Society of Arts.

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FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,

SANITARY REFORMER, AND ART-LOVER.

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GEORGE GODWIN, F.R.S., F.S.A.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—Sir Henry Wotton.

"Our English word To Build is the Anglo-Saxon Býlðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—Diversions of Purley.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is Goodness."

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Shadow and Substance.

THE close of last year has been marked by a great deal of public quarrelling (for some of it has certainly deserved that title) in the architectural world. We have had long and angry letters in newspapers, and polemical debates at meetings, in regard to more than one question which seems to have been regarded as of vital importance by the advocates on one side or another. We have had a pitched battle, for example, between the promulgators of the opposing theories in regard to the buildings of the holy mount at Jerusalem: a battle first carried on in our own columns, and then by the two champions in person at certain meetings of the Institute of Architects. In spite of very positive and very opposite assertions, however, this was a contest carried on with sufficient attention to conventional courtesy on either side. Its acerbities were mild compared with those which have marked the more recent fight over the question of restoring the roof of St. Alban's. In regard to this burning question some of the controversialists appear to have lost all command of temper, and have indulged in the bitterest recriminations and personalities, accusing each other even of want of truthfulness and of straightforward dealing, to an extent which we hope they will in cooler moments regret, though in some cases it is obvious that scolding is a congenial and favourite occupation.

It is no uncommon thing, however, to see people who are very much in earnest about a point lose their temper in discussing it; it is, in fact, a fault arguing, at all events, a healthy degree of watchfulness and interest in the subject discussed. But we are struck by the fact that all this hot feeling, and strong and sometimes almost vituperative language, has been evoked entirely by questions connected with the past of architecture, not with the present or future. The subjects which have been so keenly contested have no bearing on the present or future problems of architecture practically considered. The controversy about the Haram area is, of course, a matter of pure archæology; and the dispute about the right sort of roof to put on St. Alban's was not based on any question as to practical problems of construction, about which there was no difficulty in the case, but referred to the right or wrong of the proposed scheme as a method of treating an old building. In addition to these great fights, there has also been a provincial demonstration on the part of the Society for the Preservation of Ancient Buildings, at Liverpool, the proceedings of which have been reported in our columns, and at which the paramount claims of old structures, good or bad, to be reverenced and preserved, were urged much as we have heard them urged by the same gentlemen and their friends on other occasions, though perhaps there was in some of the speeches and addresses more moderation than usual, and more capacity, if not for seeing both sides of the question, at all events for recognising the fact that it had two sides.

In view of such controversies, if they were only specimens of public zeal and interest equally displayed in regard to all branches of architecture, we might say that the art was in a very flourishing condition in regard to earnestness on the part of its professors, and appreciative interest on the part of society. But we know that nothing of the kind is the case. The whole of this public interest and professional excitement is bestowed only upon the archæological portion of the subject. We want fifty things in the way of artistic and practical improvement for the architecture of the future, but we seldom, if ever, hear any suggestions or controversies upon such topics; and if there were such, we may consider it as pretty certain that the public would take little or no notice of them, and that they would not have much of an example set them in that respect by the architects: although such subjects might include matters of real interest for the future, both in regard to the practical welfare of future generations, and the beauty and commodiousness of future cities. The view of the substance which we want in the present seems quite obscured to most persons by the shadow of the past.

It is surely time that this partial and merely sentimental view of architecture should be modified and extended on the part both of architects and of educated people generally. Old buildings, especially if originally fine specimens of the architecture of their day, are unquestionably precious possessions, to be guarded and treated with all care, to be measured and drawn and written about so far as is desirable for their full record and elucidation. Questions of architectural or archæological history are no doubt of the greatest interest, the rather since they always bear upon subjects beyond the range of mere building,—upon theories connected with the histories of nations and of the distribution of the human race. But that this branch of architectural study should alone be able to arouse public interest or excite keen controversy argues a very curious inversion of the true interests of things, and explains, perhaps, why it is that with so many people the profession of architecture is regarded with little interest, as something vague and uncertain in its ends and unpractical in its means. The engineers' profession has certainly far more of public appreciation (and appreciation of a very material and ponderable description), in the main, because the engineers are doing what people want or are supposed to want now, while so many of the architects are doing only what a small set of connoisseurs or *dilettanti* want, for reasons which they hardly know very well themselves.

We are, for example, all "by the ears" about the treatment of old churches, when, after all, the problem is how to build a new church which shall answer the double purpose of realising architectural effect in the same degree as its Mediæval predecessors, and providing a convenient interior for seeing and hearing and for arranging the accessories of a modern church. In a recent architectural discussion upon church organs, which was reported in our columns, no one concerned seems to have noticed what was however, obvious enough,—that most of the difficulty about placing the modern organ effectively and safely arises from the fact that the modern church plan, which will include provision for that and other things constantly

neglected, has not yet been made, and no one seems to care about trying to make it. It is considered far more interesting (and obviously is so to most of the lookers on) to restore old churches, or to try to prevent other people from restoring them, than to endeavour to produce new ones which shall be as good for this day as the old buildings were for theirs. Similarly, there is more glory to be gained from unearthing an old temple or the pieces of one, than there probably would be from designing and building a new one, even equal in grandeur and adapted to modern purposes. The ancient temple is of the highest interest and value, and no one grudges due honour to the discoverer of one; but if there were more thought given to the architecture of our own temples, there might be more chance than we fear there is of a future antiquary thinking it worth while to dig one of them out.

We may, it is hardly necessary to say, trace this tendency to neglect the modern and the practical side of architecture for its past and sentimental side into many other sections of architectural practice. We have seen much attention given to making the Board Schools of London accurate reproductions of the building of last century, just as we used to see them made reproductions of the Mediæval style; but we have no such systematic effort in this country to suit the building precisely to its important purposes, to procure statistics as to the precise effect, upon the health and eyesight of children, of various plans and lighting arrangements, such as we know have been systematically carried out in some parts of the United States. And others of our architects are much interested in producing street fronts of a certain pattern, but we have have had little or no systematic effort to give a new life to modern town architecture, and to render our great cities, in their normal type of street architecture, at once healthy, convenient, and beautiful. There would be difficulty in raising money for any expenditure for such a purpose, even if the ability and thought necessary to make the most of it were forthcoming; yet there are plenty of wealthy persons who would subscribe liberally to build a cathedral, because the existing cathedrals are the finest of our architectural monuments, without any consideration whether we have the same reason for building one now, or whether there are not new problems for the architect, new requirements, utterly overlooked in the meantime.

We may claim some right to speak on this subject, since we can refer with a clear conscience to the previous history and contents of the *Builder* to bear us out in saying that it has been our consistent endeavour, throughout our now long career of architectural journalising, to keep in view the wants of the present day, especially in architecture, and to assist in contributing to the development of the art of building with special reference to modern life and modern scientific improvements and demands, without in any way ignoring the great interest and value of archæology. But it is of less importance to keep the spur to the latter branch of architectural study, because it has a fascination of its own, and appeals to the fancy of many so strongly that it will always have its full share of attention. It is, in fact, a great deal easier and more enjoyable thing, for those who look mainly for recreation, to study, and restore, and theorise about old buildings, than to give serious and thoughtful consideration to what is really wanted in new ones. We fear that new buildings for special purposes are often planned, even by architects of great and probably not undeserved reputation, in a mechanical and habitual manner, and not with that strenuous application of the mind to the production of the best possible result, which is the only spirit in which an important building ought to be undertaken. Consequently, we have so much architecture which is merely the shadow of the past, so little which has substance enough of its own to foreshadow the future. It is this practical and modern side of architecture which seems to us to require special emphasis and special endeavour, and needs to be dwelt upon at a time like the new year, which always seems, to healthy-minded people of all occupations, a time for girding up the loins and trimming the lamps afresh, and making a new start. If there can be during the coming year a new impetus given to the study and practice of architecture as the art of making modern buildings fittest for their purpose, and not of merely sketching and restoring ancient ones, something will have been done in 1879; and we, at all events, will endeavour to do our part.

EGYPTIAN MANNERS.*

IN these declining days of literature, when so much that is ephemeral and perfunctory is committed to the printing-press that should more properly find its way into the waste-paper basket, it is a great relief for the reader to be able to turn to a really well-written book upon an interesting and a fertile subject. It is nothing new to say that the author of "The Manners and Customs of the Ancient Egyptians" performed his work thoroughly, conscientiously, and carefully; this was declared when the book was first issued nearly forty years ago. And the little that Dr. Birch has been enabled to add, as the result of his experiences and observation during those very forty years, shows us how minute the research, how laborious the literary labour of Sir Gardner Wilkinson must have been. It is, too, in this fact that much of the value of the present work as a book of reference resides; for just in the same proportion as the principles enunciated, and the deductions selected and gathered from the long array of recorded facts and examples, are as true and incontrovertible to-day as they ever were, so, in like measure, the results obtained do not labour under the disadvantage of becoming obsolete, and superseded by more correct canons of archæological research. On the other hand, the researches which a phalanx of scholars, of a far more critical school than Sir Gardner Wilkinson ever professed to belong to, have since conducted in this branch of literary and historical inquiry, have not tended to weaken or destroy, but rather to support and strengthen, the arguments applied by the author to the elucidation of the manners and customs of a bygone race.

If we would obtain an accurate idea of these manners and customs, we must necessarily inquire into the origin and history of that race, and trace the gradual progression of a series of steps which led more or less rapidly towards national improvement and civilisation; we must examine the contemporary state of various neighbouring nations, and gauge the one by the standard of the era of them both. General habits of that portion of the world whence their origin was derived must be considered, and, above all, it is necessary, as the author himself declares, to avoid as much as possible the invidious comparison of European and Oriental manners when contemplating the customs of an Eastern people. Many laws and customs which are found to be wise and beneficial to society in one part of the world are deemed superfluous, even if not pernicious, in another; and the same system which by some is looked upon as indispensable for their welfare and happiness, would be rejected by others as not consentaneous with the feelings of an independent spirit. If Sir Gardner Wilkinson pleaded of his prefatory chapters of history which precede the chapters devoted to a consideration of the manners of Egypt, that the deficient and unsatisfactory account which they contain is to be laid to the scanty means of information afforded either by the writers of antiquity or by monumental record, so little light has been thrown additionally on Egyptian chronology and regal *fasti*, that very few corrections will be found on comparing the dates of the kings and dynasties, as they are printed in this new edition, with those recorded in the original work. But the history of Egypt, in the true sense of the word history, has yet to be written. Wilkinson never intended to write here any more than just as much as was necessary to introduce the main subject of his work; his object was to depict the inner life of the people, not the intrigues of court, the conquests, annexations, and dethronements of the kings. Those who came after him were allured more by the tempting prizes which a language, whose niceties are not even yet adjusted, held out, and hence it is that, even in these days of desire to strike into untrodden ways, the history of Egypt,—by which we mean a history of that nation, pieced together and borne out by her own monumental records, and not an exposition of Herodotus, Diodorus, the Mosaical and historical books of the Old Testament, and the works of Pliny,—is yet unwritten. What a powerful roll-call of names the members of Egyptian scientific research make up, if we sum their list from the wandering flashes which illumined the conjectures of Dr. Young, the methodical labours of the Champollions, the energy of Rosellini, and others, down to the late C. W. Goodwin, Mr. Le Page Renouf, Professor Lushington, in this country; the German Professors Lepsius, Brugsch, Duemichen, Eisenlohr, and Stern; MM. Chabas, De Rougé, Revillout, Maspero, and Pierret, of France; M. Naville, of Geneva; and M. Golenischeff, of St. Petersburg. But these are almost all philologists, and dedicated to a study of the language and not to that of the history. It is time, too, that something should be done to preserve the fast-fading historical inscriptions which cover the walls of the massive temples that cluster upon the riparian territory of the Nile, ere modern vandalism,—a destroying agent infinitely more irrepressible and destructive than Mediæval iconoclasm,—render it impossible to refer to precious inscriptions in support of statements and theories. All modern accounts of Egyptian travellers declare the immense destruction of remains wantonly perpetrated at the present time in Egypt; the prohibition of exportation of antiquities is practically set at nought, the encroachments of sand, the gradual deterioration of ruined edifices even when left to themselves,—all these causes point to the necessity of some really good and thorough means being taken to preserve and utilise what yet remains. For this object, and tending in this direction, how much better spent would the great sums that are annually dispensed in European museums for duplicate objects of minor importance be, if they were laid out in obtaining paper impressions, or even accurate copies and permanent photographs of inscriptions, which are daily becoming rarer, and of more enhanced value, in proportion as the originals fall under the destructive hammer of the illiterate tourist, the bullet of the native marksman, and the edacious scythe of time the all-devouring.

People so professedly literary as were the Egyptians were likely to have settled for themselves the question of their origin. Wilkinson declares, and it is not denied, that their features, their language, and their peculiarities are not to be referred to, or compared with, those of the Abyssinians, but to an Asiatic prototype; and he points out many striking resemblances between the Egyptians and Asiatics, both as to their manners, customs, language, and religion. Their own account attributes the creation of mankind to the demiourges Chnoumis, who built up man out of clay upon a potter's wheel. Subsequent legends, which owe their discovery to M. Chabas and M. Naville, speak of the dispersion of four great tribes, in the direction of the cardinal points of the compass, by the god Harmachis,—a form of Ra, when he triumphed over his enemies in the Apollonopolite nome. But, as Wilkinson points out, the primeval history of states, especially at so remote an epoch as Egypt undoubtedly derives from, must necessarily be a matter of pure conjecture, seeing that they are beyond the ken of authentic records; and if those nations themselves had handed down to us what they considered their real annals, we should find them so complicated and improbable that it would be out of our power to separate truth from fiction. Governed in all probability by a hierarchy, like Judæa before the time of Saul, the civilisation of the people rapidly progressed, and the first recorded king was at least contemporary with a very advanced scientific state of the popular mind. It is this fact among others that endows the history of Egypt with so much fascination, and which has stimulated so many eminent literary men to an examination and contemplation of her arts and sciences, her literature, and her ethics. To this we owe such works as Professor Lepsius's "Denkmäler aus Ægypten und Æthiopien," Champollion's "Monuments de l'Égypte et de la Nubie," Rosellini's "Monumenti dell' Egitto e della Nubia," and the magnificent edition of the "Description de l'Égypte," published by the members of the French expedition at the beginning of this century, a monumental work of enormous labour and undying value. Schnaase, Kugler, Lübke, Erbkam, and Reber have contributed valuable works on the history of Egyptian art; Forskal, Schenk, Unger, Schweinfurth, Ascherson, and Boissier, upon the botany; and Brehm, Hartmann, Fraas, Pruner, and Klunzinger on natural history and therapeutics.

Nevertheless, England has not been behind hand in contributing her share of intellectual influence towards the elucidation of Egyptian history. Among the names of those of her

* The Manners and Customs of the Ancient Egyptians. By Sir J. Gardner Wilkinson, D.C.L., F.R.S. A new edition, revised and corrected by Samuel Birch, LL.D., D.C.L. London: John Murray, 1878.

scholars who have rendered themselves illustrious in this way, we may with a just national pride point to Samuel Sharpe's "History of Egypt," Osburn's "Monumental History of Egypt"; Palmer's "Egyptian Chronicles"; the Egyptian series of "Records of the Past"; the miscellaneous works of Gosse, McCoan, Shelly, Whately, Lane, Wilson, Miss Edwards, and Cooper, and above all for their scholarship and critical acumen, the numerous pamphlets, treatises, articles, and separate volumes, written during the period of thirty years last past by Dr. Birch, the keeper of the Egyptian and Oriental collections in the British Museum, to whom the public owes the present edition of Wilkinson's work. It is not only to writers that we are indebted for our knowledge of Egyptian archæology; a word must be said in remembrance of those who, by their exploration of sites and judicious collection of objects, have supplied the material from which all this history has been evolved. Travellers like Burton, Hay, Anastasi, Barker, Salt, Bonomi, Rhind, the late Duke of Northumberland, Morris, and Harris, and more modern ones like the Rev. Greville Chester, have seldom left the hospitable shores of Egypt without bringing fresh finds of great value to excite that never-failing interest with which the human mind fixes upon what is new. Our national collection of Egyptian objects is in this way indebted to a very large number of collectors whose united labours have made it what it is to-day,—a museum without a parallel elsewhere in the world. Wilkinson himself was a keen collector, and his treasures, the greater part of which passed, after his death, into the Museum at Harrow, sufficiently testify to his good fortune and masterly taste in this direction. Had he not expended many years of his life in a critical exploration of Egyptian localities, he could never have written this book, which records, in so charming a style, and by so exhaustive a classification, the results of his personal observations in that marvellous land. It is worth while to record a few facts of the life of this author. After leaving Exeter College, Wilkinson went to Italy, where Sir William Gell first directed his attention to Egyptian antiquities and to the fascinations which then surrounded the newly-found but undeciphered remains of the Egyptian language. In 1822 his first work was published, and from that date to the time of his death, in October, 1875, he worked laboriously at these and kindred pursuits. His works are far too numerous to be mentioned here; the catalogue of the British Museum library, and the transactions of learned societies, must be examined by those who wish to gain a correct notion of the enormous quantity of literature which he has left behind him. His long life included the beginning and the middle, if not the end, of the grand discoveries which gave modern men like Dr. Birch the faculty of deciphering the mysterious sacred writings of Egypt in such a way that none of the Emperors of Rome or philosophers of Greece could do. Thanks to him it is that we can now have unfolded the romances, the rituals, and the historical records of papyrus, coffincase, or tablet. Ancient Mizraim will soon be known far more completely to the nineteenth century than it ever was to Herodotus or Diodorus, Plato or Aristotle, and for these results we owe a deep debt of gratitude to Wilkinson and other scholars. But there are still many mysteries unsolved which surround the once splendid but now crumbling civilisation of the Pharaonic court. Who shall explain, for example, the redness of the hair of all the earliest mummies, the absence of negroidal types, the striking connexion between the arts, religions, and ethics of Egypt, India, and Mesopotamia? Who can divine what new gift may yet come to modern philology and scientific application from the Rosetta stone, the key to all Egyptian knowledge we can show, or from the works of Sir Gardner Wilkinson, who so materially forwarded its appreciation?

There are two British contemporaries of Wilkinson whose names should be recorded in connexion with Egyptian research, because they, like him, assisted to erect the study of the history of Egypt into a distinct branch of archæology,—they are Hay and Bonomi. Robert Hay organised an expedition into Egypt fifty years ago, penetrated, with his party, far up into Nubia, and collected a vastly important and extensive series of drawings, sketches, views of the country, copies of inscriptions and pictures in tombs, on rocks or walls, carefully-measured plans and elevations of the temples and palatial edifices, and a miscellaneous mass of information, which, had they only been put in order and given to the world shortly after their acquisition, would have proved of the very highest importance to the scholars then engaged upon the elucidation of those subjects. Unfortunately, however, it was not until a short time ago that the bulk of the collection passed into the possession of the trustees of the British Museum. But even now there are to be found among the collection many valuable and unpublished facts. Strange to say, no one as yet has had the leisure or the inclination to examine them *seriatim*, with a view to their utilisation. Joseph Bonomi, on the other hand, performed valuable services to Egyptian science in a very different way. Naturally gifted as he was, as an artist, sculptor, and architect, he employed these great gifts in the preparation of careful copies of inscriptions, camera drawings and water-colour views of remains, and did not even despise to draw the outline hieroglyphics for the typefounders. The excellence of his work has never been reached by any other Egyptian draughtsman, and it will probably be long before another shall arise with sufficient power of cunning hand and intellectual feeling to compete with Bonomi's achievements.

To a mind like Sir Gardner Wilkinson's, so eager to gather up what was new and startling, the treasures which the tombs of Thebes, the rock-hewn temples of Aboosimbel and Kardassie, the historic sites of Memphis, Gournah, Philæ, Denderah, and, in a word, the whole relic-strewn lands of Egypt and Nubia, were prepared to lay before the gaze of him who should seek with wondering amazement to contemplate them, naturally had a most powerful attraction. Their history, as far as could be known in his time, had indeed been handed down from the Greeks, but it was a novel way of looking at the relics to extract from them, all silent and covered with the sacred dust of old time as they were, their tales of departed manners, their eloquent responses to the touch of the master-mind who should consult them aright. To reconstruct a monstrous antediluvian bird from the single small bone alone left of its mighty frame is indeed a wonderful effort of genius; just so, to depict the thoughts and feelings which stirred the breasts, to describe the methods of life, the daily actions, the domestic and political springs which once flowed through the living bodies of the parched and bituminised mummies of the ancient Egyptians, is indeed no less a task, and demands no less potent a charm. The materials were ready and abundant; the tombs of Thebes yielded up their contents,—ivory and ebony, gold and silver, bronzes, porcelains, furniture, textile fabrics, fictilia, jewelry, ornaments, toys, dress, and all the varied paraphernalia of civilisation; the walls of the temples and palaces spoke volumes of the history; the coloured walls of the subterranean passages and chambers of the dead glowed with coloured representations of processions, entertainments, sacrifices, musical entertainments, marriage ceremonies, funeral rites, religious performances; the papyri revealed the æsthetics of the people, their creeds, and their aspirations for a future state; the *stelai*, or mortuary tablets, indicated their virtues; the very mummies bore silent testimony to their highly developed customs. But who was to sift through all this raw material, and reconstruct the men to whom all these things referred? It was Wilkinson who essayed to do it, and no one who reads these volumes will venture to say that he has failed in his self-imposed task. With him as our leader we may safely tread the mazy paths, and, read where we will in the book, his lucid expositions, his happy phrases of terse and vigorous English, his practical explanations, are sure to attract us to read more and more, and to wish to know more of these interesting subjects. In Egypt, as elsewhere, caste was an all-important element in the popular mind, and that certain well-marked classes of society prevailed, as in modern civilisation, there is not the least doubt; and that the sacerdotal or priestly order,—that of the scribes, of the military, and a numerous band of functionaries comprising a vast bureaucracy, existed from the earliest times, is attested by the monuments. Of the lower orders,—slaves, labourers, and mechanics,—less information is given; but the condition of the middle and upper classes, who could afford to purchase the immortality of corporeal incorruption that is to be acquired by more expensive sepulchres, and more perfect methods of embalmment, is well known from the monuments which have been discovered. The three great classes of society,—priests, scribes, and warriors,—were by no means castes in the sense of hereditary succession. For although a son often followed the profession of his father, owing to habits, thoughts, early education, or patronage and connexion, which have existed at all times and in all countries, these three orders were not so distinct from each other as at the present day; the priest of a god was not unfrequently a military or naval commander as well, exercised the office of scribe, and was invested with the supervision of public works or local government. An Egyptian general in the army could marry the daughter of a priest, and his children had an unlimited choice of the honourable professions. There is reason to believe that there existed an hereditary territorial aristocracy, reinvested from time to time by the sovereign with their lands, the monarch being the landowner of the whole country, and presenting estates as rewards for successful military undertakings. Public employments were monopolised by a few great families, and this has been considered by some to be an advantageous arrangement of civil government. But the great upholder of caste, the limitation of marriage to women of the same order, is nowhere borne out by the monuments.

The king was a soldier and a priest, and although his duties were well known and well defined, he was surrounded with a divinity, worshipped as a god, and placed, after his decease, among the immortals. At the death of a monarch, a curious custom was observed after the usual solemnities of the funeral. On the last day the embalmed body was placed in state, lying within the vestibule of the tomb, and an account was read aloud of the life and conduct of the departed. It was then permitted to any one present to offer himself as an accuser, and the voice of the people, if given adversely, prevented the sovereign from enjoying the customary obsequies; a worldly ordeal, the dread of which tended in no small degree to stimulate the Egyptian kings to the practice of their duty far more than any feeling inculcated by respect for the laws or the love of virtue. The Jews had a similar custom, and deprived wicked kings of the right of burial in their ancestral catacombs. The priests and prophets, the soldiers, artisans, traders, and servants slaves and children, have had their characteristics portrayed by Wilkinson in a lively and exhaustive manner; indeed, there is scarcely a single idea in connexion with domestic civilisation which has not been illustrated with drawings from the tombs and sculptures, and with remarks from his facile pen. It is interesting to bear in mind that the Egyptians, not unlike other equally advanced nations, made extensive use of mercenaries and auxiliaries in their military adventures. As early as the time of the sixth dynasty, Nubian or Nigritic levies are known to have been employed. Rameses II., one of the most warlike monarchs that ever sat upon any throne, had a contingent of no less than four important races,—the Shairetana, who have been identified by De Rougé with the Sardinians; these were armed with circular shield, short broad dagger, and two javelins; the Tuirsha, or Etruscans, armed with javelins and an implement like a bill; the Uashasha or Osci, another Italian race, who carried a bow and quiver, a club and shield; and the Taanauna, thought by the same authority to be the Danai, Dauni, or Teucri, a Pelasgic race. In addition to these the same monarch had the Mashuasha, or Maxyes, a Lybian people, and the Kahaka, a Western race whose origin has not been ascertained, in his service. At a later period, under the dodecarchy, the Asiatic Greeks, Ionians, and Carians entered the Egyptian service, and later still, the assistance rendered by Athens and Sparta to the rival monarchs was of a mercenary nature, and repaid by subsidies. Of Egyptian weapons a great variety is extant, and we may see many shapes which are common to other early nations among their bows, arrows, javelins, spear-heads, shields, daggers, battle-axes, and helmets. Corslets with metal scales were in frequent use; the chariot, the war-car, the *testudo*, the scaling-ladder, and the drawbridge were among the implements and methods of military offence and defence. With regard to a charge of cruelty to their prisoners which has been made against the Egyptians, Wilkinson defends them against this assertion at considerable length. He says, for example, "their mode of warfare was not like that of nations in their infancy, or in a state of barbarism; and it is evident, from the number of

prisoners they took, that they spared the prostrate who asked for quarter; and the representation of persons slaughtered by the Egyptians who have overtaken them, are intended to allude to what happened in the heat of action, and not to any wanton cruelty on the part of the victors. Indeed, in the naval fight of Rameses III., the Egyptians, both in the ships and on the shore, are seen rescuing the enemy, whose galley has been sunk, from a watery grave; and the humanity of that people is strongly argued, whose artists deem it a virtue worthy of being recorded among the glorious actions of their countrymen. I cannot, therefore, suppose that the Egyptians, who surpassed all others in the practices of civilised life, were in the habit of indulging in wanton cruelty, and much less do I believe that the captives represented on the façades of their temples, bound at the feet of the king, who holds them by the hair of the head, and, with an uplifted arm, appears about to immolate them in the presence of the deity, were intended to refer to a human sacrifice; but rather that the subject was a religious allegory, purporting to be an acknowledgment of the victory he had obtained by the assistance of the deity."

The chapter devoted to a consideration of the method of building houses will have a special interest with the practical builder of the present age. Their means of utilising the materials at hand, their artifices for ventilation and domestic comfort, their bricks, woodwork, furniture, villas and gardens, granaries, vineyards, storehouses, towers and terraces, fishponds and orchards, all proclaim the Egyptians to have been an eminently thoughtful people, who have left even in the ruins we see to-day, traces of a superiority of mind which may even now be contemplated and imitated with advantage, for to look back to antiquity is one thing, to go back to it is another. If we look backwards to antiquity it should be as those who are running a race to press forward the faster, and to leave the beaten path still further behind. For antiquity of origin and for grandness of conception, the pyramids are undoubtedly the most noteworthy pieces of architecture in the world; they teach us, in their old age, new lessons of stability and durability not unmixed with the charm that all ruins acquire, for

> "There is a power
> And magic in the ruin'd battlement,
> For ah! the palace of the present hour
> Must yield to the power of the present hour."

The subject is so full of interest that we must carry it on in another article.

LICHFIELD.

THERE is always something peculiarly striking in the manners and customs of an English cathedral city, but we venture to assert that very few can boast of the peculiarities which specially belong to Lichfield. Its origin, it is true, cannot be traced back the same distance as many other cities, for it was not known previously to the Saxon era,—but it has a noble cathedral, which has been munificently restored within the past two centuries; it has some traditions of a most remarkable nature; it has a water supply second to none of any other city; and, as if to stand a mockery to this latter speciality, it is equally bountifully supplied with beer. In fact, as we strolled up and down its primitive-looking streets, we could not but help noticing how closely allied the pump and the barrel appeared to be; that is to say, while one stood sentry fashion outside the house, the other was advertised by a signboard above the door, to be had within, and wherever we turned our head, so did the invite "licensed to sell" meet our eye. Of course the celebrated Trent and Burton breweries have a great deal to do with it, but surely a population of under eight thousand inhabitants,—counting men, women, and children,—cannot require so many houses of "entertainment." A spurt in the building line, it is true, has recently sprung up, but it will take a great deal indeed to move Lichfield from its quiet primitiveness, and a vast amount of work to do away with its ancient manners and customs.

Now it is not our intention to give a history of the city, for that can be had at a very moderate rate of the local stationer, boasting of "Johnson's head" for his sign; but what we purpose doing is to supply some facts and scraps which recent researches have brought to light, and which at the present time, while the exterior of the cathedral is under the process of restoration, cannot but be of interest to a great many of our readers.

Staffordshire anciently was part and parcel of the Mercian kingdom, but there is nothing to denote the existence of such a place as Lichfield before the end of the third century. We are told that on a small spot of ground within the precincts, and called Christian Fields, a certain Saint Amphilabus preached Christianity to the natives; that the Romans found out their retreat, made a general massacre of the lot, and left their mangled remains to be devoured by wild beasts and birds of prey. This, says our local friends, gave the origin of the name of Lichfield—a field of dead bodies; and as if to perpetuate the terrible slaughter, the town seal to this day bears for its heraldic picture three martyred kings surrounded by all the emblems of ancient warfare, daggers, swords, battleaxes, and clubs, which being also used on the panels of the local railway carriages, caused our country cousins to regard it as specially emblematic of a railway accident! Other authorities tell us that the name is derived from the Saxon *lece*, *lec*, *lace*, or *lich*,—a lake,—descriptive of its marshy situation, and which probably is the more accurate supposition.

Three centuries after the massacre, Oswy, the Northumberland king, conquered Penda, the monarch of Mercia, converted the kingdom to Christianity, founded a bishopric, and erected a church, which he dedicated to St. Peter and St. Mary (this was about the year 667), upon the site of the field of slaughter of the Diocletian period. The present position of the cathedral has led many writers to believe the traditional foundation of the city to be correct. Any way, the first bishop was a Scot, and the second was the renowned Saint Chad. Another Lichfield legend tells us that Bishop Chad succeeded to the prelacy in 669, and took up his abode in a cell in the woods at the place called Stowe, within a mile of the present cathedral, and close to a well of water,—which well, by the way, still exists in a garden a little north-west of the present St. Chad's Church,—and that here he subsisted upon the milk of a doe. This doe was hunted upon one occasion by the sons of the then Mercian king, Wulfhere, who being led to the prelate's cell were persuaded to embrace Christianity. This so enraged their parent that he slew them both, and yet he in turn became a Christian too. These wonderful conversions led to notable results,—the most startling being the miracles that took place soon after: flights of angels singing hymns over the bishop's cell, nightingale's stopped warbling, and, after St. Chad's death, man and beast were cured of dangerous maladies by gathering the dust from his tomb, or sleeping on it. Whatever truth may be in this legend, we do know this, that St. Chad's memory is still cherished, and that in the present cathedral library there is specially preserved a very interesting memento of him. This is a folio MS. volume on vellum (recently bound), called "St. Chad's Gospel," of the Latin Vulgate text, containing the Gospels of SS. Matthew, Mark, and Luke, down to chap. iii. v. 9, written about the year 720. It is an interesting specimen of an illuminated MS. of the ancient Irish school, but we doubt its having been written by St. Chad, although probably by a contemporary scribe. Carefully enclosed in a glass case, we noticed that, although the strong thick vellum is discoloured, the ink is as black as if it was written but yesterday. One thing we must not forget, it owes its preservation to the Rev. William Higgins, "the chief chante of Litchfeld," during the Civil Wars.

But we cannot quit St. Chad yet. We must record the latest of wonders. When the Derbyshire Archæological Society visited Lichfield, in July, Bishop Abraham, standing on the site of St. Chad's shrine, and close by the chair on which lay the "Gospels," told his astonished hearers that (the late) Mr. Hewitt had purchased some ancient papers, in which was described the dying moments of a man living at Sedgeley, upon whose death-bed were found the remains of the bones of our Saint wrapped up in black webbing. Now Mr. Hewitt had searched the records, and found out that in 1552 a commission ordered all relics to be destroyed; that one, Arthur Dudley, a prebendary of the cathedral, was sworn a commissioner to find and destroy these relics the following year; that he naturally looked for these bones in every place but the right one,—for he had previously taken care to abstract them from the shrine, and gave them to his sisters at Woodsetton. They, however, got frightened of their trust, and handed them over to Henry Hodgetts, at whose death, at Sedgeley, they passed into the hands of a priest, one Henry Turner. From him they came to the family of Leveson, thence were taken to Boscobel, and afterwards to Swynnerton, where Dr. Kirk, of Lichfield, saw them. Then they were placed behind the altar at Aston, near Stone, and finally are now deposited in the Roman Catholic Cathedral of Birmingham. After so long a ramble, let us hope that the bones of the second bishop of Lichfield are now resting in peace. But his name and fame will long resound, especially in his own cathedral; for we read in the statutes of a twelfth-century bishop an order that "whenever God permits a miracle to be wrought at the shrine of St. Chad," so then shall the cathedral bells be set ringing!

In Domesday, the Lichfield lands are mentioned as belonging to the Bishop of Chester, Bishop Peter having removed the see thither in 1067. In 1095, Bishop Lynsey transferred it to Coventry, whence it was brought back to Lichfield in the middle of the twelfth century by the good Bishop Clinton, who commenced the rebuilding of the cathedral. But the most munificent prelate was Bishop Langton, in 1296. He erected a shrine to St. Chad, at the cost of 2,000*l.* (?), lengthened the cathedral, erected a vaulted roof over the transept, cleaned the close ditch, surrounded it with a stone wall with two stone bridges, paved the city streets, and erected a new palace, with a large hall at the north-east end of the close, and upon the site of the present mansion, which was built in 1687. He also erected the fine gate at the west entrance to the close, which was "improved" off the face of the earth in 1800, as was the south gate half a century previously. Before Langton's time "the city was completely divided from the close, the citizens having access to their cathedral only by a boat over the now Minster Pool."

The city had a grant of a market as early as 1161, but the earliest kingly visit recorded is when Edward III. held a tournament here with the Earl of Lancaster. Among the Exchequer accounts of this reign we find the same king, in his 44th year, paying the Dean and Chapter 100*l.* which he had borrowed of them. Richard II. kept Christmas here in 1397, and it must have been a big Christmas party indeed, for it is recorded that 2,000 oxen and 200 tuns of wine were consumed. And yet only two years later the same monarch was brought prisoner here *en route* to London! The ancient "Guild of St. Mary" was instituted by this king in 1387, and this continued the governing authority of the city until as late as 1548, when Edward VI. granted it a corporation of two bailiffs and twenty-four burgesses. In 1419, the ordinaries of the vicars choral of the cathedral were written on vellum, and these are still preserved in the Salt Library at Stafford, and a century later, 1522, when Henry VIII. made his expedition to seize the crown of France, the Bishop of Lichfield lent 1,000*l.*, and the Dean and Chapter 133*l.* 6*s.* 8*d.* In Queen Mary's reign, September 1555, Robert Glover was brought to the Swan Inn, confined in the church prison, condemned as a heretic in the Bishop's Court, and burnt at the stake at Coventry. By a charter of the second year of the same queen the city was made a county in itself. In 1553 took place the registration of the church goods. From the original documents preserved in the Record Office, we learn there were delivered over to the cathedral authorities (after being recorded) "ii chalices of sylver gylte with patents, xij bells in ij steeples, vj clothes of dyaper for the table of Holly Comunyon, xxiiij olde quyssyons, and a lecturne of brasse." To the Chapel Church: one chalice, three bells in the steeple with a frame, two altar-cloths and a towel. To St. Michael's: one chalice, three bells in steeple, two altar-cloths, and two frounts of white damask; and the same to Stowe Church. Every church had a general seizure made by the commissioners of its candlesticks, cruets, crosses, altar-cloths, coffers, surplices, bells, and brass-work; but the parishioners had already made a step before them, for numbers of articles are mentioned as having been "solde by the bayles and cominalties of the said Sitty of Lychefeld . . . for takenge downe the alters, pavynge the flores and puttynge awaye the housynge of idolls or images and settynge up the godly Scryptures."

The year following (1554) Ralph Baynes was consecrated Bishop of Lichfield, but both he and

Owen Oglethorpe (who was consecrated Bishop of Carlisle in 1556, and had crowned Queen Elizabeth) were deprived in 1559, and were both buried in the church of St. Dunstan-in-the-West, London, as noted by Mr. T. C. Noble in his account of the registers of that parish :—

1559. Nov. 24. Mr. Doctor Banes.
1559-60. Jan. 2. Doctor Eglethorpe.

Half a century after this died Sampson Erderswicke, the first historian of Staffordshire. By his will, in the nature of a trust-deed, and which was proved the 6th of October, 1603, he left everything he had in his house at Sandon, except his wearing apparel, "to be ymployed and bestowed to the use and benefytts of hym that shall be heire of hym the said Sampson at the tyme of his decease, and so to remayne from heire to heire as heire-loomes," while the produce of his corn and other effects was to be spent in portions of 500*l.* each to his daughters, Maria and Margerie. It was to this Sampson Erderswicke, a "well-beloved cousin," that Thos. Venables, esq., baron of Kindreton, Chester, left "in consideration of the great paynes, travell, and charges which he hath bene at, in setting downe my descent or pedigree," one buck in summer and one doe in winter yearly out of his park, together with licence to hunt and kill deer therein with any number of persons at pleasure.

A few years later a very sorry picture is presented to our gaze,—the burning of another "heretic." From the State papers we learn that one Edward Wightman, of Burton, had petitioned the king, at Royston, in a strain that caused James I. to refer him to Bishop Neile (subsequently Archbishop of York). From Easter till October Wightman's "blasphemous heresies" caused some trouble, which ended in his being sent to Lichfield and tried there the 19th, 26th, and 29th of November, and the 2nd to the 5th of December, 1611. The bishop tells us in his report :—"I read the sentence against him and denounced him to be a blasphemous heretic, and to be accordingly certefied to the secular power. Whereupon his majesties writ (dated March 9) was directed to the sheriff of the county of the city of Lichfield to burn him as a heretic. He being brought to the stake, and the fire having scorched him a little, he cried out that he would recant. The people thereupon ran into the fire and suffered themselves to be scorched to save him. There was then prepared a form of recantation, which he read and professed. Whereupon he was carried back to the prison, and after a fortnight or three weeks' time of passing he was brought into the consistory, there to declare his recantation and renounce his heresies, done deliberately upon better resolution and in truth, and not upon terror or fire. When he came there he blasphemed more audaciously than before; whereupon his majesty commanded the writ for his burning to be renewed, which was sent down and executed, and he died blaspheming."

We find in 1617, Thomas Hutchins, the City postmaster, petitioning the king for the payment of the three years' salary, &c., overdue. He had before petitioned, and, of course, the king had promised payment. James was very fond of promising,—and now he and all the posts were in great distress. Payment was, it seems, forthcoming this time, although, as late as 1630, we still find Hutchins petitioning. Upon this occasion, however, he had found himself in the Marshalsea, but probably it was on account of the 12,000*l.* which he says was due to him. Many of the "posts" had four years' pay in arrears ; so we must suppose it is easier for a postmaster in Queen Victoria's reign to get paid, than it was for his predecessor in the time of the Stuarts. And yet these were "the good old times"!

In this same year of 1630, on May 1st, we find Bishop Morton writing from Eccleshall Castle to the bailiffs of Lichfield requesting that two chests preserved in St. Mary's Church may be properly looked after pending further orders. It appears in one of these the Corporation kept their deeds, and in the other, the church and bishopric kept theirs. How far these orders for preservation of documents were attended to in those days may be gathered from the fact that a few days later the dean petitioned the king that in violation of the bishop's instructions, the Corporation had removed their chest with its contents, and therefore prayed restoration. Here there is another of the many evidences of the way in which the MSS. of our forefather's estates have been lost.

Our next local event of interest is dated 1639. Among the original orders of the Court of High Commission we find a very severe sentence passed, and a sentence specially illustrative of the times. Thomas Cotton, and Dorothy, wife of William Thornton, both of the parish of St. Michael, Lichfield, were sentenced to do penance (for committing adultery) in their parish church and in the cathedral, and he to pay a fine of 500*l.* and all costs. In the following year a very interesting question was raised and argued. The Lords of the Council appear to have assessed the City 100*l.* out of 2,000*l.* to be raised by the county for ship-money. Of this 100*l.*, those residing in the close, "the beauty of the city," were assessed at fifteen guineas, but they refused to pay, claiming exemption, whereupon the bailiffs seized the registrar's nag for his 2*l.* The Dean and Chapter immediately petitioned the king; he referred the matter to his Council, and they to the Solicitor-General Littleton, who subsequently sent in his opinion that the close was in the county of Stafford, and not within the city and county of Lichfield. This, of course, decided a long-vexed question of the privileges appertaining to the ancient close.

To give some idea of the state of the bishop's palace at this period, here is an extract from a letter which Bishop Wright wrote to the Dean of Arches in 1638 :—"I have been at great charges to make a ruinous palace fit to give content to my successors, but content none can have if it continue as now it is, and therefore, unless I have it so inclosed that I may keep my people in it at night, and keep theirs out, I will stay my hands from further expenses, and return to moist Eccleshall to end my days. I pray take notice that the Bishop of Lichfield, who formerly had many houses, should only now have but one to dwell in, whatsoever happeneth, and that none of the wholesomest, where the prebend has more authority than the bishop."

We are now in troubled times. A few years later, "The Siege of Lichfield" brought about sad havoc both to city and cathedral, especially the latter. We could fill pages in description ; we have before us no fewer than a dozen different news-sheets of the time detailing the progress of the siege. That the close was strongly fortified may be gleaned from one of the newsletters, called "Joyfull Newes from Lichfield," dated April 17, 1643, wherein the writer says : "Prince Rupert fought against the close ever since the 10th, and can do no good against it : he has lost many men, but we have lost none as yet." Then "he caused the colliers to come in with all their pickaxes to undermine it, but could not for the rock and water." Next he sent ten miles round for all the ladders that could be obtained "but in the scalling of the wals our men killed eight of his men and took one, and that which they took they, with advice, hanged him three yards from the wall, like a syne, and bid Prince Rupert shoot him downe." The next day, Rupert sent to inquire if they were going to yield ; they replied they would die sooner, and they wished to know why he did not shoot faster, "if he wanted powder they would lend him a barrel!" And next, when Prince Rupert did shoot a volley at the walls, the besieged actually rang the bells in defiance. In a tract entitled "Valour Crowned," &c., Thomas Ellis narrates a curious incident or two :—His brother, Henry Pretty, "was shot in the back upon his belt with a musket bullet, which struck him down, yet neither pierced belt or coat ; and at the breach when so many brake in, he and his lieutenant with Captain Greaves lead on those thirty men, where Askin, chaplain to Prince Rupert, presented a pistol to his very face, the powder whereof flew in his forehead, yet the bullet went through the brim of his hat." How long the siege would have lasted it is impossible to say, had not one of the towers been undermined by Rupert successfully, and, exploding, made a breach and caused the besieged to surrender on the 20th of April, 1643. Speaking of the siege, the late Mr. Hewitt writes : "Wishing to observe the effect of his cannonading, Lord Brooke placed himself within the porch of a house in Dam-street, where, being observed from the Minster battlements by one 'deaf and dumb Dyott' the latter shot the general through the head and killed him. This event occurring on St. Chad's day, March 2nd, the Cavalier party naturally referred it to the interposition of our Lichfield saint. The spot were Lord Brooke fell is marked by an inscription in the wall of a house in Dam-street on the east side," and "the lintel through which the ball passed," says Jackson's Guide in 1781, "is now preserved amongst the curiosities in Mr. Greene's Museum." The Dyotts have for centuries been associated with Lichfield, and several monuments to them exist in St. Mary's Church. Anthony, son of Sir Richard Dyott, specially desired by will that his Uncle John (who had shot Lord Brooke) should be kept by his brother Richard "in the same plight and equipage with all things necessary as my father and I have done." At the height of the seige, Dr. John Hackett continued to preach in the cathedral, and while doing so, at the time of its surrender a soldier rushed in and threatened to shoot him dead if he did not stop praying. "Soldier, I am doing my duty ; do you do yours," was Hackett's quiet and yet beneficial reply. Dr. Hackett was consecrated Bishop of Lichfield 1661, and proved the great mover in the restoration of the cathedral. Both in this siege, and the other attack in 1646, the "Roundheads" did terrible injury. "They destroyed the monuments, broke the effigies of bishops and knights, stole the sepulchral brasses, demolished the painted windows, burnt the church records and the organ, defaced the statues, tore the vestments, hurled cats through the church for their daily pastime, travestied the holy rites of baptism by carrying a calf wrapped in linen to the font, sprinkling it with water, and bestowing upon it some ribald name. The Communion plate and the valuables were carried off by Russell, the Parliamentary governor." Some of the balls and shot fired into the building during the time of the siege have, within the last few months, been dug up during excavations by the cathedral walls. Another note is worthy of record. It was the first church made a garrison of by the Royalists, and the first seized by the Parliamentary forces. And when, in 1646, the city again resisted, the surrender was only made when the king's affairs were found hopeless. Of those that then left the close were the governor, five colonels, Sir Richard Dyott, and five other commoners, seventy-three officers, five magistrates, twenty-one esquires and gentry, and 700 soldiers, with 800 muskets and 100 cases of pistols.

One of the conditions of surrender was "that all writings, evidences, and charters belonging to the cathedral, as also the library there, shall be preserved." This stipulation was very requisite ; for in the late tumults the documents in the house of Michael Noble, the town clerk, who lived in the close, had been carried off among the other plunder. This town clerk, by the way, was a somewhat remarkable man. He was appointed coroner and town clerk by the charter of James I., in 1623, and was of a family long seated at Charley, a hamlet in the parish of Fairwell, in the county. In 1640 he had been returned M.P. for the city, and his son subsequently was made a captain "amongst those seditious varlets that went against Church and king." But if Michael Noble "forgot his allegiance," what must we say of his wife, who, by the State papers preserved in the Record Office, seems to have been one of those "strong-minded female" characters which we are so accustomed to meet with even in this nineteenth century? It appears that during the Midsummer quarter of 1636, "the Lady Eleanor Davies," while stopping at Mr. Walker's house, in the close, compiled her "Appeale to the Throne," containing "scandalous libells against Dr. Twisden and Dean Latham" ; that she subsequently lodged at the Angel, in Lichfield ; that she had for associates the wives of certain officials of the city, including Marie Noble, the wife of the town clerk ; and that the whole of these ladies appeared determined to create a disturbance to the unquieting of the whole place. Now, it appears they went about it in a very startling manner. The seat adjoining the bishop's throne in the cathedral nave was appropriated to the wives of the deans and canons, but of this Mrs. Noble and her friends took possession, even against the orders of the bishop. Of course, this was bad enough, but what followed was worse. Going to the seat one day, this lady met Mrs. Twisden (subsequently Mrs. Pelsant), and then came "the tug of war." Mrs. Noble took her rival "by the shoulders, or some other part of her body, and in a vyolent manner, to the disturbance of the congregation, putt her backe againe, and threwe her aboute, and used verie impatient wordes, the whole congregation taking speciel notice thereof." Next, the confederate ladies came to the cathedral and specially saw the said Lady Davies take her

seat on the throne, and finally, as a climax, "the said ladie did with a pott of water, tarr, and other filthy thinges defile the hangings of the altar after the morning prayer, while living at Mrs. Walker's, and told some of the working men she had sprinkled holy water on the same." When Mrs. Walker was asked why she harboured such a woman, she replied, "the Lady Davies had but done her conscience, and it was better justice than them that had set the candlesticks there." How the dispute was settled we have not been able to discover. Michael Noble died the beginning of the year 1650, and in his will, proved the 10th of March, directs, "My body to be buried in the *late* Cathedral Church of Lichfield," near the bodies of his father and mother, Edward and Isabel Noble. He left issue two sons, named John, "the Captain," who died 1663, and Weston, and three daughters, Isabel (the wife of Dr. Hewitt, of the close), Mary, and Margaret. To the poor of Lichfield he left 10*l.*

After the destruction of the cathedral,—for little remained except the outer walls,—the affairs in the city assumed a more peaceful bearing, except that the inhabitants had to mourn for those that the plague had carried off (more than 800 persons), about the very time when the second tumult occurred. To show the hatred existing at the periods, we think the indorsement on a deed preserved at the Salt Library will be amusing to our readers: "A bargain and sale made by the Oliverian rogues (by virtue of an Act made in Hell) to Thomas Fawcett," and relates to cathedral lands, A.D. 1649.

In 1661 Bishop Hackett commenced a new era in the history of Lichfield. We have already stated it was to him the restoration of the cathedral is due, and when we note that he contributed 1,700*l.*, and obtained subscriptions of 8,000*l.* more, with donations of various kinds of gifts as well,—and among the donors were Charles II., Archbishop Sheldon, Elias Ashmole, Coke, and Clarendon,—it may be supposed that his name will not easily be forgotten. The cathedral was reconsecrated 26th December, 1669, and now, this present year, for the fourth time since then, have further additions or alterations been made. We can only trust that those now in progress will be more successful than those which were undertaken nearly a century ago. Illustrations of the new font and reredos were given in our journal 8th March, 1862, and 26th November, 1864.

But we must hasten on, although we have a goodly store of original matter yet untold. When Sir Thomas Butler, Earl Ossory, the eldest son of the Duke of Ormond, passed through Staffordshire on his road to Dublin to take the Deputyship of Ireland, in February, 1667, there was a grand reception given him, and a coach and six horses conducted him to Lichfield, where "the Corporation gave him a noble banquet of better sweetmeats than are usually found," for which kindness he stayed in the city the whole night. Two years later (July 31, 1669), occurred a most remarkable event. It is recorded in a scarce tract of eight pages now before us, entitled "A Strange and Wonderful Relation of a Flight of Pismires that fell in the Town of Lichfield," &c. It was at the time of a full market, when for some three hours the whole market, and several streets adjoining, were covered by a tremendous army of these ants, stated to be of the size of a spider, which not only took possession of the place, but did great damage as well. Those that fell dead "made several heaps to the bigness of a bushell of corn." They are supposed to have come from the East, and flew off in a body towards the North. In 1687 the bishop's palace was rebuilt; and the cathedral bells were recast,—one of the subscribers to the cost being "Michael Johnson, ten shillings"; and the same year, when King James II. passed through the city, in August, he received a present of over 100*l.*, and did the citizens the honour to "touch" them for the evil "in ye midle quire of ye minster church." An entry in the register of St. Mary's Church tells us that between October 25, 1685, and August, 1687, thirty-nine persons, chiefly of middle age, received the honour. It is a matter of history the touching of Dr. Johnson by Queen Anne. William III. came here in 1690; the Duke of Cumberland, in 1745; and twice has her present Majesty given it a visit. The Diocesan Theological College was established here in 1857, having been proposed five years previously. In 1859 was opened the free library and museum, principally through the active exertions of the Rev. J. T. Law, the chancellor of the diocese, and others, including Capt. Dyott, Dr. Rowley, Messrs. Lomax, Harwood, &c. This building is situated near the cathedral, on the high London-road; and contains a large and interesting collection of curiosities, including several relics of Dr. Johnson and the original model of his statue, which, designed by T. C. Lucas, was erected in the market-place opposite Johnson's house, in August, 1838, at the cost of the chancellor; three sides of the pedestal representing three events in the poet's life:—"How he was borne from school," "Hearing Dr. Sacheverel preach," and "Doing Penance in Uttoxeter Market-place,"—a cast of the latter subject having been recently taken for the statue at Uttoxeter. One of the recent additions to the museum is a good-sized model of a Japanese hotel, the gift of the Hon. Captain Lyttelton. The museum has also a fine collection of coins, medals, and local tokens; some valuable paintings, and antiquities discovered in the neighbourhood. We were much interested in the whole of these, but would suggest to those having charge of the valuables to take efficient means to prevent inconvenience or loss by the crush that sometimes takes place when our "country cousins" flock to the city. The present obliging attendant at times requires strong additional help; for it would be a great pity to have some of the rarities damaged by those who come, not to admire, but to spoil. A catalogue is also much wanted. A museum was established in Lichfield in the last century, but it belonged to private individuals. The celebrated Richard Greene took forty years to bring together, in his house in Sadler-street, a very remarkable collection, a catalogue of which, dated 1786 (kindly shown to us by Mr. Lomax), occupying eighty-four pages. The local portion descended to his grandson, Dr. Wright, but the other portion was sold to Mr. Yote, of Gloucester, for 1,000*l.* When Dr. Wright died the locals were dispersed under the hammer. A great many articles formed the beginning of the present museum; but the majority passed into private hands. We may mention that the recreation-ground (adjoining the City Museum), in which is a fountain, the gift of Chancellor Law, was reclaimed from the ozier-bed,—anciently a part of "Sandford Pool," and it may be interesting also to note that Lichfield has for centuries been celebrated for its pools, so much so, that the writer of a very scarce little tract on the Lichfield waters printed in 1840, gives a curious and lengthy argument in favour of the derivation of the name of the city from the marshy nature of the ground. And he instances the names of places and streets, such as Dam-street, Wade-street, Frogmere or Frogpond street, Stepping Stones-lane, Swan-lane, &c., as evidences, and the overflow of water, he declares, created those lakes and marshes which gave to the place the name Lecetfelle, Licetfield, Lakefell, Lichfield.

We have already spoken of the bountiful supply of water by means of conduit pipes. This conduit stood on the site of the present drinking-fountain and clock-tower (erected in 1863), next the Priory (the residence of Dr. Brown) and opposite Bore-street. It was given in 1301 by Henry Campael, son of Michael de Lichfield, the bellfounder, "in pure and perpetual frank almoigne for the use and solace of the fryers," and is derived from lands at Alderstone. The city afterwards obtained the use, and four conduits were erected. Three of these being removed, the streets are now plentifully supplied with pumps, while the pipes also convey a plentiful supply to the houses, for which a rateable charge is made. There is also a reservoir called "Stowe Pool," of some eighteen acres, for neighbouring districts. Besides the clock chimes, the clock itself is lighted up at night by means of a light thrown upon its face from the opposite building. The Priory adjoining, now a private residence, was one of the earliest Franciscan buildings in England. The order having come over to England in the beginning of the thirteenth century, founded a house at Lichfield about 1229. It was dissolved by Henry VIII., and of the little that remains perhaps the only relic of note is a slab with an inscription to "Ricardus Mercator," who was probably one of the earliest of their brethren.

Opposite the tower, and at the corner of Bore-street, is a curious-looking building, with an inscription,—"Tho. Minor's House," now in the occupation of Mr. Batty, veterinary surgeon. This house has a somewhat curious history, having been specially left to Lichfield for the purposes of a school, but which school, by one of the Charity Commission schemes, has since been incorporated with the Free Grammar School. Thomas Minor belonged to an old family in county Stafford. He was a draper, living in Sadler (now Market) street, in the city, and issued tokens in 1656, 1658, and 1660. He was elected M.P. 1654-56 and 1658-59, and died on the 7th of September, 1677, aged sixty-eight, ten years after his first wife. A tablet to their memory is in the vestry of St. Mary's Church, where he was buried. By his will, proved the 12th of October, 1677, he bequeaths his property at Uttoxeter to his then wife, Dorothy, and others, in specified portions, and upon special conditions; he leaves 100*l.* for his funeral mourning apparel, and "for a gravestone and a small monument for me"; to his niece he leaves the Unicorn in Lichfield; he directed a sermon to be annually preached on St. Thomas's Day in St. Mary's; left 5*l.* to the poor of the city; and to certain trustees he left "all that messuage, house, or tenement, which I lately buylded at my own proper costs and charges, standing at the upper end of Bore-street,"—this was in 1660,—and "to employ the said messuage, as now they are employed, ffor a schoole house, wherein may be taught thirty poore boys to read in English bookes untill they can well read chapters in the Bible, whose parents are not able to keep their children at schoole at their own charge." He left land specially to support the institution, and to pay the master 10*l.* a year, 13s. 4d. for annual repairs, 6s. 8d. "for one carte or waggon load of coals to be yearly laid downe about Symon and Jude's Day at the said schoole, done for the use and benefit of the said poore boyes," and 6s. 8d. "to be laid out in wine and cakes yearly for a small treatment" when his feoffees paid their annual visit of inspection. We hope the Charity Commissioners did not forget the instructions in the will, when they set about dissolving or "improving" this good man's special bequest.

Speaking of schools reminds us that there are now ten in active operation in the city, and at the head of these is the celebrated Free School, said to have been founded by Edward VI., and to the support of "six poor scholars" of which Archdeacon Walker left land in 1567. The present building in St. John-street (opposite St. John's Hospital) was erected in 1850 on the site of that built in 1692, in which and its predecessor, among others were educated the poet Addison, Dr. Johnson, David Garrick, Elias Ashmole, Bishops Smalridge and Newton, Chief Justices Willes & Wilmot, and several others of note; while Dr. Harwood, the historian of Lichfield, was its head-master for several years. The old building is pictured in the *Gentleman's Magazine*, 1794, at which date it was "in a state of dilapidation, and unfit for the use either of the master or boys." In Chambers's "Book of Days" is engraved the stool or altar of repentance,—a flogging-horse which stood in the lower school-room, covered with dust, and at the same time "there was a head-master receiving a good salary, but no scholars." In Dr. Johnson's time, Hunter, the head-master, "was very severe, and wrong-headedly severe. He used to beat us unmercifully, and he did not distinguish between ignorance and negligence, for he would beat a boy equally for not knowing a thing as for neglecting to know it, and," continues the Doctor, philosophically, "if a boy could answer every question, there would be no need of a master to teach him." And the only consolation the boy got while being flogged was, that Hunter used to tell him, "This I do to save you from the gallows!" How Dr. Johnson was borne on the shoulders of his schoolmates from his father's house to the school is kept in memory by the sculpture on the statue base.

Mentioning *the house* calls to our mind to say a word or two thereon. Every one that visits Lichfield cannot fail to see the solid brick-built mansion which stands at the corner of the market-place. It is one of the remnants of the fine old houses of bygone days. At the commencement of the last century it was in the tenure of its owner, one Michael Johnson, bookseller, stationer, and subsequently parchment-maker, &c., who had been born at Cubley, in Derbyshire, 1656, and married, at St. Giles's Church, Packwood, Warwickshire, 19th June, 1706, Sarah Ford, descended of an ancient race of yeomanry in that county. To them were born two sons, whose baptisms are recorded in the registers of St. Mary's Church, immediately facing their birthplace,—

1709. Sept. "Bapt. Sam., son of Mich. Johnson, gent., 7."

1712. Oct. "Bapt. Nathaniel, son of Mr. Michl. Johnson, 14."

Of the latter little is known except that he appears to have been rather a trouble to his parents, and not on good terms with his brother. At all events, we must judge this by a letter which Mr. T. C. Noble tells us he saw reverently preserved at Lichfield. It was addressed to his "honoured mother," and contains this paragraph: "As to my brother's assisting me, I had but little reason to expect it, when he would scarce ever use me with common civility!" Nathaniel died in 1737, while Michael, the father (who served office as Sheriff of the City in 1709, and Bailiff in 1718 and 1725), died some six years previously, as is recorded in the St. Michael's register:

1731, "Dec. 7, Mr. Michael Johnson, a magistrate of this city, was buried."

In the same tomb was buried Mrs. Johnson in 1759; their epitaphs being composed by their celebrated son. We need not enter further into a biography, except stating that Dr. Johnson himself naturally possessed a great love for his native place, and those now living there venerate his name. We have seen his relics preserved there with jealous care, but to enumerate the whole of these would take up too much space. Paintings, portraits, shoe-buckles, walking-stick, cribbage-board, prayer-book, chair, bust by Nollekins, his wife's wedding-ring, &c. The house remains in the same condition it did (so far as the structure is concerned) in Johnson's time, except that the exterior of the shop (now occupied by a draper) has been a little modernised. Mr. Clarke, the present tenant, very obligingly permitted an exploration, and we found the parlour next the shop had not been altered in the least. It was in 1784, in October, Dr. Johnson paid his last visit to Lichfield,—just two months before his death. In 1767, on August 15, the Corporation there renewed the lease to him of the waste lands upon which Michael Johnson had built his house,—and this renewal was an exceptional one. The old lease had expired, but without any application from the Doctor, the City unanimously granted him another ninety-nine years at the old rate of 5s. a year, and without paying a fine. After this who can say that Corporations are illiberal to their tenants?

Next door to Johnson's house is the old Three Crowns Tavern. Here our poet always stayed when in and near the city, and here to this day, in the rear, is the parlour where he took "a comfortable supper" in 1776, and sat in the very chair which we had the privilege of occupying a century and two years later. Boswell narrates that when he and his "master" visited Lichfield, trade was very quiet, although the manufacture of sail-cloth and streamers for ships, and dressing of sheepskins was going on,—a somewhat curious business for an inland city,—and when he ventured to say the inhabitants were "an idle set of people," the "roarer" of Fleet-street replied, "We are a city of philosophers; we work with our heads, and make the boobies of Birmingham work for us with their hands."

While here in 1776, Mr. Stanton, the manager of the theatre, paid his compliments to the doctor, who visited his performance, and jocularly proposed to Bozzy to write a prologue for the occasion. The present theatre, or St. James's Hall, in Bore-street, was opened in 1873, and stands on the site of that built in 1790. Near by, in the same street, is the Guildhall, erected in 1846; it is a large room, with the city gaol under it. The old hall was an ancient structure, in which the Guild, established in 1387, carried on its business until 1835, when the present town council was established. Nearly opposite is the Market Hall, erected in 1849, upon the site of that built by Dean Denton in the sixteenth century.

Adjoining the Market is St. Mary's Church, the history of the foundation of which is rather uncertain. The Rev. Mr. Baker, the vicar, who preached at the opening of the new church, December 30th, 1721, and who died August 17th, 1732, after holding the pulpit for fifty-one years, has written in the parish register, "By an inscription upon the steeple of the old church the foundation was laid A.D. 856"; but historians have doubted the correctness of this assertion. It is, however, of a very early date, and the present building is the fifth on the site. The tower and spire were erected from designs by Mr. Street, in 1855, as a memorial to the late vicar, and the body of the church in 1868-70 (Mr. Samuel Fowler, a native of the city, being the architect), as a memorial to Bishop Lonsdale. Here are the Dyott monuments, and the register, which commences October 5th, 1566, is perfect to the present time, except between April 28th, 1641, and February, 1645 (except a solitary entry on July 9th, 1644) clearly showing the troubled times.

St. Michael's Church, with spire, is on what they call Green Hill, eastward of the city, and on the road to the Trent Valley railway station. The first church was probably erected at the end of the thirteenth century, and a century later was buried the William de Walton whose monumental effigy was discovered in 1846, when the restorations were in progress. The approach to the church is through a fine avenue of elms. Here were buried the parents and brother of Dr. Johnson, and from the churchyard, which is the largest we know of,—being some seven acres in extent,—a magnificent view of the surrounding country can be had. Just within the railings by the high road is a very interesting tomb. It is that of the Rev. J. T. Law, fifty-three years chancellor of the diocese, who died 22nd February, 1876, aged eighty-five, and who built this tomb on the death of his wife ten years previously. His name is closely associated with the welfare of Lichfield; he was its most energetic benefactor of modern times, and probably the most curious evidence extant of his thoughtfulness is the clock which exists at the top of the tomb, with two dials, which goes night and day, and is to do so for ever, and at night was ordered to be illuminated, so that passengers to the station might know the time of the day, and, at the same time, that time flies, and our time on earth is limited. We may here mention that on Whit Monday, yearly, a grand festival is held on the open space called Greenhill, near the church, and is called "Greenhill Bower." It commences with a procession of the citizens round the city, and a free entertainment of wine and cake in the festooned bower as a wind-up. The show is something after the fashion of the London Lord Mayor's Shows of the olden time.

St. Chad's, or Stowe Church, at the east of the city, is supposed to have been erected on the site of the Hermitage, but no part of the present building is earlier than 1300, the tower perhaps 1350. Close by is the celebrated spring of water of Charles II.'s time, the grounds surrounding which have been the theme of prose and song, and gave origin to Dr. Darwin's "Botanic Garden." In the church were buried the Biddulphs, some of whom were M.P.s for the city, 1640 to 1708. Close by is the remnant of Michael Johnson's unsuccessful venture,—the parchment factory,—and here stood, until 1829, "Johnson's Willow," upon the site of which is a successor.

St. John's Church is attached to the hospital near the City station, and in St. John-street. The priory was founded six centuries ago. Bishop Smyth, in 1495, brought about a reformation in its rules, and founded it afresh for thirteen poor men; and he erected the present building, which is a remarkable specimen of architecture of that date. The church was restored in 1870-71, at a cost of about 1,400*l.*, chiefly through the exertions of the late Rev. Chancellor Law, who was for many years master. Christ Church was erected in 1845-7, by the daughter of Dean Woodhouse, Mrs. Hinkley, and in 1871 a monument was erected in it to her memory. The church is of the Decorated style, with square tower and carved pinnacles."

The Holy Cross R.C. Church is in St. John-street, and the tower is a reproduction of that of Glastonbury Abbey. Here is De Bruyn's celebrated picture, the gift of the Earl of Shrewsbury; and here is buried Dr. Kerk, founder of the church, who died in 1851, aged 92, after upwards of half a century's service.

And what more shall we say about Lichfield? We have already gone pretty deeply into some of its little-known historical facts, and we could keep on much longer had we space at our command. Its eminent natives include William de Lichfield, the divine, who left behind him nearly 4,000 sermons; the father of William Camden, the antiquary; Elias Ashmole, the founder of the Museum at Oxford; Gregory King, the herald; a host of others, some of whom have been already mentioned by us; but among the whole, the city certainly must not forget its Johnson, who, in 1776, praised the inhabitants as "the most sober, decent people in England, the genteelest in proportion to their wealth, and spoke the purest English." After this, is it to be wondered at that we find so much of interest in its history?

AT THE GROSVENOR GALLERY.

WE could hardly have hoped to have a second winter exhibition of equal value with the first held at the Grosvenor Gallery, in so far as the "sketches and studies of old masters" are concerned. Yet the present exhibition, which has been opened this week, is, taken all round, equal in interest to the last. There is no such collection of Da Vinci's, certainly, as last year; but there is a collection of old drawings of peculiar interest from the very fact that it illustrates the work of some masters who are not so completely household names with every one; and, added to this, is the fact that the collection of water-colours is one of a very unusual type, comprising many of the best and most refined specimens of living English artists whose work is marked by special qualities more appreciated by artists and critics than by the general phalanx of exhibition-goers. In the rather short notice we must give this week, we propose to say something of this water-colour collection, and of one or two other specialties of the exhibition.

There is one point in the exhibition which claims special mention, inasmuch as it has been talked of more or less beforehand,—we mean the collection of original studies by Ingres. These are not quite equal either in extent or in interest to what we were led to expect, though they would form an important portion of any ordinary exhibition of studies. They fill the small room which is so oddly placed at the end of a "corridor that leads to nothing" else, and is called the "Water-colour Room." They consist in great measure of outline studies of figures for the artist's principal pictures,—figures before the drapery was added. Among these a study of the whole composition of the picture called "The Golden Age" (644), on small scale, on brown paper, is of great interest, and so also are some of the larger outline studies for single figures in the same picture. The two finest studies of this kind, however, are the two for the figure of Stratonice, in the picture "Stratonice; or, the Illness of Antiochus," remarkable for the union of such fine drawing of the figure, with such characteristic individuality in the head and countenance. The studies for "The Apotheosis of Homer," the whole picture and the single figures, are also well worth attention, especially the figure of Phidias (665), and the nude and draped studies for Pindar in the same frame (664*). There seems, however, to be a tendency to shortness in the leg in these nude studies. A very clever specimen among the finished pencil drawings is that of "Midas" and his barber (667), at the moment when the latter has discovered the awful fact of the ass's ears, and starts back in horror. The expression of both figures is so vivid as almost to make the legend seem a reality. Several pencil portraits of contemporaries of the painter, men and women, are very delicate in finish, and there is a water-colour study called "The Odalisque" (969), which shows to how high a degree of finish Ingres would carry a mere study, for this is obviously no more. We looked for a sketch of "La Source," the work by which Ingres is best known in this country, but there is none.

To the water-colour collection in the East Gallery is appended a note to the effect that the collection is intended as a completion of the illustration of the growth and development of water-colour art in England, commenced last year, and now brought down to the present time. Viewed in this light, the collection is hardly sufficiently typical or impartial: names are omitted which ought to be well represented; and some which we are not accustomed to regard as of the first importance in the art are very prominently represented. But otherwise the selection is an admirable one, and, in fact, it seems in not a few cases to include exceptionally good and successful works by the artists represented, so much so as to convey the idea that we have got quite the pick of their productions, and to raise our respect for them considerably higher than their usually exhibited works at current exhibitions would seem to warrant.

We do not, of course, include under this category Mr. Poynter, though it may be said that

his little "Venus and Æsculapius" (794), which was in the Dudley Gallery some little time since, is one of the most really poetic and refined things that he has ever painted; at the same time, we could wish to see the details of Greek architecture in the picture ameliorated. Others of his water-colours which are grouped here are beautiful in style and handling, and show this artist to be far more "all round" in his capabilities than some eminent figure-painters who also paint landscape. Mr. A. H. Marsh is a well-known exhibitor in water-colour galleries, whose work as seen here appears of unusual excellence; his two small pieces, called the "Student" and the "Mussel Gatherer" (800-1) are the more noteworthy from the contrast, style, and subject displayed in them. We heartily wish, too, that Mr. H. B. Roberts were always so refined in feeling and style as he appears in his small work called "The Sermon" (793), which, by contrast with frequent contributions to the Institute of Painters in Water-Colours, we should hardly have guessed for his. Sir Coutts Lindsay's "Mount Athos" (806) is a fine and impressive landscape, unusual, and perhaps a little conventional in tone, but with a kind of conventionality which seems to aid in expressing the peculiar feeling of the scene. Lady Lindsay, whose accomplishments are varied and admirable, asserts her position as a water-colourist by five interesting frames.

Mrs. Allingham is hardly well represented, chiefly by landscape, which is not her strong point. By Mr. Alma Tadema there is one superb little work, "An Interesting Scroll" (830), illustrating all the finest qualities of his art (which is saying a good deal). There are several works of that remarkable and defiantly original landscape-artist, the late Mr. Sam Bough, but none which illustrate his real power when at his best. We can suppose that his drawings are scattered and not very easy to come at, but we should have very much liked to see an adequate representation of him just at this juncture: many exhibition-goers in London know, we suspect, very little of his peculiar power. Mr. Powell is also very inadequately represented. We find good works, if not their very best, by Messrs. J. Knight, Macallum, Basil Bradley, J. Orrock, and H. S. Hine, and are brought up in our tour by Mr. Arthur Severn's remarkable and, as one may say, courageous study of "Waves by Moonlight" (873), one of those efforts to realise exceptional effects of nature to which this artist has given himself with remarkable boldness and generally with great success. A work which attracts notice much less, but which is perfect in its way, is Mr. Donaldson's small, quiet, rich little drawing, "The Walls of Nuremberg" (876), representing a combination or fusion of modern and Mediæval feeling hardly to be found elsewhere. Mr. A. Severn's "Florence from the Albergo d'Arno" (895), looking down from a height on the Arno flooded with golden light, is another noble drawing which we did not remember. Of Mr. J. D. Watson, an artist who sometimes provokes one by falling below what he has made us expect from him, there are three admirable specimens, none of them, we fancy, very recent; one ("Book-lore") we can remember a good while back. Mr. Albert Goodwin's "Abingdon Churchyard" (891) we have noticed once on another occasion as exhibiting the finest qualities of this very original artist and manipulator; and Mr. Buckman, whose name has been brought forward of late in connexion with something like a new idea in decorative art, has (among other things) a small work, "An Armistice," concluded between a child and a refractory donkey in a field, which shows the tendency towards the manner he has lately adopted, but shows also some fine qualities in regard to tone and open-air effect, which it seems to us he has rather lost in his more recent efforts in favour of "the decorative treatment of modern subjects."

No one in the gallery is better represented in one sense than Mr. Boyce, whose peculiar genius is exhibited in perfection in such a gem as "Binsey, near Oxford" (903), a cottage orchard on a spring morning, positively glittering with light. In another way there is as much to admire in "Where stood Bridewell Hospital and Prison" (913), though the problem is less difficult. Mr. H. Moore's works here would hardly give an adequate idea of his powers. We are glad to meet some admirable drawings by Mr. F. W. Burton, whose works are seldom seen on the walls of recent exhibitions: "The Meeting on the Turret-stair" (908) is a fine and solid piece of colouring and draughtsmanship. There is a fair representation numerically of Mr. Carl Haag and of Mr. A. D. Fripp, in neither case showing all they can do; and we come in succession on the names of Messrs. Dodgson, Bateman, J. W. North, Lamont, and E. Fahey: the "Bathers" of the last-named artist, lent by himself, is one of the best works by his hand that we have seen.

Mr. A. W. Hunt is the most largely represented of all, and deservedly so. It is when we get the works of this great water-colour artist in connexion that we are best able to estimate his extraordinary powers and his total freedom from mannerism. In the case of so many other talented water-colour painters we recognise their work immediately by its peculiarity of tone and of manipulation; but Mr. Hunt, instead of resembling himself, only resembles nature. In this capacity for identifying himself with infinitely varying effects and aspects of nature, and representing each in the manner best calculated to bring out the special impression of the scene with the greatest intensity, he is only second to Turner, and runs that great landscape-poet very close at times. Just compare "The Rainbow" and "Brignall Banks" (962-3) in justification of what we have said as to Mr. Hunt's variety; and then again that remarkable study of trees under a hot sun, which appears here as "View in Cumberland," but which we first knew under the title "When Summer Days are fine," in the gallery of the old Water-Colour Society, where the hanging committee had prudently placed it on the floor so as to be out of the way. It is very interesting to compare also with Mr. Hunt's work that of Mr. G. A. Fripp, who is well represented on an adjacent portion of the walls. The latter artist is perhaps the very best representative that could be found among modern water-colourists of that calm, complete, but nevertheless limited form of landscape art which is content with realising the everyday aspects of nature in drawings which illustrate a manipulation completely mastered and completely adequate to the aim in view, but never attempting to transgress the limits of what is obvious to the eye of the majority of beholders, and is easily reproduced in pigments. One feels that there is something thoroughly satisfactory and praiseworthy in this art of Mr. Fripps's; moreover that it affords an eminently sensible and safe model for study. But its limitations must be admitted when we contrast it with so ambitious and varied an art as that of Mr. Hunt. The latter sometimes fails, it is true; but then how much more he attempts, and how far more exciting it is to the imagination to find not the mere aspect or outer mask of nature represented, but her very life—

> "The stir of the forces
> Whence issued the world."

We pass by with varying phases of admiration the works bearing the names of Joseph Knight, Arthur Glennie, Sir John Gilbert (whose sketch called "A Gloomy Evening" is very fine), Carl Werner, F. Goodall, E. E. Goodall, F. Dillon, and others whose styles are well known, and are more or less well represented. We may feel excused, in an architectural journal, for mentioning specially two admirable little translations of old architecture into water-colour art, by Mr. John O'Connor, "The Priory, Hampstead," and "Old York Gate" (1019-20), the latter as it was when the water came up to the steps. We notice also one work by Mr. Walter Crane, whose name we passed by in a previous portion of the collection, not caring for semi-decorative fairy-tale drawings, of which he has done far too many. But his drawing of the "Yews of Borrowdale" (1027), the four gloomy old trees which suggested one of the finest passages in the whole of Wordsworth's poems, is a very unusual production, quite worthy of the subject, and making us wish that the artist did more in that kind of way. Last, but certainly not least, we have specimens of the work of Mr. J. D. Linton, who, like some others, is represented here by works which seem to raise his reputation even higher than his annual contributions to current exhibitions. It would be scarcely possible for figure-painting in water-colour to be carried to a higher point of success in regard to drawing, colour, composition and expression than in the representation of "Washing the Beggar's Feet on Maunday Thursday" (1030), in which especially one notices that peculiar subtlety of feeling, only to be found in works of the highest class, in which it is difficult to say whether humour or pathos predominates.

REPORT OF THE INSTITUTION OF CIVIL ENGINEERS.

We have before us the annual report of the Council of the Institution of Civil Engineers, which was passed at the annual meeting of that body on the 17th of December last. The number of members and associates now on the books is 2,815, being an increase of 204 within the year. It may be remarked that this number represents a little more than the addition of one new member per week since the foundation of the Institution. The question, which has been for some time debated, as to the permanent form to be given to the constitution of the society, has been settled with very general accord. In future, only those who are engaged in some of those branches defined by the charter as constituting the profession of the civil engineer will be admitted to the privilege of corporate membership, the existing associates preserving their actual *status*. The names of thirteen members, and of twenty associates, are included in the obituary of the year. Among these, that of George Parkes Bidder, which has been borne on the books of the Institution for more than half a century, will probably be the most generally known. Mr. Bidder has been an active member of the Council of the Institution for more than twenty-five years. He was president in 1860-1861. A paper contributed by Mr. Bidder to the proceedings of the Institution on "Mental Calculation," forms his first and only attempt to explain the great gift with which, as a boy, he was endowed, or of the interest excited by what was virtually the story of his life. Mr. John Penn, who was elected so far back as 1824, was also well known to the public from his inventions and improvements in connexion with the marine steam-engine. Mr. Bolckow, M.P., a deceased associate, also deserves remembrance as one who materially added to the resources of the country by the active part he took in the opening up of the great Cleveland iron district.

The contributions to the funds of the Institution within the past year from members, associates, and students, amounted to 8,620*l*. The general balance-sheet of the year amounts to 14,412*l*., leaving in the hands of the treasurer the balance of 929*l*. A list of forty subjects for papers to be communicated to the Institution during the coming year is appended to the Report, and should be applied for by any persons desirous of so distinguishing themselves. The application of electricity to lighting purposes; the recent progress in telegraphy; the relative advantages of steam, hot air, gas, water, and electricity as the motive power for small engines; torpedoes; and the output of coal in the United Kingdom, are, as might have been anticipated, among the subjects proposed.

Inf uture volumes of the Minutes there will be given, from time to time, short reports of the progress of different branches of engineering abroad, as shown by the abstracts. The value of this new feature may be rendered very high; and if the Council could be prevailed on to omit the word "abroad," and to present a brief yearly index of public works at home, the change could not fail greatly to augment the value and influence of the "Minutes of Proceedings." The general index to the first fifty volumes of the "Minutes of Proceedings" is in the press, and shortly will be issued. This issue is all that is needed to complete the utility of a publication which may almost be termed an Encyclopædia of English Engineering.

Monument to Lord Brougham.—The *Avenir* gives details of the laying of the first stone of the monument to Lord Brougham at Cannes. The site for the statue is the Petit Cours. A leaden box containing coins and the minutes of the proceedings was introduced into a receptacle prepared for it in the stone, and was covered with a plate on which was engraved, besides the name, age, &c., of Lord Brougham, the words of which the following is a translation:—

"He was the first foreigner who took up his residence at Cannes. He erected the first villa there; he contributed in a great measure to the prosperity and fortune of our winter station by attracting to it his friends and acquaintances. For thirty-three years he resided in our town, and his attachment for it was such that in dying he expressed a wish to be interred here. That is why the grateful people of Cannes have raised this monument to him."

CHRISTMAS-EVE IN VENICE.

THE few tardy, winter-fleeing travellers now hastening at this late period southwards to bask in the social warmth of Rome, where they will be among the latest arrivals, have been able, within the last few days, to enjoy a sight that visitors to Italy, even at this season, rarely expect to meet with; for Christmas finds us here in Venetia with the whole country enveloped in what the journals have lately termed "a melancholy sheet of snow," 12 in. deep. Letters from friends inform us how in the south, in Naples and in Rome, they have been visited with the same severe weather, adding a fresh novelty to the charms of a Roman winter with a new king and queen, floods that have as yet scarcely abated, and a recent complete ministerial change.

But here in Venetia the winter has come with a severity that few were prepared for, and the suffering is much to be sympathised with; for three winters past, little or no snow has fallen here, and old people speak of never having seen such a Christmas since the days of their youth, fifty years ago. Not all the jollity of the season has been able to silence the claims of the poor, and in Venice charity has been actively at work.

The unusual severity of the season is attributed by the priests and their great allies, the women of Italy, to the introduction of railways, and even the moderately intelligent man does not entirely reject this apocryphal view, qualifying it, however, by the theory that the change may arise from the breaking down and levelling in parts of the natural barriers that have ever existed, as they suppose, between the fogs and cold of the north, and the sun of the south; while some attribute the acknowledged change of the climate to the enormous destruction of forest lands. Notwithstanding the love that the Italian has for the open air in the piazza and at his window, his opinion cannot be considered, meteorologically, strong.

With all the noble history of its past, with all the evidences of wealth lavished in every direction, in their churches, in their palaces, and their picture-galleries, Venice, with a population of not nearly a quarter of a million, has to support a fourth of this number as paupers. In the streets of this city, the two extremes are to be seen of dressiness,—a weakness of the Italian mind both male and female,—and of insufficient clothing,—the latter, alas! far in the majority; the respectable three-quarters of the inhabitants apparently keeping within doors. Indeed, if George IV. had been as much a traveller as his grand-nephew, the Prince of Wales, he would not have made his famous remark at Dublin, on landing at Kingston quay, that "he had at last discovered a great mystery, —the place where all the old clothes went to."

Though it cannot be said that Venice has put on a Christmas appearance, save in the novel effect produced by the snow lying thickly on all the roofs and cornices of the palaces, adding a beauty, if that were possible, to the outlines of the buildings, preparations for days past have been actively advancing for the great *fête*, and in some of the smaller *piazze* in the neighbourhood of the Rialto the traditional booths for the sale of toys have been erected in the spaces between the heaped-up snow, which, after having been swept together by the care of the municipality (numbers of the poor have been thus employed), is gradually removed and thrown into the canals.

Each train as it arrives brings in the produce of the rich neighbouring *terra firma*,—factors with fowls, and game, and wine, bringing to their masters, from their pleasant country farms, the carefully fattened turkey, the plump fowl, and well watched hare; flat round baskets well filled, other baskets, exactly resembling that which Titian has painted in his "Presentation," by the side of his absurdly called mother, filling every carriage of the early trains arriving from the towns and villages in the plain at the foot of the Venetian hills, which, in their snowy loveliness on the morning of this especial day, the precursor of Christmas, were lighted in rosy splendour by the rising sun. In the canals gondolas moved about laden with market produce, not with fruit, as would-be romantic Beckford described now a century ago, but with the more homely and as useful cabbage, with turnips, and frozen poultry. For the cold is intense, and rapidity of action, repugnant as it is to the Italian nature, is absolutely necessary.

On the quays nothing is doing: off the famous Riva di Schiavoni is lying a coasting brig or so, and in the fog, off the low island of S. Giorgio, the only steamer in the port. What a contrast to the bustle of the busy Boompjes of Rotterdam, or,—but no need to go so far,—what a contrast to the Venetian quays of Carpaccio's days, the quays with all their shipping and their life, which he loved so well to paint.

Venice is in decadence, and sinks lower every day, its past has left barely a tradition of its existence, and the Christmas shops are filled with trashy *articles de Paris*, with Christmas cards, and "wishes" of German manufacture from Dresden, and of a taste rejected in England years ago; the beautiful Piazza of St. Mark's, happily unchanged in appearance, contains shops only imitations of the Palais Royal, for which it once formed the model, and the ignorance and want of taste of the strangers appears to create an insignificant trade that must have a most immoral effect on the tradesmen of the *portici*.

Not only are the imperfect restorations of San Marco stopped, and every object of art neglected in this city, through cruel necessity and rapidly declining prosperity, and perhaps by the foolish reliance on the feeble support of strangers, but even the picture-galleries, that form so great an attraction, are altogether unheated, and those travellers who in passing through Venice at this season have waited day by day in the hope of visiting the pictures at the Bello Arti, have found it, to their intense mortification, impossible to see the "Assumption" or the Carpaccios, in consequence of the snow that has been allowed to accumulate on the skylights of the galleries.

And yet there are those living who remember the time when some keen interest was still alive in this once great capital of encouragement and genius; and only within the last few days the *Adriatico* published an interesting letter written by an old pupil of the Academy of the Fine Arts, Cesare Cantù, to the painter Francesco Hayez, a fellow pupil, who, though now eighty-seven years of age, still exercises his profession:—"Dear Hayez," ran the letter,—

"Whenever we meet, you never neglect to recall our happy student days at Rome, at Naples, and at Pesth, and in the recollection of those times we passed together. I never forget seeing at Capo di Monti one of your earliest works. I wish you at this season another year of strength and tranquillity of mind to continue your work; and in sending you the accompanying letter of Canova's, written sixty-four years ago, and referring to your early work, I wish to recall those happy days. May God preserve you to the country and your friends. CESARE CANTU.

December 17, 1878."

Canova's letter ran as follows:—

"I have seen the work of Signor Hayez, representing Mardocheo led by Amanus through Susa in triumph, a subject well considered and composed, and, within the last few days, terminated; and I can affirm in truth that I find it worthy of praise and approbation, in proof of which I willingly write this attestation, assuring the Academy of Fine Arts that it certainly ought to feel satisfied with the study and progress of this, its excellent and praiseworthy pupil.

ANTONIO CANOVA.

Rome, September 3, 1814."

Signor Hayez's answer to his friend Cantù is interesting in its simplicity:—

"Dear Cantù,—Would that I had a little of your skill in replying to your affectionate letter, and in expressing the pleasure your words gave me. I feel proud that so well known a man should think so highly of me. Thanks for your kindness and your good wishes, which possess a double value to me, coming from so loyal and sincere a friend. HAYEZ.

Francesco, December 21st, 1878."

Some of this genuine feeling, worthy of the history of the past, is still happily to be found in Venice; and in more than one *calle* or by-way in portions of the city little visited by the stranger; in court, where one's eye at every turn falls upon some noble production of the past, some finished piece of architecture "that Carpaccio, Cima, and John Bellini loved," one may find some quiet workman still carrying on the trade exercised by his ancestors in centuries gone by,—degenerated descendants of noble artists, the chisellers, metal-workers, the weavers, and the goldsmiths of the past, specimens of whose work we treasure in our museums, and admire in the pictures of Carpaccio and Paul Veronese.

Venice, once so famous for its gorgeous woven fabrics, for its rich hangings and its fabrics of silk and gold and silver, still possesses workmen who continue the traditions of its past. Among this small number should be placed the brothers Sartori, of Tyrolese origin, who settled more than twenty years ago in Venice, since when they have, in addition to their manufacture of velvet and plush, turned their attention to the weaving of brocades and hangings in imitation of the old patterns. Their products, as also those of the firm of Trapolin, a Venetian, are especially appreciated in France for their many exceptional qualities, at a time when manufacturers seem rivalling each other in lowering the honesty of their products; but the modesty and retiring nature of the true workman, which seem to exist as much in the present day as in the past, have served to hide from the public the merits of these Venetian toilers. While the success of the industry of lace-making is familiar to the world through the efforts of certain philanthropic (and chiefly English) persons, other branches of Venetian industry are but little known or encouraged. The world is now so constituted that it has become, in the struggle for existence, a necessity to push, to make oneself known, or else be left unnoticed. True of all time, — Beaumarchais, a century ago, in his "Mariage de Figaro," made a similar comment on the society of his time,—the necessity in the present day is more than ever evident.

Our constant exhibitions, local and international, give every artist, every workman, an opportunity of proving his powers, and let us hope that in some such manner, and before long, will be again shown, if scarcely the supremacy, at least not the decadence of the Queen of the Adriatic.

Treviso.

THE FINANCIAL POSITION OF OUR RAILWAYS.

AN article on the "Financial Position of our Railways" appears in the *Liverpool Daily Post* of the 27th of December, 1878, which demands serious attention on the part of railway shareholders. The writer bases his statements on the Board of Trade Returns, on the analyses of the same given by Mr. Fleming, in his "Index to our Railway System"; and on a series of papers by Mr. Conder, C.E., in the *Edinburgh Review* and in *Fraser's Magazine*.

The chief outcome of the investigations of the *Liverpool Daily Post* is the statement that while the recent additions to the capital of the railways of the United Kingdom, which have continued for the last twenty years at the rate of 18,000,000*l.* per annum, have been apparently more than covered by the annual increase of the gross traffic, the increase on the working expenses has been so great as to swallow up any profit thus looked for, and, in point of fact, to place the companies in a worse position than they occupied in 1871. And as the increase has been for the most part in some form of guaranteed stock, the main effect of this miscalculation will fall upon the holders of ordinary shares. It will be seen, by reference to the Government Blue-book called "Railway Returns for England, Scotland, and Ireland for the year 1877," that out of 552,661,551*l.* of total capital in the year 1871, 230,234,058*l.* was ordinary stock; while out of 674,059,048*l.* in 1877, 265,031,233*l.* was ordinary stock. Thus, in round numbers, there has only been an increase of 35,000,000*l.* of ordinary, out of an increase of 121,400,000*l.* of aggregate, capital. This implies a very serious change in the distribution of the holding of stock, and one which is likely to produce a very sensible effect on the composition and votes of half-yearly meetings; guaranteed shareholders being apt to take comparatively little interest in the control of the policy of those undertakings on which they form privileged pensioners.

For an increase of 22 per cent. on capital since 1871, the returns of the companies, taking the average of the United Kingdom, have to show a gross revenue increased by 29 per cent. Unfortunately there is another item which has increased in a more rapid ratio. That is, the proportion of working charges. In 1871 the working charges amounted to 47 per cent. of revenue. In 1878 they amounted to 54 per cent. of revenue. The result is, an increase in the net revenue of only 13 per cent., or 9 per cent. less than the increase of capital!

This burning the candle at both ends is attributed by the able writer in the Liverpool paper to the disproportionate increase of the mineral traffic on the long trunk lines, which apparently has been carried on without any actual knowledge of the cost and earning of that portion of the traffic taken alone. The consequence is, that while on six metropolitan railways, which only earn an average of 5·92 per cent. of their traffic from minerals, the engineering working charges amount to 38·90 per cent. of revenue, on six metropolitan lines, which earn an average of 22·79 per cent. of their revenue from minerals, the same items of charge amount to 47 per cent. of revenue. It follows that while, between 1871 and 1877, the six southern or non-mineral lines have increased their earning power from 3·36 to 4·92 per cent., the earning power of the six mineral trunk lines,—viz., the London and North-Western, the Midland, the North-Eastern, the Great Northern, the Great Western, and the Great Eastern,—has sunk in the same period from 5·89 to 4·56 per cent. "Thus, while the passenger lines show a continuous progress, the mixed ones, as compared with a year of bad trade (1867), hardly hold their own, while compared with a prosperous year (1871) they show a heavy loss as the result of their expenditure of capital." The capital of the mixed lines rose by 259,754,060*l.*, or 32·55 per cent. from 1871 to 1877, while their net returns only increased 11·65 per cent., giving a heavy loss on the expenditure. The case will cease to be matter of wonder when we find that the charge for conveying a ton of coals on the Great Northern line, from Doncaster to London, is 6s. 2d., the fare of a third-class passenger for the same distance being 1*l.* 11s. 3d. As to cost, wherever it has been possible to institute a comparison, it has been found that it costs more to carry a ton of freight than to carry two passengers. "As the rail-rates for coals of the several companies running into London will be about equal, and as about 5,500,000 tons are annually carried thither, it is evident that their loss on the *long journey competitive coal traffic* must be something enormous." We shall be glad to learn how this article—which after all is matter, not of opinion, but of facts and figures, is received on 'Change at Liverpool.

THE SOCIETY OF BRITISH ARTISTS.

THE present winter exhibition of the Society of British Artists, open at the rooms in Conduit-street, is a better one than the last we had to mention, and contains a good many agreeable works, though these are nearly all among the smaller contributions, and are mostly not placed on the line, which is occupied by less meritorious works of more pretention in regard to size and subject. The best things are all landscape; there can hardly be said to be any figure productions which call for criticism. Of the landscapes some may be mentioned that have merit worthy of recognition. Mr. C. P'Anson's two small works, "A Misty Day in Spring" and "Summer Afternoon in Sussex" (25, 37) are among the first we noticed; and among the very best is Mr. J. W. B. Knight's "Highway, Winchilsea" (71), a fine powerful sketch, for it is hardly more. Mr. H. Goodwin's "Splugen Pass" (115), and Mr. Knight's "Foot of the Pennines" (134), have fine qualities, and so has the small landscape by Mr. Mummery, illustrating some lines from Longfellow (165). "Over the Hill," by Mr. J. Whipple (192); "Entrance to Brading Harbour," by Mr. W. H. Bartlett (209); "Brachen Harvest," by Mr. E. Ellis (240); "On the Thames near Wargrave" (289), by Mr. M. Hetherington; and "The Brook" (323), by Mr. J. W. Barber, come into the same category. "Near Enfield" (356), by Mr. Schafer, and "A Storm-cloud" (383), by Mr. B. Evans, are above the average of landscape; the latter especially is a very powerful little sketch. The water-colours include a considerable proportion of works showing true artistic feeling and a good water-colour style. We may particularise especially "Changing Pastures" (564), by Mr. L. L. Pocock, and "Ebb-tide at Hastings Sands" (577), by Mr. John Steeple. Among the water-colours, also, "Sitting for their Portraits" (500), a small sketch of a group of Orientals, is good, and "A Study" of a head in oil (56), by Mr. G. Lucas, is one of the few figure-subjects whch are in a good style. There are a few small works of sculpture in clay and terra cotta, among which may be mentioned a portrait statuette, by Miss Crockford, and a group entitled "Looking for Father," by Mr. E. R. Mullins.

A RUN THROUGH SPAIN.*

MADRID.

AT last we have reached the capital of Spain. The railway administration, as usual, signalises itself by making the travellers wait an absurd time for their luggage; and then, when finally the luggage is secured, we are assailed here, as elsewhere, by a rabble of ruffianly fellows, each attempting to snatch away a bundle, rugs, or a box, under the pretext of conveying it to a cab or to the hotel. The carriage which, after something approaching to a free fight and general riot, we contrived to secure, drove us at the wildest pace. The children that were nearly run over at the corners of streets, and the lamp-posts we grazed, were so numerous, that we were perfectly astounded when we reached the hotel without having encountered any really serious accident. Of course, this furious driving was merely an excuse for extorting an exorbitant fare. There are, it is true, but few foreign tourists in Spain, yet the inhabitants have already learnt full well that the foreigner is to be fleeced on every occasion, and made to pay an absurd price for all he buys and for all he may want to see. In purchasing anything, the foreigner may safely offer half the sum demanded; and if, after a long barter, he gives more than two-thirds of the sum originally mentioned by the shopkeeper, the probabilities are that he will have been grievously swindled. It is, we need scarcely remark, extremely disagreeable to be compelled to bargain in this manner, not to mention the great loss of time it involves; but these remarks apply naturally only to the trade in fancy articles, and not to the necessaries of life, such as meat and groceries, &c.

The first impression produced by the general aspect of Madrid is that Spain possesses a small Paris. The Puerta del Sol, which is the boulevard des Italiens or the Piccadilly of Madrid, is lighted by electricity, thus recalling the Place de l'Opéra in Paris. The crowds of people walking on the broad causeway, the tall houses, let out in flats, all recall Paris. The *cafés* also are numerous, but seats are not allowed to be placed outside, and the general aspect is consequently not so gay as in France. Our hotel, a very celebrated house, was, however, very unlike anything seen in Paris. We believe it had once been a convent. The key of our bed-room door must have weighed a pound and a half; its size was colossal, and the door itself, of the thickest, panelled wood, could have withstood a siege. There was a big court in the centre of the hotel where strange animals assembled in the night and bleated to the moon; where mules, goats, a sheep or two, a few horses, groaned, and neighed, and slept, and woke to kick *ad libitum* at each other, or at the stable-boys. We slept as best we could with these strange sounds just outside the window, and in the morning we found that this window gave on to a balcony which went the round of the yard, and would have enabled us, had we wished to do so, to look into, and even enter, the rooms of all the persons who lived on the same floor. It was scarcely worth while possessing a formidable key and door when the windows were so vulnerable.

The great distinctive feature of Madrid which will at once strike the architect who visits this town is what we may term the wonderful liberty of architecture enjoyed in the capital of Spain. In this, Madrid affords a favourable contrast with Paris. At first, the traveller is impressed with the grandeur of Paris, the magnificence of its boulevards; but gradually it dawns upon him that these splendid boulevards are all alike, that the houses are all built after the same model, that there is hardly any variety, any play for the imagination. The new Boulevard St. Germain is almost identical with the Boulevard Magenta, its senior by a few years. Whether situated in the north, the south, the east, or the fashionable west, all the new boulevards of Paris are appallingly alike one to another. At last a natural reaction sets in, and the visitor in despair seeks to relieve his eyes in the narrow streets of the Isle St. Louis, attempts to unearth some remnants of the historical Quartier Latin, or else loses himself hopelessly in the Marais. At Madrid there is no necessity for any such violent measures, and the visitor need not seek out eccentric quarters of the town to find a little variety. The fashionable districts, such as the Prado, consist, apart from the trees, the fountains, the carriage-drives, &c., which constitute the promenade, of a succession of what the Spaniards delight in describing as palaces. In England we should, more modestly, term these structures large houses, or, at best, mansions; but in Spain the grandest term the language can afford is always preferred. Nevertheless, it must be admitted that some of these mansions are very beautiful and grandiose in their proportions. Their chief charm, however, rests in the variety of design and structure. If a rich man be fortunate enough to secure a plot of ground, he will combine with his architect some special plan particularly suited to his fancy and convenience, maintaining, at the same time, a strict watch on his neighbours, so that his house should not be out of keeping with theirs.

With the courteous and amiable assistance of Señor D. Mariano Belmáo, the editor of the *Revista de la Arquitectura*, and one of the most active members of the committee governing the Spanish Central Society of Architects, we were able to visit some of these mansions. The first was situated in the Calle de la Concordia. The materials are stone, wood, and red bricks. The latter are not often used for the external walls in Madrid, and they consequently give this house a peculiar aspect. The windows, doors, &c., are framed with white stone; the bulk of the wall is of red brick. The owner had given *carte blanche* to the architect, Señor Lema, requesting him to build a house after his own fancy, stipulating only that ease and comfort should be always considered as of more importance than luxury. The result has been the erection of a somewhat original dwelling; and, if we have not perfection, we have, at least, many new suggestions, many odd combinations, and much to learn in the study of a structure which is not the reproduction of known styles, but the expression of an individual imagination. The arched crossette over the side door is peculiar, and some of the cornices are especially remarkable. The combining of iron grating with the stone for ornamental and protective purposes is also worth notice, while the library, with its windows built above the book-shelves, is truly original. A great whiteness of colour prevails in the internal courts, and this is cleverly contrived so as to preserve the daylight as long as possible.

From this house we went to visit the mansion of Señor Anglada, which is now nearly completed, and is built after the designs and under the superintendence of Señor Ayuro, architect. This mansion has the advantage of occupying an elevated site. The great variety of ornamentation and design,—which does not, however, interfere with the unity of purpose,—is at once noticeable. The style is Greco-Modern, simple, serious, elegant; but the yard or court, which is in the centre of the mansion, is decorated with magnificent Moorish or arabesque lacework. This was not yet coloured; but we could, at least, admire the beauty of the fret-work. The frieze was in Moorish coloured bricks. The court rejoiced in a marble fountain, with marble floors, which will help to keep the temperature down during the summer months, and is surrounded by a colonnade of marble pillars, the upper part carved to represent leaves, and gradually expanding to form the capital. The entrance to this mansion is under a colonnade; to the right a magnificent fire-place gives the hall a cheerful aspect in winter, while, opposite, marble steps lead up to the various apartments. Glass roofing above admits the maximum of light, and a grand effect is thus secured. The great drawing-room on the first floor measures no less than 14 mètres in height; and, on one side, there is an alcove situated near the ceiling, where an orchestra can be comfortably seated, and may fill the saloon with the sounds of music without obtruding themselves; and, above all, without taking up any of the dancing space. Around this magnificent mansion there is ground enough for a garden; while, in the rear, we visited some very fine model stables, which we entered by a peculiar glass door some 20 ft. high, protected with artistic ironwork.

While visiting this mansion, which, it will be understood, was in course of construction, we enjoyed a particularly good opportunity of admiring the general attitude of the Spanish skilled artisan. We could not but pay homage

* See vol. xxxvi., p. 1320.

to the wonderful courtliness with which the foreman conducted us over the building, and the promptitude and yet the solemnity and dignity of deportment displayed by the other workmen when they were called forward to uncover a column, or some of the arabesque work, so that the Señor Inglese might see how Spanish artisans could work. They manifested evident pride in their craft, and were quite anxious to show what they had done. But what we more particularly remarked was the wonderful dignity of attitude, the amiability, the graceful ease of movement, that distinguished these workmen. There are many thousand Englishmen possessing great wealth and holding high positions who could not possibly comport themselves in the same singularly refined and courtly manner.

We were informed that these workmen were, on the whole, well contented with their condition. They had no trade unions, but there were a few benefit societies. As there are not many skilled artisans in Spain, they have no great difficulty in obtaining fair remuneration for their labour. We had, unfortunately, no opportunity of checking the accuracy of this information by consulting the workmen themselves. These assertions must, therefore, be taken as merely the masters' view of the question.

On our road to another new mansion we passed the Puerta de Alcala, which is the only really handsome triumphal arch in Madrid. It once formed part of the walls, but is now surrounded with gardens. In height it measures 72 ft., and possesses five arches. The Calle de Alcala, which leads up to this gate, is also one of the principal streets in Madrid. Some time ago there was a small amount of ground vacant at the end of this street, and facing the Puerta de Alcala. The Marquis of Portugallette was anxious to build a mansion here, but would not buy the whole plot of ground, though urged to do so by the Town Council, who were anxious to see this important site devoted to a building worthy of the position. The Marquis was, however, obdurate. He contented himself with the larger portion of the ground, and there built his mansion. Soon, however, the remaining plot of land was sold, and this fell into the hands of some speculative builders. They at once ran up a house of immense height, to be let out in flats, and held out as a special inducement that the back windows of each of these flats overlooked the garden of the Marquis of Portugallette's mansion, commanded an excellent view through his windows, and that, in a word, the bourgeois occupants of these apartments might, during their leisure moments, find some diversion in watching the movements of the aristocracy besporting themselves in the mansion next door. As there is a certain element of snobbism even in Spain, these arguments might have proved effective but for the energetic action of the Marquis. Infuriated at finding himself at the mercy of his neighbours' curiosity, he has caused an enormous wall to be built at the edge of his garden. This had already reached the height of the third story when we passed in front of the mansion. The wall, in red brick, is ugly as the most malicious might desire, and it threatens not only to block the view that the inhabitants of the apartments were to enjoy, but it will most evidently deprive them of the light of day, which is so essential to their wellbeing. This surprising struggle between the proprietors of the two houses at the corner of the Calle de Alcala is one of the oddities of Madrid, and a general source of amusement. On the whole, the public feeling runs against the Marquis. It is argued that he could very well have bought the entire plot of ground, and that this would have been much better for the general appearance of this important public place, than allowing a portion of the land to be covered by a somewhat ordinary house, divided into flats.

The Growth of the Metropolis.—Statistics of great interest are given in the annual financial statement of the Metropolitan Board of Works. It is stated that since the Board came into existence the population of the metropolis has increased by 1,300,000, that the number of houses is more by 150,000., that 600 miles of streets have been opened, that the assessment has more than doubled itself, and that upwards of twenty millions sterling have been expended in improvement, six millions of which have been repaid.

"HAMLET" AT THE LYCEUM.

THE text of the acting edition of "Hamlet" employed in the revival of the play inaugurated at the Lyceum Theatre, London, on Monday night, was published at the Chiswick Press, and forwarded to the metropolitan papers on that day. It is printed in pamphlet form, and, together with the preface, runs to eighty-two pages. The text has been revised by Mr. Irving, but it will be found to differ very little from that used by him upon the production of the play in October, 1874, when Mr. Irving played *Hamlet* for 200 consecutive nights. The edition is based upon the "Cambridge Shakspeare" of Clark and Aldis Wright; and where alterations are introduced, the authority for departure is either one of the two first quartos (1603 and 1604), or the first folio (1623). The quarto of 1611 being in many important particulars spurious or slovenly, has not, it would seem, been consulted. Mr. Irving appears to have aimed at selecting what is best and most essential to the intelligent development of the story and growth of the characterisation. We think it will be allowed upon examination that both in what has been retained and what has been omitted, a wise discretion has been exercised. Many earnest partisans of one well-known solution of the problems presented in *Hamlet's* complex character will quarrel with the continued omission of scene iv., act iv., containing the familiar soliloquy, which gives, they think, the surest key to the construction of the character and the moral purpose of the play. Others, again, who adopt another standpoint, will be pleased to find the king's prayer (act iii., scene ii.) retained, and the brief dialogue, between *Polonius* and *Reynaldo*, and *Polonius* and *Ophelia* (act ii., scene i.), restored. Those who crave for more of the passages usually omitted in representation must, as the preface says, be content to exercise their patience and self-denial. Mr. Irving has admitted as much of Shakspeare's play as the conditions of performance allow. Already the representation occupies nearly four hours, and in days when people are intolerant of anything like lengthiness in modern plays, the sustained tension involved in so long a performance says much for the improved position of Shakspeare on the stage.

To arrange for the stage the mere text of "Hamlet" is a work presenting peculiar difficulties. It must be remembered that Shakspeare has furnished the actor with no directions as to the scenes, and, skilled as he undoubtedly was in the art of stage management, the business and the scenery must always be purely conjectural, except so far as they can be gathered from allusions in the text. No edition of the play published in Shakspeare's lifetime contains even division into acts, and many stage directions which appear in the folio of 1623, and in the subsequent editions of Rowe and Theobald, are utterly unsupported by any special reason or authority. Tradition, therefore, so far from being an aid is often a hindrance to the actor, who is puzzled to distinguish the work of the author from the speculative interpolations of persons who achieved novelty at the cost of probability, and peculiarity at the cost of appropriateness.

Mr. Irving has adopted in his revision a method in harmony with Shakspeare's manner, which never permitted itself to be hampered by formal respect for minor considerations when the dramatic effect of a situation was in question. Mr. Irving's innovations lie mainly in the kind of arrangement of the scenic decorations, and other accessories of the play. Of these the preface to the book, signed "F. A. M." (Frank A. Marshall), gives an excellent description. Without attempting to overburden the play with spectacular effect, it has been the object to present as much picturesque effect as the poet's own descriptions may seem to justify. In pursuance of this object, many new features have been introduced, and our readers will be glad to have some of them pointed out, as well as the reasons assigned by Mr. Marshall for their adoption.

The *Ghost*, in act i., scene i., appears to *Marcellus*, *Bernardo*, and *Horatio*, on the battlements of the castle, and not, as before, crossing over the front portion of the stage. This obvious improvement was, it will be remembered, introduced by Mr. Tom Taylor, in his "Hamlet," produced at the Crystal Palace in 1873. The scene is supposed to occupy the space of time from daylight to dawn, and in order to justify *Horatio's*

"But look, the morn in russet mantle clad,"

and *Bernardo's*

"When yon same star that westward from the pole,"

the painter has tried to convey the impression of on-coming dawn, with a star shining faintly in the sky. The last scene in the first act, instead of representing a part of the platform near the castle, represents a lonely spot on the sea-shore, at some distance from the castle, to which the *Ghost* is supposed to have induced *Hamlet* to follow him, in order that the solemn revelation it has to make may be made there with more effect than under the walls of the castle in which *Claudius* and his boon companions are feasting. This deviation has been suggested by the words of *Horatio*, act i., scene iv., lines 69-71, C. P. edition. In the closet-scene, at the end of act iii., the *Ghost* does not appear clad in armour, but in a dressing-robe, such as indicated by the stage direction of the first quarto. In the last act, the burial of *Ophelia* takes place at nightfall, as was customary in all cases of supposed suicide. The only important innovation that calls for further notice is that an interval is by the nature of the last-mentioned scene supposed to elapse between scenes i. and ii. of this act. The scene with *Osric* occurs in the garden of the castle (not in a hall of the castle, as previously), and the fencing bout between *Hamlet* and *Laertes* in the vestibule of the castle, through the open arches of which are seen the trees of the orchard in which the good king *Hamlet* met his death at his brother's hands.

With regard to the costumes, no attempt has been made to attain any archæological accuracy, and Mr. Marshall contends, as others have contended, that such accuracy has been rendered unpractical by the constant anachronisms occurring in the text. The period in which the play is supposed to take place is, he says, almost fabulous, and the references to such comparatively modern implements as "partisans," "cannons," "rapiers," and "hangers," would render all attempts to reproduce one period of Danish history inconsistent with the spirit of the play. Here it may be observed that Shakspeare has not altogether ignored the conditions of the country in which he has laid his scene, or entirely forgotten to infuse local colouring. It will be remembered that the king (act iv., scene iii.) says of England that her cicatrice looks raw and red after the Danish sword, and her free awe pays homage to Denmark. Again, *Hamlet* (act v., scene ii.) calls England tributary to the king, his uncle. This evidence points conclusively to 1000-1010, or thereabouts, as the period of the play. The Norwegian attack on Poland, which winds up act iv., scene iv., helps this conclusion. On the other hand, it cannot be gainsaid that the author makes the characters in "Hamlet" talk and think like persons of his own time. The choice of Wittenberg as the seat of learning from which the speculative *Hamlet* came, was doubtless suggested by the prominence attained by that university during the fifty years or more of religious rebellion or reformation in Germany previously to the production of the play. The character of *Osric* was clearly designed to expose to just contempt the foppish affectations of the age. The allusions to France in relation to the residence of *Laertes* there are of a contemporaneous nature; and the 1*st Gravedigger's* song is borrowed from Percy's "Reliques of Ancient English Poetry," where it bears the signature of Lord Vaux. The players introduced, as well as the references to *Hecate*, and to the unction bought of a mountebank, are clear anachronisms, and give a sort of justification for the Elizabethan treatment Mr. Irving has adopted. We may say, however, that this is not our view. The date is fixed, and this date we would adhere to in producing the play, leaving the anachronisms to find their excusers. It was Shakspeare's business to present for solution by plot and incident a problem of human life, and not to relate events with historical or geographical accuracy; and to a strong and enduring human interest Shakspeare made all æsthetic propriety subservient; but that is no reason why his exponents should exaggerate them, and make them give the tone to the whole play. Mr. Marshall will have plenty of supporters in the view he sides with, and can afford to hear one objector.

Admit his view, however. Whilst Shakspeare never allowed himself to be trammelled

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by considerations of historical accuracy, he exercised most rigorously his innate sense of harmony. He had an insight that was sure, an instinct that was safe. He trespassed upon history and geography, but never upon æsthetic self-consistency; and no stage representation can be held complete that fails to recognise the unerring artistic purity that characterises his work when it is considered in relation to its subjective moral purpose. The scenery designed to illustrate his play should partake of the harmony of his conception. It may often be wholly Elizabethan, where the author used only the material at hand in the solution of his problem of human life and passion; but it must always be unfailingly self-consistent if it is to partake of his spirit.

Where so much is worthy of praise, it may appear ungracious to seem to censure; but no artist of Mr. Irving's distinction can afford to be indifferent even to the smallest matters of artistic propriety. Now, we desire to point out that the scenery at the Lyceum, whilst very picturesque in every particular, is at least marred by architectural inconsistency. It is sometimes inconsistent in degree as it is picturesque. The royal castle is presented seven times on the Lyceum boards, and four times out of the seven in altered forms of architecture. Variety has been secured by the artist at the cost of probability. The room of state in the first act, in one pronounced order of Norman, gives place to the queen's chamber in the third act in Early English Gothic,—of a sort.

Every true artist has need to acquire a general knowledge of other arts than that he follows, and an actor must, indeed, be strangely broad in his artistic sympathies if he is to avoid wounding the sensibilities of every specialist. None the less should it be his aim, in all details of the many arts that centre about the stage, to maintain an appearance of consistency and propriety. Mr. Irving's management ought not to fail in this particular.

Touching the acting, Mr. Irving's representation of *Hamlet* is already so well known and so fully accepted by the public, that comment on it here is unnecessary. It is a very fine performance. Miss Ellen Terry has fully justified the expectations that were formed as to her *Ophelia*; Mr. Forrester as *Claudius* makes the perversity of the Queen less difficult to understand than is ordinarily the case; and Miss Pauncefort and Mr. Mead leave nothing to be desired in their respective parts.

The auditorium has been charmingly decorated under the direction of Mr. Darbyshire.

PEELE'S COFFEE HOUSE.

IT is worth notice that Peele's Coffee-house, formerly one of the noted literary haunts of the neighbourhood of Fleet-street, has disappeared, having recently been absorbed into the contiguous hotel of the same name. It had of late years languished, as a public news-rooms and the *coup de grace* was given to it when a young and vigorous institution of the same kind was opened as the City News Rooms, near Ludgate Circus. The decline of Peele's was due to the same cause as its reputation for the past half-century. It was the only convenient place where journalists could consult files of the provincial and metropolitan papers; but these stores of the past had encroached on the available space of the establishment to such an extent that there was not room enough left for the customers,—at least, not sufficient to make the concern a paying one. Amongst the treasures for which Peele's was noted was a perfect copy of the *Times* and of the deceased *Morning Chronicle*, both from the date of their first appearance. When it was determined to close the place, these were offered at the price of waste paper to the British Museum, but were declined. Advertisements in the United States and some of the colonies likewise failed to bring purchasers, and the proprietor was compelled to dispose of the whole of his files to a waste-paper merchant of the Borough. The *Times*, *Morning Chronicle*, and other files which were sold, weighed no less than 40 tons, and realised the sum of 200*l.* as waste. They have long since passed through the mill again, and appeared once more in a newspaper form, but under other names.

Winter Exhibition: Royal Academy.—The exhibition of works by old masters and deceased British artists, at Burlington House, will be opened to the public on Monday next.

AN ARCHITECTURAL PATCHWORK.

OUR double-page illustration is a reproduction by photolithography of a drawing recently exhibited at the "Black and White" Exhibition by Mr. H. W. Brewer, entitled "An Architectural Patchwork." The object of the artist is to represent the picturesque condition of many a Continental town at the commencement of this century, when Coney, Prout, Gurtin, and others made such charming drawings of them. The subject is a large church built at various dates, situated at the junction of two rivers, one of which is seen winding its way between lofty gabled houses, many of which overhang its waters in a manner so common in ancient fortified towns, where every inch of space was so very important, that not only were quays dispensed with, but even the bridges were encroached upon to find standing room for dwelling-houses, and even churches. The church (or we suppose we must call it a cathedral) is indeed a veritable patchwork, exhibiting the details of every style of architecture from the tenth to the eighteenth centuries; the whole, however, is German in nationality, and could not have existed in any other part of the world. It shows one of those west fronts crowned with three towers, one in the centre and the others flanking it,—a plan not known, or, at any rate, very uncommon, in England or France, but often to be met with in Germany, and occasionally in Belgium. The churches of St. Gumbert at Ansbach, and the Münster church at Essen, in Germany, are good examples of this treatment. In the drawing before us, the flanking towers are of the very earliest Romanesque style, but their upper stories exhibit the same style more matured and more elaborate as to its detail; in fact, approaching the German Romanesque of the thirteenth century. The central tower is early fourteenth-century work; the porch below it, later, exhibits the characteristics of late fourteenth-century Gothic, and has an apsidal chapel above it. This latter feature is quite a German peculiarity, examples of which are to be seen above the western porches of the Frauen-kirche at Nuremburg and the Pfarr-kirche at Coburg. An apse in this position may, perhaps, be looked upon as a kind of recollection of the old Romanesque churches with their apses at both ends. The three towers are crowned with bulbous steeples of wood covered with slate,—the kind of additions which the architects of the seventeenth and eighteenth centuries were so fond of making to the purer and more beautiful buildings of their predecessors of the thirteenth, fourteenth, and fifteenth centuries. The flank of this cathedral, a portion of which only is seen in the drawing, shows an early fourteenth-century nave, with two chapels, one of which exhibits the wildest eccentricities of the very latest German Gothic, and the other is crowned with a dome, and illustrates the peculiarities of what the Germans call the "Pig-tail period" of architecture. The whole church appears to be raised upon a crypt, and a street passes under the western towers through a solid Romanesque arch. Great attention has been paid to the minutest details; even the sundial on the nearest tower has its appropriate motto, calling attention to the rapid passage of time, and the vanity of worldly glory. This motto is a quotation from an old Latin hymn, and is as follows:—

> "Ecce mundus evanescit!
> Decor ejus jam marcescit,
> Et quotidie vilescit,
> Fallax ejus gloria."

We should mention the fact that the drawing is purely a composition. No portion of it is a positive copy from any existing building, though the artist has founded his design upon various ancient German churches, and as his object has been rather the representation of what might have existed, than that which is likely to come into existence at any future time, originality of architectural forms has been carefully avoided, though at the same time there is considerable originality of adaptation and composition.

One object of this drawing is certainly a kind of mute protest against the kind of restoration now being carried on on the Continent, and even, we are sorry to say, occasionally nearer home, where, by attempting to reduce an ancient building to the *one* style in which it was originally built, much of its archæological and historical interest is lost, and features are destroyed which, although perhaps slightly incongruous, deserve to be left alone from their own intrinsic worth.

NEW COURTS OF JUSTICE, STUTTGART.

THE modern part of the capital of the kingdom of Würtemberg (the older portions of which are disappearing by degrees, to make room for buildings more suitable to the requirements of the time) is well built, and possesses many handsome structures. To their number another is now being added, the new Courts of Justice, in course of erection, and of which we are enabled to give an illustration.

The old Courts of Justice were found insufficient and inconvenient long ago, even at a time when the present publicity of judicial proceedings, both criminal and civil, was not thought of. Stuttgart has also increased in size and population since the time its original Courts were designed. The number of inhabitants is now 115,000. Unfortunately, with the growth of the town, crime has increased to such an extent as to make increased provision necessary. Another inconvenience was the fact of the Courts being distributed over the city, involving much loss of time to the legal profession. All these circumstances convinced the Government and the Estates that a change had to be made and an outlay incurred, which conviction ultimately led to the carrying out of the present plans, by which all the Courts will be united under one roof. The new building supplies accommodation for the Supreme Court of Justice (Oberlandesgericht), the Lower Court (Landgericht), and two Divisional Courts (Amtsgerichte), with offices, official residences, &c. The concentration of the seats of Justice is the more complete as the Ministry of Justice is quite close at hand.

The new edifice imposes by the purity of its design, by the suitable distribution of its masses (by a length of 330 ft.), and by the chaste character of its component parts. The pronounced stamp of the wings imparts to the building the appearance of a harmonious whole.

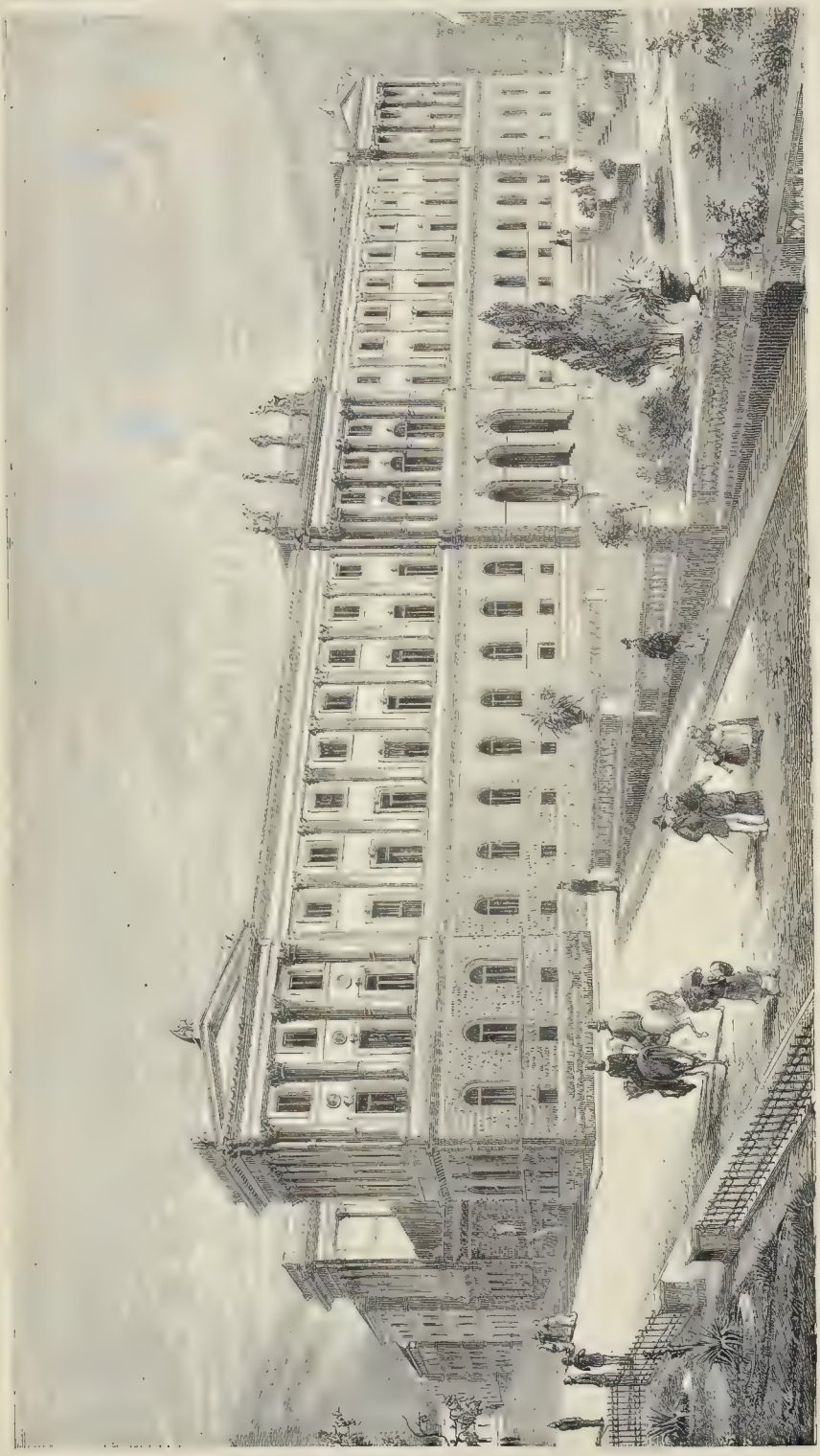
The Courts of Justice will require for the completion of their interior about another year, for it is expected that they will not be finished until the autumn of 1879; the work of construction having then altogether taken up five years.

The foundation works for another important building, the Public Library, which is to fill the square in front of the one of which we have been speaking, and the plans for which have been designed by the same architect,—Herr Oberbaurath von Landauer,—have already been commenced, but the building will not be completed under six years. After the lapse of that time, however, there will be grouped together in this locality a number of buildings (the Prinzessin-Palais, the Archives of State and Cabinet of Natural History, the Palace of Justice and Public Library) in the style of the Italian Renaissance the collective impression of which would be good if it were not marred by two insignificant private buildings intruding between them.

NEW PUBLIC OFFICES AT KENSAL TOWN.

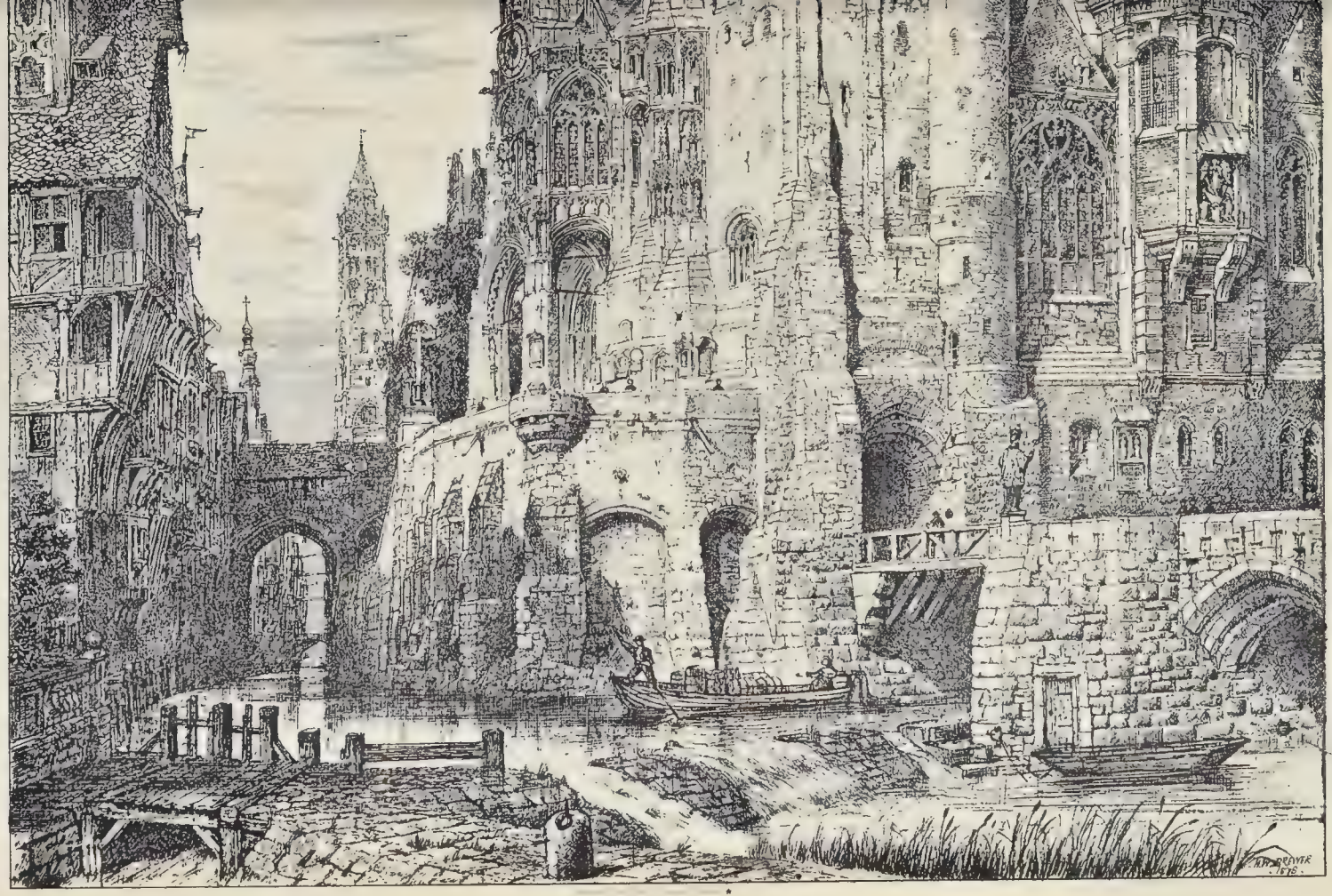
THE Chelsea Vestry are about to erect new parochial offices for the Kensal Town portion of the district. At their last meeting, the Committee of Works recommended with reference to this outlying but rapidly-increasing district of the parish that a plot of land be secured in abcut the centre of the old Kensal Town district to enable the building of an institution, with suitable accommodation for the several parochial departments and officers, together with a mortuary and a residence for the sanitary officer. The surveyor stated that the ground had been selected, and that the proposed building would cost about 2,300*l.* In moving the adoption of the committee's recommendation, Mr. Disher stated that the guardians would rent part of the place for a relief station. It was agreed to obtain the land, and erect a building in accordance with the estimates of the surveyor.

Lydney Cross.—The old cross at Lydney has been restored as a memorial to the late squire of Lydney Park. The work done consists of the erection of a shaft, surmounted by a Maltese cross, with a thorough renovation of the old masonry. A Carrara marble tablet has also been erected in the parish church, in the space known as the "Bathurst Chapel." Mr. Forsyth, of Baker-street, has carried out the whole of the work.



THE NEW COURTS OF JUSTICE, STUTTGART.—Herr Oberbaurath von Landauer, Architect.



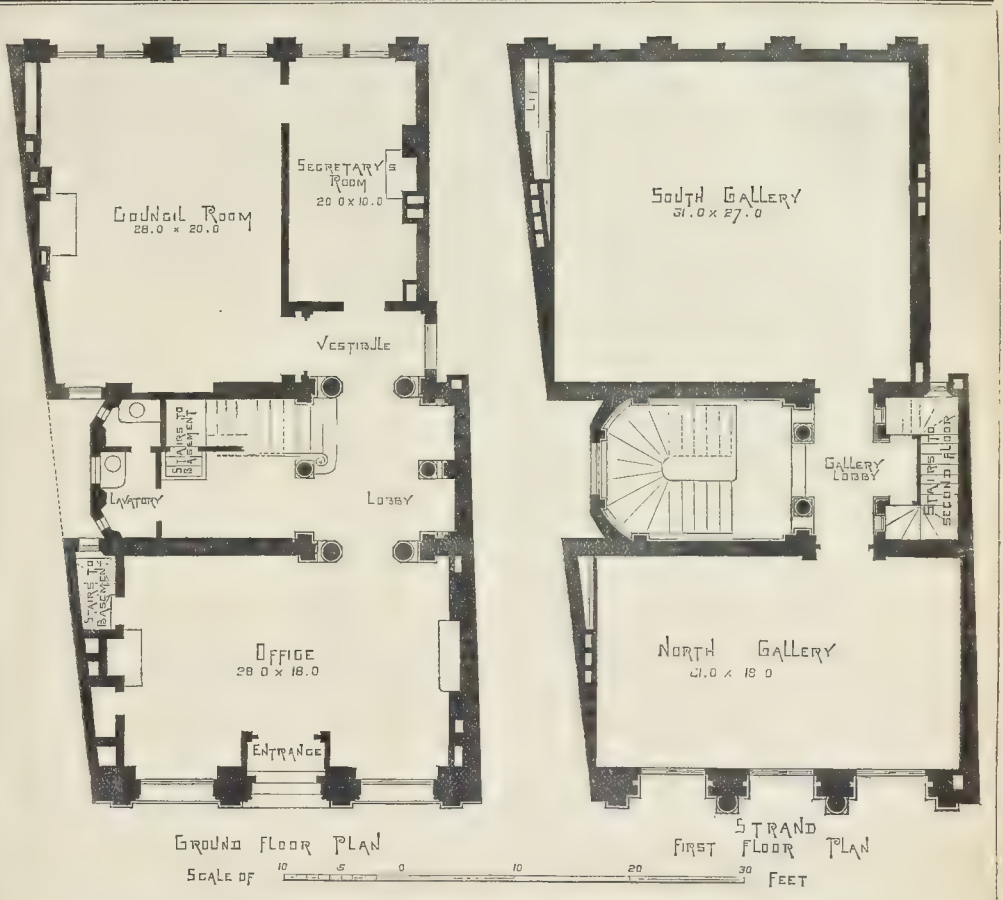


AN ARCHITECTURAL PATCHWORK.

By H. W. Brewer



THE NEW HOME OF THE ART-UNION OF LONDON, No. 112, STRAND.—PROF. E. M. BARRY, R.A. ARCHITECT.



THE NEW HOME OF THE ART-UNION OF LONDON.—*Plans.*

THE NEW HOUSE FOR THE ART-UNION OF LONDON.

By the terms of its constitution, as a corporate body, by Royal Charter, in the year 1846, the Art-Union of London was required to reserve a sum of 2½ per cent. on its receipts each year, to form a fund "for the purpose of purchasing or building a gallery, and for providing a permanent fund for assisting in carrying out the objects of the society." The reserve thus instituted, together with the interest accruing from the investment of the same, and certain other small increments, such as the balance of prizes unexpended by prizeholders, and of the amounts received for catalogues at the annual exhibition, has now resulted in a considerable sum, and the Council have felt themselves in a position to carry out the purposes above indicated.

An appropriate site was found in the Strand, on ground belonging to the Duchy of Lancaster, abutting on the churchyard of the Savoy, and thus securing access in the rear for the reception and despatch of goods.

The style adopted is Italian, treated in the Palladian manner, with an order of Corinthian three-quarter columns and pilasters to the first or principal story. The ground floor has a central entrance, over which the special device of the Art-Union is carved, with reclining youths as supporters. The spandrels of the three arches above are also sculptured, with boys bearing the insignia of the Fine Arts,—Painting, Sculpture, and Architecture. The pilasters are divided into panels, carved with arabesques and separated by circles, containing heads of some of the representative artists of the Renaissance and of modern times. The upper part of the elevation is rusticated, according to the Florentine custom, the windows being deeply recessed, and the arches bearing vousoirs, and being slightly pointed. Each window is surmounted by a carved panel, having the cypher of the society, "A. U. L.," and the motto, "L'Union fait la Force," worked in stone. The frieze of the order beneath displays the words "Art-Union of London." The windows of both the upper stories have balconies, those of the second floor being curved on plan. The carving, which is very well executed, is by Messrs. Mabey, of Prince's-mews, S.W., and is suggestive throughout of the purpose of the institution, viz., the union of the arts and the encouragement of a taste for the same among the public. The plans of two floors, which we publish, will explain the general arrangements adopted. There will also be provided on the other floors offices, workshops, packing-rooms, and storerooms, for carrying on the daily business of the association. A workmen's entrance is placed at the back, towards the Savoy, which is at a lower level than the Strand. The back elevation is of brick, simply treated, with arched recesses; the Strand front is of Portland stone throughout. The contractors are Messrs. Perry, of Bow, and Mr. House is the clerk of works. The building is approaching completion, and will, it is expected, be finished early in 1879. The preparation of designs for the new building was entrusted to Mr. E. M. Barry, R.A., and the result is the structure of which in our present number we give an elevation.

The Art-Union, now in its forty-third year, will thus be in possession of a commodious office for the transaction of business, and such provision for the storing of its large accumulation of prints and other works of art, and for the package and despatch of the extensive supplies of works of all kinds which are continually leaving for all parts both of this and other countries.

There will, moreover, be adequate space for the advantageous exhibition of the collection of works in bronze, Parian, &c., of which the exclusive copyright belongs to the society, and which the premises up to this time occupied by the Art-Union have been quite insufficient to provide.

The new galleries, when not required for the annual exhibition of prizes, will contain such a variety of pictures and other works which are gradually accumulating, as to constitute an interesting and instructive collection, to which the subscribers and their friends will have constant access, and, in the words of the report of 1877, "increased prosperity may be hoped for, commensurate with the enlarged facilities thus afforded for developing the objects of the Association."

A "Coffee Public-House" at Bromsgrove was opened on the 23rd of December by a limited liability company of local shareholders. It contains two coffee-rooms, bar, kitchen, lavatories for males and females, &c. Some previously-existing premises have been converted to the purposes of the company, under the direction of Mr. John Cotton, architect, Bromsgrove, by Messrs. Brazier & Weaver, builders, at a total cost of about 500*l*. Similar establishments are being opened in all parts of the country.

EASTERN WORK AND WESTERN WORK, AND THE WAR BETWEEN THEM.

WAR, if indeed it be war, has many evils; but as there would seem to be in the very nature of things no evil, however great, without some corresponding or accompanying good, war even may have its good. Be it so. We are now marching into a strange and out-of-the-way Eastern country, of which little, next to nothing, indeed, is known to the public, or even to experts. It may happen that out of the disturbance some additional knowledge may be come at as to the precise state of things and ways of life, and even fine art, of that so distant and inaccessible country, Afghanistan. We say how next to nothing it is we know of so out-of-the-way a place, and how difficult it would be, if we indeed did know, to realise to ourselves the precise state of things there, and to picture to our minds' eye what the every-day life and surroundings there are. Eastern and Western modern life are certainly as diverse as two things both human can well possibly be; and it is impossible to get a glimpse of that far-off Eastern life, and mode of every-day existence, without seeing this the more and more vividly the longer we gaze at it. It matters but little where we go for our contrast, or to what phase of life we specially look and study, that contrast is equally startling and pointed. The colours may indeed differ in brightness and intensity, but the contrast is there and cannot be otherwise than seen.

In the first place, this is the very sunlight itself,—a cause of difference so vast as in itself to be enough to account for everything, and for all differences. Much might be speculated about it, but we forbear, and wonder a little at the fact of so little being apparently cogitated about it, seeing how enormous, though so simple, are its effects.

Next, there is the very nature of the ground itself, and the stupendous aspect of it,—of its mountain masses, and consequently broad waterways. These alone, were there no others, are enough to render this "neutral zone" sufficiently remarkable and different from all things we have here round and about us. Afghanistan, Khelat, Yarkand, on our side, as the phrase is; Bukhara, Khokand, on the part of Russia,—mattering, perhaps, as far as we here are to look at them, but very little; for Eastern peoples would seem to be all but incapable of change, whatever the "influences" over them, or about them, may be. It is really something wonderful to find, as we soon do find, how these "outlines" we hear so much of vanish into thin air as we get closer and closer to them. Where does the giant mountain begin? and where does the defined nationality of one State begin to influence the one next door to it? and where and how does one national and individualised art run into and mix with another? Asia is the East *par excellence*, and if there be a section of the world in unity with itself, is it not there? In details, indeed, it differs, as we travel through it, but it is still one.

It is thus, when looking at the East as contrasted with the West, in this broad way, that we may well wonder, more and more, at the narrow lines and artificial boundaries which statecraft has devised, and will, we may suppose, always try to devise. But we may leave these narrow artificial lines, and look for a moment at what the Eastern man does when left to his own devices. Central Asia is emphatically the East, and if Western dreams of it are at all to be realised, it is most surely there that such must be. If we might venture to characterise the general idea of the architecture of the East, it would be, in each instance, that of simple unborrowed construction,—in rude house and hut building,—which in the main make up the street-ways of an Eastern town; for, singularly enough, it is not until you come to public buildings, as the temples and mosques, that "architecture," as that word is generally and now understood, comes into the account. A street-way in an Eastern town is, if truth must be told, but a poor affair, if contrasted with that which it is here in this Western world. The narrowness of the way, the lowness of the house-building, the flat roofs, and the absence of all "architecture," leave nought but the simple picturesque to do the work of making a mental art impression. Were it not for the mosques, and what else there may be of public building, there would be but little architecture. But there is more in this than at first look appears, and much has yet to be said about it.

But it is first of all, and primitively, in the all but total absence of the division of labour in the production of all things useful as well as ornamental, that the East differs so totally from the West, and what is more, in the absence of all tendency to merge into and to adopt that system of work which is the very life of modern manufacturing energy in all Western countries. Nothing, as we all know, is left undone to widen this system and idea of work here, and the more or less advanced state of any particular manufacture is measured by the amount of division it is found capable of, or that each separate article can be made to bear. This, the very life of work here, is all but unthought of there, and could be but impossible to those who work more or less traditionally and personally, and as artists. It may seem but a trite subject this, and to many too obvious, but it has been but little thought of, or its import seen, by those who have done so much to improve our methods of work, and add to our powers and means of design, even by the borrowing from and the copying those very forms which the Eastern man has made, through a long course of ages, so thoroughly his own. In the country we are now so gloriously marching over, there must needs be right and left of this line of march much to look at and to study. Let us hope that it may in some way be taken due note of, not to be looked down upon, but at.

But, again, it is not in the all but total absence of *machinery*, as an instrument of production, that the East, speaking generally is, even at the present moment, so different from the West. In the production of any one of the simple things which go to make up the common necessities of house furnishing and clothing, and "ornaments," of which the men and women of the far East are so fond, this difference between them is equally marked. *Machinery*,—if the term may be used,—is unknown in our Western sense of the word. There are machines and mechanical appliances in the East as well as in the West; but they are of a different kind, and are made serviceable in a totally different way. A *machine* in the service of an Oriental is simply an addition and a help to his *hand*, and he cannot leave it for a moment. It will not go on working by itself, and without constant attention and hand-power at the same time always moving with it. So that the personal and art power of him who is aided by the machine is never for a moment away. Here, as all know, and it hardly needs mention, the machine, the more potent and improved it be, is all-powerful, and the human power has but to be present to watch it, and to see that nothing intervenes to mar its all-potent influence. Indeed, as we know, the modern and improved machine has all but, even as it is, taken the work out of the *hands* of the workman altogether, his *eye* only being needed to watch it. A huge gain this, but at how tremendous a cost. The man of the East has no idea of this,—as yet.

But there is far more than this to be considered. Confining ourselves to one speciality: though there is so much more, we may remark that there is nothing more noteworthy in this Eastern work than the evidence it shows of the inherent power of design in the Eastern man in his own special and individual way. It may seem a familiar subject this, but it is not so. It is wonderful to think of the lapse of time,—of generations,—through which those special ideas of design have come, and thus to reach the present day with but little if any change. All would seem to come of tradition, but yet does each workman manifest a knowledge and feeling of and for the work he has before him. It would be impossible to take it out of his hands and away from him, and to put it into the hands of another without loss of some kind. Nothing can evidence this more clearly than the fact of the change which takes place when any one of his "woven fabrics,"—to cite a speciality,—is attempted by another. So marked, indeed, is this, that we have but to look at and to contrast with the genuine work any specimen, however well and cleverly done, which may be selected to compare with it. With all our helps we are incapable of doing his work, or work like it. Western and Eastern work and methods are different, and would seem incapable of amalgation or interchange. Thus to profit by the capabilities and capacities of the men and women of the East we must need leave them alone,—to do their work in their own way.

And might we not now well ask how best may it be possible in the nature of things to profit by this diversity of power between two powers so opposite, and apparently so incapable of amalgamation, or mixture, or even of being made to go together the same road? What can be done? That we should lose much and infinitely by the destruction of Eastern individualism and nationality there can be no doubt whatever; for, as the author of "Tancred" has noticed so impressively, it is all but infinite the debt which we of the West owe to the East. Indeed, according to that eminent authority, "spiritually" we should have simply nothing to go by, were it not for the marvellous and miraculous history and doings of the Eastern sages and heroes.

That we of the West are debtors thus to the East no one doubts, and that we are so too artistically there can be as little doubt. How much then do we owe to it? To profit by it we most surely ought, and to feel a little grateful may not be out of place; but above all must it be unwise to do aught which can have the effect of deadening, or killing outright, that powerful individuality,—to adopt that expressive and comprehensive word, which has, from the remotest ages, even down to the present hour, enabled the Asiatic to live by himself, and for himself, and to be always a force in the world and,—may we not fairly say it?—to teach the world. We do indeed, as it is, know a good deal about the East; but there is, it is quite certain, far more yet to be known about it, and about the multitude of races who go to make it up. Will the present war help this?

THE DRAINAGE OF MUNICH.

SIR,—In your issue of the 14th ult. I notice in your continued article on "Sewage and Irrigation Works in Germany," in your mention of the case of Munich, the statement that the plans prepared for the sewerage of that city are now being revised by the Geheime-Oberbaurath, Herr Wiebe, of Berlin. This statement must arise from some misconception or want of information on the part of your informant, and is, so far as I am aware, at variance with the facts, unless it were possible that the Munich authorities should, unknown to me, have commissioned Mr. Wiebe with such a task. This is, however, highly improbable, from the fact that I am, as their consulting engineer for matters connected with the sewerage and house-drainage of the city, in frequent correspondence with them. Under such circumstances I am sure no one would more readily disclaim the statement set forth in your article than Mr. Wiebe himself.

The statement arises, no doubt, from the fact of Mr. Wiebe having been called in along with Mr. Bürkli, of Zurich, in August, 1877, to report on my sewerage scheme; and as the subject of the Munich works has been alluded to in your columns, it may probably be as well to give a little more of their history up to the present moment.

Munich possesses, including a few short lengths of pipe-sewers, upwards of thirteen miles of flat-bottomed sewers, nine miles of which are to be found on the left bank of the Isar, chiefly in the older parts of the city, although they are to be met with in newer districts, in the vicinity of the Gaertner Platz Theatre, Gendlinger Thor, and Ludwig Strasse. The remainder are distributed over the Au and Hairdhausen, on the right bank of the river.

In 1867 the city architect and engineer, Herr Baurath Zenetti, designed a system of egg-shaped, brick-built sewers, for the divisions of the new parts of the city, called the Max and Ludwig Vorstädt, in which the University, the celebrated Picture Galleries, the Polytechnical School, &c., are situated; and the work of execution was then commenced and carried on until, combined with similar works for the low-lying district of the town (called the Thal), upwards of fifteen miles of such sewers were carried out. For those in the Thal district advantage was taken of the adjacent water-courses, running through the city, for flushing purposes, but for the thirteen miles of the Max and Ludwig districts no such flushing power was available. A large number of so-called "dead ends" was used as flushing tanks by the insertion of flushing-gates, and a connexion being made with the water mains. Owing to the insufficiency of the water-works for such a purpose, this arrangement proved unsatisfactory, the result being that Baurath-Zenetti himself was amongst the first to

acknowledge that nothing more in the way of sewerage should be done, until a scheme for the whole city had been prepared by some one specially experienced in town drainage.

This was the state of affairs when I was called in to advise and report in September, 1875. In July, 1867, I presented my scheme and report, which were based upon instructions received, one of which was that the system of sewers was to be so designed that whilst every facility for a commencement of the works, with direct outlet into the Isar, should be given, due regard should be had to the eventuality of irrigation being adopted. The fifteen miles of newly-executed egg-shaped sewers were, if possible, to be incorporated with the new system, but the thirty-six miles of water-courses intersecting the city, and supplying about 100 mills and other works with water-power, were not in any way to be interfered with; not even a drop of water for flushing purposes was to be extracted from them, although this had already been done for the Thal district.

Whilst my plans were in progress, Herr Geheimerath Professor Dr. von Pettenkofer delivered a series of sixteen lectures on the question of sewerage and removal of town refuse, having special reference to Munich, the tendency of which went to show that the discharge of the sewage into the Isar was admissible. The impression made on my mind was, that the authorities would be glad to avoid, if possible, the expense of irrigation works; nevertheless, my plans were, according to the instructions received, prepared to admit of the adoption of irrigation; but my report referring to this part of the subject has not been made public for reasons which will be readily understood as affecting the value of the lands in view.

I carefully examined every foot of the existing egg-shaped sewers, and came to the conclusion that means must be devised to secure the perfect flushing of as many of them as possible, and that with various improvements, including a system of surface ventilation, the greater portion thereof, those of the Max-vorstädt, at any rate, might be worked into a new system. This consideration and the stipulated non-interference with the network of mill-races already alluded to, increased the difficulties to be dealt with in designing a new system on the left bank of the river; but they have been met in such a manner that the existing sewers of the Max-vorstädt are to be permanently adopted, subject to the improvements recommended, whilst those of the Ludwig-vorstädt, about three miles in length, in the carrying out of which, at their point of junction with the Max district sewers, a fall of upwards of 5 ft. has unaccountably been lost, can only be retained for surface drainage, thus rendering a new set of pipe sewers eventually necessary alongside the existing ones for the reception of the house-drainage proper.

I had no orders to prepare any estimate of the cost, but after publication and distribution of the plans and report amongst the members of the corporate bodies, I received an order to prepare one, which was handed in on April, 1877. It included 123 miles of sewers, and amounted to 627,000*l.*; but no account was taken at that time of the cost of the irrigation works, nor was it desired: this became necessary only by the course of subsequent events.

About this time the Bavarian Institute of Architects and Engineers took the question up, and very animated discussions took place at the meetings held respectively on the 15th, 23rd, and 29th of March, 1877, which lasted on each occasion till midnight, and resulted in a vote being taken for or against the principle of the water-carriage system, ending in the extraordinary fact, for so enlightened a society, that fifty votes were recorded against it, and only thirteen for it. The shorthand notes of these meetings, together with my estimate, were published in the same year with the proceedings of the joint committee, appointed by the magistrates and town council to report on the water-works and sewerage question.

This unexpected opposition to a water carriage system, on the part of such an institution, made further progress difficult for the authorities, who had only been desirous of calling forth a discussion on the technical merits of my plans; but which question, by a direct vote taken on the point, the members of the Institute declined to entertain, by a majority of 45 to 19. Under such circumstances, the magistrates came to the conclusion that no other course was left open to them but calling in some other acknowledged authority to report on the plans before them, and accordingly they selected Mr. Bürkli-Ziegler, of Zürich, for this purpose. At my suggestion a second gentleman was called in, although I advised even a third. I was desirous that one English engineer of eminence should be named, but this suggestion seemed to find no favour, and finally Mr. Wiebe was selected.

Messrs. Wiebe and Bürkli-Ziegler reported on the 26th of August, 1877, and approved in every essential particular of the whole of my plans, and were of opinion that the estimate was amply sufficient for the works. There were a few minor points wherein they thought savings might be effected; as, for instance, in a greater use of manholes in the carriageways, as against side entrances in the footways, as provided for in my estimate. They further recommended that the old flat-bottomed sewers should be examined to ascertain whether they could not be utilised for carrying off the rain-water, and thus perhaps facilitate a greater use of pipes in those portions of the town where such sewers existed. They insisted, however, on the immediate adoption of irrigation works as a *sine quâ non*, and recommended that the estimate should be amended to include this. They fully approved of the land selected by me for such works, which I had divided into three sections, the first and second of which, nearest the city, could be commanded by the sewers of the higher and greater portions of the city by gravitation, whilst No. 3 could be held as a reserve. Messrs. Wiebe and Bürkli-Ziegler recommended, however, Nos. 2 and 3 sections, and the securing of any reserve that might be wanted beyond even the latter.

I received instructions from the magistrates, in consequence of this report, to prepare the requisite further plans for the irrigation works, and to include the additional costs in the estimate, and these were laid before the authorities in January, 1878.

The estimate amounted, as set forth in your article, to 734,000*l.*, exclusive of the purchase of the 2,000 acres of land required.

Nothing further has been done in the matter beyond the appointment of a rather numerous committee, consisting of representatives of the Government, magistrates, town council, the medical society, the Institution of Architects and Engineers, and the Agricultural Society, to visit the works of other towns, and it will no doubt very materially depend upon the tone of this committee's report what further steps are to be taken. The committee were delayed in starting from Munich from time to time, but finally made a very considerable tour, visiting Frankfort-on-the-Maine, Dortrecht, Leyden, Amsterdam, Berlin, Dantzic, and Breslau, and their report may now be daily expected.

In the meantime, one main line of sewer, upwards of a mile long, has been carried out in accordance with my plans, and regulations have been adopted for the private drainage now draining into it. Bye-laws have also been issued, under my advice, for the house-drainage of other parts of the town in connexion with the existing sewers and the town water-courses, so as to admit of a joining of such drains to the new sewers when built.

The contouring of the irrigation lands has just been completed, and the results are now lying in my office, so that such preparations as are under the circumstances possible have been made to push forward, should the final favourable vote of the corporate bodies be arrived at during the winter. I cannot see, therefore, in the face of all this, how your correspondent can have any such information as to the revision of my plans as that alluded to in the article referred to, and shall be glad, therefore, if you will have the goodness to give the same publicity to this as has been accorded to the statement in question.

J. GORDON, M. Inst. C.E.

Frankfort-on-the-Maine.

Fall of Three Houses.—On Sunday morning three houses in course of completion at Hither Green-lane, Lewisham, fell with a loud noise, causing much alarm in the neighbourhood. Fortunately, though several persons saw the accident, no one was near enough to be injured. The cause of the mishap is supposed to be the late sudden thaw. During the frost the mortar froze as the men laid the bricks, so that when the weather changed the walls became insecure.

ON SOME OF THE PRINCIPLES WHICH SHOULD REGULATE PROVINCIAL GALLERIES OF ART.

No one can fail to see that art is clearly making its way in the large provincial towns of this country. This is evident when such structures as the recently-erected Walker Art Gallery in Liverpool are called to mind, when the various provincial exhibitions are remembered, and when other facts are recalled which it is not now necessary to particularise. Such a civilising progress is undoubtedly a gratifying sign, for it means that intelligence and culture are becoming more general, and that an intellectual pleasure is being opened to classes who, no very long time ago, were strangers to the ideas and the examples of art.

But whilst it is obvious that it is better for a man in some provincial town to have the opportunity of seeing second-class pictures than none at all, it is clear also that every endeavour should be made to establish the permanent galleries of art in the provinces on a sound and a high basis. To buy a number of pictures of comparatively little value, to hang them up in several large galleries, to throw these open to the public without payment, or for an infinitesimal sum, is not the whole duty of those who institute and take charge of provincial collections. Nor, on the other hand, is their duty properly undertaken if they delegate their work to some person with no very broad ideas on the subject of art, or who, possibly, has a strong inclination to, and admiration of, one particular school, modern or ancient. To fill a gallery with examples of one school or one nation is to lose sight of the fundamental principles which should guide those who have the conduct of the rapidly-increasing galleries of art in this country. The first aim and object of those concerned with these galleries is that they should be the means of educating and purifying the public taste. Hence great care should be taken in the selection of the pictures which are to be collected in the galleries. As regards modern works of art, those which have obtained the ephemeral reputation which so frequently is gained by second-class works should not be eagerly sought after. Nor should an artist who has become the hero of the season necessarily be asked to paint a picture for this or that gallery. In one word, fashion should be carefully avoided, and modern works should only be chosen which exhibit the best elements of the modern school. We have no doubt at all that actual modern pictures, that is, those of living artists, should be very sparingly bought, and that one of the first aims of provincial managers should be to make the country galleries as historical as possible. Except, perhaps, in the eastern counties, where Cotman, Crome, Vincent, and others formed a particular school of their own, a provincial gallery will be unable to obtain any distinctive mark in consequence of a distinct school of artists having made the locality their home. We in England have no Low Country school, such as we see characterise Antwerp, Bruges, and the other towns of Holland and Belgium. Hence we should try to make the English school as historical as possible, and not fill our provincial galleries with pictures by living artists alone.

Then, again, we do not hesitate to say that as regards the older masters of the Italian, the Flemish, and the Spanish schools, attempts, at any rate, should be made to exhibit them historically. It is quite obvious, however, that it is next to impossible to obtain really fine works of the masters of the past, and the next best thing therefore to do is to obtain the finest copies possible of some of the great works of Murillo, Titian, and other world-famous artists. This is quite feasible, and if care is taken in the selection of the pictures copied, it is perfectly practicable to place before the citizens of Newcastle, or of Wolverhampton, a series of examples which will enable them to comprehend what the Italian or the Dutch masters really did. We would much prefer, indeed, to see managers of provincial galleries spending money in this way rather than filling their rooms with a large number of quite modern pictures, however clever. We do not wish, let it be clearly understood, to taboo the works of modern artists; what we wish to impress on our readers is that since art-galleries are intended to cultivate and improve public taste, they should contain pictures which will show the historical progress of art,—which will show what the greatest artists have accomplished,

and so, while elevating the taste of the public, indirectly improve English art and encourage the best artists by enabling them to have their works duly appreciated. Catholicity, too, is an essential element in any really good gallery, and this cannot be accomplished without resorting to the use of copies. Nor could anything be more desirable than for a town which possesses pictures of historical value in one collection to embrace the old in the new art gallery. Thus in Liverpool, for example, it would add much to the value of what will ultimately be the chief picture-gallery in the North-West of England, if the various pictures of the old Italian and Flemish schools now located in the Royal Institution could be placed in the Walker Art-Gallery, and form the beginning of an historical collection, chronologically arranged according to the nationality of the painters. The triptych, for example, by Roger Van der Weyden, one of the numerous replicas of the original "Descent from the Cross," is an excellent example of the works of the early Flemish painters.

And, further, we have a very strong opinion that engravings and prints should be properly utilised. They may serve either for the purposes of art alone, or for a narrower object. Thus it would be quite possible with some enterprise, after a certain time, for a good many towns to form a gallery of historical portraits. The National Portrait Gallery can only be in one place, but it would undoubtedly be a source of pleasure and of general culture if a good gallery of portrait prints,—historical in their character,—were formed in some towns. There are in London from time to time collections of prints sold from which selections could be made. As a rule, the collectors of prints, so far as our experience goes, chiefly keep them closely confined in large portfolios in large cabinets, where they generally remain until they are sold "by order of the executor of Mr. Dryasdust, the well-known collector and connoisseur of prints." A little care and enterprise would, we are sure, enable several capital collections of prints and drawings to be gathered together, interesting both as works of art and for what they show of times past.

It comes, therefore, to this, that art-galleries in the provinces should contain pictures calculated to improve the taste of those who visit them, and capable of educating those who desire to have an intelligent knowledge of art. Pictures should be brought together, too, in a sufficiently broad and liberal manner, so that whilst these primary objects are kept clearly in view, the numerous visitors to a gallery in a large town should be both amused and interested in a healthy manner.

THE CHINESE LABOUR QUESTION.

AMONGST the many vexed subjects which are so keenly exercising the minds of employers and employed,—such as wages, over-production, shorter hours, arbitration, conciliation, &c.,—none is of more importance than the foreign labour question, which is more intimately bound up with our industrial affairs than people imagine. The only time when the public mind has been much fixed upon it was during the London masons' strike of 1877, when imported foreign labour became an accomplished fact, and was a very ugly thorn in the side of the English operative. But though this was only the thin end of the wedge, it showed how easily difficulties could be surmounted if capitalists were so minded, and what inexhaustible supplies of foreign labour there were to draw upon. Even looked upon in this light, we cannot afford to be indifferent to it; but there is another view of the question which, though general, is of still greater importance. In these days, when the whole earth is bound together with a secret network of communication, one big artery throbs and pulsates simultaneously through it, whether the difficulty be commercial, political, or industrial; and neither employers nor workmen can ignore the necessity of a knowledge by industrials in England, of what is going on amongst industrials abroad. It is only by keeping a wary eye on labour, trade, and wages, in foreign countries, that we can hope to keep pace with foreign competition, and adapt our production and expenditure to those of our neighbours far away. Capitalists are only just beginning to realise that the lower rate of wages abroad (machinery and working power being equal to our own) is a powerful factor in ousting us from the race; and working men are still more in the dark, although a faint glimpse of the disagreeable necessities of the times is dawning upon them, notwithstanding the glib assurance of their leaders that they ought not to submit to them. During the masons' strike, allusions were often made to the importation of Chinese labour, and although it was treated more as a joke than anything else, it might become a very grim joke to us. At all events, amongst our colonies and in America, the Chinese question is one of the most serious of the day; and, even as a collateral fact, it will not be uninteresting to the readers of the *Builder* if we briefly examine John Chinaman as an item in the labour market.

America, Australia, Peru, and the Sandwich Islands have, up to the present, been the chief countries to which Chinese emigration has been directed. From the Victorian census abstracts, which are remarkably full of particulars, we learn many interesting facts respecting the Chinese population, which has been carefully watched by the authorities. In 1875 there was in that colony a total of 17,935 Chinese, of whom only the very small proportion of thirty-six were females. Of these, 16,372, or over nine-tenths, were between twenty-one and fifty-five years of age, the primest years available for labour. As to occupation, by far the greater portion, not only here, but in all other countries where they have immigrated *en masse*, was engaged in gold-mining; and, as the gold mining industry of Victoria has fallen off very considerably, and with great regularity, for several years past, it may account for the fact that the number of Chinese also has considerably decreased, as in 1861 there were 24,732, showing a decline of 6,797 in fourteen years. The ascertained list by occupation was as follows:—13,374 (75 per cent.) engaged in gold-mining; 1,446, farming, gardening, and agriculture; 542, shopkeeping; 274, hawkers and pedlars; 146 opium dealers; 123, provision dealers; 114, butchers; 84, gamblers and lottery-ticket sellers. The latter is a dubious occupation, and, doubtless, a euphony for the loafing and vagabond section of the race,—a by no means large proportion, considering the general character of the gold-diggings. Of the women, one was an inn-servant, one an opium dealer, while the others came under the head of wives, widows, and children. In religious and educational matters, the figures give us but a scanty result. Out of the whole number, 285, or one in 63, professed Christianity, 123 being Church of England, 101 Roman Catholics, 28 Presbyterians, 32 Wesleyans, and one Independent; and as to education, 210, or one in 85, could read, and 175, or one in 102, could write. But as these statistics apply only to the English language, they are worth nothing in ascertaining the real state of education in their own tongue. One of the most interesting points is that of the conjugal relations of the Chinese abroad. Whatever they may be in their own country, they are misogynists when they come away from it, or, at all events, rarely bring their wives away with them. In Victoria, 99 per cent. are returned as single, 144 individuals only being married, and seven widowers. In the decade previous to this, when the Chinese were thicker on the ground, it was ascertained that 99 women were married to Chinamen, of whom 24 were English, 16 Irish, five Scotch, 49 Australians, one German, two Chinese, and two of unknown nationality. The fact of the single condition of the Chinaman, when he goes to live abroad, is no doubt an important one, because it has been brought as an accusation against them, both in San Francisco and Melbourne, that they are immoral, and not at all averse to the society of the opposite sex, provided that they are not shackled with the ties of matrimony. No doubt this is true to a considerable extent; and when so many unmarried men leave their belongings and home ties behind them, it is not to be wondered at if these colonies contain elements which will not bear much looking into; but if we take an equal number of adventurers and loafers from any other country, we question very much whether as much demoralisation would not follow in their train. Indeed, in other respects, the character of the Chinaman as an Australian citizen stands high. In 1874, when the Chinese population was estimated at 19,619, the average number of prisoners was 1,595; and between 1864 and 1873 only two were executed. Next to the Victorians themselves, fewer Chinese, relatively to their number, were arrested, than any other nationality in the colony. They do not contribute much to the drunkards' list, though those who are sent for trial commit their full share of the more serious offences. In Queensland, the Chinese immigration assumes numerically a rather different phase, owing partly to its greater proximity to China, and partly to the more unsettled character of the goldfields which attract them. The semi-tropical climate, too, of Carpentaria and the North of Queensland generally, seems to suit the Chinese, and the consequence is that in many of the recent gold districts, such as the Palmer River, they far outweigh the European population. By the last Queensland census, there were said to be 10,342 Chinese in the colony, of whom only nine were females; but so rapid has been the immigration, at all events until checked by the Gold Fields Act, that these numbers were far below the mark, for it was stated in the *Queenslander* that there were 18,000 alone on the Palmer River in the summer of 1877. The object of this Act was, according to some, prompted by a fear that the Chinese element would swamp the European by mere force of numbers, and it proposed to check the invasion by the imposition of a head tax, which, at all events, would swell the revenue, if it did not succeed in keeping the enemy at bay. But it is more likely that the cry of exclusion of the Chinese was a political one, intended to serve a certain purpose amongst the working men at election times. Even if the Chinamen did congregate rather overwhelmingly at the Palmer River, they could not stay there or at any goldfield for long, and were obliged to take up other occupations, for which this portion of the colony offers great scope. Roads, bridges, wharfs, railways, public buildings, have all to be constructed, and cheap labour to make them is peremptorily required; and, in addition to these, there are the rapidly extending sugar plantations of the Mackay district, where European labour is not the most suitable, being too costly, and not agreeing well with the climate. Moreover, the heavy diet of the European in the tropics militates against his work, while the light wholesome food and abstemiousness of the Chinese are invaluable to him. In South Australia, up to a recent date, the Chinese element has not been sufficiently strong to induce much interest in the question; but the acquisition of the Northern territory by this colony is beginning to alter the state of things, and the introduction of Chinese labour is likely to assume an important aspect. The old-established portions of South Australia are of sufficiently English character, both in labour, climate, and production, to offer little temptation to the Mongolian to make his way there; though the contractors on the new railway from Port Augusta northward, which is destined to connect Adelaide with Port Darwin, are advantageously employing Chinese navvies. With regard to the Northern territory itself, the authorities are not only willing, but anxious, that their immigration should be encouraged; and, indeed, Sir Wm. Jervois, the present governor, has openly stated that he could see no other means by which that splendid territory could be developed, without introducing some such element, while the Adelaide press in general advocates the movement in contra-distinction to the repressive policy pursued by Queensland.

It is, however, in the Western States of America that we find the Chinese *en masse*, and most important in the industrial economy of the country. According to the most recent calculations there were over 150,000 Chinese in America during 1876, of whom at least 60,000 were in the State of California. They arrived here, in anything like numbers, about 1855, and then chiefly confined themselves, as usual, to the gold or precious metal mining districts, carefully re-working the exhausted "placer" claims, which had been abandoned by European and American miners. From this occupation they gradually spread to others, such as coal mining in Nebraska and Iowa, domestic service, laundry work, &c., and when the great Pacific Railway was being constructed, many thousands of Chinamen were employed. The work suited them admirably, and they displayed great intelligence and industry, being apparently indifferent to the extremes of heat and cold found in the Sierra Nevada and the Rocky Mountains. In San Francisco, which is the great port of arrival, and consequently their head-quarters in the United States, the number of Chinese was about 33,000, every eighth man, in fact, being of that nationality, and the avocations in which they were engaged were,—makers of cigars and cigar-boxes, soap, boots and shoes, slippers,

saddles, whips, harness, salt, powder and brooms; laundrymen, sewing-machine workers, woollen operatives, merchants and clerks, house servants, painters, stone-cutters, coopers, buttermen, silversmiths, clothiers, vegetable-sellers, &c. Amongst the more curious items of this census, figure 120 only as respectable women, 2,600 as enslaved prostitutes, and 3,500 residents of no occupation, agents, loafers, and villains. Mining is the employment in which the Chinaman finds his most congenial occupation, and there are in the whole of the States between 20,000 and 30,000 engaged in it. As mining labourers, they get in California about 6s. 10d. a day. The wages of a Chinaman in domestic service are stated to be from 2*l.* per month for an active boy, to 5*l.* for an experienced servant; while those employed in ordinary labour earn usually about 4s. a day. Chinese boys are largely occupied as nurses to children, for which they seem particularly adapted; and as the wages of a nursemaid average 4*l.* per month, there is a decided balance in favour of the Chinese boy In the cigar factories in California, white *employés* are paid from 56s. to 72s. per week; Chinese, from 30s. to 48s.; and in the woollen-mills, where they find occupation as wool-sorters, pickers, carders, spinners, weavers, burlers, fullers, and packers, their wages seldom go beyond 3s. 9d. a day, while those of the white operatives are treble that amount. The boot and shoe trade also employs a good number of Chinese, who got a footing in the Californian factories through a strike; and so successful was the experiment, that the managers declared that they eventually required as many white overseers as were previously employed as working hands. While the Pacific States and British Columbia have ever been the great Chinese strongholds, they are gradually extending themselves eastward, and are now found in the large boot factories in Massachusetts, as well as in the cotton-mills at Fall River. Whatever opposition they have encountered in Australia has been of a passive and legalised form; but in California, and particularly in San Francisco, they have had at different times to meet with very hostile treatment at the hands of the mob, which, always unreasoning and unreasonable, has frequently vented its dislike to the Chinese in personal attacks upon their quarters. Public opinion during the last twelve months has been greatly excited on the question, especially on the part of the shoemakers, of whom 800 were said to be out of employment, while 5,000 Chinese were in work. The causes of dislike, which include their immorality, are, not unnaturally, greatly enhanced by the impression that Chinese cheap labour is superseding the dearer and more irregular industrial powers of the white operatives; but to the contempt and active illtreatment so freely lavished on him, the Chinaman opposes an inert, passive resistance, on which it is very difficult to make any impression; and, like the tide, he ebbs but to flow again, and with almost as much certainty. The Californian Legislature's report on Chinese immigration was not favourable. The evidence went to show that the majority are of the lowest orders of the people, mainly those who have no houses or occupation on land, but who live in boats on the river. Of 545 of the foreign criminals in the State Prison in 1877, 198 were Chinese, nearly two-fifths of the whole, while the jails and reformatories swarmed with the lower grade of malefactors. This was certainly not an encouraging statement; but taking into comparison the reasonably orderly life of the Australian Chinese, one cannot help thinking that the report was very considerably coloured by *animus*. Before concluding the subject, it will not be amiss to briefly glance at the condition of Chinese workmen in their own country, some interesting details of which were given by M. Champion, a French chemist, who wrote a book on Chinese industries. He stated that the silk-weavers of Han-keon worked from 6 a.m. to 6 p.m., for which they received about 8d. a day of our money, in addition to lodging and nourishment. The latter, consisting of rice and vegetables, tea and tobacco, cost a little over 10d. per day. Masons and bricklayers earned from 5d. to 6d. a day, with two meals in ordinary weather, and three in times of great heat, the cost of the keep being about 10s. a month per head. That they do not necessarily require a tropical or semi-tropical climate to work in, is evident from the fact that the bricklayers, joiners, masons, and labourers employed in the building trades at Pekin are only able to carry on their calling during eight months of the year, on account of the excessive cold, which often reaches 5 degrees Fahrenheit. At the present time, it is proposed to introduce Chinese labour into Algeria, and although the scheme has its opponents, it is more than probable that they will make a footing there under Governmental supervision. Although, as far as individual capabilities are concerned, there are many points to commend the Chinaman to employers of labour, we do not think that the immigration will reach English shores, — at all events, for some time to come. Climatic considerations would not deter them, for they meet all over the world with greater extremes of temperature than they could ever experience here. Individual Chinamen may possibly find employment, but there would be no scope in our mining industries, the favourite pursuit of Chinese immigrants, nor would there be room in our large towns and seaports for the numbers who frequent the Australian and American seaboard. In the same way as there would not be physical room, there would not be moral room for them, nor would there be anything attractive, but rather the reverse, in our old-established and ordinary civilisation.

ST. ALBAN'S CATHEDRAL.

SIR,—I have read Mr. Street's letter on this subject with interest, if not with pleasure. To my mind it savours too much of those sermons in which the preacher creates a bogie of unbelief for the mere pleasure of knocking him down. I have no intention of replying in detail to what Mr. Street urges, for I am well aware that if the controversy between us were continued indefinitely, neither would be convinced of the error of his ways, and, on the whole, I think it is one of those frequent cases in which it is best to "agree to differ." Nevertheless, there are one or two matters which I must take note of.

I have already expressed to Mr. Street my regret at having used the unlucky word "surreptitious," and explained to him that in writing it I had no thought of its having reference to himself, but only to the action of an uncalled-for doctor examining a patient without his or his friends' knowledge. I did not see at the time how easily the word might be misunderstood.

Mr. Street evidently still thinks that my conduct has been inconsistent with my oft-quoted Report of June 25th. I have been much surprised at what has been built upon this poor letter, which begins with the words, "I understand that a *further report*, dealing especially with the western portions of the roof, is thought desirable. As this had already been dealt with by my father, I did not include it in my former letter." This is, on the face of it, only supplementary to what had been written before. As nobody seems to have cared to inquire what this was, I think it is well to quote that portion of my *original* report, dated *June 7th*, which refers to the high roof. After stating the nature and probable cost of the repairs required to the old roof and ceiling, I go on as follows:—

"The next division of the subject is perhaps the most important, namely, the treatment of the lead covering. The question of the pitch of the roof at once comes in, whether to preserve the present form, or revert to the more ancient high pitch shown by the marks remaining on the tower-wall. I consider that all I have said above" [*i.e.*, as to the repairs of the old roof and ceiling], "applies equally to either treatment of the roof, as, if the high pitch is determined on, I think the committee will agree with the view held so strongly by Sir Gilbert Scott, that the old roof should in that case be repaired, and that over it should be erected a new set of framed rafters to the higher angle, while about the retention of the ceiling there can hardly arise any question. Sir Gilbert's wish was, supposing the higher angle to be agreed on, to follow the same course adopted by him at Selby in a parallel case. This has been perfectly successful and may be taken as a precedent."

It will be seen from the above that, although from a feeling that this had not become a practical question, I did not urge the high roof as a *sine quâ non*, yet the bias of my opinion was all in favour of it. This report and its supplement, dated June 25th, were read together at the meeting of the committee held on June 29th. I was present, and, in the discussion which took place, spoke strongly in favour of a high roof being erected above the timbers of the old one; and, finally, the high roof was carried. The minority, however, not being satisfied, a larger meeting was called for the 10th of August. For this meeting I prepared a report, dated July 26th, giving various estimates for the high roof, which I had been instructed to obtain, and ending as follows:—

"I understand that a motion will be brought forward at the meeting, the object of which is to reverse the decision arrived at in favour of a high-pitched roof. The arguments I have heard are,—first, that the western part of the Abbey having been '*Tudorised*,' as I think it has been expressed, the low-pitched roof is more in accordance with the architecture; and, second, that, as a new higher gable will become necessary at the west end, we shall be infringing on the design of Abbot Wheathampstead. I wish to point out that, as far as the nave is concerned, no late alteration of any consequence whatever has been made, with the exception of the insertion of the west window. It is, to all intents and purposes, early architecture from beginning to end, and, therefore, a high-pitched roof, such as it originally had, will be in full accordance with its design. Besides this, I wish to call attention to the fact that the gable does not form any important feature in the west front. Its design terminates in a horizontal cornice and parapet, the gable having been erected well behind this on the inner face of the wall, with a passage-way between the two. In the new arrangement no alteration will be made to the parapet beyond such repairs as are necessary, and the new gable, which should be kept subordinate to the design, will, like the present one, be in rear of the general line of the front. Another consideration is this: the three noble portals, with their lofty gables, will doubtless be restored before long. These will greatly alter the character of the west front, vastly increasing their beauty, and there cannot be a question that the gable of the new roof will be more in agreement with this new and earlier character than the depressed gable which now exists."

The final meeting,—which was one of all the large subscribers—was held a few weeks later, when, for the third time, the high roof was carried by a large majority, but on none of these occasions was I able to carry out my wish of preserving the old roof in connexion with it. This, I am glad to think, has now been made possible by the action of Mr. Street and the Society of Antiquaries, and so far, I am extremely obliged to them. I do not think I need say anything further on this point.

Although Mr. Street's opinion is opposed to mine in some respects, I am able to gather some crumbs of comfort from his letter; for instance, although at the beginning of it he disputes my higher roof mark being a roof mark at all, and calls in Mr. Neale to help him (who, after agreeing with me as to this line at the Society of Antiquaries, and more recently at a meeting of the St. Alban's Architectural Society, has, I am told, been spending day after day amidst snow and ice, measuring the tower brick by brick in order to prove himself and me wrong), yet, later on in his letter, he says, speaking of my explanation of the upper and lower roof marks,—that "a far simpler explanation would be that when the nave walls were raised 3 ft. 6 in. above the transept walls, the ridge of the nave roof was also raised 3 ft. 6 in. above its old line, and so has produced the '*original*' marks above the other." From this I gather that after all Mr. Street thinks as I do, that these upper marks do at least indicate a roof, and are not due to my imagination, as otherwise the explanation would be far more *simple* than reasonable. Whether Mr. Street now agrees with me or not as to the raising of the walls I cannot make out from the wording of his letter. I hope he does, as I consider it proved as certainly as anything resting on architectural evidence can be.

Then, as regards the artistic effect of a high roof, Mr. Street says that if only the old timbers were rather more rotten, he could agree "*in the propriety* of raising the ridges of the roofs to the level at which they stood when the tower was built." He adds, "I should do so, because at this level it would be possible hereafter to look forward to all the roofs being as they once were, at the same level" [surely not that of the eastern arm, as this would involve the destruction of the choir clearstory]. If it would be any advantage to raise the roof at all, the more or less rotten state of the timbers cannot affect the artistic propriety of doing so, nor can the difference in the height (varying from 3ft. 6 in. to nothing, according to the view taken of the Norman ridge-line), make all the difference between dwarfing the tower, and restoring it to "the proportions its builders intended that it should have." Moreover, I am not at all prepared to believe that if Mr. Street favoured the high roof, he would favour the destruction of the parapets, so that I am able to gather that he must think as I do, that the appearance will, on the whole, be improved by the high roof, and that such a roof can be erected with parapets.

Mr. Street's theory of the Norman roof finishing below the string-course of the tower is new. His diagram exhibited at the Society of Antiquaries certainly did not show it so, nor are there any marks on any of the four sides of the tower suggesting it. The only evidence is Mr. Neale's drawing of the transept springers, and this part of the building I am now having accurately measured.

Mr. Street states, most inaccurately, that I have "taken away whatever remained of the old corbel table, &c., on the western part of the nave, and have erected a new parapet of Early

English style to agree with the old work in the clearstory." The Early English corbel table remained here before our works of restoration were commenced, as may be seen by reference to Mr. Neale's plate. This portion has been most faithfully restored, many of the original corbels being retained, but as this part of the restoration was all done before I came on the scene, it can have little to do with my theory, and so the *reductio ad absurdum* falls to the ground.

The proposal to restore the high roof having met with such an unexpected reception, I tremble to think what would happen if I suggested the reinstatement of the slender Hertfordshire spire which formed a beautiful feature probably from Trumpington's days down to the last century; but, nevertheless, I venture to say that I should like to see it restored.

J. OLDRID SCOTT,

THE BATTLE OF ST. ALBAN'S.

SIR,—As it is impossible to answer Sir Edmund Beckett in the *Times*, will you allow me to make public in your columns the enclosed correspondence arising out of the remark with which he concludes his letter in that paper on Christmas-day, under the above title, as follows:—"I could say something of the third companion's probable impartiality, too; but as it has not been published by their newspaper, I will not." ARTHUR W. BLOMFIELD.

I.

"28, Montagu-square, December 25, 1878.

Sir,—I have just been looking at the brilliant display of squibs and rockets with which (so far as the *Times* is concerned) you bring the Battle of St. Alban's to a close this morning.

I notice that it ends with the exhibition of a 'cracker,' directed against myself, which only half goes off. This is highly unsatisfactory, and I think I am entitled to ask you for some explanation. It appears to me extremely unfair publicly to impute unworthy motives, or to insinuate the probability of such motives in so vague a manner as to render distinct repudiation impossible. I, therefore, appeal to you to state clearly by what you believe me to have been biassed in the very minor part I have played in this matter. It is sometimes difficult to feel confident as to the springs of action, even in one's own case, and I undertake to tell you at once, if you succeed in pointing out to me any hidden motive in what I have done beyond the ostensible one of the simple wish to give an honest opinion when pressed on both sides. I am entirely unconscious of anything more at present, and I am at a loss to conceive what you can mean.—I am, sir, your obedient servant, ARTHUR W. BLOMFIELD.

Sir Edmund Beckett, Bart., Q.C."

II.

On a Post-card received December 27, 1878.

"I never re-light my public 'crackers' for private exhibition, and I am sure it is unnecessary in this case.

E. BECKETT, 60, Marina, St. Leonard's.

Arthur Blomfield, esq."

III.

"28, Montagu-square, December 27, 1878.

Sir,—The fair inference to be drawn from your reply to my letter is that you do not hesitate to make public insinuations which you are not prepared to substantiate.—I am, sir, your obedient servant,

ARTHUR W. BLOMFIELD.

Sir Edmund Beckett, Bart., Q.C.

I shall publish this correspondence."

IV.

"60, Marina, St. Leonard's, December 28, 1878.

Sir,—The fairer 'inference from my answer' to your letter is, that, if a man behaves as you and Mr. Street and Mr. Christian have done, and then besides writes privately to me about my 'squibs and crackers,' he will be 'answered according to his folly.' And he will get no other answer.—Yours obediently, EDM. BECKETT.

A. W. Blomfield, esq."

V.

"28, Montagu-square, December 30, 1878.

Sir,—In 'answering me according to my folly,' you clearly remain yourself in the other great section of humanity.

Allow me, however, to remark that the roof of the nave of St. Alban's (spell it how you like) is not your private property, though you seem to think so.—Your obedient servant,

ARTHUR W. BLOMFIELD.

Sir E. Beckett, Bart., Q.C."

FIVE YEARS' GROWTH OF "THE BUILDER."

As many of our readers and subscribers will doubtless have noticed, the annual volumes of the *Builder* have of late years considerably increased in bulk. Our volume for 1874 contained 1,082 pages; that for 1875, 1,160 pages; that for 1876, 1,276 pages; that for 1877, 1,308 pages; and that for 1878, just completed, 1,372 pages. These figures (in all cases irrespective of advertisements) show a total increase of nearly 300 pages in five years, or an average addition of sixty pages per year during that period.

NEW WORKS, CARLISLE.

MESSRS. THOMLINSON & Co.'s, Nelson-street Works, Denton Holme, Carlisle, are now completed. The machinery and fittings are also ready for starting to run. The loom-shed is about 133 ft. square, and contains 322 looms, and is so planned as to be easily extended. The warehouse block, measuring 184 ft. by 34 ft., and three stories high, is placed to the front, being somewhat ornate, and contains long rooms for beaming, warping, sizing, &c. The engines and boilers, chimney (100 ft. high), mechanics' shop, twisting block, stabling, &c., comprise a block of buildings on the right hand of the loom-shed. The work has been executed by Messrs. C. & J. Armstrong, contractors, at a cost of from 8,000*l.* to 9,000*l.* exclusive of land and machinery. The engines and boilers are by Messrs. Pratchitt Bros. Mr. Jno. Allan has acted as clerk of the works, and the whole has been carried out under the superintendence and from the designs of Messrs. Hetherington & Oliver, architects.

"INDUSTRIAL DWELLINGS" IN NEWCASTLE-ON-TYNE.

FROM time to time we have reported the progress of the Newcastle Industrial Dwellings Company, which was formed in 1869 with the object of erecting a suitable building in which suites of rooms should be provided for between forty and fifty families. In selecting a site for the buildings, the company wisely kept in view the possibility of the need of enlargement, and a block of buildings, divided into three sections, and accommodating forty-two families, was erected and opened in 1870, during the meeting of the Social Science Association. The success of the experiment was so marked that within two years the company resolved to attempt a considerable extension of their sphere of operations. In 1872 plans for a new building were submitted to the local contractors, but it was found that in the time which had elapsed since the first block was built the price of labour and of materials had increased to such an extent as to preclude all hope of erecting similar premises that could be let at the same moderate rate of rent. Had the directors chosen to follow the general policy of those around them, and raised their rents, they could at once have proceeded with their extension, but this line of action would have excluded from their dwellings the class for whom they were specially designed, and it was resolved, for the time being, to shelve the plans for a new building. In 1875 action was again taken to procure estimates of cost, but the result was precisely the same as had been the case three years previously. The cost of building had, in fact, increased enormously since 1870. But it chanced that the period of general prosperity was even then nearing its end, and with dulness of trade came a great fall in the prices of building material and cheaper labour. In 1877 the directors resolved to avail themselves of the opportunity to proceed with their long-contemplated extensions, and the responses from local contractors being satisfactory, all despatch has been made with the work.

The new ranges of building may be said to have completed the original idea of the dwellings, which now run in lines the shape of which may be roughly suggested by the letter E. The range consists of a large central block, with two wings stretching from it right and left, and short flanking sections returned from the main building at each end. The central block is six stories in height; the whole of the wings and flanking buildings are four stories. The material used for the old portion of the building was rubble, faced with brick; but the new portion, which considerably more than doubles the accommodation at command, is built of brick only. The sole ornament about the erection is in the central block, which has a mansard roof, with dormer windows, decked with finials, and fronted by a balustrade. The length of the main building is 412 ft., and the height of the central block is 60 ft., and of the wings about 40 ft. The frontage is to the south, and overlooks the locality known as the Garth Heads, just beyond which is the New-road. The western end of the structure adjoins Tower-street and the Sallyport Gate, and to the eastward a new street separates it from the Industrial Schools. A range of yards lies behind the main block, and farther to the north there is some available ground, at present occupied by wood-yards. The whole of the building erected by the company is divided into seven distinct sections, each of which is entered by its own front door. The sections, saving only the central block, are laid out uniformly in suites of rooms, after the French and Scottish fashion, and, in all, separate "dwellings" are provided for a hundred families. In some few cases suites of three rooms can be let, and there are places where a single room is at liberty to be dealt with, but generally the suites are of two rooms each, namely, a kitchen (or living-room) and a bedroom. The door and common staircase are in the centre of each section, and on each floor there are two suites of rooms in the front of the building, and two suites at the back.

In order to provide for the healthy recreation and instruction of the inmates of the buildings, the first floor of the central block contains a hall or reading-room, 51 ft. by 16 ft. This hall will probably be used as a schoolroom for children by day. Washhouses are provided at the far ends of the yards. Mr. John Price, the agent resident on the premises, reports that in the older portion of the building the annual death-rate was no more than 14 per 1,000, whilst that of the whole borough was about 22 per 1,000.

The architect for the buildings is Mr. J. Johnstone, of Clayton-street, Newcastle, and the contractors are:—For the masonry and brick-work, Middlemiss Brothers, of Corbridge and Newcastle; joiner-work, Mr. Driesdale, of Bath-lane, Newcastle; plumber-work, Mr. F. Cable, New Bridge-street and New-road, Newcastle; plastering-work, Mr. F. Wallace, Newcastle; painting, Mr. A. Robertson, Clayton-street, Newcastle; kitchen ranges and fittings, Messrs. Walker & Emley, and Messrs. Mather & Armstrong, both of Newcastle. The staircases are laid with granite concrete, by Mr. W. Wilkinson, Newcastle. Mr. Jacob Glaister is clerk of the works, and the sanitary and other arrangements are looked after by Mr. Price.

The entire cost of the new building will be about 12,000*l.* The rents of the suites vary, according to the conveniences offered and the situation of each particular "dwelling" in the house, from 3s. 6d. to 4s. 9d. per week.

STUDENTS AT THE ROYAL ACADEMY.

THE following have been admitted to the Architectural School, Mr. R. Phené Spiers, master:—

First-class Student.—W. Stevens.

Second-class Students.—F. W. Besant, C. Bradley, G. H. Coldwell, H. Goodall, M. J, Lansdell, F. C. Lees, A. J. Murray, J. B. Phillips, L. Stokes, T. Watkins, T. B. Whinney.

Probationers.—F. C. Booty, F. G. F. Hooper, W. Lane, C. P. Leach, F. W. Littlewood, W. Bassett Smith, N. J. Stanger, T. S. Townsend.

New Clock at Northallerton.—A fine turret clock has just been fixed in the tower of St. Thomas's Church, Brompton, Northallerton, the work of the firm of J. W. Benson, of Ludgate-hill. The bed or frame is of iron fitted with plummer blocks, in order that if at any time the clock should require cleaning or repairing, one part can be removed without disturbing the remainder; the wheels are of hard brass cut by steam-power. The time is shown on two copper dials, 4 ft. 6 in. in diameter, and the clock strikes the hours on a 9 cwt. bell and ting-tangs the quarters on two smaller ones.

ANCIENT BUILDINGS AND THE RIGHT TO SUPPORT.

ANGUS *v.* DALTON AND THE COMMISSIONERS OF WORKS.

THIS case, which has already been discussed in the *Builder* (p. 313 of the volume just completed), was before the Court of Appeal last week. It was an action brought by the plaintiffs, coach-builders at Newcastle-on-Tyne, against the defendant Dalton, a builder and contractor, and against the Commissioners of Works, who had employed Dalton to pull down a house and erect upon the site of it a new Probate Registry, for damages for the destruction of their manufactory, which fell down in consequence of the excavations made on the adjoining land for the purpose of carrying out the works. The plaintiffs' premises were about 100 years old, and had been converted from a dwelling-house into a coach factory in the year 1849. There was no party wall between the two houses, the separating wall belonging entirely to the defendants' premises, so that when it was pulled down the plaintiffs' house was left open. But the floor joists ran into a chimney-stack on that side, so that the pulling down of the wall did not affect the stability of the plaintiffs' building. In excavating for the foundations of the new buildings, the defendants left a pillar of clay surrounding the pillar of the chimney-stack. This pillar, however, turned out to be insufficient, cracked, and gave way, and the plaintiffs' coach-factory entirely collapsed.

The action was tried before Mr. Justice Lush at Newcastle Summer Assizes, 1876, when the defendants contended—first, that neither Dalton nor the Commissioners were liable, but a sub-contractor whom they had employed; and, secondly, that the plaintiffs had no right by prescription to the support of the adjoining land for the plaintiffs' building in its altered form, which had thrown an unusal weight upon the chimney-stack next the defendants' land, and of which the defendants had no notice.

The learned Judge decided both points in favour of the plaintiffs, and ordered a verdict to be entered for the plaintiffs, subject to a reference as to the amount of damages.

On motion for judgment, however, the Court of Queen's Bench, consisting of Lord Chief Justice Cockburn, Mr. Justice Mellor, and Mr. Justice Lush (Mr. Justice Lush dissenting), entered judgment for the defendants, on the ground that the evidence showed that no grant of or assent to the easement claimed by the plaintiffs had been given by the adjoining owner, and, therefore, the enjoyment of support for more than twenty years did not give a prescriptive right. Against this decision the present appeal was brought.

Lord Justice Thesiger, after a statement of the facts of the case and carefully examining the authorities, said that the result of those authorities was that a grant of support to buildings by adjacent lands was to be presumed from uninterrupted enjoyment for more than twenty years, and the mere fact that there had been no actual grant of the easement would not do away with the presumption. This presumption was subject to be rebutted, and the rule that the enjoyment must not be secret in order to raise the presumption applied to such cases to this extent, that if the burden upon the servient tenement was greater than that which the dominant tenement might reasonably be supposed to require, that would be evidence to rebut the presumption. He was, therefore, of opinion that there should be a new trial. As to the liability of the defendants, as opposed to the sub-contractor, he was of opinion that point was decided by the case of Bowers *v.* Peate (1 Q.B. Div., 321).

Lord Justice Cotton concurred. He was of opinion that the plaintiffs were entitled to such support as would be reasonable for a house of the character and appearance of the house for which the easement was claimed, but no more.

Lord Justice Brett differed. He held that the right to support of buildings by adjoining soil was not a right of property. It could be obtained by prescription; but that was on the presumption of a lost grant, and was very difficult to establish. Evidence could be given that no such grant had, in fact, been made, which would be conclusive, and it was hardly possible to obtain evidence in favour of the prescription of such a character as would legally support the presumption. In the present case it had been shown that no grant of the easement claimed had actually been made, and, consequently, the defendants were entitled to judgment.

THE FAILURE OF A CONCRETE ARCH AT RYDE.

THE BOROUGH SURVEYOR'S DEFENCE.

IN the volume of the *Builder* just completed (p. 1159) it was recorded that by the falling of an arch forming part of the sluice between Monkton Marshes and the Esplanade at Ryde, I.W., on the 1st of October last, a man, named John Langford, was killed. The Coroner's jury by their verdict found that the failure of the arch was due to the use of improper materials, and that negligence was displayed by the borough surveyor, Mr. Francis Newman, in allowing such [alleged] improper materials to be used. In consequence of this verdict, Mr. Newman, together with the contractor and clerk of works, was censured by the Coroner, who expressed a doubt whether the verdict ought not to have been one of "manslaughter."

The matter has since been before the Town Council, in the shape of a report by the surveyor to the Public Works Committee. Mr. Newman, as will be seen, contends that the verdict was against the weight of evidence, and hints that a coroner's jury is not the best authority as to the composition of concrete. We let him speak for himself, in the words of his report (dated December 3rd, 1878) to the Committee:—

"On the 19th and 20th ult. I tested the portion of the arch of the new sluice between the Esplanade and the Strand in six places, at regular intervals. In each case two wooden bearers were placed on the crown of the arch, having a bearing of 18 in. across the arch, and 4 in. in the direction of its length. These bearers were 4 ft. 4 in. apart, representing two wheels. A weight of 4 tons 4 cwt. was applied in each place except the southern end, that is the part next the portion of arch where the accident occurred, which was loaded with about 5½ tons. Under each point loaded a slight strip of wood was placed tightly between the arch and invert, to indicate any deflection, but none was visible in any case. These stationary loads would respectively represent moving loads of 3 tons and 4 tons on two points, or 5 tons and 8 tons on four wheels. This is in excess of any load ever likely to be in Cornwall-street, and as in a year's time the concrete will be at least double the strength it is at present, and as, when the arch is covered with metalling, any weight brought upon it will be distributed over a larger surface of the concrete, there is a very large margin of safety. Since the melancholy accident which took place on October 1st, the November part of the proceedings of the Institution of Civil Engineers has been published, and in it is a paper showing the result of numerous experiments made to determine the proper proportions of sand and gravel in cement concrete. In this paper it is laid down that, where two parts of sand are used to one part of cement, the best proportion of gravel is 4½ parts; this is nearly identical with my specification, which provided for one of cement, two of sand, and five of gravel. . . . . In consequence of my expressing at the first day's inquest an opinion that more sand had been used than was specified, the inquest was adjourned to enable me to examine and report on this point. On neither day was any evidence given showing I was aware of any improper material being used, nor was there any evidence, except my own, as to the responsibility of an engineer for detailed supervision, and my evidence was what is known to all who are familiar with such matters, that an engineer cannot be held responsible, either legally or morally, for what may occur when he is not present. Such a view, it appeared to me, needed no enforcing, as, if the engineer were personally able to insure that the whole of the materials and workmanship were suitable, a clerk of works would be a needless extravagance. However, the jury, to my astonishment, and against the summing up of the Coroner, took a different view, and one which I cannot think the evidence warranted. The resolution of the Council to apply to the Local Government Board to send an inspector to inquire into the matter relieved me, at the time, from the consideration of the steps I should take to vindicate my reputation; but the refusal of the Board to comply with the request of the Council, and the Council having determined not to have the report of an independent engineer, left the matter as the jury left it." . . . .

It was moved that the report, of which the above formed part, and a supplementary report detailing some further tests, should be recorded on the minutes, but several of the councillors of Ryde have such faith in the infallibility of the decision of a coroner's jury in such matters that they intimated that they could not vote for the motion, inasmuch as the surveyor's reports reflected on the sagacity of the jurymen. In the end, the motion was withdrawn, it being understood that the reports would be entered on the minutes without formal authorisation.

LIGHT CASE.

DAVENPORT *v.* RIDSDALE AND ANOTHER.

BARON CLEASBY, sitting in the Exchequer Division at the Guildhall, in the city of London, with a special jury, has been engaged four days in hearing this case, which is of much importance to the owners of property in towns, and more particularly so in the city of London.

The plaintiff in the suit was Mr. Davenport, a china, glass, and earthenware merchant, carrying on business at No. 82, Fleet-street, in the city of London, and the defendants were the owners of the block of red brick buildings, in the Renaissance style of architecture, which were recently erected at the corner of Fleet-street, next to Salisbury-court. The investigation involved the calling of a great many witnesses, and the dealing with a vast number of figures respecting the old buildings which had been pulled down, and the new premises which had been erected upon their site, but, practically, the question at issue became whether the addition of 3 ft. in height of the new wall beyond the 47 ft. 10 in. which the old one was, materially obstructed the passage of light to the plaintiff's premises standing upon the opposite side of Salisbury-court, which is but 23 ft. in width.

The plaintiff gave evidence in person, and all of his *employés*, to the effect that his premises were not so well lighted as formerly, and in support called as experts Mr. Marsh Nelson, Professor Kerr (who produced diagrams), Mr. P. Spiers, and Mr. Woodthorpe. All their opinions, according to the defendants' witnesses, were drawn upon incorrect information.

Defendants called their architect, Mr. Peebles, who had designed the new buildings, and his assistant, Mr. Nicol, and Mr. Williams, from the office of Mr. Barnes Williams, the surveyor of the freeholders of the land, who proved the measurements of the old buildings before they were pulled down, and the accuracy of the drawings and models of the old and new buildings.

Mr. Peebles gave in evidence his opinion that the access of light to the plaintiff's premises had not been materially interfered with or obstructed, and this opinion was supported in great detail by Mr. Clifton, Mr. Hesketh, Mr. Francis Fowler, and Mr. F'Anson.

The Judge, in summing up, said the question the jury had to answer was, is the plaintiff substantially prejudiced in the enjoyment of light to his premises by the alteration made by the defendants? He further said, the jury were not to suppose that the necessary consequence of their finding one way or the other would be that the building would have to be pulled down.

The jury retired for about ten minutes. On returning the foreman said, the verdict is, "We find that Mr. Davenport's light is not materially affected by the defendants' building."

The technical form was said to be, motion refused, and action dismissed with costs.

The counsel engaged were,—Mr. Brown, Q.C., Mr. A. L. Smith, and Mr. Watson for the plaintiff; and Mr. Kemp, Q.C., and Mr. Oswald for the defendants.

WATER FOR GARDEN FOUNTAINS.

SEVENOAKS WATER COMPANY *v.* DOUBBLE.

THIS case, heard recently in the Sevenoaks County Court, is of some importance to water companies and consumers.

It appeared that the company had supplied the defendant with water for domestic use for some years, and without giving notice of his intention to do so, the defendant had made a connexion between the pipes in his house and a fountain in his garden; the basin of the fountain had an overflow-pipe that would take all the water that passed through the fountain, even if it ran day and night. The company's secretary and manager, Mr. F. Hunter, upon receiving information of this, visited the defendant's premises on the 6th of July, and asked the gardener to turn on the water. He did so, and the company then demanded payment. The defendant, however, refused to meet the claim, and, after many applications, the company gave him seven days' notice to pay, the alternative being that his entire water supply would be cut off. As he remained a defaulter, the latter course was adopted on the 26th of August. The company's manager had calculated that the quantity of water that could pass through the defendant's pipes, if constantly running, would exceed 3,000,000 gallons yearly.

The defence was that the fountain had never been used.

The Judge remarked that the impression on his mind was that the fountain had been fitted to be used, and the defendant had used it. If people would have such things they must expect to pay for them. Judgment would be for the company for the amount claimed, and costs.

Covent Garden Pantomime.—Reverting to the old traditions of the house, the present proprietors, Messrs. Gatti, have spared nor pains nor cost nor skill to render "Jack and the Beanstalk" the pantomime of the season; and they have succeeded. The scene for the Fairies, the Palace of King Pippin, with its ballet, the Procession in honour of Jack, and the Transformation scene, are fine works of their kind, and will long dwell in the memory of the little ones. The variety shown in the dresses by Mr. Alfred Thompson is marvellous, and the sequence and harmony nevertheless obtained show him to be a real artist. There is plenty of fun in the piece, too, and we can safely recommend it.

THE STRIKES OF 1878.

MR. G. PHILLIPS BEVAN writes:—For months past there has been the same dull monotony of falling markets, wages reduced, workmen discharged, mills closed, furnaces blown out, and collieries laid off, and 1879 opens amid universal depression and distress, such as the present generation has seldom or never known. One would naturally suppose that with this diminution of work there would be comparatively few labour disputes to chronicle, seeing that the number of unemployed throughout the year has been very great, and has now attained enormous proportions. Unfortunately, this is not the case, for the sum total of strikes for 1878 is no less than 277. The number for last year was only 181. To this list we may add forty strikes in other countries.

A good number of these have been ephemeral, and, with the exception of the Lancashire cotton strike, which was attended with so much unfortunate violence, have not been of sufficient magnitude to rivet public attention, like the Clyde shipbuilding and the London masons did last year. At the same time, the pertinacity with which some of these quarrels have been, and are still being, fought is amazing, in the face of such a hopeless out-look of industrial affairs. Of individual trades, the colliers have led the way in general restlessness during the year, a fact which appears to be largely attributable to the fallacious teaching of Mr. Macdonald on his favourate subject of limitation of production. The building trades have also been, as usual, very unsettled, though it is worth notice that the majority of these disputes have arisen in the North and Scotland, where wages are always less than those of the South.

The results of these strikes only confirm me in the opinion that they utterly fail to gain their object. Out of this large number I can only find four in which the men were distinctly successful, and seventeen in which a compromise was entered into, and these only in strikes of no great importance. Whatever excuse there may be for agitation when business is brisk, there is none now; and those leaders who, in full knowledge of the deplorable state of trade, not only in England, but all over the world, and also of the rapidity with which foreign nations are treading on our heels, can yet advise their unfortunate clients to strike, and thus throw fresh burdens upon charity and the ratepayers, are, in my humble opinion, fearfully culpable.

AUTOMATIC EXTINCTION OF FIRES.

THE vacant land formerly occupied by the City Gasworks at the Blackfriars end of the Victoria Embankment was recently the scene of an important experiment to test the efficacy of Messrs. Lawes & McLennan's patent self-acting fire extinguisher. The principle of the invention consists in fire itself being the means of bringing water to bear in such a manner as to shut out air from the flames, and so deprive the fire of oxygen. To effect this, perforated tubes, of any size or shape suitable to the building or room to be protected, are permanently fixed in convenient places; and, where rendered desirable, from the extent of the area to be protected, the tubes are divided into sections of any length. These tubes or sections are connected by pipes with the water-main in the street, or with a cistern placed over the building. The connecting-pipes are each provided with a cock and lever and when the latter rests at right angles to the pipe the cock is closed, and the water is thereby shut off. The lever is kept in position by means of a cord, which, in the case of a theatre, extends across the flies and wings. On the occurrence of a fire, as soon as the cord is destroyed by the flames, the lever falls by its own weight, and opening the cock, the water ascends into the perforated tube or section commanding the area on fire; the perforations being arranged with the object of directing the water so as to cover, in falling, the whole surface on fire, to the exclusion, as far as possible, of air. The experiment carried out consisted in setting fire to a wooden structure, erected and fitted up somewhat after the model of a portion of a stage of a theatre. The structure contained 12,672 cubic feet of space, and was protected by one 2-in. tube, 24 ft. long, extending horizontally from back to front. This tube was divided into two sections of equal length, and a 2-in. upright pipe, provided with a cock and lever, was connected with each section. Water was supplied to the upright pipes by a 2½-in. main attached to a hydrant in Tudor-street. The structure was filled with a quantity of old scenery and other highly inflammable stage properties, including masks, paste-board shields, festoons of artificial flowers, a few planks, a wickerwork model of Cleopatra's needle (!) with the hieroglyphics which had once covered it hung up in the form of a sheet of canvas, and other similar effects, the floor being strewn 1 ft. or 1 ft. 6 in. thick with carpenters' shavings. Before applying the torch, kerosene or benzoline, or some such kindred spirit, was plentifully besprinkled high and low over the rubbish thus arranged for experiment, and the consequence was that immediately the torch was applied the flames ran with almost lightning speed from back to front and from bottom to top of the temporary erection made for the experiment, and the top being merely a gridiron, the volume of flame shot up with a roar through the top, reaching nearly as high again as the building. The fire was but three minutes in attaining this degree of impetuosity, and then, while the flames were raging in the height of their fury, the water was turned on and the fire was almost completely subdued in two minutes,—almost subdued, but not quite, for one small smouldering heap in the centre of the remains kept burning for two or three minutes longer, because, from some defect in fixing the perforated pipes, the water seemed to fall clear of the apparently charmed circle in which the bonfire continued to burn. The experiment was made without attaching the cords to the weights before referred to, the levers and weights being down ready for the water to pass through when turned on from the outside, the object being to show how the invention would work when a fire had got a thorough and complete "hold" of the building. Had the cords been attached, as would be the case in practice, the levers and weights would have fallen through the burning of the cords long before the fire had obtained so great an ascendancy, and, provided that the water was in the pipes, the fire would have been extinguished. The "automatic" operation of the invention is, therefore, dependent on human care and oversight in seeing that the valves and gear are in order, and that there is water in the pipes.

DRYING DAMP WALLS.

THE following procedure is described by a German paper as a reliable means of drying damp walls. The wall, or that part of it which is damp, is freed from its plaster until the bricks or stones are laid bare, next further cleaned with a stiff broom, and then covered with the mass prepared as below, and dry river sand thrown on as a covering. A hundredweight of tar is heated to boiling-point in a pot, best in the open air; keep boiling gently, and mix gradually 3½ lb. of lard with it. After some more stirring, 8 lb. of fine brickdust are successively put into the liquid, and moved about until thoroughly disintegrated, which has been effected when, on dipping in and withdrawing a stick, no lumps adhere to it. The fire under the pot is then reduced, merely keeping the mass hot, which in that state is applied to the wall. This part of the work, as well as the throwing on of the river-sand against the tarred surface, must be done with the trowel quickly and with sufficient force. It must be continued until the whole wall is covered both with the tar mixture and the sand. The tar must not be allowed to get cold, nor must the smallest possible spot be left uncovered, as otherwise damp would show itself again in such places, and where no sand has been thrown the following coat of plaster would not stick. When the tar covering has become cold and hard, the usual or gypsum coating may be applied. It is asserted, if this covering has been properly dried, that even in underground rooms not a sign of dampness will be perceived. About 300 square feet may be covered with the quantities above stated.

Bangor Cathedral.—About five years since the choir and transepts of Bangor Cathedral were restored, at a cost of upwards of 20,000*l*. It is now stated that the Dean and Chapter are desirous of making a fresh effort to restore the nave and side aisles, the chapter-house, and cathedral-yard, works which it is hoped to effect for 6,000*l*., leaving the erection of the tower to a future date.

A RIVAL TO EDISON.

Is is not generally known that Edison has a rival in the division of the electric current. Herr Siegfried Marcus, of Vienna, civil engineer, has even been so fortunate as to be a fortnight beforehand in his application for patents in Europe. We learn from an eye-witness who was present at the earliest experiment which Herr Marcus carried on before a select body of scientific men that the result corresponds exactly with the communications we have received with regard to Edison's experiments. The Austrian inventor was rather taken by surprise in his preparations by the news from New York, and had not been able to get ready a larger number of lamps. Nor had he succeeded in obtaining a proportionately powerful electro-dynamic machine with corresponding motor. The experiment was consequently carried on with only ten lamps, with a small Siemens machine and a gas-engine of 1½ horse-power. It is, however, described as completely successful. Herr Marcus made the trial with a single straight wire, to which were connected, laterally, ten lamps, placed in a closed room. The several lamps were of small dimensions, each light being just sufficient to light a room of moderate size. The division of the light, as well as the production of small flames, was completely solved. By touching a key, the inventor lighted and extinguished all the ten lamps. But he could also, in the same manner, select a single lamp of the series, extinguish it, and *light it again*. Unprotected, the electric light appeared like large stars; covered by a dull glass globe, it distributed a soft day-like light; if placed before a reflector, the glare was overpowering. Our authority adds that there can be no doubt that by means of Marcus's method and sufficiently powerful machines thousands of lamps of various illuminating power may be lighted and extinguished, and at a less cost than gas.

RADIATION OR CONVECTION.

SIR,—Being in Paris, I have but recently seen my letter in your issue of November 23rd, and Mr. Horace Field's comments of November 30th. I did not go into details of appliances for special cases, and their cost, as this would require a good-sized volume to describe the principal ones, and many jealous men would still be omitted. But there are general principles that should be comprehended before we can make satisfactory progress in this direction.

Now, there are two distinct principles of warming,—one is by direct radiation, and the other is by convection. A third, though of less importance, is by conduction.

A thermometer, with the bulb exposed, hanging in the centre of the fire-room of a steamship will frequently indicate 100°, while another thermometer hanging beside it, in air of the same temperature, but screened by a double tin tube from the radiation, will indicate as low as 30°, or below the freezing-point. On the other hand, the same thermometers exposed in an ice-house on a hot day in summer might show the exposed thermometer indicating 45°, while the one in the air-tubes would indicate 70° or 80°.

These are very radical differences as affecting the inanimate thermometer. A human being is still more sensitive. It seems very probable that these radically different conditions would have very different effects on the human system. What these effects are should be carefully studied.

The man in the boiler-room may be in a strong draught of cold, invigorating air, at a temperature below the freezing-point, and at the same time be abundantly warmed by the bright radiation from the boilers; while the man in the ice-house may be surrounded by warm, debilitating air, and at the same time feel chilly and uncomfortable, because the warmth of his body is being radiated to the cold walls.

We are sadly deficient in thorough and accurate knowledge of the exact effect of these various conditions upon the human system, because so few sanitarians or physiologists have carefully studied or experimented upon this special point.

It is stated, however, by some experimenters that twice the amount of carbonic acid is exhaled when breathing air near zero that there

is when inhaling air near the temperature of the blood.

Every one knows how much more cheerful and bright he and all his neighbours are on a bright sunny day, with a cool bracing air, than they are when the air is warm and no radiation from the sun.

The mortality tables of the city of New York for the last ten years give about 100 additional deaths per week for every degree the average temperature exceeds 75°.

Close observation and a careful study of these points have produced the very strong conviction on my mind that it is of the utmost importance for the maintenance of sound physical health that in our artificial arrangements we maintain, as nearly as possible, the conditions found in the external atmosphere. Here the solid objects are warmer than the air, and we receive our warmth by radiation. But in our dwellings there is a strong disposition to imitate the conditions of the ice-house by having the air hotter than the solid objects. It was against this popular tendency that I wished to protest so decisively in my letter of the 23rd.

It is astonishing how few persons make the distinction between the various conditions of obtaining their warmth. If the thermometer indicates the prescribed temperature they think that is all that is required. And another point I have often noticed, the thermometer is usually hung about the height of the head, and many persons, like the ostrich, seem to think if their heads are covered by the warm air it is all right. In the external atmosphere the sun warms the earth at our feet, and our heads are cooler. In regard to the cost of the different arrangements, I would simply say that a careful study of practical details shows direct radiation to be much cheaper than warming by hot-air currents.

But we should not allow ourselves to be confused by this until we have settled the fundamental principle. Is heating by direct radiation more wholesome than heating by hot-air currents?

When we know what we want the mechanics will gladly manufacture whatever their customers will buy. If we cannot pay for a healthful heating apparatus we must, of course, take what we can pay for, and die the sooner.

It is to be hoped, however, that no one's poverty will condemn him to the company around the unimproved fire Mr. Field refers to, even if he should get his heating free.

L. W. LEEDS, *of New York.*

"IDLE HANDS TO WASTE LANDS."

SIR,—I wish every working man, and he especially who labours with his hands, and whatever his trade, would read and study your article in a recent number of the *Builder*, in which you advocate an extension of the hours of labour, and something else. Not that all would agree with your conclusions, which is scarcely to be expected. The coal-miner would point to a decreasing demand for coal in every department of manufacture, and a great accumulation of coal on the pit's bank (one noble lord is reported to have some 60,000 tons stacked at Newtownards) as a sufficient reason why supply should be reduced, instead of increased, and so in other departments of industry. But there is one kind of manufacture in which, beyond description, we are sadly deficient, and dependent upon other countries where I think we ought not to be, to which the idle miner and ironworker, spinner and weaver, builder, and all other surplus hands might, and ought to, turn to, namely the production of the food of the people. We in England are every year more and more neglecting this vital manufacture, notwithstanding the apparently overwhelming interest attaching at this period of the year to our agricultural shows, but which are supported by a very small minority of the cultivators of the soil only.

I have in times past, by your favour, called the attention of the readers of the *Builder* to this very important fact,—a fact which has now become of first-rate importance, and which will shortly have to be faced if England is to hold her own amongst the nations of the world, viz., that we are dependent upon other countries for the bulk of the food we eat, and that no nation, however vast its empire, or apparently prosperous its condition, can ever be really independent or permanently prosperous while that condition obtains. All history attests this.

Lest I should be suspected of being an alarmist, I subjoin a statement of our food imports into the United Kingdom, copied from the Board of Trade returns for six months, ending June last:—

	Value.
Animals (living)	£6,693,778
Bacon	3,773,424
Beef (salt)	226,548
„ (fresh)	789,118
Butter	5,123,336
Cheese	1,697,789
Chicory	44,866
Corn (wheat)	15,096,047
„ (various)	11,966,582
„ (meal)	4,038,526
Eggs	1,377,696
Hams	993,834
Hops	383,542
Lard	1,295,655
Meat (various)	741,900
Pork (not hams)	434,360
Potatoes	1,799,614
Poultry and game	135,651
Yeast (dried)	216,353
Total, six months	£56,920,541
	2
Rate per annum	£113,841,082

It may be taken for granted that the bulk of this enormous importation comes to Great Britain alone, because Ireland supplies us with a very large additional quantity of food not enumerated in the foregoing list, of which we have no return, and nothing is mentioned in the list which could not be,—and, indeed, is in a small way,—produced in this country, and of a better quality.

We can scarcely hope that in the future our foreign trade—in some branches, at least,—can become of the magnitude it has been in the past. America has become independent of us in almost everything; and other countries with whom we have traded largely formerly are rapidly becoming manufacturers of goods for their own markets, made by English machinery, and directed in many cases by English heads.

Except the very interior of Africa, which yet remains unexplored and undeveloped to trade, there remains little of the earth's surface where we have not penetrated with our goods. Our greatest efforts in recent years have been to abolish waste in all things, and if we are to hold our own we must now direct our anxious attention to the enormous waste of the soil of this country which now obtains. Agriculture is the very foundation of every nation's permanent prosperity, and to it the efforts of our present surplus population must be directed. No need, then, to dispute about short time, or a road to ruin. Let the cry be, "Back to the land!"

E. GRIMES.

THE AIR IN THE SOUTH KENSINGTON MUSEUM.

SIR,—Whenever I go to South Kensington Museum I find the place stuffy. This stuffiness increases as one leaves the entrances (where a little fresh air unavoidably finds its way in), and reaches its culmination in the picture-galleries. The symptoms there produced are, first, a sense of extreme closeness, the air having a peculiar taste. My eyes involuntarily wander upwards and roundabout to see if there is an open window within reach. There are windows in the building by the hundred, but they appear to be all shut. After a few minutes of this in the picture-galleries, I am overcome by a feeling of lassitude, prompting me to lean against door-posts in a demoralised state, and heave immense sighs. Lastly, headache comes on, and I am driven out. As I reach the exit I feel much better, and a few minutes outside puts me all right again.

Now here obviously the air is impure, but what I particularly wish to know is the *cause* of the impurity. Air of the same temperature outside, or in a fire-lighted house, produces none of the disagreeable symptoms I have described. The museum appears to receive warmed air through gratings in the floor. Is this air pure, in the first place? Does it become contaminated in the process of warming? Or, lastly, is the noxious state of the air caused by the extremely slow manner in which it is changed, thus allowing it to become charged with human eliminations? I incline to the last view of the matter, for I observe that the air in the picture-galleries is stagnant, many hours being probably required to thoroughly change it. Indeed, I should not be surprised if it took a whole day for the air in some of the shut-up *culs-de-sac* to be renewed, aided by natural diffusion, which is very trifling in such a place, and the motion of the visitors. At the same time, it is possible that the air is vitiated in the process of warming, for I have observed similar symptoms at other places supplied with artificially warmed air, but not so much in buildings where the real external air finds its way in freely without warming.

I, and no doubt many others, can find little pleasure in contemplating the accumulated treasures at South Kensington while the ventilation remains as it is, though I might get acclimatised were I one of those fat policemen one sees about the place.

O. H.

FIRE-PROOF CONSTRUCTION AT DUKINFIELD.

SIR,—Allow me to draw the attention of your readers to a recent fire at Dukinfield, near Ashton-under-Lyne, which, if the account in the local paper is to be depended upon, seems to have put a system of fire-proof flooring to a complete test, which it stood triumphantly. The fire broke out on the 19th inst. at 3.20 p.m., in the fourth story of a cotton-mill, and raged until 7.30, when the 5,700 spindles in the room had been destroyed, but neither the floors below *nor the two over* were materially injured. Now, I think, the system which has stood so fair a test deserves all the advertisement which your paper can give. May I beg some of your readers in the vicinity to answer the following questions:—

1. What is the size of the building?
2. What are details of construction and the designer's name?
3. Are the floors above and below structurally damaged?—will they have to be rebuilt?

J. G.

BUILDERS' ACCOUNTS.

SIR,—Will you kindly allow me space to say a few words in answer to your correspondent, "A Builders' Surveyor," on the matter of builders' accounts, as it is a subject of great interest to a large number of your readers.

In my opinion the difficulties referred to will be readily overcome by adopting an improved system of book-keeping, which shall show, by means of subsidiary books, the prime cost of each part of the work, separately from the total prime cost, shown by the principal books, and a ready means of testing the accuracy of all entries.

When this is done "A Builders' Surveyor" will find no difficulty in proving beyond dispute the actual prime cost of any particular item required; and then, in dealing with men who have a disposition to act honourably and fairly, it will be easy to fix a price which shall include an adequate profit.

At present, in many cases, builders are unwilling to produce their books, as proof of prime cost, in consequence of their being kept upon an old-fashioned hap-hazard method,—not system,—which is so unsatisfactory and complicated that their production would hardly mend matters, and quite fail to give clearly the information required.

H. C. BEVIS.

SPOTS ON PORTLAND CEMENT.

SIR,—I quite agree with your correspondents that weight, fineness, and tensile strength, are indispensable qualities; but there is yet another. Should it not be insisted that all cements should be so manufactured that they may not, after use, develope those black patches of vegetation that so frequently eat through paint and spoil the appearance of cemented walls? I have been annoyed beyond measure with work that has so turned out, and, despite all my efforts, the black leprous spots remain; I cannot kill them. Zopissa, silicate solution, oils, &c., have all failed.

THOMAS E. KNIGHTLEY.

POWER IN THE SEWER.

SIR,—As the introduction of the electric light depends in a great degree on the expense of motive power, may I ask if the main sewer could not be utilised for the purpose? I am not aware of the volume of fluid, nor of the velocity with which it runs, but if these are sufficient, there seems to me no reason why an attempt should not be made to light the Thames Embankment, either by a turbine or an under-shot wheel fixed in the sewer.

ROBT. PALMER.

QUANTITIES.

Sir,—With reference to the correspondence in your journal respecting the legal relations of quantity surveyors to architects, builders, and owners, the difficulty suggested by your correspondent, "Fogged," can be easily remedied by the insertion of a clause in the contract to the effect that the builder shall pay, out of the first instalment, to Messrs. (the quantity surveyors) the sum of (*i.e.*, the amount of their charges as entered in the bills of quantities), and shall produce their receipt to the architect, who shall have power to refuse any further certificate till it is so. This has always been my practice, with a further provision that the employer is not in any way to be held answerable for the correctness of the said quantities.

Ch. G. Wray.

WEDNESBURY COMPETITION.

"Sir,—Some months since there appeared an advertisement in the *Builder* of the Wednesbury School Board, inviting architects to send in plans for proposed new schools in High-street and New-town. Plans were to be sent in by the 1st of October. Nothing has been heard from the authorities since that time, and the drawings have not been returned. Competitor.

A SUBSTITUTE FOR LEATHER MACHINE-STRAPS.

We learn from *Wieck's Gewerbe-Zeitung* that a German firm is now making machine-straps of wire. It has been attempted at various times to find a cheap substitute for leather; gum-elastic, gutta-percha, and hair having been tried, hitherto without the desired success. Those three materials suffer under the great disadvantages that they stretch too much, are difficult to join, shorten, or lengthen; their power of adhesion is insufficient, on account of their tendency to stretch; they are subjected to the influence of temperature, and attacked by oils and acids. Besides all these drawbacks, they are too dear. The problem of finding a suitable substitute for leather machine-bands is stated to have now been solved. The driving-belts in question are made of the best crucible steel wire, in transverse network of one to ten wires, in any desirable length and width. The two ends of the strap are joined like the middle, so that there is no beginning and no ending, the belt forming an endless band. Those straps are not to be confounded with flat wire ropes, which, in consequence of the wires running parallel longitudinally, are stiff and immovable. All the wires run parallel only across the width, in such a manner that one wire catches into the other like a spiral, a continuous densely-woven chain being thus produced, the movability of which is so great as to enable it to go round the smallest pulley. The straps are also made with leather or elastic lining, or bordered with leather, elastic, hemp, hair-tape, or any other material, also its interstices filled with gutta-percha, to supply elastic bands with cotton web, and to prevent their stretching. The invention, which has been patented, consists, in the first place, in the combination of the wire network with leather or any material, in such a manner that the flexibility of the strap is retained, next the tension in transmitting mechanical labour is sustained by the wire-chain, the lining affecting only the adhesion. Where large pulleys and proportionately broad straps are used, the lining of leather, &c., may be dispensed with, and in that case the border of the wire netting is sufficient for transmitting large powers upon metallic pulleys. If, however, the pulleys are covered with leather, the power of the wire-driving bands becomes very large. The tightening of the strap,—shortening of the chain,—which is only necessary once, viz., when put on by means of a strap-key, may be effected very easily and very quickly by taking out any desired number of wires, and again joining the two ends in the same manner by twisting in the required number of wires. The advantages of these straps are stated to be as follow:—(1.) They stretch but very little after they have once been put on by means of a strap-key. (2.) Their power in transmitting mechanical labour is much larger than that of driving-belts of any other material. (3.) They are stronger and more durable than any other. (4.) They form an independent whole, without beginning and end. (5.) Joining by means of screws, rivets, and the inconveniences attending their use, are dispensed with. (6.) An equal, steady, silent motion, of great importance for exact lathes, is insured. (7.) The driving-straps may be opened, shortened, lengthened, and again joined at any point. (8.) Repairs will not be required; each individual wire having to endure the same strain and to transmit the same amount of power as all the others, the strap undergoes wear and tear in its entirety. If the expense caused by repairs of leather straps in course of time is taken into consideration, which in large works reaches a pretty stiff sum per annum, this advantage of the patent straps is evident. (9.) If the wire is galvanised or oxydised, the straps will resist all the effects of wet weather, pass without injury through water or through damp spaces, and are never affected by the temperature. (10.) The original cost, compared with that of double leather straps, is about 33 per cent. less.

COMPETITIONS.

National Hospital for the Paralysed and Epileptic.—The Board of Management, some few months ago, invited Messrs. Batterbury & Huxley, Mr. M. P. Manning, and Mr. F. W. Stent to submit in competition plans for rebuilding the above-named hospital in Queen-square. The Board have decided to adopt the plans submitted by Mr. M. P. Manning, of Mitre-court, Temple. The honorarium to the other competing architects was fixed at fifty guineas.

Blundell's School, Tiverton.—The plans submitted in competition for the proposed new school buildings at Horsdon have been on view at the Town-hall. The requirements issued by the governors for the guidance of the architects in the preparation of their plans comprised the following:—(1) Schoolroom capable of holding at least 250; two day-rooms for the boys, one of which to be suitable for a dining-room for day boys. (2) Head-master's residence, with sufficient accommodation to supply a boarding-house for fifty boys, if hereafter erected in connexion therewith. (3) Porter's or entrance lodge. The drainage and water-supply to be included and shown. The sum proposed to be expended for the above is 11,000*l.* The designs sent in are twenty-two in number, some of the architects signing their names, while others have adopted a motto.

MASTERS AND MEN.

Sheffield.—The master builders of Sheffield have decided upon a reduction in all branches of the trade. The reduction, so far as regards the masons, bricklayers, plasterers, and labourers, will begin next week, and the wages of the joiners will be reduced on the 24th of June next.

Wolverhampton.—On the 21st of December the whole of the associated builders in Wolverhampton gave their men notice of a reduction of ½d. per hour all round, to take effect from the 18th inst. The depression in this trade is increasing. Thirty-five carpenters were discharged from one yard alone in the town for want of employment.

Bangor.—Notice was given on the 27th ult. at the Deneric slate quarries, employing 6,000 men, that the quarries will be worked only three days a week.

Greenock.—The Greenock operative masons have resolved to acquiesce in the masters' demand for the reduction of the wages from 8d. to 7½d. per hour from the 1st of January; but they have declined to refund the 30*l.* of fine imposed by the operatives on the Masters' Association some time ago in consequence of one of the firms having used machine-dressed stones. The Masters' Association, which paid the fine at the time under protest, have, it is stated, resolved to raise an action for the recovery of the fine.——The operative joiners of the town have resolved that the men belonging to that trade in the employment of Messrs. Caird & Co., shall accept the reduction of 7½ per cent. in wages, in preference to increasing the working hours from fifty-one to fifty-seven per week.

Staffordshire.—Upwards of 2,000 nailers have just been deprived of work in the nail-making districts of South Staffordshire, owing to the general refusal of the masters to give out work, although, it is stated, they have some good orders on hand.

Threatened Conflict in the Engineering Trades.—A general meeting of the Executive Council of the Amalgamated Society of Engineers, &c., was held on Monday night, at the general office, Blackfriars-road, to consider the issues raised by two important documents circulated to its members by the committee of the Iron Trades Employers' Association. The first letter invited a meeting of all employers in the London district to consider the advisability of extending the hours of labour from 54 to 57½ hours per week,—such meeting to be held at the Association Office, 46, Watling-street, on January 7, 1879. The other document was a printed circular, in which the case of the employers was stated at some length, and in which reasons for the contemplated increase in the week's work were given. After careful consideration of these documents, the council passed a resolution in favour of immediate organisation of all trades for a determined resistance of the contemplated attempt to destroy the nine-hours system. Funds are already available for this purpose, in addition to the large sum of 260,000*l.* already accumulated by the Amalgamated Society.

CHURCH-BUILDING NEWS.

Helland.—The parish church of Helland, near Bodmin, has been re-opened by the Bishop of Truro, after restoration under the direction of Mr. J. P. St. Aubyn, architect, Mr. William May, of Pool, Camborne, being the contractor. Much of the old "cradle" roof has been repaired, and the new portion has been constructed on the same principle in pitch pine. Encaustic and glazed tiles have been laid, and the pulpit and font have been each supplied with a granite base. The pulpit, lectern, and communion-table are of plain, unpolished oak. A portion of the old stained window in the east end of the south aisle has been preserved. The building is heated by a Rimmington hot-air apparatus, and lighted by means of paraffin lamps raised on standards.

Hollinwood.—A new church at Hollinwood is approaching completion, and will, it is thought, be finished by Easter. It will cost 8,000*l.*, and a further sum of 4,000*l.* will be expended in a tower and a peal of bells. Mr. R. Knill Freeman, of Bolton, is the architect.

Hornby.—Hornby Church, near Bedale, has been re-opened, after restoration, which, according to the *York Herald*, "has been so carried out as not to obliterate the fine old architectural beauties" of the church. The contractors for the whole of the works were Messrs. Shillitoe & Morgan, builders, of Campsall, near Doncaster, the architect being Mr. J. L. Pearson, A.R.A., London. The total cost of the restoration has been 6,000*l.*, the whole of which has been contributed by the Duke and Duchess of Leeds.

Burton Leonard.—A new church at Burton Leonard, five miles from Ripon, has been consecrated. The church is dedicated to St. Leonard, and was erected in consequence of the dilapidated condition of the old fabric, which had become so ruinous as to be unsafe. The old structure was demolished in the summer of 1877, and plans for a new edifice were obtained from Mr. C. Hodgson Fowler, architect to the Dean and Chapter of Durham. The new edifice is in the Late Decorated style, and consists of a chancel, nave, and organ-chamber, a vestry on the north side of the nave, and a bell-gable at the west end. The east window is of five lights, and will shortly be filled in with stained glass, illustrative of the Ascension. It is the gift of Mrs. Shiffner, of Copgrove Hall. The whole of the stone and oak carving is the work of Mr. Milburn, York. The sole contractor is Mr. T. Wood, Pickering, and Mr. Nelson has acted as clerk of the works.

Tebay.—The foundation-stone of a new church at Tebay, Cumberland, has been laid. The architect is Mr. Ferguson, of Carlisle.

West Dean.—All Saints' Church, West Dean, near Seaford, Sussex, has been re-opened, after restoration, under the direction of Mr. Henry E. Rumble, architect, Eastbourne, the contractor being Mr. Longley, of Turner's Hill. The roof of the church has been entirely renovated, the outside of the tower covered with shingles, and the nave and chancel with tiles.

Milborne St. Andrew.—The parish church of Milborne St. Andrew, Dorset, has been re-opened, after restoration and enlargement under the direction of Mr. G. E. Street, R.A., at a cost of about 2,500*l.* The former chancel-arch is Norman Transition work, the western side being ornamented by a bold zig-zag or chevron ornament. This arch, an interesting portion of the remains of the former building, has been pre-

served by Mr. Street, being transferred to the entrance of the Pleydell aisle, while the chancel now has a new and larger arch. The north transept has been retained, but by raising the south wall of the nave and extending the church in that direction an entirely new north aisle in a line with the Pleydell aisle has been provided, thus increasing the accommodation considerably. Messrs. Hale & Sons, of Salisbury, were the contractors.

Bentley.—A new church is in course of erection at Bentley, in the parish of South Weald, near Brentwood, Essex. The church is designed in the Early English style. It is intended to afford accommodation for 250 persons, and consists of a nave and south aisle about 60 ft. long; chancel, 30 ft. long, or one-third the length of the church. The organ-chamber is at the east end of the south aisle, and the tower in a corresponding position on the north side of the chancel; on the ground-floor of the tower, and on a level with the choir, is the vestry. Externally the walls will be faced with flint in random courses. The dressings to windows and door quoins, &c., will be in Westwood stone. The roofs of nave and chancel will be of high pitch, and tiled; the spire broached and covered with oak shingles. In the interior of the church the same stone as that outside will be used in the arches, nave, arcade, chancel, and organ-chamber, as also throughout the chancel to heads of lancets and doorways. The seats will be of oak, likewise the ceiling to chancel, which will be panelled. The sacrarium and chancel are to be paved with marble mosaic in small tessera; and the nave with Minton's tiles. The church is erected chiefly through the munificence of the Rev. Charles Almeric Belli (late vicar of South Weald). The architect is Mr. Ernest C. Lee, of London, and the builder is Mr. Joseph S. Hammond, Romford.

DISSENTING CHURCH BUILDING NEWS.

Bowdon (Cheshire).—The memorial stones of a new Baptist chapel and schools at Bowdon have been laid. The building will be Italian in character, of red brick, and is being erected at the junction of Hale-road and Byrom-street. The lower story will be used for school purposes, and will comprise a schoolroom, 67 ft. long and 39 ft. wide, with two class-rooms, library, &c., and will be provided with a separate entrance from Byrom-street, and also have communication with the chapel by means of a staircase in the tower. The upper floor comprises the chapel, 73 ft. long, 39 ft. wide, and 28 ft. high, with a gallery over the main entrance. Accommodation will be provided for nearly 500 persons. Vestries are provided at the back of the chapel with a separate entrance from Byrom-street. The main façade is towards Hale-road, and will be flanked by a campanile rising to a height of 64 ft. The cost of the buildings will be about 2,100*l.*, and the works are being executed by Mr. J. Pennington, builder, Bowdon, from the designs and under the superintendence of Mr. William Owen, architect, Manchester.

Blackley.—A new Baptist chapel is being built at Blackley, near Elland. It is intended to accommodate 500 adults and 240 children, and will also contain minister's, deacons', and singers' vestries. The interior is to be of varnished pitch pine, and it is expected that the building will be ready for occupation in the month of June. The schoolroom, underneath the chapel, will hold from 350 to 400 scholars, besides heating apparatus room, serving-kitchen, store-room, and superintendent's vestry. The architect is Mr. C. F. L. Horsfall, of Halifax, and the contractors are as follow:—Masons, T. Bottomley, Elland; joiners, Hirst & Wilson, Elland; glazing, J. Bolton, Halifax; heating apparatus, J. Calvert, West Vale. The total cost, including site, will be about 3,500*l.*

Borrowby.—A new Wesleyan Chapel at Borrowby, near Northallerton, has been opened. It is Gothic in style, is capable of holding 200 persons, and has cost 500*l.* The stonework has been executed by Mr. Eyles, builder, of Northallerton; the joiner-work by Messrs. Foggin & Sons; the painting by Mr. Wm. T. Cooper; and the plumbers' work by Mr. F. B. Fowler, Northallerton. Mr. W. Foggin, Northallerton, is the architect.

Alves.—The Free Church of Alves, N.B., has been rebuilt and opened for worship. The new building has been erected from plans by Messrs. Reed & Melven, architects, Elgin. It has a spire rising to a height of 53 ft. The church measures 50 ft. long by 42 ft. wide, and is fitted with galleries and a platform-pulpit. The accommodation is for 500 persons, and the cost is about 1,000*l.*

Middlesbrough.—A new Primitive Methodist Chapel, erected in Gilkes-street, Middlesbrough, has been opened. It is built of brick, with stone facings, and is capable of accommodating 850 people. The total cost has been 1,300*l.* The whole of the work has been under the supervision of the architect, Mr. Ralph Jackson, Middlesbrough. Mr. J. Lord was the builder.

Cannock.—The Wesleyan Chapel here has been reopened, after renovation and alterations under the direction of Mr. Loxton, architect.

Dunnington.—A new Baptist Chapel at Dunnington, near Alcester, has been opened. It is built of native blue stone, with Bath stone facings. The builders are Messrs. Smallwood & Co., of Alcester and Wootton Wawen. The total cost is about 1,400*l.*

Broomhill.—A Wesleyan Chapel is in course of erection at Broomhill, near Amble, Northumberland. The building is intended to accommodate 300 worshippers, and the cost will be about 700*l.* Messrs. E. & A. M. Spence, of Amble, are the builders.

SCHOOLS OF ART.

Cork.—On the 23rd ult. the annual distribution of prizes to the students of the Cork School of Art took place. The report submitted by the head-master, Mr. James Brenan, R.H.A., showed that the number of students on the roll of the school for the year was 260, being an increase of twenty-one over the number for the preceding year. The number of works sent to South Kensington for examination was 780, and the number of prizes awarded was fourteen, an increase of five over last year. In the second-grade examinations thirty-seven students were successful, being an increase of thirteen over last year. As in the case of so many towns in England, great inconvenience is suffered by the Cork School of Art through the inadequacy and unsuitability of the only premises available. A better state of things is, however, looked forward to with hopefulness.

Seaham Harbour.—The annual presentation of prizes in connexion with the Art and Science classes here took place the other day. The school shows marked advancement both in numbers and in work done, and special prizes were offered by the Marquess of Londonderry. Mr. John Smith, the head-master, presented his report, in which he urged that employers of labour would advance their own interest by sending their apprentices to such classes. During the past year, there were fifty-three students in art and six in science, as compared with forty-five and three respectively in the preceding year.

STAINED GLASS.

Pembroke (Bermuda).—Two stained-glass windows, one to the memory of the late bishop, and the other to the late rector, have just been placed in St. John's Church, Pembroke, Bermuda. They are by Ballantine & Son, of Edinburgh, and consist of two lights each, that in memory of the bishop having for its subject "Our Lord's Charge to St. Peter," and "St. Paul preaching at Athens"; and that in memory of the rector, "The Sower sowing the Seed," and "The Shepherd feeding his Flock." The bishop's window has been erected by members of the Church of England in the colony.

Kington Magna (Dorset).—A new west window has been placed in the church of this parish by Miss Dugdale, daughter of a former rector, to the memory of her parents and sisters. The stained-glass work has been executed by Messrs. Heaton, Butler, & Bayne, of London. The three principal lights represent the infant Saviour in the centre, and on each side the adoration of the Magi, and that of the shepherds. The stonework of the window, which is new, is Decorated in character, and was executed by Mr. Lilly, of Gillingham, at his Chilmark, Wardour, and Tisbury quarries.

Hales Owen. — A stained-glass window has recently been placed in the east end of the south aisle of the parish church of Hales Owen. It is the gift of Sybella Lady Lyttelton, in memory of the late Lord Lyttelton. The window is by Messrs. Hardman, of Birmingham. The gift included the tracery, which was designed by the late Sir Gilbert Scott for the intended restoration of that part of the church whenever the work may be resumed. The subject, chosen by Lady Lyttelton, was suggested by the first portion of the *Te Deum*, and is treated in twelve sections, as follows:—In the upper division are angels, archangels, cherubim, and seraphim; in the second, apostles (St. Peter, St. James, and St. John the Evangelist), prophets (David, Isaiah, and Elijah); martyrs and confessors (Abel, Daniel, and Stephen); and patriarchs (Abraham, Isaac, and Jacob).

Epworth.—The east window of Epworth Church has been filled with stained glass, to commemorate the lengthened period which has marked the incumbency of the Hon. and Rev. Charles Dundas, who for five-and-thirty years has been rector of the small capital of the Isle of Axholme. The window is from a design by Mr. James Fowler, architect, Louth, and was executed by Mr. W. H. Constable, of Cambridge. It contains four lights, each with two subjects,—Christ bearing his cross, the Crucifixion, the Ascension, our Lord's appearance to the two disciples on the way to Emmaus, the Presentation in the Temple, the Adoration of the Magi (occupying, however, two lights), and Christ disputing with the doctors in the Temple.

Eccleshall.—A new stained-glass window, the gift of two ladies in memory of their sister, has lately been placed in the south aisle of Eccleshall Church, from the designs of Messrs. Clayton & Bell. The subject is the finding of our Lord in the Temple at the age of twelve years. The window consists of three lights.

Kelsale.—The east window of Kelsale Church, Saxmundham, has just been filled with stained glass to the memory of the late Rev. Lancelot Robert Brown, and Anna Maria his wife, by their daughter Georgiana and her husband, Mr. Frederick F. J. Morrice. The subject is the Ascension, and it occupies the entire five lower lights. The window was executed from a design by Mr. M. Camm, by Messrs. Camm Brothers, Birmingham, and erected by Mr. Martin Thomas Gunn, of Stowmarket.

THE PREPARATION OF PLANS FOR MAIN SEWERAGE, DRAINAGE, AND WATER SUPPLY.

A REVISED edition of suggestions as to the preparation of district maps, and of plans for sewerage, drainage, and water supply, by Mr. Robert Rawlinson, C.B., has been issued (Knight & Co.). Much has been added, both in the letter-press and in the plans, and the suggestions are now so complete that a careful study of them would enable a man to set up as a sanitary engineer. Mr. Rawlinson has put into them the result of all his large and well-digested experience.

Books Received.

Dangers to Health: a Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M.A. London: J. & J. Churchill. 1878.

IF Mr. Teale's blue arrows, like forked lightning, or Mediæval devils' tails, dashing here and there out of soil-pipes and drains into cisterns and chambers, do not frighten people into a proper revision of their domestic sanitary arrangements, we do not know what will. There is nothing like an appeal to the eye:—

> "Things by the ear received, men's minds excite
> Much less than when submitted to the sight;
> For the spectator, with his trusty eyes,
> To his own mind impressions best applies."

When we began our crusade,—say thirty years ago,—against the frightful evils which then existed, and were bent on arousing public attention, we acted largely on this belief, and it would be found, on looking back to our early volumes,* that all those sanitary defects which are now recognised, formulated, and prescribed for, were pointed out by means of drawings of existing instances, which were in some quarters ridiculed and even abused as exaggerations. We say emphatically *all*, without exception.

Mr. Teale's volume is a very valuable contribution to hygienic literature; results of the defects described are given, and remedies are

* See also "London Shadows: a Glance at the Homes of the Thousands," by Geo. Godwin, 1854; "Town Swamps and Social Bridges," by the same, 1859; "Another Blow for Life," by the same, 1864, &c.

pointed out: its circulation cannot fail to do good.

Apart to some extent from the real object of this book, Mr. Teale, in connexion with the subject of ventilation, makes some suggestions with reference to the accumulation of dust in glass cases for museum specimens which deserve investigation. Every one knows the injury thus caused, and the expense it causes, but the reason why the dust gets admission as it does to even the most carefully-made 'glass cases, is seldom thought of. The author points out that the air within is constantly altering in volume through changes in temperature and of barometric pressure, and that this causes perpetual currents of dirt-laden air through minute crevices. The remedy is to supply the case in a regular way with cleansed air, and Mr. Teale suggests and illustrates some arrangements for effecting this satisfactorily.

VARIORUM.

THE Christmas number of the *Masonic Magazine* (Kenning) includes a new story, by Mr. Anthony Trollope, called "Catherine Carmichael; or, Three Years' Running," and a very interesting story it is. The number has for frontispiece a very good portrait of Lord Skelmersdale, Deputy Grand Master of the Craft.——"The Garden Oracle for 1879" (*Gardeners' Magazine* Office) contains a large amount of information; for example, descriptive lists of all the new plants, new flowers, and new fruits; an analysis of the varieties of potatoes, with special reference to their relative productiveness, liability to disease, and table quality; and a treatise on the construction and management of propagating cases, with special reference to the requirements of amateur gardeners.——We take a paragraph from "The Popular Educator" for January, on "A Course of Tinting":—"In commencing these instructions in water-colour painting, we would urge upon our pupils the *necessity* of good drawing, and keeping up the practice of it, as in a great measure their success in painting will depend upon the ability they possess for representing the exact forms of objects with the lead-pencil. Colours, like lines, must be put in their right places, and the power of doing this in both cases is strictly that of drawing. We do not leave off drawing when we put down the lead-pencil, we simply change the instrument and continue drawing, but with other materials. The pupil is often too anxious to begin the painting and leave much of the drawing to be done, if possible, with the brush, sometimes from a total inability to carry out faithfully to the end what we should call a clear or severe outline, or from not understanding its importance: we can tell such that if they find it difficult to represent the forms of objects truthfully with the pencil, they will not be able to fulfil their intention with the brush; and if they are desirous of finishing the picture quickly, we advise them to draw it well first, and so avoid the inevitable blotching erasures which would spoil its appearance, and cause so much discouragement. Nothing more readily exposes the defects in a drawing than filling it up with colour, for the errors and imperfections crop up as the painting advances, and many who have foolishly neglected to bestow a little more time and care upon the drawing, could testify to the discouragement and failure which usually follow."

Depression in the Lancashire Building Trade.—At the last monthly meeting of the Moss-side Local Board, a discussion arose on the question of allowing builders further time for the settlement of their paving accounts. A deputation attended, and pleaded that the depression in trade, and the number of houses in the district unoccupied, prevented them paying just yet. Building societies had also deprived them of support owing to depositors withdrawing on account of hard times. Mr. Murgatroyd said that if the Board were to avail themselves of their borrowing powers they would then be in a position to relieve these gentlemen. They had no right to deal kindly with one and not with another, and he moved that no remissions be made to any property-owners until the Board put themselves in such a position to make them *pro rata*. It appeared that the builders who interviewed the Board were paying originally 50*l.* per month; this was reduced by the finance committee to 25*l.*, and the Board resolved to reduce it to 20*l.*

Miscellanea.

The Sanitary Condition of Dewsbury.—The *Dewsbury Reporter* has devoted a great deal of space to the publication of extracts from a long and interesting report made by Dr. Thorne Thorne to the Local Government Board on the sanitary condition of the townships in the Dewsbury Registration District. The report is the outcome of an investigation, extending over several weeks, ordered by the central authority in London because of the "continued prevalence of fever" in the townships, as disclosed in the returns of the Registrar-General. The report reveals a wretched state of things, especially in Dewsbury itself. Houses built back-to-back, over-crowded, and without ventilation; manufacturing refuse (of which decomposing urine forms part), left in back yards to pollute the soil and atmosphere; badly-paved and drained, and ill-scavenged streets; midden-privies abutting upon dwelling-rooms; defective drainage, through which the basements of many of the houses are flooded by storm water from the sewers in times of heavy rainfall; insufficient ventilation of the sewers; these, together with an inadequate and inferior water-supply (largely drawn from polluted wells), are some of the causes which have made Dewsbury and its neighbouring townships so unsatisfactory as to their sanitary condition. In Batley, for instance, Dr. Thorne says that midden-privies built in actual contact with houses and soaking into cellars were several times met with, and the same structures are often so placed as of necessity to foul the air inside as well as outside dwellings. And these serious faults in the matter of house construction, the inspector says, "are not limited to old houses, for in one locality, where the ground sloped rapidly, I found the midden-privy of a new house built in actual contact with the bedroom of a neighbouring house at a lower level. Bye-laws under which such constructions can be erected clearly need revision." Liversedge, Heckmondwike, Birstall, Gomersal, Birkenshaw, Morley, Ossett, Mirfield,—all have their bills of mortality swelled by the sanitary defects already enumerated. In some of the places back-to-back houses are still being built! Dr. Thorne points out the remedial measures that ought to be taken, and primarily strongly insists upon an abundant supply of wholesome water and proper systems of drainage. It is certainly high time for the local sanitary authorities to quicken, or be quickened, into action on behalf of the teeming populations in their midst.

Haworth Church and the Brontes.—The proposal to pull down Haworth Church, Yorkshire, and to build a new church on the site, is provoking much opposition. Mr. T. Wemyss Reid, editor of the *Leeds Mercury*, in a letter to the *Times*, admits that the present church is old and inconvenient, but, he says, "It is the one great memorial in stone of one of the noblest and most touching stories connected with our English literature. It contains the precious dust of Charlotte and Emily Brontë; and so long as the names of those great women are remembered, it cannot fail to be regarded as one of the most interesting shrines of our native genius. Is it absolutely necessary that this building should be destroyed, and the graves of the Brontës, with the monumental tablet which records their names, rudely disturbed, in order that a handsome Gothic edifice should be provided for the satisfaction of the incumbent of Haworth and the convenience of the parishioners? Land is cheap at Haworth. With all the waste of moors stretching away for miles from the very edge of the churchyard, there can be no difficulty in providing a suitable site at small expense for the new church, if new church there must be. Can it not be built, therefore, without necessitating the destruction of that old building, which should be for ever 'sacred to the memory of the Brontës?'"

New Gasworks, Audley.—The new gasworks provided by the Audley (Staffordshire) Local Board have just been opened. The works were designed, and the plans and specifications prepared, by Mr. John Davies, engineer and manager to the Kidsgrove Gas Company, and the whole of the work, which was commenced in June last, has been carried out entirely under his direction. Messrs. Drewitt & Pickering were the contractors for the buildings, and the executors of the late Mr. George Barker have completed the ironwork which he contracted to execute.

The New Rotunda Theatre, Liverpool, has been opened, after reconstruction and enlargement. The previous building was almost totally destroyed by fire in July, 1877. The new building has been erected from plans prepared by Mr. C. J. Phipps, F.S.A., of London, in conjunction with Messrs. E. Davies & Son, Liverpool. The building stands at the angle formed by the junction of Stanley and Scotland roads, and, with its lofty towers and high Mansard roof forms quite a feature of this part of the town. The ground-floor of the building comprises a tavern and *café*, and also billiard-rooms with seven tables. These are approached by entrances entirely distinct from the tavern at the corner, and the same entrance affords access to six American bowling-alleys in the basement. The theatre affords seats for 2,000 persons, and it is stated that every precaution has been taken to minimise danger in the case of panic. The ceiling is of elaborate design, and this and the two tiers of box-fronts and proscenium pillars have been manufactured by the patentees, Jackson & Son, of London, in their fibrous plaster, and ornamentally painted and decorated by Messrs. Dondy and assistants, from the designs of the architect. The general works have been carried out by Messrs. Haigh & Co., of Fraser-street, as general contractors, with the following as sub-contractors:—Messrs. Roberts & Robinson, for the brickwork; Mr. Thornton, for the masonry; Mr. Jones, of Mount-pleasant, for the plastering; Messrs. Walker & Pendleton, for the ironwork; Messrs. Catlow, for the plumbing. The scenery and act-drop have been painted by Mr. Crawford. Mr. F. Stripling, from London, has been the clerk of the works, and has superintended the erection of the elaborate mechanical stage.

The Purification of Sewage.—A conference of representatives of various local authorities in Lancashire, and of sanitary engineers, was held on the 20th ult., in Manchester, to consider the question of dealing with water-carried sewage. Sir Henry Cole introduced the subject, pointing out that great benefits would result from the federation of places in the catchment basins of the rivers of Lancashire with the view of promoting the economical purification of sewage. The outcome of such joint action would be the saving of about one-third of the amount which would have to be expended if the places acted independently. He asked the gentlemen present to apply their practical knowledge to facts which, in connexion with this matter, he laid before them, so as to meet the requirements of the law in purifying, with the greatest efficiency, economy, and permanency, the sewage of the various places with which they were connected. Unless these places combined to carry out an efficient method of dealing with their sewage, the Government would establish a Conservancy Board for the whole country, and the results would not, in many cases, be agreeable. On the motion of Mr. Green (Todmorden), seconded by Mr. Farrar, the following resolution was passed:—

"That this meeting is of opinion that greater economy will be promoted by having the sewage of the greatest number of inhabitants brought together for purification, by which the cost will be reduced in an inverse ratio to the numbers, and recommends all sanitary Boards to consider carefully the principle of federation before they adopt any other system of purification."

It was also decided, on the suggestion of Sir Henry Cole, to adjourn the meeting for three months, in order that consideration might be given to the question as to whether any practical steps could be taken.

The New Law on Factories and Workshops.—On Wednesday the new Act to consolidate and amend the law relating to factories and workshops came into force. It is a large Act, containing some 107 sections and several schedules, with numerous regulations to carry out the new law. An abstract of the Act is to be placed in every factory and workshop. It is divided into four parts. The first has reference to the general law relating to factories and workshops, including the safety of machinery, the employment of children, and the meal-times appointed. The second part relates to special provisions of particular cases, and the third part to administration, penalties, and legal proceedings under the Act. The fourth part has reference to definitions, and to the repeal of nearly twenty statutes and parts by the new law. There are various provisions as to holidays and the employment of young children. Considerable powers are conferred on inspectors to enter all factories.

The Proposed New Building Regulations for Glasgow. — The public inquiry ordered by Mr. Cross, the Home Secretary, in reference to the proposed new building regulations for Glasgow, was resumed in the Ordinary Court, at the county buildings, on the 24th ult. The Sheriff Principal, Mr. Clark, who presided, asked Mr. Lang, the representative of the town council, whether he was prepared to make any further concessions, with the view of obviating the objections which had been taken to the proposed regulations, and he replied that he was not in a position to concede anything further in the meantime. The points of the case, said the Sheriff Principal, seemed to him,—(1) whether the regulations were desirable or necessary from a sanitary point of view; (2) whether, if desirable or necessary, they should not be modified somewhat in details; (3) whether, in cases of compulsory removals under them, compensation should not be given; (4) whether they ought not to be carried out in the ordinary courts instead of in the Dean of Guild Court; and (5) whether they should not form the subject of a general Act, applicable to all Scotland, or at least to the vicinity of Glasgow within a radius of six miles. The inquiry was then adjourned till the 9th of January that evidence might be taken as to whether the regulations were desirable or necessary.

"The Use of the Beautiful in our Churches."—This was the title of a paper recently read at Dewsbury by Mr. J. W. Connon, architect (of the firm of Holtom & Connon). The author sought to show that a church, having a certain sanctity as a place set apart for the worship of God, cannot be too richly adorned; that the ornament used ought to be appropriate, and to be ecclesiastical in its character; that the key-note to the applied adornment ought to be that of religious symbolism, both for its propriety and for its historical associations; that a church should have arrangements distinctive of its purpose, among which, as being specially ecclesiastical, ought to be chancel and altar; that the services ought to be as ornate and elaborate as is consistent with good taste; and that a distinction should be drawn between the reverential and the admonitory divisions of the service; or, in other words, between the sermon and the rest of the service. In conclusion, he said they ought to feel imbued with the glowing words of Scripture, which expresses in lovely imagery a fitting temple for our God,—"I will lay thy stones with many colours, and thy foundation with sapphires. And I will make thy windows of agates, and thy gates of carbuncle, and all thy borders of pleasant stones."

Progress in Penzance.—New docks are about to be constructed in Penzance, and a new railway-station is in course of erection by Messrs. Vernon & Evens, of Cheltenham. In the extreme west of the borough Mr. Robbins is steadily pushing on three new roads, which open up building plots on what is known as the Hawkins property,—land between Alexandra-road and the town, and pretty slopes west of Polwithen and north of Alverton-lane. The large Bible Christian Chapel in Taroveor-lane, the foundation-stone of which was laid a few months ago by Sir John St. Aubyn, bart., M.P., is completed as far as the walls and roof are concerned, and Mr. Henry Carne, the contractor, is pushing on the woodwork of the interior. Madron is enclosing its new additional burial-ground. Paul has commenced its new Board schools (Mr. Henry Carne, carpenter; Messrs. Dustow & Sons, masons). Newlyn, which is also in Paul parish, commences very shortly an addition to its Wesleyan day and Sunday schools, the plans for which have been prepared by Mr. John W. Trounson. The same architect has drawn plans for a mortuary chapel at Lelant, the gift of the late Capt. Perry. Mr. Philip Hurrell, of Lelant, has the contract for this. At Madron new girls' and infants' schools are being erected. The contractors are Messrs. Trythall, Ford, & Gendall, and the cost will be 1,000*l.*

St. Alban's Archæological Society.—Mr. John Chapple, clerk of the works at St. Alban's Cathedral, in a letter addressed to us, demurs to parts of our report of the last meeting of this society, and says *animus* is shown in ignoring his name. He is quite in error here; the omission was entirely accidental. Mr. Chapple, by the way, like the rest of the world under similar circumstances, has never thought it worth while to write when his name has been mentioned with commendation in our pages.

The Caledonian Railway Bridge, Glasgow.—The stonework of this bridge over the harbour has been completed by the laying of the upper courses of the eight buttress-turrets which spring from the tall granite piers. With the exception of fixing in their permanent equidistant positions the light retaining girders stretching between the higher parapets and of adding a few ornamental brackets, the whole of the ironwork is also finished. Between each of the two pairs of piers rising from the river bed an iron semicircular arch has been constructed. Both arches support massive iron crossbeams, which run beneath the junctions of the long central and its two contiguous spans. For the purpose of giving stability, as well as of softening the harsh outline caused by parapets 20 ft. high, ending with one side being contrasted with others only half that height, beginning on the other side of the land piers, brackets have been introduced at the angles formed above Broomielaw and Clyde-place. Each bracket exhibits a shield bearing the lion rampant, and surmounted by the words "Caledonian Railway." The eight granite half-turrets are to be crowned by a series of lamp groups, which have been constructed by Messrs. M'Dowall, Steven, & Co., Milton Ironworks.

Water Supply, Chipping-Norton.—The new waterworks for the supply of Chipping-Norton have been completed and opened. The water is derived from the oolite rock which caps the elevated ground at the back of the town, and which forms a great natural reservoir, from which many springs arise. The Glyme is one of the most considerable of these. In the clay which immediately underlies the rock at the Glyme pumping-station are constructed brick culverts or drains 9 ft. in diameter, which collect the water through holes in their upper surfaces, and convey it to a central chamber, the whole storage capacity of the reservoir thus formed being over 50,000 gallons. A steam pump forces the water from this collecting station to a distributing reservoir on the high ground behind Back-lane, a distance of about 1,200 yards. This reservoir is capable of containing 400,000 gallons, and is built in two equal divisions, and covered with an iron roof. The main pipes which conduct the water from this reservoir through the streets of the town by gravitation are kept constantly charged, Mr. W. H. Y. Webber is the engineer, and the contractors were Messrs. Burden and Messrs. Pontifex & Wood.

Christmas Hospitality in Exeter. — "Wandering Exonian" (Mr. Harry Hems) gave his tenth annual Christmas Feast to the aged poor of Exeter on Christmas Day. The place chosen was Gidley's Restaurant, in St. Stephen's Bow, and fifty-one ancient dames and aged men,—whose ages varied from 60 to 80, with the exception of two under and over these figures,—were fortunate in receiving invitations. Some of them had several times been guests upon similar occasions at the same board, and they came with pleasant greetings for the host and his family. With others it was the first time, but one and all were made to feel at home, and received the warmest welcome. It was one o'clock when the guests assembled, and the hour was that of ten when the party broke up. "Wandering Exonian," in replying to the toast of his health, expressed his acknowledgments to his "helpers in the feast," who were many.

Episcopal Throne, St. Andrew's, Plymouth. — The new bishop's throne in St. Andrew's Church, Plymouth, the gift of Mr. Alfred Hingston, one of the churchwardens, has been uncovered. The throne, together with the new credence, is from the designs of Messrs. G. G. & J. O. Scott, sons and successors of the late Sir Gilbert Scott, to whom the restoration of the church was entrusted. The throne stands upon a raised platform, and assumes the shape of a seat and desk. Its position in the church is at the foot of the lowest of the polished marble steps by which the table is gained. It stands within the Communion-rails upon the north side, and its back rests against the dwarfed parclose screen. The fittings, throne, and credence are the work of Mr. Harry Hems, Exeter.

"Science Made Easy."—It will be seen from an advertisement in another column that this course of lectures by Mr. T. Twining, at the Artisans' Institute, will commence on Monday next.

Business Premises at Brighton.—Messrs. John Beal & Co., wholesale newsagents and stationers, have just completed some extensive alterations and additions to their premises, which occupy a site including and extending from Nos. 53, 54, and 55, East-street, to Old Steine. Mr. Arthur Loader is the architect, and the contractor has been Mr. G. R. Lockyer, whose foreman was Mr. George Avis. Mr. Slatter, of East-street, did the gasfitting. The total outlay upon the alterations, which will conduce greatly to the well-ordered conduct of Messrs. Beal's large business, has been about 2,000*l.*

Irregularity in the Town Surveyor's Office, Liverpool.—From the proceedings of the finance and estate committee, submitted to the town council on Wednesday last, it appeared that they had investigated a complaint with reference to Mr. Thomas Holmes, an architectural assistant in the office of the surveyor, having done private work for a gentleman in Bootle. The surveyor reported that Mr. Holmes had given great satisfaction in the office, and had made a mistake in performing the work at home, through not being aware of the existence of a standing order prohibiting private work being done in leisure hours. The chairman of the committee was directed to reprimand Mr. Holmes.

Sanatorium for Children, Southport. — On the 28th ult., the new sanatorium for sick children, which has been erected in Hawkshead-street South, Southport, was formally opened by Lady Lindsay. The building, which is Gothic in character, has been designed by Messrs. Mellor & Sutton, architects, and the sole contractor was Mr. T. Duxfield. The front elevation is faced with patent bricks, relieved with stone. The main feature is a central projecting entrance, approached by a flight of steps, which is flanked by two other projecting gables. The cost of the building has been about 2,700*l.*

Derby Central School of Science.—At the annual meeting of the Derby Central School of Science, held the other day, the committee reported that at no previous period had the school been in so sound and healthy a state. The report of the head master (Mr. Coyle) stated that of the 137 students on the register, twenty-eight were studying geometry, thirteen machine drawing, twenty building construction and graphical statics, while eleven were devoting attention to acoustics, light, and heat. One student was successful in the open competition for entrance to the Royal Civil Engineering College, Cooper's-hill.

Luther's House at Mansfeld.—According to a German paper, Luther's house at Mansfeld, which remained in the possession of the Reformer's descendants till the middle of the last century, has just been bought by a person who wishes to turn it into a public-house! To prevent its being converted to any such use, a committee has been formed with a view to raising funds for its purchase and preservation.

The Church of St. Mary-at-Hill, Eastcheap, has been scheduled by the Inner Circle line in the event of their scheme receiving Parliamentary sanction, though they do not propose to go nearer to the site than 75 ft., the widening of the thoroughfare at this point also not coming within 45 ft. The *Citizen* states that the rector will oppose the scheme.

Paris.—The Supreme Fine Art Commission has agreed to the scheme by which the *Salon* every third year will mainly consist of the best pictures of the two previous years, the right of medallists to exhibit at least one picture without examination by the jury being suspended at this triennial exhibition.

Fire in a Liverpool Timber-yard.—On the night of the 27th ult. a very destructive fire, entailing damage to the extent of several thousand pounds, occurred in the saw-mill and timber-yard in Dexter-street, Park-place, Liverpool, belonging to Mr. B. L. Lloyd.

TENDERS

For constructing roads, paths and curbing, sewers, drains, &c., on estate at Enfield, for the Birkbeck Freehold Land Society. Mr. St. John H. Hancock, surveyor:—

Waddingham	£3,988 0 0
Pound (accepted)	3,400 0 0
Bugbird	3,060 0 0

For first portion of the Tonic Sol-Fa College, Forest Gate, Essex. Mr. T. Lewis Banks, architect. Quantities by Mr. J. Sargeant:—

		Allowance for sand and ballast.	
Toms	£2,898 0 0	£30 0 0	
Josolyne	2,852 0 0	38 0 0	
Bangs & Co.	2,796 0 0	31 0 0	
Downs	2,752 0 0	0 3 6	cubic yard.
Sharpe & Mills	2,636 0 0	44 0 0	
Mortier*	2,615 0 0	7 0 0	
Hunt (too late)	2,298 0 0	28 10 0	

* Accepted, except as regards allowance for sand and ballast.

For Wesleyan chapel, Broadway, Cardiff. Messrs. W. G. Habershon & Fawckner, architects:—

D. J. & D. Davies	£5,910 0 0
Cocks & Clarke	5,409 0 0
John Robbins	5,265 0 0
W. & J. Webb	5,170 0 0
Shepton	5,165 0 0
Fox	5,150 0 0
Price	5,134 0 0
Knill & Geen	5,000 0 0
Miles	4,938 0 0
Biggs	4,920 0 0
Linton	4,800 0 0
Jones & Co.	4,762 0 0
J. Robbins	4,600 0 0
Furnell & Fry	4,498 8 0
Thomas	4,446 0 0
Shepherd	4,349 0 0
Gough (too late)	4,523 0 0

For Marshes-road Schools. Messrs. W. G. Habershon & Fawckner, architects.—

Prosser	£2,093 0 0
Webber	2,049 0 0
Jones & Son	2,040 0 0
James & Sons	1,990 0 0
Stephens	1,900 0 0
Linton	1,894 0 0
Richards	1,877 0 0
Williams	1,845 0 0
Scetch	1,843 0 0
Miles	1,839 0 0
Hazell	1,825 0 0
Blackburn	1,798 0 0
Davies, Bros.	1,798 0 0
Jones & Co.	1,787 0 0

For Bible Christian chapel and minister's house, Cardiff. Messrs. W. G. Habershon & Fawckner, architects.

	Chapel.	House.
Evans	£1,789 0 0	£998 0 0
Robbins	1,750 0 0	900 0 0
Price & Evans	1,630 0 0	950 0 0
Marshall	1,555 0 0	770 0 0
Furnell & Fry	1,508 0 0	727 10 0
Shepherd	1,441 0 0	775 0 0
Thomas	1,478 0 0	730 0 0
Knill & Geen	1,470 0 0	749 0 0
Green & Miller	1,330 19 3	847 6 8
Shepton	1,446 0 0	727 12 0
Jones & Co.	1,361 0 0	739 0 0
Lewis, Bros.	1,429 0 0	700 0 0
Howard	1,455 4 10	644 0 0

For Chapel and House.

Morgan	£2,350 0 0
Gough	2,170 9 0

For house at Leytonstone, for Mr. Vinnicombe. Mr. F. Boreham, architect:—

Roberts	£712 0 0
Cattey	469 0 0
Horlock	435 0 0
Bradford	430 0 0

For new vestries, Methodist Free Church, Canning Town. Mr. F. Boreham, architect:—

Roberts	£234 0 0
Hodgson	208 0 0
Bradford	225 0 0
Horlock	170 0 0

For a pair of semi-detached houses, for Messrs. Hill & Jamison, at East-end, Finchley. Mr. J. E. Sears, architect:—

Maley	£1,852 0 0
Stimes & Son	1,848 0 0
Sorrell	1,180 0 0

TO CORRESPONDENTS.

C. G. W.—L. & H.—H. & O.—M. & S.—W. M.—G. R.—W. T.—Mrs. P.—E. H.—H. F.—J. D.—R. P. S.—G. R. W.—S. & Son.—J. T. R. G.—C. J. K.—H. & P.—E. & H.—M. P. R.—S. G.—J. W.—S. N.—C. L.—C. M.—A. F.—F. A. R.—W. W. L.—J. E. F.—Dr. R.—W. S. (pipes are burst during the freezing, the damage discovered in the thawing.)—J. S. H. (next week).—J. P. (names and figures in "copy" sent not readable).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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VOL. XXXVII. No. 1875. SATURDAY, JANUARY 11, 1879.

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Cost of Light—Can it be Lessened?

IF there be one mode in which, more than in another, the press can render the most signal service to the inventor, and thus to the progress of invention and to the happiness of mankind, it is by its function of an index. By that we do not so much mean an echo or reflection of the opinions, or even of the facts, of the day, as a comparison of what is new with what is already known, and an intimation of the exact spot in which that knowledge is to be found. If this function could be thoroughly and completely exercised, the saving of inventive power would be immense. It may be questioned what proportion of the patents which are now annually secured would be applied for if the applicant knew, either what had been done before his time, or what were the real limits within which such improvements as he proposed to obtain were practically possible. In the old state of the Patent Office it was all but impossible to obtain this information as to the first point. This is now only matter of research, facilitated by good arrangement. But how many make the search? And of those who do, how many have even conceived the idea of ascertaining, in the first instance, what limits of advantage are fixed by nature to the supposed improvements.

This consideration has been very much illustrated by the recent supposed improvements in light, and in the production and communication of power, of which we have heard so much. Old inventions, long ago tried and found wanting as practical sources of advantage, have been brought forward as new ones. Old sources of power, gradually displaced by less costly methods, have been rediscovered. And, at the same time, inventions which contain within themselves such seeds of value that it is impossible for the inquirer to doubt that, sooner or later, they will play a great part in the mechanical arrangements of the country, are allowed to pass into oblivion.

The fact is, that in any invention two distinct considerations have to be borne in mind. These are the real and the personal; and nine times out of ten the latter has the most weight. A manifest improvement may be proposed. It may be real. But the question is, "Who will derive the benefit?" If the reply be "The public," the rejoinder is, "Then let the public look to it." There is no machinery in this country by which the adoption of an improvement, however great, that would be of the most signal public advantage, could be advanced, if the spur and stimulus of the private advantage of the inventor or communicator were absent.

Let us take the case of light. This is a matter which, perhaps more than any other, comes home to every one. During the last sixty-four years there has been, no doubt, considerable advance made in this respect. Some of our present appliances are very good, if few of them are the best conceivable, or even the best known. The price of gas in London has been reduced from 15s. to 3s. 6d. or 3s. 3d. per 1,000 cubic feet. At the same time, it cannot be said that gas is in a condition of which science has much cause to be proud. It is consumed with great waste. The products of combustion are highly prejudicial to health. They are usually allowed to escape into the air of any apartment lighted by gas, to the manifest deterioration of the atmosphere. This is evident from the fact that plants will not live in a room lighted by gas. The odour is most offensive. The purification is often so badly done as to allow of the deposit of a foul and offensive grease in the pipes; and if cotton wool be used as a filter, it will often become black and fœtid in a very few hours. All this means waste; waste of the products obtainable from a ton of coal, and even worse, waste of health, of eyesight, and of lungs.

Now let us imagine,—and we may add that it is not altogether an imaginary case,—an inventor who discovers a simple mode of effecting a great improvement in gas-lighting. He finds that he can so improve on existing arrangements as to make three cubic feet of gas give as much light as five now do. What is the inventor to do? He either does, or does not, take out a patent. Let us suppose that he does. Under the protection of the Great Seal he goes to the directors of a gas company, full of hope that his fortune is made. He reasons without his host. The gas company derive their income from the measured sale of gas, not from that of light. It is light that the public require. It is gas that the company sells. The man who makes less gas give more light is thus a commercial opponent of the companies. As such he will be treated. If he goes to the public he will be told to prove his case. "That is all very well," a consumer will say; "you propose to diminish my gas bills. So long ago a man came here and insisted on selling me new burners, at 11d. a piece, which were to save me no end of money. I find that I have burnt more gas since. The fact is, I don't understand these matters, and I find it the best way to leave them to the gas companies, who do. If yours was a good thing, of course the companies would take it up. Good morning."

Now in this case, which, as before hinted, is not altogether an imaginary one,—where is the public to look for guidance? Where is the index? The man with the longest purse, who will spend the most in advertisements, will sell his nostrum. Not only is this well known to be the case, but it is even known as a matter of degree. Advertising on a large scale, and scientifically managed, commands a certain sale, irrespective of the value of the object advertised. The outlay of 1,000*l.* in advertising an article which is neither better nor worse than a dozen others of the same nature, or intended for the same object, will ensure a sale to the amount of 2,000*l.* One of the most signal instances of this is to be found in the case of quack medicines. We could mention one, the constant advertisement of which has brought in enormous sums to its proprietors, the medical value of which can be best understood by any who have had the experience of recommending a dose of his own nostrum to the worthy individual in question.

It is not so much the case that there is an absence of information, as that there is a want of index to the information which might be made easily accessible. The Parliamentary papers form the costly sepulchre of an immense amount of valuable information. It is often obtained at great cost, and all that the public hear of it is comprised in a line in a newspaper. Few papers give so much as that. We have spoken of the records of the Patent Office. Then there are the transactions of our learned societies,—those of the Royal Society, the Minutes of Proceedings of the Institution of Civil Engineers, the Proceedings of the Royal Institute of British Architects, and many others, —libraries full of the most valuable information, which are readily accessible to the student, so only that he knew what they contained. As it is, a man may waste years in discovering something that has been ably and exhaustively dealt with by a foreign or even by an English writer five or ten years before.

A remarkable instance of the want of attention which has been commanded by a very important source of improvement has very recently come to our notice, in the matter of light. There was an exhibition of scientific apparatus and engineering appliances held at Milan, in September last, under the title of "Tecnonomasio." At this exhibition an apparatus for the distillation of gas from petroleum was displayed in operation. The results, as officially reported, were very remarkable. They were, moreover, in exact accordance with known chemical facts. The luminous value of the petroleum gas was shown to be more than threefold that of ordinary coal gas, while the price was extraordinarily lower. This, however, is as compared with the price of gas in Milan, which is 9s. 6d. per 1,000 feet. But the special illustration of our former remarks is to be found in the total disregard, so far as we are aware, which has been shown to a paper on the same subject contained in vol. xl. of the Minutes of Proceedings of the Institution of Civil Engineers, printed in 1875. The title of

this paper is, "Petroleum and other Mineral Oils applied to the Manufacture of Gas," by O. C. D. Ross, M. Inst. C.E. A long and very able paper on the construction of gasworks, by Harry Edward Jones, Assoc. Inst. C.E., was read and debated at length before the Institution on three evenings in the session of 1875. Mr. Ross's paper, coming under the head of "other selected papers," did not undergo discussion. Thus it has remained among the other valuable archives of the Institution, in the hands of the members alone. Of course, it is accessible at the British Museum, and similar places of literary research. But if Mr. Ross's paper had been indexed as it deserves, it could not fail to have attracted much attention at a time when the quality of light, and the cost of lighting, have so fully pre-occupied the public.

It is a matter of admitted defect, in our present acquaintance with the subject of lighting, that no scientific unit of light has yet been defined. It is extraordinary that this should be the case, as the general adoption of the Joule unit of heat indicates, with no small perspicuity, the existence of a co-related unit of light. Our nominal unit of light in this country is the sperm candle consuming 120 grains weight per hour, an article in the consumption and illuminating power of which great irregularity prevails. The French Carcel burner, which is taken to be equal to 9·6 English candles, is a far more satisfactory unit, for the reason that in the French experiments the consumption of the standard lamp is checked by an actual weighing of the oil, when the light is kindled and when it is extinguished, so that the normal consumption is verified, and any excess or defect allowed for. Besides this, a unit of this magnitude is far more accurate for comparison of lights varying from the intensity of 10 to 100 or more candles, than is the English standard candle, used in pairs.

The Joule unit of heat, as is well known, is the thermometric quantity required to raise a pound of water 1 degree of Fahrenheit in temperature. The amount, measured in energy, was determined by Mr. Joule at 772 foot pounds. Other investigators come tolerably near this result. But a more curiously exact determination is, that the unit of 772 foot pounds is the exact quantity of heat liberated by the consumption of half a grain of carbon. Of course, this is the theoretic consumption of the chemist. But the relation indicates the existence of a good natural unit for light, which would not only be of use as a theoretic term of comparison, but would tend to keep the attention fixed on the actual economy effected by any mode of combustion. If the light emitted by the combustion of half a grain of carbon (in oxygen, or even in atmospheric air) were adopted as a unit, we should be taking a step towards placing the study of illumination on a more scientific basis. Thus it would be at once noted that the sublimation of a grain of carbon in the electric circuit yields 50 times as much light as a grain of carbon burnt in the usual mode as coal-gas.

The unit candle, of six to the pound, is to consume 120 grains per hour. The burners by which the English gas is tested are constructed to consume 5 cubic feet of gas per hour. This quantity of gas would be equal to the consumption of 11·27 grains of carbon per minute, according to Mr. Vernon Harcourt's analyses, and to 14·0 grains per minute according to the more ordinary allowance of 60 per cent. of carbon in coal-gas. This would be equal to 14·60ths of a grain, or 0·466 of such a unit as we propose, per second. In an equal weight of petroleum-gas, the illuminating power, measured in the same terms, would give from 0·648 to 0·812 such units of light per second. The pale blue flame due to the combustion of the hydrogen is disregarded photometrically in each case.

Offering this new unit of light for what it may prove to be worth, we now return to the subject of Mr. Ross's paper. It is estimated, this gentleman tells us, that the quantity of coal consumed in the United Kingdom in the manufacture of gas in the year 1873 was not less than 6,580,000 tons, or nearly twice as much as was used during the same period on all the railways of the country; and an analysis of the quantity of carbon (which is the light-giving ingredient) contained in the gas produced from that enormous quantity of coal shows the startling fact that the same quantity of carbon might be practically obtained, and the same quantity of gas be manufactured, from very little more than 650,000 tons of petroleum or other mineral oils, which is about half the quantity now exported from America to Europe.

Gas made from petroleum spirit, or naphtha, as it is called in the United States, has recently been the subject of discussion at the meetings of the American Gas Association. There were, in 1875, fourteen cities and towns in America in which naphtha-gas is used unmixed, and in many other places it is used in combination with coal-gas.

The practice in America is to burn the gas at the rate of one cubic foot per hour, the light so obtained being rated as equal to that of sixteen candles.

We are not about to offer any authoritative opinion on the probability that petroleum will supersede coal as the raw material of our gas manufacture. This industry is a special branch of engineering, demanding long study, and as to some of the primary conditions of which (as for instance the respective advantages of disdistilling at a higher or a lower temperature) opposite opinions are held among experts themselves. At the same time, the advantages which, on the first blush, appear likely to result from the use of a substance already produced in a liquid form by nature herself, are so great, that the matter is one deserving the serious study of practical men. We are speaking now of the substitution of petroleum for coal on a large scale. The comparison made by Mr. Ross between hundreds of thousands of tons of petroleum, and millions of tons of coal, require a good deal of investigation before we can leap at any great saving. Crude petroleum is sold in Pennsylvania at ¼d. per gallon, or 10s. per ton. Refined petroleum costs 3d. per gallon, or 3l. per ton, free on board in New York, and the present price in England is about 10d. per gallon. But the gas made from crude petroleum begins to condense at a temperature of 119° Fahrenheit. The refined petroleum begins to condense when the temperature falls below 78° Fahrenheit. It is only a thin and more refined quality of the oil which affords a practically permanent gas. For this there is not such a demand as to make it an article of regular commerce. The power is double that of refined petroleum. But the quality of this gas is not only of a highly illuminative order, but is such that no condensation occurs until the temperature reaches below 10° Fahrenheit, so that the gas is really more permanent than ordinary coal gas.

Leaving this matter of the cost of the material for further investigation, attention should be given to the use of petroleum in detail, as compared with that of gas on a large scale. Mr. Ross describes a very simple application of petroleum spirit to the illumination of a gentleman's house. There were four floors to the house, besides a coachhouse and stable 200 yards off. The central hall is lighted with fifty-four argand lamps, and the rest of the mansion is also adequately lighted. The machine for this purpose only covers a few feet of space, in the corner of a garret. Air is drawn, by the action of a fan, over the surface of petroleum spirit in a vessel adapted for the purpose, which is called the carburettor. In its passage it takes up enough hydrocarbon vapour to form an inflammable mixture. The action of the fan causes an adequate tension, and the carburetted air is turned on in the same way as ordinary gas. The force per burner is not given; but the whole cost of the apparatus was only 100l. The subject excited great interest in Brussels, and Mr. Ross says that he has been called on to supply members of the Royal family of Belgium and others with similar machines. By this or a similar apparatus many country-houses in that country are already lighted.

We consider that it is rendering a good service to the architects of this country to call attention to a statement of this nature, when it has received the implied sanction of publication as a selected paper by the Institution of Civil Engineers. Mr. Ross has, we understand, published a book on the subject, but it has not come before us for review. If what is stated as to the non-condensibility of the gas be reliable, the matter almost reduces itself to a question of the cost at which the highly-refined oil in question can be supplied for a large demand. As to this, of course all due inquiry should be made. It is in the case of the country residence, where gas is not attainable, that such an invention, assuming the account to be faithful, would possess its chief value. The power of self-contained production of that nature is one for which the proprietor of many a noble mansion would gladly pay. But there seems no reason to anticipate that the cost will ultimately prove formidable.

In another form the distillation of petroleum by the lamp itself has attained a high degree of efficiency. On several of the leading lines in the United Kingdom, and on the Great Southern and Western Railway in Ireland, the recent introduction of the "Imperial lamp" has given quite a new aspect to the trains in which it is introduced. On her Majesty's late journey from Scotland this lamp was introduced in the Royal saloon carriages. It is the invention of Colonel Martin, late commanding the 4th King's Own Royals, an officer among whose numerous inventions may be mentioned that of the mode of cremation which, in some parts of India, has now entirely superseded the employment of the costly and disgusting funeral pyre. The principle of the Imperial lamp is the simple one of supplying, at the point where the flame is ignited, the exact quantity of air needed to support the combustion, and excluding the access of more air to the flame. When the lamp is first lighted a dew overspreads the glass globe in which it is confined. This is due to the formation of water from the hydrogen of the spirit of combining with the oxygen of the air. The cold glass condenses this aqueous vapour. But as the lamp becomes warm, in the course of a few minutes the condensation ceases, and the aqueous vapour escapes together with the carbonic acid caused by combustion of the carbon, which lumeniferous element forms 80 per cent. and upwards of the oil. The result is a pure white light of great steadiness and brilliancy. A wick is used in the lamp, but its service seems to be confined to the conduction of the oil to the point where it is vapourised, as the lamp can be burned for a week without trimming. The oil is contained in a vessel which screws into the bottom of the lamp, and which can be removed for filling with the greatest ease. The cost of the lamp is said not to exceed five-eighths of a penny for sixteen hours. No movement of the lamp, and no wind blowing on the carriage, appears to produce any effect on the flame. The Dublin and the Liverpool papers have spoken in the highest terms of this lamp; and as it unquestionably gives three or four times the light of the ordinary railway-lamp at a greatly reduced cost, we may expect to see its use become very general.

There can be no valid reason for confining a perfect apparatus for combustion to railway-lamps. Public attention has been singularly excited by the promise of electric light. As to this we now say but little, for the reason that we may fully expect that Sir Joseph Bazalgette and Mr. Haywood will before long have something definite to tell us on the subject of cost. Meantime, we all know that the effective character of this light increases in proportion to its concentration, and that the cost of apparatus of transmission, if not of transmission itself, is proportionate to the square of the distance from the prime motor to the point of illumination. But, mean time, let us make the best use of what we have at hand. Let us inquire as to what can be done with the products of the distillation of nature herself, which in some spots gush from the earth in a gaseous jet, and burn like vast torches on the application of a match. Let us study to do the best with hydro-carbon vapour. We know that if this is so burnt as to form carbonic oxide, instead of carbonic acid, 50 per cent. of heat is lost. How far this proportion holds as to light, no one, as far as we know, has yet measured. It is the difference between the light of a dull red-dish flame and that of a fine lustrous white flame. When the latter is produced, when all the light is obtained from the carbon, the most offensive character of the products of combustion is at an end. A perfect lamp has no smell. It forms by combustion only water and carbonic acid. The latter, of course, must have means of escape afforded, but the result is altogether different from that of the ordinary combustion of gas, petroleum, or any other strongly smelling fuel. When we get all the light, we avoid waste and avoid smell. In pointing out what has already been attained, and what is probably attainable, we hope that we have shown that vast outlays of capital are not required,—that unknown fields of science have not to be explored,—but that for that prime necessity of instantaneous artificial light, we have only to collect and act upon information readily accessible in order to produce admirable results at very reasonable prices.

THE BURLINGTON HOUSE LOAN EXHIBITION.

THE Royal Academy, in their Tenth Winter Exhibition of Paintings by Old Masters, have drawn upon the new mine of wealth in the shape of sketches and studies which was opened out by the proprietor of the Grosvenor Gallery last year. That collection took the exhibition-going public fairly by surprise; yet that it was but a revelation of a small part of what is in existence will be obvious to every one who studies the similar collection in Burlington House this year; equal in every way in interest to the Grosvenor Exhibition of last year, yet (with one or two trifling exceptions) an entirely new set of drawings. It must not be forgotten, moreover, that the Grosvenor Gallery has this year also its fresh collection of such sketches, of the greatest variety and interest, of which more anon. But giving to the Grosvenor Gallery authorities all credit for having first started the idea, the chief interest lies this year with the collection got together by the Royal Academy, as it is a less scattered and more representative set of drawings, illustrating especially the work of this kind by Michelangelo, Raffaelle, Leonardo da Vinci, Albert Dürer, and Holbein, with other works by artists who are only less than the greatest. There is also the usual number of paintings, scarcely perhaps with the usual interest as a whole; this can hardly be expected to be kept up *ad infinitum*, though there are many fine and valuable paintings. But the cream of the exhibition is unquestionably in the sketches and studies, arranged in Galleries VII., VIII., IX., and X., which furnish matter for as much space as we can devote to the exhibition in this number. Gallery VII. also contains a very large collection of miniatures, which seem to have proved an immense attraction to the general run of visitors, and may well call for some special notice in due course, as a branch of art of peculiar interest, though of course not so important from a purely artistic and intellectual point of view as the drawings.

Of these, the contributions from Raffaelle and da Vinci occupy one room (the usual water-colour room) almost exclusively. Those by Raffaelle are largely contributed from the great collection of the University of Oxford. They vary very much in finish and artistic effect, some being mere hasty *tâtonnements*, in pen outline, roughly shaded, some more highly finished, in black chalk, some in silver point (that beautiful and delicate medium of execution of old Italian draughtsmen), some in red chalk, these latter being generally the most highly finished, as we often find to be the case with drawings by the great Italian masters, who seem to have regarded this medium of execution as the finest and most effective for their highest class of studies. Pen outline with *bistre* shading, and the lights brought out with white, is also a rather favourite method, and is that employed for one of the most finished of Raffaelle's studies exhibited here, that for the "Miraculous Draught of Fishes" (157), from the collection of the Queen, and in which the design is quite as complete as it is in the large cartoon, and looks, indeed, as if it might be a copy on a small scale from the larger work, rather than a tentative study for the latter. It is remarkable in the large number of these drawings (both of Raffaelle and others, his contemporaries) which are heightened with white, how well the white has stood after the lapse of so long a time, preserving apparently all the sharp and glittering effect which it had when first laid on. However badly off we were for permanent whites in this country till the present generation of colourmen invented them, it is clear that the draughtsmen of the Cinquecento period could command a sound and honest material of this class, in which to express their ideas of lighting. Taking the Raffaelle drawings in this collection as a whole, it may be said that they hardly possess, artistically or intellectually, the same value as those of one or two of the painters' great compeers. They have not the force and power of those by Michelangelo, whose power, indeed, Raffaelle did not equal or rival in finished paintings either; and they are immeasurably behind those of da Vinci in regard to labour, accuracy, and intensity. A study of Michelangelo called a "Group of Warriors" (which, or a repetition of it, was in the Grosvenor Gallery last year) has been rather significantly hung among the Raffaelles, so as to balance a somewhat similar study by Raffaelle (Nos. 115 and 151). The latter is much more sketchy and less certain in the modelling of the contours of the limbs and the folds of the muscles; and the same kind of difference is apparent in comparing other studies by the two masters. The study for the figure of St. Paul, in the cartoon of the Sacrifice at Lystra (143), is very deficient in mere force as compared with the large figure in the cartoon; in this respect again a contrast to Michelangelo, who seems to put an amount of vigour and energy into a first sketch which even the finished work sometimes hardly equals. In the drawings in red chalk, however, which, as we observed, Raffaelle seems to have prepared for his most careful studies, we find an exquisite grace and completeness of modelling, as in the two drawings of female figures (148-9) lent by the Duke of Devonshire, which are perfectly beautiful. A study which has very great interest is that of a part of the Transfiguration picture, without draperies, and scored over with cross-lines dividing it into squares for easier reproduction (137); and it is certainly remarkable how much more dignified appear the figures of the two patriarchs in the apparition in their undraped stage than they do in the completed work: the criticism which some one passed on the "kicking gracefulness" of these figures, as unworthy of the serious character of the subject, is not applicable here; the action of the figures is dignified and quiet, the effect that has been not unjustly complained of is entirely due to the flutter and too-busy character of the draperies subsequently added. On the other hand, some of the undraped studies here speak volumes as to the immense value of drapery in adding beauty and dignity to the figure in many cases. There is, for instance, a rough pen study for the Virgin and Child and St. John in the "Madonna del Cardellino," and it is surprising how graceless appears this seated young woman, her two bare legs towards us, compared with the same figure when covered with broad folds of drapery. However elegant may be the female form in a standing position, seated it requires the drapery to cover and connect the lines and angles of the limbs, and give dignity and repose to the whole. Among the finest of the slighter and more sketchy studies may be mentioned that for the two figures meeting on the steps in "The School of Athens" (152); the perfect expression of the action of the two figures, as well as the consentaneous movement which pervades every line, and makes the two figures appear the product of a single thought shaping itself at once on the paper, strike one even more remarkably in so slight a sketch than in the finished picture.

We come now to the extraordinary collection of Leonardo da Vincis,—extraordinary not more for the power than for the almost alarming versatility displayed. The central feature is a large cartoon of the Virgin seated on the knee of St. Ann, belonging to the Royal Academy, and of which it is said by Vasari that when it was first exhibited at Florence, young and old went to see it, "as to a solemn feast." Here, as elsewhere, however, we are struck by the want of moral beauty in the faces of Leonardo's women, in spite of Vasari's ecstasies. They present a type with which we are familiar from other studies of Da Vinci, and which is wonderfully refined and graceful, but in these thin and compressed lips we do not read the tale of a sweet and bounteous nature: it is an outside beauty only. But the smaller studies are the most strange collection: it is difficult to believe them to be all the work of the same hand and mind. One of the first things we come on is a minute battle-piece in red chalk on the reddest of red paper, in which exceptionally huge elephants career about among the infantry and cavalry with great activity; at least, the catalogue says they are elephants, and we thought we could dimly discern a trunk or two. In this same doubly red combination is also a little sketch for an "Assumption" (194), with small carefully-grouped figures seen through a lofty faintly-indicated archway; and in the adjoining gallery is a remarkable single figure (312), a draped figure with folded arms and as if in deep attention to something, also in this strong red medium. But, then, here is a very elaborate and careful perspective drawing (172) of a new kind of derrick for hoisting cannon, showing the men working at it. Nos. 174 and 175 are sheets of small drawings of an equally practical nature, showing the process for casting a large bronze equestrian statue,—the shape of the core, the section of the core and mould, &c. A number of studies for horses evidently have reference to the same work; some of these are beautifully finished, and one drawing shows enlarged studies of the lifted fore-leg drawn with regard to a theory of proportion worked out in lines and angles on the drawing. A pencil study from a dead horse (197) is equally powerful in its way. But among the finest things in the set of drawings are the anatomical studies of different parts of the figure. One of these, a study of the leg and foot, with the attachments of the muscles carefully delineated, is one of the finest and most carefully finished drawings of the kind, probably, that has ever been made; there is quite an artistic beauty in it, and the same may be said of the studies of the shoulder and chest on another sheet. A set of skull studies are wonderful in their care and finish; these are accompanied by extensive notes in the artist's own handwriting, and in one, in which the skull is half in section and half in what one may call an interior perspective, there is a diagram drawn within the skull apparently with the view of calculating its centre of gravity. It is hardly necessary to enlarge on the evidence shown by such drawings as all these as to the extreme importance attached by Leonardo to complete accuracy of construction in drawing. In fact, one may suppose that the reason he painted comparatively so few pictures was that he occupied the greater part of his life in the assiduous training which he gave himself in order to be able to realise that completeness which was his object, and almost sacrificed the end for the means. We may mention one more curiosity of this collection before quitting it. This is a drawing of "two warlike engines" (210), one of which is certainly ingenious enough and unlike any offensive weapon we ever saw before. It consists of a kind of low two-wheeled carriage, with a large horizontal four-armed cross carried upon it, very like the top of a turnstile, the arms long enough to project considerably on either side of the vehicle, and each arm carrying two or three large shot slung with chains to the end of it. The horse is harnessed with a pretty long shaft so as to keep him well out of the way, and the object of the whole thing seems to be that the car is to be driven at full speed through the enemy's ranks, and the action of the wheels is to set the horizontal turnstile revolving at proportionate speed, its shotted arms knocking down and sweeping away every one who is in its course. Another drawing shows the same machine armed with some amiable-looking jagged and spiked bars instead of shot. It would certainly be effective in breaking up the ranks,—provided always that the horse got through first! However, we might take a hint from it: we could drive them by steam now, and launch them against the enemy's files or squares like a kind of land torpedo.

The Holbeins come next in order; but we will rather look first at the drawings of Michelangelo. The collection of drawings by him is hardly so full or so typical an illustration of his powers, as those of the other great names previously mentioned. Still there are some very fine specimens of his work here, and notably one which is not hung with the rest in Gallery IX., but occupies a central place in Gallery VII.; the silver-point study for the figure of "The Dawn" on the Medici tomb. This, which is lent by Mr. Jas. Knowles, may perhaps be safely called the finest drawing in the exhibition; it is quite a finished work in its way, in which one hardly knows whether to admire most the boldness and largeness of style in the design of the figure, or the delicacy with which this design is conveyed by the shading and modelling of the contours, and in expression it strikes us as even surpassing the completed figure itself. Among others of the Michelangelo drawings may be mentioned especially a study, not highly finished, but very forcible, for a figure of Christ rising from the Tomb (262): a figure glorious in the energy and beauty of its up-springing action, though utterly out of the beat of the ordinary artistic conception of Christ, and suggesting, in fact, rather the idea of an Apollo. The careful red-chalk drawing of the "Baccanalia di Putti" (294), a set of drunken little Pagans of tender years, which comes from the collection of the Queen, is one specially mentioned by Vasari as drawn by Michelangelo for his friend Tommaso de' Cavalieri, and is one of the most interesting, if not one of the pleasantest of the drawings. A pen-drawing called a "Study of a Dragon" (266) is very characteristic of the master, and remarkable for the evident attempt to render the anatomy of the dragon as logical as possible.

It is almost a pity that the Holbeins could not have been hung in a separate room from the works of any of the Italian masters, so completely different is the world into which they take us, both in regard to subject and method. Art is here used to perpetuate the real, and not to suggest the ideal; and it is a peculiar good fortune that there was an artist of that period capable of representing and putting on record for us, with so much precision and refinement, what the men and women, *temp.* Henry VIII., were like: for the men in particular seem to have been a splendid set, hardly equalled in style and appearance since Queen Elizabeth's day, at all events. Not that England has wanted fine specimens of the native man even in these degenerate days; but what strikes one on looking over the Holbeins is that, unless Holbein was in exceptionally good luck with his sitters, there was in that day a prevalent type of man certainly superior in external appearance to any prevalent type nowadays in England,—a type in which the aspect of hero and gentleman is splendidly combined. We see this, not only in the head of such a well-known man as Sir Thomas Wyatt, but in a good many others whose names are not familiar in the same manner, but who present the same appearance of dignity and calm and conscious self-reliance and courage, combined with a great refinement, not only in the expression of the face, but in the very cut and trim of the beard, and the sit of the hat on the head. Perhaps the peculiarly sensible, and yet picturesque head-covering of the period, the flat cap placed with an easy grace on one side of the head, is not without its effect in contributing to the chivalrous aspect of the wearer. Would it be possible for any one to look chivalrous in a chimney-pot hat? A question not to be asked. On the other hand, it is curious to notice that few, if any, of the female heads are very remarkable for beauty; they convey an idea rather of thoughtfulness, and certainly of womanly dignity, of a very high order; but in the matter of mere beauty, they are below what any collection of ladies' portraits of the same class of society would be likely to exhibit in the present day. Indeed, we imagine (without gallantry) that the English race never stood higher in regard to female beauty than at present; but we may feel conscious that the kind of noble and thoughtful air and strongly-marked character which we find in Holbein's female heads is not so common now. Lady Jane Greys were much more a product of that day than of this: our modern lady can talk about a great many things, it is true, but not generally with very accurate knowledge or logical reasoning. But this is a digression, certainly, from Holbein's work. The remarkable point that strikes one in seeing a number of his portraits of women together, is the completeness with which character and expression are conveyed with so few lines and such slight colouring as in most of these; the mouth is often hardly more than a single line, yet it seems to render the expression and modelling of the lips in a satisfactory and almost complete manner; and the like minute delicacy is seen in the tracing of the contours of the neck and bust, always drawn with the most careful recognition of those slight variations of curve which go for so much in showing the grace of a form in perspective and foreshortening. There is something, too, charming, though no doubt exceedingly artificial, in Holbein's delicate way of suggesting the colour of nature without giving it; letting the flesh have a very light and faint tint, or sometimes none at all, and then giving the only decided tint to the hair, not in general the colour of nature probably,—that is, not literally so,—but a tone which, in combination with the rest, gives the same balance as the real colour would if the whole were finished. He is very careful in his notes as to the texture and colour of the costume, and very attentive in regard to the correct drawing and placing of personal ornaments on the figures; and it is noteworthy, too, how evidently he enjoyed drawing the peculiarly picturesque though simple headdress of the ladies of his time, and making the most of its contrasted folds and curves. His peculiarly-delicate and truthful indication of hair in the beards of his male sitters is also remarkable, and may be especially noticed in one of the two Sir Thomas Wyatts which are framed together (224), and of which we are convinced the second and inferior one is a copy of Holbein's work by another hand, as it is entirely wanting in the characteristic felicity of execution in regard to this point especially.

Of the two rooms full of sketches of a more miscellaneous character, one (Gallery VII.) contains various studies by those who may be called the lesser great masters,—the Caracci, Romano, Guercino, and others; many of them very charming, and some having qualities of special interest in regard to peculiarities of subject and treatment; but few, of course, rivalling in value the best of those we have already been referring to. Giulio Romano's "Virgin and Child in Act of Blessing" (26) is remarkable for the beautiful composition of the group and the consentaneous action of the two figures, as if inspired with one motive; and a pen and bistre study of a similar group of Fra Bartolommeo is a gem of grace and expression, notwithstanding the rather odd drawing of the Virgin's neck. Some landscape studies of Titian are of special interest: one in particular, slight and sketchy, of a view in Cadore; and a larger and more finished one called "A Study of Rocks and Trees" (77); and it is interesting to compare several studies by Parmigiano, all marked by his studied and rather affected grace, as if his figures were posing to look elegant. But the contents of Gallery X. interest us, and will probably interest most visitors, more; they contain what is more out of the usual run of such studies. There are some by Albert Dürer; among others an outline on green paper of the half-length of a young woman in a broad-brimmed hat, which, in its careful delineation of expression by means of outline drawing only, reminds us curiously of Holbein's portrait studies, to which also the style of the figure herself has some similarity, though, of course, the tone and effect are quite different. Dürer's coloured study of the "Wing of a Jay" (315) shows with what exactitude he, like Da Vinci, studied the detail of objects which he wished to introduce in his pictures; as a piece of representation, this drawing (in tempera) is hardly equalled by anything in the exhibition. Architects will find interest in Martin Van Heemskerk's two sketches of "Buildings in Rome" (329). Then we come to English worthies, among whom Flaxman is pre-eminent. There is a highly-finished crayon portrait of himself from his own hand, and a number of his beautifully-conceived and delicately drawn outline studies of figures, sometimes with a very slight shading, others in pure outline. Some of these are marked in his own neat and delicate handwriting as "from nature"; little single figures or groups, such as a boy holding a child on his knee; and in these it is very interesting to note how the classic mind of Flaxman transferred itself into these studies, rejecting from his representation everything that was merely accidental, such as realistic details of dress; preserving only that, in outline and grouping, which constituted the essential beauty and spirit of the group. It is almost amusing to contrast with these pure and essentially Greek designs the sketches of the pseudo-classic Barry, who endeavoured to be antique by painting figures in blankets, and wrote himself up into a fervour of enthusiasm which his paintings at least did not succeed in conveying to others. In justice to Barry, however, it must be said that his drawings have considerable force, and fine composition, and that he is infinitely better without colour than with. Among interesting bits in this room is a very small and rough sketch by Reynolds, the property of Mr. F. T. Palgrave (340), a study, and to all appearance the first study, or rather sketch, for the composition of "Cymon and Iphigenia." Near this we noted a study of a pine-apple, by Turner (337), lightly but firmly tinted in water-colour, and obviously made with some deliberate intention of future use, as the artist has added to the drawing a note that it was "5 in. in diameter, contains 1 ft. 2 in. cube [*sic*]; weight, 6½ lb." This is an instructive commentary on what has often been said, by those who knew most of Turner's method of working, as to his laborious exactitude and precision in the study of objects he intended to introduce in his pictures, though it may be admitted that the method of painting them when so introduced would not always lead to such a conclusion. Contiguous to the Flaxman drawings is a study by Lawrence, in pencil, and partly coloured, a "Portrait of Mrs. Wolfe and her Son," which indeed looks affected by the side of Flaxman's spontaneous art, but is nevertheless distinguished by a remarkable grace and elegance, both in the figure of the lady and in the composition; the joint action of mother and child, both looking up as if at some one unexpectedly entering, is very charming and natural. We must, however, conclude our remarks, and can merely mention that this same room contains a considerable selection of landscape studies by Claude, some very beautiful; a good many by Rubens, and others by the two Poussins, Berghem, Watteau, W. Van de Velde, &c. Among a few points of special interest may be mentioned a very slightly sketched but interesting composition representing "The Agony in the Garden," by Nicolas Poussin,—a subject quite out of his usual line; a study in chalk and Indian ink for a lioness, by Rubens, evidently one of the studies made for the picture of "Daniel,"—indeed, we think this very animal is in the picture in the same attitude; and a highly interesting study of a ship by Van de Velde,—not a picturesque sketch, but a side elevation of a ship drawn in outline with a pen, and the mechanical details carefully noted. This may be compared with Turner's pine-apple, as an example of the manner in which great painters, who are famed chiefly for broad and picturesque effect and poetic feeling, lay the practical foundation for their works.

EGYPTIAN MANNERS.*

THERE is an ancient poem written by an Egyptian in memory and praise of the successes of Rameses, in which the temples that adorn the valley of the river Nile are designated as "everlasting stones"; and the works of Egyptian architectonic art do of a surety seem to have as yet well merited their title to a perpetual existence. Of these wonderful masterpieces of intelligent human erection, some have undoubtedly withstood the combined efforts of man and the elements to destroy them, for forty or even fifty centuries. Compared with their age, the extant works of all other nations (unless, indeed, we except some remarkable structures in the tropical regions of the new world which present many features worthy of comparison with Egyptian styles) are recent and modern. And it has been pointed out by some writers that not the least marvellous aspect of these ancient Egyptian monuments is, that the skill and precision which was displayed in the designing and execution of them must have been the growth of many antecedent ages, all memorials of which are now buried in the obscurity of the remotest antiquity.

It would, of course, be an idle speculation for us to attempt to decide whether the arts of Egypt were carried from elsewhere to the fertile banks of the Nile, or whether their origin was purely local. Some of the earliest specimens of handiwork may, indeed, be compared, as Sir Gardner Wilkinson has pointed out, with Asiatic relics; but the forms are, taken altogether, so peculiar and unique in character and design, that the preponderance of evidence must be given to the theory which demands a local rather than a foreign influence upon their development. One of the great difficulties in the way of rightly solving this question is the fact that there are no coeval remains of any Oriental nations with which early Egyptian monuments can be compared. The labours of Dr. Schliemann have, indeed, revealed many fine examples of very early Hellenic civilisation, some forms of which approach Egyptian prototypes; but we search in vain for foreign data, and at present the only known sources from which we can derive any opinion as to the original condition and earliest developments of the arts of Egypt are the technical execution of the oldest known monuments, and the forms and style of detailed elaborations employed in them. The painted ceilings of the tombs of the pyramids were, no doubt, originally suggested by the fabrications of the weaver, whose arts are thus proved to have been in a very high state of perfection at the earliest period. Some of the principal patterns that occur thus depicted are reproduced by a coloured plate in the work before us, where Wilkinson draws attention to their admirable taste. Those of the tombs are preserved far more perfectly than those in the houses, few of which, thanks to the facilities of modern travelling, now retain any vestige of the stucco or of the coloured devices that once embellished them. These ceilings were arranged in compartments, each having a pattern with an appropriate border; in many instances pointing so forcibly to Greek taste, that we should be surprised to

* See p. 3, *ante*.

find them upon monuments of the early period of the eighteenth dynasty, if there were not authority for acknowledging that Egypt unquestionably lent numerous devices to the Greeks. To this fact we may not hesitate to ascribe the scarabæus beetle, the harpy, the rosette, the wave-like scroll, and many other ornamental emblems on Greek and Roman vases. The favourite forms, we are told, "were the lotus, the square, the diamond, the circle, and, above all, the succession of scrolls, and squares within squares, usually called the Tuscan border, both of which are of ordinary occurrence on Greek and Etruscan, as well as Egyptian vases; and those given from a tomb at Siout, painted upon a black or dark bronze ground, though of an age prior to the year 1600 before our era, are perhaps the most elegant; and, which is most remarkable, bear the nearest resemblance to a Greek style. Similar designs were adopted by the Romans, some of which, having been found in the baths of Titus, gave Raffaelle the idea of his celebrated and *novel* arabesques; and the paintings of Pompeii make us acquainted with a still greater variety." The author does not deny that the taste of Greece, and even Rome, far surpassed that of Egypt. This he asserts was a natural result of the encouragement given to inventions, which Egypt, fettered, as she was, by regulations and strongly conservative prejudices that prevented the development of taste, and cramped the genius of her native artists, never enjoyed. But, notwithstanding that the gilded and interlaced patterns of Roman ceilings surpassed in the richness and beauty of their effect the ceilings of an Egyptian interior, divided as they were into numerous compartments, presenting cornices, mouldings, and embossed fretwork, painted, gilt, and even inlaid with ivory; still, in the general modes of decoration, they, like the stuccoed walls, bore a striking analogy to those in the mansions of Thebes and other cities of the Nile.

After discussing the date and object of the pyramids,—disdaining to entertain the astronomical theories with which some writers have striven to invest their well-regulated dimensions and beautifully symmetrical proportions,—the author passes onward to examine the palaces, houses, temples, and lastly, the tombs of Egypt, pointing out the prevailing ideas of solidity and grandeur, the massive and substantial effect which is found running through every edifice, from the palace of the monarch to the simple tomb of the deceased functionary, composed of a series of chambers hewn in the solid rock, which forms so constant and so remarkable a feature in the riparian ichnography of the Nile. Grand and full of awe as some of these structures are, they do not fail, even in their desolation, to bear a lively testimony to their former magnificence: and as the explorer passes in his pursuit of knowledge through court after court, beneath the colonnades and stone-roofed aisles of Theban temples, through the mazy cluster of chambers now tenantless, but once teeming with all that made human life intellectual and sublime, or, it may be, as he threads his dangerous way along Cimmerian passages and subterranean labyrinths illuminated by the flickering and uncertain torch, he feels that the civilisation of which he forms an atom is not for a moment to be compared, as far as its memorials will avail, with those that attest the bygone glories of fifty centuries of Egyptian art. Even as it is, the treasures which that country yet retains undiscovered are very many and very valuable. Unexplored tombs contain literary and domestic relics of the highest importance, compared to which those which Wilkinson examined, and those which the British Museum preserves are insignificant. It is not so long since that a lady, at the peril of her life, descended deep into the recesses of a tomb, in utter darkness, and groping among the half-putrid remains of a mummied corpse, succeeded in recovering to the world of letters the earliest book that is known to us, a veritable volume, not a roll, composed of leaves of papyrus, upon which are inscribed portions of the immortal Homeric poem and an unknown classical Greek text. Nor is it so long a time since an enthusiastic English traveller discovered a ruined temple at Tel-el-Yahoudeh, entirely built up of inlaid porcelain of various colours, the very rosettes and foliage which adorned the numerous cornices and architectural details being found to be elaborate specimens of the highest style of the potter's art. At this very time the rubbish heaps of Egypt are yielding up palæographic treasures, the great value of which will be admitted before long, not only by Egyptologists, but by palæographers of the Greek and Byzantine schools. Broken fictilia and shards of crockery have been found in great quantities inscribed with Greek and Coptic formulæ in cursive characters, dated from the first century before our Christian era; for the scarcity of papyrus and the inapplicability of vellum compelled the inhabitants of the Nile region to take their tax receipts on terra-cotta fragments.

The Egyptians were pre-eminently pictorial in their predilections; their alphabet preserved its pictorial character, which from its very nature must have been invented in the earliest days of their civilisation, without appreciable change down to the very last days of their national life; side by side with this character two other methods of writing are found to have been employed, denoted *hieratic*, the cursive writing of the priests; and *demotic*, the cursive writing of the common people; both of them, however, are merely tachygraphic modifications of the hieroglyphic or lapidary and official writing, and like them admit the pictorial ideographs of their archetypal alphabetary. Their taste for vivid representation manifested itself in a thousand different ways. The temples were covered with scenes and inscriptions couched in flattering terms relating the virtues of the monarchs; the various objects in daily domestic use were gaily painted and duly inscribed; their manuscripts written on leather, papyrus, or fine linen cloth, adorned with vignettes either in outline or body colour, long before the arts of illustrating and illuminating had risen among the literary nations of Europe; their coffins and winding-sheets covered with decorations and ornamental specimens of penmanship, consisting of necessary excerpts from the Funereal Ritual, the Rule of Conduct for the departed soul during his abode among the mansions of the nether world; and their tombs to this day bear witness to the beautiful arts of mural painting in which the Egyptians were proficient. It is mainly to these pictorial remains that Wilkinson has been indebted in his excellent expositions of Egyptian manners and customs. Some of the most notable tombs of Gourneh, Thebes, Medinet Abou, Benihassan, and Kardassie, for example, furnish details to be found from no other source. One of these in particular, the tomb of Rekhmara, a noble Egyptian of high rank, has supplied an immense amount of new information, and we may easily judge of the grandeur of the sepulchral chambers prepared for his mummy by an inspection of a small portion of one wall only, reproduced for this edition in a large folding plate of chromo-lithography. Fac-similes of the whole of this tomb are contained in the Hay collection in the Manuscript Department of the British Museum, and a great portion of it, we believe, has never yet been published.

In their mechanical knowledge it appears the Egyptians were somewhat primitive, and when we contemplate the enormous masses of stone, which must have been elevated to great heights in course of the construction of the spacious temples of Philæ, Denderah, Thebes, and other well-known sites, it is really marvellous that with the limited knowledge of mechanism at their command, such results could have been achieved. Heavy roofing stones, of considerable dimensions, spanning long intervals from column to column, cannot have been placed in position without great labour and consummate ingenuity. Some astounding results were no doubt executed by hewing out of the living rock, court after court, and column after column, in proportion as the means of progressing with the work were obtained. But no writer on Egyptian manners has declared the way by which the temples upon the plains were constructed in detail of manual labour. Even the mere transport of heavy pieces of sculpture required the united efforts of an incredible number of slaves, convicts, prisoners of war, or workmen specially trained to pull altogether at a given signal. Oxen with sledges were employed to draw single stones; but a very curious and interesting subject in connexion with the conveyance of colossi was discovered by Captains Irby and Mangles, painted on the wall of a grotto behind E'Dayr, a Christian village between Antinoe and El-Bersheh. Here the colossal statue of a private individual is mounted on a sledge, which a large number of men are dragging with ropes,—a subject doubly interesting, from being of the early age of King Usertesen II., and one of the few paintings which throw any light on the method employed for moving weights; for it is remarked by Wilkinson as singular that while the Egyptians took a pleasure and a pride in depicting the simplest and to us most insignificant customs of their daily life, yet we find no illustration of the mechanical means of a people who have left so many unquestionable proofs of skill in those matters.

To allude to all the points which Sir Gardner has touched upon so ably, and which Dr. Birch has annotated so learnedly in these three volumes, would be impossible in the space at command here. The dresses of different classes of society, the wigs of false hair, shoes and sandals, charming specimens of the jeweller's and goldsmith's arts, toys, weapons, tools, implements of trade, games and pastimes, furniture, and other details, are so copiously illustrated with woodcuts and plain or coloured plates, that one might almost be tempted to imagine that upon the author and publisher there had descended some considerable amount of the ancient Egyptian spirit of profuse pictorial representation. Long chapters of great interest are devoted to the arts of the builder and the carpenter, the chase, agriculture and the care of cattle, the natural history of the fauna and the flora of Egypt and Nubia, but we can only refer to them in a general way, from want of space.

The third and concluding volume of this most interesting work is devoted to an exhaustive examination of the matters connected with the religious feelings of the Egyptians, the Pantheon or system of gods and their worship, the sacred objects of natural history, emblems, processions, and funeral rites. In this volume an important alteration will be found on comparing it with the corresponding part of the former edition. In that the full-page plates were published separately, in a volume, executed by a lithographic process, not by any means successful, because, at the time when they were published the art of the lithographer was in a very crude transitional state, and the best productions of the year 1840, when compared with fairly good specimens of lithography so common and plentiful nowadays, are painfully poor and unsatisfactory in representative effect. In this edition, on the other hand, all the lithographic plates have been reproduced by Mr. J. D. Cooper, the well-known wood-engraver, of the Strand, upon wood-blocks, and inserted at their proper places in the text, so that the reader is no longer placed under the necessity of turning to another book to seek the illustrations to which the text refers. This manifest advantage, which must have been obtained at a large expense on the part of the publishers, constitutes one of the great extrinsic merits of the edition, which, for general excellence of printing and beauty of production, reflects great credit upon Messrs. Clowes & Son. The imperfect index, a great defect in the first edition, has been replaced by an entirely new and exhaustive index in the present issue.

Being attached superstitiously to their sacred institutions, and devoted to a religion which admitted much outward show, the Egyptians invested their ceremonies with all the grandeur that solemn pomp could bestow; and the celebration of their religious rites was remarkable for all that human ingenuity could devise to render them splendid and imposing. They took a pride in being, as they asserted, the nation in which had originated most of the sacred institutions afterwards common to other peoples, who were believed to have borrowed them from Egypt. And the mysterious nature and attributes of the deity, though presented under a different form, were recognised by the Egpytians as a direct emanation from the metaphysical philosophy of their priesthood. They claimed, too, the merit of having been the first to dedicate each month and each day to a particular presiding deity; a method of constructing a calendar which has been imitated and preserved throughout the whole of Christendom (except among the Republicans of France and the English Society of Friends) to the present day, the Egyptian gods having, indeed, yielded their places to those of another Pantheon, which have in turn been supplanted by the saints of a Christian era. Many of the Greek notions of religion were borrowed from Egyptian theological tenets. Sacrifices were especially made a feature in the modes of worship, and curiously enough, the ideas of religion which were cultivated among the priesthood were of a far more mystic and advanced character than those which were disseminated by the priests themselves among the people. Complicated and localised as it was in later times, Wilkinson

states that it may be reasonably supposed in early times the religion was more simple and free from the host of fanciful beings who, at a later time, filled a station in the extensive catalogue of gods. According to the author, the original objects of worship among the primitive denizens of the Valley of the Nile were, the deified attributes of a creative power and of the divine intellect, and the sun and moon, whose visible power has so generally been an object of veneration among mankind in the early ages of the world. To these he adds the president of that future state to which the souls of the departed were supposed to pass after they had cast off their earthly envelope. He does not attempt to decide whether the Egyptians had originally the belief in a future state, or if the immortality of the soul was a doctrine engrafted into their theology at a later period, when their religious notions had been to some extent modified and remodelled by the teachings of advanced philosophy. At any rate, the oldest remaining monuments bear ample evidence of this having been their belief at the earliest period of which we have any record. Osiris, the judge and president of the Purgatory, or Amenti, is mentioned in tombs contemporary with the kings who erected the Pyramids upwards of two thousand years before the Christian era. To these simple tenets of belief numerous additions and ramifications were subsequently made. The worship of the Aten, or solar disc, in opposition to the god Amen, one of the eight principal divinities, received, as Dr. Birch tells us, a great extension in the reign of Amenophis III., owing to the influence of the queen, Taii. Its first appearance upon the monuments is in the eleventh year of that monarch. His successor, Amenophis IV., subsequently assumed the name of Khuenaten, and endeavoured to remove the capital of the country to Tel-el-Amarna, and to destroy all traces of the worship of Amen-ra throughout the country by erasing the name, which was subsequently restored when the overthrow of the new worship of the solar disc was accomplished. Much in the same way our own king, Henry VIII., endeavoured to remove the name of Thomas Becket, the canonised Archbishop of Canterbury, from the list of Catholic saints, by ordering the wholesale destruction of his effigies, and causing his name to be erased from every service-book in the kingdom. The Aten represented the sun in its character of universal god; it gives light to mankind, "the lord of the festivals of thirty years, the lord of the heaven," and its rays terminate in human hands, emblematic of its demiurgic or creative power. Some go so far as to see in it the adoration of the Hebrew *Adonai* and the Syrian *Adonis*. Here me may note that if the Egyptians separated the orb from the rays of the sun, they were, at least, not alone in that idea,—the same was common to the Greeks; and our readers will not fail to call to mind the sadly beautiful distich spoken by Alcestis before going to her death, wherein she exclaims that now for the very last time she turns her eyes towards the *ἀκτῖνα κύκλονθ' ἡλίου*,—an expression which is thus shown to be not mere poetry, but a profound and truly religious discrimination. Osiris and his godlike sister-wife Isis are, of course, the leading spirits of the Egyptian pantheon: he has a human history as well as a divine, but the want of space forbids our doing more than referring to the thirteenth chapter of Sir Gardner Wilkinson's book such of our perusers who would know more of the remarkable history of this sacred personage. Of the transmigration of the soul, the worship of the Apis or spotless Bull, of the Cow of Athor, the great triad of Thebes, the doctrine of the Trinity, the theory of mystic numbers, the history and attributes of Chnumis, Amen, Ptah, Khem, Sati, Mut or Buto, Bubastis and Neith, exhaustive disquisitions are given. One very remarkable point must be noticed here: it is the localised worship of different triads, or arbitrary groups composed of three gods who were set up pre-eminently for worship in various districts to the exclusion, or, at least, displacement of the others. Some of those triads are well known, but a great number are not known. If in every town or district of Egypt the principal temple had been preserved, we could easily discover the members of the triad worshipped there in combination, as well as the name of the chief deity who presided in it, and thus become better acquainted with the character of the great gods. Few, however, can now be ascertained; and in Lower Egypt and the Delta especially, little information is offered now by the mutilated remains of isolated monuments. The funeral triad,—Osiris, Isis, and Nephthys,—alone occurs generally in all tombs throughout the country.

The account of the care bestowed upon the large class of sacred animals is not the least attractive portion of this book. Carefully tended in life, mummified and embalmed after death, apes and monkeys, bears, dogs, wolves, foxes, ichneumons, jackals, cats, lions, hippopotami, asses, goats, cows, vultures, geese, the ibis, crocodiles, snakes, the tortoise, and many fishes were apportioned off to the tutelary care of the several gods,—who even took the forms of their heads from their especial animals. While the bat, the hedgehog, otter, hyena, panther, leopard, mouse, rat, porcupine, elephant, boar, horse, camel, stag, giraffe, gazelle, ibex, buffalo, dolphin, most birds, saurians, batrachians, and insects were not so honoured. The scarabæus, of course, was universally adored; his habits and mode of life especially recommended him as an object of veneration to a thoughtful, prudent, and mystery-loving people. He was an emblem of the sun, of the creative power, of the triadic Ptah-Socharis-Osiris, of the world, of astronomical science, and lastly intimately connected with funeral rites. The author has not omitted to carry his elaborate researches into the manners and customs of this remarkable people right down to the last remains of their bodies as exhibited in their hardened and bituminised mummies, many of which are enveloped in costly linen bandages, beaded networks of exquisitely delicate manufacture, covered with plates of gold, adorned with jewelry and engraved stones of great price, and fortified for their triumphant passage unscathed through the lurking terrors of the next world by a lengthy series of extracts from the ritual of the dead.

And here, in conclusion, we may take our leave, reluctantly, of a book which cannot fail to please, instruct, and gratify the most critical and exacting reader, to enchant the indulgent, and to stimulate the amateur Egyptologist. If its perusal should result in attracting towards the tiny circle who form the school of English Egyptology some, who may hereafter build up for themselves, out of the stores of knowledge which men like Sir Gardner Wilkinson and Dr. Birch have garnered, in this and other kindred publications, imperishable monuments of literary fame, this book will not have been re-issued in vain. It is, after all, sad to think that England possesses no young and rising Egyptian scholars who are competent to carry on the labours which have made London the headquarters of the science. Dr. Birch has for many years represented, single-handed, the most advanced state of this branch of archæology, not forgetting, nor lightly passing over the opportunities which his official position as keeper of the Egyptian antiquities in our national temple of the Muses has afforded him. His Grammar and his Dictionary of the Egyptian language, both published and available to the student at large, have failed to attract a single English student of energy, perseverance, and originality, if we except only M. Le Page Renouf, one of her Majesty's inspectors of schools. The lectures on Egyptian language delivered by this gentleman at the Society of Biblical Archæological should form a rallying ground where the traditions of the elder labourers in this fruitful garden of knowledge might be handed down, but as yet they have borne but little fruit, and promise less. In the not far distant future, if we may augur aright, we shall find ourselves directing, in a very much greater measure than we do now, a country, of which we shall know but little as far as the literature and archæology are concerned.

The Ladies' Work Society.—This Society, located at 31, Sloane-street, and of which H.R.H. the Princess Louise is president, and Mrs. William Playfair vice-president, is formed for the assistance of poor gentlewomen, either by the sale of their work or securing orders for it. The committee have always sought to raise the standard of the work both in design and execution, and the Silver Medal just awarded to the Society at the Paris Exhibition may be taken as evidence of their success. We have before now had occasion to mention excellent specimens of the highest classes of work exhibited by them. The Society is much in want of funds, and we should be glad if we could interest some of our friends in its success.

THE FITNESS OF THINGS.

Of all professions, that of the architect, equally with that of the civil engineer, is one where a due and proper appreciation of the fitness of things is most to be desired, and where, perhaps, it is most generally to be found, for he who, having built a house or carried out to completion some engineering work, can with the receipt of the balance of his allotted remuneration, dismiss the subject and object of his past labours for ever from his mind, must be curious humanity indeed.

Any house, no matter how small or how meanly built, must, so long as its four walls and roof-tree hold together, minister not only to the actual purposes of shelter for which it was primarily constructed, but in a thousand ways to the comfort or discomfort of generation after generation, and, if we only follow the matter out, to their weal or woe to an extent that at first seems scarcely credible.

And so, too, in like manner, with the work of the engineer in many cases, with the great difference, however, that not only the welfare and comfort of one family, but of many hundreds or thousands, are involved. We are assured by those best calculated to express an opinion that the great antidote to much of the suffering and poverty of this populous kingdom is "thrift," and those of us who will only take the trouble to look round and observe the waste and misuse of time, of strength, of articles of food and clothing,—in short, of *money*,—cannot fail to see that "thrift," rightly understood and practised, would raise at least one half of the indigent and poor of the country to comfortable, honest, independence, if not to comparative affluence. Men are prone to lament the cruel fate that keeps them fast bound in the toils of poverty and its attendant evils, but the fact may generally be discovered that their present distress is really due to their having failed some time or other, in days gone by, to take their own little tide of affairs at its flood, and by a thrifty use of their opportunities to place themselves in position to withstand future storms and buffetings.

With the architect or engineer a right appreciation of thrift should, of course, first lead him to give the best, soundest, and most durable work possible for the money; and, secondarily, to aim at a due and proper fitness of things in the most minute details. To this end it behoves the architect to descend awhile from his high stool of æstheticism, and the engineer to cease from his engrossing combat with the mighty powers of Nature (or rather from the absorbing study of her laws), and in a commonplace way occupy themselves with commonplace and, possibly to them, very uninteresting things,—the daily petty wants and requirements of all classes of their fellow men.

It is not in the power of all professional men to descend or to stop short after this fashion; and, while some cannot, there are others who will not do so. An Indian proverb says, "The frog in the well, what does he know about matters outside?" and one feels somewhat maliciously inclined to ask whether a cigar-loving, bachelor-living, and domesticity-despising young architect is likely to be able, or would if he could, design and carry out dwellings which in fitness and suitability of detail will enable their inmates, from mistress to servant, from matron to maid, to freely practise that thrift and economy which in our English homes are yearly becoming more and more necessary. However, let him take heart of grace and read and think, so that he may comprehend the "*res angusta domi*"; so as to design houses which shall be as comfortable and as economical "homes" as they are pleasant in appearance,—to which end, farther, he must study and seriously consider the domestic needs and requirements of humanity in all its seven stages.

If he who has succeeded in growing two blades of grass where only one previously existed is a benefactor to his country (and we must be all pretty well agreed as to this being a truism), how much the more must that architect be a benefactor who can look back on his work of the past, and say,—"I have built so many dwelling-houses, with their attendant offices [or so many dozens, or scores, as the case may be], and throughout all my work I have so planned and arranged that I have succeeded in reducing domestic labour and toil to a minimum, and given at the same time the maximum comfort that was consistent with other due requirements."

The Romans were wont to set up in their

atria busts and statues of the ancestors to whose courage and virtues they owed their wealth and position; so, too, might the British householder, whose house has been built with a view to the fitness of things, well set up in his hall a bust of the architect, to whom the whole of his family, from himself down to the meanest domestic, nay, even to the old pony in the stable, have thus been made the life-long debtors.

Take the case where, say at the expenditure of 1,500*l.* or so, an architect has designed and carried out some modest, unpretending English house, to be occupied by some family equally as modest and unpretending, and it will be found that a very great deal of the welfare and happiness of the family depends on the mode in which the architect has carried out the details of his work; indeed, far more so than at first sight most people will be willing to allow.

It is no slight thing whether the day nursery has or has not been placed where the little inmates have a bright and cheerful outlook, or the night nursery where they shall be snug and warm. It is no slight thing whether the room of the mistress and matron, and in which she will, in the natural course of events, have to pass many weary days and nights of sickness, can or cannot be, when required, shut completely off from all noise and bustle, while yet in close propinquity to the nurseries themselves; nor is it all one whether the room allotted to the breadwinner, when he wishes to read, write, or rest in quiet, is suited or unsuited to its purpose. With the servants it is not a matter of indifference whether the kitchen is cheerful or otherwise, or whether the larder, coal-house, and other offices are conveniently situated or the reverse; while the old pony would tell you, if he could speak, of the advantages both he and his owner gain by the well-considered "fitness" of the stable arrangements.

Fitness of things in domestic arrangements certainly and surely has its fruit in increased health and energy, capability for labour, and capacity for true enjoyment, or, in other words, is productive of the best economic results; for a family where want of health and energy, and of capability for labour and enjoyment is the rule, will most assuredly require a larger income, or find it far more difficult to make both ends meet than in the opposite case.

While it should be a *sine qud non* with all architects to devote most particular care to the drainage, sewerage, and ventilation of the houses they are intrusted to build, he who studies the fitness of things will go further, provided that these three important matters are as simple in their construction as the science of the present day will allow, and that all underground work is sufficiently easy of access to permit of thorough examination and cleansing at any time without the inconvenience, annoyance, and expense the unfortunate householder is usually called upon to submit to when "something goes wrong with the drains."

It is impossible to dilate on the thousand-and-one points in the plan and arrangement of every habitation that go to make up the happiness of family after family, and enable the frugal, hard-worked, and hard-working parents year after year "to make the ditch make the hedge," and he who would strive to provide these points, or some of them, must be large-hearted enough to think and care deeply for the peculiar requirements of all classes of humanity, from the cradle upwards, and to perceive that infinitesimal economies of time and labour obtained by the judicious placing of even a water-tap or a cupboard, will, before the house itself has stood many years, amount to no inconsiderable sum.

As a nation we are terribly ignorant of "thrift," and it is to this ignorance much of the present suffering is to be attributed. As a class, architects have been thought, and in some cases not without reason, prone to attend more to details of outward beauty than to those of inward economy and comfort, to build for their own honour rather than that their careful forethought should enable any reduction to be made, say, in the number of domestics required, or that a shilling might be often saved where the same would be truly appreciated.

A Joke,—for the Plumbers.—An American contemporary has the following:—"Sir Charles Dilke was recently asked how his house had fared during a storm. 'Oh, badly,' was the reply; 'my cistern is the only dry place in it.'"

THE INDUSTRIAL CRISIS.

SCARCELY a single day passes without bringing to light some fresh proof that in our remarks of December 14th, on the outlook of labour, we have put the finger on the crucial question of the hour, as regards industry. A general movement, not concerted, but arising in all parts of the kingdom from the operation of the same causes,—has been almost everywhere manifest, since we called attention to what was occurring in the coal-mining districts. The lesson afforded by the sudden collapse of the Oldham strike, foredoomed from the first day, with no effect except that of driving trade from the town, and costing the workpeople 60,000*l.*, has apparently had no influence on the counsels of the operative classes. We printed in our last week's number a letter to which we are glad to have occasion to refer, as it gives us the opportunity of making still plainer what was apparently not quite clear to an intelligent reader, though it is a matter as to which there is not the least hesitation in our view. Mr. Grimes points to the accumulation of coal as a reason why supply should be reduced and not increased. It would be well for us all if coal were the only product left to accumulate on the hands of the producer. It is to this very accumulation of unsaleable products that we referred in saying, "It is, of course, possible that the industry of a country may be unduly distributed." Of two things one must be the case. Either there is some limit, lower than our actual proportion of about 280 souls per square mile, at which the productive value of man ceases, and the increase beyond which means an increase of poverty, or there is not. It is, of course, open to any one to argue that the former is the case, and that the 2,500,000 souls who formed the population of England at the date of the Conquest occupied a much better position in every way than the present 34,000,000 inhabitants of the United Kingdom. Or it is possible to take any point between these two, and to say "Here in 1800 [or any other year] the most productive ratio of population existed." But as the Liverpool population of 101 souls per acre is at least as well off as the Dublin population of 31, or as the Sheffield population of 14 souls per acre, it will be hard to show that the country is, or can easily become, too full of inhabitants. If not, if wealth increases with the increase of industry, as the weight of honey in a hive depends, not only on a good season and plenty of wild flower, but on the number of bees, then production cannot be in excess, because producers cannot be in excess; though production may be, as we before said, ill-distributed. No better instance of bad distribution of labour can be instanced than that referred to by some of our correspondents, with reference to a point on which we have more than once insisted—that of "Lands that want hands."

At the present moment, when the most powerful of all the labour associations has declared its intention to resist to the bitter end the proposed return to less arbitrarily curtailed hours of work, we can but urge all concerned to endeavour to regard the question as producers, rather than as operatives or masters, and as Englishmen, rather than as members of a single craft. What is the actual point on which issue seems about to be joined? The increase of the working time in the week by 6¼ per cent.,—from 54 hours to 57½ hours. Can any steady workman call that a hardship? We would much rather have to chronicle that English workmen found themselves in a position to work 3½ hours less in the week, but if this advantage cannot be had, if it be found that unless the additional work be done this particular manufacture or process must come to an end altogether in England in view of what can be done abroad, those who advise resistance are not wise counsellors. What does the change imply,—we do not say to master or to man, but to the engineering trade of the country? It means a gain of 6½ per cent. in the time in which an order can be executed. Three weeks and a half are saved out of fifty-four. Engineers will understand that such a difference might just prove the turning-point between sending an order to Belgium or to Birmingham. Further, it means a reduction of 3½ per cent. in the cost of production, all round. Men accustomed to make or to examine tenders will also understand what that means. Again, if we suppose that the mechanical motor power now employed in the country is equal to the work 5,400,000 horses (which is the case if we allot but a very moderate duty to the quantity of coal used for raising steam), the change will enrich the country, within the year, by the value of the work done by 350,000 horses, at a cost of only some 3d. per diem per horse.

We regret to see the argument put, by the advocates of short time, on the ground of the superiority of English workmen. As to that, we have often borne testimony. We have had occasion to conduct experiments wherein the work of the English has been definitely and publicly pitted against some of the French workmen, the result being two and a half to one in favour of England. But we are far from saying that almost, if not quite, a like difference may be found between the English workmen of the time referred to and those of the present day. It is only within the last few days that a popular writer has been contrasting the energy of the sturdy Northumbrian workmen, who stripped to their work as if their hearts were in it, with the more leisurely work of the South Yorkshiremen. It is only the Englishman at his best who can make any attempt to justify the boast of King Henry V. as to his soldiers, of whom he says:—

> "——when they were in health, I tell thee, herald,
> I thought upon one pair of English legs
> Did march three Frenchmen."

But, allow the outside ever claimed, and it is interesting to note that, on the occasion of the trial before referred to, when the Frenchmen attributed their beating to the better tools of the Englishmen, the order was given to change tools: and the result was exactly that hinted by Shakspeare, viz.,—three to one in favour of the English. But let the English workman study the real odds. They are these:—

Take 3 French operatives..... 3
Engine power 20
23 × 72 hours = product 1,656 units of work.

1 English operative 3
Engine power..... 20
23 × 54 hours = product 1,242 units of work.

Even if we reduce the proportion of power derived from the coal much below the above rate, its great importance as a factor cannot be denied. The best result of steady human labour known to our own practice is that of the filling of railway-wagons with earth. In this a good filler, paid from 2s. 9d. to 3s. 3d. per day, used to perform work equal to 128 foot tons, one day with another. The one-horse power work of a steam-engine for a day of ten hours is 880 foot tons. The industrial population in the country in 1871 was 5,137,725. How many of these were men working full time? Half the number would be a very full estimate. But the mechanical collaboration of the steam-engine has been produced by the combination of some 33,000,000 tons of coal. If these data are put together, it will follow that the estimate of twenty times a man's work done, per man's day employed, by the steam-engine, is not likely to be over the mark. But suppose the steam-work to be only half what we estimate, and that one Englishman is worth three foreigners, we should still find the production of the latter to be 986 against 702 of the former. It is idle to speak of holding our own against such odds. If the Englishman can do as much work in two days as the foreigner in six, he forgets that he has only two days' work of the steam-engine to aid in the result, while the foreigner has six days of that work. And by a strange perversity of nature a steam-engine will do much the same amount of work per hour in Liège as in Sheffield.

We strongly urge the councils of the Working Men's Associations to make a few calculations of this nature for their own guidance. It is of no use to shut our eyes, and to set our backs against the steam-engine. It is too late to smash it, and all the king's horses and all the king's men cannot overpower it. And it is not an English patent; and, moreover, all are the better for it in the long run, notwithstanding individual and temporary hardships.

Town-hall and Court-house, Kingstown, Dublin.—The corner-stone of the new Town-hall and Court-house for Kingstown has been laid. In August, 1874, designs were advertised for and received. Those of Mr. J. L. Robinson were accepted. The original cost was estimated at 8,000*l.*, but some changes and amendments in the plans were suggested by the Board of Works Commissioners, which it was considered would add about 5,000*l.* to the cost of the works. The designs, being confirmed by Parliament, were ordered to be carried out, and the work was commenced last July.

A PAINTER "IN COURT" IN THE SIXTEENTH CENTURY.

A RECENT art trial in a court of justice, that has amused many and distressed not a few, recalls to us a passage quoted by Mr. Ruskin himself in one of his instructive pamphlets, a "Guide to the Principal Pictures of the Academy at Venice,"—a pamphlet little known, and, expensive as it is, like all Mr. Ruskin's works, is of real value to the art-student, and even to the speculator, judging by the recent sale of some of the Professor's well-known books. Mr. Ruskin quotes from his friend Mr. Cheney's "Original Documents relating to Venetian Painters," the trial of Master Paul Caliari, better known to the world as Paul Veronese, before the Holy Office, for alleged profanity in a picture painted by him of the "Last Supper at the House of Simon."

The work from which the extract is made having been communicated only to the author's friends, the document is additionally interesting.

It is well known (says Mr. Cheney in his prefatory remarks) to the students of Venetian history that the Roman Inquisition was allowed little influence, and still less power, in the States of the Signory; and its sittings were always attended by lay members, selected from the Senati, to regulate and report its proceedings. The sittings of the Holy Office were held in the Chapel of St. Theodore, fronting the door leading from St. Mark's Church to the Fondamenta di Canonica.

On Saturday, the 8th of July, 1573, Master Paul Caliari, of Verona, a painter, residing in the parish of St. Samuel, was brought before the Sacred Tribunal; and being asked his name and surname, answered as above; and being asked of his profession, answered,—"I invent and draw figures."

"Do you know the reason why you have been summoned?—No, my lord.

Can you imagine it?—I can imagine it.

Tell us what you imagine.—For the reason which the Reverend Prior of SS. Giovanni and Paolo, whose name I know not, told me that he had been here, and that your illustrious lordships had given him orders that I should substitute the figure of the Magdalene for that of a dog; and I replied that I would willingly have done this, or anything else, for my own credit and the advantage of the picture, but that I did not think the figure of the Magdalene would be fitting, or would look well, for many reasons, which I will always assign whenever the opportunity is given me.*

What picture is that which you have named?—It is the picture representing the Last Supper in the house of Simon.

Where is this picture?—In the refectory of the Friars of SS. Giovanni and Paolo.

Is it painted on the wall, on panel, or on cloth?—On cloth.

How many feet is it in height?—It is about 17 ft.

How wide?—About 39 ft.

In this supper have you painted any attendants?—Yes, my lord.

Say how many attendants, and what each is doing?—First, the master of the house, Simon; besides, I have placed below him a server, who I have supposed to have come for his own amusement, to see the arrangement of the table. There are besides several others, which, as there are many figures in the picture, I do not recollect.

What is the meaning of those men dressed in the German fashion, each with a halbert in his hand?—It is now necessary that I should say a few words.

Say on.—We painters take the same licence that is permitted to poets, to jesters (!) I have placed those two halberdiers—the one eating, the other drinking—by the staircase to be supposed ready to perform any duty that may be required of them, it appearing to me quite fitting that the master of such a house, who was rich and great, as I have been told, should have such attendants.

That fellow dressed like a buffoon, with the parrot on his wrist—for what purpose is he introduced into the canvas?—For ornament, as is usually done.

At the table whom have you placed?—The twelve apostles.

What is St. Peter doing, who is the first?—He is cutting up a lamb to send to the other end of the table.

What is he doing who is next to him?—He is holding a plate to receive what St. Peter will give him.

Tell us what he is doing who is next to this last?—He is using a fork as a toothpick.

Who do you think were really present at that supper?—I believe Christ and his apostles were present; but in the foreground of the picture I have placed figures for ornament, of my own invention.

Were you commissioned by any person to paint Germans and buffoons, and such-like, in this picture?—No, my lord; my commission was to ornament the picture as I judged best, which, being large, requires many figures, as it appears to me.

Are the ornaments that the painter is in the habit of introducing in his frescoes and pictures suited and fitting to the subject and to the principal persons represented, or does he really paint such as strike his own fancy, without exercising his judgment or discretion?—I design my pictures with all due consideration as to what is fitting, and to the best of my judgment.

Does it appear to you fitting that in such a subject you should paint buffoons, drunkards, Germans, dwarfs, and similar indecencies?—No, my lord.

Why, then, have you painted them?—I have done it because I supposed that these were not in the place where the supper was served.

Are you not aware that in Germany, and in other places infested with heresy, they are in the habit of painting pictures full of sourrility, for the purpose of ridiculing and degrading the Holy Church, and thus teaching false doctrines to the ignorant and foolish?—Yes, my lord, it is bad; but I return to what I said before: I thought myself obliged to do as others—my predecessors—have done before me.

And have your predecessors, then, done such things?—Michael Angelo in the Papal Chapel at Rome, in his Last Judgment, has painted the figures all naked, and in various attitudes, with little reverence.

Do you not know that in a painting like that, where drapery is not supposed, dresses are not required; and that disembodied spirits are only represented, but there are neither buffoons, nor dogs, nor armour, nor any other absurdity? And does it not appear to you that, neither by this or any other example, you have done right in painting the picture in this manner, and that it can be proved right and decent?—Illustrious lord, I do not defend it; but I thought I was doing right. I had not considered all these things, never intending to commit any impropriety."

Which examination ended, my lords decreed that the above-named Master Paul should be bound to correct and amend the picture which had been under question, within three months, at his own expense, under penalties to be imposed by the Sacred Tribunal.

This sentence, however severe in terms, was merely a matter of form. The Examiners were satisfied there was no malice *prepense* in their fanciful Paul, and troubled neither him nor themselves further. "He did not so much as efface the inculpated dog, and the only correction or amendment he made," adds Mr. Ruskin, "so far as I can see, was the addition of the inscription which marked the picture for the feast of Levi."

Mr. Ruskin, during his recent law-suit, must have been amused, unless he had forgotten his own quotation, at his recollection of the trial of Master Paul Caliari.

It is not often in history that painters are "brought into court," and still less rarely in England, where probably one of the last instances occurred a century ago, when Bartolozzi was produced as a witness, and with him old Benjamin West, then P.R.A., addressed on that occasion for the first and only time in his life as "Sir Benjamin."

* We have necessarily omitted Mr. Ruskin's valuable explanatory notes.

Depression of Trade.—Speaking at a dinner on the occasion of the opening of new Board of Trade offices, at South Shields, Mr. C. M. Palmer, M.P. for the Northern Division of Durham, said that a revival of trade could only be brought about by workmen and employers uniting to secure production at the least possible cost. It was useless to haggle over an hour daily or 2d. or 3d. per day when mines and manufactories were being closed in their midst. He did not believe in the cry of protection or over-production, for under Free Trade commerce progressed. Production at the minimum of cost would always command the markets of the world.

THE BURSTING OF A 38-TON GUN.

WITHOUT being either pessimists or alarmists, but speaking from a mechanical point of view, we cannot but regard the bursting of a 38-ton gun in the turret of the *Thunderer*, on the morning of the 2nd of January, as perhaps the most dismaying casualty that has occurred of late years. In some other cases the loss of life has been greater, and the number of wounded more considerable. Still, a list of forty-seven killed and wounded, at a moment of supposed perfect security, is in itself a very deplorable misfortune. But the point at which the mechanist looks is rather the blow given to the modern system of artillery. We have long expressed the anticipation that the time would come when nations would refuse to lay out sums of half-millions a piece on floating batteries which the contact of a torpedo would send at once to the bottom. But that it should be the very weapon of rule and of power, the mighty Armstrong gun, that should destroy its own turret, was hardly within the compass of our diffidence.

It is well known not only that the greatest care is taken in the fabrication of these monster pieces of ordnance, but that they are subject to proof far exceeding the stress which their use in war is intended to throw on them. The great disruptive force of twenty tons and upwards per square inch has been exerted, without mischief, in these weapons. And one of the main claims of the Armstrong gun on the confidence of the public has been that, partly in consequence of the spiral disposition of its material, overwork would cause yielding rather than produce rupture.

It is hardly likely that very much positive information as to the cause of the disaster will be elicited by court-martial, for the sad reason that the seven men who manned the turret at the time were all instantaneously killed. The one consideration which occurs to us as explanatory of the rupture may give some little degree of renewed confidence; but it shows how the utmost care in the handling of these huge guns will have to be exerted in a direction to which, it is possible, due attention was not given in the present case. The gun was fired for practice, with an empty shell. The loading was effected by the hydraulic apparatus so ably designed by Mr. Rendel for that purpose. The event seems to indicate, almost with certainty, that the bolt could not have been rammed thoroughly home. Whether there was any hitch in the machinery, whether there was not due allowance made for the room occupied by a lighter charge, or whether the haste in loading was too great, it may possibly never be ascertained. But that, whatever was the cause, a space not properly filled was left between the breach and the bolt we hold to be pretty nearly certain.

The great improvements of the last few years in artillery, especially those in the fabrication of large-grained powder, have all been directed to give to the explosive force the effect of a mighty lifting action, as contrasted with a blow. The object has been attained to a high degree of success. The comparatively slow ignition of the powder,—speaking of minute fractions of seconds,—allows the projectile to commence its movement before it receives the entire effect of the explosive force. Thus muzzle velocities far exceeding those formerly conceived as possible have been attained; and that positively with a less destructive force exerted within the gun than was formerly the case. But without perfect ramming, the very opposite action might ensue. The powder might explode and the gas expand to a certain extent before it met the resistance of the bolt. For the lifting action, which is the ground of safety, would have to be substituted a percussive action, which no gun could stand. And that, in our opinion, must have been what took place. Let any one calculate the difference between a nascent pressure, rapidly rising to 20 tons per inch, and a blow delivered by a hammer which would have that pressure when at rest, even if it only fell through a fraction of an inch, and what we mean will become apparent.

Whether this view be substantiated or not, one lesson results from this explosion, and that is, to make sure of the ramming. That the perfect completion of that duty should be automatically indicated is probably not too much to require. That the captain of the gun should, by some certain method, be sure that the charge occupied no more than its normal proportion of

the bore, is a matter that should be made an essential part of the gun drill. It is possible that a little time might thus be lost. But in dealing with such masses of matter, and such tremendous power, rapidity and smartness in action are qualities rather to be shunned than to be encouraged. Not to be in a hurry, and to be absolutely certain that the service of the gun is in every point duly watched, are matters of more importance than rapidity of loading. It is possible that the lesson, thus improved, may add to the safety of our men of war. But it will require long care, and no small experience of the result of that care to remove the unpleasant impression, well described by a contemporary as one of incredulity and consternation, produced by the first rupture of an Armstrong gun in actual service.

The *Thunderer* has, indeed, been unfortunate. The explosion of her boiler was only less alarming than that of her gun. And she has, we think, been on shore between these two disasters. A very searching inquiry should be made, and perhaps some valuable information may be obtained as to the number of seconds that elapsed between the order to load and the discharge of the gun. If this can be ascertained, the designer of the loading machinery, as well as practical artillerists, should be called on to speak fully as to this part of the question, in which the clue to the calamity may be expected to lurk.

FROM EDINBURGH.

THE present depressed state of trade, which everywhere prevails, and the severity of the weather, have thrown an unusual number of hands idle here. Many have been employed by the authorities in removing the snow from the streets, the remuneration for which has been at the rate of 1s. 3d. per diem. When labourers are willing to accept remuneration at such a rate, it may be taken as an indication that skilled labour has proportionately decreased in value, and that such is the case in the building trade is unquestionable, and there does not at present seem much chance of things assuming a different aspect for some time. The only new work of any importance at present contemplated in the city is the carrying out of the last of the projected streets embraced under the Improvement Act, viz., the formation of a thoroughfare from the south end of Castle-terrace onwards across the West Port by Lady Lawson's Wynd to Lauriston-place. In this instance, the same short-sighted policy was followed as in former ones. Lady Lawson's Wynd is narrow and steep, consisting of a single row of houses of a very poor description, on the west side, and the boundary-wall of the Cattle Market on the other. These houses were not scheduled under the Act, and now that they are wanted, exorbitant prices are asked for them, so much so, that the authorities, rather than submit to such demands, have resolved to cut off a slice from the Cattle Market, which is already small enough for its purpose. The gradient of the lane is so steep that it must be improved if the new street is to be of any use as a thoroughfare, and the result will be similar to that in Blackfriars-street, a great inequality between the levels of the footpaths on either side. In regard to that portion of the ground to be appropriated for the new thoroughfare immediately adjoining Castle-terrace, the same error was committed by not securing a vacant piece of ground which has since been built upon. After considerable delay an arrangement has been come to with the proprietor, by which he gives up a portion of his premises, but not such as would have been acquired at the outset, for the new street will not be in a straight line with Castle-terrace, but will have to be thrown somewhat to the south-west of the line of the terrace houses. The new street will form a near cut from the West-end to the University, the new Infirmary, medical class-rooms, &c.

The new Medical College is beginning to appear above the garden-wall which separates the site from the Meadow-walk. The basement to the west is raised a considerable height above the ground-level, and is formed of large polished ashlar, and towards the south the heads of arched windows, with deep voussoirs, are seen. The extramural medical class-rooms in Chambers-street are now roofed in. We gave a detailed description of the plans and elevation when the building was commenced last Spring, The elevation of the street, prepared by the late Mr. Cousin, has been followed in all essential particulars. The new Normal Schools, to the east of this, are now ready for the roof. In detail the elevation is much bolder than the remainder of the block, and bears distinct evidence of being the work of another hand. In Cockburn-street (which was the precursor of the city improvements, and is a very successful example of the modern picturesque) there has been a vacant site near to its northern end which has been a great eyesore. The proprietor of this piece of ground has at last seen his way to utilise it, and a telling bit has been added to the street quite in keeping with the remainder.

One can now form an opinion of the architectural merits of the rival hydropathic establishments. The one at Morningside, designed by Mr. W. H. Beattie, is roofed in with red pantiles, —the first instance of these being used here which has come under our notice. As to the building itself, it possesses neither harmony of proportion nor picturesqueness of effect. An attempt has been made to give the skyline effectiveness by throwing up one angle, but the result has only been to give an awkward, one-sided aspect to the structure. The building stands upon an eminence, having a fine prospect to the south and east, but this is marred by the immediate proximity of a lunatic asylum and a cemetery. The site is ill-chosen; for, although the prospect is fine, it is destitute of timber, and exposed to the full rigour of the east wind, and from the quantity of glass used, the interior will be anything but snug when Boreas is in the ascendant. The other hydropathic establishment, designed by Messrs. Peddie & Kinnear, presents a marked contrast to the above in every respect. It is snugly situated at the base of a hill, and sheltered from the east by a belt of trees; but it does not, like the other, command an extensive prospect. The elevation is Italian, consisting of three pavilions, connected by curtains. The cornice is formed by the roof timbers projecting boldly, and the fenestration is simple, yet effective.

Since our last notice the Mayfield Free Church has been roofed in, and we find that Mr. Blanc, the architect of it, has ventured to produce a well-developed *flèche* at the intersection of the transepts; this is the only example of the kind in the city, and adds greatly to the effect of the church, which, upon the whole, is a very successful effort. We cannot say as much for the Established Church beside it: it has an aspect of meanness, and yet apes at being fine; even the masonry seems to be of inferior quality.

The great spire of the cathedral looms larger and larger. The nave has been screened off by a temporary partition, and a choir-organ fitted up, but it would appear that under the will of the testatrix the building must be completed before it can be used, and the clergy must therefore exercise a little patience in regard to the period at which this magnificent gift is to be put into their possession.

NORTHERN TRADE IN 1878.

A REVIEW of northern trade in 1878 can be no very pleasant task, for it is to so large an extent one in which declining production, falling prices, and an increased proportion of idle works, are far too frequent features. It was imagined when the year commenced that the lowest depths of the commericial depression had been plumbed; but as the months have rolled by it is conclusively shown that deeper depths have been waded into; and though in some branches of trade there has been a slight recovery, and in one there is tolerable briskness, at present the general tendency on the whole has been in the direction of increased dulness. In the coal and iron trades there has been a reduction of the output, chemical factories have been closed, the shipping trade has been dull, the constructive branches have been most adversely affected, and only in shipbuilding and its contributory industries has there been briskness. To the depression which has been general there is added, as a cause of the unusual dulness in northern trade, the idleness which has arisen from the changing requirements of modern times, more especially in constructive works. In railway formation and renewal, for instance, steel rails are almost universally preferred; and as the iron rail manufacture formed so large a part of the metallurgical industries of the north, the preference named has closed nearly every one of the rail-mills in the north-eastern district. In other similar methods trade has been diverted, and thus there is the effect of this to be added to that of the causes which have generally depressed our trades.

In the coal and coke industries, there have been partial reductions: in Northumberland the miners have twice had to submit to reductions in wages; but owing to the attachment of a minimum rate of wages to the sliding scale which prevails in Durham, there has been no reduction of wages generally in that county, although the selling price of coal has fallen on the average to slightly less than 4s. 8d. per ton. There has been in both parts of the Northern coalfield a considerable reduction of the output; but the exact extent is not definable as yet; and there has been in consequence a working of short time, as well as the closing of several collieries. It is doubtful whether the reduction in the cost of production has been to the extent of the reduction in the selling price of coal, but there is an additional output on the average of the collieries from each, and thus a distribution of the heavy establishment charges over a wider area. Still the course of the coal trade has been downwards throughout the year, and it is only by a reference to the wages and the prices, as well as the demand, that were known in former periods of depression, that the conclusion is come to that the dulness has reached its extreme limit.

In the iron trade, the first feature is the large decline in the production of ironstone in the Cleveland district,—due not only to the lessened out-put of pig-iron, and the smaller consequential demand for iron ore, but also to the fact that in that output there is a larger proportion of iron smelted from imported ores, richer and fit for use in the steel manufacture. Although the exact output of ironstone cannot be stated for some time, yet it is probable that it will be about a million tons less than in 1877. The output of crude iron is more readily ascertainable, for the statistics of the Cleveland iron-masters show that in every month of the year, with one exception, there has been a reduction in the output, and from these figures it is conjecturable that for the whole year the production will be about 100,000 tons less than it was last year,—the reduction being attributable wholly to the furnaces outside the centre of the district, and that reduction is in the face of a production of over 300,000 tons of iron from the imported ores that have been spoken of. Prices have fallen in the pig-iron markets, from 2*l.* to 1*l.* 16s. per ton; but there are the accompaniments of reduced wages at the iron mines and at the blast-furnaces to the extent of 5 per cent, and there is a reduction in the cost of carriage to a slightly larger extent. The demand has not shown the symptoms of increase that it has known for the past few years, for the shipments of pig-iron have been rather less, and the local consumption at the forges and foundries has been slightly increased. But even this has not prevented an addition to the stocks, though the rate of increase is less than it was.

In the finished iron trade there is a feature which has been noticeable for several years, for the iron rail manufacture has shown a marked falling off again, and the rate of production is now not a twelfth part of what it was five years ago. There has been some increase in other branches of the malleable iron trade, chiefly owing to the activity in ship-building and to the extremely low prices that have been known for all kinds of iron. To these low prices there are the partial counter-balances of reduced cost of labour and lower rates for material and fuel; but even with this the boundary between profit and loss has in some instances been passed. The falling off in the production of iron rails is accompanied by a briskness in the steel rail trade, and though the ores have to be imported as yet, the position of the steel-rail mills, and the excellence of their economical adaptation, has caused them to be briskly employed, and it is believed profitably, whilst the increasing output has been fully needed to meet the orders. There are clear proofs that the steel trade of the north will grow, for already other works are in progress or projected which will add to, if varying, the output; and attempts are still being made to attain the great desideratum of the north,—the adaptation of Cleveland iron to use in the steel manufacture.

Contributory to the increased production of malleable iron has been the shipbuilding industry, which, with some check, has gone on increasing on the whole, and this to such an extent that during the present year the number of vessels built has been considerably in excess of the average at the north-eastern ports. But this has not been entirely because shipping has paid well, but because the low prices at which

vessels may now be bought makes the purchase a probably profitable one. And there are other indications that this will be for some time continued, and that the launches from the northern shipbuilding yards will be up to the average. Marine engineering has naturally prospered under these circumstances, but there has been increased dulness at the locomotive works, and two reductions of wages have had to be submitted to by the workmen. In the chemical trade, also, there is increased depression, registered by the lower prices, and by the closing of one or two of the Tyneside factories. And the low prices and the comparatively small demand for lead have closed one or two of the lead mines in the northern dales, and reduced the number of miners and others. In constructional industries there is reduced employment; and though there is still a very large employment of unskilled labour in the construction of public works, there are indications that there will not be renewals of such as are brought to a close. And in minor, but important industries, there is at last the same reflection of the intense dulness in the mineral trades which are in the north the controlling industries. It is evident that during the year there has been an attempt to reduce the output to something approximating to the diminished demand. In the reduction of prices, there is ground for hope that the district is better prepared to meet the increased competition that still is known; and in the reflection of rates on wages, as well as in the growth of the average output, there is reason to hope that some of the evils engendered in a period of intense demand are removed. In these and in the endeavours still in progress to improve the product of northern labour as well as to lessen the cost of production there are the greatest grounds for congratulation that the year affords, and without which its tale would be one of unmitigated gloom.

EFFECT OF THE MOTION OF THE AIR WITHIN AN AUDITORIUM UPON ITS ACOUSTIC QUALITIES.*

IT is the purpose of this paper to give an account of some experiments made for the purpose of determining the effects of currents of air within an auditorium, upon its acoustic qualities. These experiments are in three series,—the first being a laboratory investigation into the effects of currents of air upon a ray of sound; the second and third, studies, by different methods, of the effects of the currents of air in a lecture-hall and a theatre, upon the waves of sound.

Since the air of a hall is the medium by which sound is conveyed from the speaker or singer to the hearer, it would certainly seem of fundamental importance that this air should be in the condition best suited to the propagation of sound. Experiments made by the author, in a considerable number of halls, show that the atmosphere is almost invariably disturbed by currents of air of varying density crossing the room in all directions. These currents have been traced out with thistle balls, and their velocity measured by the anemometer. The estimates of density have been made from the velocity of motion. Now the experiments of Professor Tyndall have shown that currents of air of varying density form one of the chief obstacles to the propagation of sound-waves. The author, in repeating these experiments in a somewhat modified form, found that such currents of air not only decrease the intensity of a sound-wave, as Professor Tyndall has shown, but that they actually modify its form, and so give rise to great indistinctness. The experiments were made as follows:—

At *A* was placed a source of sound,

$$A + - + - + - + - + E,$$

being in some cases an organ-pipe, in others a man who spoke in a clear and distinct voice, and in others various musical instruments, on which simple combinations of notes were played. Just below the points, + +, &c., were placed substances heated to such temperatures as to give rise to currents of air corresponding in density to those found in an auditorium. At *E* was placed the ear, which, though it be not so reliable an instrument as the singing flame of Professor Tyndall for estimating intensities of sound, is, of course, the best instrument imaginable for determining their qualities. The results of the experiments were as follow:—The ear being placed at *E*, and a small lead organ-pipe, blown with a constant pressure of air at *A*, the heated bodies were placed under + +, &c. A very decided decrease in the intensity of sound was noticed, but it was also noticed that the previously clear note lost its *distinctness*. The pipe was removed, and a man was placed at *A*, who spoke in clear and well-defined tones. The effect was not only to decrease the intensity of his voice, but to make it slightly confused and indistinct, as if each syllable were repeated several times in very close succession. When a flute was substituted for the voice, the effect was the same. The effect on a violin seemed to be considerably less. With a drum, no effect whatever was observed. The effect seemed to be most marked on the man's voice, or a musical instrument in which the overtones were comparatively small. The explanation of this is very simple. The original ray of sound, striking upon the first current of air, is partially reflected and partially transmitted. The loss of the reflected portion causes a decrease in the intensity of sound. The transmitted portion, striking upon a second current, is likewise divided, and its transmitted portion continues to be so divided as many times as there are variations in the density of the air. Its reflected portion, as well as that of all the succeeding reflections, instead of being wholly lost, is interrupted in its backward course by the first current of air, and reflected along the path of the primary wave, but following it at an interval of time, depending upon the thickness of the current of air. Each reflection being thus again and again reflected and divided, we have, following close upon the primary wave, a multitude of secondary waves, which, falling upon the ear, greatly mask the distinctness of the original sound. Currents of air of varying density then cause, first, a decrease in intensity of sound, and secondly, an indistinctness, or confusion of the sound.

That currents of air, which we have thus studied in the laboratory, act in the same way in an auditorium, may be shown by the following experiment, in which the sound-waves may be actually traced out in space, and their confusion, consequent upon the introduction of currents of air, likewise shown.

Near the middle of a lecture-hall, 92 ft. long and 65 ft. wide (the hall of the Massachusetts Institute of Technology, in Boston), a heavy plank, 6 ft. wide and 12 ft. long, was set on one end and firmly fixed; 8 ft. from its middle point, on one side, was placed a B 4 stopped lead organ-pipe, which was so connected with a gasometer as to be blown with a constant pressure of air.

On the other side of the plank, and within the sound shadow, a system of coördinates, in a plane parallel with the floor, was established by means of light wooden rods, which ran parallel and perpendicular to the board, and their length divided into centimètres.

Now, it has been shown by the author (*Proc. Am. Acad. Arts and Sciences*, May 10th, 1876), that rays of sound diverging from such a source, and being diffracted around the edges of the board, will, when they meet each other, after having passed over paths differing by a half wave-length, neutralise each other, and produce comparative silence. By moving a B 4 resonator, connected by means of a rubber tube with the ear, along these coördinates, the points of interference are easily detected, and are found to be situated as predicted by formulæ similar to those used in the diffraction of light. In fact, the cases are entirely analogous.

We have here, then, a means of mapping out the positions of the sound-waves in space, and can say that at one point there is silence, because two sound-waves have met crest upon the trough, and neutralised; at another, the sound is loud, because two waves have met, crest and crest, and trough and trough, and have doubled. All this is true so long as the air of the hall is at rest, and these experiments have been made with doors, windows, and registers carefully closed.

Everything being in this condition, and the sound-waves having been mapped out, the doors and windows were thrown open to the winter's air, and the registers were opened to admit as many streams of air heated to nearly 100° C. What is the effect? Currents are rushing about the hall in every direction (we have the conditions of the laboratory experiment), the waves of sound are superimposed by numberless reflections, whose points of condensation do not coincide, and the phenomena of diffraction instantly disappears. This experiment was many times repeated, and always with the same results.

It is evident, then, that in order to procure the proper propagation of sound, we must do away with these air-currents. It must be remembered, however, that when large numbers of persons are crowded into halls, the air within is usually subjected to very considerable disturbances in order to obtain even indifferent ventilation. How, then, shall we obtain the desired ventilation, and at the same time prevent the formation of currents of air?

The solution of this problem seems to me to be given in the third series of experiments, which were carried out in the Baltimore Academy of Music, designed by Mr. J. Crawford Neilson, architect of that city.

The ventilation of this house is so arranged as to prevent largely the formation of air-currents of unequal density. According to a survey, made with thistle balls and the anemometer, of the space contained within the walls of this theatre, the movement of the air is as follows:—

The whole supply of fresh air is admitted at the back of the stage, is there warmed, then crosses the stage horizontally, passes through the proscenium, and then, somewhat diagonally towards the roof, across the auditorium in one grand volume, and with gentle motion so as to almost entirely prevent the formation of minor air-currents. It is exhausted partially by an outlet in the roof, and partly by numerous registers in the ceilings of the galleries. From this central outlet, and from the large flues of the registers, the air passes into the ventilating-tower over the great chandelier, which supplies, in its heat, a part of the motive-power of the circulation. It is further expelled from the tower by means of large valves, so contrived that, while they offer no obstacle to the egress of air, they completely deny it entrance. The amount of air so passed through the house is, as determined by a series of experiments, about 15,000 ft. per minute. This amount, sufficient to ventilate the house, is just what seems to be required to impress the proper movement on its atmosphere. That it is amply sufficient for ventilation is shown by the fact that the thermometers of the upper circle do not vary perceptibly from those of the orchestra circle.

The seating capacity of the house is about 1,600 persons. The acoustics are, if we may judge from the testimony of a large number of singers and speakers, as well as from our own observation, among the best.

The weakest voice is audible to every seat in the house; sounds, such as a sigh, a kiss, or even the simulated breathing of the somnambulist, may be heard in the most distant parts, and all effects in music are exactly rendered. All singers and speakers agree in describing the facility with which the voice is used on this stage.

It now remains to show that the universally acknowledged acoustics of this house are largely due to the *condition of the air*, and not to the arrangement and material of the walls, together with other well-known causes of success or defect. For this purpose persons have been repeatedly stationed at different parts of the house during a performance, without being informed of the nature of the experiments to be carried out. They have simply been asked to note, at intervals during the evening, the comparative ease with which they could hear the performers. At various intervals during the evening, the valves which control the ventilation were reversed, so as to entirely interfere with the unbroken condition of the air, and give rise to currents of circulation. Almost invariably the testimony of the hearers would be, that at times corresponding to the interruption of the ventilation, the "sound was dead," was "confused and indistinct," and it would be observed that people all over the house would make an effort to listen. As an example of these experiments, the following is copied from the author's notes, for the evening of January 24th, 1878.

There was a concert, consisting of orchestral music and solos, held in the house. At eight o'clock, observers (A, B, C, and D) were stationed respectively in the orchestra, right and left wings of the balcony, and on the bridge that spans the stage above the level of the highest proscenium boxes. They were entirely

* By Mr. W. W. Jacques, Fellow in Physics of the Johns Hopkins University, U.S., reporting the result of investigation of acoustic principles of the Academy of Music of Baltimore, made by order of President Gilman, of J. H. University.

ignorant of the nature of the experiment, and were simply requested to note the times of good and bad hearing.

At half-past eight o'clock the valves were reversed, and remained so till nine, when they were again set aright. After the performance the following testimony was given by the different observers:—

A. Orchestra: to 9·15, very indistinct; 9·15 to 10, much better.

B. Right balcony: 8·45 to 9·15, sound was dead; 9·15 to 10, decidedly better.

C. Left balcony: 8 to 8·40, good; 8·40 to 9·15 confused; 9·15 to 10, good.

D. Over stage: 8 to 8·30, good; 8·30 to 9, strong draught, hearing better; 9·10 draught disappeared.

An examination of this table shows that the observers in the auditorium found a period of half an hour's duration when the sound was not so plain as it had been before, or was after. This time was of the same length; but from ten to fifteen minutes later than the period of interruption of the ventilation. But some time is, of course, necessary for the air-currents to form, or, being formed, for them to be destroyed.

The observer, D, over the stage, however, found the hearing *better* during the half hour of interruption, and this is exactly what would be expected; for the interruption of the current of air through the auditorium causes it instead to rise directly over the stage into the large space in which hangs the scenery, and thence out of the building.

During Neilson's performance of *Rosalind*, observers A and B were stationed in the first, and C and D in the second, balcony from 8 to 10 p.m. At 8·50 the ventilators were closed, and the lobby doors, together with those leading from the lobby to the street, were thrown open.

Thistle-balls let loose from the balconies showed currents of air coming in at the doors and crossing the auditorium towards the stage. At 9·20 the doors were closed, and ventilating-valves set aright. The testimony of the observers was as follows:—

A. First balcony: 8 to nearly 9, good; for about half an hour, bad; afterwards, much better.

B. First balcony: 8 to 9 good; 9 to 9·30, bad; 9·30 to 10, good; strong current of air felt from the door a little before 9.

C. Second balcony: 8 to 8·50, good; 8·50 to 9·20, bad; 9·20 to 10, good.

D. Second balcony: 8 to about 9, good; 9 to 9·20, bad; 9·20 to 10, good.

In the foregoing paper we have studied the effects of air-currents upon the acoustic qualities of an auditorium. That this is only one of the factors on which success depends the author knows full well, and experiments are now in progress upon some of the other causes which modify the acoustic properties of churches, theatres, and halls.

These, however, have been in part studied before, while the above researches are believed to be entirely new.

THE METROPOLITAN BOARD OF WORKS AND INUNDATIONS IN PIMLICO.

A SOMEWHAT warm discussion took place at the Westminster Vestry last week on recent inundations in Pimlico, in the course of which the inaction of the Metropolitan Board of Works was rather severely commented upon.

Mr. Southon asked the Surveyor if it was within his knowledge that on the previous Wednesday night the King's Scholars' Pond sewer was so overcharged that the houses in Tachbrook-street and other parts of Pimlico were seriously inundated? To his knowledge the basement of some of the houses were flooded 2 ft.

In reply, the Surveyor said the inundation was owing to the heavy rainfall in the Thames, and the sudden thaw. An immense volume of water poured off the hills into the Thames, and the water was forced back into the sewer, as the stream was tide-locked. It was a matter entirely for the Metropolitan Board of Works, but, no doubt, a very serious and urgent question.

The Chairman said the attention of the Metropolitan Board had already been called to the matter, and it was under the consideration of their engineer.

Mr. Finch observed that he did not think they should be satisfied with the mere assurance that the matter was before the Metropolitan Board. Their non-action was most unsatisfactory, and he moved that their further attention be called to the extreme urgency of the matter.

In the further discussion which followed, Mr. Southon said it was twelve months ago when the first complaint was made to the Metropolitan Board, and the nuisance still continued. Doctors in the locality stated that diphtheria and other maladies were engendered by the smell from the sewer, which was as large as an underground railway, and above the level of the rooms occupied by people.

The motion was unanimously carried.

THE POLYTECHNIKUM, AIX-LA-CHAPELLE.

IN the midst of one of the most sanguinary and surprising wars which history has had to chronicle, far away from the thunder of guns which almost unceasingly accompanied the fierce struggle in France, a peaceful scene, strangely in contrast with the noise of battle, was enacted in the country which, while it held in deathly grip an ancient foeman, was not entirely neglecting the cultivation of the arts of peace. It was during those anxious times, on October 10, 1870, that the Polytechnic School of Aix-la-Chapelle (of which we give an interior view), was publicly and solemnly opened.

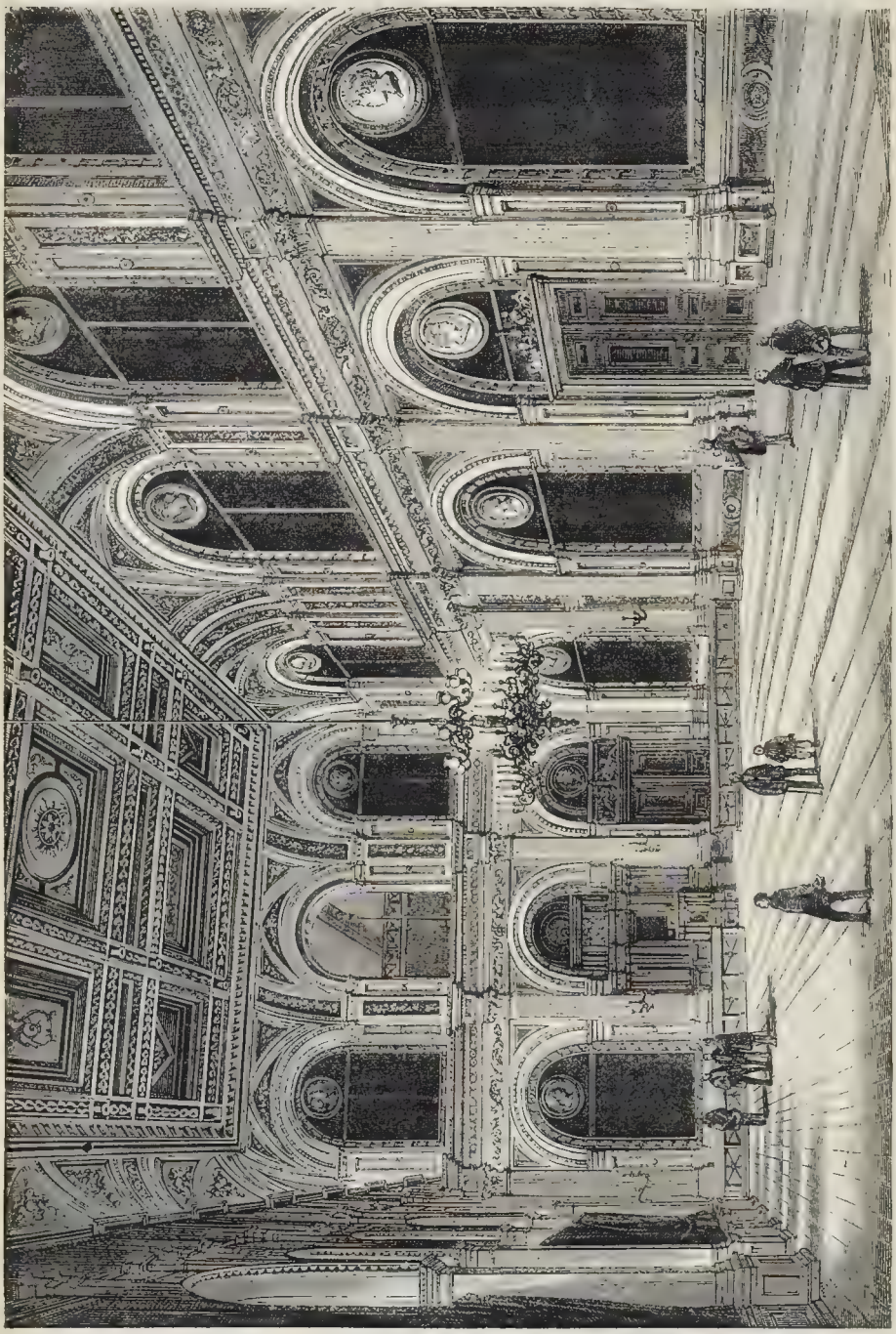
Although this institution will benefit, in the first place, the Rhine Province and Westphalia, the effects of its teaching will also be more widely felt, especially in the remaining larger portion of Northern Germany which, besides the School of Architecture and Industry of Berlin and the Polytechnic School of Hanover, does not possess another similar institute. The importance of the cultivation of the practical sciences was not thoroughly recognised until the rapid strides in mechanical and civil engineering, in the construction and perfection of steam machinery, and in the several branches of architecture, during this present century, taught men that their diligent study had become imperative. The establishment of a school supplying this want in Düsseldorf was abandoned when once the great Cornelius, in 1821, had demonstrated the impossibility of combining a polytechnic institution with the Academy of Arts founded there. Thus it happened that Prussia, in her older provinces (leaving Hanover out of the question, as not then forming part of the Hohenzollern monarchy), up to the time of the opening of the Aachen school, had no institute serving for the cultivation of all the branches of the practical sciences. The execution of the long-proposed scheme assumed distinct form in 1858, when, on the return of his Royal Highness the Crown Prince of Prussia with his young bride from England, and in celebration of his setting foot again on native soil, the sum of 5,000 thalers was placed at his disposal by the Aachen-München Insurance Company (one of the largest fire-insurance societies in Germany). This gift his Highness determined should form the nucleus of a fund for the foundation of a Polytechnic School for the Rhine Province and Westphalia. The idea thus started soon found numerous adherents far and wide. For some time Aix-la-Chapelle and Cologne competed for the honour of being the seat of the new institution. If Cologne's claims were its position as the chief city of the Rhine Province and its great importance as a centre of trade, the scales were turned in favour of Aix-la-Chapelle, notwithstanding its unfavourable situation on the then western frontier of Germany, by the fact that, placed in the centre of an important branch of industry, it was a more suitable spot for uniting theory with practice. Thanks to the exertions and the munificence of local associations, as well as of the administration of the town and local magnates, which between them raised nearly half a million thalers (75,000*l.*), Aachen was selected by royal order as the seat of the new school, and the foundation-stone was laid on May 15, 1865 (the fiftieth anniversary of the union of the Rhine Provinces with Prussia), by his Majesty the King in person. The works proceeded rapidly, under the direction of the architect, Herr Baurath Kremer. The original estimates being exceeded, the funds required were rapidly provided by private donors, and on April 23, 1870, the opening of the school was ordered to take place in October, this programme being adhered to notwithstanding the intervention of the Franco-German War.

As regards the building itself, it rises on an eminence near the Templerbend Railway Station. It is erected principally of tufa and sandstone, and consists of the principal façade (with basement, ground-story, and two other stories) and two wings, as well as the laboratory; the latter joining the two wings. This square of buildings covers an area of 36,429 square feet Rhenish, and forms in its interior a court laid out with lawn and flower-beds, a fountain being placed in its centre. The roof is of zinc, and sloping; a stone gallery runs round the laboratory. The façade of the principal building, in the style of Early Italian Renaissance, is adorned on its summit with the emblematic figures of the town of Aachen, the Rhine Province, the province of Westphalia, and Borussia, a figure in armour and armed with the spear. Above them rises the statue of Minerva, with the Prussian eagle and two owls as acroteria. In the principal building are the handsome vestibule, the staircase adorned with busts of the Emperor and his son, and with imitations of classic statues, as well as the Aula, 39 ft. high, round the walls of which are placed medallion-busts of eminent men of science. Round the Aula are grouped lecture-rooms, drawing-classes, the secretary's offices, rooms for professors and students, as well as rooms for moulding and modelling. The laboratory contains a photographic studio, rooms for photometric measurements, a large auditory for experimental chemistry with amphitheatre, a private laboratory, and workrooms. The cost of construction of the building was 410,000 thalers (61,500*l.*); the expense for the collections, the library, and the furniture, was 125,340 thalers (18,800*l.*); total 80,300*l.*; to which must be added the salaries of the professors and teachers, paid partly by the Government, partly by the town.

The warming of the building, excepting the Aula and the basement, is effected by a hot-water apparatus, in connexion with which is a system of ventilation of the large and lofty auditories. Water-pipes run through the whole building, provided with the requisite arrangements for the prompt extinction of fire. The water required for that purpose is pumped by a steam-engine into four cisterns of an aggregate cubic contents of 1,000 ft., and thence distributed over the whole building. A clock is fixed over the centre door, the striking of which is heard all over the building, and which is connected by an electric conduit with a dial in the laboratory. All the stairs are of stone. The space between the principal front and the roadway is laid out as a garden, and adorned by two fountains.

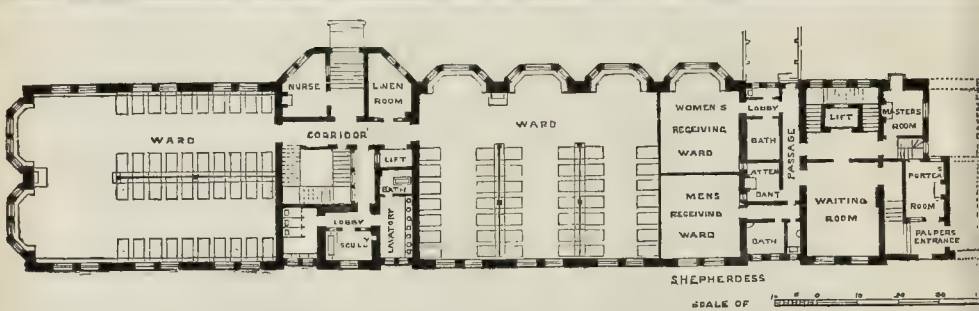
A few words as to the instruction imparted at the Aachen Polytechnic School may fitly conclude this article. The curriculum includes higher mathematics, physical sciences, chemistry, mechanical engineering, and architecture, with the requisite drawing, moulding and modelling, as well as exercises in drawing up plans; to all of which are added, during summer, excursions to industrial establishments in the neighbourhood. Political economy, German, French, and English literature, bookkeeping and commercial instruction, anthropology, sanitary measures, and the supervision of noxious trades, are also included in the cursus. The term for the study of chemistry is three years; for mechanical engineering, three or four years; for civil engineers and architects, four years. The year's instruction is divided into two half-years. Under ordinary circumstances, students can only enter in autumn. The winter half-year extends from October to the Easter vacation, the summer half-year from the end of the latter to the end of July.

A Telegraphic Exhibition.—Major Webber, during the discussion which arose on the reading of his paper at a late meeting of the Society of Telegraph Engineers, suggested an exhibition of electrical and telegraphic apparatus during the meeting of the forthcoming Conference. This suggestion is well worth consideration, and, if carried out, a working committee should be formed at once, as the time during which the exhibition can be organised is none too long for the perfection of such a scheme. An exhibition of this kind should meet with the willing co-operation of all the Governments interested, and of the various manufacturers on the Continent and at home. We believe that if the idea was heartily supported by the Post-office authorities, the exhibition would be a great success.—*The Electrician.*



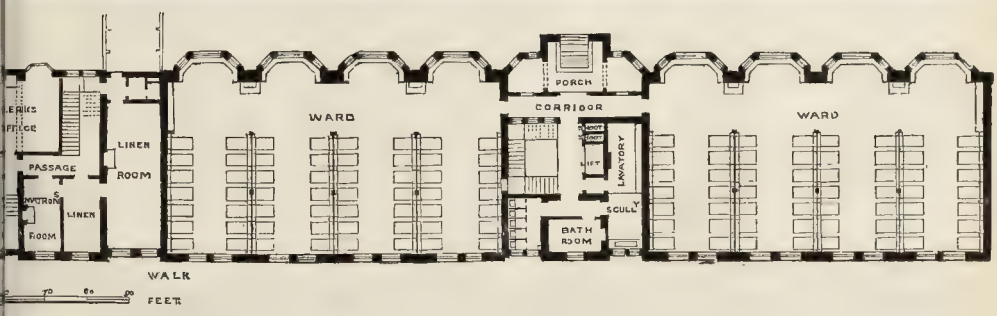
THE HALL OF THE "POLYTECHNIKUM," AIX-LA-CHAPELLE.—Baurath Kremer, Architect.





INFIRM WARDS AND ADMINISTRATIVE OFFICES OF ST.





WORKHOUSE, LONDON.—Mr. H. Saxon Snell, Architect.

INFIRM WARDS AND ADMINISTRATIVE OFFICES OF ST. LUKE'S WORKHOUSE.

THIS range of buildings, fronting Shepherdess-walk, City-road, is erected from the designs of Mr. H. Saxon Snell, architect, and forms a portion of the reconstruction of St. Luke's workhouse. The central block contains the entrances to the building, and the receiving wards and master's offices and residence, also the lying-in wards, and dormitories for those able-bodied paupers who assist in the general work of the establishment. The wings on either side are for the accommodation of the male and female infirm paupers of the union. Generally, the plan of the building is similar to the model infirm wards erected some ten years since at St. Marylebone Workhouse from the designs of the same architect, but upon a much more extensive scale.

It has become almost a universal rule in the planning of any description of wards used for the reception of the sick, that the beds should be ranged opposite to one another, and down each side of the exterior walls of the apartments, and that between the beds there should be opposite windows. But it will be seen that one disadvantage of this plan is, that the bed being next an outside wall, the patient occupies the coldest position in the room. This objection can best be appreciated by those who have experienced the increased warmth and comfort of a house standing between two others, as compared with the corner house of a row. It is, nevertheless, counterbalanced by the fact that ventilation by opposite windows between the beds has been found the most perfect that can be obtained, and so far the plan must continue to be adopted in all buildings where other circumstances do not suggest an alteration. This principle of ventilation by opposite windows, however, only holds good where the cubic space allotted to each patient is so large as to admit of the beds being placed far enough apart to insure the inmate freedom from the effect of the draught passing between the windows when open, or the downward current of cold air proceeding from the glass when the external atmosphere is colder than that of the room, and the windows are shut. This point appears to have been overlooked; and large public buildings have been erected where the beds are not only so close to the windows that the patient must suffer to a greater or less degree from the effects of through and down draughts; but in some cases the beds are necessarily placed directly under the windows, and this, together with the proximity of the bed to an outside wall, can hardly fail to have an injurious effect on the inmates of the wards so built. In order to avoid this evil, Mr. Snell considers that the beds of all such wards should be placed at a distance of not less than 6 ft. apart, and when the space allotted to each inmate will not admit of this distance, then some other plan should be adopted, as in the new buildings at St. Marylebone and St. Luke's Workhouses, where the beds are ranged opposite to one another along the internal walls and partitions in each ward, leaving a central gangway between. The windows are in the external walls at either end. The internal walls next the heads of the end row of beds are hollow, and contain large air-flues which permit the introduction of warm air under, and an exit for foul air over, each bed.

The question as to whether this plan is or is not a desirable one, of course admits of speculation. We cannot shut our eyes to some very strong objections to it. It is stated, however, that the guardians of both Holborn and Marylebone have found reason to congratulate themselves upon the success of their experiment, and the former Board are now erecting a large infirmary at Highgate with some blocks of wards built on the principle above described, and others on the pavilion plan. The two systems will, therefore, be worked side by side, and the advantages or disadvantages of both will consequently be still farther tested.

The St. Luke's Workhouse buildings consist of four stories of wards, and, in addition, store and day rooms in the basement. The wards generally are 80 ft. long, 40 ft. wide, and 13 ft. high, with four bay windows, each 16 ft. long, and 6 ft. wide, and this allows 800 cubic feet of air space to each inmate.

Touching the heating and ventilation of the wards, the skirting at the back of the beds forms a box 9 in. square, with a perforated zinc front, and running through this box are hot-water pipes. At the ends of these channels in the front and back walls are large openings, through which the external fresh air is admitted, and, passing over the hot-water pipes, it is warmed and rises upwards, and is emitted through the perforated front of the skirting boxes into the wards immediately under the beds. The foul air is carried off through wide channels in the ceilings, which communicate with large flues running up the side walls, and terminating just above the level of the eaves of the roof.

The upper wards, occupied by the bedridden, are somewhat differently constructed from those of the lower wards, inasmuch as the ceilings follow the line of the sloping sides of the roof, which is supported at intervals by semi-elliptic cast-iron ribs. The escape of foul air in these upper wards is provided for by a channel in the apex of the ceiling, running the whole length of the room, with zinc shafts at intervals open to the air.

The wards at the southern end of the buildings were differently planned, in order that bay windows might be placed in the end walls, and so that they would have a more cheerful outlook on to the City-road than was possible in the case of the other wards. Moreover, these wards are occupied by the more convalescent patients, and therefore ventilation by the windows can be effected when the inmates are not lying in bed.

The gas-burners of the wards are contrived to serve the purposes of ventilation by being placed under inverted enamelled iron basins, from the tops of which are pipes communicating with horizontal wrought-iron tubes running the whole length of the ceilings and into the upright shafts of the side walls. These tubes, it is understood, not only carry off the products of combustion, but they largely contribute to changing the air of the rooms.

In addition to the hot-water pipes, there are in each ward two open fire-stoves, that tend to give a cheerful aspect to the rooms in cold weather. These stoves are placed against the outer walls, and have openings underneath for the supply, from the outside, of fresh air, which, on entrance, strikes against the heated cast-iron hearth-plate and fire-brick sides, and is thus passed into the room in a warm state.

The nurses' rooms, situated between the wards, are entered off the staircases on the various floors; they are for the accommodation of the paid nurses only, the pauper assistant nurses being housed at another part of the building, especially set apart for this class of inmates.

Adjoining the nurses' rooms are large well-lighted closets for the storage of clean linen.

The central portion of each wing contains the staircase, nurses' rooms, lift, bath-room, water-closets, and lavatories. The staircases are lighted from the roof, and on each landing there are entrances to the cages of the hydraulic lifts, 8 ft. long and 4 ft. wide, used for raising the bedridden to the top floor, and for the conveyance of coals and meals to the various wards.

The baths, scullery-sinks, and water-closets, are next the outside wall, and their contents are discharged directly into two large cast-iron pipes that run down the exterior face of the building, after the manner of ordinary rain-water pipes, and thence into the road sewer. The joints of these soil pipes are made air-tight, and the upper portions above the level of the highest set of closets are turned into flues in the wall, having outlets at the level of the ordinary chimneys.

The level of the ground-floor is 5 ft. above the pavement outside, and underneath is a well-lighted dry basement, used as store, work, and day rooms. On this floor is a corridor of communication, 12 ft. wide, connecting all parts of the building, and also the washhouse and kitchen, both new erections, situated on the same level, but outside the main building. This subway is one of the most useful features of the building, for by it the whole of the meals, coals, &c., are brought in trucks to the foot of the lifts, up which they are raised, then wheeled to the different wards, and when empty returned in the same manner.

The building has been erected in three different sections, and the builders were respectively Messrs. Crabb & Vaughan, Messrs. Wall Bros., and Mr. John High. The heating and sanitary works, and the lifts were executed by Messrs. Turner & Co., Messrs. Potter & Sons, and Messrs. May Bros.; the gas pipes and fittings by Messrs. Abercrombie & Sons and Messrs. Jeal Bros.

The whole of the block of buildings, accommodating 930 inmates, besides the administrative offices, work-room, &c., cost 36,000*l.*, or less than 38*l.* per bed, and this amount includes all stoves, fixtures, engineering, and sanitary works, and architect's commission.

DECORATIONS AT THE WESTMINSTER HOSPITAL.

LAST Monday the Westminster Hospital was the scene of a large gathering of visitors to do honour to an entertainment given to such of the patients as were able to benefit by it, the occasion being the completion of some decorations in two of the wards, which have been carried out by the Kyrle Society, a Society which was formed to supply charity in the form of artistic adornment for those who cannot possibly afford to indulge themselves in such a taste, and perhaps partly in the hope of forming artistic taste and sympathy where it did not already exist. The Westminster Hospital being supported by voluntary contributions, such a gift seems fittingly bestowed there. One of the rooms, the women's convalescent ward on the upper floor of the Hospital, is a recent addition, till now unoccupied, and has been decorated from designs by Mr. William Morris (who is a member of the Society) and executed under his direction. The decorations consist of a broad frieze painted in a conventional treatment of fruit and foliage, and a similar treatment of the timbers of the roof which are visible in the room. We should have suggested a more constructive treatment of the roof principals, but it is needless to say that all the ornament is of a high class in itself, and the conventional design carried out in a thoroughly artistic and logical manner. The Bouverie Ward has been decorated with a painted frieze of natural flowers running round the upper part of the walls, with a plain band occupied by suitable inscriptions over it, and a dark-stained wood moulding beneath; a fireplace design of ebonised wood and tiles has been added, and the wall hung with prints chiefly selected from the Arundel Society's publications. The general effect is very harmonious, giving a warmth of colour to the room without any obtrusiveness, and it seemed to be generally felt that the amount of positive colour included in the decoration was preferable, in a room of this kind, to the delicate but exceedingly low and nearly colourless tones employed in the other ward. It may be a point worth consideration, too, whether in decorating rooms used by poor and uneducated people chiefly, natural floral ornament is not in some senses preferable to conventionalised ornament,—at least, so far as the object of giving pleasure to the occupiers is concerned; for conventionalised ornament certainly appeals more to cultured than to uncultured sympathies.

It may be mentioned that the work in the Bouverie ward (which is also a convalescent ward), was all carried on without interrupting the use of the room or disturbing the patients. The decorative painting in this ward was all the work of amateur hands, but the whole was under the superintendence of Mr. C. Harrison Townsend, architect, a member of the committee of the society. There was a Christmas-tree and a distribution of presents in the new ward, for convalescents and out-patients and their friends, and a concert in another room, to which the Westminster Abbey choir contributed some singing; and the Dean of Westminster gave a short address before the distribution of presents.

While on the subject of hospital decoration, we may mention another hospital not so well known to West-end philanthropists as it deserves to be, the East London Children's Hospital at Shadwell, an admirably-managed institution of its kind. Those interested in it will be glad of either gifts or loans of suitable pictures or chromo-lithographs to brighten up the aspect of the wards, and furnish amusement to the poor little patients.

Burial Board Offices, Smallthorne, Tunstall.—On the 31st ult. new buildings for the Burial Board here were opened. The offices are situated in Leek-road. The building is in the Gothic style, and has been erected by Mr. Moss, of Ford-green, from plans supplied by Mr. Dain, of Burslem. The new cemetery is within the inclosure, and the ground occupied is two acres in extent. The whole cost of the structure, including the palisades and gates, is about 1,250*l.*

THE PRIVATE BILL LEGISLATION FOR 1879.

PROJECTED TOWN IMPROVEMENTS AND PUBLIC WORKS.

AN analysis of the several private Bills to be investigated in the Session which has just commenced shows that the work of the several Parliamentary committees during the next three or four months is not likely to be a sinecure. Numerically, there are not so many Bills as last year produced, but a large number of those which will have to pass through the Parliamentary ordeal this year involve projects of considerable magnitude, affecting great interests, and, as respects many of them, there are already symptoms of strong opposition and protracted contests in the committee-rooms. Including the Board of Trade applications, the total number of Bills of all kinds is a little more than 240, the main proportion being in respect of actual new works, whilst the rest are for extension of time or abandonment as regards railways and other undertakings, or for amalgamations or other financial arrangements. The railway Bills are limited, as compared with previous years, whilst the tramway projects are correspondingly numerous, being upwards of sixty in number for undertakings of this character, not only in the metropolis, but in most of the large towns in the country; and it is a noticeable feature that, whereas there seems an organised opposition to the Bills promoted within the metropolitan area, several of those having reference to the provinces are promoted by the various municipal bodies, amongst them being the corporations of Liverpool and Manchester, both of which include in their respective Bills power to use steam or other mechanical power on the tramways in those towns. The gas and water Bills, including Board of Trade applications, are seventy in number, and it is worthy of remark that a large proportion of the gas projects include powers to adopt the electric light or other illuminating power. The town improvement Bills are very numerous, and the undertakings for which powers are sought are of great magnitude, including the construction of town-halls, markets, and other public buildings, the making of new streets, together with extensive sanitary and other powers.

Out of the entire number of Bills, the metropolis alone contributes a large proportion, there being forty-four projects directly connected with the metropolitan area, in addition to the Bills promoted by the great railway companies, in which powers for important works are sought within the metropolitan district. The railway Bills are five in number, whilst there are no fewer than seventeen tramway projects for the construction of works of this character in different parts of the metropolis. The gas and water Bills are five in number, whilst there are seventeen Bills of a miscellaneous character. The most important of the railway Bills is that designated the City Union and Outer and Inner Circle Completion Bill, which involves an enormous outlay. Powers are sought in this Bill for a construction of a line from the Cannon-street station of the South-Eastern Railway to the Fenchurch-street station of the Great Eastern line; also, the construction of a line from the Mansion House station of the Metropolitan District to the Aldgate Station of the Metropolitan. This project, if sanctioned and carried out, will involve the widening of Eastcheap, and the construction of new streets in the City, necessitating the purchase of much valuable property. The Bill also contains clauses empowering the company to contribute towards the erection of hotels and other buildings, and one clause enables the company to buy land and erect buildings for the accommodation of the families of the labouring classes whose dwellings may be required for the purposes of the proposed works. Amongst the clauses in a Bill promoted by the Great Eastern Railway Company is one seeking powers to purchase lands and houses in Liverpool-street, extending to Bishopsgate-street, for the purpose of erecting a new hotel in connexion with their Liverpool-street Station.

The Metropolitan tramway Bills form a special feature. In these several projects, powers are sought both by existing and new companies, to construct a complete network of tramways in and around the metropolis, both east, west, north, and south. One scheme is for the construction of a tramway passing over Waterloo Bridge to Wellington-street, in the Strand; another, along the Albert Embankment, Palace-road, and Stangate, to Westminster Bridge-road; whilst another proposes a line from Westminster Bridge-road, along York-road, Stamford-street, Southwark-street, to High-street in the Borough, near London Bridge.

The gas and water Bills include one by the Gaslight and Coke Company, with power to manufacture and supply gas for warming, ventilating, and cooking purposes; also a similar Bill promoted by the Crystal Palace District Gas Company, with powers also to supply the electric light.

The Bills promoted by the City Corporation include a Bill for powers to widen London Bridge; also a Bill for the abolition of Leadenhall Market, and the establishment of a new market on the site of the old Hide Market; likewise, jointly with the Metropolitan Board of Works, a Bill for the continuance of the Coal and Wine Dues. The Metropolitan Board of Works have three Bills, one for the purchase of the water companies, another for the construction of the Tower High-level Bridge over the Thames, and a third Bill for the prevention of the Thames flooding. There is also a Bill, promoted by the War-office authorities, empowering the Metropolitan Board of Works to lay out Wormwood Scrubbs for recreation for the inhabitants of the metropolis, a portion to be set aside for military purposes. The metropolitan Bills of a miscellaneous character include one to regulate the river traffic on the Thames; also a Bill for powers to remove the City of London Schools, and to erect new school-buildings on the Thames Embankment; together with a Bill, promoted by the trustees of St. Thomas's Hospital, for powers to purchase lands and houses from the authorities of Brazenose College, Oxford, for the purpose of enlarging the hospital.

As regards the provinces, the most interesting of the sixteen new railway Bills promoted is one entitled the Blackpool, Lytham, and Southport Railway, promoted by a company proposed to be incorporated, for the purpose of connecting Southport with Lytham and Blackpool, by the construction of a line of railway across the river Ribble, from the Hesketh-with-Becconsal Station of the Southport and Preston Railway, to join the Lytham and Blackpool Railway at the Lytham Station. At the point where the proposed railway would cross the river Ribble it is three miles in width, and navigable for vessels of large tonnage. It is proposed to carry the railway across the Ribble by a bridge of immense altitude, the sanction of the Admiralty being required for the carrying out of the scheme. A company to be incorporated under the name of the Manchester City Railway Company has a Bill for powers to make an underground railway between Blackfriars-street, on the banks of the river Irwell, to Piccadilly, the line passing under Deansgate, Market-street, and other thoroughfares. In addition to the Bills for entirely new lines, all the great companies have Bills for new works and extensions on their respective systems.

Amongst the batch of gas and water Bills is that promoted by the Manchester Corporation for a supply from Thirlmere Lake, which was defeated in the House of Lords last session, although it passed the House of Commons. It is understood that the opposition offered to it last year will be renewed during the ensuing session.

The Bills connected with piers, harbours, and docks include the construction of a new pier at Ramsgate; also a Bill enabling the St. Anne's-on-the-Sea (near Lytham) Land and Building Company to construct a pier at that watering place; a Bill to erect a promenade pier at Westgate-on-Sea; a Bill for powers to construct a marine drive, promenade, sea defence, and carriage-road at Walton-on-the-Naze, with powers to cut down, drain, and plant the cliffs; to embank the foreshore, and to erect public buildings for bathing, sanitary, and hotel purposes. The Eastbourne Local Board have likewise a Bill for the construction of a sea-wall, embankment, and breakwater, with powers to reclaim land and foreshore. There is also a Bill for the construction of a new wet dock, and a graving dock, at Falmouth; a new dock at Felixton; and a floating dock, quays, and wharfs, for the improvement of the harbour of Penzance.

The comprehensive town improvement Bills are promoted by the several corporations and local authorities of Bath, Over Darwen, Blackburn, Warrington, South Shields, Derby, Rotherham, Rochester, Blackpool, Nottingham, and Eastbourne, several of them including large powers over the erection of buildings, and the general sanitary condition of their respective localities.——The Bath Corporation Bill is for powers to purchase Bath Common for the purposes of a park for the public.——The Bill promoted by the Over Darwen local authorities contains very extensive sanitary provisions, and building regulations, with a clause for the purchase of land for a cemetery, and also for a public park. Several of the Bills, in addition to providing for sanitary improvements, and the widening and improving of streets, contain clauses enabling the promoters to erect public buildings of a varied character.——In the South Shields Bill powers are sought for the erection of a new town-hall, public baths, a new market, and the construction of a public park.——The Rotherham Bill seeks powers for a very considerable enlargement of the borough boundaries, with extensive building and sanitary powers, together with clauses for the erection of sewage works, and also a public market.——The Bill promoted by the Rochester Corporation is of a varied character, and includes the construction of an embankment on the foreshore of the Medway for the protection of the lands and other property on its banks. The Bill also contains powers as to the drainage and sewage works in Strood and Frindsbury; also powers to enlarge and improve the Guildhall, and to erect new offices and other buildings there. Powers are likewise sought to dredge the bed and foreshore of the Medway, together with powers to purchase the Strood Waterworks, and to construct large new reservoirs and other works.——The Blackpool Bill is the most comprehensive of the entire number, and involves a very large outlay. It embraces the extension of the borough, which at present includes 1,200 acres, to nearly 3,400 acres. In addition there are no fewer than twenty-three town improvements, the most important of which are the construction of new streets and the improvement of existing streets, in continuation of each other, from the North Shore to the South Shore, at a short distance in the rear of the front Sea Parade, and running parallel with it. This street is to be called the New Main-street. It is to be twenty yards in width and nearly two miles in length, and is intended to form a substitute for the existing parade, and a protection from the gales which prevail during the early and later seasons. The estimated cost of this undertaking alone is 150,000*l*.——The Nottingham Bill seeks powers for the purchase of Bulwell Forest by the Corporation, and the appropriation of it for a public park, recreation-ground, and a cemetery. The forest, which is 141 acres in extent, is the property of the Duke of St. Alban's. The Bill also contains clauses for the purchase of the Gas and Water Companies, with powers to use the electric light.——The Bill promoted by the Eastbourne Local Board contains clauses as to street improvements; also powers to erect a new town-hall and a public waiting-room; a clause empowering the Board to lay out the reclaimed foreshore for building purposes; together with general powers with reference to the erection of houses and sanitary arrangements.

Amongst the Bills of a miscellaneous character is one promoted by the Liverpool Corporation, containing clauses enabling the Corporation to illuminate the streets and public buildings with the electric light. The "National Electric Light Company" likewise apply for powers to break up streets, roads, and other places, and to lay down pipes, tubes, posts, lamps, and apparatus for lighting streets, and public and private places and buildings, by means of electricity, galvanism, or other similar agency.

Projected Harbours for Cyprus.—It is stated that an investigation has been going on as to the feasibility of constructing a harbour at Limasol. This, it is reported, can only be done by the erection of an isolated breakwater running nearly parallel to the shore in a depth of water varying from 40 ft. to 50 ft., and of a length of about three-quarters of a mile. According to a design made by Mr. Hamilton Fulton, the engineer, the outlay for a breakwater at Limasol, with its accessories, would amount to as much as 1,000,000*l*., whereas at Famagosta, an adequate amount of harbour and dock accommodation could be provided, according to Mr. Fulton's estimate, for 500,000*l*.

EARL GRANVILLE ON ART, SCIENCE, AND TRADE.

EARL GRANVILLE presided on the 3rd inst. at the annual meeting of the Hanley School of Art. Before distributing the prizes, the noble earl made a speech, in the course of which he said:—It is hardly necessary for me to remind this particular meeting that the Potteries have become a place of very great importance, so much so, that nowadays the chiar' oscuro, or light and shade, which distinguishes it, is fully appreciated. It has been said that at the present moment there is great distress prevailing, which is owing to the habits of improvidence of the people of this locality. I have felt it my duty to inquire into those allegations, and I am informed, partly by the local press and partly by competent authorities, that there are no grounds for the accusations which have been made, and that there have been no serious differences between the employers and the employed. So far as I have been enabled to learn, the distress prevailing in the kingdom is not of that character which requires exceptional means to relieve. I have listened with great interest to the observations which have been made to this meeting, and to the report which has been read by your secretary. It has been pointed out how largely increased the numbers of those who have been successful in their examinations have been. All this is satisfactory; but unfortunately it is also reported that in the work of the elementary classes there has been a want of regularity of attendance. I am not one of those that think that young people who have been working all day can always be tempted from places of amusement to places of study; but I think those who conduct this institution endeavour to struggle as much as possible against this irregularity of attendance. It was once said that no two people ever read the same book or saw the same picture. I believe the remark is true. Of course, it does not mean that no picture was ever seen by one person only, but that a particular picture or book addressed itself differently to different persons according to their mind,—that the person so addressed received different impressions. I was once told by a friend of mine, an artist, that he constantly saw new sources of beauty in the objects he was studying and looking at all his life, and I have not the slighteat doubt that Mr. Wedgwood saw beauties in objects that were unperceived by men of less observation and genius than himself. This school is termed a school of art, and not of science; but I am glad to hear that you have scientific studies, and that the science classes are under nearly the same management as the school of art. Now, in regard to art alone, I think it is most creditable to Hanley that four years before the great historical Exhibition of 1851, before the advantages or disadvantages of competition were made apparent, Hanley opened a school of art. Philosophical historians have traced the progress of mankind, and they have shown how very different the rate of that progress has been at different epochs of the history of the world. The chief characteristic of this century is the much greater control that man has obtained over matter. It would be very difficult to state what labour, how many millions of human beings, is represented by the steam-power in this country; it would be almost as difficult to recount the different inventions and immense improvements in inventions which have taken place during the present century. The mind of man acting upon matter through the useful mechanical arts is a living principle of modern civilisation. It is true that the newest inventions contain something that is old, and they are hardly ever perfect; but it is also true that the progress has been perfectly extraordinary. In short, it is very difficult now to disbelieve anything until one has examined fully into it. Though the distress in this district is not so great as in other manufacturing districts, there is no doubt that the depression is universal in trade. I, for one, am perfectly convinced that sooner or later prosperity will gradually revive. We all agree as to a great many of the principal causes of the depression. There might possibly be some disagreement between some Conservative gentlemen and myself as to the particular causes which may aggravate that distress, but we shall all be agreed that when the revival of prosperity does come, the international struggle for superiority will be of the most intense kind, and I am perfectly convinced that it is only by employers and employed agreeing to see things as they are, and endeavouring to co-operate with one another, and, above all, encouraging education of every character, general and technical, that we shall be able to hold, maintain, and, I trust, better the position which we have hitherto held. I believe that without knowledge,—that without the openings which knowledge gives,—to expect a man to compete with one who is thus armed is to expect that a barbarian savage, with bow and arrows, can compete with a civilised being in possession of arms of precision; and, therefore, I do feel that this meeting is well employed in celebrating the successful results of an institution which is calculated to further the education which is now so desirable. When I was asked to speak, I thought that you possibly might expect me to deliver a philosophical treatise on the principles of art. Luckily for you, I remembered the advice given by Lord Dalhousie to a friend of mine,—at that time a young man, and now acknowledged to be one of the most brilliant speakers in this country,—and he said,—"Not only avoid speaking of subjects which you do not know, but avoid speaking of subjects which your audience do not think you know." Therefore, I shall close my remarks on a subject that I do know, viz., that I feel very great pleasure in distributing the prizes to those young persons who have so well deserved the honours they are about to receive.

THE LATE MR. JOHN JOHNSON, ARCHITECT.

THE profession has recently lost a highly-talented and esteemed member by the death of Mr. John Johnson, of 14, Buckingham-street, Adelphi, which took place on the 28th ult.

Mr. Johnson started in life with honours, for he gained the Gold Medallion of the Society of Arts for a competition design in 1833, the Silver Medal of the Royal Academy in 1834, the Gold Medal of the Royal Academy in 1835, and the Travelling Studentship in 1836, when he went to Italy, and remained abroad, we believe till 1840, bringing back with him a valuable collection of sketches, which assisted, no doubt, to develop the excellence he always displayed in detail and colour.

His two works, perhaps, best known to the general public, were the decorations of Her Majesty's Theatre for Mr. Lumley, and his designs for the Alexandra Palace;* for the latter work, he was in 1877 made a Fellow of the Florentine Academy, an honour totally unexpected on his part, till he received his diploma through our Ambassador. His designs for the terrace at Lancaster-gate, and Prince's-gate, Hyde Park, for Sir John Kelk, are also well known. He published a book, called "Johnson's Churches of Northampton," which, for reference, was highly useful to architects. Mr. Johnson was for some years District Surveyor for East Hackney; but though it was a lucrative appointment, he found it interfere with those occupations which were more congenial to his taste, and he resigned.

Though seventy-one years of age, he may be truly said to have died "in harness," for in 1878 he carried out an Italian design for a large mansion, for Sir John Kelk, at Tedworth, Wilts, at a cost of 45,000*l.*; and also completed the design, details, and contract for a church at the same place, to cost 12,000*l.*, which, when finished, will certainly be the most perfect of his works.

Greatly as his loss will be felt by the profession, it will be still more deeply regretted by a large circle of friends to whom he had endeared himself by the natural kindness of his heart, the benevolence of his character, and the genial warmth and amiability of his disposition. His hand was ever open to the needy and deserving while alive, and even after death he wished the stream of his benevolence to flow on, for he has bequeathed 1,000*l.* to the Architects' Benevolent, and 1,000*l.* to the Artists' Benevolent Funds. We are indebted for these particulars to one of his oldest friends, Mr. Charles Moreing.

The following is a list of the works designed and executed by Mr. John Johnson:—

Churches and Chapels.—St. Saviour's, Walmer, 1843; St. Paul's, Camden-town, 1847; St. Edward's, Romford, Essex, 1849; Christ Church, Stratford, Essex, 1850; Holy Trinity, Portland; Curragh Church, Ireland (Lady Waterford), 1850; St. Matthew's, Oakley-square, and Parsonage, 1851 or 1857; St. Andrew's, Thornhill-square, Islington, 1853; St. Peter's, Cobo, Guernsey, Channel Islands, 1853; two Chapels, Newport Cemetery, South Wales, 1854; St. Mary's, Greenhithe, Kent, 1858; St. Luke's, King's-cross (pulled down for Midland Railway, 1860); St. Andrew's, Romford, Essex, 1861; Woolhampton Church, Berks, 1861; Bramcote Church, Nottingham, 1861; Holy Trinity, Wimbledon, 1862; Wanstead Chapel, 1866; Roslyn Chapel and Residentiary, Hampstead, 1867; Midgham Church, Berks, 1869; Brimpton Church, Berks, 1869; Tedworth Church, Wilts. 1878 (now proceeding).

Mansions, Schools, &c.—First Alexandra Palace (burnt down June, 1873), Messrs. Meeson & Johnson, architects; Second Palace, Mr. J. Johnson, architect, commenced 1873, finished 1875; Water Colour Gallery, Pall-mall; West Ham Memorial Schools (Sir John Felly); Knockholt School, East Tilbury, Essex; Woolhampton School. In 1858, designs and alterations to Woolhampton House, Berks (Mr. James Blythe); designs and alterations (Mr. B. B. Green), Midgham Park, Berks; villa for Mr. Henry Wiggan, Birmingham; decorations (internal) of Her Majesty's Theatre; Princes-terrace mansions, for Sir John Kelk; the Terrace, Lancaster-gate mansions, Hyde Park North (Sir J. Kelk); shooting lodge (Mr. John Fowler, C.E.), on Loch Broom, Rosshire, N.B.; alteration of Bentley Priory, Stanmore, for Sir J. Kelk; club chambers, St. James-square; and houses in King-street. In 1865, mansion for Mr. John Fowler, C.E., Braemore, Rosshire, N.B.; mansion, Down-place, Guildford, Surrey, for Mr. T. Faviell. In 1876, mansion, 3, Grosvenor-square, for Sir John Kelk; Tedworth House, Wilts, and church, 1878, for Sir John Kelk.

* His design and a plan of the building will be found in our volume for 1874, pp. 637, 638, and 639.

PROPOSED BATHS AND WASHHOUSES FOR ISLINGTON.

A SPECIAL committee has been appointed by the Islington Vestry to take into consideration the advisability of adopting in the parish the Act of Parliament authorising the establishment of public baths and washhouses. Mr. Mote, in moving the appointment of the committee, said that the Act of Parliament required that they should establish these baths and washhouses for the health and cleanliness of the people in densely populated places. They knew, even in the parish of Islington, that large families live in one small room, and they had not the means of observing the rules of decency and cleanliness. He condemned the narrow-mindedness of certain vestrymen, and predicted that the constant refusal of local bodies to carry into effect permissive Acts of Parliament, such as those under consideration, would in all probability result in that centralisation which the friends of local self-government affected to dread.

During a discussion on the motion, several members opposed it, on the ground of expense, and also on the further ground that the baths would not pay; but in answer to this the success of the St. Pancras Baths and Washhouses was cited, and the motion was carried. The probability, therefore, is that public baths and washhouses will ultimately be established in Islington.

DISCOVERY OF ROMAN REMAINS, BREGENZ.

THE *Nürnberger Korrespondent* contains a letter on fresh discoveries of Roman remains at Bregenz (Lake of Constanz), from which we take the following particulars:—Brigantium, the old Roman city on the Bodensee, on the site of which modern Bregenz, the chief town of Vorarlberg, Tyrol, is erected, has become very familiar to us by recent excavations, carried on under the direction of Dr. Jenny in Hard. Remains of a not inconsiderable number of private and public buildings have been discovered, especially in the neighbourhood of the Evangelical Church, ten minutes from the town, on both sides of the old Roman road. They are not in rows, but have been placed detached, in the midst of gardens and meadows, and are consequently on that account of some importance in making us acquainted with the structure and arrangement of the Roman house in Germania, besides affording great interest to antiquaries on account of the large number of objects of all descriptions buried in them. During the excavations made quite recently, besides smaller walls, remains of four buildings of great importance have been discovered. Undoubted traces of a Roman building have this autumn also been met with at the neighbouring Lindau, a further proof for the existence of a Roman colony there, and another point of support in answering the question where the island of the Lake of Constanz was situated, concerning the position of which much discussion has been going on recently, and which Tiberius, according to Strabo, chose as a base.

Archæology.—The Portuguese Government has decided to receive at Lisbon the International Congress of Archæology and Pre-historic Anthropology in 1880.

THE NAVE ROOF OF ST. ALBAN'S.

SIR,—A very few words will suffice to close this correspondence, as far as I am concerned. Any one who will take the trouble to look again at my letter will see that Mr. Scott has omitted to answer it on most points, whilst those on which he does write do not affect the main issue.

He refers at length to his reports. Of these, save one of June 25th, I know nothing. That was complete in itself, and I agreed with it, and have spent some time in supporting its recommendations, hoping when I began that I was helping Mr. Scott's object. It is true that it began by referring to the western part of the roof; but as it finished by speaking of what would then have to be done to the whole of the ceiling, I concluded that the eastern part of the roof had already been dealt with in some report which I had not seen. I will only add that, if language means anything, making an old roof "sound and serviceable" by repairs, does not mean erecting a new roof over and independent of it.

If Mr. Scott will read what I have written more carefully, he will see that I have always asserted that the walls of the nave and transepts originally finished at the same level, as consequently did their roofs. The nave-walls being now higher than the transept-walls, must evidently have been raised. I have stated this clearly from the first, and cannot understand why Mr. Scott assumes that there is any possibility of my being in doubt about it.

As to the new parapets to the western part of the nave, I thought I had made myself clear. The corbel-table under the parapet is, I doubt not, a copy of the old corbel-table, but the parapet above it did not appear to me to be copied from anything of the same age now existing on the church.

I am very glad Mr. Scott is going to have the south transept gable accurately measured; with this, and the old doorways in the tower, and the marks of framing on the old timbers in the nave roof, he will be able, as I pointed out to the Society of Antiquaries, to reconstruct on paper, with a close approach to accuracy, the position and pitch of a Norman roof, and the design of a latest high-pitched roof of the nave, to which no doubt the old timbers belonged. These would be very interesting particulars, and I regret that they were not obtained before any illustrations of the supposed lines of roofs were published. But without this information, Mr. Scott's illustration affords, to say the least, very strong evidence against the line which he calls that of the original roof being, in fact, anything of the sort, even if it exists anywhere, save in his own imagination.

GEORGE EDMUND STREET.

SIR,—Everything that can be done ought to be done to discover, and to bring before the public, the facts relating to the existing remains, and the evidences of the architectural history of the several roofs which have covered the Abbey Church of St. Alban's.

A fresh interpretation of the facts recently brought out, as to one very important detail, may serve to throw light upon the proper solution of the present controversy; at all events, as to the true state of the case, whether the eventual result may be affected by it or not. Until recently little has been accurately known, except perhaps to those personally interested in the work, respecting the relation of the existing parapets to the present or to previous roofs, or as to what was really proposed to be done in their restoration or renovation, as the case might be.

Mr. Street's reply to Mr. J. O. Scott's report will have made clear to those who have at all looked into the matter for themselves, what Mr. Scott's report, in the absence of his diagrams, failed to do. And I must express my amazement at finding it not only supposed, but seriously and deliberately maintained, (1) that the original Norman roof extended so far above the principal string-course of the tower as to cut through the jambs of the windows over; (2) that the lines of the roof-chases in the tower wall, now filled in, but still so conspicuous and so clearly indicative of the original Norman roof, are not the lines of a Norman roof at all, but of a later Mediæval roof cut down from the steeper pitch; (3) that this lower roof ever co-existed with the parapets, or would be in any way at all compatible with them; (4) that the present proposal to construct a new steep roof to the lines of this lower roof would present in any way, or in any sense, a "restoration" of what ever had existed, or ever could have existed at any one period.

I do not now propose to enter into the merits of the question as to what ought to be, or is to be, done by the restoration committee. I can freely admit, as I took the opportunity of doing at the meeting of the Society of Antiquaries, that the high ridge line, if kept within the limits of the apex of the walled-up chases of the original work, would be better, æsthetically, and would produce, much more nearly than it does at present, the effect intended by the original builders, and the appearance which the Abbey presented in its palmiest days. But I must confess I do not see how it is to be done in any way which shall be compatible with the principles of "faithful restoration," and I do most emphatically protest against its being urged or attempted upon any one of the grounds set forth in the four propositions above enumerated. Let it be done "as the best thing," or as a "vast improvement," as a necessary expedient, as a legitimate development of nineteenth-century work, as a concession to weakness, or as an irresistible act of irresponsible power; only let it not be promoted and defended upon grounds which shall utterly stultify the boasted enlightenment of the present generation in the study and preservation of Mediæval architecture.

I speak strongly, but surely not more strongly than the rights and the urgency of the case demand; and I will be no party to this question being made a personal matter. But when eminent amateurs charge the whole architectural profession with ignorance and with wanton destructiveness, it would be doing a lasting injury to the interests which we have at heart to let pass such flagrant Vandalism as that of the triumph of might over right, in these days of free enlightenment and investigation. And this is the more needful at the present time, and in the present instance, when an energetic body of men, self-constituted for the very purpose of the "conservation of ancient remains," has left the battle of conservation to be fought out single-handed by those whom it has thought well to denounce in no measured terms for their wanton destructiveness. There has been "much cry and little wool." They seem to have taken no steps, at all events no effectual steps, either for investigating the facts or of appealing to the popular enthusiasm for the conservation of the ancient remains. Discretion has proved, in this case at least, the better part of valour. It would have been a thankless and uphill task for them to have undertaken. And the preliminary investigation is one from which they might well shrink. Much has been said in the public papers, but no sufficient information which could be relied on had been given as to the structural question now raised when it was announced that the steep roof was already decided on. And in August last I wrote to the *Times* suggesting that there ought to be a conference of architects to investigate and report upon such existing evidence and indications as could be discovered, and had not up to this time been communicated to the papers, in order that the public might be in some position to appreciate what was going on. Being the dull time of the year, the *Times* seemed to think such a suggestion superfluous. Happily the same idea occurred to other minds, and through the instrumentality of the Conservation Committee of the Institute, the conference was held of which we now have the result.

My own visit to St. Alban's was an entirely voluntary and independent one, and the section which I made, showing the line of the Norman roof to have been at an angle of about 45° with the horizon, and to have run down on to the corbel-table from which the parapet springs, agreed with the section exhibited by Mr. Street. The remains which are actually found to exist accord accurately with what naturally would be expected by the circumstances of the building, and by comparison with others of a similar character. The angle of slope, the position of the ridge, the relation to the corbel-table, the indication of the line of rafter on the original walls, the relation of the rafter-line to the corbel-table,—all go unmistakably to corroborate each other as to its original date and treatment. It is true that doubt has been thrown upon the date of the corbel-table; but I think an examination of its construction and of its section, of which Mr. Neale has kindly favoured me with a full-sized profile, convincingly shows it to be the original one. It is equally clear that the string-course immediately over it, and forming, as it were, a part of it, was an addition of the fourteenth century, when the parapets were built; when, also, it is probable the angle bridges against the tower were added. This, however, is not of so much account.

Now the alleged traces of the steeper roof upon the tower-walls, which have been so effectually obliterated as to be scarcely visible, are almost ignored by Mr. Street, and according to the clerk of works always were very dubious. It seems, however, according to Mr. Scott, that they really existed, and, indeed, were regarded by him as indicating the line of the Norman roof. No other attempt seems to have been made either to explain them, or to explain them away, excepting that Mr. Street very properly denies that such a roof could have been the Norman one, unless it were lifted when the walls were raised. Neither of these suppositions will be found to be satisfactory as an explanation of the facts.

There is, however, as yet, nothing to show the exact or even the supposed line or angle of this high roof; and until Mr. Scott shall have produced this, it may be difficult to explain it satisfactorily. But apart from the evidence of its existence being established, it is not only possible, but probable, that such a roof, with parapets, may have been put up in the fourteenth century above the old line of the Norman roof, and cut down again in the fifteenth or sixteenth century, not to the intermediate pitch of about 45°, but to the present flat one of 18°

This supposition will account for the existence of the string over the corbel-table being of the fourteenth century (at which time the parapet would be first built); and also for a subsequent raising, perhaps in the fifteenth or sixteenth century, of the wall, and probably of the parapet also, when the roof was cut down.

A very customary and probable slope for such a roof within a parapet would be an angle of 60°. Neither the carrying up of such a roof, cutting, as it is said to have done, into the windows above the string, nor the cutting it down again below the ridge of the original one, would be at all at variance with the practice of the men of the respective periods. It is what we find again and again has been done; and it will reconcile with each other the conflicting difficulties raised.

All this, however, will not go to remove the difficulty, but rather to increase it, if the old roof be doomed to destruction. It would be preposterous to raise the ridge of a new roof again to cut into the window over the principal string; and it would be impossible to follow the line of the old Norman roof with the existing parapet. The only proper mode of dealing with it would be indefensible, except by way of radical renovation. The striking out of a new line of rafters from the present gutter to the line of the old Norman ridge would be an efficient, possibly a defensible one; but by no treatment short of destroying all the present parapets could there well be a restoration to what it was at any period. Possibly the committee may resolve still that radical renovation will be the best way out of the difficulty, only let it not be called "faithful restoration."

This course will, at all events, disarm the power of future adverse criticism by destroying the only vestiges by which it could be made effectual. Of the condition of the roof I am not prepared to speak. I have been told that it is in such a state that, though an estimate has been given for its repair, the builder would not undertake it as a contract. On the other hand, it has been reported well capable of repair. And, if it be so, there seems no reason for replacing it with one upon new lines, and essentially of modern construction.

WILLIAM WHITE, F.S.A.

SIR,—My letter in your last week's issue contained a few inaccuracies, which crept in owing to its having been written in a hurry, and corrected by means of post-cards. Speaking of an expression I had used previously, which was liable to be misunderstood, I am made to say that it had no "reference to himself." This should have been "myself." At the end of my letter it is stated that certain work "was all done before I came on the scene." This should be read "was all arranged for."

The other inaccuracies are only verbal

J. OLDRID SCOTT.

Hampstead.—Efforts are being made to preserve the fine lime-trees of the Well-walk, Hampstead, which it was intended to cut down to make way for building operations.

WHAT IS A "NEW" BUILDING?

AT the last meeting of the Wimbledon Local Board, an "opinion" of Mr. W. Cunningham Glen, barrister, given at the request of the Board, was read, in which he stated that it was not possible to give an accurate legal definition of what is a "new building." Every case must be governed by its own special circumstances, and until a judicial decision was obtained it could only be a matter of opinion whether a particular structure was a new building or not. In the case of Mr. Sloper, who had constructed an office adjoining his private residence, built of brick, and slated, Mr. Glen was of opinion that it was a new building within the meaning of the bye-laws. True, it was an addition to an existing building, but it came as much within the scope and the object of the bye-laws as to structure of walls, foundations, roofs, and chimneys, as if it were wholly unconnected with the old building. As regards the second case submitted to Mr. Glen, of a wooden knife-house erected in his garden by Mr. Ward, Mr. Glen was of opinion that it was not a "new building."

The chairman observed that the opinion would be very valuable in framing the new bye-laws.

KITCHEN BOILER EXPLOSIONS.

WITH reference to the bursting of kitchen boilers, several instances of which (one or two of them resulting fatally) have recently occurred, Mr. Lavington Fletcher, of Manchester, writes:—The first step to take in endeavouring to prevent household boiler explosions is to clearly understand their cause. On this subject there has been much mystification. It is generally thought they are due to the injection of a little water to a boiler which has been boiled dry and overheated, when it is supposed so rapid a generation of steam takes place that an instantaneous and ungovernable pressure is developed which shivers the boiler to pieces, just as if burst by a charge of gunpowder. This view, though generally entertained, is without foundation, and, as it puts people on the wrong scent, is mischievous. The simple cause of household boiler explosions is the gradual accumulation of heat in the boiler, which leads to a gradual, and not a sudden, accumulation of pressure, just as when a porter or ale bottle bursts in hot weather from a rise in temperature. These household boilers are on the circulating principle, and in the majority of cases have two pipes connecting them to a cistern placed at a higher level, and called the hot-water cistern. These cisterns are generally fixed at the top of the house, and frequently in the roof. One of these connecting-pipes runs from the top of the boiler to the top of the hot-water cistern, or nearly so. This is called the flow-pipe, and through it the hot water ascends from the boiler to the cistern. The other pipe runs from the bottom of the cistern to the bottom of the boiler, or nearly so. This is called the return-pipe, and through it the cold water descends from the cistern to the boiler. Thus a circulation is maintained, and the boiler beneath and the cistern above keep on exchanging their water as long as the fire burns. The arrangement, as will be seen, is very simple. The pipes form two natural safety-valves, and as long as the water remains liquid and the thoroughfares open an undue accumulation of pressure is impossible. With a head of water 10 ft. above the boiler the pressure is somewhat under 5 lb. on the square inch; with a head of 20 ft. it is somewhat under 10 lb.; with a head of 30 ft. somewhat under 15 lb.; with a head of 40 ft. somewhat under 20 lb.; with a head of 50 ft. somewhat under 25 lb. This will cover the height of most houses, so that the pressure on household boilers simply from the head of water is very little. When, however, the outlets become choked, whether from the accumulation of incrustation, as is sometimes the case, or from the closing of stop-taps, or from the formation of ice, it will be seen that the conditions are totally changed. The circulation is stopped. The pipes no longer act as safety valves. The pressure is bottled up within the boiler, and thus, as long as the fire goes on burning, the water in the boiler goes on getting hotter and expanding, and the pressure goes on increasing. It becomes, therefore, a race between the intensity of the fire and the tenacity of the boiler. If the fire be at all active the boiler must soon be mastered. The stronger the boiler the greater the accumulation of pressure before it bursts, and the more violent the explosion when it occurs. The circulating pipes may be choked with ice in a single frosty night between the time of drawing the fire in the evening and lighting it again on the next morning. It is clear, therefore, that some outlet for the pressure is needed that will not be affected by the frost or the choking of the pipes from other causes, and this may be found in a good metal safety-valve. It may be desirable for me to add that a fire heating a circulating boiler should never be lighted when water cannot be freely drawn from the taps in the scullery or bath-room, or from any other taps connected with the boiler or with the circulating pipes.

FIRE "ANNIHILATORS."

INVENTORS at the present time seem to be devoting considerable attention to the repression of "the devouring element," as fire "in the wrong place" has been termed. On the 3rd inst. some experiments were made at the Canning Pierhead, Liverpool, to test "Dunn's Patent Fire Annihilator." The patent claims to be a prompt extinguisher of fire, and the result is sought to be accomplished by an engine, or "annihilator," being constructed, with appliances, to generate carbonic acid gas rapidly and continuously in large volume, so as to speedily fill the hold or compartment of a ship in which fire has arisen. A pile of wood and other combustibles, saturated with petroleum, was placed in a brick building lent for the occasion by the Dock Board, and every aperture having been closed, a light was applied. A strong flame arose, and, after allowing it to obtain a hold, the engine was set in motion, when a small quantity of gas ejected through the hose is stated to have immediately quenched the fire. The pile was then re-lighted, and, in the way of further experiment, the window was left open so as to admit a certain current of air. In this instance an additional second or two elapsed, but the result is stated to have been equally satisfactory. The engine employed is capable of generating 600 ft. of gas per minute, which will, it is stated, impregnate double that quantity of atmospheric air.

By permission of the City Lands Committee, a trial has been made on the vacant land at Whitefriars of a method of extinguishing fires invented by Mr. T. Atkins. As the trial was intended to be a competitive one between water as at present applied and the improved method, it became necessary to have the trials in both cases under precisely the same conditions. For that purpose a steam fire-engine was employed in both, and two wooden structures were erected, each of the same size, and containing the like quantity of most inflammable materials. The first structure fired was allowed to become thoroughly ignited, when the steam fire-engine employed for the purpose was started, and threw a volume of water into the burning mass equal to 300 gallons per minute, and at which rate it occupied thirteen minutes in extinguishing the fire. The second structure was then ignited, and allowed the same time in which to arrive at the same state of combustion as the first. The engine, being then connected with the apparatus for producing the required results, was then started, and succeeded in extinguishing this fire in two minutes and a half, showing a gain in time over the first trial of ten minutes and a half, and an economy in the water used of 3,150 gallons, equal to rather over 80 per cent. The apparatus is somewhat similar to a small stove, which, being charged with the combination of materials and ignited, the products of combustion, instead of being allowed to escape, are drawn into the suction-pipe of the pump of the fire-engine in combination with the water at each stroke. The gases and water, in passing through the various parts of the pumping apparatus, and, being under pressure, become intimately combined, and are then conveyed in the ordinary manner through the hose and branch pipe, from which they issue in apparently the same condition as water *per se*.

New Railway in the North.—Plans for a new line of railway, projected by Mr. Randolph Gordon Erskine Wemyss, which it is proposed to form between Thornton Junction and East Wemyss and Buckhaven, have been prepared by Mr. Sang, C.E., Kirkcaldy. The line will be upwards of four miles in length, with a gradient varying from 1 in 101 to 1 in 300 yards. It is estimated that the cost will be about 20,000*l*.

LAMPS FOR THE ELECTRIC LIGHT.

"DIOGENES" writes,—"May I be pardoned if I object to the present method of using this light, and may I offer a few suggestions? It seems to me that it is a light that requires to be its own distance from that which it is intended to illumine, and the distance at which gas is serviceable will not do for it. Neither does a lamp-post seem desirable. We want the light where now we get the blackest shadow. Could not the lamps be made to project from the houses, on ornamental brackets? They would be cheaper than elaborate lamp-posts, and out of the way. Also they might be any distance up, and something white on the wall would be an assistance. Then the glasses could perhaps be plain (not "ground" or opal), at all events at the bottom, if not at the sides, so letting out more light downwards, where it is wanted. A somewhat similar defect was fatal to the "new" light that was tried on the first half of Westminster Bridge, directly it was opened, and it will be a pity if this present illuminator loses favour through being misplaced or wrongly treated.

THE STORY WITH SOME INTEREST IN ST. LUKE'S.

IN our last volume (pp. 791, 816, 1013) mention was made of the alleged objectionable conduct on the part of some of the members of St. Luke's Vestry, and of the present representative of that Vestry at the Metropolitan Board of Works (Mr. Storey) in respect of the purchase and re-sale, with interested motives, of certain property required for carrying out what is called the Golden-lane Improvement. At the meeting of the Vestry on the 31st ult., a deputation attended from the Ratepayers' Association, to present a memorial from a public meeting objecting to the improvements being carried on under the present Vestry, and calling on the members of the Vestry to resign.

Mr. Allen said that it was a general feeling amongst the ratepayers that far too much money had been paid for certain properties purchased in Golden-lane, and they were dissatisfied with the way matters were conducted by the Vestry.

Mr. R. Moreland also supported the memorial.

Mr. Churchwarden Pedder defended the action of the Vestry, and said the proceedings were upheld by the most competent authorities. It might be very well for Mr. Vulliamy, of the Metropolitan Board of Works, to give a different valuation now to what he did when the scheme was proposed. The property of Mr. Smith had been purchased by Mr. Storey at a fair market price, and in that opinion they had been strengthened by Sir Henry Hunt and Messrs. Edwin Fox & Bousfield. There had been properties purchased by the City of London a short distance from the land in question, for which a much higher price was paid. There was also the trade compensation which had to be taken into consideration. Sir Henry Hunt had allowed for neighbouring properties 2*l*. a foot, and the land in question had been obtained at 15s. a foot. They had already incurred heavy legal costs by going to a jury in compensation cases, and, in fact, they were not successful. They would not go down on their knees to the Board of Works, and were determined to hold their position. He moved, "That, taking into consideration the fact that the Ratepayers' Association have commenced an action at law against the Vestry, we are unable to comply with their request to resign our seats at the Vestry until the result of the said action be determined."

Mr. Gardner seconded the motion.

Mr. Gabriel did not see that there was any other course left open to them than to resign. They had lost the confidence of the Metropolitan Board of Works and of the ratepayers, and they would never be able to obtain money to carry on the improvements. The fact was, in his opinion, patent to all, that the existing Vestry never would regain public confidence.

Mr. Standring hoped that there would be some way of getting out of the difficulty. He thought that if Mr. Storey would resign his seat at the Metropolitan Board of Works, matters would be improved.

Mr. Ingoldby said that a combination had been entered into by which members of the Vestry had been enriched at the cost of the parish.

Mr. Smith said that all kinds of dishonesty

had been attributed to him, but it yet remained to be proved if such were the case. He now held a letter offering him a much larger price for the same freehold land than had been paid him by the Vestry. He got no more than the value of the land, and a much smaller sum for trade compensation than had been allowed to some others.

OBITUARY.

Mr. T. Hervey.—Dublin papers report the death of Mr. T. Hervey, M.R.I.A., at his residence, Alfred-street, Belfast. Mr. Hervey had been settled in Belfast since 1869, and during that time he had been concerned for the erection of several Catholic places of worship in Ulster, including St. Patrick's, Donegall-street. The deceased was only thirty-two years of age, and leaves a widow and one child.

Mr. William Baker.—The death is announced of Mr. William Baker, at his residence in Westbourne-terrace. He was a member of the Council of the Institution of Civil Engineers, and for a period of nearly twenty years filled the responsible office of chief engineer to the London and North-Western Railway Company.

APPOINTMENT OF ARCHITECT.

LANCASTER ASYLUM.

SIR,—Referring to a letter in your issue of the 28th ult., headed "Very Smart," your correspondents apparently consider it superfluous to inform readers of the *Builder* that the candidate who alone was so hospitably entertained at the Asylum overnight *previously* to the meeting of the committee, and who was so much better informed than were the other selected candidates as to the ideas, wishes, and intentions of individual members of the committee, was at the meeting actually chosen!

I put it to you, sir, is it not reasonable to ask for some little explanation, when an Asylum Committee of County Magistrates, after having had submitted to the Commissioners in Lunacy plans made by their own "very intelligent" clerk of works, issue an advertisement inviting applications from architects not only to prepare complete working drawings, &c., but also to give "the usual architect's supervision"; then, out of a large number of applications, select another clerk of works, whose age does not indicate any extensive experience, as *architect* of works to cost some 60,000*l.*?

A THIRD ARCHITECT.

ARCHITECTS' CHARGES.

SIR,—Will any of your numerous readers inform me whether a court of law has yet affirmed the charges for professional services laid down by the rules of the Institute of British Architects, especially for works contemplated, but not carried out, and which, I believe, are always charged at 2½ per cent. for complete drawings and specification ready for contract?

X. S.

WASTE LAND.

SIR,—Mr. Grimes's letter in your last issue opens up a very important social and political question, and one on which many interested like myself in agriculture would gladly be instructed. No one can doubt that it would be desirable to increase, if practicable, the agricultural produce of this country, and if possible render ourselves independent of the foreigner; but self-interest already prompts both occupier and owner to do all they can to effect this result.

I am far from denying that it is possible that a larger product might be got out of the land, but then the extra produce would not remunerate the extra labour.

You might grow a turnip on a deal table, but it would cost you as much as a pine-apple, and would only be a turnip after all. The rate of agricultural wages is not greatly in excess of that required for sustenance, and there is no probability of men being willing to cultivate the soil for any continuous period unless wages afford some margin beyond bare maintenance. No great reduction in the price of agricultural labour can be expected that would render the application of further labour, beyond that already applied, profitable. Farmers are sufficiently alive to their own interests to employ any amount of labour that can be advantageously applied to the land. The fact is, that American produce grown on the rich lands of the far West enters our ports at such a price as to beat any elaborate hand-culture in this variable climate. Without a recurrence to protection, which I do not think Mr. Grimes would advocate (or the nation submit to) there is little chance of any further application (to any large extent) of agricultural labour. I am quite aware what a peasant proprietary has effected on the Continent; but the best judges are agreed, assuming similar conditions of climate and soil, acre for acre, that there is a larger produce under our system than that of our neighbours.

"Idle hands to waste lands" is the suggestion of your paper. There is, however, a fallacy in supposing that land that would yield sustenance-wages to the labourer for its cultivation is allowed to lie waste. There may be parks and pleasure-grounds that are exceptions, but, without a social revolution, I do not see how we can expect the owners to devote them to the employment of idle hands.

Let me offer your correspondent a practical suggestion. His motto is "Back to the land." Now, there are many hundreds of farms to be let at the present moment, the occupiers being unable to raise produce sufficient to pay outgoings and labour. Let him take one of these farms and employ his idle hands thereon, and see if he can beat the foreigner out of the home market. If he succeeds he will have solved a great social problem, and deserved well of his country. I can promise him the sympathy and best wishes of all interested in agricultural matters, and a host of warm admirers and friends; but, unless he is prepared to show that his ideas are practicable, he should not venture to advise nor help to maintain what, after many years of practical experience, I believe to be a delusion.

P. J.

PORTLAND CEMENT.

SIR,—If I may be permitted, after allowing so long a time to elapse, to answer Messrs. Gostling's letter, I would do so by quoting from my paper, on "The Manufacture and Testing of Portland Cement," read before the Institute of Mechanical Engineers in January, 1875. I there say:—

"It should weigh from 112 lb. to 118 lb. per striked bushel, and should be so fine that 80 per cent. will pass through a sieve of 2,500 meshes to the square inch; when moulded into a briquette and placed in water for seven days, it should then be capable of resisting a tensile strain of from 300 lb. to 400 lb. per square inch, and should, during the process of setting, show neither expansion nor contraction.

Weight and Fineness.—A light cement, *i.e.*, one weighing from 100 lb. to 108 lb. per bushel, is invariably a weak one, though it be of the requisite fineness; at the same time a heavy cement, if coarsely ground, is also weak, and will have no carrying capacity for sand. As the more the clinker is burned the harder and heavier it becomes, and, therefore, more difficult to grind in the millstones, the heavy cements to be met with are almost invariably coarse ones; and as an under-burned cement from its softness will be ground fine enough, but will be found deficient in weight, it will be seen that the weight, unless taken in conjunction with the fineness, is no test as to the quality of the cement."

For the large buyers it is but small matter how the cement is sold, for they are generally protected by a carefully-prepared specification adapted to the work for which the cement is to be used, and the manufacturer knows that unless he can comply with that specification he would be better without the contract. But it is the small builder who buys by the bushel that is, even now, the sufferer, and I maintain would be an even greater sufferer if weight were substituted.

If any alteration is to be made from the present mode of selling cement, I would certainly advocate that, as in the Adulteration of Food Act, the description and properties of every parcel of cement sold be given with it.

H. FAIJA.

Proposed Pier, Westgate-on-Sea.—It is proposed to erect a landing-pier, a little more than half a mile in length, at this new and rising watering-place. The limit of deviation in which it is proposed to build it is about ten chains; there will be a large cross head. The starting-point will be some 30 ft. below the top of the cliffs, and above the sands there will be a clear headway of 5 ft. at the commencement, and a few yards further down, 10 ft. At the head of the pier there will be at low tide some 16 ft. depth of water, thus allowing steamers to call at all periods of the tide; while at high tide the depth of water will be 31 ft. 6 in., allowing a clear headway of 5 ft. under the pier.

A YARD OF LIME.

SIR,—In reply to "A Contractor's" inquiry, contained in your issue of November 30, 1878, I think he will find that there is a "generally recognised trade custom" amongst lime, &c., merchants fixing the so-called "yard of *lime*" at eighteen bushels.

A BUILDER.

A YARD OF BALLAST.

SIR,—In reply to "An Engineer," in your last volume, 33 yards of concrete will require, for the purpose mentioned, about 40 yards of ballast (cubic yards).

All loads, whether one or two horse, should be checked at intervals by being tipped into a bunker containing a cubic yard. My experience teaches me not to believe in *loads*.

ANOTHER ENGINEER.

WHO PAYS FOR THE TROWEL?

SIR,—In connexion with an important Corporation in the North of England, a large public building is in course of erection. The foundation-stone was laid with a becoming ceremonial, for which, of course, a trowel must be purchased. It is said that one of the best silver ones was not good enough for the person to be thus honoured, and that he consequently procured one at a cost of 50*l.* or more, and then wrote to the various contractors, stating the amount which each must remit towards the purchase. I shall be glad to know what is the custom of the building trade, and whether the various contractors make provision for such imposts in their tenders, or whether this is one of those matters they must quietly submit to rather than incur the risk of offending one who by his position has it in his power to throw them out much more than the amount they are called upon thus to contribute?

INQUIRER.

"BRICKS! BRICKS! BRICKS!"

SIR,—Under the above heading there were advertised in your last issue "fifteen millions good Kent bricks" to be sold at prices considerably below the market value of the day. We should be glad to buy the whole quantity at the prices named for prompt cash, but we have searched in vain for "Bath-buildings, Lothbury," and are told by the Post-office authorities that numerous letters addressed to "Mr. G. Goodman" have been returned to the Dead Letter-office.

If you will kindly insert this in your next number it will, perhaps, lead to the discovery of the advertiser.

OLD SUBSCRIBERS.

SEVERN BRIDGE RAILWAY.

THIS important line of railway, now in course of construction, commences at Lydney, having junctions with the Severn and Wye Railway and the Great Western South Wales line. From here to Purton,—the site of the bridge,—the distance is scarcely four miles, inclusive of a tunnel 505 yards in length, completed for double line. From Lydney to this point there is a gradient of 1 in 32, rendered necessary to attain the required height from the bridge. For some distance the new railway runs parallel with the Great Western service, when it strikes away in order also to attain the required approach to the bridge. The tunnel masonry is very substantial, — stone foundation and side walls, with brick crown. From the tunnel to the bridge the gradient falls 1 in 50. There are four cuttings between Lydney and the Severn, but the principal ones are on either side of the tunnel; No. 3 has involved the removal of 80,000 cubic yards of earth, giving a depth from the surface of about 50 ft. Cutting No. 4 on the bridge side is nearly identical, and leads on to the viaduct, consisting of thirteen arches, with an altitude of 74 ft., and constructed of the best classes of Forest stone. The span over the Great Western Railway is oblique. In close proximity to the viaduct will be provided the bridge station, reached by a steep pathway now in course of construction. Station No. 1, however, will be at Lydney; and it is to be utilised by the Severn and Wye Railway Company, being also immediately contiguous to the South Wales Station of the Great Western line. The new railway may be provided at some future time with a double set of rails. For the present only one line has been laid, the permanent way of which is complete to the tunnel. Mr. G. W. Keeling is the engineer, and Mr. Griffiths the contractor.

The bridge near the parish church at Lydney is a substantial piece of work, with oblique arch 60 ft. in length, and over which both the new line and the Severn and Wye Railway pass. Owing to the difficulties which presented themselves in securing a desirable foundation, the entire bed of the stream was concreted to a thickness of 4 ft. 6 in.

The contract for the railway,—about five miles in length,—was assigned in 1874 to Messrs. Vickers & Cook, of London, at 90,000*l*. On the Sharpness shore the bridge is connected with a swing-bridge over the Gloucester and Berkeley canal, its total length being 196 ft.; it will be worked by steam power, the signal gear being placed in a house fixed on the top of the bowstring girder forming the bridge. This part of the undertaking was commenced and finished by Mr. Griffith Griffiths, who succeeded Messrs. Vickers & Cook at the spring of last year, under an arrangement to complete the railway approaches,—in fact, the finishing of the line between Lydney and the bridge and the line on the opposite shore. This swing-bridge is for a double railway, and one of the piers, of stone masonry, is over 40 ft. in diameter, the swing-bridge being 500 tons in weight, and moved with the greatest ease under the arrangements above mentioned. From here to the Midland Railway, near Sharpness Station, the line passes through a deep cutting, and this work is progressing.

The Severn Bridge itself is so far complete that only two main spans on the Forest shore remain to be finished. Practically, the number has now been reduced to one, as the first large span has so far become a *fait accompli* that the girders are fixed, and a large staff of workmen are engaged on the finishing process. According to the *Western Mail*, the bridge is expected to be completed in the course of the next few months.

The engineers are Mr. George W. Keeling, of Lydney, and Mr. G. W. Owen, of Westminster. Mr. Thomas E. Harrison, late president of the Institution of Civil Engineers, is the consulting engineer. The railway and viaduct is being completed by Mr. Griffith Griffiths, of Dean Forest. The bridge contractors are the Windsor Hamilton Iron Company, whose local representative is Mr. G. Earle. The severe frost during the last few weeks has somewhat retarded the completion of the viaduct, the approximate cost of which is 20,000*l*.

FROM GERMANY.

The New House of the Imperial Legislature.—The German *Reichsrath*, or Imperial Parliament, has been meeting ever since the establishment of the new Empire in 1871 in temporary premises, no agreement having been arrived at up to a recent date as to the site and other particulars of the proposed new houses of Parliament. It has now been agreed that the site of the new structure shall be that occupied by Kroll's Theatre, which is certainly one of the best positions to be found for the purpose in Berlin, being situated in the Park or Thiergarten, close to the Brandenburg gate at the end of the Unter den Linden, and in front of the colossal monument erected to commemorate the Prussian and German victories in the Danish, Austrian, and French wars. There are, however, many details yet to be settled before the commencement can be made with the new houses of the Imperial German Parliament.

The Obelisk to the Emperor William.—The most striking of the extensive decorations which were made in Berlin on the re-entry of the Emperor William into his capital after an absence of five months, caused by the wounds inflicted by the assassin Nobiling, was an obelisk, erected of temporary materials on the Potsdam Platz, close to the railway station at which his Majesty arrived in the city. It is now proposed to erect in permanent materials an obelisk precisely on the same spot, and on the same model as the temporary structure, and a large sum has already been collected in subscriptions from all parts of Germany for the purpose of carrying out this object. The height of the monument will be 28·3 mètres with pedestal, so that it will slightly exceed in altitude the Obelisk of Luxor, on the Place de la Concorde, at Paris, which, with pedestal, measures 27·8 mètres, or 22·8 mètres without the pedestal; Cleopatra's Needle, on the Thames Embankment, being without pedestal 21·3 mètres in height. The material to be employed in the construction is dark polished granite, with bronze for the girdle and sculptures.

New Railway Stations.—A great central railway station is to be built at Frankfort-on-the-Main, the estimated cost of which is 2½ million marks. Another great station is to be erected at Hanover, at an estimated cost of 3 million marks. In accordance with the principle recently laid down by the Imperial Chancellery, as well as by the Prussian Ministry, that all public works in Germany are to be executed exclusively by Germans, and with materials produced in Germany, except in the case of articles not produced in that country, foreign architects and others are excluded from all competition on the above works.

MASTERS AND MEN.

York.—At a meeting of the operative bricklayers of York, held on the 4th inst., it was resolved to accede to the masters' proposal of a reduction of one halfpenny per hour; the men, three weeks ago, decided to offer resistance, but after more fully considering the state of trade, they decided to submit. The reduction comes into force at once.

Glasgow. — The Glasgow plumbers' strike against an intimated reduction of 1d. an hour began on the 3rd inst.

Montrose.—After a strike of six weeks' duration, the masons in Montrose have accepted the masters' terms,—viz., 6d. an hour for shed-work, and 6½d. for work not under cover, the three months' notice on either side being abandoned.

Leeds.—The Leeds Master Builders' Association has given notice to the operatives in the various branches of the building trade in Leeds and district for a revision of the present wages and working rules, the main features of which are contained in the following memoranda:—Masons: Notice given October 21, 1878, to expire the 1st of May, 1879. The present rate of wages is,—Setters of stone, 9½d. per hour, to be reduced to 9¼d. per hour; the present rate for masons is 9d. per hour, to be reduced to 8½d. That walking time, lodgings, and railway-fares be matters for arrangement between employers and operatives. The masons now commence work on Monday morning at 8·30 o'clock. It is proposed that they shall commence work at seven o'clock, the same as the other branches, and that on Saturdays, instead of giving up work at 12 o'clock at noon, they shall work until 12·30. Bricklayers: Notice given to bricklayers, October 21, 1878, to expire the 1st of May, 1879. That the question of walking-time, lodgings, and railway-fares be matters for arrangement between employers and operatives. Labourers: Notice given October 28, 1878, to expire 1st of May, 1879. There is no existing code of rules for labourers. They are receiving 6d. per hour at present, and work 50 hours per week. It is proposed that they shall be reduced to 5½d. per hour. Joiners: Notice given December 27, 1878, to expire 1st of July, 1879. Joiners' present rate of wages is 8d. per hour; to be reduced to 7½d. per hour. That the question of walking-time, lodgings, and railway-fares be matters for arrangement between employers and operatives.

Sheffield. — The dispute in the building trades at Sheffield presents no prospect of an early settlement. The masters gave to the masons five days' notice of a reduction of about 12½ per cent, but the men declined to recognise it, contending that one of the rules agreed to between them and the masters was to the effect that no alteration should be made in the rate of wages without a five months' notice being given. The masters state that they have agreed to no such rule since the last strike, and that five days' notice is all they can be expected to give of a reduction. The men have produced letters signed by the secretary of the Masters' Association agreeing to the rule, but the masters repudiate the action of their official. The masters are not unanimous, and it is expected that almost as many masons will be at work on Monday as will be locked out.

The Engineering Trade.—The meeting of the masters in the engineering trade, which was fixed to take place in London on the 11th inst., is now postponed. The men are determined to resist the proposed extension of hours. At the same time, it is stated that over 8 per cent. of the engineers throughout the country are unemployed. As an argument against the proposed increase of the working hours, the engineers refer to the fact that the men in nearly all the railway engine-shops are working short time,—that is, from three-quarters to seven-eighths of the weekly hours. The shops of the London and North-Western Railway are altogether closed on Saturday. So far as utilising the plant is concerned, the men say they do not object to working a double shift, thus working day and night. So far as competition is concerned, they quote the Board of Trade returns to show that the exportation of locomotives for the eleven months of 1878 is half a million pounds sterling over that of the same period in 1876. One large ironwork in North Wales is at present executing an order for iron rails and plates for Belgium, which, however, it undertook on condition of the men submitting to a slight reduction of wages. The Amalgamated Society's accumulated balance at the end of the last September quarter was 263,000*l*. At the beginning of last month the number of members of the Society was 45,472, all working in the United Kingdom, with the exception of some 5,000 distributed on the Continent and in America.

NEW SEWERAGE WORKS FOR THE CROYDON RURAL SANITARY AUTHORITY.

THE work undertaken by the Croydon Rural Sanitary Authority for sewering that portion of their district comprising Beddington, Merton, Merton Rush, Mitcham, Morden, and Wallington, was inaugurated on the 23rd of December, by laying the memorial-stone of the new pumping station in Byegrove Mead, situate on the northern side of the main road from London to Merton, and within a mile of Lower Merton Station.

In 1870 a scheme of drainage for this district was prepared by Sir J. W. Bazalgette, which involved the pumping of the whole of the sewage on to land at a considerable elevation, the effluent water passing into the Beverley Brook. Strong opposition was manifested to this outfall, and the scheme was abandoned. Subsequently, an attempt was made to extend the West-Kent outfall, so that it could be made available for these places and for the Upper Thames District, but this proposal also fell through.

In 1874 a scheme was prepared by Mr. Baldwin Latham, C.E., which, however, had to be given up, in consequence of the owners of the land at West Barnes Farm, Merton, declining to sell it for the purpose. The Sanitary Authority then turned their attention again to the advisability of joining the West-Kent drainage scheme, but, on full inquiry, it was found to be far too expensive for the district. Mr. Latham was again instructed to examine the district, and ultimately he submitted the present scheme, which was adopted by the Authority, and received a favourable report from Col. Cox, R.E., and Mr. Robert Rawlinson, C.B., the Inspecting Engineers of the Local Government Board. Not without opposition by the Metropolitan Board of Works, the scheme ultimately received the assent of the Local Government Board.

The adopted scheme includes the construction of thirty-six miles of sewer, all of which are within existing or contemplated roads. About six miles of sewer are to be laid in roads which have been made since the scheme of 1874 was propounded, to meet the requirements of the district, parts of which, such as Wallington, are being rapidly built upon. The outfall at Byegrove Mead is partly in the parish of Mitcham, and partly in Wimbledon. An area of thirty-eight acres has been purchased, of which about thirty acres are gravel, which will be surrounded by a puddle-wall, and then be thoroughly drained. This area will then be used as a filter. The sewage will be prepared for the land in tanks within a covered building, about 114 ft. long, and at once solidified by air-pressure in suitable presses. The sewage from two-thirds of the whole district will be dealt with by gravitation, and the remaining third will be pumped to a height of about 20 ft. The land for the outfall works has been purchased at a cost of 11,300*l*., and the engineering and superintendence will bring the total outlay up to 90,000*l*. For the construction of the works, and for treating the sewage during the three years and a quarter the works will be in hand, the tender of Messrs. B. Cooke & Co., of the Phœnix Wharf, Battersea, has been accepted. The quantities were taken out by Messrs. Hovenden & Heath.

Ascot Heath.—The new stand now in course of erection upon Ascot Heath is fast progressing towards completion. The building, which is of considerable size, and is constructed of white brick and stone, with iron girders, is situated to the east of and adjoining the galleries of boxes next the Grand Stand. The contractor is Mr. Holles, of Windsor.

ACCIDENTS.

ON the 31st ult., a large part of what is known as the barrack-wall in Cochrane-street, Dundee, fell down, demolishing a one-story house, considerably damaging another house, and crushing to death Mr. David Clark, the owner of the first house. It is believed that the fall of the wall was due to frost and rain.

A dangerous fissure is stated to have been caused in the tower, which is over 120 ft. high, of the military brigade depôt at Devizes, and precautionary measures have been rendered necessary. The tower is believed to have a good foundation, and the fracture is attributed to the action of the frost. The depôt was only completed nine months ago, and cost 45,000*l.* At the summit of the tower are two large tanks, having a capacity of 5,000 gallons, but they have not yet been filled with water.

The tower of a new church which is being built at Borstal, next Rochester, fell in with a crash last week, it is supposed through the action of the frost. Fortunately the workmen had just left off for the day, and no person was injured.

Owing, it is alleged, to the rapid thaw on the banks of the Frome, at Stapleton, Bristol, four houses gave way on the 1st inst., and fell into the river. They had, however, been considered insecure, and the occupants had left them some time before the occurrence.

A serious accident has occurred at Rochester. Owing to the severe frost, the wall of a new building in course of erection fell in, burying four men in the ruins. They were got out as speedily as possible and removed to St. Bartholomew's Hospital.

Considerable damage is reported to have been caused by the recent wet weather to the Spithead forts. Although these circular masses of masonry are provided with bomb-proof iron roofs, having a cupola curve for the express purpose of delivering the rain, the damp has managed to penetrate through the interstices and bolt-holes, and is percolating through the upper tier of casemates upon the guns, gear, and platform below. In the No Man's Land Fort the water in some of the casemates is said to reach a depth of 3 ft. St. Helen's Fort continues to give trouble for another reason. It is stated to be built upon an evidently unstable foundation on a shoal just outside Brading harbour, and though some parts of the fort have been rebuilt, it still affords evidence of subsidence.

SIR,—On the night of the 28th ult., two of six houses (recently slated in), in Hither Green-lane, Lewisham, fell down, and on the following morning, I presume from sympathy with his suffering brothers, a third succumbed. There seems to be some question in the minds of the people as to the cause of the disaster. I, yesterday, took three samples of the mortar from a portion of the standing ruins, which I enclose. Do you think the nature of the mortar (?), as per sample, had anything to do with the matter?

J. W.

*** The stuff sent to us was *not* mortar,—simply dry mud. Still, we make no charge, as we have not seen the buildings.

VARIORUM.

A SECOND volume of "The Church Rambler," just now published (Hamilton, Adams, & Co.), describes popularly, and illustrates, thirty-six churches situated within a radius of a few miles from Bath. The articles of which it consists appeared first in the *Bath Herald*. The wood-cuts are not of very high class, but they are more expressive than words.——A tenth edition has been published (Virtue & Co.) of Mr. Geo. Alfred Rogers's useful little book, "The Art of Wood-carving: Practical Hints to Amateurs." We assisted in making it known when it first appeared, in 1867, and since then it has had a steady sale, and so has justified our commendation. The present edition has 28 illustrations. Besides the practical hints given by Mr. Rogers to would-be wood-carvers, we will throw "a little one in,"—first learn to draw.——The *British Quarterly Review* for January contains an article on "Restorations," with special reference to the late Sir G. G. Scott and St. Alban's. It bears a strong family likeness to a certain rightly-condemned article in the *Quarterly* (pure and simple), and as it is at any rate equally offensive in tone, some of our readers may like to know of it.——Part 35 of "Picturesque Europe" takes us into the Bernese Oberland and on to the Rhine, the river "of warriors and of thinkers," as Victor Hugo calls it. He might have added, and of robbers, but let that pass. The frontispiece is an engraved view from a capital drawing by Birket Foster, of old houses at Strasburg, and nearly every page includes a charming wood-cut. It will be a delightful book of its kind when completed.——We understand that the new tragedy about to be published by Messrs. Longmans & Co., bearing the title "Brian Boru," by "J. T. B.," is the production of an architect and a member of the Institute.

Miscellanea.

Artisans' Dwellings in Exeter.—A short time since the Exeter Freehold Land Society, with commendable enterprise, purchased a block of dilapidated and overcrowded dwellings that stood at the bottom of Rack-street, and, having removed a portion of these buildings, they are about to erect some new dwellings for artisans. The houses that have been pulled down were let out in tenements, and gave shelter to between fifty and sixty persons. The Society proposes to erect eleven houses. Some objection was raised to the style of buildings erected in London by the Industrial Dwellings Company, on the ground that they resembled "barracks," and the dwellings to be erected by the Society will consist of eleven separate two-story houses, and there will be four rooms in each. The cost of the eleven new houses will be about 170*l.* each, and the total cost of their erection and of the ground on which they stand may be put down at somewhere about 2,000*l.* The houses will be erected in two rows facing each other. Messrs. Packham & Croote are the architects, and Messrs. Brealey & Sons are the builders.

Society of Arts.—The following arrangements have been made for the forthcoming ordinary meetings of the Society:—January 15, "Economy and Safety by the Use of Automatic Couplings on Railways," by Mr. T. A. Brockelbank; January 22, "The Modern Science of Economics," by Mr. Henry Dunning Macleod, barrister-at-law; January 29, "The Distribution of Disease popularly considered," by Mr. Alfred Haviland; February 5, "The Best Method for Improving the Condition of the Blind," by Dr. T. R. Armitage; February 26, "Indian Pottery at the Paris Exhibition," by Dr. George Birdwood; March 5, "The Social Necessity for Popular and Practical Teaching of Sanitary Science," by Mr. Joseph J. Pope; March 12, "The Compensation of Timekeepers," by Mr. Edward Rigg; March 19, "Economical Gardens for Londoners," by Mr. W. Mattieu Williams; March 26, "The Treatment of Iron to Prevent Corrosion" (a second communication), by Professor Barff.

Trade with China.—It appears to be recognised that China, with its teeming population and multiple wants, is a promising market of the future for British manufactures. With the object of encouraging a growing trade, the proprietors of the *Shen Pao* (*Shanghai Gazette*), the most widely-circulated Chinese newspaper, have opened its columns for the business announcements of British merchants and manufacturers who may wish to bring their wares and brands under the direct notice of the Chinese trading community.

St. Paul's Churchyard.—According to the *City Press*, invitations have been sent out from the Architect's department of the Corporation to firms eminent in the art of designing public gardens inviting them to submit designs for the embellishment of the grounds to be formed out of the churchyard of St. Paul's Cathedral. The work, which is to be extended to three sides of the cathedral, will probably include improvements of an extensive nature, as well as some alterations to the outer railings. The scheme in its full details has not, however, yet been finally decided.

The St. Gothard Tunnel.—The prospects of the St. Gothard Tunnel enterprise are reported to be improving. The Italian Government has not, indeed, yet given a formal undertaking to furnish the required subvention, but it is expected that the *plébiscite* about to be held in Switzerland will result in a vote in favour of completing the work.

"Society for the Fine Arts."—This Society (with an awkward name) has issued its programme for the twenty-first session. On January 23rd, the first *conversazione*. January 30th, lecture by Mr. W. Cave Thomas; subject, "On the Study of the Fine Arts"; Mr. Frank Roland in the chair. February 13th, lecture by Mr. C. J. Griffiths; subject, "The Art of Wood Engraving at the Present Day." February 20th, the second *conversazione*. March 6th, lecture by Mr. Walter J. Allen, hon. sec.; subject, "The Art Decoration of the Stage"; the Marquis Townsend in the chair. March 20th, lecture by Mr. S. W. Kershaw, M.A.; subject, "Early Art in Books and Manuscripts." April 3rd, lecture by Mr. J. Forbes Robertson; subject, "Contemporaneous Art as illustrated by the great Paris Exposition of 1878"; Mr. James Edmeston in the chair. April 24th, the third *conversazione*. May 8th, lecture by Mr. T. H. Wright; subject, "The Music of the Harp, and National Airs of Ireland and Scotland." May 15th, lecture by Mr. E. P. Loftus Brock; subject, "On the Uses of a Collection of Ancient Engravings"; Mr. George Godwin in the chair. May 29th, lecture by Mr. Robert W. Edis, F.S.A.; subject, "The Furnishing of Town Houses"; Mr. Edmund Yates in the chair. June 5th, a morning meeting. And on June 19th, the fourth *conversazione*.

Inscriptions for the Obelisk.—We have been wondering whether the base of the obelisk would ever be inscribed with a brief history of the monolith and a record of the circumstances attending its transport to this country. At the meeting of the Metropolitan Board of Works this Friday, the Works and General Purposes Committee will report on a letter from Mr. John Dixon, asking for approval of the affixing of inscription-plates upon the pedestal of the obelisk, and for permission to cut the date "1878" in the granite, and on the letters from Lieut.-Gen. Sir J. E. Alexander, with statements with regard to the suggested inscriptions to be placed on the pedestal of the obelisk, and the Committee will submit inscriptions as settled by them after communication with Dr. Erasmus Wilson, F.R.S., and Dr. Birch, of the British Museum, recommending that the same be approved and adopted; and that the work of placing them on the pedestal be carried out at the entire cost of the Board.

London Association of Foremen Engineers.—The annual meeting of this association was held on the 4th inst., when the President, Mr. Joseph Newton, delivered an address, in the course of which he briefly referred to the deaths of four members, Mr. John Penn, Mr. William Smith, Mr. G. B. Galloway, and Mr. George Bullough, and then proceeded to review the events which had passed since the last meeting as affecting the profession. Referring to provincial associations, he said it was satisfactory to find that all the institutions which had been founded on their own model were in a flourishing condition. The example of Manchester, Leeds, and Middlesbrough might well be followed in many other places, and the advantages of friendly co-operation between their class secured.

Proposed Alterations, Norwood Schools.—At a meeting of the Lambeth Board of Guardians on the 1st inst., a letter was read from Mr. Henry Currey, the referee, reporting that he had considered the plans sent in in this competition, and, having regard to the instructions given to the architects, gave it as his opinion that the following stood in first order:—"Light and Air," at a cost of 20,070*l.*; "Terra-Cotta," 33,700*l.*; "A Ratepayer," 25,101*l.* 18s. 9d. On opening the envelopes, it was found that the first premium, of 150*l.*, fell to Messrs. Coe & Robinson, 4, Furnival's Inn; second premium, of 100*l.*, Messrs. F. H. Fowler & Aldwinckle; third premium, of 50*l.*, Mr. Edward Clarke, 6, Adam-street, Adelphi.

Archæology in Rome.—Mr. Hare delivered the opening address of the British and American Archæological Society in Rome on the 2nd inst. He warned the visitor to Rome against undertaking too much; advised concentration of attention on special epochs, or special episodes of those epochs; and asserted the claims of Christians equally with those of Pagan archæology. A vote of thanks was proposed by Mr. Robert Tighe, who, as one of the chief office-bearers of the society, contrasted the splendid provision made for German archæologists with the precarious support accorded to their fellow-workers from England and America.

Edison's Electric Light.—What purports to be the first authoritative statement as to the details of Mr Edison's electric light invention is given in the *New York Herald*, by a correspondent who examited the Edison electric lamp in Mr. Edison's laboratory. From the statement it seems that the patents we have heard of as having been granted recently at Washington in his favour were only two out of a very large series that have to be taken out. The system is a very complex one, and each part of it must be protected by patent. These parts correspond to the retorts, receivers, mains, &c., in gas manufacture and lighting. Mr. Edison himself did not know when the correspondent called what were the particular parts in respect of which patents had been granted. The light is produced by incandescence. The conductor, which is made incandescent by the electric current passing through it, is a small, curiously-shaped apparatus, consisting of a high alloy of iridium, which cannot be melted under 5,000 degrees Fahrenheit. Devices of exceeding simplicity and, as repeated experiments are said to have proved, of equal reliability, are connected with the lamp. They surmount the apparent impossibility of regulating the strength of the light. This lamp, when placed in the electric circuit, in which a strong current circulates, is absolutely independent of the strength of the current. This Mr. Edison considers one of the vital features of the invention. If the regulator is set so that the light gives only, say, ten-candle power, no increase in the strength of the current will increase its brilliancy. This light is independent of all others in the circuit. A thousand may, it is asserted, be fed from the same conductor, and the extinction of all but one will have no effect on that one. Each lamp in the circuit, by means of the regulator, the description of which latter Mr. Edison for the present withholds, is allowed to draw from the central station just sufficient current to supply itself.

The Proposed Town-hall, Reading.—A meeting of the subscribers and friends of the movement to build a new Town-hall, free library, museum, and school of science and art, at Reading, was held in the Council Chamber on the 30th ult., under the presidency of the mayor, Mr. H. B. Blandy. The original estimated cost was about 25,000*l.*; but it was thought that the buildings, as planned, would not be substantial enough, and Mr. T. Lainson, of Brighton, whom the committee had consulted on the matter, was commissioned to prepare fresh plans from the instructions of the committee. These he estimated to cost about 38,000*l.*, but the lowest tender for the work was 60,000*l.* This appalled the committee, and the scheme nearly fell through. The committee met again to see if something could not be done to reduce the amount, and they now reported that leaving out the decoration and fitting up the Town-hall, the cost would be 45,000*l.* It was stated that some of the committee would guarantee 35,000*l.*, whether the subscriptions amounted to that sum or not, if the Town Council would find 10,000*l.* It was proposed by Mr. T. Rogers, and seconded by Sir Peter Spokes, that the Council should be asked to find that sum. In opposition to the motion it was pointed out that the town was indebted a quarter of a million, and with the prospect of further expenditure to carry out surface drainage and develope the sewage farm; but the motion was carried, on the understanding that the town should be first consulted as to whether they would agree to find the 10,000*l.*

Presentation to a Borough Surveyor.—On the 3rd inst. an interesting presentation to Mr. Hudson Reah, who for a number of years had held the office of Borough Surveyor of Darlington, took place in the Council Chamber. A few months ago Mr. Reah resigned, on his appointment to a more lucrative post as surveyor to the borough of Preston, in Lancashire, and the officials connected with the Darlington Corporation wished to testify their appreciation of his courtesy and kindliness in a substantial manner. The testimonial took the form of a silver tea service for Mr. Reah and a gold locket and chain for Mrs. Reah, which were subscribed for by the officers employed by the Corporation. The teapot bore the inscription, "Presented to Hudson Reah, Esq., C.E., by the officials and workmen of the Darlington Corporation, as a mark of esteem and respect on his retiring from the surveyorship of the Borough."

Sewage Purification.—In an elaborate report dealing with the disposal of the Walsall sewage, Messrs. Donaldson and Davenhill say:—"We recommend you to adopt the 'sodium' process recently invented, and successfully brought into operation at Taunton by Mr. Smith, the surveyor. We believe the process to be the cheapest yet discovered. Mr. Smith states that it renders the effluent fit to be discharged into rivers, but adds that he looks upon chemical processes simply as preliminaries to further purification by filtration through land. We cannot, therefore, take the responsibility of advising you to rely upon the chemical process only. An area of nine acres at Taunton suffices for a present population of 16,000. Following this proportion, you ought to purchase—having in view the ultimate increase of population of 100,000,—about sixty acres of high ground in the neighbourhood of Bescot. The cost of the works, including a turbine and pumping machinery, was only, in round numbers, 11,000*l.* They are stated by Mr. Smith to be sufficient for a population of 35,000. Although, *cæteris paribus*, the increase in the first cost of purification works would not be in proportion to the increase in the population, there are some special difficulties to be overcome at Bescot, so that it would not be safe to put down the first cost of works for a population of 60,000 at less than 30,000*l.* Probably 40,000*l.* and 50,000*l.* would be sufficient estimates for populations of 89,000 and 100,000 respectively. The daily cost in chemicals is a little less than 7*s.* for a population of 16,000. You may, therefore, look upon 600*l.*, 800*l.*, and 1,000*l.* a year as safe estimates for populations of 60,000, 80,000, and 100,000 respectively."

The Abbey of St. Andrew, Hexham.—Mr. C. Clement Hodges is about to publish a Monograph, consisting of a history, an architectural description, and complete drawings of the whole abbey. The work will be privately printed, and sold to subscribers only. There is no church in the county of Northumberland which exceeds the Abbey Church at Hexham in scale, the unusual beauty of its architecture and proportions, or in the extreme interest of its long and varied history. The site has been a Roman station, and has been successively occupied by a Saxon monastery, a cathedral, and an Austin Canons' Priory. What is left of the church of this priory is now used as the parish church of the town; it is all that time, the Scots, and the modern restorers have left of a once noble building, having lost its nave, its eastern addition of the fourteenth century, with the great east window, its high pitched lead roofs, the greater part of its furniture and tombs, and the whole of its stained glass and minor ornaments. Subscribers are wanted.

The Timber Trade.—Messrs. Foy, Morgan, & Co., in their Annual Wood Report, 1878, say:—"Possibly in no previous year have the dock deliveries of wood been so narrowly watched; for in the capacity of consumers lay the solution of dealing with the excessive stock with which the year commenced. The deliveries from the Surrey Commercial Docks, up to the 31st of December during the last three years, appear to be (the Millwall Dock Company making no record) as follow:—

	1878.	1877.	1876.
Deals, &c.	195,319 ...	168,990 ...	169,570 standards.
Prepared boards	22,386 ...	21,950 ...	16,680 "
Floated timber...	89,274 ...	93,294 ...	104,191 loads.

In estimating the year's consumption, the fact of large deliveries having been made from the Millwall Docks should not be overlooked. The open weather of the first three months being favourable for building operations, dock deliveries were registered larger than those of the corresponding period of the previous year, and this excess, with one or two exceptions, has been continuous throughout the year.

Fulham.—Two apse windows have just been placed in the Servite Church, Fulham-road. The one on the Gospel side contains the "Virgin giving the Habit to the Seven Founders," "Death of the Virgin," and the "Virgin and St. John visiting the Garden of Olives after the Agony." In the base are demi-figures of St. Edward and St. Joseph, with the arms of the donor in the centre light. On the Epistle side,—The "Holy Family at Nazareth," Pieta, "St. John comforting the Virgin after the Crucifixion," tracery, Nativity, and other subjects. The windows are from original designs by Mr. William Tipping, of Edith-grove.

A Cheap Colour Box.—Messrs. Lechertier, Barbe, & Co. have sent us one of their "Society of Arts" one shilling moist colour-boxes, containing ten colours and three brushes. It shows considerable improvements upon that brought out by them in 1877. The main and novel feature of this new box is, that the colours are contained in small tin pans; that these pans are removable, and that, when used up, any of them can be replaced by another, just as in artists' colour-boxes. Further still, that thirty of the most useful moist colours are manufactured and sold in those small tin pans; so that additional colours may be put into the box, in order to bring it fully within any object in view in water-colour drawing.

Coal Armour.—An experiment of some interest has taken place in Porchester Creek. On one side of an old vessel called the *Oberon*, two compartments were formed. They were about 14 ft. long and 6 ft. high, and extended about 8 ft. inwards into the ship. These compartments were filled with coal, one being loose material and the other patent fuel, and the coal in each compartment was divided by boiler-plates. Six shells were then fired at the ship's side from a 4½-ton gun, at a distance of 100 yards. None of the shells, however, succeeded in penetrating the coal armour.

Advantages of War.—Orders have been issued by the Bombay Government, suspending public works in the Presidency, in order that no outlay may be incurred which can by any means be avoided or deferred until the next year. New works which have not yet been commenced must not be commenced, and the allotments provided for them are cancelled. No repairs are to be carried out except such as are absolutely essential for the safety of buildings. Chief and superintending engineers are held responsible that these orders are vigorously carried out

Book-keeping.—With reference to recent letters in our pages, Mr. H. C. Bevis, accountant, of St. Martin's-place, writes to call our attention to a course of tuition by which he undertakes to impart a rapid and thorough knowledge of builders' book-keeping. This is a subject of importance to many of our readers, for in few other trades is a good system of book-keeping so exceedingly necessary. We go a little out of our way to mention Mr. Bevis, because we hear that his system has been adopted by some builders with excellent results.

Technical Education.—There seems to be every prospect of a college for technical education being commenced shortly at South Kensington. The City companies, afraid that if they do not bestir themselves an inquiry into their employment of their revenues cannot long be avoided, have agreed to bear a large part of the expenses of the scheme. It is probable that the instruction given will be theoretical rather than practical, but this point has hardly yet been settled, and till it is decided the project can scarcely take a definite shape.—*Athenæum.*

Royal Archæological Institute.—The Town Clerk of Taunton has received a reply from the Secretary of the Royal Archæological Institute of Great Britain and Ireland, accepting, on the part of the Council, an invitation made by the Taunton Town Council that the Congress of 1879 should be held in that town in August next.

Manchester.—Plans prepared by Messrs. Hetherington & Oliver, architects, of Carlisle, have been accepted for building a new Wesleyan school-chapel, vestries, keeper's house, &c., in Plymouth-grove, Manchester. These are to be followed by the erection of a large chapel, to seat 1,000 persons, for which purpose the sum of 10,000*l.* was left some years ago.

The Metropolitan Bridges.—Claims have been received by the committee of the Metropolitan Board of Works for the purchase of three more bridges across the Thames, namely, Hammersmith for 201,000*l.*, Wandsworth for 150,000*l.*, and Fulham for 100,000*l.* The amount to be paid for the Albert and the Battersea Bridges is now before the arbitrators.

Liverpool Architectural Society.—At a meeting of this society, held on Wednesday evening, Mr. C. Aldridge, vice-president, in the chair, a paper "On Artistic Races," was read by Mr. B. L. Benas, and a discussion followed. The members afterwards discussed the subject, "Smoke Flues: their Uses and Defects."

The Builders' Ball is, as will be seen by advertisement, fixed to be held on the 30th inst. We hope that, as in past years, the result will be a substantial addition to the funds of the Builders' Benevolent Institution.

TENDERS

For Cottage Hospital, Ross. Messrs. Haddon Bros., architect:—

Cowdery & Son	£1,701 0 0
Welsh	1,700 0 0
Coleman, Bros.	1,575 0 0
Bowers	1,550 0 0
Hards	1,524 0 0
Pearson & Son	1,520 0 0
Edwards	1,475 0 0
Cullis	1,410 0 0
King	1,368 0 0
Godwin	1,368 0 0
Lewis	1,360 0 0
Pritchard	1,320 0 0
Jones & Co.	1,292 0 0
W. & J. Crowe (accepted)	1,200 0 0
Sandford	1,155 0 0

For enlargement of the Town-hall and other buildings, Maidenhead. Messrs. C. Cooper & Davy, architects. Quantities supplied:—

Keeffe	£3,645 0 0
Roavell	3,620 0 0
Simonds	3,341 0 0
Taylor & Grist	3,325 0 0
Woodbridge, Bros.	3,223 0 0
Kempsell	3,184 0 0
Bebbington	3,127 0 0
Crook	3,119 0 0
Sim	3,059 0 0
Jones & Co.	2,850 0 0
Kingerlee	2,700 0 0

For the erection of shop and offices in Bell-yard and Crown-court, Temple Bar, for Mr. J. K. Metherell. Messrs. Isaacs & Florence, architects. Quantities by Mr. L. C. Riddett:—

Brass	£3,198 0 0
Kirk & Randall	3,062 0 0
Browne & Robinson	2,796 0 0
Conder	2,648 0 0
Grimwood & Sons	2,576 0 0
Hook & Oldrey	2,499 0 0
Macey	2,480 0 0
Patman & Fotheringham *	2,375 0 0

* Accepted.

For the erection of day industrial schools for 200 children, and infant schools for 210 children, for the Gateshead School Board, Gateshead. Quantities by Mr. George Connell. Mr. Thomas Oliver, architect:—

	Total for Industrial School.	Total for Infant School.
T. W. Robson	£6,793 0 0	£2,966 0 0
Miller	6,478 12 7	1,630 1 8
Bell	6,026 2 1	1,813 4 6
Gibson	5,463 19 4	1,676 16 2
Towns, Bros.	5,105 19 9½	1,866 12 2½
Kennedy & Son	5,504 1 6	1,436 4 10
Inglis & Reah	5,296 15 0	1,493 5 0
J. & W. Simpson	5,158 5 4	1,653 1 2
Broomhead & Keswick	5,224 0 0	1,490 0 0
Nicholson	4,981 15 6	1,446 8 6
T. & R. Lamb	5,080 7 6	1,569 12 11
Melvin	4,971 9 8	1,416 15 4
Richardson, Son, & Co.	4,930 7 5	1,382 15 4
Kitching	4,922 15 9	1,379 10 2
Simpson	4,823 11 0	1,435 10 0
J. Atkinson	4,765 18 11	1,456 17 5½
Hurst & White	4,720 15 7	1,371 18 9
Smith	4,655 17 7	1,346 18 4
N. & R. Reed	4,690 3 5	1,335 16 7
J. & R. Pattinson	4,561 19 6	1,393 15 11
Noble	4,489 5 0½	1,413 18 7
Robson & Tremble	4,548 5 0	1,302 0 0
Leighton	4,614 14 10	1,219 18 7
Hutchinson	4,552 10 2	1,271 9 3
Allison	4,493 0 0	1,277 0 0
Grisdale	4,378 15 0	1,223 0 0
Atkinson	4,3 8 17 6	1,262 10 9
Ferguson	4,387 18 6	1,180 3 2
T. Robson	5,037 11 11	1,467 8 3½
Middlemiss, Bros.	4,262 10 0	1,194 0 0
R. & R. J. Harrison	4,245 3 4	1,124 17 1
Elliot	4,169 0 0	1,169 0 0
Greason & Stockdale	4,128 2 3	1,135 4 9
H. Atkinson	4,115 3 5	1,050 17 1
Thompson	3,999 16 11	1,151 3 1

For the erection of the Northgate Schools, providing accommodation for 890 children, for the School Board, Guisborough. Mr. F. M. Bottomley (of the firm of Armfield & Bottomley), architect:—

	Schools.	Dwelling-houses.
Gladstone	£5,693 7 0	£1,311 16 0
Osborne	5,050 0 0	1,464 0 0
Barry	4,977 10 4	1,466 13 0
Braithwaite	4,922 0 0	1,478 0 0
Wood	4,885 19 8	1,417 19 2
Harrison & Son	4,770 0 0	1,530 0 0
Perks, Bros.	4,912 13 0	1,343 3 0
Lord	4,588 1 0	1,572 8 7
Dalton	4,767 14 8	1,354 0 0
Wilkinson	4,579 0 0	1,490 0 0
Almgill, Bros.	4,670 19 5	1,338 8 1
Forster	4,795 0 0	1,203 0 0
Stevenson	4,655 0 0	1,326 0 0
Barton	4,713 0 0	1,254 0 0
Renshaw & Walker	4,590 0 0	1,330 0 0
Boagey	4,600 0 0	1,287 0 0
Johnson	4,533 0 0	1,340 0 0
Watson, Bros.	4,530 0 0	1,340 0 0
Sturdy, Bros.	4,524 16 0	1,341 13 0
Dickinson	4,475 0 0	1,310 0 0
Trevor & Estill	4,450 0 0	1,320 0 0
Cass (accepted)	4,307 0 0	1,181 0 0
White	4,213 11 0	1,154 5 0
Heckle, Bros.	3,990 0 0	1,210 0 0

For the whole.

Robson	£7,174 0 0
Young	5,835 0 0
Yeo	5,750 0 0

For the erection of a New Central Police Station, for the county of Durham, at Durham. Mr. William Crozier, architect. Mr. Joseph Greenwood, quantity surveyor:—

Caldcleugh	£9,519 0 0
Lowes	9,450 13 9
Gowens	9,372 9 9
Forster	9,037 3 6
Robson & Son	8,997 0 0
Kennedy & Son	8,985 7 7
Inglis & Reah	8,958 0 0
Whaley	8,871 9 4
Middlemiss, Bros.	8,852 8 0
Forster	8,603 19 3
Grant	8,569 0 0
Allison	8,450 0 0
Hurst & White	8,440 0 0
Gradon & Son	8,440 0 0
Sanderson	8,350 0 0
Robson & Tremble	8,342 18 9
Atkinson	8,262 4 4
Elliott	8,180 0 0
W. & J. Butter	8,169 0 0
Johnson	8,040 11 4
Richardson & Co. (withdrawn)	7,788 12 4

For alterations to laundry, White Union Chapel Infirmary. Mr. W. A. Langmore, architect:—

Sampson & Parish	£307 0 0
Price	275 0 0
Wise	263 0 0
Hunt	259 0 0
Poole	248 0 0
Palmer	240 0 0
Keefe	211 0 0
Castle (accepted)	195 10 0
Whiter & Young	190 0 0

Engineer's Work.

Clements	943 10 0
Fraser	850 0 0
Musts	797 0 0
Bradford & Co.	797 0 0
Bramham	748 10 0
Busby (accepted)	736 13 0
Beckett, Bros.	718 11 0

For erecting spire of St. Peter's Church, Bournemouth. Mr. Street, architect. Quantities supplied:—

Peerless	£3,050 0 0
Stephens & Bastow	2,999 0 0
Dove Bros.	2,995 0 0
Adamson & Son	2,965 0 0
Clark	2,946 0 0
Wall & Hook	2,860 0 0

For single cottage, Denzil-road, Guildford Park Estate. Mr. Henry Peak, architect:—

Tribe	£329 17 6
Robinson	273 7 6
Litchfield (accepted)	250 0 0

For rebuilding 150, Oxford-street, for Messrs. Parkhouse & Fulmans. Mr. A. E. Hughes, architect. Quantities by Messrs. Corderoy & Sandall:—

Hill & Higgs	£4,670 0	£112 0
Perkins	4,393 0	130 0
Simpson & Son	4,290 0	50 0
Ansell	4,280 0	82 0
Williams & Son (accepted)	4,213 0	55 0
Waters	3,930 0	145 0

For additional cellarage and warehouse, North-street, Guildford. Mr. Henry Peak, architect. Quantities supplied:—

Swayne, Wm.	£825 10 0
Mason	811 0 0
Swayne, Thos.	804 0 0
Strudwick	801 0 0
Nye	760 0 0
Moon	720 0 0
Clark	715 0 0
Garnett (accepted)	708 0 0

For new bar, reparations, &c., at the Stoke Hotel, Guildford. Mr. Henry Peak, architect:—

Swayne, Thos.	£430 0 0
Strudwick	421 0 0
Moon	420 0 0
Mason	417 0 0
Clark	405 10 6
Garnett	397 0 0
Smith & Sons (accepted)	349 0 0

For Gold Chain Factory, Clerkenwell-road, for Mr. Edward Culver. Mr. Ebenezer Gregg, architect:—

Ashby, Bros.	£12,587 0 0
Lawrence & Sons	12,142 0 0
Smith & Co.	12,093 0 0
Trollope & Sons	11,983 0 0
Lucas, Bros.	11,944 0 0
Holland & Hannen	11,727 0 0
Baker & Son (accepted)	11,000 0 0

For rebuilding No. 22, St. Swithin's-lane, City. Mr. Charles Reilly, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

Sewell & Son	£6,920 0 0
Conder	6,775 0 0
Perry & Co.	6,740 0 0
Ashby & Horner	6,693 0 0
Ashby, Bros.	6,531 0 0
Lathey, Bros.	5,770 0 0

For additions and alterations to Jews' Infant Schools, Tenter-street, Whitechapel:—

Brass	£1,049 0 0
Morter	1,044 0 0
Patrick	1,025 0 0
Fish	994 0 0
Jennings	890 0 0
Pritchard	883 0 0
Elworthy	663 0 0

For the erection of additional stores and packing-room at West Ferry-road, Millwall, for Mr. J. T. Morton. Mr. William Eve, architect:—

Woodward	£1,910 0 0
Heiser	1,668 0 0
Sheffield	1,543 0 0
Salt	1,435 0 0
Crabb (accepted)	1,360 0 0

For gas services and fittings for new Congregational Church, Salisbury:—

Edgar	£334 17 6
Carter, Bros.	284 10 0
Rothwell	247 0 0
Woodrow	235 10 0
Hale & Sons	210 0 0

For alterations to Nos. 39, 41, and 43, Camden-passage, Islington. Mr. Finch Hill, architect:—

Sharman	£250 0 0
Combe & Son	244 0 0
Nightingale	238 0 0
Toms	223 0 0
Lawrence	208 0 0
Wise	205 0 0

For rebuilding Nos. 335, 336, and 337, Upper-street, Islington, for Mr. John King. Mr. A. Johnson, architect. Quantities supplied:—

Combe & Son	£2,244 0 0
Sharman	2,157 0 0
Toms	2,087 0 0
Nightingale	2,081 0 0
Lawrance	1,985 0 0
Wise	1,980 0 0

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII No. 1876. SATURDAY, JANUARY 13, 1879

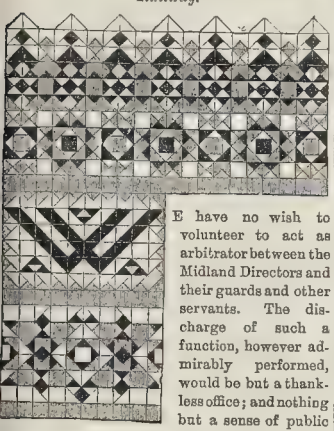
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The Serious Contention on the Midland Railway.



WE have no wish to volunteer to act as arbitrator between the Midland Directors and their guards and other servants. The discharge of such a function, however admirably performed, would be but a thankless office; and nothing but a sense of public duty, and of possessing the confidence of both the opposing parties, could induce any competent man to consent to make such an effort. At the same time we question whether, unless such a step be opportunely taken, there is not too much reason to fear that discussion arising out of the contention will have to take place before other tribunals.

It is, however, impossible to remain silent on a subject of such grave national importance; and it is the more incumbent on us to offer a few remarks, because otherwise the very distinctly expressed views of the *Builder* as to short time may be appealed to in proof of the assertion that our judgment is entirely against the men in this case. This would be unjust, both to them and to ourselves.

The opinion enounced in these columns as to the hours of labour has been lately expressed on economic grounds. Thus regarded, we hold it to be absolutely incontrovertible that a reduction in the hours during which a factory, or any combination of men and machinery, works in the week or in the year, involves a diminution of production, that is to say, of national wealth, in proportion to the stoppage, and an increase of the cost of production, in the ratio of the loss of the machine power involved. As to that, there can be no dispute. There may be difference of opinion as to the policy; there can be none as to the facts. And no inquiry can be anything but a sham that ignores this primary truth.

This view of the case, it is hardly necessary to remark, does not apply to a railway. The railway system of Great Britain is an immense combination of machinery, directed and aided by human power, that never rests. To run the 220 millions of train miles that carried the traffic of 1877, a train must start, on each line, on an average about every half-hour. At all events, Mr. Fleming's estimate for 1876 (in No. 2 of his Index to our Railway System) gave thirty-two minutes for the average interval between trains starting in England, and thirty-seven for the United Kingdom, for a train mileage under 216,000,000 miles. These distances, of course, are not equally divided through the twenty-four hours. On the Metropolitan lines, for example, there are 5½ hours of rest from the passenger traffic, which have to be taken into account in speaking of intervals of eight and of five minutes between the trains. On many lines the passenger traffic is chiefly conducted by day, and the goods traffic by night. But this is by no means always the case. The night mail trains have always been the favourites of men of business. Over the whole great network of 15,000 miles of British railway, a constant, unintermitting, rapid stream of traffic flows continually day and night. Like the blood in the human body, the volume of the flow differs materially in different parts of the system. Unlike the blood, the flow is intermittent, and has a horary as well as a local maximum and minimum. But it never ceases. Nor is it possible to put a finger on any part of the system, and rudely to arrest the normal flow at a single point, without causing complication and danger to the whole,—danger the locality of which it is impossible to predict.

The first requisite, therefore, for the profitable employment of machinery is not present in the railway system of Great Britain. The fact is due to the mode in which that system has been allowed to develope itself,—not according to the convenience of individuals or the resolutions of trade societies, but as guided by the simple and continued effort how best to do the work. Probably not an hour of nightwork has been occupied, as a rule, by anything that could, under existing arrangements, have been as conveniently done by day. Great hardships have been borne, and are borne, by the officers of this great system, from the manager to the porter. But how best to carry the traffic has been the main care. And with many of those failings, which are due either to the limited strength, or to the limited intelligence, of all human organisations, there is no doubt that the great vital circulation is carried on, at this moment, with a punctuality and a care to which the world has never seen any parallel.

The economical difficulty, then, of fixing the hours for which machinery is to run does not arise in the case of the railways of Great Britain. The machine works continuously. The objections which apply to short time on the part of the workmen, when they imply stoppage of machinery, do not apply here. The only question is as to the best distribution of the human labour needed to keep the great machine in order.

As to this, when we come down from the limit of the managers of departments and high officials, the occupation of whose time is pretty much the same in any department of industry, we find two natural classes into which the occupation of a railway servant is divided. There are definite or intermittent duties, and there are continuous duties. A driver who has to take a train for a certain number of miles has a definite duty to perform, and his hours of labour can be so arranged as to come within the limit of health and strength. At a signal-box, where various streams of traffic meet, the duty is continuous. In the former case, the old limit of the ten hours' day, which has never been departed from on our railways, may in most cases, and ought in all, to be ample. In the latter case, it is no less clear that twelve hours' constant strain is too much for any one who should satisfactorily perform such onerous duties. Signalmen, and those who perform similar duties, ought not, in our opinion, to work for more than eight hours; and three shifts of men ought to be provided for the day's work.

It is undeniable that a very heavy responsibility is incurred by any person who rashly tampers with a great organisation of this kind for pecuniary profit. It is not for us to say that such a thing is unjustifiable. But we wish to point out certain considerations which, as it seems to us, are of great weight. In the present case the Midland directors have put the case in the very baldest and strongest form. "The state of trade and the condition of the labour market," says Mr. Allport, "call for a reduction of wages." What does that mean? Does it mean that the traffic of the Midland railway has so fallen off that the servants of the company really have less work to perform than they had a year ago, and, therefore, ought in future to take five per cent. less wages? No such thing. No such decline in amount of work is stated. Does it mean that, although the Midland keeps up its trade, other lines have suffered so much that they have had to discharge their servants, and that there is a surplus quantity of practised railway labour in the market? So far is this from being the case that the Midland Company are only the pioneers in a movement which other companies, and the servants of other companies, look on as a vast, a costly, and a dangerous experiment. All that can be meant by the "condition of the labour market" is, that there are so many men out of work, that any number of inexperienced hands may be ready to discharge the work of certain railway servants at a shilling a week lower wages! The manager, in fact, says,—"So-and-so, you have been at work for us for seven years. You have given satisfaction. You have been paid less than other men, for equal work, because of the steady, permanent character of your occupation. But Smith, who was not a railway man, but something else, will try his hand at your work for 17s. a week instead of 18s. Will you take 17s., or go about your business?"

That is, purely and simply, Mr. Allport's case as to reduction of wages. As to the trip system we shall have a word also to say. But even as to this, the question is complicated by a demand for sixty-six hours' work instead of sixty, which is in fact a reduction of wages. Now we shall be laughed out of court by a certain school if we speak of the bond that ought to exist between master and servant. We shall be told that these are old-fashioned sentimental notions, and that the Midland Rail-

way Company is a great trading company, bound, by duty to its proprietors, to make every shilling go as far as possible, and not to give 18s. for work that can be done for 17s.

But even on this narrow view of the case, is it certain that the policy is wise? As to its justice, on the higher ground of appreciation, we are told that it is no concern of ours. Will Mr. Allport get his 18s. worth of work for 17s.? We much question whether those who propose to do so do not forget the immense amount of human nature that exists in man. We are prepared to admit that the adoption of purely selfish rules might produce the best monetary result, provided men were universally and intelligently selfish. But, in point of fact, selfishness, the purer, that is to say, the more theoretically perfect, it is, is often the more narrow and short-sighted. If the Midland experiment is carried out to the end it will be an instructive instance of the working value of the so-called political economic theory.

Let us suppose the new tariff of wages triumphantly established. What will be the result? The servants of the Midland Company, of a certain grade, will all have been changed, in one way or in another. Either they will be new men, who have to learn the special duties of their position; or they will be the old men, smarting under a sense (rightly or wrongly entertained) of injury, and looking forward to a time when they may at least regain what they have lost. How can any man who knows human nature suppose that either of these two classes of men would render the same amount of cheerful, prompt, efficient service that each man performed before the reform?

We think otherwise. And we think that all experience shows that the difference between the labour of the discontented man, and that of the man who feels that, come what may, his employer seeks to regulate his relations with him, not by pettifogging sharpness, but by broad and liberal integrity and equity, will be something far more than five per cent. on the amount of work actually done. We lately spoke of a man's work as equivalent to 128 foot-tons per day. But that was willing work. Unquestionably, had pay been reduced, and had the services of a driving ganger been employed in exchange for those of an intelligent foreman, who had his master's interest at heart, the daily work in question would not have amounted to 100 foot-tons per man. Those who know what labour is, by working among and with the men, will know that this view is correct.

Let it not be said that we are putting this in the men's heads. What have they said at their meetings, temperate and orderly as they seem to have been? They have said that they deeply felt the injustice of the case;—that it was the worst-paid servants of the company on whom the burden was laid; that had matters been in a bad way, from no fault of the management, and had a general reduction of five or ten per cent. from the 4,000*l.* a year of the manager downwards, been proposed, it would have been another thing. The experiment, it was felt, had been tried on the very men least able to resist reduction, as well as most keenly feeling the pinch. Let the measure succeed or no, the men will not forget that. It will require a very large annual saving in the item of wages to make up for the unconscious but incessant loss effected by the substitution of perfunctory for willing service.

Now as to the trip system. "Here," it may be said, "of course the directors are in the right. They may count on the consistent support of the *Builder*, the steady advocate of piece-work, wherever possible, as the best-paying all round. Paying by the trip is piece-work. It is not intended to reduce wages by this method; in fact, during,—it is not said how long,—the company have only saved 60*l.* by the change. But by interesting the goods guards in the punctuality of their trains we make human nature pull with us, and secure a tremendous gain of time."

Is this so certain? In the first place it seems to us that paying by the trip is not properly to be called piece-work. It is deficient in one element of that method of contract; and that one happens to be the vital element.

The essential nature of piece-work we take to be this:—Assuming that a certain amount of work is done by ordinary labour at a known cost, the price of such work is offered to the labourer, measured not by the time in which it is done, but by the work itself. Thus, if 100 foot-tons per diem is an average amount of work done, for which 2s. 6d. is paid, a foreman, or say a set of men, are offered 2s. 6d. for 100 foot-tons of work. These men, then, will probably turn out 128-foot tons per day instead of 100. They will do 28 per cent. more work under the inducement of more pay. For this the master will pay at the same rate for labour; while he will get 28 per cent. more out of his capital and machinery for nothing, or for comparatively nothing.

This method, of course, gives a clear gain to the stronger, more skilful, and more industrious workman over the weaker, less skilful, and idler workman. Even to the latter it offers advantages; but it offers them at a price he does not like to pay,—the price of doing his best. Thus as a rule the better men,—unfortunately the minority,—are all firm supporters of piece-work. The inferior men,—and it is not peculiar to the working-classes that these form the large majority,—are against it. This is the general state of the question.

Now, where is the gain to be made by the best man in the trip system? His time-book is given him. The immediate regulation of running speed is not in his hands, but in those of the engine-driver. But do what he will, he can make no advance on the regulated speed. He can make no gain, either for the company or for himself. At every four or five miles the train is liable to be stopped by imperative signal. It is ordered into sidings by signal. It must always be kept out of the way of the passenger trains; and heavy penalties are imposed if this is neglected. The police seems to be admirable; the control, exercised from head-quarters, absolute. How can the guard loiter, even if he be disposed? Thus, when the men indignantly deny the charge, it must be allowed that at least the *primâ facie* evidence is in their favour.

Let us not, however, depart from an impartial view of the facts. As to the theory, we speak with such authority as clothes us from the confidence of a very large number of specially-educated readers. We say without hesitation, that the great evil of short time, viz., the waste of the machine power of the country, does not apply in the case of railways, which are ever-running machines. We say that the essential virtue of the piece-work system, that of allowing the best man to make the most remunerative use of his time, does not apply to the trip system. How, then, as to the detailed facts?

As to these, we cannot do better than cite the words of a very respectable contemporary, who, without that special knowledge of work which should be found in the conductors of a professional journal, has taken much the same view of the present strife as ourselves. "It has been stated," says the *Standard*, of the 11th of June, "with a precision and unanimity that leave no doubt for there being some foundation for the charge, that the executive of the company have not been successful in inspiring the *employés* with profound reliance on every assertion they make." This is a mild way of stating a very significant charge. And what may be further said, without prejudicing any one, is this,—to verify or disprove the statements of the men as to individual loss of time, and as to difficulty in obtaining due payment for overtime, is comparatively easy. To verify or disprove general statements as to loss or gain to the company, or absence of hardship on the part of the men, is a task of great difficulty, only to be discharged by some one invested with full powers, not only of arbitration, but also of audit.

It seems to us, then, that, point after point, there is every reason to regret the line of action which the directors of the Midland Company have been counselled to adopt, and to express the hope that, with such grace as they may, they shall hasten to re-establish those good relations between the superintendents and the men, of which some very gratifying instances have come to light during the present struggle. The great revenue of the Midland Railway, for the year 1877, was a trifle over 120,000*l.* per week. When we hear of the blocked lines, and of the reduced number of passengers that leave London, it is not too much to suppose that a loss of from 7,000*l.* to 10,000*l.* or more per diem is incurred by every day of strife. What may be the result of the employment, on a large scale, of new and untried hands, we forbear to point out. Is the game, even if successful, worth the candle?

There is another point which bears on the strong feeling entertained by the men, that the portion of dividend which it is now sought to stop from their wages might much more certainly be decided by a modification of the peculiar and experimental policy of the Midland. We are not among those who have been great admirers of this policy, and as yet it has found no imitators among the great lines. The result of the figures of the last half-yearly report prepared us to expect something unpleasant, and we fear that the attention of the shareholders may be diverted by this ill-considered strike from certain points of vital interest to themselves. The men speak of the great outlay on unnecessary works. Perhaps they are not the best judges on that score. Still the matter has to be looked at. In the half-year ending June, 1878, the Midland Railway ran 89,747 miles of passenger trains more than in the corresponding half-year of 1877, with an increase of gross income from passengers, parcels, mails, &c., of only 1,397*l.*! Of goods and mineral train mileage, the extra distance run in 1878 was 244,306 train miles; the additional gross earnings being 33,497*l.*; of which 28,020*l.* was derived from the more than questionably remunerative price of carriage of minerals. These extra train miles have thus only earned about 3s. 1d. per passenger train mile, and about 2s. 9d. for goods and mineral train miles. The cost of running a train mile (taking the generally unsatisfactory mode of lumping the cost all round, though the goods trains are from twice to thrice the weight of the passenger trains), was 33·9 pence in 1876, according to Mr. Fleming. In 1877 we make it rather less, namely, 33·12 pence per train mile. Thus the large amount of extra traffic barely earned enough to cover its own cost out of pocket. The total paid-up capital of the Midland Railway on 31st December, 1876, was 59,406,987*l.* On 31st December, 1877, it had risen to 62,189,934*l.* At the half-yearly meeting on the 20th of August last it stood at 64,036,291*l.*, and a further creation of capital was sanctioned to the extent of 2,050,000*l.* Exclusive of this, the traffic of 1878 must provide dividend on 2,583,000*l.* of capital stock more than was required in 1877. Where are the 103,000*l* thus required to come from? The passenger traffic seems to be steadily deteriorating as a source of net income. We have given the difference of income, and of mileage, for the year. For the half-year ending with June, 1878, the movement was even more unsatisfactory. The chairman admitted a falling off of 85,000 first-class passengers in that half-year; and though there had been an increase of 210,030 third-class passengers, the financial result showed a loss of 6,426*l.* on this, the most lucrative part, of the railway income.

Facts of this nature, which we may be sure are not in any way coloured against the railway company, are enough to show that there is great cause for straining every nerve to maintain the dividend of the shareholders. That such should be done we are altogether in accord with the Midland directors. But the question is,—how is it to be done? by reduction of cost, or by careful and intelligent cultivation of remunerative traffic? How much can be effected by the first method is doubtful, and at all events limited. Coals are now at a low price. We have seen what is the calculation about labour. But, supposing, instead of the 60*l.* said to have been saved in the wages of guards by the trip-system, 60,000*l.* are struck off the pay-sheet! It is a drop in the bucket. 1,043,000*l.* are required, after all working expenses, amounting in 1877 to 3,361,699*l.* for the year, and all interest on guaranteed and preferential stock, amounting, last August, to 549,945*l.* for the half-year, have been paid, in order to keep up a 5 per cent. dividend. What we do see is a steady increase of capital, and a marked increase, for 1877, of unproductive traffic. It is rather by reverting to the old rules to which England owns her mercantile wealth; by counting the cost; by leaving risky and unremunerative business to whoever likes to take it; by the ascertaining with absolute certitude the net earning power of each class of business, in order to cultivate the lucrative, and to diminish the non-remunerative; and by binding all the staff of this great enterprise together in one firm circle of cheerful devotion to the interests of the company; than by attempting, even with a brief success, to give a tangible form to the doctrine of political economists as to the labour market, that the Midland Railway Company can continue to maintain the character of a well-ordered undertaking.

THE OLD MASTERS' DRAWINGS AT THE GROSVENOR.

THE more we have looked at the two collections of old drawings now to be seen in London the more we have felt inclined to regret the lavish manner in which treasures such as these have been simultaneously poured forth upon the public in such a quantity as to preclude any really profitable study of the whole, except on the part of persons who have unlimited time on their hands. To others, the wealth of material is simply embarrassing, for any purpose beyond merely walking round and looking in a voluptuously indolent spirit of enjoyment. This is all very well in its way, but there is so much to be really learned from studying the manner in which great artists have put their first thoughts upon paper,—so much in regard both to art in general and to the habits and methods of each particular artist,—that it is really a pity to find spread out before us an amount of work all of which we cannot possibly study in this considerate and profitable manner, and which there is yet little chance of seeing again for an unlimited period. Even if we take one exhibition alone, we feel that half the number of drawings, combined with a good *catalogue raisonnée*, would have been as much as most people could really study to advantage during a few visits; and study is the best use of such a collection; the tribe of mere exhibition loungers do not care for studies of this kind much, though they have duly learned the lesson that it is not right to say so. And when we come to think of the two collections, both opened at once in rather ill-advised rivalry, there is almost a feeling of bewilderment at the extent of the treasures.

This feeling is rather increased, perhaps, at the Grosvenor, by the want of defined grouping of the works by the same hand; drawings by various masters being intermingled and scattered about by twos and threes, so as to render comparative study difficult. This neglect of grouping rather surprises us, as the grouping system has been rigidly carried out in the case of the water-colours, and certainly the studies require such assistance from logical collocation more than any modern drawings. The artist who is most specially and consecutively represented is Rembrandt, whose sketches occupy great part of one of the tables in the East Gallery. They are not all of equal interest by any means, and in fact they make a finer appearance in the catalogue than in reality. Some of them are so exceedingly rough and slight, as to have rather an historic than an artistic value,—which of course must be rated at its due worth; but the manner of describing them in the catalogue is absurd in some cases. No. 298, for instance, a "Winter Scene in Holland" is described as a "highly-finished drawing in sepia." We should like to know what is to be called a "sketch," if this is a highly-finished drawing. "Study of a female nude figure" (305) should also be rather termed "sketch," for that cannot rightly be termed a "study" of the figure in which the legs are merely delineated in straight lines, without any attention to minutiæ of modelling and contour. The sketch, by the way, is a very pretty one, and one wonders where Rembrandt caught a model differing so much from the usual type of Dutch female of his period, as represented in countless paintings. Among the other drawings of the set the finest, perhaps, are of the studies of a camel and a lion (317). These are really "studies" of animal character given with intense force and reality. In that of the lion, the open claw and the mouth with the corners drawn out into a snarl, are remarkably expressive of animal ferocity. Among the works of a higher class of subject, a sepia sketch, which is entitled, "Repose in Egypt" (291), but is really a specimen of that type of "Holy Family" subjects which used to be called a "Riposo," is remarkable for its truly Rembrandtish power of light effect. "A Woman in Dutch Costume" (324) is a slight but very fine study of a figure looking out of a window. A great many first sketches for pictures, marked by the artist's grim and characteristic force, are to be found. One of the most striking is "St. Paul before Felix" (311) in which the play of human weakness is admirably indicated in the figures of Felix and Drusilla,—thoroughly Dutch figures, of course, but representing character that is common to all countries. There is something, perhaps, in the entire neglect of local and historical truth the entire neglecenes of this kind, which even intensifies their human interest.

We can only notice a few of the salient points among the other drawings in the East Gallery, following them in order round the room. Near the commencement of the numbers we come upon a considerable collection of drawings of Mantegna, hardly in his greatest style, but very fascinating in their strange mingling of Gothic and Classic feeling; his "Festival of Bacchus" (37) looks like Nicolas Poussin mediævalised. The drawings are all in that grand and highly-finished monochrome execution which was so favourite a medium of expression with this great and ideal artist, the abstract nature of whose designs would seem almost to become too much realised and localised by the employment of colour in accordance with nature. Quite as interesting as his figure-subjects, however, and more unique of its kind, is Mantegna's grand drawing of a design for a chalice (35), on vellum, with pen and bistre. This is a large-size drawing, showing a chalice with much elaborate detail and many small bas-reliefs; the design is very fine and rich, and the drawing splendid: it is worth while for any one interested in ornamental work to look at it. We must pass over a good many drawings af various masters, just noticing the grace of a figure of a youth by Masaccio (40),—one of the Christ Church College collection; and the fine, though rather loaded, studies of figure compositions in strong sepia by Filippino Lippi. Some studies of heads by Lorenzo di Credi have great refinement of execution; these are in silver-point, as are many of the drawings exhibited. The peculiar significance of the use of this medium is, perhaps, hardly appreciated by many visitors. Every one can see what a delicate line and tone is produced by it, and how admirably it is adapted to the refinements of shading in line; but every one is not alive to the fact that this method of drawing with a metallic point on chemically-prepared paper (something after the method of our modern "indelible" memorandum-books) admitted of no erasure, and that thus all these beautifully-finished drawings which we see in this material were drawn at once as we see them, with no preliminary sketching. The fact that this was such a favourite material with the great Italian painters speaks volumes in itself for the certainty of their knowledge and their power of hand. We next come on a group of Lionardo drawings, some very fine, though not to be compared with the wonderful show of last year; a small head of a youth in red chalk (97), lent by the Earl of Warwick, is very refined. In the large head in chalk (92, from the Christ Church collection) we are again struck with the repetition of that peculiar and fascinating, but, at the same time, affected smile which is prevalent in the female heads of Da Vinci, and certainly amounts to a mannerism, and, in the end, not a pleasant one: fascinating, we have called it, but it is so in a rather weird fashion; we should not trust a woman with that smile, as we should one of Raffaelle's beautiful human faces. Andrea Verocchio's design for a window (99) must, of course, be looked at by the architectural visitor; but it is not good.

A considerable number of drawings by Correggio form a group of special interest, as his drawings and studies are by no means so familiar to us as those of some other leading names. They are nearly all highly finished, as we should expect drawings by Correggio to be; and nearly all remarkable for grace and prettiness rather than any higher qualities. There is some power in the large study for the head of an angel (115), called in the catalogue "life-size," but in reality colossal; and there is a beautiful piece of careful foreshortening of the countenance (that difficult feat in drawing) in the angel's head looking upwards (114), and a grace peculiar to the artist in the figure of the Virgin in 109. There are some studies for child-angels for the "hash of frogs," and other angelic figures in various stages of development and various attitudes of graceful (?) and conventional kicking, such as was once thought peculiarly appropriate for angels on a ceiling. Altogether, with all their fine finish, these are not drawings one would go very far out of one's way to see. How different is the kind of power we perceive in such a drawing as the "Venus and Cupid" of Titian (133) which hangs near this; a pen-drawing, rough in style in comparison with the Correggio drawings, but full of natural life and vigour. The Venus here leans back with one hand on the rock on which she is seated, with a fine but perfectly natural and spontaneous action. A curious landscape drawing by Titian, with a figure of a cripple drawn in a small cart in the foreground (141), is to be noticed; and, what is of more special interest, one or two sketches of first thoughts for the "Peter Martyr" picture, differing, however, considerably from the picture as completed. Giorgione's "Adoration of the Magi" (132), showing a group of dignified old men seen in half-length with their attention directed towards the central group, is a very fine and homogeneous composition; his small and highly-finished study for a figure for a drinking-fountain, a boy stringing a bow and placed in a niche, may also be noted. By Bartolommeo there are several studies, including a portrait of Savonarola, a less ascetic and more filled-out face than we usually see in portraits of the Luther of Italy. A study of a girl's head, looking down (155), is of exquisite grace in pose and expression.

We must pass lightly over the Rubens and Vandyck drawings, which are not mostly of the highest interest, though one cannot but be struck with the almost brute force of Rubens's sketch-portrait of the Earl of Arundel (163), a man who must have held his own pretty well wherever he went; and also with the vigour of the same artist's portrayal of "David Slaying Goliath" (169), with his foot on the head of the fallen Philistine, whose eye glares upwards in rage and apprehension of the coming blow. Among these Dutch drawings is appropriately placed one by Vandyck's follower, Lely, a very refined and careful portrait study in Indian ink of a full-length of a gentleman in the dress of the period, full of the ultra-aristocratic manner which was so peculiarly developed under the *régime* of the Stuarts. The drawing is so entirely successful in the character aimed at as to make us understand very well the secret of Lely's success as a fashionable portrait-painter. Vandyck's "Judgment of Paris" (193) is very vulgar both as a drawing of nude figures and as a rendering of a poetic legend. Among the Dutch drawings nothing struck us so much as a very small landscape by De Koningh (219), remarkable in the perfection of its perspective and the look of distance, one feels that one could travel into it and over all the successive grades of distance; and all this effect is got almost entirely by drawing, with little help from aërial perspective. There is another landscape of about the same size and style by De Koningh, and nearly as fine, on the table among the Rembrandt drawings. Rembrandt's "Susannah, a study for a nude figure" (226), at all events deprives those wicked "Elders" of any shred of excuse for their improper behaviour. There are a number of fine drawings by Ostade, more especially "Interior of a Cottage" (231); a three-quarter length portrait of a lady, by Frans Hals (water-colour on vellum), which is magnificent in its way, stately in pose, and forcible in execution; there are studies of cows by A. Van der Velde and Paul Potter, hung next each other, which serve to show that Van der Velde was the better man even at cows, in spite of the name Paul Potter has got for this special branch of painting; there are some Cuyps of moderate interest (Cuyp is not much without his colour, after all); there is a sketch by Backhuysen (277), "A Sea Piece on the Y" (which it appears to us should therefore be called a *river* piece) which illustrates finely the peculiar power this artist possessed of giving movement and what we may call "floatation" to his shipping; and there is a drawing by Jan Steen, "Le bon Vivant en Ménage" (256), which is one of the finest things in the room, and remarkable for showing real and keen pathos, which we do not generally look for from Jan Steen. It represents a half-drunken man who seems to have fallen on the floor after, as we may suppose, making himself generally disagreeable for some time previously; his unhappy wife sits weeping with her face buried in her hands. Did the artist give it the title printed in the catalogue? There is a keen satire in the title, which the drawing fully carries out.

The screens or tables are rich in isolated items of great interest. Among these are two drawings by Gerard Dow, studies of figures (357, 361), of which the first in particular is beautiful, the face carefully drawn in a foreshortened position, the hands very delicately delineated. A study by A. Van der Velde, called simply "A Boor" (341), deserves special notice; it is remarkably fine and complete in drawing and in delineation of character. By his brother William there is a study of the stern of a ship (called absurdly in the catalogue

"the *helm* of a ship"), which, as an illustration of Van der Velde's study of ship-painting may be compared with his side elevation of a ship at Burlington House (mentioned in our article on the drawings there); this is called, by the way, a "design," but we imagine it is more properly a study from an existing vessel; a regular old tea-wagon thing, with her quarter buried in gilt moulding and "flummery." The Dutch, at all events, had not the excuse for thus overloading the sterns of their ships with ornament, which was once made for the French shipbuilders during the time of our war with the republic,—viz., that it was the part most frequently exhibited to the enemy, and therefore should be made as presentable as possible! On the second screen, we compare with some interest drawings by Guardi and Canaletto, only to confirm our long-formed opinion that the merits of the latter as a painter of architecture have been much overrated; in the matter of style and manner in architectural sketching Guardi's "View in Venice" (383) is just perfect, and beats Canaletto quite out of the field. The view of old Westminster Bridge, by the latter, has, however, very great topographical interest. Perhaps the most interesting thing of all on this second screen is the sheet of six studies of the proportions of the figure, "given by Andrea del Verocchio to his pupil, Leonardo da Vinci" (402). The figures are divided out into compartments lettered for reference, but it is not easy, without any description, to trace out what is the principle intended to be recommended in regard to the proportions of the different parts. The highest interest of the drawing consists in its having been one of the lesson-books, as we may say, of Leonardo da Vinci. It is from the Christ Church collection.

In the vestibule is a collection of Claude's studies of landscapes, which do not, however, suggest anything new in regard to Claude's art and practice; they certainly seem to confirm the theory suggested with so much probability by Mr. Seymour Haden in regard to the *Liber Veritatis*, that it was intended as a catalogue rather than an artistic work, for none of these drawings suggest the style of the *Liber* except one, which we imagine is one of that collection; the rest are much more finished, and present a much fuller and more complete effect. Some of the studies of trees are very beautiful as to general effect, although a close inspection of them seems to show that Claude troubled himself little about special character of ramification or foliage in various species of trees. A tree was a tree to him,—a mass of foliage,—and studied as such simply, in its lights and darks and curves; the touches in detail are conventional in manner, and almost in what we should now think a "drawing-copy" style.

Michelangelo's large cartoon of "Charity," which faces the visitor on entering the vestibule, is almost too faded and too badly lighted (under glass) to be well seen. The finest among the few drawings by him is certainly the red chalk drawing of the "Holy Family" (496); this, though on a small scale, is a grand work in the master's greatest style, both of thought and execution; the attitude and expression of the sleeping infant Jesus may compare in supernatural dignity with that other wonderful infant in the "San Sisto Madonna." A slight sketch in pen and bistre of one of the compartments of the Sistine Chapel will be looked at with interest. The sculpture gallery contains some drawings by Raffaelle, but none of them of much importance, comparatively speaking. What interest us more in this small room are some drawings by Holbein and Albert Dürer. Among the former is a remarkable design for a dagger-sheath, representing a battle; a bas-relief crowded with small figures, represented not in the usual mode of bas-relief, but in perspective, so as to give an extended view over the groups of combatants. Among Albert Dürer's drawings is a very spirited and remarkably classic-looking design for a figure of Apollo, to surmount a drinking-fountain, and two studies from the life, in silver-point, of a by no means classic-looking female, which studies seem, nevertheless, to have been intended to serve as the basis for a picture of Venus,—a very German Venus.

Albert Hall Exhibition.—The exhibition of works of fine art here will be opened to the public on Monday, February 3. The private view will be given on the Saturday previously.

A NEW HOUSE IN MADRID.

ONE of the newest and at the same time the most curious mansions in Madrid is undoubtedly the Palais de Xifre, giving on to the Prado, and not far from the Picture Gallery, but on the opposite side. The style of architecture is Persian, and the decoration arabesque. Señor Francisco Cubas is the architect who has raised this most remarkable dwelling, while it owes to Señor Francisco Contreras the beautiful sculpture that embellishes its walls. The outside of the mansion, though interesting and peculiar, does not produce anything approaching the startling effect of the internal decorations. The hall, on entering, seems ablaze with brilliant colours. Blue, especially light blue, predominates, brightened by sparkling gold and vivid vermilion, while here and there a little brown has a sobering effect, and effectually prevents what might otherwise be considered a gaudy exaggeration. In a moment, the eye becomes inured to this startling display of colour, and then we gradually discover that it all covers the most beautiful arabesque work, that it helps to delineate each curve, to give relief to the embossments. Around the hall there are graceful pillars of white marble supporting portions of the first floor; and to the left will be found a splendid flight of white marble steps, protected by a white balustrade and bronze latticework. Opposite the balustrade there is an enamelled frieze of diamond-shaped bricks, each about 2 in. square, and of different colours. A beautiful frieze runs from pillar to pillar, but the double range crossing the centre of the hall is perforated, and this adds greatly to the lightness and delicacy of the arabesque designs. The staircase admits a view upwards more than two stories high: while, by placing looking-glasses opposite each other on the first landing, a grandiose optical delusion is produced, as the glasses reproduce over and over again the splendid surrounding decorations. To the right of the first floor landing, and commanding a very fine view of the Prado, is what we might call a balcony-room, firstly because it protrudes from the main building, and secondly, because it is so completely surrounded by windows reaching from the ceiling to the floor, that the look-out is as little impeded as that enjoyed on an ordinary balcony. The prevalence of glass has not, however, prevented the introduction here as elsewhere of the most careful decoration. The arabesques that cover the ceiling are in fact far more delicate in design, sober in their tints, and give a more perfect example of the harmony of colours which was the pride of the ancient Moors.

In the various apartments, we remarked more particularly the marquetry doors, of Persian design, which blended admirably with the surroundings. The decorations of the ceilings were also especially noticeable for the variety of design. These were generally divided into squares of about 18 in., but it was impossible to find two squares alike in the designs they enclosed. The luxury of the bath-room was thoroughly Oriental. The bath-room was composed entirely of marble, and measured about 3 yards square and 4 ft. in depth; but the water could be entirely covered by means of two huge marble slabs fixed on little wheels, and which, by turning the handle of a very simple mechanism, roll readily over the bath. Though this remarkable house is about completed, it is not yet finished. Already, however, one or two items of furniture had made their appearance, and these were in thorough keeping with the general style of the mansion. At the same time we must confess that an Arabian towel-horse and the Oriental three-legged wooden stool seemed, strange in Europe, and did not suggest an idea of great comfort. In fact, notwithstanding the undoubted beauty of this mansion, it would never suit any one but a person wealthy enough to possess several houses. It would be impossible to purchase any object from an ordinary shop for this extraordinary house. The most comfortable or graceful article of modern furniture, the richest ornament that was not strictly Oriental in its style, would look glaringly out of place in this mansion. In a short time the inhabitants of such a dwelling would tire of being compelled to thus restrict their purchases. What would be far more practical would be the decoration of a part of a house or mansion in this manner,—just as at the Hôtel Continental of Paris, where all visitors admire the Moorish reading-room.

With a view to facilitating the spread of this new fashion of decoration, several adepts in Moorish art have associated themselves together, and have contrived a system by which they can export to all countries the means of converting an ordinary room into a Moorish saloon. The measurements of the room in question have to be sent with some slight description of its general disposition. Thereupon, plaster of Paris plaques, coloured or not as desired, are sent, which completely cover the walls with the purest arabesques. We need scarcely point out that, in Spain, with such models as the Alcazar, the Alhambra, and the Mosque of Cordova, the purity of the Moorish art may, without difficulty, be reproduced. Already in England one or two persons have availed themselves of this easy method of having an Oriental room without any particular trouble. Señor Belmas (Calle Almirante, 2, Madrid) is one of the principal promoters of this enterprise, and will give all information that may be required. A Moorish room in most English mansions may ultimately become as much a convention as the necessity of having a conservatory.

THE ACCIDENT ON BOARD H.M.S. *THUNDERER*.

THE lessons to be obtained from such an accident as that which has befallen the 38-ton gun in the turret of the *Thunderer* will, no doubt, be taken to heart by the authorities, and applied in such a way as to avoid, if possible, a repetition of the causes which led to it. If the explosion which burst the gun was rendered excessive on account of the ball having been separated from the charge, then any defects in the mechanical arrangements that may have been responsible for this mishap are, no doubt, capable of being remedied. If such accidents could be altogether insured against by the adoption of mechanism outside the gun itself, they might be made matters of the most remote contingency. The comparative merits of rival systems of working guns on board ship, however, are unfortunately not the most important nor the most difficult part of the problem for providing thoroughly reliable artillery. Whether Scott's or Armstrong's or Moncrieff's system is used, so long as the charge and the shot are properly placed in the gun, none of these can be held responsible for what takes place when the gun is fired. It is just possible that the accident may revive the warfare which had almost ceased between the rival systems of breech and muzzle loading; though it is difficult to see how any arguments in favour of the former can be gathered from what has happened. If it is maintained that no such position of the ball is possible in a breach-loading cannon, this statement must not be used so as to lead to the conclusion that there is any inherent defect in the muzzle-loading system which is likely to lead to the ball becoming separated from the charge. A certain amount of care is necessary in the working of both systems, and that being so, the one must not necessarily be condemned in favour of the other, simply because a disaster has occurred through carelessness. It is very doubtful if the presumed separation of the charge from the shot can have been the cause of the accident. The merits of the two systems will have to be decided, if they have not already been decided. Altogether apart from the accident on board the *Thunderer*, no doubt those who are interested in the breech-loading system, and who have lost largely by the successful introduction of the muzzle-loading guns, known as "Frasers," at Woolwich, will revive the controversy, but it will require a considerable amount of ingenuity to convince practical men that the muzzle-loading system was really responsible for the recent accident. From all that can be gathered at present, it is most probable some condition at present unknown, and altogether unconnected with the merits of the rival systems, that must be held to have been the cause of the disaster.

It would not be altogether true to say that we know no more about the essential conditions of safety in a big gun than the constructors of the artillery which so often proved disastrous to those who worked it during the warfare of the four centuries that followed on the introduction of gunpowder. For practical purposes, however, we are almost as much in the dark about the immediate causes of the accident in the turret of the *Thunderer*, as the courtiers of King James II. of Scotland were about the causes of the explosion by which that un-

rtunate monarch had his thigh shattered at
e siege of Roxburgh Castle. Previously to the
rimean War, it may be said that we were as
norant as a fifteenth-century artilleryman,
id if it had not been for the labours of Mr.
obert Mallet there is no great reason to
ppose that our ignorance would have been
uch enlightened. The removal of the Govern-
ent ordnance foundry from Moorfields to
oolwich followed upon the explosion of a mould
which the casting of a cannon was being
rried on in presence of a distinguished party
f spectators. The accident was predicted by
German stranger, who tried to persuade the
oulders to desist, and having failed to do so
ot himself out of harm's way. The explosion
llowed upon the contact of the molten metal
ith the damp interior of the mould, and might
ave been avoided with a little care. It is
ifferent, however, with a big gun. A mould
an be examined, and its fitness to receive
charge of molten metal accurately judged
f by a practical moulder, but it is not so
ith large cannon. They are practically
the same category with steam boilers,
ydraulic accumulators, compressed air re-
eivers, and every appliance which is subjected
o a strain adjusted to materials which are
upposed to be of a uniform strength, but the
trength of which is, after all, only a supposition.
tructural strains, such as those in iron roofs, are
ot to be classed in the same way, because,
xcept in the case of single girders or supports,
hey are made up of so many parts that a fair
verage strength of material amounts to a
rtainty. If the accident on board the *Thun-
erer* was due to weakness of material, this will
robably be traced, as the fractures are sure to
ave followed the planes of least resistance in
he neighbourhood of the explosion, and their
ppearance will be sufficient ground for form-
ng a judgment as to this point; but unfortu-
ately such knowledge can only be purchased
t the cost of a burst gun, and generally of
everal lives as well. Mr. Mallet was successful
n tracing the causes which led to structural
nd molecular weakness in the construction of
ig guns, and this has enabled us to provide
gainst them to a great extent; but it is well
known that iron may be able to resist a proof
train that is fatal to its safety when it is after-
wards subjected to a long repeated course of lesser
train. So long as the strength of materials
f which guns are made is dependent on the care
f the manufacturer only, without any more
reliable guarantee than a proof charge which
may permanently injure the whole structure,
we can have no certainty that any gun in the ser-
vice is safe from such a failure as that which oc-
urred in the turret of the *Thunderer*. One of the
greatest benefits that science can possibly bestow
on the department of the mechanical engineer,
as well as the artilleryman, is the discovery of
some reliable method of judging of the sound-
ness of a structure after the labour of the work-
man is at end upon the iron from which it has
been made. The difference of the manner
n which castings, and even forgings, are
allowed to cool makes all the difference, in many
ases, between efficiency and weakness, and
after the normal temperature is reached we are
still in ignorance of their true condition until
after they have failed. Much has no doubt been
done to insure as far as possible that a certain
standard of strength has been reached, and
perhaps no better method of doing this has
ever been introduced than in subjecting the
iron or steel in a fluid state to a uniform pres-
sure while in process of crystallisation. It is
to the same principle that we owe the high
standard of strength so generally reached in
bar-iron subjected to the pressure of the rolling-
mill uniformly in a direction at right angles to
its length; but what is still urgently needed is
some method of judging of the efficiency of a
structure without subjecting it to an excessive
strain.

The late Sir Francis Grant, P.R.A.—The will, dated February 4, 1873, of Sir Francis Grant, late of the Lodge, Melton Mowbray, and of 27, Sussex-place, Regent's Park, who died on October 5, 1878, was proved on the 27th ult. by Dame Isabella Elizabeth Grant, the widow; Lieut.-Col. Francis Richard Charles Grant, the son; and Charles Thomas Constantine, the nephew, the surviving executors, the personal estate in the United Kingdom being sworn under 20,000*l*. The only persons interested under the will are the testator's wife and children.

A NEW WORK BY M. VIOLLET-LE-DUC.

THE new work recently published by M. Viollet-le-Duc,—the history of a Town-hall and a Cathedral,*—and which, for some time past, has been expected with interest,—is thus reviewed by the well-known art-critic, M. Philippe Burby, in the *République Française*.

M. Viollet-le-Duc has just made an important addition to that historical and artistic, technical and critical, series of works, of which we have announced, during the past five years, the different parts as they were published,—"The History of a House," the first to appear, "The History of a Fortress," "The History of Human Habitations," and now, "The History of a Town-hall and a Cathedral."

And so, in the quiet of the study, rises before one's eyes the constituent elements of our past civilisation, narrated and rendered intelligible by drawings of extraordinary exactitude. Architecture is before us as on a stage. We see it in its most rudimentary form, serving merely to protect the human animal; then, disengaged from the mud of the first materials, sheltering the family from the inclemencies of the weather; and then the moral and civil freedom of the man. Finally, by the choice of materials, by the suitability and harmony of the surroundings in the midst of which it is created, the beauty of its ornament, architecture offers to the critic who seeks to devolve by study its great laws and lessons a grave field for meditation.

The work of M. Viollet-le-Duc, in its written pages alone, is an example. Previously to composing these volumes, which we would wish to see in the hands of all scholars and students, M. Viollet-le-Duc published his "Dictionnaires" and "Entretiens," in whose pages we all have received our education as critics, and learnt to borrow arms to resist the tactics which now exist in all official channels, circumscribing the critic in the narrow space of a few journals and reviews.

It is the spirit of this profoundly national work, consecrated as it is to the demonstration more than the exaltation of French genius, it is the unshakable faith in a not far distant return to good methods and doctrines of construction and ornament, which is the reliance for the near future. If there is in the arts which are brought in contact directly or permanently with the masses a point which it is necessary to protect from the fatal effects of a pseudo-classic influence which obtains from abroad its inspirations for the future, if young France wishes to see her public monuments, her fortresses, even her houses, express her pride and grace, her good sense and skill, she must break with superannuated doctrines, and revive the more exact study and traditions of her great architect-masons of the Middle Ages and the dawn of the Renaissance.

In this volume, as in his preceding Histories (of which M. Hetzel has recently re-published the series in uniform size), M. Viollet-le-Duc takes a monument from its earliest foundations, follows it through its history in the numerous and often radical modifications which it cannot fail to undergo in invasions, by civil war, by partial fire, by change of fashion, and, more than all, by restoration. Naturally the monument is placed in a position which gives the pretext for a typical history.

Here, in "the city of Clusiacum, which rises in amphitheatral form on the side of a hill, at the foot of which runs a little river," the Roman *Prætorium* occupies the highest point on the north; on one of the sides of the market-place rises the ancient *Curiæ*. The Franks approach; they seize without resistance a city from which Roman conquest and occupation have taken all sentiment of independence, and it is the Christian bishop who alone obtains by gold the salvation of the city. The Franks, installed, are converted to Christianity; the Curiæ, the old municipal edifice, has no longer any need for its existence; and the cathedral rises, enlarging the basilica raised on the site of the Temple of Diana. The bishop takes upon himself all the moral, the civil, and the military power. In the eighth century an abbey shares a portion of this rich benefice, and in the last years of the eleventh century the city, which has only floated from episcopal and priestly power into that of royalty or the seigneurs, commences to form into a *commune* or parish, and the people determine to build a monument suitable for the assembly of the citizens, the old Curiæ now being little better than a dilapidated barn.

The programme was thus prepared; a tower to contain a room for the archives, seals, banners, and all the more important and precious treasures of the community; this tower is surmounted by a belfry, furnished with three bells; a watch-tower, from which all the points of the town were visible. On the site of the old Curiæ, a vaulted room for the meeting of the *dixainiers*, and a prison; above, the meeting-hall of the citizens, and a gallery opening on the *Grand Place* to address the people.

To this programme so clearly detailed are added, as is usual with M. Viollet-le-Duc, drawings of plans, and sections, and elevations, animated by a crowd always in action, and appropriate to the occasion. Such, for example, as a view of the Hôtel de Ville in the twelfth century; and, later, a view in perspective of the cathedral of Cluny at the commencement of the thirteenth century.

These two edifices, the cathedral and the town-hall, see generation after generation of the citizens pass before them or enter them, battling out the noblest problems of the existence of individuals and of nations.

What, as author and artist, has been the endeavour of M. Viollet-le-Duc to show is, how and why the cathedral has been, in the same proportion as the town-hall, the visible sign of the efforts made at certain epochs to constitute itself in the face of the feudal power of the past, and the book closes with this instructive sentence,—Our love for our native country is in proportion to our knowledge of its history, and if we wish to instil this spirit into the minds of the public, its history must become familiar to all.

When the book itself reaches us we may have some words of our own to say about it; what we have printed is the opinion of a friendly fellow-countryman of the author.

* Histoire d'un Hôtel de Ville et d'une Cathédrale. Texte et Dessins par E. Viollet-le-Duc. One volume, 8vo. Hetzel et Cie., Paris.

ELEMENTARY ART EDUCATION IN ENGLAND.

THERE can be no question at all that the means of artistic education for the youth of England have vastly increased of late years, and no one can doubt that the sound teaching of art must increase the growth of true culture. For there is no single thing which is more the cause of a false and affected enthusiasm for art than an ignorance of its elements. Every year the readers of *Punch* are able to laugh over some life-like sketch of the pseudo-amateur of art, yet his or her sayings would be quite impossible had this individual received any serious training in the elements of the fine arts. To what extent elementary education in art is now carried in this country may be gathered from the recently published Report (the 25th) of the Science and Art Department of the Committee of Council on Education for the year 1878. It is a volume which, as may be gathered from its title, deals with other matters than art, which are equally important in their own sphere; but is one also which contains a considerable mass of statistics, by no means very inviting literary fare for the ordinary reader. Yet its contents are really, if carefully considered, of very considerable interest, and not a little suggestive, so that we do not hesitate to give our readers some information culled from its pages, which they would otherwise have no opportunity of obtaining.

The elementary teaching of art in this country at the present time may be said to be divided among three bodies of students, first of all among the scholars in the public elementary or primary schools which exist from one end of England to the other. These are the Board schools and those various primary establishments which are known by various names, and are principally supported from sources other than the rates. There are British, Church, Parochial, National, and other denominational schools. The second division may be called art classes, under which term we include not only art classes proper, but what the authorities at Whitehall class separately,—that is, the training colleges and what we may term miscellaneous classes. By this we mean those which the authorities denominate as "unaided classes," among which rather unsuggestive term are certain bodies in which drawing is taught, and which receive no aid by payments. They com-

prise no fewer than 107 schools, and consist of very various bodies, as will be seen from the following short selection. There are, for instance, St. Matthew's school, Ardwick; the Grammar school, Atherstone; the High School for Girls, Bath; the Mechanics' Institute, Hebden-bridge; and the News Room and Library, at Llandudno. This short list is sufficient evidence of the miscellaneous character of the bodies which are included in this list of "unaided classes." Thirdly, we come to the schools of art, which need very little explanation. Of these three divisions we propose to give a few of what appears to us to be the most important of the most noticeable details. And we should add that when the year 1877 is spoken of, it does not include the whole of that year, since the official year comprises parts of the years 1876-77, which are the subject of the report of the year 1878.

Beginning, then, with our first division, the elementary day or primary schools, we find that the number of these schools in which drawing was taught was 3,767, and that the number of scholars to whom this branch of education was taught was 549,010, of which 403,208 children were examined at the annual examination in the month of March, 1877. These figures present increases respectively over the previous year of (in round numbers) 432 schools, 88,000 children, and 71,800 examinees. The most satisfactory feature in these figures, it needs scarcely be pointed out, is the large increase in the examinees as compared with the actual increase in the number of scholars. The total amount of money granted in aid of instruction in drawing was (again speaking of round numbers) 27,900*l.* or 5,900*l.* more than in 1876. The actual total, however, including the cost of prizes and examples, amounted to 32,000*l.* odd, being on an average 8*l.* 14s. 4d. per school. Of course, the schools where drawing is taught, or at any rate those where there are the largest numbers of pupils, are those in the different towns. The rural districts show fewer pupils than the towns, and we are inclined to think, though we have made no calculations on the matter, that when drawing is taught in rural places it is chiefly in Board Schools. In the metropolis, at any rate, it is evident that the Board Schools give more opportunites for instruction in drawing than other schools, as appears by the following extract from the Report of the Assistant Examiner in the Art Division, who visited 253 elementary schools in London. He speaks thus:—"The Board Schools possess peculiar advantages. The time set apart for drawing is liberally fixed at two hours for each boy, and one hour and a half for each girl per week. The children are relieved from all necessity of finding their own materials. In schools other than Board Schools no uniformity exists in reference to amount of time for drawing; whilst in no instance does instruction in drawing occupy more than two hours per week, it sometimes has only one half-hour allotted to it. The children are generally required to provide their own materials, and in many instances the parents, either through disinclination or actual poverty, fail to supply what is necessary. . . . . The subject of geometry is thus often entirely neglected, and the same cause acts as an impediment to the efficient teaching of freehand and model drawing." We are not now concerned with the policy of teaching drawing in elementary schools. We will assume, since the Legislature sanctions the payment of money for its encouragement, that it is advisable that children should be taught the elements of drawing; certainly we ourselves think so; and if they are, it is obvious that they should be taught it systematically, and in sufficient periods to make some real impression upon them.

We must now pass on to the other two divisions of this subject. We find the number of training colleges where drawing was taught amounts to forty-seven, and in these, in round numbers, 3,700 students were examined and 800 teachers and pupil-teachers, whilst in the year 1868, which affords an approximate comparison of the increase in the last ten years, 2,000 pupils were examined, but only 187 teachers and pupil-teachers. Hence there has been a very considerable increase, especially among the teachers. Touching as we are merely on some of the most prominent facts of this subject, so as to give an outline of the elementary art-teaching among the artisan classes in this country at the present time, we will not dwell longer on this point, but pass on to the second branch of schools of this division,—the art classes. Here the number of students was 29,500 in 910 classes, showing a decrease of about 2,500 in students, and, on the other hand, an increase of nearly fifty classes. But it is satisfactory to observe that though the actual number of students has decreased, there has been a slight increase in the number of those who sent up work for examination, so that the genuine amount of education has, it may fairly be said, increased rather than decreased among these bodies; and it may be well here to explain in two or three words the composition of these art-classes, for there is no difficulty in regard to the other schools and colleges upon which we have already touched. They consist of classes for children above twelve years of age and artisans. In these classes the primary instruction of the children is carried further than in the elementary schools, and they are associated with adult students in the study of form, light and shade, and linear drawing. Here, in fact, begins the real elementary education in drawing, which may really have an influence upon our artisans, for the training in the elementary schools can assuredly do very little in this direction.

Finally, we must touch in a few lines on the schools of art which are entirely devoted to art instruction, where the student, after having obtained sound elementary knowledge, pursues the technical study of art in the direction required by his occupation. As the crowning part of the edifice, we have the National Art Training School, which is maintained for teaching art-teachers, designers, and art-workmen. The total number of schools of art in operation was 144, containing in round numbers 29,400 pupils, thus showing, as regards fees, an increase of about 3,000*l.* over the previous year. From these schools of art, 138,199 drawings were sent up for examination, and of these 790 were referred to the national ccmpetition.

Finally, in the National Art Training School there were, during the year ending July 31st, 1877, forty-one students in training, and fourteen national scholars, who not only were free students, but likewise received weekly allowances, varying from 10s. to 35s. each. But in connexion both with this National Training School and the schools of art scattered throughout Great Britain, there are various points, both of importance and interest, which we must reserve for notice on another occasion. What we have now said will bring out with a certain prominence the general scope of the instruction in elementary drawing as a part of national education, and in fine art as applied to industry, and some important details in regard to the teaching of art in the higher schools will remain to be touched on hereafter.

We wish we could believe that the results of the large organisations now in operation are fully what they should be.

SHALL WE HAVE THE DRAMA OR THE PENNY GAFF?

AT a season when such unusual distress is pressing, not only on the poorest, but on many who have been long accustomed to the enjoyment of every comfort, or even of every luxury, of life, the expression "seasonable amusement" may seem somewhat to jar upon the ear. Nor would that feeling be inappropriate in the case of any effort to stifle the questioning of anxious thought under the veil of idle trifling, or of uproarious jollity. Such, however, is not the aspect under which we approach the subject. As far back as written history reaches, and to that yet more distant time of the habits and manners of which we have only rare and quaint indications (such as those afforded by the famous Etruscan dice, or by the yet ruder and quainter implements of sport yielded by lake dwellings or barrows), we have evidence of the direction of no small amount of human skill to the organisation of amusement. The greatest founders of empires have considered it a part of their wisdom to provide for the amusement of their people. Among those nations which were the most skilled in architecture and in engineering, public amusement rose to a level with the noblest arts. And those literary works which rank among the chief treasures of mankind,—the masterpieces of Greek verse, and the chief glory of the English tongue,—are, in their type and essence, efforts to amuse, in the highest and noblest sense of the word.

It is as to the ennobling character of amusement that we wish to add one or two remarks to those which have recently been brought before public attention. Amusement man will have. Nay, no one familiar with history doubts that it has been at the very moments when peril and distress are most urgent that the efforts to snatch a fearful joy are apt to become most frantic. The *Decamerons* was an effort to cheer the profound gloom and terror spread by the ravages of the plague in Florence. The annals of that frightful saturnalia of mob-rule and of murder, the Reign of Terror in Paris, are lurid with the glow of drunken orgies, and echo the rattle of the dice-box. The soldiers of the Roman Procurator threw dice for the seamless robe, under the shadow of the preternatural eclipse. Among northern nations, where hunger is sharpened by cold, and where the brain is not so quickly maddened by alcohol as is the case in warmer climates, great feasts, and especially great drinking bouts, have usually been the favourite form of amusement. So much has that habit prevailed among the Norse, the Danish, and the sturdy hunter tribes of Northern Europe, that heaven itself is pictured in their hymns as the scene of a perpetual orgy; where Odin and his fellow immortals enjoy an immortality of strong drink.

Where climate woos mankind to a gentler existence; where the fierce heat of six weeks or two months of summer disposes the Italian or the Greek to make the most of the cool evening and the bright moonlight; where nature enforces sobriety, because madness is the consequence of excess in alcoholic drink; the need of organised amusement of a higher order than that of the banquet first became evident. In Greece and in Italy we find the first examples of the dedication of the intellect to the provision of a feast, not for the body, but for the mind. Lofty grave tragedians arose, to purify the mind, as Aristotle remarks, by pity and by fear, before the art of music had been developed into the condition of a sensuous and luxurious charm. The music of Greece was extremely simple, the musical instruments were few in number, and rude in form, and the science of music was not only unknown, but undreamed of, at the time when the noblest masterpiece of the drama dominated the imaginations of the auditors of Æschylus, of Sophocles, and of Euripides. In endeavouring to understand how, in times so comparatively rude, such unapproached majesty should have characterised the Grecian tragic drama, we must remember, not only the influence of climate, but that of the genius of the people. Let any one wander through the more remote districts of Italy, and converse with the people. Still better, let him listen as they converse with one another. You hear, at a little distance, a frantic hubbub,—voices screaming one against another, or it may be one long-drawn recitation, causing a momentary silence. You see eyes flashing, figures agitated from head to foot, the hands thrown out as if in struggle, or spread forth with a deprecatory gesture. You see two or three people on their way along a mountain path or city street, and at every few steps one of them halts, throws himself athwart the path, turns his back in the direction of his journey, and enforces some long story on his comrades. What does it all mean? It means that the people are, as a race, born actors. They cannot narrate the simplest occurrence without an accompaniment of dramatic tone and representation. The graceful and resonant Italian tongue lends itself with extraordinary ease to the *improvisators*. The very length and flow of the words seem to call for accompanying action of hand and figure. It is at times possible to understand very sufficiently the purport of a conversation by watching the speakers, even if the spectator is out of earshot. So much is this the case that there is in Naples a special theatre devoted to that mute action which we call pantomime. In the little *Theatro di Policinello* at Naples, while the secondary members of the troupe dress and speak much as in other theatres, the chief performer does neither. He utters no sound. His dress is a loose white jacket, trousers, and nightcap. The upper part of his face is covered with a black mask. But so perfect is the command possessed by this actor—who is *Policinello*, himself—of dramatic action, that his dumb-show charms, fascinates, and stirs the audience as few actors or singers elsewhere can do. The mode in which comic mischief, ardent love, ready rascality, or abject terror, are telegraphed by this voiceless figure, so as to touch the very hearts of the audience, is such as no language can describe.

In the universal use of dramatic action in Italy and Greece may be detected one of the great causes of the early triumphs of the Greek drama. We are not confounding two distinct races in so saying, for the Adriatic seaboard of Italy is the *Magna Grecia* of Classic times, and is peopled by a race of Hellenic blood. The old characteristics of Homeric Greece, its division into numerous states or cities, each, however small in its area, keeping within the fence of its distinct nationality, and having few dealings but such as are of a hostile nature with its surrounding neighbours, are distinct at the present day, in this part of Italy. How far the idea which has taken such firm hold of the peninsula, from the Alps to the Ionian Sea, of *Italia Una*, may tend to confuse the distinctions which have survived from Classic through Mediæval times, remains to be seen; but it must take at least two or three generations to effect any great change. We may instance the little city of Monopoli,—a name probably but little familiar to most of our readers. It lies on the Adriatic seaboard, between Bari and Brindisi, and is the only natural port on that part of the coast. It is small, but sheltered and deep. An English man-of-war, such as three-deckers used to be, could ride in safety in its shelter; and that so close to the shore that an active midshipman might leap from one of the yards on to the loggia of a palace that borders the port; in which, from your bedroom window, you look sheer down through 40 ft. of clear sea-water. Here there is a theatre, supported for the most part by local talent as well as by local funds. And the nobles and burghers of Monopoli are proud to claim,—and that with no small degree of justice,—that the Monopolitan stage produces more good acting than is to be found on the Neapolitan stage; with the sole exception, perhaps, of the *Teatro di Fiorentini*, which is devoted to the classical Italian drama.

Among a people thus dramatic by their very blood, it is perfectly conceivable both how great dramatic poets should have arisen, at an early stage of national life, and how the masterpieces of these master playwrights should have formed a part of the moral code, almost of the very religion, of the country. Times were already growing out of joint when the great comedian, Aristophanes,—no less native a product of the soil than the great tragedians,—felt so secure of the support of the mass of the populace as to dare, not only to satirise those in power, but to laugh at the gods as well as at men. The evil effects of the law of Solon, which gave voting power to the populace, was illustrated by the mischievous licence of Aristophanes. There is no doubt that this licence was one of the great causes of the judicial murder of Socrates,—that crime against humanity. The wonderful powers of the poet in those days may be estimated from this single portion of history. It was a power, as exerted by Aristophanes, almost wholly mischievous; and in its mischief and its licence, as directed to tickle the palates of those who had little to lose, and who entertained a national,—or, we may rather say a human,—envy of those who had much to enjoy, if not to spare, became an evil of tenfold power, because it woke the plaudits of the many. But this fact should not blind our eyes to the powerful and ennobling effect of the dramas of the great tragedians. A profound sense of the power, and of the interference with human events, of the immortals; a conviction of that sure retribution of impiety which was shadowed forth by the terrible fiction of the Furies; a fear of broken treaty, of broken truth, of sacrilege against the temple, the enclosures, or the priests, of the national religion (of which the sanction extended to the office of the herald, as it lingers even to the present day amongst ourselves, is a relic),—these powerful and vital convictions formed the very backbone of the Greek tragic drama. And the influence on the people of such representations as those of the great trilogies of Æschylus must have been far more profound than that of any teaching, of which we have any account, on the part of the priesthood; if not than that of nine-tenths of the utterances from the pulpits of the present day.

Between an art of this kind,—lofty, severe, deeply instinct not so much with the local religion of towns or cities as directed to the worship of special tutelary divinities, as with that deeper and truer idea of faith, honour, fear of the recompense surely attending on conscious wrong-doing, which underlies every form of religion, if it have any truth whatever,—and the art which panders to the idle, thoughtless passions of the weakest of the race, the contrast is as diametric as can be well conceived. It was so in the time of Aristophanes; it is so at the present time. It is, however, unfortunately too true that, if the votes of a nation be counted, and not weighed, or if, as with ourselves, it is on the pence of the millions that the dramatist or the caterer of public amusement has mainly to rely for support, the lower art will elbow out the art which is higher and more severe. It is no satire, no injustice, to say that whenever the multitude is left as the sole judge, the worse is likely to displace the better. The most extreme views will always find more favour with the mass than those which are more balanced and reserved. The man who goes farthest,—in speech and promise at least,—is the greatest favourite of the moment. The latest novelty commands the largest audience. And if with, or even without, the graces of style, of diction, or of personation, the innuendo can be made more palpable, and at the same time more unutterable; the envenomed sting of satire can be sharpened to the keenest edge, and infixed in the noblest subject; or the last fragment of sexual delicacy can be most openly riven; there will be found the more ready support from the pence of the million.

Considerations similar to, or at all events perfectly harmonious with, the above, must, we conceive, have been long familiar to the mind which,—in spite of the fashionable doctrine of the day, the divine right of *laissez-faire*, and that grovelling adulation of the most ignorant of our fellows, of which men high in name, and once high in influence, have set so pernicious an example,—has ventured to plead the cause of the drama as a subtle, powerful, and unrivalled engine of national elevation and instruction, and as a scourge of the evils which beset society. If it be certain, as we hold it to be, that a nation will have amusement, organised either for it or by it; if it be certain that the more this organisation, or the encouragement and the payment of this organisation, is left to the taste of the masses, the more loud, violent, scurrilous, indecent, and profane will the amusements which replace tragedy on the stage tend to become; if we remember to what untold depths of infamy public representations sank among the law-abiding Romans,—a people once as chaste and pure as they were fierce, warlike, and skilful in construction; we may certainly feel startled at the course we are taking in this matter, as well as at the railway velocity which it has attained. The cost of the appeal to the eye is now so overwhelming that little or nothing is left to pay for the appeal to the nobler emotions of the soul.

There is, we apprehend, at present some slackening in the energy of that violent crusade urged on the part of the clergy against the drama, which has been characteristic both of the settled purpose of the Church of Rome, and of the anxious missionary enterprise of the Evangelical party in the Church of England some half century ago. At all events, the partisans of such a crusade are now comparatively silent, out of the pale of their own special disciples. Speaking with all respect of inherent intolerance of this nature, we would yet ask those who feel it to glance at history, and to endeavour to form some practical conception of human nature and of the way to elevate it. There may be room for a conflict as to the thesis "How much better it would be if everybody always went daily to church, instead of going sometimes to a theatre." It is unnecessary here to discuss such a position. It is not one of any practical utility. It is not one as to whether there is the remotest chance of its coming on for useful discussion in our day. What is a practical thesis for debate, however, is that "So many millions of our countrymen desire to go, do go, and will go, to some form of dramatic entertainment. It is a want—be it healthy or otherwise—for which provision must be made. Is it the part of people of good sense, or of honest men, to cast up their hands and eyes and howl at what they call this depravity in their neighbours, or to do their best to insure that the amusements which they certainly will have shall be of an ennobling, instead of a debasing character?" Let us remember that the work will be hard enough to effect the change. Such a change is not—like the sweeping substitution before referred to,—wholly visionary, impracticable, and out of the question. But it is a task of much difficulty; only to be accomplished by the strenuous and combined exertion of all those by whom the future of England is regarded as something to which they stand in the relation of trustees.

There is another consideration which should not be without extraordinary weight. In the opinion of the immense majority of judges, German as well as English (we doubt whether the Latin nations can fully approach Teutonic or Anglo-Teutonic literature), the noblest writing in the English tongue occurs in the dramatic form. We may go much further, and take with us, if not so commanding a majority, yet, at all events, a very considerable following, in saying that the noblest writing since the times of Æschylus and Sophocles is that of an English dramatist. The genius of Shakspeare is unique. Any attempt,—and who shall count the number that have been made,—to discover the secret of his fascination by critical analysis is something like an attempt to investigate the immortality of the soul by vivisection. Faults,—he is full of them. He would not be human were it otherwise. At times he has even sported with a disregard of that great law of the unities of the drama, the observance of which is one of the main sources of the power of the Greek tragedians,—

> "Jumping o'er times;
> Turning the accomplishment of many years
> Into an hour-glass."

Who stays to lisp out the word "anachronism" when we listen for the striking of the clock in "Macbeth," when we hear of the use of cannon in the early wars of England, when we go by sea to Illyria? Compared with the technic workmanship of the Greek dramatists, the plays of Shakspeare recall the bas-reliefs of the Mediæval artists, such as those on the Gates of Paradise, once described in our columns, where pictorial groups are made up of the repeated acting of the same individuals, sequent events being grouped in place instead of in time, or contrasted with the simple designs of Flaxman, or with the grouping on a Greek cameo. But in this very reliance on the power of his own magic to compel the assent of the heart, in spite of the active calculating power of the mind, we trace one of those splendid faults of Shakspeare, which are so much superior to the steady and level excellencies of other poets.

Shakspeare, as his writings prove, even in his time had to strive against that tendency which led to the victory of Aristophanes over the graver forms of drama. This is perhaps most evident in the choice of his subjects. If we consider what the tone of his day was, the delicacy of his motives, and even of his comic incidents, is not the least wonderful characteristic of his plays. If it be true that it was the virgin queen herself who proposed "Falstaff in love" as the subject of a play, the treatment of the "Merry Wives of Windsor" most signally illustrates the truth of the foregoing remark. In scenes where the lofty tragedy of the principal characters out-tops the mists of the Thames, and might have been apt to overshoot a London audience, the lighting touch of humour brings the heaven of the tragedian into instant connexion with the earth in which his audience stands. In the whole range of literature there is nothing more human, more magical, more humorous, than the question of Fluellen, after the noble and reverent speech of Henry V.,—'Is it not lawful, an please your majesty, to tell how many is killed?"

But we must pause. The theme is one that is apt to become uncontrollable. The point now reached is,—can there be a more worthy effort for English gentlemen to make than one which has for its object to bring the lofty and yet practical and intelligible teaching of the first of English dramatists home to the masses for whom he wrote?

The Female School of Art.—With reference to a recent exhibition of works by the students here, it is agreeable to learn that two water-colour studies of flowers by Anne E. Hopkinson have been purchased by her Majesty the Queen, viz., a study of roses and a study of primroses and orchids; and that the National Gold Medal drawing from the antique, by Mary Katherine Benson, and a National Bronze Medal drawing (study of mice) by Maud Ashley West, have been purchased by the Department of Science and Art. The following have been admitted during the past year as students in the Royal Academy Schools:—Alice Hanslip, Ida Lovering, Mary Katherine Benson, Susan Ruth Canton, Frances Binns, Louisa Jacobs, Margaret Dicksee, and Sarah Alice Miller.

"WHISTLER *v.* RUSKIN" AGAIN.

THE first thing that strikes us in the pamphlet which Mr. Whistler has unadvisedly published under the above title, is, why it should be considered peculiarly suitable that a pamphlet issued by an artist should be printed on the roughest paper with uncut edges, and with a cover which looks as if originally intended to wrap up sugar in. But the reading of the pamphlet dispels any idea of unsuitability in this respect. Mr. Whistler's literary style is as untrimmed as his paper; and if he has said some smart things about people who write and cannot draw, he has at least offered himself as a practical example of a man who can draw but cannot write. Apart from the mere question of style, from the literary vulgarity of the interlarding of every sentence with foreign words, and the uncouth constructions on every page, the writer has largely indulged in that very fault of personality and strong language for the use of which he brought his action against Mr. Ruskin; so that the whole thing is a scolding match on both sides.

Putting the manner of the pamphlet on one side, a word may be said about its matter. There are two or three good hits in it, and we by no means say that an onslaught on art-critics is an amusement entirely without provocation. The opinion expressed, that the art-critic *par excellence* is a growth of modern life, and has no counterpart in the past, is to a great extent true; and the remark that the said art-critic, professing to write only for the good of art, is nevertheless continually lamenting the inferiority of modern art, and pointing to its triumphs at a time when "art-critics," in a modern sense, did not exist, is at least cleverly put. For ourselves, with a long acquaintance with artists, we feel considerable sympathy with the hearty dislike which many of them have for the full-blown art-critic,—the gentleman who has never made a drawing in his life, could not make one to save his life, but can talk about everything connected with art with an assumption of more than knowledge,—of omniscience. Even, however, in his case it must be remembered that the existence of this highly-developed form of critic, and the fact that he finds his profession a very profitable one, is a proof that there is a large demand for critical writing; and people can hardly be blamed for supplying that demand. The fact is, we live in an age very much given to talk, especially talk about art and literature, and people who cannot trust their own wits to furnish them with that sort of talk are only too glad to get it done for them by critics in magazines. It is not a very healthy state of things; but it is certainly not entirely the fault of the critic: he is merely the natural result of it.

But though we may concede that the modern critic "takes too much upon him," Mr. Whistler is quite mistaken in supposing, if he does suppose it, that in any former period of art (that was worth anything) there was no such thing as an expression of public opinion on the work of the artist, or that such opinion can safely be held as matter of indifference by him. Art enjoys the freest and most healthy life, always, in the atmosphere of the freest public opinion, without which it would be apt to degenerate into the mere indulgence of the fancies of a clique of enthusiasts,—a phenomenon which we are not without an instance of in contemporary English art, among a certain set of artists who affect to decline public exhibition and only dispose of their works in private to a select circle of admirers. And though Mr. Whistler evidently thinks society was made for art, it is, perhaps, quite as fair an extreme to say that art was made for society,—for cultivated society, of course; and if an artist through any wrong-headedness persists in painting what, in despite of any technical cleverness, is without any interest for cultured people at large, the critic is only acting as their mouthpiece (the only mouthpiece they have) in saying so. We do not expect the artist to like him for it; but he will often do wisely to consider the critic's opinion, even if the latter could not paint a picture himself, on the well-known ground that "lookers-on see most of the game." Indeed, the idea that no one is to be considered a competent judge of any art unless he is a master of its *technique* himself, has only to be stated for any rational person to see its absurdity. It is contradicted by the whole practice and theory of cultivated society in all ages.

There is, however, a much stronger claim to be made by writers about art upon the sympathies and goodwill of the artists, in that it is mainly through art-criticism and art-literature that the majority of persons know anything about art at all. How many men would know anything about the works and the genius of the great Italian painters, but for the literary man? And how many of the public would be capable of forming even as good a judgment of art as they do form, but for the guidance and hints of those who, without being artists, have given thought and study to the subject? And how would the artists, after all, like to be without the notice of the press? This last point is of peculiar force in the present case, for we shrewdly suspect that, unless Mr. Whistler's "Nocturnes," and his other works of that class had been well pushed (as they have been) by some of his friends and admirers among the "critics," they would never have obtained the notice and admiration they have (we say not here whether rightly or wrongly) obtained.

Mr. Whistler's pamphlet will probably have amused a good many people; but we more than half suspect that, even with artists, three-fourths of the laugh it may have raised has been against and not with the writer of it, who would do better to keep to his brush and let the pen alone.

ST. ALBAN'S ABBEY.

THE NAVE ROOF.

SIR,—I wish somebody had taken the pains six months ago to prepare the carefully measured drawing which you have agreed to give this week in the *Builder*. It would probably have made a great deal of difference in the course of the controversy, and would have spared me several rather painful days spent in the midst of cold cutting winds, snow, and ice. When I came to the conclusion that the controversy might last for ever, unless this drawing were made, and no one else undertook to make it, it became as clearly my duty as it is now to prepare some explanatory notes.*

I have felt during this controversy that it was open to any good-natured friend,—for I do not know that I have an enemy,—to say that I was taking too much upon myself; and as this has been said in various cheerful tones, I feel that I have no right to expostulate, but every right to explain, that when the question was the possibility of repairing the old roof I would not,—being one against the world,—state publicly the conclusions I had come to until another architect had verified them. What I said so carefully in my "Report" of last July on this head has met with nothing but confirmation, and it has now become a kind of slander to say that *anybody* (except Sir E. Beckett, who is isolated in a way which must be full of comfort to him) *ever* thought the old roof was incapable of repair. Now that the battle of the pitches is being strenuously fought out, I feel that I ought not to flinch or to be reticent. The pitch was merely alluded to in my paper at the Society of Antiquaries, which was devoted almost wholly to a description of the construction of the existing roof. As to the exact form and details of old work, I am not disposed to give way to any one's assertions, having been myself trained to habits of accurate investigation. About inferences from facts, modesty makes confidence less defiant.

It seemed to me at first that it would be indispensable to write here about "intentional misrepresentation," "covert sneers," "insinuations," "angelic dispositions," "nonsense," and "hairdressers." I got an argument into good trim, setting many jewels of that sort with care,—probably the performance would have been pronounced "telling" when it was published. Reflection has, however, made me doubt whether intemperate and offensive language can be used with propriety in a controversy by any one who is not a skilful lawyer, nor at all grey-headed, nor bald. Besides, I wish to be brief, and a man must believe himself a favourite of Fortune when he attempts to demolish another in two lines on a postcard.

1. The walls of the tower are of tiles, generally 17 in. by 12 in. by 1½ in., with mortar joints almost as thick as the tiles themselves. Previously to 1871 the whole of the surfaces were covered with plaster. This was taken off, and the tilework repaired, and the whole of the joints pointed in cement, under the direction of Sir G. G. Scott (see "Neale's St. Alban's," pp. 2 and 24). The drawing shows the tiles which appear to be new, or to have been disturbed since the original erection of the tower. Of course, too much importance must not be attached to every tile, as some tiles have been replaced in almost every portion of every wall in the course of repairs. There is a distinctly cut groove running from A to B, and a similar groove from C to D. Facts about these grooves are given by enlarged portions, and by a detailed section. These grooves do not seem to be mere chisellings of already finished tilework. Some of the tiles have shaped edges. Possibly the original shingle covering fitted into the grooves. A line drawn along the two lengths of groove will strike upon the existing coping of the parapet. This is the only roof-line actually marked upon the tower wall,—the only line which indubitably points to an abutting roof; it exists distinctly as a straight line, as to the dimensions of which there can be no mistake. A line drawn along the two lengths of groove, will also run for its whole length on the new tilework inserted by Sir G. G. Scott. A similar line on the south side of the centre will also run for its whole length on new tilework. The new tilework has wholly destroyed distinct traces of the groove, but its presence prepares us to believe readily and firmly that the wall once had continuous grooves for both slopes. Mr. Scott's suggested roof-lines run for some considerable portion of their length over original unaltered tilework, without any marks of a groove. Mr. Street, in his drawing shown at the Society of Antiquaries, on November 28, made this line of groove, A B—C D, the only line of the high-pitched roof, being unable to recognise any other as supported by facts.

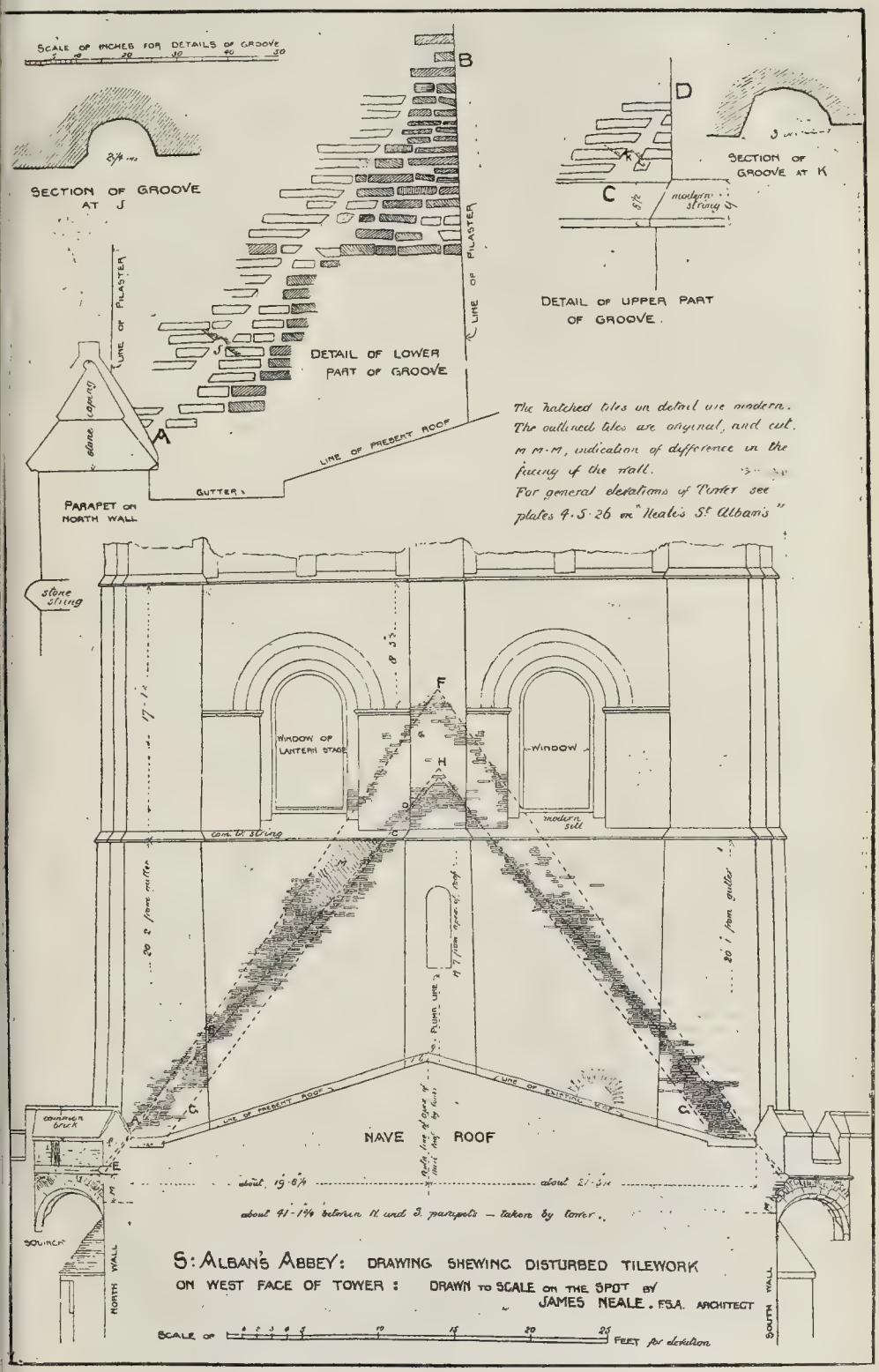
2. Mr. J. O. Scott believes that there was a roof-line running from E to F, and that this was the line of the original Norman roof. The line does not run over disturbed and renewed tilework in the tower for any considerable portion of its length. It obviously would not admit parapets; and perhaps never existed except for the sake of argument; at any rate, as no one proposes to follow it in the restoration, so its precise meaning is not a practical question.

3. Mr. Scott believes also that there was a roof-line running from G to H, and that this was the original Early English roof. This line does not run over the disturbed and renewed tilework of the tower wall for the whole of its length, but portions of it run over *original unaltered* tilework without any mark of a groove. No one who will carefully study this drawing or visit the building, and spend a proper time there, can believe that this lower line,—which it is intended to follow for the new roof,—is capable of being soberly argued for. There is not a particle of evidence that any such roof-line really existed. It should be observed that both Mr. Scott's lines disregard the groove A B—C D in the strangest way. The line G H has been imagined for the mere purpose of getting gutters of a fair width inside the parapets, and might quite as fairly have been drawn anywhere else. The new roof will represent an outline which was *never* taken before by any roof abutting against the western face of the tower, of which any traces remain. The Faculty Committee are thinking about giving to the nave of the church an aspect which it had never actually had at any time. This is a kind of "conservative restoration" which has never been argued for under that name before.

4. With anything like the present arrangement of parapets and gutters, no high-pitched roof, abutting for its whole length against the disturbed tilework, could have been put over the nave. The parapets would have necessarily been much higher than they are, and the tower walls clearly show that no such monstrously disproportionate parapet walls ever existed. There is an entire absence of good evidence that a high-pitched roof was ever put over the Decorated bays. The pitches of the lines of disturbed tilework on the other sides of the tower, the existence of the squinches, the levels and characters of the different eaves-courses, the analogy of the other low-pitched roofs in the church, the character of the roof itself,—all might be brought forward again, and every fact shown to be consistent with the belief that the present roof over the eastern portion of the nave represents the original roof, erected after the completion of the stonework of the Decorated bays.

5. Many matters, which I venture to think of

*I shall be very happy to show my original drawing to Mr. Scott or any one else; and allow anybody to examine it to any extent. It was made on the spot, and every dimension is figured.



S: ALBAN'S ABBEY: DRAWING SHEWING DISTURBED TILEWORK ON WEST FACE OF TOWER: DRAWN TO SCALE ON THE SPOT BY JAMES NEALE. F.S.A. ARCHITECT

minor importance, have been brought into this controversy, and discussed at great length. I will resist the temptation which has beguiled others, contenting myself with dealing in a conclusive way with what is at the present moment the main point—for all who truly respect, and resent pure innovations in, our ancient buildings. As Selby has been several times quoted as a precedent, it should, however, be noted that its central tower is a seventeenth-century construction, not of rare merit; that the question of the part to be played by the transepts in the grouping did not arise as at St. Alban's; that, in fact, the churches are so entirely different in size, situation, and character that any comparison must be purely misleading.

6. Being a sanguine person, I am still hopeful that the voice of reason will penetrate to the Faculty Committee. The old roof might be repaired to last for centuries,—much of the lead covering might remain untouched,—a strong wish has been expressed to retain the ceilings unaltered. The only high-pitched roof which has been *conclusively proved* (by the actual groove) to have existed, could not have stood between the present parapets. No new timber has yet been obtained for the roof: the question is, therefore, still open. Why should it not be decided in accordance with the views of the majority of architects and antiquaries, who would be deeply pained to see the old aspect of St. Alban's tampered with?—who are unwilling that "restoration" should be discredited by being identified in such a prominent instance with disregard of facts, and of the claims of antiquity,—and with the indulgence of wilful caprice.

JAMES NEALE, F.S.A., Architect.

ST. ALBAN'S CATHEDRAL.

SIR,—It has amused as well as astonished me to look on at your grand restoration fray anent St. Alban's roof: the combatants innocently ignoring all changes in that building during their own grandfathers' days, or even since them.

Two or three object to a high roof (on any of the arms), as having interfered, if it ever existed, with the tower windows, whose present sills and upright jambs they take as quite authentic Norman. Nothing but the arch-heads are even so old as our present precious century!

Not only does Carter's "Ancient Architecture," plate 17 (dated 1797), show you these as the upper halves of *simple circles* (obviously the fittest form for any two windows so placed over the slopes of a roof), and his opposite page of letterpress state that "the second part is the ringing-room, lighted by *circular* openings"; but in the Society of Antiquaries' great monograph of the building, published 1813, he thus describes the tower (p. 7):—"It has two rows of windows, four in the lower, two in the upper, each divided into two bays by short round pillars; the space between the three arches is lighted by a number of triangular holes. Under the lowest row are two *circular* openings." He appears to restrict the term "window" to openings with horizontal sills. Again, a south-east view by Coney, dated 1824, for the "Monasticon," shows the simple circles, but probably after they had really been cut down and deepened into the present rectangular-bottomed lights; for it is truly remarkable that all the plates to the above great monograph, each dated 1810, contradict the letterpress by showing these as at present.

Another novelty, anticipated by none of the engravers, is the tier of square panels on the outside of the chancel clearstory, one over each of the ten windows. Again, Mr. Neale describes the piece of flat ceiling west of the tower, painted in smaller squares than the rest of the nave, namely six in the width, instead of four, as lately disclosed by removing the hideous four-panelled ceiling. But Carter's great plan, dated 1810, and Coney's, 1819 (in Dugdale), both mark the six-panelled design entire; the former with the Assumption, or "Coronation of Our Lady," in two middle panels, which Carter repeats at large in his plate 19, without a hint that any of it was concealed. E. L. G.

*** We print this not with a view of helping those who desire to erect a lofty roof, but with the feeling that no information should be withheld.

THE EXCAVATIONS AT OLYMPIA.

RESPECTING the progress which has been made in the excavations which are being carried out under the direction of a number of German *savans*, at the expense of the Imperial Government of Germany, some interesting particulars have just been published by the *Reichsanzeiger*, or Imperial Gazette. The fourth campaign, or series of excavations, commenced after a summer vacation of four months and a half, on the 16th of October last, with a staff of 250 native labourers. In the previous winter and spring, the north of the Altis had been opened, displaying a stately row of edifices of very varied character. The object in view in the new excavations was to explore the southern and eastern portions of the sacred district. From the south the excavating party expected to ascertain the boundary in that direction of the Altis, with the festal arch for grand processions, and to learn something of the sanctuary of Hippodameia, and the numerous buildings which extended outside the sacred grove down to the banks of the Aphæus. On the east, the eastern Altis wall, two colonnades mentioned by Pausanias, and the *Stadion*, were the objects to be sought for; and further, in the north-west, the *Prytaneion* and the *Gymnasion*.

By the end of the first week in December, after only seven weeks' labour, the excavating party had accomplished a large portion of their task. They had found and identified several of the edifices they were in search of, besides making a number of unexpected discoveries of importance.

Almost with the first turn of the spade there were found in the north-western corner between the Heraion and the north Altis gate remains of an ancient building, which was without difficulty recognised as the Prytaneion of the Eleans. According to Pausanias's description, this edifice contained a large dining-hall, in which the Olympic victors were entertained; and a sanctuary of Hestia, from the altar of which the ashes used to be carried to the great altar of Zeus. At the destruction of Olympia this building did not escape the common fate; but the ancient ground-plan, so far as the earth has hitherto been removed, is readily recognised. About the large hall, as a centre, there are grouped several rooms, in one of which there are still large portions of two mosaic floors. The chief front of this Prytaneion is formed by a Doric colonnade, of which two columns still remain *in situ*. Judged by the form of their capitals, they belong to the best period of Grecian architecture; but they show, as compared with their diameter, quite an abnormal axial width from column to column ($6\frac{3}{4}$ lower diameters),—a proportion possessed by no other Doric edifice.

The second discovery of importance was made in the south of the Altis. At a distance of only forty mètres from the Temple of Zeus, the southern boundary-wall of the sacred enclosure was met with. This was a surprise, as the wall had been previously looked for much farther south. Important as this discovery is for the topography of Olympia, it is of still greater importance in its practical bearings on the further prosecution of the excavations, inasmuch as the area of the Altis, which had hitherto been calculated only on conjectural data, has turned out to be smaller than had been assumed. It is now evident that it will be possible to lay open the whole of the sacred district, with its numerous buildings, aqueducts, altars, and pedestals, in the course of two years from the present time.

Nearly in the middle of the southern Altis wall, opposite the chief front of the Temple of Zeus, a structure was discovered which may be safely described as an Altis gate. Its advantageous position, right opposite the terrace which stretches along the east front of the Temple of Zeus, and which is still adorned with more than forty pedestals for votive offerings and altars, appears to justify the assumption that this gate was the festal gate of Olympia, through which the embassies from states and cities entered the sacred grove in solemn procession. As the western boundary-wall of the Altis, containing two smaller entrance-gates, was laid open last year, and as, moreover, in the north the Kronos Hill forms a natural boundary to the sacred enclosure, while now the southern boundary-wall, with the festal entrance, had also been discovered, it only remained to determine the eastern boundary of the district whose central point was the great altar of Zeus. As early as last winter a wall was here found which there were many grounds for regarding as the eastern wall of the Altis. Further digging has now shown that that wall, in conjunction with a second parallel line of wall, formed a large side-hall which, commencing at the secret entrance of the Stadion, at the foot of the Kronion, occupied almost the entire eastern side of the Altis, having a length of about 100 mètres, and forming a noble architectonic conclusion to the entire inclosure. This is, without doubt, that hall mentioned by Pausanias and other writers of antiquity, and which, after its wall paintings, was called the "Variegated Hall," and which, from its sevenfold echo, also bore the name of the "Stoa of the Echo." On its west front there were forty slender Ionic columns rising on three marble steps, and crowned with a noble entablature. A second row of columns divided the interior of the hall into two longitudinal sections. The hind wall was closed, and in ancient times was adorned with the wall-paintings above mentioned. In front of the hall there extended an unbroken series of monuments and dedicatory gifts, of which all that remains are the pedestals upon which they stood.

Another edifice of importance was found in the south, outside the Altis. It is a hall, likewise with double nave, probably about 80 mètres in length, and belonging to the Roman period. On the exterior it possessed Doric columns and entablature, while the interior pillars are Corinthian. After most of the buildings of Olympia were destroyed, this hall, like the Temple of Zeus, remained standing for a long time. The two edifices formed respectively the north and south side of the Byzantine quadrilateral, the eastern and western walls of which were built from the ruins of Olympia. At a later time, viz., shortly before the great inundation of Altis and its being overspread with sand, the southern hall, perhaps in consequence of an earthquake, fell to ruins, and hence we find the columns, capitals, and entablatures at the present day precisely in the same spot where they fell centuries ago.

Besides these four important edifices, this year's excavations have furnished a large quantity of separate fragments of buildings valuable for the history of architecture. The Byzantine fortification above referred to was particularly productive. Pieces of one Ionic and four Doric edifices were here found. Among the remains of the latter are portions with well-preserved coloured ornamentation, such as have seldom been observed hitherto; and especially interesting are the half-column capitals which adorned the Ionic interior of the Philippeion. Their exact date (soon after 338 B.C.), not less than their strict style, render these capitals some of the most valuable illustrations of the entire Corinthian order.

ST. MARY EXTRA, SOUTHAMPTON.

Board Schools.—The School Board for St. Mary Extra, which is a district separated from Southampton proper by the river Itchen, and not under the Southampton School Board, recently advertised for plans in competition for a school for 350 boys, and master's residence. Eleven sets of designs were sent in under motto, the design marked "Clausentum" (Mr. W. H. Mitchell, architect, Southampton), being selected. His plans having received the sanction of the Educational Department, and the Board having obtained the requisite borrowing powers, they have decided to carry out the work and commence the buildings early in the spring. The tender of Mr. J. W. Roland, a local builder, amounting to 2,770*l.*, has been accepted, which is exclusive of school fittings and furniture. The estimated cost, including conveyance of land, architect's commission, fittings, &c., is 3,800*l.*

The Cemetery.—The great increase in the population of this district, mainly attributable to the establishment in its midst of the large shipbuilding works of Messrs. Oswald, Mordaunt, & Co., combined with the overcrowded state of the parish church-yard, led during the past year to the establishment of a Burial Board. A site having been obtained, the Board invited the local architects to supply designs in competition for the chapels, entrance-lodge, and laying out the cemetery, the result being the selection of the design marked "Gabriel Grub," the architect being Mr. W. H. Mitchell. Tenders were received, both for laying out the ground and the erection of the buildings by the Board, at their last meeting, when it was decided to carry out the work forthwith. The total cost, including site, &c., is estimated at 3,000*l.*



LIGHTHOUSE AT THE ENTRANCE TO SWAN RIVER, WESTERN AUSTRALIA.
MR. J. H. THOMAS, ARCHITECT.

LIGHTHOUSE, FREMANTLE, WESTERN AUSTRALIA.

THIS lighthouse, recently erected from designs by Mr. J. H. Thomas, C.E., Director of Public Works, is situated on Arthur's Head, on the south side of the entrance to Swan River, in lat. 32° 03′ 14″ south, and long. 115° 45′ 12″ east. It is a circular stone tower, having a base of 22 ft. diameter, the height above high-water mark to the centre of the cast-iron lantern being 92 ft., and the height of the building from base to vane is 71 ft. The illuminating apparatus is a third-order fixed dioptric light, manufactured by Messrs. Chance Bros., of Birmingham.

REREDOS, BY TILMAN RIEMENSCHNEIDER, IN ST. JAMES'S CHURCH, ROTHENBURG.

WE have frequently had occasion to mention the works of Tilman Riemenschneider, the celebrated sculptor, of Würzburg, and as an example of his work, in marble, we have recently given an engraving of the splendid monument of Bishop Rodolph von Scherenberg (A.D. 1495).

In order to show that this able sculptor was equally excellent in wood-carving, we present our readers with an engraving of a reredos carved by him in the church of St. James at Rothenburg.

This reredos, which is of the "triptych" form so common in Germany, is placed over an altar at the east end of the north aisle in the before-mentioned church. It is composed entirely of oak, and is about 30 ft. high. It may be described as consisting of a "predella," or basement, richly pierced with open tracery, forming a kind of cell, in which is placed a charmingly-executed group, representing the Death of the Virgin. Above this is a noble triptych, which, when the wings are open, displays in the centre the Coronation of the Virgin as Queen of Heaven. A curious feature about the centre portion is that the pierced openings at the back of the figures are glazed, which rather seems to suggest that this altar was intended to stand in front of a window, or in an apse. The effect of stained glass seen through these glazed openings must have been remarkably pretty. The doors or wings of the triptych are adorned with female figures in low relief. Immediately above the triptych is a small niche, containing a bust of St. John the Evangelist, below which is the inscription :—

"IM ENFANG WAR DAS WORT."
("In the beginning was the Word.")

It is very uncommon, indeed, to find a quotation from the Scriptures in the vulgar tongue at this early date, the end of the fifteenth century, but what is still more remarkable is that having translated the text into German they should have inscribed it in Roman characters. It would not have astonished us to have seen the words, "In principio erat verbum," written in black letter, as it was a common practice in the Middle Ages to write Latin in the German lettering; but that they should have translated the Latin into German, and then have converted the German-text into Latin characters, does seem a piece of inconsistency.

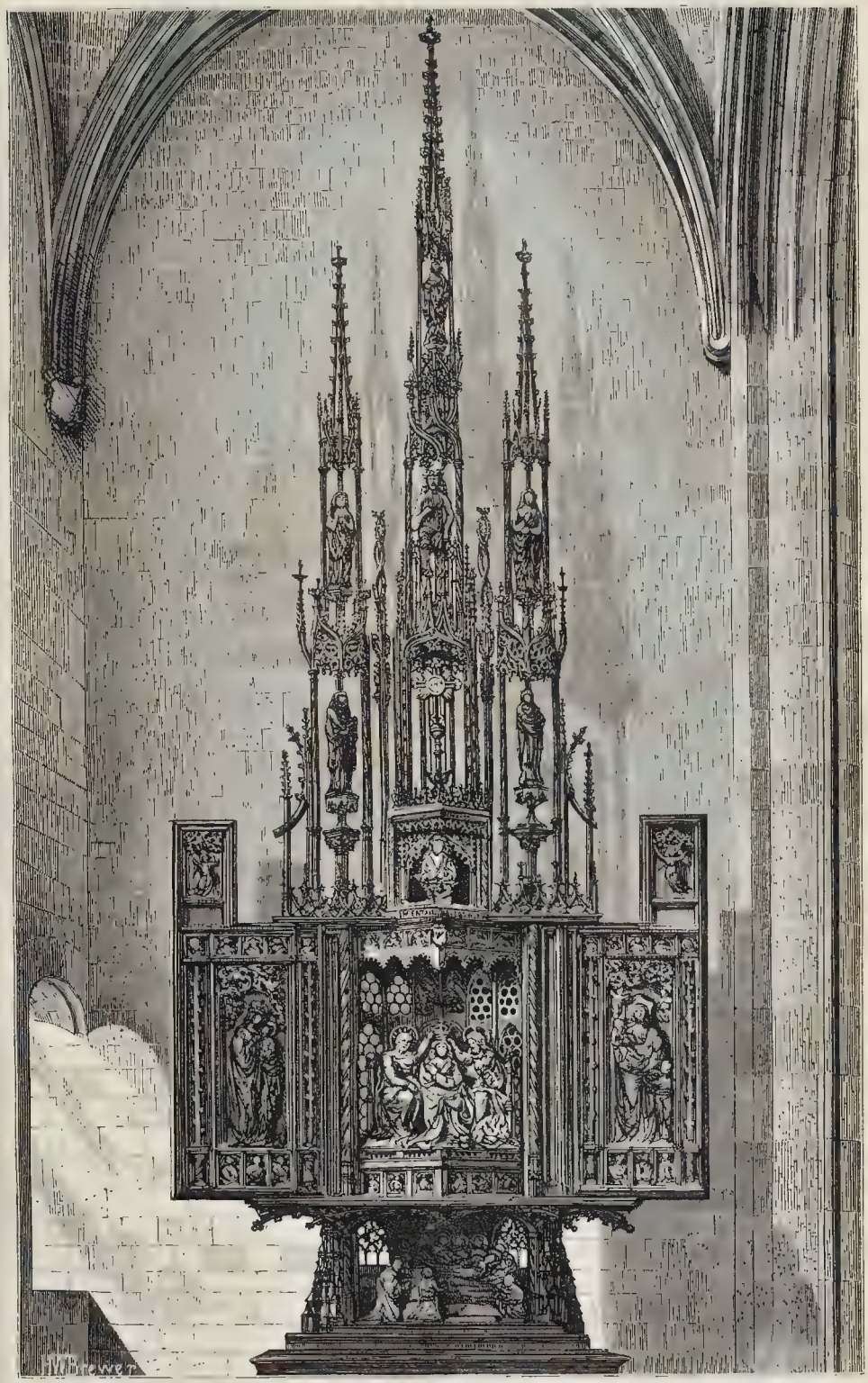
The upper portion of this reredos consists of three lofty spires, each composed of two stories of canopy-work, filled with statues, representing our Lord crowned with thorns, Saints John the Baptist, John the Evangelist, Mary, and Mary Magdelene.

The Church of St. James contains two other reredoses, much in the same style as this one, fine stalls, and some excellent old stained glass. The building, however, has been restored in rather an unfeeling way, and has a hard, dry, and uninteresting look, which may, perhaps, please the Germans, but would not be looked upon favourably in this country.

THE CRITERION RESTAURANT AND THEATRE.*

TILL within late years a common reproach to London was the general insufficiency of the accommodation provided for those who, either from necessity or choice, were in the habit of seeking their dinners elsewhere than in their own homes. There were, indeed, the clubs, the best probably in the world; but they supplied the wants of a comparatively small section of the community, and that, too, a section owning, in most cases, houses and establishments of its own. It could boast, moreover, hotels, often of vast proportions, where the prices were generally on a scale of equal grandeur, and where splendour rather than comfort seemed often to be the aim and object of the management. Then, again, in the City and around the law courts were taverns, popularly supposed to have been, in days gone by, the favourite haunts of great and witty men, the fame of whose memories seemed, as it were, to impart an additional flavour to the wines and dishes. Lower down again in the scale came the foreign establishments, which dispensed their hospitalities mostly in the neighbourhood of Leicester-square. Last of all were the little dining-rooms or eating-houses, where the surroundings were generally of a nature to destroy the appetite even of the least fastidious; and, in fact, there were few places where people could lunch or dine at a moderate cost and in a clearly comfortable manner, with the advantage of a *menu* consisting of something beyond a chop or a steak. As this want began to be felt, it was soon found that dirt and discomfort were not absolutely indispensable to economy, and soon certain establishments, principally in connexion with railway stations,—at first in small refreshment-rooms,

* From a paper, by Mr. Thomas Verity, entitled "The Modern Restaurant," read at the Royal Institute of British Architects on the 13th inst., as elsewhere mentioned.



REREDOS IN ST. JAMES'S CHURCH, ROTHENBURG.—END OF THE FIFTEENTH CENTURY.

but lately in handsomely-appointed saloons, such as those at the Midland and Holborn Viaduct Stations.

For this result the public are in no small measure indebted to the proprietors of the Criterion. The site upon which it stands was formerly occupied by two hotels, both celebrated in their time,—the "White Bear" and "Webb's"; the former was one of the old-fashioned galleried inns. These may be considered as examples of the old style, and the present building, being the most important of its kind yet erected, may be taken as a type of the modern house of public entertainment. I hope I shall not be considered egotistical in saying this, but as, after a trial of seven years, the proprietors tell me they can suggest no material alterations, the Criterion may be considered to fairly meet the requirements of this particular business. Without here going into details of the accommodation, I may briefly say that the public portion includes dining-rooms of various capacity, restaurant, grill-room, buffet, smoking-room, a grand hall (now used as a *table d'hôte*, but originally intended for a ball-room), lavatories, retiring and cloak rooms, and, lastly, a theatre. The service departments, to which I shall presently allude more fully, are arranged in a central block one over another, corresponding in level with the different dining-rooms, and in communication with one another by means of lifts and staircases, and comprising kitchens, sculleries, larders, pantries, cleaning-rooms, wine, beer, and ice cellars, and store-rooms for plate, glass, linen, groceries, and all kinds of provisions.

The general arrangements of the building are,—On the ground floor, the principal entrance, which is in the centre of the Piccadilly façade, under a large recessed archway, opening into a rectangular vestibule, 30 ft. by 25 ft., rising through two floors and forming the central means of communication with all the public rooms. The principal staircase, 10 ft. wide, is in the centre of the end opposite the entrance, and leads to the *table d'hôte* and other dining-rooms on the upper floors. On the right of the vestibule is the restaurant, 70 ft. by about 30 ft., and on the left is the buffet, 90 ft. by 25 ft., with smoking-room, 40 ft. by 25 ft., at the farther end. There is also a side entrance to the buffet from Piccadilly, having on the right a small bar, where those with strong palates, or with none at all, may indulge in the fearful concoctions with comical names, so much in vogue on the other side of the Atlantic, and on the left is a cigar-shop. There is another entrance to the buffet from Jermyn-street by the secondary staircase, which runs from the bottom to the top of the house. Advantage has been taken of the difference of level in the two streets, to obtain in a half-basement a second-class dining or grill room, while to gain still greater height for this room, the floor of the smoking-room has been raised 2 ft. above the general level of the ground floor.

On the first-floor, and on the west side of the vestibule, is a room, 50 ft. by 25 ft., devoted to the "diner Parisien," and on the east is a room of similar dimensions for banquets, &c., and ranged along the corridor, leading to Jermyn-street, are private rooms of different sizes, for parties from ten to fifty persons; these rooms are also approached from Jermyn-street by the secondary staircase. On this floor the service to the west or more public rooms is by a separate passage, but for the private rooms is by the general corridor. This at first sight might be considered an objection, but when it is remembered that the visitors would be in the rooms while the dinners were being served, it will be seen that it is not a matter of much moment.

On the second floor, at the Jermyn-street end of the building, there is a large room, approached by either staircase, used principally for Masonic meetings or banquets, and here the service is direct. On this floor, but at a somewhat higher level, is the grand hall, 80 ft. by 50 ft. and 35 ft. high; this room occupies the whole length of the Piccadilly front, and is lighted by the range of great windows looking towards the street, and by a large glazed dome in the centre.

The kitchens and serveries are arranged on six successive stories in a vertical series, as follows:—on the first basement is a kitchen, principally for the grill-room, although much of the roasting for the restaurant and buffet on the ground-floor is done here; this was at first done by a large open dangle, capable of cooking a dozen joints at one time, but it has now been replaced by a gas roasting-oven, which is much more economical, takes up less space, and does not throw out the same amount of heat as the open fire. Adjoining this is the vegetable kitchen and general scullery, and knife, fork, and glass cleaning rooms for the lower part of the house,—no small labour, when it is considered that the average number of dinners and luncheons is 2,000, and upon several occasions the enormous number of 4,500 has been reached. On the ground-floor, the kitchen partakes more of the character of a serving-room for the buffet and restaurant, sauces and light things, such as omelettes, being the only things cooked here; for the rest, the joints and vegetables come from below, and *entrées* and other made dishes from the chief kitchen at the top of the house. On the floor next over this (mezzanine) is the principal plate-cleaning room. On the first floor the service is for the east and west rooms, and the private rooms; on the second floor the service is for the Masonic room and the grand hall,—this may be also served directly from the principal kitchen on the next floor,—the whole series being, as I said before, in direct communication by means of lifts and the servants' staircase.

The idea of an underground theatre was suggested by the Athenée in Paris; but whereas that is only partially sunk, this is entirely below the ground-floor. It was not originally intended as a theatre, but as a small concert-room, and was, indeed, constructed as a square-galleried room, and it was not until the entire carcass was built that it was determined to convert it into a theatre. Its position has been somewhat severely criticised, and all kinds of prophecies were made concerning it, some even going so far as to say that the audience would be stifled; but, from careful observations of the temperature of most of the London theatres, this has been found to compare very favourably with the best. Of course, the ventilation is assisted by artificial means, which I will presently explain more at length. The entrance to the stalls and boxes is on the right of the central archway in Piccadilly, and for the pit and gallery from Jermyn-street; the corridors and staircases throughout being entirely fireproof. Some difficulty arose with the Lord Chamberlain's office at the time it was built as to whether the theatre could be considered a separate building, as the two licences were not allowed for the same building; but, after much controversy with the Metropolitan Board of Works, it was agreed that the floor formed a sufficiently fireproof party division to enable the theatre and restaurant to be considered separate. The entrances were ultimately modified, so that there was no connexion between the two, except through the outer lobbies.

The theatre occupies the whole length of the Piccadilly front, viz., 80 ft., by a width of 50 ft., and the height from the stalls to the ceiling is 27 ft. It is divided into stalls and pit on the lower floor, balcony and boxes on the first tier, and gallery and boxes on the upper tier, and will accommodate over 1,000 persons. The stage is 25 ft. deep, with a proscenium-opening of 22 ft. Dressing-rooms are provided on both sides and under the stage, the entrance for professionals being by a separate staircase in the Jermyn-street area. Cloak and retiring rooms are provided for all classes on both sides of the house. Only very limited storage is provided for properties, &c., the stores and carpenters' shop being elsewhere. By doing this a very serious element of danger from fire is avoided.

The theatre, buffet, restaurant, and grand hall are lighted at night by sunlights, having flues formed in the floors by placing rolled-iron joists about 2 ft. apart, with slate bottoms and covers, to contain the iron pipes, of which each light has three, running some distance from the burner, the outer one being carried as far as the upcast shafts in the walls. The stage having such a limited height, the appliances were of a very special character, particularly as regards lighting. Wing-burners were almost entirely dispensed with, the batten lights being mainly depended upon to light the scene. These have iron hoods, with flue-pipes, coated thickly with Leroy's cement, leading to the extracting-shafts going to the top of the building, the only naked lights on the stage being the float in front.

The planning the arrangements for ventilating and warming this building, with all the various conditions to be met in its several departments, involved considerable contrivance, in order to overcome the structural difficulties, and to obtain the numerous air-shafts in the necessary positions for carrying away the vitiated air and to introduce fresh air. For this reason the apparatus was divided into two divisions: one being the theatre, the large hall, restaurant, &c., and the other for the buffet, smoking-room, grill-room, and the dining-rooms, facing Jermyn-street. For the ventilation of the theatre a fan is provided, 4 ft. 6 in. diameter, worked by a direct-acting steam-engine. It draws its supply down a series of air-shafts, formed in the main eastern wall, and forces it into an air-chamber formed under the floor of the theatre. From this chamber shafts are carried up in the walls to diffuse the fresh air at different levels around the whole space. In addition to these shafts, branch distributing channels are provided for a supply of air for the stalls and the pit. Heating power, composed of hot-water pipes arranged in coils, is fixed in the chambers, in order that the air supplied may be warmed before its distribution when found necessary. A water spray is also fixed in the main cold air supply for cleansing the air. For the extraction of the vitiated air from the body of the theatre, a centre perforation, about 5 ft., is provided, in direct communication with a powerful extraction shaft, 4 ft. by 3 ft., running up the entire height of the building. In order to increase the power of this shaft, the waste heat from the grill stove, and the products of combustion from the sun-burner that lights the theatre, are carried up the centre in independent wrought-iron pipes. At the gallery level, and also at the back of the stage, four other extraction shafts are provided. It is found that when this apparatus is in full working the amount of air supplied and extracted is equal to the entire renewal of the cubic contents of the theatre from five to six times per hour.

The ventilation arrangements for the large hall consist of a series of inlets of fresh air around three sides of the hall, in direct communication with the chamber already described. The vitiated air is removed through the sun-burner, and the perforations round it communicating with a main extractor formed over the dome. The plan adopted for the ventilation of the large hall is generally applied to all the rooms throughout the building. A second fan is provided for forcing the air to the rooms situated towards the Jermyn-street front. The steam boilers are placed in a convenient part of the basement, and are three in number; two of these are in constant work, the third retained as a supernumerary. They supply the steam for all the culinary purposes, for working the cold water and fire service, and the steam for the hot-water supply, and ventilation and heating arrangements. The steam boilers are placed under supervision, and are inspected and cleaned out every two months.

The hot-water services to kitchen, sculleries, lavatories, &c., are worked by a steam heater fixed in the basement, from which a 2-in. continuous flow is carried through the different departments, with suitable outlets where required. The flow terminates in two spacious circulating cisterns, and a return-pipe is taken back to the heater, passing on its road all the lavatories at the Jermyn-street front.

The necessity of easy and rapid communication between the store-rooms on the lowest basement and the kitchens at the top, and on intermediate floors, was provided for by deciding to use a direct-acting hydraulic lift. And as it was seen that a large quantity of water would be required to work it, the questions of water supply and lifting machinery were considered by Messrs. Eastons & Anderson, whom I consulted upon this part of the work, and who drew out a scheme, which was carried out with slight modifications by Messrs. Turner & Co., of East-street. A 5-in. pipe was connected to the Grand Junction Company's main in Piccadilly, which, immediately on entering the building, branched into two pipes, each with a meter attached. One of these pipes supplied the water at high pressure, and the other at low pressure, the rate of charge for the water supplied by the former being 25 per cent. more than for that supplied by the latter. On the roof of the building a cast-iron tank was fixed, measuring about 20 ft. by 30 ft., and about 4 ft. deep, and from it were taken the supplies to the kitchens and other parts of the building, as well as to the lift. In the basement beneath the floor level, a brick tank was made, lined with asphalte, and to it was connected the service from the low-pressure pipe before mentioned, and also the overflow from the other tank. The water discharged

by the lift on its descent is conducted to the brick tank, near which is fixed a steam-pump, which draws the water from the brick tank and forces it up to the cast-iron one on roof. Thus no waste of water occurs, and the cost of the power for working the lift is represented by the steam used for driving the pump. The boilers which are provided for the heating and ventilating, and the cooking apparatus, also supply the steam required by the pump. It is only for short intervals and at different times in the day or night that the Water Company's pressure is sufficient to reach the upper tank, so that practically all the water used is received at low pressure and pumped up. On the high-pressure main and on the supply-pipe to lift are fixed on each floor fire-cocks with hose and connexions; and since the upper tank almost always has some 10,000 gallons of water in it, a large supply is available in case of fire. The hydraulic lift consists of a wrought-turned ram, 7¼ in. diameter, working water-tight through a gland at the top of a cylinder sunk into the ground, and has an oak cage on the top of it, with the necessary guides, valves, balance-weight, &c., as usual. The length of the ram exceeds by about 3 ft. the total height of the ascent-cage, which is 72 ft., being the height of the top kitchen floor above the lowest basement. The water-pressure acting on the bottom of the ram pushes it out of the cylinder and so raises the cage. A rope passing through the cage and extending the whole height of the lift-shaft, enables it to be started or stopped by a person inside it or standing on any floor. The well for containing the cylinder of the lift was sunk to a depth below the basement of 80 ft., or 110 ft. below Piccadilly; it was lined with 9-in. brickwork in cement, and finished 3 ft. diameter in the clear. The London clay was not passed through until the extreme bottom of the well was reached, when a little water made its appearance. After the completion of the well it gradually rose until it attained a height of about 60 ft. from the bottom. All the food-lifts are worked by hand by means of an endless rope, and are made with double boxes attached to one another by ropes, so that as one box ascends the other descends.

The basement is considerably below the main sewer in Piccadilly, and it was at one time thought that all the sewage would have to be pumped up, but, fortunately, it was found that in Regent-street, at the end of Jermyn-street, there existed an old sewer 40 ft. below the roadway. Permission to enter this was given, and a barrel-drain was driven up Jermyn-street, into which all the sewage passes. It is perhaps more difficult to keep the drains free in this class of building than in any other, owing to the enormous quantities of fat and refuse of all kinds from the sculleries. Although every provision had been made for arresting and collecting it by means of traps, yet it was found that a large portion of the fat passed away with the water into the down-pipes, where it quickly got chilled and adhered to the pipes, causing partial stoppages; this was at last remedied, by turning the waste steam into them, which has the effect of keeping them warm, and so preventing any deposit. I must say here that the first efforts in this direction were a mistake, as I turned the steam into the cast-iron floor gutters, the result being that owing to expansion and contraction the joints soon became leaky. I have now abandoned floor gutters altogether in kitchens, and carry the waste steam to the stack pipes in the manner above mentioned.

The whole of the ground was excavated to a depth of 30 ft. below the level of Piccadilly, and in a great part the adjoining buildings were underpinned to that depth. In several places water was found, and in order to keep it back I adopted a system which had been successfully tried at the Royal Albert Hall for other purposes, which was, to build the back portion of the underpinning first 1 ft. 2 in. thick, and render it with asphalte, leaving bond for the face work, the bonders being coated with and set in asphalte as the outer work came up. The result is perfectly satisfactory, although in one place the water came through so fast from an old well on the adjoining premises, that it was with great difficulty the asphalte was made to adhere to the bricks. At first, the water thus intercepted ran down the back of the wall and rose under the footings; to carry this off I constructed surface drains with cesspools, and ran it into the main drain, but as the ground consolidated, this ceased in a great measure, and is now scarcely perceptible.

The concrete for foundations, and the mortar, is General Scott's selenitic; the floors throughout are fireproof, the basements and ground floor on Fox & Barrett's principle, and the upper floors on Dennett's system, which I consider above all the best. The reason for using Fox & Barrett's for the lower floors was to form a strong abutment for the houses and ground all round, to take the place of the shores, which it was necessary to strike before it would have been possible to form the floors.

The large size of the rooms on the lower floors necessitated an elaborate arrangement of stanchions and girders to carry the walls above, indeed, broadly speaking, the whole of the interior was constructed in that way. All the main stanchions are protected by brick-work, and the girders either by concrete or plaster.

During the building, various modifications were made from time to time, which, in some cases, caused an entire change of the system of girders; the most notable being that caused by the conversion of the theatre. The box-girder, carrying the west wall of the vestibule, was calculated as being continuous, having bearings on four intermediate stanchions and the walls at either end, which made it a comparatively light one. When it became necessary to remove the two centre stanchions in order to form the circle, a plate-girder, 50 ft. bearing, and 3 ft. 8 in. deep, was inserted under the floor of the great hall, and the lower one hung up to it by slings, brought up to their work by key and cottar connexions; this, considering the roof was on, and the floors formed, was rather an anxious operation, the girder was hoisted in halves, and riveted in place; the amount of deflection in the lower girder being less than 1-16th of an inch, after the removing of the hydraulic jacks which supported it during the alteration.

The Piccadilly roof consists of four Warren girders 17 ft. deep, the roof shape being made by saddle frames fixed to the backs, the whole very light, and giving plenty of space for the dormitories. The Jermyn-street roof is of different construction. The whole of the space being required, there could be no principals; it is therefore formed with an upper and lower curb as tension and compression girders, the whole of the strains being discharged at the angles. The other parts of the building, although in some cases complicated, presented only the difficulties usually met with, and it would be uninteresting if I were to give a further description. I shall therefore proceed to notice the distinguishing feature of the decorations, which is the tile work. I have here used it very extensively as wall decoration, and whatever may be its merits or its faults artistically, it has at least the advantage of being bright and clean, practically indestructible, and not too expensive, and, what is most important, it will wash. It was the first experiment on so large a scale, and I may say I brought the idea with me from South Kensington, where it was then being adopted in the refreshment-rooms, and its many obvious advantages led me to use it so extensively.

When I first proposed to tile the walls, it was thought that the effect would be too like a butcher's shop, but having an opportunity of using it on a smaller scale at the Mansion House Station Restaurant, my clients were convinced of its utility, and determined to adopt it for this building.

The cartoons for the figure subjects were drawn by Mr. Coke, and the work was executed by Messrs. Simpson & Son, who also carried out the painted decorations in the various rooms and in the theatre. The floors of all the rooms are laid out with parquetry by various makers. The vestibule is paved with marble mosaic by Burke, assisted by Italian workmen.

The building now in course of erection on the east side of the Criterion will contain on the ground floor a buffet and smoking-room 29 ft. by 70 ft., with a still-room at the end, to supply both the bar in the present building, and also the additional one. The first floor is designed to be used either as separate dining-rooms, or a suite of Masonic rooms. The upper floor will be in communication with the grand hall, by means of a large opening which may be closed at pleasure by shutters, so that it may be used either as an extension for the table d'hôte, or for private banquets.

The service of all these rooms will be from the present kitchens.

As an example of a similar class of restaurant, Mr. Verity alluded to the "Gaiety," which he has just reconstructed. In effecting this, it became necessary, as our readers have already been told, to take out the whole of the Strand front and a part of the side front, as the former mezzanine was removed to give greater height to the buffet; this involved a work of underpinning probably the most extensive yet accomplished. It was done most skilfully, and with the most satisfactory result, by the contractors, Messrs. George Smith & Co.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fourth ordinary meeting of the Institute for session 1878–79 was held on Monday evening last, Mr. Charles Barry, president, in the chair.

The following gentlemen were balloted for and declared to be duly elected, viz.:—

As *Fellows*: Mr. John Bryce, Edinburgh; Mr. Percival Gordon Smith (Associate), architect to the Local Government Board; Mr. Thomas Edward Colcutt, Bloomsbury-square; and Mr. Thomas William Cutler (Associate), Queen-square, Bloomsbury.

As *Associates*: Mr. S. C. Searle, Ludgate-hill; Mr. L. E. Hickmott, Rotherham; Mr. J. F. Shenton, Rotherham; Mr. A. F. Watson, Lamport; Mr. W. D. Bayliss, Singapore, Straits Settlements; Mr. F. Pinches, Strand; Mr. C. A. Gould, Great George-street, Westminster; Mr. W. Woodward, Granville-square; and Mr. W. Grellier, Abchurch-lane.

As *Honorary Associate*: Mr. John Everett Millais, R.A., Palace-gate.

The President observed that at the last meeting it was intimated that, with the approval of the members, the Council would, according to precedent, prepare an address of condolence with her Majesty the Queen on the occasion of the affliction with which she had recently been visited. The address which had been sent by the Council was as follows:—

"The dutiful Address of the Royal Institute of British Architects to her most Gracious Majesty the Queen.

MAY IT PLEASE YOUR MAJESTY,—The President and Council of the Royal Institute of British Architects, on behalf of themselves and of the other members of their body, desire respectfully to approach your Majesty, not only as the Royal Patron of this Institute, but also as their gracious Sovereign, with an expression of deep-felt sympathy in the early death of your Majesty's beloved daughter, the Princess Alice, Grand Duchess of Hesse-Darmstadt, who, by her self-devotion and thoughtful energy on two momentous occasions, when the whole nation was suffering intense anxiety, secured the affectionate esteem of all classes of the community. The President and Council earnestly implore that Almighty God, who has seen fit again to visit your Majesty with sorrow, may in His goodness and in response to the prayers of a united people, sustain and comfort the Queen, the Grand Duke, and all the Royal family, in this present time of affliction.

Signed and sealed, on behalf of the Council and the general body of Members of the Royal Institute of British Architects. CHARLES BARRY, President."

The Secretary also read the letter of condolence which had been sent to the widow of the late Mr. F. P. Cockerell, Honorary Secretary, a post which, in the words of the letter, "he occupied during eight years with honour to himself and advantage to his colleagues."

The President said that many of the members would be aware that their friend Mr. Horace Jones recently left England for two or three months' change, and they would be glad to hear that there were strong grounds for hoping that his health, which had been almost completely broken down, would soon be entirely restored. Though absent from its meetings, he had not forgotten the Institute, and he had sent drawings of the remarkable bascule bridge which he had designed to cross the Thames below London Bridge; also an effigy of Temple Bar cast from the lead which came from its roof. It was possible, however, that in consequence of his illness, the paper which he had promised on "Electric Lighting" would not be read this session.

A short discussion, or conversation, rather, then took place on Captain Burton's paper on "Remains of Buildings in Midian." *

The President observed that the apology with which Capt. Burton had commenced his paper, on the ground that there was little to interest architects in the land of Midian, was quite

* *Builder*, vol. xxxvi., p. 1350.

unneeded, for the paper contained some most interesting particulars as to the remains of ancient buildings which he had discovered,—remains the existence of which set one conjecturing as to what the buildings were like originally. Indeed, the general information which the paper contained, putting aside altogether that which dealt with the remains of old buildings, was most interesting and valuable.

Professor Kerr said he should like to ask Capt. Burton whether, without going into details of archæological proof, he could say if it was his impression or belief that any of the remains he had met with in Midian were those of pre-Roman buildings?

Captain Burton said he had met with one ruin which was distinctly of the date of Herod Augustus, but most of the remains were in such a state that they might be of almost any age. The city of Madyan, mentioned by Ptolemy, and now in ruins, was built of alabaster, which had crumbled away and was of the consistency of salt. Amongst the coins he had found was a forged one (showing that there were "smashers" in those days) with a representation of an Athenian temple on one side. It was composed almost entirely of copper, with a thin coating of silver over it. Of course this forged coin, which dated about 300 B.C., might have been imported into Midian, but there was no reason for supposing so, as there were found in contiguity with it many coins of distinctly local origin, in which the figure of the owl still survived. He could scarcely form any idea of the original buildings. In the book of Numbers (xxxi. 10) mention was made of "cities" and "goodly castles" of Midian being burnt by the children of Israel. Almost all the tribes at present inhabiting the country were modern, and of Egyptian origin. It was a question hotly contested amongst German scholars whether the Nabathæans were not the original inhabitants of Babylon.

Professor Hayter Lewis asked Captain Burton whether he had met with any stone circles or dolmens in his travels through Midian.

Captain Burton replied that he had not met with any circles, though he had heard of the existence of a single dolmen,—a stone mounted upon three supports.

A vote of thanks having been accorded by acclamation to Captain Burton,

Mr. Thomas Verity's paper on "The Modern Restaurant" was read. Of this we give the substance on another page.

DEMOCRACY IN ART.

AT a meeting of the Royal Society of Literature, held on Wednesday evening, the 8th inst., at the Rooms, 4, St. Martin's-place, Mr. C. H. E. Carmichael read an important paper on "Rubens, and the Antwerp Art Congress." Mr. Charles Clarke, Q.C., was in the chair, and there was a good attendance.

Mr. Carmichael said,—When the City of Antwerp, for the second time within the same century, resolved to celebrate a festival in honour of her renowned citizen, Peter Paul Rubens, she threw herself into the work of rejoicing with an ardour that few great mercantile centres would display for such an object, and with a good taste that still fewer could rival. The great secret of the Rubens festival and Art Congress of 1877 seems to me to have been that the festival was everybody's festival, and that all ranks of Antwerp society, and even both the great parties which so sharply divide Belgian politics and Belgian society, united in showing their common respect for the memory of Rubens. How strong a hold that memory has on the Belgian mind nothing could more strikingly testify than this universality of celebration which was so characteristic of the centenary of 1877. That it should have been determined to make an art congress one of the leading features of the festival will be accepted as most suitable to the occasion. The success was due to the same widely-diffused energy, of which I have already spoken. Taken up heartily by the highest office-bearers in the municipality, under the presidency of the over-worked but ever courteous Burgomaster of Antwerp, M. Leopold de Wael, and the able chairmanship of M. Picher, the Antwerp Art Congress played a conspicuous part in the more serious features of the Rubens centenary.

Having given an account of the composition of the Antwerp Art Congress, which included the names of well-known Continental artists, Mr. Carmichael continued:—I have been thus particular in giving these names in order that those of us who did not follow its proceedings at the time may form their judgment as to the general calibre of its members. I cannot attempt to carry you with me through all the manifold details of the discussions of even one section, but must content myself with dwelling upon some of the more widely interesting general features of the Congress and Festival. We discussed Rubens from pretty nearly every possible point of view, and tried to get some light thrown upon every kind of influence that he exercised over his contemporaries, and that his contemporaries exercised over him. How far we succeeded is a question which, I think, cannot yet be fully answered, for the after-results of such discussions are slow in developing themselves, and the influence of the mere fact of such a gathering for such an object is not to be measured by the number or quality of the papers read or opinions sustained. I incline to the belief that the questions proposed on such occasions, and circulated throughout the length and breadth of the literary and artistic world, produce an effect in stimulating research and quickening thought of which the full power will only be known perhaps in aftertimes, when research shall have resulted in the acknowledgment of facts hitherto ignored, or in the setting of well-known facts in a new light, and when thought shall have been quickened into action. No one, I think, can study the heads of discussion proposed at Antwerp in 1877 without feeling that, although on many points no satisfactory solution could be expected during the sittings of the congress, much would be gained by the very clash of opinion, and still more by their free and temperate expression. Questions which to the British mind are apt to appear unpractical may have, it seems to me, a very practical value in countries whose Parliamentary institutions are still in their infancy, but whose people prize the constitutional liberties which they themselves, or their fathers, have not long won. When such a people discuss the influence of "Democracy in Art," ancient Greece and Mediæval Italy seem to enter the lists, and modern Belgium seems to become more the "cockpit of Europe,"; but this time the strife, though keen, is conducted, in regard to a tournament, where the object is to unhorse, not to slay, the opposing knight.

It may serve as some illustration of the general character of the discussion on the questions of the day which entered into the programme of the Antwerp Congress if I give a few extracts from the debates on "The Influence of Democracy in Art," for here, if anywhere, was the rock upon which the Congress might be expected to split. I do not mean to deny that a greater amount of warmth characterised these sittings than some others in which the topics were less exciting; but it is, I think, only just to Belgium to state that the discussion was opened by an Antwerp art professor, M. Van der Bussche, in very temperate language, and that one of the representatives, of what might be called the authoritative or aristocratic, as opposed to the democratic theory, Herr Schœfmann, admitted that if by the democracy was meant the whole people, in all the various manifestations of national life, he was ready to acknowledge the influence of democracy in art, for art, he said, "springs from the people, and belongs to their whole life." Yet this was the language held by one who professed to believe that the artist is "by nature aristocratic, and inclined towards authority." M. Van der Bussche, in his opening speech, gave a brief glance,—very necessary to the true understanding of the question under discussion,—at the various meanings of the word "democracy." It were much to be wished that one of our most recent English writers on this thorny subject, Sir T. Erskine May, had always kept these various meanings in view in the course of his elaborate work on "Democracy in Europe." Now it is evidently true, as M. Van der Bussche observed, that democracy in the ancient world was a different thing from modern democracy, and it is further true that Greek democracy differed from that of Rome. Yet, again, Mediæval democracy differed alike from its predecessors, and in the present day American democracy is widely different from that which manifests itself on the Continent of Europe, under varied forms, which are the outcome of European society and a European past. According to the view of M. Van der Bussche, art should be a beacon, lighting the way of the nations, and it ought, therefore, to guide democracy, not to be guided by it. This may appear to some to be a compromise between the two views of art; if so, it is, at any rate to my mind, a compromise embodying, and not giving up, truth. It is also perfectly reconcilable with the view of Dr. Scharpurans, for that which, he maintained, springs from the people, and is an integral part of their life in all its various manifestations, is scarcely best fitted to be unto the people as a beacon, lighting the way of the nations. In this manner we may, I think, harmonise the seemingly conflicting theories upon the influence of democracy in art, without giving up anything which is essential. And it seems to me that there was enough truth on both sides for the members of the æsthetic section of the Antwerp Congress to be able to separate, as they did, with their friendly feelings towards each other increased rather than diminished.

But it must not be supposed that the Congress only treated questions of theory. Not to speak of the Legislative Section, which discussed the possibility of framing an international art copyright law, and the basis of whose discussions was, to my mind, more practical than that adopted by some more recent congresses, the labours of the Historical Section deserve our attention, the question before it being, "What elements do we possess for a history of the works of Rubens?" The section came to the conclusion that these elements, which were numerous, but scattered over Europe, ought to be brought together and published in a collective form, and edited by a committee to be named by the authorities, under the appropriate title of "Codex Diplomaticus Rubenianus." It is proposed that the volumes constituting this "Codex" should embrace all official, notarial, and other documents, registers, &c., illustrating the history of Rubens, as well as a complete collection of his correspondence, comprising letters addressed to him, no less than those written by him; biographies, when founded on official documents, and drawn up not more than a century after his death; extracts from contemporary historians and chronicles; and, generally, everything that may seem likely to throw a light upon the life and works of Rubens. This is, it will be seen, both a comprehensive and a practical scheme. It is one which, in this Society at least, must meet with well-wishers, as offering the promise of a substantial addition to the literary history of art, in the full story of a great artist who was widely known and highly esteemed in England. It is quite probable that not only our State Paper Office, but also private collections, may contain some documents which ought to find a place in this proposed publication; and we may well believe that the town of Antwerp, which received its English visitors with such hearty, as well as magnificent, hospitality, would appreciate a return which should take the shape of assistance in the illustration of her great citizen. I should, for my own part, gladly receive and transmit to Antwerp any information, whether from public or private sources, tending to aid the Antwerp committee in making the proposed work worthy of the occasion which gave rise to it. We may be quite sure that the city of the Plantin Press will do all honour to its typographical no less than to its other artistic memorials. In the wonderful procession which wended its way by torchlight, as well as by sunlight, through the picturesque streets of old Antwerp, and down the broad boulevards of modern Antwerp, the printing-press of the famous house of Plantin had its place along with the principal works of Rubens.

My necessarily brief and imperfect sketch of the Rubens festival of 1877 would be still more imperfect than it is were I not to lay before you some of the interesting eulogies passed on the great Flemish master by the foreign representatives of the world of art, who came to do his memory honour in his own city. Conspicuous among these must stand out the carefully-weighed judgment of the veteran M. Charles Blanc, of the Institute of France, who, standing by the newly unveiled bust of Rubens, in the Hall of the Museum, spoke to this effect:—"Like a musician showing his superiority alike in the invention of a theme, in its composition, in its rendering on the stage, and in its vocalisation, Rubens is at once an admirable composer, and the most brilliant *virtuosi*. One of the things most astonishing to the æsthetical sense is that the Low Countries, the most distant

province of the empire of art, the furthest from its first home, should have seen the birth of the great painters who were to carry eloquence of colouring and *chiaroscuro* to their highest pitch. Far from imitating the French artists of the fifteenth century, who owed nothing to foreign influence, Rubens went abroad to seek inspiration and ideas." . . . . . .

It was through studying Titian and Veronese in Venice, and the Sistine Chapel in Rome, that he was enabled to see everything, even colouring on a great scale. It is because Rubens never became simply local in his art conceptione that he has given strangers a right to come and take part in a festival to which his spirit of universality seemed to invite them. The delegate of the Royal Academy of Fine Arts at Stockholm, said :—"Every Swede who has learned to read has also learned to venerate the name of Rubens, and to know something of his titles to renown, if only in the shape of the ten or twelve masterpieces which we are proud to possess from the brush of an artist who was the living embodiment of the art of an epoch at once brilliant and militant, and whose name is one of the privileged band of names that light up the darkness of the ages." Rhetoric paid its tribute to the language I have cited. Painting, engraving, photography contributed their share in the interesting specimens of Rubens and other masters, and reproductions of the works of Rubens in the galleries of Germany, Italy, Spain, and other countries, gathered together in Antwerp during the festival. That music, too, had her part, and that no unimportant one, in the glorification of Rubens, is a fact which I must not omit to commemorate, and those who heard the "Rubens Cantata" are not likely to forget the music played in the Rubens Tercentenary of 1877.

A brief discussion followed in which the chairman, Mr. Highton and Mr. Vaux took part, and the proceedings terminated with a vote of thanks to Mr. Carmichael for his paper.

TAMPERING WITH REPORTS: COST OF GRANITE PAVING.

SIR,—Will you permit me, through your columns, to call the attention of borough engineers and town surveyors to a disingenuous attempt to mislead them, which has been made by the Nevin Granite Company, Leadenhall-street, London ?

About eighteen months ago I was desired to report upon the suitability of several classes of stone for paving purposes in the borough of Bradford. Amongst these happened to be some Penmaenmawr or blue Welsh, respecting which great complaints had been made. A copy of my report the Nevin Granite Company have somehow obtained, and it appears to have occurred to them that it would be exceedingly smart were they to take a few words here and there from the report, and put them together in such a fashion as to make me give a favourable account of a paving material I had distinctly condemned, and transfer this to the granite they supply. That they have done this deliberately, and with full knowledge of what they were doing, is apparent from the fact that they pass over half a page of my report condemnatory of the Penmaenmawr stone, and pick out the concluding half of a sentence, the beginning of which did not suit their purpose, and use it to give a false colour to the statistics which were appended to my report.

I send, for the comparison of your readers, that part of my report from which the quotations are taken, and the statement in the Nevin Company's circular. Such a mode as they have adopted of puffing their granite seems to me to merit strong condemnation. If official reports are to be tampered with in this manner for advertising purposes, injustice will be done to the reputation of those whose duties are already sufficiently arduous, and there will be no reliance to be placed upon even the most positive statements put forward by those interested in the supply of any particular material.

The following is the passage in my report :—

"It is now upwards of twelve years since you commenced to pave with granite, and during that time five varieties of granite have been tried ; they are :—

1. Penmaenmawr, or blue Welsh. 2. Mountsorrel. 3. Dalbeattie. 4. Shap. 5. Random.

No. 1 is the 3 in. by 6½ in. Penmaenmawr, or blue Welsh sett, as laid down in Thornton-road, Tyrrel-street, and part of Market-street. This is by far the most durable stone of any in use here, but from its extreme hardness, it is liable to become slippery, and forms an exceedingly dangerous pavement, and one not suitable for use as a paving material. Some of this stone has been laid down about twelve years, and I am unable to detect that it is yet worn to any appreciable degree.

I may, however, state that the quality of the Welsh granite laid down in Bradford is not that which is best adapted for paving purposes. A quantity of this granite, which was laid down for crossings a few years ago, has recently had to be taken up; and in the course of some correspondence with the company supplying it, I was informed that the stone was supplied as channel runners,—not as crossing stones. This must not be regarded as a fair sample of Welsh granite, for an abundant supply can be obtained out of the grey rock, equal to the Mountsorrel and Dalbeattie granite, both as respects security of foothold, cost, and durability. Large quantities of this grey granite are being used in Manchester and Liverpool, where it gives great satisfaction."

What the Nevin Company's circular makes of this is,—

"The following extract from a special report upon the subject of granite paving made by the borough surveyor of Bradford, Yorkshire, at the request of the street and drainage committee, shows the relative value of Welsh granite, as compared with some other descriptions used for paving in that borough. The surveyor's experiments and calculations are based on a period of twenty-five years, and an area of 7,000 superficial yards.

In reference to the Welsh granite he says, 'an abundant supply can be obtained out of the grey rock equal to Mountsorrel and Dalbeattie granite, both as respects security of foothold, cost, and durability. Large quantities of this grey granite are being used in Manchester and Liverpool, where it gives great satisfaction.'

The following table is the result of the experiments referred to :—

A TABLE showing First Cost of the different Kinds of Paving laid down in the Borough (exclusive of Foundations), with Repairs, Interest, &c., based on a Period of Twenty-five Years, and an Area of 7,000 superficial Yards, in Manchester-road, from Tyrrel-street to Midland.

Materials.	First Life in Years.	Area in Superficial Yards.	First Cost. Price per Yard.	First Cost. To end of Years.	First Cost. £ s. d.	1st Repairs, including waste. To end of Years.	1st Repairs, including waste. £ s. d.	1st Renewals. To end of Years.	1st Renewals. £ s. d.	2nd Repairs, including waste. To end of Years.	2nd Repairs, including waste. £ s. d.	2nd Renewals. To end of Years.	2nd Renewals. £ s. d.	3rd Repairs, including waste. To end of Years.	3rd Repairs, including waste. £ s. d.	Interest at 4 per cent. £ s. d.	Total Cost at end of 25 Years. £ s. d.
Yorkshire Setts	8	7000	4 11	5	1720 16 8	18	904 3 4	13	1720 16 8	18	904 3 4	18	1720 10 8	21	904 3 4	3812 0 0	12,697 0 0
Random Granite	10	7000	5 0	5	1750 0 0	19	700 0 0	15	1750 0 0	20	700 0 0	20	1750 0 0	...	.....	3990 0 0	10,940 0 0
Shap Granite	9	7000	9/6	6	3325 0 0	9	1137 10 0	15	3325 0 0	18	1137 10 0	18	3325 0 0	...	.....	7713 10 0	19,963 10 0
Welsh Granite	40	7000	11/0	12	3850 0 0	Repairs over half the area		1200 : 6 : 1 Proportion for 7 years.		...	.....	...	.....	...	.....	4083 0 0	8,233 0 0
Dalbeattie Granite	18	7000	10/6	9	3675 0 0	13	487 13 0			...	.....	...	.....	...	.....	3955 0 0	9,666 16 1
Mountsorrel Granite	25	7000	12/0	9	4200 0 0	...	350 0 0	...	.....	...	.....	...	.....	...	.....	4424 0 0	8,974 0 0
Yorkshire Setts	8	7000	4 11	5	1720 16 8	18	904 3 4	13	1720 16 8	18	904 3 4	18	1720 10 8	21	904 3 4	3812 0 0	12,697 0 0
Random Granite	10	7000	5 0	5	1750 0 0	19	700 0 0	15	1750 0 0	20	700 0 0	20	1750 0 0	...	.....	3990 0 0	10,940 0 0
Shap Granite	9	7000	9/6	6	3325 0 0	9	1137 10 0	15	3325 0 0	18	1137 10 0	18	3325 0 0	...	.....	7713 10 0	19,963 10 0
Welsh Granite	40	7000	11/0	12	3850 0 0	Repairs over half the area		1200 : 6 : 1 Proportion for 7 years.		...	.....	...	.....	...	.....	4083 0 0	8,233 0 0
Dalbeattie Granite	18	7000	10/6	9	3675 0 0	13	487 13 0			...	.....	...	.....	...	.....	3955 0 0	9,666 16 1
Mountsorrel Granite	25	7000	12/0	9	4200 0 0	...	350 0 0	...	.....	...	.....	...	.....	...	.....	4424 0 0	8,974 0 0

They give the following statistics, and say :—

"From this table it will be seen that Welsh granite setts, over an equal given area,—

	£	s.	d.	
Last 15 years longer than Mountsorrel granite, and cost	742	0	0	less.
Last 22 years longer than Dalbeattie granite, and cost	1,434	16	1	,,
Last 30 years longer than Random granite, and cost	2,498	0	0	,,
Last 31 years longer than Shap granite, and cost	11,721	10	0	,,
Last 32 years longer than Yorkshire setts and cost	4,455	0	0	,,

The Nevin Company thus appropriate to the grey granite the character for durability I had given to the Penmaenmawr or blue Welsh, and after I had said (on their own representation) that Welsh grey granite was equal in respect of security of foothold, cost, and durability to Mountsorrel and Dalbeattie, they make me give statistics showing that it is both cheaper and more durable than these. They may say that they find the words "Welsh granite" in the table, but the heading of the table which they quote states expressely that it refers to "the different kinds of paving laid down in the borough." I may here state that when my report was written, not a single stone of grey granite had been used in Bradford, and on the page of the report from which they quote their introductory misleading half-sentence, it is set forth with a prominence that precludes mistake, that the only Welsh stone laid down in Bradford was the Penmaenmawr or blue Welsh; the first sentence of the paragraph from which they take their quotation expressly calls attention to the fact.

The designation "Welsh granite," I may say, was used because the Penmaenmawr stone was known by that name to the council and the public. The Nevin Company thus represent me as giving the preference to the material I have condemned.

JNO. ALLISON, A.I.C.E.,
Borough Surveyor, Bradford.

LEAD POISONING AT PORTSMOUTH.

STAFF-SURGEON C. J. FENWELL, of Portsmouth Dockyard, having reported to Rear-Admiral Foley, the admiral-superintendent, that during the past year there had been no fewer than seventy-five serious cases of lead poisoning in the yard among men engaged in cleaning the double bottoms of men-of-war, exclusive of the number of cases that occurred in the Indian troopers, experiments have been made upon the double bottom of the *Devastation*, with the object of ascertaining whether the processes now in use of chipping and cleaning the old red lead could not be dispensed with. The experiments have been conducted by Mr. W. B. Robinson, chief constructor; Mr. J. Elliot, constructor in charge of the ship; and Mr. Weston, admiralty chemist. Hitherto the most stringent regulations have been issued for the information of the workmen, but without effect, owing, no doubt, in a great measure to the difficulty in carrying them out practically. To preserve the iron of the double bottoms from deteriorating, the iron surfaces are coated with red lead, which requires to be periodically renewed. But before this can be done the old coating has to be removed, which can only be accomplished by chipping and scraping, whereby the poisonous pigment, converted into an impalpable powder, is inhaled by the workmen. To prevent the serious results of lead poisoning, and the introduction of the dust into the skin, the utmost attention to cleanliness is necessary. The shipwrights are accordingly advised to wash the face and hands, rinse the mouth, and comb the hair several times a day. Bathing and ablution of the whole body should also be frequently practised. The working clothes, which should be made of canvas instead of woollen material, should be washed at least once a week, and worn as little as possible after coming out of the ship; while the head should be protected by a cap made of some impervious substance, such as oiled paper. Care should be taken that none of the poison be admitted into the system with the food. The workmen are cautioned against taking their meals where scaling has been going on, and are advised to be scrupulous in cleaning their hands and lips before eating. They are also requested to use muslin covers for their mouths, to take plenty of fat or oily food at meals, and to use a sulphuric acid orangeade as a beverage. The impracticable nature of many of these regulations has led to their being generally neglected, with the consequences already mentioned. The first experiment on board the *Devastation* wa

with a view to determining whether the old red lead could not be removed without the necessity of being chipped off, and it was found that the ordinary "cleansing powder" used in the yard, mixed with sea water, and applied with a brush, softened the lead to such an extent that it could readily be scraped off, like moistened putty, without any portion being dispersed in the form of powder. The subsequent experiments were made with the purpose of discovering whether red-lead paint could not be superseded as a protective for the iron by a non-poisonous composition. The requirements to be met were that the new protection should not be rendered inoperative by wet surfaces, and that it should dry almost immediately. These requirements were (according to the *Morning Post*) successfully fulfilled by a treatment of Major Crease's, of the Royal Marine artillery. A black composition is first applied to the iron, and, being a water paint, it is not affected by wet, after which a coat of specially-prepared cement is put on, which combines with the composition and forms a stony enamel, which effectually secures the double bottom from oxydisation. It was found that the coating dried in four hours, and it is understood that the cost is less than that of the poisonous process which has been hitherto adopted. The constructive department at Portsmouth has strongly recommended the new treatment to the Admiralty.

IMPROVEMENTS IN STREET GAS-LIGHTING.

EVEN though the electric light should fall short of the expectations of Mr. Edison, M. Jablochkoff, and the other gentlemen whose names have recently been prominent in connexion with that brilliant but (at present) costly and not absolutely reliable luminary, it will be remembered with gratitude if it should be the means of bringing about the greatly-needed improvement of our street gas-lighting. "Lighting," indeed, it can scarcely be called, for, with the exception of a few favoured streets in the City and at the West End, the street gaslights of the metropolis have hitherto been so feeble and flickering, and so few and far-between, that they have only served to make darkness visible.

The Phœnix Gas Company is, with commendable enterprise, now engaged in showing what *can* be done with gas-light. During the last few days Mr. Corbet Woodall, the company's engineer, has completely revolutionised the lighting of that portion of the Waterloo Bridge-road which lies between the foot of the bridge and the South-Western Railway Terminus. Up to the time the company took the matter in hand this stretch of road had been illuminated by twenty-two gas-lamps, including six at York-road crossing. The total light thus afforded was equal to about 264 candles, and the total cost per annum to 93*l.* 10s., or 5½d. per hour. The first step was to remove the old lamps and to replace them by forty-eight others of new design, each giving a light of fifteen candles, as against that of twelve candles as previously, and the distance between the lamps being reduced to one-third of the former distance. The lamp-posts are about 2 ft. shorter than those usually employed, thus bringing the light nearer the ground, while the lanterns are somewhat of a diamond shape in vertical section, flattened at the top in some cases and at the bottom in others. Some are octagonal, while others,—the large ones,—are twelve-sided, and in all cases the iron frame in which the lantern is usually carried has been abolished, thus removing one cause of shadow on the pavement. The tops of the lanterns are glazed with opal glass, which reflects a much larger proportion of light on to the pavement than is usual. With those lanterns which are flattened at the top a shadow is cast fro n the under framing on the pavement, while from those with the flat-angled bottoms there is no shadow whatever. At the York-road crossing are two refuges, which previously were lighted from two posts, each carrying three ordinary gas-lamps. These latter have been removed, and replaced by single lanterns with opal glass tops and twelve sides, within which are burners giving a light of 130 candles in one case and 200 candles in the other. At each of the four corners of the intersecting roads is a lamp having an argand burner of 50-candle power, affording, with the large burners on the refuges, a high amount of illumination. At the end of the road next the bridge the old lamp-posts, being placed at distances of 40 yards apart, have not been removed, but have been fitted with argand burners of 50-candle power. The burners used have been made by Mr. William Sugg, of Westminster.

Of course, the cost of the improved system shows a considerable increase as against the previous defective method of lighting. The cost of the posts, lanterns, burners, and fixing is put at 120*l.*,—the yearly interest on the first cost, at 10 per cent. representing, therefore, 12*l.* The cost of lighting, cleaning, repairing, &c., is placed at 15s. per lamp per annum, that being the price paid to the company, and which equals 40*l.* 10s. The cost of the gas consumed in the 4,200 hours during which the lamps are alight in the year is put at 334*l.* 12s., the price of gas being taken at 3s. 4d. per 1,000 cubic feet, thus bringing the total cost per annum to 387*l.* 2s. Put in other terms, this means that the cost of gas used in thoroughly lighting 500 yards of broad roadway amounts to 1s. 7d., and the total cost, including maintenance, to 1s. 10d., per hour. Such a light as is produced is not required all the night through. In order, therefore, to economise, it is proposed to extinguish one-half the lamps at midnight, which would reduce the cost to 1s. 2d. and 1s. 5d. respectively.

The Phœnix Gas Company has succeeded in demonstrating,—what no one ever doubted,—that street gas-lighting in London is capable of great improvement. Should the electric light fulfil the most sanguine expectations that have been formed of it, the gas companies may possibly find it to their advantage to greatly improve our street-lighting without material increase of charge. In other words, their shareholders would, it is to be presumed, rather have their dividends reduced from ten per cent. to six per cent. than be placed in the forlorn position of receiving no dividend at all.

MASTERS AND MEN.

The Building Trade in Great Britain.—Mr. W. Knox, secretary of the National Association of Master Builders of Great Britain, has just issued two tabular statements, one purporting to show the state of trade and the labour-market at the commencement of the current year, the other giving the hours worked per week, and the wages paid per hour, in the building trade all over the country. From the first of these documents we gather that the building trade is, taken as a whole, in a very depressed condition. The table deals with seventy-three towns (excluding six which have not made any return since July last), and of these, only one (Guildford) reports trade as "very fair" in all branches, with a "sufficient" supply of labour. Portsmouth reports trade "good" in all branches, with a "plentiful" supply of labour (except in regard to painters and plasterers, the supply of painters being described as "moderate," while plasterers are "scarce"). A few towns report trade as "fair," and one or two as "moderate" and "middling"; the other towns variously report trade as "quiet," "very quiet," "slack," "very slack," "dull," "very dull," "bad," "very bad," "depressed," and "very depressed." This depression seems to be felt in most branches of the trade, and the supply of labour is almost invariably reported to be "plentiful" or "abundant" in all branches, Birmingham and Chatham reporting labour in all trades to be "largely in excess of demand." In twenty-nine towns the men in from one to four branches of trade are under notice from the masters, both in respect of reduction of wages and increase of hours. From the table stating the hours worked per week in summer and winter in the various trades, and the wages paid per hour or per week, we learn that longer hours are worked in Canterbury than in either of the seventy-eight other towns mentioned, the working hours in the cathedral city being 70 in all trades in summer, while in winter masons work 60 hours, bricklayers 54, carpenters 60, plasterers 60, slaters 60, plumbers 60, painters 54, masons' labourers 60, bricklayers' labourers 54, and plasterers' labourers 60. The wages paid in Canterbury, summer and winter alike, are 6½d. per hour to masons, 6d. and 6½d. to bricklayers, 6d. to 6½d. to carpenters, 7½d. to plasterers, 6d. to slaters, 6½d. to plumbers, 5½d. to painters, 4d. to masons' labourers, 3½d. to bricklayers' labourers, and 4d. to plasterers' labourers. In Blackburn, the hours of work and rate of wages in winter and summer are as follow:—Masons, 49 hours and 36s. per week in summer, 44 hours and 33s. per week in winter; bricklayers, 49 hours and 39s. per week in summer, 44 hours and 36s. per week in winter; carpenters, 49 hours per week, and 8½d. per hour, winter and summer; plasterers, 49 hours and 36s. per week in summer, 44 hours and 33s. per week in winter; slaters, 49 hours and 36s. per week in summer, 44 hours and 33s. per week in winter; plumbers, 49 hours per week, and 8½d. per hour, winter and summer; painters, 54 hours in summer, and 46½ hours in winter, 8½d. an hour all the year round; masons' labourers, 49 hours and 22s. per week in summer, 44 hours and 20s. per week in winter; bricklayers' labourers, 49 hours and 26s. per week in summer, 44 hours and 24s. per week in winter; and plasterers' labourers, 49 hours and 26s. per week in summer, 44 hours and 24s. per week in winter. In Taunton the hours would seem to be 59½ all the year round, and wages would appear to be lower there than elsewhere, the following being the rates returned for all trades, both in summer and winter:—masons, 4½d. to 5d. per hour; bricklayers, 4½d. to 5d.; carpenters, 4½d. to 5d.; plasterers, 4½d. to 5d.; slaters, 4½d. to 5d.; plumbers, 5d. to 6d.; painters, 4d. to 5d.; masons' labourers, 4d.; bricklayers' labourers, 3d. to 4d.; plasterers' labourers, 3d. to 4d. Wages in London, Liverpool, Manchester, Bristol, and other large towns, are in most instances nearly, if not quite, 50 per cent. above those paid in Taunton, while the hours worked per week are from 5 to 10 less.

Banbury.—The carpenters and joiners of Banbury, after being on strike eight weeks, have agreed to resume work at 1d. per hour reduction on their former rate of wages. The wages of the town will now be 6½d. per hour.

Perth. — The Perth masons have received notice of a further reduction of ½d. per hour.

WORKMEN IN LINCOLN.

A FEW weeks ago it was arranged amongst the builders of this city, in consequence of trade being very slack and, comparatively speaking, nothing doing, to have the men on short time so that we should be able to give them a chance of keeping their homes together until trade revived again. The joiners, carpenters, plumbers, painters, in fact, all the branches in connexion with the building trade, are quite agreeable to the arrangement, with the exception of the bricklayers, who protested against it, and told us distinctly, if you have not work enough to keep us all on full time you must discharge the men, according to the work you have, to keep the remainder full time, and unless you comply with our request we shall call all the men out on strike. The consequence is they have gone out on strike, as the masters do not intend to give way to them.

WILLIAM SIMS.

HALIFAX SCHOOL OF ART.

CHANGES AT SOUTH KENSINGTON.

THE head-master of this school, Mr. W. H. Stopford, in his recent report, objects strongly to the withdrawal of third-grade prizes, the only awards made to the elementary stages of instruction:—"In order to produce good advanced students, we must, in the first place," he says, "have good elementary students; and it appears to me, if the present system be persisted in, it is likely to produce an injurious effect, by unduly stimulating students to produce advanced works. Under the old system, medals and prizes were awarded to outline and shaded drawings from the flat; now it is very rarely that a shaded drawing receives a prize; and I have not heard of an instance in which an award has been made to an outline drawing. Again, in the annual exhibition of the National Competition Works at South Kensington, the elementary stages are now altogether unrepresented. In any sweeping measure, such as the reduction in the number of these third-grade prizes, due notice of the change should be given to masters, so that they should not lead their students to suppose they were competing for prizes which had been withdrawn. Another matter of much importance in our schools is the very desirable change which has been introduced under the new *régime* at South Kensington, viz.:—the use of the stump instead of the crayon-point in shading. In this instance, again, no official notice was given to art-masters of the transition. Last year we sent from this school one of the most beautiful shaded drawings of a column which I have ever seen; under the old system it would undoubtedly have received a high award, but owing to the change in treatment, of which we had received no notice, it obtained no recognition whatever."

Mr. Stopford again justly protests against the wretched accommodation and appliances at their disposal in Halifax.

CASES UNDER THE METROPOLITAN BUILDING ACT.

Dangerous Buildings. — At the Marylebone Police-court, Mr. Napier, from the office of the Metropolitan Board of Works, applied for an order under the following circumstances:—Mr. Alfred Bovill, district surveyor for the northern division of St. Pancras, he observed, had given a certificate that the College Laundry, College-lane, Highgate, was in a dangerous state, and it was necessary that an order of a magistrate should be obtained for the removal of the inmates. The application was made under the Act 18 & 19 Vict., cap. 122 (the Metropolitan Buildings Act), sec. 80, and which enacted as follows:—

"In cases where a structure has been certified by a district surveyor, or such other surveyor as aforesaid, to be dangerous to its inmates, a justice of the peace may, if satisfied of the correctness of such certificate, upon the application of the said Board, by order under his hand, direct any inmates of such structure to be removed therefrom by a constable or other peace officer; and if they have no other abode, he may require them to be received into the workhouse established for the reception of the poor of the place in which such structure is situate."

Mr. Bovill, the district surveyor, having been sworn, said he had inspected the premises, and found them in a very dangerous state. Part of the roof had fallen in, and another part was in a very dangerous condtion. Fifteen laundry-women were employed there, and the freeholder was anxious that the inmates should be removed.

Mr. De Rutzen made an order on Mr. Bovill's certificate.

What is a Building?—At the Wandsworth Police Court, Mr. Sutton, a builder, of Upper Richmond-road, Putney, was summoned before Mr. Paget, by Mr. Field, the district surveyor, for not complying with the provisions of the Building Act. It appeared that the defendant had in his yard a temporary "lean-to" against a hay-loft and stable, with two sides open, and a post, covered with boards and a tarpaulin. A second building had been enclosed with boards.

Mr. Jones, who appeared for the defendant, contended that the lean-to was not a building within the meaning of the Act.

Mr. Paget called for the Act, to ascertain the definition of a building.

Mr. Jones said there was no definition of a building in the Act. He produced a printed opinion of Mr. W. Cunningham Glen, the counsel, which had been taken by the Wimbledon Local Board, as to the meaning of a new building, stating that it was not possible to give an accurate legal definition of what is a new building.

Mr. Paget said he quite agreed with him. After reading further on the magistrate observed that Mr. Glen was of opinion that a wooden knife-house was not a building. The case before him (Mr. Paget) was much stronger. His opinion was that the "lean-to" was not a building.

With regard to the other building, Mr. Jones said it had existed for many years.

Mr. Paget made an order for it to be enclosed with brickwork or other incombustible material.

COSTLESS POWER.

SIR,—The first or leading article in your issue of the 28th ult. deals with this question in so practical a manner that but little more is needed to cause public bodies to think carefully before attempting to bring to life in this country a competition between water power and steam power for any purpose not requiring a combination of slow motion and concentrated power. To it I commend the attention of all those who, not having any technical knowledge of the subject, have caught at the ideas suggested by Messrs. Hodson's report. Mr. Matheson's illustration of the Schaffhausen and Zurich works, where the swift current of enormous and glacier-fed waters is, to a certain extent, utilised, is disposed of effectually. Touching Mr. Matheson's opinion as to the relative cost of water under corporations and under companies, it may be asked, Where is any difference to be found, and in what degree? Till these questions are answered, no further attention is needed upon this head.

It may be well, in passing, to advert to the subject of leakage in water-mains for one moment. The writer of the article is quite correct in his statements, but at the same time it is possible by testing the pipes and joints after laying, in the open trenches, before covering, to secure an immunity from leakage. I may refer those interested in this subject to the Minutes of the Institution of Civil Engineers, in which will be found, during the present year, a paper giving precise details of a complete system of town supply laid down in this manner.

Coming, now, to Messrs. Hodson's reply, it is only necessary for me to supplement my former questions,—still unanswered,—by one or two others arising out of their reply in the *Builder* for the 28th of December.

I asked for information as to the mode of utilising with equable power the waste water at the Loughborough reservoir. I am first told that a "practical engineer" knows perfectly well that from the advent of "the autumnal rains throughout the wet months, and until the commencement of the summer season," large volumes of water are usually, at present, allowed to run to waste.

Do these gentlemen know that there is not the least regularity in the rainfall of this country, even in the so-called "wet months"? Have they seen the tables furnished by Mr. Hawksley to the Royal Commission on Water-supply, 1867-8, showing the three months of maximum and minimum of rainfall at Redmires, in the Sheffield Waterworks catch-ground for thirty-three years? If so, they will know that in the three consecutive months of maximum rainfall, that of June occurs eight, that of July nine, and that of August fourteen times That in the three months' minimum, that of January occurs six, that of February fourteen, and that of March twenty times, the last being the month which, during the aforesaid period of thirty-three years, has most frequently been in the category of dry months. No practical illustration of the mode of utilisation is given, and we are left to conjecture. A storm of say 2 in. in forty-eight hours happens on the 16th of November, and is succeeded by three weeks of dry weather; supposing the reservoirs to be full, what becomes of the surplus? Supposing them to be down and able to hold the rainfall, where *is* the surplus?

Again, where are the great towns so badly engineered as to be provided with immense volumes of surplus water? Are they Manchester, Liverpool, Leeds, Bradford, Huddersfield, Halifax, Newcastle, Blackburn, or any of our great manufacturing centres, most of which have been, within a few years, applicants to Parliament for increased powers of supply, new catch-grounds, as well as reservoirs?

It seems that I was mistaken in supposing Messrs. Hodson to recommend the construction of new weirs or other works to rivers, and that their suggestion was simply to use the water of the wet periods now flowing off to waste. As a matter of fact, I had no such supposition, being well assured that very little consideration had been given to a most complicated and difficult subject. I asked how it was proposed to utilise the waste waters of the rivers, and now am told, by way of reply, no more than that they simply suggest the use of the "water of the wet periods which now flows off in waste"; and, further, that some of the mills on the Soar have sufficient pound-room to store the night water for the day's use, except in periods of drought.

True enough; but how utilise it, unless, indeed, it is proposed to enter into an agreement with the mill-owner, and at certain hours, *varying every day*, stop his works, taking his power and using it for light, needed in the depth of winter at 3·45, and at midsummer not until nine o'clock, and also taking both the chances of drought and backwater.

Need more be said upon this chimera of costless power? M. PATERSON.

ORGANS IN CHURCHES.

SIR,—I am neither a church-builder nor an organ-builder, and, therefore, may be considered bold to write about a subject that I am not professionally acquainted with; but as I am a reader of yours, and derive great pleasure, as well as instruction, from the many practical hints contained in your valuable paper, it has struck me that I might be allowed to give a hint respecting the present mode of placing organs in churches, by which the mellowness of the tone is injured, and sometimes destroyed: I allude to the neglect of providing a recess for the organ, with a sufficiently elevated roof.

If you go into any ordinary modern Gothic church, you will usually find the organ crammed under one of the aisles, which, being a mere lean-to to the nave, has a comparatively low roof, while the organ itself is reared within a foot or two of it. Now sound, to be heard to advantage, wants room, and sound coming out of an organ so placed, vibrates against the roof, because it has no room, and produces a grating sound, which, in some instances, is so palpable as to interfere with the harmony. Almost any newly-built Gothic church will serve to illustrate my meaning. Go to St. Paul's, or the Abbey' or any *parish* church with an elevated roof, or to St. Stephen's, Walbrook, where, although the organ is near the roof, the sound has the dome to disperse in; or some of *Wren's* circular-roofed churches, where the organ has been placed on the ground-floor, and you will find that, though the value of the organ is no greater, the tone is softer and mellower, and has none of that grating vibration, which, to me, is (and I should imagine to musicians must be), offensive.

A LOVER OF CHURCH ORGANS.

*** The subject has been treated of in our our pages on more than one occasion.

THE INDUSTRIAL CRISIS.

SIR,—Your excellent article under this heading will be read at this season with much interest.

Let me, in a few words, give you a practical illustration of the cost of English and foreign labour; one instance only of many that have come under my personal observation. For some years I had, amongst others, a certain artworkman in my employ, whose rate of wages was 1s. 6d. per hour, together with an additional 6s. per week for lodgings whenever he happened to be working away from home. Further, he was accustomed to charge cabfares, and other little items, that often tended to swell his "time-paper" considerably.

About twelve months ago I had occasion to dismiss him; and his place was soon afterwards refilled by a clever little Prussian from Westphalia. This man is content in receiving 9d. an hour and no "extras," whilst his work is quite equal to that of his predecessor's,—both as regards quality and quantity. Further, he (the Prussian) never goes off "*on the beer*"!

HARRY HEMS.

KITCHEN BOILER EXPLOSIONS.

SIR,—I am not inclined, without several experiments being made, to believe Mr. Lavington Fletcher when he states, as at p. 55, that a kitchen boiler red hot, or nearly so, will not burst with a sudden inrush of cold water into it. At present, I consider, such an assertion, if acted up to, is highly dangerous.

He is quite right, of course, about the gradual accumulation of pressure in a boiler with frozen-up pipes causing an explosion; and the stronger the boiler the greater the force of the explosion.

Mr. Fletcher, however, omits to explain the cause of the pipes freezing. I will, therefore, add that information. Two causes are—the pipes not being properly wrapped up with felt as they ought to be, and the ascending, or hot, pipe especially not having a gradual rise in every part of its course. When this latter is not seen to a cold-water trap is formed upon the ascension-pipe, and the easy rise upwards of the hot-water and steam prevented; hence, when the fire is low, or let out at night, a strong frost freezes the water in the trap, or past it, and an explosion takes place. A valve upon the boiler, if touched occasionally to see that it worked freely, would help to prevent accident; but the great matter is to put in the circulating-pipes properly, and protect them.

When the hot water stops running at the kitchen sink, that is a warning to look after the boiler. W. P. BUCHAN.

SIR,—I observe, in your impression of to-day, remarks made by Mr. Lavington Fletcher, which describe a safety-valve as the one security against kitchen-boiler explosions;—but what safety-valve? Daily attention, if I am rightly informed, is required by the safety-valves in use in the ordinary steam-engine boiler,—the result, I presume, of corrosion caused by their contact with steam. So vital, for safety, is this attention considered by a large engineering firm of my acquaintance, that one of the principals makes it part of his daily business to see this valve lifted. No one can expect such attention as this to a kitchen-boiler, where a safety-valve, to be a perfect security, must be reliable if left untouched for years; and to be an imperfect one must need examining at most at the commencement of each winter season. Some of my engineering friends tried to manufacture for themselves a valve which would satisfy these conditions, by the use of a meta which would melt at a certain temperature

t did not at the time succeed. May I, then pplement the remarks referred to by asking at valve we should use? HORACE FIELD.

OBITUARY.

Mr. E. M. Ward, R.A.—Thursday's evening pers announce that Mr. E. M. Ward, R.A., o had been for some days dangerously ill, d at his residence, Windsor, on Wednesday ening, at ten o'clock. He was born in 1816.

Lieut.-Colonel Vallancey.—The death of ut.-Colonel (G. P.) Vallancey, of her Majesty's dian Army, at Guernsey, on the 16th ult., at e age of seventy-two, is curtly announced in e daily press. There are thousands to whom e thought will not occur that the deceased s the grandson of General Charles Vallancey, e once celebrated Irish antiquary, who died far back as 1812 at an advanced age. A sketch the life and works of the distinguished engi- er and antiquary, who held an appointment der the Irish and United Government for any years, was given in our volume towards e close of 1869. The reproduction of that etch in the Dublin press brought us a letter January, 1870, revealing a number of facts t previously known respecting the antiquary d his family.

A Well-known Sanitary Reformer.—One of the st friends of sanitary reform in Liverpool died st week,—Mr. Hugh Shimmin, who was for any years past the editor and proprietor of local paper called the *Liverpool Porcupine*, hich prominently advocated the improvement the sanitary condition of the town. In osecuting this task the deceased undertook e arduous work of personally visiting the arions fever and disease-breeding parts of the orough, and the ill-ventilated, dirty, and over- owded abodes of the labouring population are from time to time unearthed in the columns the *Porcupine*, until at length they attracted e serious attention of the health committee of e Corporation. On many occasions Mr. Shim- in accompanied the members and officers of e health committee on personal visits to the wer parts of the town, pointing out to them e unsanitary scenes which he had discovered, the course of his explorations, and Mr. New- nds, the late borough engineer, as well as r. Trench, the late medical officer of health, and r. Shuttleworth, the late town clerk, have all equently been heard to declare that the in- rmation furnished by Mr. Shimmin was most luable, and that the town was deeply indebted him.

THE BIRMINGHAM DISASTER.

A GREAT calamity occurred to Birmingham on turday last in the destruction by fire of the gnificent reference and lending libraries, in- ding the famous Shakspeare library and the rvantes collection. For some months past, e works in connexion with the extension of ese libraries have been in progress, and as ese involved the lengthening of the library- oms, which were situated one over another, hoarded timber screen was erected at the end each room to form an enclosure while the end ill was removed. This was canvassed and pered on the inside, and in the upper or refer- ce library the book-cases were erected against is screen to nearly its full weight. A gallery n entirely round this room, and it was lighted ceiling-lights by day and sun gas-burners by ght, the iron pipes to supply which were rried up temporarily outside the screen. The ather having been very cold lately, the gas in ese outer pipes became condensed and frozen o ice, which checked the flow considerably. bout 1 p.m. on Saturday, one of the gasfitters nployed by the Gas Department of the Corpora- on was employed in thawing these pipes, which unwisely attempted to do without removal, d with the gas full on in them. By some means t yet explained, some deal shavings which he d taken with him became ignited, and these set e to the wooden partition, alarming the readers d attendants, who at once put into use a zen buckets and a hogshead of water, stand- g ready near the door of the room, but with- t avail. They then turned their efforts wards securing as many of the books as pos- le, and succeeded in saving a large number. e fire, however, soon burnt through a wood- sted pugged floor, into the room below, from hich many of the books forming the lending- rary had been removed, and in which stood the marble statue of the Prince Consort, and the very fine colossal statues, in plaster, of Burke and Goldsmith. It was at one time feared that these would be destroyed; but by great effort they were saved, and afterwards removed into the new borough offices.

The cold at the time of the fire was so intense that the fire-plugs were frozen, and much valuable time was lost in consequence at the outset, and afterwards, when an abundant supply of water was obtained from a special high-pressure main recently laid down, the water quickly froze on the charred embers, and embedded the ruins in a sheet of ice.

It is intended at once to begin the reconstruction, the means for which will be at once forthcoming, the building being insured in the Lancashire fire-office for 12,000*l.*, and the books, &c. for another 12,000*l.*, which will doubtless buy a great many books, but not enough, and a further sum of 10,000*l.* is required to be raised by subscription, towards which the sum of 2,750*l.*, in six donations, is already secured. The disaster is, nevertheless, irreparable.

VENTILATION OF CHURCHES.

SIR,—We wish some of your correspondents would kindly state the best means of ventilating churches and chapels without the congregation feeling anything of down-draughts.

M. & S.

"BRICKS! BRICKS! BRICKS!"

SIR,—I should have been as glad as "Old Subscriber" to purchase the "fifteen millions good Kent bricks" for cash, with guarantees to deliver to my order, of good quality, at the prices advertised.

I sent a clerk with my son to find the advertiser, at "Bath Buildings, Lothbury," with instructions not to come back till he was found. Had they obeyed me implicitly, it appears from "Old Subscriber's" letter in your issue of the 11th inst. I might never have seen them again.

I hope the advertiser will be discovered, or will discover himself, unless he prefers his action to be considered a discreditable hoax or a dishonourable trick.

WILLIAM THOMAS WISEMAN.

CHURCH-BUILDING NEWS.

Heigham.—The old parish church of Heigham, dedicated to St. Bartholomew, having undergone complete restoration and enlargement as a memorial to Bishop Hall, has been re-opened. Previously to its restoration the church consisted of a nave, south aisle, and a north porch; but an aisle has now been added on the north side. This aisle is in the Decorated style, with four bays and elaborate moulded arches, and an open-timbered roof. The whole fabric has been carefully restored. The south walls are preserved, and a new roof supplied to that aisle on exactly the same pattern as the one removed. A new porch has been erected on the north side, the tower has been refaced, and a new parapet given to it. The church is seated with open oak benches, and paved with Minton's encaustic tiles. The windows are glazed with cathedral glass, and the church is warmed with heating apparatus by Messrs. Barnards & Bishop. All the interesting mural monuments, including that to Bishop Hall, have been cleaned and removed from the north wall of the nave to the new aisle. A vestry and organ-chamber have been attached to the north aisle, and a new pulpit and communion-table provided. The restoration has been carried out from the plans of Mr. R. M. Phipson, Mr. G. E. Hawes being the contractor, and Mr. Owen clerk of the works. The gasfittings are by Mr. Palmer. The cost has been 2,500*l.*

Burton-Leonard.—We are requested by Mr. C. Hodgson Fowler, F.S.A., to say that the wood-carving at this church was done by Mr. Milburne, of York, as stated by us recently but that all the stone-carving was done by the builder's foreman, Mr. Watson.

SCHOOL BUILDING NEWS.

Torquay.—The new Wesleyan school premises in Lower Union-street, Torquay, were opened on the 17th ult. Adjoining the school there is being erected a Wesleyan Chapel. The total cost of the new premises will be about 6,000*l.* The actual amount of the contract is 5,773*l.* 10s. The chapel is to be completed by the end of March. The school will be used forthwith. The buildings have a frontage of 110 ft., and extend in depth to the Castle-road. The style of architecture adopted is Classic. The chapel, with its galleries, will hold over 1,000, and the school-room between 400 and 500. Bath stone is freely used in the front. The whole of the walls are built with local limestone, the portions seen from the street being of nobble work pointed in cement. The architect is Mr. J. W. Howell, Torquay, and the contractor is Mr. E. P. Bovey, Torquay. Mr. Hems, of Exeter, did the carving.

Gateshead.—On the 26th of December, the foundation-stone and four corner-stones of the Primitive Methodist new schools, Sunderland-road, Gateshead, were laid. The schools, with vestries, heating-chambers, &c., will cost, including the site, 900*l.* They will be built to accommodate 400 children. Mr. Thomas Southern, of South Shields, is the architect, the builder being Mr. Thomas H. Hutchinson, Gateshead.

Sevenoaks Weald.—A new infants' school, to accommodate eighty children, is being built in Sevenoaks Weald. The cost will be 320*l.*, without fittings. The contractors are Messrs. Punnett, of Tunbridge.

SCHOOL BOARD SCHOOLS.

Dewsbury.—The memorial-stone of new Board Schools at Eastborough, Dewsbury, has been laid. The schools are situated in a central position, with frontages to two streets. They are designed in the Geometrical Gothic style, with traceried windows and a tower about 100 ft. high. The schools will accommodate 900 children in three departments. The uneven state of the site presented some difficulty, but this has been overcome by making the schools partially two stories in height, so that the children accommodated on both stories will enter from the level of the street. The buildings are being carried out under the superintendence of Messrs. Holtom & Connon, architects, at an estimated cost for schools and fittings of about 7,000*l.* They are being erected by local contractors.

Mexborough.—A new Board School for 200 children has been opened here. It is built of Mexborough stone, and occupies a site at the junction of Garden-street and Dolcliffe-road. Messrs. Tacon & Rawson, of Rotherham, were the architects, and Messrs. Saul & Jones, of Mexborough, the contractors. The total cost was 2,579*l.*

Bill Quay (Durham).—The second group of schools erected by the Heworth Board has been opened at Bill Quay. The new buildings will afford accommodation for 550 scholars, on the mixed principle. In their general arrangements these schools are somewhat similar to those lately opened at High Felling from the designs of the same architect. The ventilation is by means of vertical inlet tubes, opening into the rooms at about 6 ft. 6 in. from the floor, for the admission of fresh air, and by sheet-iron tubes above the ceilings for the extraction of vitiated air. The extract tubes are taken to central cylinders placed in turrets over the two main rooms, where provision is made by powerful Bunsen burners, lighted by electricity, for the rarefaction and expulsion of the vitiated air. The heating is effected by means of hot-water pipes and coils. Externally the schools, with the caretaker's house, are executed in red pressed bricks, with black brick bands, stone dressings, and slated roof. The contract has been efficiently carried out by Messrs. Carr, under the supervision of Mr. Lowes, the clerk of the works, at a total cost of about 5,500*l.* Messrs. Walker & Emley were the contractors for the warming and ventilation. Mr. Thomas Oliver, of Newcastle, was the architect.

Rathen.—New school buildings, provided by the School Board of Rathen, have been opened. The new buildings are on the site of the old school, and are fitted up with all modern requirements, having statutory accommodation for 230 scholars. The plans were by Messrs. Mackenzie & M'Millan, architects, Aberdeen; and the contractors for the buildings were:—Mr. Wm. Davidson, mason, New Pitsligo; Mr. R. Burgess, carpenter, Ellon; Mr. A. Wiseman, plasterer, Fraserburgh; Mr. Jos. Merson, slater; Mr. Jas. Reid, plumber, Fraserburgh; Mr. Alex. Smith, painter, Fraserburgh.

Balsall Heath.—The new Board school in Clifton-road, Balsall Heath, has been opened. It provides for 800 children. Mr. G. Ingall is the architect.

Chelsea.—Sir Charles Reed, chairman of the School Board for London, has opened the new schools which have been erected in Marlborough-road, Chelsea. The area of the ground covered amounts to 17,723 square feet, at an inclusive cost of 8,296*l.* The cost of building, exclusive of extras, amounts to 7,608*l.*; while the total cost per head is 30*l.* 1s. 5d. The new schools will accommodate 193 boys, 187 girls, and 152 infants. Mr. E. R. Robson is the architect.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Termonfeckin.—A new church is about to be built at Termonfeckin, county Louth, which will replace the present thatched structure. An excellent site has been selected, and a large quantity of stone carted to the place. The parishioners have appointed a committee to whom was intrusted the duty of appointing an architect to draw up the plans of the new church. At a meeting of the committee the names of Mr. Ashlin, of Dublin, and of Mr. P. J. Dodd, Drogheda, were proposed for adoption. The majority decided in favour of Mr. Dodd.

Inchicore.—On the 8th ult., the new church of Mary Immaculate, Inchicore, was solemnly dedicated. The church comprises nave, transepts, chancel, and four side-chapels. The full length is about 158 ft., and the width across the nave and aisles is about 527 ft., the width across the transepts being some 76 ft. The chancel measures about 31 ft. long by 28 ft. wide, and the area of each side-chapel is 20 ft Polished columns of Aberdeen granite support the nave and aisles, and these columns are provided with white Portland stone moulded bases and capitals, the latter being richly carved. Similar arcading, but of somewhat lighter proportions, will divide the chancel and side-chapels. The aisles, each divided into six bays in length, are lighted by twelve three-light windows with traceried heads. The nave clearstory is subdivided into twelve bays, and on each side the windows will consist of two lights. On each side of the western gable are two turrets, measuring externally at the base about 16 ft. and providing accommodation for bells and ringing-chambers. The lower portion of each of these turrets serves as a porch to each of the aisles, and the upper portion of each is to be surmounted by a spire reaching 104 ft. from the ground to the base of the cross. The height from the ground to the apex of the nave gable is 70 ft., and the entire height from the floor to the ceiling is 55 ft. The general style of the design is that of the Decorated period of Gothic architecture, and the principal materials introduced in the construction are Dalkey granite, ashlar for the external facing, with Portland Stourton stone for the dressings, and internally both Portland and Caen stone are used. Mr. Ashlin is the architect.

VARIORUM.

THE new issue of Streets' "Indian and Colonial Mercantile Directory," 1879, gives the various steam routes to the places treated of, with rates of fares and times of transit; particulars of the various railways in operation or construction; and the London agents to each of the banks, so that a merchant is enabled to see to whom to apply, where financial information or assistance is needed in connexion with any particular town or city. Full particulars of the principal products are given, and articles which form the chief trade of each place, so that merchants can tell (guided by the Customs tariff given) the class of shipments likely to prove most remunerative. Another feature in the present edition is the insertion of maps of the various countries mentioned. The practical value of the book was shown to us forcibly by a coincidence. At the moment when it reached us a youngster in whom we are interested was urging his desire to go to our South African Colonies, to push his fortunes as an agriculturist or a trader. The book opened almost of itself at a map of them, and following it was such information as to such of the principal towns and their occupants as enabled us to arrive at once at a fairly reasonable opinion on the subject.——"Jenkinson's Practical Guide to North Wales" (Stanford) is a handy little book. This is not the time to pay a visit to Wales, be it North or South; but when the summer comes, and the air is ambient and the fingers are not frozen, as ours feel at this moment, such of our readers as desire to enjoy its many beauties may remember that Jenkinson's Guide will be useful. ——We have received from Messrs. Cassell & Co. the second volume of "A New Testament Commentary for English Readers," an important book for those who seek such instruction as it purports to convey. Edited by Dr. Ellicott, the Bishop of Gloucester and Bristol, with the collaboration of such men as Dr. Plumptre, Dr. Sanday, and the Rev. T. Teignmouth Shore, the book necessarily contains a large amount of learning and knowledge.

Miscellanea.

American *v.* English Locks.—Mr. James Hill, of Upper Thames-street, says, in a letter to Col. Wrottesley, published in the *Times*:—"With respect to my own particular trade, I used to buy the bulk of my locks from Willenhall. I am not exactly a manufacturer, although I have locks of my own patterns made exclusively for me. I prefer to be a merchant only, as I should be sorry to have direct dealings with the British workman. I still buy a little from Wolverhampton and Willenhall, when time is of consequence; but my chief supply comes now from America. I was driven there by the inferiority and high prices of English workmanship, and the unwillingness of the masters to entertain my ideas of improvement. The latter are now complaining of my American resources. . . . I have supplied all the locks for a large hospital at Walsall,—within a stone's throw of where locks are made! Yet these locks of mine came 3,500 miles, and cannot be equalled in this country. This is 'sending coals to Newcastle' with a vengeance! I have certainly reason to rejoice that I visited America last year. I opened up business relations with one or two large firms, who have taken pains and spared no expense to carry out my views in relation to much-needed improvements in the symmetry and construction of our English locks. . . . You ask me to state the results of my observations in America and the causes operating in favour of American productions being cheaper and better than the English. In the first place, the Americans certainly employ machinery a great deal more than we do. Indeed, the bulk of our English locks are hand-made, and there is too much of the 'rule of thumb' about them. Secondly, the Americans, both masters and men, seem to have more technical and general education than we can boast of here. We do not think enough in our manufactories, whereas it would pay us to keep a man to do nothing but invent and improve and think out the requirements of our customers. In the third place, the men work longer hours in America, and I was surprised to find that they worked as long on Saturdays as on other days. Fourthly, I found less drunkenness in America, and I certainly could not hear that the men neglected their work through drink. . . . . I have no great faith in the cheaper class of American locks. Some of them are really too cheap and too common for this country, and are only fit for the wooden houses in the States. I do not sell any of these pure 'Yankee' goods, and people have made a mistake in importing them so largely. What I have done is this (and I believe my idea was original), I got the Americans to improve upon the old recognised English patterns, so that my locks ought to be termed 'Anglo-Americans.'"

Electricity and Lightning.—Mr. Stephen Grey, a Charterhouse pensioner, who discovered the difference between conductors and non-conductors, and other capital facts, appears also to have been the first electrician who entertained the notion of an identity between electricity and lightning. In the concluding paragraph of one of Mr. Grey's papers printed in the "Transactions of the Royal Society," the author says, whilst contemplating the results of the experiments he had been describing in the same paper:—"By these experiments we see that an actual flame of fire, with an explosion, and an ebullition of cold water, may be produced by communicative electricity (communicated to a metallic rod, an iron ball, and other bodies, on which he had been experimenting); and though these effects are at present but in *minimus*, it is probable that in time there may be found out a method to collect a greater quantity of it, and, consequently, to increase the force of this electric fire, which, by several of these experiments, seems to be of the same nature as that of thunder and lightning." These predictions, which were printed in "Transactions for the Year 1735," ten years prior to the discovery of the Leyden Jar, and about seventeen before the first successful experiments in atmospherical electricity, were wonderfully verified in these two memorable events.—*The Electrician.*

Horsemonger-lane Gaol.—As will be seen by an advertisement which we publish this week, the materials of Horsemonger-lane Gaol are about to be sold by Messrs. Horne, Eversfield, & Co.

Thames Valley Drainage.—Mr. T. J. Nelson, presiding last week at a meeting of the Hampton-wick Local Board, drew attention to the notice sent out by the Lower Thames Valley Main Drainage Board, of which he is the chairman, inviting the opinions of the several constituent authorities with regard to separating rainfall from house sewage. He explained that the joint board was formed on the basis of its being obliged to provide for the drainage of the district to the extent of 250 gallons of sewage daily for every inhabited house. According to the scheme (Colonel Haywood's) which the Board had adopted, the first pumping-station would be in close contiguity to the gasworks at Richmond, and that would lift the sewage of Barnes, Kew, and Mortlake. Taking the rainfall at 25½ in., the total per annum in tons which would come to the first pumping station would be 8,184,324, the number of feet which the pumps would have to lift was 24, and the cost of fuel for pumping 327*l.* a year. The sewage then flowed on to Ham Fields,—the second pumping-station. There, of course, would not only have to be lifted the sewage that had come down from Barnes, Kew, and Mortlake, but also the sewage of the very large district of Heston and Isleworth, Richmond, Petersham, Ham-court, Teddington, and Hampton Wick, and the rainfall for these additional places would be 29,189,364 tons, which would have to be lifted a height of 27 ft., and the cost of coals per annum would be 1,682*l.* Having got the sewage there it would then flow on in union with Kingston, Surbiton, New Malden, East Molesey, Long Ditton, Thames Ditton, Hook, Kingston-common, Esher, West Molesey, and Hampton, and the rainfall from the area would amount to 36,401,472 tons. If they added two other stations it would give a total of 73,775,169 tons of rainfall which would have to be pumped at the final place of irrigation area at Esher, the number of feet the pumps would have to lift it being 40, and the cost per annum for coals amounting to 4,918*l.* The total cost, therefore, of pumping the rain alone would amount to 6,927*l.* He urged that this was an expenditure that ought not to be incurred, as experience showed that in dealing with sewage it was best to have nothing to do with rainfall. The Board thereupon agreed to adopt the separate system as soon as the joint Board was prepared to receive their sewage.

Edinburgh Builders and the New Police Bill.—At a meeting of the Executive Committee of the Edinburgh Master Builders' Association, held on the 7th inst., the building clauses of the new Police Bill were considered. It was pointed out that the Town Council had not given effect to any of the builders' suggestions, except that of permitting the erection of saloons for business purposes behind tenements altered for such purposes, the provision, however, not extending to saloons in connexion with new buildings for business purposes. It was unanimously agreed to recommend the Association to take steps to oppose the passing of the Bill in the Committee of the House of Commons, or otherwise secure its amendment. Objection was also made to the extension of the Dean of Guild Court jurisdiction, on the ground that by the constitution of that body there was no guarantee that the Dean should have a practical knowledge of buildings; that eleven of a Court was too large; and that the proportion of three of the eleven to be architects, engineers, surveyors, or builders was too few. It was proposed to strike from the duties of Master of Works that of certifying new buildings or alterations to be "fit for occupation," retaining the clause, "is in accordance with the provisions of this Act," as being, in the opinion of the committee, sufficient to guarantee all necessary sanitary and other requirements. Certain minor clauses were also objected to, such as that requiring party-walls to be carried 2 ft. above the roof timbers, and that providing for the emptying of washhand basins and sinks over a trapped grating on the surface of the ground before passing into the drain. An amendment was proposed in the section imposing a penalty for refusing to weigh coal, so as to extend it to all other materials for sale in the city, and to provide that the purchaser have the power to insist upon weighing or re-weighing.

The "New Infirmary of St. Luke's," in the City-road.—Messrs. Guynan & Son supplied the whole of the blinds to the north block and the administrative offices.

Tramways in Newcastle-on-Tyne.—On the 23rd ult. a section of the tramways which have been laid down by the Corporation of Newcastle-on-Tyne was formally opened. The tramways have been leased by the Corporation to Messrs. William Turton, Leeds, Daniel Busby and William Busby, Liverpool, for twenty-one years, and the Corporation are to be paid as rent by the lessees 7½ per cent. on 30,000*l.*, the amount of capital authorised to be expended under the Parliamentary powers obtained by the Corporation, and the lessees have also to keep the roadway between the rails, and for a distance of 1 ft. 6 in. beyond the outer rails, in repair. The line is partly double and partly single, with passing points. The mode of construction is as follows:—The rails are of rolled steel 3 1-16 in. wide, and 2⅛ in. deep, with a groove ⅞ in. deep, and weigh 50 lb. to the yard. The rails are fixed on cast-iron chairs by means of hob-headed nails, similarly to folding wedges, through the sides of the rails into wooden plugs in the chairs. The points and crossings are also of steel. The rails are 24 ft. long, and bear on chairs placed 3 ft. centre to centre. The ends of the rails are fastened on to "joint chairs" in a similar manner to the single chairs, and have two pins driven into each side of the rails. The ordinary chairs weigh 48 lb. each, and the joint chairs 85 lb. each, and all are of Kincaid's latent. The gauge between the rails is 4 ft. 8½ in. The tramroads for the full width between the rails, and for a distance of 18 in. beyond the outer rails, are paved with whinstone where the gradients are easier than 1 in 40, and with Dalbeattie granite where the gradients are heavier than 1 in 40. The stones are dressed to 4½ in. by 4½ in., and 6 in. deep, and are laid as close as possible, and well rammed; and the joints are filled in with clean shingle, the whole run in with asphalte and boiling hot tar. All the work has been done by Mr. Simpson, contractor, under the direction and personal superintendence of Mr. Fowler, the borough engineer.

The Goldsmiths' Company and Technical Education.—With a view to the encouragement of technical education in the design and execution of works of art in the precious metals, the Goldsmiths' Company resolved some time ago to give valuable prizes for specimens of original work. These prizes have recently been awarded with the following result:—Mr. W. W. Morrison, for a design for a tea and coffee service, 50*l.*; Mr. A. Garbutt for model for a shield, 50*l.*; Mr. H. E. Tidmarsh, for a design for a salver, 25*l.*; Mr. C. Vigor, for a model for a cup, 25*l.*; Mr. H. Simpkin, for execution, 25*l.*; Mr. W. Smith, for chasing, 25*l.*; Mr. T. Edwards, jun., for *repoussé* work, 25*l.*; Mr. S. Gill, for engraving, 25*l.*; Mr. G. W. Rhead, for a design for a wine-fountain, 25*l.* A selection of the best objects sent will be exhibited at the South Kensington Museum for about a month.—*City Press.*

A Turner.—The following odd story is current. Some twenty-five years ago John Butterton, a young English artist, went to Philadelphia with Turner's picture of "Conway Castle, North Wales." Mr. Thomas Moran, the well-known American painter, saw the picture, and has since remembered it with enthusiasm. He has traced the work to Hamminton, Atlantic County, New Jersey, and has purchased it from Mr. Butterton. It is now in Mr. Moran's studio in Newark, and is valued by art experts at from 5,000*l.* to 6,000*l.* The picture measures 4 ft. 8 in. by 4 ft. 8 in. It was painted about the year 1810 for Mr. Thomas Goodall, banker, of Abingdon, Berkshire, and went direct from Turner's studio to the owner's house. At the death of Mr. Goodall it came into the possession of the present Mr. Butterton's father, of Batore Hall, Staffordshire, and when he died it was inherited by Mr. Butterton, of Hamminton.

"Dreadnought" Seamen's Hospital, Greenwich.—The Committee reported to the General Court of the Governors of this society, held on Friday in last week, that the whole of the powers of the hospital had been ventilated and trapped under the direction of Mr. Ernest Turner upon a plan approved by Mr. Robert Rawlinson, C.B.

Institution of Surveyors.—At the ordinary general meeting, held on January 6, a paper on "Terminal Charges," by Mr. T. F. Hedley (supplementary to the paper read at the last meeting, on "The Rating of Railways"), was read, and the discussion on the two papers was adjourned until the next meeting, Jan. 30.

Drury-Lane Theatre.—In the afternoon of Thursday, January 23rd, will be produced Shakspeare's tragedy, "Romeo and Juliet," in which Miss Rosa Kenney, the daughter of Mr. Chas. Lamb Kenney, and grand-daughter of the even better known earlier dramatist of that name, will make her first appearance on any stage in the character of *Juliet*. There is a little romance in the matter. For several years, it seems, this young lady, without the knowledge of any person, has sedulously studied Shakspeare with a view to making her appearance at a fitting moment, and, if we may believe some good judges who have had an opportunity to estimate her powers, the stage will gain a valuable recruit.

Compensation Case.—Mr. Under-Sheriff Burchell presided over a special jury, on the 11th inst., at the Middlesex Sheriff's Court, in the case of Parry *v.* The Metropolitan District Railway (Fulham Extension). This was a compensation claim of 2,787*l.* for premises at Walham-green, and the loss of business as a cowkeeper by the railway taking his property. He had sold off his stock, and alleged that he could obtain no other premises in the neighbourhood. In addition to his leasehold interest he claimed 1,500*l.* for three years' profits. The jury, after consulting for half an hour, assessed the value at 1,200*l.* As this amount was under the offer made by the company it will not carry costs.

The Fall of Three Houses at Lewisham. At the Lewisham District Board of Works, Mr. Carline, the Board's surveyor, reported as to the three houses in course of erection in Hithergreen-lane, which had suddenly fallen. As already mentioned, the primary cause of the accident was the corner column giving way, and the houses having been built in frosty weather the mortar did not bind, and they fell like a pack of cards. Three houses adjoining have since been condemned by the district surveyor, and constables placed on the spot to warn people of danger.

Bristol and Gloucestershire Archæological Society.—A general meeting of this society will be held on Wednesday, February 5, at the School of Art, Gloucester. The following papers will be then read, and others are expected:—"St. Briavels Castle," Rev. W. Taprell Allen; "The Arms of the Free Miners and Free Smiths of the Forest," Mr. J. D. T. Niblett, F.S.A.; "Dukes of Gloucester," Rev. W. Bazeley; and "A Chapter in Gloucestershire History," Mr. J. H. Cooke, F.S.A.

Fall of Cornice.—The inhabitants of Seldon-road, Nunhead, were alarmed on Tuesday morning by a couple of loud crashes, resembling the falling in of a building, which, it was discovered, resulted from the precipitation of from 60 ft. to 70 ft. of the ornamental cement and brick coping from the top fronts of Nos. 18, 20, 22, and 24, Seldon-road, into the street. The catastrophe fortunately did not result in personal injury.

Royal Academy: Lectures in Architecture.—These lectures will be delivered, in accordance with our previous notice, on Thursday, the 30th inst., and the five succeeding Thursdays, at eight p.m. We may usefully repeat what we have before said, that admission for those who are not students of the Academy can be obtained by written application to the Professor of Architecture at the Royal Academy.

Failures.—According to *Kemp's Mercantile Gazette*, the failures in 1878 were 13,630 in number, or 2,383 more than in 1877. The number in 1877 was larger than in 1876; but, inasmuch as the failures in 1868 were 15,860 in number and in 1869 16,518, things have been worse than they are now.

The late Mr. F. P. Cockerell.—The will, dated March 13, 1873, of Mr. Frederick Pepys Cockerell, late of 18, Manchester-square, architect, who died on November 4th, 1878, at 66, Rue François, Paris, was proved on the 7th ult. by Mrs. Mary Mulock Cockerell, the widow, the sole executrix, the personalty being sworn under 14,000*l.*

Fire at Messrs. Tylor & Sons' Works.—We regret to hear that a large portion of the building occupied by Messrs. Tylor & Sons, the well-known manufacturers of water-fittings, in Warwick-lane, has been burned down. A portion of the building destroyed formed part of the old College of Physicians, and included the celebrated dome. The business of the firm is carried on as usual.

Tobermory, N.B.—On the 14th inst. a new Free Church was opened here. It has been erected from designs prepared by Mr. John C. Hay, Edinburgh, the style adopted being the Early English. It consists of a ground-floor and gallery at one end, access to which is gained by staircases right and left of the vestibule, the right-hand entrance being carried up as a tower finishing with a spire. The church is seated for 500 persons. The cost of the building has been about 3,000*l.*

TENDERS

For erection of St. Mark's Church, Hanwell, Middlesex. Mr. William White, architect. Quantities supplied:—

Grimwood & Son	£3,026 0 0
Dove Bros.	2,995 0 0
Lathey Bros.	2,818 0 0
Gregory	2,780 0 0

For works required in diverting sewage south-west of Hampstead parish. Mr. C. Lowe, surveyor:—

Meston	£3,920 0 0
Wall	3,830 0 0
Nowell	3,660 0 0
Killingback	3,637 0 0
George	3,631 0 0
Crockett	3,612 0 0
Watts (accepted)	3,497 0 0

For the erection of No. 3, Blenheim-street, New Bond-street, London. Messrs. Tanley & Boyle, architects. Quantities supplied:—

Merritt & Ashby	£1,700 0 0
Longmire & Burge	1,623 0 0
Crockett	1,593 0 0
Macey & Son	1,593 0 0
Manley	1,497 0 0
Cowland Bros.	1,493 0 0
Outhwaite & Son	1,380 0 0
Sabey & Son	1,350 0 0
Brealey	1,300 0 0

For the erection of chapels (under one roof), lodge, entrance-gates, and wing fencing, at St. Mary Extra Cemetery, Southampton. Mr. W. H. Mitchell, architect. Quantities supplied:—

	Iron gates and fencing.	Oak gates and fencing.
Wyeth	£1,9.0 0 0	£1,850 0 0
Bailey & Son	1,845 0 0	1,787 0 0
Crook	1,478 0 0	1,421 0 0
Rowland	1,402 0 0	1,355 0 0
Stevens & Son	1,348 0 0	1,296 0 0
Chapman (accepted)	1,342 0 0	1,295 0 0

For forming and gravelling roads and paths, laying drain to entrance, and supplying and fixing pests and wire fencing, at St. Mary Extra Cemetery, Southampton:—

Sheppard	£195 19 0 !
Richards	157 10 0
Batten	120 0 0
Buth (accepted)	94 16 9 !

For alterations at the Sultan, Picton-street, Camberwell, for Messrs. Hanbury & Co. Mr. E. Brown, architect:—

Little	£470 0 0
Marr	456 0 0
Salt (accepted)	350 0 0

For reinstating No. 1, Hemsworth-street, Hoxton, for Mr. G. Smith. Mr. E. Brown, architect:—

Linzell (accepted)	£297 0 0

For alterations at the Queen's Hotel, Victoria Park, for Mr. A. Angliss. Mr. E. Brown, architect:—

Cocks	£428 0 0
Salt	386 0 0
Hughes (accepted)	337 0 0

For alterations at the Queen Anne, Vauxhall-walk, Lambeth, for Messrs. Hanbury & Co. Mr. E. Brown, architect:—

Marr	£278 0 0
Salt (accepted)	270 0 0
Hearle	265 0 0

For new cottages, Hatter's Farm, Wycombe. Mr. Arthur Vernon, architect:—

Taylor & Grist	£399 10 0
Hunt	397 17 6
Harris	373 3 0
Gibson	340 19 0
Wheeler (accepted)	320 0 0

For laying cast-iron sewer, &c., for the Sevenoaks Local Board:—

Chandler & Sons (accepted).

For two houses at Kenley, for Mr. James Hall. Mr. J. S. Quiter, architect:—

Roberts	£4,659 0 0
Duncan	4,540 0 0
Jarrett	4,360 0 0
Bowyer	4,310 0 0
Lathey	4,276 0 0
Saker	4,100 0 0
Thomson	3,985 0 0
Battley	3,938 0 0
Hobbs	3,200 0 0

For counter and cabinet at the Hare and Hounds tavern, Hampstead. Mr. Ashby, architect:—

Trent Bros.	£397 14 11
Everett & Son	345 7 0
Hill & Son (accepted)	329 0 0

For completing two houses in Clapham Park, for Mr. J. L. Hadley. Messrs. Brown & Goldring, architects:—

Somerford & Sons	£385 0 0
Smith & Scarborough (accepted)	320 0 0

of scientific ingenuity which answers so perfectly in the lecture-room, but which present so many points of objection when we come to the stern rough reality of underground life. The generating cells and helix are enclosed in a case which is strapped on to the miner's back like a knapsack. The conducting wires, properly insulated, pass to an illuminating coil within a glass cylinder, provided with a metallic cap. The incandescence of the coil supplies the light, while the access of air, and of fire-damp, is prevented by the hermetic closing of the case. Those who can remember George Stephenson will be able to imagine the mode in which the practised miner would have looked at this beautiful scientific toy.

With regard to the application of the electric light to coal-mines, nothing has yet transpired to lead to the conviction that any positive advantage, as far as absolute safety is concerned, is thus to be gained. A splendid light at the bottom of the shaft would, no doubt, be a great boon to the men there engaged. But the proportion of the work thus aided would be very small, and that, moreover, would be carried on at the point least liable to the occurrence of explosion. A little study of the plan of a coal-mine will convince any one of the great difficulty which would attend the application of any system of illumination that depends on concentration of light. "A colliery air-channel, says Mr. Struvé in the paper before cited, "may be compared to a gas-main in a street, with numerous perforations, through which the gas is supplied to the various adjoining lamps." In the Eagleback colliery, for example, the air descends a sloping drift 700 yards long, with a sectional area of 50 square feet; it then proceeds along to a level heading of 600 yards in length, and 36 square feet area; and thence into an air-channel of 350 yards long, and 16 square feet area, which reaches the extreme end of the colliery. Thence it courses through all the stalls, passing from one to another, through channels of about 16 square feet area, for a distance of about 400 yards; then through an air-channel of 1,200 yards long, and 12 feet sectional area, which is surrounded by an extensive goaf. Finally it ascends an up-cast shaft of 9 ft. in diameter. There are thus 3,270 yards of air-channel, varying in area from 50 to 9 square feet, through which 225 ft. of air per second are driven at velocities varying from 4½ to 25 ft. per second. The illumination of such a series of galleries, from a few luminous points, would seem to be ont of the question.

Again, as far as absolute safety is concerned, it is easy to err. Of the three modes in which illumination is now produced by electricity, that of incandescence, which is the method adopted by Mr. Edison, is clearly out of court as to safety. An incandescent coil or plate of metal, unless hermetically enclosed, would fire fire-damp more suddenly than a naked flame. This method is, in fact, familiarly known and used for blasting. As to the voltaic arc itself, we speak with more hesitation; but we apprehend that the result of its contact with firedamp would be the same as in the case of incandescent metal. There remains the expedient of the use of the "Geissler tubes"; but M. Fontaine states that the feeble lighting-power of these tubes renders them unsuited to domestic and industrial usage. Thus, if the difficulty of producing, by means of dynamo-electric machinery, a large series of small illuminating *foci* were overcome,—a step which has as yet to be taken,—there is every reason to fear that each of these *foci* would prove a source of greater danger than a safety-lamp, or even than a naked light. As to the idea of sending forward a supply of light reflected by a series of mirrors from a powerful *focus*, we have to remember that, irrespective of the irregularity of the channels and workings, light suffers a notable diminution with every reflection, and in its direct journey loses its illuminative power in the ratio of the square of the distance traversed. And if the plan of a mine, whether worked as the "long wall" is, or any modification of the "pillar and stall" principle, be regarded, it will be at once seen that every working miner must carry his own light. Certainly, with all the inconvenience of its straps and wires, the photo-electric lamp of Dumas and Benoit promises more practical aid to the coal-miner than any of the more recent and more ambitious modes of electric illumination.

A coal-mine, in fact, is the very citadel of naked human labour, in every sense of the term. In no place are the wise recommendations of practical science more stoutly resisted. In no place can purely theoretic science, or imaginary and untried improvements, have so little chance of being introduced. Nowhere is the speculative reformer more certain to break his head against some coarse, angular, irreducible fact. Some time ago, as our readers were aware, a number of well-meaning gentlemen endeavoured to avert a panic price for coal, by arguing that if we only went deep enough our resources would be inexhaustible. It never struck them to inquire how much cheaper coal could be delivered in Newcastle from Belgium, or other districts, where the upper seams were not exhausted, than it would be if extracted from depths where the temperature of the earth rises considerably above blood heat. An amusing instance of the mode in which ugly facts are left out of sight in discussion will be found in a paper on "Coal-mining in Deep Workings," which followed that on the safety of different modes of working, to which we before referred. The author wished to show that coal could be raised from the enormous depth of 7,000 ft. He could not arrive at a lower temperature for this depth than 176° Fahrenheit, which alone might have been thought conclusive. But he argued that heat is transmitted from one body to another in three different ways,—by radiation, by conduction, and by convection or contact with cooler air. The decrease of the temperature of the passages in mines by artificial ventilation, down to a degree at which men could breathe and work, be regarded as quite manageable, on the ground that the conduction of heat to the exposed surface of the coal or rock, which would be constantly going on, would have a constantly diminishing effect, as the heat would be taken from the face by convection more rapidly than it arrived there by conduction, and that thus the temperature of the air in the workings would be kept down to a mean of 91° 9′ Fahrenheit at the depth of 7,000 ft. It is unnecessary to go through the pages of calculations which result in this comfortable assurance, for the reason that they omit altogether the consideration that the miner has to stand, or even to lie on the ground. Instead of being surrounded (as his mouth and lungs are supposed to be) by a constant stream of cool air, at a given distance from a face which has been cooling for forty days, the feet or naked limbs of the man would be in close contact with the fresh-cut and uncooled surface of the floor of the mine. How much work would be done under that indispensable condition, with an earth temperature of 176° Fahrenheit we leave to our readers to determine. Mr. Robert Stephenson quietly remarked on the paper that in his own collieries it had never been attempted to work at such a depth as 7,000 ft.

Are we, however, to stop here? Are we to content ourselves with a statistical view of the case—to inquire how far the average death-tax of one life for every 100,000 tons of coals, which was the ratio in 1869, has been reduced or otherwise by recent legislation? Are we to subscribe to the dictum of Mr. Stephenson, who said that his opinion as a young man, which had been borne out by subsequent experience, was that the so-called Government inspection of coal-mines was useless? "The inspector came after an explosion, and went down the pit, and then told the men what they ought to have done; but he never told them beforehand what they should do to prevent an explosion." Mr. Stephenson's own opinion was that the great step to be taken to insure safety was to increase fourfold the area of the shafts. "He repeated that, for the quantity of coal got,"—that was in 1870, since which date there has been an increase of more than 30 per cent. in that quantity—"the shafts ought to be quadrupled, either in area or in number." It would be of great interest to have such a return of numbers and area of shafts, lengths of workings, number of men employed to each shaft, and proportioned yield of coal, as should show how far the advice of one of our first engineers, himself a practical and experienced miner, has up to this time been followed.

It strikes us, however, on a review of the interesting information of which we have thus given a very brief abstract, that there is one hitherto unnoticed practical point which comes to the fore, and that with great distinctness. Out of the mining casualties in 1866-7-8, Mr. Fowler showed that explosions were the cause of 29 per cent. Falls in the mine caused a greater mortality, 34 per cent. Shaft accidents made up 12 per cent.; the remaining 25 per cent. being grouped together as miscellaneous. Of these the explosions may, as a rule, be regarded as preventible. If no blasting is allowed, and no naked lights are introduced, in a fiery mine, no explosion can, except under very exceptional circumstances, take place. Yet year after year they do take place. And the Government inspection,—and we wish Mr. Robert Stephenson were among us to admit it, as no doubt he would frankly do,—has had, at all events, some good result in discouraging the use of powder in fiery mines. Now, it is not consistent with any profound knowledge of human nature to argue that it is the inherent wickedness of the miner which induces him to take matches in his pocket, or to open his safety-lamp to trim the wick. After all is said that can be said of want of thought, rashness, pig-headedness, sacrifice of the lives of others to a moment's gratification, and so on, there remains the plain truth that some very powerful influence must be constantly acting on our vast underground population in order to induce them to run such fearful risks, and to produce explosions sweeping sixty men at a time from the world. What is this influence?—this strong instinct, which drives the miner to rush on to his own destruction? It may be said it is the craving for tobacco. But smoking is, we apprehend, prohibited in fiery mines, and it is an offence which gives immediate and unmistakable evidence of committal, while it is one against which it is possible to guard by proper precaution in searching the men.

We apprehend that the cause is to be found in the strong instinctive desire for light, which, in those regions of profound gloom and damp, is apt to become uncontrollable. Danger is a distant evil; darkness is a present and pressing one. The natural desire for light is intensified by the need of light for the workman. How many hard blows of the pick would one good ray of light save? How much wasted time, and lost labour, is unavoidable, when the source of illumination is the faint and veiled ray of the "Davy" or the "Geordie"? It is all very well for those of us with whom night, in our houses if not in our streets, is made brighter than day, to declaim against the wickedness of the miner who, groping in a Cimmerian gloom, tries to turn a little more light on a bit of work that is baffling his over-taxed strength. Here, then, may be found a cause for explosions which is deeply based on an instinct of human nature.

What follows? It follows that he will be the best friend that the miner ever had who will give him a lamp combining the two great, and hitherto unreconciled, properties, of non-explosive safety and high illuminative power. Such a lamp, moreover, should be cheap. It should be strong. It should be simple. It should be capable of adjustment of the light without opening. It should be capable of being locked, and opened only by its own key,—a key to be kept by the inspector, and never given to the miner. In fact, it should be a lamp which the miner should have no temptation to open, except for the purpose which is forbidden,—that is to say, to set something on fire,—and which he should be unable to open for that purpose. This would be the true safety-lamp. A lamp to give the light of half a dozen candles, and which would only yield its full light when properly closed. By giving such a lamp to the miner we should supply his great want, and we should put into his hand, not a constantly irritating source of temptation, but a true and invaluable friend.

Is it too much to ask the genius of the day for such a lamp as this? We reply that, in our opinion, it is not. What will be the reward of the inventor? Judging from past experience it will be this. He will be allowed to spend his fortune and to break his heart in the effort to force on mankind a beneficent invention, the adoption of which will save at least one human life per day, and prevent the annual widowing and desolation of from two to three hundred families.

Memorial Window in St. Paul's.—A stained-glass window has been erected in the north-west chapel of St. Paul's Cathedral, nearly under the west tower, to the memory of the late Dean Mansel. The subject chosen for illustration is the Incredulity of St. Thomas, as related in St. John xx. 24; and the work has been entrusted to Messrs. John Hardman & Co., under the direction of Mr. Penrose, architect to the dean and chapter.

PAINTINGS AT THE BURLINGTON HOUSE EXHIBITION.

ALTHOUGH the collection of paintings at the Academy loan exhibition this year did not at first sight seem very attractive, and contains hardly anything that is obviously striking or astonishing, a judicial survey of them at leisure reveals a great amount of work of very high interest artistically and historically.

Among portraits, Hoppner leads the way in the first room with a very dignified solidly-painted work "Lady Elizabeth Compton" (1), in a style reminding us of a more modern taste as to colour, the general effect being dark and sober, with a coral necklace giving the one slight point of colour. Lawrence's "Mrs. Horsley Palmer" (3) is inferior to this in artistic power, but is a very good specimen of the painter's peculiarly aristocratic refinement; the fine throat and neck of the sitter (her best charms), are very delicately drawn and modelled. Some small Reynolds and Gainsboroughs near these are more notable for the special manner than for the special merits of those artists; Gainsborough's "Lady Whichcote" (13), however, shows how far he could render a decidedly plain woman interesting in a picture, by pose and manner; he introduces here the particular white dog which was such a favourite with him. Reynolds's portrait of Fox, standing with his hand on some papers labelled "A Bill for the better regulating of the affairs of the E. I. Company" (a detail introduced at his request, as connecting him with a measure "which would always be the pride of his life") has the greatest historic interest, but is hardly in other respects a favourable specimen of Reynolds; the hand laid on the table is very negligent in drawing and finish. But Romney is well represented; in his "Lady Sullivan" (9), it is true, the flow of the drapery to one side is rather too palpably managed; in the pendent picture, "Mrs. Lee Acton" (20), there is no such defect, and this is a beautiful sketch portrait,—it cannot be called a finished picture. Another portrait of the same lady (42), standing in the middle of a landscape, is more conscientiously finished, and even more impresses us with the remarkable and *spirituel* beauty of the face, though the peculiar make (probably) of the gown of that day gives an odd and awkward line to the lower part of the figure. The finest portrait in this room, however, is certainly Reynolds's "William Frederick of Gloucester" (45), as a child, but assuming the air and equipment of a man in an oddly serious and sober manner; the work is one in which, as in the "Strawberry Girl," and in another child-portrait, a little Lady Charlotte or Lady Catharine (we forget the title), Reynolds has achieved a real originality in colour, of a nature which is to be perceived rather than described: the tones of the dress, &c., are so unusual and subtle, in a kind of colourless colour, that one is tempted to think the picture has faded very much, but the glow on the countenances shows that this is not the case. This work is balanced by Gainsborough's "Pink Boy" (39), a work far behind the "Blue Boy" in character and force of colour. Sir Joshua's "Kitty Reynolds" (48) is a lovely thing in pose and drawing, and pleasing in colour,—more pleasing probably to many than such a brilliant experiment as that just mentioned, which is *caviare* to the general; but, on the other hand, this warmly-coloured portrait exhibits the ordinary resources of colour, rather than its refinements. The three Hogarth portraits which hang next each other (32, 33, 36) are all fine unpretentious works, but curiously illustrate what we have often fancied in Hogarth's portraits, a tendency to give to his sitters the same kind of upward tilt of the countenance, expressing alertness combined with a certain dash of something like conceit, which we see in his own well-known portrait of himself. In these three paintings placed together the resemblance in pose is too marked to be overlooked. Harlow's portrait of Northcote (30) is a brilliant study of a very shrewd and characteristic countenance: it is the property, we see, of Mr. Frith. Zoffany's portraits, including a large "Family Piece" (27) are dry and uninteresting, though the large group referred to is combined in an effective and natural manner. Among the landscapes in this room are two or three charming little Nasmyths, two fine Van der Veldes, a Richard Wilson, a Tivoli (not *the* Tivoli), very dull in colour, and a charming work by Collins, "Sunrise on the Coast" (40), beautifully composed without apparent study, full of an indefinable sea-coast feeling, and the sparkle of the water under the first glint of the rising sun is beautifully given, as well as the movement of the waves breaking on the beach.

In the second room the main attraction is undoubtedly the corner where are collected the works by the great masters of the realistic Dutch school, in the position which has usually been assigned to their works in the annual loan exhibitions. These are not numerous, but they are remarkable in quality. Jan Steen's large work with many figures, called "Dutch Festival" (99), which attracts attention most, is not, however, one of the finest, and seems to us to have been "cleaned" or painted on in more recent days, at least the central figure of the mother has that appearance. It is not, in fact, a "festival," but simply a scene at an inn, where the various characters and their occupations are effectively contrasted; the key to the feeling of the whole is in the central figure just mentioned of the woman suckling her child, regardless (as far as possible) of the medley of confusion going on around her, the noise of the boy beating his drum close to the child's ear, and of the revellers at a table on the left, one of whom stands up to drain a large "flute-glass": an old hag who is bringing in refreshments and whose figure composes with the centre group is very important in its effect on the whole arrangement. This is a striking work, no doubt, but it is not equal in sentiment to the smaller Jan Steen (54) on the other side of the doorway, representing a small family saying grace over their meal. In this, which seems much more as Jan Steen left it than the other,— much richer in texture and less hard,—there is a simple, almost awkward, pathos in the figure and action of the man "saying grace," his head partly shaded by his large-brimmed hat, which comes home to one in a very real manner, from which the careful but always subordinated treatment of the accessories detracts in no way; we may admire the painting of the earthenware jug (a kind of Doulton ware of the period) and the piece of meat on the dish as much as we please; but for all this admirable execution, the personages remain the chief attractions. Even finer in the higher qualities of genius, though less interesting in subject, is a small Teniers, "Interior of an Alehouse" (104), merely a group of three figures; one lad holding a mug of beer, but turning round to make a remark to the companion who stands by him, is remarkable for the life and vivacity of attitude and countenance. Ostade's picture, with two half-drunken figures at a window and others dimly seen behind them (112), is another masterpiece of its kind; and it is really instructive in a way to compare these with such a work as the "Man in his Study," by Gerard Dow (113), a small picture, brilliant to the highest degree in colour and painting of detail, and perfectly pleasing in subject, morally speaking,—a respectable, refined old gentleman over his books, and to notice how, nevertheless, it is quite weak in its impression upon us in comparison with the two last-named works. One realises that (within certain limitations) it hardly matters what are the mere facts of the subject chosen by a great artist, if the genius is there which can breathe force and meaning into it. These works of Teniers and Ostade exhibit literally the *creative* force of genius; the power to take the common clay of humanity and breathe into it the breath of artistic life. In the same remarkable corner of this room may be noticed Metsu's "Scene at an Inn" (110), and Ostade's "The Lawyer" (107), the latter a brilliant and beautiful little work. In another corner of the same room there are three or four interesting examples of the Dutch artistic mind applied to the translation of architecture into painting; two interiors of churches by Emanuel de Witte (88, 89), a street view, by Jan Van der Heyde (92), the well-known master of painting brickwork, and a "View in Amsterdam" (87), by Gerrit Berck-Heyde, a little overloaded with shadow on the right, but the group of buildings in middle distance, seen across a piece of canal, could not be excelled for truthfulness, delicacy, and minuteness of execution. Among the other main points of interest in Gallery II. are an exceptionally beautiful specimen of Grerze (85), a head of a young girl with beautiful, almost luminous light-brown, or "golden" hair, falling in masses round her face, a face pleasantly exceptional among those of Greuze by the entire absence of the coquetry (or something even more objectionable) which characterises so many of his heads of this type; it is a sweet innocent face, with the eyes turned up inquiringly,—

> "As life were one long and sweet surprise."

There is an exceedingly fine Canaletto, "The Church of San Salute" (61), remarkable for its combination of clear hard texture with atmospheric effect; and a fruit piece by Cornelius de Heem, very rich in colour, and also noteworthy for its minutely careful and correct drawing,—not always a characteristic of fruit pictures. Janssens's portraits, solid and forcible, though not reaching the best in portrait art, are worth attention; and there is a capital specimen of Frank Hals, a portrait showing something of the peculiar force and freedom of Velasquez in face-painting.

Passing over for the present the large central gallery, we are attracted into Gallery IV., where, as usual, the works of the earlier period of Italian art are bestowed. As in the other rooms, the attraction of the show grows upon one after seeming a little disappointing at first sight. The two most prominently important works are two large and very fine Gian Bellinis, the property of Mr. W. Graham (199, 203). These are works of the most noble quality in design and feeling, despite a little of the stiffness of the præ-Titian period in Venetian art; in No. 199 the two angels standing one on each side of the group are especially remarkable for combined grace and power. The colour has stood wonderfully, nor do the pictures appear to have been painted on or "cleaned," in an objectionable sense of the word. The rich harmony of these works and their admirable preservation show what a start Titian got from his predecessors in Venetian renown in these matters, and how much he must have really owed them in spite of their want of graciousness towards the young rival who was to eclipse them. A remarkable work hung between them is the portrait of a woman, attributed to Piero della Francesca, a half-length profile in a stiff semi-decorative fashion, but of the most beautiful and delicate combination of colour: it is curious that the face is relieved against an almost flesh-toned ground, not differing very much from the general tone of the face, it is partly to this that the peculiarly delicate effect of the whole is to be traced; the tones of the dress are retiring and beautifully harmonised, and the whole is accentuated by a coral necklace, which is the one bit of positive colour. The treatment of the hair is remarkable in its freedom and realism, if really by Francesca or an artist of his date. Another exceedingly unusual work is Sir Henry Hawley's large picture, of which the author is not known, and it is labelled only "Venetian School"; this represents the flight into Egypt (206), and whatever doubt there may be as to the artist, there can be none that he was familiar with the work of Giorgione, and owed a great deal to him, though he had not learned to acquire "a temperance that would beget smoothness," or quietness, in the action, which is too bustling, but, at the same time, full of life: the whole group, preceded by a very lively angel showing the way, are full of hurry, except the Virgin sitting on the ass; she is playfully caressing the infant, who puts up his hand to her face. The colouring is exceedingly Giorgionesque, so is the whole style and attitude of the man on the further side of the ass, turning away from the spectator; though it would be impossible to put down the work as a whole to Giorgione. Another fine contribution is the "Virgin and Child, and St. John," by Ghirlandaio (197), in which the artist's mode of modelling the shadows in the flesh by minute hatchings in warm colour (nearly red) may be studied to perfection: the infant, who in this painting stretches out his hand to take some fruit from the hand of an angel, at the same time looking, not at the gift, but up in the face of the giver, has that majestic expression which so many of the painters of Italy studied (apparently) to infuse into the countenance of the holy child in their paintings. Mr. Hooker's "Madonna and Child," by Raffaelle (193), strikes with some surprise in regard to its alleged authorship, which, however, seems perfectly well established. It has the Raffaelle spirituality, but not the Raffaelle ease and elegance of pose and drawing, and has a gold background. An inscription on the back states (we are told in the catalogue) that the picture was bought by Elizabeth of Gubbio, who was superior of the Convent of S. Chiara, at Urbino, in Raffaelle's lifetime. We should be tempted to think that the painter had adopted a religious style with the view of suiting the

feelings of some special purchaser, or else that it was a youthful work before he had quitted the track of his predecessors. Next to this an archaic Byzantine triptych (192) of the Crucifixion strikes us by its fine composition and intensity of dramatic expression, in spite of archaic drawing: the group of women all drawn together in one corner, with a unanimous expression of shrinking and terror, and on the other side the group of soldiers and other excited spectators, and hands thrust up into the air in a manner almost reminding us of Titian's "Assumption." To see these dramatic qualities of art in a small painting of so naïve a style of execution is very interesting. A diptych by Taddeo Gaddi is another very interesting and, in its peculiar way, expressive work, though it has nothing of the vigour of action of the little Byzantine picture last named; a certain angel's head in profile is beautiful in execution, and a calm saintliness of expression: much of the soul of Gaddi, one would think, went into that face. There are some very curious decorative studies or illuminations of the school of Giotto, and, indeed, apparently by a very close follower and admirer of the master; also a beautifully-finished decorative picture, as we should now consider it (but not so intended by the painter) by Fra Angelico, of "The Annunciation" (880), in which decorators may take note of the angel's wing as furnishing a hint for a rich effect. Among some of the rather heterogeneous works on the other side of the room is a portrait of Mary Queen of Scots by Pombus,—a hard performance, not giving the idea of much personal beauty: it is hung rather significantly over a little Queen Mary by Holbein, and the family likeness in the two portraits is distinctly traceable. A fine specimen of Quentin Matsys (219) represents two countenances as mean and repelling as could well be (the old man would do for Harpagon), but the expression of odious human character is in this case powerfully given without being weakened by fantastic accessories.

We may have further remarks to make as to the other pictures, and the miniature collection.

A SMOKELESS LONDON.

These words are being written on a cold frosty morning: the opening of one of those days that will make the winter of 1878-79 memorable in our country's annals. The price of coal has been gradually rising for several weeks. This has followed upon an increased demand; and the demand, of course, has its origin in the lowered temperature and the craving of human beings for heat. At such a period the consumption of fuel may be looked upon as having reached its annual maximum in the metropolis. The coal bill becomes a serious item in the households of the poor in such weather as this, and every exertion is necessary to provide enough to wage a successful battle with the frost. Such being the state of affairs in every establishment that owns a chimney and a hearth, the result upon the condition of the London atmosphere can easily be predicted. Upon looking out of the window,—instead of the clear, exhilarating prospect of fresh air, which, in the country, must be exceptionally bracing and clear,—the Londoner is frequently confronted by a dense, yellow fog, through which he sees the smoke of a hundred chimneys, each pouring its contribution of carbon and sulphurous acid and carbonic oxide into the already overloaded atmosphere. For such weather, every person, except perhaps the coal-merchant and the coal-master, wishes coal to be as cheap as possible. So far from any one grudging the use of coal at such a time, kind-hearted people are trying to make up the deficiency and distributing fuel to those who cannot afford to buy it. The question naturally arises in an inquiring mind, is all this atmospheric pollution a necessary condition of warmth? Unthinking persons look upon smoke, especially in large manufacturing towns, as a condition of prosperity. They know that in dull times, when the cotton factory is closed, there is no smoke to be seen coming from its chimney; it ceases along with the roar of the machinery and the employment of hundreds of workpeople. No doubt, the smoke is a sign of prosperity, but is it a necessary condition of prosperity? In prosperous times, might the machinery not spin cotton or weave cloth just as well, and employ just as many hands, if there were no smoke coming from the factory chimney all by reason of its having all been consumed? The answer that science gives to this question is, that not only could the work of prosperous times be conducted quite as well without an escape of smoke, that renders life in a large manufacturing town very much less tolerable than it otherwise would be, but that if the smoke were consumed it would just be so much money in the pocket of the manufacturer, and so much material wealth saved to the nation at large.

Every one is tolerably well acquainted with the conditions upon which the combustion of a piece of coal depends. When heat is applied to it, gas escapes, carrying with it particles of carbon that have been stored up in the recesses of the coal-mine ever since the time of the primeval forest of which it is composed. As soon as the gas mixes with the air at the high temperature of a furnace, or even of a domestic fire-place, it combines with the oxygen of the atmosphere, and the result is flame or combustion. Before combustion is possible, a certain proportion of oxygen must be mixed with the gas, and if this is not present the gas escapes up the chimney unconsumed. With regard to the particles of carbon, which form the visible condition of smoke, a somewhat higher temperature is necessary before they combine with the oxygen, and if there is not enough oxygen for the combustion of the gas, there will be still less available for burning the smoke, and it will pass up the chimney without having ever, as it were, had the chance of being converted into heat at all. These facts have been known to men of science for a great many years, and various attempts have been made to apply them in such a way as to lead to a solution of the difficult problem of complete combustion. In the great industry of iron-smelting, which not long since was distinguished for its extravagant waste of fuel, the solution of this intricate difficulty has been completely solved among the more intelligent men who avail themselves of the opportunities which science has placed within their reach. Until within the last fifteen or twenty years there was no more wasteful appliance in the whole field of British industry than a blast furnace. The materials from which pig-iron (that is, iron ready to be cast into grates and railings, or converted into malleable iron by being puddled) was made were thrown into a great furnace with an open top, from which the flames escaped, and still escape in some places, in such a manner as almost to turn night into day. Now all this waste gas, instead of being allowed to escape from the top of the furnace, mixing with the oxygen of the air and being converted into flames, the heat of which is entirely lost, is conveyed away in pipes and made use of to drive steam-engines and heat stoves,—in fact, is employed to do everything outside the blast-furnace itself, which formerly was done by the use of immense quantities of coal. When any thoughtful person begins to consider the number of interests that are served by such improvements, it is quite clear that they are by no means confined to the ironmaster. The population which was formerly inflicted with the atmospheric pollution which came from the mouths of the open furnaces have had this sort of nuisance permanently put an end to. Every one knows that the position which this country has attained to in its manufacturing pre-eminence, and which it requires so great a struggle to maintain, is dependent upon the material wealth which it possesses in its coal-fields, so that the nation as well as the ironmaster is deeply interested in the saving which has followed upon a more scientific use of coal in our blast furnaces. A third and very important interest which, unfortunately, for the future of this country, is very little thought about, must be a gainer by such methods of economising fuel, viz., the interest of the generations who are to follow us, and who will be dependent upon the supplies of fuel which we are now wasting so extravagantly. Upon thinking over the matter a little further, it becomes quite clear that these interests are the natural consequence the one of the other. That is to say, cleanliness follows upon economy, and economy upon cleanliness. So far from smoky chimneys being a necessary condition of national prosperity, they are a source of national loss, and cleanliness and a pure atmosphere are a source of material saving. Science is really not by any means to blame for having made the world dirty; because, when she is appealed to, she is not only able to make it clean, but in doing so she effects a great saving of the national resources. This being so, it will be well to turn to the factory chimney, and see what can be done there to bring about the economy that has been effected in the blast-furnace. In one important respect the boiler furnace of the cotton-mill is at a great disadvantage as compared with the blast-furnace, because, in the nature of things, it has a much lower temperature. In the blast-furnace, every device is resorted to in order to maintain the temperature at a height which will smelt the iron ore as rapidly and efficiently as possible. This brings about a state of matters with regard to the fuel which renders smoke—that is, particles of carbon—almost an impossibility. All the chemical constituents of the coal are immediately converted into gas at such a high temperature that they approach the condition of permanent gases, *i.e.*, gases which, when they are cooled, will not deposit tar or any other solid matter. When gas is in this condition, and mixed with common air at the high temperature at which it comes from a blast-furnace, it is in the most favourable state to be completely consumed, the equivalent of this combustion giving out a maximum of heat. In the furnace of a boiler this desirable state of things is, of course, unattainable, because the fuel is contained in a combustion chamber, surrounded with water, the temperature of which, measured by a thermometer, is not more than one-tenth of that of the blast-furnace. Here, then, is a great practical difficulty, because, even if the boiler furnace is so arranged as to admit all the air that is theoretically necessary for the combustion of the fuel, it by no means follows that its temperature will be sufficiently great to bring about the chemical reaction between the carbon particles of the fuel and the oxygen of the atmosphere which is necessary for their combustion and the avoiding of an escape of smoke. In a well-constructed boiler-furnace, however, it is possible to arrange the firing in such a way that the addition of fresh fuel will never be made so as to give rise to an escape of carbon particles in excess of what the temperature and the air of the furnace are capable of consuming,—at least, to a considerable extent. It follows from this that care on the part of the stoker is one of the most important factors in a smokeless chimney. This has pressed itself so strongly on the minds of engineers that, knowing the frailty of human nature, and especially of stoking human nature, they have devised a mechanical stoking apparatus, which feeds the furnace at a uniform rate, and in many instances does the work exceedingly well. The proprietor of a boiler furnace is still, however, at a disadvantage, as compared with the owner of a blast-furnace in the important item of a high temperature, and the result is that he is a great offender in the matter of smoke. The question that naturally occurs to the mind of any one subjected to the nuisance of a smoky factory chimney is, What have the public got to do with this? Because a boiler-furnace is not worked at the temperature of a blast-furnace, must that be held as a sufficient reason for the manufacturer to be allowed to contaminate the atmosphere with sulphurous acid which kills our trees and affects our health? The manufacturer's reply is, of course, the old one about smoke being a necessary condition of prosperity, and that, if he is forced to do away with his smoke, he must close his gates and throw, it may be, hundreds of workpeople out of employment. The public, on the other hand, may say, very justly, "Such an argument suits your convenience, but is it true that closing your gates is your only alternative? Science appealed to in the blast-furnace gave an unequivocal reply that cleanliness and economy are allied to each other in the relationship of cause and effect. Although the temperature of your boiler-furnace is lower than that of a blast-furnace, must we necessarily take this as an answer in the face of what appears to be an axiom that dirt and waste are inseparably associated?" If obliged to give a reply the millowner might answer, "Granted that cleanliness and economy are related to each other in the way you describe, if there is such a great saving in burning my smoke, you may be quite sure that I would lessen my coal bill if I only knew how it could be done." If Science were made the referee in such a dispute, the manufacturer might reasonably urge that his business was of a practical nature, and might be ruined by the introduction of unsuccessful experiments, and that if Science is referred to it must be in the form of a positive issue as to what she really can do without the chance of failure and mishap. It is not enough that there seems to be a certainty that science

will ultimately effect a solution of the problem of complete combustion in steam-boilers, but the reply must have relation to what can actually be done. In such a case the court of appeal comes to be that of a tribunal composed of men whose knowledge represents the greatest advances that have been made in the practical application of science to the problem of combustion. If the public appeared as plaintiff, and the manufacturer as defendant before such a tribunal, it must at once be admitted that if the only fuel to be used by the manufacturer is common coal, the verdict must be in his favour in so far that he might be called upon to mitigate the nuisance arising from his smoky chimneys to a great extent, but could not be called upon to put an end to it altogether. It must not be supposed, however, that the case for the public by any means ends here.

A population suffering from an atmosphere polluted by smoke is quite entitled to ask if common coal is the only fuel which it is open to the manufacturer to make use of. If the supposed court of appeal were referred to, their answer would certainly be that common coal is not the only available fuel, and if asked by the manufacturer for an explanation, they would be bound to state that not only is common coal not the only available fuel, but that its unnecessary use is the cause of the waste and dirt complained of. The smoke which comes from a properly constructed boiler-furnace is the result of the first few minutes of contact between the fresh coal and the heat of previous charges, and it is then that gas escapes in excess of the means available for its combustion. The public then have a right to ask if this gas which is wasted, and which contaminates the atmosphere, could not be extracted before the coal is placed in the boiler furnace at all. The answer is that it can be so extracted. Again, from the manufacturer's point of view the question may be put,—"Would this process not subject me to additional expense?" The reply is,—"In the long run certainly not. The first cost of the necessary apparatus would be trifling, and would be recovered by the saving that would be effected in the short period of a few months at furthest." The manufacturer might then say,—"If you mean by this process that I should use coke instead of coal, it will certainly be more expensive, and, moreover, even if such a plan were adopted, the products of combustion, though invisible, would be more offensive and more injurious to health than those which come from the use of ordinary coal." The answer on the side of the public is,—"We do not by any means wish you to use coke. As it is only a comparatively small proportion of the gas contained in your coal which is incapable of being consumed in your boiler-furnace, it is only that small proportion which we require you to extract before adding fresh fuel. When you do add the fuel it must have been previously deprived of that proportion of its gas which renders it offensive."

If the manufacturer urged that such a proposal was impracticable or expensive, there are many illustrations to prove a case against him. Mr. Budd, of South Wales, the veteran blast-furnace economist, when first he made use of the waste gases of the smelting process, was so astonished at the result that he declared it would be a source of economy in raising steam in boilers if the coal were put into an apparatus like a blast-furnace, and nothing but the gas used as fuel. No doubt, if the gas were properly consumed, the statement was quite true if the comparison were made with the wasteful apparatus which was almost universally employed in the first quarter of the century, but even in the more advanced practice of the present day, the manufacturer stands convicted of enormous waste. Dr. Siemens, who is one of the greatest authorities upon the subject of combustion, and who has done much to introduce a more scientific application of its principles into the iron trade, stated in a lecture delivered in Glasgow about a year ago that even in the most improved description of boiler and steam-engine, only about one-ninth of the total heat-giving capacity of the coal was converted into mechanical energy or work. The steam-engine itself is only responsible for a comparatively small proportion of the waste, and it is doubtful if any great additional economy is attainable so far as it is concerned. The great source of waste is in the generation of heat in the boiler, and the larger part of that is due to the escape of gas and carbon through the chimney. Of that waste, again, the greater proportion is to be attributed to the large escape of smoke which takes place when fresh fuel is thrown upon the boiler furnace. Here, then, the manufacturer is confronted with a dissipation of that very portion of the fuel of which the public have a right to complain. This is not the place to enter into a technical explanation of the methods available for avoiding this waste, and the atmospheric pollution to which it gives rise, but in the face of the experience which has been obtained in other departments of industry in which coal is extensively employed, it is idle to say that the owners of steam-boilers have not the remedy in their own hands if they choose to make use of it. But supposing, now, that the manufacturer were forced into accepting the conclusion that not only was he an offender, but committed his offences in a manner that was both unnecessary and extravagant, there is still an argument open to him in his case with the public which, though it is not of any real weight, is a very common one. It is that which is generally known as *tu quoque*. "Why," the manufacturer may say, "should I be called upon to exert myself to get rid of a nuisance to which every hearth-fire in the kingdom is a contributory as well as myself?" It is this position which has probably done more than anything else to retard sanitary reform in the direction of atmospheric pollution. The manufacturer puts himself in the place of the plaintiff, and retorts upon him with his own arguments. The question is, can the same rule not be made to apply to the domestic consumer through the local authorities that it is proposed the manufacturers should apply to himself? If the boiler-furnace, which has so many advantages in its size and construction, is incapable of completely consuming the fuel employed, it is quite certain that an ordinary fireplace will be at a still greater disadvantage. There is no doubt that in large industrial centres the manufacturer contributes a much larger proportion of smoke than all the rest of the community put together, but even then the argument is still open to him that he is only a contributory. The consequence has been hitherto that the Legislature has only interfered with him to the extent of insisting that he shall abate the nuisance, and black smoke escaping longer than a specified time is the only offence which is subjected to a penalty. To confine the argument to the domestic consumer, and taking those districts of London in which the atmospheric pollution from smoke has its origin in domestic sources alone, the recent experience of Londoners during the fogs of the present winter has been sufficiently trying, and it becomes important then, both from a social and economic point of view, to inquire into the practicability of any scheme that has for its object the entire abolition of the nuisance complained of. In order to remove the *locus standi* of the manufacturer who argues that the public are equal offenders with himself, it will be well to see if the remedy which it is proposed to apply to the boiler furnace is not equally applicable to the case of domestic consumption. In both cases the principal escape of smoke takes place upon the addition of fresh fuel. As it is proposed that the manufacturer should be obliged to extract this quantity of gas from his coal before burning it in his furnace, and as it is quite certain that doing so would not only avoid nuisance, but prove a source of economy, is there any reason to suppose that, if the coal consumed in London were subjected to the same process, there would be anything but a great gain to the inhabitants of London, both in comfort and in pocket? Turning to the Report of the Registrar of the London Coal Market for 1878, it will be found that nearly 9,000,000 tons of coal were brought into London during the year, of which 6,639,000 tons were consumed within the London district, the balance having been exported or otherwise disposed of. We have, therefore, to deal with a daily consumption of somewhat under 20,000 tons. If this coal were subjected to the process employed for the production of illuminating gas, it would probably yield on the average between 7,000 and 8,000 cubic feet of gas per ton. Of this quantity the offending part, that is the part which escapes unconsumed upon each addition of fresh fuel, is probably on the average not more than 3,000 cubic feet per ton. If this, then, were first removed, without materially interfering with the character of the fuel, the coal of London would be practically incapable of producing any atmospheric pollution from smoke. It is not maintained that this fuel would be absolutely smokeless, but its use would entail an amount of smoke that would be practically unnoticeable. Upon inquiring into the apparatus necessary to remove this proportion of gas from London coal, the writer does not wish to commit the reader to any details. It will convey an idea to his mind, however, of how much smaller the necessary apparatus would be than he might at first suppose, if the dimensions of an ordinary blast-furnace are taken as an illustration of the large scale upon which materials can be treated at a higher temperature than is necessary for abstracting the surplus gas from London coal. The average sectional area of an ordinary blast-furnace is about 300 square feet, and the cubic capacity about 18,000 cubic feet, and such an appliance would contain 450 tons of coal. Supposing then that the time occupied in extracting 3,000 cubic feet of gas per ton of this quantity in some such apparatus as a blast-furnace occupied two hours, then five ordinary blast-furnaces would be amply sufficient to render London a practically smokeless city if all the coal used in it were first subjected to this gas-tax. Of course no one will deny the great social advantages that would follow upon the adoption of such a system, but looking at the proposal in its economical aspects the results are still more startling. If 3,000 cubic feet of gas per ton were removed from the 20,000 tons of coal which are consumed in London daily, there would be 60,000,000 cubic feet available, partly for raising the heat necessary for the removal of the gas, but to a great extent for industrial purposes. This gas would be much richer than the ordinary coal gas sold for illumination, and might be drawn off from the coal in such a way as to make it capable of being used for a variety of purposes. If the temperature of extraction were very low, then the superfluous gas might, to a great extent, be condensed and treated so as to make all the solid hydro-carbon products commercially available. If taken off at a higher temperature it would be a much more valuable heating agent than illuminating gas, while if the temperature of extraction were raised to that of an ordinary gas-retort, what is at present being thrown into the atmosphere from every chimney in London might be used for lighting our streets and houses, or driving the engines of the electric light. There is reason to believe that with properly-constructed apparatus, 30,000,000 cubic feet of gas would be sufficient for raising the heat necessary for extracting the superfluous quantity referred to, so that there would still remain 30,000,000 cubic feet to be disposed of every day in the various manners that have been roughly suggested. If 1s. per 1,000 cubic feet were obtainable for the gas from manufacturers and others, then a daily revenue of 1,500*l.*, or considerably more than half a million per annum, would accrue, and this, after making every allowance for labour and interest upon capital, would leave a large balance in hand.

Of the difficulties that must attend the introduction of such a system it would be foolish to speak lightly. No doubt there would be many, not only in connexion with the mechanical and other details which would require to be successfully carried out, but also in dealing with the various interests involved. To a certain extent the process would assimilate the values of the various kinds of coal, but they would still retain a character relative to their original quality, and if the different varieties were classed and treated separately, there is no ground to suppose that the coal-master would have anything to complain of. With regard to the practical effect upon the fuel, as it would only be robbed of that which at present passes up the chimney, there would be nothing lost to the consumer, but, on the contrary, the smoke having been removed, which often renders the adoption of apparatus well suited for warming purposes impracticable, the way would, no doubt, be opened up to a more scientific application of the principles of combustion in every-day life. Even supposing that the economic view of the question which has been taken is somewhat sanguine, though the writer cannot see how a lower estimate than 1s. per 1,000 cubic feet could be adopted, the gain to the inhabitants of London would still be enormous. The amount of labour at present expended upon the continual struggle with dirt, that results at the best in a perpetual griminess, would be reduced by one-half; our parks and squares, where the trees are becoming prematurely stag-headed, and suffering, in many cases, complete decay, would assume something like

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the freshness of the country; and, above all, our lungs would be saved from the smoke that often renders a winter day in London intolerable. It is almost certain that, if the public led the way in the sanitary reform of the atmosphere, the manufacturer would very soon be forced to follow.

"ÆSTHETICS."

The neat volume with this formidable though brief title* comes to us from France, though the English edition which is now before us forms one in a series of works brought out in this country under the title of the "Library of Contemporary Science." It may be questioned whether "æsthetics," whatever it or they may be, is a "science" in the proper sense of the word, though there is no need to quarrel with a book for its title if it tells or teaches us anything, whether in a strictly scientific manner or not. The first sentence of the introductory chapter startled us sufficiently,—"Æsthetics being, as has been said, the science of the beautiful in the arts, it would seem but natural to begin by explaining what beauty and art are respectively." *Grace à Dieu*, however, M. Veron does not in this case do what is "natural"; on the contrary, he expresses in the next sentence his conviction that *à priori* definitions are little to be trusted, and that "it is more reasonable and scientific to search among facts, to see whether they are not able of themselves to afford us the definitions we want." This is the keynote of M. Veron's work. Instead of framing theses as to what the arts should do when regarded from the point of view of abstract theory, he examines what they have done, what of that is best, and why it is best. This is at least a step towards bringing æsthetics within the definition of science, and out of the regions of cloudland; and after this declared intention on the part of the author, we turn over his pages with more hope of finding something practical to lay hold of than the title at first seemed to promise. We are removed thus from the abstract to the concrete, and prepared to accept the author's definition of æsthetics as "the science whose object is the study and elucidation of the manifestations of artistic genius." The author purposely gets rid of the word "beauty" altogether, regarding it as too vague in its meaning, and too variously understood, to be profitably employed in a work aiming at precise analysis and definite conclusions.

Let us see, as an example of the author's method and style of thought, how he applies this view of æsthetics to the consideration of architecture. He refers to the extremes to which "the symbolic school" have gone in treating of architecture, Mr. C. Blanc representing the Egyptian priests as "reproducing in an ideal form the great features of nature's architecture," Lamennais describing the Indian temples as representations of the Pantheistic idea, &c.; and against such visionary phraseology he opposes Viollet-le-Duc's simple and practical words,—"As far as the architect is concerned, architecture is the sensible and easily understood expression of a want satisfied." Applying this, for example, to temple architecture, M. Veron urges that the immense size of the temples of the East is to be explained partly by the fact that the sacerdotal societies themselves inhabited the temple, and turned it into a kind of town.

In Greece, where this was not the case, the temples merely assumed the proportions supposed to be necessary for the dwelling of the god, who was colossal certainly, but still did not require more than a house proportionately larger than those of mortals. So in speaking of the Mediæval cathedrals, he adopts the view that they were, in reality, rather federal than feudal, a kind of sacred forum, where matters of interest to the community were discussed. There may be more colour for this view than is usually supposed, but we imagine it must be taken *cum grano*; and it is certainly carrying it too far to say that the cathedral towers were built mainly for the purposes of signalling and keeping a look-out over the country. They may have been used for these purposes, but there is plenty of evidence that both west fronts and towers were matters of emulation between the monks of rival abbeys, and arose from the ambition to surpass somebody else, which has been such a constant stimulus to effort in art and science alike. But the manner of summing up what may be supposed to have been the origin of architecture,—that it "sprang from the natural aggrandisement of man's primitive dwellings," is very good and very comprehensive: and in his brief analysis of Greek and Gothic architecture, in speaking of the latter, the author fully recognises the constructive importance of the pointed arch as a means of overcoming the difficulties inherent in building with the circular arch. In the Gothic style, he observes, "everything is founded upon and referred to the pointed arch,—not by virtue of any fanciful system, but by a series of deductions from fact, which demand practical recognition quite as much as theoretical assent." M. Veron revives an interesting question further on in regard to Gothic architecture, viz., whether that honesty "in displaying construction which has been praised as such a virtue in the Mediæval builders, was really intended by them; whether, for example, they would have displayed their flying buttresses so prominently, their framework for holding up the building, if they could have avoided it. M. Veron apparently leans to the contrary opinion, but we doubt the correctness of his conclusions. To our thinking, the buildings furnish ample evidence that their builders enjoyed the method of building they had developed, and saw nothing in its frank display of construction to be ashamed of.

The concluding section on architecture, summing up the subject, contains some general remarks which are admirable, and embody some truths in regard to the nature of architecture, and the manner in which it is commonly regarded in the present day, such as are very little recognised or understood at present. M. Veron has the power, which so few seem to have, of placing himself in imagination in the position of builders of other epochs, and realising to some extent how the thing looked to those who made it. Thus he calls attention to the very important consideration that "in most cases it would be a mistake on our part to suppose that the ideas or moral impressions created in our minds by the sight of certain edifices were foreseen and intended by their authors." Our sentiment is projected back upon the building through an intervening medium of historic association; and thus, as M. Veron says, the Coliseum has probably provoked many more laudatory apostrophes in the days of its ruin and decay than when a hundred thousand spectators assembled within its walls to applaud the fight of gladiators. A very good paragraph in regard to the degree and source of architectural expression we may quote in full:—

"Architecture, in its own province, has a power of expression which cannot be denied. That it can convey an impression of calm or of boldness, of grace or of power, of religious bigotry or of gaiety" (?), "of size or of richness, the sight of certain monumental works is sufficient to prove. In our study and analysis of architectural construction, we may easily notice the reasons for each of these impressions; for example, prolonged horizontal lines create ideas of stability, durability, and weight; vertical lines, on the other hand, express boldness, enthusiasm, aspirations; the predominance of plain surfaces over voids suggests austerity and gloom; while many and various openings create absolutely opposite ideas. We must also recognise that the nature of materials and their arrangement, the various uses of smooth and carved surfaces, can either add greatly to, or much detract from, the character and beauty of an edifice. Great architects are those who are able to tell in advance, with accurate knowledge and feeling, the exact effect which all these various conditions will have in the finished building. But it is obvious that this ability cannot be acquired except by a series of experiments, in which each component part is gradually reduced to its just importance. Architecture, even when considered from the æsthetic point of view, remains so dependent upon geometry, upon mechanics, and upon logic, that it is difficult to discover accurately the share which sentiment and logic have in it."

It is very well that a book should be published in a popular form, containing so much practical sense on a subject on which there is such general misconception. Much of what we have looked at in M. Veron's book under other headings,—painting and sculpture, for example,—appears very sensible and very suggestive; and throughout the book the author looks upon art from the point of view of modern life and feeling, and is a determined opponent of the worship of academical tradition. In his chapter on sculpture he instances Carpeaux as one who has put new life into sculpture by aiming specially at the study and expression of life and movement; he is a sculptor "no longer content to reproduce attitudes; he strives to become dramatic and expressive." . . . . "All the worshippers of abstract beauty joined in denouncing him as a corrupter of public taste"; but "the public have ranged themselves on his side." This latter fact does not, after all, prove much, we may say, and it is easy to carry the sculpture of "movement and life" too far for the true capabilities of the art; but the genius of Carpeaux, and the value and originality of his contributions to modern sculpture, are of course undeniable. One is surprised to see such a subject touched upon, however, without even the mention of the name of Dalou.

One subject is referred to (p. 88), which has before now been debated in our columns. M. Veron observes that art, far from being, as some regard it, the blossom and fruit of civilisation, is rather its germ: it is the result of the search after the best, incessantly prompted by the cerebral activity which is the essential characteristic of man. It is almost impossible to quarrel with the position as here stated; but, then the meaning here attached to the word "art" is very different from that in which it is commonly used by those who maintain the "blossom and fruit" theory. Like so many other debated and debatable questions of this kind, a great deal of the difference of opinion means really a difference in the signification attached to words. We note the author's view as worth the attention of those who are interested in the question, but cannot go into the subject now. M. Veron gives pretty full and, from his point of view, logical reasons for the opinion expressed.

* Æsthetics. By Eugene Veron. Translated by W. H. Armstrong, M.A. London: Chapman & Hall. 1879.

LEONARDO DA VINCI AND MICHELANGELO.

In the course of the last four centuries, filled as they are with the memories of many interesting names, it is but little exaggeration to say that, no two figures have stood out so prominently and so familiarly before the world,—have gratified and delighted it so continuously,—have afforded such field for study, for thought, and for inquiry,—as those of Leonardo da Vinci and Michelangelo. They are names the associations connected with which belong, and have belonged, for generations to all countries. In spite of our familiarity with their thoughts and lives, their works and friends,—familiarity the result of numerous literary studies and criticisms,—it is with no small degree of interest that any new work on the lives of these great men is welcomed by the refined world.

Amply though it is acknowledged, the debt that in this way artists owe to the literary student cannot be too thoroughly appreciated, and every effort ought to be made to throw down the artificial barriers which, with us, have been so unaccountably thrown up between the literary man and the artist; to chase away the misunderstanding, distrust, and imagined divergence of aims that it is useless to deny exist in England between these two important components of true "society."

The extraordinary admiration bestowed by the world at large, and especially by England, on French art,—an unaccountable admiration when we compare during the last hundred years the productions of the two countries,—can alone be attributed to the great intimacy which has existed in France between the artist and literary man, who have owed to each other's mutual support and almost daily intercourse more than one happy suggestion.

In France, no artist of even tolerable merit can be named who has not received his full share of credit at the hands of its literary men; while in England, the conscientious, careful work of our artists of the last hundred years has, one might almost say, with the notable exception of some few names, been only properly appreciated within a few years; and how many names are there which still remain to be drawn from an unmerited oblivion? By what almost seems an artful and constant repetition of certain favourite names in literary works (on almost every page of the best writers one may find allusions that could alone be suggested by an intimate understanding of, and friendship with, the artist), by carefully-written critiques of their works, the world has become, so to speak, completely familiar with French art and artists; while English art, lacking proper ap-

preciation, is ill-understood, and even ignored by many English people.

From this proper fellow-feeling between the artist and the literary student, which produced Vasari's "Lives," that legion of French writers of whom Charles Blanc may be said to be the typical representant, and beside whom we have only Walpole (and what do we not owe to him?), and, might be added, Dunlap's "Anecdotes of the Painters in America,"—from this fellow-feeling it has arisen that we are in possession of such a mine of information regarding the Italian painters, and especially Leonardo da Vinci and Michelangelo.

The expression of the most recent view on the works and lives of these two great men, the "Leonardo and Michelangelo" of Sig. Boito (a well-known art critic and contributor to the *Nuova Antologia**), will be read with interest by all sincere admirers of the great art of the past, who will thank the author for the suggestion of more than one new idea regarding the complex minds and lives of two such extraordinary interpreters of the silent art.

The means and aims of Leonardo and Michelangelo were too widely different for much friendly sympathy to exist in common between these two strange natures; but, owing to this very difference, in presenting the lives and thoughts of both, some idea of their artistic aims may be formed.

In Leonardo, who himself claimed but the title of "disciple of experiment," one finds, even when he seeks to represent the beauty of human nature, something experimental; while Michelangelo, in drawing his inspiration from the source of nature, entirely recreated her impressions in his own extraordinary mind. One a philosopher in everything, far-seeing, almost a prophet, incarnating four centuries ago the spirit of the man of the present day; the other, the free, unrestrained artist, giving existence to conceptions which belong as much to the genius of antiquity as to that of modern days. It was in the school of the antique that Michelangelo was formed; Leonardo, but little a student of antiquity, still seeking to satisfy his unquenchable thirst for truth. and even repeating his axiom that experiment never fails, but only our judgment. They represent the two phases of art,—the broad, profound mind which searches into the very depths of the beautiful; and the ardent spirit which precipitates itself upon the conquest of beauty as a standard may be won in battle.

The hand to which we owe the "Moses" worked with the rapidity of lightning; in three years,—tradition says in less than twenty months,—the noble poem of the Sistine Chapel ceiling was commenced and terminated. In the completion of the famous "Cena," Leonardo, to learn, employed sixteen years, and an equal time on the unfinished model of the great Sforza horse. "Patience," said the divine Da Vinci, overcomes all difficulties as easily as cold may be averted by the addition of warm clothing."

His refined and delicate nature, devoted as he was to innate research and experiment, and lover of the exquisite beauties of Nature, fitted him to be a painter rather than a sculptor, and painting he praises as the foremost of all arts, as taught to those whom Nature has not touched with her magic wand; not the mother of sons untold, like the printing-press; painting, honouring for ever the artist, and remaining always precious and unique.

Strangely enough, Leonardo appears little to have studied the antique. In his treatises he refers but once to the works of classic days, and in he confounds Greek and Latin; and, the pupil of Andrea Verocchio, the goldsmith, who, the discovery of the antique statues at Rome, abandoned his profession to follow that of the sculptor, and restored the Marsyas for Lorenzo de' Medici, Leonardo, among his innumerable sketches, has only left one drawing of a horse recalling that of the Monte Cavallo,—a small drawing, resembling a Greek Faun, and but few other proofs that he ever studied, as artists study, the antique.

Whoever turns over the pages of the "Codice Atlantico," at the Ambrosiana, with its 1,600 sketches, by Leonardo (without remembering what are to be seen in England, only a small portion of what his industry has left us), cannot resist a feeling of astonishment at the fertility of his genius. Mechanics, hydraulics, physics, mathematics, geology, botany, artillery, geography, astronomy, every science then known, was represented; and through all the hand of the artist is evident. A problem of geometry, which ends with the study of a leg; a weaving-loom, or a machine for laminating metal, adorned with some sweet female profile, or kneeling Madonna.

If in the science of Leonardo can be traced the fantasy of the artist, in the art of Leonardo may be noted the judgment of the man of science.

He is the naturalist painter, the philosophic painter, the critical painter; in a word, the painter of to-day, and Vasari (whose mine of information and anecdote writers on art have long made use of) tells us, slightly ashamed of even confessing it, in his preface to the third part of his famous "Lives," that Leonardo da Vinci gave birth to the manner "which we now call the modern."

Leonardo, remarks Signor Boito, was laconic in what regarded his affections. On the death of his father, in a MS. (now in the British Museum) one reads, "on the 9th of July, 1504, died S. Piero Davinej, notary, at the palace of the Podesta, my father, eighty years of age, leaving ten sons and two daughters." Ser Piero had had four wives; Leonardo was the son of none of these, but of a certain Catherine, who eventually married an Accattabriga. In 1457, when Leonardo was five years of age, we find the following note, "Lionardo, son of said Ser Pietro, illegitimate, born," &c. But the boy was certainly legitimate, since otherwise he could not have disputed with his brothers the inheritance of the father and an uncle,—a lawsuit which we see by letters of a later date happily caused but little ill-feeling between the relations. Regarded strictly, this indifference must be looked upon as selfishness in his character, but that selfishness which tears itself from earth to live in a paradise of art and science.

Leonardo was strange in this particular, remarks Sig. Boito, that there remains no evidence of his ever having suffered from the pangs of love, and yet Leonardo's beauty of form and feature are familiar to us all from the description of Vasari, and those portraits which exist at Florence, at Venice, Turin, and London. Michelet tells us that when the painter was at the court of Francis I., although then somewhat aged, he was copied by the king and courtiers, in the style and cut of his costume, his beard and hair. And yet in two distinct places in his *Trattato della Pittura*, Leonardo smiles at those who in his day showed a vain interest in dress.

Even in his youth, the gallantry of Leonardo must have been capricious and often neglected, for the painter had other thoughts to occupy his mind. The jokes, the repartees which more than one writer has handed down, cannot destroy the abstracted nature of the man immersed in the contemplation of nature; the painter, he once said, must live alone; and, he added, if he will be content to be alone, he will be everything.

It is important, remarks Signor Boito, that we should see the man before considering his work; especially in that art in which his nature shows itself. Michelangelo shows himself in his work; the "Moses" is Michelangelo, the nature of the artist is revealed; Raffaelle in his figures can be divined, but not so Leonardo. His Christ and Apostles, in his "Cena," are the true personages of the sublime drama in which they take so important a part. He who has imagined them has disappeared, but still remains his famous "Cena." Never has any painter, we believe, either before or after Leonardo, succeeded so completely in satisfying every critic, as has Leonardo in this work,—a work on the completion of which he spent no less than sixteen years, painting, it is true, as his contemporary Matteo Bandello tells us, according to his caprice, now giving a few touches of the brush to some portion, and as soon leaving it, to continue elsewhere some neglected work. "On some days, from sunrise to sunset, he never laid down the brush, denying himself his meals; at other times contenting himself with contemplating his work for hours together, his arms crossed," intent on the consideration of new experiments, whose results, alas! worked so soon their fatal effects.

Of his superb "Cena," injured by time and the brutality of Napoleon's soldiers, at a later period by the restorers, Sig. Boito mentions several reproductions, but neglects to speak of the valuable copy by Leonardo's pupil, Marco d'Aggione, which so many of our readers will remember in the lecture-room of the old Royal Academy, and which now holds so distinguished a place of honour at Burlington House.

Sig. Boito has carefully prepared and presented to his readers the remarks of Leonardo's numerous critics on his works in the various galleries of Europe; and sad is the tale these criticisms tell, written by such well-known professors as Beyle, Viardot, Charles Blanc, Rumoler, Clément, Delecluze, and a host of others, of the numerous pictures erroneously attributed to the great painter, of whose works so few specimens now remain. Here we stop, remarks Sig. Boito, after a lengthy review, because round the many pictures said to be by Leonardo only hangs an interminable litany of doubts and suspicions, which, he adds, the more one studies the clearer, alas! they appear.

This happened to Rigollot, who published a catalogue of Leonardo's works; as also to the Marchese d'Adda, who has written learnedly about Leonardo as an engraver, and who has denied the authenticity of the illustrations of the treatise "De Divina Proportione," by Fra Luca Paciolo; as also those of the "Trattato di Scienza d'Arme" (published at Rome in 1553), and all the others, attributing them rather to Verocchio, Mantegna, Pollaiola, and Francia, with the exception of two,—a profile of a woman and the four horses; while d'Adda concludes by the statement that no print, either in copper or in wood, can be regarded with certainty as the work of Leonardo.

Of Leonardo's numerous productions mentioned by Vasari, how few now, alas! remain! Not even the famous cartoon of the Battle of Anghiari. It was in the execution of this work that Michelangelo and Leonardo were brought face to face. Both had been commissioned by Pier Soderino, the *gonfaloniere* or mayor of Florence, to paint one of the walls of the great council-chamber; both painters prepared cartoons which gained the admiration of all contemporaries; both commenced to paint, and the works of both were left unfinished, the cartoons were lost, and we must content ourselves with Vasari's description and a few pencilled memoranda. Michelangelo's subject, adapted for his display of muscles, was the famous cartoon of Pisa; Leonardo's, the Battle of Anghiari.

Of the few reproductions left us of Michelangelo's great work, Sig. Boito has neglected to mention the superb engraving by Schiavonetti, from a drawing, if we are not mistaken, by the late Henry Howard, R.A., a work probably alone known, however, only to a few English artists and connoisseurs.

The cartoon for this great work Michelangelo completed in ten months; Leonardo, on his, spent more than two years, commencing to paint at first in oil-colour, with a composition of his own invention, of chalk, Greek pitch, linseed-oil, and white lead, which before long, however, he was obliged to abandon. Such, indeed, were the experiments he eventually practised, that a few short years after the picture was finished, it fell irreclaimably to ruin,—the fate of more than one of Leonardo's works.

This mania for experiments with varnishes and mastics, and colours, must be regarded as Leonardo's chief fault, as, indeed, it has been in every painter who has followed his example. Vasari has already told us much concerning Leonardo's method, and his admiration for low tone. He prepared, writes Signor Boito, his ground of a brown colour; he then modelled, especially the features, in neutral tints, and then tenderly finished his work in colour. His marvellous rotundity and relief arose from his profound knowledge of light and shade,—a knowledge that perhaps more than once led him into excess. It was not by dexterous brush-work that his effects were produced, not by boldness, and in the same way that he shows no wish to reveal in his work his own mind, he seems desirous to hide his manipulative power.

This was in later life, when Leonardo had mastered his methods, but while in Florence we see evidences of his perplexity amid the seducing examples of his contemporaries and predecessors. Massaccio, that ideal artist, the beloved of all painters, had died at the early age of twenty-six, some quarter of a century before Leonardo's birth. That same year (1452) Donatello was aged sixty-six; Leon Alberti, forty-seven; Fra Lippi, forty; Ghirlandaio, but three years old; Sandro Botticelli, five; Ghiberti, who, the same year, 1452, had placed at San Giovanni his second "Gate to Paradise," seventy-four; the divine Angelico, sixty-five.

In the works of this period, Leonardo is

* Ulrico Hoepli, Milano, 1879.

thoroughly Florentine, as indeed he is during the whole first thirty years or so of his life; and to which belongs Lord Norwich's famous "Virgin and Child," which Waagen has declared to be thoroughly authentic.

Sig. Boito closes his first chapter on "the painter and his mind" by a learned review of the state of art in Milan and the cities of Lombardy previously to Leonardo's arrival in the capital of the Sforza family; and we are further shown how Leonardo left no famous pupil to continue his tradition, though some of the painter's biographers have attempted to prove the contrary. Whether or no this be the case, without Leonardo's teaching Andrea Solari's works would never have been produced, and perhaps much of the admirable grace of the pictures of Bernardino Luini would have been wanting.

Even in divine natures, remarks Sig. Boito, one may meet sometimes with strange contrasts. Leonardo loved, as deeply as his own cherished art of the pencil and the brush, that of the chisel, even when declaring sculpture to be a mechanical art, causing in itself no admiration in the spectator. Whatever his expressed opinions may have been, Leonardo, we have evidence, wielded ably the modelling-tool and the chisel, though, alas! nothing remains to show us his power. While he was in Florence, in the first years of the sixteenth century, the *gonfaloniers* had held out the prospect of his being allowed to use a huge block of untouched marble lying at Santa Maria, but Michelangelo, then a youth of twenty-five, in two short years, while amply employed in the execution of numerous other commissions, saw in and worked from the unshapely mass the famous David, of which we have so interesting a reproduction in our own South Kensington Museum.

The only great work in sculpture that Leonardo ever attempted to carry out was the equestrian statue of Francesco Sforza. The disappointment, delay, the hesitation and extraordinary dilatoriness of Leonardo in the execution of this colossal work, Sig. Boito tells at length in his interesting pages. Sixteen tedious years Leonardo laboured unsuccessfully to complete the great horse, the model of which was eventually abandoned and destroyed.*

Leonardo, the pupil of Andrea del Verocchio, the author of the noble Colleoni monument at Venice, who again was the pupil of Donatello, the author of the statue of Tattamaleta at Padua,—Leonardo, with the perfection of such works before him, and the remembrance of the horses of Phidias, strove to his utmost to equal, if not surpass, the work of his predecessors. The Fates, alas! were unpropitious, and Leonardo's fame alone must rest on the record of his conscientious desire to arrive at the furthest limit of perfection.

Unhappy, he used to say, enumerating a noble sentiment, the ruling precept of his own life,—one not alone applicable to the artist's aims, but to those of every one's existence,—unhappy is he whose work surpasses his ideal; he who sees his work still far from the realisation of the ideal he has striven to attain may be on the threshold of perfection.

We will continue the subject hereafter.

Liverpool Engineering Society.—At the first meeting of the present year held on Wednesday, the 15th instant, at the Royal Institution, Colquitt-street, Mr. Morgan E. Yeatman, M.A., president, in the chair, the chief business was the reading and discussion of a paper by Mr. J. S. Brodie on "The Disposal of Town Refuse." The author considered that in spite of the attention that has been paid to this all-important subject, and the sums of money that have been spent by various companies with greater or less results, the question as to how best to get rid of such refuse as that from dwellings, factories, and slaughter-houses remains *in statu quo*. With a view to further elucidation and discussion the present paper was written, and it gives a description of the more important schemes that have been tried for the treatment of sewage. In conclusion, Mr. Brodie believed that unless something altogether unexpected came forward, towns would have to continue to pay to get rid of their refuse just as they have to pay for their water supply.

* In our notice of the present exhibition of drawings at Burlington House, mention will be found of sketches there made by Leonardo for this work.

CONSTRUCTION AND COMBINATION IN THE ARTS.

THE SUCCESSIVE AND THE SIMULTANEOUS.

A BUILDING or a picture is as much a poetical whole, or ought to be, as is an epic or a drama; it is a whole in virtue of being governed by one pervading purpose and expression, to which all subordinate parts contribute; those parts being subordinates in a certain hierarchical progression, —certain divisions having an approximation to a totality in themselves, but still by themselves being incomplete, such dependent parts having still their own subordinate parts until we descend at last to the purely elementary. The introduction of an element or a combination as a subsidiary member is only justified by aptitude for assisting a leading effect, and so, more or less, indispensably contributing to some ultimate practical efficiency, or to as decided a dominant and harmonious expression. It is upon the essential value of the result, whether economical, or æsthetic, or combined; and the perfection with which it is brought about and accomplished, that the standing, the rating, of the artistic whole depends. A fine subject, a cathedral or an epic, may be only half taken advantage of,—may be disgraced and deformed by excrescence and inappropriateness, and certainly a poem may be no less so.

To this extent the same general definition applies to either class of artistic achievement; but when we press the comparison further, we find that we have to ask ourselves,—How can we institute a parallel between a work which presents itself all at once, and another which comes upon us in a course of succession, whereby the impression of one moment is constantly being succeeded by a novel impression? Portal, rose-window, towers of a cathedral, come into view and remain in view together, and declare their harmonious relations as long as we like without change, without suspensions, revelations, or surprises. How are we to bring into analogy the relation of these architectural members to each other, and those of an oratorio of Handel? How shall we compare the majestic structure of a trilogy of Æschylus with the Parthenon? The problem seems like that of putting into comparison a straight line with a plane surface. To compare an elegy in a country churchyard to the church itself seems like an attempt to find a third proportional to Hyde Park and New Year's-day. Yet not altogether so. The impression which a fine building produces is not entirely simultaneous; nay, that which we owe to a narrative or a drama is not entirely to be regarded without any qualification as successive. To fully appreciate the architecture, we take different points of view. It may be agreeable, it may even be necessary, to make a circuit; and even if we restrict the case to the aspect of a noble façade, though it is certainly all in view at once, and produces a general impression at once,—if it is a work of that complexity, however made compatible with simplicity, which is ever implied by the production of the greatest effects, we do not and cannot, and would not wish to attend at the same moment to every part equally; we flit from one to another; we take them in some order of succession, quite spontaneously it may be, and compare part with part, and travel back again over the whole, and so may be conscious at last that the finest appreciation which we have realised has been as much due to the succession as to the simultaneous impressions that we have received. It is, indeed, characteristic of a fine composition in either painting or architecture, that it detains us by inviting us to go over the parts in ever-varied sequence, while the general effect is still ever present to the mind.

On the other hand, the impressions of an oratorio or of a drama are not so purely successive as they may at first be considered. What is presented to us directly and is immediately proceeding, excites anticipations, curiosities, interest as to what is to come, and at the same time even as it passes leaves an impression that does not die out, but becomes simultaneous with the next direct impression that succeeds. Even as when a musical note ceases its effect lives on by predisposing the ear for the reception of certain notes to succeed it in preference to others, the progress of the work puts us into a state of mind,—of emotional susceptibility as well as of intellectual information,—that blends from one stage to another. This progress, under the conduct of a consummate artist, works up and onward to a final climax; and so the condition of sensibility becomes gradually more and more completely under the influence which owes as much to the beginning as to the end of the system of excitement. We have been led on step by step, it is true, but so we might be if we had our first sight of a fine building as gradually emerging from a mist until after part in succession to part had been revealed, and then just as the whole came into sight, the mist should again close in and take it from our view. Let it be allowed to us, in our search after the development of the concurrence of the simultaneous with the successive in the arts, to recur for illustration to an aspect of those conditions of a National Theatre for the national drama which we have been recently discussing and have not yet done with.

Among the difficulties that have to be conquered before the requisite organisation can be achieved is that inveterate jealousy which Macready was conscious of and confesses; jealousy that an actor is apt to entertain, not only against those who play, or may play, the same parts that he excels in, but against those who play along with him. Applause given to another, —such is the candid avowal and notorious fact,—seems taken from themselves. In consequence, the ambitious, and those who have attained a certain popularity, feel that they are losers by appearing in even important parts, that by their nature do not offer the best opportunities for "bringing down the house." Next follows entire indifference to the fate of scenes in which they do not themselves appear. The inevitable consequence must be that the genuine and perhaps unsuspecting appreciator of the drama as a work of art is baulked at every turn. For the full effect which he desiderates to be realised, the secondary part should be assigned to a first-rate talent no less than the chief part; but there is a tendency for rivalry, and jealousy, and self-conceit (let us whisper), to thrust it down upon third or fourth rate talent. But Othello, in exercising such tyranny, sadly miscalculates the reaction on his own performance; he does not know that the effect of his scene with Iago largely depends, not only on the excellence of Iago in the same scene,—on what may be called the simultaneous contrast,—but on the impression which he has made, and of which the effect still tells on the spectators, still rings in their ears, and enhances or deadens their interest, in an antecedent encounter with Cassio or Roderigo.

The story is told that Mrs. Pritchard, who preceded Mrs. Siddons, neither read nor knew more of the tragedy of "Macbeth" than her own speeches and the cues that introduced them. The story may have sprung from mistake, ill-nature, or satire; but actors, even such as Garrick, have treated Shakspeare's compositions in a spirit that is, perhaps, one degree more discreditable. An actor behind the scenes,—supposing him even to be there and not in his tiring-room, not on his way to the theatre to be just in time for the call-boy, is no doubt, in a disadvantageous position for appreciating the true sentiment of scenes that he himself has no part in. We may compare him to a musician in the orchestra, who should be conceived as only conscious of the music at the time that his own instrument was in request for the score. He, too, would probably think that the rest of the performance dragged, might well be compressed, made to "go closer," and so forth. He would be likely enough to wish especially that whatever immediately delayed his own display, should be curtailed. He would have for his reward the experience that his own display would fall comparatively flat; the preparation by which a great artist introduces a fine scene in a play has the same relation to that scene as the background has to an historical picture, as the foreground has to a landscape, as a portico to an entrance-hall, a hall to the chief saloon. When Garrick cut out the boorish conundrums of the gravedigger, he was unconscious that he was destroying a contrast that would give double effect to the over-refining reflections of Hamlet by the side of the grave at his next entrance. Scene after scene is torn away from Othello, the true impression of his mental struggle is weakened in consequence; the actor has his great scenes that most he prizes intact, but relief is lost, and the noble Moor has been improved in consequence to excite not sympathy but repugnance, pure and simple, in those unsophisticated minds that, unimbued with the omitted literature, very justly turn away from him as he has been sometimes represented s

born of surroundings. Of a truth, it is their erit and not their fault if they happen to ock the more indulgent, and the victim whom e poet sets before us at large as only succmbing to diabolical ingenuity and spite, is coiled from and denounced by them as a sorry ipe and cold-blooded murderer.

If we ask a dramatic author what he underands and aims at as the essentials of construcn, he will say most probably that construction his art means coherence and climax; that is say, an intimate correlation of various threads interest and incident all converging with an cumulation of interest as they proceed to an timate harmonious and most highly pleasurable se. This is the meaning of the ancient doctne of variety and unity as characteristic of generally, of works of any considerable imrtance in any art whatever. Invention nging between lightest fancy to most soaring agination must be relied on to minister variety, d a sense of appropriate proportion govern the pervading unity. Where these faculties are rophied, or hypertrophied, we know what the sults are in architecture,—the results are the me in a poem or a drama. The reorganisan of the drama will be a failure unless an ective check can be instituted against condary parts being neglected, and superior rts unrelieved, whether the check be found in enlightenment of the actor's self-interest, or dependent managerial control that can enforce elf. Apart from such control, the dramatic ucture will be comparable at last to some chitectural productions wherein, for anything at appears, the several features have been rtially indulged,—towers allowed to assert mselves to a degree that dwarfs and seems threaten to crush the really useful building ached to them, blank walls doing their best crowd out windows, entrances expanding mselves till they threaten to disjoin the ade, and porticos putting themselves forrd as much too important to have any conration for requirement of space in the oons to which they give admittance.

THE FRENCH MEDIÆVAL BUILDING TRADE.

From the literary researches of M. Fagniez the early industrial history of France, we ain several interesting particulars on the rious trades to be found in Paris, including se of building; and when we reflect on the le erections that rose up in those eras to form French cities, it would seem not out of place we seek to know something of those who built m. From that very ancient industrial census, own as the *Livret des Métiers*, we find that re were in Paris at the end of the thirteenth tury 122 masons, 7 masons' assistants, 36 sterers, 2 scaffold-builders (*eschafaudeurs*), oor-makers, 108 carpenters, 18 stone-getters n the quarries, and, lastly, some *appareilleurs*, cribed as master-workmen, who traced the ne dressing. Of these, the numbers are not wn. There could not have been many; for, ording to some, the architect himself somees took the duty of *appareilleur*. Indeed, re was no such person as an architect in se days, this term not having come into vogue il the fifteenth century. In the twelfth and fteenth centuries he was designated as the ster of the works, and his office was to trace plans, calculate the quantities, buy the terials, arrange with the contractors, overand measure the work, and pay the men. architect, therefore, had in most cases rly enough to do without assuming the duties *appareilleur*, which was probably done by ster stonecutters, as the following extract ns to show:—"Me Dreufavier, tailleur de re, por avoir taillé et faict l'appareil aux ons d'un portail de pierre." However this be, the master of the works had the whole mand and responsibility, both as regards erial and execution, and particularly in the onry, over which he exercised a more perl supervision than over the other details. left, indeed, the carpentry to the care of a ter carpenter, who drew the plans and estis, though always under the eye of, and ect to alteration by, the master of the works. latter had to arrange with everybody, as ind him in the records of the building of College of Beauvais concluding a bargain a tombstone cutter for putting up and hing the tomb of Jean de Dormans, the der; and also drawing a design for the coppersmith, in the shape of a copper crown, for the statue of the Virgin.

When the master of the works had several jobs on hand, necessitating his travelling from one to another, he had leave sometimes to appoint a substitute, whom he paid so much a day, though it was understood that the latter had no power whatever in any artistic direction, but merely in checking off certain materials or work to be done. In those days the king, the great nobles and religious establishments, had each their own properly-appointed masters of the works, generally one for masonry and another for carpentry, and the supervisors of the royal buildings were appointed personally by the king, and had a distinct position at court, giving up their office only into the hands of the royal chancellor. The following extract tells us that "Petrus Souchet, varletus camere Regis, ordinatus et institutus magister generalis operum carpenteriæ regis loco majestri Roberti Souchet vacante per resignationem ejusdem in manibus domini cancellarii factum. Idem Petrus fecit et prestitet solitum in camera juramentum." Moreover, besides their salary and certain gratifications, they had each two horses at their disposal and at the royal household's expense. Indeed, in all building matters it was the custom for the owners of the buildings to testify their satisfaction with well-done work by occasional honoraria. In 1362 the Duke of Normandy gave his master-mason, Raymond of the Temple, 20 francs in gold, and when he became king he made him one of his sergeants at arms, and gave 200 francs in gold, wherewith Raymond's son, Charlot, to whom the king was godfather, and who was studying at the University of Orleans, might pay for his keep and buy books. Louis of Orleans also gave the same sum to Raymond, who, apparently, was in luck's way, for his services as architect of Orleans aux Celestins. Occasionally a good bit of money was made by the masters of the works selling the materials *sub rosa*, and pocketing the proceeds, though precautions were sometimes taken to make this impossible. Of this a case in point happened in 1402, when the materials for one of the royal buildings, consisting of wood, lead, iron, carpentry work, scaffolding, glass, and sashes were shut up in a warehouse, with two locks and keys, of which the master of the works held one and the accountant the other, so that any misdemeanour could only be carried out by collusion between these two. At the conclusion of the operations, the materials which were left were sold by the receivers in the presence of the master of the works, *au prouffict du Roi*. Although in ordinary cases the master of the works was also pay-clerk, the royal household included a special functionary for this office, which was sometimes a confidential one, Philip the Long having appointed his valet to discharge this duty. We find extant one of these certificates of payment, as follows:—"Jehan Frangile, maistre des œuvres de charpenterie du Roy nostre sire, à Guillaume, receveur du Roy, salut. Je vous certifie que Regnault de Gastins, masson, a bien guagné et deservi, et lui est deu sept livres trois sols tournois pour avoir fait et parfait les besonges qui ensuivent. Tesmoing mon seel à ces presents le xe jour de Fevrier l'an MCCCLX. et seize."

In cases where an expert's opinion was wanted, the master of the works himself acted, although this was sometimes done by masons and carpenters specially sworn to act (jurés du roi). In all building affairs connected with the royal household, there were two of these officials, one for masonry and the other for carpentry, but in other cases we hear of juries of eight or even twelve. They were personages of some consequence, being nominated by the master-mason of the king, and instituted by the provost of Paris, who adminstered the oath to them. In 1402, a case occurred in which one Jean Priem disputed the right of Pierre Denis to be properly elected, though the provost confirmed the election, and maintained his right. When Pierre Denis died, there was again a contest, so that it is clear that the office was one of considerable importance in the trade. Various mentions are made of occasions in which the services of this jury of experts were called into requisition, and must have been of decided utility in the government of the city. For instance, in 1326, one Souplicet, a chasuble maker, presented a petition that the jury should assemble and report on the condition of the adjoining house, which threatened to come down and involve his own property in the ruin. The jury came, saw, and approved of the petition, putting their seals to an order that the insecure house, the property of Isabelle de Trambley, should be at once pulled down. Again, in 1334, Philip of Valois authorised Guillaume Judet, chaplain of St. Michel's chapel, to break through the wall of his house, which adjoined the street of the Grand Pont, and to build there workshops, the receipts from which were to be applied to the maintenance of the chapel; at the same time he gave instructions to his experts to visit the place and report as to where the wall could be pierced at the least inconvenience to the neighbourhood.

THE LATE MR. E. M. WARD, R.A.

THE remains of this excellent artist and much-esteemed man were interred at Upton Church, Slough, on Tuesday morning last. The funeral *cortége*, which consisted of a hearse and four mourning coaches, left the late residence of the deceased, Glen Aray Lodge, Osborne-road, Windsor, shortly before twelve o'clock. The first carriage contained his three sons, Mr. Leslie Ward, Mr. Wriothesley Russell Ward, and Mr. Stanhope Ward, and Mr. Charles Ward, brother of the deceased. In the second were Mr. E. Chappell, son-in-law of the deceased; Sir Frederick Leighton, president of the Royal Academy; Mr. Millais, R.A.; and Mr. Frith, R.A. In the third, Mr. G. R. Ward, father of Mrs. Ward and uncle of the deceased; Mr. Tom Taylor, Mr. E. M. Barry, R.A., and Mr. Beavis. In the fourth, Mr. S. Evans, of Eton College; Dr. Collins, Mr. Ashton, and Mr. W. B. Holderness. The *cortége* arrived at the interesting old church about half-past twelve, where a great many friends of the deceased had previously assembled. The Rev. Edward Hale, of Eton College, read the service.

The melancholy circumstances attending the death of Mr. Ward have been made widely known, and have only excited feelings of sorrow and commiseration. He had suffered from a long illness, and had become subject to fits of depression, one of which overmastered his reason. His rare ability as a painter, and his high character as a husband and father, have already been the theme of many warm notices, the result to a certain extent of a reaction. For some time past a certain school of critics, admirers of the smeary and the incomplete,—of suggestion rather than depiction,—have treated his works with neglect if not with depreciatory comments, and this treatment we have reason to believe had tended to aggravate his illness and embitter a portion of his life. Posterity will do him more justice. He has left a number of works which his country will not willingly let die. Some short time ago, as many will be glad to hear, the Council of the Art-Union of London adopted for engraving his interesting picture "Dr. Johnson in Lord Chesterfield's Antechamber," which is now in the hands of Mr. Lumb Stocks, and a series of drawings by the artist himself from his principal works in the Westminster Palace, reproductions of which, together with those of pictures by Mr. Cope in the same building, will form a book for distribution to the subscribers hereafter.

The Slate Trade.—A manifesto bearing upon the present position of the slate trade,—the staple industry of North Wales,—is being circulated by the Executive Council of the North Wales Quarrymen's Union. The trade, it is stated, has within the last six months got into one of the strangest and most sudden panics ever known, the present danger being lest the employers should endeavour to push matters too far, and take advantage of the stagnation to repeat their attack upon the union. The council complain of the apparent reluctance of quarry proprietors to continue the practice of making stock preparatory to a revival of trade, the men preferring to work such stock at a most reasonable price rather than have their hours shortened. Looking to the present state of affairs, and that the reason assigned for the reduction of wages and the shortening of hours is the inability of quarry-owners to sell the quantity of slates made, the union has resolved upon voting to each member emigrating to America 3*l.* for the first year of membership, and 1*l.* for each succeeding year he has been associated with the organisation; double the amount to Australian and New Zealand emigrants, with a further premium of 2*l.* to all emigrating west of Chicago or to South America.

STEAM LAUNDRY BUILDINGS AND MACHINERY.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At a meeting of this society held on the 16th inst., Mr. C. H. Driver, F.R.I.B.A., president, in the chair, Mr. W. C. Street read a paper on steam laundry buildings and machinery, in the course of which he said:—

The evils or dangers which are generally attendant upon the ordinary methods pursued in laundry work, and which have been enumerated by such papers as the *Lancet* when discussing this question, are, generally, the many chances of infection with many subtle, painful, disagreeable, or even deadly diseases. In addition to this, there are the minor discomforts ordinarily experienced in our dealings with our washerwomen, and the great damage done to our property by the use of chemicals, scrubbing-brushes, torsion or wringing, and other violent usages. The editor of the *Lancet* has his own idea of a perfect laundry, and describes it fully under date of the 24th of November, 1877. The following are the essentials as given in a summary at the end of the article:—

(*a.*) The avoidance of any personal contact with the clothes until after purification.

(*b.*) The complete separation of foul linen.

(*c.*) The riddance of filth by shaking in running water charged with a disinfectant.

(*d.*) Drying at a high temperature to desiccate the loosened dirt which may adhere to the fabric after the first washing.

(*e.*) Shaking in a strong current of air to discharge the dried particles.

(*f.*) Isolation of the disinfecting staff who work in the receiving-house.

(*g.*) The whole of the workers in the "model laundry" should be kept under sanitary supervision, which should extend to their homes.

To nearly all, if not all, of the above it would perhaps be very proper to subscribe, given two conditions,—(1) an unlimited command of money, and (2) that perfection is attainable. These two conditions are, however, precisely the very ones which, by their invariable absence, constitute the chief difficulty of all our tasks, and we must accept just so much as is possible at the present, and hope that in times to come matters may be still more improved. Any one who would now undertake to fulfil, in a practical and remunerative manner, all the requirements enumerated by the editor of the *Lancet*, would be either very foolish, or possess an entire disregard for truth. The collection of the linen must always be carried on in pretty much the same manner as at present, only improved by providing large and clean vehicles and receptacles, as well as receivers. The linen, on its arrival at the laundry, can be sorted or divided into the several classes requiring various or separate treatments. Any consignment of linen that is suspected of infection should be conveyed to the laundry in an air-tight receptacle, and put bodily into the disinfector, and after a thorough disinfection, by subjection to steam under pressure, equal to a temperature of 274°, which will destroy all germs of disease, it can be sorted in the same way as any other linen. Passing from the sorting-room, the linen should be taken into the several washing-houses or rooms to be washed, boiled, rinsed, blued, &c. It can then, instead of being violently wrenched and wrung, have the superfluous water taken from it by being placed in a circular machine, called a "hydro-extractor." This machine has wirework sides, and spins round at the rate of 2,000 revolutions per minute. The centrifugal action presses the linen against the wirework sides, and the water passes out through them. The linen should next be taken to the drying-room, where it can be dried either by being put on horses and thrust into a hot closet, or, as in the case of flannels, which ought not to be dried too quickly or in too great a heat, be placed on lines above the hot closet; or, as in the case of lace curtains, &c., be stretched upon frames, and subjected to a similar moderate temperature. The usual temperature of the hot closet should be about 140° Fahr., and that of the floor on top of the closet about 90°. From the drying-room the linen should be taken into a calendering and mangling room, where as much as is possible of the finishing can be done by steam machinery. From here it must be passed into the hands of the ironers, &c., by whom it is finished up and prepared for passing into the sorting and packing room. In the West End Steam Laundry, in which I have had the honour to be interested as the architect, the several operations are there conducted as nearly as possible in the order described. There are many kinds of washing-machines in the market, and anybody intending to purchase, on either a small or a large scale, should be very careful and patient in making every inquiry as to which is the best for the particular kind and quantity of work. In some instances a rotary machine, where the clothes are subjected to the action of hot water and steam, with the addition of soap and soda, will be sufficient. But where, for instance, the linen of a labouring population is to be cleansed, there should clearly be some more powerful mechanical means for purging the clothes of the accumulated perspiration and foulness, and for these purposes a shuttle, or a machine with a beater, would be better. For general purposes a machine called a "Whitster" would seem a very ingenious contrivance, as it squeezes the clothes with an elastic pressure against a vibrating wash-board, and each time the press recedes the roll of clothes turns round a portion of its circumference, so that at every stroke the fabrics are squeezed in a different position. For the extraction of the great bulk of the water after the washing, boiling, and rinsing have been performed, nothing can be better than the "hydro-extractor" already described. The arrangement of the drying-closets is a matter of the highest importance, as there should be a constant admission of hot dry air into the closets, with a concurrent exhaustion of the supersaturated air. If this is not attended to, the clothes will be taken out of the closets heated, but not dried. In some cases the drying-closets are heated by steam-pipes, and in others by flues from the ironing-stoves. I would suggest the latter as being preferable, and that the hot-closets should, if possible, be placed at a little distance from the moist atmosphere of the wash-houses. The creation of a vacuum or exhaust for the removal of the wet air from the closet, as the moisture is evaporated from the clothes, must be very carefully managed and regulated. In some cases it may be effected, as has been done by Mr. Howland, the manager of the West-End Laundry, by placing a steam jet near the exit of the exhaust-pipe, and thus sucking the air up. It would perhaps be better effected if the steam were passed in an annular space, similarly to that by which exhaust is occasioned in Smith's vacuum brake. It can also be done by a fan, or by connexion with the draught of the boiler-furnace. It would also be easy to devise a simple means for regulating the rate of the exhaust so as to suit the state of the atmosphere, and to maintain the drying-closets at any required heat. The calendering-machines are very ingenious, performing ordinary descriptions of ironing and folding by passing the linen between two cylinders heated by steam. The mangle is an ordinary form of mangle similar to that worked by Mr. Mantalini, only it is operated by steam instead of manual labour; the workpeople in time become so expert in feeding it as to take out and put in fresh rolls of linen without stopping the machine. With regard to ironing-stoves, there is still room for improvement in the way of maintaining an equal heat all over the stove, and with regard to economy of fuel,—a great deal of heat passing extravagantly up the chimney. Where the stove is utilised for heating the drying-closets, as before mentioned, there must be an obvious economy. In designing a range of laundry buildings, the details must be regulated by the extent and shape of the available ground. Where, as in the case of the West-End Laundry, there is plenty of space, I should consider it preferable that they should be all on one floor, as permitting greater ease of transit from one department to another, and affording opportunities for shutting off the steamy wash-house from the drying and finishing rooms. Particular care should be paid to the buildings being sufficiently lofty, well ventilated, and well lighted, and all direct communication with the sewers must be avoided. The roof-principals must be sufficiently strong to admit of shafting being attached to them without causing vibration, and this can be done without needless waste of material. It is better, in many respects, to have overhead shafting rather than bracketed. The engine used at the West End Laundry is an ordinary horizontal engine, of 15-horse power, and the steam is generated in a vertical Field boiler, the latter being selected as doing away with the tall chimney-shaft which would have been required for a Cornish boiler. One of the sources of infection, that from workpeople, should be carefully guarded against. In the case of the laundry I have spoken of, it is proposed by the proprietor to build cottages for his workpeople, so as to offer extra inducements to good hands, and to gradually concentrate the required labour on the site, where it can be placed under medical supervision. I had intended illustrating this paper with plans of other laundries, and of the different machines employed; but on talking to one or two of the manufacturing laundry engineers, they appeared so very jealous about showing plans which they said were the results of vast experience and expense, that I abandoned the idea. We are, all of us, tempted to invest our particular callings with a certain degree of mystery, but I would ask young architects and engineers to be of good hope, for though many of the existing laundries and many of the trade machines are very good, there is still room for great improvement. While, too, there is a large population, to a great proportion of whom cleanliness is valuable, there must be a demand for such buildings and such machinery. In the planning of laundry buildings, if the general requirements are kept steadily in view, and there is a judicious selection of the best available machinery, the result in competent hands cannot be so very far wrong.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At the third meeting of the session, Mr. Thomas Morgan, F.S.A., in the chair,

The Rev. Mr. Chandler reported the discovery of the altar slab of Waterbeach Church. It is of grey marble, and has been supported by six pilasters, fragments of which were found.

Dr. Woodhouse, as a warning to antiquaries, exhibited a large collection of forged articles, the work of the firm of "Billy & Charley," whose productions were more frequently met with a few years ago.

Mr. Loftus Brock, F.S.A., described an African jug of modern date, having the form and colouring of early times, being an example of the continuance of ancient types in the country.

Mr. Gordon Hills reported that several fragments of Roman date had been found in Chichester Cathedral, indicating the prior existence of Roman buildings on the site. He exhibited red tesseræ and Samian ware, and spoke of flue tiles having been found.

Mr. Hills then read the first paper, descriptive of the recent discovery of a remarkable series of earthenware vessels at Leeds Church, Kent. They are built up over the arches of the nave, and were inserted probably in the belief that they would help the acoustic effect of the building. The arches are of the fifteenth-century date, but the jars appear to be older. The subject of acoustic pottery in churches was dwelt upon at length.

Mr. De Grey Birch, F.R.S.L., commented upon the peculiarities of the inscriptions.

Mr. Roach Smith, F.S.A., reported the discovery on the Allier of the site of a Roman manufactory of small statuettes of white clay, and exhibited a series of photographs of the most interesting kind. These articles are of rare occurrence in England.

Mr. Morgan read the second paper, taking for his theme the positions of the Roman armies in North Britain in the second and third centuries, the positions being indicated by numerous evidences which were passed in review, while recent discoveries were mentioned which offered additional information.

The third paper was by Mr. W. C. Little, who traced the course of a Roman road across the Cambridgeshire fens, and described its construction of gravel upon a layer of branches. It is generally 25 ft. wide.

Frost and the Water Pipes.—We have received a bundle of letters asking whether, when a lead pipe bursts, the mischief is done during the process of freezing, or that of thawing, and hinting at some fresh theory on the subject. Our early teaching was to the effect that it is the force with which the water takes the form of crystals in freezing that rends the pipe, the mischief not showing till the thaw comes; nor are we aware of any proof to the contrary. But this is a day of upsettings, and we are always willing to learn.



ANCIENT HOUSE IN CLARE, SUFFOLK.—FIFTEENTH CENTURY.

ANCIENT HOUSE IN CLARE.

THE house, of which we give an illustration, is situated close to the churchyard, at Clare, in Suffolk. It is an interesting example of a house of the fifteenth century, with a remarkably pretty "barge-board," composed of pierced tracery work, and some well-designed wooden corbels, and picturesque square-headed windows containing their original tracery and glazing; but the most remarkable feature about this house is the treatment of the plaster-work. Whether this is cœval with the building or not is a question, probably the greater part of it is of the same date as the rest of the house, but it has been considerably mended and patched up, though at the same time preserving the original design. The kind of Indian shawl pattern, and the winged beast below the window, are very remarkable. But the heart (if it is intended to represent a heart) and the scroll-work in the upper part of the gable, seem of a more modern character. The whole is, however, an exceedingly interesting example of plaster-work as treated for purposes of external decoration, and we more especially call attention to it, as from year to year these specimens of the domestic architecture of the Middle Ages are disappearing.

TYNEMOUTH CHURCH.

THE monastery and first church at Tynemouth were built during the reign of Edwin, king of Northumbria, possibly mainly of wood, and were reconstructed of stone during the seventh century. The remains of St. Oswald were buried there. The monastery suffered very much from attacks from the Danes, and was rebuilt several times. Earl Tosti refounded it in the eleventh century. In the thirteenth century the eastern portion of the church was rebuilt. A stone screen was erected across the eastern arch of the nave, and the nave was set apart, as at St. Alban's and elsewhere. The church was finally ruined in 1665, more by wilful destruction than by decay and exposure to the weather.

Two or three years ago the late Sir G. Gilbert Scott was requested to prepare plans for its restoration, and if these should be carried out the interior will take the appearance presented by the accompanying view. It is a project which Sir Gilbert Scott had much at heart.

PARTY WALLS: THE LAW AND THE PRACTICE.

ARCHITECTURAL ASSOCIATION.

AT the ordinary meeting of this Association, on the 17th inst., Mr. Thomas Blashill read the following paper on the above subject:—

There exists in London a long-established custom of building between adjoining houses, not two separate external walls,—one standing upon the ground of each owner,—but one wall, the centre of which is usually placed perpendicularly over the boundary-line of the two properties, which wall is known as a "party-wall." The obvious convenience of this arrangement, both as saving space and reducing the cost of building, has caused it to become general in places where land is valuable; it is therefore of importance that those who have to deal with such property should be acquainted with the laws relating to it, and with the difficulties most likely to be met with in the course of practice. Although the subject is not very simple, I hope to submit it in a shape that will lead to useful discussion.

In London the law in respect of party structures is contained in the Metropolitan Building Act, 1855, the provisions of which have been embodied in the Local Acts of some other towns. To this Act I shall limit the subject; for where it is not in operation, the rights and duties of parties who are presumed to be tenants-in-common of a party-wall are not so much matters of general interest and importance as is the case where such walls are the usual mode of separating buildings from each other.

What is a party-wall? The Act says, in the interpretation clause, — "'Party-wall' shall apply to every wall *used, or built in order to be used*, as a separation of any building from any other building, with a view to the same being occupied by different persons." This is generally satisfactory, and a wall standing as the separation between the rooms of two houses may almost safely be considered to be a party-wall. But there are cases in which, on examining the construction and the elevations of two houses, A and B, it is clear that A has first been built as a distinct and complete house, and that B has afterwards been added, the wall in question having been made use of, perhaps surreptitiously, and the deeds relating to A may show that the ground upon which the whole wall stands was conveyed to the owner of it. I think that when this is clearly seen, the wall must be considered to be the external wall of the house A. The wall was certainly never built in order to be used as a separation of the two buildings, and the true boundary-line of A seems to be at the outer face of the wall, while the house B was wrongfully built without any external wall on that side. Although many



TYNEMOUTH ABBEY CHURCH.—As proposed to be Restored by the late Sir G. G. Scott, R.A.

ersons differ from this view, I think that as
e land on which the wall stands is wholly the
roperty of the owner of A, the most that can
e said is that the owner of B has acquired an
sement over the wall to the extent to which
is used by him. The Act goes on to say,—
'Party-structure' shall include party-walls,
nd also partitions, arches, floors, and other
ructures separating buildings, stories, or rooms,
hich belong to different owners, or which are
pproached by distinct staircases or separate
ntrances from without."

The provisions, so far as they relate to party-
alls, are of two classes; those which regulate
e nature of the construction, and those which
x the rights and duties of the respective owners
a wall with respect to each other. Part II.
the Act, which relates to dangerous structures,
as also an important bearing on party-walls.

The first class includes such things as have to
e done under the supervision of the district
rveyor. With respect to them much mis-
pprehension exists, but when carefully studied
ey become tolerably clear. I only propose,
erefore, to bring them together in a form con-
nient for discussion, and such as will form an
troduction to the much more troublesome and
fficult class of provisions which relate to build-
g and adjoining owners.

By section 27 of the Act, every building must be
parated from every adjoining building by two
xternal walls or one party-wall; and under
rticular conditions of size and occupation, the
her party structures above defined must be
ed.

By section 9, any "alteration, addition, or
her work," which affects the construction of a
rty-wall is subject to the regulations of the
ct; section 10 provides that whenever *more*
an one-half of an old building has been taken
wn every part of the remainder of it that is
t in conformity with the Act must be taken
wn; and section 11 provides that whenever
much as one-half of any timber or other
rtition not in conformity with the Act and
parating old buildings is removed, the build-
gs must be divided from each other as directed
y the Act.

The first schedule of the Act gives the thick-
sses of "external and party walls" with refer-
ce to their lengths and heights, the height (for
is purpose) being measured from the base of
e wall to the level of the top of the topmost
ory; which means the underside of the tie of
e roof, or half the vertical height of the
fters where there is no roof-tie. But the
rty-wall must, by section 17, be carried up
ove the roof flat or gutter of the highest
ilding adjoining thereto, so that it shall be
6 in. above the flat or gutter, and
6 in. from the roof when measured at right
gles to its slope. If any turret, dormer, lan-
rn-light, or other combustible erection be upon
e roof within 4 ft. of the party-wall, the
all must be carried up 12 in. above such
rection, and be 12 in. wider on each side than
is. Also, the wall must be carried up above
y part of a roof that is opposite to and within
ft. of such wall.

By section 13, recesses may be made in party-
alls, but the backs of them must be 13 in.
ick. They must be arched over, must not
me within 1 ft. of an external wall, and must
t extend over more than one-half the area of
e party-wall.

Section 18 forbids that a chase cut in a party-
all should exceed 14 in. in width or 4½ in. in
pth, or should leave less than 8½ in. of brick-
ork at its back, or should be within 7 ft. of
y other chase on the same side of the wall.

By section 28, any opening made in a party-
all for the purpose of uniting two buildings,
hich together would contain over 216,000 cubic
et, must be not more than 7 ft. wide and 8 ft.
igh, and the floor, jambs, and head must be of
rick, stone, or iron, and have two wrought-iron
ors, each ¼ in. thick, separated by the full
ickness of the wall, each fitted in rebated
ames, without woodwork of any kind. Build-
gs so united must be in the same occupation,
d when they cease to be so occupied the open-
gs must be built up.

By section 20 the back of every chimney
ening in a party-wall must be 8½ in. thick,
om the level of the hearth, to 1 ft. above the
antel, and no chimney-breast or shaft built
ith or in a party-wall must be cut away with-
t the certificate of the district surveyor.

Sections 24 and 25 fix the thickness of the
rty arches which have to be constructed to
parate different properties.

As to timber in party-walls, by section 15 the ends of bressummers and of beams or joists, if bearing upon party-walls, must be 4½ in. from the centre. Bressummers must have stone or iron corbels under them, and must have 4½-in. piers or else story-posts under them, in addition to their bearing on the party-walls.

The foregoing regulations, which may be profitably studied at length by referring to the respective sections, will help to a right understanding of that part of the Act which deals specially with the rights, duties, and powers of the respective owners of party-structures. These are the subject of constant dispute, often leading to grave annoyance and loss; it is therefore highly important that from the first step everything relating to a party-wall should be conducted with careful reference to this part of the Act. But, in fact, this is very often neglected, the whole proceeding being carried on without regard to the law, or in reliance on the good nature of the respective parties, although, as neighbours, they are in a position of natural antagonism to each other. The following considerations will show that such a practice as this is unsafe, and ought not in any case to be followed.

Laws are made to be observed; not to be ignored. A client has a right to expect that when there is a well-known mode of procedure legally established, that mode shall be followed by his architect in every particular. Although he will give no special credit if everything goes well, he will have a right to complain if they go badly. There is always a risk that some complication will arise even in the simplest matter, especially if it is known that it is being loosely managed, for then either party may see his way to gain something by taking advantage of the want of strict arrangement. Even when all parties wish to be fair, it often happens that owners of property are so nervously anxious about it that they think every one who touches it is doing them mischief. Then the parties may quarrel during the progress of the work, or they may die, when their successors could be neither legally nor morally bound to adopt any arrangement not legally made. It very frequently happens that parties are only limited owners, being lessees or tenants for life, or they may be trustees for parties, who will hold them responsible for any damage to the property. If the owners are a public body, their officers will not be justified in allowing anything less than the strict fulfilment of all legal requirements. If any loss is caused through irregular proceedings, the architect or the builder may find himself saddled with the whole responsibility for damage caused in executing works which he had no more real authority to do than any man in the street. Lastly, it is generally quite as little trouble to do what the law requires as to manage the matter in any irregular way.

The owners of a party-wall are called "tenants-in-common" of the wall; they are not owners each of the half wall which stands on his ground. When there is no Building Act, either owner could pull down the whole if he thought he should like to have a better one. The only foundation in the Act for this idea of separate ownership seems to be in the interpretation of the word "area," which, as regards a building, is to include "such portions of the party-walls as belong to the building."

Party structures, considered as belonging to different owners, are dealt with in Part III., beginning with section 82, which enacts that such one of the owners of the premises separated by, *or adjoining to*, any party structure as is desirous of executing any work in respect of it, shall be called the building-owner, and the owner of the other premises shall be called the adjoining owner. Now "owner" (by the interpretation clause) applies to "every person in possession or receipt either of the whole or of any part of the rents or profits of any land or tenement, or in the occupation of such land or tenement other than as a tenant from year to year, or for any less term, or as a tenant at will."

At an early period, often before the old building is pulled down, the building-owner should cause a party-wall notice to be served on every adjoining owner, and as the work to be done may not as yet be finally settled, it is wise to include all the matters which a building owner can do in the notice. There is often great difficulty in finding out the real owners; a weekly tenant will represent himself as a leaseholder, or a *bonâ fide* leaseholder may have so short a term that he will be gone before the notice expires. As a rule, it is best to serve a notice on everybody who seems to have any interest in the property, for if they are not owners the notices will not make them owners. The notices usually bring all parties to some arrangement. If there is a leaseholder, he being responsible to his lessor, most usually and properly is the party solely dealt with, but the freeholder will sometimes insist on protecting himself also by an award.

The form of notice is printed and sold by authority of the Metropolitan Board of Works, and is usually filled up and served by the architect of the building-owner. I suppose it is intended that this ordinary matter may be properly managed without its being necessary to take legal advice and incur needless expenses. As it cannot be properly said to be the architect's business, he had better strictly limit himself to such cases as are quite plain and clear; and if there is the least doubt as to the proper parties on whom to serve notices (as there must often be in the case of trusteeships and of companies), he should let his client's solicitor take the responsibility. The same may be said when the clients are trustees or a company. The notice must be given to the adjoining owner three months before any works can be done by delivering the same to him personally, or by sending it by post in a registered letter at his last known place of abode. All other notices or requisitions must be served in the same way. The architect is usually named in the notice as the surveyor appointed by the building owner to superintend the work, and to settle on his behalf all matters of difference that may arise in relation thereto. This is convenient, but not necessary, for the building-owner is not bound to appoint a surveyor until he has received ten days' notice from the adjoining owner to do so.

It is very common to receive a party-wall notice signed by the architect on behalf of the building-owner, which is invalid, and if any difficulty arises his client may disown him. It is also common to name as "the surveyor" a firm of architects instead of that member of the firm who intends to act; in these cases the appointment is invalid.

We have nothing to do here with the motives which may often render it desirable for the building-owner to keep the exact nature of his intended operations secret as long as he can; such, for instance, as his possible interference with ancient lights. But, as a rule, it is only courteous to let the adjoining owner know, if he wishes it, as soon as possible what is to be done, for it may happen that some of the works included in the notice will so seriously interfere with his property that long notices and arrangement with other parties is necessary. I have had cases where the nature of the occupation of adjoining premises was such that it was found better to build a new external wall than to pull down and rebuild the party-wall.

If the adjoining owner does not within fourteen days express his consent to the notice, "he shall be considered to have dissented therefrom, and therefore a difference shall be deemed to have arisen" between the parties. It is as well that this difference (which is almost inevitable) should be allowed to arise thus, by lapse of time, rather than by writing a formal letter, which may convey the idea that serious obstruction is intended. After the lapse of this time the adjoining owner may appoint the surveyor who is to act on his behalf, but he is not bound to appoint him until ten days after he has had formal notice to do so, for the original party-wall notice does not ask him to appoint a surveyor, though many persons seem to think it does. If either party makes default in appointing his surveyor after this ten days' notice, the party giving the notice may make the appointment in the place of the party making default. The building and adjoining owners may concur in the appointment of the same surveyor, who, in that case, has the same power as the two surveyors and the third surveyor whom they are required to appoint. This appointment is very often neglected. A surveyor who desires to obstruct will try to avoid it. It is, however, the first business to be done between the two surveyors, whether they are going to agree amicably or not. He will naturally be some person whom both parties believe will act fairly and impartially if required. If either party refuses to join in the appointment of the third surveyor, there is nothing in this Act to compel him to do so; it is a matter for legal advice, but it is a very unusual course to take. On this point, I would remark that it

does not seem the duty of surveyors when placed in the position of arbitrators to exercise their ingenuity in placing obstructions in the way of the other side, as if they were solicitors instructed to fight a matter to the uttermost. They are appointed to see that the difference is fairly adjusted, and that is all that either side can honestly desire. The appointment of the third surveyor should be in writing, signed by both parties, although he may never be called upon in the matter. Indeed, I believe the Act is clear that he must at least be appointed, for the 7th clause of the 85th section says that the "one surveyor" (agreed on between the parties), "or three surveyors, or any two of them, shall settle any matter in dispute." So that they must be *two of three*, and not simply *two*. Observe also that the third surveyor is not an umpire, as is often imagined. He can only act with one or both of the others; and in cases of very great difficulty and responsibility he had better be joined with the other two for the security of all parties, and to show that every care had been taken to arrive at a proper decision. The duties of the surveyors are "to settle any matter in dispute between such building and adjoining owner, with power by his or their award to determine the right to do, and the time and manner of doing, any work, and generally any other matter arising out of or incidental to such difference." But they have no power to award that the work shall be begun before the expiration of three months from the date of service of the party-wall notice, which requires the permission of the adjoining owner himself. There is an appeal within fourteen days to the county court, which brings the matter into the hands of the lawyers, where we may very well leave it. The award must not deal with anything beyond the Act, and if in carrying it out injury is done to ancient lights of the adjoining owner, it will not protect the building-owner from the consequences thereof.

We find the rights of the building owner defined in the eighty-third section. The Master of the Rolls recently laid it down in a case in which I was engaged, that this section contains *all* his rights; and that, within the area affected by the Act, he has no others. The eighty-eighth section regulates the apportionment of the cost of works that may be done, and it will be convenient to read the two sections together.

1st. The building-owner may repair any party-structure that is defective or out of repair, and the cost in such case must be borne by the two owners in due proportion, regard being had to the use which each makes of the structure.

2nd. He may pull down and rebuild if it is so far defective, or out of repair, as to make this necessary or desirable, on the same terms as to the cost.

3rd. He may pull down any timber or other partition dividing the building that is not conformable to the Act, or to either of two older Building Acts which next preceded this Act, and build a proper party-wall instead, each owner bearing his due proportion of the cost according to the use he makes of the wall, and also to the thickness of wall which his building requires. 4. He may deal with intermixed property; and 5th, with buildings communicating over public ways, which will involve very complicated questions not relating to party-walls, and which may, therefore, be passed over here. 6th. He may raise any party structure permitted by the Act to be raised, or any external wall built against such party structure; but as this would be solely for his own convenience, he must bear the cost, and must, besides, make good all damages occasioned to the adjoining premises, or to the internal finishing and decorations, and carry up all flues and chimney-stacks of the adjoining owner, so far as the new works may render it necessary. 7th. He may pull down any party structure,—that is, of insufficient strength for his intended building, and may rebuild it of sufficient strength, on the like conditions as to cost and as to making good damage to adjoining premises, their internal finishing or decorations. 8th. He may cut into any party structure at his own cost, and on condition of making good damage to the adjoining premises. 9th. He may cut away any footing, chimney-breast, jambs, or flues projecting from the party-wall in order to build an external wall against it, or for any other purpose on the same condition as to payment of cost and damage. And although they, being upon his side of the wall, may be considered his own property, he cannot deal with them without a proper award under this Act, nor can he cut away the chimney-breasts or shafts without the certificate of the district surveyor, as already pointed out. And after the external wall has been built, the party-wall remains a party-wall, which may cause future trouble to either owner, or to both.

Finally, there is a very comprehensive clause giving the building owner a right to perform any other necessary works incident to the connexion of party-structure with the premises adjoining thereto.

It will be seen that there is very great scope for the exercise of the judgment of the surveyors on most of these points. There is the just apportionment of costs when work has to be done at the expense of both owners. Where the respective buildings differ greatly in size, and the party-wall which would be thick enough for one has to be built thicker in respect of the larger building, the exact position of the centre of the wall with respect to the line dividing the two properties may have to be fixed separately for each floor. As there are certain parts of the metropolis where the space in a building occupied by a thickness of only 4½ in., more or less, in a party-wall would be worth several hundreds of pounds, the importance of this arrangement is evident. Besides this, questions as to what damage has been done to the premises of the adjoining owner, his finishings and decorations, and the value thereof, are often very complicated. No power is given to make the building owner hoard up, or pay for hoarding up, the rooms of the adjoining owner that may be left open by pulling down the party-wall. No award, therefore, can deal with that particular item, whatever remedy might be found by action at law,—a not very promising proceeding. If the building owner fails to make good any damage done he is liable to a penalty not exceeding 20*l.* per day, at the discretion of the magistrate.

Although power is given above to raise a party-wall, no power is expressly given to *underpin* or to continue the wall downwards,—an operation frequently requiring to be done and included in a party-wall notice. I think we may draw a distinction between an ordinary act of underpinning, where such work is necessary by reason of the base of a wall being decayed or placed on a defective foundation, which act is of the nature of a repair, and the act of extending a wall downwards for the purpose of forming a basement of one or more stories in depth below the old foundation. The Master of the Rolls, in the case to which I have referred (Standard Bank *v.* Stokes*) had all this before him, and gave the opinion that the power given to *raise* a wall is wide enough to include this downward extension of it. He said, "Is it necessary to limit the word 'raise' to putting something on the wall on the top, and may not you raise or make it longer, or build it up by something on the bottom? I do not think it necessary so to hold." He considered, also, that having power by another sub-section of the Act to pull down a wall and put it up again, it would be an extraordinary reading of the Act to say that you may not do something less; that is to say, support it and put a new wall underneath it But the judge founded his decision on the power which is given "to perform any other necessary works incidental to the connexion of party-structure with the premises adjoining thereto. He said, "If you make the sub-basement, and you do not support the wall, it will fall down, and it is incident to its connexion, because, if it fell down its connexion could be terminated in a very summary manner." If one may presume to choose between these three reasons, I should say the last seems to be the best. As to the whole of the rights that are given to the building owner, the Act provides that he shall not exercise them in such manner, or at such time, as to cause unnecessary inconvenience to the adjoining owner, and we have already seen that the surveyors are to determine the time and manner.

The rights of the adjoining owner, as affecting the party structure, are as follow. He may require the erection thereon of certain chimney jambs, breasts, or flues, or certain piers or recesses, or any other like works for his own convenience, and the building owner must do this if it will not be injurious to him or cause unnecessary inconvenience or delay. The adjoining owner may require these works to be done by giving a notice, a printed form for which is provided, within one month after his receipt of the party-wall notice from the building owner, or he may do the works himself. If he gives a notice it must be done in the same way as laid down for the notice by the building owner, and if a difference arises thereon it must be dealt with by the surveyors. Sections 89, 90, and 93, give the mode of arranging the payments by the adjoining owner for works done on his requisition. He may demand from the building owner security for costs and compensation before the work is commenced, and the amount of the security is to be fixed by the judge of the county court in case of difference.

By section 92, the building owner is to stand possessed of the sole property in the party-structure until any contribution which may be due from the adjoining owner in respect of it is paid. This may seriously hamper the adjoining owner in dealing with his property, and may induce him to pay.

The party-wall considered as a "dangerous structure" very frequently comes under the notice of the district surveyor. Its connexion with the external walls is peculiarly liable to cause danger to a building. A case is now under my notice where the front walls of a whole terrace of three-story houses, some fifty years old, have to be taken down and rebuilt, mainly owing to the party-walls having been first erected, and the front walls afterwards built up against them without any bond whatever. I know of a case in which this process was reversed. A long façade was first erected, and afterwards the party-walls were built against it at such distances as suited the wishes of purchasers, good bond being, of course, impossible. New fronts have constantly been added to buildings, with very slight possibility of getting good bond to the ends of the party-walls, and even in the building of new premises, great difficulty is experienced in making the façades of two adjoining houses meet at the centre line of the party-wall, and at the same time getting good bond. Nevertheless, this ought to be done, for we very frequently meet with cases where the walls at this spot are cracked from top to bottom, and are very far from being safe.

In cases of rebuilding, where a party-wall, being exposed, is found to be unsound, it is the duty of the surveyors duly appointed to determine on the steps necessary to be taken in respect of it, and they ought to keep the responsibility from all other parties. Very frequently where work is being done irregularly, the building owner gives the adjoining owner notice that he will not be responsible for anything that may happen to the adjoining premises; but at least he must have some responsibility for the party-wall of which he is joint owner. If neither party will support it, it may result in accident before the attention of the district surveyor is called to it. On the other hand, a building owner who has neglected to give the proper notice in good time, and desires to rebuild a party-wall without waiting for the period of three months, is often anxious to get the wall condemned as a dangerous structure, which would operate unfairly to the adjoining owner. One who desires to build a new wall, and to make his neighbour pay half the cost, although the existing wall may be quite good enough for the latter, will also try to obtain the condemnation of the wall, often on very slight grounds.

I have now touched upon every part of the Metropolitan Building Act which relates to party-walls, except only certain matters of procedure which are rather in the department of the lawyers than in ours. Nevertheless, these portions may be very usefully studied, and the opinion of an experienced lawyer on any difficult case will usually throw great light on any part of the Act. My object has been to arrange the matter in a form to be easily understood, to point out those misapprehensions which seem most prevalent, and to notice some of the cases of difficulty which we meet in practice. I shall feel glad if those members who have had most experience in these matters will give us the advantage of it, and particularly if they will point out any matter which seems to have been insufficiently noticed, or which requires to be corrected, and I trust that the result will be useful to the members of this Association.

The President, in inviting discussion, said that Mr. Blashill had treated his subject in a singularly clear and lucid way, and had brought forward many points not always borne in mind, and perhaps not generally known by architects.

Mr. Robert Walker said he feared that there was not only a very great amount of ignorance,

* Reported in *Builder* for 1878, p. 207.

ut a great lack of a due sense of responsibility n dealing with party-walls prevailing among architects and surveyors having to do with property in the heart of the metropolis. The expression "It is *only* a party-wall!" was too often used as an apology for tampering with party-structures. He met with a typical instance the other day. A large boiler was being fixed in some premises, and in order to gain a little more space, a portion of the party-wall was cut away so as to form a recess into which one end of the boiler fitted. When he called attention to this, he met with the rejoinder, "But it is only a party-wall!" Speaking generally, he felt convinced that dealings with party-walls were conducted in a sort of slipshod manner in many architects' offices. He felt deeply on the question, because a jury of his countrymen had taken upon themselves to censure him for allowing two eminent architects to do something in connexion with a party-wall which he had no power to prevent. It was often erroneously assumed by architects that they could do what they liked with the half of the party-wall adjoining the property in which they were interested; but it was not so, any more than that one of two men who were joint owners of an elephant could shoot his half of the animal. A party-wall consisted of two undivided moieties. The Building Act provided that a building-owner should not touch the chimney-breasts on his side of a party-wall without the certificate of the district surveyor. But it was an anomaly in the Act that it gave no power to the district surveyor to deal with the wall as a whole. The law officers of the Metropolitan Board of Works had supported him (Mr. Walker) in his opinion that, until the district surveyor was called upon to interfere under the Dangerous Structures Act, all the responsibility of dealing with a party-wall attached to the surveyors acting for the respective owners. The Building Act said most distinctly that each party should appoint a surveyor, unless they both agreed upon one surveyor to act for both owners; and in the event of each side appointing a surveyor, the two surveyors so appointed should nominate a third to act as an umpire, to whom all differences should be referred. Where the two surveyors appointed by the owners refused or neglected to appoint a third surveyor, a deadlock would very often ensue, and the only remedy was to go to the Court of Queen's Bench, and get a *mandamus*, or else to make an *ex parte* application to a judge in chambers for an order compelling compliance with the Act. If either of the owners did not comply with the Act, the best course was to bring the matter before the Metropolitan Board of Works, and to give the owner notice that he would be held responsible for any damage arising from his non-compliance with the law. The whole question of party-walls was deserving of the most careful study. Modern fronts were now carried up in crowded thoroughfares on nothing but iron and glass, and practically the party-wall was the only part of such buildings which had any vital energy and force in it. Good party-walls, in fact, formed the backbone, the sheet-anchor, of such buildings. It was terrifying to see how often heavy superstructures were carried up on iron columns, in conjunction with party-walls that were perhaps two or three hundred years old,—especially in these days of underground railways and heavy sewerage works. The architect would best study his own and his clients' interests by insisting upon thoroughly sound and unimpeachable party-walls.

Mr. Gilbert R. Redgrave said that Mr. Blashill had pointed out most carefully the way in which the two surveyors appointed by the respective owners were to nominate a third surveyor, who was not, according to Mr. Blashill, an "umpire," although Mr. Walker had spoken of him as such. The Act clearly said that the award as to a party-wall must be made by the *two* surveyors. Mr. Blashill had not stated whether a party-wall extended right through to the face of the frontage. Presuming it to do so, what duty was enforced upon the building-owner in case of the adjoining owner requiring particular materials carried up on the exterior?

Mr. J. Douglass Mathews said that every party-wall had its own peculiarities, and although in some cases they did not involve much trouble, in others a great number of questions arose which could only be settled as they occurred. Of course the broad principles to be observed were laid down by the Act. In all cases where party-walls were increased in height, all questions arising as to rights of light and air should be kept distinct from those arising as to the party-wall itself. One point which often caused a great deal of trouble was that the Building Act empowered a building-owner to do certain things in such a way and at such times as not to cause inconvenience to the adjoining owner. This was an open door for all sorts of difficulties, especially when there were three or four, or more, adjoining owners. Of course, it was an inconvenience at the best of times for the adjoining owner to have his rooms laid open by the pulling down of a party-wall, and it would be exceptionally inconvenient in the present cold season when the party-wall so demolished happened to contain the chimney-breasts of the adjoining owner's house, for, of course, it would preclude fires. The inconvenience attending the demolition and rebuilding of a party-wall was one, however, which the adjoining owner must put up with so long as he enjoyed the convenience and economy accruing from making one wall divide two properties. He had heard that it was likely that a case raising the question of compensation for such inconvenience would shortly come on for hearing, but it was to be hoped that it would not go against the building-owner. In the demolition of old party-walls it was necessary to exercise the utmost care, as sometimes the chimney-breasts were carried on either side of the wall in such a way as to make those on one side balance those on the other. He thought that, all things considered, the provisions of the Building Act as to party-walls were pretty clear and distinct.

Mr. S. F. Clarkson said that chimney-breasts built against party-walls, although they were bonded into party-walls, were not part thereof. The building-owner, or the person who wanted to deal with his side of the party-wall, must not do anything that would imperil the safety of the structure without notice, and the purpose of the notice was clearly that the adjoining owner should make provision for his own interests. But the Act should not be unduly strained, for although it was very properly not allowed to the building-owner to do anything to a party-wall that would endanger its stability or inconvenience the adjoining owner, nevertheless it was allowable to do a great deal of work upon a party-wall. The question of party fence-walls was becoming of increasing importance, and some day or other legislation would be called for to enable them to become party-structures. As Mr. Mathews had said, the Building Act was, in the main, a good Act, and it was much to be desired that country-towns and rural districts should be provided with equally satisfactory legislation, especially as to the rights of adjoining owners in party-walls, such rights being at present most dubious. Mr. Blashill had not mentioned that in London we were going to have practically some new building legislation, dealing with party-walls as well as with other matters. He should very much like to feel assured that that legislation (which would take the form of bye-laws prepared by the Metropolitan Board of Works in pursuance of powers given them by the Act of last session) would be effective without being too stringent. One of these bye-laws provided that party-walls might be constructed of *inferior* bricks! That provision, taken in conjunction with what Mr. Walker had said, was not very reassuring. Of course the provisions of these bye-laws as to foundations and materials generally would apply equally to party-walls and to external walls.

Mr. Hunter said that the Building Act stipulated that three months' notice should be given to the adjoining owner by the building owner of his intention to proceed to interfere with or pull down and rebuild a party-wall, but, so far as he could see (and he had taken legal advice), there was no power in the Act to compel him to proceed with the work at the expiration of the three months. Again, it appeared to be a moot point whether a party-wall which was carried up higher than one of the two properties which it served to separate was a party-wall for its whole height. On this point, it seemed to him that Mr. Blashill would have great difficulty in establishing the correctness of his reading of the Act.

Mr. Walker explained that he merely used the word "umpire," as applied to the third surveyor, in its colloquial sense. He wished to add that difficulties often arose where one party, having given notice to deal with a party-wall, went on at once without waiting for the expiration of the term. That could be stopped by an injunction in Chancery, on the ground of non-compliance with the Act. In the last Building Act for Bristol, a clause had been inserted to the effect that if the adjoining owners of a party-structure could not agree, the old structure should be pulled down, and each party build a new one!

The thanks of the meeting having been tendered to Mr. Blashill for his paper,

Mr. Blashill, in reply to Mr. Redgrave, said that most undoubtedly a party-wall extended right through to the surface of the frontage, or it would not completely separate the two buildings. In answer to Mr. Hunter, he said the Act contained no provision to compel a man who gave notice of his intention to do certain things to a party-wall to proceed with the work at the expiration of the three months.

THE GOLDEN MEAN.

FULL many a gem of truth has been kicked about through the ages, has been picked up and cast away again, without its value being recognised, till some mind with more penetration than usual has suspected a brilliant jewel below a rough and somewhat unpromising exterior. Of such crude and imperfectly revealed truths, often taken up and rejected without the least suspicion being entertained of their real value, Mr. Cave Thomas considers the Doctrine of the Mean, in which he recognises great scientific significance, and has devoted himself to the cutting, developing, and polishing of its various facets.* The Golden Mean is to him the keystone of the philosophy of the future, of a mathematical solution of the intellectual process, and of the moral law. He maintains that the *form* of our experience, of our cognition, is a quantitative or mathematical *form*, and that the selfsame principle which finds mathematical expression as the *mean* is the universal expression or measure in nature for the good and the beautiful. We propose, therefore, pending the publication of Mr. Thomas's work, to give a brief sketch of what he has been doing through the years towards expounding the Doctrine of the Golden Mean in reference to cosmical phenomena, to æsthetics, hygiene, education, ethics, politics, and natural theology.

Cosmical Phenomena.—In cosmical phenomena Mr. Thomas has shown that the preservation of the *mean* appears to be the very spirit and purpose of nature, and that although temporary aberrations may occur in the orbital movements of the planets, yet that these are periodically redressed; that there is a law of compensation obtaining throughout the solar system by which the *mean* through all the vicissitudes of that system is preserved. Thus, though the amount of light and heat may vary at different times and in different places throughout the year, yet that the mean annual amount of light and heat received from the sun is constant. The same principle obtains in reference, as we have stated, to the orbits of the planets. The author maintains that a great moral principle having a mathematical expression is supreme in the cosmos. For if the *mean* were not constant the *mean* solar day would not have remained unchanged, as it is known to have done, since the time of Hipparchus.

Æsthetics.—But Mr. Thomas not only contends that this principle holds good in the larger phenomena of the cosmos, but in human life, both intellectual and physical, and, in respect to the principle of beauty, that this, according to the law of probability, would inhere in the mean. Moreover, experience proves that the mean is the mathematical expression for the proportions of the beautiful; for if beauty did not lie in the mean it would inhere in some proportional relations, in which there would be excess and defect, which is absurd. When studying this subject some years ago, he predicted that this principle, as the principle of beauty, would be confirmed by experiment. His own suggestion may have fulfilled that purpose, but, at all events that has been accomplished, he thinks, by what has been denominated composite photography,—a process by which a number of faces are combined so as to form an average image of the features and faces combined, and in which the opposite disproportions in the faces of the several individuals photographed, neutralise each other, and present a typal form better looking than either. If this process could be extended, so as to use a sufficient number of individual instances, it would give us the ideal form or type of beauty,—the mind attains to

* The Golden Mean, or the Mathematical Theory of the Good and the Beautiful.

its ideal by a similar process of averaging. This method of composite photography was described in *Nature* by Mr. Douglas Galton. Our author carries the principle of the mean through in a logical manner in that section of his work which is devoted to æsthetics In his "Revised Theory of Light," &c., Hogarth, and Sir Joshua Reynolds, without recognising the great scientific import of the mean, had convinced themselves that it was the principle of beauty. Other writers upon art had previously recognised the mean as the golden principle of taste. Addison had indeed caught a glimpse of its universality, as may be gathered from the following quotation:—"There is," said he, "a mean, and a certain measure in which the good and the beautiful consist, and out of which they never can depart"; and Dufresnoy says:—"And taste, like morals, loves the golden mean." Mr. Thomas has not been content with a mere vague expression of the principle, but claims to have reduced the science of æsthetics to a mathematical calculus which brings the subject within the category of the exact sciences. The subject has grown under his hands, and what he has already published on the subject may be regarded as fragmentary and incomplete compared with what he promises to presently give us as his matured work.

Hygiene.—Our author may not find it so difficult, perhaps, to convince his readers of the truth of the principle he is expounding in respect to hygiene as in some other sections of his subject. For any violation of the law in the conduct of the human being is followed by tangible and disagreeable results, and its continued infringement leads to ill-health and disease. The virtue of moderation in living is known to most intelligent persons, though in many cases, unfortunately, they may honour the principle more in its breach than its observance simply because it is regarded as a haphazard and rule-of-thumb expression, instead of as it is the exact enunciation not only of a scientific but most important truth, and that they have not fully experienced the inevitable and dire consequences resulting from its repeated infringement. What Mr. Thomas may have to say on this portion of his subject may be of wide-spread advantage, and serve as a profitable source of reference both now and in the years to come.

Education he regards as a branch of the wider hygiene, and the infringement of the *mean* to be as injurious to the hygiene of the intellect as to that of the physique. He regards the principle as the basis of a science of education, of the education of the future, which will be established on training instead of "cramming," on a moderated use of all the intellectual faculties, and not upon a specialisation of one,—on a symmetrical training of the whole together, rather than on an abnormal development of a part. In a lecture which the author gave before the Society for the Development of the Science of Education, he formulated the fundamental principles of this science, and showed that these are resolvable into laws having reference to the distribution of brain power, which when enunciated are seen to be correlated with those abstract principles which regulate the distribution of force amongst the planets, and in which the preservation of the *mean* is also the central law. The *mean* would, indeed, seem to be to the moral system what the sun is to the solar,—the very centre of gravitation.

Ethics.—Ethics, too, may be regarded as a portion of the wider hygiene, for the science of ethics is a science of the moral hygiene, in which the principle of the golden mean equally holds good. But in this particular section Mr. Thomas had very little to do; he had no occasion to go on a voyage of discovery, for Aristotle had traversed that portion of the subject of old time. The exact basis on which Mr. Thomas builds his system will, however, remove obscurities that have crept into the Nichomachian ethics in the lapse of centuries. In other respects, this section was ready to his hands, and falls naturally into its place. It is, perhaps, right that persons who may not have studied Aristotle's ethics should be informed that these are founded on a quantitative or mathematical basis, in which the *mean* is recognised as the principle and measure of moral rectitude.

Politics.—The principle of the *mean* may be traced as holding good in politics. It may be recognised under several forms of expression,—as, for instance, the balance of power, the *juste au milieu*, compromise, &c. It is recognised, too, in that great axiom of political economy, viz., "the greatest happiness to the greatest number," which means nothing more nor less than that distribution which undoes excess, and would give to every man his due or *mean* of wealth and power. It is the principle which gives stability to a constitutional government,—that is to say, to a government in which the tendency of any component element of the State to monopolise political power is provided against, is frustrated, compensated, or neutralised, by the antagonistic action of its other elements, and thus a balance or *mean* is preserved amongst the various estates of the realm. The observance of the golden mean in politics, which constitutes the virtue of constitutional governments, will gradually be recognised as the principle which should also be observed amongst the nations in order to promote the general happiness; and a growing tendency towards moderation may be observed in the councils of nations, and to combine against any one which shall show a disposition to despotically assert herself against the common interests of mankind. Moderation amongst the nations would, in fact, be federation.

Natural Theology.—On this section of the subject the author must himself expatiate. It will here be sufficient to note that he traces the doctrine of the golden mean in Biblical ethics, not overlooking those remarkable expressions of the principle in the Gospels, that reiteration of the precept of the Grecian and Chinese sages,—observe the mean in all things,—which takes the form of "Let your moderation be known unto all men"; and also that grand summing of the experience of ages which recognises the grand principle in the aphorism,—"He that striveth for the mastery is temperate in all things." He also points out how consistent the Scriptural enunciation of the Messianic manhood is with the golden principle, the golden mean of rectitude and beauty.

ST. ALBAN'S ABBEY.

THE NAVE ROOF.

SIR,—The roof controversy seems now to be in a fair way for settlement. It has been well argued on all sides before the general body of the public,—the ultimate court of appeal in all such cases,—and the decision, of course, rests with them. The Faculty Committee may propose a policy, but they will surely not be so unwise as to persist in it when the vote is necessarily against them. At the meeting of the subscribers on the 10th of August, 1878, the follow resolution was passed:—"That the roof of the nave having become ruinous, it is desirable to restore it to the original pitch indicated by the weathering on the tower, keeping so much of the painted and panelled ceiling as is in a sound condition, and restoring the rest in a similar style." It has been proved that the roof *is not ruinous*, and the Faculty Committee have actually determined to keep it up under another roof. But it is now also proved to everybody's satisfaction that the roof-line which it is intended to follow for the new lofty roof is a fresh roof-line,—never used in the building before. It is not *the original pitch indicated by the weathering of the tower* mentioned in the resolution of the 10th of August. There is no *weathering* on the west face of the tower; but that is, of course, merely a slip due to ignorance of technical terms. The only line showing *the original pitch* (the line A B—C D on Mr. Neale's careful drawing given in last week's *Builder*) cannot be followed without destroying all the old parapets as well as the new parapets over the Early English bays erected by Sir G. G. Scott.

Therefore, the controversy is, as I have said, in a fair way for settlement. The faculty committee must either determine to do whatever they like, not heeding the history of the building, or they must give up their projected lofty roof. I sincerely trust they will see their way to giving it up. No one need regard the result as a personal victory; the only people who have been perfectly free from blundering are those who have never taken part in the controversy. But the importance of the precedent, if the wrong action is taken, cannot be exaggerated. Sir E. Beckett is, perhaps, rightly looked upon as the main promoter of the novelty. It may, therefore, not be inopportune to repeat his language at the Institute on the 11th of June, 1877,—"Notwithstanding the general avowal of conservative principles in restoration, a vast quantity of old work is much too frequently replaced by something entirely different from whatever was or could have been there before, and with no excuse except fancy." Such a confession of the errors of others ought not to be followed by indulgence in the same offence.

Let me take this opportunity of saying a word with respect to that "energetic body of men, organised for the very purpose of the conservation of ancient remains, who have left the battle of conservation to be fought out by others"; who are vigorously reproved by Mr. W. White, F.S.A., in the *Builder* of January 11th, p. 54. The members of the Society for the Protection of Ancient Monuments should not, I think, be blamed because they have not failed to perceive that the heads of the architectural profession, Mr. Street, Mr. White, Mr. Blomfield, Mr. Christian, the *Builder*, and the President of the R.I.B.A., have been right in the main; and that there is really no opposition to them which can be called serious. However, if Mr. White or any one else will point out where interference is now necessary, I will answer for it that time and energy shall be spent in the good cause.

JOHN HEBB.

SIR,—Since my last rather lengthy communication was written, Mr. J. O. Scott's section and Mr. Neale's section have appeared. Until the latter came out we were still practically in the dark as to the lines which Mr. Scott had really laid down, whether of the supposed old roofs, or of the proposed new one. And although he has shown Mr. Scott to be wrong in his conclusions, it is some satisfaction to find, after all that has passed, that Mr. Scott's lines were not impracticable and unreasonable, as from his sections and previous explanations they appeared to be. That section was manifestly an impossible one, and must have been, from some cause or other, quite incorrectly given, the top of the original Norman wall, as indicated, being shown 18 in. *below* the bottom of corbel-table, whilst the supposed line of the original Norman roof would intersect the face-line of the wall at 1 ft. 6 in. or 2 ft. *above* it; and, on the contrary, the supposed *lowered* roof would correspond very nearly with the line at D in Mr. Scott's section. Mr. Neale, however, shows that Mr. Scott's line really started from the top of the corbel-table, where Mr. Street and myself had placed it in our sections exhibited at the Society of Antiquaries, only that Mr. Scott placed the apex of his later, lowered roof at the point indicated by H (see *Builder*, p. 69), which had correctly been fixed on as the apex of the original roof, and which Mr. Neale finds conclusively to be so. Whether Mr. Scott's radically new line be carried or not, he will at any rate not regret now that the investigation made primarily at the instigation of the Society of Antiquaries has resulted in Mr. Neale's masterly production, which has placed on record the architectural evidences of the case in such a clear and simple manner.

WILLIAM WHITE, F.S.A.

SIR,—When I read my paper on St. Alban's before the Society of Antiquaries, on the 28th of November last, I exhibited a rough drawing to show my views both as to the pitch of the original roof of the nave, and also as to its design. Messrs. G. G. Scott & J. O. Scott, the architects of St. Alban's, forthwith made a drawing in order to show how inaccurate I had been. Mr. J. O. Scott at the same time prepared a report in answer to me, which was read at a meeting of the St. Alban's Architectural Society on the 17th of December, with a prefatory remark from the Rector, as chairman, that it had "had considerable influence over the decision of the Faculty Committee in the course they had adopted with regard to the roof of the nave." It contradicted very positively the arguments which I had adduced, and was based on what was asserted to be an accurate measurement as contrasted with my hasty conclusions and incorrect drawing.

In that report I find the following statement made by Mr. J. O. Scott, to which I wish now to call particular attention. He says "Doubtless if Mr. Street is right in his conclusions the only reasonable course open to the committee would be to abandon the proposed high-pitched roof," the alternative being "a bold act of destructive restoration," in which "I for one could never consent to take part." My conclusion was that there never had been a steep-pitched roof, with parapets, on the nave of St. Alban's, and that Mr. Scott's scheme would give us something the like of which had never before existed there.

As long as Mr. Scott's impeachment of my accuracy could not be answered, I felt it to be impossible to hint at any possibility of inaccuracy on his part. But the careful drawing which Mr. Neale has made and published of the west wall of the tower is drawn in so minute a fashion that it is well-nigh impossible that it can be seriously incorrect in any single particular; and as it proves that my drawing was a singularly exact one, being nowhere more than about 3 in. out of the real line, there can be but one conclusion, I should suppose, as to the necessary results. Mr. Scott's own drawing of the roof-lines has none of the evidences of careful examination and detail of the old roof-line which Mr. Neale's shows; and, indeed, it absolutely ignores, as if they did not exist, the most important marks that remain.

If there is still any disposition on Mr. Scott's part to contest my own and Mr. Neale's accuracy, I would suggest that the best plan would be to exhibit for a short time at the Society of Antiquaries Mr. Neale's drawing, Messrs. Scott's drawing, and a large photograph, made for the purpose, of the wall itself. The facts will then be clear and indisputable; and Mr. J. O. Scott has already announced what his conclusion will be if they prove me to be right.

GEORGE EDMUND STREET.

SIR,—I had not intended to go any further into this controversy, the matter being now settled, nor do I propose to do so; but my attention having been directed to Mr. Neale's diagram in your last issue, I trouble you with these few lines. I gather that he considers his recent measurements throw doubt on the accuracy of the lower line of roof, which I hold to be probably an Early Decorated one, and which is now being followed in the preparation of the new roof. I have only to say that I believe the precise measurement of several hundred broken bricks in the most rugged of old walls to be a task beyond even Mr. Neale's power, especially when done with the thermometer well below freezing; and that, under any circumstances, I have far more confidence in my own method of investigation, in which your readers will, therefore, not wonder at my continuing to place full reliance.

J. OLDRID SCOTT.

THE CHOIR CEILING AND THE TOWER WINDOWS.

SIR,—I am afraid "E. L. G." (p. 70, *ante*) has not been at St. Alban's lately, and has not followed very closely the events of the last few years. The paintings on the Choir Ceiling, which are now visible, were discovered in 1875, when the distemper was cleaned off. The woodwork was not altered. There have always been sixty-six panels, arranged in eleven rows of six panels each, since the fourteenth century; and, so far as I know, Mr. Neale has never stated anything else. This must be a mare's nest of the most perfect kind. The best description of the paintings is that by Mr. R. R. Lloyd, read before the St. Alban's Architectural Society, and given a little shortened in the *Builder*, March 14, 1876, p. 214.

As to the lower windows in the tower, "E. L. G." will not, I think, wish to persevere in his statement that "nothing but the arch-heads is even so old as the present century." He will of course have perceived by the drawing, given on p. 69 of your last number, how little bearing this has on the practical question at present in debate; and as he is always intelligent and candid, a very short method will be properly appreciated. He should look again at the east side of the tower in John Coney's drawing (Ellis's "Dugdale," 1819, vol. ii.). There the circular windows are shown, but the jambs of the present windows are shown also. J. Carter in preparing the (1810) plates of his monograph no doubt saw exactly the state of the case, and cleared away the ringing-floor, and opened out the windows on his drawings. The text was edited by Sir Henry Englefield from Gough's notes; it is not by Carter. These changes were not really effected till Mr. Cottingham took the building in hand. "E. L. G.'s" doubts are so natural, and yet the way everything came about is really so clear when it is explained, that I should have felt a pleasure in running through the illustrators,—from Daniel King in the early "Dugdale," who shows the windows as they stand at present,—onward to the thirties of the present century. Perhaps when the Faculty Committee have brought peace by determining to repair the present nave-roof, and then to let it alone, you may afford space for such a bit of peaceful archæology. Let it, however, be understood that the present lower windows in the tower represent the original windows.

S. FLINT CLARKSON.

THE INSTITUTION OF MECHANICAL ENGINEERS AND THE COST OF RAILWAY TRAFFIC.

AT the anniversary meeting of the Institution of Mechanical Engineers, on the 17th of January, a paper by Mr. Price Williams, on "The Economy of Railway Working," was read. Mr. Williams's paper was intended as a reply to a paper by Mr. Conder, "On the Cost of Working different Descriptions of Railway Traffic," which was read and discussed before the meeting of the same Institution in April last.* The paper commenced by remarking on the difficulty of arriving at the exact cost of any particular branch of the business carried on by the railway companies,—a difficulty which is increased by the absence in the "half-yearly reports of any detailed information to enable the working expenses of the passenger, goods, and mineral traffic to be separately determined." It would, however, be possible to ascertain their cost if the accounts were kept in the same manner in which the locomotive engineers of one of our earliest railways furnished them many years ago.

As to maintenance of way, Mr. Williams compared the wear of the rails at the Bolton station of the Great Northern and Lancashire and Yorkshire Railways with that on a falling gradient of 1 in 200 on the Great Northern, to support the position that heavy traffic at a slow speed is less damaging to the permanent way than heavy traffic at a high speed. He expressed the opinion that the product of speed into tonnage, or what may be called the measurement, by "speed tons," gives the measure of the cost of maintenance. Thus he argued that "the effect of what the passenger train loses in weight is compensated in speed"; and on this assumption he apportioned this part of the cost to the different kinds of traffic. He added, at some length, valuable information as to the relative wear of iron and of steel rails.

As to locomotive expenses, Mr. Williams admitted that the cost of wages was in the inverse ratio of speed. Assuming the mean speed of the London and North-Western, and of the Great Northern, trains to be thirty-five miles an hour for passenger trains, and twenty miles an hour for goods and mineral trains, the respective cost of wages was about 33·3 per cent. per mile for the former, and 66·6 per cent. of the latter train mileage. As to cost of fuel, actual accounts showed the consumption of 31·77 per mile on the London and North-Western, and 38·36 per mile on the Great Northern, per passenger engine, and of 68·23 per mile on the former, and 61·64 per mile on the latter, for goods engines. The extra cost of shunting on the goods traffic is, however, very great. On the Lancashire and Yorkshire railway it amounts to 120 per cent on the total goods train mileage.

Other items of running expenses have been apportioned by Mr. Williams according to the train mileage. Traffic expenses he has distributed according to the ratio of receipts. On these assumptions Mr. Williams has drawn up a series of tables of the operation of twelve principal lines of mixed traffic north of the Thames. The result of this mode of dealing with the figures is the estimated cost of 2s. 7·73d. per passenger train mile, and 3s. 2·82d. per goods and mineral train mile, the respective earnings being 4·60s. per mile for the former, and 6·24s. per mile for the latter. The cost of the mineral trains, however, including the return of the empties, is given in the table at 6s. 5·64d. per mile.

A note upon Mr. Williams's paper was read by the Secretary of the Institution from Mr. Conder, who was prevented by indisposition from being present at the meeting. This paper expressed satisfaction at the progress that had been made in the inquiry as to cost, and hoped that the investigation would not be allowed to drop until the full assent of scientific men, abroad as well as at home, should be obtained as to the results. Mr. Conder pointed out that in those points as to which he was at issue with Mr. Williams, the detailed statistics, and the scientific investigation of foreign engineers, were in accordance with his own view, while the distribution of cost now proposed was matter of opinion only.

The division of all railway costs into three main groups, of which the first is regulated by the character of the line, the second by the volume of traffic, and the third by the time occupied in the transmission of that volume, was in accordance with all the facts cited by Mr. Williams. If this great principle is once admitted, difficulties become matters of detail, and a final conclusion must be obtained.

Mr. Conder contested the propriety of the use of the expression "speed ton," as being entirely imaginary, and contrary to the mechanical law that friction depends on weight, without reference to speed. The only investigations directly made on that point are those of Herr von Szabo, laid before the Hungarian Academy of Sciences. From an examination of the accounts of a large number of railways this gentleman arrived at the law that "the speed of trains has no perceptible influence on the cost of the way." The cases of damage cited by Mr. Williams were attributable, as had before been mentioned by Mr. Markham, of the Midland Railway, to the use of brakes, which is always destructive.

Considering that the cost of maintenance was in direct proportion to gross tonnage, Mr. Conder agreed that the cost of wages is inversely as the speed. He pointed out that the assumed rate of twenty miles per hour was far too high for the mineral traffic; and that twelve miles, and on some lines as low a speed as five miles per hour, was as much as was made by the mineral trains between termini. These corrections would, if the ton mileage could be ascertained, bring out results in accordance with those previously intimated by Mr. Conder. Mr. Williams's distribution was entirely inconsistent with the fact that while the earning power of the great mineral carrying trunk lines is steadily diminishing, year after year, the earning power of those great passenger lines which run but a very few mineral trains, is with equal steadiness on the increase.

The subject is one of primary importance, and we trust it will not be allowed to drop until definite results are attained, and the outcome of Continental and American experience is shown to be in harmony with that of the working the railways of the United Kingdom. And it will be essential to the admission of any mode of distribution of cost that it shall explain the great commercial question of the advance or decline in the net earning power of capital.

* See *Builder*, vol. xxxvi., pp. 409, 626; and p. 9, *ante*.

KILLINGWORTH COLLIERY.

LONG known as the metropolis of one of our oldest and our most productive coalfields, Newcastle-on-Tyne has wide repute for its connexion with the commencement and the development of the railway system, and with that of the engines which it has called into use; but it is far from generally known that near it there is an isolated spot which might fairly be called classic ground in Pitland. It is a place which seems in no way distinguished from its neighbours, and the traveller by the East Coast route to Scotland, seeing its rows of low cottages, its mine-mouth machinery hiding behind a pit-heap of dark, slaty, and reddish shale, might fairly deem it undistinguishable from the scores of colliery villages passed in the journey north from Newcastle. But with it are inseparably associated the names of Stephenson and Wood, and it has been the scene of many of the experiments the results of which are now fully known. Before George Stephenson had won the rest of Tapton by his labours on the Liverpool and Manchester Railway, before even its precursor, the old Stockton and Darlington line, had been opened, before the first railway engineering works had been built, the great Northumbrian had acquired no mean fame at Killingworth. To it he had been "promoted" from "braking" engines at Willington Quay to braking the winding-engines there. At Killingworth he drained one of the pits of great feeders of water; there he experimented with his safety-lamp, and produced the "Geordie," which yet retains its hold on the affections of the northern miners, and there he produced those early locomotives which did good service in paving the way for "Locomotion" and the "Rocket." It was in 1814 that the first locomotive engine, freed from

the trammels of racks, toothed rails, transversely grooved wheels, and other of the expedients by which the early engineers sought to aid in the propulsion, was built. It was only a year or so after Stephenson had become "established as engineer to the partnership collieries" that this first engine of his was produced; whilst his two patents date from the years 1816 and 1817; and from only a year or two later the railway system and the construction on a large scale of locomotives spring.

Killingworth, which holds, then, so honourable a place in both the history of the railway system and in that of the provision of greater safety for the coal-miner, is a village less than half a dozen miles from Newcastle, and not particularly distinguishable from the many passed in the journey through the Northumbrian coalfield.

Killingworth itself is a quaint old village, scattered on a hill-side. It boasts a new church, flanked by a squat little Wesleyan chapel, and, hidden away up the lane, one for another denomination of Methodists. It has the usual two public-houses, one claiming kinship by title with agriculture, and the other owning fealty in name to the village. At its upper end there is testimony to the prevailing trade of the district, both in the past and in the present, in a coal-pit, now disused, whilst the old "gin," with its stout rope yet wound, tells the tale of the modes of ascent and descent in Stephenson's early days, and a brick-embedded boiler bears witness to the excellence of the work of the Towards, who, years ago, were boiler-builders on the Tyne. Passing away from this old pit down through the village street, where cottages, with tiled roofs, castellated fronts, and with the stereotyped internal arrangements of colliery dwellings, contrast with more pretentious buildings, a few minutes' walk brings us down to West Moor pit, that at which Stephenson wrought. It is in many respects unchanged since the days of the great engineer. The pit-yard, with its engine-sheds, its rows of old tubs, of fly-wheels, and of heaps of scrap-iron; the low rows of cottages, stereotyped in ugliness, with their ruddy doors and window-shutters; the great water-butts at each house; the wooden steps, pipe-clayed or sanded over; the footpaths, made only by the frequent footsteps on the roadway; and the hollowed barrows for the barrels in which drinking-water is brought from distant wells,—these are unchanged in the scores of years; but the old gin near the pit-shaft is disused, and its beams are rotting, though the strong rope, still covered, retains its strength of old. Recent sanitary legislation has made some change in the appearance of the pit-rows, and the prosperous times of a few years ago have left their traces in the better furnishing of many of the houses, though there is adherence to the common style of the pit cottages in the great fole-pole bedstead, the polishing chairs, the corner-cupboard, and the rosewood-cased clock, as invariably to be seen as the numbered door or the huge fire. In the pit-yard we have passed there is a token of Stephenson, in one of the engines of the olden type, which tradition assigns to him as the builder. Whether it is so or not, the ancient locomotive, with its four wheels, its cylinders on the top of the boiler, its foot-board along the side, and the open machinery, flinging huge and apparently unwieldy arms about as it moves, all tell of the olden days and of makers whose implements were few; whilst its new chimney, with the "spark-dasher" at its back, tell of the renewals that have been needed. Other tokens of Stephenson's presence are to be found near; for his house, little altered, is shown near. Passing the great pit heap, we have in front a pleasant stone-built cottage, rose-bushes and fruit-trees hiding its ancient walls, whilst above the lintel of the door is a sun-dial with the tell-tale inscription above it of "Aug. 11, MDCCCXVI." Three new dormer windows have been introduced into the front, and thus the spouting is changed, but otherwise the cottage, with its slip of garden in front, where geraniums bloom, and creeping-plants overrun the border, might be still the dwelling-place of the great engineer in the days when his mind was overcoming the difficulties of the safety-lamp, and the larger difficulties of coal tramways and "Puffing Billies." Straight in front of this memento is the main line north of that great railway which has swallowed up the primal line that Stephenson first surveyed; the old cast-iron rails first introduced have given place to longer and heavier ones of malleable iron, and these are now being replaced by steel rails. The ancient engines, such as we have seen, costing their 500*l*., have been followed by others many times their power, size, weight, and price; the works such as George Stephenson projected on his first line, the Stockton and Darlington, are dwarfed in contrast with those of later date; but though the "Flying Scotchman" rushes past Killingworth at the rate of a mile in the minute, and though it and the system it traverses have little in keeping now with the engines that dragged their cast-wheels over jerking 3-ft. rails at a pace of five miles per hour, yet the latter is the progenitor of that great system, and Killingworth and its great resident of old have full claim to parentage, and to a share in

> "All the pomp that fills
> The circuit of the summer hills."

As the "Rocket" was the parent of our present locomotives, so those of the Killingworth class were the forerunners of the Rocket, bridging the gulf between it and Trevethick's early engine; and thus making possible the commencement of the railway system.

THE MOST RECENT TORPEDO BOATS, AND THEIR INFLUENCE ON MARINE ARCHITECTURE.

WE have received from New York full accounts of Capt. Ericsson's new torpedo vessel, the *Destroyer*. The subject is one of unusual interest to this country, as it tends to throw light on the question how far it is desirable to entrust the maintenance of our maritime supremacy, or the defence of our coasts, to those enormous ironclads, of which the number is so closely limited by the cost; and how essential it is to keep alive to what may be effected in war by small vessels of great speed.

The Secretary to the Navy says:—"Captain Ericsson has constructed a partially submerged and armoured vessel intended for greater speed than any ironclad, and capable of projecting a submarine shell with great velocity and accuracy to a distance of 300 or 400 yards, which is probably as far as any torpedo is likely to be effective at sea. Some preliminary trials have been made by the inventor; and a Board has been ordered by the Department, at his request, for an official trial when it is ready for service. If the practicability of all or any of these experiments should be established, our monitors and torpedo boats would furnish the amplest protection to all our harbours against any possible enemy, no matter what the size of the attacking ships. And inasmuch as we have been the pioneers in this mode of naval warfare, and have produced most satisfactory results from our experiments heretofore, the Department cannot withhold the expression of the hope that Congress will deal liberally with this branch of the service. . . . . The torpedo has become absolutely essential to the effectiveness of any modern system of naval warfare."

The U.S. *Army and Navy Journal* gives an account of the experiment above referred to by the Secretary to the Navy. The little vessel is built of steel, on lines as fine as those of a "'Varsity Eight," which the hull to some extent resembles. A flat deck rises but a few inches above the water, and an engine-room rising some 7 ft. above the deck, and occupying rather more than half the length of the vessel, with a chimney some 12 ft. high, is all that can catch the eye at a distance. In the bow of the vessel, a little above the level of the kelson, a horizontal tube, looking like a cigar-holder, with a door lifting upwards, contains the torpedo. At the stern is the propeller, a four-bladed screw; the rudder sets out from the stern behind the screw. The torpedo is not cast loose, like the Whitehead fish torpedo. Its connexion with the boat is maintained by a hollow rope, through which highly compressed air is forced by powerful pumps. The escape of this air turns the screws of the torpedo itself, which is said thus to attain a velocity of fifty miles per hour. During the whole of its brief transit it is capable of being steered from the boat by an ingenious manipulation of the movements of the air-pumps.

The editor of the *Journal* remarks on the steadiness of the little vessel at the speed of four minutes for a measured mile with, and four minutes eleven seconds against, the current. "She rode her keel so evenly and steadily that a tumbler of water might have been carried on her decks without spilling the contents. A little more motion was shown when the vessel moved astern. The steering apparatus is so perfect that a boy might handle the *Destroyer*. As to the ventilation, we confess to having had some scepticism concerning what was told us, but the report was not exaggerated. The little engine-room, so crowded with machinery that scarcely 10 ft. of standing-room was left between the engine and the boilers, was so cool that a winter over-coat was found to be a very comfortable addition to one's clothing, while standing within 3 ft. of the open and glowing furnaces. A small gale of wind was blowing down the hatches, the air drawn down through the ventilator at the stern finding its exit then. From this it will be seen how perfect is the control over the combustion in the boiler furnace. The engines are as compact a mass of powerful machinery as we could wish to see; and the extent to which power has been combined with economy of space is really marvellous, the amount of space occupied by three powerful engines being less than 300 cubic feet."

Captain Ericsson's report to the Chief of the Bureau, at New York, states that "the new screw of the *Destroyer*, 9 ft. in diameter, 14 ft. pitch, was tested last Saturday on the Hudson. 66 lb. pressure of steam being admitted to the engine developed 111 turns, or 17¾ miles progressive speed of the propeller, per hour; crank-pins and journals perfectly free from heating. This result establishes the success of the vessel in point of speed, as the working pressure, easily maintained, exceeds 100 lb. per square inch, with 120 lb. steam in the boilers. Full admission of steam during the trial having been prevented by violent foaming, expedients are now being applied to check the same. Three days later Capt. Ericsson wrote,—"The foaming of the boiler of the *Destroyer* has been completely checked. During a trial on the Hudson yesterday the propeller revolved at the rate of 121 turns per minute, with a pressure of 87 lb. The pitch being 14 ft., this shows a progressive motion of 19¼ miles per hour. It will thus be seen that the power of the engine has not yet been fully utilised. I have accordingly ordered a new propeller which will be applied forthwith."

"To John Ericsson," according to the competent testimony of our contemporary the *Mechanics' Magazine*, belongs "the undivided honour of having built the first practical screw steamer, the first screw war-ship, and the first cupola vessel." As he has thus originated that race of leviathans which for a time have dominated the modern seas, so has he made the most remarkable advance in the structure of that craft which bids fair to be to the ironclad as the sword-fish is to the whale, or the ichneumon to the crocodile. It is, of course, premature to pronounce on the success of any such new craft until it is tested in actual warfare.. But it is very clear that for the price of one *Thunderer* might be built sixty or seventy *Destroyers*; and that for defensive coast warfare there can be little question which outlay of the money would be most advantageous. The chance of effectively bringing a 38-ton gun to bear on one of these little craft, with only 12-ft. beam, sitting so low in the water that at a little distance the sea seems to cover the deck, would be small. But if the assailants were not one, but a dozen *Destroyers*, each bearing certain destruction to the big ship if she once laid her torpedo alongside her, what would be the chance of the latter? If war is finally to be put an end to by making the weapons of war so destructive that no one can hope to come alive out of action, no man can claim to have done more than Capt. Ericsson to hasten that martial millennium.

GREAT GRIMSBY.

A FISHER LADS' INSTITUTE is about to be built here, on land given by Colonel Tomline. It will provide a much-needed want for the numerous boys engaged in the fishing trade, who now have no place to resort to when on shore. The new premises will provide a large swimming-bath, lecture-hall, coffee-room, library, recreation-rooms, with agent's residence, &c. Mr. Charles Bell, of London and Grimsby, is the architect, and the works are to be begun at once. The estimated outlay is 3,000*l*.

A new school is about to be built by the School Board, for 750 children, in the West Marsh district. It will be the second provided by the Board, a former one for 1,100 children having been built eighteen months ago. The new school is from the designs of the Board's architect, Mr. Charles Bell.

SEAHAM HARBOUR.

WHEN Ulysses saw "Ithaca's emerging hills arise," with a "town and spacious port," his feelings could not have been stranger at the contrast to the Cimmerean gloom he had so lately left than would be that of one of the dwellers only a century ago on the northern coast if, on returning, he saw the spacious port of Seaham Harbour on the shores that less than threescore years ago were sand-blown banks. The third Marquis of Londonderry conceived and carried out the idea of such a port, and his successors chiefly have developed the town that has arisen. By marriage with the only daughter of Sir Harry Vane-Tempest, Lord Londonderry acquired large estates in Durham, including valuable coal-mines, and a nearer port than Sunderland being needed for shipment, Seaham Harbour arose. The foundation-stones were laid on the 28th of November, 1828, by the Marquis and his son, and the design of the Rennies, Telfords, and Buddles has been since carried out, the harbour and docks being hewn out of the limestone rock. On Monday, July 25th, 1831, a brig named the *Lord Seaham* sailed out of the port, and from that date for some years great growth was known. When the first reliable record was issued after its formation, Seaham shipped yearly some 86,000 chaldrons of coal; its branches of colliery railways yielded considerable traffic; whilst many of the essentials of town life were being supplied. It boasted of some ten public-houses; the "Royal Pilot" left daily the Lord Seaham Inn northward; whilst "gigs" and carriers supplied, in addition, the wants of the travellers and of those who sent traffic. The town was small, but the population was large in comparison with that it had been even at the census of 1831, when in the parish there were only 264 inhabitants, and when there was no place of worship other than the parish church of St. Mary. In these old days of Seaham it depended upon Houghton-le-spring for its postal facilities (letters being received by "foot-post"), and for many of its commodities the village,—for it was nothing more,—was dependent upon Sunderland.

In the years that have passed, there has been a growth of the then little harbour of Seaham and its dependent village. Lord Londonderry was once credited with the remark that he intended to make "the grass grow in Sunderland streets," but whether or not it was made, it has not come to pass. Indeed, for some considerable period there was a stoppage of the growth of Seaham, the sailing vessels which plied thereto proved inadequate to meet the needs of the trade, and it is only within the last seven or eight years that there has been a recognition of the newer condition of trade, and an attempt to meet it, and a growth since. Since the screw-collier began at first to aid the sailing vessels and then to supplant them, there has been a marked growth in the coal trade from the little port. The shipments from the collieries of Lord Londonderry have risen from 374,000 tons to 366,000 tons, and though there is a falling off in the quantities from other collieries, the total has kept up to its half-million tons. Over the Londonderry railway 969,342 tons of coal were carried in the latest year we have official returns for, as well as 308,666 passengers. Eighteen steamers are chartered to convey coal from Seaham,—one-half owned by Lord Londonderry, and as the facilities for shipment have been improved, there is no doubt that the harbour will share in the growth of the district on whose seaboard it is situated. Other industries have been projected and carried out at Seaham and in its vicinity; the Vane and Seaham Ironworks have their two blast-furnaces; but though so near the coal they are far from the iron ore, and have been long out of blast. The bottle works have been more fortunate, and both these and the chemical works have long attained eminence both in the quality and quantity of their productions. The town has acquired, with its growth in thirty years from a population of 2,000 to one of 10,000 in 1871, its six places of worship, its institute, excellent schools, and most of the other essentials and desiderata of town life. Its school oversight is entrusted to a voluntary school committee; its local supervision in matters sanitary to a local board; whilst the family who, practically speaking, may be said to own the town, have given to it, as well as patronage, general supervision.

The jubilee of Seaham Harbour has just been celebrated, and though it cannot be said that it has grown like Middlesbrough or Barrow in those years, it has yet made, as we have seen, substantial progress, and the great industry of coal shipment, on which it chiefly depends, has known considerable development. The harbour was designed to meet, fully, the needs of an order of trade which has passed away; and the change to a new era is one not easily undertaken nor quickly completed. Meantime, in the half-century there have grown up in the locality large local industries, which have to some extent lessened the quantities of coal available for shipment at the local ports; and Seaham has not known to the full the receipt of its share of that growth of local industry. It is isolated,—to some extent by its natural position,—by what its patron has called the "terrible hills" near it; and to some extent by the fact that it is dependent upon one line of railway, of which it forms the *ultima thule*. Under these circumstances, there are not the capabilities of growth in other than the shipment of coals. But having now, to some extent, that adaptation to the altered circumstances of trade, there may be expected to be a growth in that trade. It is evident that we have entered on "an era of comparatively cheap fuel," and there should be a development of the export coal trade under the stimulus which cheap fuel generally gives. Few places are so favourably situated as Seaham Harbour for developing the trade, as its contributory collieries are close at hand; and a large portion belong to its owner, who can deliver them from his own pits, over his railway, at his dock, and ship them in his own steamers. It may not know a rapid growth, but it should know a continuing solid progress now.

THE NATIONAL HEALTH SOCIETY.

A GENERAL meeting of this society, now in its sixth year, was held on the 20th, at 44, Berners-street, Mr. Ernest Hart in the chair. Miss Lankester, the secretary, read a report from the committee of the proceedings of the year, which showed that a considerable amount of good work had been done with a small expenditure. A considerable number of lectures have been delivered, and a course of drawing-room lectures will be given at 23, Hertford-street, Mayfair, by the permission of Mr. C. Matthews, in the spring. The following gentlemen have offered to give these lectures:—Dr. Teale, of Leeds; Professor Corfield, Mr. Ernest Hart, Dr. Arthur Edis, Dr. Horatio Durkin, and Mr. Ernest Turner. Efforts have been made during the year to obtain the opening of spaces for the people, the conversion of disused churchyards into gardens, &c. The committee have been anxious during the past year to inaugurate a new branch of the society's work in the shape of a house inspection organisation. The provisional rules were submitted, and will require careful consideration.

On the motion of the Chairman, seconded by Mr. Godwin, the report was adopted, as was also the following resolution, Lady Stanley of Alderley and Miss Helen Taylor taking part in the discussion:—"That this society earnestly expresses the hope that the School Board of London will, at the earliest possible opportunity prior to the ensuing spring, find means for fitting and opening the playgrounds attached to the School Board schools, for the purpose of systematic recreation during the Saturday evenings and summer holidays."

THE FREEING OF THE TOLL BRIDGES OVER THE THAMES.

THE claim of the Albert Bridge Company against the Metropolitan Board of Works for 300,000*l.* for the Albert Suspension Bridge and old Battersea wooden Bridge is now in coarse of hearing before the arbitrators, and is likely to last some days longer. Various interesting points have arisen both in regard to the suspension system of the Albert Bridge and the timber of the Battersea Bridge, which has been renewed and repaired for the last 112 years. Mr. Pope, Q.C., Mr. Bidder, Q.C., and Mr. Webster, Q.C., are conducting the case for the Bridge Company, and Sir Henry James, Q.C., and Mr. Philbrick, Q.C., appear for the Board. Engineering evidence in favour of the bridges has been given by Mr. R. M. Ordish, who designed the Albert Bridge; Mr. Ewing Matheson (the chairman of the company), Mr. W. H. Barlow, Mr. C. D. Fox, Mr. Brereton, and others; and in opposition, Sir Joseph Bazalgette, Mr. Henry Law, and Mr. Edward Woods appear for the Board. The award, which is not likely to be given for some weeks to come, will complete the second group of bridges named in the Toll Bridges Act of 1877, and will allow the free opening of five toll-bridges from Lambeth to Battersea inclusive.

THE CONFUCIAN TEMPLE OF NANKIN.

A CORRESPONDENT of the *Celestial Empire* writes as follows:—

"Nothing can be more imposing, from a strictly Chinese point of view, than the Temple of Confucius, as it appears at a distance of some few hundred yards. Embracing an area many times the size of the Royal Exchange, situated upon an undulating hillock, and enriched with clumps of dark green foliage, which form an admirable foil to the huge, curved-up roofs and zig-zag walls of the inclosure, the structure appears by no means unworthy of its high position as one of the great literary shrines of China. Nor is the impression disturbed as we approach. In front of the temple is a spacious stone court, surrounded by a wall, and entered from opposite sides by two enormous gates, magnificent in ornament, material, and design. Within, we find ourselves in a vast labyrinth. On one side there is a handsome hall, or yamen, inhabited by the *lao-ssu*. This is consecrated to the more practical part of the literary religion,—study, instruction, and examination. Everywhere there are strange and tortuous paths, sloping upwards; some, indeed, are in the form of steps, so that it is impossible to avoid a mental reference to the flight which leads to the fabled Temple of Fame,—here a combination of parable and reality. The temple proper has many elements of true splendour. Before each pavilion is an immense open court, well paved with solid stone; from this we ascend by a flight of broad and massive stone steps,—far handsomer and bigger, and broader than those which lead to the door of St. Paul's,—to the first hall of worship, which is always jealously closed when no solemnities are going on. Upon either side of the court and of the steps are broad corridors, along which run, again, deep long halls of a singularly depressing and gloomy aspect, tenanted with the memorial tablets of some thousands of departed worthies. Up again we go, however, and find ourselves in another spacious court, with another flight of steps before us, as broad, and as massive, and as handsome in every way, as those we have passed already. At length we stand before the last and highest of the sanctuaries, having ascended many steps since first we entered from below; but behind we can go higher still, and by dint of clambering up a hillock overgrown with weeds we reach a spot occupied by a little handsome kiosk, which commands a wonderful panorama of the surrounding country. Before us lies stretched the whole of the northern part of the city. Immediately below is a dismal waste of dirty common, dirty cottages, and dirt in various other forms. In the middle distance gleam the white walls of the Roman Catholic establishment; further off lie the green lanes, and prosperous market-gardens, and shady copses which surround the Miao-siang Ngan, while the horizon is bounded by an undulating sweep of hills,—the Purple-Golden Mountain to the right, then the Pe-ki-kuo, with its coronet of kiosks, then the dark-red Drum Tower, and lastly to the left, the beautiful Tsing-liang Shan. To form a correct idea of it the reader must understand,—as every one who lives in China will,—that it is less a temple than a town. For streets read corridors, for squares read courts, for houses read kiosks, pavilions, and ancestral halls, and that is the Confucian Temple. The great curling roofs hang proudly over their supports, and are richly coloured by art as well as by time; the architecture of the whole is admirable, the material massive and costly, the design well-nigh complete. But the effect? Disappointing to the last degree. Nor is the reason far to find. The whole place is a neglected wilderness. The fine broad courts are covered with grass and weeds; lumber is littered all over the enclosure; the undergrowth along many of the paths comes up almost to one's waist, flourishing as luxuriantly as on the wildest mountain side; while the beautiful stone steps, just under the overhanging portico of the temple, are,—well, overhanging porticos are generally a favourite resort for birds, and the stones in the immediate neighbourhood of this one can hardly have been

cleaned for the last ten years or so. With two industrious gardeners constantly about, the Confucian Temple of Nankin might be made a charming resort; but as it is apparently against the "custom" of China to interfere with the operations of Nature, so far as to root up weeds and keep things clean, it is a dirty, slovenly, and shamefully-neglected place."

FIRES IN THEATRES.

MR. FÖLSCH, whose valuable work on Theatre-burning was reviewed in these columns (*Builder*, vol. xxxvi., pp. 423, 691) at some length, has sent us the following list of seventeen theatres which were completely destroyed by fire in the year 1878, viz.:—

Jan 22. *Wandsbeck*, near Hamburg.—Reisner's Tivoli Theatre, burnt down at night.

Feb. 4. *Wigan.*—Queen's Theatre, large wooden building, burnt down soon after close of representation.

Feb. 5. *Chicago.*—Academy of Music, destroyed by fire after close of representation.

March 26. *London.*—Elephant and Castle Theatre, burnt down at night.

April 6. *Oldham.*—Theatre Royal, destroyed by fire early in the morning.

April 27. *South Shields.*—The Alhambra Music-hall and Amphitheatre, burnt down after close of representation.

May 1. *Wittenberge.*—Centralhalle, Theatre, and Ball-house.

May 11. *Ahmednuggur*, India.—Theatre burnt down during representation. Panic. Forty persons killed, and many others badly hurt.

June 13. *Plymouth.*—Theatre Royal, burnt down immediately after representation.

July 16. *Bradford.*—Prince's Theatre, burnt down after close of representation.

July 19. *Mont de Marsan*, France.—The Amphitheatre, destroyed by fire, with five other buildings, in the afternoon.

July. *Nischny-Novgorod.*—Theatre burnt down during an illumination for the presence of the Grand Duke.

Aug. 25. *Cologne.*—Der Gertrudenhof, burnt down in the evening, after a concert. Fire commenced on the stage.

Sept. 2. *Canal Dover*, Ohio, U.S.—Sells Brothers' Circus, small temporary building, blown down by wind during the representation, the *débris* ignited by the oil lamps.

Sep. 25. *Blackburn.*—Star Theatre, built of wood, burnt down in the night.

Nov. 14. *Bradford*, Pennsylvania, U.S.—The Théâtre Comique, burnt down, with fifty houses. The fire commenced over the stage.

Dec. 9. *Constantine*, Algiers.—Theatre burnt in the night.

WARMING AND VENTILATION OF CHURCHES.

SIR,—Allow me to reply briefly to the letter of "M. & S.," which appeared in your last week's issue, on the oft-recurring question of "the ventilation of churches and the prevention of down-draughts."

There is no doubt the evil of "down-draughts" exists, and must exist, in every church warmed (not ventilated) by any of the systems usually adopted, although, in many instances, by the exercise of a little care on the part of the man in charge that evil might be greatly mitigated.

One step in the right direction is to heat the church before the assembling of the congregation, allowing the fire to burn itself slowly out during the day of the services; but the remedy is by a carefully-designed and scientific arrangement of apparatus with channels for the admission of fresh and warm air, and others for the extraction of the vitiated air.

This can only be effected by special structural arrangements, requiring the co-operation of the architect, and which should be designed and decided on before a stone of the building is laid, care being taken that all openings, whether for inlet or extraction, are properly proportioned and distributed.

In almost every instance of church building, the warming is an after consideration, and no alternative remains but to fix the boilers or stove here, and the pipes there.

The plan I venture to suggest in the case of warming a church by hot water, would be to lay the pipes in channels built under the floor, and alongside the north and south walls, of such dimensions as to admit the entrance of a man on his hands and knees, in order that the pipes could be examined and repaired at any time, supposing such a necessity occurred.

The channel in which the pipes are laid to be supplied with fresh air from the outside, under control, and the warmed fresh air delivered into the church through a running skirting ventilator, or by flues carried up in the side walls, discharging at any height; in either case the warm air ascending in this way would entirely cut off the descending currents of cold air, and dispose of the inconvenience invariably complained of by persons seated near the walls of the church. For the extraction of the vitiated air, other channels constructed under the aisles and connected with numerous openings in the floor or risers of the seats would be necessary. The openings to be generally distributed over the church, so that the escaping air has no great velocity at any particular point, and no perceptible draught created. These main eduction channels to discharge themselves into a vertical shaft carried up in the tower.

An economy would be effected by so arranging the extraction flues that on starting the apparatus before the church is required for use, and when the air in it is pure, the supply of cold air from the outside could be shut off, and the air in the church conducted to the channels which contain the pipes, the current being diverted, and the external fresh air admitted just before the service. This might be very simply arranged.

The expense of constructing these channels as the building proceeds, would not, I venture to say, exceed that incurred in many instances under the ordinary system, where the warming has been an after consideration, and ventilation entirely ignored.

For summer ventilation openings should be provided near the roof, or high up, communicating with the extraction shaft, and under control.

A thorough explanation of the plan suggested would entail a long description and diagrams, but I will not trespass further on your space.

St. Neot's. W. ALLOWAY.

*** Several patentees request to be put in correspondence with "M. & S.," but this is not our object. We seek information for all.

VENTILATION OF CHURCHES.

SIR,—"M. & S.," at p. 81, ask how to ventilate churches, &c., without down-draughts being felt. One way to do it is to so put in the up-cast shaft that if down-draughts do take place these will not come right down upon the congregation, but be deflected either perpendicularly or at a certain desired angle upwards. How to do that practically will be explained in a new patent of mine which I expect to be published in a month or so; but if "M. & S." are architects, I shall be glad to freely explain to them my method, and allow them freely to try it in part or whole, but at their own expense, at such building as may be mutually agreed upon, and they are at liberty to publish the result.

W. P. BUCHAN.

21, *Renfrew-street, Glasgow.*

COST OF ENGLISH AND FOREIGN WORKMANSHIP.

SIR,—The letter written by your correspondent Harry Hems in your last week's issue (p. 80) is, I think, liable to give your readers a false idea of the cost of English and foreign art-workmanship, and to be greatly detrimental to our English art-workmen. I have had considerable experience in the employment of both, and I have always found that foreign art-workmen, instead of working for half their value, as Mr. Hems infers, demand more money than they are actually worth in comparison with Englishmen, and I have not yet found one, however inferior, who is willing to receive less than 1s. or 1s. 2d. per hour, in addition to customary cab-fares and expenses when from home.

SEAGIET ALBION.

ACOUSTICS.

SIR,—My attention has been drawn to the article on acoustics in your valuable paper of the 11th instant, pp. 44 and 45.

The application of the principle having been secured to me by Royal Letters Patent a few years since, for this country, I think it best (by your permission) to inform your numerous readers of the fact. This is my apology for writing you.

GEO. L. SHOELAND.

AMERICAN PLASTERERS IN EDINBURGH.

ROBINETT *v.* NEILL.

SOME dissatisfaction having arisen amongst a number of American plasterers as to an engagement made by them at New York, in September last, for employment in Edinburgh, one of their number, Matthew Robinett, sued George Neill, secretary of the Edinburgh Master Plasterers' Association, as representing that body, at the Small-Debt Court, on the 15th instant, for 11*l.* 18s. 6d., alleged to be due through breach of agreement.

It appeared that in the course of the strike of operative plasterers in Edinburgh, a messenger was despatched to New York in search of men. He procured twenty-three, the stipulations being, according to the Americans, that they were to receive six months' continuous employment of fifty-one hours a week at 9d. an hour; that they were to be paid wages at that rate during the voyage, and have their passage-money advanced. The pursuer, therefore, claimed 3*l.* 16s. 6d. (less 6s. paid) as allowance for time (102 hours) spent in crossing the Atlantic, and 8*l.* 8s. as loss through reduction of hours and want of work.

The pursuer said that, in September last, an advertisement appeared in the New York papers offering employment in Edinburgh to 100 plasterers at the rate of 9d. an hour, with free passage. He and several others made application to the agent, Mr. Day, and entered into verbal engagement with him for six months' constant work of fifty-one hours a week at the above rate, no matter whether stopped by frost or rain. Their passage was to be paid, but to be deducted from their wages at the rate of 3s. a week. They were informed that there was no strike in Edinburgh, only a scarcity of men; that the rules and regulations in force in the trade there would in no way interfere with them; and that their comfort would be attended to on arrival. On reaching Edinburgh they were provided with board and lodgings for one day, and then left to "fish" for themselves. They started work on the 10th of November, and, after working for about a month at full time, their hours were reduced to eight and a half, and subsequently to eight, seven and a half, and seven, and ultimately they were thrown idle altogether. During the time witness was idle, he received sums from his employer amounting in all to 30s. Before leaving New York he was in regular employment, and was paid at the rate of 2½ dols. a day. A committee was appointed to complain about the breach of agreement, but they obtained no redress, and the American consul at Leith was then consulted on the matter. Hence the action.

Five men placed in a similar position to the pursuer gave corroborative evidence.

Robert Day, joiner, who was deputed to go to America in search of men, said he was employed to do so by the defender, Mr. Neill. His instructions were to engage them on the best terms he could, and the wages were to begin from the time they began work in Edinburgh. He engaged twenty-three. The agreement was verbal, and was to the effect that they were to receive 9d. an hour; that nine hours' work would be afforded in summer, but that the hours might be reduced in winter. At the same time he informed them that very little time was lost in Edinburgh in the winter, in consequence of the mildness of the climate. He did not lead them to believe that their wages were to date from the time of the agreement. He informed them that there was a strike in Edinburgh. He was of opinion that he could have got 500 on the same conditions in New York, in place of twenty-three. The document which the pursuer signed at the time of the agreement contained the words "full employment for six months from date hereof"; but witness did not understand from that that wages were to be paid for the time occupied by the voyage.

The defender said he told Day to tell the men that there was a strike, and if there was any difficulty in getting hands, to offer to pay a half or the whole of the passage-money, on condition that the men signed a document to the effect that they would refund the money. Nothing passed between him and Day as to the number of working-hours, and the men made no complaint to him when the hours were reduced. When they were stopped by frost they applied to him for relief, and he gave it them. The first claim made on him for wages during the passage was the present summons. He would not give the names of the master plasterers who authorised him to send to America for men. There was not a constituted association of master plasterers in Edinburgh, so far as he knew.

Sheriff Hamilton thought the statement of conditions taken to America by Day was merely to be shown to the men. He did not think it was intended, or that Day had power, to make them believe they should be paid wages during the voyage or when idle. He thought it would be quite impossible to work out such an agreement for six months from the date of engagement, and he accordingly gave decree of *absolvitor*. His Lordship at the same time said he sympathised with the pursuer if it was the case that he left a situation in New York where he was in receipt of two dollars and a half a-day.

CONTRACTORS AND SUB-CONTRACTORS.

AT Marylebone, Joseph Wheeler, of Mill Hill, Hendon, was summoned under the Employers and Workmen Act, for wages due to two men he had employed. Mr. Kisch, solicitor, appeared for the defendant.

Messrs. Kirk & Randall, builders and contractors, of Woolwich, had a contract to do work at the Paddington Station of the Great Western Railway, and the defendant sub-contracted with them to do a portion of that work. He accordingly engaged a number of men, and the work was proceeded with, but, in consequence of something that occurred, the men were told to book their time at Messrs. Kirk & Randall's office. The defendant still continued the work but later ceased to go on with it, and it was ascertained that he had overdrawn his account with Messrs. Kirk & Randall. The men he had employed being unable to obtain the money then owing to them, summoned him before the magistrates at Edgware, and it being there contended that the men had become the workmen of Messrs. Kirk & Randall by their being instructed to book their time with them, the magistrate dismissed the summonses, and the men were told their remedy must be against Messrs. Kirk & Randall. Summonses were accordingly taken out

inst those gentlemen at this court, and were heard on turday. A solicitor who represented them said that, hough they were very sorry for the position in which the n were placed, they could not pay the money twice over, defendant Wheeler having already been paid.
A witness, one of the men engaged by Wheeler, was put o the witness-box, and on saying that he had always ked to him as his master, and had never considered that had been engaged by Messrs. Kirk & Randall in any y, the summonses as against them were dismissed, Mr. Rutzen remarking on the great hardship it was for the n to be kept out of their money. Finding the Court had risdiction in the matter, he granted fresh summonses ainst Wheeler, and, the case now being again gone into, . De Rutzen said that, with all due deference to the ugware magistrates, he considered Wheeler clearly liable. e should make an order for the payment of the money e to the complainants—namely, 16s. 4d. in one case and . 9d. in the other, with costs.
t was understood that there were some twenty-eight er men who had claims against the defendant, and Mr. Rutzen advised him to come to a settlement with them, otherwise, if summonses were asked for, they would ltainly be granted.

MASTERS AND MEN.

Huddersfield.—The master builders at Hudders- ld have given notice to determine, on May 1st, s rules under which masons now work. The asters' intention is to reduce wages and crease the hours of working, but no definite cle has yet been settled.
Sheffield.—On the 17th inst. a largely-attended eeting of the members of the Operative Brick- ers' Society was held at the Pheasant Inn, oad-street, Park, to hear a proposal which d been received from the master builders with ference to alterations in the rules of the trade reed to between the masters and the men. On 3rd of January the masters gave notice to men that a reduction in their wages would e effect from the 1st inst. They did not, wever, state the amount of the reduction, l when asked what it was to be, claimed ½d. hour and the right of alteration of the rules. men said they must know what the altera- ns were to be before they could submit, and employers promised to make the proposed erations and submit them to the men. The es, as altered, were laid before the meeting the 17th, and the men declined to accept the erations. After some discussion, the secre- y was instructed to convey to the masters, the feeling of the meeting,—"That the brick- ers do not accept the terms offered to them the master builders in their letter of the h, in which they erase a number of the rules ich have been for many years agreed to and ried out both by the employers and employed." ch respect to the reduction, it was afterwards lved,—"That we, the operative bricklayers Sheffield, are willing to accept a reduction in wages of ½d. per hour, viz., from 9d. to 8½d. hour, on condition that the master builders ept the whole of the rules as mutually wn up, agreed to, and signed by the repre- tatives of the Master Builders' Association the Operative Bricklayers' Society, in 1875; above reduction to take effect from the date which the master builders agree to accept terms." It was subsequently resolved that men would not resume work until an answer been received from the employers.
Staffordshire Nailers.—It has just been decided he members (says a Central News telegram) reak up the nailers' trade union in Stafford- e. The operatives are stated to admit the lity of contending against the masters any ger, seeing that the Worcestershire opera- s do not help, but rather oppose, by working less rate of wages.

CRITERION THEATRE.

,—In last week's *Builder*, on p. 75, Mr. Verity states the iron hoods and flue pipes connected with the n lights of the Criterion stage are coated with Leroy's nt. This must be a slip of memory, as they were d by us with Spence's patent nonconducting compo- n. As this is a matter of some importance to our repu- n, we rely on your usual courtesy to make a correc- n in your next issue.
C. W. SMITH, SON, & CO.

POWDERED FLINT.

LL some of your correspondents kindly inform me the means of reducing flint stone to powder in large ities? Is it by heat? and, if so, the most economical f applying it?
A. B. C.

ating.—"Alfred Baker's Table," advertised r columns, shows the comparative cost of ng slates per 1,200, per 1,000, and per foot re. It will be found useful as well by itects as by builders and slate merchants.

JENNINGS'S IMPROVED SINKS.

A NUMBER of years have passed since we first spoke of Mr. George Jennings as "the indefatigable." At that time he was struggling into notice, and a few words of commendation were valuable to him, and esteemed. Since then fortune has smiled on him; hundreds of workmen fill his factories; his name in connexion with sanitary arrangements is known far and wide, and he is probably independent of praise or blame. Still, however, he continues to be "the indefatigable George Jennings." And here is one of the latest evidences of it. For buildings now in progress for the Victoria Dwellings Association, the architect to the Association, Mr. Chas. Barry, was anxious to obtain a sink which should fulfil certain conditions, and explained these conditions to Mr. Jennings. In a very short time a sink to comply with them was devised and patented, and is now being made in considerable numbers to meet the demand. We will not describe it, suffice it that it seems to us after examination a very good one, and that he is quite justified in claiming that it forms (1) for the cook, an excellent tub for washing plates, dishes, and vegetables; (2) a convenient wash-tub for the housewife for her linen; (3) for the labourer's wife it answers not only for the above, but the additional purpose of a child's bath or a commodious lavatory for her husband on his return from work; (4) lined with white pine it forms the best possible sink for butler's pantry, for washing plate, china, and glass, the breakage due to the employment of ordinary sinks being avoided, and loss of spoons (owing to a grating carelessly removed and thrown aside), impossible; and (5), arranged for the reception underneath of a small grate or fire-box (in houses without a hot-water circulation), it answers all the purposes of an ordinary copper.

CHURCH-BUILDING NEWS.

Monkleigh.—The parish church of St. George, at Monkleigh, a village three miles from Great Torrington, has just had several additions made to it internally. The church is a Perpendicular building, consisting of nave, chancel, south aisle, and chancel aisle, north transept, and western tower. The church was restored generally in 1863. The recent additions have been carried out under the professional supervision of Mr. W. R. Brydon, architect, of Bideford. New oak seating has been placed in the Annery chapel. The old carved bench-ends have been re-used, and the seats made substantial and strong, whilst new seating has also been placed in the transept. This work has been carried out by Mr. Lewis Ellis, the local carpenter and sexton of Monkleigh. The tower contains five bells; these have been thoroughly overhauled and rehung, by Mr. Hooper, of Woodbury, and a chiming apparatus has also been put up, by Mr. Seage, of Exeter. A parclose screen has been erected between the chancel and the Annery aisle. It consists of several bays, springing from octagonal columns, and the upper part is rich in worked and carved tracery. The whole is surmounted by a deeply-moulded and carved cornice. At the eastern end is a doorway. This screen has been made and placed in position by Mr. Harry Hems.
Birtley.—St. John's Church has been reopened, after renovation and the addition of a new organ-chamber on the north side of the chancel. The floor is raised 5 ft. above the chancel-floor, and the chamber is half octagon on plan. The organ has been removed from the old gallery, and the case remodelled. The work has been executed at the sole cost of Colonel Sheppee, of Picktree House, in memory of his uncle, the late Augustus Henry Hunt, of Birtley House, Birtley. A new two-light window has been added to the south side of the chancel, and filled with stained glass by Clayton & Bell. The subject is the Good Samaritan. The cost has been defrayed by subscription from the inhabitants and workmen of the Birtley Iron Company, in memory of Mr. A. H. Hunt. The whole of the work has been designed and carried out under the superintendence of Mr. Charles F. Armstrong, of the firm of Lamb & Armstrong, architects, Newcastle-on-Tyne.
Castle-frome.—The parish church of Castle-Frome, Herefordshire, is about to be re-opened, after restoration under the direction of Mr. Martin Buckle, architect, Great Malvern, Mr. William Porter, of Malvern Wells, being the contractor. The tower, spire, and porch were found to be in a most dilapidated condition, and have been entirely renewed, the old lines of the former half-timbered ones being strictly adhered to. The roof, also, has been renewed and restored to its original pitch, and the old oak ceiling beams cleaned and repaired, and the panels filled in with pitch pine boarding. A new vestry, with heating-chamber under, has been added. The plaster has been taken off the inside, and the old Norman walls repointed. Encaustic tiles have been laid in the chancel, and the church has been reseated throughout.
Poltimore.—Mr. R. M. Fulford, architect, Exeter, has been consulted as to the restoration of the parish church of St. Mary, and has prepared drawings for the proposed works. Of the original seating, one bench-end has been preserved. It is of unusual solidity, and of quaint and uncommon detail, both as regards its mouldings and carved ornament. Only a few of the new seats have yet been placed in the church, and these stand in the north transept. They are of well-seasoned English oak, massive as the old bench-end just referred to, and the carving in unison therewith. The ancient end is incorporated in one of the new benches. The work is to continue. What is already done is by Mr. Harry Hems, Exeter.

Books Received.

Pretty Arts for the Employment of Leisure Hours. A Book for Ladies. By ELLIS A. DAVIDSON. With illustrations. London: Chapman & Hall. 1879.

WHY "for ladies"? We fear this book is a little behind the age. The "arts" with which it deals include wood-engraving, wood-carving, etching, lithographic drawing, &c. The time has nearly gone by when ladies who will take the trouble to acquire or practise any such occupations as these will be content to regard them as elegant trifling, or to imagine that there is anything peculiarly ladylike in taking up such studies superficially *pour passer le temps*. Among ladies who care for art-work at all, we can testify that, as far as our experience goes, there is nothing which makes them more indignant than to have it supposed that there is any ladies' way of art different from,—slighter than,—that practised by men and artists. Ladies who take up any branch of art now generally do so with a will, and not in a mere "leisure half-hour" manner. And it is well that it should be so. Any artistic work is worth doing well if it is worth doing at all, and nothing is more insufferable than "pretty" art, drawing and modelling carried out in a toy way, and with no real purpose in it. And fancy including etching under such a category as "pretty arts,"—etching, which is simply worthless unless there are the mind and feeling of an artist presiding over the scratching and biting. This will never do.

The one way in which Mr. Davidson's book may be of practical use is that it gives descriptions of the tools required in practising the various occupations named, which may serve to tell the reader who wants to etch or to engrave, &c., what to get, and from whom to get it. It is not so precise in regard to some matters of information as it might have been; under lithography, for instance, there is no hint that on the stone the drawing must be made the reverse way, a thing very likely not to occur to a beginner; and no mention of the way out of this difficulty (if it is found one) by the use of "transfer-paper," which, in fact, is in every way a much more convenient medium for amateur drawing on stone, than working on the stone direct. Nothing is said under "etching" as to dry-point work, which certainly should be mentioned. To this and other chapters must be appended the addendum which we suggested for another popular book the other day,—"First learn to draw." Card models and leather-work may come properly under the heading of "pretty arts," but it is vexatious to see them bound up with real fine-art processes, as if any one who could do one could do the other. The book is well meant, but it is a mistake.

VARIORUM.

THE first article in the new number of the *Quarterly* is a delightful account of Lessing, with a review of his works and his position in the world of letters. Germany owes much to this strange, wild genius,—"Lessing unloosened

by the power of his touch, the tongue of his countrymen, then in the cradle of their literary revival, and feebly attempting to stammer forth ideas in a language which since Luther's days had been left to lie without culture."——A new and compact edition of Lessing's "Laokoon," by the way, is before us, as a volume of the Clarendon Press Series, German Classics (Macmillan & Co.), edited with English Notes by Dr. Hamann, who has prefixed an excellent Introduction. "To realise the effect wrought by Lessing's 'Laokoon,'" wrote Goethe, "one must be young; it transported us out of the region of trivial observation into the limitless area of thought."——"Cast-iron Pipes" is the title of a pamphlet by Ernest Benedict, C.E. (Spon), which gives the result of the author's experience, while passing 30,000 tons of cast-iron pipes, during which time he learnt, as he says, much that was new to him. Many will find valuable the knowledge Mr. Benedict thus acquired.——The Municipal Corporations Companion and Diary (Waterlow & Son) has taken its place in the list of useful annuals. The new issue includes an explanatory Index, which shows at a glance the judicial and administrative character of each borough; a Table of the Municipal Acts, from 1835, which form the series proposed (by the Lord Chancellor) to be consolidated in the next session of Parliament; and a detailed and interesting account of the whole of the Ancient Corporations, which have been inquired into, and will be shortly reported upon by the Royal Commission on (Unreformed) Municipal Corporations.

Miscellanea.

A New Mersey Tunnel Scheme.—The Liverpool papers give details of a new Mersey Tunnel scheme. The railway tunnel scheme is stated to have practically collapsed, but the new proposal is to construct a tunnel for pedestrians, and for tramways and other vehicular traffic. It is proposed that the underground roadway should commence opposite the open space in front of St. Nicholas's Church, then make a detour to the left, and pass underneath the Chester Wharf and the entrance to the Manchester Dock. It will then pass underneath the river, come out near to the Morpeth Branch Dock, and be brought into direct communication with Argyle-street, the main street in Birkenhead. The proposed tunnel is to be a double one, with two arches, each arch having a footpath for pedestrians, a tramway road, and two lines for carriage and cart traffic, making in all three lines of road in each direction, in addition to the accommodation for foot passengers. As the bottom of the river is composed of solid sandstone rock, no engineering difficulties are apprehended. When completed, —which it is expected will be in about two years after the tunnel has been commenced,—each arch will be lighted throughout, perhaps with the electric light. The total length of the roadways will be 2,360 yards, or one mile and a third, and the entire cost is estimated at from 300,000*l.* to 400,000*l.* The gradients will be on an average about one in twenty-five, being the same as those in most of the London bridges. Tolls are to be charged. The intention of the promoters is to create a public trust, guaranteed in certain proportions by the Dock Board, the Corporations of Liverpool and Birkenhead, and the various interested railway companies.

Engineering Trade.—Messrs. Matheson & Grant's Report says the value of commodities, which six months ago had reached, it was hoped, the lowest point, has since continued to fall in all branches of the engineering trades, and the renewal of confidence which was looked for from the Berlin Treaty has been again postponed by the Afghan war and the recent financial failures. The evil system which these failures disclose has injured not only those immediately concerned, but has, by a forced depreciation of prices, helped to ruin many honest traders. To those who are aware of the real cost of manufacture, it is evident that even now the end has not arrived; and till the credit or borrowing sources are exhausted of the firms who, without funds of their own, are working at a loss, and who postpone the day of reckoning rather than acknowledge their insolvency, it is useless to hope for remunerative prices. The banks who provide the funds share in the disaster, and it is worth noting that such alliances are not confined to this country.

Locks and Locksmiths.—Messrs. Chubb & Son, who have certainly a right to be heard, are not contented to let Mr. Jas. Hill's statements (see p. 82, *ante*) pass *sub silentio;* they say:—"It is incorrectly assumed, both by the Colonel and by Mr. James Hill, that all English locks are of one class, consisting 'of a number of small parts exact counterparts of one another'; but as Mr. Hill owns he is not a manufacturer, preferring 'to be a merchant only,' it may be necessary to inform him that in a superior quality of lock it is not desired to make a large number precisely alike, which any one of their keys will open, but rather to produce the greatest possible variety of combinations with different keys. In order to effect this a certain amount of skilled workmanship has to supplement the products of machinery, and will always continue to do so. We were acquainted with the workmanship and finish of American locks long before contractors were tempted across the water by large discounts, and while readily acknowledging the general utility and neatness of these goods, we maintain they show no improvements affecting real security superior to those effected in this country. Scarcely a year passes in our own works without either master or men adopting some improved alteration of manufacture, and we know of numerous other cases where special machines have been made for the trade. But besides all this, Mr. Hill, in his zeal for his new friends, overstates his case against the British workman. We have employed hundreds of men at our Wolverhampton factory during the last fifty years, and have no hesitation in saying that they have been as sober, saving, and honest in their work as any similar number of Americans."

The Canadian Timber Trade. — The statistics of the Canadian timber exports for the year just closed are of especial interest to the trade in this country at the present time. They show that there has been a great falling off in the trade of the port of Quebec, the arrivals of sailing ships from sea during 1878 being 662 vessels, 503,912 tons, as compared with 958 vessels, 763,423 tons in 1877, showing a decrease of 296 vessels, 259,511 tons; while the clearances for sea (timber laden) were 476 vessels, 399,833 tons, in 1878, against 796 vessels, 670,627 tons, in 1877, showing a decrease last year of 320 vessels, 270,794 tons. The limited demand in the British markets, together with the great decline in prices, are stated to be the reason of this serious decrease in the exports; heavier stocks are left on hand than at the end of 1877, and it is expected that the production this winter of all kinds of goods will be exceedingly light. The past season is described, both by manufacturers and shippers, as being one of the dullest and most unsatisfactory on record, and merchants of old standing cannot recall a year in their long experience during which the trade suffered so much from depression, doubt, and the want of a healthy demand. It is hoped that the efforts now being made by the Canadian Government to induce the French authorities to remove the differential duties against Canadian-built ships will, if successful, lead to extensive orders from French shipowners.

Spithead.—We are informed upon the best authority that the statement inserted in our issue of the 11th inst., to the effect that there had been a percolation or leakage through the roof of the No Man's Fort at Spithead, is not justified by the facts, which simply are, that in consequence of the severe frosts, and subsequent damp weather, a great condensation of moisture had taken place on the inner surface of the iron curved plates composing the roof of the casemates, and which had resulted in a good deal of dripping and discomfort, and nothing more, and that it can easily be remedied by a coating of powdered cork, similar to that which has been most successfully applied in the magazine of the same fort, and also of some of the iron ships of the Navy,—the means of adhesion being a mixture of certain paint materials. Although such a coating is indispensable in the magazines, nothing but such a very exceptional degree of cold as has lately been experienced has suggested that it would be at all necessary in the casemates. We are assured that there is no leakage whatever through the roof or any other portion of the structure.

Revolving Shutters.—We understand that Messrs. Grafton & Co. have been appointed Steel Shutter Contractors to the French Government.

A Drawback to Brighton.—"A Bird of Passage" writes to a Brighton paper:—"In spite of all the improvements effected in Brighton, there is one respect in which the 'Queen of Watering-places' lags behind. You have one of the most magnificent seaside drives in the world; but all your visitors are not carriage people; all do not ride; and of those who do, many also enjoy the invigorating exercise of the promenade. Now, there are in Brighton no facilities for walking by the sea. There are no sands,—nothing, at all events, to speak of,—and the idea of tramping along on the shingle for any distance is not inviting. While a broad promenade has been formed at the cliff's edge, and another in a more sheltered position below it, both of these are of such material as to be detestable to the pedestrian either in fine or wet weather. In fine weather the gravel grinds painfully under foot, destroying all comfort, while a little rain converts the path into mud, variegated into pools and puddles of water. In almost all the watering-places with which I am acquainted, the sea-frontage walks are asphalted. It is so at Margate, Folkestone, and Hastings, for example, and the result is that one walks on velvet. The perfectly smooth surface is equally delightful in wet as in dry weather,—always clean and always inviting. The most tender-footed pedestrians find it a pleasure to be out and about in all weathers, whereas in Brighton the walks by the sea are always formidable, and often absolutely deterrent."

Manchester and Salford Ladies' Sanitary Reform Association. — The annual general meeting of the Manchester and Salford Ladies' Sanitary Reform Association was held on Tuesday. The Bishop of Manchester presided. Mr. E. A. Leigh (hon. sec.) read the annual report, which stated that notwithstanding the great distress arising from the badness of trade which had prevailed, the association had been able to maintain the same number of mission women as last year—viz., 13. A great amount of work had been done in the various districts. It was not possible to help noticing the close connexion between dirt and drink. Intemperance seemed to destroy ordinary sensibilities, and to make it possible for people to live with apparent contentment in a state of filth and wretchedness most distressing to behold. This association and the Manchester and Salford Sanitary Association were on the eve of amalgamation, so far as regarded their work. Arrangements had been made by which several of the medical members would deliver addresses upon sanitary matters in the different districts. Mr. T. Dale (hon. treasurer), read the financial statement, which showed that the receipts for the year, inclusive of a balance of 14*l.* 18s. 8d. in the bank at the commencement of the twelve months, amounted to 447*l.* 17s. 11d.; and after payment of all expenses, there remained a balance in the bank of 10*l.* 16s. 7d.

Improvements in St. Paul's Churchyard.—The *City Press* announces that the Coal and Corn Finance Committee having had before them plans and estimates for the embellishment of the ground around St. Paul's Cathedral, have made choice of such as seemed to them to meet the wishes of the Corporation upon the matter. The railing on the north side of the churchyard will be lowered, and a new gate formed at the north-east corner, by Cheapside. On the south side the railing will be shifted within the churchyard, so as to allow of the formation of a public footway on the outside. The contract for this portion of the work will be undertaken by Messrs. Mowlem & Co., whose tender for 2,480*l.* has been accepted out of four sent in. Mr. F. Milner, of Norwood, will superintend the laying out of the ground. The whole of the north-east, south-east, and south-west of the churchyard will be planted with trees and shrubs and flower beds, and the customary accessories of the landscape garden will find their place in the development of the work. The amount of Mr. Milner's tender is 500*l.* A fountain is to be erected to the north-east of the churchyard, which will probably be embellished with a statuette of St. Paul. The work will go forward immediately upon the signing of the contracts, under the personal supervision of Mr. A. Murray, acting for the City Architect.

New Associates of the Royal Academy. At a general assembly held on Wednesday evening, Messrs. Valentine C. Prinsep, S. Luke Fildes, and J. M'Whirter, painters, were elected Associates of the Royal Academy of Arts.

Manchester Academy of Fine Arts.—he annual meeting of the Manchester Academy Fine Arts was held on Tuesday evening, at ie Royal Institution, Mr. R. Crozier (president) the chair. Mr. H. Hadfield (secretary) read ie annual report of the council, which stated iat the association remained, the council elieved, in a healthy and vigorous state, and as fully answering the end for which it was stituted. This belief was not founded alone pon the fact of the increased number and xcellence of the works sent in for exhibition, ut also upon the earnestness of study manisted by those attending the life class. The ademy at present consisted of nine honorary id forty-four ordinary members, eighteen ssociates, nine lady exhibitors, thirty-eight ale and twenty lady students, being two dinary members, four associates, one lady hibitor, five male and twelve lady students ore than given in last year's report. The last arly exhibition was in every sense an advance on the preceding one, 98 out of 495 pictures ving been sold; and the council trusted its ccessor, now close at hand, would show no mptoms of deterioration. The council expeenced a great disappointment in connection th the exhibition at Peel Park. But for the bsidy allowed by the Salford Town Council, e council would have suffered considerable ss in connexion with that exhibition.

Singular Fatality in Liverpool.—The dead dy of Mr. John Richard Charles Ives, brother the contractor for roofing the new portion of me-street Railway Station, was found the ier morning lying in an excavation inside the tion. The hole, which was about 10 ft. deep, s made for the foundation of one of the umns supporting the roof. At the bottom s a quantity of loose earth, and an old n casting was left partly embedded in the soil. e deceased's body was found lying between side of the excavation and the casting, his e being buried in the soil. The side of the avation near the cab-stand in the interior of station is protected by a rough barricade, immediately adjoining the hole is a hut, ch is used as an office by the contractor. e on the previous evening the deceased was erved walking towards this hut, and he was seen alive afterwards. It is supposed that missed his footing on the edge of the excava-, and fell downwards upon a sharp projection he iron casting, thus sustaining the injuried his head and face, and, being stunned by fall, he was probably suffocated amongst loose earth.

Bright Buoys."—A correspondent recently 1209 of our last volume) called attention to advantage that would accrue from illuating the buoys which mark channels and bks. That these buoys are frequently destroyed isplaced by vessels running along the coast dark nights is well known. We now learn after two trials of lighted buoys the Trinity rd have resolved upon sending a buoy of ch the lantern can be kept continuously ing to a station off Dundee. The first of e trials took place in August last at the ity Wharf, when the light lasted uninterdily for twenty-eight days. Water was ped upon it from a steam-engine, to see would be the effect of the shock and ching, and no harm was done. The buoy then sent down to the Nore, and there burned ilily for twenty-four days. The same buoy now left London for its appointed place near llee. Provision has been made for keeping ght without any interference for thirty- days. The illuminating apparatus is a fication of what is known as Pintsch's comed gas system.

chitectural Association.—At the ordifortnightly meeting on the 17th inst., H. L. Florence, president, in the chair, following gentlemen were elected mem. viz.:—Messrs. V. Vagnolini, W. M. H. itt, B. V. Westbrook, J. S. Blake, H. M. yn, D. J. Budge, H. Oogh, A. Ebbs, S. Young, L. Edwards, J. G. Hall, A. W. n, R. Beesley, W. H. Bendle, G. S. W. n, B. A. Elphicke, J. B. Chubb, and C. E. son. It was announced that the first visit ildings in progress during the current n would take place this Saturday, the to the Grand Hotel, Charing-cross. Mr. as Blashill then read a paper on "Party-" which was followed by a discussion. We report elsewhere.

Gas from Water.—As a consequence of a long series of experiments, about fifty in number, each extending over several hours, and during which pressures amounting to 100, 200, and 300 atmospheres were employed, M. Bouvet, says the *Electrician*, invariably recognised the existence of the two following laws:—First, the decomposition of water by a current is independent of pressure; and, second, the quantity of electricity necessary to decompose a given weight of water is sensibly the same, whatever may be the pressure under which the decomposition is effected. The author has, moreover, observed that the oxygen and hydrogen gases are disengaged with equal facility, whatever may be the pressure. These two gases may be collected in a single receiver or in two; and in no case are there any secondary phenomena determining a recombination, even in part. The handling of the receiver containing the detonating mixture at a very high pressure is unaccompanied by any danger.

Glasgow Building Regulations.—The annual meeting of the Glasgow Landlords' Association was held on the 15th inst., Mr. A. Stewart presiding. The report stated, with reference to the proposed building regulations for Glasgow, that the changes contemplated were such as should not be made without compensating the proprietors. The chairman, in moving the adoption of the report, dealt with the various objections the Association took to the proposed regulations, stating that a single apartment house, containing 700 cubic feet, could at present be let to a man, woman, and child, but if the regulations became law only one adult and one child could occupy a house of that capacity. The idea of making closes 5 ft. wide, and staircases 4 ft. 6 in. wide, appeared to him perfectly preposterous. Speaking of the condition of the building trade, he believed prosperous times would return sooner than some people imagined. The report was adopted.

Anti-Rust.—An exhibition of the patented process of M. Dode, of Paris, for coating metals with platinum, has been given by permission of Messrs. Johnson, Matthey, & Co., on their premises, 75, Hatton-garden. M. Dode's process consists of painting the article to be coated with a composition of borate of lead, oxide of copper, and turpentine. The article is then exposed to heat for a short time, and when cool is lightly covered with a solution of platinum and essential oils mixed with borate of lead, litharge, and amylic alcohol. The article is then again heated, and as soon as it ceases to smoke the process is completed, and the platinum coating is seen of a silvery whiteness. The inventor claims that when a metal has been coated on his plan no oxidation can take place. The practical value of this invention will depend upon the cost of the application.

The Electric Light in the British Museum.—It is stated that an experiment is about to be made to test the advisability of illuminating the reading-room at the British Museum by the electric light on the Siemens system. We hear, however, that opinions are divided, on account of the difficulties attending the operation, between the suggestion of one central light suspended from the apex of the roof, and a greater distribution of the lighting power by the adoption of several standards throughout the room. The experiment is conceived directly in the interests of evening students.

The Railway to Cochin.—The *Cochin Argus* states that Mr. Hudson, the chief engineer of the Cochin Government (formerly of the Great Northern Railway), has revived the question of railway extension to Cochin, and that the Dewan of Cochin is quite prepared to give all the support which lies in the power of his Government to any scheme in furtherance of this object. If Cochin Harbour is improved, the railway will be extended to the port, or if the railway is first extended, the improvement of the harbour will follow as a matter of course.

Appointment.—It will be seen, on reference to our advertising columns, that the directors of the Industrial Dwellings Company require the services of an architect and surveyor, at a salary of 600*l.* per annum. The duties of the appointment include the responsible supervision of the company's building operations. Mr. William Ward Lee, who has been honourably associated with the company since its formation in the year 1863, will be the consulting architect.

Mr. Sopwith, F.R.S.—Mr. Thomas Sopwith, M.A., F.R.S., who died at Westminster last week, was born in 1803, at Newcastle-on-Tyne. He was for nearly fifty years extensively engaged as a civil engineer in mining, railway, and other works, both in this country and on the Continent, and was the author of several works on architecture, isometrical drawing, and mining. In 1838 he was appointed Commissioner for the Crown under the Dean Forest Mining Act, and in the same year a communication made by him to the British Association led to the establishment of the Mining Record Office. He was one of the early members of the Institution of Civil Engineers.

Proposed Exhibition of Colonial Products.—At a meeting of the Royal Colonial Institute, held last week, the Council discussed a proposal made by Mr. H. B. Strangeways, late Premier of South Australia, for holding an exhibition in London of the products and manufactures of all the British Colonies. The matter was so far favourably entertained that it was decided to convene a special meeting of the Council to take it into further consideration. It is felt that if the proposed exhibition is held, it may play an important part in opening up new channels of trade for the benefit both of the mother country and her colonies.

An Accident has occurred at Birmingham, on the west suburban branch of the Midland Railway. The line, which runs by the canal side, is for some distance below the level of the houses which overlook it, and which are supported by a wall. Owing to the action of the frost, the foundations of this wall gave way, and a range of shopping fell forward on the line, cutting the telegraph wires and completely blocking the traffic. Happily the accident was discovered in time to warn a heavily-laden passenger train, which would otherwise have run into the wreck.

Two Lectures on "The Circle and the Straight Line" have been delivered by Mr. John Harris. The immediate purpose of the lectures was to show mathematically that the supposed demonstration upon which the presently accepted ratio of the circle's circumference to the diameter is based, is erroneous, pointing out the precise particular of the error and the manner in which the error in the first instance originated and has been subsequently overlooked by mathematicians.

Honorarium.—At a recent meeting of the Cheltenham Waterworks Company, whose works have just now been transferred to the Corporation, an honorarium of 600*l.* was presented to their engineer and manager, Mr. Wm. M'Landsborough, M. Inst. C.E., in appreciation of his successful services, and as an acknowledgment on the part of the proprietors of the professional ability and unremitting attention he has shown in the discharge of the duties of his office during the fourteen years in which he has been in the service of the company.

Midland Land and Investment Corporation.—At the annual meeting of the shareholders, to be held on Wednesday, the 29th inst., the directors will report that after deducting income-tax, interest on deposits, management charges, directors' remuneration, and making full provision for doubtful debts and contingencies, the balance of profit is 20,828*l.* 19s. 9d., and after setting apart the sum of 8,000*l.* to establish a surplus reserve, will declare a dividend at the rate of 15 per cent. per annum (free of income-tax).

Bromley Vestry-hall.—Bowey's Almshouses, Bow-road, E., were last week sold by auction for demolition, the site having been sold by the trustees with the sanction of the Charity Commissioners to the churchwardens and overseers of Bromley St. Leonard, upon which to erect a Vestry-hall. The designs for the new building have been prepared by Messrs. A. & C. Harston, and have been approved by the Local Government Board.

Southport.—In reply to their advertisement, the Highway Committee had seventy candidates for the situation of inspector of paving, &c. Ultimately Mr. Thomas Hewitt, paving inspector of Bolton, was appointed. He was selected from seven, who were sent for to give personal explanation.

Hardening Copper.—Dr. J. S. Mayer, of Virginia City, Nevada, claims that he has discovered the lost art, known to the ancient Egyptians, of tempering copper so as to produce an edge which will cut like steel.

Ubiquitous Paper.—A manufactory of paper bricks, according to *Capital and Labour*, has been opened somewhere in Wisconsin. The bricks are said to be exceedingly durable and moisture proof. They are also larger than the clay article. Paper is now also used for making barrels.

TENDERS

For supplying and fixing blinds at the Holborn Union Infirmary, Archway-road, Upper Holloway. Messrs. H. Saxon Snell & Son, architects:—

Haskins	£880	0	0
Williams & Son	654	2	0
Guynan & Son	640	0	0
Collyer & Son	599	2	0
Davey & Son	574	13	0
Janes & Co.	563	0	0
Janes & Son (withdrawn)	386	19	6

For rebuilding 147 and 149, Cannon-street, and 16 and 17, Nicholas-lane, for Mr. C. V. Game. Quantities by Messrs. Batterbury & Huxley:—

Moreland & Nixon	£11,150	0	0
Perry	9,862	0	0
Kiddle & Son	9,648	0	0
Browne & Robinson	9,472	0	0
Greenwood	9,236	0	0
Downs	9,171	0	0
Brass	8,793	0	0
Ashby Bros.	8,845	0	0
Prout	8,489	0	0

For alterations and repairs to a sugar bakehouse, 36, Denmark-street, Cannon-street-road, East. Messrs. Througood & Co., architects:—

Taylor & Parfitt (accepted)	£939	0	0

For a rectory at Roggiett, in the diocese of Llandaff, for the Rev. A. G. Morris. Quantities not supplied. Mr. B. A. Lansdowne, architect:—

Colman Bros.	£2,190	0	0
H. Richards	1,845	0	0
Linton	1,791	0	0
Mills	1,735	0	0
Morgan	1,730	0	0
Jones & Son	1,747	0	0
W. Richards	1,700	0	0
Blackburne	1,695	0	0
Sealey	1,648	0	0

For Wymondham Grammar School. Mr. Alfred Smith, architect. Quantities supplied:—

Stephens & Bastow	£3,179	0	0
Thurman	2,950	0	0
Hayes	2,944	0	0
Rowley & Lynex	2,900	0	0
Wood & Son	2,893	0	0
Foxon & Son	2,732	12	6
Halliday	2,730	0	0
Roberts Bros.	2 625	0	0
Barlow Bros.	2,600	0	0
S. & W. Pattinson	2,584	0	0
Kimberley	2,528	0	0
Barnes	2,489	0	0
Smith	2,480	0	0
Bailsford & Brown	2,445	0	0
Hall	2,420	0	0
Glover	2,384	0	0
Tutin	2,378	0	0
Bramage	2,330	0	0
Huddlesworth & Green	2,296	13	0
Cullock	2,153	0	0
Young (accepted)	1,993	0	0

For additions to Board schools, Medburn-street, St. Pancras. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Williams & Son	£6,670	0	0
Brass	6,666	0	0
Perry & Co.	6,626	0	0
L. B. & R. Roberts	6,496	0	0
Pritchard	6,389	0	0
Aitchison & Walker	6,198	0	0
Scrivener & Co.	6,161	0	0
Crockett	6,156	0	0
Lawrence	5,880	0	0
Hook & Oldrey	5,873	0	0
Grover	5,390	0	0
Wall Bros.	5,177	0	0

For alteration and addition to vicarage at Llantrissent, diocese of Llandaff, for Rev. W. A. White. Quantities not supplied. Mr. E. A. Lansdowne, architect:—

Williams	£577	0	0
Linton	570	0	0
Jones & Diamond	498	0	0
H. Richards	484	0	0
Jones & Son	467	10	0
G. Jones	455	0	0
Morgan	450	0	0
Orphan	449	0	0
Blackburne	435	0	0
W. Richards	420	0	0
Mills	410	0	0

For porter's lodge and waiting-room at Deptford Small Pox Hospital. Mr. Crickmay, architect:—

Reddin	£1,794	0	0
Castle	1,785	0	0
Frost & Co.	1,750	0	0
Shapley	1,690	0	0
Sawyer	1,650	0	0
Jolline	1,650	0	0
Sims	1,609	0	0
Wall	1,597	0	0
Hoberu	1,578	0	0
Hunt	1,554	0	0
Taylor & Parfitt (accepted)	1,550	0	0
Taylor & Son	1,549	0	0
Wise	1,625	0	0
Keith	1,429	0	0

For additions to Board schools, Middle-row, Kensal-road. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Thompson	£3,480	0	0
Downs	3,357	0	0
Tongue	3,291	0	0
Hobson	3,257	0	0
Rankin	3,243	0	0
Williams, Son, & Wallington	3,240	0	0
Brass	3,195	0	0
Hook & Oldrey	3,150	0	0

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H. M.—R. C.—H. C. T.—J. J.—W. McL.—W. J. S.—Subscriber.—Plumber.—One of the Old School.—*Chemicus*—C. S.—C. M.—H. G. H. P. L.—F. M.—W. B.—H. & E.—A Firm of Engineers.—Ventilator.—G. M.—O. E. P.—W. H.—L. W. L.—H. S. H.—W. B.—C. B.—T. & P.—Inquiring Tradesman.

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We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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The Builder.

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Japanese Art.

THE remarkable collection of Japanese work which is now to be seen, by the permission of members, in the rooms of the Burlington Fine Arts Club, may well serve to revive the recently somewhat flagging enthusiasm of the æsthetic world for this type of representative national art. What we some years ago described, and to some extent ridiculed (and as we have always believed justly), as "the Japanese craze,"* has had its day of efflorescence and exuberance; the prices paid for *cloisonné* enamel are no longer preposterous, and few people would at this moment be prepared to echo the absurd exaggeration which put such work alongside the greatest Greek sculpture in artistic value, and considerably before the paintings of the great Italian school. It is just as well that such a collection as that at the Burlington Club should be made at a time when Japanese enthusiasm is a little better regulated than it used to be, and when we are not likely to be so flooded with æsthetic "gush" in relation to it as we infallibly should have been a few years ago. At the same time, as we have observed, waning enthusiasm may be pardonably revived in contemplating the exhibition at the Fine Arts Club. Whatever may be said about the aims of the artists of Japan, the perfection and apparent facility with which these aims are realised, and the unerring perception of the capabilities of the means and material employed, are truly remarkable, and become more emphatically so when we study such a considerable number and variety of specimens together. Indeed, we may frankly go with the Japanisers of the day so far as to say that there is no other source at present whence we can look for decorative art so completely true in its principles and workmanship as most of this is.

It is observable that the prevalent taste for objects of Japanese work in England appears to have shifted somewhat in regard to the class of objects most admired and coveted. We remember that at one of the first representative exhibitions made in England at the high tide of the Japanese craze, that of the Liverpool art-club (then just started), the bulk of the collection consisted of choice *cloisonné* enamel jars, and most of the rest of large jars and other vessels of porcelain of the various manufactures; and these *cloisonné* enamel vessels, large and small, were seen everywhere, and their praises sung everywhere for some time. But in the present collection there is but a small sprinkling of these, and a very large amount of work of a kind of which we used not to hear or see so much,—paintings for wall-hanging, smaller drawings in book form, and a great quantity of small ivory carvings. These last form, to our thinking, one of the most interesting and characteristic parts of the show.

It is in these small carvings that there come out most completely some of the qualities most characteristic of Japanese art, more particularly the peculiar humour of the people, their accurate perception as to the use of a material, and their nicety of observation in regard to animal life. Why there is not the same truth and reality in the treatment of human subjects is a point for consideration in itself: we are content at this moment with merely adverting to it. As is well known, the representation of the human subject in Japanese art is usually grotesque, and obviously intentionally so; but we hardly think Mr. Dillon is warranted in his observation in the preface to the catalogue, to the effect that it is impossible to suppose that those who were able so faithfully to portray birds and other animals in the most difficult foreshortened positions should have been unable to draw the human figure and face equally well if they had chosen to give their minds to it. There have been many examples in Oriental art of obvious inability to make really good representations of the human figure, accompanied by great accomplishment in portraying lower forms of life. And there are works in this very collection of ivories which are a witness against the Japanese in this respect. The larger proportion of the human figures are intentionally grotesque; but there is, for instance, a little group representing four different classes of persons in Japanese society, and evidently intended quite seriously and realistically, which are far inferior in every way to the animal productions, deficient in spirit, wrong in proportion, and, as representations, comparatively clumsy. The animal representations are quite extraordinary in their humour and vivacity, their minute delicacy of execution, and clever way in which the scale and proportions of the animal are apparently realised, in a perfectly natural manner although, in fact, they are altered to suit the diminutive scale. For this is one of the niceties of this miniature Japanese art, that its authors perceived that miniature carvings must not be treated with the same proportions as larger or life-size representations, otherwise they will look fragile and feeble. Accordingly, it will be observed in this ivory work, if attentively studied, that the parts in the animals are not in the same proportion as in nature, though at a first glance they may seem so: the head is made larger, the legs thicker, in proportion to the body, than in nature; and if this were not so, they would really appear less like nature, or at least would present less force and effect. One or two small carvings of cows lying down are very good examples of this; they are intended to be as realistic as possible, down to the hair-markings, which are done with infinite labour and delicacy; but in reality their proportions are all exaggerated. A part of the humour of these little carvings consists in the manner in which they are combined together so as to form the knob or pendant ornament which each group is intended to form: the convenient outline for the ornament, round or oval, or whatever outline and section it may have, is in many cases obviously roughly fashioned first, and then the group is, as it were, extracted from it, in such a way as to preserve as many points of the original surface as can be, and thus adhere, as nearly as possible, to the general shape required for the article. The freedom with which, notwithstanding these self-imposed restrictions, the designs are worked out, and made to appear as if the shape into which they are confined arose naturally from the grouping, cannot be too much admired. It is in this carefully-preserved relation of the design to convenience of form, and to the scale and material, that perhaps there lies the best and most practical lesson which our designers and makers of ornamental work may learn from these. The English and French artist in articles of ornament puts aside, in so many cases, the circumstances of use of the article, in order to give it a piquant and fanciful form, quite irrespective of its convenience to the wearer; and as to any notion of scale, or of the specialities of material, the former is still utterly ignored in English artistic work; to the latter some attention is at last getting bestowed, owing to the continued lessons read by ourselves (we may be allowed to say) and others, but it is still entirely neglected in a great number of articles far more costly in material, far less valuable as art, than these little Japanese ivories. Let our designers of *bijouterie* look at these, and learn how it is possible to give to such small and (as far as material is concerned) anything but costly objects such an amount of interest, force, and importance within such strictly practical limits as to size and shape. The endlessly varying humour of these little pieces of work must be seen to be appreciated: absurd squabbles between dwarf-like little men, animals riding on the backs of others, a man holding a fish by its two fins, and dancing it on its tail before him like a child learning to walk; skeletons beating drums, and engaged in other incongruous pastimes, &c. One introduction of the skeleton is curious, as suggesting its serious study as the basis of the figure; the carving represents a woman reclining on one side, with her head on her hand, enveloped in a long mantle, while back to back, and forming part of the same carving, reclines a skeleton in precisely the same attitude, as if giving the framework of the other half of the carving.

Another feature in the Burlington Club exhibition which may give to many visitors some

* See *Builder*, vol. XXX., p. 25-7.

new light on Japanese art is the presence, as part of the collection, of a considerable number of preliminary studies,—drawings made simply as studies, and not as an end in themselves. And these tell us a great deal in regard to the foundation of the peculiar excellence of Japanese art in some respects, and its deficiencies in other respects. We see, as we might expect, that their excellence in the drawing of birds is due, like all excelledce of this kind, to close and repeated study. We find here portions of birds, their heads in various positions, their legs and claws and wings, separately drawn in a comparatively rough medium with thick lines, but otherwise with the greatest attention to minute peculiarities of make and of outline. We find, what is still more significant as explaining the sources of Japanese art, that on the margin of some of these bird studies there are specimens of the real plumage attached by thin strips of paper gummed across them, so as to assist the purpose of the sketch, and be there for permanent reference in regard to minute detail. When we see this elaborate and systematic study of their subject, we no longer wonder that the Japanese bird-drawings should be so remarkable for truth and brilliancy of detail and power of representation in any attitude of foreshortening. We may still wonder, however, how it is that English artists who, one would have thought, must spend as much time and trouble in studies of the anima'ls they prefer to draw, still cannot equal the Japanese in the delicacy of their representations, and in that remarkable and vivid truth of action which distinguishes them, and of which we may say not merely that it is true to nature, but that it seems to intensify nature; we learn in looking at these the character and peculiar action of the animal in a concentrated form. Two of the most wonderful specimens of this in the exhibition are to be seen among the drawings hung on the wall in the front room (the library) of the club; one of them representing a white crane among rice-blossoms stooping its head to eat: not only is the action of neck, body, and legs perfect, but the soft bloom of the white feathers is given in a way that is almost magical, and hardly looks like the work of pigments and a brush. The drawing is in water-colour. In regard to the portrayal of action and motion, the drawing on silk, of some fish, hung on the wall to the left of this, is even finer; the fish actually seem to swim; we are conscious of the resistance of the water to their fins and to the wave-like action of their bodies; we fancy we are looking through the glass of an aquarium tank. These fish must in fact have been kept behind glass, and watched incessantly before so perfect a transcript of their life and nature could be made. The capacity for noticing and reproducing the real *bonâ-fide* manner of animals in life, instead of merely getting their details correctly and making a picture of them, seems to be peculiarly developed in Japanese art, even in cases where the details are less minutely correct. For example, at the end of the exhibition gallery of the club there hangs, among other things, a coloured drawing of a tiger foreshortened, facing the spectator, all head and legs. The detail in the drawing is not irreproachable; the anatomical structure of the legs is not indicated, and there are various points of difference between the portrayed animal and the real tiger. But for all that, we feel that the tiger nature and action are given; he is not a picture, but a real brute, sinuous, and fierce, and dangerous. We hardly know of any animal painters of our own country, gifted as some of them have been, who have realised this kind of life-like action and intensely brute character. W. Huggins has done it in some of his capital chalk studies of lions and tigers, and Wolf has accomplished it very often in his illustrations of animals, which were certainly a new light in the way of book-illustration of natural history; so much so that we have heard people say they disliked them,—they were too "horrid" to give to children; the fact being simply that Wolf portrayed the real brute nature, instead of making drawing-room pictures of animals.* Neither artist, however, can be said to have equalled the best Japanese work in intense reality and in that reticence of touch and handling which gives just what is necessary to indicate the texture of fur, or feathers, or scales, and nothing further.

But the deficiencies of Japanese art are also illustrated in these sketches; for while we find all these minute studies of animal life, there is nothing of the kind in regard to the human figure. There is one large drawing, interesting enough, representing the fond father of a family receiving from his children the certificate that they have all passed their examinations successfully; and there is a single figure of a man in another part of the room, a kind of study from the life apparently, that is to say from the clothed figure; but even that is not a realistic study, it has all the element of caricature in it. There is not a trace anywhere of that study of the figure in detail on which the great European painters founded their power, and which the Japanese, as we saw, have applied so diligently to the study of birds—no drawings of bones or muscles, of hands or knees, are to be found; and nothing more is necessary to explain the fact that the Japanese cannot draw men and women correctly, or in fact (in general) in any but a ludicrously incorrect way. That they could have acquired the power if they had sought it by the same means by which they sought and acquired such exceptional power over bird and fish drawing, is almost certain, had they felt the inclination or moving to do it. And the question is, why did they never feel it, and consequently neglect human form and human expression?

It would, perhaps, be difficult to give a decisive answer to this question without a more intimate acquaintance with Japanese ways of life and thought than we profess to have, or a more detailed examination of the subject than we have space for here. But we cannot help thinking that the art of Japan tells itself in a great degree the story of the people who produced it. And if that story means any one thing more plainly than another, it means that the people who produce this art are essentially children in mind and sympathies. It may probably be said of them, as one intimately acquainted with the Chinese has said of that closely-related people:—"A serious Chinese is a rarity; a melancholy Chinese is a perfect phenomenon." We should suppose the same of the Japanese, so long as they are under the influence of their natural and inherited temperament, which is expressed in their art, and which (both art and temperament) they are probably rapidly losing under the influence of all-pervading Europeanism. The natural consequence would be, that their interest in nature would be most concentrated on those forms of natural life which appeal most strongly to childish sympathies; on the colour and buoyant movement of birds, on the semi-grotesque character which is so prominent in fishes, and other lower forms of marine and animal creation. We observed in regard to a tiger drawing just now, that it was far less perfect and showed less minute attention, than their bird and fish drawings; and this is part of the same tendency. The higher the object rises in the scale of vertebrate life, the less sympathy has the Japanese mind with it; it becomes too logical and too serious for them, and man most of all so. Their attention is concentrated on the playthings of nature, not on her more serious and elaborated work. Human passion and expression, except in a merely jocose form, is far too serious a matter for the Japanese artist, and consequently he has never made an effort to master its medium of expression, the human countenance and figure. And that, we believe, is the real reason why the Japanese can draw the lower forms of life and not the higher ones. Like all other artists, they draw best what they care most for. Nature is to them a plaything, and they treat her accordingly. This view is borne out additionally by the fact that, in their bits of landscape-painting, there is not the remotest trace of any sympathy for the picturesque and the romance of natural scenery. They draw with great delicacy the twigs on which the birds perch; they represent the moon as a decorative accessory,—"the moon rising behind bamboos"; but of the poetry of moonlight, as we know and feel it, there is not a hint.

These considerations in themselves serve to indicate what is the limit of interest which an art such as that of Japan can or ought to have for a Western society professing intellectual culture. As a decorative art it has not been surpassed, perhaps hardly equalled, anywhere or in any age. And it has, to a European generation which has necessarily lost all its spontaneity of feeling under its multiplicity of knowledge, the exquisite charm of an art quite fresh and spontaneous in its feeling and manifestations, quite independent of the art or the associations of any other age or country. This spontaneity and characteristic individuality are, however, qualities irrevocably doomed to extinction. However we may regret it from one point of view, the fact can neither be overlooked nor avoided, that Japan also has tasted of the tree of knowledge of artistic good and evil, and will have in future to proceed by choice and not by instinct in the production of art. Even at this moment it is almost notorious that a good deal of the work done in the national style is being done conscientiously and deliberately to satisfy the newly-created European admiration for it. There are persons, ardent worshippers of artistic truth of expression, who are ready to wring their hands over this fact, to lament that we have found out one real living national art, and are spoiling it with our imported artificial European taste! But the lament is useless. If we would prevent it, the Japanese would not allow us. They have themselves laid hold energetically of the fact that the European ideal is that of the future, that the Asiatic ideal is doomed. We may regret the loss of the last important survival of naïve and childlike art, but we cannot avert it, and the wiser feeling would be to learn what we can from it while its influence is still fresh upon us, and to indulge the hope that a people who have shown themselves so gifted in regard to artistic execution and expression, even under a limited and semi-barbaric culture, may do better and higher things than ever under the influence of a wider culture and of more serious social and intellectual aims. The fine collection of their works at the Burlington club, which has suggested these remarks, affords ample occasion for the indulgence of both feelings: good opportunity for the study of the past of Japanese Art; good excuse for a hope in its future.

* It may be thought extraordinary to omit Landseer from the list, but he never achieved this peculiar realism of character in portraying animals. The facts of animal form and surface he gave splendidly, but hardly the animal nature. His dogs, in particular, were half-human, sometimes wholly so, in expression.

MADRID AND THE SOCIETY OF ARCHITECTS.

Before leaving Madrid, we felt that we should be rendering but scant justice to modern effort if we failed to make some inquiry concerning the organisation and general action of the Spanish Central Society of Architects. The ramifications of this association are so wide-spread, its members so numerous, that it must exercise very considerable influence in professional matters. Local, and even the central, governments are at all times ready to accept the advice of a body which can boast of the highest qualifications, and possesses within its ranks the most celebrated and gifted architects of Spain. The rules of the society illustrate its general objects and organisation. These are comprised in a document of no ordinary dimensions, replete with flowers of speech, outbursts of eloquence, and a plentiful admixture of grandiloquent phrases which will seem most amusing to all whose experience in these matters does not extend beyond the brief, clear, matter-of-fact, dry, and business-like wording of an English book of rules.

On opening this interesting and thoroughly characteristic pamphlet, we first find that the "Sociedad Central de Arquitectos" is composed of persons of all classes, whose object is to promote the standing of architecture in the sciences and arts with which it is related; to guard the prestige of the profession; to defend its interests in the execution of whatever conception or social function it may be destined to hold and fulfil; to establish and sustain direct relationship with analogous societies in foreign countries, or with individual architects, artists, and other persons of recognised merit, and possessing special knowledge in science or in the fine arts; and, finally, to strengthen and extend, as far as possible, all that may tend to the greater benefit of the profession and the welfare of the general public.

In order to realise this vast programme, the society proposes to stimulate work of all kinds relating to the profession by offering prizes. Then there is a special periodical, which will lend its aid to all works, writings, &c., that may be judged of use to the profession. Again, conferences are to be held, where all that relates to professional instruction is discussed. When a favourable opportunity occurs, national and international congresses are to be convoked, and the concurrence of all Spanish and foreign architects solicited. Finally, the society holds

elf ready to send deputations or petitions to her central or local authorities. The members this corporation are divided into two great asses. The first consist of *Socios*, or Fellows, who ust all be qualified architects; the second, honorary members, who are not architects, t who are either specially interested in some anch of fine arts, or in the production, &c., of e materials used in building. The Fellows are own, some as resident members, and corre-onding members. The latter live away from e capital, are, of course, the most numerous, d include the foreign members. Apart from ese distinctions, it has been judged advisable divide the whole society into three great ctions. These are known as the artistic, the ientific, and the "practical help" sections; d all members must inscribe themselves as rticipators in the labours of one of these ree divisions.

The title or diploma of architect suffices to sure inscription as candidate for fellowship of e society in the section and the district lected by the architect in question. To become hon. member, the candidate must be pro-osed by three Fellows. Fellows and members e elected by a majority of votes of the anaging committee, a third of the total number rming a quorum. Any unsatisfactory action the part of the managing committee is, we d, to be submitted to the judgment of a neral meeting, so that the administration of e society is based on democratic principles. the other hand, we find a certain amount authoritativeness which few English so-ties would tolerate. Thus, there is a le which states that Fellows are absolutely mpelled to assist at all the meetings of the ctions to which they belong, and fulfil in all asses the duties imposed upon them. Of urse, excuses are admitted in cases of emer-ncy, but they must be held valid by a majority the managing committee. Members of the ciety are evidently expected to participate tively and constantly in its labours, and may t, as is the case with many English associa-ns, content themselves with the payment of ertain fee, without putting in an appearance m year's end to year's end. With punctuality attendance, equal exactitude in the payment fees is enforced. The *Socios* are actually pelled from the society if they fail to pay eir monthly fee during four consecutive nths. The presentation of excuses three nes consecutively is considered the maximum th for the payment of fees and the perfor-ance of the various duties imposed. These les, it will be seen, are particularly rigorous, d prove that the corporation means active rk, and has no idea of tolerating sleeping embers. Foreign corresponding societies and embers, of recognised merit, are, however, empted from these severe enactments. As Spanish peculiarity, we noticed amid all ese rules a sentence destined, perhaps, encourage the candidate who might fear that s money will not be used for a sufficiently ble purpose. He is told that the entrance-fee "destined, at first, to the funds of the society, terwards to the library, and then to the chives of the corporation!"—a vast pro-amme to be realised with but a small sum. e were also somewhat amused by a rule to the fect that Fellows would be expelled,—"for srespectful conduct towards fellow-*Socios*,— offence which might reflect on the honour of e society, and be qualified by the president as rave!" Are Spanish architects in the habit of aking grimaces or throwing paper pellets at ch other?

Among the minute instructions given as to the ties of the president of the society, instruc-ns that are so obvious that they would never d their way into an English book of rules, we te that the president is to vote last at a blic meeting, and first at a secret sitting. We ould be curious to know on what reason this fference of proceeding is based. On his side e secretary is told to keep in order all that lates to the "ceremony of payment" of the trance-fees! Further, he is to give an account the work accomplished and the objects held view by each individual Fellow,—a somewhat duous task, we should imagine; and then he ust give an annual report of the work accom-ished by the society as a whole, which is to printed and distributed to the associates and e public at large "in a convenient form." or is this all,—a biographical notice is to be blished every year of the members who have en expelled! These must indeed be curious documents. Are they written in a sarcastic or an abusive strain? or is the tone adopted that of pitying regret for the dwarfed intelligence of individuals who could not appreciate advantages recklessly thrown away?

The number and quality of the prizes will be fixed each year, according to the state of the funds. These will be distributed as rewards for the most notable works accomplished by Fellows, and are directly connected with architecture. The rewards will consist of medals and certificates, and their distribution will be celebrated in public with *la Mayor solemnidad possible!* The rules relating to the public conferences are so typical that we must quote them almost textually as the concluding enactments of this remarkable association. These conferences or lectures are qualified as "the most adequate means of exalting the profession," and will be held both in public and in private. The object of the public lectures will be to make the masses appreciate the "important social mission" of the architect. A special committee will have for duty "to *foment* the lectures so that they may be celebrated with the greatest regularity possible." Finally, Article 80 of this lengthy book of rules tells us that "the convocation of a congress is of first importance, and necessary to facilitate the solution of the most arduous problems that are inherent to all forms of knowledge. Considering that these great gatherings constitute a sure means of progress, the society will resort to them on all favourable occasions, convoking the congresses at the time and in the form that will suit both natives and foreigners." Further, the society will, when invited, send representatives abroad to assist at foreign congresses.

All these facts and rules, notwithstanding the phraseology in which they are clothed, conclusively prove that in the Central Society of Spanish Architects, we have an earnest body of men, who have determined with great resolution to forward the interests, and elevate the tone, of the profession. We may be amused at sentences and rules that seem strange to us; but, at the same time, we haste to recognise, as of infinitely greater importance, the spirit of self-sacrifice that manifests itself in many of these regulations. The Fellows have undertaken the accomplishment of real work, involving regular attendance at sectional meetings, which is all for the good of the profession, and can be of but little service to them individually. In this we also note a great public feeling, a desire to approach the public, to make the outsider feel that the interests of architecture are also the interests of the community at large; that, to quote their own words, the architect *has* a "social mission" to accomplish, and that in Spain he is determined the fact shall be known. To our readers, at least, we need not insist on the truth of all this. We need not point out how much the sense of the beautiful, the record of history, the comfort of a people, depend on the development of public and private architecture. But we do maintain that all these points are not proclaimed sufficiently beyond the pale of the profession, and in this matter we may thank the Spaniards for their good example. Finally, we may look towards Spain as a nation where the profession of architecture rests on a solid basis; where the architect must have passed through a long training, both theoretical and practical, have stood the test of severe examinations, and finally earned the possession of a diploma, which confers an undoubted right to the emoluments and honours due to those who are thoroughly qualified to exercise this noble profession.

Shrewsbury Grammar Schools. — The governing body of the Royal Grammar Schools, at Shrewsbury, having decided that the present building,—a quaint and venerable edifice, in the centre of the town,—is not adequate for the present requirements of the school, and that enlargement on the old site is not desirable, the whole workhouse property, with a portion of the public grounds known as Kingsland, were purchased by them, at a cost of something like 13,000*l.* The work of gutting the old workhouse has commenced, and some portions of the building will be incorporated in the new edifice. The site is just outside the town, with the Severn, and the public grounds known as the Quarry, lying immediately below it. It is proposed that the existing school buildings shall be purchased for a public middle-class school for Shropshire and the adjacent counties.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

BY PROFESSOR EDWARD M. BARRY, R.A.*

RECENT ARTISTIC LOSSES; THE GOTHIC REVIVAL, AND SIR GILBERT SCOTT.

FIRST PART.

In Memoriam.—The late Sir Francis Grant, P.R.A.

HAVING been honoured by the Royal Academy by re-election for another term of the Professorship of Architecture, it has become my responsible and agreeable duty to address you again from this place.

This circumstance naturally leads to retrospective reflections, which, as is usual, involve a certain sadness of feeling. I must therefore ask you to bear with me, if my discourse to-night be somewhat sombre in tone.

When I delivered my first lecture to you in 1874, my initial duty,—a duty most willingly performed,—was to pay a tribute of respectful admiration and gratitude to the late Professor of Architecture, who had then resigned his chair from ill health, and in whose place I had been elected by the Academy. I refer to the late Sir Gilbert Scott, who has now departed finally from among us, in the fulness of fame and honour, on that dread journey whence there is no returning.

It has further been my sorrowful task to deplore with you the loss which the Academy lately suffered of another former professor, Mr. Sydney Smirke; and we have now one famous name the more to inscribe on the golden record of the past.

Great as has been our special loss in the architectural section of the Academy, I cannot forbear from noticing a still more general cause of sorrow, which has fallen upon us since we last met in this room, by the death of the late President of the Royal Academy, Sir Francis Grant. The great lesson, which, as it seems to me, we learn as years accumulate upon us, is that no man is indispensable. Men fall in the great battle of life, as soldiers do on the field of slaughter, and others press forward to take their places. Human affairs are so absorbing, and life so rapid, that we must not, if we would, think too much of past sorrows, but have to brace up our energies to meet the trials and duties of each day. Nevertheless, it may surely be permitted to us, on an occasion like the present, to pause for a few moments, and dwell upon the memory of those who but yesterday were here: working with us, side by side, in the great cause of art; encouraging and leading us to win, if it were possible, new victories in her pacific campaigns.

Of the position in the artist world, which will ultimately be assigned by posterity to Sir Francis Grant, it would be presumptuous in me to speak. This is not the place for such a discussion, nor am I the person to pursue it. We cannot anticipate that calm, inexorable verdict, which, sooner or later, is passed upon us all, when we have ceased to play our small part in the world's history. There are personal qualities, however, which contemporaries alone can fully appreciate, and which bring home to us the loss of the individual man we have known and respected, and who but lately was a part, so to speak, of ourselves. Every one knows how gracefully, and with what dignity, our late president discharged those duties of his high position which came under the public notice; but those who were brought into frequent contact with him, in regard to the daily business of the Academy, can alone appreciate, to their fullest extent, the finer qualities of his nature, and culture. The head of an artistic commonwealth, composed of members with the strong idiosyncrasies of individual tastes and genius, the aim of Sir F. Grant was ever to govern with his brethren, and not against them. His sway was that of the mild and excellent constitutional sovereign, and had nothing in common with the sternness of dictatorship. His proudest boast was that he left every member of the Academy a friend, and never, I believe, did he express a truer sentiment.

I have heard Sir Francis Grant called an amateur, in a manner which implies a depreciating use of the word. But, gentlemen, who would not be an amateur? Our late president had not, indeed, the early advantages of being trained under able and conscientious artists, such as those who daily act on your behalf as visitors in our schools; but when he found that the artistic flame was

* First lecture. Jan. 30th, 1879.

burning within him, he turned to the painter's profession with all his might, and to the very day of his death retained his devotion to the interests of art and those of the Royal Academy, which are, or should be, identical.

It was a matter of regret to him that his lately increased infirmities had prevented him from taking the active part he would willingly have assumed in respect of the representation of British art at the recent Paris Exhibition under the auspices of H.R.H. the Prince of Wales, to whose public spirit and untiring zeal he bore willing testimony. In the last conversation I had with Sir Francis, he referred to a medal which he had been awarded by the International jury. I promised to make inquiry, being about to visit Paris. He had received no notice from the authorities, and expressed a wish that if the award had really been made, it should be completed as soon as possible "for the sake of his family," sadly remarking that he should not himself live to receive the medal.

Sir Francis Grant was, indeed, an amateur in the sense of being a lover of art, but his devotion to it had none of that *dilettante* character which we usually associate with the word. Such as it was, it was deemed sufficient by his brethren to induce them to place him in the proudest position which any English artist can aspire to fill. Students of art may learn thereby the necessity of a love for their profession. Artists cannot be made by any academy, however liberal. Schools, lectures, exhibitions, may indeed be provided, as they are here, and their advantages offered freely and without cost to all who choose to profit by them; but there must be something more, and that something no academy can supply.

An inborn aptitude and love for his art is at least as necessary for the architect as for the painter or the sculptor, and I advise no young man to adopt the profession without it. The art of the giants of the past, whether of Classical or Mediæval days, must not be degraded in our hands, and be followed as a mere trade,—one method among many of obtaining an honest livelihood. The true architect must ever be an amateur in the highest sense of the word; he must, indeed, be an expert in the science of his work, but he must also have love of his work, and taste to appreciate everything that can claim a place in the advancement of art.

Those of you who have had the privilege of attending the annual discourses of our late president, on the recurring occasions of the distribution of prizes, will remember how earnestly he advocated the study of nature on the one hand, and on the other an affectionate reverence for the great masterpieces of antiquity. These lessons, although primarily addressed to the painter students, have, nevertheless, a special value to the architect. Our art is indeed traditional, to the greatest possible extent, so that the task of the modern architect is development, rather than invention. We can afford, therefore, less than other artists, to dispise the past and rely on ourselves alone.

Lasting fame is not easily acquired, and when a building, or other work of art, has received the admiration of centuries, we may be sure that it merits our respectful consideration. I cannot, while dwelling on this point, do better than quote a sentence from the discourse of Sir Joshua Reynolds, which our late president used as a text for the last address which he delivered to the students of the Royal Academy. After insisting on the necessity of studying antiquity, Sir Joshua says:—"The works of those who have stood the test of ages, have a claim to that respect and veneration to which no modern can pretend."

No one could have heard the address, of which the above quotation forms part, without feeling how sincere was the sympathy of Sir Francis Grant with the younger aspirants of fame, for whom it was intended. The pleasant smile, the perfect temper, the genial and yet dignified bearing, told their own tale of congratulation to the happy recipients of prizes, while they encouraged the less fortunate to farther exertion. It was impossible not to feel, that, on such occasions, there spoke out the nature of the true artist, loving all that was pure, and honest, and of good report; a nature to which were absolutely impossible anything that savoured of pretence, trickery, and meanness.

Of such a nature was Sir Francis Grant, who has passed from us with the universal respect of the Royal Academy and of the public. On the occasion of his funeral, the Dean and Chapter of St. Paul's expressed their ready acquiescence in the wish of the Academy that the remains of their late president should rest beneath Wren's dome, side by side with the ashes of his illustrious predecessors, Reynolds, West, and Lawrence. For family reasons, however, this could not be. They who had been devoted and united in life could not bear in death to be divided, and thus it happened that Melton Mowbray witnessed the last tribute of affectionate homage on the part of the Academy, which is the only personal consolation in bereavement.

It is not for us gentlemen, as I said before, to anticipate the verdict of history; but we may not, on that account, pass over in silence the departure from our midst of our late president, a successful artist, a modest and unassuming Christian, and a true English gentleman, in the best sense of the term.*

THE BURLINGTON HOUSE LOAN EXHIBITION.

The long room at Burlington House (gallery III.) is adorned in the centre position of the end wall by a large Vandyck of a type not usually associated with the name of this painter: a subject of what one may call the classical romantic type, representing Rinaldo and Armida at the moment when the enchantress is about to entangle the hero "in a wreath," as the catalogue note has it. This is a work really of very ordinary type, bold and staring in style, with the usual accessories of Cupids and fish-tailed women, and very rubicund colouring. It is fortunate that Vandyck was not often tempted to indulge in this kind of performance; and one feels this the more strongly on turning to his remarkably fine portrait of the Duke of Richmond and Lennox on another part of the walls (170), the property of the Earl of Leicester. We have seldom seen a better specimen of Vandyck's finest qualities than this: not certainly one of those few works which compel universal attention, but remarkable for its combination of marked character in the portrayal of the subject, of fine arrangement of the dress, both in regard to design and colour, and brilliancy of reflected lights without the least hardness and glitter; which last quality, it may be observed, is not always to be found in Vandyck, even in what are otherwise his most powerful productions, in which we are sometimes annoyed by an over-wrought and artificial glitter and affected brilliancy. Another small Vandyck (119) which is interesting is his picture of the "Infant Christ and St. John" as two chubby little naked saints, in a manner and feeling strongly akin to that of Murillo, though of course with a very different handling. It may have been with an intentional recognition of this affinity with the Spanish painter that this little work has been hung below a large Murillo, "St. Francis of Assisi" (117), one of those melancholy ascetic figures of Murillo which give one a shiver, and seem to indicate how strong was the grip exercised by the Spanish Church (or the Church in Spain) over the free expression and spiritual life of art. The "Magdalen" (121) by the same painter is finer and less deadening in its impression, and may claim the credit of being a more suitable illustration of the subject than many of the "rosy Magdalens" of the Italian school. But somehow these works seem to leave a weight on the mind; and there is nothing in their immediate neighbourhood calculated to relieve this. Rubens's study for part of the ceiling of Whitehall Chapel (122), with fat females in gorgeous array sprawling in foreshortened perspective with the soles of their feet toward us, is a kind of thing that impresses one as almost impudent. Mr. Osmaston's Leonardo, the "portrait of a Lady" (124), is undoubted Leonardo in the drawing and expression of the face, but is certainly dirty and heavy in colour, and impresses one with a notion that it has been painted on a good deal. As a pendent to this, and a rather instructive one, we have Salaino's "Female Figure" (127), the work of a scholar or follower of Leonardo who has been able to reproduce the peculiar simper of the mouth which Leonardo's women are far too prone to, but without the master's delicacy of drawing and modelling; the figure is a half-length, undraped, and with a background of foliage, and while aiming at being poetical, is in fact a rather wooden model, conventional in style, and only pleasing from a certain richness and harmony of colour. It is curious that this work is of exactly the type which has been revived or re-invented in certain works by a contemporary school of romantic painters, who would, indeed, refuse to be called a school, but whose affinities are too marked for them to be much separated in the judgment of outsiders.* It is refreshing, in the midst of these unrealities, to come across so sensible, straightforward, and unpretentious a piece of portrait-painting as the specimen of Sir Antonio More, "Portrait of a Man" (123), which is really the best piece of art, taken on the whole, on the end wall of the room. Our respect for this painter is further emphasised on noticing his three-quarter length of "Donna Maria de Portugal" (137) a little further on: the rich dress of the lady, in which she is enveloped up to the chin, has been a difficulty with the painter, concealing as it does all the grace and flow of the figure, and he has simply devoted himself to making the most of it, after his manner, as a means of rich decorative effect, but still subordinate to the countenance. In regard to the latter, the painter has had everything in his favour, for there is a marked individuality both of expression and effect in this sallow, plain, but not unpleasing face, with strong black eyebrows. Of the other portraits in this gallery, there is an ugly and stiff, but powerful portrait of a grim old lady ("very like mamma," we heard an undutiful young woman remark of it), labelled as of the "Florentine school"; there is a work of Paris Bordone, called "Portrait of a Female" (148), the word "lady" being prudently or prudishly denied to this person, who is, in fact, the well-known large-made blonde who appears in all Bordone's pictures, and very likely was his mistress as well as his model, though it seems hard to carry remembrance of female frailty through so many centuries, especially considering the amount of bad example the "female" must have had to keep her in countenance in those days. But after Vandyck's Duke of Richmond (if not before it) certainly the finest and most remarkable portrait is Reynolds's "Miss Kennedy" (173), another "female," it is to be feared, better known in her own day as Polly Kennedy; a work in which Reynolds seems to have taken a more than common interest, and which in a letter quoted in the catalogue he describes as having "more grace and dignity than anything I have ever done," adding his intention to try different dresses in order to make the most of his beautiful sitter: "the Oriental dresses are very rich, and have one sort of dignity, but it is a mock dignity in comparison with the simplicity of the antique." The dress which Reynolds did finally adopt has more of Oriental than of Western character. His judgment in regard to the merit of the work in dignified expression was not erroneous; the pose of the head and of the whole figure is noble and at the same time graceful in the highest degree, nor would it be possible to find among all the portraits of high-born and acknowledged ladies whom Reynolds painted, a finer and more aristocratic face than this, or one more expressive of dignity of mind. There is something really strange and pathetic in the contrast between the appearance of the painting and the history of its subject, and of the trouble she was under at the time it was being painted, for it was at the very date of her sittings to Reynolds that she was engaged in heroic efforts to obtain pardon for her brothers who were condemned for murder,—efforts apparently made with almost as much devotion and self-denial as those of Jeanie Deans.

Of the two large Tintorettos (or Tintoretti) which are to be seen in this gallery, the larger, the "Hunting Scene" (141) will hardly interest any one much; in Earl Brownlow's "Christ Curing the Paralytic" (144) there is a fine though mannered composition, and an equally mannered painting of the various heads, all of which are effective, and effectively placed as contributions to the whole, and the handling is very broad and full; but reality is wanting, it is an academical work. Gian Bellini's "Adoration of the Shepherds" (142) is a curious example of naïve realism, according to the painter's view of realism, in treating a subject of this type, and also for a pleasing simplicity

* To be continued.

* Those who know such productions of Mr. Rossetti's, for example, as the "Venus Verticordia" will readily understand why this picture of Salaino's suggests a recollection of them. This and others of the class were, however, produced at an earlier period of Mr. Rossetti's career, and he has, we believe, materially advanced from this conventional standard now, but it is still the plaything of others who have in the first instance drawn their inspiration from him.

d artlessness. Realism of a less pleasing pe is illustrated in Giorgione's ridiculous inting of "The Resurrection" (145), where e guards are represented by a couple of alian *spadassins*, and the principal figure cends from the tomb with no action, and as drawn up by invisible wires. It is sufficient look at this picture to come to the conclusion at Giorgione, like Malvolio, "would not hear godliness," and, in fact, it suggests very uch the idea that the wild and libertine artist inted it for a joke. There are two or three ry fine landscapes in the gallery; the Gaspar ussin (147) is a grand specimen of the artist's est qualities, solid and powerful in tone, noble composition. Opposite this, on the other wall, a large landscape by Callcott, which strikes with the greatest admiration, and makes us arvel at the freaks of fashion in art which ve for some time put the works of this inter out of memory and remark. Compared th much recent and brilliant landscape-inting, no doubt this picture would be pro-unced colourless and brown, but it is in ality not a whit more so than some of the est works of recent French landscape-inters, who are admired on strict æsthetic inciples, and has more atmosphere and more derness of gradation in the tones and dis-nces than have many of the said French rks which are thus admired. The general atment of the masses of trees is beautiful in gard to drawing and the balance of near and tant tints, the relation of which is at least the highest degree truthful, though perhaps separate bit is positively natural in colour. e perspective into the woodland path in the tre of the picture is worth notice, and as npletely successful in this way as anything of nstable's.

A very large study of still life by Velasquez 32) is of interest as coming from his hand, not equal in this way to the works of the atest masters of this kind of painting, mples of which are to be found on a great le in Gallery V., in the shape of the four at "market pieces," as they are called in catalogue, by Snyders, lent by the Duke of wcastle. These are *objets de luxe* rather n pictures in the higher sense; that is, they things to hang on a staircase as imposing ces of furniture. The painting in detail is nderful in some of them; the first piece (230) the finest, and is a splendid example of listic detail of this class. In the Velasquez mple we do not find the same success in the atment of fruit and game, but Velasquez is hself again on the large brass vessels which m an important item in the picture, and ich were always a peculiarly favourite acces-y with this painter. Among the rest of the rks in Gallery V. is a fine Richard Wilson, t by the Earl of Dartmouth, and some narkable horse studies by Stubbs; and ecent's "View of Yarmouth" (248) calls a special note, as one of the finest produc-ns of the set of painters who have been ther absurdly perhaps) called the Norwich ool; this is a landscape of unusual truth and ver in regard to the perspective, both of tones d delineation of distances, and has the addi-nal merit of combining artistic power with a fect representation of the character of the ntry portrayed.

IE CULTIVATION OF WASTE LANDS: AND A PRACTICAL EXAMPLE.

N a letter on the subject of "Waste Land," the *Builder* of January 11th, the writer, er the signature of "P. J.," asserts that here is a fallacy in supposing that land that uld yield sustenance wages to the labourer its cultivation is allowed to lie waste."

'his assertion, if admitted, of course knocks the head all that has been said in our columns to the employment of idle hands on idle unds. It is, therefore, desirable to see ether the "fallacy" be that of the advocates such employment, or that of "P. J."

he fact is, that this statement presents a ical example of the failure of many persons have given more or less study to the laws henomena of political economy to grasp the that these laws constitute only a portion of conflicting forces which go to make up an action. And when, as in the present , instead of observing phenomena, and ex-ining them by the action of laws, a writer s the bold course of deducing what he calls phenomena from an *à priori* view of the action of what he regards as law, he falls into signal error.

That there is a tendency to an economic balance no observer will deny. Nor does a complete study of the writings of the man who was not only the first, but the greatest, writer on the subject lead the opinion a step beyond that sound basis. As far as human action is guided by a thoroughly intelligent conception of economical law, we may at once accept the statement that land that would repay the labourer for cultivation would not be allowed to lie waste. But how far does such a conception exist? How far does it form an imperative rule? If a writer who undertakes to rebuke another can assume such a monstrous postulate as the imperative action of such a law, what will be the case with those who have not even got thus far in their economical education?

In the first place, as regards the quality and the location of land, there is no question whatever that alongside of many of the disturnpiked roads of England lie strips of rich and fertile soil, everyway equal to those which bear golden crops on the other side of the hedge, and which are devoted to grass and thistles. There can also be no doubt that if, at the close of his eight or nine hours' daily work, the skilled labourer were to apply a part of the fifteen or sixteen hours in which he claims to do as he likes to this land, he would add the value of that labour to the wealth of the country and to his own income, with the addition of the thirty or forty fold return yielded by nature. In some few places this is done, notably by the side of the former turnpike-houses. If we took only a width of 2 yards as the average of land which is now waste, not because it is of its nature unproductive, but because it has been taken out of cultivation in anticipation of being required for roadway before the introduction of the railway system changed the course of the great stream of traffic, we have upwards of 14,000 acres, admirably suited for growing potatoes, waiting to be tilled.

Again, if we look at that enormous area of tertiary deposits, for the most part left waste, which extends from a little south of the Thames to Christchurch Bay, who can pretend to say that if it would yield sustenance wages to the labourer it would not be allowed to lie waste? How is it that here and there, on the domains of enterprising proprietors who might be named, the waste is turning into lucrative wood land? What is the difference, in soil or in accessibility, between the property of the Earl of Malmesbury, near Christchurch, which is now thus being turned into a source of future wealth, and the hundreds of acres of bare heath that surround it? With the very minimum of labour this land may be made to grow wood. We do not say what portions of it might produce under sewage cultivation, because that would be only an estimate; but what does it yield now, when duly tended? This soil is the cradle of the *coniferæ*. The ruder kinds of pine-wood thrive, indigenous and self-sown. The noblest kinds would thrive under a care which they would well repay. From such land an average of four loads of timber an acre may be annually cut. In 1874 the price of larch timber in the Earl of Seafield's woods, at Strathspey, is stated in No. 290 of the *Edinburgh Review* to be 1s. a cubic foot. There would be a return, at this rate, of 8*l.* per acre per annum from this ground. Ten shillings per acre per annum would be a large allowance for the cost of labour. Here is land allowed to lie waste, not in square yards, but in square miles. The Adour, the Arun, the Avon, and the Stour drain 500,000 acres of tertiary sands, the greater part of which is untilled waste, the rolling character of which is such as to make easy the work of the drainer. Is that land that will not yield sustenance wages to the labourer?

The fact is, that in England we have never yet stated the problem of how to make the most of the spare land. Leaving out all land so highly cultivated that it can afford a fair rent, as well as all that proprietary and residential park land, which is the chief picturesque glory of our country, where,—outside the columns of the *Builder*,—has the question even been systematically mooted? As to the sustenance of the labourer, we are the most extravagant people,—at all events, in the old world. Not only does the labourer live on so costly a grain as wheat,—costly when we compare its nutritious or flesh-forming elements with its bulk; but he wastes at least one-fourth of the nutritous power of the corn by insisting on white bread. He makes that remaining three quarters of as little use as possible by eating his bread as new as he can get it. If a sack of wheat, weighing 240 lb., is sent to the mill, the loss upon grinding is only 4 lb.; the charge for the same being 1s. 6d. But out of this, 180 lb. of fine flour only are procurable, and it is in the 60 lb. that are rejected as bran and other products of bolting that a main part of the nitrogen of the seed is contained. Wheat only contains 14·6 per cent. of flesh-forming food, together with 70 per cent. of heat-giving food. Barley and rye contain each a trifle less. But oats, the food of the strong and wiry Scots, contains 17 per cent. of flesh-formers; and if oatmeal be consumed, in the form of porridge or of bread, the feeding property is nearly double that of the fine hot wheaten bread which the English labourer demands. As far as bread stuff is concerned, the working people of this country pay at least twice what they would pay if the principles of political economy had sufficient force to induce the father of a large family to make the experiment of trying a new food for a fortnight! To supply the 80 drachms of flesh-forming food which are required for the daily rations of an English soldier, as much as 1·7 lb. of wheat is said to be required. If we suffer 25 per cent. of the nutriment to be lost, as before stated, 1 lb. of oatmeal would contain nearly an equal amount of flesh-forming food.

It is not only in the choice of the cereals that the tyranny of custom or of taste laughs to scorn the inflexible laws of political economy. The soil and climate of England will produce, in every corner of country or even of town, a food that is nearly 50 per cent. more rich in nitrogenous compounds even than oats. Oats yield 17 per cent. of flesh-formers. But beans contain 24 per cent. The cultivation of pulse, as a staple article of human food, is almost unknown in this country. In the rich vale of the Severn, indeed, the air at certain seasons is heavy with the delicate fragrance of the bean plant. Fields of as much as two miles in length by half a mile wide, unbroken by a hedge, are covered in some parts of Gloucestershire by this crop. But it is usually left to be reaped; and is gathered in as a black mass of pea-straw, for the sake of the dried seeds. Eaten when young, these broad beans are as delicious as they are nutritious. The splendid flowers of the scarlet runner form an ensign hoisted by another species of this rich family of contributors to wholesome diet. But it is only the young pods that are generally eaten. Then there are the French haricot beans; the garden or field pease; and other congeners of the same group, which in a soup, a *purée*, or a porridge, may be made to yield a delicious food. In Southern Italy a large proportion of the diet of the peasantry consists in pulse; and that on plains where grows the white Apulian wheat that yields the finest wheat flour in the world. But wheat flour, though there moderate in price, has to be paid for. The garden yields pulse, for more than a third of the year, at a price too low to need any stint in the healthy appetite of the children. The English cottager who would cultivate pulse, and exchange wheat flour for oatmeal, would grow fat and flourishing, with good clothes on his back and money in his pocket, alongside of the man who, receiving the same wages, goes to the baker for his daily loaves. How can any one talk seriously about land that will not yield sustenance to the labourer, in face of such facts as these?

It will thus be seen that those parts of England are very rare in which land will not yield an ample sustenance, either in meal or in malt. Where wheat will not thrive, oats may. Where oats are not available, beans are sure to flourish. Or if money, rather than actual food, be in request, there is the unsleeping industry of the forest, that only requires fair play to produce a steady income at a very low minimum of labour. So much for the land. Operations of draining, of planting, of manuring, on whatever scale they may be undertaken, will repay the cost within a few years, and yield 50 per cent. return on the outlay for ever after. These are not imaginings; they are simple rustic facts. Of the total acreage of England only three-quarters are now under crops, bare fallow, and grass. In Wales, the proportion is 60 per cent. In Ireland, it is 78 per cent. In Scotland, it is only 26 per cent. Out of the 77,828,947 acres of the United Kingdom, only 47,263,165 acres were under cultivation, including fallows, in 1877. Out of the balance of thirty millions of acres have to be deducted the areas of towns

and cities, the sites of roads, railways, rivers, canals, lakes, and ponds, and whatever land may, at the present moment, need as much skill as has been devoted to the 6,000 square miles of fenland in order to fit it to support and to repay cultivation. But when all is allowed, what a margin remains. Nor do we believe that the "laws" of a quasi science that breaks down before the simple question, "Why does every cottager, as a rule, pay twice as much as he needs do for the food of his family?" are to be taken as quite conclusive as to the impossibility of securing a fair return from a good slice of these thirty millions of acres.

So much for waste land. How as to hands? The last report of the Local Government Board that we have at hand at the moment is that for 1875. That gives a return of 832,370 paupers on January 1, and of 784,006 on July 1, 1874. The total amount expended in relief of the poor in that year was 7,664,957*l.*, being our heritage from the proceedings of King Henry VIII. Of these, 114,324 in the winter months, and 101,601 in the summer, are able-bodied paupers. Of course it will be said by a certain school that nothing would be more erroneous in principle than to turn this great army on to some of those works of drainage, embankment, reclamation, and irrigation, that make the difference between an annual yield of nothing and one of 40*l.* per acre. The labour market would be disturbed by any such action. An industrial population of nearly six millions (it was 5,137,725 for England and Wales in 1871) would be cruelly wronged by setting 100,000 more sturdy pairs of arms to work, instead of feeding them for doing nothing. But that would be a miserable management that could not get a pound's worth of work per week out of each able-bodied man. And there would be a saving to the country of five millions per annum, or of two-thirds of the poor-rates. Look at it on the principles of the most severe and stringent economy,—only apply these principles to facts, instead of talking of them in the vague. Let us say that the artificial addition of 100,000 labourers to the working class of, say, 6,000,000, would reduce the value of the earning power of each of the latter by one-sixtieth part. Taking that earning power,—not the producing power, but the consumption of wages,—at 2s. per diem for 300 days in the year, each worker would theoretically lose one-sixtieth part of 30*l.* in the year. But the rate of incidence of the poor-rate is 6s. 6d. per head per annum, on the 23½ millions of estimated population at the date cited. This would be reduced, by the product of the labour proposed, to 2s. 2d. per head.

Now, even if we suppose that we had unjustly inflicted a tax of 10s. per head on the working classes, it would thus be reduced to 5s. 6d. per head in the first instance; while every other unit of the population is 4s. 4d. per head the better for it. That would be a good reason for reducing the burdens on the industrial classes by 5s. 6d. per head per annum, were the loss actually proved. But the fact would be, according to all experience, that the stimulus given to consumption, and to production, by the productive employment of this added body of able men, so far from lowering, would raise the price of labour, and add not only to the wealth of the country, but to the well-being of the working classes.

Here, however, we have but one item in the account. We do not forget that the 6,000,000 workers are not all able-bodied men, but must include all classes. We are not attempting prediction, or affecting accuracy of estimate. Our figures are only intended to show approximately what is the case. But if we consider that only 1,200,000 out of the 6,000,000 are picked and able-bodied men, we must rate their individual average earnings at much above 30*l.* per annum; and in the question of time we must remember that the lower the rate of remuneration, the wider the margin of unemployed time. Let us take 1,200,000 picked workmen, working fifty-two hours and a half per week, what a fund of unemployed labour is there. Tempt the workman to make up the old rate of sixty hours per week by volunteer labour,—by tilling his garden, by trimming the trees, by steady occupation of a remunerative kind in any form that will best suit his powers. What would be the effect of this? It would be equal to the addition of another army of above 90,000 picked labourers to the productive power of the country, an addition which, when we further add the extra efforts of the 4,800,000 less able workers, will be at the least doubled. And their work,—volunteer work,—is all sheer gain. It is not even taken out of the capital or the strength of the workman. For this moderate tax on his time he will be able to afford much greater comfort, to eat more meat, to drink a stronger strike of ale, to lie under an extra blanket. He will still have fourteen hours per diem for six days in the week, and twenty-four on the seventh, or 108 hours out of 168, for sleep, refreshment, improvement, or amusement. What an enormous reserve of power is thus under our hands it is not easy to calculate.

We are not advocating any utopian scheme. We are not proposing any change in the laws, or any heroic change anywhere. But we are indicating the limits of the question. On the one hand we are met with the hard, blank, cold denial that any improvement can be made. Profit and loss is said to be the inexorable law of the world; a law that not only avenges itself, but is always self-acting and always exact. Suggest any improvement, of any kind, the reply is always the same,—"If it would pay, it would accomplish itself. If it will not pay, it is mischievous to attempt to introduce it." That is, reduced to its true nakedness, the argument which we cited at the commencement of these remarks. We reply that the assumption is utterly false. A sense of profit does not rule human action. So far from acting like hunger, or any natural instinct, it requires a considerable degree of education to be imparted before it acts at all; and then ten to one it acts wrongly. For example, as to the food of the cottager. It is an economical heresy of the direst nature to assume that a man will rather pay ten shillings for food that is not the most nutritious than five shillings for food that is; that he will not even take the trouble to try whether he does not find himself better nourished and more comfortable and strong on the cheaper food. Nevertheless, this is what occurs, every day, in every poor family, with hardly an exception. Therefore, when we show how easy it is to add to the income of the cottager, and to the wealth of the country, it is with but feeble hope that much good will result from the advice. But, at all events, we have said enough to explode the puerile fallacy of the economical *non possumus*.

We hope not to be misunderstood. We remember, and we remind our readers of, the miserable failure of the *ateliers* in Paris, and of other efforts anticipated to organise labour in France. We have seen with our own eyes the ludicrous though lamentable swindle of the famine works in Ireland. These are cases in which failure has been the natural result of entrusting the direction of labour to incompetent hands, generally to those of the loudest-tongued patriot, as he described himself. But we have also witnessed facts, no less conclusive, that weigh in the other scale. We have witnessed the gradual,—and not very slow,—transformation of the agricultural labourer, who, at his wages of 9s. per week, could hardly do 60 foot-tons of work per diem, into the sturdy, well-fed railway labourer, who, at 2s. 9d. per diem, turned over his 128 foot-tons of work without distress. Wise direction, good food, and that sympathy which is the best bond between master and man, effected this change, to the great advantage of both. The country magistrates, indeed, remonstrated at the raising the rate of wages. But the work had to be done. There was but one way of doing it properly; and the country was the gainer all round; so much the gainer that in the remote districts of Wales or of Cornwall the price of transport was reduced by five-sixths, and the country markets were brought into relation with those of the great centres of production and of consumption.

In how many cases might not a similar effect be produced under the guidance of competent advice? It is not against, but with, nature that such improvers have to work; with the human nature of the workfolk, so soon as they begin to understand what is going on, and with the physical nature of the inorganic and organic world. It is only the other day that a paper, based on a memoir in the "Annales des Ponts et Chaussées," was received by the Institution of Civil Engineers, giving an account of some of those reclamation works on the *Landes* of Bordeaux, which were suggested by one of our own contributors in 1855. More than half a million of money has been laid out, under State direction, in draining, in sinking wells, and in making roads through 1,500,000 acres of land of much the same superficial character as that between Southampton and Christchurch. "Everywhere and in every respect," says Mr. George Wilson, "the results of forest cultivation are hig satisfactory." In 1877 the timber on a plo 11 acres, which had been planted in 1850, sold for 192*l.*, or 17*l.* 9s. per acre. The valu the plantations, after thirty years' growth estimated at nearly 15,000,000*l.* In anot forty years it will have reached 49,000,0 Excepting the annual cost of supervision tendence,—which is not given, but which is high,—this is the result just secured by neighbours on the other side the Channel u State interference. Forty-nine millions ster produced, chiefly by nature, in two generati for the first outlay of 540,000*l.*, and the au employment of an amount of labour which bably will be covered by the sale of turpent of lop, and of thinnings. And this fro hungry, fever-smitten, ague-haunted soil, a which, as we have seen it lying waste, it mi with some show of reason, have been urged it "would not yield sustenance wages to labourer."

It is quite certain that the cultivation of Hampshire wastes is a far easier problem was that of the desert *Landes* of Gascony.

NOTES ON ST. PAUL'S CATHEDRA

ROYAL INSTITUTE OF BRITISH ARCHITECTS

Mr. F. C. Penrose, M.A., at the last me of the Institute, read the following paper

The Crypt—Records of Old St. Paul's.

For the last seven years, or thereabout Dean and Chapter have endeavoured to the crypt both useful for ecclesiastical pur and more worthy as the burying-place of trious public characters and artists than it to be. Until lately, only a small part has shown to the public, and, with the excepti the immediate centre, containing the tom Lord Nelson and the contiguous chamb which the sarcophagus of the great Du Wellington is placed, it was dark and un for. Much of it was devoted to stowa materials, a large portion of these being scaffoldings which were used for the s children's festival, and the remainder se for various necessary purposes of the cath Now, with the exception of these last, the has been formed into what may be cal Campo Santo. The walls have been clea the soot of generations, and the floor is process of being laid down with mosaic te in various colours and of classical design. 4,000 square feet have already been so tr 3,000 more are decided on but not yet exe and by degrees the rest will no doubt The eastern part has been arranged for service, which takes place every mornin evening at eight o'clock, and on Sunday ings the Holy Communion is there celeb viz., on the site of the ancient chapel Faith. Around this part of the crypt been arranged the remains of certain mental effigies which were rescued from t cathedral, and which Dugdale's accurate taken before the Fire enabled us to id They have each been mounted on a simp of altar-tomb, with the name inscribed. record names well known in the six century, viz., Hewett, Cockayne, Henenge, Wolley, Baskerville, and some The central nave in the crypt has no opened for its full length of about 450 the bronze car which conveyed the body Duke of Wellington to the cathedral in ber, 1852, and which for a number of occupied a chamber near the centre, a minated the part shown to the public, h removed to the extreme west. This portion of the nave is now divided fr side aisles, to which, with the transep workshops and stores are relegated by w iron railing. It was the opening the crypt for this purpose that led indirectly discovery of the remains of Old St. Paul of the arches contained the huge gas which entirely blocked it up. It was e not only for proper appearance, but f and air, that this should be removed, a was dug for it on the outside to the the nave. This pit is carried down to of about 10 ft. from the ground-line churchyard. The foundations of the c walls go considerably deeper, so that th no question of undermining them. Jus edge of this pit, and about 9 ft. from face, was found a piece of stonework e *in situ*, which had clearly some connex

old fabric. The mortar was different from t used by Sir Christopher Wren, and from its ition it could have nothing to do with his k. There was embedded in it the frustrum a column, apparently Norman, from which it med that this piece of foundation belonged some of the fourteenth-century work, and t the Norman fragment was old material ived from the original choir, or perhaps from Faith's Church, demolished in 1256. This , then, seemed in all probability a relic of t St. Paul's. I fortunately had in my office opy of the plan contained amongst the Wren lection in All Souls' Library, Oxford, which resents the new cathedral placed upon the * and from this plan I assumed I had hit n the foundation of one of the piers of the sage leading from the cloister into the pter-house. I reported my discovery to the n and Chapter, and obtained from them mission to make a few more trials for other s of the old structure.

uided by the plan, I sunk a pit more to the tward, to try for one of the buttresses of chapter-house, but with no result. The h even showed no sign of having been dis- ed. I then tried backwards towards the , thinking that I might at least get hold of her part of the cloister. The plan again ed faithless; but a little more burrowing ards the east revealed a fragment of what ought might be a buttress of the main sept wall,—that is, of the western wall of south transept. This was about the same th below the surface as the first discovered ment; and this, whilst it gave clear evidence something was amiss with the plan, pointed more likely place for the next trial, and result at once appeared to prove the correct- of the hypothesis, for the next morning clerk of works came to tell me with much faction that part of the cloister-wall with buttresses had been found, and the south- internal angle soon followed. These founda- , too, were at no great depth from the sur- and their excavation was no great difficulty. of the great buttresses of the chapter- e rewarded our further investigation, but were all, for the other buttresses of the ter-house had been entirely rooted up, y for the requirements of the new structure, partly for the drains. We also found the nal south-east angle of the cloister and of the street wall, and the internal south- angle, and some traces of the external corresponding to it. The pavement in al places exists, composed of squares and ges of Purbeck marble, and is about 14 ft. w the pavement of the present cathedral, ery nearly on a level with the street to the . These remains belong to the lower story hat Sir Christopher Wren has described as chapter-house of a more elegant Gothick er with a cloyster of two stories high." historians of the cathedral inform us that chapter-house was begun to be built in ; but when we study the detail of the dings, which are very small and refined, it possible to attribute so early a date. rtheless, both Hollar's view and some ins of tracery which were dug up during xcavations point to a general design which d almost fit in with the period assigned. probability is that the work is actually of end of the fourteenth century, but that an or design had, with some modifications, carried out.

e vaulting of the chapter-house, although building was octagonal, was arranged (in ower story, at any rate) so as to rest upon central columns. This is shown in all the s; and the base of the middle vaulting is curiously divergent from the others h follow the octagonal arrangement for this ose. All the chapter-house shafts and s are of Caen stone, but those of the cloister f Purbeck marble. All are extremely well nd elegantly profiled.

aring the effects of frost upon this newly- ed masonry, I had them twice coated with wax, dissolved in spirits of turpentine, and far they seem to have well resisted the n of the weather, whilst some of the stones e same material which, not being *in situ*, were o themselves, have been much affected by it. plan is submitted, showing the whole of our veries, to a scale of 3 in. to 10 ft., and all houldings are given more at large, the bases full-size, the others half-size. These discoveries show the angles of the cloister, and enable us to recover with great precision the centre of the chapter-house. When these are compared with the Oxford plan, there is found to be an error both southwards and eastwards, amounting to about 10 ft. in each direction. In other respects the cloister is accurately blocked out, and the length and breadth are in very close agreement with the dimensions. It is a matter of very great interest to ascertain, if possible, whether the plan must be given up as hopelessly inaccurate to at least the above extent, or whether there may not be what may be called an occult reason for the particular error I have noticed, which does not vitiate the plan altogether. I have prepared a plan of the existing cathedral, from measurements to the same scale as the Oxford plan, and find that the two agree very well indeed. This is, therefore, presumably in its favour. Then we have to consider what was the object of this particular plan, not the detail of the architecture, which is merely sketched on the plan, but the exhibition of the divergence of the axial lines of the two buildings.

There are great peculiarities about this plan. The line which is shown for the west front is very considerably out of square with that which is given as the axis of the cathedral: neither is the axis of the transept square with it. The latter is shown as almost parallel to the west front. The east end, again, is an oblique line. Let us compare this plan with other plans of old St. Paul's. I do not undervalue Mr. Ferrey's careful and elaborate plan, but am considering original documents only. The plan is very nearly to the same scale as that given by Dugdale, engraved by Hollar, but there are some differences which show it to be an independent document. There is also among the All Souls Wren Collection drawings a larger plan on vellum, but it is not itself original, and the following account of its authorship has been given me:—"The plan is on vellum, and Elmes, in his catalogue of Wren's drawings, says of it, 'Mr. Gatch tells me that Mr. Buckler copied it for Sir H. Englefield.'" Nevertheless, it seems from the above to have been copied from something else, perhaps from an old plan which was falling to pieces, and it certainly represents the cloister and chapter-house with great accuracy. I will call this the Oxford plan No. 2.

There is also a small-scale plan, engraved by Loggan, and published by Thomas Bowles, St. Paul's Churchyard, about 1714, but I think the engraving itself must be considerably older. Thus we have, at any rate, four plans to refer to, and there is the tradition preserved by Stow that the old cathedral was 690 ft. long. This statement Mr. Ferrey has discussed at length in his contribution to Mr. Longman's work, "The Three Cathedrals," and, I think, has very justly come to the conclusion that the first figure is an error, and that the proper statement should have been DXC. instead of DCXC. This extreme length is at variance with all the plans, although some approach to it is made in the Oxford plan No. 2, which appears to give the length of 660 ft. The discovery of the cloister enables the scales put upon these drawings to be tested, and they do not any of them bear the test very well. The Oxford plan No. 1, however,—that which shows the two cathedrals,—when a proper scale is made for it, from the full length of 507 ft., that is, from the extremity of the present apse to the Western Towers inclusive, shows exactly the proper measure for the south wall of the cloister, which is a strong presumption in favour of the general correctness of the drawing, excepting as to scale, which may have been added by a different hand. The simplest test which can be applied to the plans in comparing them *inter se*, is that of the proportion between the nave and the choir taken from the centre of the tower. These are the results:—

	Nave.		Choir.
Hollar's plan	1,000	...	904
Oxford plan No. 1	—	...	880
,, No. 2	—	...	998
The small plan (Loggan's)	1,000	...	962

There are thus two pairs which hold together pretty fairly, Hollar's and the Oxford No. 1 in giving mean proportion of 1,000 to less than 900, and two others which hold well together in giving a much larger proportion.

There are a considerable number of perspective views extant, and if we examine these together (however divergent they may be among themselves) the mean result may be used to check the plans. Dugdale gives two. The same engraved sheet which contains Loggan's plan gives three. These results are here tabulated:—

	Nave.		Choir.
Dugdale—North	1,000	...	795
Dugdale—South	1,000	...	785
Loggan—North	1,000	...	752
Loggan—South	1,000	...	917
And to a smaller scale on the same sheet—South	1,000	...	890
Mean...	1,000	...	828

My object in this investigation is to establish the probability of the Oxford plan No. 1 being trustworthy; and the evidence of the perspective views is, as far as it goes, in favour of this probability, in reducing the ratio of the length of the nave to that of the choir. Another argument in its favour is drawn from the fact that the extent of our churchyard to the east is exactly the difference of length shown between the old and new cathedral on the plan. And in the account of Sir Christopher Wren's works in the "Parentalia," it is stated that the commissioners for rebuilding the City had settled and had obtained Parliamentary sanction for the width of all the streets before anything had been fully determined about the design for the new fabric. It seems, therefore, extremely probable that the street defines most accurately the extent of the old cathedral, and that this is again in favour of the Oxford plan No. 1.

The *primâ facie* points which make against it are,—first, that it does not fit our new discoveries; secondly, that the internal detail is drawn in an obviously careless manner, the pillars of the central tower alone seeming to have been properly laid down, and the rest merely sketched in hap-hazard; and, lastly, the curiously oblique lines of the fronts and ends, &c., which I have already noticed.* I think, however, that I shall be able to show that the last-mentioned *primâ facie* doubtful point (that of the oblique ends) is really an evidence of the accuracy of the plan; that the second is nothing more than inattention to a detail which had nothing to do with the gist of the drawing, and that the first-named misfit has arisen from the fact that the draughtsman was put out by an irregularity of which he had no previous experience, namely, a deflection of the axis of the choir from that of the nave. This appears to be the solution of the whole difficulty, and when the drawing is corrected for this peculiar arrangement, everything fits in its place, and the oblique lines are all of them reduced to their proper square directions. And now the plan becomes intelligible. But I have additional evidence, and will here quote a passage from the "Parentalia," which is very much to the point:—

"The reasons for changing the site of the church, and taking up all the old foundations are chiefly these:—First, the Act of Parliament for rebuilding the City had enacted that all the high streets (of which that which leads round the south side of St. Paul's was one) should be 40 ft. broad, but the old foundations straightened the street towards the east end to under 30 ft.

Secondly, the churchyard on the north side was wide, and afforded room that way to give the new fabric a more free and graceful aspect.

Thirdly, to have built on the old foundations must have confined the surveyor too much to the old plan and form; the ruinous walls in no part were to be trusted again, nor would the old and new work unite or stand together without cracks.

It being found expedient therefore to change the foundations, he took the advantage of more room northward, and laid the middle line of the new work more declining to the north-east than it was before, which was not due east and west, neither did the old front of the cathedral lie direct from Ludgate, as it does not at present, which was not practicable without purchasing and taking down a great number of houses and the aid of Parliament. This, though much wished for, he was not able to effect. The Commissioners for rebuilding the City had in the first place marked and staked out all the streets, and the Parliament confirmed their report, before anything had been fully determined about the design for the new fabric. The proprietors of the ground, with much eagerness and haste, had begun to build; accordingly, an incredible progress had been made in a very short time, many fair and large houses erected, and every

reduced copy of this plan is published in Mr. Long- work, "The Three Cathedrals."

* The oblique line of the west front is also shown in Loggan's plan.

foot of ground in that trading and populous part of the town was highly estimated."

It is here then stated, upon the authority of Sir Christopher Wren, that the axis of the new cathedral was set more declining to the north-east than it was before. But how if the cloister wall shows that the nave declined to the south-east instead of the north-east? Sir Christopher Wren, an astronomer, was not a man to be mistaken in a matter of east and west, but he may have put down to irregularity, which he more than once mentions in connexion with the choir, the deflection of its axis, and with it the north-easterly tendency of the whole cathedral. These bearings are as follow:—

The new cathedral to the north-east	6° 28′	
The cloister wall and chapter-house	0° 59′	to the south-east.
But the general axis of the cathedral to the north-east	3° 15′	

That is, on the assumption that the Oxford plan No. 1 correctly shows the correlation of the old and new fabric at the east end. That this was correctly marked on the plan, both at the east and west, I have scarcely any doubt; but as the whole of the foundations of the choir must have been removed, our only chance of proof from the spade will be in the possible discovery of the foundations of Paul's Cross, of which I by no means despair. But there is nothing unreasonable in the idea of a deflection of the axis. In the case we are contemplating, it must have been certainly large,—not much less than 4°. There is, however, in a fine abbey church,—Whitby,—an instance very much more considerable.

To tabulate such cases as are known to me,—

Whitby	6° 2′
Old St. Paul's, hypothesis	3° 55′
Lichfield	1° 45′

St. Mary's, Oxford, has it to a very considerable degree, 3′ 20″. The above all incline to the north, which is the general direction; but there are instances of deflection to the south. Other cathedrals may be cited for a smaller amount from my own observation; I may name York, Norwich, Peterborough, and Lincoln, as designed by Bishop Remigius, but afterwards the axis was straightened by Grostete; also to a small but very perceptible extent, St. Peter's at Rome.

If we assume the nave to have been square with the west front, and that its central line was correctly shown on the plan, and then set it out on this hypothesis, not only do the cloister and chapter-house agree very nearly indeed with their real places, but the south wall of St. Gregory's Church falls centrally upon a piece of foundation, which was discovered in the alterations made about six years ago at the west end, viz., a strong Portland stone foundation, which probably belonged to some classical addition by Inigo Jones, where a central entrance-door is shown on some of the drawings. The strongest argument, however, is to come. On the hypothesis that the position of the nave must be so corrected, I ventured a few days ago to ask for and obtained leave to dig in the north churchyard for the traces of the north transept wall, and found them in the very first pit, within 2 ft. of the centre of the hole. The whole of the work west of the tower is thus shown to be in accordance with the plan, after correction in the manner above explained, and the axis of the transept agrees in direction with the plan, and all this comes by moving it on the western extremity of the axis as a pivot. I think, then, we must conclude that the eastern extremity had the same relation to the present cathedral that the plan shows, and this implies the deflection of the axis of the choir. The deflection we are supposing could not have been contrived without much inequality in some of the choir arches; some must have been spread out and others contracted. On this point we have Sir Christopher Wren's evidence, taken from the "Parentalia," p. 274, "Lastly the intercolumniations or spaces between the Pillars of the Quire next adjoining to the Tower are very unequal." This is exactly what must have occurred with a deflected axis.

The Oxford plan No. 1 shows the axial lines as coincident at the extremity of the old choir. This would seem a very probable arrangement. But in stating this, we must not overlook the words of the "Parentalia," quoted above, that Sir Christopher Wren took advantage of more room northward, &c. The Oxford plan, however, as it stands, shows a larger area of the new cathedral to the south of the old; whereas the amended plan gives the preponderance, although only a small one, to the north side. I claim, however, that the first purpose and end of that plan is that it was intended to show the axial deviations of the two cathedrals, and that it placed them at the east and west extremities correctly, whatever it did elsewhere; and if so, there must have been the deflection of axis which I have spoken of. It is to be observed further that the plan as drawn shows the eastern wall very oblique to the axis of the cathedral, and the correction of the axis in the way proposed brings it very nearly square. Thus the only way to reconcile this plan with the new discoveries, if we retain the eastern points of coincidence, is by a deflection; and if there was no deflection, a plan which after a simple readjustment has proved itself accurate at the north transept, must be entirely discredited as to its representation of the east end.

The arguments against the deflection are the silence of Sir Christopher Wren on the point, and that straight axes are shown on this and in the other two plans, viz., Hollar's and Loggan's (for the Oxford plan No. 2 lacks authenticity), and the words of the "Parentalia" that "The surveyor took advantage of more room northward," may be quoted in this sense; but this last point is neutralised by the consideration that the same passage speaks of the axis of old St. Paul's as declining north of east, which could not have been true of an undeflected axis, for it has been demonstrated that the axis of the nave did not decline to the north-east at all. Besides, the orientation would then have been so nearly true that he would scarcely have said it was not so without some qualification. The confirmation I hope for may perhaps come from the foundations of Paul's Cross. This interesting structure is shown on the Oxford plan No. 2 and the place is confirmed by several old perspective views.

It is true that the plan we are now considering gives an impossible extension to the choir, but the compiler was probably influenced by Stow's figure of 690; but I think his place for Paul's Cross about opposite the buttress dividing the second and third bay of the choir, and his distance from the cathedral itself, may be allowed to have much weight, especially as he has rendered the due proportions of the chapter-house to the cloister, which neither Hollar's plan nor the Oxford plan No. 1 has properly represented.

The Proposed Alterations in the Churchyard.

There is an agreement between the City of London and the Dean and Chapter of St. Paul's which I trust will be favourable for the examination of the part of the churchyard in question, as there appear to be no graves in the immediate neighbourhood of the most probable site. In carrying out these arrangements, care will be taken, by the express stipulation of the Dean and Chapter, and the no less cordial desire of the City Architect, to preserve the old remains which have been discovered, and to allow them to be well seen.

The New Peal of Bells.

I have on my programme a few remarks to make on the bells which have lately been added to the cathedral and hung in the north tower. This tower, although in the general view of the cathedral it does not seem a large object, now contains all on one level twelve bells, which Sir Edmund Beckett considers the heaviest peal that can be rung. The tenor is 62 cwt., and the total peal weighs about 272 cwt. The original floor, which seems to have been calculated for a much lighter peal, had in consequence to be strengthened. This has been done by powerful struts, two from each face of the tower, meeting in a quadrate collar arrangement, which strengthens the whole floor. The timbers are large, generally 18 in. deep, and some as much as 16 in. broad, either oak or of teak. The frame also is very solid. The effect produced by the swinging of the enormous mass of metal composing the peal is almost *nil*. I have, whilst the ringing was going on, placed my hand between the timbers of the frame and the stonework of the tower, and have felt nothing more than the slightest possible palpitating movement, very similar to that of my pulse, and scarcely more perceptible. The bells were cast and hung by Messrs. Taylor, of Loughborough, and are the gift of the Corporation and some of the leading companies of the city of London.

The Decoration Scheme.

The position of the scheme for the embellishment of St. Paul's is this. A sub-committee have recommended the adoption of a design left by Mr. Alfred Stevens for the pictorial treatment of the dome in mosaic. The President of the Royal Academy and Mr. Poynter have agreed to assist the Dean and Chapter and the committee in carrying out this design, with such modifications as the proper selection of the subject entails, and they are now considering the proper means of carrying out the proposal, which is to begin by a full-sized cartoon placed up in the dome itself, so that the scale of the work may be thoroughly settled and adjusted to its proper situation. This will be both preliminary and final, will necessarily take a considerable time.

In connexion with the embellishment of the dome, it may interest the members to consider a very curious evidence of thought by the [illegible] ful and scientific designer of the cathedral which I found out when making the [illegible] measurements of the configuration of the cupola which was requisite for this undertaking. These measurements for the section were taken with the help of the theodolite, and in several ways, so as to check, or I may rather say confirm, one another, so that I have no doubt as to their accuracy within some fraction of an inch. Having got the measurements, I was soon able to make out a system of three centres, with radii of about 67 ft., 46 ft., and 60 ft. [illegible] which afforded an exceedingly close approximation to the figure. But I spent a great deal of time in endeavouring to make out a law of design combining these centres and radii. At last it struck me that the arc of a parabola which should be tangent to the sloping sides of the drum at the springing, and of which the central line or axis of symmetry was inclined to the horizon at an angle of 51° 30′, might give a probable solution. These data, combined with the springing and culminating point of the dome, enabled the elements, as they may be called, of the curve to be calculated, and when done, although it differed a very little from the contour of the dome as executed, it expressed the position of the centres and radii which I had been seeking,—absolutely. The correspondences are here exhibited:—

		A difference in horizontal measure
After adjusting the measured and the calculated dimensions at the bottom and the top, that is at the springing point and the circular eye of the dome, we have for these equivalent heights, at	Ft.	Ft.
	40·39	·03
" " " "	13 4)	·00
" " " "	37·65	·06
And at the height of about 56·00 ft., where the horizontal measures have been equated, a difference in vertical measure of		·06

A FEW SUGGESTIONS RESPECTING THE ESTABLISHMENT OF A NATIONAL THEATRE IN ENGLAND

The overflowing audiences which, [illegible] happy to hear, are nightly and enthusiastically testifying the interest taken by the public in the laudable exertions of Mr. Irving, at the Lyceum Theatre, to do justice to the genius of Shakspeare, triumphantly contradicts the sweeping assertions of the opponents of the movement in favour of an English theatre expressly devoted to the highest objects of the Drama (1), that the masterpieces of our great dramatists are no longer attractive, and that the representation of them may be confidently entrusted to the spirit of personal enterprise. Various minor objections to the proposal are urged by writers who consider that their interests may be more or less unfavourably affected by such an establishment; but the gravamen of the opposition is based upon the above two arguments. It is amusing to observe the ingenuity exercised by some who have already committed themselves by their insistence on the first or their support of the second objection to extricate themselves from the portion of [illegible] the "inexorable logic of facts" has placed them and reconcile the two by carefully avoiding any allusion to the inferences which would naturally be drawn from the event by those who disagree with them on the question at issue. [illegible] days, we are told, the public requires only to be amused at the least expense of merited labour. Hence the attractions of broad burlesque, opera-bouffe, grand spectacle, farcical comedy, and entertainment, in short, which makes no demand upon their continued attention. [illegible] tive disproof of this assertion, we [illegible] Lyceum thronged every evening fro[illegible]

ng by an audience sitting in rapt attention, en only by bursts of approbation, for four s during the performance of "Hamlet," one he longest and most philosophical plays in English language. A tragedy unrelieved, nghout the five acts, by anything, except grim humour of the short scene of the grave- ers. At Christmas-time, too, when every tre in London has taxed its capabilities to with its competitors in providing the greatest unt of attraction for the holyday makers. long this success may last is, of course, rtain; and on its continuance depends the nt to which Mr. Irving may be rewarded his exertions in a noble cause; but had not public responded to his call, the consequence t have been disastrous. What becomes, , of the second argument? Do not these iderations prove the desirability of a national tre, the existence of which could not be ngered by accidental circumstances; at the time that no personal interest, no pecuniary ve, would necessitate the nightly repetition e same play as long as it drew great houses, e exclusion of other dramas and the injury e principal performers, of whom it exhausts power and destroys the spontaneity, re- g them to mere machines, dragging them- s wearily through parts the very words of h occasionally escape their memory, as we heard confessed by more than one actor has been subjected to that painful ordeal.

ch, however, must be the natural result of "personal enterprise" to which some of lissentients would confidently entrust the rvation of the matchless drama of this ry, the respectability of the stage, and the re of histrionic art, objects which can only be ved by the solid foundation of an establish- independent of the caprice of fortune or redominant taste of the public.

. Henry J. Byron, one of the half-dozen ssful dramatists who at present enjoy the and of the theatrical market, and whom we t to find on "The other side of the Ques- in an article under that title, in the second ber of the *Theatre* (new series), has roundly red his conviction that "Such an institu- as a National Theatre would inevitably se amidst heartburnings, jealousies, con- of opinion, and general chaos." He has rather too hasty in his conclusions. In h an institution" as we desire no collapse possibly take place from such causes, or any "ills that [professional] flesh is heir

He has argued without his premises. It e time enough for him to deliver his judg- *ex cathedrâ* when he really knows how it is osed the project should be carried out. We agree with him that "common sense gene- asserts itself in the long run, and results the strongest arguments." It is in the of common sense that we plead, and we therefore no doubt that the results would fy our advocacy.

is noteworthy that the persons who prin- ly profess to deny the necessity, doubt expediency, and predict the failure of a nal Art Theatre, are the "commercial agers," as Mr. Boucicault happily termed , and the prolific and popular purveyors of farcical comedies and brilliantly-mounted rditics which occasionally replenish the y treasury of the speculator, and amply pensate the author for his light-hearted and y-executed labour. Surely they have ng to fear from the success of a theatre olished to satisfy the demands of an entirely rent class of playgoers? Amongst the ons resident in the metropolis, to say ing of the numbers whom the facilities of ay travelling add nightly to the mass, the amusement-seekers will always constitute normous majority. As regards the actors, ave not heard of a single dissentient. Mr. g is practically proclaiming his faith in the ence of remunerative audiences for the est order of intellectual compositions. Mr. ann Vezin, in his recent letter to Mr. vin, unequivocally declares that such a re as we propose to establish has "always his most earnest desire," and concludes ating his belief that, looking upon it in y a pecuniary light, "it would make money than any of those managed on ng principles."

at it is "a consummation devoutly to be d" by all who have the true interests of tage sincerely at heart is the opinion of lands besides the above two eminent artists urselves.

DOMESDAY LITERATURE.

MR. EYTON'S contribution to the literature of Domesday* is an excellent work looked at from a statistical, rather than a profoundly literary point of view. It is strange how little interest the great survey of our island kingdom has created in the world of letters since its publication by the Government in 1783. Of all who have written about it, Sir Henry Ellis and Kelham are probably the best known for their labours upon the general work. The photozincographic edition published by the late Sir Henry James is simply a miserable production, the faulty places of the fac-similes being botched up and retouched by hand to such an extent that their value for palæographical purposes is absolutly *nil*, their usefulness to correct typographical errors in the magnificent folio edition of the commissioners very doubtful, if indeed they are not likely to make difficulties where none exist. Mr. Eyton has prepared in this work a large number of elaborate tables on a great variety of subjects, such as, for example, the farming stock, the population, the valuation, the boroughs, the landholders, the *terra Regis*, the old crown demesne, various groups of demesne lands, the prædomesday hundreds of Dorset, the domesday hidage compared with modern acreage, the fiefs, and ploughlands; and he gives us a fairly full index of persons and places. But he omits to tell us anything about the sources from which he derives all this information. We do not observe a single word in his book about the manuscript or printed works which he has consulted; it is impossible, therefore, to tell whether his analysis is the result of a careful examination of the venerable codex itself, as exhibited in the copies yet remaining of it, or whether he has based his observations upon the Commissioners' edition or that of the photozincographers. From the fact recorded in the preface that a reprint of the Dorset Domesday has been published by the "Historians of Dorset" (? which ones), we are led to infer that his book is based upon this "faultless version." In our mind, if such an epithet is possible of application to any edition, it is alone well deserved by the folio edition of Sir Henry Ellis, of which we shall say more presently.

The "Domesday Book" consists of two small square folio volumes, comprising about 1,660 leaves, written in the year 1086. Other volumes of similar construction are the "Exeter Domesday Book" and "Ely Domesday Book," both written about the same date. The "Winchester Domesday Book" was compiled in 1148; and the "Beldon Book," containing the Domesday Returns for the Palatine County of Durham, in 1183. These five manuscripts compose what is collectively known as "Domesday." The first two, or Domesday properly so called, were printed in special type made for the book in 1768. The printing commenced in 1770, under the direction of Sir Henry Ellis, late Keeper of the Manuscripts and Principal Librarian of the British Museum. It was issued in 1783, after 38,000*l.* had been spent upon the edition. The type was unfortunately destroyed when Nichols' printing-office was burned in 1808. The last three of the five manuscripts referred to were published in 1816 in form of a continuation or appendix to the original work. Sir Henry Ellis's "Introduction to the Domesday Book" was published in two volumes octavo in 1833, and from that time to this no work has ever been issued to supersede it. As regards the method in which the original return was obtained,—a subject, by the way, upon which Mr. Eyton is silent,—it has been thought, and with strong reasons, that the three "king's clerks,"—Maurice, Bishop of London, William, Bishop of Norwich, and Robert, Bishop of Chester,—superintended the work. With regard to the details of the returns, and the method of procedure, the Anglo-Saxon Chronicle, under the narrative of events taking place in the year 1085, gives the following exact, but somewhat mournful, account of this great taxing of the kingdom:—"The king had a great council, and very deep speech with his witan about this land, how it was peopled, or by what men; then he sent his men over all England, into every shire, and caused them to ascertain how many hundred hides were in the shire, what land the king himself held, the cattle within the land, and what dues he ought to have in twelve months from the shire. Also, he caused to be written how much land his archbishops, his suffragan bishops, his abbots, and his earls held; and (although I may be somewhat prolix in my narrative) what or how much each man had who was a holder of land in England, in land or in cattle, and how much money it might be worth. So very narrowly he caused it to be traced out, that there was not one single hide, nor one yard of land, nor even (it is shame to tell, although it seemed to him no shame to do) an ox, nor a cow, nor a pig was left, that was not set down in his writ. And all the writings were brought to him afterwards."

Colonel Sir Henry James's photozincographic copy of the Domesday is a good example of the work performed by that process of reproduction. Its weak points are its sponginess, its failure to give tones or depths, its uncertainty, and, above all, its need of retouching by hand. It may be fervently desired by all lovers of this national relic that the Palæographical Society will some day undertake to reproduce the book by the autotype process; and this might be done without delay if only subscribers would come forward to defray the expenses of the work. Meanwhile the Commissioners' typography is the best to work upon. Several portions of this great record have been illuminated by different writers. A few years ago Mr. N. E. Hamilton edited for the Royal Society of Literature a draft,—up to that time unknown,—prepared for the Cambridgeshire and Ely inquisitors, from which the Cambridge Domesday had been condensed. This unknown record was curious in this respect, that it stated the numbers of cattle, pigs, and horses, and such like matters, in each estate, and so bore out the statement in the Anglo-Saxon Chronicle referred to above, whereas the text of the Domesday does not so record them. Mr. Eyton's introductory essay in the book before us adds considerably to our knowledge of Domesday manners and customs, and is all the more valuable because few have written on this subject so collectively as he has done. His tabulations may be relied on because they have been evidently prepared with great care and judicious selection; and we hope he will not confine his labours to Dorsetshire only. A Domesday Society, composed of Mr. Eyton and others who, like him, take a noble pleasure in those manuscripts and their teachings, would be an honour to the world of antiquarian literature, and fill up a great want which is only too often felt by those who have to examine these records by the light of their own, alas, frequently imperfect, knowledge of the subjects involved in the search.

* A Key to Domesday . . . specially exemplified by an Analysis and Digest of the Dorset Survey. By the Rev R. W. Eyton, M.A. Taylor & Co., Little Queen-street. 1878.

GREEK ART.

MR. C. T. NEWTON, C.B., of the British Museum, resumed his lectures on Greek art on Saturday evening last, at the College for Men and Women, Queen-square, Bloomsbury, taking for his subject "The Pedimental Sculptures and Metopes of the Parthenon." The previous lectures have been reported in the *Builder*.

Mr. Newton said that, at the last lecture, which he delivered in November, he drew attention to the frieze of the Parthenon, and that evening he was going to refer to other sculptured representations in the Parthenon; that was to say, the pedimental sculptures and the metopes. They were, no doubt, aware of the sad story of the Parthenon; how it was converted into a Christian church some time after the fall of paganism, how it was partly destroyed in the process of conversion, how it afterwards became a Turkish mosque, how in 1674 the sculptures were drawn by an artist named Carry, how in 1684 it was besieged by the Phœnicians, and how the Parthenon was destroyed in the course of that siege. It had been stated that the pediments, in 1674, when drawn by Carry, were very different from the state they were in when seen by English travellers in the next century. These drawings of Carry had been reproduced in various works and engravings. With the view of making those present understand the sculpture and the composition of the pediments, he had brought with him drawings illustrative of his lecture; they were, in fact, the eastern and western pediments as drawn by Carry, with certain improvements. He would endeavour to explain to them all that they could really affirm in the way of interpretation on the subject of these pediments. He was sorry to say, notwithstanding the very

great learning and thought bestowed upon these problems, that which they could affirm positively, was very little. To begin with the eastern pediment, Pausanias, that indefatigable traveller who described the works of Greece, had told them something of the subject of these two pediments. He stated that the subject of the eastern pediment related to the birth of Athene. This birth of Athene was a curious myth. What it originally meant no one could say. The story of the goddess of Athens was this: that Zeus had a violent pain in his head and called in the God of Fire, Vulcan, or, as some people stated, Prometheus, to cleave his head open. When this was done the Goddess Athene, full-armed with a spear and helmet, sprang from his brain. This was the native myth. If they thought Zeus meant heaven, and that Athene was the idea of ether, then they might suppose that this had some reference to this ethereal matter which they generally associated with the idea with the part of the sky nearer them. But this was not the question into which he now proposed to enter. The place where this miraculous birth took place was Olympus, which was the Greek way of expressing heaven where the gods were supposed to dwell above this earth. If this scene took place in Olympus, the pediment must in some way represent Olympus, and they might be quite sure from what they knew of the chronology of ancient art that it would be represented,—as, in point of fact, it was represented,—by introducing into the pediment the sun and the moon. Helios, the Sun God, with his horses, was represented as coming out of the waves on one side of the pediment, and on the other there was the representation of the moon going down into the sea, thus marking the limits of the heavens. He thought there could be no doubt that four of the figures depicted stars fading away as the day came up out of the ocean. Then there was a figure representing the god Pan, which expressed the idea of the first rays gilding the mountain top, and the dawn of morn, Aurora, who was always represented as pursuing a youth who was supposed to represent darkness. Beyond these, there was the moon also riding away before the daylight. On the other side was the goddess of night, and one of the horses was represented as having done his course, and was about to sink into the waves. On the base of the throne of the statue of Zeus, at Olympia, on which the birth of Aphrodite was represented by Phidias, the scene was in like manner bounded at either end by the sun. Then the question arose, where was this birth represented? There could be no manner of doubt that it was depicted in the middle of the pediment which had been destroyed, the destroyers taking away the sanctity of the Temple, striking at the root of the worship by the destruction of the statue of the deity. This part was then irretrievably gone, and, as far as he knew, they had not one single vestige of the figures left which were placed in the centre. No doubt there would have been found Zeus, Athene, and Vulcan, or Prometheus. He had before him a picture of a vase, which was in the British Museum, upon which was represented Zeus giving birth to Athene. This vase was exceedingly interesting, as showing any one the manner in which archaic art represented this subject, but there could be no question that it would give them no idea how Phidias would represent it in pediment. If it was not depicted as in the vase, the goddess must have been standing by the side of Zeus. In that case, the birth would actually be taking place, and they might suppose, judging from the expressions of ancient poets, that the birth took place at daybreak, which would explain the position of the sun just rising above the horizon. Athene, like all the goddesses, had a birthday, and the exact day was marked in the Athenian calendar. On the morning of the festival, the ceremonies began at the moment it was supposed the birth of Athene took place. According to this vase, the goddess who presided over human births was represented. They knew she was present on the occasion, because her name was written over a figure on one of the vases. Of the four figures, two were in rapid motion, and the rest were seated very calmly, with that tranquillity which befitted gods enthroned in Olympus, or heroic personages. The first figure on the right side was originally called Hercules, then he got named Theseus, which name was still attached to him, but there was no sort of authority for it. Various other names were given him, because he reclined on the skin of a lion or a panther. In the Louvre there was a statue of this sort. It had been properly argued that one of the figures was that of Iris, the messenger of the gods, moving away, making the announcement of the birth to the world. In the British Museum they would find Zeus represented as seated on the top of a mountain, and one of the figures was shown to be running down the steep slopes of this mountain as if she were taking a message from Zeus to the people below. In the opposite half of the pediment there were three female figures which were unknown to them. Originally they were supposed to be the Three Fates, because they formed one group, but that idea had now, he thought, been given up, because it had been said that the Fates would not be present at the birth of a goddess. One of the figures was supposed to be that of Victory, and the photograph before them showed that a fragment of the figure had been found in the Elgin room by one of the workmen, and upon it being fixed it added greatly to its beauty. He was inclined to think that it belonged to the pediment. Many theories had been put forward in regard to the subject of this pediment, and they had led to the collecting of an enormous deal of learning, but he was bound to say that they had not settled anything in regard to this pediment. After reviewing the different attributions assigned to these figures by various archæologists, the lecturer alluded to the theory lately put forward by Professor Brunn, of Munich, who supposed the several groups and figures to represent different parts of Olympus. The Theseus he supposed to be the mountain Olympus just touched by the rays of the rising sun, the two next figures the hours guarding the entrance to heaven. In the three figures in the opposite half of the pediment he recognised the stars which brought clouds and rain. With regard to the western pediment, of which now few fragments remain, they were very nearly as perfect as when they were drawn by Carry. In 1794 Mr. Dalton travelled in Greece, and he published a very rare book containing views of Greece. The work excited little attention at the time, but it was remarkable as showing the condition of the pediment. Previously to Dalton visiting Greece, a chronicler of the time told them that a person was struck with the beauty of the Greek horse, and in trying to lower the sculpture, it broke and fell to pieces; which was clearly shown according to the drawing of Dalton. In the centre were the figures of Athene and Poseidon, represented in the moment of contest for the territory of Attica. The lecturer exhibited the same scene on a painting on a Greek vase, from which it seemed probable that the olive-tree, produced by Athene from the soil of the Acropolis, was originally in the centre of the pediment. The scene was marked by blessing the two rivers of Attica, the Ilissus and Cephissus, in the angle of the pediment. Behind Athene was her car drawn by Victory, and between this car and the reclining river-god in the angle were a number of figures, generally thought to be Attic deities more or less connected with Athene. In like manner, behind Poseidon were a number of figures, which had been usually identified with marine deities, such as they might expect to find as attendants on a supporter of Poseidon. Professor Brunn, however, supposes that these subordinate figures on both sides of the pediment were figurative representations of the various natural features on the sea-coast and land frontier of Attica, which was a very startling idea. It was quite true that some of the paintings of ancient authors did show the personifications of rivers and mountains, and in ancient compositions this idea was carried very far. There were, however, no means of identifying the several promontories in connexion with these figures. He was sorry to say that after mature study this was all he could state as to the interpretation of these two pediments. He wished it were more, and possibly the discovery of other monuments might some day give them more information than they at present possessed. They must wait patiently. In the meantime, if they knew the whole scheme of these two compositions, and could identify the figures, their pleasure would be much greater in the contemplation of the works of Phidias. They must remember, however, that their ignorance from this respect did not prevent them from having the great and lasting pleasure of studying these works. All these figures were matchless in ancient sculpture; they had long been admitted to be the finest, both in the representation and in the form of drapery. To descend upon any of them would require a separate lecture. They certainly could not study them too much. They might be best appreciated when casts of the sculptures were brought to this country, and placed side by side with the figures. In regard to the metopes of the Parthenon, they had in marble sixty-Originally all round this temple were ninety-two, and he was sorry to say of all that number very few remained. Lord Elgin had been abused for taking away these sixteen, and nobody had abused him more than the French nation. His contemporary at the time, the French Ambassador, only took a few, and had the kindness to say in his work that he would have taken away the rest, but Lord Elgin anticipated him. Lord Elgin left behind nineteen metopes, and at the time Stewart visited Athens the metopes on the west and the north sides were still present, but now, by exposure to the weather, decay had been so complete that, except in very few instances, no subject could be made out at all. The subjects on the north side were thought to be scenes from the taking of Troy, and those from the scenes of the battle with the Centaurs, while at the east end, which was no doubt the most important end of the Tempie, there was what was supposed to represent the battle of the gods and the giants, which would have distinct reference to the exploits of Athene herself. The subject at the west end would have a more immediate reference to the Athenian people, there having been a distinctly recognised battle; while on the south side there were represented subjects which had not yet been interpreted. If they examined the sixty metopes at the British Museum, they would find that the subjects of them were divided into groups; upon each metope was represented the figure of a Centaur, some of them being highly dramatic in their treatment. In conclusion, Mr. Newton referred to the necessity and importance of establishing a museum of antique casts where might be gathered a number of casts of the fragments which had been scattered all over Europe. There were many in the British Museum, but there was always a hope of having more. There was always the hope that stray bits of not forming part of the limbs of figures, might be found. The Venetians might have taken away to Venice some of those portions which had not yet been discovered. The only presumption for this was that the head of one of the figures of the sculpture of the Parthenon was traced in a house at Venice. In the Museum of Athens there was a seated figure, of which they did not have a cast. His next lecture would be on the great work of Phidias in the Parthenon, the Chryselephantine Statue of Athene, and one at Olympia." Unfortunately, as these statues were made in gold and ivory, no vestige of them remained. They must imagine what they were from the description given by ancient authors.

THE TEMPLE OF HEROD.

It is high time this wearisome discussion regarding the Temple at Jerusalem was brought to a close, as from the absurd manner in which it has been conducted by Lieut. Conder, if were continued till doomsday, it would be no nearer a conclusion than it now is.

On the 2nd of December he brought forward six well-defined objections to my plan of the Temple, and when these were answered (as he neither disputed my criticisms nor retracted his own statements. He simply dropped them and, shifting his ground, brought forward on the 17th a dozen new points; and when these were categorically answered, they too are dropped, and in his letter in your last issue new ones again is taken up, and the old ones are left to take care of themselves. It was the same with controversy he provoked in your columns in July last, when he asserted the arches in the Dome of the Rock were pointed. When it was shown this was not the case, he made no apology sion that he was mistaken, but simply ignored it, and we hear no more of pointed arches in controversy. If his present objections are answered, which, if space permitted, might be the easiest thing in the world to do, there are, no doubt, dozens of other objections which if this system is continued, could be brought forward, and as lightly dropped

advancing our true knowledge of the subject ne slightest possible degree.

his present letter, Lieut. Conder characitically reverts to his imaginary underand contours, which are a very safe subject heorise upon, inasmuch as without excavaıs, which will not be permitted, in the Haram , neither he nor I, nor any one else knows an know, anything certain about them; and e did, no argument of the smallest value ld be founded on such knowledge. Even if assume that his "rock levels" are exactly as it. Conder represents them, all that can be is, that Solomon showed less than his usual dom in selecting a site for his Temple which ld involve the construction of a few more o yards of masonry in its foundations than nother situation, where, if he had had the ntage of Lieut. Conder's advice, he might saved this extra expense. But what on have we for supposing that Solomon was ated by any such motives? He certainly ot exhibit any such spirit of economy when arried up the south-east angle of the Haram, a depth of 80 ft. below the present level of ground as a foundation for his palace. Nor, the matter of that, did Herod, when he raised errace walls of his Temple courts, from a ter depth than Solomon could, from Lieut. ler's own showing, ever have done. There bsolutely nowhere, that I know of, any hint Solomon was guided by such motives in selection of a site for his Temple. Nor does description of the extent or depth of its idation exist anywhere which would justify theory Lieut. Conder bases on them. We indeed nothing except Josephus's rhetorical ription of them (Ant. xv. 11. 3), which would to the very opposite conclusion of their constructed with the most boundless exgance.

nder these circumstances, it appears to me range an hallucination as ever entered the of any reasonable person, to throw overl all that is said in the Bible, and by Jose, who are the only trustworthy authorities, to neglect what is shown in the Ordnance ey, in order to construct a theory of the ple based only on the idea that Solomon, in ting the site and arranging its courts, was d only by considerations of economy in g masonry in its foundations. For this is tically what Lieut. Conder's theory comes nd is all he has attempted to urge in its ur, but which I, for one, distinctly decline to pt as a true explanation of the mystery.

ere are two other points in Lieut. Conder's r, which, as I have begun, I fear I must e to. The first is as to the knowledge the ieval historians possessed as to the true site form of the Temple. To exemplify this he es half a dozen authorities that he thinks rm his view, but he does not allude hapter xii. of the second part of my mples of the Jews," where they are shown e more numerous, and are quoted at greater th. He does not dare to deny the correctness e relevance of my quotations, though they to a diametrically opposite conclusion; he ly ignores them, as is his custom. The nd is, with reference to the court of the *en*, and its relative importance to that of *men* of Israel. Here again, he entirely res all I have written on the subject (pp. 95 20 of my "Temples of the Jews"), and es as if I have never thought of the subject onsulted the authorities he names. On the rary, I have both thought and read much, believe my solution of the difficulty, as it e first, is the most satisfactory solution of difficulty yet attempted, and recommend it my readers as the best answer to Lieut. der's criticisms. It is needless, however, to sue these subjects further in this place, as the h of the matter is, that nothing can be more ifestly absurd than Lieut. Conder's attempt onfine the whole argument within the four ers of this discussion. What I have said it, he persists in considering as all I e to say, and what I have not said it he treats as non-existent. In no ance does he refer to my published works he subject, and, in fact, ignores them altoer. It seems to me strange that any one ld follow such a line of argument with the ifest danger staring him in the face, that e one may, some day, read my books, and never any one does he must find out how sily my views have been misrepresented in wretched discussion. So far from viewing t has been said in it as all that is to be said, I repudiate it entirely as an exposition of my views. It practically does not contain a twentieth, or, taking the drawings into account, one-hundreth part of what I have to say, or have said, on the subject in my published works, and by these, as I said before, I am prepared to stand or fall. Though this discussion, from the mode in which it has been conducted, has not touched the marrow of the question, it may be considered satisfactory, in so far as I am concerned, inasmuch as I feel that if a second edition of my "Temple of the Jews" were called for I would not have to alter one line of the text, or one cubit in the dimensions of the plans, in consequence of anything that has occurred in the course of it. If Lieut. Conder were a more logical reasoner this, no doubt, would be a gain; but I am afraid that, though it may be easy enough to prove him to be in the wrong, that can hardly be considered by outsiders as indicating what is right.

This being so, I must beg leave to decline wasting any further time on a discussion which, from the mode in which it has been conducted, cannot possibly lead to any satisfactory conclusion. If, after what has passed, any one thinks he sees on what data Lieut. Conder's theory of the Temple is based, and prefers his plan to mine, all I can say is, that he is welcome, in so far as I am concerned, and I shall make no further attempt to disturb his faith. Our views of the conditions of the problem are too far apart for any *rapprochement* to be possible, and it would consequently be idle to attempt it. At the same time, it appears to me that Lieut. Conder's mode of arguing the question is, to use the mildest possible terms, so unfair and so misleading, that I shall consider myself perfectly justified in declining, unless I see fit, to notice anything that he may hereafter write on the subject.

JAS. FERGUSSON.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the fifth ordinary meeting of this Institute, for Session 1878-79, Mr. Charles Barry, president, in the chair,

Mr. Aug. Laver, of San Francisco, was present, and was elected by acclamation an Honorary and Corresponding Member,—the President observing that Mr. Laver had been for several years past a Fellow of the Institute, and expressing the hope that his election as Honorary and Corresponding Member would be mutually advantageous to the members of the profession on both sides of the Atlantic.

The following gentlemen were then balloted for and declared to be duly elected, viz.:—

As Fellows.—Mr. H. D. Davis, London; and Mr. H. Walker, Leeds.

As Associates.—Mr. Charles Grieve, Mr. W. H. Wood, Mr. C. W. Brooks, and Mr. A. H. Tiltman, all of London; and Mr. R. Curwen, jun., Liverpool.

As Honorary Associates:—Mr. R. F. Grantham, C.E.; Mr. Henry Bessemer, C.E.; and Mr. W. R. Wood.

The donations to the Library included a new work by M. Le Sueur, entitled "Histoire et Théorie d'Architecture." Mr. Penrose said that Professor Donaldson, through whom the volume had been presented, had requested him to make a few remarks on it. The book appeared to be one of very great value and interest, but M. Le Sueur had thought fit to entirely doubt the reality, or at any rate the premeditation, of the curvature in the horizontal lines of the Greek temples. He had, on what basis Mr. Penrose knew not, come to the conclusion that the curvature of those lines was due entirely to the subsidence of the foundations. He (Mr. Penrose) thought he could easily show such a conclusion to be incorrect. To take the case of the Parthenon, the northern and eastern fronts were founded directly upon the rock, so that there could be no subsidence, and yet the curvature was the same on those fronts as on the southern and western fronts, which had some amount of artificial foundation. Moreover, Mr. Penrose said he had examined the joints, and they had not "given," as would be case were the curvature due to subsidence. He had also carefully examined and accurately measured the sixteen angle columns of the Parthenon, and he had found a difference of fully three-eighths of an inch in height between the inner and outer sides of those nearest the angles, this variation being clearly intended to enable the columns to accommodate themselves to the curvature of the horizontal lines in the several fronts. Besides, the centre columns were 2 in. longer than the angle columns. However, the work was an extremely valuable one, and he had been very much struck with the author's comparison between Egyptian and Tuscan architecture.

Thanks were accorded to the several donors.

Death of M. Duc.—The President said: Two years ago, a very distinguished French architect received the Gold Medal of this Institute at my hands. I allude to M. Duc, architect for so many years to the Palais de Justice, Paris. He has now, I regret to say, been taken away from us, after an illness of two months. His career as an architect has been that of an artist throughout. Early in his life he became a student of architecture at the École de Beaux Arts, and passed through his studies there and elsewhere with very great *éclat*. Some few years ago the Emperor of the French offered a prize of 100,000 francs to the architect who should be deemed by his colleagues and compeers best worthy of the prize. The choice fell upon M. Duc, and greater testimony to his talents, and to the cordiality with which they were appreciated by his *confrères*, could hardly be given. But he took only a part of the prize to his own use, and devoted a large sum to promoting the study of architecture,—in founding prizes, and in other ways encouraging the art to which he devoted his life. His and our old friend Professor Donaldson has undertaken to put together some interesting reminiscences of M. Duc's career, which, perhaps in the form of a sessional paper, will be laid before the members. In the meanwhile, the Council had sent a letter of condolence to his widow, lamenting, as all his French colleagues had done, the great loss which our art has sustained.*

The Honorary Secretaryship.—The President also announced that Mr. T. H. Wyatt had kindly consented, at the request of the Council, to occupy the post of honorary secretary, in the place of Mr. Cockerell, until the next election, on the clear understanding that it was a temporary service only, and that it should in no way prejudice the choice of the members when the next election of officers came on.

There was little or no discussion on Mr. Verity's paper on "The Modern Restaurant" (see *Builder*, p. 72, *ante*), the only speaker being Mr. Teulon, who said that as one of a party of members of the Institute who had recently visited the Criterion, he had been much struck with its economy of space, and with the excellence of the ventilation.

The President made a few remarks, in the course of which he referred to the successful manner in which Mr. Verity had surmounted the various difficulties encountered in the course of carrying out the building referred to.

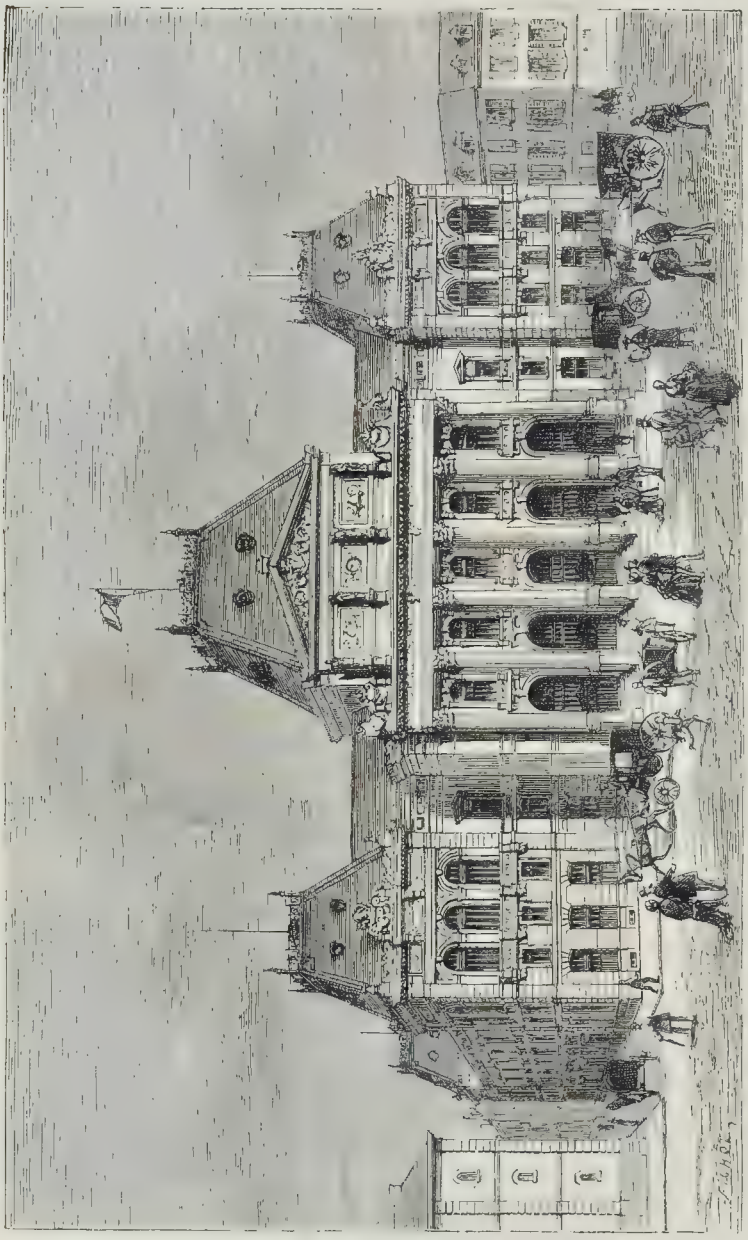
Mr. F. C. Penrose then read a paper on St. Paul's Cathedral, the substance of which we print on another page.

THE RESTORATION OF BANGOR CATHEDRAL.

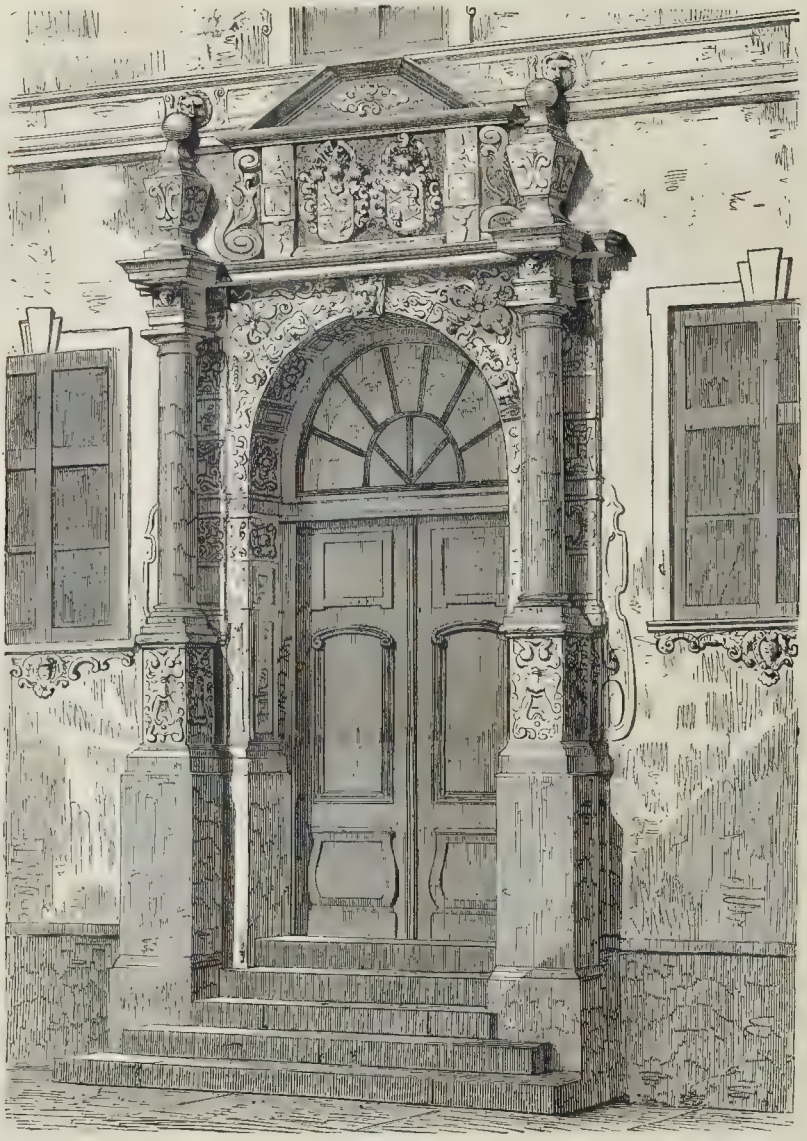
AMONGST the cathedral restorations which are from time to time taking place in different parts of the country, that of Bangor may be included. The choir and chancel have already been restored from the late Sir Gilbert Scott's designs, at a cost of nearly 20,000*l.*, and the committee entrusted with the restoration of the cathedral have now decided upon proceeding with the restoration of the nave, tower, and other buildings, which are to be carried out from the designs of Mr. G. G. Scott, at an estimated outlay of 10,700*l.* Lord Penrhyn, who subscribed nearly 7,000*l.* towards the restored portion of the cathedral, has promised another 2,000*l.* towards the completion of the work, whilst the Bishop and Mr. Hesketh give 500*l.* each; Mr. T. Warner 420*l.*, and Mr. Nanney 200*l.*, other subscriptions already contributed amounting to 4,500*l.*

Memorial of the late Princess Alice.—It is proposed to raise a memorial fund (towards which contributions are solicited) to perpetuate the memory of the late Princess Alice, and which will be applied to the "Alice Hospital" in Darmstadt. To this hospital is attached a training-school for nurses.

* Some particulars of M. Duc's career will be found in vol. xxxiv., p. 181, and in last year's volume of the *Builder*, together with a view of the *Palais de Justice* (pp. 243, 245).



THE NEW BOURSE, HAVRE, FRANCE.—M. Lemaître, Architect.



SWEDISH BUILDINGS: PORCH OF TORSTENSONSKA HOUSE.

SWEDISH ARCHITECTURE.

The accompanying engraving represents the Porch of Torstensonska House, now the residence of the Governors of the Province of Gothenburg, Sweden.

THE NEW BOURSE, HAVRE, FRANCE.

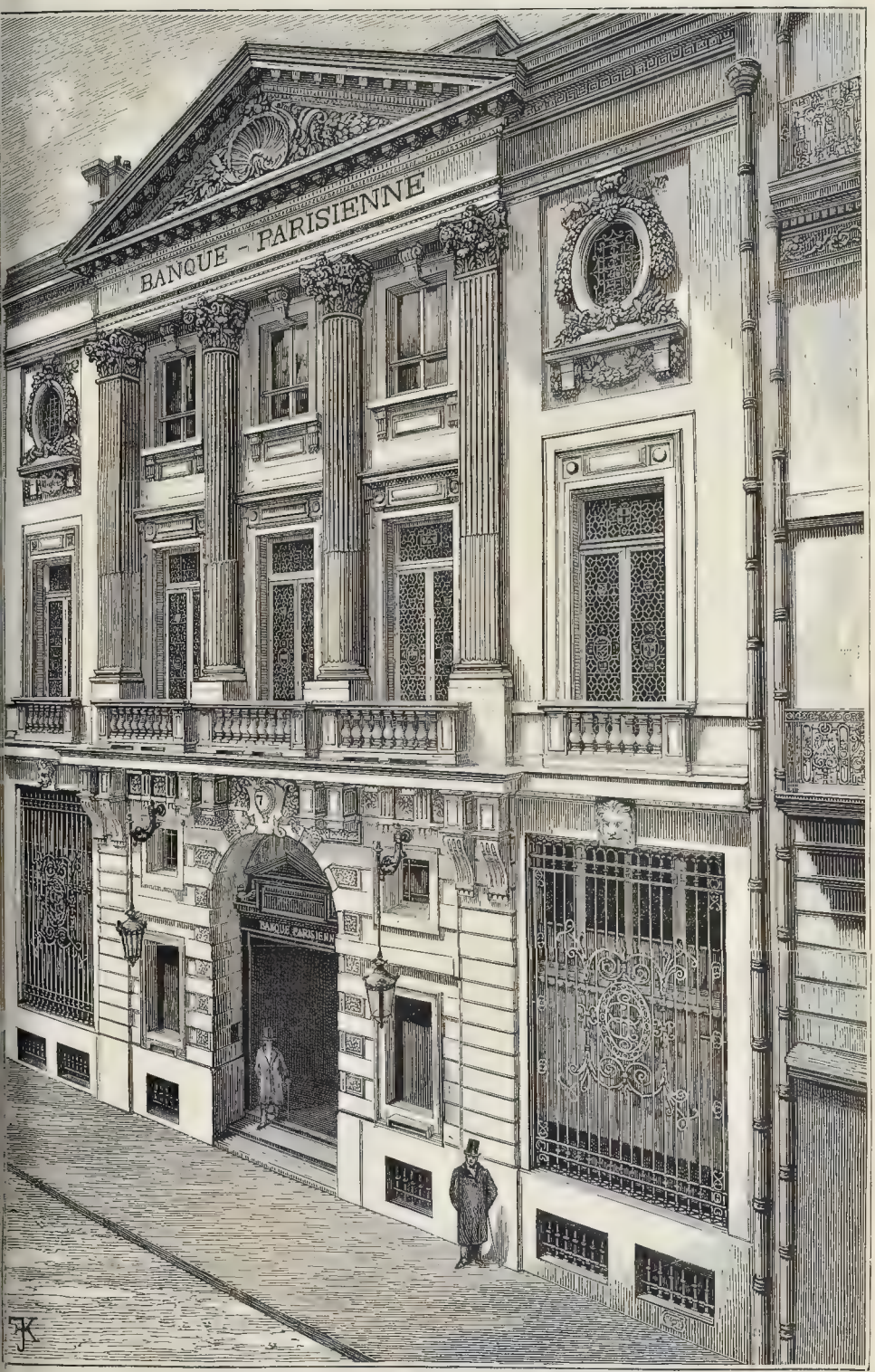
The first stone of the new Bourse for Havre was laid on the 2nd of March, 1878. When it is completed it will take the shape shown by our engraving. It is placed in the centre of the town, and occupies an area of 4,000 mètres superficial. M. Lemaître is the architect, and the cost is estimated at about 90,000*l*. The Exchange proper, which has a gallery, presents an area of 800 mètres superficial.

In addition, the building includes meeting-places for the Chamber of Commerce, the Maritime Insurance Company, auction-rooms, reading-room, and many other apartments.

THE PARISIAN BANK, PARIS.

The Parisian Bank, founded in 1874 in the Rue St. Georges, has recently removed its quarters to the Rue Chanchat: so here an elegant building has been erected under the care of M. Sauffroy, architect, on part of the ground occupied by the old Opera-house, the materials used being stone and iron. The entrance opens on to a spacious hall, round which the different bureaux are placed. On each side of the vestibule are offices where business of a private nature is transacted. On the first-floor are the offices of the president of the council, and the directors; reception saloons, and the spacious board-room, which occupies the whole of t façade, and is in itself a handsome example decorative art.

The cellars are lined with iron,—floor, sid and roof; in case of fire water can be tur on from a plug arranged in the walls, and cellars almost immediately inundated. Al the sides of the first cellar are ran, immense iron safes for the reception of Fre and foreign bonds, shares, deeds, bills exchange, gold and silver coin of all natio in this cellar also can be deposited, under s bullion, gold and silver plate, diamonds, precious stones, &c. Another cellar, no solidly constructed, is destined for the recep of other iron safes, which can be hired at a varying from 5fr. to 12fr. per month, or f 50fr. to 120fr. per annum; each safe will h a secret fastening, which can be selected the "locataire" from 15,625 combinatio



THE PARISIAN BANK, PARIS.—M. SAUFFROY, ARCHITECT.

ch will be further provided with a separate ent lock, so that any one can have his or private safe at the Parisian Bank, guarded and night, and be at liberty to visit it daily m ten to four o'clock, Sundays and fête days epted.

ts excellent organisation has hitherto made Parisian Bank a success. The cost of the lding was 16,400*l.*

ST. ALBAN'S ABBEY.

THE NAVE ROOF.

SIR,—See the disappointments which come to vocates of conservative restoration! When published my drawing, showing the state of case with reference to the roof (p. 69, *ante*), was supposed that everything would be at an directly,—the Faculty Committee and the re important subscribers would, of course, et on the roof, opposite the west face of the er, set up some cords to represent the roof- s, and pass a resolution on the spot, ordering maintenance of the present roof, and letting proposal for the high-pitched roof be quietly gotten. No one need remain more than a rter of an hour on the roof before being dy to vote on the question. A nail driven in the apex of the proposed roof, and a cord d to represent the proposed roof-line, would w that there are *no traces* of such a roof- upon the tower. The cord would run in t of tilework which has not been altered e the original construction of the tower. line which it is proposed to follow would s be proved to be merely a new roof-line, med because it would allow the parapets to ain with gutters inside them. The imple- nts of investigation would consist of one nail 30 ft. of string, and the "*method of investi- ion*" would be tying one end of the string to nail, and holding the other end.

Ir. J. O. Scott, in his letter in the *Builder* 105), seems to convey that something pro- ons is necessary in order to get at the state he case in this very simple matter: this is e a mistake. He also implies, but I think not venture to assert, that my drawing is rrect. I do not profess to be infallible, nor ndid, and am, therefore, entitled to state I cannot confess being careless. In natter of this importance, the setting-up s were not only directly tested twice, but indirectly tested in various ways. The tiles e not simply sketched; the more important s were traced from the wall upon tracing er; they were all counted, and their dimen- s taken. The work of several hours some- es only gave me a piece of tilework about . high. I have given to Mr. Scott and all ers a distinct challenge that *my* drawing may ubmitted to any amount of scrutiny. I was l aware that the temperature was frequently ll below freezing," and that the task might e served as a competitive examination among nteers for Arctic service. When visiting Alban's again and again, I was at times pted to give up the task, and should not e carried it to the end if it had been a ques- of mere personal credit. It seemed to me nestion of principle of the most important d, involving the whole theory of conservative toration, and, by implication, the credit of whole profession of architects for patient stigation, and honest acquiescence in the ult of it. I am inclined to think that many mbers of the profession would have under- en the same duty if they had known the lding as intimately as

JAMES NEALE, F.S.A.

IR,—Those who support the Faculty Com- tee should be prepared to answer the follow- questions:—Question *a*. If a line is drawn ng the two lengths of actual groove which st on the west face of the tower (A B and) on page 69, *ante*), will these grooves be nd to be parts of one and the same groove? ave pulled a cord along these grooves, and lly see no room for doubt on the subject. y are parts of one and the same groove,— intermediate portion having disappeared n new tiles were inserted. Mr. J. O. Scott ears to fancy that the two lengths of groove in some way independent of each other,— ts of two similar grooves made at different es.

uestion *b*. If a line is drawn along the line he proposed roof (G H on Mr. Neale's draw- ing), does it pass over unaltered original tile- work?

If those who support the Faculty Committee answer question *a* as I do, and as I think every- one must, they deprive the proposed roof-line of the only piece of *direct evidence* in favour of its previous existence. Mr. Neale's drawing is no doubt correct as to the line G H passing over original unaltered tilework for considerable portions of its length.

Thus, if "Yes" must be answered to both questions, the proposed roof-line is acknowledged to be an assumed line,—which cannot be found on, or deduced in any way from the condition of, the tilework of the tower. If any one is disposed to answer "No" to either or both of the questions, the answer should be given *distinctly*. The "ultimate court of appeal," as Mr. Hebb calls the general body of the public, need not be kept without an answer when it can be conveyed in a monosyllable.

S. FLINT CLARKSON.

SIR,—I do not wish to enter into the controversy which is now being carried on,—principally on one side,—about the roof of St. Alban's Abbey, having already shown my opinion on the subject by withdrawing from the Faculty Committee, rather than be a party to a measure which I regard as "impolitic, mischievous, and needless." The impolicy of permitting such a thorough innovation in an ancient building in defiance of the opinion of the most competent architects and our principal archæological societies, is becoming every day more and more apparent. The mischief cannot stop with the roof of the nave, but the alteration in that roof will almost inevitably lead to the destruction of other historical features of the building; while the needlessness of the alteration must be patent to all, inasmuch as one-third of the existing roof is acknowledged to be in good repair, and the remaining two-thirds to be susceptible of being "rendered sound and serviceable."

My object in addressing you is mainly for the purpose of again calling attention to one or two points in the history of the Abbey, which appear to somewhat overlooked in the discussion which is now going on.

We read in the "Gesta Abbatum St. Albani" that in the year 1323, when Hugh de Eversdone was abbot, two great columns of the south side of the church gave way at their foundations, and fell one after the other. Within an hour afterwards the whole of the roof which had rested on those columns, together with part of the south aisle and nearly the whole of the adjoining cloister, fell to the ground. The portion of the wall which fell may now be identified by the Decorated bays of the south wall, which in the clearstory extend about 100 ft. in length. Though the repairs were begun by Abbot Hugh, it was not until more than twenty years afterwards, during the abbacy of one of his successors, Michael of Mentmore, that the building was completed and the new work covered in.

The date, therefore, of a newly-constructed roof of one kind or another, and extending over 100 ft. of the nave immediately west of St. Cuthbert's screen, may be fixed about the year 1345.

When it is borne in mind that it was Hugh of Eversdone who completed the lady-chapel and its ante-chapel, the roofs of which are of low-pitch, it appears by no means improbable that this renovated roof over the nave was of the same character. It is true that over the south aisle the roof was of high pitch, but over the north aisle a low-pitched roof must already have been placed before the days of John of Wheathampsted (1420-1464, with an interval), or he could not have inserted the windows in the triforium on the north side of the nave to make "the church appear more light and glorious." As to the date of these windows, Mr. Neale seems inclined to place it before 1430.

If we assume that Abbot Mentmore's roof was of the original high pitch, and not of the low, we are in this difficulty,—that a roof erected in 1345 became, within about a century afterwards, so ruinous that, in common with that over the rest of the nave to the west, it had to be replaced by one of low pitch. The low roof west of St. Cuthbert's screen is all of one character, though some parts of it may have been more disturbed in modern times than others, and we can conceive it possible that this part of the nave-roof may have been of the low pitch, while that nearer the tower was still of the high. We cannot, however, well regard the part of the roof next the tower as having been the first to be lowered, while a high-pitched roof still existed over the same building to the west. It is, therefore, of importance to determine the date of the roof over the three eastern bays of the nave. There can, I think, be little hesitation in assigning the painting of the ceiling in this part of the church to the first half of the fifteenth century. The painting is also, according to Mr. Neale, on the main beams of the roof as well as on the panels, so that the roof must be of at least as early a date. Mr. Neale's recent researches have shown that on the western face of the tower there are no traces of any roof intermediate in date between that of Norman times and that at present existing. What, then, can be more likely than that the western part of the nave-roof was reconstructed of the low pitch after the fall of a portion of it in the fourteenth century, while the alteration of the remainder was carried out early in the fifteenth? Had such an extensive work as that of re-roofing the whole of the nave been undertaken during the fifteenth century, we should surely have found some record of the fact in the pages of the chroniclers of the abbey.

I am aware that Mr. Street has assigned the construction of the western part of the nave roof to the close of the fifteenth century, but, with all deference to his infinitely superior experience and knowledge, I would call attention to the fact, that the construction with three vertical posts supporting a ridge-piece and two purlins, all placed vertically, and with braces from the king-post to support the ridge-piece, are features which the western part of the nave-roof has not only in common with that of the nave of South Mimms Church, but also with the roof of the ante-chapel of the lady-chapel at St. Alban's, which was constructed about 1320. Curiously enough, the foliation of the painted panels of the nave-ceiling at St. Alban's appear to have been imitated also from the carved panels of this same ante-chapel roof.

One word as to what is likely to be the fate of the abbey unless some such course is adopted as that advocated in your columns by Mr. John Hebb. It is simply this, that the old roof will in all probability be absolutely destroyed, and not even preserved within the new roof (like a skeleton in a cupboard) as was last proposed. Moreover, the new deal roof, which, as I have all along maintained, cannot be of "the original pitch indicated by the weathering on the tower," is likely to be covered with slate and not with lead, for the preservation of the old roof in any form is contingent on sufficient subscriptions being raised for the purpose, and the funds, present and prospective, at the command of the Faculty Committee, were not when I retired from that body anything like sufficient to meet the expense of even covering the miserable deal roof with slate.

Possibly money may have since come in, but every one I meet is so thoroughly discontented with the course adopted by the committee that I much doubt it. Surely it cannot be too late to arrange with the contractor to substitute sound repairs for injudicious innovation, and thus restore the confidence of the public. Without this is regained, it requires no prophet to foresee that the reparation of the eastern part of the cathedral, which is much more pressing than that of the eastern part of the nave roof, is likely to be postponed to another generation. Perhaps, after all, it is as well that it should be!

JOHN EVANS.

SIR,—Is there no way in which the architectural profession can settle for the world at large a simple matter of fact, not more difficult to settle than whether in a town twenty miles from London a table is in one room or in another?

I have followed very carefully the controversy on the question of the nave roof, and when you gave, in a recent number of the *Builder*, that most valuable drawing by Mr. Neale, I anticipated that the matter would be finally settled. The roof-line indicated by the grooves on the west wall of the tower evidently could not be adopted while the parapets remain. The roof-line which the Faculty Committee proposes to follow does not appear to be warranted by any existing remains on the tower itself. I have looked in vain in drawings and reports for information in respect to this proposed roof-line, except that Mr. J. O. Scott has stated "that the evidences are by no means conspicuous." I cannot find any of the evidences mentioned, and

am driven to the conclusion that the Faculty Committee either have no case, or that it has been incompletely presented.

It is much to be wished that the Institute of Architects would express an opinion on so important a professional matter. It is not this building only which is in question, but the theory of restoration as it is to be pursued throughout the length and breadth of the land. The Society of Antiquaries and other societies have already made themselves heard on the side of conservative restoration; and surely that of the architects ought not to remain silent about one of the most important questions which has arisen in our time. Before a special general meeting be held, I would suggest that a small jury of the leading members should, with the consent of all parties, be kindly requested to visit the abbey as representatives of the Institute to decide finally about the facts of the case. After that, a full discussion might take place, and, it may be, a vote taken; the body of architects would not then appear so indifferent as to the proper care of our ancient monuments as some ill-natured people are disposed to think they are. BOWES A. PAICE.

SIR,—So they are proposing to place a new roof on the old walls of the time-honoured abbey church of St. Alban's?

As well may they make a covering or a high roof, in an *improved* style, over the old Norman arches and columns of the staircase near the King's School, Canterbury.

I certainly have no enthusiasm for what is called "restoration," having a respect for ancient buildings, not simply because they are old, but because they represent the times, the spirit, and the opinions of the people for whom they were constructed, and I hate shams,—sham Norman, sham Decorated, and sham Perpendicular.

I do not heedlessly condemn all restorations. Some ancient buildings, doubtless, may be improved by putting back something which once existed, and which made them more complete. I must be assured, however, that that something did exist.

Improvements of old buildings are too often the crude emanations of the fashionable notions of the day, and of an artificial taste as evanescent as, taking all the surroundings into consideration, it is inappropriate.

I trust the abbey, as far as its present roof is concerned, will be allowed to remain intact. There is plenty of scope for enterprising genius, and speculative architecture, in the constant requirements of the present day,—for new churches, new hospitals, and new asylums.

JOHN BRENT, F.S.A.*

ST. ALBAN'S TOWER AND CEILINGS.

SIR,—I trust that Mr. Clarkson is right, and can prove that the last century's circular windows in St. Alban's tower were innovations, and the present ones truly restored; because the circles would plainly not admit sufficient light, whether the stories above are used for bells or opened to the top; and I have always thought the present windows had a very genuine look in themselves, though a spurious one in Carter's drawings, who lengthened and classicalised them.

As for the mare's nest of the choir ceiling, it may be true that there have always been sixty-six panels, in eleven rows of six, since the fourteenth century; but no less true that, ever since engravings have been current, in books or periodicals of any sort, they have "always" depicted but twenty-four panels, in six rows of four; always copying from Coney's great perspective of the nave, which carries the four files of barbarous sham panels right through to the tower. As it happened that the last time I had viewed the interior, and only time with much attention, a screen of canvas or plaster went up to the roof, exactly where the abomination ends, I was really in the position of a foreigner, familiar with it only through these nest-building mares.

Speaking of abominations, however, Heaven forbid I should say a syllable tending to help, in these days, those who would touch anything, genuine or spurious, abominable or not, that can possibly be let alone. This is no time, nor will ever be a time, while the Canaanite and Hivite are still in the land,—the Percentage-on-outlay-payer and Percentage-on-outlay-receiver,—for cleaning off distemper, or anything of the sort. Days may come, let us hope, to be seen by some of us, as different from these as Bluff Harry's latter days from his earlier. Despair can least of all be entertained in presence of monuments like this, reminding us what big-looking orders of men have gone on,—"they ate, they drank, they planted, they builded, till the day," . . . . and how profoundly appropriate was the text wherewith Ruskin closed his first architectural volume, "The sun was risen upon the earth when Lot entered into Zoar." As it was with Dominicans and Franciscans, "white, black, and grey, with all their trumpery," even so, one of these fine summers, with R.I.B.A. and sundry royal things besides; and when some debased professions and trades have been cleared off, debased paintings, yea ceilings, and even roofs, may safely begin to follow, but never till then. And then, as the restored design of the main ceiling will have about 280 panels, it may seem exactly made for portraying, in medallion heads, the whole army of British and English martyrs, who followed St. Alban during the predicted "thousand, two hundred and sixty" years of their witnessing (Rev. xi. 3); but most of them in the last half-dozen, precisely while those lately-effaced distemper daubs were daubed; for Carter's engraving of them fixes their date, I think, to Philip and Mary. They were too inartistic to be earlier, and nobody later would have let the Assumption be repainted. But, I repeat, all conceivable physical restoration is only work for good times coming, and Heaven forfend it at present. For, as the monkish palindrome on the fonts used to be written,—

Νιψον ανομηματα μη μοναν οψιν.

That is to say, "O ye restorers, begin by scraping off percentage from hands, instead of distemper from ceilings." E. L. G.

QUANTITY SURVEYORS AND ARCHITECTS.

ACTION FOR FEES: GORDON *v.* BLACKBURNE.

THIS action was heard in the Lord Mayor's Court, on Friday, the 24th ult., before Mr. Woodthorpe Brandon, Assistant Judge. It involved a question of considerable importance to architects and quantity surveyors. Mr. Dickens appeared for the plaintiff, and Mr. Bremner for the defendant. In stating the facts, Mr. Dickens said the plaintiff is a surveyor, carrying on business at Weavers' Hall, Basinghall-street. Defendant is an architect practising at Blomfield-street. On September 2nd last, plaintiff received a letter from defendant making an appointment, and at the interview which ensued defendant stated that he wished plaintiff to take out some quantities for a house to be erected at Forest-gate, at the same time requesting terms to be specified. Plaintiff remarked that, as it appeared a small matter, his charge would be 2½ per cent. Three days later plaintiff received from the defendant the drawings. Plaintiff took out and completed the bills of quantities. Previously to completing them, he saw the defendant, and asked if he should have the draft quantities lithographed for him. Defendant replied in the affirmative, and accordingly the quantities were sent to Messrs. Sprague, in order that they might undergo the ordinary lithographic process. Messrs. Sprague returned the quantities, which were sent to Mr. Blackburne, so that he might forward them to his builders. Plaintiff on October the 14th called on the defendant for a cheque on account. The latter said it was inconvenient to pay anything at that time, but he would send a cheque in a few days. Plaintiff then asked who had accepted the tender. Defendant answered that the lowest tender was too high to suit his client, and that the drawings would have to be modified. He added that he had a difficulty with his client, inasmuch as he had not received instructions direct, but from a third person. Plaintiff remarked,—"How foolish it is to undertake work and render yourself liable for quantities upon such a slender basis; I must not suffer for that." On October 29th the plaintiff wrote to the defendant to the effect that he should look to him for payment; but as he had not got a settlement of his claim he was compelled to bring the present action.

The plaintiff was called, and in his examination stated that he had often taken out quantities for other architects, and that it was usual to look to the architect for payment, even when a tender was accepted and the work went on; it was the custom of the profession that the architect paid the quantity surveyor, and was reimbursed by the builder; when the work fell through, the architect paid the surveyor, and charged the amount to his client. He supposed that he must have seen the name of the owner (the defendant's client) on the drawings and specification, but he knew nothing of him.

Mr. Meeking, architect, was called for the plaintiff, and deposed that the custom of the profession in their dealings with surveyors was that the architect instructed the quantity surveyor, and that the latter was sometimes paid by the architect for the owner, and sometimes by the builder; the usage when no tender was accepted was for the surveyor to look to the architect for his fees. Mr. Charles Young, architect, confirmed the latter statement.

Mr. Bremner, for the plaintiff, submitted that there was no case to go to the jury. The defendant when he employed the plaintiff was acting according to usage as the agent of the owner, a disclosed principal, whose name was on the drawings and specification, and cited "Moon *v.* Witney Guardians, 3 Bingham, N.C. 814."

The Assistant-Judge held that the case must go to the jury to decide whether there was a personal employment of plaintiff by defendant or whether the defendant employed plaintiff as an agent, not disclosing his principal; if so, the plaintiff could elect whether he should sue against principal or agent, but if the jury should find that there was only the ordinary relation of architect and quantity surveyor between defendant and plaintiff, and that defendant acted for a disclosed principal, then the verdict would be for defendant.

Mr. Harston, architect (A. & C. Harston), was called for the defendant, and deposed that the usage was for the architect to employ the surveyor as agent of the owner, and that the fees of the quantity surveyor were paid by the builder. It was not the custom for the architect to pay the surveyor in cases in which the building was not proceeded with, but for the owner to do so, having been made responsible by his agent, the architect. His firm had never paid the fees of a quantity surveyor, nor was it the custom to do so, as had been stated by the plaintiffs' witnesses.

Mr. Francis, architect, and a member of the council of the Institute, corroborated Mr. Harston.

The defendant's counsel addressed the jury, saying that of course the architect gave the order; he always instructed the quantity surveyor. What would be the use of a building owner trying to do so? He does not understand the matter, the terms used are a jargon to him, and he leaves it to the architect.

Mr. Dickens, for plaintiff, said this was really an undefended action, and defendant was trying to evade a liability properly incurred both by custom and special contract, and his client had nothing to do with the owner, Mr. Leftley, of whom never heard of him.

The learned Assistant Judge directed the jury that the amount, 22*l.* 10*s.* 3*d.* was not in dispute, but only the liability of defendant to pay it. There was no doubt of the usage that when a tender was accepted, and the building went on, the builder paid the quantity surveyor, having previously added the amount of the quantity fees to his estimate, so that eventually the fees came out of the pocket of the building-owner. But in this case there is no builder, as no tender has been accepted. They would consider whether there was any relation between the parties other than the ordinary one which subsisted between architect and surveyor. Plaintiff says there was a personal employment and promise to pay. They would have to consider the evidence and look to all the circumstances of the case, and say whether that was so. If the plaintiff made aware that the defendant was only the architect to Mr. Leftley, or were there circumstances such as to justify the plaintiff considering that he was employed by the defendant as principal?

The jury found for the plaintiff, and in answer to the judge said that they found that the plaintiff was employed by defendant person defendant acting as principal.

* The feeling in opposition to the unwise determination of the committee to change the character of St. Alban's Cathedral increases rather than diminishes. We have received letters from men of all sorts and conditions, but are compelled to restrict ourselves to a selection.

THE POETRY AND ROMANCE OF ARCHITECTURE:

TH A VIEW OF SHOWING ITS CLAIMS, AS A FINE ART, TO GREATER POPULARITY, AMONG THE EDUCATED OF BOTH SEXES, THAN IT HAS YET ENJOYED.*

ARCHITECTURE has the unenviable distinction being the least popular of all the fine arts, , fewer educated people take interest in it know much about it. The following remarks e offered with a view of showing something the attractiveness of its character, and what terest, from various circumstances, attaches to for all. They were written some two or three ars ago, and are the result of impressions of any years' growth.

That architecture should be somewhat less red and sought after than poetry, painting, ulpture, or music, is, perhaps, not surprising, t that it should be at all slighted or neglected educated people generally is very surprising leed. But that it is slighted is a fact, and at great ignorance prevails on it is another; oofs of which abound throughout literature, erever allusion is made to architecture for ustration or otherwise. The greatest differ- be between it and the other arts lies in its nexion with, and sworn fealty to, material uirements, and its necessity of working under trictions therefrom arising. We see this dis- tion observed in most styles, including some the greatest the world has yet seen; in those Mediæval Europe, for example, in which a minent aim was to engraft art and beauty on features of utility and necessity, and to ry beauty into domestic as well as into sacred l monumental edifices. The Greeks, it is e, ignored the principle, and drew a line ween domestic and public architecture, re- rding only the latter as possessing the rank a fine art. But surely the course pursued by Mediævalists was the true way, and most sonant with the method of Nature, who con- res to give to everything, however humble, modicum of beauty.

The restrictions, however, arising from phy- l requirements are not so grievous as might supposed, seeing the most important features architecture,—doors, windows, &c., are as ceptive of beauty as if they were for beauty y.

n the view I have adopted of it, while all the er arts minister to our higher necessities y, architecture,—under which term I include gineering, for all structural works, bridges, tles, lighthouses, &c., ought to be permeated h the spirit of beauty, and not alienated m the life of art as they generally are,— nisters not only to the higher but to the lower physical. It is the art of building usefully d beautifully, which, connecting it at once with ry part of our nature,—the physical, the otional, the intellectual,—connects it also h every part of our life, and everything we d dear, and which beautifies and ennobles . And with every dream of future happiness t cannot imagine a scene in

"Some bright little isle of our own"

hout some bits of architecture here and re; and the lightest visions that float round artist's or poet's head are sure to disclose npses of snow-white arcade or pavilion, ice or oriel window peeping through their vergreens and amaranths. A genuine produc- n of architectural genius is in itself an epitome the world; the author has succeeded in using the rays of the universe. It appeals to entire range of our faculties. Like Nature self, it has reference to, and is in harmony ch, man's entire constitution. His physical nts are supplied by it, as shelter and warmth. is a means of gratification to our social pathies. Our understanding, our passions, imagination, are alike gratified by it. This versality of architecture gives it the prece- nce of the other arts. It has to go before m and prepare the way. Where architecture not there is no place for them; at least, in its ipient state, as building, it is the oldest of arts.

No institution can be established without the of architecture. It gives to art its gallery, science its museum, to literature its library, education its college and school, to benevo- pe its hospital and asylum, to religion its mple. It gives also to affectionate memory the departed its shrine; and it is to archi- tecture chiefly, whose monumental memorials are of all such works the most famous and the most durable, that the great master-spirits of the world, before the invention of printing, trusted for posthumous renown. It is even associated with the future state, for it enters into the account given of heaven in the Scriptures, where we read of our Fathar's house, and of a river the streams whereof shall make glad the city of God; the wall of which city is jasper on a foundation of precious stones, the pavement of pure gold, and every one of the twelve gates a pearl. It is otherwise figuratively referred to in various parts of the Bible. "In the time of trouble," says David, "he shall hide me in his pavilion; in the secret of his tabernacle shall he hide me."

All this, and the influence of building materials, climate, &c., render architecture, like ourselves, the creature of circumstances, which she is to a greater extent than any other of the fine arts. It is true this material and utilitarian element brings her into connexion with some low offices—kitchen and scullery, and those melancholy necessities of humanity, water-closets, sewers, cesspools, &c.,—and obliges her to call in the aid of certain grossly material and mechanical arts or handicrafts called masonry, bricklaying, carpentry, joinery, plumbing, &c., with soiled hands and aprons. But these are merely her instruments or ministers, who build like Amphion to her music, which render even them more honourable than most other handicrafts, from their connexion with art and beauty, and enables them to boast more than others "the nobility of labour, the long pedigree of toil." Moreover, they are only seemingly, not really, low, being, along with ventilation, heating, lighting, based on or in some way connected with various sciences,—chemistry, geology, algebra, conic sections, geometry, statics, dynamics, — which bring them into relationship with astronomy and the sublimest pursuits of the human mind. They therefore add to rather than diminish the lustre of architecture, which includes more arts within it than any other art.

But if they degraded her, she would be fully indemnified for any loss of dignity by the ministration of sculpture and painting, two superior arts as considered in themselves, who, along with landscape gardening, become her handmaids for the finishing and elevating of her works. Architecture can fully satisfy the mind without their aid,—that is, she is a perfect art in herself, and independent of them, as poetry is of music. But on certain architectural surfaces,—walls and ceilings, pediments, metopes, friezes,—painting and sculpture may bestow their highest efforts, in the shape of pictures and *bassi relievi*, not as independent works, making use of the building as a frame, but in strict subordination to the genius of the architecture, for its embellishment, and for that alone. Such is the sculpture, I believe, of the pediments, friezes, &c., of the Parthenon by Phidias; such are the paintings of the ceiling and walls of the Sistine Chapel by Michelangelo. The Apollo Belvidere, the most ideal god-like statue among the numerous remains of antiquity, may for aught we know have been an architectural ornament. Even poetry may be considered a handmaid of architecture; for she can supply inscriptive matter, giving rhythmic utterance to the sublimest truths for architectural adornment. And not only has the highest art been employed in architectural decoration, but the richest materials,—gold and precious stones, as in tombs and palaces of India, and in the golden house of Nero, for example.

Another distinction of architecture among the fine arts is that her works appear as a second, an intellectual birth of nature, and give as it were the finishing strokes to the earth, over the natural features of which they have the advantage in showing an inside as well as an outside. Such are detached buildings of all ranks strewed over the country, — cathedrals and abbeys, castles, palaces, mansions, villas, cottages, village churches,—which become gems and jewels of the earth, having a magical influence on its aspect. How delightful to cast the eye over a wide plain, studded with these mementos of human life! some time-honoured, others comparatively recent,—one within its own domain of orchard, garden, park, or thickly and lovingly shaded with trees,—another isolated, reminding us of the innumerable ties that bind us to humanity of every grade, and how humanity of every grade is linked to the Hebe-mother, earth and nature, whose love for these creations of man is emblematical of her love for him. She embraces these children of architecture as she embraces her own works, rocks, trees, and hills, as if she recognised them as her children's children. How they rescue the scene from that melancholy loneliness of expression which inevitably attaches to scenes composed of natural objects only. How often is an old ruined castle, surrounded by its turrets and battlements, sometimes lighted up by a ray of orange-coloured sunlight, at others half lost in fog or mist, the life and soul of the landscape, the removal of which would produce a mournful and intolerable blank!

This new birth of nature includes some of man's greatest achievements, in which we see him at his grandest, competing (if I may so speak) with his Creator; in some lands embodying a power that seems superhuman, as in the Great Pyramid, the works of the Pelasgi, the Indian cave-temples. These, as indeed some domed and vaulted buildings, as Milan or Amiens Cathedral, or the choir of Beauvais, "a church in the air," for example, which latter shows stone vaulting 167 ft. high, the strain of which is conveyed to the ground by buttresses, if they were to tell their own tale by inscriptions, in the manner of the Moorish buildings, might exclaim, with the Psalmist, "We are fearfully and wonderfully made." Architecture, as in some of the works just mentioned, soars high into the air and burrows into the ground,—and no art does so much to enliven and charm the world, and to enrich it with beauty and sublimity.

As the most interesting objects to man are man and his works, these must always form the greatest attraction of travel. The works of God, it is true, are great, sought out of all those that have pleasure therein; but that "God made the country while man made the town," a sentiment, as I think, unworthy of Cowper, its author, is scarcely a correct view of them,—for God made both; and the town has the advantage over the country in embodying the wisdom of both God and man. Moreover, natural scenery, though it differs with every country, presents a general sameness, and appeals to a comparatively narrow range of sympathies; while the works of the architect show striking change with every country and age of the world; and the buildings of the East are as wide apart in character from those of the West, and the edifices of ancient from those of modern times, as the poles asunder. What is America, with all its gigantic natural features, its dense forests, and mighty rivers, sublime as they must be in the almost uncultivated majesty of nature, in point of human interest, compared with Europe or Asia? What is the St. Lawrence or Lake Superior, or the Falls of Niagara, to the pyramids and temples of Egypt and Greece, or the stupendous sculptured caverns of India? Natural objects are more or less dependent on times and seasons for their attractions; but at no period of the year can these works of architecture be viewed without exciting the liveliest sensations of wonder and delight. In the most beautiful countries of the globe architecture heightens the beauty or sublimity of the fairest landscapes.

> "Earth proudly wears the Parthenon
> As the best gem upon her zone;
> And morning opes with haste her lids
> To gaze upon her pyramids,
> O'er England's abbeys bends the sky
> As on its friends with kindred eye."

What is there in Hindostan compared to the temples of the Hindoos and the palaces, mosques, and tombs of their Mahommedan conquerers? Its natural productions, the tamarind, the banian, the peepul, with the bright, rich green foliage and lustrous flowers of which temple and tower, pillared arcade, and balustraded terrace are interspersed, may be transplanted and made to grow in the plant-stoves of England, but not the architecture. It is the latter, I believe, more than anything else, that renders the gem-fraught land a land of wonders. The isolated excavated Temple of Kylas, which has been termed the Paradise of the Gods, raises, it is said, mingled emotions of pleasure, amazement, and reverential awe in the breast of the most stolid visitor. What is there of natural feature in France compared to the great Mediæval cathedrals? What amid the charming scenery of Andalusia would conjure up fairy scenes like the halls and courts of the Alhambra? What images more impressive does the name of Egypt and the Nile call up to the imagination than Karnack, Luxor, and the Memnonium, with their

* By Mr. Samuel Huggins. Read at a meeting of the erpool Architectural Society, Wednesday, January 22.

accompaniments of obelisks, sphinxes, colossi, which, we know, have been objects of wonder to the most intelligent visitors since the age of Herodotus?

Enter the cities. What are they but architecture which strikes at once as the eyes, nose, and mouth of the place? What was the hundred-gated Thebes but temple-palaces with their lofty pylons? What is there at Athens but the Acropolis and its architectural treasures? What is Venice but an architectural gem set in the brightest of seas, reflecting the brightest of skies? What are Florence and the Eternal City but thier charmed stones,—Nuremberg, but its harmonious bricks?

Again, most educated people have a fondness for history, as, next to what is to be in the future, nothing is more interesting than the inquiry into the past. But here are history's landmarks,—her rolls, her tablets. Architecture is history's self. In it history is more vividly and unquestionably written than on the printed page. In the career of architecture, its multifarious varieties in different countries and mutations in course of ages, we have reflexes of human feelings and human genius as influenced by the various circumstances, more especially religion, and the inherent mental peculiarities of race under which man is placed in the world. So much is this the case, that a diagram chart of the styles of architecture is a rough chart of political history, of ethnological history, and history of religions. Few people are aware, while reading of the rise and fall of the ancient empires, the rise and progress of Christianity, the conversion of Constantine the Great, the division of the Church into the Latin and Greek communities, the incursions of the Teutonic tribes upon the Roman empire, the rise and conquests of Mohammedanism, the Crusades, the Iconoclastic persecution in the Eastern Empire, the Norman conquests in Italy, France, and England, and invasion of Apulia and Sicily, the capture of Constantinople by the Turks, the Reformation, the expulsion of the Moors from Spain, that these events have all their corresponding ones in the history of architecture, and have built themselves on to the surface of the earth. It is said, I doubt not with truth, that the Xanthian marbles in the British Museum show the three-fold connexion between Assyria and Persia, Persia and Asia Minor, and Asia Minor and Greece. The vast despotism of the Cæsars, gradually effacing all national peculiarities, and assimilating the remotest provinces of the empire to each other, may be read in the uniformity of style of the architecture of those centuries, which was all Roman over the whole Roman or civilised world till the fifth century, when the Byzantine took its rise. There were no other styles practised in the world at the time except a Sassanian, a Buddhist and Chinese. The extensive commercial intercourse of the Venetians with the East, commencing with the Crusades, which opened to them all the Syrian harbours, and led to a universal monopoly in the Greek empire, and to a partial sovereignty in 1204, may be read in the beautiful Oriental character of their architecture, and their proneness to colour. The origin of the Northern Gothic is similarly traceable in history. There is, at least, a striking analogy between the manner in which the qualities brought with them from their forests and marshes by the Northern warriors,—energy, independence, the dread of shame, the contempt of danger,—mingling with those of effeminate classic races in the Roman Empire, produced, after generations of ignominy and confusion, the modern European character, and the slow generation of the Gothic style of architecture by the same people out of the decadency of the classic Roman,—Christianity, I need scarcely say, entering as an element into both.

The cathedrals of Europe are monuments of Catholicism, as Versailles and the Escurial, the Mafra and the Kremlin, are of monarchy or kingly power, and as the Hôtels de Ville of Ghent, Louvain, and Ypres mark the rise of the free cities and progress of popular liberty. What throws light on ancient Roman civilisation, and shows its contrast with the Christian, like the blood-stained Colosseum? And is it not in the great old palaces of Italy that we learn most about the ancient Italian aristocracy? What could have thrown so much light on, or made so startling a revelation of, the social and domestic condition, the morals and manners of the people of Magna Græcia, at the epoch of Christianity, as the exhumation of Pompeii, which was the skeleton or shell, so to speak, of the deceased community which had occupied it? This luminosity of architectural remains it is which gives to the ancient cities of Europe and Asia their surpassing interest, and renders the smallest remains of ancient buildings everywhere the objects dearest to history, to knowledge, to the human mind,—which may more especially be said of the relics of temples and shrines of the various oracles and religions, from their psychical connexion with the different faiths of mankind. By its architecture, Rome, aptly called the Eternal City, is the great link that connects the ancient and modern civilisation,—the world of Paganism and the world of Christianity. It is the grave of the old world and the cradle of the new. Look on the Triumphal Arches, overgrown with ivy and wall-flowers, and you have evidence of her rule as mistress of the world, when through her streets passed the ivory chariots of the conqueror, the golden eagles, the laurelled fasces, the shouting legions, in victorious procession. "When I search," says Lamartine, "amongst my impressions of Rome, I find two which overwhelm all others,—the Colosseum, that work of the Roman people; St. Peter's, that *chef-d'œuvre* of Catholicism." What is perhaps most important to observe therein may be traced, amid monuments and mementos of everything that is interesting in the history of the world, the gradual rise and growth of modern civilisation and refinement. As remarked by Goethe, who reckoned a new birthday from the day he entered Rome, wherever you turn your eyes you meet something imposing or affecting from its history or associations.

But it is important to observe that great buildings do not merely bear witness to the great deeds of former generations, like the written page; they are among the great deeds themselves, and independent of written evidence, by which architecture becomes more mixed up and identified with general history and great public and political events than any other of the fine arts. They are the greatest sufferers from war, and stand as monuments, not only of the wear of time, but of the wrath of man. The latter variously illustrates great events; but architecture is essential to them. The erection of a great building is a great public event itself, and great buildings form the chief trophies of the power and magnificence of the conquerors and potentates of the earth; and pre-historic buildings are the more valuable for being the only evidences of their creators remaining.

In these, architecture unites itself with mystery, and carries the mind back into mythological ages, linking the real and known with the half-forgotten time, and with heroes and demi-gods,—with Hercules, with Perseus, with Theseus, and the rest. The Pelasgic and Cyclopæan remains seem, indeed, to be the work of such superhuman agents, as do the vast excavated dwellings and sepulchres in the rocks of Petra, supposed to be the Bozra of the Bible. In Ellora and Elephanta the eye roams bewildered over scenes of romantic beauty, which it is baffled in its endeavour to trace to human agency.

An ancient building may be said to hold the spirit of the age to which it belongs embalmed, and to be fraught with memories of all the events that have occurred in and around it; which gives it an interest for creatures of a day like ourselves it would be impossible to overestimate. With what awe we should look upon a man that had seen William the Conqueror, or even Queen Elizabeth! But an edifice that has seen these has its face so wrinkled, so thought-lined and marked, if I may so speak, by time, that it seems as conscious almost as a human being; by which it has gained a power over the imagination that no combination of natural features could have. Who visits the Parthenon, looks on that which has looked on Phideas, and which reflects the loving gaze of Pericles. In our own country, what has not the old Tower on the Thames witnessed of England's worthies and martyrs? Charles I. saw his army defeated from a bastion-tower of Chester. Charles is gone, but the tower which remains saw the same event, and you cannot gaze bodily upon that tower without gazing mentally upon the battle.

Though domestic buildings are not generally the most ancient, yet there are none to which this charm clings more than to them. Gazing on some old houses, it is difficult to regard them as inanimate objects. They appear to have a life and history of their own as contemplative and enduring as a human existence; and as rich with long experience of sunshine, and storm, and the events of birth, marriage, and death, wherewith they have joyed and grieved.

But architecture, for its own sake, should be more popular than it is. It is not, any more than philosophy, "harsh and crabbed," but "musical as is Apollo's lute." Its breath is poetry. It is to the eye what music is to the ear, and goes through it as a gate to the soul itself; which I believe is felt in a high-class church, where sublime architecture has a charm to uplift the soul, and aid a divine exercise of all the powers and passions of the mind, like grand music. Architecture is, equally with the other arts, which are all intimately bound together by analogies and sympathies, related to the divinest of all human pursuits—poetry. It has, indeed, a more mental or ideal origin than painting, sculpture, and music, being not like them a direct, but an analogical imitation of nature both in general design and decoration; and the highest architectural ornament, as in that rare architecture wherein the beautiful "developed its ripe proportions," is most ideal.

There is, therefore, something anomalous in people fond of music and poetry passing by an edifice, embodying any artistic genius, without notice, at least if they make any pretentions to taste, which is the inward light or intelligence of universal beauty; a truth which accounts for the fact that in Greece, the birthplace of true art, poetry, architecture, painting, sculpture, and music sprang up together the beautiful children of one birth.

But all who are susceptible of pleasure from a beautiful human face, where beauty and grace may be said to have made their home, should be charmed by a well-designed architectural façade, which is beautiful on the same principle as the face, and must speak to all cultured minds irrespective of technical knowledge, no less than a picture or mass.

But there are not wanting instances of the truest appreciation of architecture among non-professional men. I forget the name of the intelligent traveller, who, longing to bear with him from the Continent a vision of beauty such as should hallow and brighten every other remembrance, speaks of the "glorious choir of Cologne as ever freshly rising from out the depths of treasured memories, as the realisation of beauty at once graceful and winning, dignified and royal." "It is difficult," he says, "to speak calmly of Cologne Cathedral, and if the fane may anywhere float in sweetest dreams, surely it is here. Milan calms and solemnises; Cologne rejoices and elevates; Antwerp exhales and purifies." And it seems probable from the revealings of biography, that all great poetic and artistic minds have had a love—acknowledged or unacknowledged—for architecture. Milton, who could rear mental fabrics of glory and beauty from the most varied and discordant materials, was one of its lovers. His exquisite lines in "Il Penseroso" on ecclesiastical architecture in connexion with ecclesiastical music breathe the most intense love for it:—

> "But let my due feet never fail
> To walk the studious cloister's pale,
> And love the high embowèd roof,
> With antique pillars massy proof,
> And storied windows richly dight,
> Casting a dim religious light:
> There let the pealing organ blow
> To the full-voiced choir below,
> In service high and anthems clear,
> As may with sweetness, through mine ear
> Dissolve me into ecstasies,
> And bring all heaven before mine eyes."

The celebrated French writer, Lamartine, certainly appreciated architecture, for he goes into raptures over St. Peter's, at Rome, which he speaks of as clothing the idea of God in the splendour of which it is capable. Another great poet, Goethe, had a strong love for, and critical knowledge of, architecture, as had, also, more or less, Horace Walpole, the Earl of Essex, Lington, Gray the poet, Lord Byron, and Madame de Staël; while Michelangelo and Raffaelle did not disdain to practise it. It enters into the composition of the greatest landscapes and historic pictures, and is wove into the texture of the greatest epic and other poems and romances, and there is scarcely any poet or writer of fiction but what lays it under contribution. In the "Odyssey," for example, we find the palaces and gardens of Alcinous, and the grotto and garden of Calypso:—

> "A scene where if a god should cast his sight,
> A god might gaze and wander with delight."

In the "Iliad" are the palaces of Priam and his sons, Hector and Paris. In the "Jerusa

elivered" we have the Enchanted Palace and arden of Armida. In the "Pilgrim's Pro-ress," the House Beautiful. In the Fairy ueen," the Bower of Bliss. In the "Paradise ost" we find the Pandemonium, the palace c capitol of Satan, the Celestial Gate, with rontispiece of diamond and gold; the Sea of asper, or of liquid pearl; also the Shady ower, flowers of all hue, and without thorn, he rose, of Paradise. In Thompson's "Castle f Indolence the Enchanted Mansion so called.

We should wonder why, in the appointments f the Muses to their various presidencies over he fine arts and liberal sciences among the ncient poets, architecture was not graced with muse, if painting and sculpture were not in he same predicament. But all three were surely orthy of the distinction. Terpsichore would rely have been better employed with a dif-erent name, presiding over painting, sculpture, nd architecture, than over dancing. They ceived some amends in being placed under the rotection of Minerva, the goddess of Wisdom, hich may serve to indicate the intellectual haracter of the arts; and also in the fact that pollo, to whom the Muses were attendant ymphs, was the god of all the fine and liberal rts, including eloquence and medicine.

My impression is, that the extension of archi-ectural study is one of the wants of the age, nd essential to the true interest and honour of chitecture and its professors; and there is ery facility for it. Architecture may be udied as we go about our daily business. Like isdom, she lifts up her voice in the gates and reets of the city. A man may be deprived painting and sculpture, and be without usic, but he can scarcely—if he live in a town -be without architecture. We occasionally e a picture and sculpture gallery, and mu-ums of natural history and antiquities, but we ve, for the most part, in an architectural useum, and one to which new works are con-antly being added. An ancient city is to chitecture what a library is to literature, and ost large cities present facilities so great that mes of styles and features of buildings ought become as familiar in people's ears as house-old words; and most people should be able to stinguish between orders and periods as they between trees, or between cows and sheep.

In accordance with these views, I have often ought that architectural journals should be ss exclusively technical than they are, and ow an aim at rendering themselves attractive general readers. While not abating one jot its interest for the architect, I think any chitectural journal could be of such texture nd complexion, that each number of it would nd its way into every hole and corner of edu-ted society; as by having some portion of its ace occupied by articles interweaving artistic iticism with moral and philosophical sentiment nd reflection; and by such popular subjects as e relations of architecture to the other fine rts, the relations of the latter to each other and literature and all science: a most fascinating ld of speculation, from the cultivation of hich every class of students might reap benefit, nd none more, I believe, than the literary man, ho would find that it is in poetry, painting, ulpture, architecture, and music that those eat principles which govern all the higher anches of literature are most distinctly illus-ated. I believe that between all journals the me relations and sympathies should be main-ined as exist between the different branches art, literature, or science they represent. ey should, as it were, blend and run into each her. [I trust this paragraph will be taken ly for what it is meant,—a suggestion.]

The extension of architectural study which I commend, so far from making every man his wn architect, which some might possibly dread om it, would, I believe, cause the architect's rvice to be more sought after; and so bene-ially influence, not only our street architec-re, but the mansion and villa architecture of e country, and its harmonious application to e landscape. It would lead to greater tender-ss towards our beautiful English scenery, and great love of country and home, to which I lieve there is a natural predisposition in every rtuous breast. Round the architectural scene the joys and sorrows of our life,—

> "With tendrils strong as flesh and blood
> Our pastime and our happiness will grow."

But, what is better than all, the general study architecture would be another instrument of e elevation and spiritualisation of society,—helping to counteract the present tendency of men to sink into a material epicurean life; and its influence would extend to the humblest class; for, though I have only spoken of our art as appealing to the sympathies of the educated classes, I believe that every true piece of architecture, as well as every beautiful natural object, claims some sympathy in the breast of the poorest man and woman that walk the streets.

COST OF RAILWAY TRAFFIC.

SIR,—With reference to the main point now at issue between Mr. Price Williams and myself (*vide supra*, p. 105), which is as to the proportionate damage done to the permanent way of railways by heavy and by fast traffic, will you allow me to refer to a discussion which took place at the Institution of Civil Engineers on 17th April, 1855, and which bears on the very point of the cost of maintenance of the Great Northern Railway? An account of it will be found in volume xiv. of the Minutes of Proceedings of the Institution of Civil Engineers.

Mr. Robert Stephenson, V.P., M.P., then said "It was not the income per mile that should be taken as the standard of the traffic, in respect to wear and tear; it was the weight, or rather the number of wheels, combined with the weight. Coals, which were carried at a halfpenny per ton per mile, would ensure more destruction to the permanent way than passengers at twopence per mile." I was in no doubt as to what would have been the reply of my old chief if the question could have been put to him; but I was not till now aware how distinctly he had expressed his opinion at the Institution. In Mr. F. S. Williams's book "The Midland Railway," p. 439, will be found the statement that when, during Mr. Stephenson's absence in Egypt, the Clay Cross Colliery Company obtained an agreement with the London and North-Western Railway Company, to carry 60,000 tons of coal to London at the rate of ¼d. per ton per mile, Mr. Stephenson refused to give his sanction to the agreement "on the ground that such a rate of carriage would be injurious to the railway company; and he would not, he said, consent to sacrifice the interests of the company, of which he was the consulting engineer, and, as he considered it, his own honour, for his private interest as a Clay Cross proprietor."

In the discussion which I have cited, Mr. Carr proffered the following statement as to maintenance of way. "He had kept a distinct account, for twelve months, of the cost of eighteen miles of the up and down lines of the Great Northern Railway, and the result showed that the permanent way expenses increased rather more rapidly than the tonnage which passed over it. The labour of maintenance of the up-line was to the down as 1·98 to 1, the gross weight passed over the rails being as 1·74 to 1. The great difference in the traffic on the two lines was due to the coals carried up towards London; and, as might be supposed, more damage was done per ton by such extreme loads than by ordinary goods and passenger trains; this would account for the deterioration increasing more rapidly than the tonnage. . . . . If railway companies would boldly meet the question of maintenance, without fear of the consequences to the value of shares in the market, a much more healthy state would be induced; and the resident engineers, having the charge of maintenance of way, would be free to compare notes, and could establish some general rule for companies, which, it was to be feared, would not now be done without injury to him who told the whole truth. . . . . The destruction of rails is in about the same proportion as the labour; the rails destroyed on the up line being to those on the down as 2 to 1. Perhaps little inference could be drawn from this, as none but defective rails would fail in three years. However, the fact was that the heavy traffic on the up-line seemed to tell upon the defective rails about as fast again as the ordinary goods and passenger traffic on the down-line."

It will be seen, then, that the highest professional authority on the subject of railways has given, by anticipation, his adhesion to the view which I have ventured to advocate, to the effect that the damage done to the permanent way is due to the weight passed over it. That when this weight is excessive, as is often the case with mineral trains, the effect of the strain on the driving-wheels, as well as that of the running friction, will proportionately increase, as intimated by the statistics of the case, is quite consistent with all that we know of the effect of stress. That is a point which I have not brought forward, although it has not escaped my attention. But the great fallacy with which I have had to contend has been the imaginary unit of the "speed ton," or the multiple of the weight by the speed. I am not aware to whom the invention of this most unfortunate expression is due; nor have I ever seen any attempt at logical argument, either from mechanical law or from statistical accounts in its support. On many of the American lines it is employed as the formula for the distribution of all working cost between passenger and non-passenger traffic; and to that fact may be attributed the bankruptcy of the American coal lines, and the small net results derived from an enormous traffic over lines so much less costly than our own. The mischief, of course, arises from the disproportionate rates of fares and of freights which have been generally established in accordance with such an erroneous division of working cost; the American lines being as far from the English lines, in the matter of comparative lowness of freight (with the exception of minerals), as the English lines, in their turn, are from the cheaply and lucratively worked lines of India.

The general use of the "train-mile" is only a veiled form of the "speed-ton." I rejoice to see that Mr. Price Williams has abandoned this method of distribution of cost, except with regard to the single item of maintenance. As to that, when what I have above cited as to the opinion of Mr. Robert Stephenson is added to the undeniable fact that the proportion of the cost of maintenance to income increases with, and much more rapidly than, the proportion of gross revenue derived from mineral traffic, I have every hope that this patient analyst will reconsider an assumption which it is impossible to reconcile with the outcome of experience.

Mr. Carr's remarks, no less than those of Mr. Stephenson, show that it is now nearly a quarter of a century since thoughtful engineers were anxious to obtain those data for determining the cost of various kinds of railway transport for which I ask, but which the companies refuse to allow even their own officers to collect. So long as the actual ton-mileage is unknown, it is impossible to do more than guess at detailed cost. We can only draw our inferences from the decrease in the net-earning power of one set of lines, contracted with the increase of the net-earning power of another, a fact more and more clear each successive half-year.

FRANCIS R. CONDER, C.E.

THE GROSVENOR *BUFFET*.

THE *buffet* attached to the Grosvenor Gallery has been decorated at a considerable expense in the fashion which has been set at the various establishments of the same kind belonging to Messrs. Spiers & Pond, described in these columns on various occasions. The "art-tiles" of Messrs. W. B. Simpson & Sons, of St. Martin's-lane, have been utilised for decorating the walls, and in the hands of the same firm the ornamentation of the ceilings was also placed. In contradistinction to encaustic, majolica, and other tiles, which are produced by mechanical processes, those of Messrs. Simpson & Sons are painted by hand. The designs are also done under glaze, and in many instances their effect is heightened by subsequent enamel paintings. The designs with which the makers have ornamented the walls of the Grosvenor Gallery *buffet* are undeniably the best they have produced. They are tile-paintings of a high order of excellence, and their size, which is more than ordinarily large, renders them sufficiently striking to attract considerably more than a mere transient inspection. The scenes depicted are in harmony with the uses and associations of the room. They represent the gambols of Amorini and Bacchanti, who are discharging various duties in connexion with a species of arcadian gathering and preparation of the vine, and take the form of large panels alternating with majolica pilasters in high relief. As a material suitable for ceilings, equally susceptible of ornamentation with ceramic ware, equally washable and imperishable, and as soft and malleable as kalsomine or canvas, Messrs. Simpson have adopted enamelled iron, now used for the first time, in the Grosvenor Gallery. The adaptation of metal for enamelled paintings was recognised by the early Limoges artists, whose works are to a certain extent copied here, being in monochrome, and covered with an opaque enamel

upon which the designs are painted. In modern times, enamelled iron has been used under the patent of Dr. Hickling, which was taken out in 1799, and various others sealed during the last thirty years for the purpose of coating vessels for domestic use. In addition to durability, enamelled iron has the advantages of being very light, and producible in pieces of almost any size. The enamelled iron plates are affixed to an ordinary boarded ceiling, and the joints are concealed and protected by means of wood mouldings. The works have been carried out under the direction of Mr. W. T. Sams, the architect of the building, and the result is creditable to all the parties concerned. The cost, we understand, was about 1,300*l.*

METROPOLITAN FREE HOSPITAL COMPETITION.

The Committee have selected for execution the design submitted by Messrs. H. H. Collins & James Edmeston, architects, submitted under the motto "Ad Rem." Mr. Edward I'Anson acted as the committee's referee, and they adopted his selection unanimously. The amount to be expended is 18,000*l.* The descriptive particulars which accompany the selected design show a full grasp of the subject. We print two paragraphs from it:—

"Economy of administration and facility of service are only obtainable by simplicity of plan, so necessary to the well-being of a hospital. Eminent authorities agree that 'complication interferes with light and ventilation, discipline, facility of supervision, and economy of service. Publicity is the best policy and most efficient protection, whether in the hospital or in town construction;' for it must be remembered that the attendants require as much supervision as the patients. A place for lumber means the accumulation of lumber, and every additional room means increased service and cleansing. In the design submitted, each floor is arranged departmentally: thus we have the official portion,—the out-patients', with the accommodation appertaining thereto, so devised that the system is progressive,—entering, receiving advice, obtaining medical relief, and departing. The hospital accommodation proper,—each floor devoted to its own purpose,—with as little corridor space as possible, and this without twists or winds, and approached by a wide and well-lighted staircase, or by a lift so positioned as to be in immediate proximity with the wards, each ward supervised by nurse, and, where practicable, by one nurse for two wards.

Culinary arrangements, whether positioned on basement or upper floors, with lifts so located that the effluvia therefrom will not penetrate into the wards. Stores of various kinds are provided (too many cannot be planned), and all under immediate charge of the matron, whose apartments are centrally situated. Laundry arrangements are, again, kept separate and distinct. The "post-mortem" and mortuary are so positioned that the dead may be removed without notice by the living, and without affecting the sensitiveness of the patients. The medical officers have facile access to their work, and are also in easy communication with the domestic staff. The operating-theatre is placed, as desired, at the top of the establishment, is approached either by the staircase or by the lift, so that the patient is landed at its door without being subjected to exertion or fatigue; and if a small clinical school be desired, the recess can be appropriated for a gallery to accommodate students or visitors."

It may be mentioned that the competition was limited to six architects; namely, Mr. Chas. Barry, Mr. Chatfeild Clarke, Mr. H. H. Collins, Mr. J. Edmeston, Mr. Owen, and Mr. Ebenezer Saunders. By a singular coincidence the design selected for the Second Premium was one by Messrs. Edmeston & Collins.

"Costless Power."—One of the latest dodges in the matter of electric lighting we take from *Design and Work*. A Mr. James Tyman states that by using the hind wheel of his bicycle as a motor for the magneto-electric machine, and having the carbons, with necessary adjustment, fixed on the front of his bicycle, he obtains a light equal to 120-candle power. The cost of the apparatus is about 5*l.*, and the only drawback to this invention is that directly the rider stops he is left in total darkness.

NORTHERN ARCHITECTURAL ASSOCIATION.

A special meeting of the members of the Northern Architectural Association was held on Thursday, the 23rd ult., at the Old Castle, Newcastle, for the purpose of presenting Mr. Robert Lamb, one of their members, with an illuminated address, bearing testimony to their estimation of his character and qualifications, prior to his leaving Darlington for New Zealand for the benefit of his health. The president, Mr. Thomas Oliver, occupied the chair, and he was supported by Mr. S. Oswald, Mr. Prosser, Mr. W. H. Dunn, Mr. F. Charlton, Mr. Shewbrooks, Mr. Reay, Mr. Connell, and others, together with the subject of the address, Mr. Robert Lamb, of the firm of Messrs. Ross & Lamb, Darlington. The president rose to present the address, together with a purse of gold, and addressed Mr. Lamb as follows:—"My dear sir,—As the president of the Northern Architectural Association, it is my duty to present you, in the name of the members of that association, with this address, and a purse containing the surplus subscriptions, on your proposed removal from amongst us, owing to ill-health, to seek in New Zealand a more congenial climate for the prosecution of your duties and your profession. We all regret that you must leave us, and we fervently hope you may have health and strength in your new home. No one here can part with you as I do. You are associated in all my youthful endeavours, as my first pupil, assistant, and partner. With years you have increased in my esteem, and my admiration of your unobtrusive goodness has also increased with them. Your talents are appreciated by all who know you; and your high sense of honour, your keen feeling in regard to professional etiquette, your inborn love of truth and justice, and your gentle though firm behaviour throughout the routine walks of life, impress themselves upon those who know you, as I am sure they have impressed themselves upon me. I congratulate you on being what I may call one of those "handy" men,—a man who can do anything, indeed; for it is just such men, I can imagine, that are adapted for new countries. I am a regular reader of Australian newspapers, and letters from Australia, so that I have a pretty good idea of the doings of a new country; and I can vouch for this, that you will adapt yourself in your domestic habits as well as in your professional duties to the ways of a new people as well, or better, than any one I know. I wish you good health to do this. I expect you will take to your newly-adopted country this memorial of our respect, esteem, and regard; and as its beautiful lettering is perused by strangers, you will feel proud in saying that your name,—though then quite a young man,—is one of the foremost enrolled in the list of the first members of the Northern Architectural Association, just twenty-one years ago. On this, the year of our majority, we, as an association, wish you,—though a sad farewell,—a hearty God-speed." With considerable emotion Mr. Lamb briefly expressed his thanks for the address.

NATIONAL ASSOCIATION OF MASTER BUILDERS.

The first annual meeting of this Association was held on the 23rd ult., in Leeds, when upwards of seventy representatives from the local associations of Altrincham, Birmingham, Bolton, Bradford, Bristol, Crewe, Derby, Doncaster, Huddersfield, Hull, Lancaster, Leeds, Leicester, Lincoln, Liverpool, London, Manchester, and Salford, Newcastle-on-Tyne, Nottingham, Southport, St. Helen's, Walsall, Warrington, Widnes, Wigan, and Wolverhampton were present. The report of the council announced a very general reduction of the rates of wages, and in some cases an increase of working-hours in the various branches of the building trade as likely to come into operation at various periods during the coming spring. The meeting also discussed and approved a form of contract which had been prepared and recommended by the council for general adoption throughout the building trade in the country, the contract being based upon the conditions of contract agreed upon by the Royal Institute of British Architects and the London Builders' Association. The National Association now embraces the Local Builders' Associations of nearly all the principal towns and cities in the country, and the council are still assisting in organising new associations in towns where none exist, with a view to their amalgamation with the National Association. A very strong opinion was expressed at the meeting that the proposed reduction in the cost of labour will lead to a general improvement in trade, and thus benefit both workmen, employers, and the public.

STEAM LAUNDRIES.

Sir,—In the interesting paper by Mr. Stree upon the above subject read at the late meeting of the Civil and Mechanical Engineers' Society and given in the *Builder* of the 25th ult., miss all allusion to the very important consideration, as regards the *thorough cleansing and purification* of the articles to be washed, of the qualities of the waters suitable and unsuitable for the purpose.

This question is one to which my attention has been drawn lately by more than one steam laundry company, and I have had to deal with it by their invitation; but it is extraordinary how little consideration is ordinarily given to even in its economical bearings upon this industry, whether pursued upon a large or a small scale.

It may be well worthy of a little space in your valued columns, I venture to think, to give an extract or two from the Report of the Royal Commission* upon "The Domestic Water Supply of Great Britain," and the more so that it is now easily to be obtained upon this point.

At page 21,—"Hard water decomposes soap, and cannot be efficiently used for washing. The chief hardening ingredients met with in potable waters are the salts of lime and magnesia. In the decomposition of soap these salts form curdy and insoluble compounds, containing the fatty acids of the soap and the lime and magnesia of the salts. As long as this decomposition goes on, the soap is useless as a detergent, and it is only after all the lime and magnesia salts have been decomposed at the expense of the soap that the latter begins to exert a useful effect. As soon as this is the case, however, the slightest further addition of soap produces a lather when the water is agitated, but this lather is again destroyed by the addition of a further quantity of the hard water." . . . . "The operation of washing with soap and hard water is analogous to that used by the dyer and calico-printer when he fixes his pigments on calico, woollen, or silk tissues. The pores of the skin are filled with insoluble greasy and curdy salts of the fatty acids contained in the soap, and it is only because the insoluble pigment produced is white, or nearly so, that such a repulsive operation is tolerated. To those, however, who have been accustomed to wash in soft water, the abnormal condition of the skin thus induced is for a long time extremely unpleasant."

Of the hardening salts present in potable water, carbonate of lime is the one most generally met with; and, to obtain a numerical expression for this quality of hardness, a sample containing 1 lb. of carbonate of lime, or its equivalent in other hardening salts, in 100,000 lb. is said to have one degree of hardness. The degree of hardness indicates the destruction and waste of 12 lb. of the best hard soap, in 100,000 lb., or 10,000 gallons, of the water when used in washing. Or (page 204), "Thus 10 gallons of water of the hardness of Thames water (about 20 degrees) cause the waste of nearly a quarter of a pound of a soap when it is used for washing."

"They estimate that the maximum loss of soap incurred by the use of Thames water is 42 per cent. for linens, 14 per cent. for woollens; but they call attention to the fact that in the coarse washing of the poorer classes much of this loss may be avoided by the use of carbonate of soda. It is in the more careful washing of the middle and upper classes that the advantages of soft water become fully sensible. In the digestion of the linen in hot water with soap and carbonate of soda, preliminary to the proper washing, the hardness of the water can only occasion a trifling loss of soda; but, afterwards, in the washing where soda is avoided, the earthy salts must occasion a loss of their full equivalent of soap. It is found proper also to avoid boiling any portion of the Thames water that is used in the wash-tub, or even heating that water above a certain point, for the carbonate of lime precipitates on the fabric, carrying down the colouring matter of the water with it, and producing stains which there is the greatest difficulty in afterwards removing from the linen. The colour of the water is thus, indeed, fixed upon the cloth by the precipitated lime with the tenacity of a mordant" (pp. 238, 5

In the washing of the person, the saving of soap by the use of soft water is most obvious. For baths, soft water is most agreeable, and might contribute greatly to their more general use. Its superior efficiency to hard water in washing floors and walls is calculated also to promote a greater cleanliness in the dwellings of all classes, both within and externally; while in the occasional domestic washing of linen, the smaller preparation necessary for washing in soft compared with hard water, the saving of soap which would then be sensible to its full extent, and the more rapid and agreeable nature of the operation, w

* Rivers Pollution Commission. Sixth Report. 1

ake a supply of soft water in a high degree esirable. The use of soda in washing would be adly avoided by most housekeepers, owing to s injurious action on the colours of certain rints and the permanent yellow tinge and eakness of fibre which it may occasion, even white linens, when exposed to heat, before e soda is entirely washed out, as in ironing.

"The economy which carbonate of soda exhibits in comrison with soap as a softening agent is far surpassed that which results from the use of lime for this purse. The latter material costs only about 8d. per cwt., d this weight of lime will do the work of 20½ cwt. of ap in softening hard water. To soften a quantity of rd water which requires 1 cwt. of lime, the following ould be the weight and cost of the three alternative aterials:—

1 cwt. quicklime	£0	0	8
4½ cwt. carbonate of soda	2	17	9
20½ cwt. soap	47	1	8

are is thus an enormous economy in the use of lime, d in the discovery of this process the late Dr. Clark, ofessor of Chemistry in the University of Aberdeen, nferred a valuable boon upon the inhabitants of many rd-water districts" (p. 205).

There remains to add that this process of Dr. ark is fully described in your own pages of e 15th of December, 1877.

JOHN HENDERSON PORTER.

RGE PURCHASE OF LAND BY THE METROPOLITAN ASYLUMS BOARD.

THE Metropolitan Asylums Board have just ermined to purchase between fifty and sixty res of land near the Darenth schools, at a ce of 109*l.* per acre. At their last meeting, the bject was before the Board, when Sir E. H. rrie, as chairman of the Darenth Schools mmittee, stated that the land was valuable, d that its possession by the managers was not y exceedingly desirable, but as a matter of ture economy was of great importance. The ce in the first instance was offered at from . to 80*l.* an acre, but under these terms they uld have had to deal with the tenants on the perty, and in order to get rid of that diffi- ty the committee recommended that the land purchased outright, at 109*l.* per acre. The irman of the finance committee observed t the borrowing powers of the Board had eady been exceeded, and what he wished to rd against was that, having obtained posses- n of this land, there should not be an imme- te desire on the part of the Darenth com- tee to build another asylum upon it. The tion for the purchase of the land was, how- r, unanimously adopted.

HE LONDON FINANCIAL ASSOCIATION AND THE PURCHASE OF THE ALEXANDRA PALACE.

THE London Financial Association appear at sent to be in some difficulties in connexion, ongst other things, with the purchase of the xandra Palace and grounds, and a special eting of the shareholders has just been held onsider the report of a committee of investi- tion into the transactions of the Association cedent to the appointment of the present rd on the 8th of April, 1878. From the ort of this committee, it appeared that paid-up capital of 1,154,700*l.*, and the rve fund of 80,000*l.*, had all been lost. Mr. H. Powell, who acted as chairman of the eting, made pointed allusion to the Alexandra ace purchase, observing that Messrs. Gals- thy and Fletcher were appointed by the reholders to make a report of the Alexandra ace Company, and therefore he was pre- ited from taking the initiative. In next aking of Mr. E. M. Barry, he stated that he not wish to say one word in disparagement of a; but he would say that the previous con- ion of Mr. Barry with the Messrs. Kelk & as would also prevent his taking the initia- e. It must be recollected that Mr. Barry s the architect for Covent Garden Theatre l a great hotel, and Messrs. Lucas were contractors, and was it for a moment be supposed that Mr. Barry would like break off that connexion?—though no bt, if some one else would stand in the ter, and place the circumstances before Mr. ry, he would express an opinion. After some her remarks from the chairman, in the rse of which he stated that there was a large n of money of which the shareholders had n deprived, a discussion followed, ending in committee being instructed to continue their investigation into the affairs of the company, and to present a requisition to the directors to call an extraordinary meeting.

"FROST AND THE WATER PIPES."

SIR,—In reference to a paragraph in your last issue, headed "Frost and the Water Pipes," every reader of the *Builder* may easily satisfy himself that water-pipes, &c., burst on freezing, as you say, and not at the time of thawing, as many suppose. Let any one take a common wine-bottle, fill it with water, cork it tight, and expose it in the open air during a hard frost, and he will find that on the water freezing solid the bottle will either be burst or the cork forced out. A better experiment still will be to procure 3 *ft.* or 4 ft. of ¾ in. or 1 in. water-pipe, with an iron plug screwed in at each end; remove one of the plugs, fill the pipe with water and screw the plug securely in, expose the pipe until the water is frozen solid, and it will probably be found that the pipe is burst. A cast-iron pipe would be much better for the experiment, as its elasticity is less than that of wrought-iron. The expansive force of freezing water is about 30,000 lb. per square inch, and its maximum density is at 4 degrees centigrade.

FRANK CHESSELL.

SIR,—I have for some years observed rather closely the action of frost on water-pipes, and have come to the conclusion that it is not the expansion of cystallisation acting directly which causes the fracture.

A pipe may be frozen fifty times without breaking, and the unlucky failure happens at last when it becomes frozen in two places, and the crystallisation goes on from these places towards each other. The water pent up between the two masses of ice thus becomes subject to such a pressure that a rupture of the pipe must take place. The gaping nature of the rent caused is to my mind proof that this is the case, and so is also the fact that a pipe which is known to be frozen up for yards of its length does not split from end to end, but opens in one or more places of moderate length.

W. WYATT.

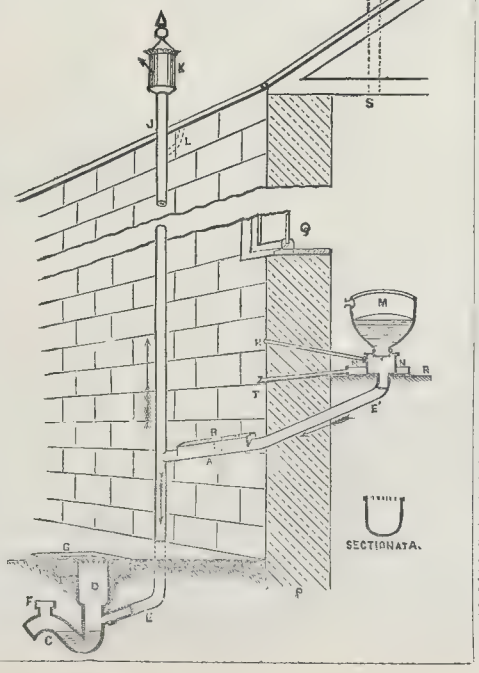
SANITARY APPLIANCES IN HOUSES WITHOUT SEWAGE GAS.

SIR,—Many attempts have been made of late years to solve this problem satisfactorily, but all plans I have yet seen published are open to improvement. In November, 1874, I published an article on "Scientific and Safe Water-closets," the safety consisting in locking off the soil-pipe from the house-drain by means of a ventilating syphon drain-trap at its foot, which allowed a current of fresh air to enter the soil-pipe, and come out at its top as diluted sewage gas. In a long soil-pipe, however, the smell at the top was pretty strong. At p. 44 of your issue for January 12, 1878, a different plan is shown by Mr. R. Norman Shaw, R.A. This plan is faulty, however, in several respects, which need not exist, viz., it allows the foul air in the upright soil-pipe to blow off under the windows instead of above them. It also omits to ventilate the soil-pipe between the water-closet and the outside, while easy access to the drain-trap is not provided for.

As meeting all these objections, I beg to enclose a new plan, which, for simplicity and efficiency, combined with cheapness, is in advance of anything I have yet seen. The idea was suggested to my mind by a perusal of Dr. Robert Bell's "Sanitary Science" in Blackie's Encyclopædia. The particular speciality in this case is the use of an open-air channel-pipe, as marked at A on the sketch, which occurs upon the branch soil-pipe. It is made upon the pipe outside of the wall, and breaks the air connexion between the upright main soil-pipe and the branch soil-pipe without interfering with the free flow outwards of the soil. The plan is *not patented*, and all and sundry are free to use it.

It is understood that the house-drain is properly trapped off from the sewer, and also ventilated. Mr. Baldwin Latham states, at p. 408 of his work on "Sanitary Engineering," that the system of drainage, ventilation, and trapping recommended in the recent Model Bye-laws issued by the Local Government Board is that shown in my patent for April, 1875, and drawn there for the information of the public. A great advance as regards safety, however, would be found in the adoption of the new plan I now suggest, which is applicable for waste-pipes as well as soil-pipes.

I have shown the water-closet without a syphon-trap under it, but such may be used if desired. M in the sketch is a Bramah valve closet, which requires a small trap for the overflow, especially if the under trap be omitted. H is the ventilating-pipe for the branch soil-pipe E', the fresh air entering at the open side of A, nearest the water-closet. T is the safe-pipe, with a hinged valve upon its outlet-end, C is a ventilating 6-in. drain-trap. D is opening both for fresh air and cleansing. The fresh air entering at D comes out at the fixed ventilator, K, above the roof. The air-current of the main soil-pipe, E, tends to induce a current from the open end of A next the soil-pipe, so that no smell from the soil-pipe comes out at A. B is a swinging valve of thin tinned copper, but I do not consider it necessary. Q is the water-closet window, and S a ventilating-pipe for the water-closet apartment if wished. It is supposed the air-channel at A may be about 2 ft. long. With its use the short piece of soil-pipe between it and the house could do almost no harm, as the pipe H would prevent any accumulation of sewage-gas in it, especially if the water-closet were properly flushed when used, and kept as a water-closet, and not as a cesspit.



Although only one water-closet is shown as joining the upright soil-pipe, several might join it, each with its own branch pipe and open channel, A; it being remembered that the shorter the branch soil-pipe between the

w.c. and A, the less sewage-gas will be generated. Consequently all water-closets and other sanitary fittings should be close to and as near an outside wall as possible.

Inattention to this has added largely to the disease and death-rate of our country for years back, and it is still going on,—more shame to the authorities who allow it to be done, and to the architects who draw the plans. So far as my experience can enable me to judge, our plan is to allow houses to be put up badly and to be badly drained; then, after several people have been killed, and a complaint lodged,—the latter is the main point,—things will be cobbled up. "Prevention of disease is better than cure" has been talked about, but it has not, so far as I am aware, been properly acted up to yet. Progress in sanitary matters is slow; it is to be hoped, however, that it will be sure.

W. P. Buchan.

THE GRAND HOTEL, CHARING-CROSS.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

The members of the Architectural Association made their first Saturday afternoon visit to works in progress during the present session on the 25th ult., the building selected being the Grand Hotel, Charing-cross, by permission of the architects, Messrs. Francis & Saunders. The building, as passers-by will have observed, has now made considerable progress, having been carried up in parts beyond the fifth story. The visitors on Saturday last were numerous, and they were received in the office of the clerk of the works by Mr. Horace Francis, one of the architects, who briefly explained the plans and the leading features of the building, and the visitors were afterwards conducted over the works by Mr. Holloway, the clerk of works (whom we remember at the new East and West India Dock-house, Billiter-street), and Mr. Coates, the general foreman and representative of the contractors, Messrs. Merritt & Ashby. The building will be six stories in height, with an additional story in each of the four Mansard roofs which surmount the towers which serve to emphasise the façade. The building covers half an acre of ground, and has a total length of frontage, from the extreme point in Northumberland-street to the extreme limit in Northumberland-avenue, of 420 ft.; the distance from the Strand corner to the termination of the building in Northumberland-avenue being 302 ft. Of the 118 ft. frontage occupied in Northumberland-street, nearly the whole of the ground floor will be used as a *buffet* and *restaurant*, entered from the Strand, the entrance at this corner also giving access to the hotel proper. With the exception of the square tower which is carried up at the angle of the Strand and Northumberland-street, the whole of the building facing the last-named street will, above the ground-floor, be divided into two separate portions,—that adjoining the tower containing most of the bath-rooms, lavatories, water-closets, &c., and the portion lower down Northumberland-street being appropriated to kitchens, bakery, &c. The whole of the floors in these two portions of the building will be fireproof, on Dennett's system, which will also be used for the first floor of the main building, it not being thought necessary to have fireproof floors throughout. All the floors of the main building above the first will be of the ordinary timber construction, well pugged. The necessity for making the first floor fireproof is, however, imperative; for at the Strand end of the building the ground floor will be appropriated to a series of sixteen shops, each being about 15 ft. wide between centres, and 30 ft. deep, each shop being provided with a basement and a vault beneath the pavement. These shops will, it is expected, from their advantageous position, command good rents, and thus contribute to the financial success of the undertaking. In this connexion Mr. Francis stated that the ground-rent amounts to 9,500*l.* per annum, or, roughly speaking, 9*s.* 6*d.* per foot super.! In addition to the tower we have mentioned as being placed at the corner of Northumberland-street, there are three other similar towers. The one at the western end of the straight portion of the Strand façade serves to emphasise the junction of that part of the façade with the curved portion at the corner of Northumberland Avenue. At the lower extremity of this curved portion of the façade* a third tower connects that part of the building with the straight portion in Northumberland Avenue; at the extremity of this straight portion is the fourth tower. These towers are each about 130 ft. high from the ground-line to the iron cresting surmounting the Mansard roofs, which will be executed in Vieille Montagne zinc. The main cornice will be at the level of the fifth floor, and will have a projection of 2 ft. 6 in. At the level of the sixth floor will be a less prominent cornice, surmounted by a balustrade, behind which the slated roof, studded with numerous dormers lighting the rooms in the sixth floor, will rise. The shops on the ground story will not extend the whole distance down Northumberland Avenue, the last 60 ft. or 70 ft. of ground floor frontage being of masonry, and comprising the grand entrance to the hotel. The material used for the façade is Portland stone on the ground story. Above the ground story the façade is wholly of Box Ground (Bath) stone, specially selected by the clerk of the works. The only coloured material used in this façade will be red Aberdeen granite. Of this material are the pilasters between the several shops, and the three-quarter columns on the first floor. Bosses of the same granite will be fixed in the moulded stone pilasters at the angles of the towers. The mortar used for the internal walls is ground blue lias, the brickwork behind the façade being all set in Portland cement. At intervals in the façade there are large oriel windows extending through the first and second stories, and where these oriels happen to come over the shop-fronts the way in which the masonry has been corbelled out directly from the girders is somewhat of a feat in construction. The base of each of these windows consists of three large stones, each weighing from four to five tons, and each boxed-out, tied down by bolts behind, and seated on flanges of girders in front. The whole of the ironwork, except that used in the fireproof floors, is being supplied by Messrs. Burgoyne & Co.

The building will contain about 250 rooms,—some in suites of two, three, four, or more,—and the remainder simply bedrooms. This number of rooms is exclusive of those set apart for the domestics. On the ground-floor, to the right of the grand entrance as one enters the building, will be a large smoking-room. Approached from the hall on the left-hand will be the grand central *salle-à-manger*, 95 ft. by 50 ft. This will be a handsome apartment, divided longitudinally into what may be likened to the nave and aisles of a church by a series of eighteen iron columns, encased in marble or scagliola. These columns have a height of about 19 ft. 6 in., and carry girders which support the walls of the building above. By this means the first and superincumbent floors are carried over what may be called the aisles of the grand *salle*, and more space is got for bedrooms. What may be called the nave or central area of the *salle* will be lighted for its whole length by a semicircular iron roof of rich design. Above this central portion of the *salle* will be a large open area, giving light not only to the *salle*, but to rooms on all the floors above. The outer face of the walls of this area are faced with Cliff & Sons' white-glazed bricks, the window-heads being composed of specially-moulded voussoirs of the same material. Adjoining the grand *salle* will be a secondary *salle*, 40 ft. by 35 ft. The space beneath these apartments will be used as stores for china, glass, &c. On the first floor, over the grand entrance, is the library, and adjoining that is a large drawing-room for ladies. The grand staircase was at first intended to be of Portland stone, but we understand that Mr. Holloway, the clerk of the works, conceived a method of making a staircase which should be fireproof, while at the same time handsomer and cheaper than one of Portland stone, and his plans met with the approval of the architects, and are to be carried out. The staircase occupies a space of about 25 ft. by 19 ft., and the stairs will be 6 ft. wide from top to bottom of the building. They are to be constructed of concrete made of Portland cement and burnt breeze, and each step will have embedded in it for its whole length a rolled iron joist, 5 in. by 2 in. by ½ in. These iron joists will be connected at their outer ends by a continuous iron bar 1½ in. by ½ in., and also by means of hoop-iron bond passing through two slots provided in each joist. The whole of this ironwork will be embedded in the concrete, and the treads (12½ in.) and risers (6 in.) will be faced with white Sicilian marble, the soffit being finished with Parian cement in moulded panels.

We have only space to add that the present contract, amounting to 90,000*l.*, is expected to be completed by Jan. 1, 1880. This contract, however, does not include decorations and many other items.

* Struck on a 60 ft. radius.

PROTECTION FROM FIRE.

Sir,—The destruction by fire of the mansion Duncombe Park, including so many priceless gems of art, ancestral portraits, &c., is truly a national calamity! Unfortunately, such a occurrence is by no means rare.

For the protection of noblemen's country residences, I take it for granted that most of them have one or more fire-engines on the premises, but a fire-engine is a mockery if the water supply fails (too often the case when a fire of any magnitude occurs), and hence the necessity for a special cistern of sufficient magnitude for all possible contingencies; and as there are but few country mansions of any importance without a lake or large pond in their vicinity, sanitary pipes might be laid, if the level permitted, in connexion with the cistern.

The use of iron is fast superseding wood, and might be largely used in the construction of country mansions. *Certes*, when a fire breaks out, the less wood they have about them the better. The floors might be of iron, similar to the decks of some of our large steamers, *i.e.*, of embossed plates, about ¼ in. thick, coated with Portland cement on the top side, and laid upon iron beams (specially rolled for the purpose).

Sir William Burnett patented a process a few years ago, for rendering wood impervious to the ordinary action of fire (by treating it with a certain chemical solution, presuming it answered fairly well; wood so prepared might be used for the necessary internal fittings, and so reduce liability of a house, or rather the movable furniture of a house, to destruction by fire would be well-nigh reduced to a minimum.

With regard to heating apparatus, the hot-water system is decidedly preferable to, as infinitely safer than, the flue or hot-air system.

How frequently a fire originates under the hearthstone, due to the slab being too thin, or set upon wooden sleepers, and perchance a fire being fire kept up in a low grate until the inmates of the house retire to rest.

For extinguishing a fire in the early stages the "*Extinctеur*" (a small portable appliance) has already done good service, but is not so well known or appreciated as it deserves. It has, however, been adopted by several of the large hotels in London, at the South Kensington Museum, and on shipboard. To it Mr. Brassey, M.P., was greatly indebted for subduing a fire which broke out in the night on board his yacht the *Sunbeam*, during his recent voyage round the world.

H. S. Harlan.

VENTILATION OF CHURCHES.

Sir,—I think it will be admitted that no hard-and-fast lines can be laid down for the proper ventilation of churches: very much must necessarily depend upon conditions already existing, and the ease or otherwise with which they can be altered. A dome or lantern light would facilitate the object very materially, with other proper arrangements; and with these latter I find down-draughts can be reduced to a minimum. In winter ventilation alone will not prove satisfactory. Churches require to be warmed properly then also. If the heated air has to *fight its way* from a furnace through long, cold chambers, having gratings in them at *various points for the purpose of admitting* the heated air into the body of the church, the temperature at different parts of it will be very unequal, because proper diffusion throughout the entire space, unassisted, will certainly be found not to take place sufficiently quickly to be either useful or satisfactory. Special *channels* for the *admission* of fresh and warmed air, and others for the *escape* of vitiated air, will also, I am sure, prove abortive unless some *real* means of "extraction," either the *plenum* or *vacuum* plan, or both combined, be used. It must be borne in mind, too, that the moment a valve in a shaft is used to "shut off" air, ventilation through such a shaft ceases. I have warmed and ventilated some churches and large public buildings very satisfactorily. As my plan of doing it is known to you, I need not attempt, by a long description of it, to fully explain it; but special certificates of the efficiency of anything can, as I am told, be obtained on payment of a fee of five guineas. It would be useless for me to send you any. The honour of real science cries aloud at this; will her votaries ever close?

E. Gregson Bate.

The "Separate System."—The committee of the Lower Thames Valley Main Sewerage Board have, very judiciously, sent out a circular letter to all the sanitary authorities of the districts the Board is composed, asking for their opinions as to the adoption of the "separate system" for their future drainage operations.

MASTERS AND MEN.

effield.—A meeting of the Sheffield carers and joiners was held on the 22nd ult. to ider the new code of rules recently issued he masters, in which they propose a reduc- of 1d. per hour, and an addition of four s to the working week, as well as the aboli- of all the privileges in the rules agreed to 877, except the one which makes the hours utdoor work the same as those observed in workshops. The meeting, after discussion, ded that it was premature to discuss the osed set of new rules, and the meeting was urned to a future date.——At a meeting of Executive Distress Committee, held on the ult. at the Town Clerk's office, the follow- nstructions were issued to the chairmen and bers of the district relief committees:—

bricklayer, mason, joiner, or other person ged in those trades which are now on strike, y person or family keeping a dog, must be ved out of the Mayor's Relief Fund."

rnard Castle.—The lead trade in Teesdale s no sign of reviving. In addition to the ber of men already discharged by the agents he London Lead Company, it is stated in upper part of the dale that the mining ts have been instructed to discharge about hundred more miners. Acting on the in- tions of the governor and company, it is rstood that the necessary notices have issued, and that they will take effect at sual letting of the bargains in the course week or two.

rfar.—The master builders in Forfar have ced the wages of their journeymen to 6d. hour, the reduction to take effect imme- ly.

Miscellanea.

. Mary-at-Hill, Eastcheap.—This church ng been threatened with destruction or y, by being scheduled by the Inner e Railway completion scheme, a meeting been held to take steps to prevent the pro- l Vandalism. Mr. W. M. Teulon, architect, ded, and said he was glad to find that there now some probability of a vigorous oppo- n to any interference with the church. When ion College scheme was first broached, the tects had been startled by its Vandalism, ad formed a sub-committee among them- s, which had visited every one of the ed churches, some thirty in number, but he tted that no practical action had resulted their visit or their meetings. He had for g time felt that a committee must be ght together in the City of London if these hes were to be saved from destruction. It t be allowed that the Union of Benefices ad gone far enough, as eleven churches had dy been removed. A general discussion d, and it was eventually decided that there d be mutual co-operation and communica- n on the subject, and those present formed selves into a preliminary committee to lish a "City Church and Churchyard Pro- n Society."

hools of Art.—Sir P. Cunliffe Owen, C.B., tor of the South Kensington Museum, ered the prizes to the successful students e Nottingham School of Art in the Albert of that town. In the course of his remarks id that while acting as secretary to the sh Commission at the Paris Exhibition, he opportunities of witnessing the practical ts of the schools of art. As an Englishman d reason to be proud of the position this ry had taken during that Exhibition. He been pleased to hear the French acknow- e that we had obtained, through the agency e schools, a style of our own, and that were willing to come to this country for ners for their manufactures.

e Hampstead Small-Pox Hospital.—ment was given on Tuesday in the case of and Others *v.* The Metropolitan Asylums . This action was brought by Sir and Hill and other inhabitants of Hamp- against the Metropolitan Asylums Board juries alleged to have been caused to pro- and to the sanitary condition of the neigh- hood through the establishment of a small- hospital at Hampstead Heath. Baron k, in delivering judgment, found for the iffs on all points, granting an injunction strain the defendants from carrying on the al so as to create a nuisance.

Fires.—The residence of Sir F. Leighton, president of the Royal Academy, 2, Holland-park-road, Kensington, was the scene of great confusion on Tuesday morning, consequent on the alarm of fire, occasioned by a defect in the flue. The fire was extinguished by the inmates. Some damage was done by fire and cutting away in the vicinity of the studio, the contents of which suffered from the effects of smoke and dirt.——Between ten and eleven o'clock, a fire occurred at 10, Eagle-wharf-road, New North-road, occupied by Mr. H. Pritchard, cabinet-maker, the circumstances attending which were most unfortunate. After the "call" was made, the turncock was not present for nearly an hour, and on the arrival of the brigade from the Essex-road, Islington, much time was lost, owing to the frost, in opening the plugs. In the meantime, the steamer from Whitecross-street broke down in Shepherdess-walk, and was unable to reach the fire.—— Kenmare Castle, which is in course of construction at Killarney, for the Earl of Kenmare, has had a narrow escape of being burned down. The main building has been completed, and the workmen are engaged in the internal decorations. On Saturday morning, when the men were going to work, they discovered that a fire had broken out in the butler's pantry, at the northern side. This apartment had been filled with joinery and timber, which fed the flames, and quickly caused it to extend. The fire had already taken possession of the upper flooring, and was extending to the kitchen-roof and across the corridor to the billiard-room, which was filled with a lot of valuable timber. It had also taken possession of the staircase, and was rushing up the left to the upper rooms. Fortunately the water supply to the house had been completed, and hydrants had been fitted both outside and inside the house. After an hour the workmen succeeded in isolating, and finally in subduing, the flames. The damage, which is estimated at 2,000*l.*, is covered by insurance.——On Monday evening, about nine o'clock, a fire occurred in one of the old Government buildings in Downing-street. It broke out in that portion of the Colonial Office now occupied by a branch department of the Board of Trade, detached from the head office. Considerable damage has been done to the building, but the official residences of the Premier and the Chancellor of the Exchequer were uninjured.

Royal Irish Academy.—At a general meeting of the Royal Irish Academy, Dublin, on Monday evening, Dr. Fraser said that two years ago he had called attention to the unprotected state of the manuscripts in the Academy. A terrible fire had recently occurred in Birmingham, and a large number of exceedingly valuable works and manuscripts were destroyed. Now, it seemed to him that in a library the only and best plan was that adopted by merchants, and it was to deposit the manuscripts in a closed safe after the day's use. He now again called attention to it, and hoped that some steps would be taken for the protection of the manuscripts. The chairman (Sir Robert Kane) said that the discussion was not quite formal, as no notice had been given; the best thing to do would be to refer the matter to the council for consideration. Dr. Fraser then moved a resolution to that effect.

The late Mr. John Johnson, Architect.—This gentleman, who died on the 28th ult., and of whose works as an architect we have already spoken, was celebrated as a fisherman. His skill in this respect is thus noticed in the *Fishing Gazette*:—"In the piscatorial world Mr. Johnson has left behind him the name of a famous angler, and the books of the Piscatorial Society, of which he was a very old member, record some wonderful takes of fish in the earlier portion of his life. In the year 1866 he obtained the leading prize for the greatest weight of fish, there being a total of something like 550 lb. placed to his credit. He was also, up to the time of his death, 'the author' of the club in conjunction with his old friend, Mr. Thomas Gillatt. Mr. Johnson was an old member of the Thames Angling Preservation Society, and for the last ten years was one of its general committee."

Municipal Buildings, Reading.—The Reading Town Councillors, at a special meeting held on the 20th ult., passed a resolution that a proposal for the ratepayers to contribute 10,000*l.* towards the sum of 45,000*l.*, to be raised for the building of a new Town-hall, free library, museum, and schools of science and art, be submitted to the ratepayers in public meeting.

Well-walk, Hampstead.—We are glad t see it stated that in all probability the venerabl lime-trees of which this walk is composed, and which are connected with the memories of Dr. Johnson, Charles Lamb, S. T. Coleridge, and John Keats, will be spared. The trustees of the Wells Charity, who towards the close of last years had passed sentence of execution upon them, have now rescinded their resolution, having been moved thereto by an almost unanimous memorial from the parishioners and residents of Hampstead. As, however, the intended destruction of Well-walk had been sanctioned by the Charity Commissioners and their surveyor, it will be necessary to submit the altered plan of operations to that Board for their approval before the Walk can be said to have been permanently saved.

New Business Premises, Londonderry.—New business premises for Messrs. Mulholland & Co., in Bishop-street and Pump-street, Derry, have just been completed, from the plans and under the superintendence of Mr. John Guy Ferguson, architect. Messrs. Salmon, Barnes, & Co., supplied the revolving-shutters; Messrs. Defries & Sons the sun-burners; Howorth's archimedian ventilators are used; and the heating is effected on Messrs. Musgrave's patent "warmed fresh air" system. All the plumbing, lighting, and gasfitting arrangements have been carried out by Messrs. McLaughlin & McCullough; the ornamental plaster-work was executed by Mr. Creery; and the cast-iron work was supplied by Messrs. Geo. Smith & Co., Glasgow. The general contractor was Mr. Joseph Ballintine.

Yardley (Birmingham) Sewerage Works.—A meeting of the Solihull Rural Sanitary Authority was held on the 22nd ult. at Solihull, the Rev. J. Howe presiding. On the motion of Mr. Barrows, seconded by the Rev. F. S. Dodd, it was resolved that the cost of the structural works at Cole Hall and Acock's-green, and the additional sewerage required in Yardley Village, as recommended by Mr. E. Pritchard, engineer to the Authority, form part of the application to the Local Government Board for 20,000*l.*, and that no new contract for works be entered into until the present contract is completed. The amount already borrowed for works is 25,000*l.*

Tooth's Improved Railway Bars.—On the 23rd ult., a number of gentlemen interested in railway improvements visited Stratford, to witness the working on the Great Eastern goods sidings, of a new system of railway bars, patented by Mr. Tooth. The system has been in operation for three weeks at Stratford. Amongst the advantages claimed are,—prevention of concussion, the bars being made to overlap, and so enabling the wheels of the engine and carriages to get on to one bar before leaving the other; reduction of noise, and oscillation; and great saving in wear and tear of rolling stock, and in maintenance of permanent way.

The Revival of Trade.—Mr. Mundella, speaking at the annual meeting of the Sheffield Chamber of Commerce, expressed a belief that, notwithstanding the present gloomy outlook, we had not permanently lost any portion of our national industries, and said he was convinced trade would revive. The reciprocity which was most required was that between capital and labour, which would induce more mutual consideration between employer and employed.

Wedgwood Ware at the Liverpool Art Club.—An exhibition of Wedgwood ware will be opened at the Liverpool Art Club, on the evening of Monday next, the 3rd inst., when a *conversazione* will be held, at which Miss Meteyard will be present. On the same evening a club dinner will be given to Mr. Godfrey Wedgwood and other friends who have assisted the committee by the loan of examples.

Salisbury Cathedral.—The tender of Mr. Alfred Robinson, of Holborn, has been accepted by the Dean and Chapter for the screen of woodwork to be erected in the north transept for the purpose of enclosing the apparatus for blowing the organ. The designs are by Mr. G. E. Street, the cathedral architect.

Society of Engineers.—The first ordinary meeting of this society for the current year will be held on Monday, the 3rd inst., in the Society's hall, at the above address. The president, Mr. Robert Paulson Spice, will present the premiums awarded for papers read during that year, and will deliver his inaugural address.

TENDERS

For main drainage works for Bognor District, for the Bognor Local Board. Mr. Arthur Smith, architect :—

Coker	£7,820	0	0
Brass	7,349	0	0
Edmondson	7,058	0	0
Hatton & Co.	6,690	9	4
Marshall	6,668	0	0
Dickson	6,300	0	0
Young	6,134	10	0
Giles	5,838	0	0
Hayter	5,514	0	0
Dodds & Co.	5,490	0	0
Jones	5,357	0	0
Hayward (accepted)	4,876	5	0
Williams	4,200	0	0

For new Wesleyan Chapel, at New Barnet, Herts. Mr. James Weir, architect. Quantities by Mr. C. G. Mayland :—

Ansell	£9,250	0	0
Rider & Son	8,978	0	0
Hobson	8,541	0	0
Manley	8,437	0	0
Nightingale	8,201	0	0
Lathey, Brothers	8,184	0	0
Dove, Brothers*	8,025	0	0

* Accepted, with modifications, 6,200*l.*

For building a reservoir, for the Watford Board of Health :—

Turner	£6,990	0	0
Hatton & Co.	6,345	0	0
C. A. Hailey	6,300	0	0
Godwin	6,200	0	0
G. & J. Waterman	6,094	0	0
Rowland, Brothers	6,015	0	0
Pratt	5,990	0	0
Andrews & Son	5,986	0	0
Maxwell	5,890	0	0
Meston	5,750	0	0
Bell	5,585	0	0
Organ	5,450	0	0
Hunt (accepted)	5,183	0	0

Accepted for a block of offices, at Altrincham, Cheshire, for Mr. W. C. Brooks, M.P. Mr. George Truefitt, architect :—

Hamilton (Excavator and Bricklayer)	£1,280	0	0
Southern (Carpenter, Joiner, and Bell-hanger)	1,650	0	0
Patteson (Mason)	603	0	0
Ashcroft (Tiler)	161	14	0
Walton (Plumber, Glazier, and Gasfitter)	398	0	0
Flee, late Lomas (Plasterer, Painter, and Paperhanger)	436	0	0

For new parish church, Peel, Isle of Man. Messrs. T. D. Barry & Son, architects. Quantities supplied :—

Rowley & Lynex	£11,774	0	0
Carine & Goldsmith	9,600	0	0
Anwell	9,330	0	0
Black & Toul	9,050	0	0
Smith	9,000	0	0
Aspinall & Rothwell	9,000	0	0
Anderson & Radcliffe	8 910	0	0
Brown & Backhouse	8,799	0	0
Thornton & Sons	8,750	0	0
Costain	8,510	0	0
Winnard	8,283	0	0
Kinwig & Harrison (exclusive of spire)	8,455	0	0

For offices for the Croydon Commercial Gas and Coke Company. Messrs. Bernoy & Monday, architects. Quantities supplied by Mr. F. J. Mullett :—

Coles	£3,080	0	0
Hyde	2,997	0	0
Hart	2,790	0	0
Nightingale	2,769	0	0
Macey & Sons	2,689	0	0
Smith (accepted)	2,535	0	0

For shops, Thornton-row, Greenwich. Mr. Thomas Dinwiddy, architect :—

Bridel	£787	0	0
Tull	734	0	0
Greenwood	725	0	0
Jerrard	721	0	0
Redman	690	0	0
Hall (accepted)	675	0	0

For alterations to the Queen's Head public-house, Tower-hill, for Mr. A. S. Naylor :—

Little	£597	0	0
Beale	557	0	0
Shurmur	540	0	0

For the erection of shops, Amherst-road, Hackney. Messrs. Waymouth & Son, architects. Quantities by Mr. W. Birdseye :—

Sheffield & Prebble	£11,473	0	0
Sawyer	10,990	0	0
Shurmur	10,845	0	0

For shops and offices, No. 2 and 4, Warner-place, Hackney-road, for Mrs. S. B. James. Mr. Charles C. Pearce, architect. :—

Thomerson	£1,483	0	0
Shurmur	1,449	0	0
Jarvis & Sons	1,125	0	0

For additions to the Joint Counties Lunatic Asylum, Carmarthen. Messrs. Giles & Gough, architects. Quantities supplied :—

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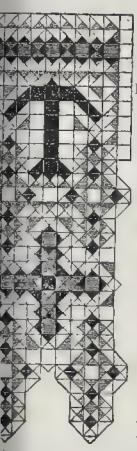
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Town and Country Mansions.

THE author of the book thus entitled* has had much practical experience in house planning and construction, and has combined with this a feeling for the picturesque in house-building, and a desire at least to realise it in practice, so far as to produce a better balance between the artistic and the practical sides of house building than we always find. It is too often the case that a man who is a very good sanitarian builds very ugly houses, hat the man who is professedly an "art-tect" succeeds only in putting more or picturesque decoration on an ill-planned inconvenient and (for all he knows to contrary) an unhealthy dwelling. Mr. g's book, although it is obviously in-d mainly to catch the eye with nice designs ated in spirited though rather overloaded graphs, contains in the letterpress evidence e attention to the practical side of the er; and, indeed, we are inclined to think, gh he will not, we fear, thank us for saying at the practical part of his book is in ty more systematic and unimpeachable its artistic side.

fact, we cannot quite reconcile the opinion ssed by Mr. Young in regard to the artistic of architecture with his practice. In some s preliminary remarks in regard to style, he is most logical and broad in his views, shows, though with a restrained and ous form of expression, an evident con-t for a good deal of what passes for Art Art-furniture and Art-schools at the present

He points out that the Gothic revival was n its best practitioners, at any rate) really vival of the spirit and not merely of the s of the style, whereas the Queen Anne ement is merely copying. "This self-styled ool' of decorators and furniture-makers phenomenon of the times, and yet they are nique. They stand in the same relation to s fanatical sectarians do to religion; they me much if they understand little; if they little knowledge of art they make up the iency by a superfluity of spurious zeal, and der themselves specially selected as chosen ls of art-knowledge, while they have never ed the matter below the surface." And there is more to the same purpose, showing that all this talk and enthusiasm, these fits of adoration over an ugly old chair, are the product of a state of feeling which is rather inimical than favourable to the advancement of art properly so called. With all which we are quite in accord. But why, then, when we turn to Mr. Young's illustrations, do we light, the very first thing, on a house designed in exact accordance with the habitudes of this new school of *dilettanti*? We said in our haste, "designed"; but, then, is this "design,"—this jumble of queerly-curled gables, and rusticated pilasters, and engaged columns, thrown together with little or no meaning? In this criticism we by no means intend to speak disrespectfully of the author of the book, as if he could not design, for we know (and have evidence in other illustrations in his book) that he can; but we are certainly tempted to ask why he rebukes the Queen Annists with the pen and then flatters them with the pencil? Probably this house, and others in the book, were produced at the bidding of clients who will have Queen Anne or nothing (for clients have that way with them now, and small thanks to them), but it is a great pity that these votaries of artistic fashion should have power to compel men who can do better things to work down to the level of their ill-advised and illogical fancies, and to reduce the architect to play the part indicated in the melancholy motto,—

> "Video meliora, proboque;
> Deteriora sequor."

If people will have these bundles of odds and ends of a corrupt style thrown together, there is, we may say, no help for the architect who has not a private fortune: *oportet vivere*. But it is nonsense to call it design, in any sense in which the word has any intellectual value; and there are other things in Mr. Young's book that are so much better than this, and are so distinctly pervaded by a true feeling for the picturesque in architecture,—the picturesque based upon plan and design,—that it is quite a pity that he put anything so ugly as these Cadogan-square houses at the very outset of his book; unless, indeed, we are to suppose that it was with a prudent desire to catch clients by setting before them something after their own heart, and showing that the author was up in the prevailing fashions of the day.

There is something to be said *pro* and *con.*, in regard to the remarks embodied in the text under the heading "Selecting a Style." We have some objection to the heading in itself, as apparently giving definite encouragement to the popular idea of the majority of clients, that it is a positive duty in the first instance, before building anything, to make up your mind to build in a particular style or manner (for the latter expression in many cases embodies much more the real truth of the matter). It is true that the author's remarks are in a great measure a correction of this prejudice, or are apparently intended to be so. "The best architect," he says, "is he who, free from prejudice, has studied the peculiarities, and communed with the genius of all styles, and who comprehends the great central art of architecture, which is neither French nor English, neither Classic nor Gothic, but all of them, and much more." And this is admirably said. But why head the chapter with a title which is in itself an essential contradiction of this sentiment? So far as the book has any influence on the mind of the average client, the result will certainly be that the said average client will be caught by the heading, and will entirely miss the philosophising under it. To get any anything into the heads of the English public in regard to architectural principles, it is necessary to state these principles in the most plain and matter-of-fact and uncompromising manner, and even then with little chance of success. But if any architect in writing about the art side of his profession expects the average reader to follow him into discriminations and critical niceties, he will be almost certainly disappointed. The only way is to tell the client, with the rigour of superior knowledge and authority, that such a view is right and such another is wrong. He may then succumb; or he may, perhaps, seek out a less uncompromising architect; experience points to the latter as the more probable result. Still, we have a great opinion that clients should be kept in order by their architects more than they are, and we suspect that in many cases, if it were decisively carried out, the client would be more obedient than a timorous architect sometimes imagines until he has tried the experiment; at all events, a man is often secretly thankful to any one who will make up for him what he calls his mind, when he cannot make it up for himself. Some of Mr. Young's observations in regard to the different way in which questions of style present themselves to persons of different habits of mind are amusing and very much to the point. As he candidly admits, the client who wants a particular style on grounds of sentiment often finds himself opposed by a contrary sentiment on the part of the architect. It is not unreasonable that he should kick against this counter sentiment, if he perceives it to be nothing but sentiment. The architect should be ready to give a reason for the faith that is in him; not necessarily "with meekness and fear," which would be too often thrown away. But the influence of habit even on the orthodox architectural mind is far stronger than it ought to be, as illustrated very aptly by the author in reference to French opinion, as contrasted with English. A French architect says of one of the best designed of modern English houses, "*C'est un Gothique affreux.*" He dislikes it because he does not understand the style, and has never learned to understand it; but a Louis Quinze design,—"*oui, c'est magnifique*," simply because it is Louis Quinze. In which also there is instruction.

Among the designs illustrated in the book, those which partake of late Gothic and Eliza-

*own and Country Mansions, and Suburban Houses. Notes on the Sanitary and Artistic Construction of ses. By William Young, Architect. London: E. N. Spon. 1879.

bethan manner are the best, and (as our way of characterising them indicates) they consist less of mere reproduction of old materials, and show more originality of detail and combination than the Queen Anne designs. Perhaps the best is Holmwood House, Hants, the main view of which we think we remember in one of the Academy collections in the architectural room. The author has contrived very successfully to combine picturesque outline and grouping with suitability of plan, and with a sufficient predominance of horizontal lines to give solidity to the whole. We do not altogether reconcile the staircase design and detail with the exterior. Of course, mullioned windows are found in Elizabethan mansions, combined with internal details and fittings which have more reference to the coming Jacobean era than to the past Gothic era; Elizabethanism being the connecting link of the two. But the exterior of Mr. Young's design has decided reminiscences of Gothic, more than reminiscences, while his staircase has not a suspicion of Gothic detail in it; the distinction is greater than would be found, as far as we remember, in actual examples; but even if there were precedent for it, why not correct this obvious want of coherence in architectural manner, and render the whole design of the interior and exterior homogeneous in feeling? It is not so in fact in this case, regarded as modern work, and is hardly so even historically, if that were a matter of consequence. The plan is a very good example of convenient and, at the same time, effective arrangement. The specimens of decorative treatment of interiors, given in the book, are very pleasing in some cases, though all to our thinking more or less suffering from the fault of the day, want of repose, and over-elaboration of parts. This is, perhaps, intensified by the manner of the photo-lithographs, which we have already referred to as overloaded. It is the fashion now to get up decorative drawing of this kind with a profusion of marking and shading, which seldom comes out over-clearly in the photo-lithographic process, but which, by giving a generally full and rich effect, enables often a small amount of thought to go a long way in a drawing, shading and graining doing so much to fill up spaces and give a look of great elaboration. This is quite unnecessary in these designs, which even in execution would certainly not appear deficient in variety of detail; but the point is worth mention in regard to the general practice of architectural drawing of this kind at present. We should prefer to see more certainty of line and definition, with less of mere surface-work, which can be made to cover a multitude of sins often in a drawing which would have little to recommend it if reduced to pure form, without this "colouring up" at the hands of the draughtsman.

The practical remarks in the text of the book, arranged under the heading of the different classes of apartments, are, though brief, very much to the point, and very well written. It is only just to others who have treated of the conveniences of house-planning, to observe that there is, as far as we have noticed, no new light thrown upon the subject, beyond what is to be found in other treatises by members of the profession who have treated of house-planning in a practical spirit. Mr. Young's work, however, is obviously not intended to be in any way exhaustive in these matters, and is, we presume, rather addressed to non-professional people who may wish to gain some general knowledge on the subject of houses than to architects. The perusal of it will probably enable an intelligent client to keep a look-out on his architect to some extent, and see that he gets from him all attention to the various *desiderata* which are brought forward and commented upon. Whether that result is to be considered as an advantage or not depends, of course on the point of view from which it is regarded.

There are, however, suggestions in Mr. Young's pages which many members of the profession would do well to take into account more than they do. That "the architect should always see the site before commencing to study the plans" would seem to a rightly-constituted mind, no doubt, a truism, but we suspect it is not unfrequently neglected, and plans are sketched and then made to suit the site afterwards. It is certainly a mistake to suppose that a mere plan of the site, however accurate, will answer the purpose: did any one ever visit a site of which he had had a plan previously, without finding something about it of which the plan gave him no idea? We must, however, protest against some of the remarks under the heading of concrete; for instance, that it would be found a hazardous experiment to employ it for floors or roofs in a dwelling-house, "and most probably a complete failure." There may be question as to the material being liked for floors, but that is the only doubt about it; and it is quite certain that there can hardly be a better roof than concrete properly constructed and employed. In general, however, the practical recommendations contained in the book seem quite unimpeachable.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

RECENT ARTISTIC LOSSES; THE GOTHIC REVIVAL, AND SIR GILBERT SCOTT.

And now I must turn to that other recent loss, which we, as architects, have specially to lament, in the death of Sir Gilbert Scott. It has rarely happened, I think, to any modern architect, to be in so full a manner, a representative of that which may almost be called an architectural Revolution. It is still less often the case, that such Revolutionists experience in their lifetime, so large a measure of success, as fell to the lot of our late gifted Academician.

I am not about to discuss any peculiarities of his work in detail. The time is perhaps not yet come for such an examination, nor should I be so presumptuous as to attempt it. I wish rather to notice some of the principles of the important architectural movement, with which his name is associated, and to remark in passing, on any points which may be useful to ourselves at the present time.

Sir Gilbert Scott, when filling the chair of Professor of Architecture, established many claims to your gratitude, and I have noticed, with much satisfaction, that his lectures have been lately published by his representatives, and thus laid before the great world. He was, I have always thought, remarkable as much for the candour of his judgment, as for the extent of his learning, and the depth of his convictions. Thus, speaking of the Dome, in one of his lectures, he laments that it had found no abiding place in that great system of English Mediæval architecture, to which he was devoted.

In this passage he declares, as I think most correctly, that the noblest of all forms by which a space can be covered is the dome, and that of all architectural features it is "the most sublime, and the most poetic, and is susceptible of, and demands the highest artistic treatment." Further on, he does full justice to Michelangelo's grand dome of St. Peter's, as well as to Wren's masterpiece at St. Paul's, pronouncing the latter to be the most successful, as regards external appearance, in the world. His remarks as to the internal treatment of this crowning achievement of Renaissance architecture, have a special interest, at the present time, when it is understood that a renewed attempt is to be made to induce some of our best painters to devote themselves to the glorious task of decorating the dome of St. Paul's.

Sir Gilbert Scott, alluding to such an application of painting, declares that "the dome, without its appropriate decorations, is but the body without the soul. It is the sister art of painting which breathes life into the otherwise breathless form. Such painting must, however," he adds, "be adapted to its position with skill, knowledge, and study." Painters must remember that the dome possesses "an essential form, on which its very stability, real or apparent, depends. They must, therefore, keep their art in subordination, so as not to disturb that essential; but rather to bring out and emphasise it"; otherwise the application of high artistic painting to the dome "will not prove a loving union, but rather a hostile collision of the two sister arts."

Sir Gilbert Scott's devotion to Mediæval architecture is well known, and it was a cruel irony of fate which imposed upon him the task of constructing the Public Offices in a style which, though he had studied it, was not that of his matured choice. He speaks, in his lectures, of his original enthusiasm for that revival of Gothic architecture in which he took subsequently a large and successful part. At the same time, he declared his catholicity of taste, protesting against being considered narrow or one-sided, and expressing, as he said, no "stinted or col hearted" eulogy of the architecture of ancie Greece and Rome. Of the Greeks, he speaks "the most wonderful in intellectual power all the races of man. That race, inspired as would almost seem of God, to be our instructo in literature and art, and our initiators in scienc just as was another people to be the teachers His holy religion." The Roman style, he sai had great merits. It "amplified and extend the capabilities of Classic architecture, rende ing it capable of meeting every possib emergency and demand, whether of mater or construction, and giving it a cosmopolit character, suited to a people which had co quered the world, and which, if itself a race iron, united under its world-wide sway, brass, the silver, and the gold, of the ol rulers of mankind."

Sympathising deeply with the revival Gothic architecture, which has been one of t most remarkable events of our time, Sir Gilb Scott was well aware, that for any revival have a chance of permanence, it was necessa that it should rest on a rational basis. We ha seen, on former occasions, how spontaneous irresistible was the Renaissance movement Italy. In our country it was hardly less pote though, in accordance with the genius of English people, the march of change was m measured and gradual. It was, however, n the less complete. Wren spoke, as we know Gothic as a barbarous style, and his towere Westminster Abbey remain to testify to imperfect appreciation of Mediæval art. whole soul was thrown into the revival of his d day, which aimed at the adoption, more or l of Roman forms in all our architecture, whet sacred or domestic. The "revival of lette led the way to a revival of architecture, the effects of the then recent Reformation no inconsiderable share in inducing men t ready to break with the past.

The movement towards a Classic revival not partial or insular. It extended to all civil nations, and although it may have been chec it has never been stopped, and is still in prog

There are those who, as we know, repu Revivals, and think by so doing to obtain o nality. A vain hope! Architecture, th the first among the arts, is not free, as are sisters of Painting and Sculpture. She h scientific or material as well as an artistic and must accept limits, or fetters, if you li call them so. She has, moreover, to re antiquity, and must take into account reverence for the past, which mankind in ge largely entertains. She has further to be u as well as ornamental, and must there restrain her genius by the canons of com sense.

Sir Gilbert Scott was a revivalist by t as well as from conviction. He tells u "love for Gothic architecture was absol spontaneous," and that he then looked on Cl work, as "an alien to our race and our religi I do not share this opinion, but we may the very strength of the expression, a pre the devotion which is characteristic earnest artist.

The advocates of originality in archite will, however, return to the charge. "W they will say, "have Revivals at all?" tecture used to be progressive, changes indeed naturally, as blossoms succeed but such violent revulsions of public ta the Classic Renaissance on the one hand the Gothic Revival on the other, are m portents.

The only answer that can be given, is circumstances are changed. We can no as our forefathers were. The time is past men agreed to receive their policy, their rel their architecture, from others. The "r of letters" was an outburst of freedom, we will have liberty, we must accept its backs.

Let us consider for a moment how liberty has worked in the architectural h of our country, from Mediæval times.

In the Gothic architecture of Englan may easily trace the progress spoken of by objectors, up to a certain point. Then it n a retrogression begins, and, ultimately, t na'ssance appears, involving an abrupt with tradition. We have seen how the style gave way to the Norman, and als the so-called Early English and Dec varieties continued the onward movemer last, in the Perpendicular and Tudor p signs of faltering energy became apparent

* First Lecture. See p. 115, *ante*.

ease of appliances for domestic comfort gave mpetus to changes of form, in the direction he trabeated or horizontal principle; while perfluity of ornament evidenced the decay he great principle of noble architecture, rated construction, as opposed to constructed oration.

he old forms were soon to be discarded, ther with the decoration which had, more ss, corrupted them. They took refuge for ne in the architecture which we call Eliza- an, or Jacobean, but which is, in truth, nsitional, and had not time enough allowed t, for being formulated as a regular style. liæval art seemed to have run its course, and e about to expire, when the Classical revival Inigo Jones and Wren arose to bid it dis- ear.

Why was the change welcomed? The new ary enthusiasm had perhaps the first place ng the factors of change; but must there also have been other causes at work? e elaborate requirements called, it may be, more complex arrangements, and for these old Mediæval architecture might be deemed . The necessities of modern life may have ed opposed to Mediæval feelings and tradi- s, and thus a change, which was almost a olution, may have come to be hailed with faction, and even with enthusiasm. hether, if the new love for the history and ature of Greece and Rome had not arisen n it did, it would have been possible to lope from the Tudor and Elizabethan archi- re of England a style which would have ed for modern wants, is a problem which never been solved. It is, I think, matter egret that this is so. Our English Transi- al designs have many merits, and possess, as ems to me, much capacity for improvement. e leaders of the great Gothic Revival, with h Sir Gilbert Scott was connected, took a hopeful view. They looked further back- ds to Mediæval works alone, and seemed to rd the past as a garden, from which flowers t be culled at random, adopting one Gothic or another, as individual taste dictated. not mean to discuss now the advantages or drawbacks of such a course; but it is ent that a Revival pursued in such a manner t a development, but an eclectic adoption of ain phases of an old order of things.

e Renaissance revivalists were somewhat ter, possibly because they had a less wealth aterial on which to exercise their choice. Romans adopted Greek architecture as a le, while adding to it the arch, with all its eaching consequences. The introduction e arch was, to a great extent, an engineer- expedient. It gave power, freedom, and sty to the graceful, if somewhat mono- us, forms of ancient Greece. The latter were by the Romans for frontispieces, as in the ication of porticos, with horizontal enta- ures, to buildings in which the arch pre- inated. The beam and the arch thus co- rated in a friendly rivalry, and that they so co-exist, is one of the claims of Classical on our approval to-day.

ren, the great master of the English Renais- e, availed himself of the liberty thus ac- ded to him. Inigo Jones, in his new portico . Paul's, exhibited a trabeated construction, in the executed fragment of his design for tehall the arch finds no place. Wren, how- r, used the arch with readiness, and adopted noblest exemplification as the crowning ure of his greatest work.

he Mediæval architects had found out, long ore the Renaissance, that the severity of the nted arch involved them in difficulties, par- larly in domestic work. The segmental n and the four-centred depressed arch, were expedients adopted by them to overcome inconveniences which made themselves felt; although by such methods increased plas- ty was obtained, it may be doubted if it was too dearly purchased, and Mediæval art has er, at any rate, felt itself able to accept the t services of beam and arch with the same rity that was displayed by the Renaissance nitects.

When we consider the progress of the Renais- ce movement, and observe how, starting n Italy, it penetrated into all countries, ablishing itself everywhere, with more or success, it is impossible to avoid the con- ion that there must have been some potent son of general convenience underlying so arkable a propaganda. In this country, r the new method had taken root, it needed a new revival to obtain even a hearing for the claims of the old Mediæval art.

It appears strange to us that, with such vast stores of Mediæval artistic beauty as England possesses, such a state of things should have been possible. We may have our individual predilections for either of the rival schools, but it may almost seem to us a thing incredible, that Wren, for example, should find nothing to admire in Westminster Abbey.

It was, perhaps, from the artistic deficiency exemplified by such an instance, that the revived Classical architecture in England ceased to advance, and then became neglected. It had, indeed, been, to a great extent, imposed from above. The king and court were the first patrons of the new order of things, and the revival, therefore, lacked spontaneity.

Then came, in process of time, tastes for Egyptian art, and imitation of Greek temples, with little real feeling, and still less power to adapt, rather than copy, with a blind subservience, forms which are unfitted for our wants, and unsuitable to our climate. Such reproductions could not commend themselves to the practical conclusions of our countrymen; and they served therefore, as episodes only, in the architectural history of the day.

The impetus of the Classical revival was well nigh spent, and the age of no-architecture appeared to be at hand. Houses without taste, and churches in decay, abounded, in what may be called,—*The Dismal period*,—the period of Bloomsbury streets, and Batty Langley's Gothic.

It was then that the important movement arose, in the later phases of which, Sir Gilbert Scott was destined to take the foremost place. Horace Walpole had played with Gothic at Strawberry Hill, and Sir W. Scott had entranced a nation (already, alas! half forgetful of him) by the creations of his genius, which turned men's thoughts to the habits, customs, and architecture of olden times.

Sir Gilbert Scott has himself told us, however, that these things did not move him, and that his love for Gothic art arose independently, and with an unconscious will. We are all of us, nevertheless, so much influenced by associations, that it is difficult for any one to assert an absolute independence, and it may well be that he was drawn on, like others, by unseen influences.

A revival, if it be more than a passing fancy for a new plaything, must be called for by some new want to be supplied, or by some deficiencies to be atoned for. At the time of the Gothic revival, both these conditions were present.

In the first place, a craving had arisen for something better than the then prevailing dreary bareness of churches, public buildings, and houses. Men began to turn to art as a civiliser and teacher; a revived earnestness in religion brought new forces into play, and everything became ripe for an architectural revival.

The new desire for something superior to the architecture of Baker-street had already shown itself in such monuments as St. George's Hall, Liverpool, the Royal Exchange, the clubs in Pall-mall, and important buildings for City companies, banking, and other associations, in London and elsewhere. Thus far, the idea had been to take up the work of Inigo Jones and Wren; to purify it by the refining influence of Greek art, and, in this way, to carry on the Renaissance to a successful development.

The movement has never stopped. A time came, however, when it was checked. This was the period of the Gothic revival.

I have spoken of deficiencies, to be made good. An age of ecclesiastical neglect had allowed our cathedrals and churches to fall into decay, and there was ample room for the energy of one of the leaders of the revival, the Cambridge Camden Society, with its suggestive motto, "*Donec templa refeceris*."

A nation so conservative in its instincts as the English could not long tolerate the sight of churches closed for want of repairs, and cathedrals walled up, and divided, because avoided, and disused. A cry was therefore raised for the building of new churches, and for the repair and restoration of old ones. A strong ecclesiastical movement revived an interest in the fabrics, while it pressed earnestly for consideration of the spiritual necessities of the Church.

Sir Gilbert Scott soon became identified with the Gothic revival, and one of the best known of his early works, which brought him fame and reputation, is the parish church of St. Giles, Camberwell.

In the competitions at Hamburg, he further proved that English architects feared no foreign rivals, and could encounter them, in their own country, with success. The noble church, erected as the result of one of these competitions, is among the most important works, wholly designed by Sir Gilbert Scott, and was, I believe, so considered by himself.

The Gothic movement would scarcely have advanced as rapidly as it did, if it had not been for the choice of Gothic architecture for the rebuilding of the Houses of Parliament. For this work, it became necessary to train workmen for the various departments of stone and wood carving, encaustic tiles, decoration, metal work, &c. Of the leaders in such teaching, none can compare with Augustus Welby Pugin, who lent his willing co-operation to the architect of the building, my father, Sir Charles Barry.

To educate workmen in Gothic principles of work, collections of casts and specimens were made, and Sir Gilbert Scott became one of the first and warmest supporters of the Architectural Museum at Westminster, an institution established with this object.

The influence exerted by Pugin and his followers made itself felt in all the subsidiary pursuits which are allied to architectural design, and thus it became possible for architects to ensure the due execution of their ideas, in the style now coming into use.

Gothic churches multiplied, cathedrals were repaired and restored, and became once more thronged with overflowing congregations. The old neglect had passed away under the energetic impulse of, it may be, a too indiscriminating zeal for newness, under the name of Restoration.

Architecture was again enlisted in the service of the church, and many a fierce controversy about Ritual arose from the connexion. The days of barn-like churches were over, and whitewashed interiors were no longer considered a necessarily Protestant institution. The duty was everywhere preached of building our churches in all the "beauty of holiness."

The taste for Mediæval architecture was thus warmly encouraged by the clergy, who looked upon themselves as the guardians of our sacred buildings, and were active promoters of a Revival which they were able to make ancillary to their own views of ecclesiastical polity.

In secular work, the new taste also prevailed, although not so strongly. Banks, town-halls, law courts, and other important buildings were erected in one of the Gothic varieties of style; although for such purposes, the Renaissance was still often employed, as, indeed, it is at the present time, when signs may perhaps be detected of an increasing feeling in favour of Classic architecture or some modifications of it.

In adapting the revived Gothic for such buildings as I have mentioned, certain inconveniences were felt, and increased elasticity came to be desired. Some of our architects have sought to attain these ends by mixing Italian and French peculiarities of detail with those which are purely English. The employment of large shafts in columns, and the partial abandonment of moulded, for plate tracery, date from this period. Sir Gilbert Scott did not, however, accept with any readiness such a modification of the revival movement. To him it was a national effort to revive the English forms of Mediæval architecture. We may see traces of admixture of the foreign element in certain of his church fittings, but in his more important designs for buildings (always excepting the Albert Memorial in Hyde Park), he remained, as he began, emphatically an English architect. At the time of his death, Gothic architecture had become completely accepted as the Ecclesiastical style, while, for other buildings, no final decision can be said to have yet met with general consent.

Sir Gilbert Scott was, neither by taste nor temperament, an innovator. He wished to restore, in architecture, the ancient ways, with due regard to the different circumstances of modern life. In the conduct of a great movement, there is room for diversities of character, and enthusiasm will sometimes lead to extravagance. The Gothic Revival, and the so-called Tractarian movement went on together, hand in hand, with mutual help and sympathy; but Sir Gilbert Scott was too earnest a champion to wish his cause to be identified with any single party. In his works we may see evidences of sobriety of taste, and calmness of judgment, such as distinguished many of the High Churchmen of the day, as, for example, the late Dean of Chichester. To such minds, the Revival was welcome, as long as it did not go too far, and

enabled them to tread the *via media* of safety. Sir Gilbert Scott may perhaps be called the Dr. Hook of the architectural Revival.

He was not content to limit the claims of Gothic, however, to ecclesiastical purposes, but published an earnest appeal for its employment in secular and domestic buildings. This appeal was, however, but partially successful, and he had the mortification of seeing his most important design for a public work, the public offices, set aside by Lord Palmerston, from an avowed preference for Classic architecture.

Many of us may remember the fierce controversies that raged, on that occasion, between the advocates of the rival systems, a veritable "Battle of the styles." Discussions arose, on all sides, as to the suitability of various details, to the wants of modern life. Must a Classical building be inconvenient? Can sash-windows be used in Gothic windows? Such, and many other questions were asked, with little heed to the answers.

I dare say many of you may still feel bewildered at the din of rival schools, and are perhaps asking the old question, "What is truth?"

The freedom of art rejects infallibility, but some answer may perhaps be found in the reflection that though styles may be many, art is one, and catholic. All good styles have the same characteristics, and it may be our part to seek to grasp true artistic principles, while refusing to be bound by too precise forms.

With the history of all styles before us, there can be no good reason why we should voluntarily shut up the stores of knowledge at our disposal. Rather should we seek for the key to enable us to profit by the rich and varied accumulations of the past.

Truth and beauty are to be looked for in all really healthy forms of architectural art, and we may fairly apply these principles as tests. We must have truth, not only in construction, but also with regard to the general character of our work, its proper application to the purpose intended, its suitability to the climate, the habits of its proposed occupants, and to the materials employed.

In all these things, nature may be our guide. Not, as I have before endeavoured to explain to you, that architects can go to nature for direct inspiration, but because they can learn from her, as they can do in no other way, the perfect application of the principles of truth and beauty in those works of the Almighty which seem to have been intended to elevate the mind of man above the passing miseries of the world, and to draw it upwards to the contemplation of a perfect and glorious future, in which Good will rule for ever over Evil.

Our architecture must also be beautiful as well as truthful. Here we tread upon the embers of the old contention that Truth *is* Beauty. To accept this doctrine unreservedly, we must adopt a very far-reaching definition of truth, which, it may be feared, a combination of art with science, such as architecture, will never be able to agree upon. In the meantime, architects must accept the doctrine that their work should please from its beauty, as well as satisfy from its truthfulness.

You will, I believe, be more likely to be successful in this aim if you are contented to be guided by the past, than if you are for ever striving for originality, and for new combinations.

Nothing is more striking in the great works of architecture than the effect produced by the skilful combination of a few forms. We cannot be always inventing new shapes of arches and pillars, mouldings and capitals, but we may at least seek to acquire the power of using the materials we have intelligently and with beauty. An unsparing critic of architects has lately declared, that "what we want is not a new style, but the genius or taste to build decently in any style."

If this be so, we may at least plead for a certain liberty, and decline to be bound by the arbitrary ruling of those, who, having acquired a predilection for one style, or even for one fleeting variety of a style, denounce all others with an indiscriminating intolerance.

Such has not been the teaching from this place, either from Professor Cockerell, Mr. Smirke, or Sir Gilbert Scott.

The first-named refined and gifted artist ever recognised the essential principles of art, in whatever forms he found them embodied. These latter were to him mere accidents, and were not suffered to obscure the divine flame of genius.

Professor Cockerell was an ardent admirer of Greek art, and its influence pervaded all his work. He occupied a foremost place in the revived Renaissance movement, already referred to, and he left behind him a school, a tradition, and a most worthy representative. Alas! that I must speak of the latter, as of the past. Cut off in the prime of life, in the fulness of power and genius; a graceful artist, a true and generous friend; those who are left to bewail his loss may find some consolation in the reflection that the mantle of the father had descended to the son, and that in his hands a great architectural name had suffered no diminution of lustre.

Sir Gilbert Scott, in his teaching here, repeated almost the words of Professor Cockerell, in enjoining a candid examination of the principles of diverse schools.

In his last lecture, he thus counselled students of our art,—"In these days of miscellaneous distraction, it is difficult to give advice as to the choice of a groundwork of study. Having no actual style belonging to our age, you must choose between the two Renaissances,—the Classic and the Gothic,—as best you may." Further on, he says,—"Your choice being made, you must study with all diligence, and with the most assiduous attention, the best and purest examples of the style you have chosen; making yourself thoroughly acquainted with it, from its very root to its minutest details, and using every endeavour to catch the true artistic spirit of the style, in its best phases."

These words were uttered more than five years ago, but they are not less applicable now than when they were first spoken. Indeed, they may almost seem to have been prophetic of a time when the exclusive principles of the Gothic revival may, perhaps, have lost something of their strength, and when certain of the more adventurous spirits among us appear to be striving for a fusion or compromise, where lately all was sternness and exclusiveness.

For my own part, I cannot but adhere to the teaching of my distinguished predecessor, with this difference, that his tastes had led him into the Mediæval camp, while mine tend in the opposite direction. There can be no legitimate grounds for expecting success, on either hand, unless with devotion and enthusiasm, and a firm resolution to do your best. Advancing in this manner, with science as his handmaid, and the accumulated knowledge of the world open to him, the architect may yet hope for success in his art, not inferior to that which has illuminated the past history of the world.

I commend to you the above quoted advice. It is always interesting to discuss the possibilities of an architectural future, and we may amuse ourselves with devising *châteaux en Espagne* in a new and perfect manner; but, in the meantime, we must deal with the styles familiar to us, and do our best with them.

The great revival movement, which Sir Gilbert Scott did so much to further, has now reached a respectable age, and we can in some degree measure its results.

Fostered by ecclesiastical influences, it was but natural that it should illustrate the effects of that powerful impulse. The greatest architectural successes to which it has given rise may consequently be looked for in the structures intended for sacred uses.

The name of Sir Gilbert Scott will ever be indissolubly associated with such works, and it is upon them, that his fame will chiefly rest. In his case, as in that of Sir F. Grant, we cannot now determine the award that will be ultimately given by posterity. There are too many differences among living critics to allow us to recognise their judgment, whatever it may be, as final, in a case of contemporary history. The heated discussions, on questions of restoration alone, will suffice as a warning. No one, I suppose, will dispute that an age of neglect must be followed by an age of new building, or by an age of Restoration. If this were not so, architecture must perish out of the earth.

The Gothic revival partook of both these characteristics. It has been an age of new building, for it has covered the land with new structures, designed, more or less, on the old Gothic principles. It has also been an age of Restoration.

How far restoration may be carried is, as you know, a subject of fierce controversy at the present time. Are we to rebuild deformities because they exist? If not, what canon of taste or archæology is to prevail? On this point, I may perhaps quote once more from the words of the illustrious original President of the Royal Academy:—"Ancient ornament having the right of possession, ought not to be removed unless to make room for that which not only has higher pretensions, but such pretensions, as will balance the evil and confusion which innovation always brings with it."

Having given full weight to this wise advice we must remember that modern restorers have had to deal with difficulties, not of their own creating. No name will be handed down to our successors as much connected with recent restoration as that of Sir Gilbert Scott, and no one has been more vigorously, and, as I think, in many instances, more unjustly, assailed, in reference to this question.

It is all very well for a number of gentlemen especially if possessed of *dilettante* tastes, to denounce all alterations, and tell architects that is their duty to preserve everything that has an historical interest, regardless of convenience and treating good and bad alike.

Architects, however, have to deal with the pressing and practical wants of the day, and must bring common-sense to bear on their daily work. It is quite right that they should be conservative in spirit, jealous of unnecessary change, and should regard the ancient buildings committed to their charge as a sacred trust.

It is, however, a very different thing to forbid all restoration and change; and when this is done by those who have no responsibility in the matter, it is difficult to avoid thinking that certain persons who loaded others with burdens too heavy to be borne, and would not touch the same with one of their fingers.

Mistakes will, of course, be made in all great movements, such as that of the restoration of our Mediæval monuments. In so long, active and laborious a career as that of Sir Gilbert Scott, I doubt not that episodes occurred which may not have commended themselves to a riper judgment; but I am sure that, many of those who have been ready to listen to accounts of rashness, formed an erroneous view of the character of our departed friend,—of his painstaking habits, his calmness of judgment, his modesty, and his love for his art. To such dispositions, such public attacks as are too often lightly made, become a heavy burden, and I have reason to believe that they were latterly much felt by Sir Gilbert Scott.

A great architect stands forth before the world. His works are public property, at least as regards the right to criticise and assail them. His deeds are not like those of statesmen, lawyers, and other public men, whose mistakes are soon absolved, if not soon forgotten, and can his failures be buried, like those of another profession. It may perhaps be whispered that even our greatest men do sometimes go astray, but the architect must be infallible. He is supposed to be bound to break a lance with all comers, and must be ready to defend with what executed by him in the first enthusiasm of youth, as well as his achievements of yesterday. I will not complain of this necessity; but may I suggest to some of our critics that they would regard such demands if applied to themselves?

If architects be taunted with their inability to agree on the style to be adopted and the principles which should govern their art, it is perhaps be remembered that such doubts are not their exclusive heritage, and that doctors have been known to differ. Nay, if we take a wider range of vision, and lift our eyes to the dignified eminence of the judicial bench, a layman may possibly be excused for thinking that the "battle of the styles" shrinks into insignificance in comparison with the battles of the Judges.

It is not for me to defend the restorations of Sir Gilbert Scott, still less to assume, respecting them, the semblance of an apologetic tone. His works stand on their merits, and need no champion. I wish, however, to caution young architects against lending a too willing ear to denunciatory anonymous criticisms. It is never difficult to find fault. The *suppressio veri* and *suggestio falsi* are twin-brothers of evil. No work of architecture that the world has yet seen is beyond criticism. How easy for any one to enumerate a string of faults, and shut his eyes with wilful blindness, to merits and successes!

It was declared lately, and most truly, that it is impossible to have a generation of great artists, when the general taste is degraded. To prevent or to remedy such a state of things is the office of the real critic. Good criticism

fore, I believe, not only an advantage to art; but even a necessity for its existence. e useful, however, it should be candid, and generous. When you read in a newspaper olesale condemnation of the work of a great receive it with distrust. It is not, on the of it, likely that all he has done is bad; must surely be some merit, some redeem- ualities, which call for appreciation. You at least pause before you denounce one on n responsibility weighs heavily, an artist has won his way anxiously and toilfully up ladder of fame, at the bidding of some r writer of smart sayings, who pens his censures behind the often unfair shield onymous secrecy, which prevents all know- on your part of his fitness for his office, ven of his motives.

you desire yourselves to obtain success and in your profession, do not believe that reputations are lightly won, or easily sup- d. Do not expect that the goal is to be ed, otherwise than by patient and laborious . Once more quoting Sir Joshua Reynolds, dents must therefore be told, again and , that labour is the only price of solid fame, hat whatever their force of genius may be, is no easy method of becoming a good er." With a change of the last word, this ine will apply as fully to the architect as s fellow-student. In no profession, other his own, is steady application more re- d: You must not be discouraged at failure, nust be prepared for censure when you perhaps expected praise. Sir Gilbert s reputation stands so high that it can to be fairly criticised. I do not say that re to refuse to listen to any reasonable dis- ns of particular works, but I do ask you ter upon this consideration with a pre- ion in favour of the architect who has ht to his task the learning and devotion fe, and has probably dealt with questions, raised as novelties, when some of his confident assailants were in their cradles. ember," as was said not long since by ern Nestor in council, to a youthful and hat pugnacious disputant, "even the st among us may err sometimes."

Gilbert Scott was too learned to be over- ent. Invariably kind to the young student, s all his life a student himself, and his t unassuming manner bespoke the character who was ever a learner. His name lives ly in stately cathedrals, but in many a village, as the great church-architect of y. He was a worker at his art until his ; and when his time of rest came, his s were fitly placed in that famous abbey he loved so well; that national Campo where sleep so many of the great and nes of the past; that Royal Church whose ame causes a thrill wherever the English ge is spoken, and has braced the nerves y a man, from Nelson downwards, to do ty in the service of his country. His was formed by the side of that of Sir s Barry, to whose place in the Royal my, he had succeeded, on the death of ter in 1860.

career of Sir Gilbert Scott was, as I aid, in some respects, unique, and, in all bility, the exact circumstances of the which affected it, can never recur. To gentlemen, as the younger standard- s of the profession, it may nevertheless encouragement. We may all, at any letermine that our noble art shall not in our hands by any lack of devotion, work, and perseverance. Thus may we though, it may be, at a distance, in the of the great men who have passed before, us may we endeavour to deserve, if it be ven us to achieve, success which may re with theirs.

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kmen's Industrial Exhibition.—In uence of the success of the recent exhi- of this nature in the same locality, it has termined to hold in Westminster another ion, "open to the *bonâ fide* work of persons ng to the industrial classes resident in ." At a public meeting held at nor Hall, Buckingham Palace-road, on ay, the Right Hon. the Speaker in the esolutions to this effect were passed, on ion of the First Lord of the Admiralty, therford Alcock, Sir J. M'Garel Hogg, er gentlemen.

THE LIBRARY OF HERCULANEUM.

THE visitor to the rooms of the National Museum at Naples, rich in priceless treasures, must have observed in one of the upper apartments several curious sets of apparatus at work, and wondered no less at the objects than at the indescribable patience with which the labour bestowed upon them is pursued. He would observe there, in glass cases about 3 ft. high, and placed upon small tables, cylindrical pieces of a charred material, hung up on fine threads and carefully bedded on wadding, of which various parts have been peeled off and pasted on thin, transparent skins supported by the threads. Year after year workmen are seated at the small tables, operating with astonishing care and patience on the pieces of charcoal, and trying to detach their surfaces by means of chemical liquids, gumming materials, and pincers. On the walls of the room are hung up, framed and glazed, larger and smaller black strips, and leaves are to be seen which have evidently been obtained by that patient labour; and if we take a closer look, we notice closely ranged characters, and under each strip or leaf a label, containing, for instance, Φιλοδήμου περὶ μουσικῆς (Philodemus on Music), Ἐπικούρου περὶ φύσεως (Epicurus on Nature), and so on; and there can be no longer any doubt that we have writings, and of old authors, before us. Indeed, they are authors of Rome and Greece, who are once more being rendered legible to us by the labour described, and what appear to us as round pieces of charcoal are the original volumes of a library in which they were read more than eighteen centuries ago. The room is called the "Hall of Herculaneum Papyri," and its contents consist of the book-rolls found in the middle of last century in the buried town of Herculaneum, of which only the smallest portion has been opened and deciphered.

It is well known that, besides the Egyptian papyri, this find is the only one of its kind of classic antiquity. It was not a small triumph for archæology when, for the first time, such a manuscript roll, as it had been laid down by the ancients, was looked at and felt, and more so when the opening and deciphering of it had been accomplished. Of course it required a long time and great pains before this was attained. What is now considered an unheard-of act of vandalism,—that formerly the rolls were cut through lengthwise, and separated as well as could be done,—was considered a great gain at that time; and this will be easily understood when the nature of the rolls is taken into consideration.

The material on which the Greeks and Romans wrote, following the example of the Egyptians, was (besides the wooden tablets coated with wax, found in Pompeii, and the parchment invented by Eumenes of Pergamum) the fine bast of the papyrus plant (*Cyperus papyrus*, L.), growing in Egypt, Syria, and Palestine, as well as in Sicily, Calabria, and other localities. The carefully detached strips of the bast, generally from 10 in. to 12 in. long, and 4 in. to 5 in. wide, had to be prepared for use by washing, bleaching, and smoothing. The writing materials were cane pens and an ink prepared of soot. For a larger manuscript, of course, many of those papyrus strips were required, which were pasted together along their longest margins, so that each strip formed a column of writing about the breadth of the hand; and the whole "book" consisted of a long piece of papyrus several feet long. In order to facilitate handling and reading, the strip was fastened at one end to a round stick (the ends of which were provided with knobs), and rolled round it. The back of the leaves was not written on; consequently the title could be written on the outside of the roll, lengthwise, in large red letters of a more or less ornamental nature. In order to read, the book had to be held with both hands and gradually unrolled, by which one column after another became visible. All the Roman expressions having reference to books have been derived from this mode of procedure. *Liber*, "the book," originally means "bast," the inner bark of a tree; *volumen*, "the volume," indicates a "roll"; *pagina*, "the page," is connected with *pangere*, "to fasten," and describes the single "pasted-on strip." For opening the book, to "unroll" was used; for closing, to "roll up." The word "rubric" also may be ascribed to the fact, that the titles of books and their sections, especially of collections of laws, were written with red ink. In order to improve their appearance, the backs of rolls, especially of those exhibited by booksellers, were often dyed with saffron colour, the edge polished with brimstone and coloured red. Valuable writings were provided with an especial parchment covering, and for moving them about, large boxes were made, in which a number of rolls were placed upright, and which slaves carried behind children to school, or behind men to their offices and clubs. In the libraries the rolls were put into bookcases and on shelves in such a manner as to show their titles, the bust of any celebrated author often being set up above the section of the library where his works were kept.

The contents of a private library, dating from the first century of our era, were found thus arranged in Herculaneum. It was in 1752, consequently after a long break in the excavations, commenced in 1713, that the owner of an estate at Resina, in digging a well, came upon the peristyle of a handsome house, the so-called "Casa di Aristide." In its garden, which extended to the sea, there were found, between the columns of a pavilion, the bronze statues and busts numbered among the most valuable treasures of the Naples Museum, such as the Reposing Mercury, the Drunken Faun, the Sleeping Faun, the two Prize-runners, the so-called Seneca and Plato, &c.; in a small room of the principal building were a number of book-cases, and in the centre a round desk, in the form of a table. On the latter lay cane pens, styles, and inkstands. The former were surmounted by busts of Demosthenes, Zeno, Epicurus, and Hermachus, and contained nearly 3,000 well-arranged rolls. The book-cases, as well as their contents, were completely carbonised, and it will be easily understood how the black objects, which had preserved their cylindrical form more or less, and the edges of which showed a great similarity with the annual rings of wood, were mistaken for charcoal, and treated accordingly; for this discovery was the first of its kind. Nobody had seen papyri before; nobody expected to find them, and least of all could it have been expected to discover them in the form of charcoal; but even when the traces of writing were noticed, and Mazzocchi had declared them to be papyrus-rolls, the time for a suitable treatment and preservation had not yet arrived. We must not judge too harshly of the bad treatment experienced by these valuable finds, but must rather let the helplessness with which the extraordinary difficulty had to be faced serve as an excuse. But it is a fact that more than a third of the rolls have been either destroyed or lost. Only 1,756 rolls, of which many are fragmentary pieces, have been preserved. Of this number, up to the present time, only 186, consequently but the tenth part, have been unrolled, facsimilised, and published. No more than nineteen have been interpreted or translated; which furnishes a striking proof of the material and scientific difficulties of the labour.

Thus forty years passed after the discovery before it was possible to publish one page. No means had yet been found to open the rolls, which crumbled to dust on being touched. It was Peter Antonio Piaggi, of Genoa, who succeeded in inventing an arrangement which is as simple as it is ingenious, and by means of which all the results enumerated have hitherto been obtained. The apparatus still in operation is the same as that invented by him. Parallel strips of thin skin are gummed on to the surface of the roll, and gently tightened by means of silk thread, after separation has been assisted by means of the pincers. The roll then begins to revolve slowly on a bed of wadding, and permits of the gummed-on parts unrolling themselves in the degree that its own weight offers resistance. The work requires untold patience and painstaking, and proceeds very slowly indeed; but it offers safety against damage to the papyrus, no other force but its own weight coming into operation during the process of unrolling.

The first volume of the *Volumina Herculanensia* was published in 1793, to which ten others followed up to 1855. They are folio books, which, besides *fac-similes*, contain a mass of supplements, notes, and commentaries, but they deal with only nineteen papyri. Were the remaining work to proceed at the same rate, it would require nearly six thousand years and over a thousand folio books to publish 1,756 rolls! Fortunately the work was considerably accelerated when, in 1802, Hayter, commissioned by the then Prince of Wales, the Neapolitan Government consenting, began to take part in it. Assisted by Italians expert in the labour of

unrolling, and saving neither pains nor expense, he had within a few years opened over two hundred papyri, and would have attained much more, had not the entry of the French into Naples compelled him to leave that city. The *fac-similes* of ninety-six papyri came at that time into the possession of the Prince of Wales, and through him went to the University of Oxford, where they are still. Of the originals, which remained in Naples, new drawings were made, so that there exist two sets of the *fac-similes* of those ninety-six rolls. Of these, only the best, to the number of seven, were lithographed, and published in 1824-25 by the University, but without any commentary.

In Naples, the work of publishing commentaries, commenced quite out of proportion, could naturally not keep pace with the work of unrolling and making *fac-similes*. After the capture of Naples in 1860, the Italian Government found over 2,000 copperplates with the *fac-similes* of 160 papyri. Without waiting for the work of translating and commenting, they began in 1861 the publication of a new series, which, like the first one, closed in 1855, embraces eleven folio volumes, each of five parts, and at this moment is very near completion. The appearance of the fifth part of the eleventh volume has just been announced. Thus we have, as already remarked, at present published before us 186 papyri, but only nineteen commented on, while, besides, about 300 have been unrolled and partly,—as far as possible and they were worth the trouble,—*fac-similes* taken of them. It will easily be believed that this is not possible in all cases, as many are preserved only in fragments, and in a very bad state. But even those that are legible are by no means all worth the pains bestowed upon their deciphering. Indeed, it may be stated that, taken on the whole, the find at Herculaneum remains far behind the expectations which it at first had given rise to But we learn from it that a comparatively rich private library of the Roman Empire contains extremely little that could be instructive to us. We notice how the spirit of Cæsarism had confined and depressed to an incredible degree the interest in literature as well as the extent of the writings that served for private reading. How valuable it would have been for us, and with how much right we might have expected to find at least something of the numerous lost writings of the most eminent Roman authors of the first century; whether it be of the older poets, as Ovid, Pedo Albinovanus, Sabinus, or of the more modern ones: Lucanus, through whose art Nero suffered the pangs of jealousy; Curiatius Maternus, who was highly esteemed by Tacitus; Lucilius, Cæsius Bassus, Persius, and others. Might not the lover of art and books of Herculaneum who bought the 3,000 rolls, or had them written out, have had copied for his use also one of the most important Roman works of the time: say a few books of Celsus's Encyclopædia, of Verrius Flaccus's Lexicon, of Asconius Pedianus's Commentaries, of Seneca's Controversies, if he took an interest in philology and practical philosophy; but if he loved history and light reading, a piece of Livius, Pompeius Trogus, or at least the novel of Petronius?

Nothing of all this. Not a single one of the more eminent Roman authors has been discovered among the manuscripts examined. A strange irony of fate has willed it that in the library of the Roman town almost exclusively only Greek writings have come to light. The few Roman works, at present only eighteen in number, are completely illegible, with the exception of a single roll, and this contains a fragment of a poem on the battle of Actium, alleged to be by Rabirius, an epic poet.

The irony of fate goes further. If the Greek manuscripts were at least historical writings and poetical contributions, instead of philosophical works! Or if we had but found writings of the more eminent older philosophers! Or if at least the most important school of the time, the Stoics, were represented! What have we instead? Numerous treatises by disciples of Epicarus, while of his own principal works, embracing thirty-seven books "On Nature," only fragments of the second and eleventh books have been found; and of a manuscript of the most eminent representative of Epicureanism in Rome, Lucretius, which would have been highly interesting to us, not a trace has been discovered. Of Stoics, Chrysippus alone, with his treatise "On Providence," was represented in the library; the title only is preserved, which was already known before.

Amongst the manuscripts with which we have become acquainted are the following:—Polystratus, "On Unfounded Pride," partly well preserved; fragments of the Epicureans Colotes of Lampsacus; Demetrius the Laconian; Metrodorus, "On the Feelings"; a certain Carniscus, an anonymous writer "On Anger," and others; and, finally, a large number of treatises by Philodemus of Gadara. The latter, also an Epicurean, and contemporary of Cicero, known already through a few of his epigrams in the Greek Anthology, as well as through being mentioned by Cicero, and a reference made by Diogenes Laërtius to his philosophical history, is the only author the acquaintance with whom has been augmented by the manuscripts of Herculaneum. We know now his writings "On the Animals," "Death and Religion," "Life and Morals," "The Vices," "The Vices and the Opposite Virtues," "Phenomena in Nature," "The Inferences of Induction," "Piety," "Music," "Rhetoric," "Poems," &c.,—altogether twenty-six various writings which bear his names and were formerly unknown. They represent him as a man of decidedly Epicurean views, and as a writer of fluency of style and vivacity of expression, but one not approaching the most eminent adherents of the school. It is therefore surprising to see, in a collection of books in which the greatest writers are so sparsely represented, an inferior disciple, otherwise hardly known in literature, with such a large number of works, which gives some ground for the supposition that this library may have been derived from the estate of Philodemus himself.

The papyri found at Herculaneum have consequently furnished a not inconsiderable contribution to the history of Epicurean philosophy. On the whole, however, as will appear from what has been stated, their importance is small. Although about 1,200 rolls are still awaiting resuscitation, we are not justified in expecting too much information from them, for two reasons. In the first place, a considerable portion will be illegible or otherwise of no use; and, secondly, there will be found among them numerous duplicates and continuations of the works already named, quite independent of the fact that among the number of 1,756 all fragments have been counted separately, of which often several form but one roll. If we, in accordance with Comparetti's calculations, reduce the number of rolls to 800 or 900, that of complete writings must be fixed still much lower, each book of works divided into several books being written on a separate roll. The work of Epicurus, therefore, takes up thirty-seven rolls, and as there are three copies of it, as proved by Gomperz, no less than 111 rolls must be assigned to it. Other writings also, for instance the treatise of Philodemus "On Rhetoric," are present in duplicate, and of others considerable portions may be expected, as of that of Philodemus "On the Vices," of which only the tenth book has been found.

If the works of many of the authors have been restored only in fragments, on the other hand many cannot be assigned to any writer. The names of authors are, as a rule, stated on the manuscripts in two places, at the beginning and end. The head of the roll, being most exposed to the influences of heat, wet, and pressure, is usually the part most injured, so that the first lines are but seldom legible. In most cases it has been found impossible to penetrate to the heart of the papyrus roll; in deed, the instances are very rare where this has been successfully accomplished. Consequently, the determination of the author of a volume rests often solely upon a comparison of the contents with the contents of other signed rolls, and a conclusion which certainly in most cases where we have to deal with parts of one and the same work leaves no doubt. But the knowledge of their origin must be entirely dispensed with in the case of a good many fragments.

Notwithstanding the scanty harvest, the Italian Government, of course, will continue the work, the possibility of unexpected important finds being by no means excluded. As soon as the copper plates already finished have all been published, the numerous drawings which, as yet, have not been engraved will also be made public. One of these, containing new fragments of Philodemus, of a History of Philosophic Schools, was published by Comparetti as early as 1875. The latter, also, in an essay which made its appearance quite recently, defends his countrymen against an accusation levelled by foreigners, amongst others by Ritschl, in 1838, that they had been careless with the papyri, and not derived the profit from them by far wh "more intelligent" people would have gai He cites as a proof of the worthlessness of assertion the fact, that in 1806 the Bour Government made presents of twenty-six of best preserved papyri partly to the Fre partly to the English Government, but that to the present time not a single one of them been opened. In 1818, as he further state German, Sickler by name, tried to unroll th that had reached England, but obtained better result than to utterly destroy seve them.

It might be urged, in answer to those proaches, that the Italians also took a long ti and destroyed, by an erroneous treatment, a larger number of papyri before they attai to their present expertness, which is certa astonishing. But instead of giving vent to s national bickerings and jealousies, it will tainly be better to exchange mutual congrat tions at the results already attained, an wish best success to the laborious work progress.

THE LAW AND THE SITE OF HOSPITA

Architects are chiefly interested in decision given by Mr. Baron Pollock, on the of January, in the case of Hill and Othe The Metropolitan Asylums Board. It is no much the individual case which is of p interest (although the local importance of particular contention cannot be easily rated), as it is the state of the law laid d that concerns the profession. No more portant charge can be entrusted to the han an architect than that of the design and e tion of a hospital. Large sums of money devoted to these buildings; and it is of esse interest to the entire community that all skill and experience can do to make them pe should be done. Of course, the first questi be determined is that of site. This is als most difficult question. And there is no that the difficulty is greatly increased b decision on the present occasion. As t verdict of the jury, and the consequent dec of the judge, we have nothing to say. We only to accept them as indications of fac of law, subject to any further proceedin way of appeal. But the difficulty lies her hospital, if built at all, must be built where. For the sake, both of the patient of the neighbourhood, it is most desira have it out of town. For the sake patients it is essential to have it as n town (whether London or any great cen population be indicated by the expression vacant and salubrious site can be found. these commodious and favoured spots an cisely those of the highest residential valu the owners rise in arms and say,—You not bring infectious disease here! What architect to do?

In the present case the defendants pl that they acted under the authority of of Parliament; but it was admitted that t did not indicate the exact site they have se nor did it direct them to carry it on a actually did. The jury found that the h was a nuisance to each of the plaintiffs They also found that it was a nuisance t of them by reason of the patients going coming from the hospital, the infe nature of the disease for which it was being, of course, borne in mind. The point found by the jury was that even defendants were authorised to build a h on the site selected, they did not erect an it on with due regard to the plaintiffs' On the other hand, the jury admitte everything had been done properly wit hospital, and great praise was due medical attendants and nurses. It is imp more exactly to define the very point w most perplexing to the architect.

The learned judge observed that th first raised by the defendants was not on but was fraught with the most seriou quences. They argued that they were no for damages, because they acted in obed the Local Government Board, and becau *bonâ fide* endeavoured to carry out t thrown upon them by Act of Parliament it is also declared to be law that an obedience must be limited by the legal ob of the order given, and that the defendan responsible for keeping within the lim scribed by the law. "It cannot be sup said the learned judge, "that the Leg

the Asylums Board with an option so to
m their duty as to create or not to create
nce respecting the rights of others. If
inciple were once admitted, it would be
t to see where the line could be drawn."
, the judge gave a virtual adhesion to the
which we have before now cited (see
tise on the Pollution and Obstruction of
Courses," by Clement Higgins, p. 134),
creation of a public nuisance cannot be
ed by Act of Parliament." It is the pre-
ion of law that the Legislature cannot
to legalise a nuisance. The result of
iew of the case was an injunction to
in the defendants from carrying on the
n so as to be a nuisance to the plaintiff, a
n which, however good in law, may be
o open the door to a plentiful crop of
ion as to what is or is not a nuisance.
truth is, that the question raised is only
those constantly recurring difficulties
are the natural outcome of our enormous
of population. Sanitary arrangements
one or two centuries ago, were un-
ed of, are now becoming imperative.
pollution, sewage disposal, house inspec-
re all parts of the same question as the
n and arrangement of hospitals. If we
venture on a forecast as to what a con-
increase in the size of our great cities will,
or later, render imperative, it would be
On the most available spot, where suffi-
rea can be obtained at adequate price,—
example, in the wide sandy waste near
,—a large hospital estate should be pur-
before it is too late. In this, different
ahments should be erected. The London
the accommodation would then be con-
o a commodious and properly arranged
ng-house, articulated with our railway
, from which an ambulance train should
n to the hospital establishment. There
be some inconvenience attending the
e of patients, but this would be reduced
inimum by regularity of despatch; so
patient could be taken at once to the
ambulance. Whether difficulty of access
nds would be an unmixed evil may be
. But third-class carriages might be
d to the ambulance train at a penny a
re for a return ticket. And without
ting other inconveniences, such as that
nore complete localisation of the medical
e question will, sooner or later, come on,
r some such plan does not present the
m of evils.
from the immediate interest of the
t of hospitals, the decision of Mr. Baron
is of no small importance as thoroughly
ing the opinion which we have before
d to offer as to the effect that the law
give to the complaints of the Thames
ancy Board with regard to the pollution
hames at Barking and at Crossness, by
ks of the Metropolitan Board of Works.
plication of legal principle in the two
identical. The Legislature cannot have
d to give powers which shall so be
out as to cause a nuisance. All that the
Conservancy Board have to do is to
nuisance. That done, another precedent
afforded as to the relief which the
f law will not hesitate to afford.

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dee Waterworks.—At a meeting of
al Scottish Society of Arts held on the
t., Mr. R. M. Ferguson, president, in the
Mr. Alex. Leslie, C.E., read a paper on
ndee Waterworks. The communication
ustrated by maps and diagrams. Mr.
said, Dundee had now more water than
her town in Scotland per head. Up to
e town was merely supplied by public
nd water-carts. It was then obtained
ewport, on the Fife side of the Tay, but
ndee was going to supply Newport.
trathen scheme supplied far more water
ndee was likely to require for many
o come. The works at present gave the
,000,000 gallons a-day; and provisions
n made for laying down another pipe,
uble the supply would be obtained. The
he works, exclusive of the price of land,
n 210,000*l.* Some discussion followed
ubject of the bursting of pipes, it being
ion of Mr. Leslie and Mr. Coyne, C.E.,
pipes did not get fair play in the hands
nakers, inasmuch as they were unduly
to the weather when removed from the

LEONARDO DA VINCI AND MICHELANGELO.

In his careful study of the life and works of Michelangelo, Sig. Boito* presents us with two lengthy chapters: one, "The Mind of the Man"; the second, "The Character of his Works." It is important, remarks the author, to fathom, first, the mind of the artist by his writings, and then to judge the production of his genius.

Michelangelo cannot be regarded as a facile and abundant writer, notwithstanding the numerous letters and the many sonnets he has left; his nature seems to have had but little power of expansion; the letters, in fact, are cold, the rhymes laboured. The great artist's difficulty in the poetical rendering of his ideas can be traced even in his warmest expressions of feeling to the Marchesa di Pescara,—the noble-minded Vittoria Colonna of Sebastian del Piombo's equally noble portrait,†—in sonnets, for the elegant translation of which we must thank Miss Fanny Bunnett in her "Life of Michelangelo" from the German of Grimm.

In his letters to his father, brothers, and nephews, to his intimate friends, and to famous contemporaries, at all periods of his life, a strange omission of any expression of a love for nature is equally noticeable. The art of Michelangelo, very truly observes Sig. Boito, is concentrated on mankind. In the extraordinary composition of the Sistine Chapel the landscape is confined to the Biblical tree of knowledge, and the ocean of the Deluge; while, in the "Holy Family" (at the Uffizi),—a subject which all his predecessors and contemporaries beautified with distant views of glowing Tuscany,—Michelangelo has merely usurped their place with nude figures.

We recommend to all admirers of Michelangelo Sig. Boito's analysis of the struggles of the great artist's mind, as shown in his various sonnets, the depth of his never-uttered and painful affection for Vittoria Colonna, the expression of that love, and his passionate acknowledgment of its powerful influence.

We are also shown how exaggerated an importance has been attributed to Michelangelo's so-called defence of Florence. Throughout this whole period he appears to have expressed his abhorrence of the war, his desire for peace, and the absolute necessity there was with the artist for its enjoyment; and we learn from a letter written by him to his friend Messer Battista, how, towards the end of September, 1529, he withdrew to Venice, whence he evidently purposed to visit France. Some degree of remorse must have overwhelmed him, however, since at a later date we find him again in Florence, where complete pardon for this desertion was accorded him, the Pope exhorting him to alone consult his own safety, and to continue his work on the tomb of the Medici.

Michelangelo was no politician, and of this fact he was himself thoroughly aware, as we learn from more than one of his letters. The advice he accorded to his relations was, however, at all times just and valuable, and worthy their attention, though it is one of the saddest features of the great artist's life that the ingratitude of his parents and relations should have caused his sensitive nature great pain.

Protected by the favour of the Pope, surrounded by numerous brother artists, Michelangelo more than once complains of his loneliness. He has no friends, nor does he wish to have any, he lives alone, going little out, speaking to no one, and especially never to Florentines, than whom he once tells us, it would be impossible to find people more haughty or more ungrateful; how he combats with his poverty, and how his annoyances weigh upon him, occupying his attention more than his art. And in speaking of his great work of the tomb of Julius II., he complains how painting and sculpture, fatigue, and devotion had ruined him, exclaiming, "Better had I in my youth been a maker of matches!"

Such expressions of melancholy are indeed sad, as the utterances of a nature like that of Michelangelo; let us hope that they were alone the result of that momentary despondency which seems to come over every great mind at some period of its struggle to attain ideal perfection. To a man who felt and saw his life in this despairing mood, a little distraction, as Signor Boito very truly says, was absolutely necessary both for mind and body; and nothing proves more this need than the happiness expressed by Michelangelo in a letter to Sebastian del Piombo, in which he describes an evening spent in the jovial company of his friend Cuio, who, with others of his companions, had obliged the painter to sup with them. Michelangelo, in this letter, glows with the joy which this pleasant recollection awoke in him, as he felt a pleasure in telling his friend the praises he received on that occasion; an action, for Michelangelo, usually but little prone to moments of expansion, full of delicate courtesy.

This letter to Sebastian del Piombo recalls to Signor Boito one of Vasari's anecdotes of Michelangelo, who, having heard that Sebastian was painting at San Pietro, in Montario, a subject in which a monk was represented, remarked that this figure would spoil all; and, when asked to explain his reason, stated that as the monks had ruined the world, which is so vast, it would be but little wonder that one, even, should spoil a chapel so small; and this anecdote suggests to Sig. Boito Grimm's ingenious argument to prove Michelangelo a Lutheran, all which and sundry others, our author, quoting, concludes: — Michelangelo had his art, which occupied each moment of his time, and while, for obvious reasons, he observed certain Catholic forms, it is impossible to say that he was neither Lutheran nor anti-Lutheran, nor even perfect Romanist. He was, above all, a sublime artist. Michelangelo, in sum, notwithstanding the excesses of his style, was essentially of a practical disposition. Certainly, when he poetised,—an art then much in vogue,—abstract ideas were absolutely necessary; and since he had learnt at second-hand (at Florence with the De Medici) in his youthful years some little smattering of Platonic philosophy, not a few ideas were drawn from this source; but, truth to tell, neither the æsthetics of Plato, nor the æsthetics of Savonarola, for the artist, when he works, are worth much. That beauty is a ray of divine splendour which raises the mind to the contemplation of first causes from which it is derived, and of which it is in great measure the recollection,—that beauty is light, that the beautiful is the good, that the good is the true, with other algebraic deductions from these definitions, Michelangelo but little troubled himself; nor would their discussion, indeed, have helped him to create such conceptions as the noble figures of the "Captives," one of the greatest treasures of the Louvre, nor to compose that miracle of art, the ceiling of the Sistine Chapel.

Nothing shows more the little desire Michelangelo possessed to enter into the metaphysics of his art than his reply to Varchi's pamphlet reviving the old disputed question of the precedence of sculpture or painting. After giving all due credit to sculpture, "the lantern," as he termed it, of the painter, "you may patch up a peace between the two," he concluded, "and leave to others such disputes, for more time is spent in them than in doing good work." In this letter the great *maestro* shows the absolute necessity for the painter to be a sculptor, the sculptor to be a painter.

And yet in painting he himself met with numerous difficulties; he writes to his father, during the time that he was at work at the Sistine Chapel, not only complaining of his not having received a groat from the Pope, but expressing his unwillingness to speak to his holiness, since the work was not progressing as he would have liked. Painting, he urged, was not his profession, the difficulty of the work was immense; he bewailed his loss of time, and recommended himself to God.

That this complaint of his small progress should be in connexion with the colossal work of the Sistine Chapel, completed in such an extraordinarily short period, will appear to all strange. This exclamation that painting was not his profession broke from him more than once; while to the mere study of colour and its processes we know he paid but little attention. With Buonarotti painting pleased him the more it resembled his beloved art of statuary, confounding thus improperly the entirely separate natures and requirements of both; and it was this opinion, which he could happily adapt to his conception of the decorations of the Sistine Chapel, that led him to look upon as effeminate the art which formed the glory of Titian. Michelangelo has, indeed, left but few pictures,—the "Fates" at the Pitti, the "Holy Family" at the Uffizi,—stamped with a strangely classic rather than the religious character, which is more evident in the so-called Manchester

* "Leonardo and Michelangelo." Hoepli, Milano, 1879. See *Builder*, p. 90, *ante*.
† Exhibited some years since at Burlington House.

Virgin, so long attributed to Ghirlandaio, but proved by Morris Moore to be the work of Michelangelo.

To love and understand the use of oil and tempera, justly remarks Sig. Boito, referring to the difficulties of Buonarotti, the artist's universe must not alone be confined to the nude. The free and joyous nature must be envied, the sun, its sparkling and obliterating rays, its noble shadows, the verdure of the plains, the grand effects of nature. He must live, like Titian, in a city, rich in the gorgeous draperies of the East; where the churches sparkle in their low-toned gold and choice mosaics; where, in the sombre canals, the furrow of the gondola leaves in its wake a track of shining silver; where every ceremony groups a thousand colours richer than the rarest stones; and where the nude is seen and studied, not its muscles and its strength, but the rosy tints, the livid greens and blues, the delicacy and life which breathe in every member; and never to have to repeat, as did Michelangelo in his old age, that no loss is greater than that of past time.

But the genius of Buonarotti seems little to have desired the direct study of nature; as little did he wish to represent her, and if a motive may be assigned, it was not the incarnation of a long thought-out ideal, not the service of his religion, but the simpler, prouder, more selfish aim which art, in this latter half of the nineteenth century, seems chiefly to desire to carry out,—the revelation of self.

The action, the seeming restlessness which marks so many of his figures, elsewhere writes Sig. Boito, is sublime. He seems in it to unfold the whole mystery of life, the whole wonder of creation. Mankind is so discontented with everything, their minds are so full of ambition, of envy, curiosity, and passion, that the figures of the Sistine Chapel, which, to seat themselves, find scarcely the smallest stool, or in the Medicean allegory, rest upon some uneasy inclined plane, seem the faithful emblem of human existence. These are the true figures of Michelangelo, which possess a startling fascination that makes the marble live again; this is life, this is art indeed. And when, with these noble conceptions in the mind, one turns to the simple truth of the other Quattrocentists, or the gorgeous real truth of the other Cinquecentists, their painting seems but cold, but artificial, and merely ornamental.

And then we follow Sig. Boito through various other criticisms on the Bacchus and the David; on the great master's power of sketching, the value he placed upon his earliest studies; his care in keeping regular accounts, with various other interesting details; among these the record of the only precept which Michelangelo may be said to have left. "Draw," he writes on a letter which we treasure in our British Museum. "Draw, Antonio; draw, Antonio; draw and lose no time."

As a proof of the just appreciation and value Michelangelo placed upon his sketches, we have an interesting letter written from Rome in 1507 to his father, asking him to gather together all his early drawings which might be remaining at Florence, and send them to him; but he adds, as a mother might speak of a child, take good care to so do up the package that it cannot be injured by the wet, and see well that in arranging it, not even the smallest scrap is injured; and especially recommend it to the carrier, and write to me when you send it.

For his statues he usually contented himself with a small wax model, which, as soon as commenced, was reproduced in marble. Blaise de Vigenere, in his "Images de Philostrates," tells us how he saw Michelangelo then more than sixty years of age, and not in very robust health, chip boldly off in a quarter of an hour from a hard block of marble as much as would have taken a good hour for three strong young workmen.

The remarks and researches of Sig. Boito concerning Michelangelo's greatest work, the Sistine Chapel, are interesting, and prove that, even if the stories of Vasari and others are incorrect, the whole ceiling, a space of some 1,700 square mètres (or about 2,000 square yards) was completed in an incredibly short space of time; letters proving that Michelangelo cannot have even thought of the work previous to the middle of the year 1508; months then were spent on the designs for the Apostles, in travelling backwards and forwards between Rome and Bologna, in sending to Florence for workmen to teach him the art of working in fresco; indeed, the artist was alarmed at his small progress. "Holy father," he once remarked to Julius II., "I have told your holiness this art was not mine." And yet we have perfect evidence that the whole work, every figure of which shows the touch of his hand, was completed at the beginning of the year 1513.

But Michelangelo, hard at work on his scaffolding, barely found time enough to snatch a mouthful of food. "Do not write to me," he tells his father, "I have not a moment to spare," though, as an additional surprise, his industry was such that he found time to write more than one sonnet to Vittoria Colonna, who indeed reproved him for his attentions, occupied as he must be with his great work. In another sonnet he tells us, half in joke, half seriously, of his constrained position when at work, his beard in the air, the brush dripping on his face, speckling it "like a rich pavement of varied marbles."

Signor Boito devotes not a few pages to the consideration of the sources from which Michelangelo may have drawn his extraordinary conceptions. Masaccio's works in the Carmine (where we know Torrigiano and young Buonarotti fell out so seriously) can have but little inspired the future author of the Sistine Chapel and the David. Ghiberti, Luca della Robbia, Mino del Fiesole, Donatello, and their works are considered, but as soon rejected, as direct inspirers of Buonarotti. Perhaps Luca Signorelli can alone be regarded as Michelangelesque. Sig. Boito puts forward as the only artist whose works can be compared to those of Michelangelo, Nicoli Pisano; less fortunate than his successor in that only long after his death were the Farnese Hercules, the Torso of the Belvedere, and the Laocoön discovered. Between the two masters were singular analogies, for the consideration of which we refer our readers to Sig. Boito's pages, as also for the history of the famous "mask," the young sculptor's stay under the patronage of Lorenzo the Magnificent, and the first works which showed such extraordinary power, the Bacchus, the Apollo, the David, of whose execution and eventual situation as decided by the sculptor himself after the question had been discussed by a committee composed of more than one interesting Florentine name we have an admirable account.

With an artistic and sympathetic analysis of the famous cartoon of Pisa, the tomb of Julius II., the Moses, and Michelangelo's various religious subjects, Sig. Boito closes his admirable and interesting account of the life and work of Buonarotti, an "artistic study," as the author not unduly terms his book, which will be received with no little pleasure by the refined world of art and letters, as a valuable addition to our stores of treasured information regarding the lives of Leonardo da Vinci and Michelangelo.

THE EXHIBITION AT THE ROYAL ALBERT HALL.

The addition to the list of winter exhibitions by the collection of nearly 1,000 works of art in the gallery of the Albert Hall has rather a formidable sound; but the collection has its specialities which make it worth a visit even to the connoisseur; and to that more numerous class who visit an exhibition for an hour or two of intellectual recreation rather than for criticism, there is a great deal to enjoy. One special point which the critic is bound to notice and give credit for, is the admirable manner in which the pictures have been hung, and which evinces a degree of care and study of the art of hanging (if we may call it so) quite unusual. The works are naturally divided into groups by the architectural subdivision of the gallery, and each of these groups has been so arranged as to combine pictures with a certain relationship of subject, where there was material for that; or, at the least, to combine those which, from their tone and scale of colour, could be placed in contiguity without injuring one another. The result is very successful, and is mainly due to the care of Mr. A. MacCallum, the well-known landscape-painter, who undertook, as a labour of love, this portion of the responsibility. Another special feature observable in the gallery is this, that every picture has on it a ticket giving the subject and the artist's name, so that, although the catalogue is desirable as a record and as giving the prices of the various works of art, visitors who prefer it may get all the information they desire on looking at the picture. This has been done at some cost and pains by the council, and deserves the thanks of public.

Among the works exhibited, many pere will be interested to find pictures by well-kno painters which have been first exhibited s time ago, and not accessible to the public si Among these we hailed with especial plea Sir F. Leighton's beautiful and imaginative gr called "Summer Moon," in which, as those recollect it in the Academy may remember, t is no moon visible, but two female figures ste in deep sleep on a seat in the moonlight. title, we presume, was an after-thought, but work is one of those which require no title, speak for themselves, appealing to our broa artistic sympathies, and it has always appe to us one of the most poetic and imagina things which Sir F. Leighton has prod Another work by the same artist, painted y ago, and quite an early work, is his repres tion of the distress of the Capulet famil finding Juliet apparently dead in her bed the "potion." There is a certain acade mannerism in the attitudes and draperies i picture such as the artist has long ago got in more recent works, but there is much en and vigour in the conception of the scene the figure of old Capulet would be remar under any circumstances. We do not when Mr. H. W. B. Davies painted the "St Herd," but it is one of the best and most fo works of his that we have seen. A bri group of landscapes of peculiarly realisti forcible style is to be found not far from including Mr. Brett's large and effective piece in a different manner from that in h he now paints, entitled "Christmas off the Coast," and his small and still more po and brilliant little view over Dartmoor. last we take to be a recent painting, it has a brilliant force of sunlight effect which has n the artist's later works. Interspersed with works by well-known names we find some have the equal interest (in its way) of good works by names little known to us will note a few of both classes in the or numbering. A little work by Signor Brizz representing a plough drawn over heavy a couple of oxen, is admirable, and remi of what we noticed in one or two of the national Exhibitions of a few years b Kensington, as to the faculty possessed b of the Italian artists of to-day in the ren of animal life in a manner of their ow see with pleasure Mr. MacCallum's inte painting of "Untrodden Snow Three Mile Charing-cross" (in Holland Park, to wit) may be remembered at a recent Royal A exhibition; and a little further on we co very pretty collection of still life and subjects grouped together, mostly small among which, "A Late Rose," by Miss I "Still Life" (jars, &c.), by Miss H. G. and "Daffodils," by Miss M. Ludovici, a cially good. Mr. R. C. Leslie's noble se "A Last Shot at the Spanish Armad welcome incident; many visitors to the A of '77 must remember it, and the rem successful painting of the mass of dar rolling into view on the left. Mr. MacC "Cedar Grove, Chiswick," is one of t of his works that we have seen; a dark twilight effect, with the remains of light beyond the bronzed masses of the A large and very admirable landscap member of the Royal Scottish Acade W. B. Brown, "A Beechwood in Autumn us much pleasure; the large trees wh from the foreground are carefully st character without hardness or excess o the landscape seen beneath their in thorough keeping with the year, the beauty of which is to be illustrated. Mr. Buxton Knig landscape called "The Sailor's Home this, should also be noticed. Mr. W. B shows his true feeling for nature in work, "A Breezy Day on the Coast of Picking out some of the small works i the-way corners, we were particularl with one by Mr. H. Campion called beam on the Moss-grown Pond" (21 deserves close attention; we have ra bright sunlight and the vivid green o tion under its rays given with more re in this little painting, which really spar is good in other points also. Anot charming representation of a certain light is given in Mr. Wilson's larg "Before the Busy Hum of Day," morning scene, up the Thames, w

ie. Mr. Girardot sends a very pathetic picture under the title of "The Dark " which will repay examination in regard o its feeling and the careful attention to , which all help the story. Among others small works we notice the name of Mr. croft appended to two little landscape and scenes, the inspiration of which is derived fason, and which have much poetic feel- There are many more pleasant bits to be in going round the gallery; and the visitor not forget to descend to the water-colour on another floor, where besides water- s are some good pieces of sculpture by . John Bell, Marshall Wood, Williamson, r, and others, and a loan collection of this portion of the exhibition has been ed by Mr. Bell. We may mention that the specimens of sculpture in the prin- gallery are to be found Mr. Bell's model design for the Albert Memorial (repre- the prince as the Christian knight clad our and kneeling), and a finely-modelled entitled "The Deluge," by Count Gleichen.

HE LOGIC OF ARCHITECTURAL DESIGN."

was the subject of a discourse given H. Heathcote Statham at the Royal ion, Albemarle-street, on the evening ay, the 31st ult. The lecture was pri- intended as a popular exposition of the g

Maxims of Architectural Morality.

rchitecture, being based on practical ments, can only be true and logical so is in accordance with and expresses

he plan of the building is the basis of the esign. A good plan is one in which the departments are arranged and com- such a manner as to ensure the greatest nce and the best possible effect.

he exterior grouping and design of a should arise out of and indicate the plan and arrangement.

he architectural design (both internal rnal) should arise out of and express ntific construction or the "statics" of ding.

rnament must be so introduced as either hasise the construction or to be mani- dependent thereof; and must be designed ference to the material in which it is to nted, and the climate under which it is en.

No feature not arising out of the plan or ction can be added to the architectural of a building under the pretext that it amental." Such a feature is an archi- l falsehood.

Statham commenced by observing that if asked to define architecture in a single hensive phrase, he should call it "the uilding with expression." In order to ate rightly the limits and capabilities of , it was necessary to bear in mind that ed from the other arts which appealed ense of sight in two very important par- . In the first place, architecture was an ing out of practical needs and dependent ientific requirements. If we did not uildings to cover us there would be no ture, and if we did not build them in nce with statical conditions they would n. In the second place, architecture had t reference to any of the external forms e. So far as it had reference to nature, rather to certain abstract qualities of number, proportion; and its relation in pect to nature rather resembled that of . Just as music depended upon the setting melody and of harmony in accordance rtain ratios of sound and in relation to a curring rhythm, so architecture had its of the eye; and some other points mblance were touched upon. The t architecture had no direct reference xternal forms of nature was one reason ere was such an absence of definite about right or wrong in archi- To put the case in an extreme f a painter were to draw a figure wo heads, everybody would at once at he was wrong; but it perhaps might as wrong for an architect to put two o a building instead of one, though the e wrong of his doing so would only be seen by a process of reasoning which people would not take the trouble to go through. Architecture was the expression of certain requirements, each of which had its logical relation to the others, and was only a real thing when that relationship was maintained. Only when people considered the relation between the wants of a building and the expression of its architecture, was it possible for them to estimate rightly whether its design was worthy of commendation or the reverse,—whether it was good architecture or bad. The lecturer went on to say that he did not propose to endeavour to evolve a logical architecture out of the depths of his own inner consciousness, for that was what no man and no nation had ever been able to do; but he would illustrate what he had already said by referring to some points in the best and most logical styles that had existed. To take the case of a Greek Doric temple, structurally it was a very simple thing, consisting of a central cell, with a kind of verandah round it formed of upright pillars which carried horizontal beams, which, again, carried short vertical supports, above which was the raking course or slope of the roof. In the first place, it was to be noted that it was owing to the fact that Greece was a sunny and bright climate that the Greek dwelling (of which the temple was probably an amplification) required the shelter of the verandah round it; and but for that fact the Greek column, which had impressed itself upon all forms of European architecture down to the present day, might never have existed. That showed the intimate connexion of architecture with climatic conditions. By the aid of a diagram showing one half the elevation of a Greek temple in its Doric form and one half exhibiting only the primary masses of the construction, the gradual elaboration of the Doric form of architectural expression was traced out, the column especially being adduced as an example of the employment of ornament in such a manner as to emphasise expression, the vertical flutes serving not only to give play of light, but to intensify the vertical expression of the column, while the annulets at the necking served to bind the whole together and give strength to what might be termed the wrist of the column, just as the annular ligature bound together the sinews on the human wrist. Thus was obtained a column which was far more expressive of power to resist forces of a vertical tendency than a round column, and one which also gave play of light and shade, and was decorated by ornament assisting constructive expression. It was, in short, an object conveying the idea of resistance to vertical weight. The architrave or lintel was left quite plain, in accordance with Maxim V., for the addition of ornament to a part of the building which manifestly had to carry a great weight would give an appearance of weakness. The small vertical supports,—the triglyphs,—between the architrave and the cornice were relieved by vertical channels, indicating the direction of the strain. The spaces between these small vertical supports were at first left empty, having, it was thought, served as windows in the domestic habitations of man from which it was supposed that the temples of the gods were copied, more or less exactly, and on a much larger scale. Subsequently, with the development of the architecture, these spaces were filled with sculptured slabs, called metopes, having no structural functions to fulfil; being, in fact (according to Maxim V.), ornament independent of the construction. Passing on to notice Roman architecture, the lecturer said that the Romans, among Europeans, first brought the arch into play as an important statical element in building, but they borrowed their architectural expression from the Greeks, and were so illogical as to keep on using the column, although its function as a vertical support had been given up. The consequence was that the oblique lines of pressure due to arcuate construction were completely disguised by the trabeate expression given to the architecture. The lecturer then went on to show how Gothic architecture,—the architecture of the pointed arch,—had grown up out of the constructive difficulties encountered by the Roman and Romanesque builders in vaulting over large spaces with the round arch, owing to the difficulty of treating a cross-vault of unequal spans with the circular arch, as well as the tendency of the circular arch (on a large scale) to sink at the crown. That the popular idea as to the merely artistic origin of the pointed arch was a mistake was conclusively shown by such instances of transitional architecture as Kirkstall and Fountains, where the large constructional arches of the nave arcade were pointed, and the smaller and merely ornamental arches circular. But the practical origin of the pointed arch was more significantly shown in the development of the vaulted roof, which was illustrated by diagrams showing how this form of arch allowed of the closer adjustment of the curves of the vaulting-ribs, though their complete and logical adjustment was not reached till the form now known as the fan-vault was adopted; which, though it appeared so graceful as to look like a mere plaything, was, in fact, the logical outcome of a long struggle with practical difficulties. A point to be noticed was that while in the earlier forms of Gothic vault the ribs were really constructional, in the fan-vault they had ceased to be so, and were merely an expression, precisely analogous to that of the flutings in the Doric column. A further diagram showed how, by the gradual adoption of the buttress, which was really the wall cut up into sections and placed edgeways to the points of pressure of the vault, the whole design of the Mediæval building became a precise expression of its construction. He then showed, by a comparison of Greek and Gothic ornament, how, in a bright climate, such as that of Greece, and with a material so fine in texture as that of white Pentelic marble, the ornament was naturally of a most refined and delicate character; while, on the other hand, in dull Northern climates, and with coarse-grained stone, the ornament must perforce be bold and vigorous, deeply undercut. Each style of ornament was best suited to its own material and climate. It was owing to the fact that differences of climate and material had been entirely overlooked that "Greek" buildings in London appeared so cold and uninteresting. If we could have Greek sunshine in London, and could find a quarry of pure white marble at Redhill or elsewhere in the vicinity of the metropolis, then we might hope to have Greek architecture in our midst. Speaking of the relation which should subsist between plan and design, Mr. Statham went on to say that the external composition of a building ought to arise out of and express the plan, and that if it did not do so it was a sham. He instanced the Houses of Parliament as a good instance of the way in which the plan of a building might be emphasised by external features, inasmuch as the central octagon, the great rallying-point of the plan, was marked by the well-known central spire, while the grand entrance was dignified by the great Victoria Tower, the other extreme end of the building being marked by the Clock-tower. Each of these great towers was specially designed by Barry for its own distinctive purpose, but yet some people criticised the building adversely because the architect did not put a Victoria Tower at each end of the building. As a practical example of how the plan of a building might be completely disguised by its façade, the lecturer instanced the building in which he was speaking, which, towards Albemarle-street, presented the appearance of a Corinthian temple, with the spaces between the intercolumniations filled with square windows. Internally, the building was divided into a number of small rooms and the theatre, to which the exterior had no relation whatever. As further illustrations of illogical design Mr. Statham cited St. Paul's Cathedral and the new Blackfriars Bridge. St. Paul's was structurally a Gothic building, although externally no one would think so, and the external walls above the nave aisles were merely screens. The huge granite columns surmounting the cutwaters of the piers at Blackfriars bridge were shown to be capable of supporting considerable structures, whereas they now carried nothing. This bridge afforded an apt illustration of the mistake which was often made in engineering designs; but the engineers, who had done, perhaps, the greatest work of any profession during this century, would not learn anything about architectural design, although, at the same time, they would persist in putting "architecture" on to their structures. They seemed to be oblivious of the fact, that if great engineering works were built simply of the materials necessary for their construction, they would often look well without any "dressing," because wherever materials were arranged to resist the physical forces of nature, the structures could not fail to be more or less in harmony with nature. But to

apply architectural ornament illogically to such structures was to vulgarise them. In conclusion, Mr. Statham said a few words by way of practical application of his remarks. He pointed out that, within the last fifty or sixty years we had taken up and imitated various phases of past styles of architecture one after another. First came Roman, then Greek; then Gothic in all its phases was gone through, beginning, curiously enough, with the latest development of the style, and working backwards until something very like Norman work was reached. Now, in the present day, we had arrived at the architecture of that æsthetic sovereign, Queen Anne. A doorway was now made up, perhaps, of a couple of imitation Greek columns, carrying an architrave, frieze, cornice, and other things which had a meaning in their own place, and in stone construction, and then these were surmounted by a pediment, broken in the centre, and the recess filled with a Japanese pot. And that was called "Art in the house!" The reason why these vagaries were practised was that so few people took the trouble to think what was the meaning of the architectural forms which were used, and consequently, they were at the mercy of any architect or any other person who wished to start "a new style" and to get it taken up. Architects were not entirely to blame for this: they must give what there was a demand for. We could hardly hope to have better architecture on a large scale until there was a demand for it, and for that reason it was worth while for cultured people, who had no connexion with architecture, to give some thought as to the meaning of its forms. He was far from going the length of saying that people could not be happy or virtuous in houses which were bad specimens of architecture, but it was, at any rate, worth while for them to endeavour to make the surroundings of their lives bear some reference to actual facts.

The lecture, which was most attentively listened to, was made additionally interesting and clear by a series of sketches which were placed in the hands of every person entering the theatre, and, as a popular exposition of some of the fundamental principles of architecture, was very successful.

THE ELEMENTARY ART EDUCATION OF THE INDUSTRIAL CLASSES.

In a recent number of this journal (p. 65, *ante*) we gave an outline of the organisation which exists in this country for the education in art of the industrial classes. The results of that education can really be only properly arrived at by a careful comparison of the various kinds of industrial work throughout England of which the elements of art form an essential part. Looking around, and observing also the very considerable system of teaching which has sprung up of recent years, we do not observe that knowledge of the principles of art practically displayed which we should expect from the amount of art-education which is spread throughout Great Britain. Be that as it may, we have also another means of taking note of the result of the teaching in question by considering the report of the examiners on the national competition of the works of schools of art in 1877. Of the 138,199 drawings sent up from schools of art and branches, 790 were referred to the national competition, and therefore the chief strong points of the scholars should be fairly noticeable.

The examination on the first day consisted of that in figure-drawing and painting. The competition here, say the examiners, Messrs. Pickersgill, R.A., Yeames, A.R.A., Leslie, R.A., Poynter, R.A., and Bowler, "showed more vitality" than in the previous year, and "less purely mechanical labour." But it would appear that drawings from the antique were less good, and these, it seems, on account of the difficulties involved in determining the comparative degrees of merit where the conditions are dissimilar, were not included in the competition for the gold medal. But they should, add the examiners, "be encouraged by the masters as affording one of the most valuable means of instruction." But if they are excluded from the gold medal competition, it is not very likely that masters will encourage this class of drawings as they should do, because, since there exists a system of payment by results, those who teach will naturally "have an eye" to the most profitable subjects.

Next let us turn to the second day's examination, viz., design, with architecture and modelling. We should say that the results were very far from satisfactory, as will be seen from the report of the examiners, Messrs. J. E. Boehm, Wm. Morris, J. J. Stevenson, Poynter, R.A., and Bowler. "But few examples of architectural design were submitted, and in some of these a want of due relation between the exterior and the interior design was observed, important features of the elevation having no correspondingly important parts in the plan" of the drawings. For the plasterers' work they remark that a large number were "merely geometrical diapers, generally designed in a manner very unfit for the material." Moreover, "the designs showed little feeling for colour: they were either dirty and lifeless when the aim was sober colouring, or crude and violent when bright tints were used." In the examination by the same gentlemen on the third day in design, there seems to have been nothing deserving praise. Of the combinations in the designs for lace, some were "objectionable," and of the damasks some were faulty, from the introduction of too florid curves. The most satisfactory part, indeed, seems to be the paintings in oil and water-colours, in which "the competition was a good one, the groups of still life showing a remarkable general progress." This is a matter of congratulation, but, on the other hand, the progress made in this department, and the apparent want of progress in others of a more practically useful kind, rather tend to show that the results of the teaching of art among the industrial classes is not wholly satisfactory. Because, undoubtedly, one of the chief objects of this education is to increase the knowledge of art among the students, so that it may have a powerful influence upon purely industrial work. So that though we are glad to find such favourable progress in regard to oil and water colours, we should have been more pleased to find that the principles of art were duly applied to such matters as the plasterers' work, for example, to which notice has been already called. An artisan may feel well pleased at being able to put on paper a good water-colour sketch, but if a design for lace "is spoiled by the use of incongruous styles," for example, the teaching and the knowledge of oils or water-colours is, from an industrial point of view, pretty nearly wholly useless. We observe, for instance, that out of the thirteen gold medals awarded, only five were for purely industrial designs, namely two for lace, one for muslin, one for machine-drawing, and one for designs for knives, whilst the remainder were for a group in oils, in water-colours, and so forth. In the award of silver medals, thirty-seven in number, seventeen were for what we have termed industrial art-work. Still, what is being done ought to improve the character of English workmanship, and raise the intellectual standard of the workman, which is one of the greatest benefits which it is to be hoped may be derived from art-education. Moreover, the quantity of artistic literature diffused throughout the country in prizes ought also to be a potent factor if the teaching in the schools is really thoroughly imbibed. Thus, for example, 100 copies of Tyrwhitte's "Pictorial Art" were distributed in prizes, and 82 of Flaxman's "Anatomy," and these ought not to be seed sown in a wholly barren soil. Still, when we consider the general character of English industrial art-work at the present day, we cannot, taking it as a whole, honestly say that we see results in it adequate to the money, the time, and the labour, which are spent in the system of art education which we have been noticing.

South London Working Men's College. A lecture on "Healthy Houses" was given at the above institution on February 4, by Dr. W. H. Corfield, to a very attentive audience. The chair was taken by Mr. M. H. Judge, who, in thanking the lecturer, alluded to the free library and reading-room lately established in the rooms of the Working Men's College, Kennington-lane, and to the need of funds being provided for its support. He added that the reading-room was supplied with every important London newspaper and periodical, and that the books of the library were lent for home reading; but that hitherto the expenditure had been very far in excess of the income. The free reading-room and library, the only one in South London, is open daily from ten a.m. till ten p.m., and on Sundays from six till ten p.m.

A PRACTICAL ITALIAN WORK ON HOUSEHOLD COMFORT.

Of the many countries which have watc with more than ordinary interest the succes results of the Paris Exhibition of last y Italy has been by no means one of the l observant. Within a month's time after doors of the twin palace of the Champ de M and the Trocadéro had been closed, and be even the visitors from all parts of the world reached their distant homes, bearing with t the recollection of the marvels of the Ex tion, appeared at Milan three works by t well-known Italian authors, each of whom given an excellent account of Paris and great show.

In the "Ricordi di Parigi" of De Amicis, the "Lutezia" of the eminent Genoese nov Barrili, the subject of the Exhibition has merely the peg on which to hang much inte ing information, particularly connected Paris, its wonderful museums and celebr The third work is of a different and essent original stamp. The title of the book alo sufficient to explain its nature, "Novelti Industry applied to Domestic Life."*

The Cavaliere Antonio Caccianiga, the au of this work, is well known and highly este in Italy, not alone as Deputy for Treviso, h a successful literary man, all of whose wri whether of a serious or amusing nature, stamped with an ardent desire to sho native country, only so recently emanci from the power of ignorant principalitie necessity for industry, the value of labo education, and development of agricultur charms of country life, and the sacred nat domestic affection.

This, his most recent work, bears evi even in a more marked degree, of Sig. C niga's desire to form, or rather reform, I character. The mere enumeration of the ters and their contents would suffice to the nature of the broad and practical visi Caccianiga has taken of the Paris Exh and its contents, and the result is a b which he lays before his countrymen modern appliances and recent improve invented and exhibited by the world, crease the ease, the health, and comf every-day existence.

Italy, once the land of the highest de refinement, the instructress of the we taste and luxury, is now so far behind t of the globe in availing herself of the pr results of modern progress, that Signo cianiga's book will serve as a valuable g many, who, as he himself says, are no aware of the comfortable, easy habits rest of mankind.

The official catalogue of the Exhibition of eight large octavo volumes; but, on a smaller scale, Signor Caccianiga's wor prises a complete compendium of the c of every-day existence. The object of t cannot be more clearly stated than in t tence which occurs in the Introduction render the house more beautiful by possible means, to make it an attractiv is the surest means of reforming our hab of improving and refining our natures, making mankind better and more happy. this end in view we have visited the Par bition, and have studied in every br industry all which seemed to us to con economy, the æsthetics, the hygiene, a fort of the household. If the chief ai study, of all philosophy, of all politic greatest possible happiness for the great sible number, its chief germ lies in the circle, which is the basis of society; its tion is in the house, which forms the na the city and of the State. The man w honourably in his family, and who works for its happiness, increases both the mo dard and the wealth of the nation."

And here we have before us a nu valuable dissertations on the kitch pantry, the reception-room, the study, dressing-room, on medicine and hyg clothing, on the care of children, on the house, on domestic animals, on instruc culture, on lighting, heating water, an lation, with various other chapters on building materials, on furniture an domestic subjects, treated in the gayest

* "Novità dell' Industria applicate alla Vit tics," by A. Caccianiga. Published, as also works above mentioned, by the Fratelli Treve 1879.

ner; instruction and interest afforded which er flag for an instant, a sentimentality never ried too far, a serious tone not too profound, ether with a mass of useful information and ice which will render the book acceptable to y order of reader.

he work is the production of an accomplished thoughtful writer who has taken into con- ration, in an impartial and agreeable manner ch cannot too highly be praised, all the many ures which make up the household, from the st serious matters to the most minute. The ortunity afforded by the Paris Exhibition, of mining and noting down the more recent rovements and inventions from all the ntries of the world, has given Sig. Caccianiga means for laying before his readers an en- ly new set of hints and ideas. "Realism," the author remarks, "has an incontestable it when it can be rendered useful to the ily and to society; to belong to the present we must make idealism practical and realism l."

ut Sig. Caccianiga has had another end in r in his excellent work,—to hold before his ntrymen, and thus incite them to progress he wholesome spur of emulation, the efforts success of the rest of the world; and his luding chapter is a homily, which contains y valuable precepts, lengthy quotations of ch might be made, did but space allow. very country," remarks the author, in a sen- e which applies essentially to the position of land at the present moment, "every country orth alone what its people are worth. Where are educated and laborious, the vitality of nation is ensured. It may temporarily suc- b through an accumulation of fatal circum- ces, but cannot die. Intelligence and labour repair the losses, and restore the old sperity and power."

hroughout the work Sig. Caccianiga rarely s an opportunity of giving full credit England for the important part she has n in the civilising crusade of the present in which France and America have also n so large a share.

e learn that a French translation is about ppear at Paris of Sig. Caccianiga's work, e an English translation has also been orised. Sig. Caccianiga's book will be of ice to many as a technical, literary, and tical treatise on moral and material life, ing known all the most important novel- of industry that serve to increase the fort of domestic life.

THE SANITARY STATE OF CHISELBOROUGH.

ANY of our readers may remember that ards the close of the year 1872 we pub- d some articles on "The Houses of the ourers in Somersetshire." Among other ges, we described sights and scenes wit- ed in Chinnock, Chiselborough, Montacute, Stoke-sub-Hamdon. We gave views also few of the cottages in the villages we visited. picture of ill-fated Chiselborough did not at lease the then and still present rector of place. He sent us a letter, which we pub- ed at the time, giving what he called some odifying facts" which were to be weighed in face of our statements. The rector ad- ed in his letter some of the cottages were otless faulty, and that some of the worst nged to the occupiers or to owners ally poor, but he held, with regard to Chisel- ugh, that "so large a proportion of hearty, lthy men and handsome girls could rarely met with elsewhere." The rector was not sent with sending to the *Builder* a modifying er, but he took the opportunity of addressing the *Times* a letter of a more combative racter, and some of the local journals of his rict seemed to have been inspired to state ters which were not, like our details, based on onal observation. Be that as it may, we glad to see that the reverend rector of Chisel- ugh has at last become conscious that the ple under his pastoral care are not well sed, and that no surprise need be felt at the moral and physical condition of the in- itants of Chiselborough. Although it has en seven years to make a sanitary convert he rector, better late than never. We are there is light which has left some distant s three thousand years ago, which has not ched this world yet. The rays of sanitary nce have taken long to travel, and are only now reaching sundry places in the British Islands. But to the point. A few days ago a letter from the rector of Chiselborough was read at the Yeovil Board of Guardians. The writer said,—

"May I beg you to direct the attention of your inspector to the condition of a cottage in this village, occupied by Charles Hallett, and owned, I believe, by a person named Langdon, living at Preston, near Yeovil? It does not seem to be fit for human habitation, and the adjoining one is scarcely better. There are some other cottages just above these that are in a despicable condition, and I can feel no surprise at the low moral and physical condition of persons whose surroundings are so depressing."

Mr. Templeman bore testimony to the bad state of these cottages, and remarked that he believed the thatch was off one of them. The Clerk was instructed to send a copy of the letter to the sanitary inspector (Mr. Langdon).

A few words now from our description in relation to Chiselborough in 1872:—"No external sketch of the habitations in this place could give a complete idea of the state and condition of the interior, or the deplorable life of the labouring inhabitants. The village is the home of an unhappy race of human beings, whose frightful afflictions are unquestionably attributable to the place and circumstances. . . . The maladies that these unfortunate creatures suffer from are goître and cretinism. The existence of such a place is a disgrace to our boasted civilisation. . . . In times of heavy rain the natural outfall of the drainage of the hillside is the floor of such cottages. Further, year after year the contents of cesspools have been allowed to sink into and saturate the soil, the foul drainage in connexion with one set of houses percolating through the soil under the walls of the houses below them. The wells and other means of water-supply for the inhabitants in the lower portion of the village suffer necessarily from the foul filtration we have been describing." We gave full details of the social and sanitary state of the place, and, therefore, we were obliged to draw a rather unprepossessing picture of the features and physical condition of a number of the people. After seven years, it is somewhat disheartening to hear from the mouth of the rector (though church matters and school organisation, singing assemblies, and clubs may have improved the society of the village), "a low moral and physical condition" still exists, and that the cottages of the poor are in a "despicable condition." Verily, the Sanitary Authority in Yeovil must be somnolent, and the sanitary supervision of Chiselborough and other analogous villages perfunctory. The "primrose-belted" village will not be disinfected by the odour of the wild flowers, no matter how plentiful they may be, and sanitary teaching and sanitary work must be made to accompany spiritual instruction; for cleanliness, as the proverb says, is next to godliness.

SHEFFIELD AND ITS SANITARY CONDITION.

As regards its sanitary state, Sheffield, which is suffering most acutely from the depression in trade, appears also to be in a deplorable sanitary condition. A report has just been presented to the Town Council by the Health Committee with regard to that portion of the town known as Nether-Hallam, which reveals a shocking and revolting state of things as existing in one of the most important towns in the kingdom. The report states that many of the cottages in that district, though only erected a few years ago, are now in a state of dilapidation, and ought to be closed. Many others are likewise in a sad sanitary condition, and are brought under the immediate notice of the new Medical Officer of Health. One street in the neighbourhood is described as one vast piggery. Almost every one is said to keep pigs, the styes being close to the houses, and, in summer especially, the air is charged with malaria and miasma, which spread fever of a most malignant character through the district. The report states that steps have already been taken to abate this part of the nuisance. The drains in the district are reported as being all defective, and emptying themselves on land where the refuse water stands until it becomes offensive. In the case of one house in which eight deaths had taken place from fever, it was found that under the floor of the kitchen was a large cistern, intended to receive the rain water from the roof of the house, and this water was used by the occupiers for drinking and culinary purposes. On examination it was found that the water from the slop-stone, that had been used for washing and all other purposes, found its way into the cistern. It appears that the council has been without a Medical Officer of Health for upwards of five months.

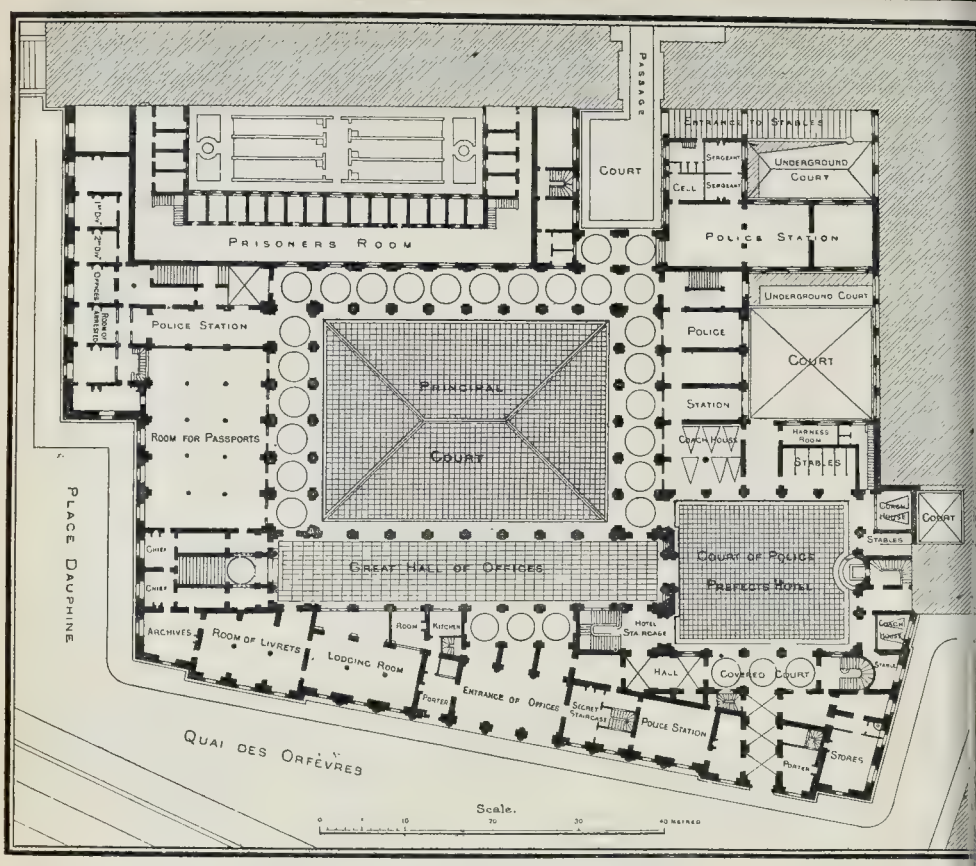
BUILDING ON RUBBISH-SHOOTS AT HACKNEY.

THE Poplar Board of Works have just been instrumental in preventing the erection of another colony of "jerry" buildings on rubbish-shoots at Hackney. A short time ago the Board made a representation to the Metropolitan Board of Works, calling their attention to an attempt to utilise some land in the vicinity of Whitepost-lane, Hackney-wick, for building purposes, this land having until recently been used as a rubbish-shoot. At the last meeting of the Poplar Board the chairman said it was with the greatest satisfaction that he informed the Board that the representation made by them had been effective, and that under the powers of the Buildings Amendment Act of last Session the Metropolitan Board had refused permission to build on the land. The chairman added that he thought the public were indebted to the press for drawing attention to the matter just at the right moment. It was a most important thing for public Boards to know that the Metropolitan Board is now vested with power sufficient to stop the erection of dwellings on unsuitable ground.

STUDY OF THE FINE ARTS.

AT the Society of the Fine Arts, Conduit-street, on Thursday last, Mr. Cave Thomas took as the subject for a discourse "An Introduction to the Study of the Fine Arts," Mr. Frank Rowland in the chair. The successful prosecution of the study of the fine arts, the lecturer said, depends on certain favourable social and political conditions. That in the great art epochs the system of art education and of art encouragement were always the same, and quite different from our own. That art is the index of a nation's culture, the outcome and not the cause of civilisation. That every stage in the progress of the intellectual development of a nation impresses its characteristics upon the art of the period. That the finest, the highest, kind of art is the flower of the highest intellectual culture, and therefore only found at the culmination of a civilisation. He then went on to show that the motive of "Great Creating Nature," in all her works, is that of adaptation to purpose, and that the artist, as the imitator of nature, as creative in a lower sphere, is most successful when actuated by the same motive. That the fine arts are adaptations to the senses and intellect of man. He also pointed out the fallacy of the notion that any production of nature must necessarily be beautiful though perfectly adapted to its purpose; that its being beautiful depended upon whether it was also in conformity with man's sensuous nature. He then drew attention to the fact that the whole tendency of scientific investigation goes to prove that the form of our knowledge is quantitative, and capable of being mathematically expressed. That the mean is the stable pole about which every species of phenomenon fluctuates,—is the mathematical expression for rectitude in nature, of the good in morals, and of the beautiful in nature and in art. That if the form of our knowledge be quantitative, all our knowledge is fundamentally that of proportional relation, and the doctrine of adaptation to purpose resolves itself into that of adaptation of proportion to purpose. All art is intrinsically proportioned adjustment, not only in respect to form, but to colour, &c., and its principles are, therefore, capable of being mathematically formulated. Mr. Thomas seeks to establish the principles of the fine arts on a sound scientific basis, and has for many years been working to this end.

The Electric Light in a Salt Mine.—The practical utility of the electric light for illuminating salt-mines was tried in Messrs. Verdin & Sons' rock-salt mine at Marston, in Cheshire, on the 23rd ult., experiments being conducted by Messrs. Welch & Scott, of Manchester. The mine is one of the largest in England; its capacity is about seven or eight acres, the roof being supported by natural pillars of rock-salt. In the experiments the electric light was generated from a Siemens machine, the motive power being derived from Marshall's special electric engine. The result is stated to have been satisfactory.



THE NEW PREFECTURE OF POLICE, PARIS.—*Ground Plan.*

THE NEW PREFECTURE OF POLICE, PARIS.

Though M. Jules Simon once wrote that "the only stroke of the pickaxe he could forgive was that which struck down the Bastille, because something else fell with it," yet we are glad to find that he extended his pardon to the act of demolishing the old Prefecture, describing it as "filthy and loathsome"; which, as M. Jules Claretie observed, "greatly annoyed the rats, who regretted the residence of their ancestors, and complained bitterly of the conduct of M. Le Préfet de la Seine." The improvements carried out on the "Island of the City" necessitated the demolition of a part of the dismal Place Dauphine, and the ridiculous column to the memory of General Desaix. In this work, however, the Commune took part, but from different motives than those which actuated the Municipal Council; and here we are reminded of what another French author wrote (Edmond About), "Dans les Ruines." "Wanton, useless destruction," he writes, "horrifies me, and I feel, if I turn to look upon the scene, that my eyes are accomplices to the act; but those who raze to the ground a dirty, unwholesome quarter do not destroy for the pleasure of destroying, they clear the space, and better and finer buildings are constructed upon it. This creative destruction I admire and applaud." Paris owes to this "creative destruction" its finest avenues and boulevards, some of its most refreshing "*parcs*" and public gardens, and many of its noblest edifices, while the useful has not been lost sight of.

The new Prefecture of Police may be reckoned amongst the former, and it certainly ranks with the latter. The architect, M. Diet, has had no small difficulties to contend with; the building was originally intended to be on a much larger scale, stretching from the Rue d'Harlay to the Boulevard du Palais, but on account of the cost of the late war, he had to reduce his plans by nearly one-half; the consequence is that, owing to the large increase of the *personnel* of the Prefecture, some of the business has to be transacted at the City barracks, where probably at some future date the whole of the service will be administered, and the Court of Appeal established in the present new building which adjoins the Palace of Justice, having its frontage on the Quai de l'Horloge. It was commenced under the Empire, and formed part of the plans of Baron Haussmann, who entrusted its design and construction to M. Diet. Amongst other buildings worthy of note by the same architect, we may mention the Museum at Amiens, the Hospital for Lunatics at Charenton, the Veterinary School, Alfort, &c. The new Prefecture of Police is a plain but elegant stone construction, built at a cost of 220,000*l.*

The oblique lines on the left side of the plan show the towing-path at the side of an arm of the Seine.

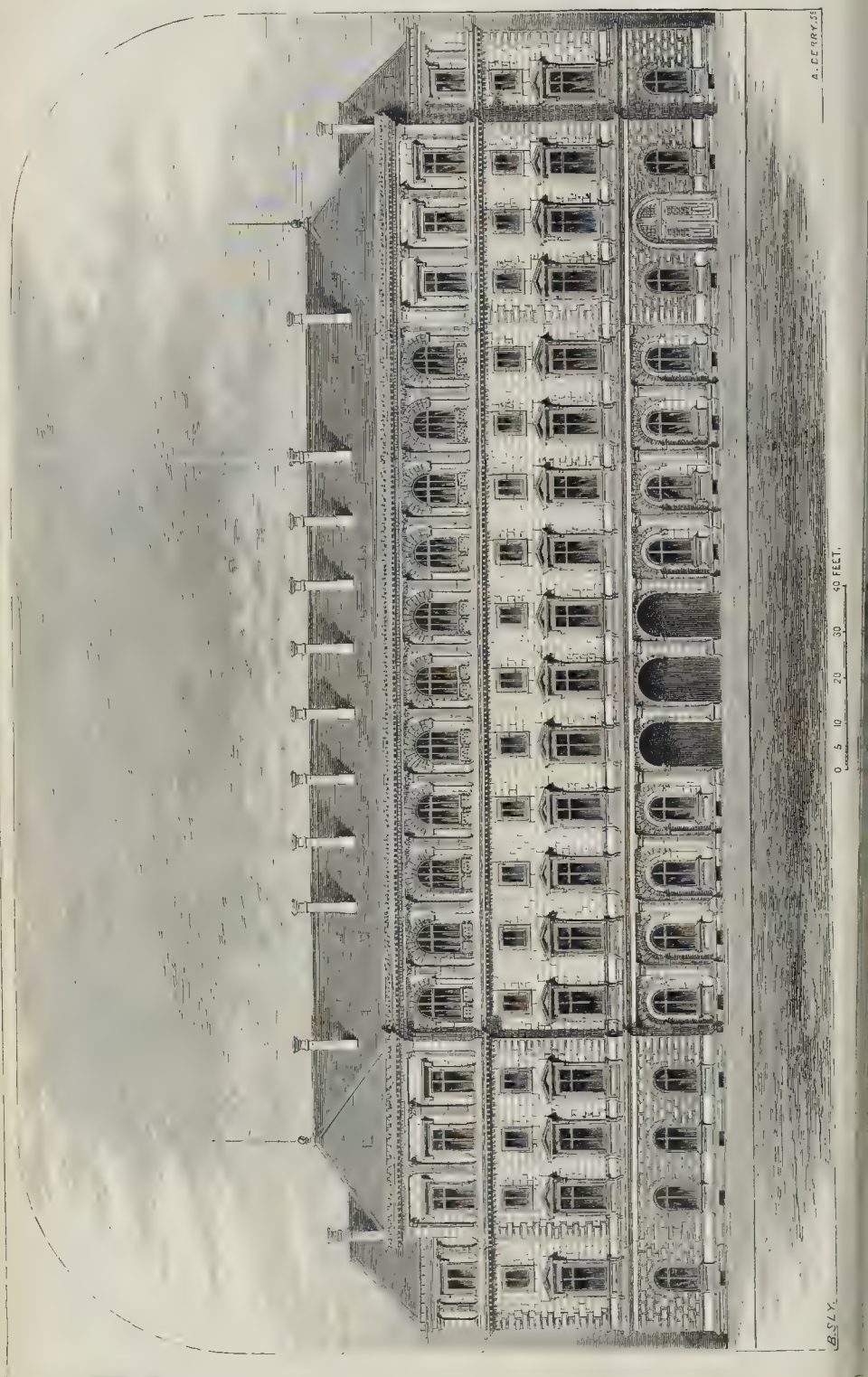
Look to the Cornices.—A piece of stone, weighing ¼ cwt., fell from the cornice of the Town Hall, Ipswich, a few days since, striking a man named Davey on the head and killing him instantaneously. The fall was caused by the frost, it is said.

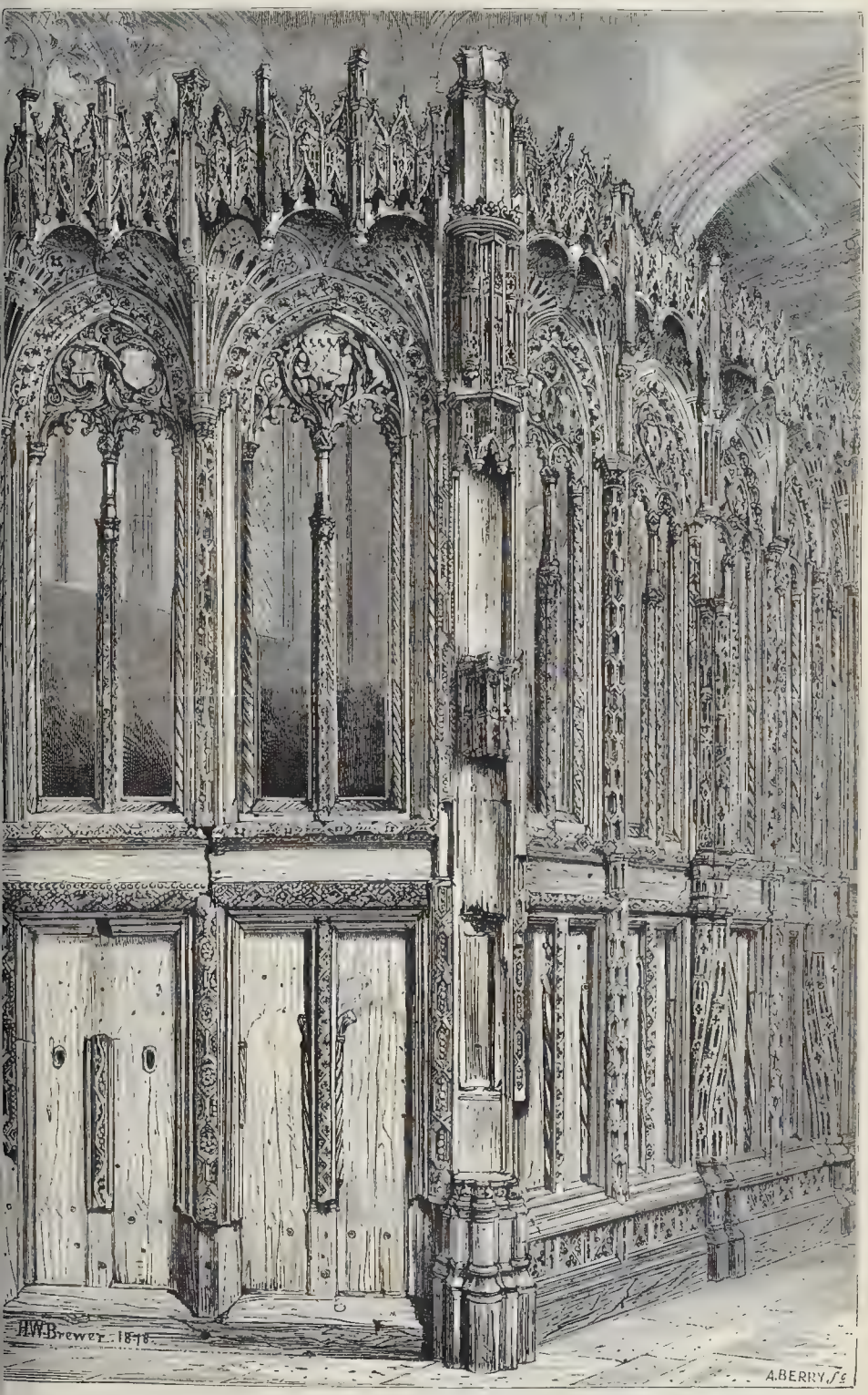
THE OXFORD CHANTRY AT LAVENHA

AN ARCHÆOLOGICAL PUZZLE.

There are few more interesting little to in England than Lavenham, in Suffolk. M of the houses are excellent examples of domes architecture of the sixteenth century. Th is a capital old cross, and the parish chu is one of the finest examples of Perpendic work in England. It consists of a nave aisles, of six bays; a lofty western tower chancel, and two large side-chapels; a so porch, and a very curious and interesting ve at the east end. The whole building is pendicular, of a very rich and late type, w the exception of the chancel, which is Decorated.

The church is said to have been built pa by the De Veres, Earls of Oxford, and partly a family of the name of Sprynge (or Spri The porch and the large south chapel w erected by John De Vere, and are inscri with the dates 1525 and 1527. The roofs of church are richly carved in oak, and the fitt and furniture are of the most interes description. The rood-screen and side scre of the chancel are Decorated in character; the stalls, parcloses of the chapel, and the chantry chapels of wood, miscalled the "Oxfo and "Norfolk" pews, are probably of the s age as the nave of the church. Our illustrat which is from a drawing made on the s represents the Oxford "chantry." For t can be little doubt that, previous to the Re mation, these so-called "pews" were, in rea the private chantries or chapels of the De Ve and probably of the Springs. Unfortunat


A. E. PERRY, DEL.
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THE OXFORD CHANTRY, IN LAVENHAM CHURCH, SUFFOLK.

date of both these works is unknown; nor y reliable information to be obtained con- ng them. Both of them, but more especially xford chantry, exhibit most singular features sign and execution; it is difficult to say for in whether they are the works of English- or of foreigners. But the Oxford chantry s so strong a resemblance to the screen- round the tomb of Henry VII., and to the oy-work over the stalls of Henry VII.'s el, both of which are usually ascribed to ish workmen, that it is possible that these hantry chapels may be works of the very men who were engaged upon Henry VII.'s el. We are the more led to this supposition the fact that these two chantry chapels no kind of resemblance to any other wood- , either in Lavenham Church or in the bourhood, not only as to their design, but as to their construction and the manner in h the details are executed. All the carving hed to the other screen-work in Lavenham h is cut out of the solid, but in these two ries it is made up of separate pieces of which are stuck together with a kind of and then attached to the main structure oden pegs, or fitted into grooves something the same manner as that adopted by rn cabinet-makers. The work, too, is far r and more free from irregularity of execu- han is usual with English work of the ; then, again, the tracery and mullions l twisted, and, instead of forming regular inear patterns or rectangular openings, the y is formed by interpenetrating scrolls, break off and end in foliage a little d the point of interpenetration. Shields ntroduced into the tracery; they are l by nude figures, very spiritedly exe- and partaking more of the characteristics naissance than of Gothic sculpture. We have no hesitation in ascribing the whole work to Flemish sculptors were it not e curious kind of fan tracery supporting per canopies. However, it must not be ed that this is at all like ordinary fan y, as the pendentives, instead of being rcular in plan, are very much flattened to form a kind of half oval, and the erse bars of the tracery, instead of level, rise very much towards the centre; , the whole forms a kind of constructive otive. This has been so skilfully done that fficult to understand it from a drawing. ason of this treatment is obvious. Had n-tracery been set out in the ordinary way, cessive projection of the canopies would nade the whole composition look "top- " On the whole, we are inclined to think otwithstanding this fan tracery, the work nish, and not English.

ains of colouring are to be traced in the s of the cornices, but as far as can be out, it seems only to have been used gly, and not to have been carried over the body of the work, or even over the This again, is a very un-English treat- In fact, the whole thing is an archæo- puzzle, and in the absence of documentary ce we can only hazard a few conjectures d upon the history of works which exhibit s of somewhat similar character. A good f the carving which adorned the lower has been taken away, and much of that is left is loose, so that it might easily be d by those mischievous persons who are habit of collecting *souvenirs* of their o celebrated buildings. These loose frag- should be immediately made secure with pegs, or even with glue.

Strike in Glasgow.—The 400 riveters truck work on the Clyde last October a reduction of 7½ per cent. have now ed to be taken on at the reduction. The s have replied that the work they left is ing efficiently done by apprentices, or by men not formerly instructed in , and by non-union riveters. If, how- ny more men are needed, employment offered them; but the non-unionists will ined in any case. The immediate results strike have been the loss to the 400 men uck of about 14,000*l.*; the loss of very nore to some thousands of others who, their action, would have been engaged shipyards; the loss to the district of contracts which have had to be declined; great increase in number of the so- nemployed.—*Glasgow News.*

HOTELS AND RESTAURANTS.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association on the 31st ult., Mr. H. L. Florence, president, in the chair,

Mr. F. J. Francis, F.R.I.B.A., read a paper on "Hotels and Restaurants." He commenced by observing that the stately hotel, with its vast dimensions, architectural pretensions, and luxurious fittings, was confessedly an offspring of but recent date, and the same was to be said of the modern *restaurant*, where, without the introduction of any hotel accommodation, the public had all the tempting appliances of the best cookery, served under circumstances of extreme luxury, and in apartments frequently of great architectural elegance, and with decorations that were only equalled in the houses of the wealthy, or the gilded *salons* of the modern club-house. The American hotel was of enormous dimensions. It was built of granite, brown sandstone, or white marble, and was seven or eight stories high. It had bedrooms for 1,000 or 1,200 guests, in all of which hot and cold water was laid on, and gas provided. It had spacious dining and drawing rooms, reading-rooms, refreshment parlours and bars, barbers' shops, and baths, and everything on the same scale. It had a kitchen capable of furnishing four meals a day for 1,000 people; and a steam laundry, in which the visitor could have his stock of soiled linen washed, dried, starched, ironed, and returned to his room in two hours. All the ingenuities of modern invention were brought to bear in these vast buildings to abridge manual labour, including half a dozen lifts for passengers and luggage. Just as the large and well-appointed hotels of the present day had superseded the dingy lodgings formerly offered by hotels, so the modern *restaurant* might be said to have superseded the dirty coffee and chop houses which used to be so prevalent. His (Mr. Francis's) firm had been engaged in the construction of several high-class *restaurants*, and he would, therefore, give some particulars of four of them, viz., Crosby Hall, Bishopsgate-street; the King's Head, Fenchurch-street; the Holborn Restaurant; and the "Palmerston," Old Broad-street. In 1867 *Crosby Hall* came into the hands of its present proprietors, and from the plans and under the supervision of Messrs. Francis it underwent a complete metamorphosis to adapt it to its new uses as a *restaurant*, and subsequently an important addition was made on the northern side by the acquisition of additional ground. Having given a sketch of the history and structural vicissitudes of the building since the time of its erection in the middle of the fifteenth century by John Crosby, an eminent citizen, Mr. Francis said that the works to the original structure were carried out in 1868, and in 1873, upon an additional space of ground acquired, new buildings, in accordance with the style of the old building, were erected, faced externally with stone, and with the interior decorated similarly to the remainder of the structure. The main entrance is in Bishopsgate-street, leading to the council-room, which is appropriated as a capacious luncheon-bar, as is also the whole of the ground-floor of the extension. The floor throughout is laid with encaustic tiles, and the walls are decorated with oil-colour paintings representing scenes in English history, either connected with Crosby House, or contemporaneous therewith. The ceilings are panelled with Tudor enrichments, the whole overlaid with polychromatic decoration. In the banqueting-hall, little was needed to bring out the fine proportions and superb detail forming the original building. An unsightly gallery had to be removed, but the windows were intact. The exquisite bay window, with its beautiful groined ceiling, required nothing but cleansing, as was also the case with the fine roof, with its transverse and longitudinal ribs and rich traceried insertions. The Mediæval smoking-room consists of a large parallelogram-shaped apartment, with an arched recess on the eastern side, lighted with deeply-recessed Gothic windows, and a large oriel window at the north end. Great care has been taken with the ventilation of this room by providing fresh-air inlets behind the skirting, separate flues in the chimney-breasts, and perforated panels, forming distinct air-channels, in the ceiling for carrying off the foul air. This apartment is also decorated with wall-paintings representing historical scenes. The kitchen department occupies the second and third floors of the building, and the kitchen ranges, hot-plates, gas-stoves, and steam-boilers, though not spread over a large area, are well placed for their work, and facilitate economy and regularity of service. There are two sets of double-acting lifts from the kitchen, having deliveries at the luncheon-bars, the banqueting-hall, and the throne-room. The steam-boiler serves the auxiliary purpose of warming and ventilating the smoking-room. The *King's Head Tavern*, at the corner of Mark-lane and Fenchurch-street, might very well claim to be an example of the earliest of those places to which London's citizens resorted for rest and refreshment. It had the honour of a visit from Queen Elizabeth, on the occasion of her release from the Tower. The old building, altered and cut about, with its inconvenient kitchen on the ground-floor, and its irregular-shaped rooms and low-pitched ceilings, was not capable of being satisfactorily converted into a spacious modern *restaurant*, and Messrs Francis were therefore commissioned to entirely take down and rebuild the premises. It was considered desirable to have a double basement, as the locality is in the centre of the wine trade, and the lower story was carried to a depth of 20 ft. below the street-level. The vaults were erected at the outset of the work to form a proper abutment for keeping up the roadway, and fireproof flooring, on Fox & Barrett's system, was adopted, both for the ground-floor and upper basement. The lower basement floor was asphalted, and the asphalte was also laid vertically on the walls, to prevent access of damp to the cellars. The principal entrance is in Fenchurch-street, and leads at once into a lobby, from which, on the right, immediate access is obtained to the luncheon buffet, 60 ft. long and 20 ft. wide. The mural decoration adopted for this room shows what may be effected by the use of art tile-painting for internal ornament. There is no building in London in which this kind of tilework has been so extensively introduced as in that forming the subject of this notice. The whole of the tile-work in this room, as also that on the marble staircase, the first-floor vestibule, the Queen's dining-room, and the smoking-room, have been executed by Mr. Alexander Gibbs, of Bloomsbury-street, and possess considerable artistic merit; and although the original cost is considerable, yet, being of so enduring a material and so readily cleaned, it may be safely commended to notice and adoption. In the arched recesses in the luncheon buffet, the art-tile paintings illustrate the plays of Shakspeare. The counter-front, the panelled ceiling, and the gas lanterns and pendants,—the latter by Messrs. Verity, of King-street, Covent-garden,—are all designed with special reference to the architecture of the building. Underneath the luncheon buffet, and approached from a staircase of good proportions, is the chop and grill room, 62 ft. long by 20 ft. wide, thoroughly ventilated by windows at each end, and also by a ventilating cornice all round the room, communicating with a large vertical zinc tube running to the top of the building, connected with the flue of the grill, and ventilating the room. A Sicilian marble staircase, 6 ft. wide, leads to the Queen's dining-room, which is on the first floor, and is 60 ft. long by 30 ft. wide, without any internal piers or columns. The ceiling of this apartment is composed of a series of geometric panels, with foliated enrichments, and the walls exhibit a series of illustrations, in art tiles, of Tennyson's works. The gas chandeliers were supplied by Messrs. Verity, of Covent-garden, and the chimney-pieces by Mr. Anstey, of Alpha-road. A spacious serving-room is situated on this floor, in close contiguity with the dining-room, and communicating by lifts with the kitchens at the top of the building. On the second floor, the smoking-room, 35 ft. by 31 ft., occupies the most important position. It is carried through two floors, and is provided with a gallery all round. It is lighted by two rows of windows on the north and east sides, and also by a large central skylight, starting with a cove, and provided with vertical and sloping lights, with a sun-burner in the centre. The walls are decorated with painted tiles, the spaces under the gallery and between the windows consisting of a series illustrating the Seven Ages of Man. The wall spaces on the gallery level are decorated with tile panels containing representations of flowers and birds. Adjoining the smoking-room is another dining-room, 31 ft. by 26 ft. It is called the Marble-room, as the walls are panelled, above the pitch-pine dado, with coloured Italian marbles. Above the marble

work are carved oak panels, illuminated with heraldic shields. This dining-room opens into a small private dining-room, 16 ft. by 12 ft. The kitchen and scullery are placed on the third floor. The floors of both are covered with chequered iron plates, screwed to the boards, with white-lead and felt joints, and turned up 2 in. all round next the wall, with overflow-pipe between the joists to take away any overflow of water. The larder is on the fourth floor. On the same floor as the kitchen is a large baker's oven, in two compartments, erected by Mr. Smith, of Lambeth. It weighs upwards of 40 tons, and considerable care had to be taken in the construction to carry securely so heavy a weight. Since the completion of the structure, a considerable addition has been made to the accommodation on the first-floor by the appropriation of a large area, originally intended for offices, as an extra dining-room, and to be used as a reception-room for guests when large evening dinners are served in the Queen's Room. The extra room thus provided is 50 ft. long and 17 ft. wide, lighted by a range of seven windows facing Mark-lane. It is called the Alabaster-room, as the walls all round, including dados and cornices, are lined with alabaster marble-work, consisting of a series of pilasters running nearly to the ceiling with moulded and sunk panels between. The exterior elevation consists of red bricks, with Portland and Bath stone dressings. The style of the architecture is Elizabethan, with details of a Classic type. The *Holborn Restaurant* was originally a large public bath, afterwards converted into a casino. It was subsequently started as a *restaurant* by an American, but did not succeed in his hands. About four years since it came into the hands of its present proprietor, who commissioned Messrs. Francis to alter and re-arrange the interior, and rebuild the part in Holborn. The grand *salon* is 95 ft. long and 50 ft. in width. The grill-room is 41 ft. by 37 ft. Very little architectural alteration was required. The large dining-room, called the Prince's Salon, was formed by sweeping away a number of smaller apartments. The kitchen and its accessories were necessarily placed in the basement. They occupy a position near the Lincoln's-inn entrance. The *Palmerston Restaurant* occupies the whole of the basement of Palmerston-buildings, extending from Old Broad-street to Bishopsgate-street. The premises were not originally intended for the purpose they now serve, but the *restaurant* has developed from a small beginning. There are entrances both in Old Broad-street and Bishopsgate-street, and a corridor, 12 ft. wide, leads from one street to the other. There is a spacious luncheon-bar at the Bishopsgate entrance, leading to an extensive range of sky-lighted apartments, in which there are eight billiard-tables. In the centre of the building is the French dining-room, adjoining which is the kitchen,—one of the best arranged in the metropolis, and not to be excelled for cleanliness and ventilation. Beyond this, and nearing Old Broad-street, is the chop and grill room, and on the opposite side of the corridors the smoking-room, leading again to the billiard-rooms. This again leads to the *bodega*, or wine-bar, through which Old Broad-street is reached. The reconstruction of the interior of the premises to adapt them to their present purpose necessitated some difficult needling-up of heavy walls and chimney-stacks more than 100 ft. high. The cellarage in the lower basement is very extensive, exceeding 12,000 ft. in area. In conclusion, Mr. Francis described the new Grand Hotel at Charing-cross, some particulars of which we published last week.* He said that in magnitude or elaboration of finish it could not compare with those gigantic American palaces to which he had already made reference; nor could it pretend to rival the Hôtel Continental at Paris,—a building probably unsurpassed for its grand central vestibule, its *table d'hôte*, its reception-rooms, *café restaurant*, and smoking-rooms, all decorated with a splendour and at a cost which would seem to an outsider seriously to peril the chances of its commercial success. Including the cost of the freehold, it is credibly stated that the total outlay on the building had been 700,000*l.* Of other buildings of this class, the fine Midland Hotel at St. Pancras Station was one of the most remarkable works of the present day. For excellence of design, and for minute attention to detail in every part and in all trades, Mr. Francis did not think it could be excelled. The construction of its grand staircase, with its ingenious groining, was especially to be noted as a most successful achievement. On a smaller scale, the Holborn Viaduct Hotel, by Mr. Isaacs, must be held to be a very meritorious work. Here, again, the principal staircase, with its broad flights, spacious landings, and honest iron construction, subordinated to decorative effects by simple coloured enrichments, was especially deserving of praise.

* See p. 136, *ante*. The number of shops to be provided is *thirteen*, and not sixteen, as there stated.

LAND AND LABOUR.

Sir,—There is one important fact, not yet stated, which appears to me to modify the conclusions at which you arrive in your articles on short time and the industrial crisis. That fact is, that it is impossible to find a market for any increased production; indeed, notwithstanding the enormously-curtailed production which now obtains, it is scarcely possible to sell what is now being made. Commercial travellers tell me that they have more trouble in selling 10*l.* worth of goods now than they had formerly with 10,000*l.* worth; and that even a George Moore would fail in getting a line.

The cotton spinners and manufacturers of Lancashire some time ago thought that by lowering wages they could force consumption, and they have after much opposition succeeded in reducing wages, but with the effect which was inevitable, that most of them are working short time, and many have closed altogether. They cannot sell what they produce. From the Board of Trade returns, I learn that the exports of all cotton goods during the month of December last was 5,065,449*l.*, as compared with 5,523,341*l.* for December, 1877, a reduction of nearly half a million sterling, or 10 per cent. I do not suppose this is likely to go on for any great length of time, but I am decidedly of opinion, from my own knowledge of Lancashire, which is considerable, that with the mills and machinery they now possess, working continuously (and, as you have shown, most economically) three shifts per day of eight hours each, for six days a week, they could produce the whole of the cotton goods required in the whole world, and they could beat the world for cheapness in the doing of it. Of course, an Act of Parliament or two would have to be repealed to enable this to be done, and something like honesty of work would have to be maintained, which has not been the case of late years, and hence a preference on the part of some consumers for the manufactures of other countries, and an effort on their part to establish works of their own, as in India, where a considerable quantity is being made.

In the iron trade, again, we have a very much greater plant than can be continuously employed, except under such a return of prosperity as we had five years ago. I have no returns for the whole country, but in the Staffordshire district, where there are about 150 smelting-furnaces, less than fifty are in blast at the present time. Our total exports for last year of iron and steel rails amounted to 2,533,927*l.*, as against 3,096,563*l.* in 1877. In this article alone, the United States, which six years ago took from us some 600,000 to 700,000 tons, last year took only 485 tons iron rails, and 500 tons steel rails, the difference being made up by rails of their own make.

As I have said before, the iron trade to America is as good as gone. But even there the capabilities of production are greatly in excess of the requirements. From a report just published by the secretary of the American Iron and Steel Association, we learn that at the close of 1878 there were in the United States 700 furnaces for the production of iron, of which only 260 were in blast, and 440 were idle, and yet they have 516,000 tons of pig-iron in stock, out of a production of 2,382,000 tons, an amount approaching our own total make. We can never hope, therefore, to have a resumption of our iron trade with America, and the same may be said of most other branches. They have years ago set themselves the task of becoming self-dependent, and they will, doubtless, in time succeed. But, as things now stand, we are very greatly dependent upon them for our food. In 1878, we took from them wheat to the value of 16,446,846*l.*, as against 13,535,204*l.* in 1877, and 10,300,374*l.* in 1876, a constant and rapidly-increasing amount. Our manufactures for them are decreasing, and our imports of food are increasing, for which we shall have to pay in coin. And where is the money to come from if our people are idle? The disease protection has broken out in Europe, and unl a drastic remedy is applied, which seems likely, our trade to Germany, at least in ir will be shortly closed. The consideration these facts leads me to the conclusion I h already stated,—that a re-arrangement of p duction must be made in Britain. The alternat is a wholesale emigration to new countries. this, we have the advocacy of no less a pers age than my Lord Derby, a nobleman for wh I have great respect. But will my Lord beco the leader of such a movement, like Willi Penn or the Earl of Selkirk? I fear not. loves his country too well to leave it, an this be the case with a rich noble, why ma not be of the working men? Patriotism is confined to any one class, and if the produc alone leave the country, what will becom the drones, of whom, I regret to say, we h a greater proportion than any other coun and when the emigrants reach their new hor the greater part must, perforce, cultivate land, whatever their former occupation; why may they not do this at home, witho forced expatriation, when, as can be abunda proved, the land is waiting for the work Nearly 78 millions of acres exist in Britain, less than half that number of souls, all t inhabit them. We have two acres to one per and yet we are told the country is too crow The fact is that the operations of the l affecting the possession of land, and the gr tation of the workers towards the indust centres, have made crowded cities and dese villages.

A few words in reply to "P. J.," who, w admitting his comparative ignorance of subject, thinks I am guilty of a culp temerity for advocating what he believes t a delusion. That there is a vast area of g vatable land in England left untilled I am tive, because I have seen it in the course o travels through it, much on foot. That a deal of that which is said to be tilled proc very much below its capabilities I hel believe; and I have only to appeal to such as Mr. Mechi for a confirmation. Our agr tural shows yearly attest the fact also. I w quote much in support, but will only c couple of experiences given by the late Wren Hoskyns, some time M.P. for Here himself a landholder and owner. He sa "I once gave a twelve years' lease to a working labourer of about an acre of land, or what would have been land if it had not been an old gravel quarry, 'fit to stan lark,' as the adjoining farmer (his empl remarked, looking with a face of am amusement on the transaction,—'Long b the lease was out, the quarry had, with by only, become a rich-looking, almost level g plot, the half of which, manured fro house and his pig, with some horn shavin favourite wheat drug of his—did you ev it?), produced a measured crop of five thirty bushels,—more than any acre i parish could at that time grow!"

Again,—"I once had a snipe farm,—yo heard of turnip and barley, and wheat bean farms,—I did not plant them, the spontaneously, not singly or in couples, l clouds, and I used to fire accordingly, s do, at a covey of birds, and when th retriever brought them in, all fluff and she used to look up a dismal apology in m as if she had done something wrong,—l puppy who brings a feather to your feet, a a scolding, if you are out of sorts. The one piece,—fourteen acres,—so far fro homestead, and with such a reputation, resolved myself into a committee of se what to do with it. Melbourne's alter 'Couldn't we let it alone?' came, lik Tempter. Well, suddenly, it seemed t pillow (they usually come in the dark) I idea. In eight-and-forty hours it had be fact,—and more, eight-and-twenty facts for I had marked out a road across the (the field was of oblong shape), and dr the rules, and taken the signatures, an my own, and eight-and-twenty families hardly say 'tenants,' in the individual nor would you, if you had seen the pla year on a Sunday afternoon) had each an acre. I drained it for them, and then them their rules, for they were theirs rath mine, except one, and that was mine only. 'That no bad word should ever be utt "Could Blaow"' (the patronymic of th ment ground). I followed the Melbourne

er all, I let it alone. They paid a pound each r annum,—monstrous, doubtless; but they did t seem to see it at all in that light. My aim was only to 'remove whatever had ndered the individual from obtaining that gree of well-being which he was capable of aching by exertions according to the best of his ility.' (Consul's Report, Prussia.) The first ar's crops were very like—their neighbours'. t they were satisfied, which was more than could say with my farm, though the rent arged on my debtor page was only half theirs. t the second year the whole scene was anged. As I walked, just before harvest time, and down the allotment road (now a self-own *chaussée* of eight-and-twenty stone con-butors,—the rolling alone fell to me), I rcely could trust my eyes. We talk of 'look-g over our wheats'; I did not do that, cause I could not,—at least, that was the pression on the eye, as I looked *up* along the n-serried floor of long, well-filled ears top-g the firm, nodulated stems, like a veteran iment in 'close order,'—closer could hardly There was one farm in the parish (not ne) that had crops as good,—at any rate, on vider scale of goodness and quality,—but that s one of the really good farms of England,— reputation-maker's. The rest, in racing rase, were 'nowhere.' Considering how rdly money is scraped together in farming, ave often thought with what cheerful honesty rents are usually paid. But the rents of ourers, with a bit of land, have in my experi-e been paid, sometimes under very adverse l, with a touching sense of honour that has n recalled to me old Wordsworth,—

> 'I've heard of hearts unkind,—kind deeds
> With coldness still returning,—
> Alas! the *gratitude* of men
> Hath oftener left me mourning.'"

t is with some diffidence I ask you to print long letter, but the subject is of such reme importance that I am desirous of con-ing such persons as "P. J.," whose "*non numus*" I am confronted with so frequently. to the remedy for these evils, I may say that will not be of the simple nature suggested. rms given up by one holder cannot be laid l of and dealt with successfully without a nage in the conditions of the holding. We st get rid of the "dead hand," and the born hand," before we can do much towards ancipation of the land, which is a question for coming statesmen. E. Grimes.

Since writing the above, I have read your werful article on this subject in the last mber of the *Builder*, for which I beg leave hank you.

AN APPEAL TO EMPLOYERS AND EMPLOYED.

How long is this fratricidal contention be-en the employers and the employed, these important estates of the realm, to continue? sdom cries aloud, "For heaven's sake, be l! Have not both of you got eyes to see t commerce is in the throes of readjust-nt, and that England can never again, easily as she did till within a few years t, monopolise the trade of the world? Nor it right or just that she should. Other ntries claim to share in industries and com-rcial enterprises. You made no secrets of ir inventions, nor did you hesitate to manu-ture and to sell your steam hands to the ions. How, then, can you be astonished that work of your own hands should be turned ainst you to break down your commercial nopoly,—that other nations should compete h you in the marts of the world? America, ance, Germany, Holland, and Belgium, are w extensive and still increasing factories. Bear s fact, this changed state of things, stead-tly in mind, and also the inevitable conse-nce,—viz., the alteration which must take ce in the amount of goods manufactured in s country,—production must inevitably and ndually contract. Neither must it be forgotten t, whilst your staple industries are contract-, the population is increasing." These are momentous conditions which have to be t and to be grappled with. For if the popu-ion of the country be increasing, whilst the nand for labour is decreasing, there is no ver on earth to avert the cheapening of labour of obviating the miseries attendant on a con-ntly increasing surplus population of unem-yed. The struggle for existence is beginning to pinch. Women also assert their right to work and to compete in many industries with men: this increases the difficulty, and of course tends still further to cheapen labour by swelling the supply of hands out of all proportion to the demand.

How are these difficulties to be temporised with and staved off,—the chances of misery and calamity to be lessened? It is quite clear that, other things being equal,—coal, machinery, &c.,—that that country will be able to produce cheapest which shall be able to obtain the cheapest human labour. For the markets of the world will be held by the cheapest best. If we cannot continue to produce the cheapest best, then the evils contemplated must be hastened and aggravated by a more rapid contraction of our manufacturing industries, which must lead to the ultimate transfer of those industries to other peoples. The employers and the employed surely, therefore, cannot be so blind as not to perceive that, if the manufacturing trade of the world is to be retained by us for some time longer, on the score of self-preservation, that can only be by the diminution of the cost of production by every available means. Employers must forego in profits, and the employed in wage. This, or the gradual disappearance of manufacturing industry from these shores is the only alternative.

Yes! there may still be found some additional means which may aid us in staving off the evil day. Enterprise may push our commerce into yet unworked regions, but this can only be in respect to some of the rougher staples, and in these only till other nations shall follow in our wake. But this forcing of our manufactures upon other peoples can scarcely be justified otherwise than on the score of self-preservation. For it is a question which has yet to be considered whether the substitution of mechanical for human labour is a benefit to the world at large. It is undoubtedly to us as a nation, and in a purely selfish point of view; but that is insufficient to justify it, for it must deprive hands somewhere or other in other parts of the globe of industries. No! depend upon it, England will have to pass through a commercial storm of extreme severity, and she will only be able to escape its perils, and to pass triumphantly through it, by timely taking in sail. Employers and employed must make mutual concessions, and the State must consider some organised system of emigration for transferring the surplus population to the colonies.

The only possible means, be it remembered, for holding the markets of the world is to manufacture the cheapest and best, and employers and employed must unite in friendly council to effect this much-to-be-desired end.

Meter.

"ART FOR ART."

Mr. T. H. Hall Caine lectured at the Free Library, Liverpool, on Tuesday, January 28th, on "The Poetry of Pre-Raffaellitism,—Dante Gabriel Rossetti." Mr. Councillor P. H. Rathbone occupied the chair, and there was a crowded and appreciative audience. After some general observations on the school of Rossetti's genius, Mr. Caine concluded with the following on art and morality:—

It would be wrong to say that Rossetti has part or lot with those false artists, or no-artists, who assert, without fear or shame, that the manner of doing a thing should be abrogated or superseded by the moral purpose of its being done. Through and in his poetry, as in his painting, we may see that to him, as an artist, the first thing is to do his work supremely well for its own sake, while the accident is the ethical result which follows. Rossetti makes no conscious compromise with the puritan principle of doing good, and to demand first of his poetry the lesson or message it has for us would be wilfully to miss of pleasure while we vainly strove for profit. He is too true an artist to follow art into its byways of moral significance, and thereby cripple its broader aims. But at the same time, all this absorption of the artist in his art lives and works together with the personal instincts of *the man*. It is everywhere mixed with it and coloured by it, and to do good on other grounds is in Rossetti's art involved and included in being good on its own. And those who assert that the manner of doing a work is *the essence* of the work done, may claim to be the perfect artists by right of their passion of pursuit. They are assuredly imperfect men. Their work may be of supreme value to certain byways of art, but their narrowed aims make as feeble an effort as puritanism ever advanced to cover the whole domain of art. The colour of the picture, and the music of the poem belong to the manner of the artist, and appeal first to our affections, but the pleasure or even exaltation of soul we derive from them is due, not to any virtue in themselves so much as to their own spiritual significance and suggestiveness.

But the manner of doing a thing can never be more than a part of the work done, and art has never been followed for its own sake without involving other meanings, purposes, and results. Look broadly at the Mediæval ages for evidence of this enforced marriage of manner and meaning; or look specially, if you will, at the age of the Renaissance. The artist has never at any time divorced his moral nature from his artistic instinct, and cannot. The ethical significance may have been always the accident of his *work*, but it has been always the essence of his nature; and those artists who, to-day, claim the supreme place for the manner of their work are struggling either to cheapen the gifts they have not got in abundance, or, more probably, to conceal the quality of the meaning in their work, of which they have no moral cause to be proud.

You may know a tree by its fruits, but the fruits are not the essence of the tree, and even as an artist's moral instincts are so will his art be. His art cannot escape the colouring it gets from the human side of his nature, because it is in the essence of art that it appeals to its own highest faculties largely through the channel of moral instincts:—that music is exquisite and colour splendid, first because both have spiritual significance, and next because they respond to sensuous passion. But it is one thing to pursue art (for its own sake) with an over-ruling moral instinct that gravitates towards conduct, and quite another thing deliberately to absorb art in moral purposes. Cowper and Klopstock furnish well-worn examples of the trespass of unlovely morality upon the truth and beauty of art; and Edgar Allen Poe and Chas. Beaudelain of the violent abrogation of puritanism in the pursuit of manner. But the poetry of Rossetti shows how possible it is, without making conscious compromise with the puritan principle of doing good, to be unconsciously making for moral ends. This is because the basis of the poet's nature is a Hebraic craving for the correct, and as the tree is so have the fruits been. There is a passive puritanism in "Jenny" which lives and works together with the artist's purely artistic passion for doing his work supremely well. Every thought in "Dante at Verona" and "The Last Confession" is mixed with and coloured by a personal moral instinct that is safe and right. And now, looking at the relation of art and morality as seen in the light of Rossetti's poetry, there will be no need for "the poor fine arts to take themselves away" from before the face of aggressive puritanism if artists will look closely to it that the personal nature which, without purpose of their own, permeates their work is such as will bear fruits of good meaning. After that, art for art by all means, both first and last, and art will assuredly be good on other grounds as well as good on her own.

We cannot easily bring ourselves to believe that either moral or artistic self-consciousness can inspire true art-work, or even so much as nestle at the root of it. We know that men have consciously wrought great work for the praise of achievement, and for the expression of religious feeling; but we cling to the belief that the noblest and best has been done when the artist has forgotten his purpose and yielded himself up with *abandon* to his mood. The sonnets of Rossetti's "House of Life," seem to our enchanted sense to have grown up out of sheer joy of their own loveliness. Nevertheless, all art is essentially self-conscious, and between two such opposite aims and forces as operate in the art of Cowper and in the art of Rossetti, we see only certain differences of kind and measure of self-consciousness. The inspiration is dead when the picture is painted and the poem written. It is the key of the poet's art to prolong the inspiration, or reproduce it by memory. The "mute inglorious Milton" and the Milton of imperishable speech differ only in this: to the one the angels, whose visitations both enjoy, comes like soft music heard in sleep, and leaves after it an unsatisfied yearning and sweet sadness; to the other it is an angel to be wrestled with the whole night long, if perchance with the dawn it leaves its name and blessing behind it. And the most peerless thing of beauty in Rossetti's volume is to the inspiration which

induced it, like Rossetti's "Portrait," to the lady it represented,—

"Less than her shadow on the grass,
Or than her image in the stream."

In moving the usual vote of thanks to the lecturer, Mr. P. H. Rathbone, from the chair, said the audience ought not to be led astray by the enthusiasm they had seen, but should be put on their guard as to the true nature of the work of Rossetti. This remark occasioned the utmost curiosity amongst the audience, and when Mr. Rathbone proceeded to say that Rossetti was the greatest painter and poet of animal life, and that neither his paintings nor his poems gave evidence of acquaintance with anything but the purely fleshly side of human life, the consternation felt both by audience and lecturer was very marked. The poet had learned woman's heart, as Mr. Caine observed, but everywhere in those sonnets which they had heard so much extolled was to be seen the sensual side of Rossetti's nature. Rossetti painted women without soul, and depicted the love of man for women, not man for man. These opinions, so much out of harmony with the lecture, created the liveliest interest, and when Mr. Caine rose to reply to the vote of thanks, book in hand, the audience manifested their enjoyment of the inevitable encounter. He, with much warmth, retorted upon Mr. Rathbone that Dante Rossetti had never painted a "Lans Veneris"; said his passion for woman was not of the nature of Swinburne's, but a Keatsean crystallised passion; and read the sonnet, "On the Refusal of aid between Nations," to refute Mr. Rathbone's charge that Rossetti cared nothing for anybody but his egotistical self. The warmth of the reply appeared to be relished by the audience, who were clearly unaccustomed to such a collision between chairman and lecturer, and the cheers and counter-cheers which followed the points of each speaker showed how eagerly they were taking sides. It is not often that a purely educational platform is treated to incidents like these, and, perhaps, all things considered, it will be well for all parties concerned if in future a recurrence of such a clashing of opinion is avoided.

THE TEMPLE OF JERUSALEM.

Sir,—As Mr. Fergusson thinks it becoming to apply such terms as "absurd," "manifestly absurd," "unfair," and "misleading" to the arguments of an officer who has always treated him with the respect due to his position, allow one word from a surveyor who has given much study to the question of the site of the Temple.

Twelve years ago I had no further acquaintance with the topography of Jerusalem than such as might be gathered from your own columns; as, for example, from the *Builder* of December 7, 1867, in the article on "The Ninth Crusade." I knew that the question was rather angrily debated, but I had no view of my own, except that it must certainly be determinable by patient research.

Since that time I have read and studied all that I could lay hands on on the subject, including, of course, the great survey of the Temple area, and the rock levels of the whole city of Jerusalem, which it is evident to a surveyor must form the basis of any sound inquiry.

What seemed to me to be conclusive as to the site of Solomon's temple was the exact accord of the three ancient authorities, the Bible, the Talmud, and the works of Josephus, in the statement that the Temple was on the crest of a hill. Unless these authorities are thrown altogether overboard, these statements control the whole question, and any other arguments must be subordinated to this condition.

Josephus says (Bell. v. v. 1),—Το δὲ ἱερὸν ἵδρυτο μὲν, ὥσπερ ἔφην, ἐπὶ λόφου καρτεροῦ, and adds that "at first τὸ ανωτάτω χθαλαμὸν was hardly sufficient for the temple and the altar, for all around was precipitous and declining." In the course of time, he goes on to say, the hill was raised around the holy house, and surrounded by a wall. Nothing can be more definite than this statement made by a priest, to whom the whole area of the temple and its courts was familiar, and who was the historian of the spot. He also says that the *peribolus*, or outer wall, rose from the deepest parts of the φάραγξ to 300 cubits, or even more, and that it contained stones of 40 cubits. These remarks are quite intelligible as applying to the prodigious height of the south-east corner of the Haram wall, rising from the Kedron Ravine, on the lower courses of which the old Phœnician letters occur.

The treatise Parah of the Talmud, iii. 6, describes the bridge which was erected, pier over arch, and arch over pier, from the mountain of the Temple to the Mount of Olives, on the occasion of the Sacrifice of the Red Heifer. The tract Middoth, II. 4, says that the eastern walls of the Temple were low, in order that the priest who performed this sacrifice, standing בראש הר המשחה, on the summit of the Mount of Olives, might dispose himself right, מתכוון, and look in through the gate of the holy house while he sprinkled the blood. According to the Survey, the summit of the Mount of Olives is exactly opposite to the Sakhrah rock, on the summit of the Temple Hill, so that a line of vision runs directly through the gates into the Holy House, if there situated. If the Temple had been on the south-west slope of the hill no such arrangement would have been possible.

3. The book of Genesis, xxii. 4, says that Abraham lifted up his eyes, and saw the place where he was to build an altar "afar off." את המקום מהרק. Now, although it is as yet undecided whether the spot indicated in the book of Genesis was on this Temple mountain, or, as contended by the Samaritans, on Mount Gerizim, it is certain that the Jews could not have applied the expression to the south-western slope of the hill, or to any spot but its summit, in accordance with the two former determinations.

It seems to me, as a practical surveyor, that these three authorities are so conclusive as to the localisation of the site of the Temple and altar of Solomon on the natural rock summit of the hill opposite the Mount of Olives, that there is no room for discussing any theory that should place it on the south-west slope, without despising the only ancient authorities on the subject.

A Civil Engineer accustomed to Trigonometrical Survey.

ST. ALBAN'S CATHEDRAL.

Sir,—I have read Mr. Evans's letter with much interest. He has the advantage of many among us in knowing more than we do of the documentary evidence as to the works carried on at St. Alban's in the fourteenth century. If his theory were correct, that the existing roof of the nave dates from the middle of the fourteenth century, many small difficulties would no doubt be explained in the easiest and simplest way possible; and I am inclined to hope that the much later date which I gave it may, on further examination, be found to be incorrect. But until I can make such further examination, both of the nave and of the other roofs referred to by Mr. Evans, I am bound to say that I find it difficult to accept his solution.

Now that the proposed new roof has been conclusively shown to be entirely a new invention, and in no sense a restoration of anything that ever before existed, with parapets, at St. Alban's, the only defence of the course which is to be taken, which still remains unassailed, is the statement that it was what Sir Gilbert Scott had himself intended to do. Nobody has yet given us the authority for this statement. Mr. J. O. Scott told the Conservation Committee of the Institute of Architects that, curiously enough, his father had never mentioned the subject to him, and he could, therefore, only conjecture what he might have done. It so happens that, in looking over some old letters the other day, I came on one of Sir Gilbert's, dated October 24, 1867, which answers with singular exactness for the course which he would have advised. He was writing to me about some works which had been executed in a Scotch cathedral to which he had been consulting architect, and these are his words:—"I found that ——— had reported that the old roof must be taken off, and I at once expressed my consternation at such an idea, and took it for granted that he would follow my advice; instead of which he got sanction for carrying out his own views, set to work, and before I heard more he had it nearly all off. I then, finding that he might quite well have saved it, withdrew in disgust. It was a roof of Scotch fir of the same age with the ceiling, and made expressly for its support." He concluded his letter, knowing that I was on the point of going into Scotland, with these words,—"I wish you would do anything you can to call attention to anything which is being done wrong."

It would be difficult to find any words more applicable than these of Sir Gilbert Scott's, not only to the destructive scheme proposed at St. Alban's, but also to the course which I and other architects have taken in "calling attention" to it.

George Edmund Street.

Sir,—The *Builder* has placed us all under immeasurable obligation by the course it has taken in the matter of the roof of St. Alban's Abbey (may I here plead for the retention of the familiar old name "Abbey"?).

If the proposal to erect a high-pitched roof had been carried without protest, then, indeed, would the whole architectural profession have earned, and well merited, the severest blame. Condemning a fairly sound roof as "ruinous" and "rotten," ignoring the actual markings of the old roof on the western face of the tower, and imagining a non-existent roof-line,—all these have a very bad sound indeed.

The Faculty Committee seem to have been driven by a kind of fate into antagonism with all our leading architects, and are now apparently prepared to meet all opposition to their proposed proceedings by masterly immobility.

I do think we are entitled to some facts with reference to the proposed roof-line, which no one that I can hear of has yet been able to find on the tower.

As an outsider, I would ask to be allowed to protest against the somewhat contemptuous style in which Mr. J. O. Scott has thought fit to speak of Mr. Neale's labours; for it is such labours as his, with earnestness and thoroughness as their characteristics, carried out, more over, with a zeal and an enthusiasm bordering on self-denial, that can alone save the profession of architecture from becoming, in this country, what, according to some, it has already become, a lifeless, copying trade. Mr. Neale is deserving of our most hearty thanks, for when his admirable drawings were published in the *Builder*, the controversy began for us who had not actually explored the roof of St. Alban's Abbey.

A Layman.

Sir,—You must forgive me if I dare to ask you to print so astounding an assertion as this. I am absolutely amused with the archæologic odium engendered by the controversy on St. Alban's Abbey roof. Though "damns," even as *Bob Acres's* time, were deemed old-fashioned, they live again in our own later day of resuscitation and revival. One man, who evidently believes in "conservative restoration," whatever that may be; in the "credit of the whole profession of architects," which, I may add, is seriously impaired when one member attempts to out-another from an important post; and in "hone acquiescence," seems determined not to let others scrape an intimacy with the walls of which he claims a unique and student-like right. Another man does "not wish to enter into the controversy," and then writes a column and a half of the *Builder* about it. A third wants to know why the Institute of Architects* does not "do something," just as the Liberals used to taunt the Conservative party, which, once in power, generally shows itself too active. Then another gentleman, forgetting the advice of "shun Carlylese," writes quotations with a fine Saxon emphasis, as if readers of newspapers were not sufficiently perplexed already. Most of the combatants seem to sign themselves fellows of the Society of Amateurs, as if Edmund has styled the "Antiquaries," a society always youthfully hot and artistically indignant.

Dear, dear sir, in the fear of bores, and for the love of good words,—not to mention good language,—let there be an end of the pitch-pine-rafter-and-flat-oak-ceiling fight, and thus obl

An Old Friend.

The Royal Institution.—At the last general monthly meeting on the 3rd inst., Mr. Warde la Rue, F.R.S., was elected secretary of the Royal Institution, and Mr. William Spottiswoode, Pres. R.S., was elected manager. The Roy Institution must feel proud.

* In justice to the Royal Institute of Architects it ah be repeated that the council passed, some time ago important resolution with reference to St. Alban's Ca dral roof, which was noticed in the *Times* and in our columns. The wording of it was:—

"That the council of the Royal Institute of Br Architects, having learnt from John Oldrid Scott, Fel that he is satisfied there is no difficulty whatever in re ing the oak roof now existing over the nave of St. Alb Cathedral, express their opinion that in that case it w be most desirable to abandon the proposal to erect a roof over the same,"—Passed 16th December, 1878.

ANCIENT ART AND THE ANCIENT GEOMETRY.

We are informed that the paper on "The connexion between Ancient Art and the Ancient Geometry, as illustrated by the Works of the Age of Pericles," to be read by Mr. Pennethorne (elder brother of the late Sir James Pennethorne, and the author of a recent important work on Greece "Geometry and Optics of Ancient Architecture"), at the next meeting of the Royal Institute of British Architects, will be explained by original drawings made expressly for the lecture by Mr. John Robinson. The sketches made by Mr. Pennethorne many years ago in Egypt and Greece will also be exhibited. The paper discusses the origin of Greek art from the early Egyptian monuments, and likewise endeavours to show the possibility of recovering from the marble remains in the Acropolis of Athens, the ancient theory of proportion, and the methods that were employed by the Athenian architects in correcting these first-given proportions, so that the temples when erected should present to the spectator the same relation of the parts to each other as that in which they were originally designed. Mr. Pennethorne has also suggested theory referring to the curvature of the horizontal lines in the Greek Temples, together with the geometrical methods of designing the Greek mouldings and ornaments.

It seems to us that the reading of this paper, which is to take place on Monday next, 10th of February, is most opportune,—more especially because in M. Lesueur's book just published it is laid down that the curved horizontal lines known to exist in the steps and cornices of the Parthenon are due to the effect of settlement. With a statement from a member of the Institute of France, and a gentleman who, perhaps, among the many celebrated French architects has been longest before the public, cannot be allowed to remain unanswered.

THE BATTERSEA AND CHELSEA OLD BRIDGE.

PROPOSED NEW BRIDGE.

The impending opening to the public, free, of the Battersea old bridge, along with the rest of the Thames Bridges, has led to a proposal for the construction of an entirely new bridge between the two sides of the river. The proposal has originated with the Chelsea vestry, who are acting the co-operation of the Battersea vestry. The Chelsea local authorities urge that, on the Battersea Bridge being opened free to the public, and being placed under the control of the Metropolitan Board of Works, the Board will be under the necessity of expending a large sum of money upon it in consequence of its present decayed condition, or of erecting an entirely new bridge on the site; and it is urged that, in the event of the erection of a new bridge being decided upon, it should be built higher up the river from a point at the western end of Cheyne-walk, formerly known as Cremorne-road, Chelsea, and, crossing the river, should terminate at a point to the eastward of Battersea Church, from which an approach should be made to Battersea High-street. It is considered that a new bridge erected between these points would be a great public accommodation alike to the western parts of Kensington and Chelsea, and also to the western parts of Wandsworth and Clapham Junction district, all of which neighbourhoods are enormously increasing in population.

Engineers' Spelling.—At the recent meeting of the Cyrstal Palace School of Engineering, Mr. Harrison Hayter, C.E., who presided, said that the examiners of the school had combined with their praise of the students' work a little official comment upon their spelling. It was stated out, for example, that "knoch" was only a fair orthographic symbol for "notch." The other hand, the lad who spelt "hydraulic" as,—"hydrolick,"—was a little too fond of phonetic spelling. Mr. Hayter, however, regarded the examiners that education in these minute details has only recently been expected of engineers. In his younger days many clever engineers were comparatively unlettered. He knew one particularly able fellow, the admiration of his profession, who puzzled all his compeers by the use after his name of the two letters "S.I." At length some one was bold enough to ask what they meant. What was the answer? "Civil Engineer."

SOCIETY OF ENGINEERS.

The first ordinary meeting of this society for the present year was held on the 3rd inst. The President, Mr. R. P. Spice, presented premiums of books for papers read during the past year, viz.:—To Mr. Henry S. Copland, for his paper on "Modern Roadway Construction," and to Mr. George G. André, for his paper on the "Application of Electricity to the Ignition of Blasting Charges." The President then proceeded to deliver his inaugural address. Glancing in passing at the causes and results of the present general commercial depression, Mr. Spice specially referred to the circumstance that some of the markets of the world,—formerly open to our merchants and manufacturers,—have been virtually closed to us by the lamentable return to the old system of so-called "protective duties," the application of which to our manufactures amounts to the positive prevention of the people from continuing to be our customers, their statesmen,—blind to the best and lasting interests of the masses,—having determined so to favour the few at the expense of the many, in utter disregard of the soundest principles of political economy. Mr. Spice then gave an exhaustive *resumé* of the progress of electric lighting during the past year, the advances made in which, he observed, had been very marked. He described the various systems of electric lighting which were now before the public in a practical form, and pointed out the extent of their application in England. The Jablochkoff light had been experimentally tried on the Holborn Viaduct, in Billingsgate Market, and was now under trial on the Thames Embankment. It had also been tried at Westgate-on-Sea for twenty-four nights, and its cost carefully ascertained. For fuel, Jablochkoff candles, and attendance for the six lamps used, the cost was 40*l.* 9s. 4d. The cost of gas at Westgate prices (6s. 6d. per 1,000 cubic feet) to produce the same amount of illumination would be 16*l.* 15s. 4d., whilst at London prices (3s. 6d. per 1,000 feet) it would only be 7*l.* 18s. 9d. The Rapieff, the Serrin, the Siemens, the Lontin, the Wallace, the Werdermann, the Van der Weyde, and the Wilde electric light systems were successively described, and the adoption of the Rapieff light at the *Times* Office, and of the Wallace light at the Great Eastern Railway Station in Liverpool-street noticed. In summing up the merits and demerits of the electric system, the President observed that there could be no doubt but that, for special purposes, where a high standard of illumination was a *sine quâ non*, and where the extra expense it entailed was of no moment, that light would find a wide field for its adoption.

ART COPYRIGHT.

A meeting of artists and others interested in this subject was held at the Grosvenor Gallery, Bond-street, on the 1st inst.

Sir Coutts Lindsay, who occupied the chair, said he had called the meeting in consequence of having received numerous letters from artists suggesting the propriety of some expression of feeling on their part before effect was given to the recommendations of the recent Royal Commission. He understood that the Government intended immediate legislation on the subject. At present the law was very anomalous, and its effect was to give neither the purchaser nor the producer of a picture any claim to the copyright except by special contract and in the case of works done on commission. That such a state of things should exist seemed to him to be unworthy of the legislation of England, and it was high time some more complete form of laws should be promulgated. He found among the Commissioners,—first, the president, who represented the Government; several lawyers; two literary men, Mr. Froude and Mr. Trollope; a scientific gentleman; a musician, Sir J. Benedict; but there was not a man having any interest in art. No representative of the interests of art was nominated on the Commission,—a most unfortunate circumstance, and one which, probably, had affected the resolutions of the Commission very injuriously in the interests of art. The laws respecting painting, drawing, photographs, and sculpture had been framed at different times, and, therefore, there was little or no uniformity in them. There was great disparity in regard to copyright in them, both as to the time they enjoyed protection and also in other divisions of the matter. Hitherto artists had enjoyed copyright during life and seven years after death. With regard to sculpture, it had been fourteen years after production and fourteen years after if the sculptor was then alive. By the present law, if an artist sold a picture without having the copyright reserved to him, he lost possession of it, while the right did not vest in the purchaser unless there was a written agreement to that effect. The copyright became the property of anybody who wished to make use of the idea which ought to belong to the artist. If a painting or art-work was done on commission, then the right belonged to the commission, and ceased to be the property of the artist. There was no doubt that fresh legislation was needed on that point. Such an anomaly had never before existed in English law, and he thought he expressed the feeling of the meeting in saying that artists were grateful to the Government for proposing to legislate on the subject.

Mr. Field having recounted the history of artistic copyright legislation from Hogarth's time to the present day, and remarked that painters only asked that they should not be placed in a worse position than a mechanic with a box of chemicals,

Mr. Richmond moved:—

"That, while welcoming the report of the Royal Commission as exposing the grave defects of the existing law of artistic copyright, and recognising the value of many of its recommendations, this meeting is nevertheless of opinion that, in regard to its main provisions, the interests of the public could be as adequately secured by means less injurious to the interests of art."

Mr. Albert Moore seconded the proposition and it was carried unanimously.

Mr. A. D. Fripp, seconded by Mr. Keeley Halsewell, moved a resolution to the effect that, except in the case of portraits and *replicas*, the right of reproduction should remain with the painter, unless he specifically parted with it.

Mr. A. Lucas, seconded by Mr. Sadler, moved an amendment in favour of the recommendation of the Commission.

The amendment was lost; the original resolution was then carried all but unanimously.

Mr. Herkomer proposed the third resolution:

"That while admitting the value of registration as applied to forms of art like photography and engraving, which are susceptible of exact and perfect mechanical reproduction, we are nevertheless of opinion that it would prove a vexatious and ineffective mode of protection for the design in works of imaginative art, of which the value depends upon the handiwork of the artist himself in the expression or embodiment of such design, and which are, therefore, incapable of precise verification by means of description or copy."

Mr. John Leighton seconded the resolution, which was carried, there being only one dissentient.

Messrs. Fripp, Richmond, A. Moore, and Herkomer were nominated as a deputation to bring the resolutions of the meeting to the notice of the Government, and the proceedings ended with a vote of thanks to the chairman.

ILLICIT COMMISSIONS.

The Derby master-painters, fancying themselves aggrieved because the painting of the Free Library and Museum was, on the recommendation of the architect, Mr. Freeman, of Bolton, given to a Manchester firm, have met and passed a resolution disapproving of the conduct of the Free Library Committee in letting the job go out of the town. But our present purpose is not so much to refer to this alleged grievance as to call attention to a statement made by the *Derby and Derbyshire Gazette* of the 24th ult., in which paper, under the head of "Local Gossip," some comments were made on the meeting. We extract the following passages:—

"The committee were greatly to blame if they left themselves in the matter in the hands of their architect. We do not for a moment insinuate that Mr. Freeman has done or would do anything unprofessional or dishonourable. *But we happen to have had a little experience in building, and that experience has taught us that it is not unprofessional or dishonourable for architects to receive a commission upon orders that come through them for decorating and furnishing the edifices which they erect.* Supposing that Mr. Freeman is above such a practice, he would yet naturally be predisposed to favour tradesmen in his own locality, or known to him from previous transactions."

Judging from the sentence which we have italicised, the writer must have been singularly unfortunate in his "little experience"; and he seems to be utterly unaware of the fact that any member of the Royal Institute of British

Architects (a body which is admittedly at the head of the architectural profession) who can be proved guilty of receiving such illicit commissions is liable to instant expulsion from its ranks. This shows that the Institute's idea of "unprofessional" or "dishonourable" conduct does not exactly agree with that of the writer in the *Derby Gazette*.

THE DWELLING-HOUSE.

The second course of Cantor lectures (Society of Arts) will be by Dr. W. H. Corfield, M.A., on "Dwelling-houses: their Sanitary Construction and Arrangements." It will consist of six lectures, to be given on the following dates:—

Feb. 17.—*Situation and Structure of House.*—Drainage of soil, foundations, walls, roof, rain-water pipes, &c.

Feb. 24.—*Ventilation, Warming, and Lighting.*—Size of rooms, overcrowding, ventilators, stoves, lights, &c.

March 3.—*Water Supply.*—Sources, systems of service, cisterns, pipes, filters, &c.

March 10.—*Removal of Refuse Matters.*—Dust, kitchen refuse, earth closets, &c. Conservancy and water-carriage systems compared.

March 17.—*Sewerage.*—Main sewers and house branches, traps, ventilation, &c.

March 24.—*Water-closets, Sinks, and Baths.*—Arrangements of pipes, traps, &c.

The course will be illustrated by specimens and models from the Parkes Museum of Hygiene.

LONDON SHOW ROOMS.

Messrs. John Hardman & Co. have recently rebuilt their London premises at 13, King William-street, Charing-cross, where they have been established since 1851. The new show-rooms and packing-rooms occupy the whole of the lower part of the building. The principal room is 24 ft. high, so that it is well adapted for the display of large coronæ, &c., which can be suspended at a good height, and by means of a special arrangement of pipes and connexions gas-fittings can be temporarily lighted up for inspection when required. The lighting of the rooms is by ventilating globe pendants, which Messrs. Hardman have specially made for the purpose,—some in brass, and others in brass and wrought-iron, all the ventilating-pipes being of copper, which will become in time of a rich brown colour. The products of the burnt gas being led away by these pipes, and an equable temperature maintained throughout the premises by a heating apparatus in the basement, any considerable injury to highly-finished metal work will be avoided. All small articles are shown in wainscot dust-proof cases, some of them being iron plated, and connected with electric alarums by Messrs. Comyn, Ching, & Co. Stained glass will fill the lantern lights, and wall decoration of different types will be introduced in panels prepared for the purpose; showing thus specimens of other arts now practised by Messrs. Hardman for a good number of years,—glass painting, for instance, since 1848. All the metal fittings have been specially designed. The woodwork is all in pitch-pine and wainscot. Mr. J. Stannah has fitted up powerful hand-lifts, by which large cases can be carried from the street to the packing-rooms, and articles for exhibition lifted to and from the basement and show-rooms. Messrs. Lott & Son, of Fulham-road, were the builders, who carried out the work under Messrs. J. & S. Flint Clarkson, architects, Great Ormond-street.

FROST AND WATER PIPES.

Sir,—Water in freezing expands with enormous force. If a tap be turned during the freezing up a puff of air will result, showing that the air in the pipe is becoming compressed.

What I have found to be a simple remedy is, to leave a tap or taps at the lowest point of drawing off, dribbling say 120 drops a minute, and although the pipes may ultimately freeze up they will not burst, as the ice then expands along the length of the pipe instead of across it.

It is best, of course, to empty the pipes, and a stop-cock next the cistern on the down pipe, or a service-box in the cistern, with a spindle valve, and line and ring into the water-closet below it, will keep the cistern full, when the taps can all be turned on and left so during the night. Care, however, should be taken not to leave the water-closet traps unsealed. T. G.

DRAINAGE PLANS.

Featherstone (*Yorkshire*).—On the 29th ult. an inquiry was held by Mr. John Thornhill Harrison, C.E., with reference to the application of the Featherstone Local Board of Health for sanction to borrow 7,000*l.* for the execution of sewerage works for three of the townships within their district. Considerable opposition was raised, but the objections were overruled by the inspector, who said he should report favourably on the scheme to the Local Government Board. The plans were prepared by Mr. A. W. Cross, Stud. Inst. C.E., the local surveyor, acting in conjunction with Messrs. Hodson, Price, & Hodson, of Loughborough.

LAMPS FOR THE ELECTRIC LIGHT.

Sir,—An inspection of the electric light on the Thames Embankment has suggested the following ideas to me, which I should be glad to submit to those who are practically interested in the subject, and able, if necessary, to test them by experiment.

With opal or ground glass globes of the density found necessary to soften the intensity of the light, it appears to me that the latter mainly radiates, not directly from the electric arc, but from the intensely illuminated globe which encloses it. Under these circumstances, would not the use of *much larger globes*, by which the area of the radiating surface would be increased, augment the percentage of light utilised, at the same time distributing it in a more soft and diffused form? These large globes might also be of somewhat less density than those now employed, as the rays would not reach them in so concentrated a form. W. B.

GLASS AND IRON.

Sir,—Will any of your readers inform me whether, by contraction or expansion, glass will start with two stars in the centre?

I have had an extraordinary case occur to me in this way. I have inserted a light in a verandah; the framework was made of T-iron, glazed with 26-oz. ground bent glass. About two months after completion one square started with a star in the centre. I had it taken out, but did not find it bound in the least in the frame. That square was replaced with a smaller one.

Since then some nine months have elapsed, and now another pane has gone, in a similar way, with two stars. As I have always found glass, broken by contraction or expansion, to start at the side and go right across the pane, I appeal to your readers, hoping they will be able to give me some of their experience.

An Inquiring Tradesman.

P.S.—I would add that the size of the panes is 58 in. by 22 in.

ENGLISH AND FOREIGN CARVERS.

Sir,—In your impression of the 18th ult. (page 80) you publish a letter from Mr. Hems upon the labour question, to which I should have replied before had I not come to the conclusion that the letter was scarcely worthy of notice. You have, however, published a reply (p. 108) from another correspondent, which has again brought the matter before my mind. If not too late, may I be permitted to say a word upon the subject? Mr. Hems seems to lack experience when he says a man charges 1s. per day and travelling expenses in order to swell up his "time-paper." My experience for the last thirty years has been that no competent man, except under pressure of distress, would accept country work without the usual 1s. per day extra and all travelling expenses paid; and there is no reason why he should, as there are a great many additional expenses incurred by a man being from home; and no reasonable employer would object to it. If Mr. Hems has paid 1s. 6d. per hour to an incompetent man who "does his beer," he has only done what employers are often doing till they prove their man; but they "sack" the man, and do not write to the *Builder*. With regard to his clever little Prussian who "does not beer," and who does not "swell up his time-paper" with extras, he, no doubt, has been gratified by the eulogium passed upon him (that is, if he understands English); but with all due respect for the foreigner, I can testify to finding as hone Englishmen. Extras for country work are n extortionate, but an established and just rul Both foreign and English assistants can b obtained at all prices, both as mechanics ar art-workmen, but it is paying the qualifie foreign art-workman an ill compliment to s that he will work for less money than a English mechanic. Jno. Lewis Jaquet.

RED LEAD AND WHITE ZINC.

Sir,—I read in your issue of January 18th important article on the bad effects of red le upon the men who clear it from iron ship and on the necessity of finding a substitute f it. I believe this is an old grievance, a cannot but express surprise that the red le has not long since been superseded by son harmless and more effective substance.

At the last meeting of the British Associati I made known the composition and properti of a new mineral white invented by Mr. Thom Griffiths, of Liverpool, which would be, both regards efficiency and cost, a very great i provement upon the dangerous red lead s used so extensively. This new white, an o sulphide of zinc, is, in my opinion, one of t most ingenious and useful discoveries of mode times, and sooner or later it must superse both red lead and white lead in all their app cations as pigments or protective surfaces. was exhibited at the Paris Exhibition (where received a medal) and at the recent Sanits Conference at Stafford, under the name "Griffiths's Patent White," and noticed in t *Builder* of August 3rd, 1878. I believe a that Mr. Griffiths is in possession of some resu of experiments of more than ordinary impo ance upon the protection of iron surfaces means of this new pigment, which can transformed at will into a kind of enamel great beauty and permanence; and it wo certainly be a matter of great public utilit that gentleman would consent to make th known. T. L. Phipson, Ph.D.

THE STATE OF TRADE.

Sir,—I have been looking into your colu each week for some time past, expecting so action to be taken or proposed by members the building trades of London, seeing it i question of much importance in the pres depressed state of trade, and which just now receiving great attention in almost every p vincial town in the kingdom. And why should the question of a reduction of wages or lon hours of labour be considered here, when look at the thousands out of work, and find neighbours over the other side supplanting in nearly every article of manufactured joine Look at the vast number of doors, windows, imported, in some cases so low in price to be nearly equal to what one has to pa joiner here for labour. Are we to stand by watch these things, taking no notice whatev For my own part, I think not only build but workmen engaged in the trade should the selves look at it in a sensible light, and say w shall be done. I maintain that all classes the building trade, both joiners, masons, bri layers, and labourers, are in a worse posit than they were ten years ago, financiall mean, for what is the use of a few extra s lings per week if it has all, and more, to be p in extra rents and cost of living? I think should one and all, masters and men, look i matters, and help one another, the masters meeting the men fairly in an adjustment of wa and the men by agreeing to the old stand of fifty-six and a half hours per week, or giv and taking,—for it is quite certain the sho hours have not increased our trade. Unions strikes I abhor. I am a working man mys and honestly believe the above is one of many causes from which we are now suffer I trust some abler pen than mine will take matter up. A Journeyman Joine

A New Company, called the Birming House Building, Land, and Investment C pany (Limited), has been registered, wit capital of 50,000*l.*, in 20*l.* shares. The objec the company is to acquire eligible land building purposes, and the erection thereon good substantial houses that will constitut sound investment.

WELSH PAVING.

R,—Having lately made a visit of inspection
ie Penmaenmawr quarries, I cannot let the
ctions of Mr. Allison (borough surveyor of
lford) to them as a paving-sett producing
re pass unnoticed.
ır experience in this town is similar to Mr.
ion's, that the blue Welsh sett is very apt
year slippery, so much so that we have
oved a large quantity, and replaced them
granite; and we have arrived at the con-
on, except where durability is the only
ity to consider, it is not to be recommended
paving material.
ne quarry belonging to Messrs. Darbyshire
o. produces a material of a nature totally
rent from the blue Welsh stone.
s colour is grey, and the texture of the
rial appears coarse enough to ensure a
factory foothold, and is of such a nature as
arrant confidence in its lasting power.
ur kind insertion of this letter will, while
ing to ventilate the question, do justice to
quarries at Penmaenmawr which are not
ne stone. THOS. LONGDIN,
Borough Surveyor, Warrington.

OPEN SOIL PIPES.

.—In the *Builder*, January 12, 1878, appeared a letter
Mr. Norman Shaw, advocating the use of open instead
ed soil-pipes. In replying to the correspondence
followed in your journal, Mr. Shaw writes,—"I now
to the very serious question of frost raised by Mr.
Smith, and to this I regret to say I cannot give an
r based upon experience, —for hard frosts seem to be
fashion now."
s year we have had frost enough to test the system,
would be interesting to know what effect it has had.
ps Mr. Norman Shaw will kindly enlighten us upon
int. D. B.

DELAY IN BUILDING.

—An old proverb tells us that a "nod is as good as
," &c., and though, personally, I am not a far-
individual, at the same time I trust I am not alto-
a "blind horse." If I may so far intrude on your
le space, I trust you will allow me to call attention
at (possibly in my ignorance) I may term short-
ness in many, if not nearly all, our "speculative"
n. Any one who is in the habit of visiting our
n suburbs may have noticed the large number of
(I beg pardon), "villas," standing oftentimes in rows
n six to twenty, or more, apparently completely
d, but in reality only in "carcass." The sashes
in, and the front door hung, but on entering you
nd the walls and partitions either not touched, or at
ith only the first coat of plastering on. The reason of
obvious to a practical man, for with weather as we
xperienced it this winter plastering is virtually out
question, at the same time there must surely be
lternative.
friend of mine, who has been travelling on the Con-
told me only a few days ago that in Paris he was
ng some builders at work on a row of new houses,
a sharp youngster, of not more than fourteen,
ally asked him if they could "make" houses as
y in England. Naturally my friend felt somewhat
sat at such a slight on our national workmanship,
e a wise man, pocketed his grievance and took the
unity of going over the work, where he found that
stering was proceeding at the same rate as the car-
, one day only being allowed for a coat of plaster to
Now, sir, although we have often heard that "they
gs better in France," I cannot comprehend that our
ymen have not, up to the present time, brought
knowledge and experience into use to save not only
but, as a necessary consequence, money, by com-
g contracts or speculative works in perhaps half the
ow wasted on them.
conclusion, may I suggest that, if it is possible to
we on our present system, some of our leading firms
test the question, as in the present critical situation
iness, especially in the building trades and others
ted with it, anything that may tend to remedy any
s and to allow of buildings being completed more
y, would confer a favour on employers and employed,
uld not injure the interests of that branch of the trade
o so much at the mercy of the weather, viz., the
PLASTERER.

PARTY-WALL QUESTIONS.

.—I read with interest the article relating to party-
but I have had matters connected with this vexed ques-
hich have never been settled by surveyors and owners
atisfaction. I will venture to mention them. I have
t freehold land, and when I want to build entirely
own land I must have footings or foundations which
ler than the party-wall. I want to build, say, a 14-in.
Now, if I lay the first course with three bricks
and intend the upper or the party wall to form my
ory, my footings must project 7 in. on the land
ing. Now, what I should like to know is, can an
ng owner of land prevent any one laying the pro-
foundation-courses on his land? If so, then there
be a 7-in space open up all the height of the party-
and if my neighbour observes this same rule, to keep
tings on his own boundary, then he loses 7 in. outside
ity-wall, making a 14-in. space to remain for no pur-
r benefit as long as the two houses stand. I hope I
made myself clear, and shall be favoured by some
ilenment in your much-prized paper. I may mention
r matter. I sold a freehold house, with a figured
the deed, which made the centre of the party-wall
the boundary. I held the original assignment, which left me the remainder of my land, viz., about 7 in. wide, and the length of the house, which was all I had left of the land, contemplating taking the adjoining land, and then using the wall for my own use, free of any molestation: but some other builder built on the land, and the owner of the house I sold took a consideration from the builder for the use of his party-wall, claiming it as his; but I referred him to his deed and mine, which showed the 7-in. slip of land, with half the party-wall still remaining on my deed; but, to save a bother, I took about one-half the value of the wall in settlement. Now, these are nice and exact questions; and if you can throw light upon the matter as regards the law or rule in these questions in your valuable paper, I and many others will be interested. I may say I had no clause relating to my retaining the party-wall in the contract for sale. ROBERT AMERY.

HEREFORD.

The Sewage Question.—The case of Lloyd *v.* The Corporation of Hereford was before the County Court judge on the 14th ult.; but was not proceeded with, inasmuch as the defendants had agreed to suspend the draining of sewage into the Wye, or in default to pay plaintiff 5*l.* a day during such default.

A Joint Railway Station.—The *Hereford Times* says that the three railway companies running into Hereford,—the Great Western, the Midland, and the London and North-Western,—have come to a final agreement for the erection of a joint station at Hereford, on the Barton site. The cost of the station is estimated at between 50,000*l.* and 60,000*l.*

CHURCH-BUILDING NEWS.

Ringshall.—Ringshall Church, Suffolk, has just been re-opened, after restoration under the direction of Mr. R. M. Phipson, architect. The church, which is dedicated to St. Catherine, consists of nave, chancel, and west tower. The walls are Early English work, and Mr. Phipson fixes the date at from 1270 to 1300. One or two single-light Early English windows remain, but there are Decorated and Perpendicular windows which are insertions of later times. The east window is in the Decorated style, and there are three windows in the Perpendicular style in the chancel. The nave and chancel walls present a singular appearance externally, as they have a considerable "batter" from the foundation to the eaves. This has engendered a suspicion with some people that the walls are giving out, owing to some defect in the foundations. Mr. Phipson pronounces this idea a mistake, the "batter" of the walls being only a method of the old builders of reducing the thickness of the walls as they got higher. The tower is large, massive, and very plain, of the latter part of the thirteenth century. The walls are nearly 5 ft. thick. A plain Early English arch, the mouldings of which die against the square piers, connects the church with the tower. The roof of the nave is the original tie-beam and king-post roof of the thirteenth century. The chancel has a hammer-beam roof, which dates from the fifteenth century. In the restoration which has just been finished, the efforts of the architect have been directed to the preservation of all the old work of the church. The restorers of a century since did not deal so lightly or reverently with the old churches. They generally made a clean sweep, and they appear to have done so at Ringshall. Among the new works we note that the south-east window in the chancel has been filled with stained glass by Messrs. Clayton & Bell. The total cost of the works has been about 850*l.*

Burnham Ulph.—The chancel of the church here has recently been undergoing repair and restoration, under the direction of Mr. R. M. Phipson, architect, Norwich. The east window, a three-light Early Perpendicular insertion, the tracery of which was partly blocked up by the plaster ceiling in the repairs which took place about half a century ago, has been thoroughly restored and glazed with Hartley's cathedral glass of light blue tint, as has also the single lancet light on the north side. No remains, externally, of the shape of the two south windows were to be seen, every vestige of quoin, cill, arch, &c., having disappeared, and modern insertions having been substituted; but beneath the floors of the old pews the workmen afterwards discovered the remains of the old stone lancet windows. A new steep-pitched roof of pitch pine, sized and varnished, has been put on. It is intended to put in new benches (the floor for which is already down). The contract was taken and carried out by Mr. A. Beaver.

Bristol.—A Vestry meeting of the parish of St. George's, Bristol, was held on the 23rd ult., when the plans prepared by Mr. Philip E. Masey, architect, London, for re-building the church (recently destroyed by fire) were approved, and it was resolved to apply for a faculty. Mr. Masey, in his report accompanying the plans, makes the following among other recommendations:—"That the nave arcade (which is seriously dilapidated) and clearstory be taken down and rebuilt, the same windows being used again. That the upper stage of the tower be taken down and rebuilt, and as it is contemplated to have a peal of bells, with the four old windows I should couple other four, to give freer egress to the sound. As ready access is required to the ringing-loft, the bell-stage, and top of tower, it is needed to have a staircase turret, which I purpose adding at the north-west corner. This feature will much improve also the appearance of the tower. From the space necessarily taken up by the organ, an extension of the vestry is absolutely needed. I purpose extending the wall to have a free area inside of 17 ft. by 16 ft., and to construct a heating-chamber below. Without this latter, and proper apparatus there can be no effectual warming of the building. As I hear the west gallery is not needed, the best thing I can advise with respect to the tower is to open out the archway, and to make of the space a baptistery,—in my opinion, a very advantageous arrangement. On account of economy, cleanliness, convenience, and safety from fire, as well as for æsthetic reasons, I recommend that the whole church be paved with tiles and seated with chairs. All roofs will, of course, be required to be new."

Tewkesbury.—At a recent meeting of the Tewkesbury abbey Church Restoration Committee, Sir E. Lechmere in the chair, Tuesday, Sept. 23rd, was fixed as the date of re-opening the abbey, provided it was not found to clash with the Hereford or Birmingham Musical Festivals. On the recommendation of Mr. J. Oldrid Scott, it was resolved that the organ be permanently erected upon a screen in the north transept, and an estimate was agreed to be obtained from Mr. Willis. Mr. Scott was instructed to prepare plans of the organ-screen and choir-stalls. The Vicar read a letter from Mr. Gambier Parry respecting the colouring of the bosses in the nave, in which the writer suggested that if the committee decided to carry out any colouring at all it should be done with extreme simplicity. It was resolved that the bosses in the nave should have some relief by colouring, and that the Vicar be requested to ask Mr. Parry to colour the first bay, or first and second bays, on the western side of the hoarding, in the way suggested in his letter, as a specimen of the way in which the whole should be done.

Diocese of Lichfield.—The annual meeting of the Lichfield Diocesan Church-Building Society was held recently. From the report, it appeared that the grants voted by the committee during 1878 had amounted to 3,318*l.* 6s. 8d., including contributions towards the following items:—Building four temporary churches, containing 694 sittings, all free, 231*l.*; enlarging eight existing churches, whereby 645 sittings, all free and unappropriated, had been gained, 480*l.*; building one parsonage-house, securing a site for another house, and an additional grant towards a third, 326*l.* The committee called attention to a notice, issued at the suggestion of the society's surveyor, to the effect that in all cases of application for aid towards building, no existing fabric is to be removed, and no work begun before the plans and specifications have been approved by the general committee.

Sunderland.—The new church of St. Stephen, Ayres Quay, which was erected last year from designs by Messrs. Austin, Johnson, & Hicks, architects, of Newcastle, has just been consecrated. The church, which is built of brick, with stone dressings to windows, &c., consists of a large nave and chancel without aisles, and has a school-room and vestry underneath the chancel. The roof, which is very high-pitched, is covered with flat red tiles, and the long level ridge is broken by a bell-turret above the chancel arch, of open woodwork, surmounted by a spire covered with lead. Seats are supplied for about 500. The contractors for the masons' work were Messrs. W. Scott & Son, of Sunderland; and the whole of the woodwork, including an octagonal pulpit, lectern, and altar-rail of carved wainscot, and seats of pitch-pine, are by Mr. F. Caldclengh, of Durham.

DISSENTING CHURCH BUILDING NEWS.

Keighley.—The foundation-stone of a new Baptist Chapel at Slack-lane, near Keighley, has been laid. Mr. John Judson is the architect, and the cost will be 3,000*l.*

Failsworth.—The new Unitarian chapel at Dob-lane, Failsworth, near Manchester, was opened for public worship on the 22nd ult. The building is Gothic, of the Geometric style. The principal front faces Oldham-road, which is south. At the west end is a four-light window, filled with stained glass by Messrs. Edmundson, of Manchester, presented by the Misses Taylor, in memory of their father. Above this window is a bell-turret, in which is placed a richly-toned bell, the gift of Mr. James Hopgood, London. The east gable is filled with two two-light windows, and at the end is the pulpit, over which is a carved canopy. The walls to the right and left are filled with arcading, the panels to be decorated in diaper and stencil work. In front of the pulpit is a carved communion-table. The choir-stalls are situated right and left of the pulpit, and the organ-chamber is in an arched recess at the north-east corner. The seating is pitch-pine, open, with carved bench-ends. The building is heated by hot water, on Wagstaffe's patent, and lighted by four coronæ, suspended from the roof, and two standards, manufactured by Ogden & Co., Manchester. The roof is part open, with curved braces springing from stone shafts, with foliated capitals to the under-side of the collars. Upon the whole the building has a neat and pleasing effect. The works have been carried out by Mr. David Adams, of Harpurhey. Messrs. Adams & Son, of Manchester, were the architects.

Armagh.—The new Presbyterian Church in Armagh is nearly completed. It occupies a site at the lower corner of Melbourne-terrace, facing the Mall, and is being erected from the designs of Messrs. Young & Mackenzie, architects, Belfast. The contract for the work is being carried out by Messrs. James & Jacob Guiler. The church consists of nave, aisles, and lofty tower and spire at the north-west angle of the building. The main front faces towards the Mall. The principal material used is Armagh marble, but the dressings are of Dungannon stone. The style is Decorated. There is a great deal of carved work upon the building, and this has been executed by Mr. Harry Hems. Mr. Rhind is the clerk of works.

SCHOOL BUILDING NEWS.

Eccleston.—A new school and master's house have recently been erected at Eccleston, near Chester, at the cost of the Duke of Westminster. The whole of the walls are of red sandstone, and the roofs are tiled. The windows of the school have a Gothic character, with stone tracery, and are filled with ornamental lead glazing. The gables and the upper part of the walls of the house are of black and white timber framing. The most striking feature outside is a lofty stone bell-turret, which is carried up one angle of the school, and contains a circular stone staircase. Internally the walls are lined with buff bricks, with a dado of red glazed bricks. The new school, together with several others in the neighbourhood built at the cost of the duke, has been erected from the designs of Mr. John Douglas, architect, Chester.

Coxford.—A new school-church has been opened at Coxford, near Southampton. It has been built at the sole cost of Mr. Andrew Barlow, the land being given by Mr. William Duke. The work has been carried out by Mr. J. W. Rowland, from the designs and under the superintendence of the architect, Mr. W. H. Mitchell. The school-room, in which it is also intended to hold divine service for the adult population, is 36 ft. by 24 ft. A cornice of Pether's ornamental bricks and decorated glazed tiles is carried along each side wall under the roof-plate, and a set of subject-tiles representing "The Parables of Scripture" is introduced into the east wall. The room is heated by one of Peirce's hot-air fire-lump stoves, and ventilated by vertical flues in walls. Externally the building is of dark red brick, pointed with black mortar, having moulded brick cornices to eaves and gables. The front has a five-light window with equilateral pointed arches, and brick splayed and moulded mullions, the gable over being surmounted by a bell-turret.

Clee Hills.—New Wesleyan day and Sunday schools at Clee Hills, between Ludlow and Cleobury, on the borders of Herefordshire, have been opened. The school will accommodate 250 scholars. The total cost, including the purchase of an adjoining site for a new chapel, is nearly 1,000*l.* The building was designed by Mr. J. Yates, foreman of the granite works, and carried out under his superintendence.

STAINED GLASS.

Huntingdon.—The only window in the chancel of All Saints' Church, Huntingdon, till lately remaining unfilled with stained glass, has been completed. The subject selected is "The Last Supper." Our Lord, represented in the act of blessing the bread, occupies the centre light, while six of the Apostles are on each side; through the window is seen a distant view of Jerusalem by night. The artist is Mr. A. Dixon, of London.

Sheffield.—A new window in memory of the late Mr. John Denton has been erected in All Saints' Church, Sheffield. It has been designed and executed by Mr. J. Clutterbuck, of Stratford. It comprises three lights, the central one containing a representation of St. Peter, and the side lights those of St. James and St. John. Underneath these are illustrations of "The Good Shepherd," carrying lambs in his arms; "The Lord's Ascension"; and another Gospel sketch.

MASTERS AND MEN.

York.—The notice of a reduction of wages received at the end of November by the masons, bricklayers, joiners, labourers, and others concerned in the building trade in York is now taking effect, and the men, in view of the widespread depression, appear quietly to accept the inevitable. The notice of a reduction of ½d. per hour in the masons' wages expired on the 18th ult., and the terms had been received without opposition.

Huddersfield.—The strike in the engineering trade at Huddersfield against an extension of the working-hours continues, and 107 men are on strike.

Alloa.—The workmen at the Alloa Pottery (Messrs. Bailey's) resumed work on the 27th ult. at a reduction of 10 per cent. from former rates. This is the second reduction of 10 per cent. made upon the potters' wages at Alloa during the last eight months.

Wolverhampton.—Messrs. Fell & Co. and Messrs. A. Aldridge & Co., brassfounders, Wolverhampton, have given notice of 15 per cent. reduction in wages, by taking off a bonus to that amount which was granted during the period of good trade in 1873. The men have turned out on strike. Their action is supported by the Birmingham executive of the Brassfounders' National Association, and the places of the strike hands have been filled up by non-unionists.

Hanley.—At a meeting of the annual conference of delegates on Wednesday, representing the Societies of House Painters and Decorators of the Trade Alliance of the United Kingdom at Hanley, it was stated by the president, Mr. Sanley, the greatest reduction given notice of in any district connected with the Alliance was a penny per hour. The conference resolved that the executive should be empowered to deal with the dispute.

Industrial Dwellings and the Artisans' Dwellings Act.—The Metropolitan Board of Works have received a letter from the Home Office, transmitting copy of a letter from Sir Sydney Waterlow, chairman of the Improved Industrial Dwellings Company, explaining the reasons why the company have not tendered for the purchase of the land advertised to be sold for the purposes of the Whitechapel and Limehouse Scheme under the Artisans' Dwellings Act, 1875, and stating that the Secretary of State is confident that the Board, from their desire to give effect to the Act in a satisfactory manner with as much expedition as possible, will be willing to modify the form of tender already adopted for the purpose of removing difficulties and attracting tenders; that he is anxious that building operations should be commenced early this spring, and suggesting a new form of advertisement for tenders of a much more simple and elastic character.

RUINOUS NEW HOUSES.

Metropolitan Building Act.—At the Greenw Police Court, Mr. Champion, builder, of Lew ham, appeared to an adjourned summons, bef Mr. Balguy, at the instance of the Metropolit Board of Works, to show cause why an or should not be made upon him to take do three of six houses constructed by him Hither-green-lane, in December last.

Mr. Badger, the district surveyor for the Lewis division, and Mr. Tabberer, surveyor for the Greenw division, gave evidence, from which it appeared tha block of six houses had been put up in six weeks be Christmas, and that Mr. Badger had examined the fore conducting the building as to the mortar that was b used. On the 21st and 22nd of December, owing to frost and thaw, the corner house and next house fell, twenty-three hours afterwards a third house fell. mortar used was said to feel like snuff when pinc between the thumb and finger.

Mr. Carttar, for the defence, observed that it would ruin if an order was issued for defendant to pull down three houses, and called the managing man who had the work on the structure, and also architects, who evidence that the specimens of mortar produced were such as would lead them to give a certificate for "cont work," but that it was pretty good mortar for "specula building," and each also said, after inspecting three hou there were many more worse built than these, and there was no necessity to pull them down.

Mr. Balguy said it was sought to prove that Mr. Ba and the other district surveyor had made too much of danger attending the structures. The mortar used peared to be like road dust, and he should make the o asked for, the work to be done in fourteen days.

A NOTE.

A concurrence that never took place bef and that can never by any possibility be fo again, would seem to be worth a passing n though in itself of no consequence, and thi is:—the number of our present issue is tha this year of grace, 1879. Simple enough unimportant; but it serves to bring to mind in a striking way the marvellous pas of time; and, filling us with recollections thoughts, would lead us to take the ge reader into confidence at some length, as our custom in earlier and more "gushi days. But the opportunity is not pres the idea has come too late; the paper made up, and for every line we add to some other line must be displaced. One mark, however, forces itself upon us, and have expression, egotistical though it be deemed. Of those 1879 weekly num which constitute the present life of the *Bui* one thousand seven hundred and eighty have been produced and issued under direct personal care and supervision of present conductor. It is not a gladdening re lection, this passage of unrecallable tim this progress towards the End,—but something to be able to say, with upon heart,—yes, even with lips to Bible,— during that time the endeavour has bee perform faithfully, and with high aims, functions of such a position; that self-see has never been a motive; that pain has n been willingly given; that while we have c stepped out of the way to assist budding t or back up struggling desert, we have n knowingly sought to gratify a personal p The constant endeavour has been to encou right feelings, to afford useful information, to effect such an amount of good as our earnest, if humble, efforts could compass.

George Godwi

Mr. S. C. Hall, F.S.A., will, we regre learn from the current number of *Social* (the 49th), retire from the editorship of periodical with the completion of its weekly issue. He incidentally mentions the reasons for his retirement have no refer to the recent case of Pepperell *v.* The Ma of Townshend. Mr. Hall thanks the author artists who have aided him in the work; says that the withdrawal of his name from title-page must be held as assurance tha ceases entirely to control or influence publication.

The Grand Hotel, Charing - cro Messrs. Chas. Williams & Co. are the con tors for the ornamental iron roof over the *à-manger* at the above buildings.

Miscellanea.

New Railway in the West.—The new rom Okehampton to Holsworthy, opend 20th ult., is practically an extension of ondon and South-Western system, though ucted by the Devon and Cornwall Com-

The line has cost 200,000*l.* Messrs. aith & Church were the engineers, Mr. Relf was the contractor, and Mr. Henry the surveyor. The line seems well con-ed throughout. It branches off from the line three miles to the south-west of Oke-ton, at a point called Meldon Junction, and s through the parishes of Okehampton, ry, Beaworthy, Bratton Clovelly, North-lalwell, Black Torrington, Ashwater, Brad-Cookbury, Hollacombe, and reaches the us at Holsworthy after traversing seven-niles and three-quarters. The land for g seven miles of the railway was given r owners, viz., Archdeacon Woollcombe, . W. Medley, Mr. W. J. Harris, and Earl pe; and so happily were the negotiations ther owners conducted that there has not a single dispute to refer to arbitration. radients of this extension are about the s on the main line, the worst being 1 in unning as it does along a ridge of country bankments are not excessive, the deepest aviest being that at the Meldon Junction, half a mile long, and 53 ft. deep. Taken ther, the earthworks represent 915,000 ards. The deepest cutting, 50 ft., follows rk at Meldon. The cuttings are chiefly h hard shale, and number forty-two, vary-m 200 to 173,000 cubic yards. Thirty-two and occupation road bridges have had to t. As good stone could not be obtained he line's commencement, the first six are faced with brickwork; the rest are ed of stone from the quarries near Bea- and Halwell-road Station. The total of masonry in bridges and culverts is 17,000 cubic yards. The most formidable the viaduct at Holsworthy, built entirely nry, consisting of eight arches of 50 ft. ch, 84 ft. in height, and it is 463 ft. in

The stone for this structure was pro-from quarries on the property of Mr. Harris, near the Beaworthy and Halwell-ation, and the string-courses, caps, and are of granite from Dartmoor.

emarkable Book.—On the 30th ult., in, there was commenced the sale, by of the library (10,000 volumes) of Mr. as Cooke. One of the books for sale he *Freeman's Journal*) has a special and oly interest for Irish readers. It is the "Mexican Antiquities," by Lord Kings-. Lord Kingsborough was the eldest he Earl of Kingston, and was born in In the early part of the present century elled in Mexico, and conceived the idea ting his life to the publication of a work ntiquities of that country. The result e magnificent volumes, published at a 235*l.* 10s., and replete with illustra-nique in their splendour, their costliness, ir truth to nature. Prescott, the great n of Mexico, wrote of this work that a "munificent undertaking, which no ment probably would, and few indi-could, have executed, which entitled its o the lasting gratitude of every friend ce." Lord Kingsborough spent on the sum variously stated at from 32,000*l.* to , and devoted to it all his time, his and, in the end, his life. When his s were exhausted, he was arrested in at the suit of the papermaker, and con-the Marshalsea, where he contracted a ut fever, and died in a few weeks. Had appy victim to enthusiasm lived a few longer, he would have inherited the Earl of Kingston and an income of a year.

p Papier Mache.—We have received e Papier Mâché Company (Limited) ns of a new material in *papier mâché*, he company have, after a series of ex-ts, succeeded in bringing to perfection. now enabled to supply all their unper-enrichment mouldings at exactly half iginal price. These enrichments are ut and strong, and ought to supersede the coarse, common plaster work used ornments" by speculative builders of uses in the suburbs.

Local Expenditure on Public Works.—It is urged that, however desirable an improvement may be, these days of depressed trade and unemployed labour is not the time to launch into corporate expenditure. The *Wrexham Advertiser* says on this:—"To this argument there is, in our opinion, a very cogent answer, come from whom it may. Expenditure upon town improvements, whether they be street, drainage, or building, means mainly an expenditure on labour. Stonework, brickwork, drainage work, imply that the bulk of the materials used are made available and valuable by labour, the bulk of which is local. And then the actual carrying out of the work must be certainly by local labour. Thus, therefore, the local labour market is at once improved by the process, and men are placed in a position to earn a livelihood. The money thus spent in wages percolates into the tills of the tradesmen, and assists them in tiding over the bad times. Moreover, labour and materials are cheaper at such times than under ordinary circumstances. The expenditure of 1,000*l.* can be secured in one year for a yearly payment of about 55*l.*, extending over thirty years. Such an expenditure, when wisely incurred, not only benefits the town during its progress, but opens up new sources of revenue afterwards, that, in all probability, will more than recoup the original outlay. Abundant facts exist in proof of the truth of this conclusion, and the advocates of corporate works need only prove the wisdom and necessity of such undertakings."

Fall of a Railway Bridge.—On Monday morning an accident occurred at a bridge over the main line of the Manchester, Sheffield, and Lincolnshire Railway, in the parish of Melton Ross, known as Chalk-hill-bridge, which was near some lime-kilns between Brocklesby and Barnetby Stations, and formed a connexion of the high road between Grimsby and Brigg. For some time the bridge had evidently been in a dilapidated condition, the heavy frosts of the winter, by dislodging the foundations and brickwork, having increased the danger. The directors of the company, therefore, decided upon its removal, and had diverted the highway over the railway by the construction of a level crossing at a short distance from the bridge. To avoid interference with the ordinary week-day traffic, and also the risk of rubbish falling upon passenger trains, Sunday night was fixed upon for the removal of the shattered structure, and a number of men were employed on the work under the superintendence of Mr. Fisher, the resident engineer of the company at Grimsby. No fewer than seventeen shots of blasting-powder were used without producing any perceptible effect. After they had been fired it was decided to pull down the bridge by piecemeal, and when a small portion of the brickwork had been removed,—not less than half the key of the arch,—the whole structure fell without a moment's warning, killing four men and injuring many others.

Burning of the Theatre Royal, Glasgow. The Glasgow Theatre Royal, one of the largest and best equipped theatres in the kingdom, was, early on Sunday morning last, destroyed by fire. At the close of Saturday night's performance the theatre doors were all locked, Mr. Knapp, the manager, and a few gentlemen remaining inside. Shortly after midnight Mr. Knapp heard a rushing sound, as if a pipe had burst, and on looking into the theatre he found nearly the whole house in flames, and the only door which he and those with him had the means of opening could not be reached for the flames. They tried to burst first one door, then another, but failed, and it was only after drawing the attention of people outside, and having a door forcibly opened, that the party were able to escape from the fire which was fast approaching them. The theatre was erected in 1867 at a cost of 30,000*l.*

Settling with a Contractor.—The Commune of St. Briac, not far from St. Malo, has just been deeply moved. It appears that M. Collin de la Contrie, an officer in the Territorial Army, and one of the leading inhabitants of the locality, had engaged a Monsieur Hus, a contractor, to build a house for him. A quarrel having arisen between the two as to certain details of construction, they set to fighting. What exactly followed is not known, as there was no witness of the struggle; but M. Hus was found dead on the ground with his head almost cloven in two with a chopper, and M. Collin insensible by his side with his jaw smashed.

Colonial Woods.—Messrs. Coltart, Smith, & Co., in their annual Wood Circular, say, as to *yellow pine timber*:—"The import during the past year, although only a little over one-third of that of 1877, has even been more than what was required, as the consumption was on so small a scale that there is still a heavy stock left, viz., 1,131,000 ft. This is 36 per cent. less than that of last year, but with the present small demand is more than sufficient for the next six months' consumption. Freights opened at 24*s.* to 25*s.* per load, but, as in the previous year, they again declined, touching 22*s.* 6*d.* per load in the month of August; they, however, immediately afterwards rose to 27*s.* per load, which had the effect of stopping further chartering and curtailing the import considerably in the fall. The sales of Quebec square pine have been, in the early part of the year, at 1*s.* 3½*d.* per foot for small wood, and 1*s.* 10*d.* per foot for 17½-in. good fair average, but latterly sales have been made at 2*s.* to 2*s.* 0½*d.* per foot for prime square, at 2*s.* 1*d.* per foot for Waney board, and at 1*s.* 8*d.* to 1*s.* 10*s.* per foot for two parcels of St. John's square pine. *Red Pine*:—The import has been only 61,000 ft., against 72,000 ft. last year, the bulk of which having consisted of large sizes, and unusually good quality, has met with ready sale for special purposes, at fairly remunerative prices; but this article must become less saleable than formerly, in consequence of pitch pine being cheaper, cleaner, and better manufactured, especially in sawn-sided wood. The latest sale was of a prime parcel per *John Abbott*, which realised from 1*s.* 4½*d.* to 1*s.* 8*d.* per foot, averaging 1*s.* 5½*d.* per foot. The present stock consists of 39,000 ft."

Drainage of Hanwell.—The inquiry before the local Government inspector, Mr, Thornhill Harrison, C.E., as to the drainage of this town, terminated rather abruptly last week. The opponents did not deny that the town was in urgent need of improved sewerage arrangements; but on this, as on the former occasions, opposed the particular scheme put forward as a mischievous absurdity which would carry the sewers up stream instead of down, against the natural inclination of the ground, and through the higher portion of the town, where property was most valuable. In this way deep tunnelling and very flat levels would be rendered necessary. Mr. Harrison said he should now look at the matter for himself, without reference to what had gone before, and upon the second day of the inquiry expressed his opinion in decided terms, that a sewer, having for three-quarters of a mile so slight a fall as that proposed, would constitute a danger to the health of the town of Hanwell, and he would not take the responsibility of recommending the work unless it were shown to his satisfaction that no other scheme was practicable. The promoters said that, in the face of the declaration made by the inspector, it would be useless for them to proceed, and they accordingly withdrew their application. Mr. Mansergh, Mr. Henry Law, Mr. Rogers Field, Mr. Baldwin Latham, &c., came down specially to give evidence. Mr. Harrison suggested to the parties that, having fought the matter out, it would be very desirable if they would now take united action in support of some really effective scheme.

The Non-Professional Study of Architecture and Ecclesiology.—As having some connexion with, if not entirely arising out of, the *Builder's* advocacy of the non-professional study of architecture, we note with much interest that on Thursday evening last, at a meeting held at the Chapter House in St. Paul's Churchyard, a new society, to be called "The St. Paul's Ecclesiological Society," was formally constituted, for the purpose of promoting among young men engaged in the City the non-professional study of architecture and ecclesiology. It is proposed to make occasional visits to churches and other buildings, under the guidance of architects, and to hold meetings at which lectures will be given, and papers on architectural, ecclesiological, and cognate subjects read and discussed. The annual subscription has been fixed at a scarcely more than nominal sum. The chair was taken by the Rev. H. C. Shuttleworth, M.A., Minor Canon of St. Paul's, and among the architects present were Messrs. J. P. Seddon, G. H. Birch, and Bowes A. Paice. Rules were discussed and tentatively agreed to. It is proposed to ask the Dean of St. Paul's to be the president of the society. Mr. R. Howard Wall is acting as hon. sec. *pro tem.*

The Institution of Civil Engineers.—At the meetings on the 14th and 21st of January a paper was read "On the best Methods of Railway Construction for the Development of New Countries, as illustrated by the Railway Systems of South Australia," by Mr. R. C. Patterson, C.E. It was observed that the development of new countries by means of railways was the most important function of Colonial Governments. In the case of the Australian Colonies, especially in Victoria, there had been an unwillingness to take advantage of the experience and practice of older communities; and the railway policy had been the principal feature characterising opposing parties in the Legislature. Prior to 1867, a gauge of 5 ft. 3 in. had been adopted in South Australia, the lines costing considerably more than 10,000*l.* a mile, and the permanent way being of a character entirely unsuited to the climate; but in that year, owing to popular agitation, a cheaper system was introduced. The existing gauge was extended, but of a much lighter type; and the 3 ft. 6 in. gauge was introduced for districts separated from the broad-gauge lines. An extension of the main line northwards from Adelaide for seventy miles on the broad gauge had cost 5,247*l.* per mile. A description of this line, which was of an easy character, was given. The author referred to the evils of the break of gauge. Queensland had adopted a gauge of 3 ft. 6 in.; New South Wales, a gauge of 4 ft. 8½ in.; Victoria, one of 5 ft. 3 in.; and South Australia had gauges of both extremes.

The Midland Land and Investment Corporation, Limited.—At the annual meeting of the shareholders of the Midland Land and Investment Corporation, held at the Queen's Hotel, Birmingham, Mr. F. S. Bolton (chairman of the board of directors), presiding, said, in moving the adoption of the report, that the business of the company was entirely confined to the buying and developing of estates, the making of advances on freehold and leasehold property; and that the company's chief aim was not to gain a high interest, but to create good ground-rents, and make their profits on the sale of such ground-rents. Looking at the long-continued stagnation of trade, the annual report could not be otherwise than acceptable. On this occasion they did not propose to increase the dividend or to give a bonus, but to declare a dividend of 15 per cent., and to carry 8,000*l.* over as a surplus reserve fund. The report was then adopted. In response to the appeal addressed to the large landowners of the district, 100*l.* were voted to the Mayor's Relief Fund.

Engraving by Electricity.—According to *L'Électricité*, means have been found to engrave upon stone or metal by the effect of a voltaic arc produced from the point of a pencil. It is said that by these means, an artist can himself reproduce, immediately and without the intervention of any skilled workman or mechanic, the most delicate and complicated designs. If this statement can be confirmed, adds the *Electrician*, it will be of no small interest to the proprietors of illustrated papers.

Manchester City Surveyorship. — Mr. John Allison was on Wednesday appointed to the office of City Surveyor of Manchester, at a salary of 1,000*l.* per annum. There were forty-nine candidates.

The National Portrait Gallery. — The Prime Minister has appointed Sir Richard Wallace to the vacant trusteeship of the National Portrait Gallery.

TENDERS

For alterations, to 64 and 65, High-street, Kingsland. Messrs. Waymouth & Son, architects:—

Sheffield & Prebble	£317 0 0
Sawyer	290 0 0
Shurmur	289 0 0

For the erection of St. Peter's Church, Upper Holloway. Mr. C. L. Lack, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Wood, Brothers	£8,160 0 0
Gullett	8,115 0 0
Vare	8,000 0 0
Higgs & Hill	7,934 0 0
Patrick	7,971 0 0
Ward, Brothers	7,900 0 0
Atchison & Walker	7,439 0 0
Marsland	7,225 0 0
Stevenson	7,161 0 0
Manley	6,999 0 0
Sargeant	6,933 0 0
Hook & Oldrey	6,733 0 0

For the construction of sewers in Priory-road, Alexandra-road, and Kilburn-vale, Kilburn, for the Metropolitan Board of Works. Sir Joseph Bazalgette, engineer.

Williams, Son, & Watlington	£8,850 0 0
Dickinson	8,469 0 0
Cardus	8,117 0 0
Crockett	7,900 0 0
Webster	6,933 0 0
Maxwell	6,800 0 0
Stevens & Co.	6,3.0 0 0
Bell	6,295 0 0
Young & Co.	6,149 0 0
Watts	6,100 0 0
Hook & Oldrey	5,999 0 0
Nowell & Robson	5,990 0 0
Mowlem & Co.	5,400 0 0
Killingback	4,850 0 0

For an additional story to the Sussex Hotel, Cliftonville, Brighton. Mr. Fred. W. Hyde, architect. Quantities supplied:—

Cheeseman	£1,489 0 0
Lockyer	1,447 0 0
Garrett	1,380 0 0
Botting	1,350 0 0
Parsons & Son	1,375 0 0
Patching & Son	1,186 0 0

For additional story to 33 and 34, St. Paul's Churchyard and 12, Old Change, for Mr. Cox. Mr. B. Tabberer, architect:—

Crabb	£730 0 0
Saunders	630 0 0
Marks	580 0 0
Cohen	570 0 0
Johnson & Co. (accepted)	559 0 0

For completion of eight houses at Roupell Park. Mr. F. S. Archer, architect.—

Coombs	£3,837 0 0
Johnson & Co.	3,071 0 0
Watson & Dermott	2,719 0 0

For alterations and additions, Little Sutton, Chiswick. Mr. Wm. Emerson, architect:—

Haward, Brothers	£5,404 0 0
Lascelles	5,331 0 0
Colls	5,251 0 0
Adamson & Son (accepted)	4,121 0 0

For alterations, &c., at 222, 223, and 224, Upper-street, Islington, for Mr. T. E. Roberts. Mr. H. Ough, architect:—

Sage	£1,650 0 0
Reid	1,179 10 0
Coombes & Son	1,154 0 0
Shapley	1,080 0 0
Emery	1,067 0 0
Palmer	899 0 0

For repairs and decorations at Haling Park, Croydon, for Mr. James Watney. Mr. H. J. Newton, architect:—

Grimwood & Sons	£845 0 0
Godden	813 0 0
Lamble (accepted)	793 0 0

For additions to schools, William-street, Hammersm for the London School Board. Mr. E. R. Robson, a tect. Quantities by Mr. J. Nicholls:—

Jerrard	£4,995 0 0
Rankin	4,968 0 0
Tyerman	4,938 0 0
Hook & Oldrey	4,922 0 0
Hobson	4,897 0 0
Scrivener & Co.	4,898 0 0
Thompson	4,840 0 0
Higgs & Hill	4,698 0 0
Shephard	4,669 0 0
Tongue	4,505 0 0

For alterations to the Mail Coach, Camomile-st Bishopsgate-street, for Mr. J. Blyth:—

Grimwood & Son	£379 0 0
Carey	305 0 0
Hebb	275 0 0
Taylor & Parfitt (accepted)	269 0 0

For new kitchen, &c., at the Amersham Arms, cross-road, for Mr. W. Agate. Mr. W. T. Hunt, architect:—

Thomas	£270 0 0
Redman	248 0 0
Holloway	239 0 0
Smith (accepted)	198 0 0

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1880. SATURDAY, FEBRUARY 15, 1879

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On the Study of True Comfort in Architectural Design.

F it be asked what is the first requisite for the architect to bear in mind in preparing a design for a dwelling-house, we think there can be no doubt that the reply should be, domestic comfort. Under that term we, of course, include thoroughly good sanitary arrangements; as, in the absence of due attention to that part of the case, rt will prove both illusory and transient.

w if it be asked what is the object which uilder who works, not on commission or contract, but on speculation, first pro- to himself, there can be but little hesita- n giving the reply,—profit. We are not ing with any disrespect of the fair profit de. That gain is, indeed, the very cause e existence of trades and tradesmen. rtheless, it must be admitted that these oles, that of comfort, and that of profit, n themselves opposed. The reasonable t or owner who seeks for comfort must be red to pay the fair price for his house, ling the proper remuneration of the trades- As to the modest commission of the ect, we cannot fairly debit his client any outlay on that score, because, if n is determined to build, this payment ably saves itself, and that generally many over.

the other hand, we must remember that much of that building which has so happily formed much of the aspect of London has of a speculative nature. The erection certain class of house, superior, it may be, ose formerly built in the neighbourhood, e anticipation that tenants will be forth- ng, is indeed speculation; but it is specula- of a very desirable nature. Against such prise we should be the last to speak. But extreme of what is generally meant by lation has been illustrated by the proceed- of a police-court within the last few days; e a builder was condemned to pull down houses, some of a set of which other indi- ls had saved him the trouble, by falling of their own accord, and in which the ar that was used was described as crumb- between the fingers like snuff. Between the ly indefensible character of work of this e, and the stupid productions of the amateur, thinks to save the expense of an architect, there is a wide range of imperfect building. It is to work of this kind that we have alluded under the term "speculative." We should be very glad to be provided with a more appropriate adjective to designate aright this large group of imperfect or bad work.

Now the question which seems to us to deserve very much more attention than it habitually receives, is this. How far is the actual state of science, as regards those appliances which tend to comfort, to health, and to true economy, taken as the basis of design? How far is the intending occupant aware, as a rule, of what the best building appliances yet known are? How far is the architect or the builder in the habit of saying "Such and such improvements are very well worth their cost"? We are not now speaking of anything of an æsthetic character, but of those structural matters which it is absolutely essential to judge on their own merits.

We very much fear that the severe winter of the last few weeks has furnished, to three people out of four, a good reason for raising some such inquiry as that above suggested. Indoors and out, in the streets, in the coal-cellars, in the water arrangements of the house, comfort has been destroyed, and cost has been incurred, by absolute want of forethought and good arrangement, and, we hold, owing to little besides.

The remarks which have recently appeared in our columns under the head of "Smokeless London," open up one head of inquiry connected with the subject, which cannot be permitted to drop without fuller discussion. The columns of some of our daily contemporaries have been full of complaints of those nuisances from bursting pipes which have been general, but not universal. And if this is the case, if in nine houses out of ten the pipes burst after or during a frost of some intensity, while in the tenth house they do not, it is evident that it becomes matter of paramount importance to inquire into the exceptional conditions, with the view of making them the normal conditions.

One gentleman, who does not give his name, writing from Lincoln, advocates a plan which he ascribes to a medical man in Northamptonshire, and which he says was found to answer very well in practical use. A hot-air chamber, something resembling the oven of a kitchen range, is inserted in the sitting-room walls on each side of the fire-grate, behind the jambs of the chimney-piece. From these chambers iron pipes form a channel of communication with the rooms above, to which the air warmed in the chambers is admitted through ventilators in or above the skirting-boards. It is not said how the air is admitted to the proposed chambers; but this is probably by pipes communicating with the external air.

This arrangement has been proposed again and again in various forms, and adopted in some. Objections can be raised to it. But we can have no doubt that the projector has been struck, as all reflective persons must be, with the two unfortunate features that characterise our warming arrangements in ninety-nine cases out of a hundred, viz., waste of heat and irregularity of ventilation.

The fire-place in modern houses has assumed a conventional form which is only intelligible by tracing its history.

We may take Conisborough Castle for an example of the most ancient form of chimney still existing in England. This building was erected in, or close upon, the Anglo-Saxon period. In the great guard-room is a large fire-hearth. The opening is made in the thickness of the wall, with an arch above; but two transom stones, forming a projecting mantel-shelf, are built in, and supported by two sets of clustered pillars. An aperture, of a gradually contracting form, ascends from the back of the fireplace, and from the back of the mantel-shelf, sloping outwards as it rises through the thickness of the wall, till it reaches a loop-hole at a considerable height above the floor of the guard-room, where the smoke finds an exit. In other castles built about the same time will be found also slanting smoke-tunnels formed in the thickness of the walls, and terminating in loop-holes. Unfortunately, our usual modern thicknesses of external walls do not allow of this simple and effective mode of ensuring ventilation. Rochester, Kenilworth, Conway, and, we believe, Guildford, castles show chimneys similar to that of Conisborough.

The substitution of the manorial dwelling-house for the feudal castle occurred about the same time as the abandonment of plate armour, and for the same reason,—the introduction of gunpowder. As soon as it was discovered that the narrow keep, or the intolerably heavy panoply, failed to give absolute security, the love of comfort led to the disuse of these ancient modes of defence. With the manor-house came in the chimney,—built, in many noble houses of Tudor times, as an independent and essential structural feature. In the old manor-house at Chenies, the Buckinghamshire village which contains the mortuary chapel of the Dukes of Bedford, may be seen a series of massive square brick towers, projecting from the line of the building, and terminating in noble chimney-stacks. Within, the tower opened on the ground floor, affording a true chimney-corner,—a sort of recess or small chamber, in which wooden logs were piled on iron dogs, throwing a glow into the whole apartment, and allowing of the arrangement of benches within the recess, or around the chimney-corner, as it is called, which in long winter evenings thus became a nook affording warmth and comfort. Perhaps few things in the arrangements of modern luxury have the rude and hearty comfort of the chimney corner. Of such a nook, no doubt, Master Abraham Slender was thinking, when he uttered the adjuration, "Or I would I might never come in mine own great chamber again else." From this comfortable and stately beginning, the chimney has both advanced and decayed. It

has risen, as an independent tower, to the height of 468 ft. from the foundation, and 454 ft. above ground, in the case of the Port Dundas Works at Glasgow. In this noble smoke-tube the outside diameter at the ground level is 32 ft.; the thickness, seven bricks. This diminishes to an outside diameter of 12 ft. 8 in., with a thickness of a brick and half at the top. Only two church spires in Europe,—that of the Strasburg Cathedral, and that of St. Stephen's Church at Vienna,—exceed the height of this lofty chimney, which is greater than that of the Great Pyramid in its present state. The horizontal section is circular throughout; the batter is straight, and there is no cap.

From the chimney-corner, as has been intimated, has been derived the modern chimney-piece. And one necessity, as it was long held to be, has preserved the inconvenient form of the chimney-piece until it has taken the place of an institution; that was the necessity of so constructing the chimney as to leave room in it for the passage of a small boy to sweep it out. It is not so many years since that this intolerable barbarism has been abolished, thanks to the indignant exertions of the poet James Montgomery, and a few like-minded individuals. But though we no longer send boys up our chimneys, we preserve the form and structure that had become usual for that purpose. And here is one of our great sources of discomfort and of waste.

We apprehend that there can be no doubt that if, for the roughly-built square flue, to accommodate which we sacrifice so much of the room and of the good appearance of our ordinary chambers by the projection of the chimney-breast, were substituted well-made, well-fitted, smoothly-lined earthen pipes, a great improvement would result, both in comfort and in economy. It may, perhaps, be held inconsistent with our English views of what is becoming to allow these tubes to be visible, whether as detached or semi-detached from the walls; although an immense economy of fuel would be the result. By such an arrangement a fire in a room below would raise the temperature in the floors above, at least enough for health. And the great improvement lately made in terra cotta and other kinds of earthenware is such that a very charming effect might be produced from a group of hollow columns or ornamental pipes. For with the introduction of a smoke-tube, which would afford less friction and less opposition to the escape of the draught than our present flues (and which would be much more readily and effectually cleaned by the use of the ordinary jointed rod, which has superseded the climbing-boy), should be associated tubes for ventilation, and, in large rooms, for the supply of fresh air. These ventilating tubes would also give a commodious passage to gas-pipes and to water-pipes, and might easily be so arranged as to prevent the bursting of the latter. This, in some cases, has been attempted by building them in close to the flues. But the evil of the heat in summer is such as to counteract the good effect of the warming thus effected in winter.

To those persons whose taste condemns the visible introduction of warming and ventilating tubes in their apartments, and who are willing to pay for the extra fuel, or to suffer the extra cold, due to the retiring of the smoke-tubes into the walls, the advantages of the substitution of the smooth pipe for the plastered (or unplastered) flue will still be considerable. The advantages of the ventilating-tubes will be no less. It will be a question, in such an arrangement, whether the extra thickness that will probably be required in the walls, in order to include the tubes, in most cases had not better be added without, rather than within, the building. The rooms would then be rectangular; not diminished as is nowthe case by the projecting breast. The outer wall will be strengthened by the projections, which would resemble the "building strips" of the old Anglo-Saxon work, and in case of houses built in pairs or in rows, the gain to comfort would be so great as fully to make up for the loss of 4½ in. or 9 in. in the width of a room. For the chimneys being built, to carry the smoke and air-tubes, as mere thickened parts of the wall, the remainder of the party-wall would be double, with a narrow space between the two faces, which would prove a more effective non-conductor of sound from house to house than a solid wall of equal thickness. Economy and comfort would be thus combined.

Without attempting to force any nostrum on the profession, we beg very seriously to call the attention of architects to the great addition which may be made to the health and comfort of houses by a reconsideration of the rude, wasteful, inefficient form of chimney which has descended, as before intimated, from the rude snugness of the great chambers and great fireplaces of Tudor times. And this tends to the consideration of the advantage or disadvantage, in cities and in towns, of that use of the open fire to which we feel, for the most part, so national a devotion.

Referring our readers to the remarks which they will find in our present volume (p. 88), we will ask them to look a little further at the question of the economy of heat. Let us admit, once for all, that we give up the question of the drawing-room fire. So accustomed are we to associate much of the charm of the winter season with a cheerful blaze, that we will consider this as an extravagance as much to be taken for granted as the Christmas pudding, or any other extra cost allowed for the sake of the pleasure which it conveys, and thus not to be judged of on purely economical principles. And we may add that if the economy which may be easily effected in fuel be carried out in other parts of the house, not only may the best and most brilliantly-burning coals be consumed in the drawing-room, but the blaze may be improved by the addition of wood, especially of those blocks of oak, to be obtained from the ship-breakers, which, imbued with the salt of the sea, burn with so beautifully-coloured a flame.

In America, we are told, an attempt is now being made to warm New York by steam, and not only to warm each block of buildings from a central boiler, but also to supply to each house an ever-available motive power to work lifts, to pump water, or to drive any kind of machinery. It is the part of wisdom rather to await the result of experiments which are said to be in actual progress than to predict what that result will be. Still there are manifold objections to the scheme, supposing it to be at all practicable. The great drawback would be the loss of heat from conduction and radiation from the pipes. To this the projectors reply that they have a substance of remarkably non-conducting character with which to surround their mains. We suppose that if a smaller pipe, conveying steam, were placed in the midst of a larger pipe, and blocked at intervals with cork, so as not to touch the external pipe, the greatest economy of heat would be obtained. But to supply at considerable distances, and at any moment, a head of hot, dry steam, the pressure on the boilers used, and on every part of the apparatus, must be very great. Constant supervision would be required to detect and to cure leakage. Great strength would be required in the fittings. The danger of explosion would not be absent, and the effective nature of the whole apparatus, in case of any sudden fall in temperature, is as yet problematical. Besides this, it would require the assent of every householder in a street or block of buildings to allow of the laying of the steam mains through his property, whether he adopted the new plan or not. How far the patriotism of the inhabitants of New York renders this objection idle we are not aware. In England it is certain that nothing less than an Act of Parliament would enable any steam warming company to advance a single yard; so that, on the whole, we think it safe to adjourn any further consideration of the question of warming by steam from a central station until notices are lodged of an application to Parliament for the incorporation of a company for that purpose.

It is quite another matter to inquire into the source of the most economical application of heat for domestic purposes. We have occupied too much space already to bring forward on the present occasion the remarkable statistics which we have collected on this score, and which must be deferred to some future occasion. But we may call attention at least to one item, illustrative of the great cost of our open coal fires. In the last week in January the price advertised in the daily papers for the delivery of the best coal, at the house, in London, was 29s. per ton. In three cases out of four another 6d., or even 1s., will be added to secure the civility and ready aid of the servants of the coal merchant. During the same week the price of the best coals in the river was quoted at 16s. 6d. per ton. Now we are not mentioning this with any idea of intimating that the profits of the London coal merchants are too high. The great competition ever existing in an open retail trade must prevent that from being the case, to any great extent; still the difference in price, however justifiable, is very great. There will be rivedues, that must fall on any purchaser, landidues, cost of carriage to the merchant's yar cost of yard, cost of offices, cost of re-loadin cost of distribution; proper profit on all th outlay. Then comes the cost of removing th unburnt products of combustion, whether d posited as smoke in the chimney or as ashes the grate. When all these things are added the proper wholesale price of coal on a river railway wharf in London, it will be seen th the private consumer has to pay from 50 to 1 per cent. more than the wholesale consumer.

To this we will only now add that the was of the fuel, when delivered at so high a charg in the private coal-cellar, is something enc mous. The best and most economical applianc known to engineers do not obtain, from consumption of coal, more than the tenth twelfth part of the heat which, according chemical analysis, that coal actually may made to yield on a true combustion. He wou be a very sanguine person who should estima that we practically derive, from our domest consumption of fuel, a third of the useful he which is obtained from the combustion of t equal quantity of fuel under a boiler, when fi grate, flues, and draught, are all careful arranged so as to make the best of the fi The architect then, who is planning a house which each chamber is designed with the usu projecting chimney-breast, open grate, and bri flues, has to bear in mind that he is condemni his client to the most wasteful consumption fuel which can be contrived, next to a bi fire in the open air. He renders necessary t visit of the chimney-sweeper to every roo with the certainty that at each visit he leave the corners of the flue full of soot, a take as little soot from the sides of the flue possible. He involves his client in an ann purchase of fuel at a price exceeding the wh sale price at the adjoining river, canal, or r way wharf of from 50 to 100 per cent.; and ensures, as far as his efforts go, the regu combustion of that costly fuel in a mode allows the householder to make use of only fi 1-30th to 1-40th part, or even less, of its f heating power. Do not these facts call fo little serious consideration on the part of designers as well as of the occupants of houses? Economy of heat is a main elem of both comfort and health. Can we say t the question, how best to insure economy heat, has yet received due attention from architect or from the builder?

THE COPYRIGHT QUESTION.

There will be a good deal to be done bef this vexed question of copyright, so far as regards works of art, can get placed on a foot that is at once intelligible and satisfactory all parties. Satisfactory to all parties inde we imagine, no law upon artistic copyright e can be, until human nature, of the artistic p suasion at least, is very much changed. in regard to these questions, touching on business side of art, we fear that artists rather as clergymen are sometimes said to in matters of business,—possessed with an i that they have a right, as spiritual benefact of mankind, to special concessions in favour, such as can hardly be made without justice to the rights of others. The purcha of works of art rarely look upon it in the se light, so that there is abundant matter for c tention.

As will have been observed by those w have followed the report of the recent meet of artists, convened at the Grosvenor Galle to consider the subject, the meeting (and th whose views they represented) were afraid t the new legislation on copyright which we promised would only have the effect of bring the artists out of the frying-pan into the fi At present the copyright of a picture may specifically claimed and retained by the ar at the sale of the work; but if it is not so tained, its life is cut short, it vanishes into air and ceases to be a recognisable property entity. Hopes had been entertained that commission which has been sitting on the subj would fix the copyright with the artist unl specially bought along with the picture by purchaser; and the artists want this, for t very intelligible reason, that under the exist law they cannot secure the copyright with

wing the purchaser's attention to the ect, and that the purchaser is then rieved, and regards himself as a person is being defrauded of part of the advan- e in the possession of the picture which s paying for. And knowing as we do the udices and the frequently suspicious nature he English public in regard to dealings in ks of art, we can hardly feel that the diffi- y of the artists is by any means an imaginary . Indeed, the situation is rather delicate, it how you will. By the existing law, the st has practically to say to the purchaser o has just agreed to take his picture, and is, o speak, in the very act of writing a cheque it, "You are not in return for this to have whole power of doing what you please with picture; you may keep the actual picture have the pleasure of looking at it, but you ot have it engraved or otherwise copied: is my privilege, and I must have access to picture or the loan of it for that purpose, if ssary." Whether this last claim would be lly capable of being enforced we cannot we should be disposed to think not, and as the purchaser has bought the original re he has, at least, the power over its actual erial existence, and can lock it up if he ses; the artist's hold over the copyright g, in fact, rather a negative power, to pre- any one else copying the work, than a ive power to copy it or have it copied for lelf. But for all that, the way in which we it above is probably the way in which it d present itself to the mind of the purchaser, of course, we cannot wonder that a con- able proportion of purchasers would be e to take fright or to feel annoyance at this of condition attached to the purchase, and artists have consequently felt shy of men- ng so delicate a matter at all, and have rred that the copyright should vanish re any trouble came of it. And, of course, e law provided that the copyright was by understanding the artist's unless otherwise lated, this difficulty about bringing it on *apis* would, at any rate, be at an end. But present recommendation in regard to fresh lation is to leave the matter just where it ds at present so far as any wish of the artist he copyright is concerned; that is to say, ust bargain for it if he wants it; but to that otherwise it does not vanish as before, s tacitly passed over to the purchaser.

his, it should be observed, is already the with pictures painted *as commissions*; a ision made in our present confused and ical body of copyright law, in order to pre- the unauthorised copying of portraits, which in a sense be regarded as works in which personal interest of the proprietor is greater t in the case of other classes of paintings. , it seems to us (though it is not so stated heir Report), is what really gave to the bers of the Copyright Commission the bias avour of the line of legislation they have mmended. They place on record their diffi- y in making any definite legal discrimination ween what is or is not a picture painted commission," or even apparently in defining purposes of legislative action) what is or ot "a portrait." They have, therefore, cut knot by putting all pictures under the same ditions as those under which they find por- s and commissioned pictures under the ting law. This is not of course the way it pears in the Report, but this is pretty nearly t it amounts to. It is an easy way out of t is no doubt a difficulty. The Commission ved at the conclusion that, on the basis of evidence furnished to them, "no distinction practically be made between works painted ommission and those not so painted." They n continue:—

111. The only question that remains, therefore, on this ch of our inquiry, is, whether the copyright of a pic- when sold should still be vested in the artist, or her, unless expressly reserved, it should follow the ership of the picture.

112. The evidence shows that persons buying pictures ot in general think about the copyright, but that if the ject happens to be mentioned, they are generally under impression that the copyright is included in the pur- e, and are astonished if they are told that it is not. said that owing to this fact an artist, however eminent, n he is selling a picture, shrinks from mentioning the right and asking for an agreement to enable him to n it; he usually prefers that the copyright should be lutely lost to both parties, as in the absence of any en agreement it would be, under the first section of Act that was passed in the twenty-fifth and twenty- years of your Majesty's reign (c. 68), than that the haser should think that he is losing a valuable part of bargain, and consequently should decline to complete purchase.

113. The principal reason why artists wish to retain the copyright is to keep control over the engraver and photographer. To artists no doubt this control is a matter of considerable pecuniary value, but they urge that they not only wish to control engraving in order to get payment from the engraver, but chiefly to prevent inferior engraving, which they consider prejudicial to their reputation. It is admitted that if a picture is sold, the artist would have no power to get it engraved when it is in possession of the purchaser, except by his consent, and artists are willing that this should continue to be the case; but if this power of preventing engraving is so valuable, it is not easy to see why they should hesitate to explain the law to the purchaser and offer to let him have the copyright if he will preserve the picture from inferior engraving, rather than let the copyright be lost both to artist and purchaser."

This last clause is a full justification of the complaint which was made on behalf of the artists by Sir Coutts Lindsay, as chairman of the Grosvenor Gallery meeting, that no artist had found a place on the Royal Commission, and that consequently the views and feelings of artists were not represented by any one who could really understand or sympathise with them. The omission is really an extraordinary one, considering that every other branch of intellectual labour liable to be affected by the copyright law was represented among the "trusty and well-beloved" persons who formed the Commission. The result is seen in the above clause of the Report. The combined experience of the trusty and well-beloved is not equal to understanding why artists should wish on artistic grounds to control the choice of an engraver and the execution of the engraving; why they can not "explain the law to the purchaser" and solicit him to be careful in seeing that the picture is done justice to if engraved. Touching faith in the judgment, critical insight, and good will of the purchaser! But we fear, with their experience of what these qualities amount to in the average purchaser of pictures in England, the artists will hardly be satisfied to leave their artistic repute, as affected by engraving and other reproduction, in his hands. This is really a very important point indeed for artists, and one of which it is obvious that the Commissioners do not feel the full importance, or they would not talk so lightly of relegating it to the purchaser. In a former article on the subject* we pointed out how great a wrong was done to an artist, a wrong which he was almost powerless to prevent, by inartistic or vulgar copies and reproductions of his works; a wrong which, unless he happens to be really in needy circumstances, is a much more serious one to him than any mere pecuniary damage from infringement of copyright.

It is possible to see the matter from two sides in regard to the capability of legislating on it. It might reasonably be urged that to legislate at all in regard to the copyright of an imaginative work of art is a very difficult matter, and that it might be better left to the stipulation of the artist with his purchaser, in regard to the special circumstances of each case. But though this would avoid some manifest difficulties in formulating a law, it would leave scope for a great deal of very undesirable dispute between artists and purchasers. And our own impression is most distinctly (and we are by no means disposed to side with artists against the public, being in regard to this question a portion of "the public" ourselves) that right to all parties is much more likely to be done by legislating that the artist should have the copyright unless otherwise stipulated than by the reverse process which the Commissioners recommend, of giving it to the purchaser unless otherwise stipulated. The Commissioners seem to have been decidedly impressed by the average public feeling on the subject; by the fact, which they have in evidence from artists, that when a purchaser finds he is not obtaining the copyright in paying for the picture, he usually "expresses very great surprise"; and the Commissioners seem to think that anything at which the English public are very much surprised is likely to be an injustice or opposed to common sense. English people are, however, very much surprised frequently about matters in connexion with art which, nevertheless, are no legitimate grounds for surprise if they only knew it. And in regard to this present question there is one special reason why it seems to us that fair play to all parties is much more likely to be done by assigning the copyright to the artist in default of other arrangement. For this reason: all that the purchaser wants in regard to the copyright is a matter of business: he wants to secure his purchase against depreciation in the market by copies or repetitions, and he also wishes, perhaps, to be in a position to make an advantageous bargain with engravers or publishers. But the artist has an additional interest, sometimes of much more value to him than any pecuniary gain that is to be got out of the copyright, viz., the desire to preserve his artistic reputation from injury by inartistic reproductions; and this is exactly the point in regard to which it is so difficult to make a business bargain; it is a point difficult to formulate in the way of stipulation, and it is still more difficult for the person most interested to see that it is carried out. The artist may, in selling the copyright, "explain the state of the law to the purchaser" (if he can understand it himself), and he may state to the purchaser his wish that the picture should only be engraved by persons capable of doing justice to it; but, after all, when the purchaser has once got the copyright, he will be practically the sole judge of this, and the only safeguard of the artist will be in the existence of an exceptionally conscientious feeling on the part of the purchaser, leading him to consult the artist in such a case as a matter of moral duty. But we sadly fear that a large number of purchasers of paintings would be only too likely to act on the simply-expressed formula that they may "do what they like with what is their own"; and the only way for the artist really to protect himself would be to sell the copyright, subject to a written stipulation that only Brown was to be employed to engrave it, or, in a negative form, that Jones & Robinson were *not* to do it: the first might be often inconvenient, the latter always invidious. On the other hand, if the copyright were vested in the artist in the absence of any contrary stipulation, he might, in cases in which he felt it of importance to his reputation to keep an eye over the engraving of it, quietly do so without the necessity of entering into a bargain which it would be difficult to formulate, and impossible to ensure the observance of on the part of the other party to it.

So far we have been taking up the artist's side in the matter, which has been misunderstood and unduly neglected. There is, of course, also the side of the purchaser to be considered. We do not consider, however, that there can be the slightest injury to the purchaser in the fact that the copyright remains with the artist in the absence of formal agreement, provided the law of the matter is clearly understood, so as to give the purchaser no pretext for being "surprised." The copyright is in most cases of far more real importance to the artist than to the purchaser, and this is the more the case in proportion to the genius and reputation of the artist. In the case of portraits, which, as we have said, are of more direct personal interest to their possessor, it would probably be found that in most cases the purchaser would be unwilling to have the portrait without the copyright, and would therefore be more ready to offer the additional sum for the copyright; and if the artist for his own reasons stood out against selling the copyright at all, it would simply be a question of whether the purchaser thought it more to his interest to have his portrait without the copyright or not to have it at all; the matter would adjust itself as bargains are generally adjusted. If the artist found that by refusing to sell the copyright of portraits he drove away sitters, he would have either to relax his determination or to be content with giving up that branch of art, if he chose so to do. There would be no hardship to either party in such a case. But there is a question of some importance in which the duties of the artist are to be considered, and have sometimes been overlooked; that is, in regard to replicas. There can be no question that there has been a want of conscience among some artists on this point, or, at all events, a considerable confusion of ideas as to what they had or not a right to do. On the side of the artists it is urged sometimes that the value of a painting to its possessor is in no way impaired by the fact of another man having an equally good and similar painting of the same subject: that the object of a painting being really intellectual pleasure, this is the same to the possessor as if it were shared with fifty other people; that if the artist choose to give the same labour and talent over again to the same subject, there is no reason why he should not be paid again for it. But this idea would strike at the very root of copyright in works of intellectual value. It would be as reasonable to say that when the right of production of a drama had been bought by one theatre there was no prejudice done in selling it also to another

* *Builder*, vol. xxxvi., p. 234.

at some distance; that the same audience could not hear both, &c. Every one can see what a totally weak and even indefensible position that would be to take up; but the case of the picture is really analogous. It is quite true that the enjoyment of the present possessor would not be impaired by the mere fact that another man had a picture like his; but it must be remembered that his interest in the picture is not all sentiment, that it is a property interest also, for which he has paid hard cash; and his enjoyment certainly would be impaired, and very seriously impaired, if, under the pressure of hard times, he put up the work for sale, and found its value reduced one-third or one-half by the fact that there was another work equally meritorious and exactly similar to be had. This is, in fact, so self-evident that it would seem unnecessary to mention it, had we not seen one or two strange imaginings of artists in regard to their rights in repeating their subjects. In regard to small preliminary studies for pictures there can, we think, be no question among fair-minded people that they are quite a separate thing from the picture, and with quite a separate kind of interest, and that their exhibition and sale by the artist, even after the sale of the principal work, is no prejudice to the possessor of the latter in any way, though some purchasers have thought so, and have been very irate about the matter, from (as we think) an entirely mistaken view as to what makes the interest and value of a first study. But for the artist to make small replicas afterwards, and exhibit and sell them as "studies" (and we know that has been done), is a proceeding quite at variance with true artistic morality. There is another point on which there is some confusion of opinion among both artists and the public. Some people seem to imagine that there can be a copyright in the idea as well as in the form of the work; and Sir Coutts Lindsay seems to have used at the Grosvenor Gallery meeting some expressions conveying that idea,* though we have no doubt he must know better than to suppose it can be literally as his (reported) words would infer. The fact that an artist has painted "King Alfred forgetting to turn the Tea-cakes" cannot prevent all the other painters in the kingdom painting the same subject, and even the same moment of action, or inaction, if they pleased; it can only prevent them from copying the face, the position, or the drawing of King Alfred, or the precise arrangement and browning of the cakes.

The question was directly raised in the process of the inquiry by the Commission whether a copyright in buildings, an architectural copyright that is to say, was a condition which it was feasible to establish. The attention of the Commission (as we might expect from its constitution) was not directed to this by their own inclination, but by the suggestion from without, on the part of the President of the Institute of Architects, who addressed a communication to the Commission requesting to be examined in regard to this subject, and who accordingly gave evidence of cases of hardship to architects arising from the reproduction of their works by other hands, and brought before the notice of the Commission a petition in regard to the subject which had been presented to the House of Lords in the year 1869. From the Report it appears (section 126) that Mr. Barry proposed that "the right to reproduce a building should be reserved to the architect for twenty years, and this whether reproduction were desired on the same scale, or on a different one, or in whole or in part, and whether by the person who gave the commission or any other." This is a very difficult subject, on account of the impossibility in many cases of really separating architectural design from questions of special convenience of plans or sanitary arrangement in regard to plan and construction; and we confess that on the face of the report it appears to us that Mr. Barry must have asked for rather more than it was possible to obtain without benefiting the individual architect at the expense of the public. We may have some remarks to make more in detail in regard to this question of architectural copyright, which hardly admits of being handled on the same ground as most of the other subjects treated of in the Report. All we will say decisively at this moment is that we certainly protest against the subject being closed against public discussion, as the language of the Report would seem to recommend: a recommendation which again lays the Commission open to the charge, in this as in some other instances we have alluded to, of endeavouring to shelve a difficult point in order to get rid of being troubled with it, instead of fully facing the difficulty, and indicating a way out of it. That architects have experienced injustice in respect to unprincipled appropriation of their ideas is unquestionable, and they have certainly a right to demand that their rights, along with those of other professions, should be publicly considered instead of being shelved *ab initio* in the comparatively secret conclave of a Commission.

One recommendation in the Report might have been looked for as a matter of course, viz., the reduction of the time of enjoyment of copyright to one term for all classes of works of art, in place of the absurd disproportion which prevails at present. In giving this recommendation decisively, the Commissioners have also shown what, in comparison with existing law, is a very commendable liberality in regard to the period of enjoyment of copyright, namely, for the life of the artist and thirty years after his death. Thus the first generation, at least, of the artist's descendants will have the pecuniary benefit of his labours. After that, as Carlyle puts it, "people may begin to steal."

Since the above was in type, we have received a "Copy of Memorial presented to Her Majesty's Government by the Royal Academy of Arts, on the subject of the Recommendations on Artistic Copyright in Paintings and Drawings contained in the Report of the Royal Commission on Copyright." The views set forth in it may be summed up as follows:—

1. The copyright in paintings and drawings to belong to the artist, but carrying no right to disturb the purchaser or owner in his possession of the picture.

2. The purchaser or owner of a picture or drawing to be protected against replicas that should so colourably imitate such picture or drawing as to reasonably allow its identity to be challenged.

*3. The commissioner of a portrait-picture to be protected against copies of any size and in any material. Also, to be protected against the publication and sale of engravings or prints of any kind, or of photographs from the said portrait.

*4. In the event of his sale of the copyright in a picture or drawing, the artist to be protected against such sale affecting detrimentally his full rights of property in all studies and sketches connected with the work in question.

*5. Sculpture, as per Royal Commissioners' report.

*6. Engravings, as per Royal Commissioners' report, but to be protected in all international conventions.

*7. Registration of paintings and drawings not to be required until the legally defined owner (the owner) parts with his copyright.

8. Registration of sculpture to be the same as in the case of paintings and drawings.

A GOLD-LEAF AND GOLD-POWDER FACTORY IN FRANCE.

Among the numerous properties of gold, its ductility is foremost. In this quality no other metal known can compete with it. In fact, no other natural substance can be reduced to so thin, and yet so ungiving, a texture, though texture is, perhaps, the wrong word, when the surface produced is beaten out from a single material rather than woven from many. The French, following the ancients, have taken advantage of this scientific and artistic opportunity, in more ways than one. Their knowledge, scientific and historical, came, of course, to their help at the beginning. They learned how the antique Romans gilded with gold-leaf the approaches to their temples, and even the walls and the roofs of their private apartments. Whence arose this peculiar art and this luxurious industry? It was not all gold "leaf," however; it began with absolute plating, produced, like armour, rather by mechanical than by chemical processes, in the shielding of Pagan and heroic images. The statues of the early gods and goddesses, heroes and warriors, in Greece especially, were not gilded only on the surface; they were thick-plated with gold, though the economists of this metal were known in very early ages. Th Nero knew the art of surface-gilding,—or slaves knew it for him,—when he gilded t Pompeian Amphitheatre from roof to floor. have, indeed, an account of the process by whi the result was brought about, and it exhibits amount of waste strangely in contrast with practice of modern times. The Roman ounce pure or solid gold gave to the hammer finger-lengths square, or about half the surfa accepted as an average at the present day in most forward factories of France. This rea has not been brought about, be it observed, the assistance of machinery. Improveme there may have been in the process, but it still by handwork that the ultimate issue attained, and every gold-leaf in the market sustained on an average 18,000 blows of hammer, "delivered by hand." No stea hammers here; no thundering masses of me which can crush a cannon-ball or crack a n but still, a certain adaptation of machinery this delicate and generally manual work. may be interesting to note how the combinat acts in the establishment, lately visited, in Street of Cairo, at Paris. From the first ment of entry it is clear that, as at the Lon Mint, the very ground trodden upon is preci It is a world of gratings and scales. On floors channelled squares of oak, below the le of the common surface, receive the daily swe ings, which may be richer than many a C fornian "find." In the centre of the build lighted from above, is the great gold-beat hall, subjected to a concentrated inspection also from the roof,—where the hammerers at work, and around it are little chambers cells, in which the final operations are carried in association with the manufacture of g beater's skin, and an apparatus for the minute exploration of crevices. To begin w there is an ounce of pure gold, yellow, red more or less pale, as may be chosen, which desired to spread over a space, and reduc a thinness, so far as possible, without the of its being torn, or tumbling into pow That, as every one engaged in the busi knows, is the gold-beater's problem. We only to do now with the particular proce employed in a particular French, or rat perhaps, Parisian factory. Another esser equally familiar, is, that the pure gold sur thus obtained shall, however attenuated, k continuous that not a ray of natural or artifi light shall be capable of penetrating throug any more than through a wall of masonry, must be penetrable, again, by neither air damp, and if it fails in these respects it good gilding. These are elementary p upon which the great class engaged upon and kindred industries need not be inform yet they are none the less neglected, far wide, upon that account.

The first part of the apparatus, of cours a crucible, into which is poured the sma possible proportion of alloy,—an excee average producing hardness, inductility, loss; but the poorest quality is that whic most indispensable to the gold-beater, not standing that, in the French trade at all eve there are twenty degrees of purity to be with, and forty "rings of quality," distingui by experts as the "lemon," the "green," "red," the "white," the "half-yellow," "deep yellow," the "superfine yellow," an forth. The character of the ingot being a tained, it is passed under a tremendous pres of steel and steam rollers, usually manufact in Germany, passed again and again u increasing weights, exposed now to the col blasts of air, then to the intensest bl of fire, drawn through and through, unt scarcely appears to be a substance, and manipulated that, at last, drawn out betw sheets of parchment and vellum, it has t guarded against the chances of being bl away by a draught from the machinery. E set of hammers is tempered to a partic quality of gold, and the division of labou this department of the industry, is so minut to be with difficulty intelligible. Every o tion is so small, so precise, so, as it w dangerously delicate. Thus, at the Favrel tory, to watch the "beating" is, in itself interesting spectacle, after the already plates, or leaves, are placed between what to be described as the "vellum," or "ab skin" moulds. They are, perhaps, from 1 200 in number, cut in equal squares, so as t bound up in books for use in the gilder's ness, and above them the hammers work up

* See our condensed report on p. 159, *ante*.

* These are in accord with the recommendations of the Royal Commissioners.

with the monotony and regularity of
c. Not a stroke descends by chance or
ice; whether through habit or scientific
ing, the blows succeed one another in
rm succession; they are methodically dis-
ted in numbers, weight, and direction; the
ner changes from the right to the left hand
e workers so as as to preserve a perfect
ibrium, and the Messrs. Favrel assure the
d around them that this rhythmical method,
speak, is of the highest value with refe-
e to the general results of their manufac-

Twenty-four blows, and the "bed" is
ed over; twenty-four other blows, and it is
d over again; one blow in the centre, two
e right, two to the left, and so forth, with
y precaution taken, upon this tender yet
lding anvil, against the generation of too
heat, and, consequently, the destruction
ny gold. This first pounding over, the
ous metal is weighed to the fraction of a
, and now commences the process of puri-
on.

e squares are once more reduced into
ter parts, examined, rejected, or accepted,
made to sweat under the hammer by men
ing leather aprons, to catch every atom of
dross, beaten upon ox-hides, beaten upon
s, washed with water, washed with acids,
educed from a state of grossness to one of
y by implacable methods. The difference
e degrees of purity, thus ascertained, is
ellous. From some, the skilled workman
reject a ruinous proportion; from others,
ll reject scarcely any. The refuse, as it
be termed, so far as the delicate art of
g is involved, has to be packed in tin
, and sent up, certified, to the professional
sers of the works. Meanwhile, the gold-
s become smaller and smaller, being cut
adrilaterally at every stage, with incessant
, pressures, and attenuations, until they
id,—this being a secret which the French
l as sacred to themselves,—upon planks
ocks of "prick-wood," "the only wood
bling ivory, in that between its fibres
cannot be retained a particle of gold, or
ndredth part of a drop of water." The
r, flat pincers for lifting and removing
are made, also, from the same tree; but
yet the subtle processes are not at an end;
include spreading on a membrane taken
the exterior of the intestines of an ox, to
they adhere with, sometimes, an incon-
nt tenacity; and still they are not com-
y purged of the penetrating gases which
destroy in them the elements of perfect
ility. The French manufacturers confess
selves to be frequently at a loss; they fail,
ay, to get the oily matter, the inequalities,
mpiness, the air-bubbles, out of the gold,
in its most delicate and tender form of leaf,
ven when the "skin" has been treated
a varnish composed of wine, spirits of
and essential oil of spice, beaten dry,
ed in a graduated heat, hammered be-
folds of true silver tissue, and even sup-
nted by layers of gold and silver alloy.
nly a proportion of experiments is success
assured, and this, we are informed, con-
es the precariousness of the art, or the
ry, call it which we will. However, the
l Factory may, we suppose, be re-
d as, in its degree, representative, and
its order of work differs, to some ex-
from those of other similar factories in
e, it may be worth noticing. The func-
y who receives from "the office" the
in the rough, tests, weighs, and chips
earing a leathern apron to catch the
apparently atomic fragments, or dust,—
ble sometimes, we have already sug-
d, as sweepings from the Mint; that
which he is satisfied he passes on and up,
gh the several spheres of his department,
cess which, practically, has been gone
gh before, but which, theoretically, must
e over again. The ingot by this time has
nsiderably in weight, though not in value,
se all the value is practically preserved,
is curious to note how, throughout the
manufacture, the predominating idea
to be that of guarding against waste or
The sweeping-brush follows the artificer
where, just as it does in the workshops of
iamond-cutting artificers in Amsterdam.
pations of alternate heat and cold, of soft
evere pressure, of foreign materials, in-
g gypsum,—a process peculiar to the
h, it would appear,—and of a method
"browning" (of which not the most expert gold-beater can explain the actual meaning), succeed one another in the Favrel Factory until we reach, as an addition to the well-known results, others which are not to the public at large so familiar. It is not in the form of gold leaf alone that the products of this manufacture appear. The rough powder, spread on a surface of mingled gum and honey, furnishes a material of ornament second only in magnificence to that of pure gilding itself. It supplies, moreover, the foundation of silvered and bronzed decorations, in an almost incalculable variety, and, for these purposes, is often kept in a liquid state for several months together. Still, gold leaf is, of course, the prominent and permanent object of these works, and not an ounce of the true material would be sacrificed to any other purpose unless under the most absolute necessity; or, indeed, until after the very dust of the factory had been calcined. The industry, however, is in alliance with so many others, and the French and English systems, arriving at the same result, are so much at variance, that it may have been as well to note in the history and manners, so to speak, of the manufacture abroad, certain deviations from those of the manufacture at home.

BELLS.

The Rev. H. R. Haweis gave a lecture on this subject at last week's Friday evening meeting of the Royal Institution, the object of the lecture being manifestly to recommend to public consideration some of the views on the subject which have been the occasion of some tolerably acrimonious newspaper warfare lately. The two main points which Mr. Haweis wishes to recommend to the public mind are, apparently, first, that the accurate tuning of English bells is grossly neglected, and in consequence the "ear" of people who are in the habit of hearing them is systematically vitiated; and secondly, that the system of mere change-ringing on a limited scale of bells is a barbarism, and that the only use of bells which is worth serious attention is that which has been long practised in Belgium, and has been introduced into this country of late chiefly through the work of the well-known firm of Gillett & Bland, of Croydon,—the system, namely, of having a large number of bells forming a complete musical scale of two or three octaves, fixed in position, and capable of being played upon by the action of hammers, the movement of which is brought under the control of one performer, so that an actual performance of musical compositions in the true sense of the word is rendered possible, in place of the merely vague musical effect of change-ringing. Although the subject is rather musical than architectural, it is certain to interest so many of our readers that we may very suitably say a word as to the conclusions to be drawn from Mr. Haweis's lecture and illustrations. As some of our readers know, a good deal of the literary warfare on the subject has turned upon Mr. Haweis's recommendation of the Belgian bells as superior in tone and much more accurate in tuning than those which are usually turned out by English makers, and his statements on this head have been sharply contested and contradicted in some cases by persons necessarily having an interest in the contradiction, in some cases by those who, frankly admitting that they had no refinement of ear and no musical knowledge, nevertheless found themselves able to state positively that the English bells were as good as they could be. On this subject, most people who know anything about it know that Mr. Haweis is an authority: he is a musical amateur of considerable cultivation, and among other accomplishments is a violin-player, a matter which pre-supposes a good ear; but in any case, his specimens on the night of the lecture, if we are to suppose that they were fair and average specimens, pretty well established the fact of the superiority of the Belgian article in the matter at least of tuning, if not of tone. He had two of Van Aerschodt's bells, intended ultimately for the carillon of Cattistock Church, representing a minor third, and certainly possessing a beauty of tone and a purity of interval which we are not much accustomed to in this country. As to the bad tuning of English bells, every one who has any ear may have painful evidence daily: our biggest and most costly institution of the kind, the Westminster chimes, are hopelessly out of tune, and always have been; but no one minds it. We could have given Mr. Haweis a still more startling fact for his onslaught on English stupidity in these matters. In the parish church of Aldgate is a set of carillon chimes (mechanical chimes), by whom and how long fixed we do not know, on which the melodies of hymn-tunes are played before service on Sundays. The number of bells was, we suppose, limited by consideration of cost, the complete scale is obviously not there. One of the tunes set for the chimes is that to the well-known evening hymn, "Abide with me," &c. At the conclusion of the second line this tune modulates into the dominant, and requires a sharp fourth in the scale; but to save the expense of putting another bell this little trifle has been coolly passed over, and the second line of the tune is played with a wrong note, involving an essential grammatical alteration in the modulation; but no one minds! One may doubt whether such stupidity as this would be possible in any country but England.

So far, therefore, we are utterly with Mr. Haweis; and we draw attention to it here partly because architects who will possess themselves of such facts and understand what ought to be done and is not done may often have some influence in bringing about an improvement. But in regard to Mr. Haweis's other point, the use of bells as a musical instrument, so to speak, we are by no means so certain as to his position. In the first place, as the bells cannot be damped after being struck, there must always be an amount of jar and jangle from the simultaneous vibration of the bell last struck with that which follows it, which must very much militate against anything like clear musical definition. But a much more serious and essential objection is that such a system necessitates the fixture of the bell, in place of swinging it. Now, to our thinking, this is really taking away from the bell its essential and original character, as well as half its tone and effect. A fixed bell struck by a hammer or clapper never produces so fine a tone as a swung bell, and the very form of the bell indicates its original function as an instrument to be sounded by swinging. But, says Mr. Haweis, change-ringing is not music; and he was very satirical on the delights of ringing so many billion changes in so many years, and amused his audience very much with the subject. Well, of course, change-ringing is not music; no more is the singing of birds music, or the sound of the wind, but many people like to listen to them, even musical people.* The fact is, bell music in its ordinary form is a kind of link between nature and art, with a vague and wild beauty of its own, which nothing else resembles and nothing else can supply; and it is the kind of thing which the bell can do to perfection, and which nothing else can do. The very fact of the persistence of the vibrations after the blow adds to the effect in this case, but would certainly not do so in the use of bells for playing formal musical compositions. We have so many media of artistic musical expression of the most refined and, in some cases, perfect description, that it seems hardly worth while for people to go to great expense to put up huge imperfect bell-instruments in church-towers, which can only be played at all by so fixing the bell as to deprive it of much of its characteristic tone. The "wild bells" have their own part in the music of life, and the effort to tame them into a formal musical instrument can have only a very partial success at the best. Whether, however, we have chimes, or carillons, or change-ringing, for mercy's sake let us have the bells in tune; and if Mr. Haweis has done anything to impress the public mind with our miserable deficiences in that respect, he will have deserved the gratitude of all people with ears.

The Cost per Head and the Width of Schools.—At last week's meeting of the London School Board, a report of the Works Committee was adopted which recommended the forwarding of a letter to the Education Department, asking them to reconsider their decision to adhere to the rule of having five rows of desks in school-rooms. It was found to be almost impossible to keep the schools under 10*l.* per head, for some of the schools were now 22 ft. wide, while the space could not be economically utilised on account of there only being five rows of desks. The Board asked to be allowed to have six rows of desks.

* We certainly do remember a story of a musician who would not walk in the woods because "the birds sang so frightfully out of tune"; but this must have been a case of exceptional sensitiveness.

SOME DRAWINGS BY THE OLD MASTERS—ABROAD.

It is with more than ordinary interest that we at a distance read the description of the Winter Exhibition of Old Masters at Burlington House, this year, in the arrangement of which doubtless the new and accomplished president of the Royal Academy, in selecting from the precious mine of wealth we possess in England, has borne in mind the various collections of drawings in the museums of the Louvre, at Munich, Berlin, Dresden, at the Uffizi, the Ambrosiana at Milan, and last, not least, the collection of the "Belle Arti" in Venice, where he has passed so much well-spent time, and from the lessons of whose artists he has drawn so much of his subtle power to please.

A quarter of a century ago, a French critic, M. du Pays, remarked that the Biblioteca Ambrosiana at Milan was the only museum in Italy where were to be seen exhibited a series of original drawings by the great masters. Italy, he remarked, must be rich in such treasures, and the exhibition of these drawings might afford valuable instructive lessons. At the time, however, that M. du Pays wrote these words, the Academy of the Belle Arti at Venice was in possession, and had been since 1846, of an intensely interesting collection of original drawings.

These drawings, which, when we first saw them some twenty-five years ago, had only been recently arranged according to their respective schools and masters, in common with all original drawings by great artists possess intense interest; but an additional value is attached to them from the wealth of the collection in certain masters, as also from their being, except but to a few, almost unknown,—neglected in the glow of fame which radiates round the more familiar treasures of the Belle Arti.

It is the fate of such drawings in museums generally to receive from all but the most careful students mere passing attention, rather as objects of curiosity than as works worthy of æsthetic admiration. Even in the Louvre, where the extraordinary collection is shown with such liberality, there are many drawings difficult to study with close attention; and as for the treasures of our British Museum, they seem completely shut up for the benefit of Mr. Reid and his courteous assistants. In reality, however, all drawings by great masters should be studied at least as carefully as their pictures. Original drawings are, as it were, the confidential letters written to some intimate friend, revealing even in a more open manner than written thought the true character of their author.

It is precisely because these drawings were produced when no fear of that terrible Minos, the public, was before the artist, driving from his hand and mind his individuality, uninfused by the study or the counsels of another, by the influence of prevailing tastes and fashion, that all original drawings are so intensely interesting. Whatever may be the qualities, the defects of the artist may be read with greater certainty than in the finished picture; here, in fact, we have the artist at home, not in the polished exterior which he presented to the public.

It is not more than a few moments' attention that the ordinary visitor pays to the rooms in which these treasures of the Belle Arti are preserved, but many an instructive hour might be passed with profit in the "Sala Delle Seduti," or Council Room, the walls of which they adorn.

The entrance to the collection is by the dark little passage which opens on the left-hand side of Titian's famous *Assumption*, before which the four chairs stand as they have stood for more than a generation usually occupied by some enthusiasts. A few steps and you find yourself in a somewhat darkened room, on the green covered tables of which stand the ballot-boxes of the last meeting, and on the walls the frames containing the drawings, glowing in the varied colours of their paper, enriched by the magic of time; and on one wall an Oriental porphyry vase containing the treasured right hand of Canova (*Dextera magni Canovæ*), and beneath it one of the last chisels the sculptor ever used;* several other interesting Venetian relics adorn the room; under the cornice some nineteen panels, painted by Titian in his broadest manner, representing angels' heads, and taken from the suppressed school of S. Giovanni Evangelista.

But the greatest treasures are the drawings; all these that hang in this room, as also a number of others of inferior merit in the folios of the library, were at one time in the possession of the eminent artist and author, Giuseppe Bossi;* on his death they were acquired by the Abbate Celotti, from whom, in 1822, the Emperor Francis I., of Austria, purchased them, and presented them to the Belle Arti.

Of the Venetian school there are no more than twenty-five drawings; among them some from the hands of Tintoret, one by Sebastian del Piombo, a bristling wild-boar attributed to Titian, and a pen-and-ink drawing, heightened with white, by Giorgione, of a lady presented to a knight; deprived of his extraordinary glow of colour, the faults of the painter are here apparent, his want of knowledge of drawing, and though the light and shade show masterly skill, the form is uncertain and often incorrect; a red chalk study by Paul Veronese is especially interesting; the same facility with which he painted is evident in this sketch, representing two dogs playing with a cat; it appears to have been the first idea for the dogs painted in the smaller Cena now in the Louvre (formerly in the Convento de' Servi, at Venice).

The Gian Bellini, of the head of a youth, is one of the few drawings that exist by his hand, and show the extreme care with which he worked. As a rule, he used tinted paper, on which he traced the shadows of his drawing in water-colour, then making use of the tone of the paper for the middle tints, he painted the high lights with excessive care in white; showing throughout each stage the consummate knowledge of which he was so great a master. The drawing which the Belle Arti possesses is doubly precious, as being drawn on paper prepared in the way in which Cennini, in his treatise on Painting, recommends. The drawing by Mantegna of St. Peter is of exceptional interest for its originality and beauty, notwithstanding the crudity of the artist's manner, of which Vasari speaks. All the characteristics of his pictures are evident in his drawings,—firmness, even in some cases hardness, but invariably correctness.

In drawings by Leonardo, notwithstanding the wealth of the Milan collection and of Windsor Castle, the Belle Arti is rich. One is a beautiful female head which might have been the original study for the famous Monna Lisa, and, if so, would go farther to induce one to believe that that lady was the most beautiful in the world than the present restored picture of the Louvre. One is reminded of another picture in that collection, the Holy Family, by Leonardo, in the sketch we have here, in pen and ink; there are also a sketch of a dead Christ held by a hand entwined in the hair, and a pen-and-ink drawing of the infant Christ and two profile heads. Tradition has stated these to be those of the famous Ludovico il Moro, of Milan, Leonardo's patron, and Beatrice d'Este, the ruler's wife. A sketch of a horseman appears to be the first idea of the cartoon of the Battle of Anghiari, which he painted at Florence at the time that Michelangelo painted his famous cartoon of Pisa. Several other sketches belong to the same subject, and some bear notes written in the peculiar manner in which Leonardo invariably wrote,—backwards. Other sketches represent various pieces of armour, and two horsemen tilting. As for his caricatures, which we see autotyped in many of the shops in Venice, they by no means do credit to the author of the "Cena," though the lovers of personality show with some interest one profile said to be that of Leonardo's patron, Francis I. of France. Several sketches to illustrate his friend Luca Pacioli's work on "Divine Proportion" are to be found here; among them the well-known full-length figure, which the late Mr. Joseph Bonomi has freely rendered in his valuable and not sufficiently well-known work on "Human Proportion."* The drawing by Leonardo is in pen and ink, and on it written by his own hand the principal proportions of the various parts of the human bo the writing as usual running from right to l Many of these drawings by the great Milan master are well known through Bossi's work the Cenacolo di Leonardo, published at Milar 1810, and at a later date, in 1830, engraved by J and illustrated by Vallardi, a work also publis at Milan; but these now rare illustrated bo have been superseded by the autotype, and productions of many of the treasures of the B Arti can be purchased for a very small sum.

To be able to thoroughly appreciate the le ing of Leonardo in drawing the human figu one must, more, probably, than in any ot painter, study his pen-and-ink sketches, those in chalk. He often worked in red cha and then, aided by this delicate and dc material, he modelled the lights and shads with a grace certainly unequalled by any of contemporaries. Michelangelo must more t once have studied the sketches of the g Milanese (for Milanese Leonardo must be to be), for there is undoubtedly to be trace many of his drawings, especially in pen and the same manner. The drawings of Leon at the Belle Arti are among the most inter ing of the great painter, notwithstanding precious collections at Milan, Florence, Windsor Castle.

We look in vain for any sketch of a horse a companion to the sketches which form interesting a feature of Leonardo's drawing this year's exhibition at Burlington House; yet the equestrian statue for which these made occupied the great master no less sixteen years of trial and research. It wa have been a statue for his patron, Ludovi Maro, to rival Donatello's Gattamelata at Pa and his master's, Andrea del Verocchio's, Colleoni monument at Venice; but the finished model was eventually allowed t to wreck and ruin, a target for Louis XII.'s Suisses and practised marksmen.

In the drawings of the Bolognese schools names of the Carracci, and Guido, and Guer naturally take their place, and with the the characteristics of the school, the infin of former masters rather than nature i two cousins, Ludovico and Annibale; the fa and ease of Guido, one of the few masters has left studies the size of life (among sketches here are some in which charcoal is for the shadows); and the singularly chara istic manner of Barbieri, better know Guercino,—the firmness of his work in pe ink and want of care in defining the drape

The drawings of the school of Parma deserving of mention, and a debt of grat should be paid to the chief of the school, Maz better known as Parmigiano, who was the to shake off the irksomeness of the burin, seek the freedom of the etching-needle, in later days Rembrandt was to bring t masterly perfection.

The mention of Rembrandt brings us t one Rubens drawing of the collection, a s representing a Satyr placing a Cupid on a and of extraordinary finish; but among treasures of the collection are the Albert D especially one sketch of the Virgin wit infant Christ upon her knee, a drawing all the marvellous touch and minute know shown in the etched works of the master a greater natural degree of freedom of thi To thoroughly appreciate how great was artistic learning of the Nuremberg Apelle his technical skill, his pen-and-ink ske must be studied with attention to see the n of their execution and care, their simplici effect. The collection also contains a dr by Aldegrever, characterised by all the c ture of naturalism into which so many German sixteenth-century artists fell. D best pupil, Altdorfer, is also represente several drawings illustrative of the Passi showing the minuteness of execution and for composition to be remarked in his w After speaking of the nine beautiful medi Bartholemew Beham, unquestionably one finest draughtsmen of the German school, spirited red chalk sketch, by Snyders, dogs running, we return to the Italian m and after unwillingly dismissing a num sketches by Lippi; two beautiful drawi Perugino, in extraordinary preservatio water-colour drawing of no great meri valuable from its interest, by Vasari; sketches by Bramante of architectural d

* See *Builder*, vol. xxxvi., p. 1295.

* The name of Bossi is known to the world by his "Cenacolo di Leonardo." Milano, 1810, in folio. In the letters of Paul Louis Courier, "that model of political irony and masculine style of composition," as Lord Lytton terms him, we find the following passage, written to Mdme. Dionigi, at Rome, from Milan, March, 1809:—"There is a painter here known to you, Madame. It is M. Bossi, who is at present copying for the (French) Government the famous Cena of Leonardo, an enterprise which required a man of talent. Leonardo is not to be copied by everybody; but to understand the merit of what Bossi is now doing, you must see how he has re-established in his copies the portions of the fresco destroyed by time, and which are considerable. Without him we should have had but a very imperfect idea of this superb work, of which scarcely anything remained. He has discovered, I know not where, the cartoons and studies of Leonardo, and for the colour he has availed himself of certain copies made at the time the original was entire. In short, it is a new edition of the Cena."

* Published by Roberson, in Long-acre.

ng them some studies for his great work of Ambrose, at Milan; some eight studies from antique, by the well-known but mediocre ptor, and equally mediocre Florentine ter, Baccio Bandinelli; and several valuable ches, on rose-coloured paper, by Giulio i, the Giulio Romano of artistic history, h show all his bold, sure, and correct lling, and the influence of the antique, we e at last to the sketches of his master, aelle, and those by Michelangelo, which, those by Leonardo and by Dürer, form the treasure of the Belle Arti.

ch as Raffaelle was in his pictures we find in his sketches (of which there are no fewer *forty-seven* in this collection). His hand freely over the paper, tracing his concepons with a knowledge of proportion and otness, and an elegance of outline and pose, nich he has remained probably unrivalled. he most part he sketched with pen and ink, ut even the necessity for the help of chalk; times he tinted with bistre or other water-r, leaving broad masses of white; but such ings are rare, and one of them in this collection narvel of delicacy, nature, and expression.

enumerate the subjects of the whole -seven drawings is beyond the possibilities ur space; suffice it to mention some e more interesting, among which, a study the famous print by Mantegna of the cent from the Cross," several other hes showing still the influence of Perugia, , a "Virgin kneeling," taken, in fact, the pictures at Perugia, in the Church an Francesco; studies of drapery; a from Signorelli; another of the angel zel presenting to the Virgin the lily, and ng all the young painter's grace; an exe drawing of a flying angel; several hes; the first ideas for his famous Loggie e Vatican; knights on horseback; more one beautiful female head; a charming of his native city, Urbino; and numerous drawings, any single one of which would to render a collection notable.

as been said by accomplished critics that helangelo had but been able to finish his with the mastery with which he sketched in marble or on paper, he would have not alone the greatest artist of modern, all time, and his drawings, although ed with such rapidity, are so learnedly free o other artist probably has ever equalled this quality. His outline is rapid and is hand bears the freedom of his nature. sually preferred black or red chalk. rous corrections may be traced in his ngs, but never any great alteration from riginal conception. In his pen-and-ink ngs the outline is traced deliberately, ut the aid of the chalk.

ong the eight sketches by the hand of the author of the Sistine Chapel ceiling, apart he value that cannot fail to be attached work (the Cumæan Sybil, a copy of which the Louvre, is one of these sketches), are two drawings that to the English appeal with more than usual interest. a study of the dead Christ in the arms Virgin,—a superb drawing in black chalk, ridently the first study for the valuable e by Michelangelo now in our National y, and the history of whose discovery t. Macpherson, in a *café*, where the on which the picture was painted was g as a table, roused such interest among its in Rome some years ago. The other sketch, which in the midst of the numeother drawings, so roughly mounted, s attention by the care with which it een treated, while closer inspection re-o the attentive observer the small and r J. R., the stamp of the first presi-t our Royal Academy, and by its side the he used at a later date, the Sir. J. R., he resemblance of old Jonathan Richard-amp induced a change. The carefully-ed note of some Italian collector has attention to the fact of the sketch having ed to Sir Joshua Reynolds; while an nal interest is roused when the P. L. of er Lely is further discovered.

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vers' or Carliol Tower, Newcastle. morial to the Lords of the Treasury in of the preservation of the Carliol Tower presented immediately by the Society Protection of Ancient Buildings.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

ITALIAN GOTHIC, THE PRECURSOR OF THE RENAISSANCE.

In this, and the four following lectures, I propose to consider the Renaissance in Italy, and, as a prelude to so doing, shall speak to-night of Italian Gothic as the precursor of the Renaissance. The next discourse will also deal with Italian Gothic, as employed for secular architecture.

Passing onwards, the Early Renaissance, associated with the great name of Brunelleschi, will claim our attention in the fourth lecture. The fifth will describe some of the works of the second period of the Classic Revival, and particularly those of Bramante and Sansovino; while in the last lecture of the present series I shall hope to sum up, to a certain extent, the history of the Renaissance movement as a whole, with some reference to its present, and probable future, influence on modern architecture. In so doing, the last stage of the Revival in Italy will come before us, associated with the works of Palladio and Vignola.

My last lecture was more biographical than architectural. I felt I could not do better than ask you to dwell with me, for a moment, on the memory of those whose loss is still felt within these walls. The place of our late lamented President is already filled by another accomplished artist, who enjoys the confidence of his brethren, and of the public. The exact position occupied by Sir Gilbert Scott may, perhaps, never be held again, for it was the result of that Gothic Revival to which I sought to draw your attention, and which has already, to a great extent, accomplished its task.

I now propose, in a more technical manner, to take up the thread of my previous discourses, and to renew our inquiries into that other Revival, which constitutes the rival movement, known as the Renaissance.

Those who were present last year may perhaps remember that in the introductory remarks then made, some general considerations were adverted to, in respect of the Renaissance in Italy, and its effect on English architecture, first on our Transitional styles, and afterwards, on the Classic revival of the restored Stuart *régime*.

Turning to Italy for illustrations, we found its Renaissance architecture could be roughly divided into three periods, to which might be assigned the names of the Transitional, the Roman, and the Pedantic schools.

We may now follow up the subject more in detail, and devote our attention, in the first place, to the early manifestations of the Renaissance spirit, which I have called the Transitional.

It has been said of the Renaissance that it is the movement which has brought us from true principles to false, from the architectural glories of Gothic Venetian palaces, to the bathos of Harley-street and Bloomsbury. This seems, however, a partial and strained account of the position. The deadness to artistic feeling in our architecture, which has given us our cheerless streets of the Georgian era, was due to the indifference to all schools, and not to the influence of one of them.

Our case, moreover, was peculiar, and if we turn our eyes for a moment to our nearest neighbours, the French, we shall see, that although France has adopted the Renaissance more heartily than ourselves, she has never been contented with such a transfer of the architect's mission to the bricklayer and the carpenter, as we have seen here, until very recent times.

I do not wish to extol the precise methods adopted by the French, or the detailed forms chosen by them; but if we are to refer to modern work, as illustrating the effects of the Renaissance movement, it is at least as reasonable to study the always striking, and often graceful work of French architects (previous to the Haussmann epoch), as the dingy brick walls, with square holes in them, within which our grandfathers were contented to dwell, at the pleasure of the speculative builder, who, placing his work on another man's land, not unnaturally thought more of a speedy profit, than of architectural excellence.

At the time of the first signs of the Renaissance in Italy, Gothic was beginning to exhibit symptoms of decadence, both in general forms, and in detail. To some, the first signs of novelty appear, indeed, only as corruptions of the style till now supreme. Vigour of thought was replaced by refinement of execution, and architectural ornament had become uninteresting.

The Italians had always worked on somewhat different principles from the architects of sterner climes. Southern Gothic has thus a character of its own, and was ready to lend itself to fascinations of detail. Living upon classical soil, and among the dry bones of old Classic art, the Italians were in the most favourable position possible for welcoming a change, which to them seemed but a natural return to ancient traditions. They were also far from contented with the state of affairs then existing in their midst. The new ideas brought with them something of rebellion, and constituted a protest against the austerity and dogmatic intolerance of Mediævalism.

Before proceeding with our examination of the Renaissance, it may be interesting to observe some of the peculiarities of Italian Gothic architecture, and we may then perhaps appreciate more readily the difference between the mild resistance which might be expected from it to the introduction of Classic forms, and the more uncompromising opposition of the architecture of northern Europe.

We shall find, in its examples, a spirit of horizontalism which opposes itself to the all-pervading verticality of our own Mediæval architecture. In the larger diameter of shafts, and in their frequent use as single supports, reminiscences of the columns of Greece or Rome readily suggest themselves. The pointed arch, moreover, had not only to admit a rival, but even seemed unable to hold its own. The Italians loved the round arch, while they only tolerated the pointed form. Ignoring buttresses, they tied their arches together with iron rods, and seemed to be incapable of those daring feats of construction, so familiar to the Gothic architects elsewhere.

Repose and breadth of effect had more charms for the Italian mind than the bold projections, the deep shadows, the mysterious intricacy, and the complicated details of the northern work. They had broken, indeed, with the simple lintel construction of Greece; but the arches of Rome were less easily forgotten, and their employment less readily renounced. On a former occasion I asked you to observe how far the graceful campanile of Giotto at Florence illustrates the above peculiarities of Italian Gothic principles of design. They will be the more readily understood, if you observe the contrast it presents to the towers and spires with which we are familiar in England,—as, for example, the towers of Lincoln, and the spire at Salisbury.

Without going again over the ground in respect of Giotto's beautiful work, let us examine for a few moments the great cathedral, to which it serves at once as a foil, and an appendage.

The great church of Ste. Maria dei Fiori, the Duomo of Florence, stands forth as a giant, disdaining ornament or smallness of detail. Its features are few, simple, and almost colossal in scale. The elaborate details of Giotto's tower, with the numerous parts of small dimensions, and the high finish, both of the design and its execution, bring out the hugeness of the Duomo by the force of contrast, while the tower in its turn gains somewhat in exchange.

The great church illustrates, first, the plainness and simplicity of plan on which I have before remarked. It was commenced by Arnolfo di Lapo, just before his death, which occurred about the year 1300, and we do not know for certain how far he had been enabled to carry his ideas into execution. He is usually credited with the general conception, the arrangement of the plan, and the construction or design of the vaulting, always excepting the dome, which was added long afterwards by Brunelleschi.

Arnolfo's design for covering the space now crowned by the dome is involved in mystery. It is supposed that he intended to raise his roof immediately over the piers and above the first cornice, so that the line of springing should coincide with that of the nave vaulting. He was an architect of great reputation, and was largely employed by the Florentines, some of his works still remaining as embellishments of the fair city. He united, as did most architects in those times, the practice of military engineering to that of his own art, and some portion of the outer defences of Florence were constructed by him. He designed the great municipal Pa'azzo

* Second lecture. See p. 140, *ante*.

dei Signori, as well as the loggia of Or' San Michele, the church of Santa Croce, and other buildings of less importance.

In the Duomo, he has bequeathed to us the largest church constructed in Italy during the Middle Ages, and we may study, with advantage, this illustration of Italian Gothic, on a grand scale.

If you desire to observe how sharply the design contrasts with Mediæval work in Northern Europe, you may place side by side with the plan of Arnolfo's Duomo, the plan of Westminster Abbey.

In the nave of the former, 250 ft. long, there are but four arches; in the latter example, we find twelve arches in a length of 233 ft. Each church is divided transversely into nave and aisles, but these three divisions occupy a space of 125 ft. in the one case, and only 75 ft. in the English example.

The upper end of both churches expands, as is usual. At Florence, we find a grand central space surmounted by a pointed dome, with three tribunes, all alike covered with semi-domes. At Westminster, there is a multiplicity and intricacy of parts, none of them presenting exactly the same effect, because planned with various angles, and much diversity of dimensions and detail. I exclude from this description all consideration of the chapel of King Henry VII., as being a later addition, not affecting the general plan of the abbey.

The Italians evidently admired the triapsidal arrangement designed by Arnolfo, for we know that it was afterwards adopted for St. Peter's, at Rome. The preference for a semicircular form as the termination of the three arms of the cross, may have been caused by reminiscences of the old basilicas. It is found in the Church of the Nativity, at Bethlehem, and was not uncommon in the early German churches. A remarkable example of this arrangement exists at Trèves, and visitors to Cologne may remember other cases, such as the Church of St. Maria in Capitolio, the Apostles' Church, and the Church of St. Martin. Those buildings illustrate the basilican arrangement of plan, which Arnolfo adopted at Florence; and apart from all questions of style, they seem to deserve the attentive study of architects who are called upon to provide interiors capable of accommodating large numbers of persons. At Westminster, and in the churches of the Middle Ages generally, large free spaces were not felt to be required. The service was, on the worshippers' part, to be an act of faith, rather than of actual participation. Long naves and aisles were needed for processions, and large choirs for the clergy. The modern English architect has other problems to solve, and may well find in some of the simpler basilican plans, models deserving his careful attention.

At Florence, the scale is too colossal to please, and has the character of a small design, unduly magnified. On entering the nave, the great arches, although well and gracefully proportioned, have a bare and unsatisfactory effect, and on passing from the nave to the central area, under the dome, this feeling is intensified. The nave should be the entrance to something grander than itself, and so indeed it is, as far as mere dimensions are concerned, for the dome is 137 ft. in diameter, and about 280 ft. high. These grand dimensions are, however, to a great extent, thrown away, by reason of the paucity of detailed parts of moderate size, to serve as a scale for the whole.

Mr. Fergusson compares the cathedral at Florence to that of Cologne, to the disadvantage of the former, as regards the effect of apparent size. The two churches cover areas not unlike, 84,802 square feet being that of the Duomo, while the German building occupies a space of about 91,000 ft.

The nave of Arnolfo is groined in a simple manner, very different to the more elaborate arrangements favoured by English architects. Like so many other parts of Italian Gothic building, the vaulting seems incomplete without painting. The designers of these structures appear, in many cases, to have regarded them rather as a framework, to be filled in by others, than as works of architecture, complete in themselves. Painting, sculpture, exquisite marble work, terra-cotta, enamels, bronze, and mosaics, were all expected to form a part of the completed design, and the architecture proper was confined within such limits as would afford due scope for these associated arts. Simple forms, spaciousness, and great wall-spaces are consequently found associated with Gothic architecture in Italy. England had a less wealth of art in general, but more skill and self-reliance among her architects. They could not count on the assistance of accessories, and relied more on themselves. In vaulting their churches they had no superiors. Being content with moderate dimensions (as at Westminster, where the nave is less than 36 ft. wide), and being, at the same time, masters of construction, they delighted in forms of roofing which became more and more elaborated, until they culminated in the method known as fan-groining, to be seen in Henry VII.'s Chapel at Westminster, and other Tudor buildings.

The Italians were well aware of the customs of the Romans. They knew that they had employed domical and barrel-vaulted roofs. The remains of the great baths which had been covered in this manner were before their eyes. It was natural, therefore, for them to adopt large dimensions with the simple vaultings of the dome and its kindred forms. For decoration they relied on the painter, in marked contrast with their Northern brethren, who, revelling in clustered shafts, large traceries, elaborate arcades, and deeply-cut mouldings, left but little to be added to their work, which was penetrated by a predominant and all-pervading architectural idea. The Northern architects, in their power of construction, were the engineers of their day, as well as artists in design. Employing buttresses, of whatever form might be best constructionally, they were always advancing in the science of building, and their work has never been surpassed in this respect, although the use of faulty materials, and the neglect occasionally to secure stable foundations, has imposed on their successors the necessity for extensive works of reparation.

The Italians shunned buttresses. We look for them, in vain, in Arnolfo's church, or in Giotto's tower. At the Duomo, around the upper arms of the cross, strength is obtained, less scientifically, by an enormous thickness of wall. Elsewhere, resort was had, without reluctance, to iron ties to keep the arches from thrusting out the walls. With their love for repose, and breadth of effect (both of them most admirable qualities in themselves, when rightly understood and employed), the Gothic architects of Italy preferred a plain wall, as at Florence, to the varied surface, familiar to ourselves, at Westminster and elsewhere, with its variety of light and shade, and its picturesqueness of outline, both of plan and elevation. They did not, indeed, wish their walls to be undecorated. They were ready to cover them with marbles, arranged in panels, and to crown them with cornices of great elaboration. Here we may see evidence of that reliance on others, to which reference has just now been made. Such veneering with marble as exists at the Florentine cathedral has nothing to do with the architecture. It indicates no construction, and might have been applied by any one, and at any time. It serves to give some scale to the building, and to this extent is valuable; but it appears rather as an independent attempt at decoration than as an architectural design successfully achieved. There is a weakness in these veneering efforts at ornamentation, which brings into strong relief the more manly, self-sufficient vigour of the purer Gothic styles, in other countries.

Italian Gothic must, indeed, be rather regarded as an incomplete style, not fully worked out, than as a perfect system, able to compete on equal terms with Mediæval work abroad.

Whether we regard the general principles of composition, or the detailed forms adopted in Italy, we come everywhere upon traces of Classicalism, which seemed to herald the Renaissance. A few slight changes in the Duomo at Florence, with the substitution of a barrel-vault for the groined roof over the nave, would give us a building that might compare with the old Roman work, such as the Baths of Caracalla, or the Temple of Peace.

In detail, the elaboration of the ornaments which were added to the simple constructional forms, together with the beauty of execution lavished on individual parts, were but little affected by the Renaissance, which, impatient of control, wished to see each artist in his own special work, rather than recognise its value as part of one great conception, impressed with a single over-ruling thought.

If we turn from general principles, to the consideration of special details, we shall find in them also remains of Classic custom. Instead of the clustered shaft, so beautiful and varie in its design, as we see it in our great churche we have, as I have already said, the sing column, recalling those of Greece and Rom The use of the single shaft is common in Ital not only in arcades, but as mullions for windo and, in such cases, they are often doubled plan, with a happy effect. The abacus is almo always square, as is the lowest member of t base,—facts strongly suggestive of a Clas origin. The same may be said of a diminuti in diameter from the base to the capital, whi is occasionally the case with Italian Goth columns. In English Gothic, such diminution almost unknown, excepting some instances Norman work, due doubtless to a Romanesq influence.

In other details of Italian Gothic, we may further signs of attempted fusion, as in plain archivolts, with square edges, when English or French architect would have ha cluster of mouldings, with round beads, alternate hollows, coming down upon a circu capital. The cornices, again, forming str horizontal lines round the building, are eviden derived from the olden architecture.

The abacus of the column is in direct relat with the archivolt which it supports. A Rom archivolt with its outside moulding, and square edge inside, required a square cap beneath it, on which to rest. The groups mouldings which we see in our own cathed as naturally call for a circular capital, spring easily from a round or octagonal aba The octagonal capital is not unknown in It but it is rare, while the square form is the but universal rule.

The Greek method of covering the spa between the columns by a massive lint rectangular section, required a square sur on which to rest, and, consequently, altho the columns were circular on plan, the member of the capital was either square, a form allied to the square. In the Gre Doric, the moulded part of the capital circular, while the uppermost member only square on plan. The Ionic had also origina square abacus, and the Corinthian order adopted a curved form. The latter, indeed little different from a square, having the slightly curved, with a give-and-take line. all these cases, the square abacus formed of cushion, or template, on which to rest the l of stone or lintel, the support of which wa *raison d'être* of the columns.

The square abacus, adopted from Cl times, has never disappeared from Italy, a constantly used in Italian Gothic. We f here also, as you are aware, in the Early Gr which was more or less drawn from Romans and Byzantine types. In the best ages of Et Mediæval work, however, the circular form almost exclusively used, until, in the styles, the abacus became octagonal, as yo see in many Perpendicular examples. By time the abacus had lost its distinctive char and had become mixed up with the rest o mouldings, which sometimes also followe octagonal type, the more common design ever, being a mixture of mouldings, circu plan, with an octagonal abacus, the tran from one form to the other being ski managed by the interposition of a large hol

The Italian Gothic architects, building, a did, in an arched style, had not exactly the reason as the Greeks for providing a surface on the upper part of the capital they needed such an arrangement almost as from the section of their arches. These for the most part, plain, or very simply mo with a considerable thickness of square or soffite. The section of such arches point of springing, immediately over the c was square, and thus a square abacus w most convenient, and the best construct form. In the classical column, the abacu a plate, or bearing surface, interposed be the weight above and the supporting c below, the diameter of which was equ nearly equal, to the width of the stone li beam, which it carried. The Byzantin Gothic capital was differently treated, and as a direct transmitter of strain to the c which was much less in diameter than the incumbent weight. The column had th importance of dimension; but such lo compensated by the practice of placin column behind another, in arcades. I cases, a common abacus often united t capitals, as may be seen in the cloister a of San Zenone, Verona, where, moreov

above the columns is further thickened out
neans of corbels. The bases of these columns
nited, as well as the capitals, and like them
have also a square, or rather rectangular,
ber. The base mouldings are an evident
oduction of the Attic base, with all its mem-
and peculiarities. The lower plinth, square
ctangular on plan, served the same purpose
e abacus of the capital, as a transmitter
distributor of pressure.

e arch mouldings were, as we have seen,
as seemed to be specially suitable to a
re abacus. When the arch was not actually
re in section, a few indentations, with the
sional interposition of large beads, filled the
e of the smaller beads, fillets, chamfers, and
ws, of English Gothic. In their fondness of
surfaces, and dislike to bold projections,
Italian architects may be said to have
ned their buildings as elevations, while
wn Mediæval architects thought theirs
in perspective. Much of the difference
be due to climate, as, under an
n sun, the deep shadows of Northern
ic might have seemed exaggerated. The
influence told doubtless on the wall deco-
, which was noticed just now, as applied
e Duomo at Florence. Deeply moulded
s were obviously unsuited for marble, a
rial in which the Italian architects were
itted to rejoice. The real construction was
veiled, and the forms of the mouldings
ted by the necessity of upholding thin
rs of costly marble, forming a system of
ation applied superficially to the actual
ture. In spite of all care to the con-
, it is impossible to prevent these slabs
rusted marble from cracking, or bulging,
foreseen pressure comes upon them, by the
g of the building or otherwise; and when
s the case, all sense of permanent security
hes, and with it, all enjoyment. The intro-
n of marble in panels, recesses, or span-
is not liable to this objection, but when
decoration is used externally, it will be
ally found that the English manner of pre-
g ornament of a more solid character, such
ving can give us, is likely to produce a
ior effect. The panelling on the outside of
athedral at Florence recalls the work of
abinet-maker, rather than that of the
ect.

building is, however, incomplete, and if
trance-front had been finished, as designed
e architect, the whole effect of the exterior
no doubt have been more pleasing. We
t, indeed, know how Arnolfo would have
d his façade, but in Siena Cathedral an
ple exists, very rare in Italy, of a front
ly finished. In this case, we have an
ion of great richness and much beauty of
. It is, however, an application to the
ng a veneer on a large scale, for the out-
ears but an imperfect reference to the con-
tional form of the building within. Gables
r for ornament, without roofs behind
and the aims of the designer would seem
ve been akin to that of the scenic artist,
presents us with a frontispiece, and does
llow us to turn the corner, or view it, save
one point. The interior of Siena Cathedral
tainly one of the most charming of Italian
o churches, not, indeed, so much for its
ecture, strictly so called, as for the exceed-
eauty of detail of the accessories thereto.
strongly-marked banding of various
red marbles in its walls is, indeed, mono-
s, and to my thinking inharmonious with the
al principles of Pointed architecture, but
whole interior glows with gorgeous colour.
ave exquisite carvings, as in the pulpit,
ell known, probably, to most of you,
rately inlaid woodwork, paving of splendid
n and execution, bronze and ironwork,
g, and coloured marbles in profusion.
architect has provided an arena within
a art of every kind has seemed to
. The details are everything, and the
al architectural idea is smothered by
who should have been its servants.
as probably of such a building that the
ntines were thinking when they instructed
lfo to build for them a cathedral, which
d exceed in beauty all previously-existing
tures, and should exhibit a "style of mag-
nce which neither the industry nor the
r of man can surpass." Arnolfo did not
o carry out this grand commission, and it
ange that we are left so much in the dark
his ultimate intentions, if, as Vasari tells
e had a wooden model prepared of his com-
pleted design, which model was afterwards lost through the carelessness of his successors.

In further comparing Italian with Northern Gothic, we cannot but notice the difference in the windows, not only as regards their relative frequency and size, but also their architectural character. In the great Northern churches the architects delighted in large and elaborate windows. In Italy they were few and far between The brightness of the sunny South taught its builders to exclude light and glare, and the use of coloured glass was not encouraged. It may be doubted, indeed, if such use would have been consistent with the methods of internal decoration, common in Italy. Great spaces of wall, covered with fresco painting, might not unreasonably be thought inimical to the adoption of painted glass, through which a bright light would cast hues of undisguised variety on the carefully-studied harmonies of the painter. In England, and still more in France, the introduction of stained glass affected the design of churches to an enormous extent. If we had not the wall polychromy of the Italians, our architects were no less fond of colour, and they found in large traceried windows generally, and often exaggerated clearstories in particular, a field for the application of colour on a large scale. That with which the Italians covered their walls, their Northern contemporaries placed in their windows.

The same feeling appears in the tracery. In Italian churches, there is generally little of it to be seen, and where it exists, it is far inferior to that to which we are accustomed in this country. The tracery of Italy, with its heavy intervals between the openings, seemed designed, as no doubt it often was, to exclude light, and thus the very reason for the existence of the window was lost. The lack of an adequate clearstory, partly from reasons of climate, and partly from the views adopted by Italian architects, is, to a Northern eye, a notable defect in their churches. The pleasing gradation of height, from aisle to nave, to which we are accustomed, is absent, and in its place there is heaviness and want of variety.

Of late years, so much attention has been given to Italian Gothic architecture that many of our architects have adopted details taken from it into their own designs, which had been previously based upon the purer styles, familiar to them in their own country. In this way, a cosmopolitan character has been impressed upon certain works, and although there are those who condemn such a process on principle, I cannot see any reason for such condemnation, apart from the special circumstances of each case. We are entitled to regard our art as a whole, and its history lies open before us. If we are of opinion that certain forms with which our ancestors were unacquainted, but which are known to us, are good in themselves, there can be no valid reason why we should refuse to avail ourselves of them in our work of to-day. Students must bear in mind, however, that to do this well, and reasonably, is a matter of no small difficulty. They must not expect to avoid the reproach of incongruity by pointing to their sketch-books, and giving the name and date of every detail. The essential quality of all true art is its fitness, and in adopting Southern detail into Northern work, the presumption is against the process. We should, therefore, be very sure that in attempting fusion we are not sacrificing principles, or offending common-sense. With this proviso, the lessons of Italian Gothic are before us, and may, in certain cases, be followed with advantage.

In illustration of my meaning, I may perhaps recall to your memory the description of the Italian capital, with its square abacus. This form is appropriate, when used, as it was in Italy, to support arches with flat soffites, or with simple mouldings, not much differing from a square on section. It is quite otherwise, however, when the Italian capital is used beneath a group of deeply-cut English mouldings, bringing the soffite of the arch to a more or less narrow fillet. In such cases, the square abacus ceases to be reasonable, and, according to the law of common sense in architecture, it fails to please. The corners of the capital appear isolated, overhanging, and heavy, and we miss the simple gracefulness of the English jamb or mullion, with the mouldings naturally continued, or varied by the use of an attached shaft, of dimensions not greatly in excess of the mouldings, of which it seems to be a part.

One inducement to adopt the architectural details of North Italy has arisen in consequence of our habitual employment of brickwork. In this country, from the difficulty, in many parts, of procuring stone, and from the increased cost of building, the necessity for economy meets the modern architect at every turn, and imposes upon him limits which he cannot disregard. Large churches are often necessary, where the poverty of the neighbourhood renders it impossible to employ costly stonework for construction. Brick has, therefore, of necessity become the common building material, and a style of architecture which seems to lend itself readily to the use of brickwork has obvious claims on our attention. In the plain jambs, the simple mouldings, the geometrically enriched cornices, and string-courses of North Italy, we have features which are specially appropriate to brick architecture, while by the employment of the column, the use of numerous small pieces in the mullions of the windows is avoided, a defect which appears very clearly in the brick Gothic architecture of Northern Europe. The adoption of terra-cotta, again, has proved an argument in favour of Italian types. You are aware how splendidly the use of this material is exemplified in such Italian buildings as the great Hospital at Milan. In England, apart from a few exceptional instances, terra-cotta has held an inferior place, but there can be no doubt that it offers great opportunities to the architect of taste and judgment. I have in a former lecture attempted to point out to you the limits within which, as it seems to me, terra-cotta can be properly applied, and these may be broadly defined as ornamental, rather than constructional, for which latter purpose stone, and in default of stone, brick, must be considered the preferable material.

In using brick for buildings, in our large towns, we must always bear in mind the changes of our climate, and the consequent dinginess which, sooner or later, settles on brickwork, and obliterates distinctions of colour. We are often very hard on our immediate predecessors who covered their brickwork with stucco, but we may remember that their buildings, at any rate, admit of being cleaned. so as to afford some cheerfulness to our streets. Architects may, perhaps, consider whether they have not been too indiscriminate in their denunciations of plaster. For interiors, at any rate, it has many advantages, and is often to be preferred to the rude brickwork, not too good, either in quality or workmanship, which we are asked to accept in exchange. No one would desire to use cement dressings and cornices if he could do better, but for coating plain walls plaster will act as a protecting covering, giving both warmth and dryness. There should be some place in our work for methods of building which possess these advantages, and the question arises when and how plaster may be legitimately used. It would not appear that the Italian Gothic architects had much affection for brick surfaces in themselves, being always ready, as we have seen, to cover their walls with veneers of marble, according to the means at their disposal. This was, of course, an application of a covering more foreign to the structure of the walls so treated, than cement or plaster. The truth is, it is impossible to lay down absolute rules in such matters. Architecture should satisfy the reason, and should please the taste; and all the arguments in the world will not make a man like that which his soul abhors. We can but point to matters which appear worthy of your attention. The further study and the decision how to use your knowledge must rest with yourselves. The danger of being led to substitute hasty catchwords for thoughtful decisions is always great to the inexperienced, and the views on our art which are constantly put forth are varied enough to account for much confusion of ideas.

The charms of Italian Gothic Art have perhaps led some of us to stray too readily from English traditions. Great caution will always be needed in adopting foreign customs, and we must be sure that in so doing we are borrowing from the rich to lend to the poor. Can this be said of Italian Gothic, when we think of the wealth of resources of all kinds in our old English architecture? The great architect who has lately passed away from us was slow to answer this question in the affirmative, and his example enforces the lesson of caution I have ventured to suggest. In the meantime, rejoice in the opportunities you enjoy of investigation of the work of your predecessors in every land, opportunities which, until lately, were beyond

the reach of all but a few of Fortune's favourites; but while you are studying the art of other times and nations, do not forget the dictates of common sense, or the needs of your own age and country.

THE CONNEXION BETWEEN ANCIENT ART AND THE ANCIENT GEOMETRY, AS ILLUSTRATED BY THE WORKS OF THE AGE OF PERICLES.*

I must ask your indulgence while I endeavour to bring to your notice some of the connecting links that formerly existed between ancient art and Greek geometry; and although I believe the subject to be capable of clear demonstration, as every Greek marble fragment bears testimony to the fact of such connexion, yet I should not presume to bring my own researches to the notice of the Royal Institute of British Architects in a written paper had I not been invited to endeavour to place before you in a simple form a few of the results of the calculations which have been stated in a work which I have published, entitled, "The Geometry and Optics of Ancient Architecture," and to prove by evidence, that the statements made therein are correct, and that complete harmony exists between the few passages in the writings of Plato, of Aristotle, of Vitruvius, of Philo, and of other authorities which refer to the theory of ancient art, and the facts that can be deduced by measurement from the architectural remains in the Athenian Acropolis, which were calculated and executed by the architects of the age of Pericles.

The subject of the work I refer to is confined entirely to ancient architecture, and closes with the Christian era, so that it in no degree touches upon the questions of modern architecture, in which all the requirements are different, but it is simply an attempt to interpret some of the art problems, which the Greek architects have left engraved in mathematical lines upon every marble fragment of the Parthenon, of the Propylæa, and of other designs; and I have done this in the same spirit that we are trying, from the hieroglyphics and from the arrow-headed characters, to restore the languages and the literature of Egypt and of Assyria, without any expectation of introducing into Europe the civilisation of those ancient empires.

We must, therefore, dismiss from our minds all ideas of reviving Greek architecture in its original form, and must simply look upon the Greek temples as ancient works of art, in the same manner that we consider the philosophy of Plato and of Aristotle, or the geometry of Euclid, as a kind of ancient foundation upon which modern thought can rest and expand; yet possibly in Greek art, after it has been winnowed of all that is inapplicable to modern times, some ideas may be found to remain that could in themselves be made to apply to the art of all ages.

EGYPTIAN ARCHITECTURE.

The subject we have now to consider naturally commences with Egypt, where Aristotle informs us "that the mathematics were born, because the priests there enjoyed the privilege of being detached from the affairs of life, and had leisure to devote themselves to study," and the evidence is, I believe, sufficient to prove that the mathematics were not only born, but were cultivated in Egypt with considerable success, or the Greeks would not have studied in the Egyptian universities, neither should we have preserved to us in the British Museum a papyrus treating of the Egyptian geometry and arithmetic; but the existing Egyptian monuments when examined will, I believe, also confirm the early traditions of the Greeks, both as to the origin of the geometry and of the arts of Greece.

In the temples and in the tombs at Thebes are to be found some early and simple ideas of proportion, so far as the making of lines commensurable one with another, with the selecting of such combinations as produced harmony in the proportions; and in the horizontal lines, in the outlines of the shafts of the columns, in the curved sections through the cornices, and in the vaulted ceilings in the tombs, we have certainly varieties of curves traced with mathematical care. But to these I shall again refer, and for the present I will confine your attention to the first given proportions of the Egyptian sculpture and architecture.

* By Mr. John Pennethorne; read at the Royal Institute of British Architects on the 10th inst.

In the works of Monsieur Prisse d'Avennes and Herr Lepsius, several examples are given of certain canons of proportion for the human figure which were adopted by the Egyptians for designing their sculpture. The example I have selected (plate 1, fig. 1) divides the whole height of a man into nineteen parts, making the head = 3 parts, the foot = 3 parts, &c., and it is simply from the fact that certain canons of proportion were selected for the human figure that I now refer to the length, the width, and the height in the principal chambers in the tombs of the kings at Thebes, or, rather, in the excavated palaces, which are also generally proportioned in aliquot parts, and executed and finished in the most elaborate manner, thus taking fig. 2, plate 1, the principal chamber in the Tomb of Sethee I,—the length = 18 parts, the width = 11 parts, and the height = 11 parts.

Fig. 3, plate 1, is a plan and section of another of these excavated chambers. This example does not divide into the usual aliquot parts, but the length, the width, and the height of the chamber can be expressed by the 11th prob. Euclid, book 2. I simply give the measurement.

Fig. 5 shows the columns and the entablatures of the inner and the outer courts of the temple at Medinet Haboo. These are also executed in aliquot parts:—

	Whole height.	Column.	Entablature.
Inner court ...	14 parts ...	11 parts ...	3 parts
Outer court ...	13 „ ...	10 „ ...	3 „

In all this there is very little more than those ideas of natural proportion that may be found in many works of architecture, and which might be illustrated from the cathedrals of Europe, as well as from the tombs and the temple of Egypt; but there is a tendency in both Egyptian and in Greek architecture to make the lines commensurable one with another, and to avoid as much as possible incommensurable lines and angles. But I need not dwell longer upon Egypt, for as Egypt declined, other schools of geometry and of art were destined to rise in succession into importance.

Thales, B.C. 640, after studying in Egypt became the founder at Miletus of the Ionian School of Philosophy, in which was cultivated, earlier than in other parts of Greece, every branch of the mathematics and of the geometry that we now find to have been applied to ancient architecture.

Among the list of those distinguished in science who studied at Miletus we meet with Pythagoras, the founder of the School of Philosophy in Magna Græcia, B.C. 590, and with Anaxagoras, B.C. 480, the friend and instructor of Pericles, and one of the first geometricians who settled in Athens, and there founded the Athenian school of art and science. We thus perceive that from the earliest period of history until the final conquest of Egypt by the Persians under Cambyses, in B.C. 525, the arts and science were cultivated with success by the Egyptian priests, and that the Greeks looked to them as their instructors in geometry and in architecture; after that, for a short time, the sciences were cultivated in Ionia, when a second Persian invasion under Xerxes, B.C. 480, caused nearly all the cities and temples in Ionia to be destroyed, as well as the temples in the Acropolis of Athens. Ultimately, by the energy of the Athenians, Xerxes was defeated at the battles of Marathon and Salamis, and finally forced back from the shores of Europe; Athens at once became the leading power among the states of Greece. Then upon the ruins of the early Temples in the Acropolis of Athens, were erected the present works of Greek art, and to this school of geometry, of sculpture, and of architecture I must now direct your attention, commencing with the Greek theory of proportion.

GREEK ARCHITECTURE.

The first given Proportions of the Athenian Portico.—Plato, in his "Timæus," says:—"The composition of the world received one whole of each of these four natures,—fire and air, earth and water; for its composing artificer constituted it from all fire, water, air and earth, for he concluded it would thus be a perfect whole if formed from perfect parts."

This harmony of proportion, which the geometricians discovered in the forms they investigated, and which the philosophers conceived as existing in the composition of the world, the ancient architects established as a fundamental principle in their architecture. Thus Vitruvius says:—"The composition of temples is governed by the laws of symmetry, which an architect ought well to understand: this arises from proportion. Proportion is the correspondence of the measures of all the parts of a work and of the whole configuration, from which correspondence symmetry is produced; for a building cannot be well composed without the rule of symmetry and proportion, nor unless the members, as in a well-formed human body, have a perfect agreement."

The information to be derived from ancient sources, except from the actual remains of Greek architecture, is slight; but the works of the age of Pericles were executed with such extreme precision that we are able from the inductively to recover the original canon of proportions of the Athenian porticos; and this we can do by simply eliminating the small irrational quantities that by measurement are found to exist in the whole height of each temple and in the heights of the steps, the columns, and the entablatures, when compared with the length of the upper step in any given portico, and of substituting instead the nearest commensurable magnitudes. These small irrational quantities are found to vary between zero and a few inches in the porticos of the Parthenon, of the Propylæa, of the Erechtheium, &c., and are the result of careful calculations to be hereafter explained; but when they are effaced, then all the Greek porticos harmonise, and can be given in a simple diagram which is really the given Athenian canon or proportion of the Greek porticos. With the given quantities there is no difficulty in arriving by calculation at the true executed dimensions in every example, and the variations between the first given quantities and the calculated executed dimensions are the additions to the dimensions referred to by Plato, by Aristotle and by Vitruvius.

As to the Canon of Proportion of the Athenian Porticos. Divide the line A D into twenty-four parts, and let the length of the upper step be the

Octastyle	Hexastyle	Tetrastyle, portico
= 10 parts	= 8 parts	= 6 parts.

Let the whole height of the Doric portico = 5 parts. Let the whole height of the Ionic portico = 6 parts.

In the Doric porticos the whole height is found to divide into nine aliquot parts:—

The height of the steps	= 1 part.
„ column	= 6 „
„ entablature	= 2 „
	= 9 „

In the Ionic porticos the whole height is found to divide into twelve aliquot parts:—

The height of the steps	= 1 part.
„ column	= 9 „
„ entablature	= 2 „
	= 12 „

These proportions of the porticos are simply the first given quantities, and they are explained more in detail in my book.*

The Projections.—In the Doric and Ionic porticos, the total horizontal projection from the frieze to the lower step is made equal to the height of the whole given height of the porticos; and for the details of the steps, of the entablature, and of the inclination inwards of the upper masses, the whole projection is divided into some given number of aliquot parts,—as, for example, in the Parthenon, seventeen parts; in the Propylæa, sixteen parts; in the Erechtheum twenty-four parts; and the details of the projections are regulated by these numbers. The horizontal dimensions undergo no correction, but are executed as they are first given. The working out of these first-given proportions of the porticos was evidently the result of science and careful observation. But to attempt to explain the reason why certain proportions should produce that agreeable impression to the eye which by universal consent they are acknowledged to do, is, I feel, impossible. Why music we can give no reason why certain harmonies and scales should produce an agreeable impression on the ear, or why many other intervals that might be selected would be discordant,—as Aristotle says, "Posterior Analytics," chap. 3:—"Neither is all science demonstrative; but the science of things indemonstrable is indemonstrable." But I must leave these questions, and proceed to the consideration of the important subject of Position, which

* "The Geometry and Optics of Ancient Architecture," part i., plate 3.

rally includes the points of sight and the
lations of the apparent magnitudes.
sition.—It is impossible to study the Egyp-
and the Greek temples without perceiving
great care was taken by the architects in
rrangement of the position of the Propylæa,
roads of approach, and the sculpture sur-
ding the principal designs; thus in Egypt,
at Karnak and at Luxor, the roads of
oach to those temples are marked by long
of sphinxes, leading up to the Propylæa
their statues, flags, and obelisks, marking
entrance to the temple or the palace, and
pectator was led to approach these designs
certain pre-determined positions. In the
otian examples, the Propylæa and roads of
oach are placed centrally, and the spectator
s at once into the inner courts and halls of
emple, which are enriched with columns,
es, and paintings. The design is arranged
for internal than external effect.
e Grecian temples were generally sur-
ded by external colonnades, supporting an
blature enriched with sculpture, both in the
, and in the pediments; and the external
arance of the design was carefully studied.
s change in the arrangement of the designs
een Egypt and Greece led to a correspond-
ange in the position of the Propylæa and
of approach to the several temples, which
d of being central, as we have seen was
ase in Egypt, were in Greece planned so as
er an angular view of the temple to the
f the spectator. Thus Colonel Leake, in
Topography of Athens" (page 516), when
ing of the Olympium at Athens, says:—
approach to it, as in the instance of the
enon, was from the west. The gate of
an formed an entrance to the peribolus at
rth-western angle, and presented to the
tor the same kind of view that he
ed of the Parthenon on emerging from the
lsæa. In both instances his eye, by com-
ding at once a view of one of the fronts
ne of the sides of the building, enjoyed
e imposing prospect of those magnificent
s than could have been presented to him
approach immediately in front. There
similar approach to the Temples of
va at Sunium and Priene, and at the Pan-
ium of Ægina."

Plan of the Acropolis of Athens.—The
e positions of the Propylæa, of the Par-
n, and of the Erechtheium were the same
e old plan of the Acropolis, before the
es were destroyed by the Persians, as in
storedplan, when the edifices were rebuilt
the administration of Pericles. The
s, whenever it was possible, from the
t period always endeavoured, by the
gement of the gateways, the roads, the
ure, and the artificial platforms, to present
design to the eye of the spectator so that
ght be seen from a favourable angular
of view.
n its position, the Propylæa to the
olis at Athens was an exception to this
nd the west portion of the vestibule could
e seen from, and was calculated for, a
l point of view; but, passing through the
ule of the Propylæa, the first important
nent that presented itself was the statue
nerva Promachus, by Phidias, which was
high, including the pedestal. This statue
laced nearly in a line with the centre of
st portico of the Propylæa, and 120 ft. in
of it, and the pedestal presented an
r view to the eye of the spectator; near
ase of this statue we obtain an uninter-
t angular view of the Parthenon, em-
g the west portico and the north return
nd on the platform at the east end, and
he south fortification wall,—where, ac-
g to Pausanias, were represented the
f the giants, the battle of the Athenians
the Amazons, and the battle of Marathon,
e is a second angular view embracing the
rtico and the south return side.
ilarly, the plan shows sufficient space to
of angular points of view, both for the
nd north porticos of the Erechtheium.
facts relating to the canons of proportion
several porticos,—to the setting out of
ojections, and to the arrangement of the
e positions of the temple with regard to
propylæa and sculpture to suit certain
able angular points of view,—can all be
d from direct observations, but we have
consider the subject of the given points
ht,—the apparent magnitudes, and the
tions that were made by the Greek
architects in order that the designs should appear to the spectators to be as perfect in apparent proportions as they were first conceived in the mind of the architect.

The Points of Sight and the Apparent Proportions.—The subject of the apparent proportions was certainly considered anciently as an important part of Greek architecture, but each step in the calculations must, I feel, be clearly proved before the theory will be received as true.

The idea of a point of sight is not new, but that the Greeks should have corrected all the apparent vertical magnitudes, so that in the finished design they should all be commensurable one with another and with the apparent whole height, and then have trigonometrically calculated and corrected all the executed heights in the finished design to suit a favourable given point of view, requires actual proof. The evidence for what is stated will be based:—

Firstly. Upon the written statements of Plato, of Aristotle, and of Vitruvius, who all clearly refer to a favourable point of view, to the apparent magnitudes, and to the corrections made in the original design by certain "additions and diminutions."

Secondly. The measurements of the Athenian porticos show clearly that certain small plus and minus quantities have been either added to, or taken from the original dimensions of the porticos, as given in the canon of proportion.

Thirdly. By simple trigonometrical calculations commencing with the given quantities we must arrive at the true executed dimensions, which will be found in every case to agree with the measurements.

1. Plato, in the "Sophist,"* says:—

"*Guest.*—I now seem to see two kinds of imitative art. I see that one is the assimilative art,—and this especially takes place when an artist, according to the proportions of the original in length, breadth, and depth, and, moreover, by adding fitting colours, works out the production of an imitation. [This is the case in the Egyptian tombs.]

Thea.—What, then, do not all artists endeavour to do this?

Guest.—Not such as mould or paint any great work. For if they should give the true proportion of beautiful things, you know that the upper parts would appear smaller than is fitting, and the lower parts larger, through the former being seen by us at a distance, and the latter close at hand.

Thea.—Entirely so.

Guest.—Do not, then, the artists bidding farewell to truth, now work out not real proportions, but such as seem to be beautiful in their representations [namely, apparent proportions]?

Thea.—Entirely so.

Guest.—Is it not, then, just, as being at least probable, to call one an image?

Thea.—Yes.

Guest.—And we must call the part of the imitative art subsequent to this, as we have said above, assimilative.

Thea.—We must so call it.

Guest.—But what shall we call that which appears, indeed, similar to the beautiful, through *the view taken from a favourable point*, but which, when seen by him who has the power to look on things sufficiently, is not like that to which it professes to be like? Must we not call it an appearance, since it appears to be, but is not like?

Thea.—Undoubtedly.

Guest.—Is not this part abundantly to be found in painting, and in the whole of the imitative art?"

Aristotle defines the beautiful to consist in magnitude and in order; magnitude, being a relative term, is made to comprise the whole "extent of that scale which the *eye* is able *to embrace at one view.*" Again, in the Nicomachean Ethics, book ii., chap. 1, he says:—"Every scientific man will avoid excess and defect, whence it is usual to say of works that are well finished that nothing can be *added or taken away from them:* acknowledging by this that *excess and defect* corrupt that which is excellent in them." In the Parthenon and in other designs seen from the angular points of view, the diagonal line traced upon the plan of the temple is the line of greatest extent which the eye is able to embrace at one view; in the monument of Lysicrates, and in the case of the statue of Minerva Promachus, the whole height becomes the line of greatest extent. Vitruvius enters more into detail, and refers more especially to architecture.

He says, in book vi., chap. 2:—"After having determined upon such proportions as the necessity for the commensuration of the parts with the entire building seems to require, the greatest judgment must be exercised in—

'Adapting them to the nature of the spot' [position],

'The use to which the edifices are designed,'

'The appearance they ought to assume,'

by making such *additions* or *diminutions* that although the proportions are not strictly what they ought to be, the eye may not be conscious wherein they fail."

"Under every peculiar circumstance, great judgment is necessary in *calculating* the effect that will ultimately be produced."

"Since, therefore, objects sometimes assume an appearance of being otherwise than they really are, it will not be denied that additions and diminutions may be made, as the nature of the situation, or the exigencies of particular occasions require, in such a manner that the deviation from the general laws of proportion will not be perceptible."

"It therefore becomes necessary, in the first place, to institute *laws of proportion*, upon *which all our calculations must be founded.*"

"According to these, the ground-plan, exhibiting the length and breadth of the whole work, and the several parts of it, must be formed."

"When the magnitude of these is once determined, the parts must be arranged so as to produce that external beauty which suffers no doubt to arise in the minds of those who examine it to the want of proportion in any part."

"The mode of the symmetry, therefore, being first fixed" (that is, the first lines of the design being traced commensurable one with another), "the alterations" (namely, the diminutions and additions) "are to be made thereon."

Book iii., chap. 2.—"Beauty being the province of the eye, which if not satisfied by the due proportion and augmentation of the members—correcting apparent deficiencies with proper additions—the aspect will appear coarse and displeasing."

Thus we find both Plato, Aristotle, and Vitruvius agree in stating that when large works of art, either of sculpture or of architecture, were designed to be "viewed from favourable points of view," the first given proportions of the design were changed by "additions and diminutions" being made, so that in the finished work, instead of the original design, with all the parts commensurable, we have, as it were, a new design in which the parts are only apparently commensurable.

The Measurements of the Masses of the Greek Porticos.—We need not trust to the correct interpretation of these passages either in Plato or Vitruvius, for if such "additions and diminutions" were really made upon the original designs by the Athenian architects of the age of Pericles when designing their works of architecture, we must expect, upon a careful examination of such large works as the Parthenon, the Propylæa, the Erechtheium, the Theseium,—in fact, of all architectural works of magnitude executed, either in Greece or in Asia Minor, during the best period of Greek art,—to be able to discover by measurement the actual amount of the variations that were made in the heights of the several members of each design when they were subjected to those corrections which were essential to produce an apparent harmony between all the parts of the finished executed design; and this is really the case; for in each example, when we compare the executed heights with the heights given in the canon of proportion, the additions and diminutions that were originally made by the Greek architects at once appear. There is no difficulty when the given quantities, on which the calculations are founded, are correctly assumed, in arriving at the same results by calculation that we obtain by measurement, and this we shall now proceed to explain, commencing with the position of the points of sight.

The Position of the Points of Sight.—If the points of sight were not given in position, the calculations and corrections could not be made; and in the case of the Athenian Acropolis, these several points of sight are practically indicated by the relative positions of the Propylæa, the roads of approach, the levels, the arrangement of the sculpture, and the position of the Parthenon and the Erechtheium.

With regard to the Parthenon, there is sufficient space left to allow of a north-west angular view to be seen from the road close to the statue of the Minerva Promachus, and also for a south-east angular view to be seen from a point near to the south fortification-wall; in these examples there is sufficient space allowed for the eye to embrace the diagonal line of the Temple (which is the line of greatest extent) within a given horizontal visual angle of 45 degrees, which has, therefore, been assumed in every example as a given quantity, and the calculations, agreeing with the measurements, must prove, not only in the case of the Parthenon, but also of the Erechtheium and of the Propylæa, and of other Greek designs, that this horizontal

* Plato, translated by G. Burgess, M.A., vol. iii. Bohn, London.

angle of 45 degrees has been correctly assumed. The Greek idea of having a fixed point of sight, and of making the visual angles of the perspective design commensurable with each other, may appear to some minds as a waste of time and of calculation, but the painter, the sculptor, and the architect all considered their designs to suit some favourable points of view; and although the calculations in the case of the Parthenon were made to suit one point of sight, which is essential, yet the spectator moving either to the right or to the left of the calculated point of sight, within the possible limits of a Greek design, scarcely alters the result of the calculations. The spectator was by no means confined to one exact point of view, although it is requisite that a fixed point of view should be determined upon to suit which the calculations were made.

The Calculations of the Apparent Magnitudes.—In book i., chap. i., Vitruvius states that "arithmetic, assisted by the laws of geometry, determines those abstruse questions wherein the different proportions of some parts to others are involved," and he appears to refer also to the descriptive geometry of three dimensions, for the tracing of the plan and elevation of the design, and also to the perspective view of the same, accurately drawn; and in book vi., chap. 2, he refers to the special calculations required for determining the apparent magnitudes and the additions and diminutions that have to be made, as he says, "in such a manner that the deviation from the general laws of proportion will not be perceptible."

The Given Quantities.—Before these calculations can be made, certain quantities must be given, or, as Vitruvius says,—"It becomes necessary in the first place to institute laws of proportion upon which all our calculations must be founded."

Firstly. This was done for the Greek porticos when the first given heights, widths, and projections are all laid down according to a fixed canon of proportion.

Secondly. "The plan exhibiting the length and breadth of the whole work, and the several parts of it, must be formed," and the position of the point of sight must also be given upon this plan, "so as to comprise the whole extent of that scale which the eye is able to embrace at one view"; (see Aristotle) in the case of the Parthenon, this will be the diagonal line of the Temple.

Thirdly. The position of each design upon its artificial platform with regard to the point of sight, and the height of the upper step, either above or below the horizontal plane, must be also given.

The Temple is now supposed to be fixed in position with regard to the point of sight,—the given dimensions are all commensurable, and if there were no corrections to be made we might at once proceed with the designing of the columns and the entablatures, and this is actually the case in some small designs in Athens, and in the Roman porticos; but not in the Greek works of magnitude, like the Parthenon and the Propylæa. In these cases certain corrections have to be made by calculation, so that the perspective design may appear to the spectator to be perfect in apparent proportion, and the slight irregularities were thrown into the executed work, where they escaped detection. The horizontal straight lines have also to be converted into convex lines.

The Calculations of the Apparent Magnitudes of the Parthenon.—Mr. Pennethorne gave a detailed explanation of the calculations for determining the apparent magnitudes of the Parthenon, but this would not be fully understood without his illustrations.*

Health Lectures.—The National Health Society have arranged the following course of drawing-room lectures, to be delivered at 23, Hertford-street, Mayfair (by kind permission of Mr. C. Matthews):—

Thursday, Feb. 27th.—Mr. T. P. Teale, of Leeds, "Below the Floors and Behind the Walls in Modern Houses—Invisible Dangers."

March 6th.—Professor W. H. Corfield, "Put your House in Order," illustrated by specimens and models from the Parkes Museum of Hygiene.

March 13th.—Mr. Ernest Hart, "Milk and Water."

March 20th.—Dr. Arthur Edis, "Counter-seats for Shop-women; or, the Evils of Incessant Standing."

March 27th.—Mr. Horatio Donkin (Physician to the East London Hospital for Children), "The Dangers of Childhood."

April 3rd.—Mr. Ernest Turner, architect, "The Ideal Dwelling-house."

April 10th.—Mr. George Romanes.

* To be continued.

LIVERPOOL REFORM CLUB.

The Liverpool Reform Club has been formally opened. It is situated on the north side of Dale-street, nearly opposite North John-street, and occupies the site of the old George Hotel. The building has been arranged for the purposes of a first-class club, and its capabilities extend to the accommodation of about 1,200 members. Granite, about 6 ft. high, forms the base of the building, above which rises the main walling of Ruabon bricks, relieved here and there by Woolton red stone in the dressings. The principal entrance is in Dale-street, in the centre of the building, the portico being balanced by granite columns from Shap, in Westmoreland. From the entrance-hall, the first or principal floor is approached by the grand staircase. On the right, there is the reading-room, about 40 ft. long and 27 ft. wide. The aspect is pleasant, and the windows look on to Dale-street. The remaining portion of this floor is principally occupied by the large dining or coffee room, about 87 ft. long and 27 ft. wide. It runs the whole depth of the building from the Dale-street front. Continuing up the staircase, the smaller dining-rooms, smoking-room, and billiard-room are reached, all on the second floor. Dressing-rooms and bedrooms for the convenience of local and country members form a portion of the scheme. Separated from the club-rooms proper, but within easy communication, are placed the offices for carrying on the work of the club. The kitchen has lifts, dust-shoots, &c., *en suite*, connecting the different floors of the building with this department, the whole of which is on Dennett's fireproof arching. The service of bells is arranged on the pneumatic system all over the establishment.

The general contractors were Messrs. Jones & Sons, Liverpool. Messrs. Gillow & Co., Liverpool, supplied the furniture, &c.; Messrs. Jeakes & Co., London, the kitchen ranges; Messrs. Hardman & Co., Birmingham, the gasfittings and ornamental ironwork; Mr. Jennings, London, the lavatory fittings; Messrs. Bunnett & Co., London, the lifts; and Messrs. Homfray the pneumatic bells and speaking tubes; Mr. Thos. Dove being the clerk of works.

The building has been erected and the furniture supplied under the superintendence of the architect, Mr. Edmund Kirby, Liverpool.

WESTERN TOWERS, BAMBURG CATHEDRAL.

It is the practice of some German critics and writers upon architecture to claim for their country the introduction of Gothic architecture and the earliest developments of the Pointed style; in fact, so convinced are the Germans that this beautiful architecture was their own invention, that they absolutely call it the "Old German style," and they are quite indignant if one suggests that other countries can lay a better claim to its paternity. At the risk, however, of offending some of the archæologists of the "Fatherland," we must again point out the fact to which we have more than once alluded in this journal, that there are no buildings in Germany of an earlier date than the year 1200 which are constructed in the "Pointed style"; nor, as far as we have been as yet able to discover, are there any buildings previously to this date which show the Gothic arch used to any extent even in combination with earlier forms; whereas both France and England possess numerous buildings of a thoroughly-developed Gothic style dating back twenty and even thirty years before the close of the twelfth century. The cathedral of Laon, 1173; the cathedral of Notre Dame, Paris, consecrated in 1172; the cathedral of Soissons, 1175; the choir of Canterbury, commenced 1174, are examples of this; whereas the western portion of the cathedral of Bamburg, which bears the most remarkable resemblance to the cathedral of Laon, was not commenced until 1274, that is to say, 100 years later than its great French prototype. The similarity between the towers of Laon and the Western Towers of Bamburg is so remarkable that it is impossible to avoid the conclusion that the Germans deliberately copied, in fact almost reproduced, the designs of their French neighbours; nor does this reproduction by the Germans, of French designs, seem to have been confined to architecture alone, for Mr. J. N. Westlake, who, we need scarcely say, is an excellent authority on the subject, has pointed out that the early examples of German stained glass are positive reproductions French works, of an earlier date; in fact, th gentleman is of opinion that even during t eleventh and twelfth centuries, the Germa borrowed all their decorative art from t French. We are hardly prepared to go so far this, and believe that at least one school of which existed in Germany, that of Hildeshei traces its traditions directly from ancie classical models, and was in advance of a French school of so early a period: be this as may, we are thoroughly at one with Mr. We lake in believing that the Germans can lay claim to the invention of painted glass, or those beautiful forms of scroll-work and folia which developed themselves towards the end the twelfth century.

Upon looking at the dates of the earli Gothic churches erected in Germany, we shall at once that the towers of Bamburg are q as advanced in style as other works erected that country during the thirteenth century example, the Cathedral of Limburg-on-t Lahn, which is quite Transitional in charac was commenced in the year 1235; the west porch of St. Paul's at Worms, also Transitio 1261. The church of St. Martin at Wor which is rather more advanced in charac was commenced in 1265. Now when we sider that the nave of Amiens was erec between the years 1230 and 1240 (that say, was commenced five years before Limb and thirty-five before St. Martin's at Wo and has perfectly-developed bar-tracery moulded cuspings to its windows), we thin impossible that the Germans can lay either to have originated Gothic architectur in any way to have furthered its early deve ment. Who, on looking at the illustratio Bamburg Cathedral, with the round arch i mixed with the pointed, with the plate tra rose-window in the transept, with a thor Romanesque-looking eaves-cornice, could a moment suppose that they date nearly years later than the choir of the Cathedr Beauvais? Yet such is the fact.

The cathedral of Bamburg is an exceedi interesting building, consisting of a nave aisles and two apsidal choirs, one at the ea and one at the west end, short transepts a junction of the west choir with the nave four remarkably fine towers, two flanking eastern choir and two the western. There crypts below each choir, and a large ch composed of three naves of equal height length, opens out of the south transept. eastern portion of the cathedral is very Romanesque work, and the western Pointed. The spires crowning the four t are modern, and when they were erected, close of the eighteenth century, the gabl the western towers were tampered with made of lower pitch; formerly they must resembled those of the western towers at burg-on-the-Lahn, and they are so repres in the interesting view of the town given "Nüremberg Chronicle."

The cathedral is exceedingly rich in ar monuments, but we reserve a descripti these for a future occasion.

The ancient building in the foreground view is the former archbishop's palace; i good example of "post and pan" work c latter part of the fifteenth century.

The Institution of Civil Engineers. are asked to state that supplemental mee for the reading and discussion of pape students of this Institution have been appo for the following Friday evenings, at o'clock:—

Feb. 14th.—"The Excavating of a Tunnel in R Hand Labour and by Machinery." By John C. K Stud. Inst. C.E. Mr. Hayter, member of Coun preside.

Feb. 21st.—"On the Design and Construction of W Iron Tied Arches." By Percy W. Britton. Stud. Ins Mr. Barlow, vice-president, will preside.

Feb. 28th.—"On the Cost and Construction of Light Railway." By Alfred W. Szlumper, stud. In Mr. Bruce, member of Council, will preside.

March 7th.—"The Interlocking of Points and and the Electric Block System." By George D. M Stud. Inst. C.E. Mr. Woods, member of Coun preside.

The students have been urged to prepare themse the discussions, by consulting the papers, which a open for inspection at the Institution, and they ha informed the meetings will be continued, provide original papers of adequate merit are received. It been stated that a Miller Scholarship, not exceed in value, and tenable for three years, will be awa the best paper of the session, if of sufficient imp and that original communications by students, wh be deemed worthy of record, will be printed "Minutes of Proceedings" of the Institution.



WESTERN TOWERS, BAMBURG CATHEDRAL, GERMANY.



MONUMENT ERECTED TO M. BERRYER, IN THE "SALLE DES PAS PERDUS" AT THE PALACE OF JUSTICE, PARIS.——M. HENRI CHAPU, SCULPTOR; MM. DUC AND DAUMET, ARCHITECTS.

M. BERRYER'S MONUMENT.

FORMING his task with a steady conscious- and remarkable integrity of purpose, no er sought to serve his country in troublous with purer disinterestedness, or with a sense of justice, than did Pierre Antoine er.

in Paris, 1790, he commenced studying the Oratorians of Juilly with the inten- f taking holy orders, but at his father's t he left that body to apply himself to w, and first appeared at the bar at the f twenty-one. He enlisted in the Royal eers, and when Napoleon again appeared the scene, after his escape from Elba, r followed Louis XVIII. to Ghent. When, er, the Bourbons returned to power, he, strict sense of justice, volunteered his s for the defence of the generals who rought to trial for their conduct during tal "hundred days." He assisted his and the elder Dupin in pleading the cause shal Ney, and himself defended Generals onne and Debelle. The following year him pleading for Generals Canuel and lieu, accused of conspiring against the the king. One of the greatest champions liberty of the press, his opinions kept m preferment. His defence of the *Journal nats*, the *Drapeau Blanc*, and the *Quoti-* the trials of the bankers Seguin and d, that of Lamennais in 1826, and firmly established his reputation. ed as member for Puy in 1830, he took ive part in the revision of the charter, d trial by jury for press delinquencies, on of the stamp duties on newspapers, mination of "maires" by the electors, ht of public meeting, &c.; he voted the motion for the banishment of urbons, supported the Bill entitling iests to marry, and also that for -establishment of divorce; he was, a strenuous opponent of the slave In the session of 1833 he appeared at bune to demand the release of the s of Berry, whom he had endeavoured to e from her rash projects some months ely, and for which he was brought to ut acquitted. Shortly afterwards, all rang with the news of his eloquent and nt defence of Chateaubriand. In 1840 made Prince Louis Napoleon's counsel in l for the Boulogne escapade. A visit to X. at Goritz in 1837 had already given to the July Government, when, in 1843, , with other Legitimist notabilities, to to present his homage to the Comte de rd, and hail him King of France.

the fall of Louis Philippe, Berryer was d as member for the Bouches-du-Rhone Constituent Assembly of 1848, and the tive Assembly of 1849, speaking prin- upon questions of finance and admini-

e *coup d'état* of 1851, he was one of the who met at the "Mairie" of the tenth ssement, and proclaimed, but in vain, mination of the Government of Louis on. He afterwards retired from public it was again returned to the "Corps tif" in 1863. He died five years after- sincerely mourned by all France.

nonument erected to his memory in the des Pas perdus" of the Palace of was shown at the International Exhibi- st year in the building of the Ville de nd the principal figure, in white marble, ryer was exhibited by the sculptor, pu, in the "Salon" of 1877; the two (also in marble) of "Eloquence" and ity," sitting on the right and left of r, are by the same sculptor.

rchitectural portion of the monument is the late M. Duc and M. Daumet.

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al Sanitation.—According to the local , the Hexham Union Rural Sanitary ity seems to be actively bestirring itself to sewerage works for the various villages district. A contract has been let for the nt Prudhoe, according to a comprehensive prepared by Mr. John S. Hodgson, C.E., n, and the Parochial Committees of two ownships have been instructed to consult e engineer with reference to the sewer- their villages. Works of water-supply o in contemplation for various localities the Authority's area.

GREAT WORKS OF GREEK ART.

MR. C. T. NEWTON, C.B., of the British Museum, lectured on Saturday evening last, at the College of Men and Women, Queen-square, Bloomsbury, on "The Chryselephantine Statues of Athene in the Parthenon, and of Zeus at Olympia, by Phidias." The lecture was in continuation of the preceding lectures, which have been reported in the *Builder*.

In the second century before the Christian era, or, to give a little more precise date, about the year 167 B.C. (said Mr. Newton), a great Roman general, fresh from the conquests of Macedonia, marched down to Greece. He visited Olympia, and there beheld for the first time the august form of the Jupiter of Phidias, or, to give his Greek name, the Olympian Zeus. That great general, whose name would be familiar to the students of Roman history, was Paulus Æmilius, and it was recorded by more than one ancient author that when he beheld this great image of the god he acknowledged the presence of the deity, and he at once offered a sacrifice such as he would have offered as a triumphant general at the Capitol. He (the lecturer) introduced his subject with this anecdote to show that this Olympian Zeus of Phidias was not merely one of the wonders of the world, marvellous from the excellence of its material, marvellous from the beauty of its workmanship, but it had an effect upon men's minds, an effect in the way the artist intended, so as to produce a profound religious emotion. This testimony with regard to Paulus Æmilius did not stand alone. It happened that from a number of writers they had concurrent testimony as to the greatness of the impression this work produced on the spectator. These writers had capacity for judgment, and perhaps one of the most striking passages was by Dion Chrysostom, who had written a most interesting account about the Olympian Zeus. This passage was of peculiar interest as showing how a philosopher and a highly educated ancient writer interpreted the motive of this statue. He described this creation of Phidias as the image of the supreme ruler of the universe, the dispenser of peace, the god who, sitting on his throne, saw at intervals the Greek world of peace, the hostile races meeting together to celebrate one common festival; and then he dwelt especially on that mingled aspect of majesty and of benevolence towards man which was apparent in the expression of the god. "If there is any one utterly weary in his soul [he says], who has borne many misfortunes and sorrows in his life, who has lost the enjoyment of sweet sleep, such a one I can imagine standing before the Zeus of Phidias and forgetting, as he gazed on it, all the sufferings to which human life is heir, such a brightness and charm is there in this work."

This was very high testimony, continued Mr. Newton, of a mind not given to exaggeration. There were two more testimonies equally interesting. Cicero, who, besides being one of the greatest of ancient orators, was one of the greatest of ancient critics, said that Phidias had an ideal in his mind which he did not derive from any one particular man, from any one specimen of humanity, but from the conception of ideal beauty, drawn from the whole type of man, and embodied in the human form, and he supposed that the sculptor of the Olympian Zeus contemplated, as it were in his mind's eye, this image of ideal beauty, and then embodied it in his work. The third notice of the Olympian Zeus he would mention was the testimony of Quintilian, who said that Phidias produced so great an ideal work that he added something to the received religious feeling of his time. These were the testimonies of highly intellectual writers as to the effect which the art of Phidias produced upon men, not of one generation only, but of successive generations, extending from the date of Phidias down to the time of Quintilian, the second century of the Christian era. There were, besides, a number of witnesses as to the majesty of the great work of Phidias, which he need not then trouble them with. The first fact they might mention was, that it was one of the seven wonders of the Roman world. It was supposed to comprise everything for marvellous structure or for beauty, as the Temple of Diana at Ephesus, the mausoleum or tomb built for Mausolus, king of Caria, the vast brazen image of the sun at Rhodes, called the Colossus, the greatest being the Olympian Zeus.

In regard to this statue, which was so celebrated, not only for its exceeding beauty, but for the richness of the material, it was made of gold and ivory, and therefore called, in the language of the ancients, the "chryselephantine statue." He would endeavour to explain how a colossal statue such as this could be made of gold and ivory. Their notion of an ivory statue was to carve a figure out of a piece of ivory in the solid, but this was not the way the ancients followed. They built up a colossal statue in a very curious way. The temple in which the Zeus stood at Olympia, as they were no doubt aware, had been recently disinterred and measured, and was in a fair way of being restored, its height being about 60 ft., and it had been calculated that the height of this colossal figure, including the lofty throne, was about 42 ft. In order to build up the statue, the method adopted was this: first, the skeleton of the figure was made, probably of Cyprus wood, and upon that the "flesh" was laid on in clay, or some kind of plaster. The exact cast was taken from the model, and the external surface of the clay and the mould that was taken was cut into pieces, and portions of ivory, corresponding exactly in size with these segments of mould, were worked so as to fit into it, so that ultimately the ivory became, as it were, the external skin of the statue which had been moulded from within. It would be asked how they got ivory to lend itself to this means? It was done in this way: the elephant's tusk was sawn into exceedingly thin slices, and then, as they were told, some ingenious persons invented a mode of softening it so as to bend it in the form the artist required, and then, having been bent to the curve necessary, it was fastened by some elaborated systems of joining to the clay and the woodwork below. Of course, a certain amount of this explanation was guess-work, but the main fact remained that the inside of the statue was wood, next to that was clay, and upon that was ivory. Any person who wished to trace this out could turn to an excellent work published in 1815, in which diagrams of statues were given which had been divided in that way. The late Duc de Luynes, the eminent archæologist, actually had a statue made upon these principles. It was a small work made to represent the Athene in the Parthenon, but he (Mr. Newton) never saw it. The objection to this method was the liability of ivory to give way through inward expansion, and it appeared that there was a particular sort of people at Olympia who were appointed to watch these two statues, and to take care that they did not suffer any kind of injury, or from decay. Further, they were told that the climate of Olympia being wet, in front of the statue at the base was placed a sort of tank of oil, and that the climate where the Athene in the Parthenon at Athens was situated being excessively dry, there was a bath of water instead of oil. This had puzzled a great many people. It had been suggested that the true meaning of this was that the inner core of the wood would be liable to swell in a damp climate, and to shrink in a dry climate, and that the shrinkage or expansion would affect the joints of the ivory, as in the case of the Olympian Zeus they were affected, and that the object of the oil and the water was to afford these when either was wanted, that in the one case by certain fine tubes penetrating in the core of the statue when the moisture would be absorbed.

In regard to the chryselephantine statue, the "flesh" was made of ivory, the robes of gold, and the eyes of precious stones. Pausanias told them that this statue of Zeus was represented seated on a magnificent throne, and that it was 42 ft. high, inclusive of throne. On his head was a crown of olive-leaves. In his right hand was a Victory of gold and ivory, holding a sash, and having on her head a wreath. In his left hand was a sceptre, inlaid with all manner of metals, on the head of which was perched an eagle. The mantle of the god was of gold, enamelled with animals and lilies. His sandals also were of gold. His throne was adorned with gold and precious stones, and varied with ebony and ivory. At each foot of the throne were four Victorys dancing. On each of the front feet were Theban children carried off by Sphinxes; and under the Sphinxes were Apollo and Artemis shooting the Nisbids. Between each pair of feet were four rails. On these rails were the band who fought with Heracles against the Amazons (twenty-nine figures), among which was Theseus. Barriers all round fenced off the throne, on which were paintings by Panainos. Atlas holding up the Heaven, and Heracles about to receive the load.

Theseus and Peirithous, Hellas and Salamis holding the Akrostolion. Heracles and Nemean lion. Ajax ravishing Cassandra. Hippodamia with her mother. Prometheus in the bonds, and Heracles looking at him. Achilles holding up the dying Penthesilea. Two Hesperides bringing the apples. On the upper part of the throne Phidias has placed on one side the Graces, on the other the Horæ, daughters of Zeus. On the footstool were golden lions, and the battle of Theseus against the Amazons.

It might be said that this was a very good description of the statue, but it gave them no idea of the original. He (Mr. Newton) was afraid he must answer by saying that it was the only means they had of forming an idea of the original, and they must trust to their imaginations. It was quite true that they would find on a great many Greek and Roman coins the figure of Zeus. It was quite certain that the upper part of the body was naked, and would no doubt be entirely made of ivory, and that the lower half of the body would be covered with a rich mantle, the effect of which they would imagine in gold. As to the sum that it cost it was not known, but the sum that was invested in gold was. The Zeus of Olympia, he believed, remained intact and without injury all through the Roman Empire, till about the year 400, and it appeared that the temple of Zeus was burnt about the year 408, when the statue was probably destroyed. A curious question was, whether it was at all affected by earthquakes, which certainly visited Olympia from time to time; but of that they had no evidence. It had been said that Phidias, after he had made it, asked for a sign from Heaven, and that Zeus replied by a thunderbolt, which split the pavement of the Temple immediately in front, and that the place was marked for all future time by a bronze vase, which Pausanias actually saw there. What the origin of the story was they could not say; but when the Germans examined the lower pavement of this temple in the course of last year they did find a rent running through it, and they thought it possible that this natural cleft in the lower pavement was the foundation of this legend of Zeus replying by the thunderbolt. There was another point which must be referred to, viz., that one of the buildings which Pausanias mentioned was the workshop of Phidias, where he made his statue, which must have been a long and difficult work to execute. The Germans had found a building upon which a Byzantine church was afterwards built, and which unquestionably had Greek foundations of the early kind, and upon measuring this original Greek building, and comparing the measurement with the temple of Zeus, they found a correspondence so remarkable that a German architect thought that they had found the workshop of Phidias. If this was so, no doubt in this studio he received spectators when his work was on view. They were told that when his work was far advanced he threw open his door, and used to hide and listen to the criticisms that were passed upon the work, and that he took the opinion of the majority of his critics, and altered the work accordingly; on the other hand, it had been said that Phidias was so great a genius that he would not adopt this course.

He (the lecturer) had taken the Zeus of Phidias first, because the ancients considered it the greatest work of this chryselephantine art that existed in the ancient world, and therefore they must consider the statue of Athene in the Parthenon as being of the second rank. The statue was made of gold and ivory, and in regard to the gold they knew what quantity was used. According to the highest calculations of the ancients, there were forty-four talents of pure gold invested in this figure; but Thucydides calculated that there were only forty talents, which represented something more than 140,000*l*. Now, in these utilitarian days, that seemed a large sum to invest in the garments of a goddess, but they must remember that the ancients in the first place had a very different idea about the treasury. They considered that the gods and goddesses were the proper custodians of the public wealth, and thought that it would do them honour to dedicate a large proportion of the spoils of war to them, besides which votive offerings of great value were given to the deities, both public and private. They also allowed private individuals to make deposits. At the beginning of the Peloponnesian war, this 140,000*l*. worth of gold was actually worn by the goddess Athene, as was referred to by Thucydides. Before the war commenced, Pericles made a sort of speech the same as the Chancellor of the Exchequer made in regard to the ways and means of carrying on a war, and explained what the amount of the treasure was in the Acropolis. Besides this, there were the golden ornaments of the goddess herself, which, in times of extreme emergency, must always be removed and used for the purpose of carrying on a war. When the golden garments were borrowed, a sort of promissory note was given to repay the money. This kind of thing did not shake their religious prejudices, and no doubt the priests made it pleasant all round.

In conclusion, Mr. Newton said that this was all he could tell them about the two works of a most celebrated sculptor. He hoped he had made it clear to them that the ancients did not estimate the statues for their excessive cost, but for mere refinement and subtlety of the art they attached their value. They thought that these two statues were the highest embodiment of divinity which the human imagination could conceive, and therefore it was that they were valued, not merely to be dedicated by the people then existing, but by successive generations,—the people who came to see these famous shrines. The meaning of the real aim and purpose of the highest art among the Greeks was not to please man, not to obtain the panegyrics of mortal critics, but to please the gods and to elevate and instruct mankind, by bringing down to them the present deity which they could worship. He hoped on a future occasion to treat of the other branches of Athenian art, which dealt rather with the heroic than with the sublime.

NOTES ON ST. PAUL'S CATHEDRAL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the sixth ordinary meeting of the Institute for session 1878-79, held on Monday evening last, the President, Mr. Charles Barry, in the chair, the following gentlemen were balloted for and declared to be duly elected, viz.:—*As Fellows:* Mr. Alexander Peebles (Associate); Mr. Henry Dent Lomas, of Sheffield; Mr. Thomas Archer; Mr. Arthur Green; Mr. Samuel Knight (Associate); and Mr. William George Coldwell (Associate). *As Associates:* Mr. George William Webb, of Reading; Mr. Wallace Gill, of Bath; Mr. Henry Blackwell; and Mr. Leonard Brisbane Broun.

A letter was read from the Marquis of Salisbury inclosing particulars forwarded by her Majesty's *chargé d'affaires* at Munich of a quadrennial exhibition of works of art to be held in that city in July next. Programmes of the exhibition, and forms of application for space, may be obtained of the secretary of the Institute. All works offered for exhibition must be delivered at the Crystal Palace, Munich, before the 31st of May.

The meeting next proceeded to discuss Mr. Penrose's "Notes on St. Paul's Cathedral," read at the previous meeting.*

The President remarked, with respect to the mosaic marble pavement which the author had stated was already partially laid down, that the design was admirable, and he hoped that the whole of the pavement would be carried out in the same way, replacing the black and white marble floor at present existing. With respect to the decorations above the pavement, Mr. Penrose had only referred to those of the dome,—only a small part of the subject, although, at the same time, a great part in itself. It was a happy augury for the success of the decoration scheme that two such masters of their art as the President of the Royal Academy and Mr. Edward Poynter had agreed to work together so as to make the decoration of the dome a success. Both those artists were, he understood, now engaged upon their studies, and their cartoons would be exhibited *in situ*, so as to enable a satisfactory judgment to be formed of the effect of the completed work, and he ventured to think that in that way all the doubts which had perturbed the committee and the art-loving public would be practically resolved. When the decoration of the dome was completed, however, a very large field for decoration would remain, and it was to be hoped that the remainder of the work would be placed in equally able hands.

Mr. Watkiss Lloyd expressed his approval of the proposal to first of all decorate the dome and its supports, and then to decorate the remainder of the building, as being likely to result in a harmonious and satisfactory whole.

Mr. Whichcord said that as to the hanging of the bells, he understood Mr. Penrose to say t the vibration of the tower during the ringing the bells was almost *nil*. He believed that English method of pealing bells, whereby t were made to turn completely over on t bearings, was peculiar to this country. O ously the vibration resulting from such a m of ringing was very much greater than w the bells were merely struck by a hammer.

Mr. Statham said the bells were not sw round *over* their centres in ringing. They v first "set," *i.e.*, swung backwards and forwa with increasing oscillation till they reached inverted position and were stopped by a c from going further: then the pull of the ri at the proper moment brought the bell down right round, till it again reached the inve position and was again stopped by a catch till next pull. With regard to the decoration o dome of St. Paul's, he should like to ask whe it had been at all considered by those engage the work what effect the mosaic decorations w have upon the aërial perspective of the build The question was especially interesting to th stitute, inasmuch as it was one of the very things in which the late hon. secretary, Cockerell, interested himself, writing a sensible letter on the subject to the *Times*.* ever fine the mosaics might be as pictures, might have the undesirable effect of "brin down" or decreasing the apparent height o dome. No doubt if coloured marble or m were used for the floor of the cathedral,—as understood would be the case,—the "brin down" effect of the mosaics in the dome w be materially neutralised.

Mr. E. B. Ferrey said that there were a many different opinions as to what the length of Old St. Paul's was. His own im sion was that Hollar's plan was perfectly ac rate. The late Mr. Ashpitel believed that was the length of the churchyard, but in a called "London Plates," in the Library o Society of Antiquaries, the cathedral described in the margin as 720 ft. long. showed a wide bay a short distance east crossing, where there was a difference of The choir itself was completed in 1240, an eight bays beyond in 1255, and the wid evidently formed the division between th periods. Little was to be gleaned from m risons of older views of Old St. Paul's, fo showed most extraordinary variations, instance, in Mr. Crace's interesting collect views of old London, now on exhibition at Kensington, there was one very early v the cathedral, dating from the tim Edward VI., which showed a building, j by the number of bays, very much s than that represented by Hollar's view the two representations, there could the slightest doubt that Hollar's was the one, showing, as it did, twelve bays to th and eight to the choir,—the earlier view ing only six bays to the nave, and being ob a very rough and inaccurate representati

Mr. Dawson having made a few remark reference to the plan of the chapter-hou the deviation of the axis of the cathedral,

Mr. E. C. Robins, with reference suggested effect of coloured decorations dome upon the apparent size and height o feature, said the question occurred t whether it would or would not be detrim to the building if the dome were to app be a little lower than it appeared to present? He thought that Stevens h upon the right idea of treating the decor of the dome, and he thought that in the of Sir Frederick Leighton and Mr. Poyn idea would have full justice done to it.

The President, in closing the discussion that as to the interesting question rai their lamented honorary secretary (Mr. Cock and referred to by Mr. Statham, as to the of the coloured mosaic decorations upo appearance of the dome, he thought tha might with profit remember that Wr designing the cathedral, contemplated t of colour, and it was but reasonable to co that he had made adequate allowance effect upon the fabric. He thought Mr. P had clearly established the deflection of t of the old building, and it was remarkab in that building, as well as in the others cit deflection of the choir was almost inv towards the north. Remembering th religious feelings with which the Me architects designed their buildings, th

* See p. 118, *ante*.

* Quoted and commented upon in last year's v the *Builder*, p. 774.

ces would seem to show very distinctly
ere must have been some well-understood
nerally-accepted reason for it. If he might
them of a suggestion, the reason for the
on was a symbolical one, the deflection
s the north symbolising the declination
Lord's head over the right shoulder, as it
nost invariably depicted in all old repre-
ons of the Crucifixion.

Rev. Mr. Webb wished to say a word on
estion, although with reference to the
ted decoration scheme, he would say
, except, as one of the defeated minority
committee, to express the hope that the
ent that was going to be tried would be
cessful as everybody could wish. With
ce to the symbolism of the declina-
the longitudinal axis of the building,
the old ritualists,—*i.e.*, those who looked
question of ritual from a scientific
view,—it was believed that the declina-
the axis towards the north did symbolise
ditional idea that our Saviour's head
over his right shoulder. Whether it
de a rule of design by Mediæval archi-
s did not know. He should be inclined
bute the deviation of axis to inaccurate
out of the work rather than to symbolism.
President asked why, if such declination
axis were due to accident, it should
be found towards the north?
Webb said that if that were the fact, then
sident had probably suggested the correct
tion.

te of thanks having been accorded to
rose for his paper, he briefly touched on
the points raised in the discussion. He
t the vibration caused by the ringing of
s was practically *nil*, owing to the mas-
of the tower. As to the effect of
mosaics upon the aërial perspective, he
that it would tend to very con-
y enlarge the appearance of the dome.
the spandrels beneath the dome
already filled with mosaic, and to
the contiguous arches, whenever
ed at them, always appeared to be
nan the others. The mosaic in the dome,
ng, as it would, a considerable quantity
round-work and surfaces reflecting the
m side to side, would have the effect of
the dome appear much lighter. He
with Mr. Ferrey as to the general cor-
of Hollar's plan of the old cathedral;
ad lately had an opportunity of collating
cient representations of the church,
e in the collection by old Samuel Pepys,
ridge. These included a drawing show-
uildings between Old Change and the
t exactly as they were shown on the
lan No. 1, mentioned in his (Mr. Pen-
aper. The pavement represented by
ings exhibited was only the pavement
ypt. It had been executed by female
at Woking, from full-sized cartoons
by him. He agreed in thinking
evens's scheme for the decoration
dome was admirable, and when the
were fixed up, he believed it would
hat the problem had been satisfactorily
Besides the pavement in the crypt, it
ourse in contemplation to provide a
loured marble floor for the whole area
thedral. As to the declination of the
he old cathedral, Professor Lewis had
rnished him with another instance of
, viz., St. Mary's, Guildford, where
s a declination to the north of 3½ deg.
already occurred to archæologists that
entional representations of our Lord
cross, with His head lying over His right
had led to the deflection of the axis in
noticed, in all of which the deflection
ards the north. He believed, however,
re were instances in which the defec-
towards the south,—one instance,
a slight one, was known to him, viz.,
Church. He thought there was
ossible reason for the deflection to-
north, viz., the improvement of the
ve view from the west end, and he
that view of the case was strikingly
lt by the instance of Lichfield Cathedral.
ate, that reason for the deflection might
n coincident with the symbolical idea
to.

thur Cates then read Mr. Pennethorne's
"The Connexion between Ancient Art
ent Geometry, as illustrated by the
the Age of Pericles." This paper we
ther pages.

ENGINEERING AND ART.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At a meeting of this Society, held on the 30th ult., the President (Mr. Charles H. Driver, F.R.I.B.A.) read a paper on "Engineering and Art," in the course of which he said:—

"Engineering," as the word is commonly understood, may be considered to be the science of "construction," and an engineer is likewise understood to be one who practically applies the theory and science of construction to the everyday wants and requirements of our lives. "Engineering" is a very comprehensive word, including, rather widely, all matters relating to the formation of roads, bridges, canals, docks, harbours, lighthouses, mines, drainage, waterworks, sewers, fortifications, building, machinery in general, &c. Properly speaking, engineering is divided into two classes, viz., civil and mechanical engineering. In the first are comprised road-making, bridge-building, canals, docks, harbours, waterworks, drainage, mines, &c., and all the other works which may be classed under the head of railway, hydraulic, and mining engineering; whilst the second is principally connected with the manufacture and use of machinery, the working of metals, the construction of railway plant, steamships, guns, armour, plates, &c. In works of the first class the "contractor" plays an important part, as it is he who executes the work from the designs of the engineer, and on his ability and good management the success of many undertakings very materially depends. In the second class, however, the case is somewhat different, as the mechanical engineer is very generally both designer and executant of the work he undertakes. Thus much for the engineering of the present day, which may be said to have taken its stand, as a distinct profession in England, about the middle of the last century, and has since, by its varied achievements, done so much for the world at large,—much for comfort, much for luxury, much for wealth, but little, alas! for "art." All must admire the wondrous powers of such magicians as Watt, Telford, the Stephensons, Brunel, &c., and all will admit that they and their works have wrought an enormous amount of good; yet we must admit that though their works contain a vast amount of the *utile*, they have little of the *dulce* about them. Such, however, was not the case with the engineers of antiquity, who not only constructed works of pure utility, such as the harbours of the Phœnicians and of ancient Greece, the bridges of boats made by Xerxes to transport his army into Europe, the canal across the isthmus of the peninsula of Mount Athos, the aqueducts, roads, and bridges of ancient Rome, but they constructed, or assisted in the construction of works which are now looked upon as the triumphs of art (architecturally), such as the temples and pyramids of ancient Egypt, the palaces of Nineveh, the splendid buildings of Greece and Rome, and in later times the glorious cathedrals of Europe and of our own country.

"Art" is the result of the endeavour of the human mind to achieve the perfection of beauty, whether it be in form, colour, or sound, and, like engineering, it is universal; but, unlike engineering, it is strictly confined to man, and is the result of that power of selection that man, of all animals, alone possesses. Many animals, birds, and insects execute work which rivals and excels the best and most delicate work of man, but which, although artistic in result as to form or colour, is not art in itself, and birds or insects cannot be credited with "*art*," as they only follow a line of action they have no will or power to alter. The word "art," as generally understood, is applied to all such matters as music, painting, sculpture, architecture, medicine, agriculture, &c., and may be divided into two classes,—viz., "fine art" and "useful art." Music, painting, sculpture, architecture, &c., are specifically termed fine art. Medicine, agriculture, &c., belong to useful art. It is difficult, however, to define exactly where "fine art" ends and "useful art" begins, the two being, as they ought to be, so closely united. "Art," in the abstract, may be considered to be that which gives pleasure to the purely mental faculties as opposed to the purely animal passions. In this sense we view and accept the mental pleasures afforded to us by music, painting, sculpture, or literature, in contrast to the bodily pleasure we obtain by warmth or coolness, eating and drinking, rest, &c. Again, the pleasures afforded by art are not confined to individuals or nations, but are universal, whilst those which are corporeal are for the most part personal and selfish. The beauties of nature, such as are seen in fine landscapes, glowing sunsets, the flowers, the songs of birds, &c., yield pleasure to all, and of them there is no monopoly, and therefore they belong, in the truest sense, to art; and it is in this sense, and with this aim, viz., that of giving the greatest amount of pleasure to all, that the painter, the poet, the musician, and the architect should work. The mental pleasures which are embodied in the word "art" reach us chiefly through the eye and ear, the organs of smelling, tasting, and feeling ministering more to our bodily pleasures. Of the two which we may call the artistic senses, viz., seeing and hearing, the one which now concerns us at present is that of "seeing," for it is by means of sight that we learn to appreciate those attributes of "art" that are most nearly connected with works of construction, viz., "sublimity," beauty, grace, harmony, picturesqueness, proportion, order, and fitness; as, for example, the agreeable effect designated by "fitness" is an artistic pleasure which may be called the æsthetic of the useful; as, when a work is not only done effectually, but done with the appearance of ease, or the total absence of restraint, difficulty, and pain, we experience a delight quite different from the mere satisfaction growing out of the end obtained. Much of the pleasure of architectural support is referable to this source. Among the pleasures that are afforded by artistic arrangements may be noticed the sense of "unity in multitude" arising when a great number of things are brought under a comprehensive design, as when a row of pillars is crowned by a pediment. The use of simple figures,—the triangle, circle, square, &c.,—for enclosing and arranging a host of individual parts has a tendency to make an easily apprehended whole out of a numerous host of particulars. In all large works abounding in detail, we crave for some such comprehensive plan whereby we may retain the total while surveying the parts. A building, a poem, a dissertation, or a speech should have a discernible principle of order throughout, the discernment of which gives an artistic pleasure even to works of pure utility.

Let us now proceed to consider my third point, viz., are engineering and art of service to each other, and can they be united? I think, perhaps, it will be as well to sub-divide the question by seeing, firstly, whether engineering and art are of service to each other; and, secondly, can they be united? Let us, then, begin by considering how art is benefited by engineering. Engineering benefits art when engineering is in itself good and right, and when it does not benefit art, it is because it has been wrongfully and improperly applied, and I must ask you to take this remark at what it is worth, for time will not permit me to go fully into the point; but, as an instance of the good that accrues to "art" from engineering, I may refer to printing, and its attendant belongings. How much does art owe to it? Truly, in the days when printing was unknown, there were then, as now, poets and philosophers who expressed their thoughts in poetic language, and chronicled in strong prose the actions of their fellow men. But to how limited a number was the pleasure that their works afforded confined, as compared with the countless thousands who now delight in their genius? Then every copy had to be painfully transcribed, each copy taking months, perhaps, to complete. Now, by the aid of engineering (machinery), hundreds of copies can be supplied daily. Engraving, again, is an art that has greatly benefited by engineering science; for when it was, as it used to be, confined to copper plates, comparatively few copies could be produced. The copies thus produced were necessarily so costly, that only the wealthy could obtain them. Now, by using steel plates and the electrotype process, the copies are so multiplied, and thereby cheapened, that they are within the reach of all. Engineering affords great facilities for reproducing beautiful form and material, as, for instance, in such matters as porcelain and glass ware, iron and bronze work, textile fabrics, &c., thereby affording pleasure to many. But it may be,—as it has been said,—that all this tends to vulgarise art, and that machinery-produced articles, however beautiful, are not artistic, *because* they have been produced by machinery. This argument (I speak with all deference) is, I think, very fallacious. If a vase or a cup is in itself artistic in design, and is good art, so

are equally so the 20,000 copies of it, provided they are exact copies, such as machinery has the power of making.* And, again, a gardener produces from a chance seed, or, by care in cultivation, a flower or plant that has some especial point of beauty, and for which he obtains a very large price. By-and-by, from cuttings or other means of propagation, the plant or flower becomes common, and can be bought for as many pence as it cost pounds before. The plant or flower has not changed, it has just the same beauty as it ever had, but instead of pleasing only a few it pleases many. And it is on the ground that they give mental pleasure to many, that I claim for the multiplied copies of an artistic original the right to be themselves considered artistic. Engineering itself, however, is not artistic, nor does it directly produce art, but it *does* disseminate it, and, therefore, engineers may very fairly be said to benefit art.

But now let us consider how Art reciprocates the benefits she receives from Engineering. In the [earlier] days of engineering, art certainly was of great service to engineering by teaching those who practised it to clothe their works with beauty; it taught them, when they wanted a vertical support, to give it a tapering form, to give the gentle swell of the entasis to the column, thus satisfying the eye's sense of beauty and grace; to build the temple, the palace, and the cathedral all with proper fitness, and all with beauty. Though Engineering and Art are, and have been, co-existent, Art, is the master, directing and guiding Engineering into the right paths; and while Engineering acknowledges this mastership of Art all is well; but when, as is the case in these modern times, Engineering strives to obtain the mastery, the result is chaos as regards art. Modern engineering no longer pays allegiance to art, and arrogantly considers that it can do quite well without it, and hence it is that we have gone on with an increasing loss of beauty in the works of our modern engineers (this remark, however, applying only to the civil, and not to the mechanical engineer). The modern engineer seems utterly to ignore beauty of form; if he has to use a vertical support, he will probably make it of the same thickness all the way up; if he wants a buttress, he will put a great lump of masonry or brickwork in, without thought as to whether it will look ill or well, but calculated, I grant you, to do to an ounce what it has to do. There is an immense amount of thought in their work, but no mind,—I mean in an artistic sense; and even the thought they give to their work is of a sordid kind; for while they study how to use their material economically, they omit at the same time to study how to make their work pleasing, thus leaving half their work undone. I admit that engineering possesses a strong point of affinity to art in its *truth*, and by this I mean the honest construction employed by engineers in their work, never disguising or hiding it, but letting it be plainly visible to all; and there is a good honest purpose in what they do, and the sentiment of reality and truth, as opposed to fiction and falsehood, appealing as it does to our practical urgencies, disposes us to assign a high value to every work in which truth is strongly aimed at, and to derive an additional satisfaction in work in which fidelity of rendering is induced upon the charms peculiar to art. But while we admit and admire the truth of the engineer's work, and give them their due meed of praise for what they do, we must not forget at the same time to blame them, in that they leave so important a part of their work undone; viz., the making of it artistic. To my mind it is very nearly of equal importance that a building, a bridge, or whatever it may be, should be of good form and pleasing to the eye, as to be strong. There is an impertinence and brutality and want of regard for the feelings of others in many of the erections of late years,—the work of modern engineers. Consider how the Thames at London has been maltreated, and I ask you, as reasonable men, what right have we to inflict on ourselves and future generations such awful examples of the selfish disregard of all that is beautiful as have there been perpetrated? Our forefathers left us, their successors, works of beauty. What shall we leave our successors?

What remedy is there for this? Can Engineering and Art be united, and if so, how? My answer is, yes, and by means of Architecture; for though, as I have said, Architecture is to be considered as the child of Engineering, yet it is through the graces of that child that we must hope to again reconcile and unite Art with engineering. I say "again reconcile," for in old days Art and Engineering were united, and Architecture was their offspring. We moderns have divorced them; let us re-unite them. But how will Architecture unite the two? Engineering is the science of construction. Architecture, the art. Engineer is the hard matter-of-fact, uneducated man of business. Architect is the cultured and polished gentleman. Architecture is educated engineering. A man may be honest, bold, truthful, and business-like, but hard, selfish, and inconsiderate, with no knowledge or care for the beautiful. He is the modern engineer. Another may be honest, but timorous, uncertain, and unbusiness, kindly considerate with respect to the feelings of others, and with a great desire for the beautiful, often failing from lack of power. He is the modern architect.

Perhaps you will think I do not draw a flattering picture of the representatives and practisers of that art by which, as I have already told you, art and engineering can be united. Well, that may be true, but it is only true as regards the modern architect, as my first picture is of the modern engineer. The modern architect is as the times, his own want of pluck, and the modern engineer, have made him; he, if I may say so, has been bounced and bullied out of his proper position by the engineer; and much that of late years has been done by engineers should have been done, and would have been better done, by architects, if they had but retained their proper position by keeping themselves abreast of the times. I have given you a figurative sketch of the modern engineer and the modern architect. I will give you one as to the past. Here we have a man who is honest, bold, and truthful, certain and business-like, with kindly regard for the feelings of others, an intense love and knowledge of the beautiful, with a desire that all should participate in the pleasures it affords, and having the will to do good work, has also the power to execute it; he is the architect and engineer of old, the architect and engineer being one. . . .

The difference in the way an engineer and an architect would set about the same piece of work, if they had it to do, would, I think, be as follows, viz.:—The engineer would begin by studying the purpose of the intended structure, then consider as to the best materials of which to erect it, and calculate to a nicety how little of each material he could use. If he wants a door, he puts in one; if he wants a window, a window is put in; but he never studies or thinks for one moment whether he can, by placing his door or window in some other position, improve the appearance without altering the utility of his work, and the result is, his work is as bald and ugly as possible. He then, perhaps, proceeds to what he calls "ornament" it, by sticking on here and there a moulding, which as likely as not he places upside down, thus destroying the only grace his work possesses, viz., truth; and then says, with satisfaction, "See what we engineers can do: we want no architects with styles and orders to teach us what to do." On the other hand, the architect (I speak of the true architect) would first, like the engineer, consider well the purpose of his intended building, and, like him, consider as to the best material to build with, and how best to use it. He also would place his doors and windows in their most useful positions; but, in addition, he would, from the first commencement of his work, have in mental view before him a certain effect, which he would strive to produce, and thus, while so planning his building as best to suit the requirements of the work, he at the same time makes it pleasing and artistic; and when the work is finished, it needs not the extraneous aid of moulding or applied ornament, for all that is wanted in that way forms part of the structure itself. It is common to find engineers twitting architects with their want of knowledge of scientific construction; but I think I can safely say of architects that they, as a body, have a far greater knowledge of practical engineering than engineers have of architecture,—as their works show,—the architect's failures in "construction" being as nothing to the engineer's failures in "art."

* If it were possible to make ten thousand copies of the "Apollo Belvedere," each so perfect that it could not be distinguished from the original, the original would lose none of its value artistically, it would still be as beautiful as it ever was: it might perhaps be of less money-value; that, however, is a small matter,—"art" has nothing to do with "money."—C. H. D.

"THE INDUSTRIAL CRISIS."

Sir,—When I forwarded a letter under [illegible] heading, for publication in your issue of the [illegible] ult., I did so with the full knowledge that [illegible] would fall after the manner of a small bo[illegible] shell into the camp of a certain clique of [illegible] readers. But it was done without any wis[illegible] fire viciously into their midst. I shot ra[illegible] into the air just above them, hopeful that [illegible] report would awaken the sleepers, and [illegible] those who watched more vigilant than eve[illegible] am glad to find by the correspondence [illegible] "Seagirt Albion" and "Jno. Lewis Jaqu[illegible] that these anticipations have been verified.

For a moment, then, let us glance at a [illegible] summary of what has been elicited.

As an illustration in support of the pow[illegible] article that appeared in your publication fo[illegible] preceding week under the above headin[illegible] mentioned, as a passing fact, to be taken [illegible] exactly what it might be worth, that up[illegible] English workman leaving my establish[illegible] twelve months ago, the vacant place was [illegible] by a Prussian, who engaged himself at ha[illegible] "screw" of his predecessor, and who had [illegible] tinued ever since to occupy the position [illegible] credit to himself. To this, "Seagirt Alb[illegible] replied that foreigners "demand more m[illegible] than they are actually worth in comparison [illegible] Englishmen," and that he never knew a f[illegible] workman, "however inferior, willing to re[illegible] less than 1s. or 1s. 2d. an hour" as remuner[illegible] for his labour. On page 160 Mr. Jaquet, [illegible] excusable that one with so pronounced a F[illegible] patronymic should take exception to any[illegible] thing being said of a Prussian,—bears s[illegible] testimony, and winds up by asserting that [illegible] foreigners but an "ill compliment in saying [illegible] will work for less money than any E[illegible] mechanic" will do. Thus we see my[illegible] assertion that foreigners work for lower [illegible] than their English brethren meets wi[illegible] unqualified denial from two several corr[illegible] dents, to whom, I am sure, we give every[illegible] for singleness of purpose and honesty of [illegible] tion; but, facts are stubborn things, so it r[illegible] just as well to look at a few, and see if th[illegible] to be got over or not.

First, however, let me observe that I [illegible] a wholly disinterested position. I am [illegible] Englishman, and whilst open to give eve[illegible] his due, am by no means "wrapped u[illegible] foreigners. I know too well what it is [illegible] as a journeyman, amongst them in thei[illegible] lands, and I know that, as a rule, a gre[illegible] of prejudice exists,—especially in such cou[illegible] as Italy and Spain,—against strangers. [illegible] former country I have worked hard e[illegible] goodness knows, for three lira a day (v[illegible] *centissimi* = 2s. 4½d. English money), an[illegible] have been told, times enough, by the [illegible] that I was "taking the bread from the[illegible] dren's mouths," the remark being accom[illegible] by a pantomimic gesture and allusion [illegible] knife.

During the late masons' strike, I u[illegible] these columns that we could not possib[illegible] our eyes to the capabilities of foreign[illegible] foretold that the introduction of such [illegible] this country would certainly be fatal to the[illegible] I also took occasion to remark that I th[illegible] many of the laws of the union were altog[illegible] prejudicial to individual success as the[illegible] to the nation's welfare, and I queried wh[illegible] thorough unionist ever succeeded in m[illegible] position for himself in the world. Thi[illegible] assertion was contradicted by a corres[illegible] under cover of a *nom-de-plume*, and a be[illegible] high standing in Bristol was cited by [illegible] an instance of a union-man making h[illegible] An indignant denial by the gentleman [illegible] tion, together with the scathing retort [illegible] considered the unions the great curse [illegible] land, followed this, whilst the sequel[illegible] strike itself showed whether my judg[illegible] foreigners' productive power was overd[illegible] not. In my own establishment, no man [illegible] asked whether he is a "society man" [illegible] I am as profoundly indifferent as to [illegible] views upon this point as I am as to his [illegible] and as I pay a somewhat higher rate o[illegible] than does any one else in the city in [illegible] reside—higher, indeed, than that which [illegible] societies deem the standard—I think it [illegible] allowed I am in a position to state facts, t[illegible] in any way meriting the accusation th[illegible] biased.

For several years we, most of us, h[illegible] opportunities for seeing specimens of b[illegible] tiful marble mosaic floors that have bee[illegible]

workmen in so many parts of our country. Waterhouse's noble Town-hall at Man-, and other places, I have seen these men g away, hours after all Englishmen have i off: Saturday and week-days just the The result is, that effective marble inlaid are laid by the firm who have imported oreigners at 1*l.* per square yard. This rice, it is said, we cannot touch; and g thereto I note that a contemporary y says:—

king from experience, we have found the Italian a sober and industrious, and an English workman possess their patience, delicacy of touch, or eeling, which is necessary, even for fitting together l pieces of marble for a mosaic of simple design. ur workmen would altogether mar the effect of line by some inartistic method of placing the

gard, again, to *parquet* work, much of it g been procured from abroad, but the ls have been laid by ourselves. Now, r, Hungarian workmen have been intro- nto this country with a result, we are sastrous to English workmen, who, as price, cannot compete with them.

Thomas Brassey, in a lecture at Edinburgh or two ago, gave interesting statistics e relative cost of English and foreign Referring thereto he said that,—

ound that the cost of brickwork in the construc- s-locks in 1870, 1871, and 1872, in Holland, was d. per cubic yard, while the price of ordinary k on a railway contract near London in 1878, was per yard. Extending the comparison to earth- cubic yard by Dutch labour cost 3*l.* 7*s.* 2*d.*; by abour, 3*l.* 6*s.* 3*d.* The labour of four English s would be equal to that of five Dutchmen; but English workmen would cost 1*l.* 6*s.* per day, and utchmen only 18*s.* 9*d.*,—thus making the English ner cent. dearer than the Dutch."

ummer I had the honour of being nomi- e representative of the Exeter Chamber merce at Paris, and whilst over there in pacity I spent some time in making a f visits to the principal workshops of y, and in obtaining technical information to the inner life of the Parisian working for facilities afforded for doing this to advantage than I otherwise should have am indebted to the courteous assistance P. Cunliffe Owen, the British Commis- and his kindly interest I have great in thus publicly acknowledging.

argest builders in Paris are Messrs. & Cie., who employ some 5,000 hands. asons work sixty hours a week, and 6¼ francs, *i.e.*, 5*s.* 5*d.* a day, which is nt to 6½*d.* an hour. The masons' s have 4 francs, *i.e.*, 3*s.* 4*d.* a day, or 4*d.* These are considered high wages. ers and joiners,and cabinet-makers, the rate of from 4½*d.* to 6*d.* an hour; prers as much as 7*d.*, for very good men. are paid higher rates. In the best shops that men received payment equivalent m hour and upwards, the very cleverest smen in that branch in Paris receiving n hour, whilst several of the best men other leading firms were in the receipt ½*d.* These were the prices paid last in Paris, which, as the crow flies, is only ar again from London as Leicester is!

I go further? Not only in labour, but -up materials, we are hearing at every e same thing. Retail shops are crowded ssantly-carved woodwork from Switzer- d Germany, quite suitable for modest o purposes, and all ticketed at prices we ompete with. Of iron and cutlery we like tale. Joiners' work comes from and Sweden, and sells at cheaper rates e can make it for. Only yesterday a an told me he had arranged to bring reigners to do works required upon his as the "*striking*" he had endured in ast made him fear to entrust his own men; whilst in Ireland, recently, a dis- ed architect there told me that a German l been sending special gratuitous designs rs and pulpits to hundreds of the clergy country, each design having the name hurch it was sent for placed upon it; the s showing knowledge of the individual nents of the church whose name was em.

yet, in the face of all this, we find men "Seagirt Albion" say they never knew ner who would work for less than 1*s.* an whilst Jno. Lewis Jaquet pats the approvingly upon the back, and affirms d be paying him a poor compliment if ight for one moment that he could be f such a shabby thing as to come over here and work at rates a farthing under his English brother!

I am neither an alarmist nor an optimist. I am English to the backbone, and believe in our ability and in our pluck. But, I cannot close my eyes to plain facts. These tell us clearly that many outside our country are trying hard to wrest the supremacy from us, and for that reason I make these remarks. To be forewarned is to be forearmed! HARRY HEMS.

THE NEW BUILDING BYE-LAWS.

AT the meeting of the Board of Works last week a report was read from the Building Act Committee stating that they had had under consideration the resolution of the Board of the 19th of July last referring to them the Metropolis Management and Building Acts Amendment Act, 1878, with instructions to report as to the arrangements necessary to be made for giving effect to its provisions. The 12th section of this Act gives the Board power to make regulations with respect to new theatres and certain new music-halls for protection from fire. The music-halls in question are those containing a superficial area for the accommodation of the public of not less than 500 square feet, to be kept open for public dancing, music, or other public entertainment of the like kind. After the making of any regulations under this section it will not be lawful for any person to keep open any theatre or music-hall coming within the provisions of this section without a certificate from the Board to the effect that the building was, on its completion, in accordance with such regulations. Any person contravening this enactment will be liable to a penalty not exceeding 50*l.* per day. The committee have prepared with great care the regulations now submitted, which have been under their consideration on several occasions, and they have throughout conferred with the superintending architect on the technical questions involved, and with the solicitor as to the powers of the Board under the Act. These regulations provide for the deposit of drawings and specifications of new theatres and music-halls, the materials and thickness of walls, and the width of staircases and passages, with the view of affording sufficient means of exit. They also contain provisions with respect to those portions and fittings of the building from which experience has shown that the damage of fire is most likely to arise. After the making of these regulations, the Board would have power to dispense with or modify the same in any special case where they might think it expedient to do so; but before the final settlement of the regulations, the committee were of opinion that it would be desirable to obtain the views of the licensing authorities in the metropolis on the subject, and they, therefore, recommended that the regulations be referred back to the committee, with authority to send the same to the Lord Chamberlain and the justices of the peace for the city of London and the counties of Middlesex, Kent, and Surrey, with a view of obtaining suggestions before they were finally approved.

The report of the committee was agreed to.

NOTTINGHAM SCHOOL OF ART.

ON the 27th ult. the medals, the Queen's, and other prizes gained by the students of the Nottingham School of Art in the national art competition and Government examinations of 1878 were publicly distributed at the Albert Hall by Sir Philip Cunliffe Owen, C.B.

Sir Philip Owen, who on rising met with a cordial greeting, said,—The Nottingham School of Art, founded many years ago, had always maintained a reputation for itself. Through a long series of years, having always had the advantage of masters noted for the excellent training which they gave, the school had come to be a glory, not only to this town, but to the United Kingdom generally. He believed that he might, perhaps, now be allowed to refer specially to results which had been achieved in the past year,—in the year 1878. He found that the Nottingham School of Art stood, as they would all read, the first in having received the largest number of medals which had been awarded. Also, he found that in the advanced Government examinations of the third grade Nottingham stood first. One of the great results of the Paris Exhibition of 1878 had been that the French had acknowledged in the fine arts, in painting, and in the arts as applied to manufacture and industry, what they termed the style *Anglaise*. People said, "We do not altogether know what it is, but it is going to be the fashion of the future." French manufacturers had spent hours and hours in the Paris Exhibition, in the English section, and, indeed, had confessed to copying many of the designs sent, because they were convinced that unless they followed in our wake, in the race of competition they would be nowhere.

The prizes having been distributed,

Mr. J. S. Rawle, the head-master, who was cordially received, said it was always his first and pleasantest duty to congratulate those students who had come off with flying colours; and if these congratulations had been most hearty in former years, they were heartier now than ever they had been before, for he had now to congratulate them upon the fact that the past year's work had shown a crowning success over the efforts of many previous years. The students had not simply come to the front once and then retired to an inglorious place in the rear, but had continued marching steadily in line, and kept for themselves the honourable position they had first won. He said that the students had made him prouder than ever at the way in which they had done their duty, and that he knew them too well to think for one moment that those who had not been victors would let their present defeats prove a damper in their determination to continue the struggle. The followers of each branch of art might learn much from each other's work; for there was not that wide gulf between the work of the ornamentist and of the artist which many so erroneously supposed. The same broad principles, the same great truths, should guide both. There was not one art for the designer and another art for the picture-maker. In a picture the mode by which the beauty of line and of form was produced was not so evident, for pictorial art should disguise the means by which the end was gained; whereas, in an ornamental design they might, without restraint, show more completely those lines and subordinate matters which led up to the principal forms. If they critically analysed a good picture and a good piece of ornamental work they would find that the same guiding principles, in a greater or less degree had influenced the construction of each, and experience proved that the greater the art power possessed by the designer the better would be his work. It was also true that a knowledge of ornamental design would prove a help to the artist. This should always be felt, and then, although pictorial art was, of course, the higher development, there would be a greater bond of sympathy between the two, which would prove a benefit to both. Ornamental art should be considered as the younger sister to pictorial art, and not be, as was often the case, banished out of the family altogether, as something unworthy of association. This union would not degrade the latter, but would certainly elevate and ennoble the former. The workers in each branch of art should remember that all good original work must be based upon what had gone before. If it were not for the influence of the past upon them they would be in the condition of the New Zealander, who, without a history to build his own experience upon, could only carry his primitive art-power as far as the carving of rude simple forms upon the prow of his canoe. If they looked back upon the past epochs of art, both ornamental and pictorial, they found, in every case, that there had been a gradual growth which, in time only, through a succession of workers, had brought about some distinctive characteristic which marked the art history of the period.

Stability of Dock Walls.—At a meeting of the Edinburgh and Leith Engineers' Society, held on the 5th inst., Mr. Robert C. Reid, president, in the chair, a paper was read by Mr. John Romilly Allen on the "Stability of Dock Walls," in which he described the methods by which failure in dock-walls might be avoided, instancing specially the necessity for the geological formation of the site being studied by means of borings taken during the progress of the work. He stated that by means of careful backing a great economy in masonry might be effected, and that the stability of the wall was greatly secured by having increased *batter* at the foot, so as to spread the pressure over a larger area at the front of the foundation, where the stress was greatest. The paper concluded by describing a new method of calculating the stress on a dock-wall.

ST. MARY'S (R.C.) CHURCH, CHELSEA.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last a large number of the members of the Architectural Association visited the new Roman Catholic Church now approaching completion in Cadogan-street, Sloane-square, just off the southern boundary of the Cadogan estate. The new church, of which Mr. J. F. Bentley is the architect, is intended to accommodate the congregation now worshipping in the old so-called "Classic" stucco-covered building at the junction of Cadogan-street and Pavilion-road. It is Early English in style, and externally is faced with yellow stock bricks, with stone dressings, the roofs being covered with red tiles. Mr. Thomas Spooner, the clerk of the works, received the visitors, and explained the main features of the church, which on plan comprises nave, north and south aisles, chancel, lady-chapel, chantry-chapel, north transept, and on the south the chapel of the Blessed Sacrament, beyond which is the sacristy. The nave is 82 ft. long, 27 ft. wide, 55 ft. high internally from floor to under-side of ridge, and 63 ft. to outer ridge. It has an arcade of four bays on each side, 23 ft. high to the underside of apices of arches, and 16 ft. 10 in. from centre to centre of columns, which latter are octagonal on plan, with shafts running up on the nave facets through the clearstory to receive the roof principals. Eastward of these four bays on the south side is a bay 9 ft. wide between the piers, devoted to the purpose of a baptistery. Opening into a corresponding bay on the north side is the northern door, the upper part of the bay being appropriated as a small private gallery for nuns, &c. The total length of the nave is 82 ft. The chancel or sanctuary is 35 ft. long by 23 ft. 10 in. wide, and is raised three steps, or about 18 in., above the floor of the nave, the height from the chancel floor to the underside of the apex of the chancel roof being 52 ft. The total length of the church internally, from east to west, is 125 ft. The nave aisles are 15 ft. wide between piers and walls. The lady-chapel is north of the chancel, and, in fact, forms the north chancel aisle. It opens by two bays into the chancel, and is lighted by two two-light windows on the north side, and by one three-light window on the east. The chantry chapel, which forms the south aisle of the chancel, opening from it, as does the lady chapel, by two bays, is the pre-existing mortuary chapel used in connexion with the old Catholic burial-ground, upon the northern edge of which the new church has been built. This chapel was built many years ago, and is not altogether in keeping with the new work. The north transept occupies the easternmost bay of the nave on that side, and is very shallow, being scarcely deeper than the width of the aisle. Opening out of the south aisle, somewhat to the westward of the chantry chapel, is the chapel of the Blessed Sacrament,—an excrescence brought from the older building already referred to. Adjoining this chapel is the sacristy, beneath which is a chamber to contain the warming apparatus. Opening out of the north and south aisles are confessional-boxes. Behind the high altar in the chancel is a narrow passage or ambulatory leading from the chantry chapel to the lady-chapel, and giving access to a staircase leading to the triforium gallery at the east end. At the north-west corner is an octagonal turret for the bell. The east window of the chancel is lofty, and consists of four lights, which it is intended to fill with stained glass. The west window consists of four lancet-lights, of equal height. The clearstory of the chancel has five lancet-lights on each side, and that of the nave has eight lights on each side, two over each of the wide bays. The only other entrance to the church besides the north door already mentioned is the principal door at the west end of the nave. The roofs of nave and chancel are somewhat wagon-headed in shape, ceiled between the rafters, all the woodwork being painted a dark bluish-green colour, the spaces between the rafters being white. Sittings will be provided at first for about 500 people, although it will be possible to seat nearly 1,000 when necessary. The stone used for piers, &c., is Stoke Ground, Corsham Down being used for almost all other work, both internally and externally. The tracery and mullions of the east window are of Hopton Wood stone. The internal walls of nave and sanctuary are finished with ashlar, the walls of the aisles, lady-chapel, and chantry chapel being finished in plaster. Messrs. Braid & Co. are the contractors. The way in which the work, especially the masonry, has been executed was commended by several of the visitors.

BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.

A winter meeting of this Society was held in Gloucester on the 5th inst. The programme announced that a temporary museum would be formed in connexion with the Gloucester Museum for the display of archæological objects, but the display is stated to have been a very meagre one, comprising chiefly a number of interesting old engravings of Gloucester Cathedral and Woodchester Priory, lent by Mr. Conway Jones. He also exhibited for Mr. Steed a number of "remains" found in the course of excavations in Bull-lane. Soon after eight o'clock the reading of papers commenced in the Lecture Theatre. Mr. C. J. Thomas presided.

The Rev. W. Taprell Allen read a paper on St. Briavels Castle. He minutely described the building as it now exists, and which was erected by Milo Fitzwalter, the date being generally fixed at about 1131. Since then additions had been made, as was evidenced by their different style. In 1223 there was a crossbow factory at St. Briavels, and a large order for this weapon was given by the king. In 1788 Howard visited St. Briavels Castle, which was then used as a prison; he reported that there were no prisoners there then, but recently three had been released, one having been confined nearly five years for a debt of 3s. and 4l. 11s. 4d. costs. Several interesting facts in connexion with the past history of the castle were noticed. At the present time the castle was to a great extent in a ruinous state. One tower, with the adjoining rooms, is occupied.

Some discussion followed, and an old MS. book was exhibited which had been written by monks, and was for many years in the possession of the keeper of St. Briavels.

Mr. J. D. T. Niblett read the next paper, on "The Arms of the Free Miners and Free Smiths of Dean Forest." He was glad to be able to bring before his audience a fact not generally known, though specially interesting to lovers of heraldry, which was now cultivated as a science to elucidate matters of history, it being constantly useful in fixing dates. This fact was that the fraternities or guilds of the Free Miners and Free Smiths had each their own distinctive coats of arms. They were to be seen at Abbenhall Church, about a mile from Mitcheldean. He then described the church and the eight shields on its font, and exhibited coloured diagrams of them, giving explanations of various details in connexion with them.

In the brief discussion which followed, Sir J. Maclean suggested whether the shields in question, which were peculiar in bearing tools upon them, were not rather trade marks than coats of arms.

The Rev. W. Bazeley read a paper on "The Earls of Gloucester," in the course of which he said:—Foremost amongst the Conquerors' nobles was his kinsman Robert Fitz-Hamon. On the death of Queen Maud in 1083 her lands and rights, including the "honour" of Gloucester, should have passed to Henry Beauclerk, her youngest son, but William Rufus gave them in 1087 to Robert Fitz-Hamon. 1091, Jestyn, lord of Glamorganshire, having been defeated by Rhys ap Tewdor, prince of South Wales, applied for help to the nobles of England. Fitz-Hamon and other knights went to his help, and Rhys ap Tewdor having been slain, the English nobles quarrelled among themselves, and Fitz-Hamon took possession of the province of Glamorgan. In 1102, at the instance of his wife, Sybil, daughter of Roger Montgomery, Earl of Shrewsbury, and of Gerald, Abbot of Cranbourne, Fitz-Hamon re-built the priory church of Tewkesbury, and endowed it with vast possessions. William of Malmesbury says, "It cannot be easily reported how highly Robert Fitz-Hamon exalted this monastery, wherein the beauty of the building ravished the eyes and the charity of the monks allured the hearts of such folk as used to come thither." The lofty receding arch at the west end of the present church, and the massive Norman tower, were relics of Fitz-Hamon's munificence. Fitz-Hamon and his successors lived at Cardiff with little less than regal splendour, and two towers of the present Castle of Cardiff were parts of this noble structure. He accompanied Henry I. to Normandy, fought with him at Tenchebrai, and at the siege of Falaise he was wou with a spear, which drove him mad. He in 1107, and his body was brought to Eng and buried in the chapter-house at Tewkesb In 1241 Robert, the third abbot of that m removed the bones to a tomb which he had constructed for them on the south side of choir; and 150 years later, Thomas Parker eighteenth abbot, raised a chapel of ca stone above Fitz-Hamon's new resting-place ordered a mass to be sung there daily fo repose of his soul. Mr. Bazeley then went narrate at length the history of Robert de G Earl of Gloucester, eldest son of Henry I clerk, and Nesta, daughter of Rhys ap Tew During the latter years of King Henry's r Earl Robert rebuilt the Castle of Bristol; gave every tenth stone to the monks o James's Priory for the chapel of St. Together with a palace and other house built a magnificent keep on the north-west stones imported from Normandy, and compassed the whole with a strong and wall. Mr. Bazeley gave an interesting a of the long and disastrous struggle bet Stephen and Matilda, and described the portant part taken in it by Earl Robert, an various scenes connected with the conflict were enacted in Gloucester and Glouce shire.

The concluding paper was by Mr. J. H. C on "The Great Berkeley Law-suit o Fifteenth and Sixteenth Centuries."

THE ART-UNION OF LONDON.

At the present time, when retrenchm the order of the day, it was a judicious st the part of the Art-Union to select, for annual presentation work, an illustrated since many a subscriber, desirous of not the advantages attached to continuous pay might manage to spare a guinea, when he be alarmed at the further (prospective bursement required for a frame and glas large engraving were to be the return outlay.

The subject of the work in question Byron's tale of Lara, and the designs Mr. C. B. Birch.

This poem, it is stated, was chosen for it tion on account of its presenting a large of dramatic incident within the limit suited for a work of this character; thus tating the aim of making a series of which should, as far as possible, tell the tale. In addition to this, great advantag offered by the costume and architecture probable period suggested. Mr. Birch is favourably known to the subscribers statuettes "A Wood-nymph" and "Whittin The original marble of the former, given in 1872 as a prize by the Art-Unio selected as one of the works to re British sculpture at the Paris Exhibition.

The salient points of the story ha picked out for illustration, and the treatm spirited and the drawing good, the son statuesque manner occasionally indicati sculptor's hand. The book, now re delivery, will be a welcome addition to the of similar volumes already produced Society. It is to be noted that the subsc must be paid before the end of March annual meeting will be held at the I Theatre on the 29th of April, and it is ann that, amongst the prizes then to be distr will be a number of busts, in porcel H.R.H. the late Princess Alice, for wh special permission of the Queen, Mrs. T croft has made a reduced copy of the bust of the Princess.

ACTION FOR FEES.

Royal Institute of British Architects,
No. 9, Conduit-street, Lond
Feb. 12, 1879.

Sir,—The Council have had their attention dir an error, relating to themselves, in the *Builder* o inst. At p. 130 (third column), in the report of an for Fees," it is stated that "Mr. Francis, archi *a member of the Council of the Institute*, corrobora We are instructed to inform you that Mr. F. J. of 34, Old Broad-street, E.C., was a member of th before the changes made in May, 1877, but th present moment no gentleman of that name occup at the Council of the Royal Institute of British Ar and we shall be obliged if you will permit this c to appear in your next issue.

T. H. Wyatt, Hon. Secr
William H. White, Sec

THE OBELISK.

RE has been another little collision on the
on of inscriptions between the Metro-
n Board of Works and the gentlemen to
London is indebted for the Obelisk.
t asking now who is right and who
, we implore all concerned to try and
so that the monolith may take a more
able form than it at present displays.
as it is on its built-up pedestal of modern
work, with which it has not the slightest
ion, and exposing its ugly rounded end,
s like one of a set of huge skittles that
t its way, and is fast ceasing to be sug-
of anything but a sneer, a jeer, or a
It is not clearly understood what is in-
to be done to give a somewhat monu-
aspect to the at present incongruous
n, but we conclude, as a matter of course,
me metal-work is to be applied at the
gles of the base of the Obelisk, and that
netal panels will find a place on the
l, so as to connect the two, if ever so
. This ought to be done at once: the
ffair is drifting into disrepute.

TECTS' AND SURVEYORS' CLAIMS.

claims of this character came before the
napel and Shoreditch County Courts
vely last week.
e first-named court, Mr. Sanders, archi-
d surveyor, of Southampton-street,
ury-square, sued Mr. Williams, a gentle-
iding at Woodford, in Essex, to recover
of 19*l.* 18*s.*, the balance of an account
eying and superintending the building of
situated in Latchett-road, Woodford.
fendant had paid 6*l.* into court, contend-
that sum was sufficient for the services
he plaintiff had rendered, and that the
were excessive. On the other hand, it
ed that the charges made were reason-
d the judge gave a verdict for the full
claimed.
e case tried at the Shoreditch County
he plaintiff, Mr. Michell, is a surveyor
gate-street, and the defendant, Mr.
esides at Grove House, Cambridge-
The action was brought to recover
r fees and expenses, and the plaintiff's
that he was employed by the defend-
had just completed some houses at
ate, to go through a number of accounts,
ments, and quantities in connexion with
ing of these houses, and which at the
med the subject of an action at law.
also been called in to perform these
in order that he might appear as a
in the case, and be able to say whether
ges were fair and reasonable. The
was that the plaintiff was called in
o say whether the charges for material
rect or not, and that it was no part of
ness to go to the estate and test the
ments. On the part of the defence,
were called to prove that it was
le the plaintiff could have gone through
surements; but the judge said it was
able to suppose that a man could be
to become an important witness in
se unless he had examined the buildings
ed the measurements. As he appeared
been over-paid with respect to one item
ervices, he should give the plaintiff a
or 2*l.* 2*s.*, with costs.

BURSTING OF WATER-PIPES DURING FROST.

Allow me to offer, for what it is worth,
bution to the literature of burst pipes.
always held, as matter of self-evident
e view to which you admit that you
ined, namely, that the frost bursts the
d the thaw discovers the damage. The
vith which flaws occur has, indeed, been
to me as well as to others, and I can-
feel gratitude to your correspondent,
tt," for the extremely probable expla-
at he has given of at least one cause
parent caprice. This is all that I should
n able to say on the subject a month or
but in the first sudden and violent frost
resent winter, I, in common with most
ighbours, had to send for the plumber.
e of the capricious nature last noticed
rred in a service-pipe which was easy
. The ball-cock that supplied the cistern above was frozen hard. I called for boiling water to thaw it. "Not boiling, sir," quoth the plumber; "only warm." "Why surely," I replied, "the hotter the better." "No, sir," says the other, "boiling water bursts the pipes, warm water thaws them and does no harm." "All the harm," said I, "is done already, depend upon it. It is the expansion of the water in freezing that cracks the pipes; hot water or warm water can only show the damage that has been done before." "Well, sir," said the plumber, "you do as you like; but I can tell you that when I have used boiling water for thawing a pump, I have heard the bolts crack and seen the nuts fly off when it was poured on; but I never saw any damage done by moderately warm water."

Now, sir, this is only second-hand evidence as far as my communication to you is concerned. But it was a statement seriously made to me by a respectable tradesman, evidently in earnest, who spoke of his personal experience in his own trade. I do not see how he could be mistaken. I feel no doubt whatever that he said what he believed. Of course, I acted on his advice, and I had no trouble with the ball-cock. I cannot attempt to explain the theory, on the assumption that the statement is correct. The subject is one involving so much discomfort and expense to so many householders that I make no apology for bringing before you the statement exactly as it was made to me. Perhaps some of your numerous readers may be able to add something of value, either in support, in contradiction, or in explanation of the plumber's dread of boiling water.

C. E.

Sir,—During the late frost, some of your correspondents discussed the cause of the bursting of water-pipes during a frost, and, if I remember rightly, some contended that the damage was caused by the thawing of the ice. If not too late, you may like to insert the enclosed extract from Professor Huxley's admirable work, "Physiography," which I had not by me at the time you published the correspondence. I suppose he may be considered an unequalled authority on such matters:—"It is important to note that water and a few other liquids, instead of continuing steadily to contract when cooled, reach a limit at which contraction stops and is succeeded by expansion, so that the solid water actually occupies a good deal more space than did the liquid from which it was derived. When a water-pipe bursts during a frost, or a jug of water cracks as the liquid freezes, we are practically taught that water, during the process of solidification, undergoes a large increase of bulk."—P. 56.

E. S. R.

PARTY WALL QUESTIONS.

As it was I who raised these questions, I shall be glad to reply to Mr. Amery's letter in your last issue. The first case which he mentions has no bearing whatever on the subject of party walls, for a wall which he desires to build entirely upon his own land, and belonging exclusively to his own house, is not a party-wall, but an external wall. In building it he must, of course, keep quite clear of his neighbour's soil, taking such steps as he may be advised for getting a sufficient foundation with as little sacrifice of space outside his wall as possible. Practically,—if no party-wall is built,—he and his neighbour will, no doubt, build their walls close together, seeing that there is a good foundation extending under both walls. But they had much better agree to build one wall only which will stand over the junction line of the two properties, and having proper footings. This will be a "party-wall" of which they will be tenants in common, and, if within the Metropolitan district, the law in relation to it will be found in the Metropolitan Buildings Act.

With regard to his other instance, one cannot help seeing that by selling the whole of his building plot, except the strip of 7 in. wide on which stood one half of the wall, he raised some nice questions, and may be glad to have got out of his difficulty so easily. I should say the wall was not, when he sold his house, a party-wall, though it may be one now that the new proprietor of the adjoining land has paid a consideration, and has used it. Your correspondent is, I suppose, still the freeholder of the 7-in. strip, and if he had bought and built on the adjoining land he could not have sold his new house without producing his title to this strip as well as the title to his new plot. If the owner of the house last built wants to sell, he cannot produce any title to the strip. He is, however, not before us.

Thos. Blashill.

BAD BUILDINGS.

Sir,—The only effectual remedy will be to make the ground landlord jointly responsible with the speculating builder for the proper materials being used in the construction of buildings. The evil lies at the fountain head.

Most of these landlords do not employ a surveyor to look after their interests, and bind down the builder, as to the materials, under penal clauses; but employ a speculating man to cover the ground at the least possible cost. "*Qui facit per alium, facit per se*," is a legal maxim that might be applied with great benefit to the general public; and the builder in these cases is simply the agent of the landlord.

No amount of legal pressure applied to these builders can abate the evil,—fighting such a class is fighting with shadows,—here to-day, gone to-morrow.

If acting in the landlord's interests, I would not allow such a thing as an angle quoin supported by an iron column. Such quoins should all be well splayed, and good story-posts fixed in addition to such columns.

Further, I think it is a question whether the walls of all dwelling-houses should not be a brick and a half, or 14 in. thick, in place of the 9 in. work at present allowed, as the bond of this is imperfect, and it will scarcely keep out the weather.

A District Surveyor of Thirty Years' Standing.

P.S.—Power should be taken either by bye-law or amendment of Act (short Act), by the Board of Works, enacting that,—"The term 'builder' shall apply to and include any building owner, ground landlord, mortgagee, or other person interested in such land or houses"; otherwise it is a question of supply and demand. Bad builders will always be present to do cheap building and cheat the public, and the nuisance will continue, and the real offenders escape punishment.

BUILDERS' CONTRACTS.

In your impression of the 1st inst. I noticed an article stating that the first annual meeting of the National Association of Master Builders took place at Leeds, on the 23rd ult., about seventy representatives being present. Amongst the things discussed and approved of was a new form of contract which had been prepared and recommended by the committee for general adoption throughout the building trade, the contract to be based upon the conditions of contract agreed upon by the Royal Institute of British Architects and London Builders' Association. Now, though I am not a builder myself, but clerk to a builder, I think, on behalf of the builders who do not belong to the above association, I am entitled to ask a few questions on the subject of the new conditions recently imposed by the architects. In the first place, I would ask the Association of Builders why the condition of depositing a *fac-simile* priced copy of quantities before signing the contract should be enforced? The architect's answer is, to insure a more amicable settlement. In what way? Simply by charging all extra work, and deductions, if any, at contract prices. I would ask, who is to pay the builder for the extra labour in cutting away and making good after extras, if you are bound up to the contract prices? And under those conditions an architect might alter the whole arrangement of a house, and put the builder to great expense. Still, you must only have the prices that you put in low competition for the job; that is a condition, I think, that all builders of repute should oppose, as a sealed copy of quantities is not always secure, even in the hands of architects, and the builders who deposit same are making a rod to be used against them. Another very stringent condition is that all materials carted upon the works are to be the property of the person for whom you are carrying out the contract, and not to be taken away without a written order from the architect; also not to sublet any of the work without a written order from the same person. The first reads in this way. If you carry twenty loads of timber on the works, and only use fifteen, you must get an order to remove the others. The second I consider is an imposition, as all builders sublet more or less of their work.

The above comments are made upon a copy of conditions I have just perused, trusting that some member of the Builders' Association will give me his views upon it.

BUILDER'S CLERK.

FROST AND MORTAR.

SIR,—The winter of this year 1878-9 is, I take it, almost a counterpart of that of 1860-1 in its severity. In that year the building of the brick-work of a church about 8 ft. above ground level was so severely injured by the frost that it was condemned, and had to be rebuilt.

The matter was attended with litigation, and it was sought to be proved that defective materials had been used; but the result showed that good materials had been used, but the action of the frost had reduced the mortar to powder, and made it perfectly worthless.

The moral is that the rotten appearance of mortar after being acted on by frost may be mistaken by the uninitiated for defective work, and that it is better to defer all work (not always possible, however) during a frost.

A DISTRICT SURVEYOR.

SANITARY SUPERVISION.

SIR,—As I have for many years been engaged in practical sanitary house reform, I have watched the changes of public opinion on sanitary matters, and I can testify that your journal has kept well to the front in guiding that opinion into proper channels. I have derived many useful hints from the letters and articles appearing in your publication, but I think the time has come when suggestions and experiments ought to merge into ascertained and acknowledged facts. If sanitary engineers have not now sufficient experience and data to enable them definitely to determine on the best and simplest system of sanitary arrangements for houses, they will never come to any decision at all, and universal sanitary reform will be further postponed until the general body of sanitary engineers agree to adopt some approved system of sanitation.

Your correspondent, Mr. Buchan, has rendered good service to practical sanitary engineering, especially in introducing and advocating his excellent form of trap for at once excluding sewer gas while admitting pure fresh air to house-drains and soil-pipes; but Mr. Buchan rushes it readily into print, and if he confuses your readers with many more suggestions such as those in his letter which appears in your issue of February 1, they will have to give him up.

As a practical man, I heartily approve of Mr. Buchan's former suggestions, of which he freely gave the public full benefit, but I utterly condemn as absurd and impracticable his "new plan." The "open trough" on the branch soil-pipe which he therein strongly and unadvisedly advocates is so objectionable and impracticable that I am in doubt how I can ever trust to his advice again.

1st. It would present an abominable appearance (especially when in action) viewed from any windows on a higher level, whether in the same, in an adjoining, or in an opposite house.

2nd. It would be offensive to the sense of smell.

3rd. It would injure the appearance of the house.

4th. It would deteriorate the upward draught of air through all lower parts of the soil-pipe and at the inlet trap.

5th. In certain winds blowing down upon these "open troughs," a powerful and offensive down-draught would be driven out at the inlet grating over trap at ground.

6th. Heavy snow and frost would fill up and choke the "open trough," and the soil would then unquestionably overflow and pour down the sides of the house.

There is an excellent system of sanitary arrangements well known and well tested by sanitary engineers of practical experience which, if faithfully carried out, supplies all real wants; we do not want even to breathe the air of our house-drains, nor to render our soil-pipes fit places to live in. Our one object should be to exclude, by the best and simplest means, all dangerous sewer gases from our dwellings.

I have originated and am successfully carrying out a system of sanitary house inspection, guarantee, and insurance, which you may consider worth communicating to your readers, as they may find a similar system work well in their districts, and I, therefore, enclose one of my prospectuses. I find the system works smoothly and well in this country (Dublin), and it enables householders at once to strike at the root of defective drainage.

WM. ROBT. MAGUIRE.

HOTELS AND RESTAURANTS.

SIR,—Through the medium of your journal may I be allowed to supplement by a few remarks Mr. Frederick Francis's paper (p. 155, *ante*) on this subject, read before the Architectural Association? Referring to the "art-tiles" employed as decoration at the King's Head, may I, as one of the two actual painters of this work, be allowed to state that I have just designed and painted those additional portions rendered necessary by the enlargement of the premises in Mark-lane?

I must here acknowledge the name of the other painter, M. Alexandre Gravier, who, in the original and largest portion of the work, designed and painted those tiles constituting architectural arrangement, flowers, birds, fruits, &c., the sole painter and part draughtsman of the entire historical, Shakspearean, and other subject-work being

ISAAC A. GIBBS.

Royal Scottish Academy.—At a general meeting of the Royal Scottish Academy, held on Monday, Messrs. James Cassie and Robert Gavin, Associates, were elected Academicians, in the room of the late G. P. Chalmers and Kenneth Macleay.

ST. ALBAN'S ABBEY.

THE NAVE ROOF.

SIR,—"An Old Friend," in last Saturday's *Builder*, hints that it is rather "low,"—a sign of rusticity,—to care about ancient buildings. Doubtless there may be reasons therefor. So skilful an artist in throwing cold water can hardly be ignorant of his own perfections. The bits of innocent ignorance in his letter have, therefore, a suspicious look, but I will not be deterred from following my first benevolent impulse. I was really distressed that so comely-spoken a gentleman should talk of "conservative restoration, whatever that may be," and thought you would allow me to define the creed of the conservative restorer, so that when "An Old Friend" writes again on the subject he may be a trifle less vague. I do not think any orthodox member of the body will quarrel with the following six rules:—

1. An old building had better not be meddled with, unless it is going to ruin, or has been much injured by neglect or wilful mutilation.

2. Any old work of merit which wants repair should be repaired.

3. No old work of merit should be destroyed merely in order to put new work in its place.

4. If some part of a building, actually in use, is so far decayed that it must be renewed, the new work should, as a general rule, be a careful copy of the old work.

5. If ruthless people have injured the beauty of a building by depriving it of something which once belonged to it, this something may be replaced or restored.

6. If the original form of any part of a building cannot be discovered, conjecture and analogy may be useful,—if it is impossible absolutely to let the work alone,—but in no case must anything be put up which *could never* have existed at any previous time.

What is proposed at St. Alban's will sin against the spirit of the whole of these rules. A sound, substantial, old oak roof is to be destroyed,—merely to put up a new fir roof such as never existed before over Decorated bays. We have practised restoration of ancient buildings for a long time, and on a good scale in England, and have preached abroad the true kind of restoration, and denounced the false. Are we now to take it that persons in authority do not care in the least which is followed for the future? ANOTHER OLD FRIEND.

SIR,—I will ask you to publish a letter I addressed lately to Mr. Street, and this, I hope, will be my last contribution to the correspondence:—

[COPY.]

"Spring Gardens, January 31, 1879.

DEAR MR. STREET,—I was in Wales when your letter came, or I should have replied sooner.

When you first made the attack on our proposal, I felt that your position, and the prominence given to your criticisms, made it desirable that I should reconsider the ground on which we were acting.

This I did with the greatest care, proving to the satisfaction of myself and the Committee that the addition of a high roof was both justifiable and on every account advantageous.

Having done this, I have no intention of reopening the question a second time.

The method adopted for ascertaining the probable ancient line of roof is the most trustworthy I know of, and I have every reason for feeling confidence in the substantial correctness of my conclusions. J. OLDRID SCOTT."

As regards the desire which my father had to add a high roof to the nave of St. Alban's, I wish to point out that it is proved, beyond all doubt, by his repeated conversations, and by his correspondence with his clerk of the works, Mr. Chapple. It is in a letter to him that the idea of repeating what he had done at Selby is mentioned. Again, he expressed his wish most distinctly to Mr. Longmire, the contractor, as well as to others, and especially the chairman of the committee, Lord Verulam, to whom he stated that he should rejoice to add a high roof, only he despaired of the necessary funds being ever available. There is also the evidence of his original report, in which there is a passage exactly to the same effect; so that there cannot be the slightest doubt that, in his opinion, the addition of a visible roof would be a vast gain to the building, and that he would have been most pleased to carry out such a work of restoration.

For my own part, I am rejoiced to know that in what we are now doing we are only carrying out the wish of one whose opinion on such a question will be admitted by all to be of the highest value. J. OLDRID SCOTT.

SURVEYORS' FEES.

SIR,—In your issue of the 1st inst., I no
report of an "Action for Fees—Gordon *v.* Bl
burne," which, you say, involves a questio
considerable importance to architects and qu
tity surveyors. The decision, in this case, a
rently, was that an architect is liable to
quantity surveyor for his fees. If this be
case, the decision is contrary to at least
other cases, lately decided in England
Scotland. As we are not all at one as to
meaning, or, rather the effect, of this deci
would you kindly permit me a few words?

The jury in this case found for the pla
(Gordon, the quantity surveyor), on the gr
"that the plaintiff was employed by the def
ant personally, defendant acting as princi
but the judge lays down the law plainly in
ing to the jury,—"But if the jury should
that there was only the ordinary relatio
architect and quantity surveyor between de
ant and plaintiff, and that defendant acte
a disclosed principal, then the verdict wou
for the defendant."

It fairly follows that, unless there had
some other than ordinary relation (whic
jury found there was) between architect
quantity surveyor, the decision would have
for the defendant (Blackburne, the archite

The English case (Gwyther *v.* Gage) ref
to above, is reported in the *Times* of Febr
8, 1875. It was before Mr. Justice Quain
a jury. Here the plaintiff (Gwyther, a qua
surveyor) sued the building-owner for his
charged on the lowest of the tenders s
from his schedules. The defendant
payment because "the architect in the
instance had only a limited authority, an
he was told that the defendant had engag
builder, so that there would be no neces
take out the quantities to enable the build
tender." His lordship said that if the
found that the architect's authority w
limited in the way stated, the defendan
liable to pay the plaintiff a reasonable re
ration for taking out the quantities. Th
returned a verdict for the plaintiff, an
judge assessed the remuneration at 1½ p
on the lowest tender.

The Scotch case is from the *Scotsm*
January 25, 1879. It was before three
of the Court of Session. This is a cuttin
the newspaper:—

"SECOND DIVISION.

APPEAL—WILLIAM CORNELIUS *v.* EDWARD BL

This was an appeal taken from the Sheriff C
Edinburgh in an action raised in that court at the
of the respondent Black, who is an ordained sur
Edinburgh, for the payment of 82*l.* 8*s.* 3*d.* The
for was the amount of an account incurred to the
for certain measurement work on buildings
appellant Cornelius, who is a painter and
Hanover-street, Edinburgh, proposed to erect
Park, Dalry. The pursuer was employed to do
by the architect of the defender, and the defender
ground, pleaded non-employment and consequ
liability.

After hearing evidence, the Sheriff-Substitute
gave decree against the defender, holding that
tect's employment was the employment of the defe
virtue of a constant and uniform custom of trade.

The Sheriff (Davidson) affirmed the judgment-o
stitute.

To day their Lordships affirmed the judgments
against, and gave the respondent and pursuer a
expenses."

I may add that the sheriff, in his inter
says "that the pursuer's claim is suppo
constant and uniform custom of trade,"
his note "the equity which underlies tha
tice is, that the surveyor's work is d
behoof of the owner with the owner's know
To take up as little of your room as po
will only say further that these three d
appear to me to be virtually the same.

ORDAINED SURV

OPEN SOIL-PIPES.

SIR,—In reply to your correspondent
in last week's *Builder* as to how the op
pipes had fared during the recent long-co
frost, I have much pleasure in assuri
that I have not had the smallest
During the last three years I have
number carried out on my plan, and,
since the frost set in I have not been
get reports from all, yet I have heard
and amongst them have not had a sin
plaint. I think I may infer that those
not heard about are all right, for had
gone wrong the chances are I should he
of it. As a rule, we hear pretty soo
failures!

those in my own house I can personally
We have not had the smallest trouble.
ave been in constant use, and have had
cial attention paid to them. We have
content with the daily evidence that
ning was going on well. The soil-pipes
w been in use for three years, and are
inoffensive, and the closets singularly

ve heard of a great many people com-
g of the "wastes" from their sinks
g, owing to having adopted the "discon-
plan." All that I can say is, that we
ive in use (four sinks and a lavatory
and we have not had the least trouble.
ther there are no lead traps nor brass
s to check the flow of water. The water
rect from the sink through a short length
into an outside cistern head, and from
wn a vertical pipe into the underground
trap. I find that eight gallons of water
easily in from eighteen to twenty
R. Norman Shaw, R.A.

RACE COLLECTION: OLD LONDON.

collection of maps, plans, and views of
and Westminster, made by the late Mr.
ck Crace, and lent to the South Ken-
Museum by his son, Mr. J. G. Crace, as
stated, is now on view daily in two of
er rooms in the galleries on the west
the Horticultural Gardens. Admission
n Monday, Tuesday, and Saturday; on
e other week-days on payment of 6d.
s and views selected from the collec-
exhibition are 3,085 in number. A
catalogue, compiled from Mr. Crace's
ork, is to be had for 6d.

DRAINAGE WORKS.

orge's Sanitary Authority, Gloucester.—The Sanitary Authority having applied Local Government Board for sanction to 3,577*l.* for new drainage works, the ent Inspector, Colonel Ponsonby Cox, d an inquiry meeting at the offices of nority last week to receive evidence of ons interested in the matter, and to the plans and sections, which have been by Mr. Wm. Dawson, C.E., the Board's No opposition having been offered, ctor decided to report favourably upon me, so that the works will be com- hortly.

—An inquiry has been held by Major ulloch, R.E., upon the application of w-on-Soar Rural Sanitary Authority, of 3,500*l.*, to be expended for drainage Silsby. It is proposed to purify the y filtration on eight acres of land. Hodson, Price, & Hodson, of Lough- are the engineers.

—The Urban Sanitary Authority have their borough engineer, Mr. Clement be, C.E., to prepare a complete scheme sposal of the sewage of the borough, omply with the requirements of the llution Act.

MASTERS AND MEN.

gh.—At a meeting of the master of Edinburgh on the 6th inst., the f wages was fully considered. The vas of opinion that as other skilled in the building trades had recently wages considerably reduced, and as our was the maximum payment now sterers should, on and after Monday uced on the same footing, and that, their wages should be reduced to 7d. resolved that labourers be reduced hour.

—The Preston stonemasons returned n Monday morning, on the masters' reduction of 4s. a week, within a

—About 250 plumbers in Glasgow, been on strike for six weeks, agreed on accept a reduction of 1d. per hour ent rate of 8½d.

ate Quarries.—Notices of a reduction days to three weekly, and of 25 per tion in wages, were posted on Monday is slate quarries. The Bethesda e only working four days weekly.

BUILDING SUMMONSES.

At the Wandsworth Police-court, before Mr. Paget,

Mr. Charles Kent, a builder, was summoned for erecting an iron church in Queen's-road, Battersea, without giving notice to the Wandsworth Board of Works.

Mr. Pilditch, the Board's surveyor, said he made several applications for the notice, but he could not obtain it, and it was not furnished until the building was nearly finished.

The defendant said he was not aware of the existence of a local Board. He had put up several iron churches in Wandsworth, and the point had never risen before.

Mr. Paget pointed out to him that seven days' notice was required before commencing the work. He fined him 40s. and 2s. costs.

Mr. Paget heard three summonses against Mr. Snelling, Mr. Bryant, and Mr. Collis, all builders, carrying on works in Northcote-road, Battersea, for causing an obstruction by placing their materials on the road and footpaths.

Mr. Corsellis said the builders in that neighbourhood appeared to do what they pleased with the public streets.

Mr. Paget fined each of the first two defendants 40s., and the other 2's., with costs.

GRANITE PAVING.

Sir,—We notice in your valuable periodical of the 18th ult. a letter from Mr. Allison, borough surveyor of Bradford, in which he disparages somewhat the blue Penmaenmawr sett as a paving material. It is only fair to state that though the hard blue stone complained of does come from Penmaenmawr, yet there is another quarry there which produces an entirely different material, being of a grey colour, and of an excellent grain calculated to furnish the foothold so absolutely necessary in city paving.

This material is known as "Darbishire's Granite," and as we have used considerable quantities in the construction of the Preston tramways, we write with authority as to its excellence.

We may mention one telling fact, namely, that after having laid the tramway on a macadam road out of Preston, most of the ordinary traffic immediately made use of the paving in preference to the macadamised part of the road on each side.

Jay & Co.

SHARP WORK.

Sir,—The following example may serve to show the "happy despatch" with which competitions are sometimes conducted.

On the 1st of January, 1879, particulars were issued for a Wesleyan chapel at Matlock Bridge, designs to be delivered not later than February 1st. These being received, a post-card is sent to competitors informing them that 183 applications had been made; 85 sets of designs received, and two selected therefrom.

Now the post-card is printed, and dated Feb. 6; it was therefore printed a day before, and Feb. 2 was Sunday, when, of course, the designs were not looked at. There remain, at most, three working days in which to examine and reject eighty-three designs, and to choose two! What a massacre of the innocents!

Architects are generally anxious to know the fate of their designs as early as possible, and this time they must be gratified.

T. N. L.

Books Received.

Text Book on the Steam Engine. By T. M. Goodeve, M.A. London: Crosby Lockwood & Co. 1879.

The author points ont the influence which the change of view of the nature of heat has exercised in the construction of the steam-engine and the manner in which Watts's "diagram of energy" has enabled a scientific analysis of the action of heat-engines to be made, and particularly the action of the steam-engine. The first chapter contains a sketch of the steam-engine as it existed in the time of Watt, together with an account of the ideas then prevalent as to the nature of heat; the second and third chapters exhibit the principles of the modern theory of heat; the fourth deals with some salient points in the mechanism of an engine; the fifth is on the expansion of steam, the action of valves, and the application of Watts's indicator; the sixth, on boilers and the consumption of fuel; the seventh, on compound cylinder engines, illustrated by drawings; and finally, a chapter on miscellaneous details. The work concludes with a series of examination questions.

A Treatise on Coal, Mine Gases, and Ventilation. By J. W. Thomas, F.C.S. London: Longmans, Green, & Co. 1878.

This volume treats on the formation of coal, its microscopical appearances, the gases in coal, its deterioration by exposure to the atmosphere, the properties of matter. Of atmospheric air the author says that "its pressure upon a working face of coal—perhaps 1,000 yards long and 5 ft. deep—must be enormous. Now, a reduction of 1 in. of barometric column, or, in other words, an equivalent lowering of the atmosphere, would materially reduce the pressure, which is much more perceptible when divided over a large area. It will be seen, therefore, that when a portion, say 1-30th (if the barometer lowered 1 in.), of the pressure is removed, extending over so vast an area, the amount of gas which would be liberated in consequence must be, necessarily, very large. The height of the atmosphere determines the withholding or releasing of gas or fire-damp, and it behoves much care and watchfulness on the part of colliery officers when a sudden lowering of the barometric column takes place."

The author's diction is not happy, but we quote his words, because we think, from his position, that he is capable of throwing some practical light on a subject which just now largely engages the attention of people in mining districts.

Other chapters are on Hydrogen, Carbon, Compounds of Carbon and Hydrogen, Sulphur, Explosions in Coal-mines, Combustion, and Ventilation; with an Appendix on the Gases enclosed in Coal, reprinted from the Journal of the Chemical Society.

Miscellanea.

Mr. Charles Barry, President of the Royal Institute of British Architects, has been elected an Honorary Member of the Imperial and Royal Academy of Fine Arts of Vienna, "to give expression" by that body "of their esteem for his artistic career." A similar compliment has been paid to a few well-known members of the Royal Academy.

British Museum.—The British Museum is now open free to the public on every week-day, —Monday till Friday from ten o'clock, and on Saturday from twelve o'clock till the ordinary hour of closing. Special arrangements have been made to enable students to carry on their work without interruption. Students of natural history will have Tuesday and Thursday reserved for their studies, students of archæology Wednesday and Friday. Only on Monday and Saturday will the public be able to view the whole of the collections; on Tuesday and Thursday, all except the natural history specimens; and on Wednesday and Friday all except the Greek and Roman sculptures, and antiquities in the upper gallery. Tickets will be granted to readers and students without limit of term, but subject to withdrawal. The actual presentation of the ticket will not be considered necessary for entrance into the reading-room, &c., but the holder when not known to the door-keepers will be asked, for the purpose of identification, to write down his or her name and address. Arrangements are also being settled for an experimental lighting of the reading-room of the Museum with the electric light.

City Free Museum.—An addition has recently been made to the interesting collection of antiquities at this place, Mr. H. Bird having presented to the Corporation the corner-stone of St. Michael's Church, Queenhithe, which was pulled down some time since. The stone has upon it the following inscription: "This chvrch was bvrn'd in ye dreadful fire in ye yeare 1666, and was began to bee rebvilt in ye yeare 1676. Will. Woodrof, Tho. Lyme, Chvrch Wardens." On a leaden tablet it is recorded that "Sir John Lawrence, Knt., alderman of this ward, laid this stone 10 March, 1676."—*City Press.*

The Artisans' Dwellings Act.—It is understood (says the *Sheffield Telegraph*) that Mr. Cross contemplates the extension of this Act to the smaller towns. "At present the measure can only be put in force in towns possessing a considerable population, and it is felt that in many of the country towns its provisions are as much required as in the great cities. Its extension will be generally supported by all parties in the House of Commons, and will give great satisfaction to the smaller municipalities. The measure, in all probability, will form a prominent feature in the Government programme for the year."

Lectures on Architecture.—Mr. T. Roger Smith has just concluded a short course of lectures on Architecture, at the School of Military Engineering at Chatham. He has illustrated these by a method which was somewhat novel, for in addition to the usual diagrams, &c., "lantern illustrations" have been employed. That is to say, photographic views of buildings have been magnified and thrown on to a screen by the electric light, with the aid of a large magic lantern. Upwards of 150 buildings, or parts of buildings, have been by this means shown, in a manner at once accurate and brilliant.

The Proposed Building Regulations for Glasgow.—The inquiry into the provisional order which is being promoted by the Corporation of Glasgow for the better regulation of the building operations was resumed on the 5th inst. The evidence for the promoters was exhausted, and the inquiry was adjourned until the 6th inst., when the evidence for the objectors to the order was heard. The evidence was generally to the effect that the changes sought to be introduced were in many cases unnecessary, even from a sanitary and hygienic point of view, while the loss which would result to proprietors if the changes were to be carried out were of such a nature as demands compensation. Mr. Honeyman, architect, considered the proposal to make the minimum height of ceilings 10 ft. instead of 8 ft. a mistake. The room with the higher roof would have less floorage, and would be altogether less healthy and comfortable than a room with more floorage and only 8 ft. in height. Even so far as ventilation was concerned, he was of opinion that the air in the room with an 8-ft. ceiling would be more easily kept pure than in the one with the 10-ft. ceiling, keeping in view, of course, that he was referring to small houses for the working classes.

River Conservancy Boards.—The annual meeting of the Association for the Prevention of the Rivers of Scotland from Pollution, was held in Edinburgh last week. The report which was submitted advocated the appointment of Conservancy Boards throughout the country, who should have power to take such steps for the prevention of river pollution under provisions of the Act of 1876. The report suggested that the Council of the Association be empowered to petition the Government to appoint such boards. The report was adopted. Mr. David Milne Home, of Milne Graden, moved that this meeting is of opinion that there ought to be in this country a department of executive, one duty of which should be to look after the pollution of rivers, and see that they were kept free from such gross pollutions as not only unfit them for their necessary purposes, but convert them into carriers of nuisances in the districts through which they flow. Sir James Alexander seconded the motion, which was passed unanimously.

South Hants Waterworks.—These works, which are to supply a large and rapidly-increasing district, containing about 50,000 inhabitants, were opened on the 30th ult. by Lord Henry Scott, M.P., and the Right Hon. W. Cowper Temple, M.P., each of these gentlemen simultaneously opening hydrants in the market-place, Romsey, from which issued jets of water completely overtopping the highest houses, and fully demonstrating the pressure under which the company supply their district. The engineers of the works are Messrs. Russ & Minns, and the contractors Messrs. Easton & Anderson. The works were commenced less than twelve months since, and the mains laid are about thirty miles in extent. The supply is drawn from the chalk at Mitchell Marsh, about five miles from Romsey. After being softened by Clark's process, the water is pumped a distance of ten miles into a covered reservoir at Bassett, very near to and above the level of the reservoir of the Southampton corporation.

The Munich Foundry, according to the *Academy*, has been honoured with the commission to cast the German National Monument which it is proposed to erect in the Niederwald, close to Bingen on the Rhine. The work is designed by Professor Schilling, of Dresden. On a pedestal twenty-four mètres in height stands a figure of Germania pointing with uplifted hand to the symbol of German unity, the Imperial crown. The figure, which is ten mètres high, is considered by those able to judge a triumph of German plastic art. The model is shortly to be transported to Munich in a special train, and will there be put together before casting. Some difficulty exists with regard to the funds for this purpose. The cost of the monument has amounted to 1,100,000 marks, and a further sum of 350,000 marks is required. For this end a collection is to be made in every German town.

TENDERS

For the restoration and north aisle, St. Giles's Church, Lea, Malmesbury. Mr. C. J. Phipps, architect :—

Light & Smith	£1,830	0	0
Wall & Hook	1,728	0	0
Restall	1,702	0	0
Shallon & Knapp (accepted)	1,500	0	0
Brown	1,375	0	0

For new wing to the Ship Hotel, Mortlake, for Messrs. Phillips & Co. Mr. T. J. Lynes, architect :—

Turtle & Appleton	£997	0	0
Newton & Trigg	975	0	0
Lathey Bros.	948	0	0
Bowling & Miller	945	0	0
Went & Perkins	900	0	0
Kirk	873	0	0

For alterations and repairs at the Barley Mow, Horseferry-road, Westminster, for Mr. W. Rogers. Mr. J. M. Ferguson, architect :—

Lane	£180	10	0
Cole	173	0	0
Clark (accepted)	164	10	0

For the erection of new store, No. 2, and boiling-house and offices, at Marsh Gate-lane, Stratford, for Messrs. T. H. Harris & Sons. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Hosking Bros.	£1,295	0	0
North Bros.	1,150	0	0
Abrahams	1,095	0	0
Reed	999	0	0
Morter	993	0	0
Page	986	0	0
Allen	960	0	0
Laurence (accepted)	933	0	0

For the erection of the Oxford-street schools, for the Plymouth School Board, to accommodate 600 children. Mr. Silvanus Trevail, architect. Quantities by Mr. S. W. Elliott :—

Vernon & Ewins	£5,620	0	0
Blatchford & Sons	4,895	0	0
Julian & Sons	4,477	0	0
Steer	4,450	0	0
Berry	4,389	0	0
Bishop & Sons	4,178	0	0
Trevena	4,175	0	0
Palk & Partridge	4,160	0	0
Lapthorn & Good	4,025	0	0
Blowey	3,980	0	0
McMillan	3,974	0	0
Finch	3,969	0	0
Lethbridge	3,940	0	0
Foot	3,912	0	0

For alterations at the Oxford Arms, High-street, Camden-town, for Mr. F. Newport. Mr. Furniss, architect :—

Anley	£660	0	0
Toms	569	0	0
Gould & Brand	479	0	0
White	435	0	0
Somerville & Hill (accepted)	392	0	0
Pewtering.			
Stone	£40	10	0
Watts	38	0	0
Somerville & Hill	37	10	0
Edwards (accepted)	37	0	0

For piling and fencing, Billingsgate Market. Markets Committee of the Corporation of Loud Horace Jones, architect :—

Docwra	£262 5
Cook & Co.	250 0
Mowlem & Co.	198 0
Chapman	189 18
Mundy	180 0

For residence for Mr. P. S. Langton, Norfo Maidenhead. Messrs. Brown & Albury, architect

Kempsell	£2,525 0
Filewood	2,525 0
Simmonds	2,491 0
Silver & Son	2,384 0
Woodbridge Bros.	2,280 0
Kingerlee (accepted)	2,150 0

For three houses and shop, Angel-hill, Tiv Mr. J. Carpenter. Part materials to be suppl Herbert J. Jones, architect :—

Tucker & Williams	£1,080 0

For the construction of roads, sewers, and surf drains on the British Land Company's Estate green. Mr. Henry B. Michell, surveyor :—

Keeble	£2,758 0
Jackson	2,668 0
Acock	2,657 0
Harris	2,655 0
Crockett	2 626 0
Killingback	2,580 0
Pizzey	2,550 0
Dunmore (accepted)	2,493 0
Richardson (withdrawn)	2,200 0

For stabling, at Wild's-rents, Bermondsey. Leaning, architect :—

Ryder	£3,423 0
Patrick	3,023 0
Tongue	2,694 0
Tarrant & Sons (accepted)	2,653 0
Greenwood & Sons	2,645 0
Sheppard	2,625 0

For the erection of the "Defoe Memorial Tooting. Messrs. Tarring & Wilkinson, archite

Gough	£950
Atkinson	795
Manley	787
Langridge & Sons	750
Lovell	750
W. & H. Castle	721
Lawrence	715
Norris	700
Bebington	690

For alterations and repairs to the Prince Alb friars-road, for Mr. Thos. Potts. Mr. Sev tect :— Al Old

Regat	£421	
Weaver & Frith	405	
Deands	401	
Everitt & Sons	339	
Smith (accepted)	310	

For building two houses at John-street, Pen Mr. E. Fletcher. Mr. T. H. Watson, architect

Regat (accepted)	£1,220

For building three houses at John-street, for Mr. Patterson. Mr. T. H. Watson, archite

Regat (accepted)	£1,877

For building workshops and stable at We Chapel-street, Pentonville, for Mr. Reid. Watson, architect :—

Regat (accepted)	£215

TO CORRESPONDENTS.

Erratum.—In the account on p. 162 of Dob-lane worth, the architects, Messrs. Adams & Son, shou described as of King's Lynn.

J. M. G. (an advertisement).—G. W. W. (should ha of other tenderers and amounts).—E. C. R. (too late A. (shall have consideration).—F. A. E.—J. S. H.—E. C. C. H.—E. K.—F. I.—E. W.—S. P.—A. G.—E. B. J. A. G.—W. & P.—P. J.—L. S. C.—J. H.—F. H.—H. S. S. J. & Co.—H. B. M.—J. H. T. & Sons.—Mr. S—H. J. & S. S.—W. R.—J. H.—M. J. C.—J. M. B.—C. G. H.—J. H.

All statements of facts, lists of tenders, &c. must b by the name and address of the sender, not b publication.

We are compelled to decline pointing out boo addresses.

Note.—The responsibility of signed articles, and public meetings, rests, of course, with the authors.

Roofing Felts.—F. Braby & Co.

INODOROUS, SARKING, SHEATHING, AND HAIR FELTS, KEPT ALWAYS IN STOCK. MANUFACTURERS OF PER ZINC, PERFORATED COPPER, AND PERFORATED IRON, IN VARIOUS DESIGNS AND GAUGES.

Wrought Iron Tanks.—F. Braby & Co.

PAINTED AND GALVANISED, OF IMPROVED MANUFACTURE.

Corrugated Iron.—F. Braby & Co.

GALVANISED AND BLACK IN ALL GAUGES, KEPT IN STOCK. ZINC WORK OF ALL KINDS.

FITZROY WORKS, 356 to 369, EUSTON ROAD, LON

Hatton Garden, Liverpool; Great Clyde Street, Glasgow; and at Cyprus.

The Builder.

VOL. XXXVII. No. 1881. SATURDAY, FEBRUARY 22, 1879.

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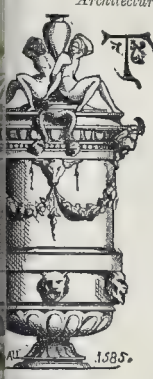
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...e Lights on the History of Egyptian Architecture.



THE subject of Egyptian architecture has been so often treated in all its different points of view, arrangements, scope, and details, that there only remains for consideration the new light thrown upon it by the decipherment of the texts of the monuments and papyri, and recent discoveries due to the exca... and researches of Mariette Bey both ...er and Lower Egypt. The purport ... pyramids, the meaning of obelisks, ... laws of the decorations of temple ...b, have been perfectly revealed. It ...ourse, obvious that the constructive ...wn in Egyptian architecture could only ...en carried out by plans carefully ...efore hand, but the number of these ...as reached the present is compara... ...significant, and limited to a speos ...on and houses of workmen at the gold... ... Gebel Ollaki, represented on a papyrus ...; the plan of the palace of Rameses II., ...00 B.C., measuring 84 cubits, on the ...t of another papyrus at the same place; ... of the tomb of Rameses IV.; one of ...l sepulchres at the Biban el Molouk of ...found on another papyrus at Turin; and ... the lake Moeris, of late period and un... ... character, on a papyrus of the Museum ...l. The inscriptions of the Temple of ...n mention an ancient plan of the times ...s for its construction. No plan, indeed, ... of the pyramids, the normal form of ...es, which extended through twelve ...s, and which in the pyramidal roofs of ...al chambers continued till the Greek ... the third century B.C., and was copied ...Mausoleum of Halicarnassus. Leaving ...p various conjectures about the pyramid, ...sed astronomical and metrical nature, or ... the built demonstration that the square ...ypothenuse equals the square of the ...es of the right-angled triangle, it is only ...y to remember that the pyramid was ...inant type of early Egyptian architec... ...d the obelisk is only a tall, truncated ..., surmounted at the apex by the ...ion instead of the sides being pro... ...to meet at a pcint. There are, ...he remains of about seventy pyramids, ...oyal sepulchres, or those of the bul... ... constructed on the plan of triangular ...ing from a square base to a trun... cated or pointed summit. After several unsuccessful attempts to discover the etymology of the word "pyramid," it appears from the geometric papyrus of the British Museum, to come from the expression "*per-em-us*," the edges applied to the four lines from the apex to the base in the sense of "proceeding from the base," the whole solid construction being called *ab mer*, a term applied to these sepulchres. In some of the older pyramids, indeed, as in that of Meidoum, the supposed sepulchre of Seneferu, a king of the third dynasty, in that of Saqqareh on the ancient site of Kochome, attributed to the second dynasty, and conjectured to be the mausoleum of the early Apis bulls, the sides are step-shaped, a form quite Babylonian, where the terraces represented the number of the planets, and this pyramidal type is again that which surmounts the Assyrian obelisks, and points to an architectural link between the earliest Babylonian and Egyptian architecture. The principle of construction is well known, the size being dependent on the length of the reign of the monarch and the successive additions to the sides as that was prolonged, the sepulchral chamber being generally placed beneath in a rock hewn with an inclined passage, for the descent of the sarcophagus. Each pyramid had a name attached to it, and that name was placed after the monarch to whose ancestral worship a priest or prophet was attached; but the inscription shows either that some of the step-shaped pyramids were surmounted by obelisks, and were dedicated with the obelisk to the sun, or that the obelisks of the old empire were placed on pyramidal bases, and such pyramids may have had other destination than that of a royal sepulchre. Of this early period one temple only remains, of excellent construction and masonry, discovered originally by Caviglia close to the great sphinx, although subsequent inscriptions mention other temples which Cheops had created on the spot. "He," it says, "the living Horus, king of the upper and lower country; Khufu, the giver of life, founded a temple of the goddess Isis, the Queen of the Pyramid; besides the gods' house of the sphinx, north-west of the god's house and the town of Osiris, lord of the gates of Hades. He built his pyramids near the temple of the goddess; and he built a pyramid to the Princess Hontsen near this temple." From other inscriptions it appears that Isis was a form of the goddess Hathor, the ruler and mistress of the place of the dead, and he built a temple in stone for her. She was, it seems, considered the companion of the god Harmachis or Horus on the Horizon, who, in the shape of the sphinx, was her great neighbour. This Temple of Isis has entirely disappeared; but it is generally considered that chapels for the performance of the necessary ancestral worship were attached to the pyramids, the more necessary that the passages and chambers of these buildings were rendered inaccessible soon after their completion. The other type of the old empire is the obelisks employed at that period for sepulchral purposes, and found of small proportions in the oldest sepulchres, and continued for this purpose, as appears from vignettes of papyri, till the third century B.C., when they were placed in pairs one at each jamb of the door of the mortuary chapel. The early obelisks were made of calcareous stone, and inscribed with the names and titles of the deceased. One obelisk to which allusion has been already made as placed on a truncated pyramid, and which is represented in an inscription of the age of the fifth dynasty, is surmounted by a disk or globe, and the whole construction dedicated to the sun. Augustus, it will be remembered, when he converted the obelisk he removed to Rome into a gnomon, placed a globe (*pyropus*) on the apex, perhaps indicative of the tradition of the original consecration of these monuments to the sun. At a later period the obelisk represented the sun, and the god Ammon, was inscribed with the titles of kings receiving a daily worship, and occupied before the doors of temples the same position it had done before sepulchres. As at the earliest period the resources of the nation were exhausted in constructing pyramids, not temples, the form architecture assumed had relation only to simple forms and sepulchral adaptations, and the early monarchs drew their materials principally from the quarries of Tourah and Syene. One Una, an officer of high rank, of the time of the sixth dynasty, received orders to bring a sarcophagus and its cover, both of limestone, from the quarries of Tourah for the king Pepi of Phiops. For Merenra, the royal successor of the same monarch, he built transports and rafts laden with granite for his pyramid, extracted from the quarries of Syene, besides a sarcophagus, a pyramidion, jambs, thresholds, doors, pillars, and cornices, showing that architecture had attained some development at this early period. Towering in the midst of a vast necropolis, and having grouped around them the tombs of the princes and nobles of the period, the pyramids represented each a reign and a history. The other tombs were also constructed upon a plan like the pyramids. The sepulchral chamber, which was of rectangular dimensions, with plain unadorned walls, was excavated in the solid rock, and the descent of the sarcophagus was effected by a perpendicular well. Each grave consisted, in fact, of three portions,—the sepulchral chamber, the well, and the mortuary chapel. From the first to the eleventh dynasty, or the so-called Old Empire, the external monument or mortuary chapel, called by Mariette by its Arabic name *mastaba*, is a rectangular construction, with its faces symmetrically inclined and united. It is always made of immense blocks, and so massy that at a distance it resembles a truncated pyramid. The entrance is by a door, generally placed at the east side, of rectangular shape, surmounted above by a half cylindrical lintel, and when of large dimensions ornamented with sculptures representing the deceased. The door is surmounted by a slab

with inscriptions in horizontal lines. At the tombs of persons of high rank, the façade becomes more ornamental, and has in front great square pillars without base or abacus. It is on the walls of the inside of the so-called *mastaba* that the various representations of the sepulchres are found, as also the sepulchral tablets or tombstones and altars of libation. This *mastaba* stood exactly over the sepulchral chamber, and at a short distance from it the architects constructed a kind of niche, walled on all sides, while the chapel was being constructed in the massive stonework of the monument. This niche, which Mariette calls *serdab*, its Arabic, not Egyptian name, contained the statue of the deceased, and other objects. Occasionally a small square hole in the wall communicates with the *serdab*. A good example of the door of a tomb of this period is that of Teta, an architect of the second pyramid built by Shafra or Kephren, now in the British Museum, in which also is a small statue of a naval architect of this early period removed from the *serdab* of his sepulchre. These orifices are by some supposed to have been intended for the smoke of the incense to fumigate the figures of the deceased, and as the door was placed at the east, the worshippers on entering faced the western wall, where occasionally were placed false doors, more in number when the rock-excavated chamber was to hold several bodies. When the sarcophagus had been lowered, the well was filled up, and access to the sepulchral chamber carefully prevented. Some of the oldest sepulchres consisted of a rock-excavated rectangular chamber to which an approach was made by a long horizontal gallery or corridor like the Etruscan cuniculi, the walls ornamented with rectangular panels surmounted by a kind of floral ornament, a modification of two flowers of the lotus or papyrus, tied back to back, resembling that found on the entablatures of the early tombs, and by some supposed to have been derived from carvings in wood. A good example of this kind of ornamentation was found on the whinstone sarcophagus of King Mycerinus, and reappears in other works of the early period, about B.C. 2900.

Amongst the architectural remains of the early dynasties must be classed the great sphinx, situated as it is in the great necropolis of Gizeh, and although it is not possible to determine its exact age from the chapels and edifices with which it is mentioned, there can be no doubt of its entering into the system of sepulchral architecture connected with the great necropolis at Gizeh. It is supposed to be older than Shafra or Kephren, who is mentioned in connexion with the inscription of Thothmes IV., subsequently placed before it. It has been conjectured to have been a sepulchre fashioned in shape of the monster. As an architectural feature of this early period may be cited the rude germ of a primitive arch, discovered by Professor Hayter Lewis, the great stones *en décharge* over the entrance of the Great Pyramid, the so-called chambers of construction in the same building, the use of bricks for pyramids and probably other edifices.

The development of Egyptian architecture after the period of the first six dynasties can only be traced from the tombs, no temples or buildings of the period having survived till the eleventh dynasty, B.C. 2380, and the tomb of Drah-abu 'l Neggah, when the sepulchres assume under that dynasty another type; the open chamber or chapel was also the sepulchral one for the coffin, and this chamber was sometimes a rock one, or specs, or a pyramid, or a pyramid placed on a square base. The most remarkable feature of the period of the twelfth dynasty is the appearance of the proto-Doric column in the open rock tombs of Beni Hassan. It is the first step in advance of the square pillar or pilaster, derived as it is supposed from the upright block left in the quarries to support the masses left above and imitated on the pillars of the tombs of the old Empire. In fact, in the tombs of Beni Hassan the outer wall of the so-called *mastaba* has ceased to exist, and is replaced by an open façade consisting of columns and a cornice, being the step to a portico with columns *in antis*. Perhaps, as Lepsius conjectures, the necessity of obtaining additional light to pass from this portico into the adjacent chambers suggested the reducing the four sides of the old pillars, and cutting them with eight facets instead of four sides, so that it presented sixteen sides, and approached a cylindrical shaft, not continued, indeed, to the top of the column, and the rectangular portion left of the pilaster constituted the abacus. The first improvement was the commencement of flutings produced by slightly hollowing each side, and sharpening the edges. When the sides were not fluted the flat surfaces were used for painted or sculptured inscriptions, which are found on these so-called proto-Doric columns at Karnak and elsewhere. It is not probable that the proto-Doric column was derived from trimmed trunks of trees, for Egypt was deficient in wood, and did not employ it for architecture at the earliest period, the monuments being of the hardest stone and the finest masonry, so that the column was derived from necessities of masonry, not imitations of woodwork. Unfortunately, beyond the general resemblance to Doric architecture in the columns, architrave, and triglyphs, the columns of this period and type offer no particular interest, or can be considered a special Egyptian architecture, and their early disappearance and discontinuance shows that they never attained any further development. The mention of architecture in the texts of the period sometimes occurs, as in the instructions of Amenemhat I., of the twelfth dynasty, in which he says,—"I built myself a house adorned with gold, its roof was painted blue, the walls in it and the passages are of stone joined with cramps, the bolts are of the metal called *men*. There are many devices of passages in it. I alone know how to find his grace, so that no one knows it except thee." This expression would appear to refer to the Labyrinth or a similar construction, although the general opinion is that this building was erected by the later kings of the twelfth dynasty. No building of the kind, however, remains to attest the construction except the ruins of the Labyrinth at Crocodilopolis. A tablet in the British Museum, No. 569, dated in the reign of Amenemhat II., for the sake of Saenhathar, mentions that he was sent to the pyramid of a monarch named Ameni. "They cause me," he says, "to the pyramid called Khorp of the monarch Ameni,—may he live for ever,—to get made fifteen columns of long lasting stone." It came to pass that the restoration of what was thrown down was completed in three months. There is, however, some difficulty about the word "column," as it may be read fifteen statues of hard stone, and the time specified. It was either "its columns" or "its statues"; but in what manner these were used in the construction of pyramids does not appear, except that, as Mariette states, each pyramid had a mortuary chapel placed on its east side, and columns and statues may have formed part of it. It must not, however, be imagined that the only columns of the twelfth dynasty were proto-Doric, for although they are striking from their appearance, others were used even as early as the fourth dynasty, B.C. 2840, when the normal form was the pilaster. A shrine of that period, figured in Lepsius, Denkmaeler Abth. ii., pl. 14, has columns apparently of wood, mere poles, surmounted by what appear to be bucrania, or ox-heads, and has an architrave ornamented with drops and squares. As early as the sixth dynasty columns are represented with the lotus and bud capital, at Saniet el Meitin, Lepsius, Abth. ii., bl. 111, *e*, and it was from the lotus capital and its transitions that the Ionic volute was subsequently derived. But the column, in shape of a sheaf of plants of the papyrus tied together, appears at the twelfth dynasty, B.C. 2380, and it is possible that this again was derived from the old ornament already mentioned, so often repeated in the panelled decoration of two papyrus flowers, their stems tied together close under the flower, so that they curve inversely from each other. In the adaptation of the papyrus to the column, then, the shaft is reeded, and consists of a bundle of papyrus plants tied close under the buds with five bands, and is evidently a development of these blown flowers united inversely with two bands, and the whole column represents, with all its reeded stems and capital, one stem and bud of the papyrus, into which the others are moulded. These columns are truncated at the base, and have the capitals and abaci square, by no means presenting the solidity of the proto-Doric, but yet in the earliest examples nearly so, consisting of five reedings, and the whole placed on a circular base, like the proto-Doric. The bands by which the stems were supposed to be bound were depicted by broad bands of colour at Beni Hassan, blue upon a brownish yellow ground; at the apex of the column the ends of the five ties which confined the cluster to form the capital, were represented. nected with the proto-Doric style in Egypt antefixal ornament; for in the tombs of Hassan (Lepsius, Denkm. ii., bl. 126), the a frieze of ornaments commonly know *skhakar*, and generally supposed to represen mastsand streamers planted in front of Egy temples. These objects, which resembl shape an inverted vase, have each at the end antefixal ornaments of five leaves is from them, and anticipate by centuries Greek antefixal ornaments and those o Assyrians, from which the Greek are sup to have been derived. As to the Egy semi-cylindrical moulding of this and a period, they were simply ornamented square compartments and diagonals, or disa passing from one compartment to the oth zigzag lines, while the panels of walls interiors were, to judge from the wooden c and tombs of this early period, diapered panels, chequers, diamond-shaped orna and squares, connected with each other, b the sculptures in relief or intaglio, colou brilliant hues, with all their details, entered so extensively into the archite decorations of the age. Even the borde present striking and curious peculiaritie one represents a chain pattern of hexagons instead of the usual squares and diagonals the tendency of the whole is to show t was principally from Egypt that Greek tecture derived its details, and that he the centre of architectural civilisation. the architecture is connected the sepu tablets of the period, which often repre the doors in use, with the peculiar convex of palm-leaves and semi-cylindrical mou while the obeliaks, which afterwards bec important a feature of Egyptian art, began Usertesen I., B.C. 2370, to be placed bef temples as well as the tombs, and the k ing one of this dynasty at Heliopolis, was called Annu, "the city of columns," place of *Ben ben*, "the pyramidions" or obelisks show that under the so-calle Empire terminated the sepulchral use o objects, to which reference will be subse made in discussing the question of the t Unfortunately, except the commencem few shrines, little remains to show the the temples of the twelfth dynasty, columns found of the proto-Doric style at and elsewhere prove that the style was ess the same as in the tombs. The early had columns, walls, pylons, and obeli same as in the middle empire. The h houses, of which there are no remain also probably the same, and rock tomb vated as speoi, with figures in relief at t of the doors, suggested such later w Abusimbel.

LIFTING APPLIANCES FOR BUIL PURPOSES.

ANY one who has lived North of th for a length of time must have been st the different way in which Scottish bui to work as compared with their brother in England. In Scotland the unit scaffolding raised to provide a resting-p the mason and his materials is the trestle. After the first few courses ha raised to a height at which it is inconve work, a series of stools are placed al walls on the inside of the building wh course of construction, and these, being with planks, afford the support of a sec form, from which additional courses ar In the erection of dwelling-houses th generally so arranged that two tiers of trestles, the upper one resting upon the provided by the lower, are sufficient the work of the mason to the level of floor, where the beams or joists provide ing-place for the stools previously e beneath. The unfinished staircase or a apartment, as a rule, admits of an arra of inclined planes formed of battens from one landing to another that s small works for the conveyance of mat the upper courses on the backs of labou

Constructively, there is a good deal t in favour of the Northern system, as t platform passes completely round the on the inside, and is commonly wider staging of poles usually employed in from the outside. The habit which th have acquired of building from the in certainly many advantages when appli

n of tall chimney-stalks, because it enables ilder to save the expense and trouble of g an outside scaffolding. The operation, otland, for all ordinary chimney-stalks, s those which are used by manufacturers lly, after the first few courses, is ordi- conducted by one mason or bricklayer, cends from course to course on the inside, ted upon a platform carried by wooden hich he builds into the wall at intervals, hich are afterwards sawn off. This l has hitherto been little employed in d, but upon its introduction in the n of a gas-work chimney in a county ot 100 miles from London three or four go, there was enough notice taken of it local newspapers to show that the plan t only new, but of unusual interest in the .

within the last fourteen or fifteen years, bour of the hodman was the only means le in Scotland for raising materials to el of the different courses of buildings their construction, and when specially weights had to be raised, such as iron and girders, the temporary appliances of and tackle were commonly employed. s it was the constantly increasing use of masses of cast and wrought iron which ntractors to adopt a cheaper and more t apparatus than that referred to; but r this be the case or not, it is certain mprovements have been very rapidly l. No doubt, the economy effected by of mechanical power, and especially the ction of steam as a prime mover, must een a great incentive to master builders away with manual labour as much as s; and this, probably, more than any other has led to the advances which have ade.

ll large building contracts undertaken in ncipal towns of Scotland, the erection of aratus for lifting the materials is one of t preliminary operations, and it is often its place and made use of before the ions have reached the level of the

The practice in Glasgow is further ed than elsewhere, and it is there that tem is carried out in its greatest perfec-

se of lifting-appliances for building ope- is of very ancient origin. It is certain e Romans frequently employed a me- l apparatus for this purpose; and as it o doubt, used with the object of saving it may be said that in this respect they n advance of much of the practice which s in England at the present day. One e which they used consisted of a great constructed somewhat after the fashion wheel of a squirrel-cage, in which the power was applied from the inside by of slaves. In running up the descending the wheel they kept up the requisite motion. It is not easy to speak with any ty of the details of this apparatus, but s evidence to show that in lifting blocks e the clips still commonly used were ed by the Romans; and not only so, but ey were kept in their place by means of me kind of holes which are still chipped ends or sides of the stones for the pur- giving a catch to the claws.

means of attaching the hoisting-chains es to the weight required to be d still prevails among our own builders, cannot look upon the wheel and the gangs es as anything but a very unwieldy appa- and one that is certainly not likely ever dopted again.

oming to the more modern substitutes for l labour, we find that almost no improve- seems to have been made upon this anti- invention of the Romans for many ies. It is to the period of the great in- l revolution which followed upon the uction of the steam engine, that we must r the first great improvements that were upon more primitive appliances. The at necessity which then arose for moving weights from place to place within a l area must have pressed hardly upon ly engineers, and been a source of con- ble expense. This occurred to a great in erecting-shops, but still more in the y where the conveyance of molten metal he cupola furnace to the moulds is an ion that needs to be carried on with pre- and rapidity. Among the innumerable ions of the present century for the saving of labour, we accordingly find that cranes hold an important place, and among these foundry cranes have always been prominent. In a large foundry the difficulty of conveying great masses of molten metal from the furnace to a distance beyond the reach of a single crane was overcome for many years by an arrangement by which one crane took up the load of another, so that the object was attained by swinging the metal to the full extent of both. The roof of the foundry under this system required to be constructed of strong beams, to which were attached the sockets in which the cranes were swung, and these were so placed that the circumference of one reached to that of the other. As the jibs of these early cranes were fixed, forming an angle with the horizontal beam at the top, it became necessary to have an appliance by which the suspended weight could be travelled along the horizontal beam, and thus entailed a great amount of mechanical detail, more especially when steam was employed as the motive power. It can be well understood, then, that although these old foundry-cranes were a great improvement upon previous practice, they had many disadvantages. The necessity for having two or more to carry the same weight from one end of a foundry to another, was an obvious source of expense both in working and in first cost, while the space occupied by the foundations of the cranes frequently required to be very heavy, and occupied portions of the foundry floor, which were the most valuable for casting. The introduction of the travelling-crane, in which the weights could be moved in all directions to the extreme limits of the building without in any way interfering with the operations of moulding, soon proved so superior to the old apparatus that it rapidly superseded it. But, although the jib-crane has been almost entirely abandoned in the erecting-shop and the foundry, an important modification of its original form soon led to its extensive adoption among builders, contractors, and especially quarrymen. This improvement consisted in making the jib movable in a vertical as well as a horizontal direction, and is now known as the derrick-crane. Instead of travelling the weight to be lifted along a fixed beam so as to reduce the radius of the swing, as was done in the old foundry-cranes, the jib itself is moved vertically, and, although in carrying out this operation, the height at which the weight is suspended varies as the sine of the angle through which the jib is elevated or depressed, this difference is so readily adjustable by the lengthening or shortening of the hoisting chain that there is no practical inconvenience arising from it. The mechanical arrangements for raising and lowering the jib are very much simpler than those required for travelling the weight along a fixed horizontal beam, and this simplicity has helped greatly towards the extension of its use, instead of the older arrangement. In situations where the distance to which materials have to be moved does not exceed the radius of the crane, and where the space it occupies is not of importance, the derrick-crane is a cheaper and more reliable appliance than any other. For building purposes the travelling-crane is unwieldy, and what becomes of advantage in the interior of a foundry is generally a source of trouble and inconvenience in the erection of masonry. Where the rails upon which a travelling-crane are supported can be run parallel to the walls of an interior, there is no interruption to the floor space, but such conditions are, for the most part, impracticable in the ordinary operations of the builder. Not only is the necessary staging for carrying the rails expensive, but it generally comes foul of some part of the building. It is different, however, with a derrick-crane, which, being placed in the centre of the operations, swings clear of all obstructions, and is capable of embracing an area that can command all the walls of a building up to 100 ft. square.

It will be well now to turn again to the habit already referred to of the Scotch masons in building from the inside. There is no doubt that it is to this practice that the extensive introduction of the derrick-crane must be attributed. In order to do the same work from the outside four cranes would be necessary; that is, one to command each of the four walls of a building, supposing it to be square. Even with such a number the interior part of the building where the derrick-crane is usually placed could hardly be reached. Such a system would not only incur four times the expense both of erection and working, but it is obviously impracticable in the great majority of instances. For instance, in a street it could not be carried out at all. The use of the travelling-crane has therefore become the only alternative where the system of building from the outside is employed, and an illustration of the limited area to which such a mechanical appliance is applicable is given in the case of the Grand Hotel now in course of erection at Charing-cross. There the cost of the framing necessary for carrying the rails upon which the travelling-crane is supported is probably greater than that of a large steam derrick, including its foundations, not to mention that the one is capable of doing fully three times the work of the other. In Glasgow the use of the derrick-crane is so extensive that a certain amount of carelessness in erecting and working it has crept in, so that several accidents have been the consequence. In all cases, however, these are attributable to causes that were avoidable. Sometimes the fault has been discovered in an overloaded chain, or one that has become worn; in other cases from "kinks" in the chain, which bring excessive strains upon the links affected by them. On several occasions damage to life and limb has followed upon the falling of a jib through the inefficiency of the "pawl" arrangement, which keeps the jib drum stationary in one direction; but such mishaps are easily insured against by ordinary care and a proper construction of the parts. Certainly, any one who is acquainted with the manner in which derrick-cranes are erected in Scotland, sometimes at a height that raises the top of the jib to an elevation of about 150 ft. above the level of the ground, cannot but contrast the practice favourably with the hod-man or even the travelling-crane. It is questionable, however, if the advantages arising from its use are sufficient to lead to an alteration in the methods of building at present prevailing in England; but they are so great that many contractors might find it to their advantage to modify their practice so as to make derrick-cranes more available than they are under the existing system.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

ITALIAN GOTHIC IN SECULAR BUILDINGS.

In my last lecture we examined some of the principles which actuated the architectural designers of Italy in dealing with the style commonly termed by us Italian Gothic. This, we found, was rather a mixture of styles, than a perfect system in itself, such as was the Gothic architecture of England, France, and Germany. It is only of late years that it has received much attention from ourselves, and it had always been previously considered an imperfect illustration of Gothic principles. In the churches of the day, the architecture occupied a position subordinate to those of the sister arts, and failed to produce the effect of unity and grandeur to which we are accustomed in the more scientific and purely architectural work of the Northern school of Gothic architects. The Italians seemed, indeed, somewhat half-hearted about their ecclesiastical architecture altogether, for it is rare to find a church of this time completed from the original design, and we left, as you may remember, the great cathedral of Florence, with its unfinished arcades of Arnolfo, waiting for its completion, in another style, and by other hands.

We may now turn our attention to another part of the subject, by inquiring how the pointed architecture of Italy was applied to buildings other than churches. The state of civilisation to which Italy had attained, during the thirteenth and fourteenth centuries, is well illustrated by the splendid palaces erected for civic purposes, and even for private residences. Of such buildings are the town-halls of various cities, and the palaces of Venice. The first class illustrate the municipal, and the second the oligarchical principle. In the great cities, the public service was already, in great measure, controlled by popular power, and republics became the nursing mothers of art.

Surprise has occasionally been expressed at this result, but it will, I think, be dissipated by reflection. It is natural that Democratic communities, ruling by and for the people, should witness with satisfaction the employment of

* Third Lecture. See p. 171, *ante*.

public funds for purposes which aim at giving pleasure to the greatest number.

Architecture, regarded in this manner, should be the most popular of the arts. A great building, for a public purpose, cannot be hidden. It is national property, and under proper regulations the humblest citizen has a right to its enjoyment. While whole treasuries of artistic wealth may lie concealed in private galleries of painting and sculpture, an architectural monument, such as St. Paul's or Westminster Abbey, is open to all, and our public collection of works of art is rightly called a National Gallery.

Italy, becoming rich, and with local influences intensifying themselves into that sort of patriotism which seems to consist of hating your neighbour, and trying to out-do him, valued art, and employed it, amongst its other resources. By its aid, each city was proud to hold its own, and, when possible, to claim superiority as regarded others.

The great civic works were constructed, in the main, by Republican power, or by those who, like despots of later days, have been contented to be tyrants by the will of the people.

The Democratic spirit in Italy was thus favourable to the cultivation of art, and it may appear strange that this has hardly been the case, hitherto, among ourselves. I am not talking politics, and may, therefore, explain that in using the term Democratic I do not wish to be considered as intimating preference, or blame, of any political system. I merely refer to it as expressing the unquestionable fact of the increased, and increasing, power of the people over their own affairs, which all modern history records.

In this country, the change has been none the less great, because gradual; and it becomes an interesting question whether the growth of those influences, which were favourable to art in Italy, have had a similar effect in our own country.

The answer must, I think, be in the negative. Not that any opposite result has been attained; but that it has hitherto proved impossible to excite sufficiently the interest of ruling Englishmen in art to make them desirous of erecting great architectural monuments. The artistic taste of the Italians was innate, and answered readily to external suggestions. With us, it has been more a matter of individual education, culture in the case of the few, while it has been neglected as an element of national prosperity. It has not been so elsewhere. Art has been cultivated by our neighbours, the French, not only from inborn taste, but also from calculated policy. We are now complaining of foreign rivalry of trade, and calling out for technical education. Perhaps it may at length dawn upon some of our rulers that an educated national taste may even be a matter of commercial importance.*

When a public feeling for art is weak, the wealth of a nation is diverted rather to selfish gratification, than to the public gain. Thus, at the late Paris Exhibition, we were told that our foreign friends were amazed at the number and costliness of the works of architecture in the English Department, which represented private expenditure for individual enjoyment.

It has become a commonplace among ourselves that our public buildings are to be stinted, and those which are now in progress are no exception to the rule. It is, indeed, becoming the practice of the State to exclude architects altogether from any but the very largest public works, and a doubtful economy is more esteemed than architectural excellence.

The most important civic edifice erected in our own time has undoubtedly been the Houses of Parliament. This was a work extending over some twenty years, requiring the best part of the life and energies of its architect. I will not now speak of its architectural merits, nor am I about to discuss the views of those who, on the one hand, declare it to be the most successful result of the Gothic revival; nor the judgment of others, who hold a diametrically contrary opinion. I wish to refer to it only as one of our greatest public monuments. It is a building which provides for the highest business of the country. The monarch addresses, from the throne, the Houses of Lords and Commons, and through them, the listening world. The so-called private business of the country, business affecting the comfort of the nation, and the expenditure of millions upon millions, is transacted within its committee-rooms. Some of the highest officers of the Commonwealth reside in it. Taking the building as a whole, there is no spot in the empire of equal interest. In this case, if in no other, we might have thought that considerations of expenditure might well have been made subservient to efficiency and to artistic considerations, and yet people are for ever talking of the cost of the Houses of Parliament, rather than of their artistic merits or defects.

On the question of expense, the common assertion is that it cost two millions. Two millions, expended in twenty years,—a hundred thousand a year out of an annual expenditure of 80 millions, for housing the Legislature of a great Empire,—about the same sum which our neighbours the French have spent, with a *cœur léger*, in as many months, on the evanescent splendours of a Great Exhibition, to say nothing of an almost equal outlay on their new Opera-house. Two millions,—a third part of the sum expended in preparation, at the first whisper of war,—a fraction of the cost of a single ironclad squadron.

In truth, the building of the Houses of Parliament, *as designed by the architect*, did not cost two millions, but the assertion has been so often made, that by repeated iteration, it has come to be accepted as correct. Be it less or more, the great question with respect to such a national monument should, as it seems to me, have been, rather, "Is it good?" than "What has it cost?" *

When we contemplate the noble remains of ancient art, we cannot for a moment doubt that the one idea present to the mind of every great artist has been to do his best, to put his whole soul into his work, and to exact, as far as was possible, perfection from all he employed, apart from pecuniary considerations.

The period of the Renaissance now under examination was a time of transition from ecclesiastical to civil polity. The Gothic of the North had found its strongest support in the Mediæval Church. The burghers and citizens of the South had advanced further along the road of political freedom, and the architectural result was the erection of the noble civic and secular buildings of Italy.

In all important Italian cities we find such monuments, vieing with, and often surpassing the churches. In some cases, as at Florence, the secular buildings are even palaces, and in all, as at Siena, Padua, Vicenza, Piacenza, Cremona, Como, and elsewhere, the Town-hall, as we may call it,' asserted the importance of the civic rulers. We find it, for the most part, in the centre of the town, dignified in its architecture with its characteristic bell-tower or campanile, the symbol of power in Mediæval days. The liberty to erect such a tower or belfry was everywhere highly prized as a sign of independence, and we know that this was the case in the North as well as the South, in the "Free Towns" founded in France by our own King Edward I., as well as in the prosperous c mercial cities of Belgium, and the more stat capitals of the Italian states, with which are now chiefly concerned.

Apart from their special significance, Italian Gothic campaniles must be deen rather interesting than admirable, in architectural sense. Rising straight from ground without buttresses or breaks, usua plain, and destitute alike of ornament and light and shade, a well-designed upper st is but a poor compensation for so much effo exerted for so small a result. The Italian tow may perhaps serve as models for lighthouses chimneys; but they cannot, in my judgment, allowed for one moment to cast into the sh the merits of our own Mediæval towers s spires. In the plains of Italy, they had a spe justification, serving both as watch-towers guides, as well as indicating the power authority of the cities in which they were pla

In the wars of the factions which tore It asunder, Guelphs and Ghibellines in turn ass ing the mastery, there was little safety out the cities. Rural domestic tranquillity wa blessing not yet to be enjoyed, and care State thus became the heritage of the citize

Public life, consequently, had great inte for the Italians, and this sentiment influen their architecture, leading them to give imp ance to their public buildings. In review on former occasions, the progress of Go architecture in England, I noticed the deve ments which were successively introduced tending to the increase of domestic enjoym To the rude Saxon Hall, which was the w dwelling, and in which the inmates not only and drank, but lived and slept, additions made, first of a few rooms, and then of s buildings, until the Hall became a mere fea of the whole structure, to which, neverthe it often still continued to give its name, found, as you may perhaps remember, son our most interesting illustrations of En architecture in domestic buildings; while, from churches and other ecclesiastical rem the structures erected for public purposes neither numerous nor important; nor they compare with contemporary or neigh ing examples elsewhere; as, for example the beautiful Town-halls of the Low Countr

The progress of architecture thus came, us, to be associated with the importance comfort of the individual, while with the Ita it merged the latter, in the corporate impor of society.

The causes of this difference may prob be sought in deep variations of national racter which exist to our own day. Indivi liberty is the much-prized inheritance of Englishman, who leaves to others the wo of equality, and the assertion of the impor of the community. We know how often said of a man that he is seen best at home the luxury of domesticity is to be found greatest completeness amongst us.

The care and devotion given in Italy to great civic buildings for the public use, ha but little counterpart in this country, an attention paid to domestic comfort am ourselves has led rather to individual selfis than to any great evidences of public spi regard to architecture. The important costly works which history will associate the nineteenth century have been for the part carried out by trading companies i pursuit of gain, while expenditure without has been forthcoming for private objects.

The civic buildings of Italy have thus ar rest apart from their architecture, and ma every sense, a time of transition. The g characteristics of their design do not mate differ from those noticed, in the last lectu respect of Italian Gothic work generally. horizontal principle is, however, more ma and the approach to Classicalism som nearer than in ecclesiastical examples.

The Gothic palaces of Venice are all m less affected by the same influences, which to give to the Renaissance its approa victory, and the latter style thus becam many instances, based upon a logical dedu from principles, already, more or less, adm

Thus, the Ducal Palace has not, at leas Northern eye, the effect of a Gothic bui The vertical principle is altogether absen in its place we have a horizontalism of it ment as marked as in any building of the R sance, such as the Farnese Palace at Rom Sansovino's beautiful Library of St. Ma Venice itself.

* I cannot forbear from quoting here, from an article which appeared not long since in the *Pall Mall Gazette;* from its correspondent in Paris, with whom I leave the responsibility of his statement of facts, and his expressed opinions. He writes:—"What a surprise it would be to Pitt, whose scorn for art has been so eloquently described by Macaulay, could he have read the report of M. Antonin Proust, on the 'Budget des Beaux Arts.' Pitt refused to grant public money to men of letters, or artists; the French Government has always pursued a different policy, and a policy which has proved remunerative."

Then follows a list of the chief items of a total vote of about 220,000*l.*, for purposes connected with art. Among them we find 60,000*l.* for preserving national monuments, 30,000*l.* for works of art to decorate public edifices, 6,000*l.* for the French Academy at Rome, and 12,000*l.* for the National School of Fine Arts, which includes among its members 57 architects.

"France," he continues, "spends thus annually some 220,000*l.* on matters connected with art. The results of this expenditure were visible at the recent Exhibition, they are visible here every day, no matter to which side you turn—visible in the taste with which women dress, with which shops are arranged, and the graceful turn which is given to the most ordinary article. Everything one sees is inviting. The restaurateur, instead of piling up in his window huge masses of raw beef, hams, and other unsightly objects, after the English fashion, has a glittering fish laid out on a bed of parsley, with a fountain playing over it, and surrounded by fruit artistically arranged. I remember at a Parliamentary inquiry under the Empire, a French workman was asked his opinion about English files. He said that the English files were the better of the two, but were not pleasing to the eye, and therefore French files were preferred. I heard a similar remark about pickles. English pickles are excellent, but they are crammed anyway into an ungainly bottle. French pickles catch the eye, being arranged with taste in graceful bottles. When art descends to files and pickles its importance in higher spheres may be easily inferred."

* Those who care to see what the cost of the Houses of Parliament, as designed by Sir Charles Barry, really was, can do so by referring to the Life of the Architect, by the Rev. Dr. Barry. They will find that the sum of two millions, often so hastily assumed to have been expended *by the architect*, can only be made up by adding to the cost of the building large sums for furniture, purchase of property, and other purposes. Great expenditure was also caused by costly and abortive schemes of ventilation, for which Sir C. Barry was not only not responsible, but which were carried out and altered again and again, *in spite of his protests.*

erection of the Ducal Palace formed an in Gothic art in Venice, and stood between rlier types of Byzantine origin, and the Transitional period, which ended with naissance. It is impossible to speak of it, eed of Venetian architecture, without g of Mr. Ruskin, if only to express to him for his devotion to the subject, the valuable essays, and beautiful illus-s, with which he has enriched our . His enthusiastic admiration for ucal Palace, and his depreciatory esti-f the merits of the Renaissance, are well . Enjoying heartily, as all must do, his t advocacy, in the one sense, it may be ted to doubt, if he has been able to do to the latter.

peculiar charm of Venice is such that mpartiality in determining the rival claims wo schools, as there exhibited, is difficult, impossible. The buildings, which are crowded together, in and around the of St. Mark's, are unrivalled in the world. cture must ever be affected by traditions ociations, and in no other instance is this he case, than in that famous group, bor-unique graces from Eastern, as well as n art. The history and spirit of the past o us, from such monuments of former with a romance and power of fascination rrests the voice of criticism.

carcely fair, therefore, to suggest that, drawings and pictures of the Ducal rather than of Renaissance designs, are ade, and are always delightful, this is a for doubting the merits of the latter. omparatively modern edifices must, of be judged in their architectural merits part from any halo of interesting his-ssociations.

ke, in a former lecture, of some of the ities of the Ducal Palace, and will efore go over the same ground again. it to say that we find in it the same half-ion of Gothic principles which has been before, as characteristic of Italian

r effects may be observed in other and even at Cremona, where, in per-s of the most Gothic-looking buildings, own-hall or civic class, in Italy, a free the pointed arch is balanced by the of vertical piers or buttresses, and by ngly-marked horizontalism of string nice.

atter feature is, indeed, specially sugges-a Classic origin, and charcteristic of Gothic. It has not, indeed, the distinct s of Roman work, nor its bold projec-ith the consequent strong shadows. It osed, usually, of groups of mouldings, of e size and prominence, suitable to con-n in brick, the material mostly used. ents of regular forms, not always d in themselves, are arranged in horizontal f ornament, and below the whole we all arches, sometimes simply arranged chicolations, and at other times inter-each other. The cornices thus designed ously based upon Classical types, varied tion, according to the material employed. e found running round the tops of build-d up the sides of gables, in a manner n to the Gothic architects of Europe y.

ature which is perhaps the most striking nglish architectural student in his first Venice, is the tracery of the Ducal and of the later buildings, the design of was based upon it. The thick and construction is altogether different to e delicate forms, to which he has hitherto ccustomed.

orthern architects had passed from the hape first to groups of single windows, d in threes and fives, as at the Temple or York Minster, and afterwards to more ted designs. Collecting single windows Pointed arch, they next pierced the aces with circles, and other geometrical ntil they arrived at the tracery, so to us in this country. In France, the ndow tracery was massive, as compared later developments, but it never reached ity of the Italian examples. The con-n was to be found in the Pointed arched d tracery formed the filling in of each t might be removed, and, as we know, uently been removed, without injury to bility of the building. In the Perpen-windows, indeed, this absence of constructive importance was less frequently the case than in the earlier styles, for at this time it was common to carry the mullions up to the enclosing arch, and not only to the springing of the arch as had been previously done. These mullions acted in such cases as piers or columns, and left but little for the arch, commonly of the four-centred depressed form, to support.

In Italy, window tracery seems to have been little admired. It was known, indeed, for it is found in various places, and generally in its simplest types. We may see it, in the case of the nave windows at Florence, and Giotto adopted it in his campanile in a more elaborate manner, as did the architects at Lucca and elsewhere. When the Pointed arch was adopted, however, the more usual course was to use rows of single openings, separated by columns, and fill up the tympanum of the arch over the windows.

In the upper arcades of the Ducal Palace, the pointed arch is altogether suppressed, and the tracery is thick, and strong enough to serve as a constructional feature, performing the duty of a support to the structure above.

The details of this arcade, and also of the more Gothic-looking arches of the ground-floor, are so beautiful that the architectural student is tempted to overlook all defects, and we have seen, in consequence, tendencies among modern architects to copy the errors, as well as the beauties, of the Ducal Palace, in combination with forms of Northern Gothic, often not very consistent in general design.

If, however, the arcade in the ground-floor, with its pointed arches, can be said to exhibit a pure Gothic character, the same can hardly be declared, in respect of the traceries of the next story.

If we recur to the definition of Gothic, as an arched style, and of Classic as a lintel style, we shall find, on examination, that these thick and simple traceries partake more of the latter, than of the former character.

They have, in the first place, to take the weight of the superstructure, and convey the pressure, as equally distributed as possible, to the columns below, all of which are of equal size [with the exceptions of the corners], and placed at moderate distances apart. There is no thrust of arches against abutments, strengthened by means of piers, or buttresses, in the Gothic manner.

We may next observe that the arches over the columns are of the ogee form, a weak type as regards its power of support. Above and between these arches we have a row of quatrefoils, exactly like one another, and arranged horizontally, the whole being surmounted by a level carved string-course.

Regarding the elevation as a whole, and from some distance, the entire mass of this tracery has the appearance of a horizontal band of enrichment, such as might be presented by an ornamental beam built into the wall. It is, indeed, a beam, or lintel of perforated stone, or rather marble, laid upon numerous supports, to which it communicates the strain of supporting the solid walls erected upon it.

If you consider the string-course above as the upper flange of such a beam or lintel, and a line, drawn level with the top members of the capitals, as the lower flange, you will find that the strains between the two flanges pass through the solid members of the tracery, very much as they do through the braces and struts of an iron trellis-beam, arranged at an angle of about 45° by a modern engineer. It having been found that the transmission of such strains had a tendency to open the joints of the masonry, iron tie-rods have been added from capital to capital, and thus the type of the lintel construction is fully exemplified.

We see, then, in these traceries, an actual element in the construction. They are not an application of ornamental detail, which can be withheld or added at will, as the Northern Gothic architect was wont to do; but they form an integral part of the fabric, and take an important share in supporting the weight of the building. In so doing they ignore the arch, and adopt the opposite principle of horizontal lintel construction.

The whole arcade is very beautiful, and so unlike anything in our architecture here that it never fails to charm us, and it is, amongst other things, a remarkable lesson to the architect, as to the disposition of light or shadow. Assuming the propriety of the conception, and taking the quatrefoils of the tracery as forming a level band of enrichment, no sculpture, in such a position, would produce the effect of these simple forms, with square edges, displaying themselves in clear cut prominence against the shadow behind them. We must ever remember, in thinking out our ideas, that we have to consider, not how to make a pretty picture ourselves of our own design, but so to work out the same, in thickness, as well as elevation; in shadows, as well as in surface detail, that the building, when completed, may deserve to be drawn by others, who may pronounce it a picture indeed.

Passing from the arcades to the other portions of the elevations of the Ducal Palace, we find little of interest, for I cannot but think that the admiration it has received, has been due to its associations, and to the charms of certain details, rather than to any excellence of the composition as a whole. Mr. Fergusson, indeed, speaks of the Palace as "a building which all the world agreed, till very lately, in thinking very ugly."

I expressed, in one of my former lectures, my doubts and criticisms upon the heavy box-like upper story, which comes down with apparently crushing weight upon the pierced arcades below, and if it had not been for the relief, given by the application of colour to the vast plain surface, the effect would be much worse than it is. The whole wall space, where not perforated by windows, is covered with a diaper pattern, composed of pieces of different coloured marbles. The effect is curious, rather than satisfactory; but if the object were to lighten the appearance of a great unbroken mass, the expedient must be pronounced successful, to a considerable extent. The decoration is also applied in a more constructionally appropriate manner than is the case with the thin veneers of marble, placed on their edges, against the wall, to which reference has already been made, as being common with Italian architects generally, and visible in numerous examples, both in Venice and elsewhere.

It has often been debated how far such systems of surface decoration are right, or should be tolerated. Perhaps we have rather too much enunciation of abstract principles in such matters. The use of gilding, or of costly materials, such as marble, will be reasonable in some cases, and objectionable in others. If it be out of place where it is used, it will not approve itself to our sense of what is fitting, and if it be ugly, it will not please the eye. In this manner it cannot satisfy the taste,—that sentiment which may be felt, but cannot be argued about on rigid logical principles.

The same thing holds good with the general question of coloured decoration,—a point on which any consensus of opinion is very difficult to ensure. No one holds more strongly than I do that Architecture, to be perfect, must avail herself of the co-operation of the sister arts, and combine the beauty of appropriate form, with the added loveliness of colour, when this can be done without unduly touching on her own province.

If it be asserted that Architecture is deposed from her proper place by the doctrine of association of the arts, it may be remarked that this can never be the case, if she be true to herself. She may invite and welcome assistance, but she may not abdicate her position of primacy.

The addition of the work of the sculptor and the painter to a structure will not make the latter architecture, if it be only building; and still less, of course, can such a miracle be effected by the humbler efforts of the decorator or the veneerer. To test the architectural merits of an edifice, in this respect, we may ask ourselves, How would it appear if destitute of the added ornament of colour? If the upper story of the Ducal Palace were painted in a uniform grey tint, could it be admired as a work of art?

Colour may be added to architecture, but it cannot take its place, and though it may modify objections, and soften deformities, it can never atone for bad art. Take the instance of St. Mark's at Venice, a church, which, though small in size, has ever attracted the admiration of thousands. Has such admiration been a consequence of its architectural excellence? If we consult an outline drawing, or even a photograph, we should be unable to account for the praise it has received. We might admire Westminster Abbey, even if it had been whitewashed, but could we surrender the varied hues, the rich mosaics, and the costly marbles of St. Mark's, without shattering our idol? The unique character of the building, its situation,

the bygone glories with which it is associated, the gorgeousness of colour applied with lavish hand in every space of floor, wall, and ceiling, make up a picture of scenic beauty, which fills us with delight, and drives the architectural element from our mind. It is only, afterwards, when calm reflection comes to our aid, that we care to criticise this wonderful treasury of gems, and find that it has obtained our admiration, rather as a collection of varied details, than as a work of pure architecture.

St. Mark's is, in many respects, an example of the fusion of ideas, which we see elsewhere, in a less conspicuous manner, in Italy. The East was ransacked for columns, and Christian art was not too proud to borrow splendour from Mahometan mosques. Byzantine forms and Romanesque ornamentation are blended in a combination of artistic incongruity, over which age, with its hallowing associations, throws its ever potent charm. We have here, none of the singleness of aim, which seems to reign over the buildings of the North, but rather the richness of accessories, each strong with individual assertion, the interest of details, magnificent with marbles, mosaic, and sculptures, speaking rather of the voluptuous refinement of the South, than of hardy vigour on the part of those, who, amidst the ruins of the system of Imperial Rome, might have carved out new styles of art, and thus have worked out for themselves a complete and logical development of architecture.

In no European country shall we find so much architectural variety as in Italy. Fated, from her geographical position, to be the battle-field of warlike neighbours, her provinces thought to gain safety by isolation, rather than by association; and it has been reserved for modern times, to see the scattered pieces welded into a single mass, and to welcome a United Italy into the great family of nations. The same feelings which separated the people in political affairs acted on their architecture, and we find, therefore, Lombard, Byzantine, and Gothic types, striving for the mastery, and, after failing in decisive victory, all agreeing, as it were, to live together in a strange combination of art, the whole being dominated by that bias towards the olden days of Rome, which the Italians never failed to exhibit.

This bias may be seen in the Venetian palaces as clearly as in the ecclesiastical buildings described in my last lecture, and, indeed, it is perhaps in them, even more conspicuous than in the churches. The Renaissance came, therefore, the more easily, as a result of habits of thought, which it did not originate.

"*Italia fara da se*," has long been the boast, —a boast not perhaps always exactly realised,— of the Italian people; and yet her architecture, previous to the Renaissance, was not her own. The Byzantine, or Lombard, or, as it has been termed, the Byzantine Romanesque, of which St. Mark's is a typical example, was derived from the East, while the German school influenced other sections of the country; and the largest Gothic building in Italy, Milan Cathedral, is believed to have been designed by a German architect, as was also the purer Gothic church of St. Francis, at Assisi.

When, therefore, to the return to classical literature, a revival of Classic architecture was added, the Italians accepted with enthusiasm an invitation which may well have seemed to them an act of patriotism.

The Northern Gothic was tinged by a feudalism which had but little influence on Italy as a whole. The Lombard nobility held their own for a time, and fortified their cities with towers and walls, but these gave place, as we have already seen, to the town-halls and civic buildings of a people who had early obtained the power to govern. Such a state of things was favourable to the change from styles which had not been thoroughly adopted, to the older forms of Roman art, which had never been forgotten, but only laid aside for a period. The Italians looked upon themselves as heirs to the Romans, and their architecture was henceforth to return to Classic types for its principles and details. This impulse has not been lost, for while we have had many fashions, the architects of Italy have never withdrawn their restored allegiance to ancient Rome.

In the revival of Gothic art in this country, we first studied our own examples, and, for a long time, no one thought of adopting other forms than those used by the old Mediæval architects. Increased research, rendered possible by those facilities of locomotion, which some are ready to condemn as obtained by machinery, led, first, to the examination and appreciation, and, then, to the adoption, in our work, of details borrowed from the Italian Gothic. It may be doubted if the process has been advantageous to our architecture. I may, perhaps, advantageously repeat my warning that any such attempts at fusion require great judgment and caution. I say this, not because we are bound to limit ourselves, for ever, to forms which our forefathers used, but because if Italian details please us, it is probably, in great measure, because they are locally appropriate, and, consequently, display merits which may not bear transplanting.

I suggested to you on the last occasion that in some points, as, for example, the use of brickwork, the Italians may teach us valuable lessons, inasmuch as they succeeded in achieving results with this material which deserve admiration, notwithstanding its defects. In Italy the architect will find examples of all kinds of qualities of manufacture, and variety of elaboration; bricks for arches and mouldings, bricks for cornices and plinths, with every use of the clay, from the simple wall brick, to the delicate sculptor-like ornaments of the artists in terra-cotta.

If we are to cultivate and improve brick architecture, these examples of the manner in which the Italians dealt with a similar problem cannot but be interesting, whether we are to be called upon to design Renaissance mansions, Gothic parsonages, or Queen Anne manor-houses. To use a material appropriately, and to obtain from it as much beauty as it is capable of affording, should always be the aim of the architect; and let no one imagine that he is likely to develope such results from his inner consciousness, or without careful study of the results obtained by others.

Poverty of design will always declare itself, and it is, perhaps, never more objectionable than when it puts on the disguise of ill-considered contrasts of parti-coloured brickwork. As I have already pointed out to you, it is the architect's business to build pictures, not to paint them. Beauty of form, both in general mass and detail,—good proportion,—appropriate and artistic ornamentation,—are the objects he should seek; and his effects of *chiaroscuro* will only reveal themselves when his design has been erected. If you are fortunate enough to be able to add to such qualities as I have enumerated, the charms of colour, it is well; but to do so satisfactorily, moderation is needed, and you must not think that local colour will atone for the absence of good architectural composition.

The Italian architects were not accustomed to vary the colour of their brickwork, which was generally red. Where variation was desired, it was obtained by a sparing use of stone or marble. With us, when it is easy to obtain bricks of different colours, the temptation to use a variegated surface has proved irresistible, and has injured many a good design, cutting it up into small parts, so as to resemble a pavement set on end, or the Tunbridge-ware manufactures, with which we are familiar. Decoration of this kind should be temperately applied, if it is to please, and the lines of colour should have reference to the constructional forms of the building in which it is used. The horizontal courses of black and white marble, which are to be seen in Italy, in such buildings as the Broletto at Como, and the cathedral of Siena, are open to question in this respect, and the effect would be more pleasing if the contrast of colour were less marked.

The great opponent, however, of colour in English architecture is the damp atmosphere, and the smoke and dirt of our great towns. Public buildings with us begin to lose their beauty almost before the scaffoldings are removed, and the most delicate details, whether of carving or of colour, are the first to disappear, in dismal smears of blackness. Until some improvement can be obtained in this matter, the architect's work is somewhat disheartening, and all delicacies of expression in external work are, to a great extent, put out of his reach.

In this scientific age will no one spare a little attention to help us? Is chemical discovery, which, in its pursuit of gain, has poisoned rivers, and rendered smiling valleys as bare and desolate-looking as if a plague of locusts had ravaged them, like Egypt of old, powerless to aid in purifying the air we breathe?

We cannot turn backwards the stream of modern manufacturing ingenuity, any more than we can bring the sun of Italy to s upon our dwellings, but, within the limits of power, we are bound to exercise our energies the difficulties of our day. Architects have privilege of standing forward in the van of m a social improvement. Let them look to it t they are qualified for their honourable task, d their work with all their might, learning eve combine their art with science, and making b subservient to the moral and physical welfar society.

THE HISTORY OF A HOUSE.

There is a mysterious house in the Engl quarter of Paris, which has often attrac attention, without, however, leading to satisfactory explanation. It is situated at corner of the Rue de Morny, immedia opposite the well-known English chemist's sh and though giving on to the Champs Ely is not in keeping with the generality of houses erected along this celebrated and cos politan promenade. This house or mansio surrounded by a garden, where lilac-trees the principal ornamentation, and is protected a low wall. Many persons must have pa and pondered what could be the history of old deserted dwelling, which still remains s in this new and magnificent quarter of P At last the story of the building has been lished, much to the gratification of all Paris and we learn that this strange house is just years old, and can boast of princely origin.

The Comte d'Artois, afterwards Charles held land in the suburb which was traverse the Chemin du Roule, now known as Faubourg St. Honoré. With a view to embe this quarter, he obtained permission from brother, Louis XVI., to open a new street, named it after his son, the Duc d'Angoul The young duke was at that time soc twenty-two years old, handsome and frivo and remarked for his gallantries even at a court as that held by Louis XVI. At the period the celebrated actress, Louise C made her *début* on the classic boards, t Comédie Française, and the Duc d'Angoul was so smitten with her charms that he d a mansion to be built expressly for her corner of the new street that bore his n Chalgrin, the king's architect, lent his assis and directed the works; Barthélemy ornam the ceilings, and the garden, much larger than now, was laid out according to the d and under the superintendence of the gar of the Petit Trianon.

Soon the Hôtel Contat, as the mansion called, was thrown open to all the *élite* i gance and wit; and Louise Contat, who poetess as well as an actress, recited her to her guests. These were so loudly appl that the actress was invited to Versailles soon won the affection of the Queen, M Antoinette. It is related that on one occ having been suddenly requested to play comedy of "La Gouvernante" at the Tr Louise Contat learnt her part in twenty hours, and obtained a great success at The walls of the Hôtel Contat have consequ witnessed some hard work as well as dancing.

Mademoiselle Contat died in 1810, bu hôtel had been bought some years previou the Italian ambassador, Marescalchi, wh one of the most ardent admirers of Napo In honour of his idol, the ambassador g this mansion a masked ball, which was des as the most sumptuous entertainment had ever been held in this luxurious qua Paris.

The next owner of the Hôtel Contat w Comte de Flahaut, and after him the Co Morny, who is generally supposed to hav his son, lived there, and finally gave his n the street which had been known as t d'Angoulême. Under the first Republi first Empire, and the second Empire, called the Rue de l'Union. Afterwards it became the Rue d'Angoulême till the Empire, guided by M. Haussmann, be revolutionise the whole nomenclature of streets, and then it was called the Rue de a name which it still preserves in spite of revolutions.

Builders' Clerks' Benevolent Insti
The twelfth annual general meeting institution will be held at its offices, o day, February 25th, Mr. Thomas F. Rid sident, in the chair.

HIBITION OF THE ROYAL SCOTTISH ACADEMY.

no departures from the usual procedure been adopted by the Royal Scottish lemy this year. The annual dinner, prior e opening, has been dispensed with, in con- ation of the losses the Academy has sus- nd by the death of members since the last sion, and the galleries have been opened two s earlier, in order that the exhibition may r simultaneously with that of the Glasgow itution.

ne number of interesting works is greater usual, and upon an examination of these it mes apparent that no inconsiderable number iem are the works of resident artists. The rast between the works exhibited for the hd time, and which were seen by the public Burlington House and elsewhere, and those bited here for the first time, is, therefore, so marked as usual; still, the display is tly indebted to the London brethren. ngst the works they have sent we notice ardson's "Queen of Swords" and "Social ," Leslie's "School Revisited," Pettie's ime portrait of Colin Hunter, "The Laird," a reduced replica of "Hunted Down," which y many preferred to the larger picture. e is a bright coast scene by J. C. Hook. Nicol again introduces us to his favourite ols, the old man and the boy, the former ng a big fish which is "Giving In," and the r yielding to a "Great Temptation" over a of jam. T. Graham sends a singular- ng "Mudlark"; and Alma Tadema a ol to his "Audience with Agrippa," entitled er the Audience," the scene of which is the grand marble staircase, represented with breadth of effect and mastery of detail for h his works are remarkable.

rning to the resident artists:—W. B. C. comes forward with a large canvass, "The of Ruthven," where the young King James en after partaking of the hospitality of Earl of Gowrie, intercepted by the rude and tutor of Glamis, and given to understand he is not at liberty to depart. Affronted at act of personal restraint and violence the bursts into tears, and the tutor of Glamis nims fiercely, "Let him weep on, better bairns weep than bearded men." The has succeeded in realising the situation, mes and characters have been carefully ed, the colour is bright but not glaring, he workmanship solid and effective.

have here brought to the light the work h the late G. P. Chalmers had hidden out ght, "The Legend," the subject of which is d woman telling a weird tale to a group of truck children. The work is unfinished, it is sufficiently advanced to show the re of the artist, which was to impart to the a degree of mystery in harmony with the ct. The figures are backed by a luminous n, from which the faces peer out in pearly n flesh tints. As a study of colour the work mirable.

. R. Gibbs's "Retreat from Moscow" is ch in subject and French in treatment. study of the French masters has not been ailing; for the work here exhibited is of a class. The various groups, as they defile ugh the snowy waste till lost in the dis- , are dramatically represented, and well ght together, the centre being emphasised standard-bearer who has fallen out from anks in the last extremity, and still grasp- he flagstaff which a comrade endeavours tricate from his clenched hand. It cannot id, however, that the work is faultless; we ot object to the generalising of detail, but o to the faulty drawing which is apparent o figure of the dying soldier, and of his ade who supports him. Similar in subject, very different in execution, is W. B. F. 's "End of the '45," where is represented oup of prisoners under the escort of a list officer being led from Culloden Moor "the die was cast and the cause was lost." e appears to be a want of finish about the . It is more crude in colour and loose in tion than another exhibit by the same , "The Dispatch," which is most effective as regards the scheme of colour and firm- of drawing.

e adventures of Charles Edward seem to never-failing theme for Scottish painters, oung Cavalier and the unfortunate Queen have been so frequently the subjects of eation that it might be possible to make a picture history of their lives without the adjunct of letter-press. This is not by any means the first time that we have seen Prince Charlie seeking refuge in the humble cottage of an adherent, and it is not the fault of Mr. Herdman if we do not exhibit the same amount of devotion to the gallant and young hero as is done by the stalwart Highlander who kneels at his feet, and kisses his hand. We have more sympathy with "Lord Ullin's Daughter" as she clings to her lover before crossing the stormy water; and still more with "Gertrude of Wyoming," although the young lady is rather above the age for sitting down on the floor and leaning on her father's knee in presence of a guest. These works are rendered by Mr. Herdman with his usual precision and rich, though somewhat conventional, tone of colour.

G. Reid's whins in full bloom "By the Wayside" seem to perfume the air, and cause one to long for the sight of such masses of yellow blossom.

Mr. W. E. Lockhart revels in the bright colours of sunny lands. Upon a large canvas he represents "Alnaschar" (of the "Arabian Nights") awaking from his dream when he "unfortunately gave such a push to his basket that it was thrown down, and its contents broken into a thousand pieces," and thus lost the chance of making his fortune by their sale and marrying the Grand Vizier's daughter. The incident is rendered by the artist with his usual vigour of treatment, but the execution is not so rough as usual, which, to our thinking, is an advantage. The foreshortening of the right leg of the principal figure seems faulty, as one leg appears shorter than the other.

Hugh Cameron seldom uses a large canvas, and certainly his small pictures are his best. His "Haymakers" are well grouped and lighted up by bright sunshine, and there is the usual charm of refined colour, but the texture of the hay is anything but satisfactory, it would have been better had there been less of it.

The only contribution by Sir Noel Paton is a small study of "The Adversary," who is represented in Miltonic fashion, seated on a rock brooding revenge, while at his feet the snake-heads of sin writhe amidst lurid flame. In "Wanderers," J. L. Wingate represents two worn-out ragged boys asleep in a wood, the younger of whom has grasped his partner as if for protection. In this and in "Summer Time" there is exhibited the same feeling for out-door effects and harmonious colour which we noticed in his works last year.

J. Smart's "Crofters Flitting" is more of a landscape than a figure subject. Indeed, the crofter is arrayed in a span-new suit of tartan *à la mode*. If the intention was that we should extend to him our sympathy for being evicted from his cot and croft on a misty day he should have assumed a different garb; as it is, we suspect he must have had a windfall and is shifting to better quarters. He is leaving a grand but rather gloomy district, such as Mr. Smart delights in depicting.

W. Mactaggart seems to be softening down the peculiarities of manipulation which he has for some years indulged in. When looking at the "Bait Gatherers" the material employed does not obtrude itself upon notice, and the effect aimed at is sufficiently obtained. The works of Robert Little are full of promise. "The Old Clock" stands upon a mantelpiece, inlaid with tiles, and a young lady, most gracefully attired in the costume of the day, is about to wind it up. The execution is careful and minute, without being hard, and altogether the work is an attractive piece of *genre*. From such a starting-point good results may be looked for.

J. C. Noble leaves the spectator to attach what meaning he chooses as to how the youth in top-boots has been "Baffled" by the apparently elder maiden lady with whom he has been having a cup of Bohea. If he has been popping the question to her, with the view of having her wealth at his disposal, he may consider himself well out of the scrape, for she seems a most arrant vixen. J. B. Abercrombie represents "John Knox a Prisoner on Board a French Galley." The fiery Reformer seems to take his captivity very easily, as he appears to have suffered neither in mind nor body; but, then, he is certain of speedy release, and hope works wonders. Such, we suppose, is the lesson intended to be conveyed. Very graceful is John Faed's figure of "Julia Mannering," highly finished to the utmost minuteness of detail, and fine in colour, though rather too uniform and metallic in texture. George Aikman enlists our sympathies for his old "Widow who is Gathering in her Harvest," alone and unassisted. The scene is well painted, and in harmony with the subject. There are effective examples of the late Sam Bough's work. His "Edinburgh Castle from the Canal" is possessed of a certain ideal grandeur, but the pervading tone is unnatural and unpleasant. "St. Monan's" is more true to nature,—airy, fresh, and vigorous.

J. R. Reid's studies in Amiens are well drawn and lighted up, and are rendered interesting by animated groups variously employed. J. Cassie is more vigorous than usual in a storm scene at St. Andrews. J. D. Adams's "Along the Shore" gives a fine effect of distance. D. W. Mackay's village scenes keep up his reputation. W. F. Vallance produces his favourite sea-side scenes under various aspects. D. Murray's landscapes are true to nature, both in colour and detail. The President's portrait of Sir James Bain is dignified and refined. Mr. Mactaggart seems to have had a fellow-feeling with the "Provost of Haddington," whose portrait is full of vigour and character. J. H. Lorimer's portraits display culture and force; those of J. Irvine refinement and discrimination.

In the sculpture-room there are numerous busts, several statuettes, and subjects in relievo, but nothing very remarkable.

THE INTERNATIONAL CONGRESS OF ARCHITECTS IN PARIS.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association on the 14th inst., Mr. H. L. Florence, president, in the chair, Messrs. C. C. Bradley, A. Nixon, F. Littlewood, W. Pope, C. E. Blondel, and E. A. Woodrow were elected members.

On the motion of Mr. R. C. Page, hon. sec., a vote of thanks was accorded to Mr. J. F. Bentley for allowing the members to visit St. Mary's (R.C.) Church, Chelsea, described in last week's *Builder*, p. 186.

It was announced that this Saturday, the 22nd, visits will be paid to the Alexandra Buildings and the Members' Chambers, Victoria-street, Westminster. Particulars will be found in our advertising columns.

Mr. R. Phené Spiers, who, in company with the President, represented the Association at the International Congress of Architects held in Paris last year, then read the following account* of the proceedings of the Congress:—

The Congress was organised under the auspices of the Société Centrale des Architectes, and authorised by decree of the Minister of Agriculture and Public Works. The Société Centrale numbers 329 members, probably increased to 350 during the Congress. Under its auspices, an international congress was held in 1867, and ordinary congresses had been held since. The society is in communication with thirteen provincial societies of architects, archæologists, and others, and with twelve foreign societies, of which the Royal Institute of British Architects is one. Delegates from most of these societies attended the Congress, and upwards of 450 architects from all parts of France and from foreign nations signed their names as attending the Congress. The general meetings were held in the Palace of the Trocadéro, in a large hall built for conferences of this kind, the sectional meetings being held in some of the unoccupied bureaux or offices of the Tuileries.

The opening meeting was held on Monday, July 29, in the Trocadéro, under the presidency of M. Lefuel, architect of the modern parts of the Louvre and the Tuileries, who, in his opening address, remarked that eleven years had passed since, on the 22nd July, 1867, there was held in the École des Beaux Arts, under the presidency of the late Victor Baltard, and due to the initiation of the École Centrale, the first international congress of architects. Since that time, though congresses of French architects had been held annually since 1873, yet, owing to the unsettled condition of the country, it had not been hitherto possible to organise one which should partake of an international character. It was with great satisfaction, said M. Lefuel, that, on the occasion of an international exhibition, and in the midst of *chefs d'œuvres* of the art and industry of all nations, they found themselves in a position again to take up, after

* Some account of the proceedings of the Congress appeared in last year's volume of the *Builder*, pp. 804, 825.

eleven years, the work then commenced; and he expressed his pleasure in receiving the members of the Congress,—the French and foreign architects and distinguished and illustrious *savants*,—assembled on that occasion, terminating his address by asking for a vote of thanks to the members of the executive committee and their eminent president, M. Viollet-le-Duc.

M. Chas. Lucas, the secretary, having described the proposed work of the Congress,

M. Hermant, vice-president, read a paper entitled "L'Esthétique à la Portée de tout le Monde,"—which may be translated, "Æsthetics placed within the reach of every one," or, more generally, "Æsthetics for the million." The purport of the paper was to show that art is regulated by certain definite principles and laws which ought to be laid down and determined in the same way as those of science. M. Hermant disclaimed any intention of laying down the law himself on that occasion, and only introduced the subject with the view of suggesting that some definitions would be of value to every one, more especially to those into whose education the study of art did not enter.

Unfortunately, as no discussion was allowed at these meetings, the subject was dropped at its birth, as it were, and no further action was taken upon it.

On Tuesday, July 30, at nine a.m., a sectional meeting was held at the Tuileries, to discuss "The Education and Professional Status of the Architect." A paper was read by M. Courau, in which he set forth the invasion of the architect's province of work by the engineer, placing the former in a very precarious position, especially in the provinces. Persons without any architectural instruction, he said, uneducated, though acquainted with the customs and a few of the technical terms used in building, assume to themselves the title of "architects," and, either by unscrupulous conduct or through ignorance, bring discredit on the whole profession, so that the architect suffers, and does not enjoy that consideration to which he is legitimately entitled. As a remedy for this state of things, M. Courau advocated the establishment of a diploma, which he considered would require from the average run of architects such a course of study as would be a guarantee to the public, and eventually raise the standard of the profession in their eyes. In advocating this diploma, M. Courau reminded the members of the Société Centrale that the foundation of their society had for its first object the establishment of a diploma, and he quoted passages from a pamphlet written by M. Adolphe Lance, and published in the "Encyclopédie d'Architecture in 1854-5, in which the value of such a diploma is clearly set forth; terminating his paper by remarking that the idea of the institution of that guarantee commenced with the society, and might now well be taken up again and brought to a practicable and definite solution.

M. Gosset warmly urged the Congress to take steps to prevent the receipt of "illicit" commissions, which, more than anything else, was bringing the profession into disrepute.

Mr. R. Phené Spiers gave a description of the architectural examination organised by the Royal Institute of British Architects in 1862, and deplored the fact that, owing to the apathy of the council, particularly during the last four years, the scheme had now well-nigh fallen through.

Señor Bolmas, secretary of the Central Society of Architects in Madrid, informed the Congress that in Spain the obtention of a diploma was a necessity for all those who wished to practise as architects.* There was a school of architects in Madrid, three years being the usual period of study, at the close of which an examination was held which might be gone through by those who came up from the provinces, or who preferred private study to that of the school. Four years had then to be passed in an architect's office and on works in progress, after which a second examination had to be passed to obtain the diploma.

Herr Klein, the delegate from Copenhagen, stated that there was a diploma in Denmark, but not a compulsory one, and thus there were two classes of architects,—those who had obtained the diploma and those who had not; some of the diplomaed architects were men of very little ability, and some of the other class were men of considerable talent, so that he did not consider that the diploma was of any value.

M. Jean Strohm, councillor of State, professor of architecture, and member of the Imperial Academy of Fine Arts in St. Petersburg, spoke of the unsatisfactory position of the architect in Russia, and advocated a diploma. Whatever position M. Strohm's colleagues hold in Russia, it is at least satisfactory to our *amour propre* to know that, at all events in his country, an architect can be a councillor of state.

It was intended to resume the subject on the following day, but there being no time set apart for it, it dropped.

M. Dutert then read a paper on the architectural designs exhibited in the Salon of 1878; and

Mr. R. Phené Spiers, by desire, gave a description of the career of an architectural student in England, and an account of the condition of architecture in that country.

On Tuesday evening, at three p.m., there was a meeting at the Trocadéro, when

M. Davioud read an essay "On the Union or the Separation of the Architect and the Engineer." The essay was one to which a prize, called the *Prix Bordin*, had been awarded by the Academy of Fine Arts, the exact title of the subject being, "To ascertain the theoretical and practical differences which exist between the respective professions of the architect and the engineer, and to take account of the advantages and disadvantages of the separation of the professions, deducing from such study what ought to be done in the interests of art,—whether an absolute separation of the two professions, or, on the contrary, a complete fusion." The question, M. Davioud stated, was a very delicate one, because it became necessary to criticise the position of a number of distinguished persons of high position in society and in the political world. In choosing the subject, the Academy had made no distinction between the civil engineer and the state engineer (the latter corresponding to the corps of Royal Engineers in this country). The latter profession differed from the former as much as that of the architect. It became necessary, therefore, to distinguish clearly between the three professions, and he accordingly divided his subject into four parts, viz.,—1. What is the State engineer? 2. What is the civil engineer? 3. What is the architect? 4. What are the actual relations between engineers and architects, and what should be done to improve them? In answering the first question, M. Davioud described in detail the organisation of the Corps des Ponts et Chaussées, created by Napoleon I., distinguishing between the mining engineer, the engineer who forms part of the service of bridges and highways, and the military engineer. He contended that centralisation and subordination of one to another had entirely suppressed the initiative of the individual, and consequently all originality and artistic feeling. Tracing his career from his entry into practice to his old age, M. Davioud pointed out how the State engineer has his life so marked out and defined that he is unable to free himself from the trammels which are imposed upon him, and eventually becomes a mere wheel in the great machine which constitutes the French Board of Works. M. Davioud considered that the course of study pursued by the State engineer in l'École Polytechnique is too theoretical and abstract, and its tendency is to form a body of men who do not draw or even make calculations, but prefer to alter, correct, and sign what is submitted to them, and above all, to make work for the engineering inspectors and architects placed under them. They become content to administrate, and not to construct, being absorbed in the tyranny of official reports and red tape. There are, of course, exceptions, and many of the most eminent civil engineers connected with the French railroads have left the State's service, and their high position there, to design and carry out roads, bridges, and machinery for the railway and other French companies. In answer to the second question, "What is the civil engineer?" M. Davioud shows that he is free and independent. The course of education he has gone through at l'École Centrale des Arts et Manufactures is of a more practical kind, the special object in that institution being to form practical men. Though the study of art is no more recognised there than at l'École Polytechnique, the students have to go through a course of construction which puts them in possession of knowledge which might, if their taste led them to it, be turned to account in architectural design. Leaving l'École Centrale with his diploma, the civil engineer (unlike the State engineer) goes upon the works as a subordinate, which enables him to study and to ask questions without compromising his dignity. Employed in private interests (which are always more exacting and economical than Government ones), he is obliged to work hard to acquire his position and to display a considerable personal value before he can reach the position of chief engineer as a representative of commercial capital. M. Davioud does not consider that the civil engineer has done much harm to architecture. He has raised construction to the height of an experimental science, and he has allowed France to rival England by judicious and economical employment of materials. The civil engineers in France are increasing in number and in the public esteem, because they are forced to work and not allowed to sleep in the enervating atmosphere of officialism. They are not artistic which is to be regretted, because some of them by supplemental study might render great service to French art industry. M. Davioud considers that art and science are unconsciously acting upon one another, and that the iron roofs of the Bibliothèque St. Geneviève, by M. Labrouste; the Halles, by M. Baltard; the atrium of the École des Beaux Arts, and of other modern French buildings, show that art is again asserting itself in connexion with scientific construction; and he foresees the time when the metallurgist, the *savant*, the ironfounder, and the architect, working together, will produce features of unknown beauty, causing a revolution in art as great as that which took place when arcuated took the place of trabeated construction. In answering question No. 3, M. Daviond, after tracing the origin of the word "architect," discusses the reasonableness of the law in allowing any one who chose to call himself an architect. He declared himself to be a partisan of complete liberty, and considered that it was for the client master of his own interest and actions, to find out how to obtain capable and fit persons to work for him. He considered that the École des Beaux Arts will largely suffice to separate the architect who had studied seriously from him who had not. As yet, he considered the architects had never taken sufficient trouble to enlighten the public on the value of men of merit in the profession; and the equality of salary which they have adopted, by a fixed scale of charges, is not likely to make people believe there can be much difference in the merit or talents of those who practise. M. Davioud classed the four-thousand-and-odd architects practising in France in three categories,—(1) those who are veritable artists, in whose talent and knowledge there is no question; (2) those who have desired to place themselves in the first category, but whose qualifications have not risen to the standard, but who, nevertheless, have become sound, practical architects with business-like qualities; and (3) those whom he called "usurpers,"—men who have gone through no serious course of study, but who have picked up such a superficial knowledge as enables them to compete with talent and instruction in demanding five per cent. or even less if they can get it. There can be no tie between these three categories. The Société Centrale endeavoured to bring the profession together in its attempt to start a diploma; when that failed, the society became weakened. "What a difference between our societies," said M. Davioud, "and the of the civil engineers, in their magnificent meeting-room in the Rue du Faubourg Poissonnière! How little *corps d'esprit* there is amongst us, and how we allow ourselves to be separated in an individualism as enervating as it is fatal!" Passing on to the subject of architectural education, M. Davioud recognises the great changes for the better that have been made in the École des Beaux Arts, but there is still wanting a great many things before the architectural student, leaving the school, will be placed in a position to practise. He did not consider that the various studies required would necessarily cool down the artistic ardour of the student; on the contrary, it might invigorate him, and prevent his becoming a mere decorator or designer on paper. "Do not let us deceive ourselves," said he; "if we compare the work done by the State or civil engineer in the same time as that of the architectural student during the progress of his studies we must be convinced that if a struggle ever takes place between the two professions, the architect will go to the wall." M. Davioud

* As stated, together with other particulars relating to this Society, in a recent article in the *Builder*,—p. 114, *ante*.

e, here referred to the easy and undisci-
d life of the architectural student in the
r and the École, compared with the strict
line of the École Polytechnique and the
des Arts et Manufactures. In examining
ourth question, the union of architects and
neers, M. Daviond considered that archi-
had obtained the most valuable informa-
from the civil engineers on all questions
ging to the science of building. Any con-
n or union with the State engineers, how-
he thought would be fatal to the profes-
He then pointed out how architects had
called in by the State engineers for public
e, and what had been the result? Charged
the care of a certain number of construc-
the work on which is sufficient to occupy
s time, he may be suddenly called upon to
three or four new buildings, and will be
d, therefore, to neglect some of his former
or hurry through the latter in a way
will be fatal to its result as a work of
Already, it is a question of establishing a
of municipal and provincial architects,
which system of centralisation M. Daviond
ds the art of the architect will be lost,
e will become a simple functionary. It
ot thus that the finest works of antiquity
nce were conceived. Architecture is a
al art, which cannot be entrusted to a
f men, whatever their qualifications may
M. Daviond, however, encourages a union
en the architects and civil engineers, from
he has nothing to fear but straightforward
. The State engineer represents prin-
which are in contradiction to the vital
ions of art, where liberty and individualism
he first importance. With the centralisa-
unity, and routine of officialism there
soon be no school, no style, no originality,
. In conclusion, M. Daviond reminded
rers that the Duke of Wellington, on his
from Paris after the disasters of 1815,
sked his opinion on the future prosperity
nce. The Duke replied that revolutions,
mpire, invasion, and civil war would
ly much retard her recovery and develop-
but the greatest ally of the interests of
ad would, alas! be French officialism.
Wednesday, July 31st, at the Tuileries,
ectional meetings were held in different
At one, presided over by M. Le
ou, president of the Northern Architec-
Society of France, M. St. Ginest, presi-
the Architectural Society of Toulouse,
communication from his society, urging
portance of drawing up some definite
f charges applicable to all France. He
l out the difference in the rules in some
provinces, and called attention to those
opted by the Society at Marseilles, who
epted the German sliding-scale. He
llowed by M. Ravon, who condemned the
system, contending that in order that a
ale of charges should be easy of applica-
cording to custom, and not contradictory
it must be perfectly clear to both the
contracting; and the difficulty of classi-
the several buildings quoted in the five
of the German scale,—which should
to the artistic section, and which to the
onstructional,—would lead to endless
s and litigation,—precisely what the
shment of a scale was intended to do
with. Before the discussion could be
the section was called to another
o hear the continuation of M. Daviond's
and
subject was adjourned till Friday, August
hen communications were read from the
s of Marseilles and Lyons; after which
. Phené Spiers described in detail the
n system, including the positions held
antity surveyors and clerks of works. As
necessary to report progress, the section
d itself into committee, and commenced
cussion of fees for works under the value
0 francs.
meeting was again adjourned till Satur-
ugust 3rd, when M. Daviond attended,
ged that until there was a compulsory
n there ought to be no fixed scale of
s, or the artist would be placed in the
ategory as the first-comer who might
to call himself an architect. This opinion
ntested by M. Lucas, who argued that it
be a very difficult and delicate task to
ine the artistic merits of the various
rs of the profession, and would lead to
disputes. Eventually the meeting was
ued, and at the last conference held in
the Trocadéro the same afternoon, M. Daviond brought forward the following resolution:—

"This Congress, recognising the principle of the liberty of artistic work, and its free remuneration, of which the foundation should be based on the economical principle of supply and demand, considers that each architect has the right to adjust the value of his services according to his own estimate of what would be a just recompense for his talent, taking into account the special difficulties which might arise in each case."

This resolution practically left the question an open one, and as there were many dissentients from taking such a course, the following resolution was added and carried:—

"In the absence, however, of any preliminary arrangement, the scale of charges fixed by the Council of Public Buildings, on the 1st February, 1893 (12 Pluviose an viii. de la République Française), might be accepted as a minimum, steps being taken meanwhile to ameliorate this document, and augment the scale in consequence of the diminution in the value of money."

This scale is thus defined: drawings of every kind, 1½ per cent.; superintendence of work, 1½ per cent.; quantities and specification, 2 per cent., making a total of 5 per cent. No committee was appointed to carry out the resolution, so that action will probably be left to the Société Centrale.*

THE SPHYGMOPHON.

DURING last year the scientific world was presented almost every month with some new practical and surprising invention having its origin in the application of the electric current by means of the telephone. In the first place, it was the improved telephone with the sounding apparatus of Siemens and Halske; next, the microphone, an apparatus for multiplying the most delicate touches, transmitted in the form of loud sounds to the human ear; further, the recently-invented microtasimeter, of Edison, an apparatus for converting into sound the most trifling changes of temperature by means of the telephone; as well as the phonograph, conceived by the same inventor, that remarkable speaking apparatus which permits of the voices of deceased persons being heard in after years.

The latest acquisition in this branch of science is the sphygmophon, an apparatus connected with the telephone, by the help of which it is possible to render quite audible the beating of the pulse and [the movements of the heart, in all its various shades of intensity, in closest proximity as well as at long distances. The new apparatus is described as so effective, and at the same time may be so imperceptibly adjusted to the human body, that in a company the beating of the heart of any individual person may be made to sound, almost ghostlike, so loud in the room as to enable everybody present to hear it at the same time. The apparatus, however, will not remain a mere curiosity. It has been constructed with a view of aiding medical diagnosis in differences of the beating of the pulse and in diseases of the heart.

The action of the microphone, as is now well known, is based upon the interruptions of very short duration of the electric current passing through it. Those interruptions cause characteristic sounds in an inserted telephone. Starting from this principle, Dr. S. Th. Stein, of Frankfurt, an eminent physician, has contrived the above apparatus in order to render observable the minutest movements in the human body. An electric current passing through the apparatus is opened and closed by means of it as quickly as the movements in the body, for instance the pulsations, cause vibrations. Corresponding exactly to those vibrations, sound waves of considerable resonance are created in the sounding-plate of the telephone if two powerful Bunsen elements are inserted for the experiment. The sounds produced by the beating of the heart, for instance, are rendered as loud as knocks on a table with the finger.

The apparatus itself consists of a piece of a watch-spring about five centimètres long, which is soldered on to a small brass frame, and is provided on its free end with a gutta-percha knob. This small knob is placed against that part of the human body the movements of which are required to be heard in the telephone. Over the gutta-percha knob a small platinum plate is adjusted, which may be brought in contact with a platinum point fixed over it. The positive current travels to the platinum point, the negative current to the platinum plate attached to the little knob. The completion of the electric current is effected by the above delicate movements in the human body, the small apparatus being strapped to the pulse of the fore-arm or to the region of the heart. The movements of those organs, corresponding to their natural rhythm, cause the platinum to approach the platinum point, by means of which the electric current is closed and again opened in similar intervals, which produces in the sounding-plate of the telephone characteristic sounds; for instance, the movements of the human heart.

The simplicity of the application of this small apparatus is said to permit medical men to use it for the diagnosis of every case. It will especially be found practicable in clinical demonstrations, the lecturer being able by its means to render audible to the whole audience normal or abnormal conditions of the pulse or movement of the heart. This will not only effect a saving of time in clinical instruction and make investigations clearer—as each student will then not be obliged to step to the patient's bed in order to put his ear to the latter's heart if he wishes to hear what the lecturer may just have been explaining,—but the application of the apparatus will also be a great relief to the patient, who will no longer be annoyed or distressed by a number of students waiting in Indian file their turn for listening.

The apparatus has been patented in Germany and abroad, we believe also in this country, and its simplicity permits of its production at a very moderate cost.

* The remainder in our next.

BUILDING IN UTOPIA.

PROBABLY few people who are not professedly literary students ever look at Sir Thomas More's fanciful and thoughtful sketch of an ideal state, although the name which he gave to his imagined country has passed into the vulgar tongue of our language with a meaning understood by everybody. Utopia, more correctly Eutopia, means, of course, merely "the pleasant place," the happy land, the land where all things are good. It is one of the curious unconscious sarcasms sometimes found in the development of language, that the expression thence derived now means only that which is impracticable, impossible, or absurd. Those, however, would make a very great mistake who should imagine that More's book gives in the main any fair cause for this perversion of the original meaning of his title; except, indeed, in the sense that the state of things he describes may be said, in the colloquial phrase, to be "too good to be true." In many points the suggestions in Utopia in regard to social and political ameliorations are not only most practical, but wonderfully modern in feeling, and in some cases ideas which are only just now beginning to be publicly taken up and worked out, are met with in complete and developed form, the offspring of More's keen and far-sighted mind, which seems to have travelled so far in advance of his own time that his contemporaries might well have regarded him as a dreamer, who suggested ideas of progress quite beyond what would then have seemed capable of realisation in practice.

"Utopia" has, however, this in common with some other ideal treatises of the kind, and especially Plato's Republic, the great and central work of this class, that the arts are apparently little thought of in it. It would seem that the turn of mind which disposes men to these considerations of political and social progress is that which is generally little disposed to art and imaginative literature. As every one knows, Plato banished poets from his Republic, and he treats artists with great contempt, and speaks of the practical business men as the "educated people," in contradistinction to the artists and poets, who, in Plato's view, are only busied about dreams and trivialities which have no relation to the important ends of life. More does not specifically say the same, but he tacitly seems to adopt very much the same view, as he makes no mention of art in any department of his book. The chapter on "sciences, crafts, and occupations," which seems to promise the nearest to it by its title, only deals with handicrafts and practical work. In the course of it, there occur some amusing remarks upon building, under the marginal note "how to avoid excessive cost in building." The people of Utopia, he tells us, manage so well to economise labour, that in many occupations they need not so much work as other nations do.

"For, first of all, the building and repairing of houses asketh everywhere so many men's continual labour, because that the unthrifty heir suffereth the houses that his father builded in continuance of time to fall into decay. So that which he might have upholden with little

cost, his successor is constrained to build it again new, to his great charge. Yea, many times also the house that stood one man in so much money, another is of so nice and too delicate a mind that he setteth nothing by it. And it being neglected, and therefore shortly falling into ruin, he buildeth up another in another place with no less cost and charge. But among the Utopians, where all things be set in good order, and the commonwealth in a good stay, it very seldom chanceth, that they choose a new plot to build a house upon. And they do not only find speedy and quick remedies for present faults, but also prevent them that be like to fall. And by this means their houses continue and last very long with little labour and small reparations; in so much that this kind of workmen sometimes have almost nothing to do." *

Such a country would hardly, we fear, have appeared a Utopia to "this kind of workmen," and one is reminded of Pugin's excited reply to the nobleman who said that he only built a fine house because people expected him to do it; for his own choice, he would be content to live in any ordinary dwelling. "Would you, my lord,—would you! and pray, what would become of me and all the other artists?" Pugin obviously thought society was made for architects. More evidently had a very strong opinion the other way, and considered it an instance of the good managemement of building estates that "this sort of workmen" had often nothing to do. It is curious that More should not have perceived that it is this progress in regard to what is considered necessary for the comfort of life, this discontent with what served our fathers well enough, which keeps half the arts and crafts of civilised society in being. His observation that the Utopians rarely chose a new plot to build upon shows us vividly how slow was the rate of increase of population in those days. Had More lived in modern London, with its continual pressure of new lines of building and new suburbs, he could hardly have written such a sentence without a sense of its absurdity; but in days when life moved so much more slowly, the fact of the continual increase of numbers, and consequently of dwellings, might have been overlooked without disturbing the reader's faith in the verisimilitude of the picture. One other point in this passage must be quoted: it seems that the workmen, when not actually employed on a building, "were commanded to hew timber at home, and to square and trim up stones, to the intent that if any work chance, it may the more speedily rise." Clearly the main object in Utopia was to get the work done, which is not always the object in this enlightened land of trade-unions.

Architecture, however, is not entirely neglected in the "Utopia," for there is, in fact, a short chapter, entitled "Of the Cities," and the reader looks at it with some curiosity to see what the author of this ideal place regarded as an ideal way of building cities. He will not find any such sumptuous architectural imaginings as another of our philosophers has put on record as his idea of a noble style of house-building.† The suggestions derived from the cities of Utopia are for the most part very practical, and, like some other parts of the book, very modern in many respects. In describing the chief city, Amaurote, it seems certainly that More was indulging his love for London and for the Thames, as a great deal of his description is evidently suggested thereby. In some respects, however, he evidently thought London was capable of improvement, as he observes, among other things at Amaurote, that "there goeth a bridge over the river, made not of piles or timber, but of stonework with gorgeous and substantial arches, at that part of the city that is farthest from the sea; to the intent that ships may pass along forby all the side of the city without let." He might have foreseen not only the building of the modern bridges with their "gorgeous and substantial arches," but one of the very difficulties which has become a subject of discussion and heart-burning in regard to the proposal for a new bridge below London Bridge. Probably More himself thought that London Bridge in his day was wrongly placed, and shut out the larger ship traffic too low down the river; but this was hardly any one's fault in the first instance. If Stukeley's old plan of Roman London is based upon any reliable data, it is obvious that the position of London Bridge was fixed at a very early date in the history of the City, and that it was at that time in the right position at the highest point up the river, which the old City flanked only from the bridge to the Tower. The Amaurotians, we are told, had a second river running past their city, a much smaller stream, which arose not far from the city walls, and they had enclosed the head spring of it, and connected it by long walls with the city, that the water should not be stopped nor turned away, nor poisoned in the event of their enemies coming upon them; and from this spring the water was conducted "in canals of brick" into the lower parts of the city. "But when that cannot be done, by reason that the place will not suffer it, then they gather the rain-water in great cisterns, which doeth them as good service." It is three centuries and a half since More wrote this, yet the idea of utilising and storing rain-water on a great scale has been only raised of late years as if it were a modern suggestion; and we seem as far from doing anything about it as ever.

But one point that is curiously significant in the description of the Utopian cities is the entirely formal manner in which More seems to have conceived city architecture, both at large and in detail; the entire absence of any perception of the value of variety and picturesqueness: and this we note as significant, because it seems to be the usual turn which ideas about building take when people set themselves deliberately to work to make architectural effect and to lay out cities or building estates. More's idea of uniformity extends even to the cities as compared with one another. Amaurote is acknowledged as the chief city, "because there is the council-house," but otherwise there is nothing to distinguish it. "As for their cities," the chapter begins, "whoso knoweth one of them knoweth them all; they be all so like to one another, as far forth as the nature of the place permitteth." Certainly in this respect our new town architecture is Utopian enough: there could not be a truer description of some of our recent big streets in the new suburbs of London,—"whoso knoweth one of them knoweth them all"; and a dreary sort of knowledge it is. Again, we find that "the houses be of fair and gorgeous building, and on the street side they stand joined together in a long row through the whole street, without any partition or separation." This [was obviously,] therefore, More's idea of street architecture as it ought to be. It is really curious to reflect that, while we regard with the greatest interest the views of the old picturesque streets of Mediæval London, as represented in old prints, with their varied gables and complete freedom from rule or regularity, this very picturesqueness was to a man like More (a representative man of culture of his day) an imperfect and barbarous style of street building, and that he looked forward to an ideal street architecture, in which all the houses should be built alike in one unvarying row, exactly in the way which so many of us are now deprecating and praying to be delivered from, as ugly and dull past all pardoning. Such a passage as this of More's certainly very strongly reminds us how relative a thing taste is, after all, in regard to such matters as the picturesque, whether in building or in nature; how dependent it is upon habit and association; how it really amounts to little more than the liking for something new and fresh, something different from what one is accustomed to: just as the inhabitant of a mountainous country often wonders what people see in mountains, and will remark how pleasant it must be to live where there are none.* As we observed, however, the tendency to formality and a studied regularity in town architecture has always shown itself in cases where there has been a deliberate intention in laying out a site, to make it architecturally effective. It seems to be somehow contrary to human nature to deliberately plan anything of this kind except on symmetrical lines. The winding streets belong only to towns which have a long history, and have grown up gradually on the natural contours of the site. When people proceed deliberately to lay out towns in what is considered a handsome manner, they then produce New Yorks and Carlsruhes.

The streets of Utopia were "20 foot broad"; a characteristic indication of the progress we have made in regard to our demands for roadway since More's time, when such a width could be spoken of as if it were an exceptional spaciousness ("set forth very commodious and handsome"). It is possible that More, like many educated people in our own day, had only a very vague impression of the real effect of so many feet when measured out on the ground; people not accustomed to measure distances by the eye invariably over-estimate the apparent length of a foot, or an inch, or any other unit of measure; so that More may have imagined a 20-ft. street as much wider than it really is. His ideas upon the value of "open spaces in towns" were, however, quite in accordance with modern convictions. He says that "on the back side of the houses throughout the whole length of the street lie large gardens enclosed round about with the back part of the streets. . . . They set great store by their gardens. Their study and diligence herein cometh not only of pleasure, but also of a certain strife and contention that is between street and street, concerning the trimming, husbanding, and furnishing of their gardens: every man for his own part." In this respect we are still a long way behind Utopia, though there is certainly a progressing enlightenment on the subject. Another suggestion indicates a state of things which, we fear, is still further from realisation. The doors which lead from the streets into the houses, and through into the gardens, "be made with two leaves, never locked nor bolted, so easy to be opened that they will follow the least drawing of a finger, and shut again alone. Whoso will may go in; for there is nothing within the houses that is private or any man's own; and every tenth year they change their houses by lot." What a "flitting"! However, human nature must alter very much before any such community of goods and absence of private interest in property could be regarded as "Utopian" in any but the secondary and derived sense of the word.

There is one other practical detail in regard to the houses of Utopia which is worth mention. After reading that they are built "in a gorgeous and gallant sort," we find farther on "that the roofs be plain and flat covered with a certain kind of plaster that is of no cost, and yet so tempered that no fire can hurt or perish it, and withstandeth the violence of the weather better than any lead." It would be rather singular if Sir Thomas More's ideal Utopian architecture were to be realised in concrete building, to which the description is certainly more applicable than to anything else.

* We have purposely modernised More's spelling.

† See Bacon's Essay "On Building."

* Such a remark we have heard actually quoted as the expression of a Swiss peasant, on hearing from some visitors that they lived where all the country was flat.

THE STEAM ENGINE.

The large work of Mr. John Bourne,—"Steam, Air, and Gas Engines,*—is now completed by the issue of the new parts, 21 to 26 inclusive.

Mr. Bourne has studied and practised in this branch of engineering for forty years, and he says of the steam-engine that it remains to-day without any change in its principle of action and even without any striking improvement in its details, since Watt left it. It is, he says, a most wasteful machine, making available as mechanical power only about one-tenth of the force of the heat of the fuel burnt, and he believes it is on the eve of supercession by simpler and more economical machines.

It is as a heat-engine that we must consider the qualities and performance of the steam engine, and in any heat-engine there must be two temperatures, that of the substance applied to the machine and that of its residue when it leaves the machine. The main source of the loss of power in the steam-engine is the comparatively low temperature of the water in the boiler.

Mr. Bourne gives as an instance of the inadequacy of the steam-engine to yield much of the power to be derived from the heat of fuel that while the temperature of a furnace may be 3,000° that of the boiler may be but 250°, and that of the condenser 100°; thus the extreme of temperature in the engine are but little removed from each other, and consequently but little of the heat is transformed into mechanical power.

Waste, it may be said, is our greatest bane and waste of a force which cannot be renewed is the worst of all. It is bad enough to waste through a badly-constructed machine, the power of a body of water falling from a higher to

* "Examples of Steam, Air, and Gas Engines; with an Account of all the principal Projects for the Production of Motive Power from Heat." By John Bourne, C.E. Illustrated by 54 plates, and 356 woodcuts. London: Longmans, Greene, & Co. 1878.

wer level, but this is renewed to us again and ain by re-evaporation and rainfall; but coal rnt is irrevocable as fuel for the steam-gine.

In speaking of mechanical power in connexion th the force of heat, it may be well to refer the discovery of Mr. Joule, some thirty years o, that a definite quantity of heat has its uivalent in a definite quantity of mechanical wer, and he found that the quantity of heat ich raises 1 lb. of water one degree of Fahren-it's scale has its equivalent in mechanical ce in the raising of 772 lb. weight 1 ft. high ainst the force of gravity.

Upon this basis it is evident that we cannot nvert into mechanical power much of the heat fuel when applied to raise steam from water a boiler.

It is true that the temperature of steam may increased by super-heating, as is now com-only done in marine engines; yet this can be ne only to a very limited extent, says the thor, for steam of a higher temperature than 5° Fah. burns the packing and carbonises the . Mr. Bourne does not think that much is to done in increasing the useful effect of the ce of steam, either by super-heating or by rface-condensation.

Soon after he had first directed his attention the subject of the steam-engine, he endea-ured to forecast the course of probable im-provement in steam machinery, especially as pplicable to steam navigation, and he then rived at conclusions which even at the present y he does not believe he could much amend; d he saw that super-heating was one means to ve fuel, but that it could not be carried very r without introducing such evils in the way of ernal corrosion as to outweigh its benefits.

The economy attainable by the more extended pplication of the principle of expansion was, at t time, well known; but the use of a large pasure of expansion involved the use of onger boilers and the use of surface-con-nsation; but in the application of surface-ndensation the object was not that of enabling e boilers to be worked at a higher pressure obviating the risk of salting, but was to make e boilers last longer. At that time marine-ilers seldom lasted more than four or five ars, whilst land-boilers lasted twenty years; t boilers fed with the distilled water from rface-condensers are found to be not more rable than boilers fed with salt-water; but one now applies surface-condensers with the w of obtaining an increased durability of the iler.

It is true that surface condensers are even w sometimes employed without the excuse of simultaneous high pressure of steam, but ese applications are not commended by the thor. No doubt, he says, in steam-vessels nerally the pressure of steam has been adually creeping up at the expense of an creased risk of explosion, and without the ncurrent introduction of any measures of creased safety. The proper course to pursue the present time is not to increase the ressure with the old forms of boiler, but to ake the boilers equal to the higher pressures; deed, the most important step of all, the neral introduction of high pressures, remains t to be taken, and before it can be taken a fferent form of boiler-shell than the rectangular e now in general use must be adopted. "In l boilers, whether land or marine, internal crustations of any mischievous thickness may prevented by sufficient blowing off from the rface, provided a high pressure of steam be t maintained in the boiler. A high pressure of eam involves a high temperature of the water ithin the boiler; and at the temperature which swers to 40 lb. of pressure, the sulphate of me contained in sea water and other hard aters begins to be deposited from the action of e heat alone, without any concentration. A rge amount of blowing off is no remedy for is evil, but on the contrary, rather aggravates ; as where much blowing off is practised, uch water must pass through the boiler, and uch new volume of water adds its proportion precipitate to the general stock. It is conse-uently advisable when bad water is used con-jointly with high pressure, to employ surface con-nsers to return to the boiler the water which as been derived from the condeusation of the eam by the contact of cold surfaces. But in l other cases surface condensers are unneces-ary, and blowing off from the surface to an xtent corresponding to the badness of the ater will suffice."

It may be remembered that the publication of the separate parts of this volume was suspended in the year 1870. Mr. Bourne was then instituting, and has since continued, an elaborate series of experiments in burning coal-dust for the heating of steam-boilers. These experiments were to some extent successful in showing the practicability of burning coal-dust, but it was found that there were many objections to its use, and it became a question whether it is advantageous to pulverise small coal before burning it, and whether it is not on the whole simpler to employ a species of furnace which will burn the small coal at present regarded as refuse, without further preparation.

The conclusions at which Mr. Bourne has arrived, from the investigations rendered necessary by the preparation of the present work, are that of the numerous projects which have been propounded for the production of motive power from heat, whether by air, gas, or other agents, there is none which is, on the whole, so eligible as the steam-engine, which is, the author says, up to the present time the cheapest and most effective thermo-dynamic motor that can be obtained. High speed is much recommended by Mr. Bourne, as much as 1,000 ft. per minute being mentioned, and all steam-engines should be constructed on the high-speed principle: that is, the engine should have no complicated movements, nor should have, what he says one inventor's engine which he describes has, viz., "rattletraps" about it; but should be massive and plain; and all should be worked expansively and be provided with steam jackets. In steam navigation he thinks the most important pending improvement is the introduction of automatic means of stoking the furnaces. Nearly all kinds of engines are illustrated, the book being in some sense a repertory of inventions; and there is a valuable appendix on a score of subjects akin to the principal one.

THE PRINCIPLES OF RESTORATION.*

I need hardly detain you at any length as to the origin and development of "Restoration." You are aware that it is due to the so-called Gothic revival, which took place some thirty-five years ago, and spread like wildfire through Europe. After the dormant state in which ecclesiastical affairs had remained for at least three-quarters of a century, it was only natural that a period of bustle and commotion should follow. The hope was that when the change came, it might be brought about by a true spirit of regeneration. But, unfortunately, the reaction was caused by prejudice and passion. Thus the new movement, bereft of any wise controlling power, carried devastation and destruction along its course. The later writers on this subject ascribe to the clergy the chief blame for that mischief, which is now admitted by all to have been done. It is not my province to absolve the clergy from any offences which they may have committed; but in fairness I must say that if they have offended they may claim most illustrious and powerful laymen as accomplices. The Legislature and the lawyers played ducks and drakes with the monuments under their charge; it was, therefore, not surprising that the prevailing epidemic should rage with fury amongst the clergy. Their passion was to restore the edifices under their control; and having no artistic education, and neither the patience nor the humility to learn, they fell an easy prey to architects, decorators, and furniture dealers. Under the influence of these guides a crusade was preached against all art subsequently to the time of the Edwards; and thus much which was good within and without the churches was rooted out. It is essential that I should place before you the outcome of this superstition, because literally it was nothing else. . . . .

Sir Gilbert Scott, the acknowledged chief of the Anglo-Goths, published from time to time a series of manifestoes,—the first dated as far back as 1841,—against the Vandalism which made the very word "restoration" a byeword and a reproach, and robbed England of a large portion of her antiquities. I could quote many extracts from his writings, all expressing the same censures and sentiments at various periods,—brave words, no doubt. Sir Gilbert Scott was, however, not strong enough to resist the pressure and temptations which his lucrative professional engagements brought upon him, or he was of an irresolute and vacillating disposition. He failed to practise the doctrines which he preached with such energy and fervour, in the restorations of many of our cathedrals and valuable churches, subsequently to these fruitless protests. The war which has been waged by Mr. Butterfield and others against Wren's original and beautiful churches in the City of London was begun by Sir Gilbert Scott. Long after he had so unreservedly denounced the evils of radical restoration, he led the attack by his transformation of the elegant church of St. Michael, Cornhill, daubing the interior with paint, filling the windows with tracery, and disfiguring the bold and noble tower,—one of the most happy inventions of modern genius.

This subject was considered so important that it raised a controversy within the solemn precincts of the Royal Institute of British Architects. A paper was read by Mr. Stevenson, a distinguished architect, and Sir Gilbert Scott replied at great length to Mr. Stevenson. The impression which the early stage of the debate left upon my mind was that the professional gentlemen were very angry with one another, and only restrained from personalities, and perhaps something worse, by the grave and respectable character of the assembly. Later on, one of the most experienced and well-abused restorers, Mr. Street, R.A., made a speech, with which I, though seldom in agreement with him on architectural topics, could find but little fault. Mr. Street stated:—1st. That the walls, columns, and arches of a building should be thoroughly repaired. 2nd. That the walls should be kept plastered wherever an old surface of plaster was found. 3rd. That screens, stalls, and other old artistic work, removed by ignorant persons, should, if practicable, be put back in their original places. 4th. That though he saw no objection to the restoration of stonework originally executed by common masons, he would never sanction the restoration of anything which was the work or had the mark of an individual artist. "All such work as the decoration of walls, paintings on walls, carvings, sculpture, and the like, ought never to be touched or altered at all. It is precious, because it embodies the handiwork and thought of a single artist, and loses all its interest and value in restoration." When I was called upon by the president, I ventured to give an opinion, "that while it was perfectly justifiable to sweep away what is utterly bad and devoid of any artistic merit, what is *original and good* ought always to be preserved." In illustration I referred to the question of the Canterbury Cathedral stalls. I was shortly afterwards followed by Mr. Poynter, R.A., who carries great weight amongst the modern school, and he was good enough to say:—"Perhaps the best thing that has been said on the subject this evening fell from Mr. Bentinck, who said that whether an anachronism should be preserved or swept away depended entirely on whether it was in itself a good or bad work of art. But, unfortunately, to decide between what is good and what is bad is the question, and it is here that the difficulty lies. On this matter of the Canterbury stalls, for instance, there are evidently two opinions. I myself decidedly hold Mr. Bentinck's view, that they should be preserved. The reason why the new society sets its face against a restoration is because they fear that the enthusiasm of the restorer might remove that which is in itself valuable, although it may be an anachronism in regard to style."

If the discussion had stopped here, the principles asserted by Mr. Street and Mr. Poynter might have been taken to command assent. But immediately after Mr. Poynter had concluded, Sir Edmund Beckett,—well known as a voluminous writer on architecture,—entered the arena. His observations will not add to his reputation as a critic, but he has enabled me to place before you with tolerable clearness the main issues in this *pro* and *anti* restoration controversy. Sir E. Beckett said:—"I should not advocate the keeping of Italian work in a Gothic building unless it was a something very exceptionally good. Mr. Bentinck would lay down the principle of keeping everything 'that is good'; but when you have to turn this principle into practice, we have to answer the question,—What is good? That is just where people differ; and this shows the folly of attempting to settle these things by principles." And, further on, Sir E. Beckett said:—"The work of restoration [he was alluding to St. Alban's Cathedral]

* From a lecture on "The Principles upon which Architectural Restoration should be conducted," at the Whitehaven Scientific Association, by the Right Hon. G. C. Bentinck, M.P.

cannot be done without a great deal of actual rebuilding and imitating old work as well as we can, which I boldly avow is the proper mode of restoring work which is partially decayed, so that the old and new may look continuous and complete. I utterly deride all the nonsense that is talked about the baseness of imitation and copying. In such cases it is the only proper mode of restoration."

Sir E. Beckett denies that you can settle by any principle "what is good"; any attempt to do so, he says, is "foolish." But I think I can state a principle which will stand any test that common sense can reasonably suggest. It may be difficult, no doubt, in any high condition of refinement, either of art or manufacture, to lay down dogmatically "what is good." It is a relative rather than a positive term. What is intended is, not the labour of common workmen, but "every original work of every individual artist" from the earliest time down to the present day. For example, any Saxon ornament, or Saxon architecture, should not be destroyed. I would keep it, because it has an individual character. Among the few things which remain at St. Bees Church (most of the older features have disappeared), there is a very curious doorway, of the early part of the twelfth century. You cannot call it a work of art, but it is a curiosity; and being the work of an individual artist and the expression of a particular time,—I would not, under any circumstances, sweep it away. Neither would I sweep away what I consider to be an excellent work of art of its class,—the pulpit of St. James's Church, Whitehaven; for it is the expression of an individual artist and a particular time. The very stalls of Gibbons, which Sir Gilbert Scott was proposing to take away out of Canterbury Cathedral, are an example. There is one building in Whitehaven which is certainly not a beautiful building; in fact, it is very bad: the old Church of St. Nicholas. It is a hopeless building. Notwithstanding, I think it does contain something good,—namely, the carving on the old Lowther pew:—not a great work, nor a fine work;—but very interesting because it is the expression and the work of the North-country carvers who lived at that time, and whose works had merit. If you were going to pull down the church or to re-arrange it,—to take away the galleries and do anything satisfactory to the modern idea,—nothing ought to make you take away that carving. The pew might, but the carving should not, be taken from the church. I think that is a very liberal view. As to any one being able to restore or make things like what they were, that is impossible. If Westminster Abbey were pulled down to-morrow you could not build it up again. It is an agglomeration, as every other cathedral is an agglomeration, of different periods and different men's ideas; so that it would be quite impossible to recreate them. You cannot reproduce, as Mr. Poynter said, a thing that has ceased to exist in art; and all these imitations are entirely based on wrong principles and false ideas. This is the principle which I asserted at the meeting of the Institute, and I submit with some confidence that this principle, approved as it was in the main by both Mr. Street and Mr. Poynter, is not "foolish," but sensible.

The proposition laid down by Sir. E. Beckett, in the last paragraph quoted from his speech, embodies in surface the ideas of the ultra-restorationists. It justifies any amount of tampering with decayed monuments of art, provided always that they are manipulated into continuous and complete harmony with the work of the modern workman. If these doctrines are to prevail, the activity of modern decorators will be subject to no restraining force. Teach them that it is lawful "to make old and new work continuous and complete, and that the baseness of imitation and copying is all nonsense," and they will continue to cut, pare, daub, and destroy so unmercifully that the few churches which have hitherto escaped will speedily share the fate of their fellows. If the principle is admissible with regard to architectural details and sculpture, it must also apply to painting. Mr. Poynter was quite unanswerable when he said, "where a church exists from Mediæval times without any paintings, I hold strongly that any attempt to supply them, as they would have done in the thirteenth or fourteenth centuries, would be quite out of place, simply because it is impossible to reproduce the spirit in which these paintings were done. The architect may produce a very good imitation, but he cannot produce the same thing. It would be an attempt to put into a church something that has no reality." Mr. Poynter not only disposed of Sir E. Beckett, but hit an obvious blot in Sir G. Scott's system, which involves a large amount of painting. It is to oppose these pernicious notions that the efforts of the anti-restoration party are mainly directed.

As to the question whether it is absolutely unlawful, as Mr. Street appears to contend, to touch original carving, sculpture, and painting, my own idea is that all *bonâ-fide* work, by all artists of whatever age, Saxon, Edwardian, or Georgian, should be left in its original condition as much as possible. Still, occasions do arise when restoration is absolutely necessary either for preservation or general effect. For instance, in the damp climate of England and the trying atmosphere of London, pictures, gilding, and sculpture must from time to time be cleaned. There really is no alternative. And when the operation has to be performed, the duty of the local authority is to see that nothing more is done than the requirements of the case demand. Works of art also often require restoration, not by way of renovation, but by replacement of some feature which, if missing, the general effect is entirely marred. It is not wrong, in my opinion, to give back a nose or hand to a statue deprived, either wilfully or accidentally, of those members. This practice was pursued by the great men of the sixteenth century, including Michelangelo, and, provided the addition be made by artists, I can see no objection to it. But in a matter like this it is impossible to draw any hard-and-fast line as to where to begin and where to end. Every case must stand on its own merits. It would be preposterous to meddle with the Elgin Marbles or the Venus de Milo; but if the Apollo Belvedere, in the Vatican, or the Clytie, in the British Museum, lost his or her nose, it would be right to put it on again or even to make a new one. To define the exact theory is difficult, but the practice is as easy as A B C.

Embracing the cause, and accepting the main principles of the Anti-Restoration Society, I cannot side with the extreme party. I desire that, in preserving the treasures of art which our forefathers have left us, the voices of reason, common sense, moderation, and expediency should have a full hearing. These treasures are unfortunately not immortal,—like all human creations, they must and will decay; but when the time for restoration comes, let that restoration be conservative in the true sense of the word.

THE EFFECT OF GAS ON ART WORKS.

It will be remembered that among the great attractions of the new Paris Opera-house, the paintings with which M. Paul Baudry has ornamented the ceiling of the crush-room hold a prominent place. These works of art took ten years to produce, but they have been spoilt in much less time. The numerous lights which were to show off these works, and enable the public to appreciate their beauty, have, on the contrary, in some measure, destroyed the colouring, cracked the paint, and smeared with smoke and dirt the whole production. That this would be the case if the gas-lights continued in close proximity to the paintings, was apparent to all who took interest in these specimens of modern decorative art. In 1874 some remonstrances appeared in various newspapers on this subject, and in 1876 the administration made a special inquiry into the matter, and acknowledged that the paintings were being spoilt. Now, however, the evil is not only denounced, but a remedy is suggested. Electric light would not be destructive to the oil-colours, while the continued and imperfect consumption of ordinary gas will certainly prove fatal. Already it will be necessary to wash or clean the paintings, a process that will detract considerably from their value and freshness. A similar deterioration is noticed in one of the most celebrated *cafés* of Paris, where the decorations by M. Gustave Boulanger and M. Delaunay had been tarnished by the innumerable gas-lamps continually alight around.

The *Journal des Débats*, in a long article on this subject, suggests first of all that the paintings should be taken away altogether, and then that the electric light should be employed instead of gas. For our part, however, we fail to understand why the paintings should be removed if the electric light is used; unless, albeit, the very different tone of the electric light should destroy the effect of the colouring. This might be the case, but the matter has not yet been proved. The *Débats* is not content to urge the removal of these works of art, but runs much farther ahead, and declares that the Committee on Public Buildings must inevitably contemplate the reconstruction of the Tuileries, and that, in the resuscitated palace, the paintings would find a new and safe abode. As for the opera, the loiterers in the crush-room must be contented with more ordinary decorations; and certainly it must be admitted that the paintings are wasted here; for they are placed too high to be seen, and too near the gas not to be destroyed.

THE SEWERAGE OF WIGTON, CUMBERLAND.

At a meeting of the Wigton Urban Sanitary Authority, on the 6th inst., the question of sewering the town was considered. A Local Government Inquiry with reference to the same subject was held on Nov. 1 and 2, 1878, and continued representations as to the need for sewerage have since then been received from the Local Government Board. In reply, the Urban Authority proposed the construction of "slop-drains," and the general adoption of earth-closets. The Local Government Board's reply to those proposal had been considered at a previous meeting, and an undertaking to completely sewer the town forwarded to London, as requested. The pith of the Local Government Board's comments upon the proposals of the Urban Authority is given in the local *Advertiser* as follows:—

"The Board in London had been advised that the sewers which would be necessary for the removal of slop and surface water would be of sufficient capacity to carry any sewage from water-closets, and pointed out that they had no power to require earth-closets to be substituted for water-closets, or to prevent water-closets being drained into the sewers. They also considered water-closets a better form of excrement disposal than the earth-closets for Wigton, and that the proposal to provide earth-closets in no way affected the need for adequate sewers."

Mr. J. S. Hodgson, C.E., Hexham, Consulting Engineer to the Urban Authority, was present at the meeting referred to, and received instructions to prepare a detailed sewerage scheme at once. The adoption of the sewerage system had been recommended by him when consulted previously to the Local Government Board inquiry.

THE NEW LAW COURTS, VIENNA.

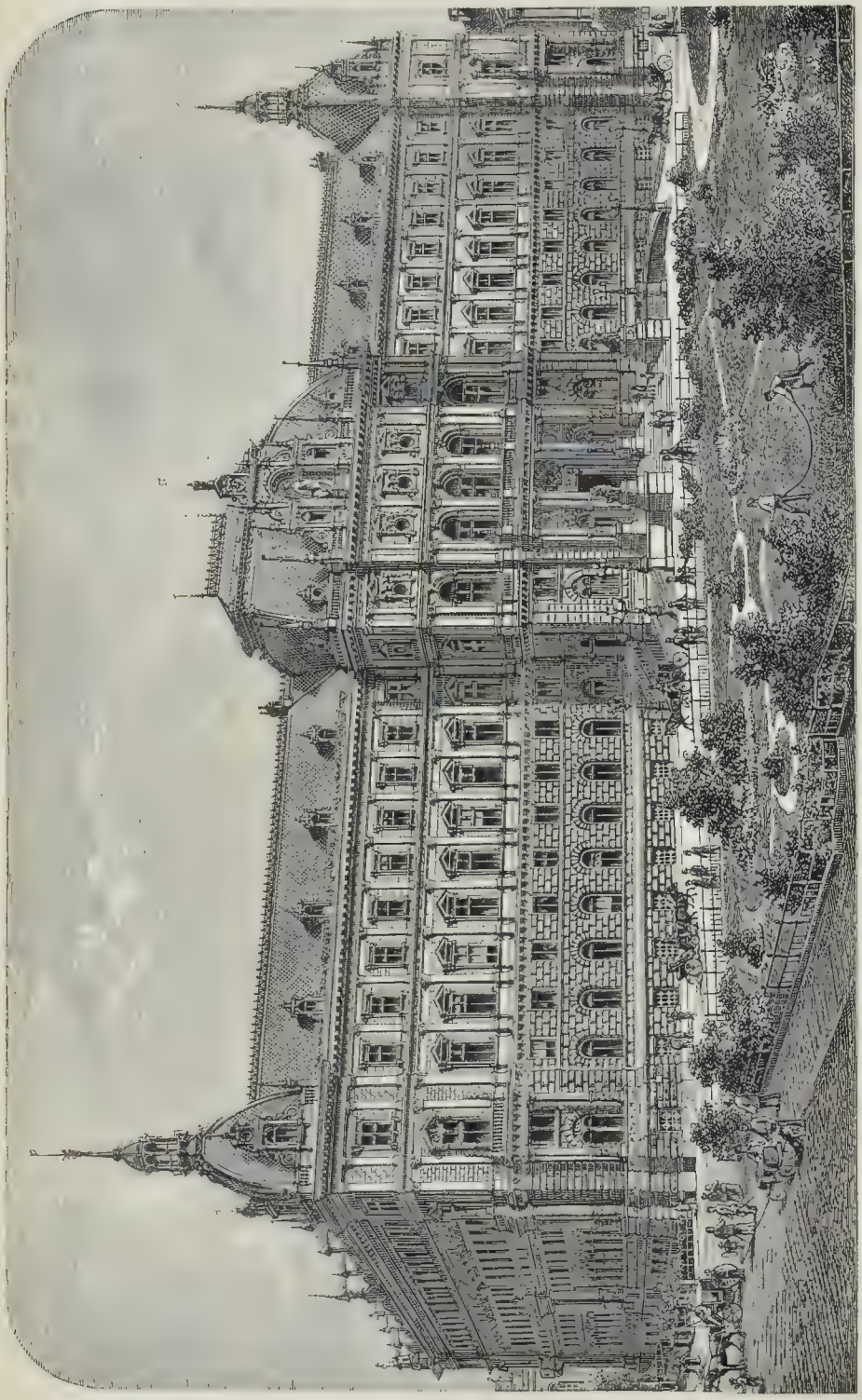
In a former issue* we gave a view of the staircase of the new Law Courts of Vienna, and we now present our readers with the exterior view of those buildings.

The new Palace of Justice is one of the many additions to the architecture of the Austrian capital which will impress their stamp upon the age of the Emperor Francis Joseph. The design is by a young and rising architect, Alexander von Wielemans, who was almost unknown at the time competition was invited in respect of this building. Operations were begun in the spring of 1875; the edifice is now nearly ready for occupation. It is in the German Renaissance style, and covers an area 358 ft. long by 256 ft. deep. It is situate next to the new Houses of Parliament, and stands free on all sides, its principal façade being turned towards the Amaliengasse, and is surrounded by ornamental gardens. The new palace consists of a basement and four stories, and will give accommodation, when completed, to the four principal courts of the Austrian Empire,—the Tribunal of Commerce, the Imperial Court for Civil Cases, the Apellate Court, and the Supreme Court of Justice, the first two occupying basement, ground floor, and mezzanine story; the two latter, the first and second floors.

The principal façade is adorned by a handsome pyramidal frontispiece over the main entrance, carrying in its centre a gigantic statue of Austria, and surmounted by a massive imperial coat of arms. The front facing the Justizplatz has four entrances and vestibules adorned by columnar portals. The principal vestibule in the great façade contains twelve columns of Untersberg marble, with decorative pedestals. The columns of the portals are of grey Karst marble. The dressing of the base ment is a brownish Oslop stone; that of the other stories is of Margaretha stone.

The two turrets which flank the principal front have a total height of 154 ft. from the pavement.

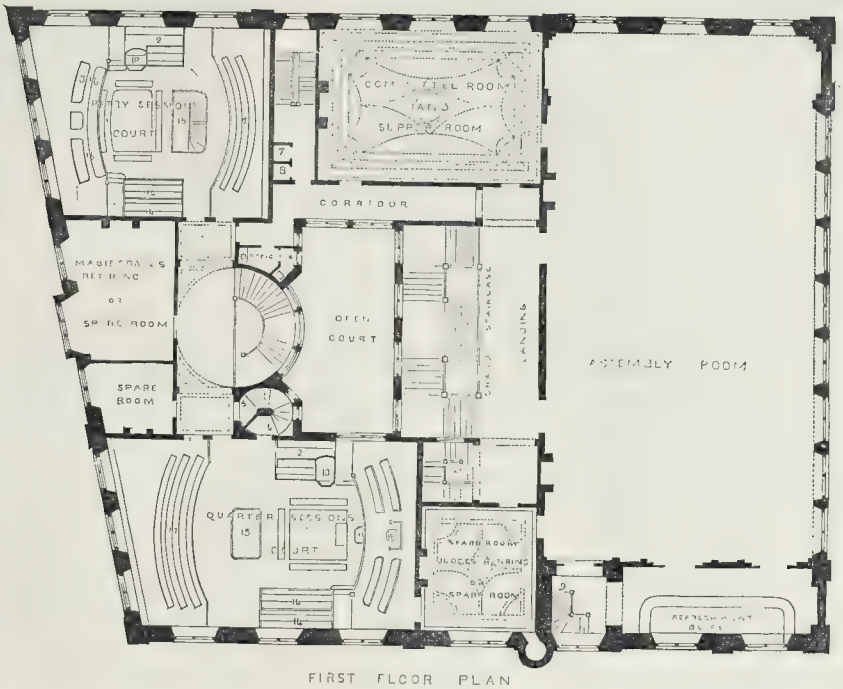
* See *Builder*, vol. xxxvi., pp. 962-964.



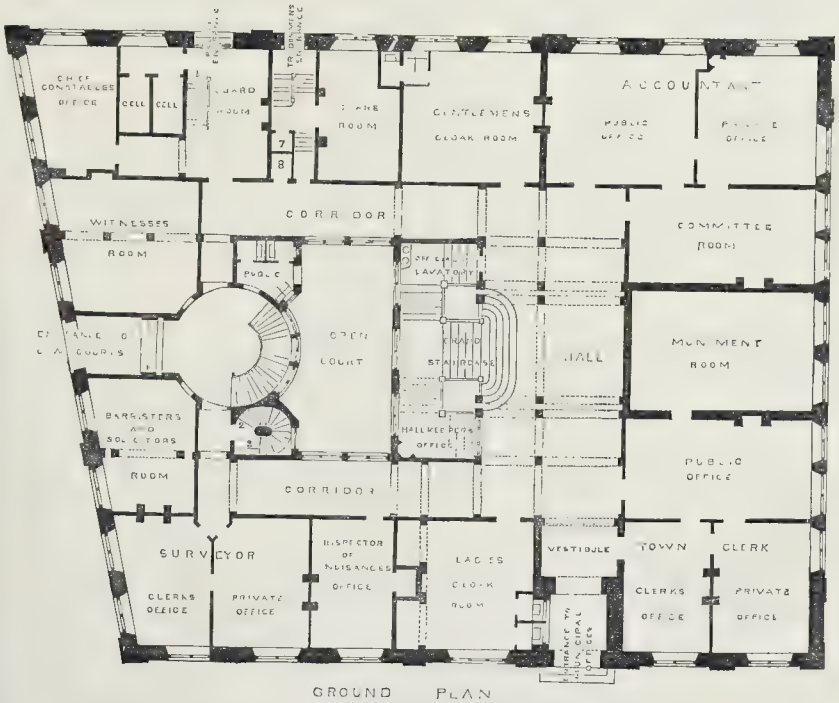
THE NEW LAW COURTS, VIENNA.—Herr Alexander von Wielemans, Architect.



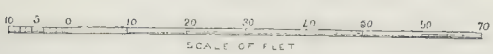
MUNICIPAL BUILDINGS, GREAT YARMOUTH.—MR. JOHN B. PEARCE, ARCHITECT.



FIRST FLOOR PLAN



GROUND PLAN



MUNICIPAL BUILDINGS, GREAT YARMOUTH.—*Plans.*

MUNICIPAL BUILDINGS, GREAT YARMOUTH.

We illustrate this week the selected design for the new municipal buildings, Great Yarmouth, sent in, under the motto "Beacon," by Mr. John B. Pearce, architect, of Norwich, tenders for the execution of which are about to be invited. This design was placed first by the corporation of Great Yarmouth. The plans may be considered as divided into two distinct departments,—viz., the municipal and the magisterial. The former of these is entered from the Hall Plain, and consists, on the ground, of a large central hall, round which are placed the various rooms appropriated to the borough officials and cloakrooms, together with a hall-keeper's-room and the requisite lavatories and other offices. From the central hall a spacious staircase leads to the assembly-room, with a cardroom, supper-room, and refreshment *buffet en suite*, and a smoking-room and gallery for orchestral purposes, easily accessible. The magisterial department is quite distinct from the municipal, although in communication with it. The entrance to this department is from the east; right and left of this entrance are rooms for the barristers, solicitors, and witnesses, and opening out of an inner hall are w.c.'s for the public. A wide easy staircase leads from this hall to the courts, which are on the first floor. The courts have separate doors for the public and officials, and every care has been taken to prevent confusion and disorder in the conduct of business. The prisoners for trial in the Petty Sessions court will be brought up by a direct staircase from the cells to the dock, and in the Quarter Sessions court, where this arrangement is not practicable, a turnkey's lobby, with a private staircase, is provided, accessible from the cells by crossing the hall of this department. A judges' retiring-room is provided in communication with the Quarter Sessions court.

There are two spare rooms between the courts on the first-floor, the larger of which, opening into the Petty Sessions court, would make an admirable retiring-room for the magistrates; retiring-places for the court officials are provided also on this floor. The second-floor is appropriated to the grand and petty jury rooms, and arranged so as to be entirely shut off from the rest of the bulding. A gallery is provided in the Quarter Sessions court. The hall-keeper's living-rooms and kitchens are on the second-floor, and occupy the central portion of the south side of the building, his bedroom being above. A separate entrance is provided on the south side, in Hall-square, for tradesmen, and to give access to the above rooms; and beneath this portion of the building are arranged the coalcellar and heating-apparatus room, the floor of the storeroom and w.c.s on the ground-floor being kept on a slightly higher level to admit of this. The ventilation of the various rooms will be chiefly effected by the arrangement of the windows, fireplaces, &c., but a special means of ventilating the courts and assembly-room will be provided by using Verity Brothers' patent air-propelling apparatus, which we have before now described. The various rooms will be warmed by open fireplaces, but provision is made for the staircases, corridors, &c., being warmed with coils of hot-water pipes, from an apparatus placed in the basement. The walls throughout are to be built of brick, faced externally with Bath stone. The floors of the principal halls and corridors are to be laid with marble mosaic paving; the lavatories, &c., to be paved with encaustic tiles, and the walls lined with white glazed tiles. The staircases will be all of white Portland stone, with ornamental iron balusters. The roofs are to be covered with Bangor slates. The windows and fittings in the principal rooms are to be of wainscot oak. The courts and assembly-room are to be lighted with sun-burners, the remaining rooms and staircases with gaseliers, of appropriate design.

Liverpool Art Club.—This active and useful association has now on view a loan collection of the works of Josiah Wedgwood, and has published a catalogue carefully compiled by Mr. Chas. T. Gatty, who has written an introduction to it. Mr. Fred. Rathbone, of Brighton, has brought together some valuable observations on the marks upon Wedgwood ware. The collection is probably more completely representative than any that has preceded it.

THE CONNEXION BETWEEN ANCIENT ART AND THE ANCIENT GEOMETRY, AS ILLUSTRATED BY THE WORKS OF THE AGE OF PERICLES.*

The Curvature of the Horizontal Lines.—The second important correction that the Greeks made upon the masses of their architectural designs was the substitution of curved lines in their larger works of architecture, instead of the horizontal straight lines.

Between the years 1835 and 1837 I had satisfied myself that the Athenian temples were all designed and calculated to be seen from fixed points of view; I had also considered, to a certain extent, the curvature of the horizontal lines, founded upon the statement in Vitruvius. I returned to Athens to observe more carefully the curves of Greek architecture, fully expecting to find confirmation of what Vitruvius so clearly states, relating to the curvature of the steps and of the architrave, and by simply straining with force 100 ft. of wire along the side of the upper step of the portices of the Parthenon, the curvature of the lines became visible. Observing in the same manner the line of the architrave, it at once appeared that there was an inward curvature as well as a curvature in the vertical plane, and both for the east and west portices this inward curvature was so regular that I conceived it to be a part of the original design. I observed also a difference of level at the angles of the upper step of the Parthenon, but the observed facts relating to the lines of the entablature did not agree with the statement of Vitruvius, and I put the subject of Greek architecture aside for fifteen years, never intending to resume the investigation. The accurate study of these curved horizontal lines was reserved for Mr. Penrose, who visited Athens in 1846, fully prepared for the investigation. He measured and observed them with all the scientific care and accuracy which the subject required, and in 1851 published the results in a very valuable work upon Greek architecture. As I have hitherto been indebted to Plato and Vitruvius, so now I shall be glad to avail myself of Mr. Penrose's careful researches.

The observed Facts relating to the Horizontal Curved Lines.—The earliest example of the curvature of the lines of ancient architecture will, I believe, be found to exist in the lines of the entablature on each of the four sides of the inner court of the temple of Medinet Haboo, B.C. 1220; and before I was aware of the fact of the curvature of the horizontal lines in the designs of the Greek architects, or of the importance of the subject in a mathematical point of view, I found from simple observation that there appeared to be a very considerable curvature in the horizontal plane of the lines of the cornice on the four sides of the inner court of this temple. On a plan of the roof of the temple as I sketched it in 1834, it will be seen that the chord of the arc on two sides is 80 ft. 9 in. in length, and that the amount of curvature in the centre measured from the chord is 8 in. The chord of the arc on two sides is 104·9, and the amount of curvature in the centre measured from the chord 4½ in. I did not then devote that attention to the study of the Egyptian curves that I now find the subject requires, as the study of scientific architecture had not presented itself to my mind; but I hope some traveller will carefully examine these Egyptian horizontal curves as well as the curved lines in the shafts of the columns, and in the sections of the cornices, for the early traces of the Egyptian geometry are worth collecting.

The Early Parthenon.—Col. Leake says, "It was probably about the eighth century before the Christian era, that the Athenians built the great temple of Minerva on the Acropolis." Mr. Penrose measured the curvature of the lines in the sub-basement of the first temple as follows:—Length of the front 104·2 ft.; amount of curvature in the vertical plane at the centre 0·15 ft.; length of the flank 221·0 ft. amount of curvature in the vertical plane at the centre 0·233 ft. This is probably the oldest existing example of the curvature of the horizontal lines of Greek architecture, about four centuries later than the temple at Medinet Haboo, although earlier than the founding of any school of Greek geometry. But it is in the designs of the Greek architects of the age of Pericles that we meet with the principal development of these curved lines, and fortunately of all the horizontal curves now remaining the best preserved and the most ca fully executed will be found to be in the up step of the Parthenon, in both the east and we portices, and on the north and south return sid

The Character of the Horizontal Curved Lin Mr. Penrose has not only measured with sci tific accuracy the horizontal curves of the P thenon and of the Temple of Theseus, but has also, I believe, deduced from his obser tions the true character of the curved lines the case of the Parthenon; for when speaki of the curve of the upper step at the east e he says,—"A circle drawn so as to pass as n as possible to all the measured points, taki them in their actual positions, would be subj to an error of only ·0065 ft." The agreem is evidently so close between the measured the calculated ordinates, for both the east the west portices of the Parthenon, that we m safely identify them as the arcs of simi circles.

Again, when referring to the upper step the north return side of the Parthenon, Penrose says,—"A circle in the actual build may be drawn so as to coincide with all measured parts of this curve subject to a ma mum error of ·006 ft., excepting in the case the sixth and seventh columns from the no east angle, where the steps have evidently b somewhat injured by the falling of the ma of the superstructure upon them in the tim the explosion. Even admitting these po without correction, the error would only amo to ·01 in a length of 228·14 ft. The differenc curvature between the south side and that the north side is so exceedingly small, that may readily believe that the increment, wh here is ·366, was intended to be the same qu tity in both flanks. The existing differen are quite accounted for by the greater liabi of the south side to disturbances, owing to height of its stylobate above the rock."

The upper step of the Parthenon is compo simply of two arcs of circles; the first to the upper step of the east and west porti the second to suit the upper step on the n and south return sides.

The Curved Lines of the Entablature.—Penrose, referring to the curved lines of entablature of the Parthenon, makes the foll ing important observations:—"These curve they stand, at least in the fronts of the Parthe have certainly a curvature in a horizonta well as in a vertical plane. The architrav the east front is bowed inwards about ·1 ft., the line of the under side of the corona of cornice about twice that quantity, and in a co ratively regular manner, more resembling, ever, a plane curve inclined to the horizon at an angle of 45°, than a line of double curva During my examination of the Temple I with many proofs that the curve, so far horizontal direction (*i.e.* the curvature on is concerned, has resulted from accident, formed no part of the original design. Of proofs the following are the most satisfac —the great stones forming the cornice a angles of the Temple, which are upward 8 ft. long on each face, are rectangula the plan, whereas, if a horizontal curve i cornice had been designed, there would have a sensible difference from the right angle considerable a length." Other proofs are given, but the passage is too long to quo detail. Mr. Penrose clearly proves the curv in the horizontal plane to be the result o various concussions which have so seri shaken the Parthenon, and which have dest the central part of the Temple, and which caused the east and the west portices s as the inner portices, to fall slightly inw and the original vertical curve of the trave to incline to the horizon at an ang nearly 54°. The observed facts, therefor found accurately to agree with the statem Vitruvius, where he says:—"The styl (namely, the steps and other horizonta below the columns) ought not to be constr upon the horizontal level, but should rise g ally from the end toward the centre, so have there a small addition"; for, he say the line of the stylobate were perfectly hori it would appear like the bed of a cha Again, "In placing the capitals upon the of the columns they are not to be arran that the abaci may be in the same hori level, but must follow the direction of the members of the architrave, which will d from the straight line drawn from the ex points in proportion to the addition given centre of the stylobate."

* By Mr. John Pennethorne. See p. 174, *ante*.

as frequently been observed in long hori- straight lines, when viewed from certain ons that they become to the eye apparently ve lines, and the Greeks seem to have ob- the same fact when viewing the long hori- lines of their temples, and to have endea- practically, as far as they were able, to this apparent optical deception; but Vitru- oes not refer to any scientific optical laws e correction of the horizontal curved lines; it is true that the curved lines of the rave and cornice were executed similar to per step, which we find to have been the and that for the whole of the Parthenon wo distinct arcs of circles are required to lculated for the execution of the whole of orizontal curved lines, then it is clear that could not have been separately calculated orrected according to any optical law, his appears to be confirmed by a passage ilo, when, referring to these lines, he —"Therefore by the method of trial, by to the substance and reducing it, and xperiments in every possible way, they ancients) made them regular to the eye o the appearance of good symmetry." passage implies that the correction of the was made experimentally, and the amount vature given in the centre of the upper f the portico was selected, so that the hould be pleasing to the eye.

Levels.—In the case of the Parthenon the ngles of the upper step are not in the same ntal plane, and there is a difference of level en the south-east and the south-west s amounting to 0·154 ft.; but the designs e stylobates of the south-east and of the west angular designs are also different, e observed variations appear to arise from tting together of the stylobates of the two s at the south-west angle, and are quite ndent of the curvature of the lines.

s first part of the theory of design only mines the true heights of the masses, and nvexity of the horizontal lines in the case losed works, like the Greek temples, when ectator, as well as the design, were under ntrol of the architect; but in some Greek s, and in the Roman forum, the masses of orticos were executed in their original t parts. Within these calculated masses, e details have now to be worked out, and his purpose we must consider separately esigning of the entablatures and of the ns, both very elaborate works of art, and econd part of the subject is applicable to cient designs, whether Greek or Roman. that relates to the given proportions, to pparent magnitudes, and to the points of we have had the guidance both of Plato itruvius, but there are no ancient refer- to the designing of the details, and the ct of the conic sections is not referred to truvius, or elsewhere, as applied to works ; but we have the original drawings of the architects engraved upon the marble ls, the mouldings, the ornaments, and other s to guide us, and in many examples it is le to trace these geometrical lines from the e, and to recover the original given nts of the several curves. The calcula- have hitherto been confined simply to the mination of a few lines and angles by plane ometry, and to the calculation of the arc ircle passing through three given points, n addition we shall now require, in the eration of the details of the design, the of calculating and of describing the arcs several conic sections, from certain given nts in each case, as these curves, the ellipse, yperbola, and the parabola, are all freely in Greece, and possibly also in Egypt, in signing of the columns and of the entab- s. The Doric and Ionic columns remain- n the Athenian Acropolis are not only iful works of art, but are also valuable ng fragments of the ancient geometry. The latures also are perspective designs care- calculated, with the mouldings and orna- mathematically traced, while the lights hadows, as well as the colours, are all per- ely studied in the finished design. In rchitectural parts of the design every h of the ancient geometry is found to be d, and all the calculations and forms are ssed in the marble with geometrical pre- , then into this framework is introduced lebrated works of sculpture and of paint- s well as the inscriptions, and the whole monised by a judicious introduction of s, applied both to the sculpture and to the architecture. The Parthenon as an intellectual composition is worthy of a place beside the great literary remains of the Greeks; it must remain, like Homer, to be studied and admired, but not easily to be reproduced.

THE DETAILS OF ANCIENT ARCHITECTURE.

I have already trespassed so much upon your kindness, and upon the time allowed, that I must as briefly as possible refer to the details of ancient architecture, and fortunately there are no new principles to be explained. We have already seen that the masses of the temples were perspectively designed and calculated, and this was also the case with the entablatures in Athens, and in Rome they were designed as they were always intended to be seen,—that is, perspectively; and the only new feature that has to be introduced is the application of the *conic sections* to the outlining of the mouldings, the ornaments, the capitals, the Greek vases, and all the details of Greek art; and although we have no written work upon the conic sections earlier than Apollonius, 240 B.C., yet traces of these curves are found in all the marble remains of the Greek temples, and I have reason to believe also in the outlines of some Egyptian cornices and shafts of the columns, but this requires additional proof and study.

The fact of these curves being employed in ancient art is not new; for Nicholson, in his "Dictionary of Art and Science," published in 1819, says,—"Grecian mouldings are formed of some conic section as a portion of the ellipse or hyperbola"; and Mr. Gwilt observed the same fact with regard to the Doric capital; for he says,—"The contour of the Doric capital will be found composed of the segments of curves formed by the section of a cone."

Mr. Penrose also states that the various sections through the Doric capitals, the curved soffits of the cornices, and the forms of the mouldings, were in the Athenian buildings invariably composed of the different arcs of the conic sections; and he observes also that "the capitals of the temple at Corinth (which were much earlier) seem also to be hyperbolic." But these general statements are not sufficient, and before we can retrace these curved lines we must be able in every example to recover the original given elements, by means of which each curve was anciently traced, and for this purpose, when in Athens in 1837, I obtained the true arc of every Athenian curve, either by tracing the section from the marble, or by tracing the outlines of the ornaments of the volutes, and of other spiral lines, by means of tracing-paper laid upon the marble, and from these data there is no difficulty in recovering the original given elements, by means of which the curves were outlined by the Greek artists: this will be made clear as we proceed with the consideration of the details, and I will at once commence with the Egyptian ceilings, entablatures, and ornaments.

The Egyptian Ornaments, Entablatures, &c.—The designs of the ceilings of Egyptian architecture were generally suggested by the ancient ideas of astronomy, and were either composed of the signs of the zodiac, or of stars fixed upon imaginary lines, as in the painted ceiling in the tomb of Rameses at Thebes. Sometimes the ceilings are divided into squares by black lines, and one star is painted in each square, or else they are divided into compartments by painted beams, and each compartment is filled with light stars on a blue ground, with an ornament around, painted in the alternate three colours—red, blue, and yellow,—forming a cornice encircling the whole; and when we compare the Greek ceilings of the temple of Theseus, or of the Erechtheium, the same idea of the beams, with the light stars on a blue ground, is seen to exist; but in Greek architecture the parts are all carefully arranged and proportioned, so that instead of a copy of the firmament, the design of the ceiling with the stars is made a part of a perfect work of art; and in like manner a comparison between the entablatures of Egypt and of Greece points to Egypt for the original type of the Doric entablature; but the entablatures, as well as the columns, of Grecian architecture are so altered, that the original ideas are nearly lost, and the design of each order of architecture in Athens becomes a purely intellectual work, and is a geometrical combination of lines and surfaces, rendered pleasing to the eye by a variety of mathematical forms in the mouldings and in the ornaments, and by a variety of lights and of shadows, and also, when required, by the additional relief of colours.

The agreement between the entablatures of Egypt and of Greece extends beyond the mere fact of the first idea of the design having an Egyptian origin; for we find, I believe, the same general principles of designing the entablatures perspectively, and of tracing the curves as the arcs of one or other of the conic sections, applicable equally to the Egyptian entablatures at Medinet Haboo, B.C. 1200, as well as to the entablatures of the Parthenon, B.C. 430. In both designs the architects were guided by the laws of perspective and of geometry, and the same general principles of design that were laid down by the Egyptian architects passed onwards to Greece, and then to Rome, through a period of 1,000 years, with only the slight variations caused by climate and by intellectual cultivation.

Besides the Egyptian ceilings and entablatures, I have given in my work ("The Geometry and Optics of Ancient Architecture") a few Egyptian coloured ornaments, selected principally from the tombs of the kings at Thebes, and leaving to others to identify, or not, with the Greek ornaments, each separate detail, yet speaking generally there appears to be some evidence that in the early Egyptian painted offerings and ornaments, are to be found the types and models of the ornamental details of Greek architecture, and the change between the designing of the ornaments in Egypt and in Greece is not greater than would naturally occur, when the mind sought to express its ideas with mathematical accuracy and with perfect geometrical forms and proportions.

The Greek Entablatures, Mouldings, and Ornaments.—In the designing of the Greek entablatures there are no corrections to be considered; but the whole entablature from the first is perspectively proportioned, and arranged to suit the given point of sight; and this is the case in the designing of all the entablatures, whether in Athens or in Rome. The projections of the details of each entablature have been already given, as well as the whole apparent height of the entablature, measured in seconds upon the arc of a great circle. Then dividing this whole apparent height into some given number of aliquot parts, measured also in seconds, the apparent height of the architrave, of the frieze, and of the cornice, will, in each case, be a multiple of this given modulus. Again, by dividing the first modulus into a given number of apparent aliquot parts, a second modulus is obtained, by which the apparent heights of all the details of the cornice, of the architrave, and of the frieze will be regulated, and the true lineal heights are then all determined by trigonometrical calculations.

In the proportioning of the Egyptian entablatures, the whole apparent heights were first divided into three equal parts, two being given to the architrave and one to the cornice; and in the proportioning of the Greek entablatures the whole apparent height is generally divided into three apparently equal divisions of architrave, frieze, and cornice. The general heights and projections being perspectively determined, then the curved mouldings of the entablatures, with their appropriate ornaments, remain still to be traced.

The Mouldings, Ornaments, and Vases.—In Egypt we meet with scarcely any traces of architectural mouldings, and the ornaments are outlined and coloured upon flat surfaces; but in Greece the curved outlines of the ornaments are generally traced upon curved surfaces, which become the mouldings of Greek architecture.

The Lotus and Papyrus Ornament.—The ornament that I have called the lotus and papyrus ornament appears at first sight to have been traced without any reference to the guiding lines of the conic sections, but when examined this is found not to be the case. Thus, taking for an example the sculptured ornament traced from the Erechtheium, plate 6, we find the papyrus flower to have been described within a perfect semi-ellipse, with axis major = 16, and axis minor = 9. And the lotus flower to have been described within two semi-ellipses: thus,—1st, with axis major = 18, and axis minor = 11; 2nd, with axis major = 11, and axis minor = 4.

These ellipses were proportioned and arranged according to a given modulus, the same as in other examples; then the separate flowers were outlined and engraved on the smooth surface of the marble within these given curved lines, and afterwards relieved by being sculptured in detail. The Erectheium never having been quite finished, this ornament is seen in progress, some

portions being finished, and other parts merely executed in the first masses, and the same gradual steps are observed from the smooth surface of the work, simply outlined, to the finished sculptured ornament, the same as is seen in the ornaments executed on the first and second classes of the mouldings.

The designing of the above ornament appears to agree very closely with the method of designing the Greek vases, and all these designs appear to be combinations of ellipses and arcs of circles, the axis major and the axis minor being given in every case in aliquot parts, and although no two examples are alike, yet the method of designing the vases is the same in all, and the ornaments that are geometrically traced upon the mouldings of the temples, are simply sketched upon the vases. I give these vases to show that the Greek methods of designing the ornaments were not confined to the larger works of art, but were applied also to their manufactured articles.

The Columns.—Without entering into a detailed comparison between the Egyptian offerings and the columns, I think we may perceive that the first ideas of the Egyptian columns were derived from the artistically arranged offerings that are painted in the tombs and on the walls of the temples, and that the Grecian Doric columns and entablatures were suggested by those earlier Egyptian designs, showing the origin of the Egyptian columns with the accompanying sketches; but the Egyptian architects were guided in the design of the columns by the laws of proportion, and by a knowledge of geometry, and between the designs of the Egyptian and of the Greek columns we shall meet with many points of very close resemblance, quite sufficient to prove that the first ideas of the Doric columns and the first principles of Greek art were both derived from Egypt. But in Greece we lose all trace of nature in the designs, and the columns, as well as the ornaments, are purely intellectual works of geometry, dependent for their beauty upon accurate proportions, upon true mathematical curves, upon a careful study of light and shadow, as well as colour, and, lastly, upon great precision in the execution of every detail.

When considering the designs of the Greek portices, we found an established canon of proportion, which was not changed except for some special reasons, and the same observation will apply to the Greek columns in Athens; the architects appear, as a rule, to have adopted a certain canon of proportion, both for the Doric and for the Ionic columns, thus:—

In the Doric order the width of the abacus $= \frac{\text{height of column.}}{5}$ This is the case in the Parthenon, in the Temple of Theseus, in the Propylæa, north wing, and in the Temple of Apollo at Phigalia.

In the Ionic order the width of the abacus $= \frac{\text{height of column.}}{8}$ This is the case in the three examples of the Erechtheium, and in the Ionic temple of the Ilissus and at Priene.

The first masses of the columns being arranged, then the width of the abacus is always divided into some given number of aliquot parts, as 14, 15, 16, &c., and one of these parts being taken as a modulus, then the upper and lower diameters of the columns, and in the Ionic order the height and width of the capital and of the base, are made multiples of this modulus. Why certain special numbers were selected for dividing the abacus into aliquot parts no satisfactory reason can be offered, and it appears to have depended upon the judgment of the architect; but all the details of the columns, as well as of the entablatures and ornaments, were invariably proportioned in aliquot parts, and it will be found to simplify the calculations required for the curves by the absence of all fractional quantities, and it is more simple than figuring in feet and decimal parts. . . . . .

The Greek columns, like all the other details, are pure works of the descriptive geometry executed with wonderful precision in marble, but sufficient has been said to explain the character of the curves, and the methods of applying the geometry to the forms of art. In conclusion, there is only one more subject to be noticed, and that is quite independent of the geometry. Vitruvius refers to it under the head of "Scenography," that is, a finished coloured drawing of the whole design, showing, as he says, "the front and a receding side, properly shadowed, the lines being drawn to their proper vanishing points." This was evidently a perspective view of the whole design, taken from the angular point of view, and showing the sculpture and the painting, as well as the architecture, all combined together in the finished drawing. These perspective drawings have still to be restored before we can form a true idea of the real appearance either of the Parthenon or of the vestibules of the Propylæa, as these works appeared to the spectators when they were first executed, or as they appeared 500 years later in the time of Pausanias, or of Plutarch, who refers to them in the following passage:—"Even now they retain the strength and freshness of a modern building, a bloom is diffused over them which preserves their aspect untarnished by time, as if they were animated with a spirit of perpetual youth and unfading elegance." It would, however, require the artist feeling of a Raffaelle or of a Claude to reproduce copies of these original drawings of the Greek artists, but the materials exist in the remains of the sculpture, of the painting, and of the architecture, and in the position of the Acropolis itself in the plane of Athens. . . .

It was not until the European mind, in the fifteenth century, was linked again to the ancient stream of geometry and philosophy, that a real advance was made in any branch of modern science, and probably no real progress will be made in architecture until we can completely recover and freely use the accumulated knowledge of the ancient world in all that relates to the science of art, and make it a basis and a starting-point. But there is no reason why the designs of modern Europe should be in any degree inferior, either in conception or in execution, to those of the best ages of the ancient world; or why, with the civilisation of the nineteenth century, we should impress upon our public monuments the marks of the twelfth or of any other century that has preceded us; but I must not trespass longer upon your time. I have endeavoured very imperfectly to interpret from the marble some of the Greek ideas of designing, and fortunately these present no real difficulties when once the position of the point of sight is determined, then calculating the design backwards, all the original apparent proportions reappear; and with regard to the details and ornaments, by merely tracing them from the marble, we recover the original mathematical lines that were engraved by the artists upon the mouldings and other forms; and this is all that has been attempted, and imperfectly accomplished. The designs both in Egypt and in Greece require further study on the spot, and any errors that are discovered can be rectified, but I believe the leading facts will bear investigation.*

* Those who are interested in the subject should obtain that Part of the Transactions of the Royal Institute of British Architects, which gives the whole of the paper, with all the necessary illustrations, diagrams showing the [illegible], &c.

"ART FOR ART."

Sir,—We were basking in the hope that hazy talk upon art was on the wane; we thought we discerned a rift of clear blue, but the outlook has closed again. The lecture on "Art for Art" at Liverpool exhibits to the full the darkness of the art discourses of the age. We will not touch upon the merits of the artist whose works were discussed. We do not know what he may think of his advocate, but assuming ourselves to be in his position, we should exclaim,—"Save us from our friends." Art for art's sake is the cant phrase of the *super-sensuous* school, and it will be a record of the imbecility of the times that such nonsense should be listened to and tolerated. We can understand an epicurean insisting upon art for pleasure's sake, or on a divine on art for religion's sake, or a patriot on art for country's sake. But art for art's sake is sheer nonsense, and in its utter vagueness may mean art either for good or evil's sake. And this appears, as far as can be gathered from so obscure a discourse, to be the lecturer's meaning, for his great maxim would appear to be that the final purpose of the artist's work, whether for good or for evil, should be left to chance. The artist, according to this canon, should be quite unconscious of "puritanically" meaning any good. He is not to compromise himself with any conscious leaning to good intentions, lest his canvas should be paved with them. His work is only to be for art's sake, taking no thought whether that be either for good or for evil. Now, sir, there is a famous essay, entitled "Murder considered as a Fine Art"; that is, art for a sake. Murder regarded from the artistic sta point of the lecturer would be justified by completeness and finish of the work. Mur would be a mere accident of the artistic mi on which the artist would not be justified exercising any control. He would only "*fo his purpose, and yield himself up with aban to his mood.*"

The lecturer one moment insists that "all is essentially self-conscious," and the very n that "neither moral nor artistic self-conscio ness can inspire true art-work." How is one deal with such inconsistency? Are we living this scientific year of grace 1879, under tutelage of South Kensington and the prim of pure taste? Or is such discourse the offspring of the "worship" and "reverence" nature inculcated by Ruskin? Or is it result of the abnegation of the logical facu by what one of your correspondents ap terms "the *higher education of cram?*" latter we believe to be the true solution of enigma.

Surely "a personal moral instinct for wha safe and right" would not suffer from be removed from the region of instinct to domain of that "essential self-consciousnes which the lecturer sometimes insisted was characteristic of the true artist, and at oth of the false. And yet, with all this incon tency before our eyes, we cannot help ask ourselves whether the lecturer may not h been labouring to express some idea to wh his afflatus of inspiration may have barred tangible exit.

Let us see, however, if we can fathom meaning of the phrase, "Art for art's sak Art, like its elder sister Nature, can bend her to every sake; and when we attempt to isolate monopolise her for any single sake, we lay selves open to the reproach of being *onesided*, of a want of cosmopolitan sympathy. One of A purposes is the presentment of the beauti This is, however, but one of its purposes,—t one which more exclusively appeals to m sensuous nature, and, like all its other purpo has its aspects of good and of evil. If, then, be right in surmising that the phrase "Art art's sake" be but other words for "Beauty beauty's sake," we maintain that this form too, requires qualification, and that the mo of the artist who aims at the beautiful sh not be "Beauty for beauty's sake," which w include beauty for evil's sake, but "Beauty virtue and Heaven's sake." For in the m aspect of the question every kind of art ha right and its wrong sides, and may be tu either to the service of Good or of Evil. alone, therefore, who uses any phase of ar virtue's sake will receive the lasting suffr of the civilised world. Nevertheless, he uses art for virtue's sake must assert himse the language of art, and not in a foreign ton or he will, of course, miss his aim.

Art for Goo

PARTY WALL QUESTIONS.

Sir,—If Mr. Blashill had not felt it his as an official to return an official kind of r (p. 387) to Mr. Amery's question (p. 161) would have been able to give some u counsel. The case in question is occurring d A man wants to build next to unoccu ground,—ground which will be unoccupied several years. He would much like to bu party-wall, and receive part of the cost of but he finds this cannot be done. He m enclose his building with a wall on his ground. Must he then project the bottom the footing "on each side of such wall at h equal to half the thickness of the wall at base?"

It may not be amiss to quote section 3 the 1844 Act, which dealt with "building pr walls next vacant land":—

"And be it enacted with regard to walls, so f relates to the building thereof on vacant ground al line of junction of premises belonging to different o or in different occupations, that one month before owner of any piece of vacant ground, or ground hitherto built upon, shall build any building adjoin another piece of vacant ground, or ground not hit built upon, or build a fence-wall for such piece of gr it shall be his duty and he is hereby required to give owner or occupier of such adjoining vacant grou notice, which must be in writing, and must set forth desire to build a party-wall or party-fence-wall describe the thicknesses and dimensions of such d party-wall or party-fence-wall, according to the (No. 16) in the schedule of notices to the like effect if within such period of one month such adj owner shall signify his consent in writing, then the

built partly on the ground of one of the said or occupiers, and partly on the ground of the other and such last-mentioned part is to be paid for as after directed by such other owner or occupier. he do not signify such consent, then it shall be y of the building-owner to build *an external wall building*, and fence-wall for such ground, *entirely s own ground, except as to the footings of any such*

se provisions are, of course, repealed by 55 Act, so far as they needed repeal. hed., Prelim., Rule 1, answers the same se in the present Act, except as to this of footings. Oddly enough, the mention se in Sec. 38 was, in some sense, a bit of as painstaking. Footings for a wall of the rate, first class (13-in. wall of dwelling- not more than 38 ft. high), were to be . wider than the wall standing thereon"; ch footings were not necessarily to be to equal amounts on each of the walls as ent. There was a provision in Sec. 28 of 44 Act, to meet cases where, "for the e of erecting an external wall, it is neces- cut away part of the footings of such wall on the side next to the wall so to be ; and authority was given to do so after notice.

antique legislation is, however, merely ed as a matter of curiosity. To the n whether the sacrifice of a strip of land, r to comply with the actual wording of nsent Building Act is inevitable, the short is, No. If an adjoining owner, after consultation, gives permission to make orary use of his land for footings, that a proper state of things between the ours. If, however, the neighbour refuses, ins are taken to make the foundation t, and the district surveyor is a reason- an, as most district surveyors are, the f the case will be observed, but not seen. district surveyor should happen to be an nable man, the best course would pro- e to add the footings on the neighbour's nd reluctantly cut them off when pressed . There ought, however, to be no neces- such an absurd procedure. Every good ought to render a cheerful obedience to laws; and the only way to enable him to to make good ones, and to administer a reasonable way.

al inspectors and district surveyors, who e nothing else, have been argued for freely, and will be again; but the Metro- Board of Works will, no doubt, continue oint practising architects, and those ts know, through their own practice, rmness is necessary,—what are essentials at are trifles. They need never flinch curing the purposes of the Act which are d useful, but they ought to be reluctant ome, on any occasion, unreasoning se.

n ought to be chargeable to Mr. Amery, others, for this instruction. It is, how- sort of reward to be in a position to at large with reference to a set of and respected persons like district rs.

A SURVEYOR.

FROM EDINBURGH.

trustees of St. Mary's Cathedral have a decision from the Court of Session to t that the time has arrived for the pre- of a deed of constitution; that the nave opened for divine service before the ion of the edifice; that the imposing of ts is not imperative if they can be done ; and that the election and appointment sters may properly be vested in the

w days ago the nave was opened for worship. There was no special service e occasion: it consisted of the usual prayers and celebration of Holy Com-

The nave is capable of accommo- ,100 persons, and its acoustic properties nd to be satisfactory. In the opening y given by the organist the *piano* s were distinctly heard, and the enuncia- oth prayers and sermon were distinctly all parts of the area. The altar fittings ourse, of a temporary nature. The con- n are provided with chairs fitted up with book-boards and kneeling-stools. The in his address, stated that they were d to enter upon the services of the day lding which might truly be called "a prayer"; and that although a con- period of time would elapse before the whole structure was finally completed, there were hopes that it might be formally dedicated before the close of the present year.

Operations have commenced for the clearance of the galleries and pews from the south transept of St. Giles's Cathedral preparatory to its being incorporated with the restored chancel.

The United Presbyterian Church, erected at Morningside about ten years ago, has proved insufficient to the requirements of this rising suburb, and it has been resolved to erect an enlarged church on the site of the present one at a cost of 10,000*l*. We understand that a few resident architects are to be asked to submit designs.

The Cowgate Free Church is to be enlarged, from designs by Messrs. Thornton Shiells & Thomson. These will not affect the elevation towards the street, but the interior will be greatly improved both as regards effect and light, in which latter respect it is very defective.

The trustees of the Hospital for Incurables have taken advantage of the present low building prices, and a site in Salisbury-place has been cleared for the erection of a new hospital.

As yet there is no sign of a change in the aspect of trade here; the great centre of interest has been the High Court of Justiciary, where the Directors of the City of Glasgow Bank have been undergoing their trial.

SOCIETY OF ANTIQUARIES OF SCOTLAND.

At the monthly meeting of this society, held in Edinburgh on Monday week, Mr. John R. Findlay, vice-president, in the chair,—the first paper was an account of Logan Tower and St. Katherine's Church at Glencorse, by Mr. Andrew Kerr, architect, F.S.A. Scot. Mr. Kerr stated that in making the investigations necessary for his previous papers on Rosslyn Castle and Chapel, he found occasional references to the legend of King Robert the Bruce hunting the deer in Glencorse, and also to members of the Rosslyn family occupying Logan Tower, in the same locality. He, therefore, visited these places in 1877, carefully examining such remains as then existed. In 1878 he had visited Glencorse and examined the remains of the chapel of St. Katherine, Logan Tower, and other old buildings situated on the hill, nearly opposite the Loganlea reservoir of the Edinburgh Waterworks. The chapel is about 40 ft. long by 20 ft. wide, and the highest part of the walls then remaining did not exceed 4 ft. The area of the burying-grounnd extended to fully a quarter of an acre. The chapel and its burying-ground are included in the area of the compensation pond, the waters of which have covered them to the depth of several fathoms, and they have been only occasionally visible in very dry seasons. Logan Tower had consisted originally of a simple tower, built probably in the thirteenth century, to which additions had been made in the fifteenth century, probably by William Sinclair, third Earl of Orkney. Mr. Kerr described the remains of a small chapel about half a mile further up the glen, concerning which nothing is now known.

Mr. Gilbert Goudie, F.S.A., Scot., in connexion with the presentation to the Museum of a stone found at Cunningsburgh, in Shetland, bearing a Runic inscription, read a notice of the Rune-inscribed relics of the Norsemen in Shetland.

The third paper was a notice by Mr. Robt. Bruce Armstrong, F.S.A., Scot., of the old church and cemetery of Airth, Stirlingshire. This ancient church, with its burying-ground, is situated close to the eastern wing of Airth Castle. The church consisted of a nave with a north aisle and chancel, the existence of a south aisle being doubtful. The oldest portion now remaining belongs to the transition period or latter portion of the twelfth century. On the south side of the nave is a chapel known as the Airth aisle, in which is a mural arch which at one time had contained a recessed tomb with a recumbent effigy, probably the mutilated semi-effigy of a female now placed in the east end of the church. On the exterior of the east wall of the Airth aisle is a Gothic niche and canopy, on the pedestal of which is a shield of arms bearing the well-known saltire and chief of the Bruces. All the architectural details of the Airth aisle are in the style of the fifteenth century. Beneath it is the vault in which the former barons of Airth and their families are interred. To the west of the Airth chapel is the Dunmore aisle, probably constructed about the close of the sixteenth century.

OBITUARY.

THE LATE MR. A. J. DUNKIN.

We hear with regret of the decease of Mr. Alfred John Dunkin, of Dartford, antiquary and historian. He was sixty-four years of age. By the death of Mr. Dunkin, Kent loses another of its veteran *literati*. Following in the steps of his father in the field of literature, Mr. Dunkin early in life attached himself to historical inquiries and antiquarian researches; and his contributions towards the history of Kent, his native county, are considerable. He has left much in MS., and possibly not arranged for press. His printed materials towards the history of Kent contain much that is indispensable to the student of the county literature and antiquities; and the volume should be secured, if possible, by the collectors of *Bibliotheca Cantiana*. He printed, *con amore*, the proceedings of the Congresses of the British Archæological Association at Canterbury and at Worcester; the latter being dedicated to his friend Mr. Roach Smith. Mr. Dunkin was one of its earliest and most active members, the opening meeting being held under the influence of Lord Alfred Conyngham, with Mr. Roach Smith and Mr. Thomas Wright as the secretaries. Mr. Dunkin was born at Islington, on Aug. 9, 1812, and was partly educated in France, having been a student at the Military College at Vendôme. Miss Dunkin, his sister, was generally his companion in his rambles and his assistant in his work. We understand that his collections will utimately go to the Guildhall Museum of London, but Miss Dunkin proposes to continue adding to its store of interesting features, being naturally unwilling to part with what has so long supplied her with a pleasant pursuit.

GUISBOROUGH SCHOOL BOARD.

The first triennial election, just over, has resulted in the re-election of five out of the seven members of the original Board.

In a *resumé* of their work during the last three years, the retiring Board state that they have carried out the Elementary Education Act to the best of their ability with the restricted means at their command, and that, towards providing proper school accommodation, they have effected the transfer from the Charity Commissioners to themselves of the Providence schools, which represent property and securities to the value of upwards of 5,000*l*. Of this sum 3,000*l*. have been devoted to the erection of the new Providence schools, and the interest of the rest enables the Board to provide prizes and exhibitions to help deserving scholars to go to schools of a higher grade.

The new Providence schools provide accommodation for 789 children, with suitable teachers' residences adjoining, and are now almost completed and ready for occupation; and the Board state that they feel it due to their architect, Mr. J. Mitchell Bottomley, of Middlesbro'-on-Tees, to say that they believe that both for beauty of design and for practical convenience and comfort these schools can compare favourably with any with which they are acquainted. The cost, inclusive of site, is 7,562*l*., and the contractors for the whole of the work are Messrs. Sturdy Bros., of Middlesbrough. The Board state that their architect has prepared plans for the Northgate schools, also providing accommodation for 789 children, but owing to the depression in trade and other causes they have proceeded with only the boys' and infants' departments, leaving the girls' school and teachers' dwellings to be completed when a revival of trade and experience of the practical working of the existing schools may demonstrate the necessity for this. The contract for the Northgate schools has been let to Mr. Richard Cass, of Guisbrough, for 3,285*l*., and the site has been given by Admiral Chaloner.

Victoria (Philosophical) Institute.—At a meeting of this Society, held on Monday evening, a paper was read by the Rev. F. W. Holland, on "The Topography of the Sinaitic Peninsula, and its bearing on the History of the Exodus."

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

The twelfth meeting of the District Committee of the Midlands will be held at Derby, on this Friday and Saturday, the 21st and 22nd of February. Amongst the business the hon. secretary to the Home and Eastern Counties Committee will call attention to the proposal of the Sanitary Institute of Great Britain to obtain a charter, and move a resolution thereon,—it is to be hoped with the view of opposing it; and works in progress will be inspected, and the following papers will be read and discussed, viz.,—"The Derby Improvement Scheme (under the Artisans' and Labourers' Dwellings Act)," "On the Purchase of Water and Gas Undertakings, by Municipal Authorities," and "Tramways (their General Construction and Maintenance)."

PROPOSED PUBLIC BATHS AND WASH-HOUSES IN BATTERSEA AND THE LATCHMERE ALLOTMENTS.

The subject of the Latchmere allotments at Battersea has for some time past been under the consideration of a special committee of the Vestry, and there now seems a probability of public baths and wash-houses being erected on the ground. This committee have just reported that according to the terms of counsel's opinion taken upon the subject, nothing can be done with these allotments except by a special Act of Parliament, or an order of the Local Government Board, which they were unwilling to advise, and there were no funds at the disposal of the Vestry to pay the expenses of procuring an Act of Parliament. But the committee were advised of one mode by which the allotments could be used for the benefit of all the parishioners, and that was the building of public baths and wash-houses on the site under the Act passed to encourage the establishment of such institutions, and which gave power to churchwardens and overseers to appropriate land belonging to the parish for the purposes of a site. The buildings might be so placed on the allotments that they would not be so well adapted for any public company to endeavour to purchase them. No burden would accrue to the rates, as the profits would repay the instalments of borrowed money. At the meeting when the report of the committee was discussed a memorial was read from a number of ratepayers asking them to consider the subject of the adoption of the Baths and Wash-houses Act, and Mr. Blunt, one of the members of the Vestry, in moving the adoption of the Act by the parish, said it was more especially necessary, as the majority of the inhabitants belonged to the labouring classes, in consequence of the number of factories in the neighbourhood. The motion was unanimously adopted.

THE SALE AND DEMOLITION OF HORSEMONGER-LANE GAOL.

The removal of Horsemonger-lane Gaol has commenced, and in a few weeks this well-known metropolitan prison, where some of the most notorious criminals of the present century have expiated their offences, will be amongst the things of the past. It is now about eighty years since the gaol was first opened. An Act of Parliament was obtained for its erection in the year 1791, but it was not until some years afterwards that the building was proceeded with, and it was completed and first opened as a prison in connexion with the county of Surrey about the end of the last century, and since that period its history has been associated with some of the greatest criminals of the last sixty or seventy years. Last week Messrs. Horne, Eversfield, & Co. sold the first portion of the materials of the prison buildings, consisting of a part of what is known as the west wing. It comprised a considerable number of the cells and other buildings forming the structure, and was divided into seventy-six lots. In addition to the usual attendance of the purchasers of building materials, there were also present large numbers of the general public, who could only have been attracted to the spot by a feeling of morbid curiosity. These parties, who had no interest in the sale itself, wandered about the grounds whilst the materials were being disposed of. The materials included an unusual quantity of iron and lead, in addition to the brickwork, and the entire proceeds of the day's sale amounted to 1,200*l.*, it being considered that the materials fetched full value. Before the whole is cleared there will be three or four more sales, the second portion being announced for sale early in March. In the meantime those parts of the structure sold last week are now being taken down. The prison buildings and grounds occupy an area of between five and six acres, and when the whole is cleared away the magistrates will dispose of the whole of the sites for building purposes, with the exception of a small portion at the extreme western boundary, immediately behind the Newington Sessions House, which is intended to be retained for the purposes of the county. On a portion of this site a deep common grave, about 12 ft. by 4 ft., has been dug, and in it the remains of all the malefactors who have been executed and buried within the gaol (so far as they could be found) have been re-interred, after having been exhumed from their original place of burial, which was easily ascertained by a mark on the wall over the head of each criminal's grave. The coffins and slight remains of seventeen were found, and those have been re-interred at a depth of 10 ft., immediately over which has been placed a bed of concrete 1 ft. 4 in. in thickness, covered by earthwork to the ground level. This step was considered desirable by the magistrates in anticipation of the excavations which will take place for buildings on the different portions of the ground.

EXTENSION OF THE SOUTHPORT PROMENADE.

Amongst public buildings and other works which are constantly going forward in the rising and flourishing town of Southport, another undertaking of this character is about to be entered upon. The Town Council have decided to extend the promenade, at a cost of 50,000*l.*, and they recently advertised for drawings. In response, sixty-seven sets of designs were sent in. These were reduced to fifteen, and a few days ago the General Purposes Committee further reduced them to three, the chief award of 30 guineas being given to the author of the design marked "Vive le Maire," by Mr. G. Heaton, of Wigan; the second, of 20gs., to "Sexagesimus," by Messrs. Goodison, Atkinson, & Ford, of Liverpool; and the third, of 10gs., to "Advance," by Mr. J. Sidebottom, of Blackpool. The final decision now rests with the Council itself, which will in all probability confirm the decision of the committee, and so accept Mr. Heaton's design.

ENLARGEMENT OF THE CHELSEA WORKHOUSE AND INFIRMARY.

The subject of enlarging both the Chelsea Workhouse and Infirmary was under discussion at the last meeting of the board of guardians. The medical superintendent of the infirmary presented a report on the inadequate accommodation at the building, stating that there were a large number of cases in the infirm wards of the workhouse that ought, properly speaking, to be in the infirmary, and, in his opinion, accommodation was required for 80 or 100 more beds in the infirmary. The master of the workhouse likewise reported on the subject, stating that the average number in the house during the year 1876 was 380, but it had now increased to the unprecedented number of 502. He considered that 150 additional beds were required for the workhouse alone. The infirmary committee, after fully considering these reports, recommended that an architect be consulted as to the best and most economical mode in which additional accommodation could be provided, and after some discussion the recommendation was adopted, the architect to make suggestions as to further building at both the workhouse and infirmary.

Liverpool Engineering Society.—The fortnightly meeting of this Society was held on Wednesday, January 29th, at the Royal Institution, Colquitt-street, Mr. M. E. Yeatman, president, in the chair. A paper was read by the hon. sec., Mr. W. W. Squire, on "The Construction of Timber Dams." The paper dealt with two forms of coffer-dam, viz., double sheet piling, with clay puddle between the rows of piling; and single-sheet piling, caulked and shored up on the inside.

CYPRUS AND ITS SURROUNDING

On this subject a paper was rea
Dr. Phené, before the members of Sion Co
London, on February 4th. The views
drawings made in the East, by the re
embraced classical places of antiquity i
eastern part of the Mediterranean, a
cluded an area from Delphi, on the
to the Phœnician coast; the lofty ran
Mount Taurus, Mounts Casius, Athos, an
Epidaurian range; the plains of Troy, i
of Imbros, Samothrace, Tenedos, Cyprus
The lofty hill of Pergamos was shown to
a most remarkable serpentine form, a si
tion which was compared with a numb
other similar forms contiguous to ancient
in all of which, history records, the serpen
worshipped, as he was in the highest deg
the Temple of Æsculapius, at Pergamos.
most remarkable of these was a mound,
form of a serpent, 500 yards long, found
plain of Lerna, the traditional place of
between Hercules and the Hydra of Ler
which place the Greek poets placed the ent
to Hades, in the depths of the Alkyonian
There, Pluto descended with the stolen P
pine; there, Bacchus also descended to
his mother Samele, which he was sup
to do, and ascended again at Trœzene,
Epidaurian range of mountains; there,
performed nocturnal ceremonies to Plu
such a nature that Pausanias declined e
mention them. Illustrations were then
of natural and artificial simulations
human form in these localities, all of
were recorded in history, showing tha
ancients noticed, and, no doubt, worsh
such forms as deities. On the coast of Phœ
near the cities admitted to be the oldest
by repute, founded by the god Chronos,
or Saturn, Byblus, and Berytus, was a
mous bust, as of a man, formed by the pr
tory of Theuprosopron. The Phœnician w
embraced that of the serpent or dragon
Berytus is asserted, by the Greek Chu
have been the actual place of contest be
St. George and the Dragon. A church
to St. George, marks the spot which was
and re-taken repeatedly in the crusades by
and Christians. The figure cut in the
the mountain at Nymphi, in Lydia, Dr
had examined. This and another similar
were mentioned by Herodotus, and
ascribed to Sesostris, who conquered these
Their antiquity was, therefore, immense
Phené considered they were of later da
Sesostris, though no doubt sculptured to
his conquests, but by a disciple of th
worship of Diana and Apollo at Delphi; th
hostile figures, with bows directed towards
Sipylus, where the so-called "Niobe"
At a meeting of the Fine Arts Soci
the 13th of February, the same gen
read another paper on the above
The reader first reviewed the condition
in the period of the greatest wealth an
perity of the island. Although archi
and sculpture were known to have flouri
Asia Minor, because we had superb remn
those arts still amongst us, it was not s
rally remembered that there were reg
schools for the study of the various
occupations, and less than all was it
probably, that amongst these was the s
painting. We were not in a position t
exactly the constitution of such schoo
perhaps was that very material, since
the grand point within our knowledge,
excellence,—proved by the works of the
learned in them. It was clear that i
town of importance in Asia, as well as in
there were,—in addition to the schools fo
sophy, astronomy, theology, rhetoric,
those for mathematics, physics, archi
sculpture, and even painting; and altho
and there a gifted professor might ins
several of these studies, yet the pupil
often be confined to the study of on
till it was mastered. Cyprus had few
of Classic architecture. Some of its
columns adorned St. Mark's, Venice;
were taken away by the Turks; and
reason to think some fine specimens
Virginia Water, near Windsor. The lo
Alexandrian library by fire, and those
gamos and other places through spoliat
no doubt taken from the moderns the v
studies and processes by which the grea
tors and architects had consummate
excellent works.

THE CHURCH AND CHURCHYARD PROTECTION SOCIETY.

A NEW society has just been formed, called the City Church and Churchyard Protection Society." The attempts which from time to time have been made to remove any church in the smallest degree interferes with new streets, railways, &c., have made it necessary that some organisation should be commenced to oppose, legally and otherwise, the reckless and unnecessary demolition of these sacred buildings handed down to us by our forefathers. The grounds for preserving the City churches are—(1) Their spiritual uses for the living; (2) their historical character; (3) the fact of their having been *for ever* solemnly consecrated to the worship of God; (4) their architectural interest and value.

The main objects of the society are, however, not so much to advocate the preservation of churches on *artistic* grounds,* as on account of their practical use for worshippers. The Society also wish to strongly protest against the action on removal of human remains in the City churchyards. A committee has been formed, and the honorary secretaries, Messrs. Trower and Wright, the Rectory, St. Mary-at-Hill, Eastcheap, will be happy to receive the names of gentlemen wishing to become members. No pecuniary liability by members will be incurred. It should be added that letters sympathising with the objects of the Society have been received from numerous influential men. The interesting church of St. Mary-at-Hill, Eastcheap, principally Wren's work, has been most seriously threatened by the extension of the District Railway. The line itself will be 75 ft. from it, but in the Bill to be laid before Parliament the church is included in the limit of deviation. The Vestry have determined to strenuously oppose the demolition of their church.

DISPUTE BETWEEN TWO BUILDERS.

A CASE came before the Shoreditch County Court last week, in which two builders were respectively plaintiff and defendant.

Mr. Kingsby, a builder at Clapton Park, sued Mr. Hornsby, also a builder, for the sum of 15*l.* 3s. 3d. for work and labour done, and for materials supplied. His case was that in September last he did certain work at two houses in Ainsworth-road belonging to the defendant. He said that he had done certain other work at other houses in the same road, also belonging to the defendant, and in reference to these there was a contract to do the work for a specific sum. The question now was whether there was such a contract to do the work in respect of which the present action was brought, for a certain sum.

On behalf of the plaintiff it was contended that he had entered into a contract for the work done at the first-named houses, but that having received a considerable sum over it, he told the defendant that the work for the other two houses must be paid for according to value. As the work progressed, payments amounting to the sum of 35*l.* 10s. were made, and at the termination of the work, the defendant refusing to pay more than what he had given on the first contract, the plaintiff sued for the balance now claimed. For the defence it was contended that there was an implied contract, but the defendant, on being examined, admitted that there was no contract in writing as regarded the last two houses.

His Honour gave judgment for the plaintiff on the question of contract, and referred the matter to a surveyor to decide the value of the work done.

BRICKMASON APPRENTICE'S WAGES IN TIME OF FROST.

BROWN *v.* PURDIE.

Last week, before Sheriff Balfour, George Brown, apprentice mason, Airdrie, sued his employers, Messrs. J. & W. Purdie, builders, Coatbridge, for the sum of 1*l.* 18s., being wages for three weeks and one day.

For the defence it was stated that the pursuer performed no work during the three weeks in question owing to the frost, and that the defenders were not liable in payment of wages to their apprentices during frost. It was further contended that, by the usage of the trade, and also by one of the clauses of the indenture, the defenders were entitled to a solvitor.

At the previous Court-day a number of witnesses were examined as to the practice of the trade, but considerable diversity of opinion seemed to exist on the subject.

At the Court hearing, Mr. King, who carries on the business of a builder at Motherwell, Glasgow, Paisley, Parkhead, and Coatbridge, was examined, and stated that it was not the custom of builders to pay their apprentices when they could not get working in consequence of frost.

For the plaintiff, it was contended that, according to the clause in the indenture which had been founded on by the defenders, the only thing which precluded the pursuer from receiving wages from inability to work in consequence of sickness, and that frost was entirely unprovided for. By the indenture both parties were bound, and an apprentice so bound could not acquire by his own labour any earnings either in the service of another person or in employment on his own account but what the master was entitled to claim. As to the usage of the trade it was maintained that usage, to be binding, must be shown to be uniform, notorious, and universal, while the evidence had disclosed a variety of different practices, and that various builders in the district were in the habit of paying their apprentices during frost.

The Sheriff, in giving judgment, held that the pursuer was entitled to his wages during the time of frost, and accordingly gave decree for the sum sued for, with expenses.

Two other cases, against the same defenders, where the indentures specified that the apprentice would not be entitled to demand wages when unable to work from sickness, "or any other cause over which the master has no control," came up for decision. The Sheriff said there was no distinction between these cases and that of Brown's, and accordingly found for the pursuers.

CHURCH ORGANS AND THEIR POSITIONS.

SIR,—I have on several occasions been much interested by articles in the *Builder* upon the position of church organs. There can be no doubt that it is a question of much importance both to organ-builders and architects. Many large instruments have been placed in holes and corners, and are consequently ineffective, while organs of moderate dimensions, erected in places favourable for sound, are most satisfactory in the variety and beauty of their tones. I have had considerable experience in the erection of organs in some of the grandest churches and cathedrals on the Continent, and, as the result of that experience, I have arrived at the conclusion that the best place for the organ in most churches is behind the reredos. This position is unsurpassed if there is an apse to the chancel, and it has this advantage also, that where the apse is large, and the reredos rather high, the organ can be built so low as to be quite hidden when looking from the chancel; and the cost of the case is much reduced. I am aware that architects as a rule object to the position that I am advocating, yet it is a most favourable one for sound, and when the instrument is shown above the reredos, as in the Carmelite Church, Bordeaux, the architectural effect, also, is very beautiful.

With the latest mechanical improvements the manuals could be placed in the chancel, near the choir. The organist would hear the true effect of the stops upon which he was playing, and would be able to judge accurately of the quantity and quality of the tone of his accompaniments. Where the organ-case and groups of pipes are to be shown above the reredos, the architect would have an opportunity of displaying much originality in the artistic treatment of such a background. There is one more advantage, which is, the possibility of having a passage under the organ, when it is raised up as a background to the reredos, so that the clergy and all connected with the service of the church could go from one vestry to the other without traversing the chancel.

I am aware that the position that I have suggested for the organ could generally be adopted only in new churches specially designed with an apse, or under such circumstances as the alteration or rebuilding of the chancel; but I maintain that an organ of twenty stops, in an apse behind the reredos, would have a more perfectly beautiful musical effect, than a "tearing" organ of double or treble the number of stops in a bad position.

AUGUST GERN.

The Will of Mr. John Sewell, late of 65, Aldersgate-street, and of Fortis-green, Finchley, builder, who died on December 29th last, was proved on the 3rd inst. by Miss E. L. Sewell, the daughter, and Mr. James Johnstone, the executors, the personal estate being sworn under 9,000*l.* His presentation plate the testator leaves to his grandson, Ernest Sewell Gale, to be held as an heirloom, but whoever holds it is to take the name of Sewell; there are a few other legacies and specific devises of freehold property to each of his two daughters, Miss Elizabeth Lowther Sewell and Mrs. Mary Margaret Gale; the residue of his estate is to be divided between them.—*City Press.*

ST. ALBAN'S ABBEY ROOF.

SIR,—I think it ought to be understood that the challenge made by Messrs. Street, Christian, Blomfield, myself, and others, has *never* been met by any one on behalf of the Faculty Committee. There has been so much written quite beside the point that some people may be misled. You inserted, on p. 69, a drawing which showed conclusively that the Faculty Committee intend to erect a roof which never existed previously at any time. No one would object to a tacit confession of error, even if it was not followed by doing the right thing. When a man has no answer to make, he cannot do better than make no answer. But the Faculty Committee are going very far beyond their duty in implying that they *have* met a distinct challenge which they have distinctly avoided. No architect who has visited the building for the purpose of looking into the matter, has found any traces of the line of the old roof on the tower which the Faculty Committee have invented for the new roof.

JAMES NEALE.

SIR,—It would be unreasonable to expect Mr. Scott to give the desired explanations about the new roof-line, after he has written two lengthy letters to state that he does not intend to do so. This will probably not prejudice the proposed work in any way,—for the true state of the case must have been explained to the Faculty Committee, and the secretary will no doubt make the matter clear to everybody. The questions that people are asking are (1) whether anybody has seen any marks on the tower which would lead him to believe that the proposed roof-line existed at some previous time; (2) and if so, what these marks are; (3) and why the actual groove (or old roof-line) on the tower-wall is quite disregarded. There are plenty of people anxious to be convinced; but they find this difficult, when all the evidence that reaches them tells the wrong way.

A. R. I. B. A.

WOULDHAM DRAINAGE.

SIR,—I shall feel greatly obliged by your inserting the following facts in your next impression. The West Malling Board of Guardians publicly advertised for tenders for the second part of drainage of the village of Wouldham, with the proviso of not being bound to accept the lowest or any tender. The tenders were sent to the surveyor, Mr. J. H. Andrews, of Rochester, and laid by him before the local committee at Wouldham. After the tenders were opened and read by the chairman, one of the sitting members (a farmer, with no practical knowledge), offered to carry out the work for thirty-six pounds under the lowest tender, which, strange to say, was accepted by the Board. [See report in the *South Eastern Gazette*, a copy of which I have forwarded with this.] I am permitted by the surveyor to state that he strongly protested against the transaction, and also stated that the lowest tender was nearly forty pounds under his private estimate.

The contractors who tendered for the work feel they have been very unfairly treated, and would be glad to hear your opinion on this subject.

GEORGE WEST, Builder.

*** The transaction as here stated is altogether unbusiness-like and unjust. Repetitions of such a proceeding would soon lead builders to refuse to tender at all.

"SANITARY SUPERVISION."

SIR,—Under the above heading in the *Builder* (p. 188), I find Mr. W. R. Maguire, of Dublin, delivering himself of no less than six objections to the system of fitting up soil-pipes shown by me at p. 135, February 1st. His objections, however, are purely imaginary. If he reads my letter again he will find that I never used the term "open trough" (I was not writing about pigs), but "open-air channel-pipe." Further, at "section at A" in the drawing he will see that a grating is placed upon the top of the said channel-pipe to prevent people seeing into it, and also to keep snow, &c., out of it. Perhaps Mr. Maguire is not aware that snow will bridge a grating that is not too wide instead of filling up the space below; but it is this fact that renders snow-boards in roof gutters of value. As to the "abominable appearance" which a branch soil-pipe, about 2 ft. 6 in. or so long outside will show, I fear I am scarcely so fastidious about the appearance of the back of the house as to sacrifice utility and safety to back-door appearances. I condemn the branch of the soil-pipe being directed right into the wall and hidden; such a plan is a dangerous sham. With the branch shown the meaning is known, and the mind and eye both satisfied. In flatted houses, such as are so much in vogue in Glasgow, the open-air channel-pipe shown at A, p. 135, would tend to isolate each house by itself so far as water-closets were concerned.

W. P. BUCHAN.

* The Society for the Protection of Ancient Buildings already taken up this part of the question.

VACANT APPOINTMENTS.

Sir,—As an architect not very fully employed just of late, I applied for the surveyorship of Skipton; also, architect to the Lancaster County Lunatic Asylum; also, surveyor, &c., to the Midland Land and Investment Corporation; and I have not heard a word from one of them, directly or indirectly!

Will any of your readers who live in the various localities favour us, through your columns, with the information as to who are the successful parties?

My testimonials were of an undoubted excellence. P.

*** With regard to the Lancaster appointment, letters that have recently appeared in the *Builder* (p. 1369 of last vol. and p. 56 of current vol.) would seem to show that the vacancy has been snugly filled up.

BUILDERS' CONTRACTS.

Sir,—In your last number appears a letter from a "Builder's Clerk" on the subject of the conditions of contract as issued by the "National Association of Master Builders," purporting to be based on conditions agreed on by the Royal Institute of British Architects and the London Builders' Society. Will you allow me to tell the "Builder's Clerk" and all Country Associations that the London Builders' Society has never agreed to deposit priced bills of quantities, and no such condition exists in their printed form? As to "all materials deposited on the works," they are not removable when the contractor has been paid for them in any certificate; otherwise the contractor may do as he likes with his materials and plant.

As to the condition for not sub-letting the work, it is generally understood that such condition does not apply to sub-letting the labour to be done by piece-work.

A Member of the London Builders' Society.

BURSTING OF WATER-PIPES DURING FROST.

Sir,—I quite endorse your correspondent "C. E.'s" theory that water-pipes burst during a frost and not during a thaw, as it is well known that water increases ten per cent. in bulk at the moment of solidification; but I think, perhaps, I can explain his plumber's statement that bolts crack and nuts fly off, on pouring in boiling water. Of course, previously to applying hot water all the metal-work is extremely cold, and is contracted to a great extent. On applying boiling water, a sudden and unequal expansion of some parts takes place, which, in my opinion, would be amply sufficient to cause the bolts to crack in the contracted parts not affected by the boiling water. Another C.E.

FROST AND MORTAR.

In reference to letter in last week's *Builder* under this head, I should feel obliged for information as to liability of contractor for damage done by frost to mortar, Bath stone, &c. This winter has been exceptionally severe, and Bath stone has suffered more than any other building material except brickwork, many of the depôts at this present time containing large quantities of stone which has been shattered to pieces. I suppose that, the stone being soft when quarried, and containing a certain amount of moisture, the frost acts upon it, as I find that stone that has been worked long enough, so that the moisture has evaporated and the face become hardened, stands the action of frost very well.

Your correspondent, "District Surveyor," mentions a case where litigation was resorted to to test liability. I should feel obliged by information containing a description of the case, so that I might know whether it is similar to my own. Contractor.

"ACTION FOR FEES."

I have read the letter addressed to you by the secretaries of the Institute of British Architects, correcting the error made by the reporter in the case of "Gordon *v.* Blackburne." The matter is not of much importance, but for the information of your numerous readers, I may say that I was in no way responsible for the erroneous statement.

The plaintiff's counsel asked me whether I had been on the Council of the Institute. My reply was, "Yes; some years ago." Accidentally I did not see the notice of the action till ten days after its appearance, or I might have anticipated the correction of the secretaries.

May I ask your insertion of this in your next number.

Frederick J. Francis.

DELAY IN BUILDING.

Sir,—If your correspondent, "Plasterer," will give me some information to assist me, I shall be pleased to introduce the French system he speaks of, if it is really an improvement. Can he send name and address of any French builders using it? G. S.

Sir,—Referring to a letter in your paper, signed "Plasterer," may we call your numerous readers' attention to our advertisement in your columns, which will, we think, meet your correspondent's requirements?

F. Rosenthal & Co.

Books Received.

The Compiler: Furniture and Decorations; Choice and Select Designs from the best Authors. R. Charles, Wellington-square, Chelsea. 1878-9.

This is a work in monthly parts, the exterior of which, with its brown paper cover and the old-fashioned cut of type in the printing distributed over the back in a stile-and-panel fashion, would in itself indicate the nature of the contents of the interior. It is an emanation, in fact, from Chelsea, the centre of the present prevalent style of building and furniture, and is a collection of specimens of work, chiefly in the way of furniture, of the semi-Classic type of the last century in this country; at least, the majority of the examples so far (in the first five parts) are from English examples, though there are specimens also of French and Italian decoration of the eighteenth century. The illustrations appear to be photo-lithographs from old engravings, published in those days when colour was considered no essential part of decoration; and as such they are of some value, as they are fac-similes from works which have now become scarce, and are not easily to be obtained. There are, for example, a good many reproductions in this way of Chippendale's and Sheraton's designs for furniture, from the engravings in their original works, which are now only to be procured at occasional book sales. Valuable in the same way are the copies from some schemes of room and ceiling decoration, by Pergolesi, and a good many by the English architect Thomas, both of the (now) sacred eighteenth century. Concerning the special virtues and vices of Chippendale, and his contemporaries or immediate successors, we said a good deal lately. The whole of the book so far being in the same taste, there is little need to describe further what is the nature of its contents; every one will be aware that in it are to be found ceilings decorated with bows, and festoons, and garlands, and musical instruments, and little panels with nymphs and cupids playing; and that there will be chairs and sofas of very neat but rather flimsy-looking construction, and chimney-pieces with scrolls and broken pediments for decoration. Some of these chimney-pieces, by Swan, and others by Thomas, are among the best things in the book, admirably drawn and, from their author's point of view, very well and tastefully designed; so far, however, it is all one taste, and that certainly none of the purest; nor do we much admire the title, which suggests only too well what design has, to a great extent, come to at present the putting together of random details.

Even as it stands, however, the publication will be of value simply from the fact that it is a reproduction of original engravings. In his prospectus, "The Compiler" states this as his special object, and observes that designers often find it very difficult to purchase high-priced books "for use as references" (*Anglicè*, to "crib" from), and even then perhaps only a few designs in each book will be of any use, so that a *fac-simile* selection may bring together for their use, in a cheap, and at the same time perfectly trustworthy, form, what would otherwise have to be searched for and collected through many not easily accessible books. "The Compiler" also proposes to give drawings or photographs of examples of furniture that are in private hands. All this is very good, but we should like to know whether the book is intended to be confined to one school of furniture and design, as it certainly is so far. If so its value will be very limited compared with what it might be if a broader and (let us add) a purer taste prevailed in the selection.

Appleby's Illustrated Handbook of Machinery, Sections 1 and 2. By C. J. Appleby, (Appleby Bros, Emerson-street). London: E. & F. N. Spon. 1877. Third Edition.

A new edition of a trade book, first published in 1869. These two sections form a portion of a whole book on machinery, which will, it is said, be completed in eight sections. These two include Prime Movers; Steam, Gas, and Air Engines; and Hoisting Machinery, Winding Engines, Hydraulic, Steam, and Hand Cranes, Winches, and Jacks. Both sections are profusely illustrated, and the illustrations do credit to both artist and publishers. Cranes and other hoisting machinery are particularly well illustrated. Mr. Appleby is a member of the Institution of Civil Engineers, although that is not stated on the title-page. The two sections of the book are very much to the purpose, and all statements are evidently very honestly made. We have at the present day so many elementary treatises on the subject, that we gladly welcome something of a more practical nature than usual.

Palgrave Family Memorials. Edited by Cha[rles] John Palmer and Stephen Tucker, Rou[en] Croix. Norwich. Privately printed. 187[8]

The conjunction of Mr. C. J. Palmer and M[r.] Stephen Tucker, both accomplished antiquari[es] in their several walks, has led to the productio[n] as might have been expected, of a model bo[ok] of Family Memorials. The Palgraves (includi[ng] the Pagraves) are an ancient family, and ma[ny] members of it have made their mark in t[he] world. The illustrations, which are numero[us] include portraits of Mr. Dawson Turner, [Sir] William Hooker, Sir Fras. Palgrave, and [Mr.] Chas. Eastlake, an excellent likeness. Althou[gh] privately printed, some of our readers may be glad to know of the existence of the book available for reference. Mr. Palgrave Simps[on] the well-known dramatic writer, is a memb[er] of the family.

VARIORUM.

"Brian Boru: a Tragedy, by J. T. F[ay] (Longmans), claims a notice at our hands, [on] the ground that its author is an architect, and [we] are the more glad, therefore, to be able to spe[ak] well of it. The scene of the drama is laid [in] Ireland, at the beginning of the eleventh centu[ry] but the author has sought to give a presentme[nt] not of historic, but dramatic truth. The play [is] much above the average of unacted publish[ed] works. It may be said to suggest "Macbeth" in one or two respects; but, for all that, ha[s] distinct plot of its own. The writing throughou[t] is good, as two or three brief quotations [will] serve to show:—

"Affliction oft-times purges
Both men and states; the hammer-strokes of Fate
Ring on the world's great anvil, and knit close
The smitten nation; sparks of strife fly off,
And sunder'd parts are welded into one
In the white heat of anguish."

Again, when the *Priest* asks,—

"Will you not make full demand on Brian?"

The *Archbishop* answers,—

"No, not at once: a sudden call might rouse
The sleeping garrison of baser thoughts,
That ever in the soul's high citadel
Have lurking-place and home."

The following, too, deserves quotation:—

"Son, I adjure you,
Distort not Brian's purposes to raise
A needless conflict; for, believe me, boy,
The ever-springing fount of warlike fame
That flings aloft the waters of its glory,
All sparkling to the world, is sad with tears,
And has its source in hidden depths of woe."

——Under the title of "Restoration of Anc[ient] Buildings," a report of the recent Conferenc[e] the Royal Institution, Liverpool, edited by [Mr.] Hall Caine, has been published in a pamp[hlet] form. The principal papers were given in [full] pages at the time, but some of our readers [will] be glad to have them in a compact form.——"Laxton's Price Book" for 1879 has [been] published. It includes a large amount [of] absolutely necessary information, and is thi[s] than ever.——The second half-yearly volum[e of] *Brief*, a weekly epitome of the Press (Wyma[n] Sons), sustains the character and deserves [the] encomiums pronounced upon the first volu[me]. Nothing could be more acceptable, we imagi[ne] to colonists and travellers abroad, than [to] receive such an accurate and comprehen[sive] digest of news, and the journal will, doubt[less] command a wide foreign circulation. It [is] of all important political and social eve[nts] tersely describing them, and adds opin[ions] briefly expressed, from various newspa[pers]. The work is very well done, and, what is [so] important, the volume has a full and cor[rect] index.——The new volume of "The Librar[y of] Contemporary Science" (published by Chap[man] & Hall) consists of the "Philosophy, Histo[ry] and Critical, of André Lefèvre," translated [by] A. H. Keane, B.A.——"Pillars of the Emp[ire]" (Chapman & Hall) is the title of a volume [con]taining sketches of living Indian and col[onial] celebrities, by several hands, and which [is] mostly appeared elsewhere. The volum[e is] edited by Mr. T. H. S. Escott, and is plea[sant] and instructive reading.

Miscellanea.

"dle Hands for Waste Lands."—A writer e *Agricultural Gazette* ("R.") says:—"A re of North Lancashire, it has ever seemed a suicidal policy on the part of the nation ow the thousands upon thousands of acres orised in the tidal bays of the Duddon, the , and the Leven, to remain unproductive. ust be patent to all who are conversant these localities (amongst which our Home stary must be reckoned, for his residence ole Riggs overlooks the Duddon), that for r years past the sands of the Duddon (above tain point) and Morecambe Bay, so far as ime traffic is concerned, have been a nullity, hat their conversion to some useful pur- would be not only a local district advan- but, if made to grow food for the people, would become a national benefit. The por- which might be enclosed and in time con- d into good arable and grazing farms, con- ery many square miles, and their embank- would entail no harm upon any one con- d. Of the practicability of enclosing our bays we have sufficient proof in what has done by the Duke of Devonshire and Mr. nder Brogden, M.P., in both the Leven and ent estuaries. Where formerly there were wastes of sands, now there are smiling . Taking into consideration that the d Kingdom is unable to supply its millions the necessary food required, looking also opposition which would be generated gst local landowners were the work pted by private effort,—looking, further, great depression of trade which exists in ngdom, and to the large number of men in istricts of those tidal estuaries who are ut of employment, my impression is that eclamation of the vast acreage of sands ned in the Duddon, Kent, and Leven ies would be most profitably undertaken Government of the country, for the work certainly constitute a national benefit. r, such as would be required, is probably cheaper now than ever it will be again in es of the present generation. Lastly, we he material for the work at our very doors. djacent hills on all sides abound with and stones, which only need quarrying to them fit for the purpose."

Alban's Abbey.—A meeting of Free- s has been held at the Freemasons' Tavern, purpose of forming a committee to raise iptions to restore in whole or in part the face of St. Alban's Abbey. Mr. J. M. , who presided, said there was hardly a er building in England to his mind than lban's Abbey, and Freemasons ought to y proud of helping in the restoration of was a national building. The honorary ary of the Hertfordshire Committee, Mr. r, said the probable cost of the proposed ation would be about 9,000*l.* St. Alban the first known Freemason in England, onsidered that all Freemasons should com- carrying out the object in view. A motion assed inviting the Freemasons of England ist in the restoration of the west face of ban's Abbey. Mr. Chapple entered into explanations as to the west front in on, and quoted a report of the late Sir t Scott, who in it said he doubted whether xisted in England a work so perfect in the half-ruined western portals of St. s, and he venerated the architects who ed them, Abbot John de Cella and, architect, Gilbert de Eversholt. A committee was afterwards formed.

leable Brass.—The brass alloy in most n use is probably that containing about per, 33 zinc, and 2 lead or tin. This com works well in the lathe, and can be rolled, very imperfectly malleable. Recently, e *Electrician*, a brass has been manufac- which possesses entirely novel properties, n be forged at a red heat precisely like o that it becomes applicable for many s for which ordinary brass is unsuitable. w alloy is composed of 57 copper and 43 should contain neither lead nor tin.

Jewish Synagogue, Park-row, Bristol, consecrated on Sunday, after having been several weeks for renovation. The dedi- ceremony was performed by the Rev. G. el and the Rev. B. Hast, both of Birming- The decorations were designed by Mr. ters, architect.

Compensating Reservoirs for Mill-owners.—On the 20th ult. an inquiry took place in the Town-hall, Bradford, as to the capacity and area of the Leeming and Leesham reservoirs, constructed by the Corporation of Bradford for the compensation of the millowners on the river Worth, which has its *embouchure* in the Aire, at Keighley. Mr. James Elkin Paskin, C.E., of Halifax, who had been appointed to the duty by the President of the Institution of Civil Engineers, presided. The Town Clerk, on behalf of the Corporation, said that the Act specified that the Leeming reservoir should have a water capacity of 19,175,000 cubic feet, while the actual capacity was 19,435,806 ft., or 260,965 ft. in excess of the stipulated size. The Leesham reservoir was specified to be of the same size, but its capacity was 20,249,950 ft., or 1,074,950 ft. in excess, the total capacity of both reservoirs in excess of the requirements of the Act being 1,281,815 cubic feet. The cost of the reservoirs had been 130,000*l.*, much in excess of the original estimate. The Town Clerk then described conduits Nos. 3 and 5, supplying these reservoirs, and called Mr. Binnie, C.E., waterworks engineer to the Corporation, whose evidence was corroborated by one of his assistants, Mr. Barlow, who had assisted in the work. Mr. Atkinson, on behalf of the millowners, said they did not dispute Mr. Binnie's work or his calculations, but wished to have the capacity of the reservoirs tested by an independent authority, in conformity with the Act. The Town Clerk said that with a view to an amicable arrangement, the Corporation would allow the size of the reservoirs to be tested by Mr. Paskin, but they would be no parties to drawing off the water or lowering the reservoir, as that rested with the millowners. As this seemed to be satisfactory to both sides, Mr. Paskin said that he should take the plans Mr. Binnie had furnished, visit the ground himself, take means to verify them, and if he found them correct the Corporation would receive his certificate.

The New Factory Act and the White-washing of Workshops.—At the meeting of the United Trades Council in Liverpool the other day, a correspondence was read between the secretary and Mr. Alexander Redgrave, her Majesty's chief inspector of factories, in reference to some points in the new Act. The secretary urged the necessity of having a register kept of the dates when the various workshops were whitewashed or painted, as there were many in Liverpool that had never been cleansed or limewashed for twelve or fifteen years, and some were hardly fit to put animals in. The inspector, in reply, said the subject would receive all the attention which its importance demanded; but he pointed out that the factory inspectors had no control whatever over workshops in which men only were employed, nor any control as to limewashing, &c., over any workshops in which neither children nor young persons were employed, nor in what were called "domestic workshops." The sanitary condition of these establishments would continue, as heretofore, under the supervision of the local authorities.

The Goldsmiths' Company and Technical Education.—The Goldsmiths' Company again offer prizes to encourage technical education in the design and execution of works of art in the precious metals. The list includes two prizes of 50*l.* each and three of 25*l.* each. Special attention is given to originality of design, as no copy is to be the subject of a prize. The prizes will be awarded in the month of December next, and the company reserve the right to exhibit the articles if they think fit between December and the following March. According to the *City Press*, the Company have also resolved that a travelling scholarship of 100*l.* per annum may be awarded by the wardens to a student who has shown exceptional talent, and who shall have obtained a prize for design for three successive years, in order to enable him to study art in the precious metals on the Continent.

Fine Arts at York.—The Earl of Feversham has arranged to allow his extensive and valuable collection of paintings and statuary (rescued from the fire at his mansion at Duncombe Park) to be exhibited at the York Fine Art and Industrial Exhibition, which is to open on the 1st of May. One gallery will be devoted to the Duncombe Park collection. The permanent picture-galleries in connexion with the exhibition are rapidly approaching completion, and have cost upwards of 12,000*l.*

The New Maidstone Bridge.—The Maidstone Town Council having applied to the Local Government Board for a provisional order to partially repeal, alter, or amend "The Maidstone Bridge Act, 1877," so as to authorise them to borrow a sum of 5,000*l.*, in addition to any money already borrowed under the said Act, Mr. J. T. Harrison, C.E., one of the Inspectors of the Local Government Board, held a formal inquiry at the Town-hall, on the 4th inst., into the application. Mr. E. Hoar (clerk to the Local Board) stated that the Parliamentary estimate for the bridge was 32,000*l.*; 22,000*l.* for structure and 10,000*l.* for the purchase of land, &c. 24,000*l.* had already been borrowed, besides 16,000*l.* to be provided by the Bridge Warden of Rochester, but it would now appear that the total sum to be expended would be 45,000*l.*, which was 5,000*l.* more than they were empowered to borrow. On the suggestion of the inspector, it was decided to borrow 5,500*l.*, the extra sum to be expended in paving, kerbing, channelling, and metalling the additional width that will be added to the London-road.

Trade in the United States.—The Secretary of the American Iron and Steel Association reports a more active trade, and better prospects for the current year. All iron and steel products were in better demand, and prices, except in the case of pig-iron, well maintained. This has frequently been made without profit. During the past year, eighteen furnaces have been destroyed, and only two new ones erected. At the close of the year there were 700 furnaces in the country, 260 of which were in blast, and 440 out of blast. The production for the year was 2,382,000 tons, an increase of 70,000 tons over 1877. Ten out of the eleven Bessemer steel works in the country were busy all the year through in making steel rails, of which there were produced about 600,000 tons, and of ingots, 730,000 tons. It is estimated that the total production of iron and steel rails is not less for the year than 932,000 tons.

Hastings.—The report of the Medical Officer of Health for the quarter ending December 31, 1878, shows that the number of inhabited houses in the municipal borough is 6,120. The estimated population to the middle of last year is 39,780, calculating as at the census of 1871. The birth-rate for 1878 is 27·25 per 1,000. This was 27 in 1877. The death-rate from all causes is 16·79, against 15·5 in 1877, and 16·08 in 1876. As usual, the mortality amongst children is very great. No less a number than 227 died under five years of age, being one-third of the total deaths from all causes. "A vast number of these lives might be annually saved if more discretion and knowledge in the feeding of children which are obliged to be brought up by hand were shown by those in charge of them."

Re-opening of the Army and Navy Club. Since August last considerable improvements have been effected at the Army and Navy Club, in enlarging the smoking-room, constructing a new house dining-room, service-room, &c., and converting the former writing-room into visitors' dining-room. A new billiard-room, containing two tables, is provided on the upper floor, and other rooms for the secretary, librarian, and committee. New larders have been provided in the basement, and also new drains and sanitary appliances in lieu of the old and defective systems. The building has been re-decorated throughout. The whole of the works have been carried out under the superintendence of Mr. H. R. Gough, by Messrs. T. W. Smith & Son, of Islington.

Fall from a Church Spire.—The Leicester Borough Coroner has held an inquest on the body of Joseph Burrows, a scaffold-builder, who met with his death by falling from a church spire. The deceased was superintending several workmen taking down the scaffolding from the new spire at St. Peter's Church, Leicester, and was giving directions for lowering a portion of the scaffolding, when he placed his hand on a cross-stay that had been unfastened. The weight of deceased caused the stay to spring outward, and, losing his balance, he fell to the ground, a distance of 75 ft., and was killed instantaneously.

Gloucestershire Lunatic Asylum Competition.—A correspondent complains, and apparently with good reason, that the building committee refuse to furnish necessary information to competitors, their "Suggestions to Architects," to which their attention has been drawn, not being complete or correct.

A Memorial Cross, of white marble, has recently been erected in Plympton St. Maurice Churchyard, to the memory of Mrs. Hole, the rector's mother. The cross is about 6 ft. high, resting on a plinth and steps, and has an octagonal shaft, on which sprigs of roses are carved. The work has been carried out by Messrs. Gullett, of Yealmpton, from the designs of Mr. Sedding, who is engaged on the restoration of the parish church.

Wednesbury Schools.—In the competition lately decided for the above Board Schools, Messrs. Alexander & Henman's design for the Lower High-street Schools was adopted, and that of Mr. Ettwell, of West Bromwich, for the New Town Schools; the designs of Mr. R. Matthews, of Birmingham, and those of Mr. C. Newman, of Wednesbury, being second respectively; Mr. S. W. Grant, of Duke-street, Adelphi, being placed third in each case. For the Lower High-street Schools there were thirty-three sets of plans sent in, and for those in the New Town twenty-eight.

TENDERS

For Briton Ferry drainage-works. Mr. H. Francis Clarke, surveyor to the Board :-

Thomas	£17,800	0	0 !
Fawks	15,255	0	0
Dickson	15,234	0	0
Pickthall	14,948	16	11
McLeod	14,316	14	4
Appleby & Lawton	14,278	1	5
Krauss	14,220	0	0
Young & Williams	12,880	0	0
Giles	12,854	8	9
Thomas	12,745	0	0
McKay	12,717	13	0
Williams	12,630	1	6
Taylor*	12,000	0	0
Speight & Sons*	11,189	13	2
Davies	10,888	0	0
Lewis & McKim*	10,810	0	0
Hill, Brothers*	10,493	0	0 !

The four marked * selected for further consideration.

For finishing four private dwelling-houses, George-lane, Lewisham. Mr. Charles Young, architect :—

Matthews (accepted)	£610	0	0

For the erection and part completion of five houses and shops, Willow-terrace, Stamford-hill. Messrs. W. Waymouth & Son, architects :—

Shurmur (accepted)	£4,257	0	0

For additions to Hargrave Park-road Schools, Upper Holloway. Mr. E. R. Robson, architect. Quantities by Northcroft, Son, & Neighbour :—

Langmead & Co.	£6,150	0	0
Roberts, Brothers	4,910	0	0
Patman & Co.	4,784	0	0
Nightingale	4,783	0	0
Laurence	4,661	0	0
Pritchard	4,642	0	0
Aitchison & Walker	4,619	0	0
Willams & Son	4,597	0	0
Hobson	4 594	0	0
Hook & Oldrey	4,587	0	0
Glover	4,534	0	0
Boyce	4,494	0	0

For alterations at the Railway Tavern, Shepherd's Bush. Mr. J. E. England, architect. Quantities not supplied :—

Vargin	£1,445	0	0
Ellis	997	0	0
Hook & Oldrey	940	0	0
Beathe	933	0	0

For the erection of a dwelling-house and shop in Fisherton-street, Salisbury, for Mr. William Lucas. Mr. Fred Bath, architect. Quantities supplied :—

Kite	£759	0	0
A. Harris	740	0	0
Tryhorn	725	0	0
G. Harris (accepted)	706	13	0

For ever wards for the Croydon Union. Quantities by Mr. F. T. Mullett. Messrs. Berney & Monday, architects :—

		Extra for Keene's Cement on Walls.		
North, Brothers	£5,952	0	0	£127 13 0
Tibbitt	5,540	0	0	78 0 0
Sawyer	5,463	0	0	150 0 0
Bowyer	5,400	0	0	70 10 0
Hobbs	5,343	5	9	50 0 0
Nightingale	5,340	0	0	140 0 0
Langmead & Way	5,295	0	0	78 0 0
Beale	5,185	0	0	35 10 0
Hunt	5,155	0	0	118 0 0
Hart	5,133	0	0	160 0 0
Pearson & Myles	5,075	0	0	80 0 0
Keefe	4,995	0	0	180 0 0
Legg	4,955	0	0	67 0 0
Hollidge & Stuart	4,950	0	0	157 0 0
Coles	4,925	0	0	70 0 0
Stephenson	4,858	0	0	149 0 0
Jas. Smith (accepted)	4,830	0	0	157 0 0
Cox	4,793	0	0	175 0 0
Parker & Evans	4,690	0	0	140 0 0
Moffatt	4,599	0	0	200 0 0

For the erection of a house and studio at Hampstead. Messrs. Tarring & Wilkinson, architects :—

Marriott	£1,840	0	0 !
Niblett	1,600	0	0
Manley	1,575	0	0
Somerville & Hill	1,564	0	0
Stephenson	1,538	0	0
Potter	1,423	0	0
Sholl	1,390	0	0
Langridge & Sons	1,375	0	0
Niblett	1,363	0	0
W. & H. Castle	1,335	0	0
Lovell	1,300	0	0
Uff	1,118	0	0
Keefe	1,175	0	0
Gough (accepted)	975	0	0
Bebington	895	0	0 !

For iron railing and gates at Highgate, for the guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects :—

Berry & Sons	£460	0	0
Potter & Son	414	10	0
May, Brothers	352	0	0
Turner & Co.	346	0	0
Richardson & Ellson (accepted)	324	0	0

For the erection of a dwelling-house and stable at Twyford, Winchester. Mr. A. W. Gabrath, architect :—

Saunders	£3,186	0	0
Carter	3,705	0	0
Stevens	2,888	0	0
Carter & Son	2,870	0	0
G. & H. Marsh	2,792	0	0
Fielder & Son (accepted)	2,790	0	0
Crook	2,789	0	0

For new premises, Oakfield-road and Breck-road, Anfield, Liverpool. Mr. Walter W. Thomas, architect. Quantities supplied by architect :—

Haigh & Co.	£1,846	0	0
Tomkinson & Co.	1,835	0	0
Wilkinson	1,768	0	0
Brown & Backhouse	1,705	0	0
Tomkinson & Sons	1,695	0	0
Urmson	1,619	0	0
Henshaw	1,569	0	0
Nicholson & Ayre	1,567	0	0

For alterations and additions to the "New Crown and Cushion," No. 133, Westminster Bridge-road, for Mr. Thomas Plumb. Mr. S. C. McMurdie, architect. Quantities supplied :—

Phelps & Rice	£585	0	0
Gibbon & Mitchell	570	0	0
Wall, Brothers	567	0	0
Wilson	475	0	0
Nixon	466	0	0
Went & Perkins	430	0	0
Ansell	410	0	0
Beale	370	0	0

For a warehouse in Great Eastern-street. Messrs. Lander & Bedells, architects :—

Nightingale	£9,889	0	0
Browne & Robinson	9,742	0	0
Brass	9,697	0	0
Williams	9,438	0	0
Grover	9,371	0	0
Brown	8,550	0	0

For the pulling down and rebuilding of a house No. Arundel-street, Haymarket, for the Hon. R. A. Arund Mr. Patrick J. J. Fay, architect :—

Jackson & Todd (accepted)	£1,230	0	0

Erratum.—We are desired to say that the amount Messrs. W. Baker & Son's tender for additions to Joint Counties Lunatic Asylum, Carmarthen, was 14,9 and not 19,995*l.* as previously stated.

TO CORRESPONDENTS.

Dr. P.—G. S.—A. G.—E. R.—E. B. F.—E. T. P.—J. S. H.—H.—H. W. B.—C. F.—W. D.—H. R. G.—T. & W.—H. S. S.—W.—Miss R.—F. B.—T. & A.—A. C.—H. H.—L. & R.—C. F. R. McL.—S. McM.—H. & G.—J. L. (in Transactions of the I Institute of British Architects, and in the *Builder*)—Ignora (must look to his books).—Handwriting (a contractor who compl that his name is spelt wrongly should take care to write it so it may be read)—C. M. (gives no information. Mere asserti Great Pyramid (next week).

All statements of facts, lists of tenders, &c. must be accompa by the name and address of the sender, not necessarily publication.

We are compelled to decline pointing out books and gi addresses.

NOTE.—The responsibility of signed articles, and papers rea public meetings, rests, of course, with the authors.

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"*Histoire et Théorie de l'Architecture.*"

THE work recently published in France under this title* has attracted already some attention among architects in this country—more perhaps than its intrinsic merits would have called forth, in consequence of its containing a direct and brusque attack on one of the

t important contributions ever made by English architect to the study of ancient itecture. We have long been in the it of thinking that Mr. Penrose's work the principles of Athenian architecture a book of which English architecture ht well be proud, as the first logical destration of a most interesting and import. series of facts in regard to the Greek ry and practice of architectural design, ved at by a process of investigation excepally minute and conscientious, and illustrated admirable completeness. All this we are tly told is a series of mistakes, arising from attributing to design what are merely accial derangements of the structure of the dings measured, the Parthenon in particular. shall refer more especially to this point in proper place; we allude to it at the outset as point which has drawn particular attention he work in this country, and which renders matter of some special interest to many of readers to consider what is the calibre and it of a work which assumes this position in rd to the labours of one of our most scientific hitects.

What strikes us in the first place, and will ke almost every English architect who opens book, is that there is absolutely not one d said about Mediæval or Gothic architure, not one hint of the existence of thing of importance between the Classic es and the Renaissance. This is to us fectly inexplicable. Here is a book by a tleman who signs himself on the title-page embre de l'Institut" and "Professeur de orie à l'École Nationale des Beaux-Arts," ok broadly entitled "the History and Theory Architecture," and which absolutely ignores existence of one of the greatest and most orically interesting of all the chapters in the ory of architecture. The author gives not a of any reason for this: in his prefatory agraph, entitled "Plan d'Ouvrage" he does say a word as to any intentional limitation his subject; he has a chapter on "the hisy of architecture before the Flood," but about history between the epochs of the Pantheon St. Peter's he is absolutely silent. That a nch architect should have adopted this view the subject before the publication of M. llet-le-Duc's Dictionary, might have been more comprehensible; that any one should be found to do so now is only a proof of narrow-mindedness and pedantry; and if this represents the view of the province of architecture as understood in the "École des Beaux-Arts," all M. Viollet-le-Duc's attacks and innuendos against the architectural teaching of that institution are more than justified. As if to leave nothing undone to complete the absurdity of his position, the author actually professes his aim, in the opening paragraph, as follows:—"Nous remonterons d'abord, autant que possible, aux monumens les plus anciens, prototypes présumés des édifices postérieurs, afin de saisir le point initial de cette long chaîne qui se déroule de siècle en siècle, et nous suivrons chaque type dans tous ses développements, depuis son origine jusqu'aux temps modernes." It is difficult to believe that in the present day any architect in his senses could positively profess to follow out the history of the art "in all its developments," and exclude from this summary the whole of the cathedrals and monastic buildings of Mediæval Europe! It is obvious from this at the outset, that we have to deal only with an academical view of architecture, and it is, therefore, useless to review the book from any other standpoint: we must content ourselves with protesting against the assumption of the author that he has produced a comprehensive book upon architecture, and against the misleading title of a book which ought to be called "Theory and History of the Classic Styles of Architecture."

The short preliminary chapters which are devoted to the research after the origin of architecture are merely the kind of formal profession of investigating the subject *ab initio*, with which readers of French theoretical works are quite familiar. There is an examination of Chinese, Mexican, and Indian architecture (very brief in each case), with the avowed intent of finding whether they can give us any light as to "the origin of architecture," with, of course, the inevitable conclusion that none of them can. The notice of Indian architecture is very superficial, and the author does not seem to know anything of Fergusson's works, which are, of course, the chief accessible sources of information now.

In coming to Egyptian architecture, we get upon firmer footing, and the author appears to much better advantage. We still feel, however, that he is on very debateable ground in his division of Pharaonic architecture into two great sections, that before and that after the Flood. We presume from this that M. Lesueur knows the date and extent of Noah's flood, in which he is at all events in advance of any professed students of history. What he really means, however, is that there is a pyramid epoch and a temple epoch, and that the one is older than the other: which no one will be disposed to question. His opinion that Egypt when she first comes into view in history was in a state of advanced civilisation which had been for a long time in existence, is in accordance with the opinions of those who have most profoundly studied Egyptian archæology. From the architectural point of view, the chapters on Egyptian architecture appear rather rambling and inconsequent, but there are very significant suggestions in it. Among the best of these are the considerations relative to the origin of the cavetto cornice of the Egyptian temples. He starts with the idea that the Egyptian tomb was in its earliest form to a great extent a representation of the abode of the deceased while on earth, it was his abode after death, "its interior decoration retraced the scenes of his life," and even the form of the tomb recalled the likeness of his earthly home. "Thus the lintel over the door of the ancient sepulchre was the imitation of the wooden lintel of the dwelling, and in the old tombs of Saqqara and Abusir, the *plafond* imitates in relief the cylindrical joists forming the ceiling of the habitations. Lastly, at Beni Hassan, one sees the likeness of the same reeds, cut in the rock, forming a penthouse over the entry. There the joists, separated by intervals, offer at the same time the origin and the most ancient example of *mutules*. In the old tombs of the necropolis of Memphis, on the contrary, the joists are adjoining each other. A stele, graven on the rock at Tura, presents the effect in perspective of joists or poles, also in close contact, in which the natural form of the wood is preserved, and which are prolonged beyond the face of the wall to shelter the inscription.* This is evidently the original type of the channelled cornices crowning all the Egyptian temples; it is rare to find an etymology as clear as this."

This point is connected with the question, always so interesting to the student of architectural development, of the relation of stone structures to wooden originals. In regard to this point M. Lesueur quotes, in order to confute, Quatremère de Quincy, who has expressed the opinion that the architecture of the Greeks was manifestly derived from wooden originals, while that of Egypt was derived from an architecture of excavation. M. Lesueur holds that the Greek architects imitated wooden construction only in some secondary portions of their buildings (and even there one may say the imitation is so distant as to be always open to question), and the Egyptians had done the same thing far more obviously long before. But the Egyptians knew also when to disguise the frail origin of their details that were derived from timber. They had "*l'esprit trop juste*" to allow of their giving to their religious edifices a construction of a common or perishable appearance. "If they adapted the idea of the cornice of their temples from a form produced by necessity, they disguised this by imitating the graceful curves of the date-palm, a curve upon which (in the building) the imitation of the stems was transformed into channelling. And against this rich background of the fluted cove was designed, lastly the winged globe, the symbol of almighty power." This is, of course, not all new, but it is effectively put, and the progress from the square pier to the fluted column is admirably and logically shown in a single plate giving plans of columns in the different stages they would probably go through, and of which Beni Hassan is the only stage remaining for actual inspection. The existence of this Early Doric in this isolated form is the more remarkable a problem, when it is considered that it dates so far back (if the reading of chronology by Egyptologist interpreters is correct), as more than 3,000 B.C., and it certainly is very extraordinary (more so than architectural historians have quite recognised) to find something so

* Histoire et Théorie de l'Architecture. Par J. B. ueur. Paris: 1879.

* The author gives an illustration of this highly interesting carving, page 86.

nearly like Grecian Doric, so obviously connected therewith, at such a distance of time before the Greek period, and to have lost all the intermediate steps between the two.

This is, in fact, we presume, one of the reasons on which M. Lesueur has based the observation (page 94) that Egyptian architecture appears to travel in the reverse direction from the architecture of other countries. "While," he says, "in Greece the buildings attain successively an increased elegance, following the natural order of things, among the Egyptians, on the contrary, the most elegant columns, the most harmonious lines, are those of the most ancient periods; and the heavy proportions, elsewhere always characteristic of the infancy of art, are, in the land of the Pharaohs, the produce of the decadence." The author accounts for this (granting it to be fact), by the consideration that, after all, the most ancient Egyptian works which time has spared to us are probably 6,000 years subsequent to the infancy of Egyptian civilisation, and that what we consider as the first productions of Egyptian art are, in fact, those of its decline. We can hardly see, however, that this renders the fact of the subsequent reverse progress towards heavy proportions any more easily explicable; and the generalisation seems hardly in accordance with all the facts. There is, however, a point in its favour made by the schedule of the dimensions and dates of the principal obelisks, showing that the later ones are considerably heavier in proportion than the earlier ones. In regard to the obelisks, which are very briefly disposed of, the author gives no hint as to their phallic origin, which, in view of some of the painted decorations of the Egyptians, is incontestable; though the remembrance of their original meaning may no doubt have faded away, as is often the case in regard to symbolical features in architecture, at or before the period when they became most frequent and important as architectural adjuncts.

A point in regard to Egyptian architecture which is of some interest at present is the presence or absence of proportional relation in the parts of buildings,—a subject to which M. Lesueur devotes a chapter, though observing that "this fundamental principle, fruitful in good results, will be more conveniently treated when we come to speak of Greek art." As the existence of proportional relations in Greek architecture is not to be doubted, and as it is a part of M. Lesueur's creed that all Greek art is derived from that of Egypt, he is (to adopt his own way of speaking of another architectural writer) under a kind of necessity to find proportional relations in Egyptian architecture. M. Lesueur distinguishes three principles or orders, which he calls "*mode hexamétrique*," "*mode heptamétrique*," and "*mode octométrique*." The *mode hexamétrique* is illustrated by the Temple of Neptune at Pæstum (which we presume M. Lesueur regards, therefore, as directly Egyptian in its origin and proportions), and is thus stated:—

Cornice (including torus moulding)	1 module.
Architrave (including *dé* beneath it)	1 module.
Capital	1 module.
Shaft of column (including the base)	3 modules.

The principle being, says the author, the extremely simple one that the square part of the order is precisely the half of the circular part. Now this seems, no doubt, a very simple statement, and one easily to be verified; but, at the very outset, the author seems to fall into the confusion of statement and calculation which appears to be the fate of all persons who meddle with proportional theories. He states the theory in terms, as one may say, of an Egyptian temple, and then illustrates it by an example of a Greek one which does not fit the description. It is needless to observe that there is no *dé* below the architrave in the Pæstum temple, and no base to the columns, both features being portions of Egyptian architecture, and not of Greek; and, of course, the capitals do not occupy the depth of one module, or anything like it; they appear, in fact, to have no commensurate ratio with the other heights. Hittorf, in his comparative table of proportions of Doric orders, divides the Pæstum order into five parts in height, so that it would on his theory be pentamétrique, but the capital does not fit into that either. There is no doubt, however, that it is much easier to believe that such simple proportions as these, whether in Egyptian or Greek architecture, were intentional, than to believe some of the fractional and utterly disproportionate numbers which are brought before us by other theorists on Greek architecture, as matters for implicit faith. The *mode heptamétrique* is supposed to be illustrated in a temple at Medinet-Amoud at Thebes. The order is divided into exactly seven parts in height, but M. Lesueur does not give us the relative heights of the parts, only he tells us that "the diameter" (of the column, we presume) "is rather less than a module," which is, of course, only another way of saying that there is no proportionate relation between the diameter and the heights, that relation being an integral part of the before-named "hexamétrique" order. But when the diameter cannot be made to fit the heights, then it is discarded as of no consequence. The octométrique order is, says M. Lesueur, the most ancient, and consists of columns of six diameters (the author says "modules," but a diagram in another part of the book shows that he does mean diameters here, though he is quite indifferent about them in the last-named case), architrave of one, and cornice of one. He names the temple of the Wingless Victory as a Greek example; but neither is this correct, unless we take the six parts from the shaft of the column only, and add the capital to the architrave, which is not the method employed in other examples cited. As in so many other cases, these proportional quantities can only be made out by continual manipulation and modification of the data. What is of more interest to us is the reference to the ancient rock-cut tomb at Giseh, which, according to the author, exhibits these special proportions, but which is of interest otherwise, as showing an example of what is evidently a very early form of lotus capital, and also as showing what M. Lesueur states to be the early and originating form of the *dé* interposed between the capital and the architrave in Egyptian architecture, and which is here shown as a downward projection worked out of the architrave; or, more correctly, the soffit of the architrave is hollowed between its bearings. The space between the main soffit and the capital is, however, much less than the usual thickness of the *dé* in later Egyptian architecture, and the object of the hollowing of the soffit is obviously to remove from the edge of the bell capital any weight that might tend to split its edges, and bring the whole bearing of the architrave over the solid centre of the column, in a manner perfectly in accordance with logical and scientific construction. If this was the habitually-used earlier form, it will be very readily seen how the labour of cutting away a part of the soffit, even for a small thickness, over the whole bearing of the architrave, would before long be abandoned for the easier expedient of placing a *dé* between the capital and architrave, and how it would seem almost necessary, when treating the *dé* as a separate piece, to give it more mass and thickness. Regarding this as the origin of the *dé*, M. Lesueur considers that it must always be counted with the architrave, and as a part of it (even after it had ceased to be actually so) in any calculations as to proportionate heights. This provision may facilitate the student in eliminating proportional heights in a probable manner in some instances, and may just as probably be an additional difficulty in other instances. What strikes one in looking at the matter from a constructional point of view is, that it is curious the Egyptians should not have seen from the first how much more easily the object could have been accomplished by leaving a small projection solid on the top of the bell of the capital, just thick enough to clear the bearing of the architrave from the edges of the bell. Another point which is suggested in the chapter before us, and which is really worth consideration, is that it was a general principle in ancient columnar architecture that the greater the number of columns, or, in other words, the longer the colonnade in proportion to its height (which seems to us a better way of putting it), the closer proportionally will the columns be placed ("plus les colonnes sont nombreuses, plus elles sont serrées"). We should doubt if this could be reduced to a mathematical principle, but it is allied to a true feeling for picturesqueness and balance in composition.

There can be no question as to the close historic relation between Greek temple architecture and the small temples *in antis*, as they may be called, which are found in different parts of Egypt, which are in their plan and general disposition almost Classic in character. They form, perhaps, the most obviously direct link between the architecture of Egypt and that of Greece, as to the close relationship of which general, however, M. Lesueur expresses himself in the most positive manner. His summary of the whole book on Egyptian architecture is given thus:—

"Les règles de l'architecture Grecque ne se trouvent point en Grèce, mais en Égypte.

L'art Égyptien contenait en germe toutes les beautés de l'art Grec, tandis que les arts de la Chine et de l'Inde sont, au contraire, condamnés à une perpétuelle enfance."

This may be carried a little too far, possibly, but, on the whole, we are disposed to think that it is very near the truth.

The author's general treatment of Greek architecture and the derived styles we propose to consider in another article; but we will anticipate one point in that part of the book, which we do not wish to quit the subject this week without saying at once what we have to say as to the criticism, or rather attack (for we can hardly call it a criticism), which M. Lesueur has made on Mr. Penrose's measurement of the curves of the Parthenon. We have looked carefully again over Mr. Penrose's book, his facts, and his arguments derived from them, and are quite convinced that his position is unassailable, and that M. Lesueur's attack is entirely uncalled for and ill-considered. M. Lesueur has the bad taste to suggest that as Mr. Penrose went to Greece under the sanction and with the assistance of the Dilettanti Society, he was "under a necessity to find the curves," a remark which we can only characterise as a specimen of the flippant impertinence which is only too familiar to those who are in the habit of reading French criticisms of the works of men of other nations. Mr. Penrose had, in fact, become perfectly conscious of the existence of the curves before his second visit to Greece, which was made not to "discover" the curves, but to measure them and ascertain their precise nature; which he did with an accuracy of which M. Lesueur cannot pretend to discredit. The explanation given by M. Lesueur is that the curves are all the effect of settlement, and he is foolish enough to hint that nothing could have been made of them in Mr. Penrose's book, except by a very exaggerated vertical scale, such as is there used, and which he says produces a line "brisée, tortueuse, comme produisent naturellement les tassements inégaux une ligne ne ressemblant à aucune courbe ayant un nom." Perhaps M. Lesueur will be good enough to tell us in what manner he would propose to exhibit on paper of the size of a book a curve rising to 4 in. or 5 in. only in more than 200 ft. (as the flank curves do) without "greatly exaggerated vertical scale," or whether he wishes to insinuate that Mr. Penrose is the first draughtsman who used such a scale for such an object? It is odd that he does not see that the first part of his sentence itself precludes the answer to the last. *Because* a vertical scale is greatly exaggerated, because the slightest settlements and displacements have been measured by Mr. Penrose's conscientious and minute accuracy, therefore the line necessarily exhibits the slight deviations owing to displacement of the masonry in the most exaggerated form. But when M. Lesueur says that the line resembles no curve whatever, we have only to appeal from his representation on the vertical scale (which M. Lesueur so absurdly treats as if it were the actual representation of the curve) to Mr. Penrose's figures, which no one, we take it, will be hardy enough to contest; from which we see that the curve of the steps on the west front hardly differs anywhere by the ·008th of an inch from the calculated arc of a circle which it is said to assume: and the lines of the other faces do not differ much more, except in one place where the old sub-basement or the rise of the ground has apparently interposed obstacles to the completion carrying out of the line as intended. We never heard of curves of settlement assuming any degree of mathematical accuracy; and we would also ask M. Lesueur to explain how it is that the joints of the steps are found to be radial to the curve, and that where they are at all open they are always in the lower part of the joint, and not in the upper part, which latter would be the necessary and obvious result if the curve resulted from settlement at the angles of the building. M. Lesueur would next have to explain why the return sides of the abaci are not plumb and why their minute divergences are all in one direction in the columns on one side of the centre, and in the opposite direction on the other side of the centre of the front

to mention a number of other minute points ending in the same direction; and he would, haps, finally explain to us how it comes pass that an upward curve is found on fronts of the following temples:—Jupiter pius, the steps or podium of the earlier henon, the Temple of Theseus, and the ples at Nemea, Segeste, and Pæstum; and it is, if the curve is the effect of settlement, all these temples have settled at the angles, re there is least weight, and not under the re of the pediment, where there is most ht? We recommend gentlemen who have us correspondence in support of M. Lesueur nsider carefully these facts, and others which will find in the pages of Mr. Penrose, the racy of whose conclusions, we imagine, they ld hardly have impugned if they had been erly acquainted with all his facts and all the s of his argument; and in regard to M. ieur, we must express our conviction that r he has only very partially studied the sub- or else that the real motive of his attack he fact that the discoverer of the Parthenon es was not a French architect.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

PROFESSOR EDWARD M. BARRY, R.A.

EARLY RENAISSANCE.—BRUNELLESCHI.

N previous occasions we have traced the ence of Classic reminiscences in the Gothic itecture of Italy, a system which seemed e compounded of rival styles, and in which ntine, Lombardic, and Romanesque ele- ts contended for the mastery with Gothic s derived from German or Northern sources. may now pass on to the time when Gothic laid aside as barbarous, and the whole ligence of the nation was concentrated on vived classicalism of literature and art. ediæval traditions, and interest in the archi- ure of the Middle Ages, have never been gether lost to ourselves, although the great issance architects of England, Wren and o Jones, had little respect for it. Our le were conscious of growth, and did not amongst the shattered fragments of former ness.

e Italians, on the other hand, broke at and as it would seem, for ever, with io architecture. Intent upon the revival of glories of imperial Rome, with a freedom sed to the Mediæval spirit, they soon came islike the Gothic of the Middle Ages, and to esteem it barbarous.

is feeling has continued, more or less, to own day, and we find Milizia [who died in], expressing his opinion, in no measured , of the architecture, which, he says, lined under Constantine into a heavy dis- ortioned style, improperly called Gothic." dds, "that in the tenth century, it again ged, and, from the excess of heaviness, med an equal excess of lightness; every was perforated and embattled: this was d the Modern Gothic, or, for distinction, the tic. It revived again in the thirteenth and eenth centuries. Finally, arts and science n arose in the fifteenth century, and Greek- an architecture with them; or, to speak correctly, an admiration for them was ndled."

riting, afterwards, of Arnolfo's work at ence, to which we shall presently return, he :—"This architect showed some slight pses of good taste. The same may be rved of the painting of Cimabue, his con- porary. But in everything, physical as as moral, the progress to excellence is by nsible gradations. The corrupt style, called *co Tedesco*, was continued for some time r that of which we are writing."

may seem strange to ourselves, fresh from Battle of Styles, and the Gothic Revival, ur own time, to find the ultimate decision ivilisation thus calmly assumed. We, too, had,—perhaps have now,—mere fashions our art. An age which, from circum- ces not of its own choosing, has no one led style of its own, must always be exposed acillations in taste as regards architecture; in respect of it, there is no court of appeal. ure, to which the painter and sculptor may r with confidence, has no infallible judgment ive upon a scientific and technic art, such hat of the architect.

* Fourth lecture. See p. 193, *ante*.

The revival of Mediævalism, which we have witnessed in England, has dealt with graver matters than outward architecture, and has aimed at the renewal of a spirit without which the return to ancient types in the mere fabric of our churches, would seem to its more enthusiastic supporters a mockery and a sham.

A time of religious activity has sought to make amends for past coldness and neglect. Society, busy with new scientific play-things, may perhaps have even come to suspect that the road to happiness is not really to be found in what men fondly term the progress of civilisation. They will still turn from the latest philosophies,—the newest science,—to the old eternal truths, which have brought comfort to countless thousands,—and they have thus been apt to think that, in copying the ancient architectural forms, they might grasp the essence of the child-like faith of olden days.

A mere retrospect will, however, fail to satisfy. Life requires more than a worship of the past,—an attempt at an impossible resuscitation. If it should prove beyond our power to endow the revived Mediævalism of our day with the vitality of progress; if it should, on the contrary, appear that the spirit of the Middle Ages has passed away from us, never to return; may it not happen that our descendants will regard the merely formal revivals of the present time with as keen a criticism as that which, on the one hand, once pronounced Gothic "barbarous"; or, on the other, declares the Renaissance "pestilent"? Already, it might seem, from various signs of the times, that the approach of such a feeling might soon commence to make itself felt.

The Early Renaissance architecture may be studied, according to two types. One of these is more affected by the work immediately previous to itself, than is the other. We may take the Certosa at Pavia as an illustration of the one school, and the works of Brunelleschi as examples of the latter.

As we have seen the Italian Gothic tinged by Classic traditions, we shall now find the Early Renaissance, of the first type, affected by Gothic principles of design.

We have, in the Certosa, a building of great richness, with varied details, many of them very beautiful, but with a complete absence of repose. The contrast, in this respect, with the Duomo at Florence is very remarkable, in the case of buildings erected nearly at the same time. The same may be said, although in an opposite sense, of the comparison between the Certosa and the neighbouring cathedral of Milan. No two buildings can be more unlike, although commenced at about the same date. The architects of the Certosa borrowed features, without scruple, from the rival styles known to them. We thus find the beautiful arcaded galleries surrounding the upper part of the semi-circular apses, which are familiar to us, in Lombard churches; and of which examples may be found, as I have before said, rendered into Northern language, in the early buildings of Cologne. Circular arches prevail in the windows, but the pointed form is also represented. The turrets, with their spirelike tops, give a considerable effect of verticality, while the enriched cornices assert the horizontal principle. The elaborate structure, half tower, half dome, which covers the intersection of nave, and transepts, has a special interest, as being one of the few existing examples which enable us to form an opinion of what might have been the treatment of the dome by the Italian architects of the Middle Ages. It was evidently designed in accordance with the tradition of the day, altered by an admixture of details intended to be classical. We find it composed of successive stories, of small columns and arches, gathered inwards, till the summit could be crowned by a small octagonal cupola. The general effect is fantastic, and cannot be commended; but it is interesting, as illustrating an attempted compromise between the Mediæval lantern spire and the dome, which latter form was soon to be considered, in Italy, the only permissible mode of covering a great church.

Taken altogether, much cannot be said in favour of the Certosa, in an architectural sense. It is inconsistent, and its details are wanting in purity of style. Nevertheless, admiration may fairly be bestowed on many of its parts, such as the delicate arabesques, in the pilasters of the chief façade, which, though more appropriate to the painter's than to the sculptor's art, exhibit a refinement of design and execution which has seldom been surpassed.

Scarcely any other single building illustrates, more clearly, the confusion of ideas which ushered in the Renaissance. The movement was one of vigorous individuality in details, without the controlling authority of a strict general design. The Italians delighted to believe that their artistic creations were unrivalled, and strove after originality of ornamentation rather than for classical correctness, so prized and over-estimated by their later architects. At the same time they turned their eyes to the antique as the real shrine of all that was best in art, and sought to engraft Classic details on Mediæval plans.

If we turn aside from the many incongruities of the Early Renaissance, and often feel that in attempting fusion, excellence, on either hand, has been missed, we may remember that it was a time of experiments; of essays, rather than achievements. The designs of the period exhibit a life and elasticity which might have been turned to better account, and with the greater knowledge of the past possessed by modern architects, it may not be too much to hope, even yet, for a skilful adaptation of a style, based upon the works of the first period of the Renaissance.

In turning from the Certosa to the cathedral at Florence, a great difference is at once manifest between the style of the pseudo-Gothic architects of the Lombard district and the semi-Classic designs, which passed for Gothic on the banks of the Arno. The Certosa was commenced about the year 1396, and Arnolfo died at the commencement of the same century, leaving the arches of his great church unfinished, and his plans for finishing its dome, or domes, altogether uncertain. The completion of this remarkable building was left to Brunelleschi, who finished the dome, just before his death, which occurred in 1444. At this period the Certosa had been all but completed, with the exception of the western front, which was not commenced until 1473.

The Florentine church differs, in almost every particular, from the Certosa. Although the pointed arch and other Gothic details are used, it has not the appearance of a Gothic building, from the largeness of its parts, the absence of vertical features, the poverty of its details, and the flatness of its large spaces. The skyline is as simple as that of the other building is broken and confused.

Arnolfo is not, of course, responsible for its present appearance, and he might have intended to finish the central area, now covered by Brunelleschi's cupola, in a manner more consonant with Gothic custom. If so, he had prepared many difficulties for himself by the adoption of the enormous dimensions of the plan. It is believed that he lived to see the erection of his building carried out, as far only as the springing of the vaulting of the nave roof, and that this vaulting, and the semi-domes of the tribunes, round the choir, were executed by others, from Arnolfo's designs, early in the fourteenth century, so that they must have been completed before the Certosa was begun.

From this point, there seem to have arisen doubt and delay. The foundations of the church had been laid more than a century before the vaulted roofs were finished. The citizens, who, on that occasion had thronged the site, had been succeeded by others imbued with different ideas. The architect had passed away, his plans, if matured, had been forgotten, and the great question of the day with the Florentines was, — "How to finish the cathedral?" or Duomo, as it had come to be called.

It may perhaps excite astonishment that any doubt should exist as to the intentions of the architect. For so great a work, it might be thought that drawings or models would be previously prepared and carefully preserved. That something of the kind existed is probable, as Vasari speaks of Arnolfo's model, and others, which were lost by the carelessness of the persons who directed the works after Arnolfo's death.

The uncertainty and the loss of the architect's designs for this, and other buildings of olden days, is less surprising than a similar occurrence would be amongst ourselves. Our lot has been cast in times of high pressure. Time is grudged for even our greatest works; and the first question asked of an architect in commencing a building is,—"When will it be finished?"

With everything hurrying about us, with knowledge increasing, and with tastes changing, we will not trust posterity. All must be finished and complete, and we seem separated for ever from the simple faith of those, who were content to take the first step in a noble work, happy to

do their best in their little span of life, and then leave the completion to their successors.

To us, then, it is difficult to understand the perplexity of the authorities and people of Florence (for the people, too, had a voice in the matter) as to the completion of their magnificent cathedral. We may remember, however, how soon designs half realised are forgotten. They are smitten with the infirmities of all human things, and the earth is strewn with their ashes. Little more than a century has passed since our own St. Paul's was completed, and yet what diversities of opinion are we not now called upon to consider, as to the original intentions of Sir Christopher Wren?

But to return to Florence. Arnolfo had provided enormous thickness of wall, to support a great weight of superstructure. In so doing, he showed himself to be more cautious than the Northern Gothic architects, the weakest parts of whose designs have commonly proved to be the angle-piers of the intersection of the nave, choir, and transepts. He, doubtless, contemplated an inner dome at a lower level than the existing structure, and he may probably have thought of some aspiring design recalling, externally, the Gothic lantern and spires. We find something of this sort at the Certosa, and there is a purer and more perfect specimen of the same feature at Chiaravalle, near Milan. In this example, story is gathered over story by easy gradations, and the top rises boldly into the air, as an octagon lantern turret, crowned with a steep spire-like roof. Some such composition, if carried out by Arnolfo with the same character of detail as the rest of his design, might perhaps have gone some way to redeem the flatness and want of scale of the entire building. If there existed any idea, however, of realising such a conception, it was abandoned altogether at the bidding of Brunelleschi, who came to his task fresh from a visit to Rome, where he had become imbued with a spirit of devoted admiration of the works of the ancients, and determined, if he could, to imitate, if not surpass, their achievements, and so obtain a share of their fame.

A Florentine by birth, he early acquired the friendship of Donato, and with him visited Rome. This journey was the turning-point of Brunelleschi's career, and determined his subsequent taste in architecture. He seems to have been quite overpowered by the effect upon his mind, of the great monuments of antiquity. He saw, as we may be sure, more than we can now discover; for many treasures of art, of all kinds, have since disappeared. He set himself to work, with the ardour of youth, to draw, examine, and measure the remains of antiquity, which opened to him, as it were, a new source of inspiration. Vasari says of him at this time:—"He gave himself up so exclusively to his studies, that he took no time either to eat or sleep; his every thought was of architecture, which was then extinct." He adds:—"I mean the good old manner, and not the Gothic and barbarous one, which was much practised at that period."

It may be supposed that his mind was often turned homewards, and that he thought of the unfinished cathedral at Florence, and considered how the Romans would have solved the problem, as yet undecided. We hear that the Pantheon formed a part of his especial studies, and it may well be that his subsequent proposals were based upon his admiration of the simple dome of that unique building.

He neglected none of the buildings of old Rome, and made plans of temples, baths, palaces, theatres, the Colosseum, and other monuments, from which he thought he could learn the methods of the ancients. He then returned to Florence, full of the conclusions he had formed, and as eager as any modern Revivalist to extol the merits of the half-forgotten architecture of the past.

He found the authorities in the midst of divided counsels and heated discussions. Architects and engineers had been summoned from afar, and were in full debate as to how the work should proceed. Brunelleschi soon declared his opinion that the walls should be carried higher; that windows should be pierced in the upper parts of the walls of the octagon; and that the dome should be commenced at a much higher level than Arnolfo had intended. While making these suggestions, he seems to have kept back his explanation of the actual methods to be adopted in carrying them into execution. They were consequently declared impracticable by rival competitors for popular favour, and appeared little likely to be approved. In the multitude of counsellors there seemed to many to be wisdom, and in the fierce discussions of the Florentines over the design of their cathedral, we may perhaps recognise some likeness to the deliberations of the often-distracted and puzzled competition committees of our own day. In such competitions there is too often an inherent weakness. In examinations for Honours at our universities, and in the competitive examinations of our public offices, it is the learned who try the learners, to ascertain their prowess. In architectural competitions it is too often the case that these conditions are reversed, and that real knowledge goes for little against more showy qualities. Designs, carefully considered, are submitted to committees, every member of which would probably confess his ignorance of architecture, and the reputation of a lifetime is imperilled by a popular vote.

From such decisions, there is practically no appeal. The most apparently clear and precise conditions of competition often prove to have been drawn up, only to be disregarded by their framers, after they have served their purpose in obtaining designs from too trustful architects. Even in the most conspicuous competitions, called for by the Government, for important national buildings, miscarriage of justice is not unknown. Competitors, who have furnished designs on the strength of definite promises, and in full confidence of fair play, may find themselves treated with the most obvious breach of faith by those who, having obtained the fruit of their labour, and retaining the same, ought, it might seem, to have regarded themselves as the pledged supporters of justice and equity. The competition, if we may call it so, at Florence, ended, as many have done in later times, in discord and confusion; and, at last, Brunelleschi, who had again withdrawn to Rome, probably in some disgust, was entreated to return, and carry out his plans.

It is curious to note the proposals, brought before the authorities, by various competing architects and engineers, as an indication of the helplessness, in matters of construction, which then prevailed in Italy. It would almost seem that the works of the Roman age had been quite forgotten, and even such buildings, as St. Mark's at Venice, and the cathedral at Pisa, overlooked. The Byzantine architects of the East had dealt with the problem, in their own way, as long back as the days of Justinian, and, in the first century, had given to the world one of the most beautiful domed buildings in existence, in the church of Sta. Sophia. The dome, in that example, though of smaller dimensions altogether than that of Brunelleschi, is far more effective, as a work of art, and exhibits also a greater skill in scientific construction.

At St. Mark's, the size of the building was too small, probably, to be much considered, by the disputants of Florence; and though the Venetians had always maintained some connexion with the East, by reason of their trade and maritime power, such communications were special to itself, and had little influence upon the rest of Italy. The would-be completors of the Duomo at Florence were, consequently, thrown upon their own resources, and the expedients proposed by some of them, had at least the merit of originality.

The great question was the need of scaffolding, or internal supports, for so vast a dome, while in process of construction. To meet this difficulty it was even proposed to fill up the space with earth, in which money should be imbedded as the mound rose; and that, on the completion of the work, permission should be given to the people to fetch away the earth, and keep all the money they could find. This may, perhaps, be described as the first proposal of a lottery in its simplest shape, and it had no doubt attractions for an Italian populace, for which such games of speculation have always had a special fascination. The Florentine idea had no results, but the lottery mania has never died out, and we have lately had a proof of its vitality in an unlooked-for manner, and from a quarter whence it might not have been expected, although it has not, in that instance, been applied, as it might have been, to the assistance of the public purse, in the removal of buildings, no longer needed.

When the above scheme failed to commend itself for approval, other proposals were made for the erection of a central column, or of several internal piers, with arches turned from them, to support a massive scaffolding above, on which the cupola might be raised. It was declared impossible to erect the latter of stone or other solid material, and cysteolite, or sponge stone was suggested, as an alternative.

Brunelleschi appears to have listened to the proposals made, with ill-disguised impatience and, at last, roundly declared that they were worthless, and that the dome could be built without such contrivances, and with no sacrifices of solidity of material, or of architectural grandeur. He soon shared the fate of those who are in advance of their time, and was voted a dreamer and a madman. He was laughed at as a simpleton, and told to talk of something which he understood, so that he complained that he could hardly pass through the streets without being pointed at, and hearing the exclamation, "There goes that fool."

In the end, however, the Florentines had to claim the assistance which they now despised. The question was referred to the syndics of the woolworkers and the wardens of the church, and they were unable to find any proposal on which they could agree. In their difficulty they turned again to Brunelleschi, and requested him to lay before them his detailed proposals. It then appeared that he had carefully considered the difficulties of the case, and had already matured plans which he was ready to pledge himself to carry out. His written report to the syndics and wardens contained a full description of his ideas. He alludes to the large dimensions of the building, both in width and altitude: the diameter of the dome being 137 ft., and the height 280 ft. In the case of the Pantheon at Rome, or the Rotunda, as it was called, the width, although greater, being 145 ft., was scarcely exceeded by the height, which was only 147 ft. The dome of Sta. Sophia had a span of only 100 ft., with an altitude of 175 ft. Both those domes were circular in plan and section, but at Florence the problem was how to cover an octagonal space in a building of Gothic architecture, and with pointed arches. Brunelleschi decided that the dome should be octagonal on plan, so as to suit the walls, and that the section should be pointed, that being, as he said, "The form which displays a rapid tendency to ascend, and, when loaded with the lantern, each part will help to give stability to the other."

By this design, a certain harmony was doubtless secured between the plan of the church and the domed roof over it; but, nevertheless, it cannot be said of Brunelleschi's work that it has solved the problem of a Gothic dome. In the neighbouring baptistery there is an example of an Early Pointed dome of octagonal plan, which may well have served as Arnolfo's model in the general design of his far greater work. There was, therefore, no novelty, thus far, in Brunelleschi's suggestions, beyond the scale of the work. His originality displayed itself in the proposal of great height. This was a departure not only from what are understood to have been the intentions of Arnolfo, but also from architectural precedent, as far as it applied to dome construction. By raising the drum, or story, beneath the dome, Brunelleschi evidently desired to obtain a grand external effect, as well as a noble completion of the interior. This has been the aim throughout of the Renaissance architects, and it brings their practice into strong contrast with that of their predecessors. The dome of the Pantheon is perhaps one of the grandest in existence, and if we could see the interior with its ornamentation, as it was originally designed, it might pass for one of the most magnificent in the world. It has, however, no external effect, and, indeed, is scarcely visible from the outside. The internal design has been the only point considered, and the dome, built of a single thickness, has no external covering or decoration. The centre, where the subsequent architects placed their lantern, adding thereby enormously to their constructional difficulties, is here open, and through the void space the light streams inward, giving a simplicity and sublimity of effect which has never been surpassed by any other method of lighting an interior. The Renaissance architects adopted different arrangements, and did not therefore derive direct inspiration from the Romans in respect of their treatment of the dome.

Nor was the case otherwise with the Byzantine buildings,—with the exception, perhaps, of St. Mark's, Venice, a structure which is in many respects unique, from the peculiar circumstances of its erection. At Sta. Sophia we find a building domed throughout, as

ich is, to my mind, the noblest architectural rior I have ever seen; but, here also there o attempt to make the dome an external ure of the building. The adoption of curved s, throughout both plan and elevation, gives Sta. Sophia a completeness of effect as a ed structure which cannot be claimed for lings which adopt a dome as they might other form of roof for covering a part of the interior. In this case there is ort of incongruity. We have no square ectangular nave or transepts, roofed over urved forms. Curvature is of the essence he plan, and we see at once that a domical pletion is the most obvious and natural od to be adopted. The eye passes with ght from the walls to the roof. Niche-like ses lead to semi-domes, and these carry interest upwards, till it culminates in the t central cupola, the whole forming one of most beautiful,—perhaps the most beautiful, rks of domical architecture in the world.

St. Mark's the domes are more numerous, less successful; indeed, the visitor thinks of their architecture, in comparison with ilded mosaics, with which they are covered. is respect, the contrast with Sta. Sophia is great, for in the latter case the mosaics been whitewashed over by the Turks, who the building as a mosque. If such a arism had been perpetrated at St. Mark's, would be found little in it to admire. We altogether, the congruity between plan section, of which Sta. Sophia is so striking ample; and the minor domes act rather as s to the central cupola, than accessories, ng up to and enhancing the effect of the feature of the design.

is worthy of remark, however, that at St. 's, we find an essential difference of exl treatment. The dome had hitherto the actual crown of the building. interior surface formed the ceiling of hurch, while the exterior was a visible to resist the weather. At St. Mark's we with domes which have become mere gs, constructed at a lower level than the ior leads us to expect, and covered with roofs, having no relation to the forms th them. This was the method of Gothic architects of Northern Europe, h they did not adopt the fantastic shapes we see at Venice. The groining in our Gothic cathedrals is not the roof, in the that the dome of the Pantheon is the f that building. Such groining requires to otected by an outer roof of woodwork, ed with lead, or other weather-resisting rial.

s circumstance has led to the partial uction of many fine monuments, and its sity is therefore to be regretted. At the s of Parliament, the roofs are all formed n-combustible materials, and there can be doubt that such a mode of construction t be adopted in our most important buildhand applied, when possible, to those which sire to uphold, and hand down to posterity. nelleschi's work is rather an octagonal with curved sides, than a dome, in the sense of the word. He adopted the ern method of double construction; but o little difference between the inner and sections, that the whole might be con- d a single design. By this arrangement, ained the opportunity of availing himself whole thickness of the double section, at oints where special strength was necesuch as the eight angle ribs. Between the , he placed piers, or internal buttresses, n each bay, to give stiffness to the filling he compartments, and to serve as counter- to the thrust of the arch. Between ter and inner cupolas, Brunelleschi a circular ring or bond. This rmed of strong beams of oak, fastened er with iron. It served to tie together rious portions of the fabric, and to give octagonal form the support which could ived from the arched or circular form of The dome, in fact, became a structure, r on plan, with extraneous parts added to rcle, so as to become an octagon. The r bonds were used at about 18 ft. apart, he dome was carried up to a certain in this manner, without scaffolding or l support, to the confusion of those ad advised the costly and elaborate expe- before referred to. In Brunelleschi's he does not, however, venture to e a full completion of the work without scaffolding. He only undertakes that it shall be carried up to the height of about 60 ft. From this point upwards, he says, it may be continued, "after such manner as shall be determined on by the masters who may have to build it, since practice teaches us by what methods to proceed." For the lower part he advised the use of hard stone and marble, and for the superstructure, brick or spongite (spugne), for the sake of lightness. It is curious to mark the reserve which Brunelleschi exhibited in his suggestions. He had not forgotten the contempt with which they had been at first received, or the insults which they had brought upon himself. He seems for the future to have contented himself with pointing out the step to be taken at once, while leaving his future intentions vague and undescribed. The Florentine authorities did not thoroughly trust him, for they associated with him Lorenzo Ghiberti, known to us for his famous gates to the Baptistery, and who appears to have enjoyed in some respects a fuller measure of their confidence. We find Brunelleschi, brooding over this mark of distrust, preparing his models in secret, and referring objectors to Ghiberti, as to difficulties which he felt sure he could not solve. At last, he succeeded in getting left alone, and was appointed sole architect of the fabric for life, with an annual allowance of 100 florins. At this time the cupola was but partially completed. The rest was superintended by Brunelleschi alone, who conducted the works henceforth with such solicitude, that it is said there was not a stone laid in the building which he had not personally examined.

The cupola thus proceeded, and as it rose the reputation of its architect increased with it. In order to facilitate the progress of the workmen he erected a scaffolding inside the dome, although there is no record of the use by him of any centreing for the arch. On this scaffold he placed, amongst other things, wine-shops and eating-houses for the workmen, so that the latter should not lose time by descending for refreshment.

The citizens were now eager to honour the man who had once seemed to them a fool, and he was accordingly appointed one of the *Signori*, or magistrates.

At length, as he was approaching his seventieth year, the two cupolas were all but finished, and nothing remained but to add the lantern, above the circular space, or eye, at the top of the building. In accordance with his usual dilatory custom, Brunelleschi had left this matter unsettled, and while he was engaged on the models of this final detail of his work, the end came.

After his death the models were disregarded, and laid aside, and the present lantern was added by others. A commencement had, however, been made by Brunelleschi, on a grander scale, so that many doubted the wisdom of loading the dome at this point with so much weight.

Brunelleschi died in 1446, at the age of sixty-nine, and was buried in the church to which he had devoted the best years of his life. His epitaph declares him famous, as the restorer of the practice of ancient architecture, and he figures, therefore, worthily in the list of the Fathers of the Italian Renaissance. He found the Gothic styles of Italy in vogue, but to him the glories of old Rome were the guiding star of his architectural life. He left nothing undone to promote the change to that, which he considered the more perfect way, and when he died, his mantle fell on other great artists, who were henceforward to conduct the movement, and whose works will claim our attention hereafter.

If we are to form a just estimate of Brunelleschi's skill, we must not forget the small amount of constructive ability shown by the architects of his day. It is a great stride in scientific building, to the Dome of Florence from the petty arches of the Italian Gothic, which required to tie even such pigmy structures as the tombs of the Scaligers at Verona with iron bars.

As an example of clever building, therefore, the cupola deserves all the praise it has received, and it is none the less interesting, because it is impossible to suppose that another like structure will ever be erected in a similar manner.

Construction, however, is not fine art, any more than engineering is architecture; and, to most persons, the effect of the great dome is disappointing in an artistic sense. As regards the exterior, it may be doubtful whether an octagonal structure on so large a scale is not a mistake. A circular dome, if beautiful at all, is beautiful from all points of view. St. Paul's, and to a somewhat less extent, St. Peter's, is a noble object, from wheresoever seen. An octagon with a curved outline, on the other hand, presents a different appearance when viewed from the front in elevation, and when seen on the angle, and it would seem scarcely possible to design it in such a manner that it shall look equally well in both cases.

It is, moreover, a less stable form than the circular plan, and we have found that Brunelleschi had to combat with self-imposed difficulties in this respect. We do not, indeed, see the evidence of these difficulties in the cupola as completed; and it may, therefore, perhaps be felt that they do not affect its beauty. There is, however, an absence of that complete satisfaction to the eye which arises from the perfect and obvious fitness which should accompany good architecture.

The dome is, moreover, too high for the internal effect of the church. It cannot be seen until the visitor is near to it, and looks up to it. In this respect, the original design of Arnolfo, springing from a lower level, would, doubtless, have been superior. The construction of a cupola, which shall be equally successful as regards both exterior and interior, has perhaps never yet been satisfactorily accomplished. The Gothic architects acknowledged the difficulty by their adoption of spires, and Sir C. Wren by his well-known expedient in the case of St. Paul's.

At Florence, we have a bold and meritorious attempt, and, if it be not perfectly successful, the grandeur of the idea and the difficulties surmounted are enough to cover the name of Brunelleschi with glory. He had been the pioneer in a great movement, and had extorted admiration from unwilling lips. His fame does not rest on a single work, for in the churches of San Lorenzo and Santo Spirito, we find further evidences of his skill in adapting Roman precedents, while in the Pitti Palace he is seen striking out a path of his own, of even greater originality.

A certain ruggedness, with massive strength and simplicity of form, distinguishes Florentine work, and in Brunelleschi's hands this was dominated by a devotion to the traditions of ancient Rome. In them, he found the inspiration which led him to apply the experience he had acquired, by the study of the baths and temples of the Imperial City, to the addition of an unrivalled cupola, constructed on Roman principles, to the unfinished structure of a Gothic church.

GERMAN POTTERY.

The Paris Exhibition included specimens, probably the best that could be produced, of the pottery of the present day of every country in Europe, with scarcely an exception save Germany. All these have been duly noticed.* Whether, in declining to exhibit, Germany was guided by a political motive, or the knowledge of short-comings, it is probable that in no section would Germany have shown to such disadvantage as in pottery, and in no other would it have been more apparent how completely she is outstripped by England and France.

German potters have occupied themselves of late years, not merely with imitating in style, but in absolutely copying English and French productions. Pieces in high relief, from which moulds or casts can be taken, have been preferred for this purpose to those with painted decoration on the flat. With no cost for modelling, cheaper material, and no duty, it is obvious that a successful competition can be carried on against the original producers. Even the Government factory at Dresden does little more than reproduce its more famous designs of the last and present century, and the Government factory at Berlin has, perhaps alone emulated the activity of invention shown by the principal potters of our own country.

Besides copying our productions, a certain number of German potters occupy themselves in imitating the Mediæval pottery of their own country. A few, however, have succeeded in modelling small animals of life-like size in terra-cotta, afterwards painted.

The potter's art in Germany of to-day is essentially imitative, and however interesting from other points of view, their pottery exhibits

* See vol. xxxvi., pp. 1217, 1243, &c.

might have been, it is probable that they would have comprised little that would be artistically distinct from the exhibits of other countries, except the reproduction of their own Mediæval styles already alluded to. The originals of these, however, possess such great interest, and so little is generally known respecting them, or indeed about German Mediæval pottery generally, compared to the careful research made into the history of that of Italy, France, and Spain, that some notes respecting it may be of interest. The history and the productions of the still existing Berlin and Dresden factories are so well known that they are not here referred to.

The study of art-pottery productions of Germany have received so small a share of attention that perhaps one of the great surprises which awaits English art-students travelling in Germany for the first time, is to find such magnificent specimens in so many towns. There is nothing to lead them to expect this. Guide-books ,which duly draw attention to buildings of note and to picture-galleries, pass over pottery in silence, and none of the writers on the history of pottery had taken notice of German work till M. Demmin* studied and drew attention to it. Italy, Spain, France, and the East, have almost entirely absorbed the attention of the connoisseur. German pottery, however, well deserves careful study, more even than the Germans themselves have given to it. There are important tombs and pulpits of pottery and enamelled tiles in churches; large stoves of pottery in public buildings; and numberless productions for domestic use of the greatest interest, in museums. Although the largest productions remain in Germany itself, both our British and South Kensington museums contain few but choice specimens.

One general feature will be found in all the productions, in whatever part of Germany they were made, and that is the characteristic way in which the national tone of thought is reflected in the decorations and designs of pottery, just as it is in painting and architecture.

While the mythologies of Greece and Rome have given inspiration to most of the designs introduced as ornament by Italians, German decorations are based on Scriptural or national histories, and classical subjects are rare.

M. Demmin is the only writer who has studied the pottery of Germany collectively, and he has divided it into five groups: (*a*) the Saxon, (*b*) the Franconian, (*c*) the Suabian, (*d*) the Rhenish, (*e*) the Bavarian. This grouping is made on a topographical basis alone, and in no way has reference to distinct schools or styles; to materials or methods of production. He does not give his reasons for his grouping, which in some cases seems arbitrary. He has, however, so far made himself an authority on the subject that in attempting to take a rapid glance at the whole of it in one short article, we shall follow it, though there are many points on which we cannot help differing from him.

1. *The Northern or Saxon.*

In this group M. Demmin includes the productions of all Northern Germany, Saxony, Silesia, and Bohemia, and, according to him, it is in this group that we find the oldest specimens of German art-pottery known. In comparing the progress of this art in Germany with its progress in other nations, it is of interest to know that the date he assigns to the earliest specimens he has seen is somewhere between 1150 and 1200. These are the enamelled tiles from the church of St. Pierre at Rostock, now in the Nuremberg Museum; and there are at the Dresden Museum many specimens from localities along the valley of the Elbe which we believe to be of about the same period. The convent of St. Paul at Leipzig, completed in 1207, but long ago removed, had a frieze of enamelled tiles, on which were represented the heads of Christ, of the Apostles, and of saints. Three of them are preserved, and show that work in high relief, and with three shades of enamel, could be produced at this date. The most interesting and most important illustration of the perfection the art had reached in Germany by the end of the thirteenth century is the tomb at Breslau of Heinrich IV., Duke of Silesia, who died in 1290. It is in the form of a sarcophagus, surrounded by figures in bas-relief, on which lies a life-size recumbent effigy of the duke wearing a diadem, holding a sceptre and shield, and dressed in armour, over which is an ermine mantle. The colours of the enamel are natural and brilliant, and the depth of the folds of this mantle indicate, as M. Demmin points out, a great reliance on the knowledge of baking and the admixture of material.

At Lubeck, Wismar, Luneburg, and Brandenburg there are churches which were built in the fourteenth century, which have their walls, pillars, and ceilings completely covered with enamelled terra cotta. A belfry at Luneburg is entirely of terra cotta. At Dantzic there is a celebrated stove, 20 ft. high, to which is assigned the date of the early part of the fifteenth century; and at Gaug is a highly ornamented pulpit of the same date.

Coming to later times, Bunzlau has, from the sixteenth century, been noted for household vessels, among them the "cafetières," glazed on the outside only.*

The most renowned productions of the whole of this group are those of Johann Schaper, who was born at Harburg, and from about 1620 till his death, in 1670, produced exquisitely painted beakers and tankards. Originally a painter on glass, he was skilled in work of great minuteness and delicacy, and when he turned his attention to pottery he introduced a style of equal minuteness. His designs are generally in monochrome, black being more frequently used than any other colour. His style was continued by his pupils after his death. At the South Kensington Museum there are small flint-glass beakers, with black landscapes upon them, painted by Schaper himself. The drawing is of the utmost delicacy, with all the careful finish of the Dutch school. Although M. Demmin has evidently devoted much skill and patience to unravelling the history of German pottery, he is not so infallible as the strictures in his preface, upon what he considers to be the mistakes of others, would imply. For instance, the earliest manufactory of earthenware at Berlin, which he mentions, dates only to 1845, while there is a bas-relief of coloured and glazed earthenware, of the date of about 1720, and made at Berlin, which has been presented to the South Kensington Museum by the Crown Princess of Germany.

2. *The Franconian.*

This group M. Demmin confines strictly to the products of Franconia,—a very limited area as compared with that of the last group. He speaks of it as "dérivé de l'École Saxonne." The most important productions were those of Nuremburg from about A.D. 1,500 onwards. For more than a hundred years the town had produced stoves in earthenware as well as other works, unimportant from an art point of view, when Veit Hirschvogel (*b.* 1441, *d.* 1525), a celebrated painter on glass, turned his attention to the decoration of pottery. He has the reputation of having been a good chemist for those days, as well as artist and enameller. His sons, Veit and Augustin, were trained in all that pertained to his newly-adopted profession, and the latter was also skilled in modelling. One at least, of the grand-children, Sebald, also became an artist in pottery, and acquired considerable wealth. So highly was Augustin esteemed that a medal was struck in his honour. The objects produced by this family were chiefly goblets, vases, inkstands, and jugs, and Augustin also produced artistically-decorated stoves.

Stoves in earthenware with various designs of artistic skill, had long formed an important part of the pottery-work supplied by Nuremberg. Many of these are still preserved,† which are richly ornamented with figures representing events recorded in the Bible, the size being about a yard square at the base, and two yards high. Paris, Munich, Berlin, and several German towns possess examples, and we have at the South Kensington Museum two examples from Nuremberg. One in green glaze of 1600 is not a work of importance, and the other of 1630, in brown glaze, is in the Italian style, with caryatides in bas-relief. There are also a number of other objects: among them two sixteenth-century jugs, by the celebrated Hirschvogels, similar in colouring to the yellow, brown, green, and white majolicas of Minton. One has in front two woodmen gazing at a tree which they are prepared to fell, and is a clever composition in high relief. The "long-beard" jugs belong to this school.

At Berlin there are small models of stoves, and in many places there are preserved money-boxes in earthenware, which it was the custom to present at christenings. Baireuth was, from 1000 * to 1700, the seat of the production of brown glazed ware, with ornaments in relief. Kreussen, seven miles distant, produced the "Apostle tankards," from 1600 to 1690, a good example of which is at Kensington, dated 167[illegible]. Another mounted tankard there bears a procession of German electors robed, and on horseback, dated 1696; others portray bear-hunts and heathen deities. The effect of the many colours introduced in the enamelling, enriched with gilding, upon a brown glaze ground, is rich and harmonious. A small grey flagon, richly covered with incised ornament, filled in as *cloisonné* with blue, red, and white enamel and gilding, and another ornamented only in the quoise and white, are of the seventeenth or eighteenth centuries; but the place of the manufacture appears unknown, though inferred to have been Nuremberg, from their having been met with there.

3. *The Suabian.*

In this group M. Demmin embraces the productions of Alsace as well as of Suabia (as known in A.D. 1788), which includes the present Wurtemberg, Baden, and part of Bavaria as far as the Lech. The earliest preserved specimens of this group are the stove-tiles from Heilbronn, on the Neckar, decorated with figures and ornaments of Romanesque style, in high relief, which date between A.D. 1000 and 1200. The most prized productions are those which a century later had their origin in some of the smaller towns [illegible] isolated from one another in the Black Forest. Some of these works which have come down to us proclaim true artists, of whose training we know nothing, and whose names, even, are in some cases not recorded. The artistic taste, and the skill in manipulation shown, were probably, in many cases, the spontaneous development of genius, but in tracing the history of art-progress it must not be forgotten that many of the artists had travelled, and no doubt had carried home with them ideas they had picked up. With regard to Schlestadt (the modern pronunciations of which are of French character) it is claimed that it was here that glazed earthenware was invented. Schœpflin, in his "Alsatia Illustrata," has fixed the date of the death of the inventor at 1283.† There are many kinds of glaze, and it would carry us beyond the limits of the present article to discuss the claims put forth by different writers.

Stoves form here, as in the other groups, the largest productions known, and it is either in complete stoves preserved to us, or from fragments which formed part of them, that we have the best knowledge of the high excellence reached by artists in this part of Germany. Some of these are dated and some are not. We will speak first of the dated specimens. The oldest known is the grand Gothic stove made for Oberdorff, which bears an inscription stating it was made by Hansen Seltzmann in 1514. Others dated 1533 are preserved from a Gothic stove made at Pforzeim, and there are others, ornamented in relief, and marked G. W., with the date 1582, which are believed to have been made at Nordlingen. Those which are regarded as the most artistic productions of the group are the stoves of the celebrated Hans Kraut, of Villingen, in the Duchy of Baden, 1520—1595. Five complete specimens of his work and many single tiles are known to exist. We possess at South Kensington one of these stoves, a magnificent example, dated 1578, and purchased for 240*l.* It measures about 7 ft. 6 in. in height, and is about a yard broad at the base. The details of the ornament are somewhat of the Renaissance character. The chief interest, however, centres in the middle panel, which is evidently modelled by the hand of a great master, and is in the highest relief, and most judiciously coloured. It represents Mordecai in the costume of a merchant prince, on a richly caparisoned charger, and the hanging of Haman, and in its vigour and costumes resembles some of Dürer's engravings.

Besides the stoves and portions of them, there are many other objects of interest. The work of Hans Kraut is further known to us by a statuette of Justice, about 8 in. high, which is enamelled in white, blue, yellow, brown, and green. That which many have regarded

* Demmin: Recherches sur la Priorité de la Renaissance de l'Art Allemande. Paris, 1862 12mo.

* There is near Bunzlau an organ of terra cotta, but the date is not known.

† M. Demmin enumerates nine preserved in the Museum at Nuremberg.

* *Vide* Demmin.

† Enamelled tiles were produced in 1207, accor[illegible] Demmin.

t artistic work, was the magnificent tomb at church of the Chapter of the Knights of St. , at Villingen, which was erected in 1536, he memory of Wolfgang de Müsmünster. church was for a while converted into a on, when the convicts so broke the tomb that rtunately only one bas-relief, nearly 5 ft. , has been preserved. At the Cluny eum, in Paris, there is another bas-relief ph probably represents the same Grand ter. It bears the inscription, "Wolfgang Gottes Gnadem," &c., and is also probably ut's work.

t the Town-hall of Augsburg there are e large stoves signed by the artist Adam t, and dated 1620. They are ornamented h figures in high relief, and are otherwise ly decorated in relief. Stuttgart also pos- es a stove with the date 1624, which is melled, and decorated in polychrome.

f the undated specimens, there is an import- one at Ravensburg, inferred to be of the enth century, which gives in bas-relief the raits of the emperors of Germany, and there iles, besides those already named, at Heil- n, at Bebenhausen, and Nordlingen, of the enth century.

he artistic power of Augsburg potters is shown in several smaller objects besides toves of Vogt. In exploring the site of an ent convent of Carmelites at Augsburg, a ber of figures in terra cotta were found, h were supposed to have belonged to a ling of the date 1420 to 1460. They show very advanced artists were in modelling, are of interest as studies of costume. y represent such subjects as knights on back tilting, warriors, the infant Jesus, the in Mary, and various figures which, when ed by the Holy Church, were regarded as ms against illness, or as cures for those who suffering.

Schrezheim, the Wintergurst had, from r to son, from 1620 till 1810, produced curious table services in which each plate ver represents some animal or vegetable, mething else eatable.

e statuettes so plentifully made at Ulm do ate back further than about 1780. They chiefly of interest as representing the mes of the inhabitants of the country of ent classes and conditions, the treatment me of them showing a sense of humour. were the work of Rummel, a clever artist, gh a simple artisan.

4. The Rhenish.

e early productions of this group are stone- and terra-cotta, and may date from the eenth century, while earthenware produc- do not date further back than the end of eventeenth century.

der the general term "L'École Rhénane," emmin groups the works from many towns villages on the borders of the Rhine, attach- great importance to Frechen, near to ne. He claims that the productions com- y called in France and England *grès de lres*, should be known as "*Grès des bords du* "

To the name *grès de Köln*, under which are known in Germany, he equally objects. facts which he would wish to see y represented in name appear to be as ws, and it will be convenient to take his bjections separately.

have found that it is not very easy to M. Demmin in this part of his work, as rguments are not focussed, his facts are ered on different pages, and it is not made clear always to which of his Rhenish sub- s he is referring. As his matter stands ed as it is, one of his arguments would to cut equally well in the opposite way to he uses it, and another, if it has any t at all, goes rather against, and cer- not for, the point he wishes to ish.

will first take his objections to the expres- *rès de Köln*, and state them as clearly as n.

re are two points he endeavours to ish. Firstly, that there were no fabriques gne at all; and, secondly, that the so-called e ware was made at Frechen, near e. For this second point no attempt is to give any proof whatever that we can M. Demmin simply asserts "C'est Frechen rès de Cologne où la fabrication a eu For the first point there are three facts

In a foot-note M Demmin mentions that he has been much influenced in his opinion by the absence of all traces of the names of potters, modellers, and ceramic artistes in the archives and registers of Cologne, of which M. Merlo has published extracts in his "Nachrichten von dem Leben und den Werken Kölnischer Künstler," and M. Demmin says he does not believe M. Merlo would have thought potters unworthy to rank with painters, enamellers, goldsmiths, embroiderers, &c. It will be noticed that the value of this as a proof rests on the belief that M. Merlo, in making extracts, would have included potters' names if there had been any to include.

(2.) M. Demmin's next fact is that it appears that at Cologne itself no fabriques of pottery existed, because the communal council would not at this time sanction their establishment, in order that the price of wood should not be increased. It was therefore at Frechen, near Cologne, that the industry found a home. It is not stated whence this information was obtained. No indication is given of the period to which it refers. We are therefore in a position to do no more than accept it as a piece of information M. Demmin has somehow acquired, which may apply to a long or short period.

(3.) M. Demmin's third fact surely tells against him, if, indeed, it is worth anything at all. He mentions that the arms of Cologne are met with on a large number of these productions; most frequently on specimens of the early Gothic style. He introduces this to show that Brongniart was wrong about the period of the manufacture of the earliest *grès*, but if the arms of Cologne were on the productions, it seems a proof that they were accepted as of Cologne work, even if they were made at Frechen. Is the distinction really worth making? Again, in his argument further on, against the use of the term "*grès de Flandre*," he says that the first *grès* known in England was called *grès de Köln*, and not *grès de Flandre*. He mentions that the British Museum has preserved a petition, of the reign of Elizabeth, from W. Simpson to Lord Burleigh, asking for a "privilego" for the manufacture of *grès de Köln*. Why did he not write "*grès de Frechen*," if there was no such thing as "*grès de Köln*"? M. Demmin, in using this extract in support of one of his arguments, seems to have overlooked that it tells against another.

M. Demmin's arguments against the use of the term "*grès de Flandres*," we have found just as difficult to understand. But, as we have said, the elements of the arguments are disjointed, and scattered over many pages. He lays great stress on the evidence from inscriptions and subjects of decoration. Germany was "Protestant," Flanders was Roman Catholic. He says, first, that *all* the inscriptions, and nearly all the subjects and armorial bearings, are German. Then, he says, *few*, if any, of these *grès* have Catholic inscriptions or subjects. They are, on the contrary, "anti-Catholic," and the sentences are those of the Reformation, and in proof, he adduces a solitary instance,—that of a jug in his collection. If the inscriptions are to be admitted as having any weight at all, why not mention a sufficient number to establish the point? But, he continues, it seems then evident that the locality of the manufacture of these *grès* was in a Protestant country, since the Flemish Catholics would certainly not have used such devices, *but if an inscription in the Flemish language is met with, the grès was probably ordered by a Flemish or Dutch personage from the German makers!*

That there was an industry in these *grès* at or near Cologne seems established from the petition to Lord Burleigh, unless we assume the name had no locality meaning. But this does not exclude the possibility of there being a similar industry in Flanders. At any rate, M. Demmin's argument, if argument it may be called, leaves the question pretty much as it was before, even though it may be a "*choquante méprise*" not to agree with him. The whole matter, no doubt, needs further investigation, and offers an interesting subject for those who have leisure and opportunity to take it up.

Leaving, however, this controversy, and turning to specimens which have been preserved, M. Demmin has grouped them thus:—

1. *Grès brun* and *Grès gris jaunâtre*.—These are the oldest, and M. Demmin states, though without giving any authority, that they range from 1350. The oldest *dated* specimen he knows is a jug of *grès brun*, signed Engel Kran, 1444. Only three specimens of the *grès gris jaunâtre* are mentioned. One is an inkstand in the form of a Gothic lion; the second is a lamp, with figures of the characters of the fourteenth century; and the third is an inkstand.

These *grès* are whitish in colour, and very slightly glazed. The commonest examples are "canettes," handled jugs cylindrical in form, tapering from the base. They are usually entirely covered with very beautiful ornament, sharp, clear, and often with minute detail. The ornament is generally arranged in diapered spaces, subjects and arms often alternating. Besides these "canettes" are flask-shaped and flat-sided beakers, ornamented in a broader manner. These, owing to the sharpness and finish of the ornament, and the care that it is necessary to bestow upon it, are seldom reproduced at the present day.

2. *Grès gris blanc alcalin.*—The dates M. Demmin assigns for this are from 1500 to 1600, after which the art was lost. The oldest dated specimen is 1537; the next oldest is 1550; and there are several others down to 1594, which is the latest mentioned.

3. *Grès gris* and *bleu, gris-bleu*, and *violet.*—These date from 1450 down to the present time, and it is this division which contains the most artistic productions.

Although far more decorative, considerably less care seems to have been bestowed on the *grès gris-bleu* of this section. The appearance of roughness in their finish is enhanced by the alternately blue and drab ornamentation overlapping each other, which gives them a blurred outline. The ornamentation is essentially German Mediæval in character, and is composed of borders in high relief, arms, inscriptions, and subjects,—the latter most frequently of pious inspiration. It seems to have been impressed upon the clay when soft by wood blocks, and the same stamps were used repeatedly. Apart from its characteristic richness, the arms, and especially the costumes, deserve careful study. The favourite and almost only objects of manufacture were flagons or beakers, some of them of almost gigantic size. In even the largest pieces, however, the details of the ornamentation were not increased in a corresponding scale, but band upon band of ornament was added, the whole being completely covered. Further elaboration was sometimes produced by moulding a twisted ribbon round the most salient part of the jug, with the folds standing away from it. The blue colouring was for the most part reserved for the flat parts, the reliefs being left grey. The pieces that are most prized are the ring-shaped jugs, and especially those formed of two rings crossing each other at right angles.

The brown glazes are of somewhat the same, but more ordinary, character and form, and this was evidently regarded as a commoner ware.

This drab and blue *grès de Köln* or *grès de Flandre*, has, owing to the cheapness and facility with which it can be reproduced, been made in very large quantities of late years, and extensively imported into England. The amateur can readily distinguish the new from the old.

In this Rhenish group, M. Demmin includes the terra-cotta with lead glaze made at Marburg from 1500 to the present time. It is now furnished at low prices. The *grès* with blue ornaments, made at Grenzhausen, from 1600 to 1780, M. Demmin also includes in this group.

5. The Bavarian.

It is not very easy to understand why M. Demmin has made this a distinct group of his German school. He says "that which I understand by the Bavarian school are the productions of the old Bavarian towns which the influence of Tyrolean art has made itself as much felt as those of the Franconian and Suabian schools," for a large number of works of art which are to be met with in châteaux, show how the art was cultivated in the Middle Ages, particularly in the Gothic time. There is, however, nothing characteristic in the school.

Waterloo Bridge.—The works in connexion with the restoration of the footpaths and the relaying of the carriage-way have just been commenced, by direction of the Metropolitan Board of Works. Messrs. Mowlem & Co. are the contractors, and they have about 100 men at work on the footways, together with machinery for raising and lowering the heavy blocks of granite, about 8 ft. in length and nearly 3 ft. in width, which form the footpath. These blocks average from 8 in. to 12 in. in thickness, and many of them are upwards of half a ton in weight.

ARCHITECTURE AT THE ROYAL SCOTTISH ACADEMY.

THE number of architectural drawings is each year becoming small by degrees and beautifully less. By what seems now to be the established practice, they are consigned to each side of the swing-doors which open into the first of the series of galleries, behind the seats of the check-taker and clerk, who seem to spot the few who push their way into the narrow straits as professional. Very few, indeed, there be who take the trouble, and sooth to say there is little to tempt them to brave the gusts of east wind which now and again attack those who linger in this neighbourhood, but the call of duty is paramount. Presto! The church demands our first attention, and we remark that churchmen of all denominations now seem most ready to avail themselves of the practice of competition. There is consequently a strong temptation to produce something striking, and necessarily there must be a very considerable amount of unremunerative work. Some one must pay for it, and it is most probably taken out of the general public. "There is something rotten in the state of Denmark" which calls for reform.

"Ryehill U.P. Church, Dundee," Maclean & Aitken, is somewhat peculiar in style. The doorways and windows are semicircular-headed, the gables of Gothic pitch and flanked by attenuated buttresses, which terminate in pinnacles. The large window in the principal gable is mullioned, and provided with plate tracery, which spreads out like a fan, and the tower is capped by a dome. It bears unmistakably the stamp of a Dissenting church. The "New Episcopal Church, Forfar," Robert Anderson, is represented by one interior and two exterior views, drawn with Mr. Anderson's usual care and precision. The design is admirable, but we can see very little difference between it and those produced by the architect under similar circumstances for several years back, except it be the trefoil piercings in the east window, which impart a restless unsatisfactory aspect to that feature. The "Design submitted for New Free Church, Kirkcaldy," is semicircular in plan, with a recess for the pulpit in the centre of the straight line. The galleries follow the line of the circle, and are carried on iron pillars, which rise to the roof, where they are boarded over at the tie-beams. There is a continuous clearstory in wood, which is lighted by sloping skylights in the roof. The interior is satisfactory, but the exterior cannot be said to be so. The breadth is disproportioned to the length, a characteristic which is emphasised by the placing of a massive, but well-proportioned tower and spire, at one side. The logical arrangement would have been to place it at the flat end. The principal doorway, again, is in the centre of the circular sweep, and is carried up into a gablet; this also wars against the form of the plan, which is better adapted for a Romanesque or Classical style than for Gothic. Two "Houses building at Colinton" are in the hands of the architect himself, and he is at full liberty to indulge his own proclivities, but we fancy low ceilings and other "fads" will hardly meet with the approbation of even those who admire them in ancient examples. "New School at Stockbridge" is a successful adaptation of Gothic, plain and business-like. The "Sketches for Anderston Free Church, Glasgow," by Campbell Douglas & Sellar, embrace two views of the exterior and one of the interior, and are artistically got up in neutral tint. The site is a steep bank near a stream, and the building looks picturesque and unexaggerated. The style is thirteenth century, of a severe type, but the severity is not carried out in the interior, which is fitted up with galleries which cut into the piers. The clearstory windows would be better without the, apparently, wood cuspings. "Competition Design," David Robertson, consists of a church with adjuncts. The architect has hardly mastered the rudiments of Gothic detail; the spire is especially weak and ineffective. "New Parish Church, Galashiels (exterior)," Hay & Henderson, consists of a nave with aisles, transepts, and tower with spire. The usual proportions between nave and transepts is entirely departed from. They each contain three windows, and the length of the nave is swamped by the transept, which consists of three gables with large geometric windows. The tower and spire, again, are burdened by a multiplicity of crocketed pinnacles, which impart to it a restless unsatisfactory appearance. Still more exaggerated are the various features in the "Competition Design for New United Presbyterian Church, Portobello," James Fairley; towers,' doorways, windows, are all on a scale suitable for a building four times the size.

"The East U. P. Church, Dalkeith, now being erected," R. Thornton Shiells & Thomson, is represented by a delicately-lined elevation, placed so high that it is difficult to make out the detail. It is Lombardo-Venetian in style, and consists of a street-front of considerable breadth, which appears to be carried out consistently with the requirements of the site, which seems to be hemmed in with buildings on each side.

A "Competitive Design for Town-hall and Municipal Buildings, Yarmouth," W. T. Aiken, is a carefully-drawn elevation, "Neo-Grec" in style, exhibiting much refinement in detail and proportion. The dome is expressive, and has been carefully considered. The "Windsor Hotel, Princes-street, Edinburgh, in course of erection," Robert Paterson & Son, consists of an elevation flanked by oriels which rise to the cornice, above which are mansard roofs,—an arrangement which has been so frequently followed of late there that it is becoming tiresome. The detail is orthodox Italian, and the proportions are satisfactory. "Hospital for Incurables, Edinburgh," Kinnear & Peddie, is a business-like yet effective and simple elevation. The central pediment is, however, rather *petit*. The group of buildings for the "Royal Bank and National Bank of Scotland at Paisley," by the same architects, is an effective enough group in the Scottish style. Their "South-east View of Kinmouth, Perthshire," is less effective than some designs we have seen from the same source.

The "Design for the K. Murray Memorial," by Lawrence Beveridge, is after the Eleanor Cross manner, but bald and ineffective. A bust under a Gothic canopy is surely out of place. There is a bird's-eye view of the new Edinburgh Royal Infirmary, placed above the doorway where we can make nothing of it; and a coloured interior of the "Library recently added to the Royal College of Surgeons, Edinburgh," is placed equally high; as also a view of "Gala Musim House." These appear as the works of David & John Bryce.

When next the Royal Scottish Academy condescend to exhibit a number of architectural drawings, it would be well that they arranged them in a common-sense manner, and not symmetrically. As at present, they do not produce an effective *tout ensemble*, and unnecessary difficulties are placed in the way of their being examined.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, on Monday evening last, Mr. Charles Barry, president, in the chair,

Mr. T. H. Wyatt, the hon. sec. for foreign correspondence, announced the death of M. Coste, hon. and corresponding member, at the advanced age of ninety-two. He was a member of the Legion of Honour, and of the Académie Française, and architect of the Bourse, at Marseilles.* He was one of the earliest foreign members of the Institute, having been elected in 1842. He spent a considerable time in Egypt, where he was employed by the Viceroy on a number of important works. He subsequently published a very important book on "Arab Architecture in Egypt," and on his returning to Paris he was employed on some very large and important works there. Mr. Wyatt added that letters of condolence had been sent to Madame Coste and to Madame Duc, widow of the late M. Joseph Louis Duc.

Mr. W. H. White, secretary, announced the death of Mr. C. J. Adams, Fellow, of Stockton-on-Tees.

Mr. Wyatt announced that he had received a letter from Herr Lepsius, of Berlin, pressing the Institute to elect the Government Architect, Herr Gropius, an Hon. and Corresponding Member. He had carried out a number of very important works,† and was in every way worthy of the honour.

The President said that the election would take place, in accordance with the rule, at the next meeting. The Council, after inspecting a portfolio of photographs of very important buildings designed by Herr Gropius, and carried out under his superintendence, felt amply justified in recommending him to the suffrages of the members.

The following new members were elected viz, Mr. David Ross, of Dunedin, New Zealand as Fellow, and Mr. John Slater as Associate.

The President called attention to the fa that Mr. John Gibson, Fellow, had been elect Grand Superintendent of Works to the Gra Lodge of Freemasons, in the room of the l Frederick Pepys Cockerell, and in doing quoted from a speech by Lord Carnarvon, P Grand Master, some appreciative remarks as the services rendered by the late Mr. Cocker and as to the qualifications of Mr. Gibson fulfilling the duties of the office.

The discussion then took place on Mr. Ja Pennethorne's paper on "The Connexion betwe Ancient Art and the Ancient Geometry, as ill trated by the Works of the Age of Pericles. The President said that Mr. Penrose was unavoidably absent, but he had taken the pains commit what he had to say to writing, and his remarks would be read by Mr. Cates.

Mr. Penrose's paper commenced by expressi the indebtedness of all the members of Institute to Mr. Pennethorne for the long careful study which that gentleman had given the subject. So valuable and so important Mr. Pennethorne's work that he (Mr. Penro was very sorry to have to say that he dissen from some of the conclusions of the author. however, Mr. Penrose's paper is not yet availa for the use of the press, we must defer extended report of his argument, inasmuch it involved a large mass of figures and of details not reportable with accuracy quickly read.

Mr. Watkiss Lloyd said that in common Mr. Penrose and, he doubted not, many oth he could not but feel that the amount of att tion and labour which Mr. Pennethorne devoted to the subject was worthy of all miration; and, like Mr. Penrose, he gre regretted to have to say that he could not a with the conclusions arrived at by the aut Vitruvius spoke of various extensions and d nutions of proportion which had to be applie the architect, but they were nothing more the moderate alterations required for curvat and really did not affect the architectural portion, properly so called; they were me adjustments of the general design. There he did not think that such cases as referred to by Vitruvius afforded any j fication of the principle upon which Pennethorne insisted. Besides, the prin enunciated by Mr. Pennethorne was not plicable to the whole of a building, to plan as well as to the elevations. On other hand, his (Mr. Watkiss Lloyd's) princ worked out many years ago, did apply to whole of the building. In conclusion, Watkiss Lloyd mentioned that his principle explained and illustrated in an appendi Professor Cockerell's book on Bassæ and Æg

Mr. H. H. Statham wished to a say a words on the question, not so much fro arithmetical as from an architectural poi view. He protested against the indulgen a tendency to allow architecture to be ridden by figures. Instances of this tend were furnished by Mr. Pennethorne's beauti illustrated book, as, for example, in a dia of an Egyptian order divided into fifty-six of which thirty-nine went to the shafts column, three and a half to the base, and and a half to the abacus. Now, if things to be divided into such small fractions, it be quite possible to make mathematical out of the wildest Gothic building that cou selected,—there was no need to go to architecture for that. According to Mr. P thorne, Greek architects designed temples to be seen from one point in order that the proportionate ratios various parts of the building should appe be right from that point. There were two incidental to the argument to which he Statham) must take exception. Firstly, comparison was made,—"To attempt to e the reason why certain proportions should duce an agreeable impression on the eye, by universal consent they were acknow to do, is, I feel, impossible. In music w give no reason why certain harmonies and should produce an agreeable impression ear, or why many other intervals mig selected which would be discordant." N a musical man, he (Mr. Statham) could on

* Illustrated and described in the *Builder*, vol. xxxiv., pp. 169, 171.

† Some of them have been illustrated in the *Builder*.

* See pp. 173, 208, *ante*.

t that was a complete fallacy. The reason y certain notes harmonised was perfectly wn, and was capable of strictly scientific nition, in a manner to which there nothing analogous in architecture. It ld not be arithmetically proved that cer- proportions in Greek temples were essary for harmony in the same way in ch it could be proved that two notes must e a certain ratio of vibration in order to monise. The second point to which he must e exception was in reference to the alleged hority of Vitruvius for the theory pro- nded. That author was quoted as saying: nder every peculiar circumstance, great judg- t is necessary in *calculating* the effect that ultimately be produced;" the word "calcu- ng" being italicised in Mr. Pennethorne's tation. Now, the original ran thus:—"Cum constituta symmetriarum ratio fuerit et mensus ratiocinationibus explicati, tum m acuminis est proprium *providere* ad uram loci aut usum aut speciem et detrac- ibus vel adjectionibus temperaturas efficere, cum de symmetris fit detractum aut adjec- id videatur recte esse formatum, in aspec- ue nihil desideratum." Now, the word *ovidere*" did not mean calculation by figures. chapter, again, from which the quotation taken, was headed "On the Proportions of vate Buildings," *not* temples; and it con- ded (in Newton's translation) with this sage:—"It cannot be doubted that we uld diminish or enlarge objects according to nature of their situation, in order that no t of the work may be unsatisfactory; but must be effected by acuteness of genius, *cannot be taught by rule.*" That was chapter of Vitruvius which was quoted the basis of Mr. Pennethorne's theory. He ld not believe that the Greek architects sidered that the beauty of their buildings dependent upon being viewed from one icular point. The point of sight indicated Mr. Pennethorne, at which the mass of the lding subtended an angle of 45° to the eye, too close for the purpose, to begin with, as the could only take in about 33° at one view. n the calculations were made on three dif- nt bases. In one passage in the paper ge 107 of the Institute Transactions), we e told that the vertical heights were com- nsurate with the length of the *upper step*; on te 4 of the illustrations it was observed that mass of the building might be regarded as be comprised between the *middle* step and projection of the cornice; and on page 111 were referred to the diagonal line joining extreme angles of the substructure. If "the eks had really been proceeding on such a ere logical principle of design as was suggested, was inconceivable that they should have ted their calculations from one base to an- er in such an illogical manner. But the most ous difficulty was one which, though obvious Mr. Pennethorne's book, had been eluded in paper read to the Institute. The two fronts he Parthenon were architecturally identical, the level of the ground for the eastern point of it was 10 ft. higher than that for the western; corrections which were right for one end of building were, therefore, necessarily wrong the other end. The explanation suggested for was still more extraordinary: it was, that nger diagonal was furnished at the eastern at of sight by the wider extension of the tform at the base of the eastern steps. This tform really died into the surface of the rock the point to which the diagonal would be rred; and they were actually asked to believe t the real beauty of proportion of the east at depended, in the mind of the Greek archi- t, upon directing the attention, not to the in mass of the building, but to this subordi- e point in the substructure. That was a ory which, he thought, refuted itself.

Mr. Cates, in reply, expressed his regret that h Mr. Pennethorne and Mr. Penrose were ent, as they would no doubt have been able to ow much additional light on the subject. eir absence was especially to be regretted, ause, simultaneously with the reading of the per, M. Lesueur, in singularly bold language, denied the existence of the refinements in ek architecture to which Mr. Penrose, Mr. nethorne, and others, had devoted so much dy. M. Lesueur declared, in language that unmistakable, that the idea of curvature in lines of Greek temples was an entire myth, hat, in fact, the curves were entirely due to subsidence of the foundations. It was not possible that those who had studied Mr. Pennethorne's book, or those who were aware of the mathematical ability of Mr. Penrose, could accept such a statement as that. It was noteworthy, though, that a German writer who visited Athens in 1862 had also made the same statement. But if the subtle refinements of Greek architecture were indeed mythical, how came it that a recently erected building in Athens, the Academy of Fine Arts, of which Herr Hansen, of Vienna, and Professor Ziller, of Athens, were the architects, was so exceedingly unsatisfactory to the eye, except on the hypothesis that it lacked the delicate refinements of the old Greek buildings?—for the proportion and detail were excellent, the material was the finest white Pentelic marble, and the workmanship was only surpassed by that of the Parthenon. Probably the brightness of the atmosphere in Greece rendered the refinements under discussion more essential than they would be in a duller climate. As to Mr. Pennethorne's theory that Greek temples were designed to be seen from one point of view, he thought that theory was indirectly supported by the fact that, as he believed, in no single instance was a Greek temple directly approached. The temples were always approached at an angle, and that certainly afforded some ground for the theory advanced by Mr. Pennethorne.

The President, in closing the discussion, said he scarcely thought M. Lesueur's extraordinary theory as to the curved lines would meet with any adherents in this country. The necessity for adopting expedients to overcome optical effects was recognised by all practical architects even in the present age of unrefined work; how much more so, then, would the necessity be felt by a people so refined as the Greeks? In his opinion, Mr. Statham's remark as to the synchronism of musical chords went a very long way to support Mr. Pennethorne's contention; for it could hardly be supposed that the delicacy of appreciation by the sense of hearing could be greater than the delicacy of appreciation by the sense of seeing, especially by the educated eye. In conclusion, the President said: That a gentleman like Mr. Pennethorne, not an architect by profession, should have such great artistic taste and such mathematical power as to enable him to take up so large a subject, and that he should, after the labour and study of years, come before us to endeavour to explain his views, are facts that provoke gratitude rather than criticism.

It being a quarter to ten when the discussion was concluded, and it being stated by Mr. Colling that his paper on "Architectural Foliage" would take an hour to read, it was unanimously resolved, on the motion of Mr. Ewan Christian, seconded by Mr. Arthur Cates, that the reading of the paper be postponed. The new method of conducting the business thus broke down once more. The sooner the old order of procedure is restored the better.

PRE-ADAMITE LONDON.

Mr. Edwin Nash, F.R.I.B.A., Master of the Merchant Taylors' Company, lectured, by special request, at the Merchant Taylors' School, Charterhouse-square, on Tuesday, the 18th ult., on "Pre-Adamite London," there being a large attendance. The Rev. Dr. Baker presided, and amongst those present were Sir J. Tyler, Major E. Anderson, Mr. R. Johnson, Mr. T. Hicks (master of the Salters' Company), &c.

Mr. Nash commenced by saying that from the title of the lecture some might imagine that he intended to treat of human beings, inasmuch as certain people believed that man existed before the time of Adam, but it was not his intention to do so, though something might be said of life in those early days, however different that life might have been from that which now prevailed. He intended to speak of London in its geological aspect, and to treat of past times which had no written history, but respecting which they had been taught great truths by close observation and reasoning. The geological formation upon which London was placed was commonly called the London clay, and it occupied an area which went by the name of the Valley of the Thames, and sometimes by that of the London Basin, because it lay upon a shallow depression in the previously-existing land. The strata peculiar to it were not confined, however, to that particular area, but they extended over a much larger surface with a very irregular outline, and in many detached portions and narrow slips. The main part extended from Newbury, in Berkshire, on the west, to beyond Harwich and Canterbury in the east. It being upon the lower beds of the tertiary division that London stood, they had to consider those beds only or chiefly. In the tertiary deposits the remains of some species of animals were identical with those which now lived. London and its neighbourhood did not possess a very marked geology, it having no high mountains, no grand escarpments, and no deep ravines. Yet London, before it possessed the name, passed through great vicissitudes during ages incalculably remote, and if they observed what had occurred at no more than a small distance beneath their path, they met with evidences of extraordinary things, that happened so deep in the depths of time that no historic chronology could be assigned to them. They further discovered that the tertiary strata,—the sand, the gravel, the clay, of which they were chiefly composed,—rested upon the ancient white rock called chalk, and which was once the bed of a vast and deep ocean, with slightly irregular bottom, having the appearance of being worn away in its surface. The chalk was eventually succeeded by vast accumulations of sand, gravel, and clay, and inasmuch as these were always the produce of water action, they were able to perceive how they came to be deposited. All investigations had shown that during a very long period an active rushing sea was breaking up the surface of the chalk and separating its numerous flint nodules from the chalk, and rolling them backwards and forwards for ages, thus grinding down their rough forms into smooth rounded pebbles and sand. Referring to the changes of climate which had occurred, Mr. Nash went on to say that those slow changes, surprising as they seemed to be, were not really extraordinary, when they considered all the circumstances and the long period over which they had ranged. They were caused by that peculiarity in the movement of our globe commonly called the procession of the equinoxes, whereby every part of the earth's surface was subject to a slow but continuous alteration of position in relation to the heat of the sun, arising from the slow shifting of the equator upon the line of greatest heat, viz., the ecliptic. This was a steady revolution, and was considered to be accomplished once in about twenty-six thousand years, but recent researches had shown the period to be about thirty-one thousand years, and it would be seen that by it all parts of the globe experience once during that time a certain maximum of cold, and a certain maximum of heat. England was now on its way towards the hot period, as was evidenced by astronomical facts, by meteorological observations, and by geological remains, after which it would draw on towards its former cold period. To understand this movement the ecliptic might be viewed as a vast permanent plane passing through the earth, and continuing through the sun, and marking at its impingement on the earth's surface the line of greatest heat. The plane of the equator, on the contrary, together with its poles, was not permanent in relation to the ecliptic, for besides having a slight variation in its angle therewith, it had a slow retrogression over the equinoxial points of the ecliptic line, arising from a slow circuit of its poles round a centre situate about six degrees from the pole of the ecliptic, by which it made a revolution backwards round the ecliptic in about 31,000 years. The consequence of this was that all portions of the earth's surface passed during this long period nearer to and farther from the solsticial points, and thus received a greater amount of heat and of cold in proportion to their distance from those points. Hence, it had become evident that there could be such a difference in climate as would be consequent upon a difference in latitude of about 23°, and this difference, taken independently of other causes of climatic variation, might, with some approach to correctness, be represented by the climate of Iceland and by that of Egypt, the one being semi-arctic and the other semi-tropical. Thus, when the solsticial point arrived at its nearest possible distance from England, London would only be 22½° from the sun's path at its hottest period; and it would be at its coldest period when it arrived at 51½° from the sun's path,—that was to say, when its latitudinal meridian was directly over the equinoxial point. These changes had occurred, and would occur again, if the globe continued to move as heretofore, and were sufficient to account for the manifestations revealed by geology; but it should be noted that they were given as independent of those physical

and local causes which were known to have a great effect upon climate, such as the Mexican Gulph stream in respect of England. As regarded the time when England would again arrive at the tropical period, this might be estimated with much accuracy, and some astronomer should work it out. Suffice it for them to imagine that England would not experience the climate of Egypt until 4,000 years had passed away, and thus, if they took their present average temperature at say 50°, and if they assumed the increase of heat to be 1° in a century, they should have the average temperature at the end of the 4,000 years at 90°. The lecturer then proceeded to minutely describe the fossils found in the lower eocene strata and London clay proper, and stated that though man did not inhabit the world at a remote period, there was an abundance of life always pervading its surface. In conclusion, Mr. Nash said that elementary geology must be learned from books, and this was all that could be expected from boys at school; but, to be a complete geologist, it must be studied in the field, and this was not always an easy matter without long practice. It was a noble and highly useful science. It explained to the architect the materials suitable for his buildings; it enlarged the faculty of observation; it opened to the mind the works of God in their grandest aspect; it confirmed the truths of Revelation; it was, in fact, next to astronomy, the most sublime study in which man could engage.

A vote of thanks to the lecturer terminated the proceedings.

THE CITY OF LONDON SCHOOL COMPETITION.

We take the occasion afforded by the advertisement of an architectural competition for this important building which it is proposed to erect on the Victoria Embankment, to draw fresh attention to a comparative innovation in regard to the demands made upon architects in such cases, against which it is absolutely requisite, in the interests of the profession, that a decided stand should be made. We refer to the increasingly frequent practice, in drawing up conditions of competition, of demanding from the competitors drawings on a working scale, accompanied by a complete specification, and a detailed description of such practical matters as methods of warming, ventilation, &c.; for all which, we need hardly say, no greater reward is offered than used to be offered at a time when competition drawings were at least tacitly supposed to be confined to a general representation of the scheme of the proposed building in regard to plan and design.

The conditions of the competition referred to are before us. They indicate the intention of erecting a building which, with accessories, can hardly be estimated at less than from 40,000*l.* to 50,000*l.* Three premiums are offered to the three best designs, of 300*l.*, 200*l.*, and 100*l.* respectively, which designs are to become the absolute property of the Corporation, who will recommend that the architect receiving the highest premium should be employed to carry out the building. So far, as competitions go, it seems pretty well. The premiums are in rather more than the average proportion to the extent of the work; and if the drawings were limited, as in all cases of competitions they ought to be, to comparatively small-scale drawings showing the architect's idea as to the plan and design,—showing, in fact, how he would do it if it were entrusted to him,—considering the splendid site and the importance of the building, it might be worth while for young architects, who felt that they had capacities beyond their present opportunities, to risk throwing away a month's thought and hard work for the chance of so good a prize. This is how it would appear on the face of the general advertisement, which we have no doubt has been regarded by many possible victims as an attractive one. But the matter is very much changed when we come to look at the requirements in detail. We then find that the "plans, sections, and elevations are to be drawn to a scale of 8 ft. to 1 in."; and further, that "a full and complete specification must accompany each design, setting forth the mode of construction and description of materials proposed to be adopted by the author, and fully and clearly describing the method of warming, ventilation, drainage, &c., proposed, illustrating the same by means of plans, &c., where necessary." An estimate of the cost must accompany each design, and the author is to give such evidence of its accuracy as the corporation may require.

Now, do those who have framed the conditions know what this means in plain English? If they do not, we will tell them in a few words. Taking the lowest figure we have named as the probable cost of the building (40,000*l.*), a complete set of drawings and specification for such a building, at the usual professional charge of 2½ per cent. (leaving 2½ per cent. for the detail drawings and superintendence), would represent work of the value of 1,000*l.* to each architect competing. The bulk of the competitors get nothing*; but of three sets of drawings the corporation propose to take absolute possession, *i.e.*, they are going to appropriate professional work for which the ordinary charge would be 3,000*l.*, in return for which they propose to pay 600*l.* But this is not all. For in spite of the large scale and the complete specification required, every one knows that the selected set of drawings will *not* be used as working drawings, for the simple reason (if for no other) that a competing architect is never really in possession of all the details which would enable him to render the drawings actually available for the contractors. The successful architect, if employed, will therefore have to commence all his work over again, and, as his premium is to merge in the commission, have a large amount of extra work to do for the ordinary commission in return for the risk of getting nothing at all for his work.

We have put the matter in a plain pounds-shillings-and-pence form; and, of course, we cannot wonder, if the public find the architectural profession willing to victimise themselves to this extent for the chance of half a commission, that they should encourage architects in a course so profitable to the employer, who thus gains possession of the complete plans and designs of three architects for a little more than half that sum which, under fair conditions, would be due for one set. We have no desire to impute any unfair intention to those who issue the conditions, who very likely merely think they are taking the usual course. The remedy is in the hands of the architects if they will only employ it. There ought to be a determined stand made against this system of calling for such heavy work upon mere speculation from members of a very hard-worked profession. Whatever may be said about the good or evil of the competition system in the abstract, we at least draw a hard-and-fast line here,—that the drawings demanded ought to be limited to so many only, on such a scale only, as are necessary to fairly show the merits of the author's scheme as to plan and design, leaving details for after-consideration.* If the committee in such a case, having selected the best design, have any reason to doubt the ability of its author to carry out the work practically in detail, they need not have bound themselves to employ him; if the premium is a fair one, and the drawings are sketches only, he is paid for his work and there is an end. But when such demands are made as in the competition referred to (which is not an isolated instance), the inevitable result is that no one is properly paid for his work; the majority get nothing, and even the best man is taxed heavily for the privilege of being employed. We do urge upon members of the profession, in their own best interests, to resist in a determined manner such demands upon them. If the promulgators of competition schemes of such an exacting nature find that no architect of eminence or position will take them up, they will very soon be driven to reason. If architects, on the contrary, will go on allowing themselves to be victimised in this kind of way, we do not see what we can do to help people who are bent on cutting their own throats. We have given them our advice in the plainest terms, and can only hope it will be followed.

The Earl of Stamford and Warrington, at his estate at Enville Hall, near Stourbridge, keeps a large collection of valuable plate, amongst which are heirlooms of ancient date, including fourteen *pots de chambre* of heavy solid silver. A recent unsuccessful burglarious attempt upon these treasures has induced his lordship to order a strong fire-and-burglar-proof room to be built at Enville for their future preservation.

* Except in cases of a limited competition by invitation, and when a fair remuneration is given to every competitor.

FRENCH MEDIÆVAL BUILDING TRADE

The French building operatives in t thirteenth century were generally on pie work, the pay being sometimes in a lump su at the conclusion of the job, and sometimes so much a yard. The proprietor, where t work was going on, found the materials a scaffolding; and, indeed, when the job was long one, he had to keep in order the tools the workmen, and to replace them if damage In some notes respecting building at the Augu tinian Convent, which lasted from August, 12 to February, 1300, the following entries occur "Pro fabricando martellos, pro forge," and al "Pro amendo martellos massonum." Paris a the neighbourhood abounded in buildi materials. Mention is made of the quarries Lourcines, of the Faubourg St. Marcel, those Mureaux, in the limestone of Charenton le Pon and the quarries of St. Germain des Pr Timber is very seldom spoken of, though in record of the works at the Louvre there a directions as to the felling, chopping, and squari eight oaks from the forest of Compiègn which were brought by water to the Louvre be cut up into planks. No wood required, ev for royal buildings, was allowed to be tak from the forests, except from certain parts whi were set apart for cutting. There is very litt mention made of any apparatus or machine in use for building purposes. What there contains a list of the expenses incurred making two "engins," which were of wood, a took 147 days' work of the carpenters. She were also built to keep these "engins," whi in all probability were some kind of crane.

In all important building works, the c tractor was bound by a penal clause in case unsatisfactory performance. We read that t master masons who came from Paris to Troy to erect a rood-loft for that cathedral wo obliged to execute a bond (for which t mother-in-law of one of them went guarante to the Chapter, of 400 francs, to be paid in c the work was not completed to their likin This was not a very extensive caution mon though probably in those days it may have presented a considerable sum for a working-m to risk. Although, in the parlance of the tra there were two distinct occupations of ma (*lathomus*) and stonecutter (*scissor lapidum*), find them employed indifferently about the sa kinds of work. It was a stonecutter that p bars of iron in the great tower of the prison Notre Dame, and also put up the gargoyl while it was a mason who was engaged in lay down stones for the steps from the episco palace to the Seine. There were also the sto squarers in the quarries, the lime-burners, mortar-makers, and the artisans who fitted the scaffolding and looked after the earthw of the foundations and the ground arou In this latter work women were employed "pour faire les fondemenz dedenz terra descombrer la place et la pierre choite p viiiˣ lx xix jornées de perriers et de ovriers braz et xl ix jornées de femmes." (A sim instance of women being occupied in build work occurs in the present day in Germa where they are employed as hod-women [Ha langerinn] at the rate of 8½d. or 9d. per da As for the workers in wood, there were c penters, sawyers, panellers or wainscotters, roofers. Amongst the carpenters proper w those who devoted themselves more to furnit and window work, and these were ca "Charpentiers-huchiers." There was no saw by machinery in those days, and it was all d by hand. The coverers or roofers were dist guished according as they operated with that slate, or tile. In 1399, one Jean Judas, a mas was fined by the provost of Paris for hav roofed a house with tiles, and thus infringed rights and monopolies of the roofers. This probably one of the earliest instances of legali trade unionism on record. As often as not, building operative had his food supplied him the place where he was working, and, indeed not unfrequently had quarters provided for altogether there. One Perrin of Origny v ordered by the court to finish certain works which he was engaged, at the expense of keep. "Condempnons Perrin d'Origny, ma demourant à la Pissote, à faire et parfaire le et soufisament à ses despens de bouche cert ouvrages de maçonnerie par lui commencés Nicholaz Larcher." And in the case of inquiry into a robbery committed at the Al

* See p. 93, *ante*.

oisson during some repairs, one of the car-
ers gave evidence that he had been working
e for six weeks, and that he also had his
ng at the Abbey. The French mason was
rally of rather a migratory disposition, and
ently wandered about for long distances in
h of work; and when the building opera-
s were of an important nature, it was not
mmon to send for workmen to Paris. We
seen above that this was the case, when
od-loft was being erected at Troyes. The
ency to migration of masons exists to the
ent day, and is altogether rather a Continen-
eature. Many of the masons in Leipsic and
r German cities are merely birds of passage,
rning to their homes during winter; and
masons of Milan and Padua are in the habit
egularly migrating from the North of Italy
Switzerland and the South of France, where
e skilled labour is highly appreciated.
ne pay of the French building operative in
hirteenth century was not always made in
ey, but frequently in kind as well. A con-
t was made with Mattieu Lepetit for the
entry of the gateway-tower at Beanfort-
allée for 80 livres, and six ells of good cloth
he value of 6 livres, wherewith to make a
. In addition to pay, the workmen fre-
itly received presents and drink-money. In
place, we find a present of 23 pairs of
es given to the masons (the English masons
-day would scarcely appreciate a *pour boire*
at form); at other times wine was distributed
he carters and labourers on the foundations.
ed, it was not the thing for the employer or
wner of the house even to go near the scene
uilding without distributing a certain amount
backsheesh"; so that those who grumble at
demands made upon them for beer by the
ish workman, may comfort themselves that
evil was even worse 600 years ago than it is
. The most was made in those days of every
special occasion, such as the laying the
stone, the driving of the first nail, putting
he keystone of the arch,—they were all ex-
ed to be commemorated with libations.
ain holidays, too, were religiously kept in
same way. Shrove Tuesday was always
ked by a good dinner given to all the work-
as also Ascension-day, on which occasions
hief of the works and the architect were
ected to preside. At the close of the job,
perative had to render to the clerk of the
s a statement of his accounts, with a certi-
e from the architect as to the value of the
k done by him. The cost of any bad work
there and then deducted from the money
g to him, and, what is more, he had to give
arantee as to the thoroughness and solidity
s performances for a certain time. In one
it is stated as follows:—"Pour couvrir, later
harpente dessus de treulle pour touz cou-
ens par Jehan le Platrier *lequel la doit
ntir de couverture jusques à III ans en bon
.*" It would not be a bad thing for the
e occupiers of London suburbs if the builders
he present day could be made to give the
e guarantee.

OLBORN UNION INFIRMARY, UPPER HOLLOWAY.

HIS building is situated nearly at the junc-
of Highgate-hill and Archway-road, imme-
ely in the rear of the Archway Tavern,
ver Holloway. The ground along the whole
ntage falls from north to south 23 ft., and
, therefore, somewhat difficult to show clearly
a plan the mode in which the various depart-
its are connected, for that which is the
and floor at the upper part of the site
omes, under the circumstances, the first
r at the lower portion. The front entrance
ding is also necessarily at a different level
n that of the hospital proper, and conse-
ntly, in order to reach the corridor, which
nects the various blocks of sick wards, it is
ssary to descend by a flight of steps some
below the level of the entrance.
he chief point of interest in the arrangement
his building is, however, the planning of the
wards, as it introduces in hospital con-
ction a new method of arranging the beds
windows. This arrangement has been
pted by the same architect in wards erected
wo London workhouses for the reception of
H and infirm paupers, and the guardians of
Holborn Union were so well pleased with
e wards that they determined to build their
mary wholly on the same plan. This, how-
ever, was objected to by the Local Government Board, who insisted upon the erection of wards designed upon the pavilion principle. After much contention, however, a compromise was effected, and the buildings have consequently been erected half on the one plan and half on the other. This result will, perhaps, be beneficial, as the two systems can be tried side by side.

In our issue of the 11th of January last we gave a description of the Infirm wards of St. Luke's workhouse, and as those of the central portion of the building now under consideration are very similar, it will be unnecessary to recapitulate their details. It will, however, be seen that being for sick inmates, a larger cubic space per patient has been requisite, and consequently the wards are somewhat larger, and the distance apart of the beds is also greater. The positions of the water-closets and bath-rooms are likewise more easy of access to the sick inmates of the wards, being situated in towers at either end, but cut off from the immediate proximity of the wards by cross ventilated lobbies.

The shape of the pavilion wards is similar to that of those in all other hospitals lately erected, but some novelties of construction have been introduced. The windows are made as casements nearly reaching the floor-level, and they open in such manner that the patients lying in bed may be protected from draught. These casements are so constructed as to render them when shut more nearly airtight than the ordinary lifting sashes; but in order to meet the opinion of those who prefer the lifting sashes, the architect has contrived that the upper part of the window shall open in this fashion, and so be used for additional ventilation whenever the weather will so permit. The fire-grates that stand in the centres of these wards are also of novel construction. They consist of an open fire at front and back, and the flues from them descend and pass right and left under the floors to the outer walls, in which they are continued to the chimney-shafts above the roof. The novelty of their construction, however, consists in the sides, back, and top of the fires being surrounded by a wrought-iron casing containing water, and that at the sides of the stove there are two upright coils of pipes through which this water when heated by the fire, circulates. Thus the whole of the products of combustion are utilised for heating purposes, and it will be seen that as the water cannot attain a temperature higher than 212° Fah. the iron over which the fire passes cannot, as is the case with ordinary air body stoves, be so heated as to burn the air impinging against its surface. Another advantage offered by this plan of heating is that a vase on the top of the stove contains the water rising from the lower part when it is expanded by the heat of the fire, and that this water being warmed a slight vapour arises from the vase, which serves to moisten the air of the wards. It should not be forgotten also to add that a channel runs under the floor to each side wall, and communicates with the outer air, thus forming a passage for fresh air to pass from the outside round the stove and the heated coils of pipes into the room. Stoves with descending flues are generally found to "smoke" when the flues get cold through the fires being neglected, or from their being let out during the night, but this difficulty has been successfully combated by encasing the horizontal iron flue-pipe in sand as it passes through the floor. The sand retains the heat of the flue for many hours, and it is only once, therefore, if at all, and then at the beginning of the winter, that the flue will require "piloting." These grates are manufactured by Messrs. Potter & Sons, of 298, Oxford-street.

The ventilation of the wards is effected by purely natural means, and is dependent, therefore, upon the simple and well-known fact that (*cæteris paribus*) heated air will always rise to a point higher than that of the colder air surrounding it, and that in its passage it will carry with it deleterious gases which would otherwise, by reason of their greater density, remain stationary or descend to the floor level.

At the back of the beds there are skirting-boxes with panelled fronts, the panels immediately under the heads of the beds being formed of perforated zinc; and running through these boxes are 4-in. hot-water heating-pipes, which go the whole length of the wards. There are openings in the wall partially covered with perforated doors for the admission of fresh air from the outside, and this air, passing over the hot-water pipes and becoming warm, will be emitted into the room through the perforated fronts of the skirting-boxes and immediately under the head of each bed.

The ceilings over each pair of beds have perforated zinc panels running the whole width of the wards, and covering a channel the full depth (12 in.) of the floor; each of these channels communicates with a large shaft running up the wall like an ordinary chimney-flue. Now, returning to the skirting box, it will be obvious that the greater part of the warmed fresh air will pass into the room through its perforated front, immediately under the heads of the beds, and this air will be drawn upwards, and, passing through the perforated zinc of the ceiling channels, be conveyed by the upright flues and find its exit at their terminations, but it is obvious also that the air in thus passing upwards from the skirting-box to the ceiling would encircle, as it were, the space surrounding the head of the sick patient, and carry with it his emanations, and, therefore, each pair of beds is provided with its own separate system of ventilation, whilst the general ventilation of the wards is supplemented by the central stoves previously described, and by the twelve upcast shafts in the side walls.

We shall look anxiously for the actual results of these arrangements when the Infirmary is occupied.

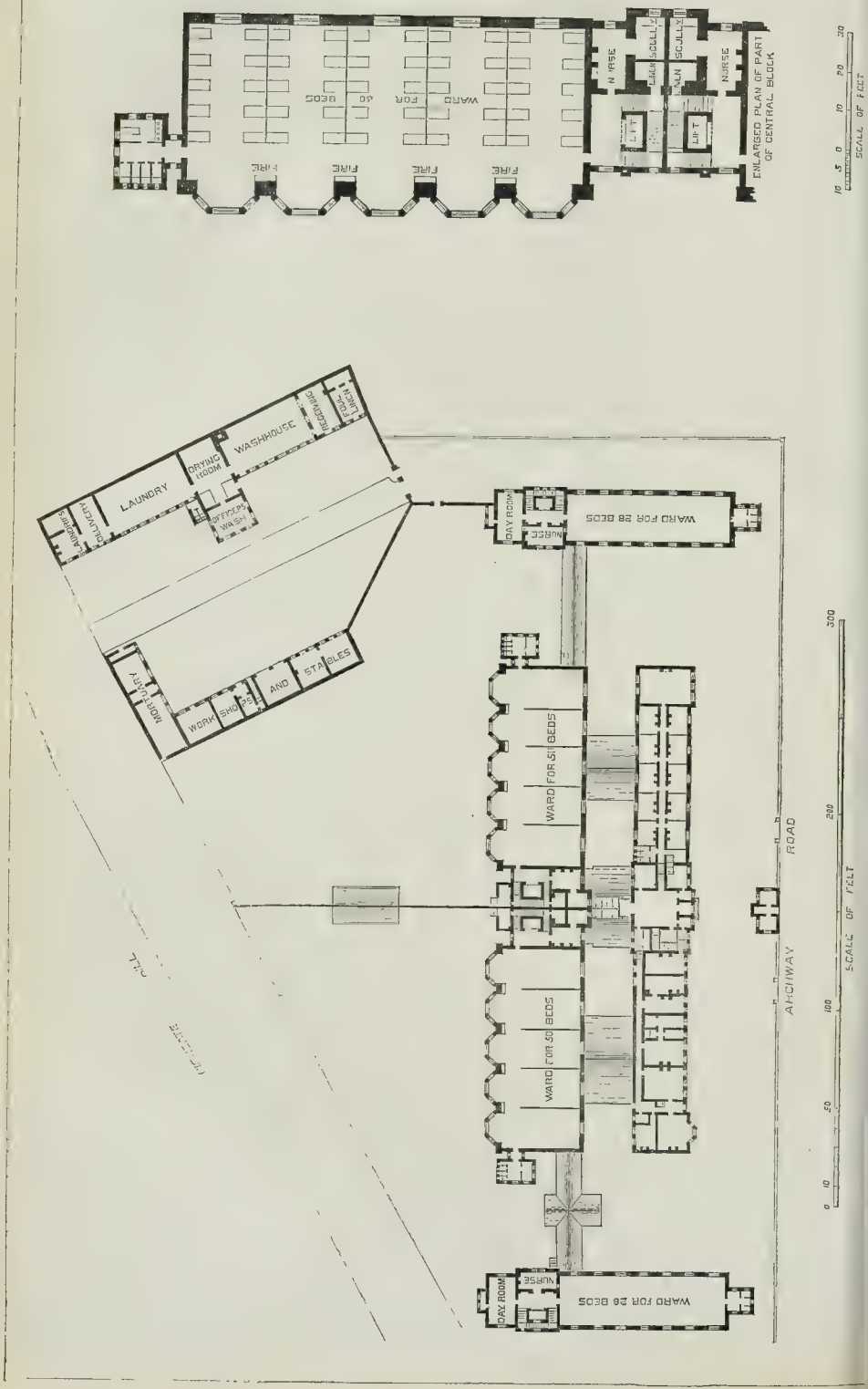
The buildings are connected by a corridor, 10 ft. wide, and on either side of this corridor are the kitchens, lifts, store-rooms, and other administrative offices. In the centre is a narrow tramway running the full length, and thus connecting all parts with the lifts that are situated at the bottom of the staircases leading to the various blocks of wards. The laundry, mortuary, coach-house, and like offices, are all detached from the main buildings.

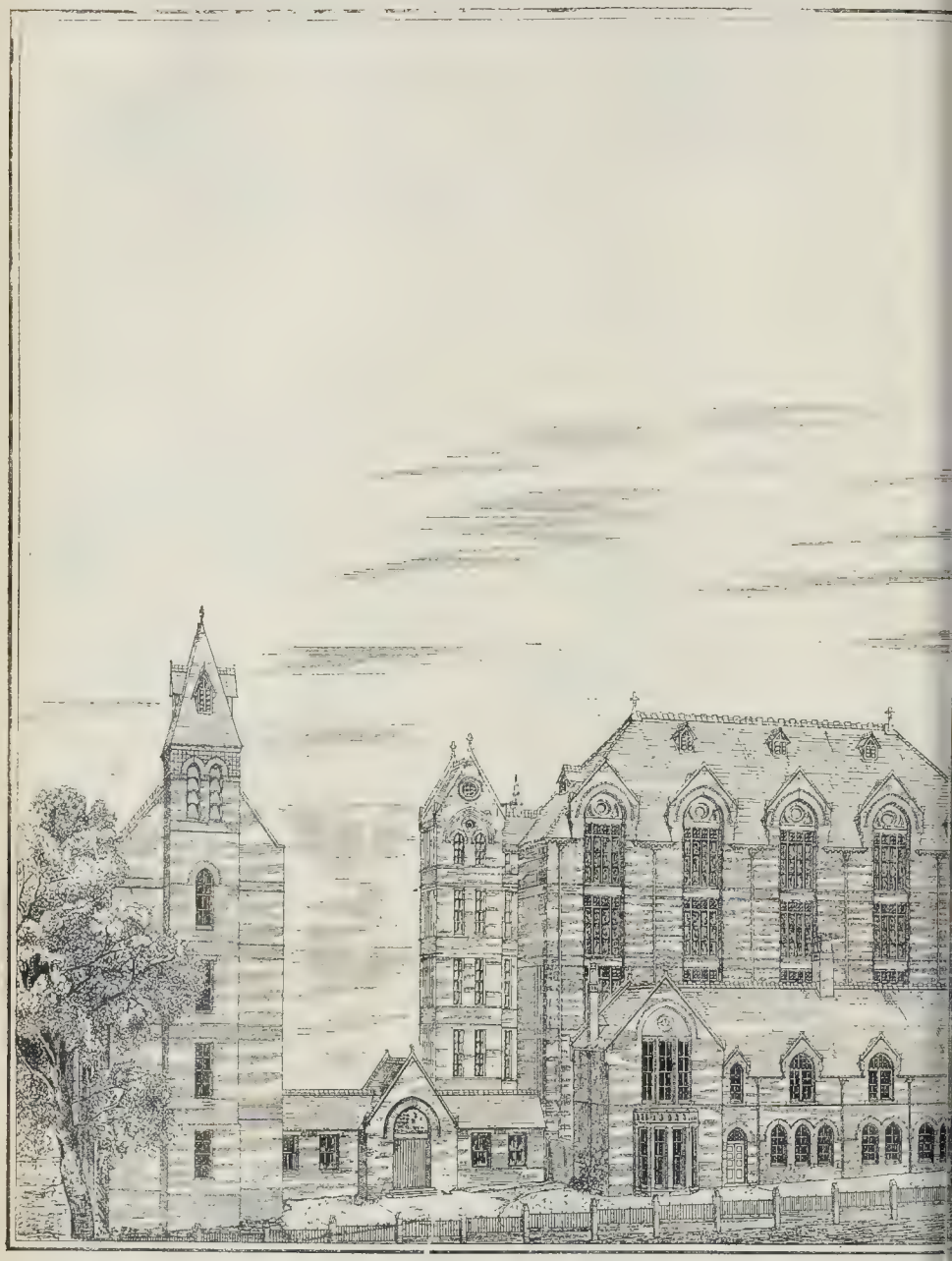
The total accommodation for sick patients is 624. The cost, inclusive of all engineering works, boundary-walls, and fittings and fixtures of every description, we are informed, will not exceed 80,000*l*. Messrs. John Mowlem & Co. are the builders. The heating and engineering works, cooking apparatus, lifts, sanitary, and gas fittings, have been executed by Messrs. Benham & Sons, Messrs. May, Bros., Messrs. Potter & Sons, Messrs. Jeal, Bros., Messrs. Richardson & Ellson, and Mr. E. Howard. The blinds are being executed by Messrs. Janes & Sons. The architect is Mr. H. Saxon Snell.

THE NEW EAST AND WEST INDIA DOCK-HOUSE, BILLITER-STREET.

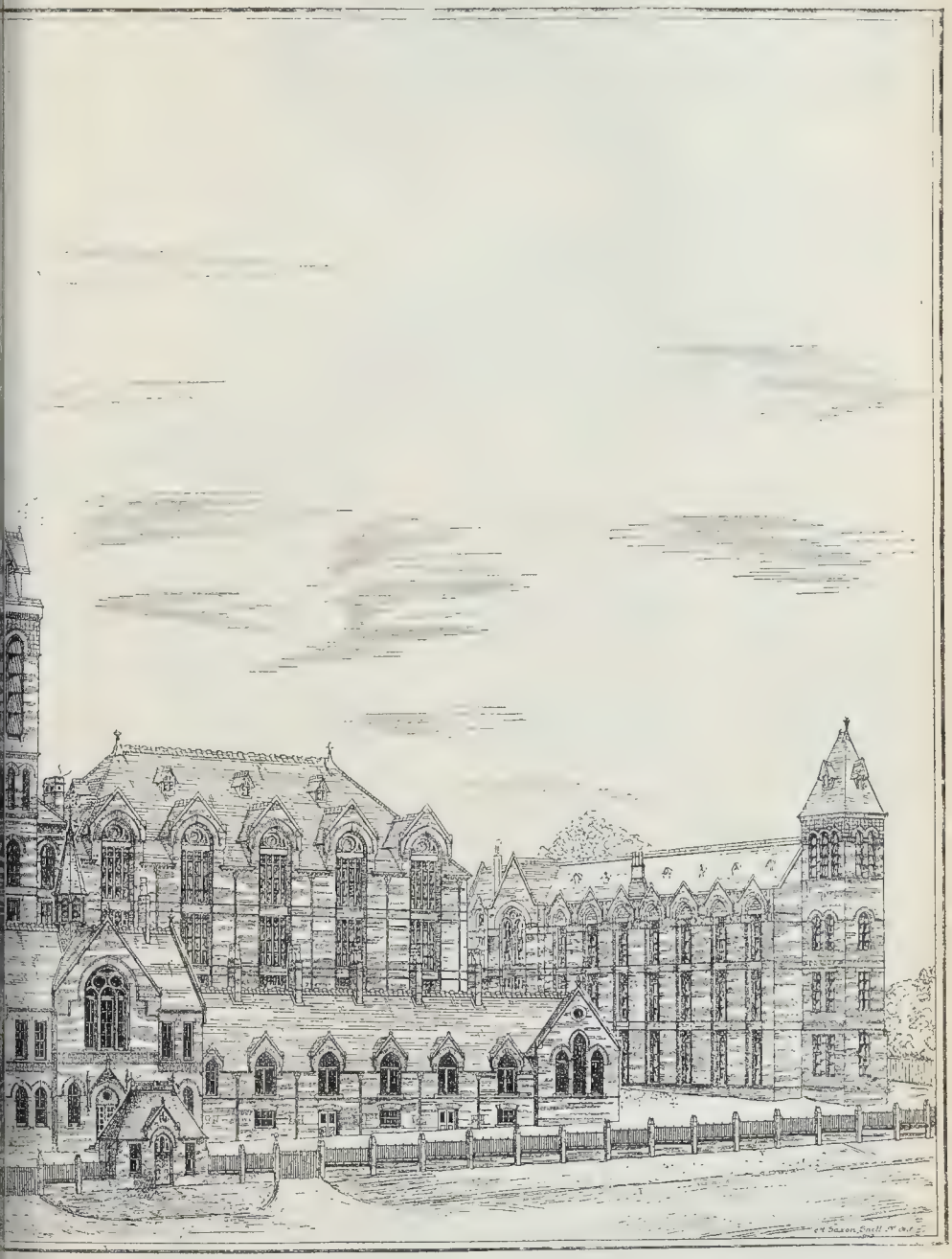
THE foundation-stone of these buildings was laid in December, 1877, by Mr. P. Bosanquet, the then chairman of the Board of Directors. On account of the peculiarities of the place required to suit the various offices, it was thought necessary to adopt a style of architecture which would allow of free treatment without sacrificing any space for recessing portions of the structure. Under the circumstances, the architect adopted a modification of Venetian Gothic, as best allowing of the necessary freedom of detail on a flat surface. The fronts are faced with Box-ground stone, relieved with red Mansfield stone in the voussoirs of arches and over the main entrance. The whole of the columns are of polished red Aberdeen or blue Peterhead granite. The plinth is of grey Cornish granite, with tooth-axed face. The bosses are principally of polished red and blue granite, but some of the groups at angle are of various coloured marbles.

With reference to the interior, the top floor consists of suites of apartments for the officials, the second mezzanine floor being devoted for luncheon-rooms, &c. The first floor will be occupied by the secretary. Upon the same floor is the court-room for holding the meetings of directors and half-yearly meetings. The ceiling is panelled, with richly-carved supports, representing different fruits emblematical of the various commercial products which fill the company's warehouses. A massive mantelpiece of marble, surmounted by a large mirror, gives a handsome appearance to the apartment, which is lighted by large double windows, and from the ceiling by a gas sunlight. In the basement are lavatories, luncheon-rooms, &c. All the principal rooms are provided with open fireplaces, the building being warmed throughout by Messrs. Price & Co.'s plan of hot-air flues. Messrs. Merritt & Ashby are the builders. The stone and wood carving has been executed by Mr. Bradford. Mr. Holloway has been clerk of

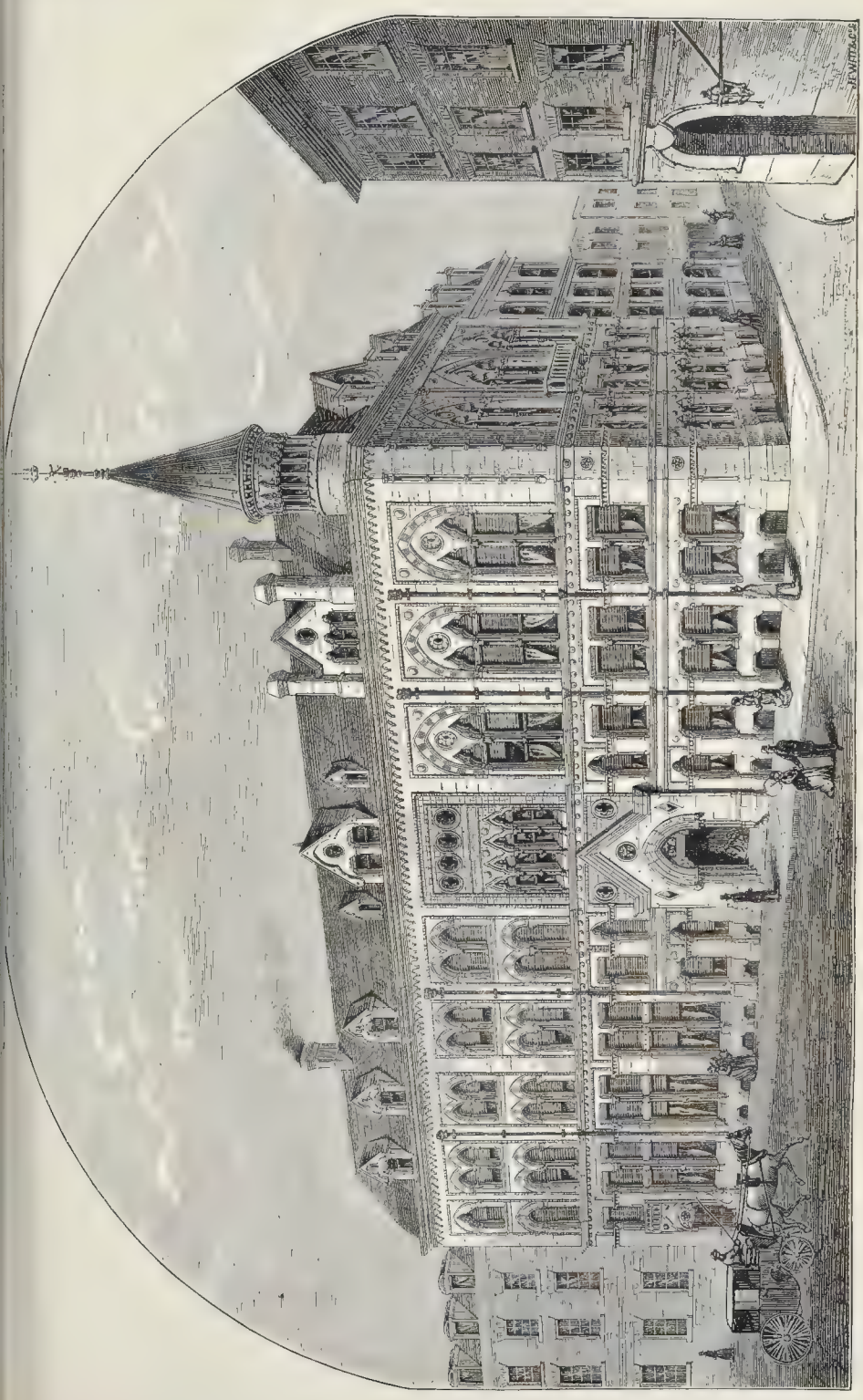

WARD FOR 56 BEDS
FIRE
FIRE
FIRE
FIRE
NURSE
MAN SCULL
MAN SCULL
NURSE
LIFT
LIFT
ENLARGED PLAN OF PART OF CENTRAL BLOCK
SCALE OF FEET
LAUNDRY
LAUNDRY
DRYING ROOM
WASHHOUSE
OFFICERS WASH
MORTUARY
WORK SHOPS AND STABLES
WARD FOR 28 BEDS
DAY ROOM
NURSE
WARD FOR 56 BEDS
WARD FOR 56 BEDS
ROAD
ARCHWAY
WARD FOR 28 BEDS
DAY ROOM
NURSE
SCALE OF FEET



THE HOLBORN UNION INFIR



—Mr. H. Saxon Snell, Architect.



THE NEW EAST AND WEST INDIA DOCK HOUSE, BILLITER STREET, LONDON.—Mr. A. Manning, Architect.

…, and the whole has been successfully …d out under the direction of the company's …ect, Mr. A. Manning.

…SAPPEARANCE OF THE TEPLITZ SPRINGS.

…ATASTROPHE has happened in the valley in … the widely celebrated medicinal baths of …z are situated, the after-effects of which …s at first feared would be fatal to the …nce of that favourite Bohemian watering- … as such, and to the prosperity of the …er part of its inhabitants. The principal …g of the old *Curort*, which has given relief … many sufferers, suddenly disappeared. … is every reason to believe that this phe- …on had some connexion with the sudden …ion of water in the Döllingen colliery …Dux. It was at first not expected that …eological commission which was hastily …oned to report on the matter would be …o do any practical good. Science, it was …would be powerless, even if the Teplitz …were less honeycombed by mines than it …lly is.

… immediate origin of the catastrophe is …bed to be due to irruption of water in the …in question. The first sign of threatening …r was the bursting forth of a water-jet of …ickness of an arm, in a seam in which two …s were at work. A few moments after …eam was burst through, the inrush of … barely leaving time for the two miners to … their escape. In their flight they were …o give warning to others, but the water …ith such rapidity that twenty-six men, out …but a hundred employed, were drowned. …ommission of inquiry which arrived on the …o investigate the causes of the irruption …found that the water has penetrated from … the level of the mine, its temperature …o 80° F.) being confirmatory of this view. … face of this fact, and of the circumstance …he inundation has extended to neighbour- …collieries and mines, there is no saying …and where it will stop. The idea of fight- …ne element is considered hopeless; there …as nothing but to wait and see what the …few weeks will bring forth. A warm … in the neighbourhood of Dux, the so- … Giants' Spring, disappeared at once after …ruption.

… importance of Teplitz resting almost ex- …ely upon its medicinal springs, the greatest …ernation naturally seized the inhabitants. …ever, matters are not so bad as they at first …d. The commission charged with investi- …g the causes of the disappearance of the …pal spring, with a view of tranquillising …ublic mind, have issued the following noti- …on:—

> …e undersigned commission announce the fact that …ginal spring in the town baths has sunk in the course …day, in such a manner that it does no longer flow …he 'Lions' Heads.' Careful examination has shown …ough the spring has fallen considerably, it has not … disappeared. The apprehension which has seized … great part of the population, and which goes to the …of affirming that the spring has been lost, is totally …ded, and we ask the inhabitants not to lose courage. …wn council have taken the necessary steps which will …ly lead to raising the spring to its former level. … the case, hardly probable, that the spring will not … measures initiated again be made to flow from the …'Heads,' Teplitz will still remain the bathing-place …vorld it always has been. The spring may be reached …aping arrangements, as is usual at other mineral …and thus brought to the surface in such a manner … baths may be supplied with thermal water without …ty. We give notice at the same time that the springs …Steinbad, Schlangenbad, and Neubad are perfectly … and have undergone no change."
>
> (Signatures.)

…order to understand the serious conse- …es of a disappearance of the spring, and …plain the panic which seized upon the in- …ants of Teplitz, it will be well to recall to … a few facts with regard to its bathing …lishments. The quantity of water which …cipal spring alone supplies is, according …. Granville, 1,189,670 cubic inches in an … The temperature of the springs is 113° …9° F. in Teplitz, and 101° to 104° F. in …eighbouring Schönau. The hot springs …plitz are very beneficial in cases of sup- …ed gout, chronic rheumatism, diseases of …oints, contracted limbs, old wounds, ob- …e cutaneous eruptions, and paralytic affec- … The waters have been used almost …ively for bathing; recently they have also …recommended and used internally. There …out ninety bathing establishments, many …ich are fine buildings. The Austrian and …ian governments have military hospitals in Teplitz. Between 10,000 and 20,000 visitors, including sometimes imperial and royal personages, visit Teplitz in the autumn.

While on the subject of the disappearance of medicinal springs, it is interesting to cite a few cases of interruption which have taken place at various times and at different places. The tradition is still preserved amongst the inhabitants of Karlsbad, in Bohemia, of how, on the 1st of November, 1755, the famous spring of that town suddenly disappeared for six hours. That day will for ever be recorded in the chronicles of Lisbon as the most awful catastrophe that can well befall a city. On the same day, again, that the great earthquake took place, a new spring burst forth at Baden, near Vienna; but Teplitz also felt its effects. On the same 1st of November, between eleven and twelve o'clock at noon, the original spring disappeared for a minute, after which the water, dyed red, burst forth again with a great noise and in such quantities that all the basins overflowed. This phenomenon was all the more remarkable as the springs of the neighbouring Schönau, according to historians, did not undergo the slightest change, while at the same time all the springs on the east coast of Africa, near Fez and Mequinez, dried up, and reappeared at Tangiers only after the lapse of twenty-four hours. A more modern precedent for the sudden disappearance of springs happened in the town of Altwasser, in Prussian Silesia. This bathing-place, like Teplitz, is situate in the midst of extensive collieries, and one day the principal artery, the Elise spring, began to run more and more sparsely, to disappear at length entirely. This disappearance was not preceded, as in the case of Teplitz, by a mining disaster; the water having probably found an underground escape.

The collieries which have been affected by the irruption of water and been entirely flooded are the following. The Döllingen mine, where the original irruption took place, is the property of a company (the Warnsdorfer Bergbau-Actien-Gesellschaft), and brought to bank, in 1877, about 36,000 tons of coal. The Nelson mine (the owner of which is Mr. William Refeen) produced in the same year 133,000 tons. Inundated are also:—The Fortschritt mine, owners Messrs. Jansenn & Mayer, produce in 1877 about 140,000 tons; Victorin mine, owner Mr. Victorin, produce 75,000 tons; and the Gisela mine, owned by a company (the Duxer Braunkohlen-Bergbaugesellschaft), yearly produce about 50,000 tons. All those collieries supply the Dux-Bodenbach Railway with 42 per cent. of its traffic; and should the inundation also extend to the Kreuzerhöhung mine (which in 1877 paid carriage for 67,000 tons), the goods traffic of that railway would be reduced by half. Six hundred miners have been thrown out of work by the disaster.

WATER FOR OUTLYING DISTRICTS.

The Public Health Act, 1875, is proposed to be amended by the Bill brought in by Mr. A. Brown, Mr. Whitwell, and Mr. Ryder, to enable local sanitary authorities to supply water to their respective districts; but they must give due notice to all parties interested, and particularly to the owners, lessees, and occupiers of the mills, manufactories, and other works using the water of any stream, for a distance of twenty miles below the point at which the water is intended to be taken.

Section 52 of the Public Health Act, 1875, is to be repealed. It makes it unlawful for a local authority to supply their district with water if it is within the limits of supply of any water company.

If any part of the district of a local authority is situated within the limits of supply of a water company, the authority are to request the company to supply water to their district, the authority paying the company 7 per cent. on the outlay, including the water-charge. The company may supply the water either per house or in bulk, as may be agreed upon. If in bulk the price is to be stated. If the two parties do not agree upon the price, or upon the time within which the supply shall be given, or upon the quantity to be supplied, the local authority may refer the matter to arbitration; and if the company do not undertake to supply water on the terms of the arbitration award the local authority may themselves proceed to effect the supply. These are the salient points of the Bill as it regards water supply.

As regards the making and maintaining of sewers, an important alteration is proposed to be made in the principle on which the charges for these works have hitherto been made. The charge is made upon the district generally, or upon a contributory place generally, whether particular premises are directly benefited or not by the works. The alteration proposed in the Bill consists in making the charge only upon those premises which are within a distance of fifty yards from a sewer belonging to the sanitary authority.

THE FLOODS IN BATTERSEA.

MEMORIAL TO THE HOME SECRETARY.

The Wandsworth District Board of Works have resolved to memorialise the Home Secretary in reference to the floods at Battersea. The memorial calls the attention of the Secretary of State to the serious damage to property, and injury to the health of the inhabitants, caused by the repeated flooding of houses with sewage-water, and points out the neglect of the Metropolitan Board of Works to provide a remedy, although they undertook to do so so long ago as November, 1877. The Home Secretary is asked to take such steps in the matter as he may deem advisable. The District Board have also agreed to take counsel's opinion as to the liability of the Metropolitan Board of Works for compensation to the persons who have sustained damage. At the meeting of the Wandsworth Board, when the above proceedings were agreed upon, Mr. Tulley, one of the members, said that during the last few days fresh floods had occurred, and people were being drowned out of their houses, losing their health, and in fact dying. Mr. Young, another member, said he was one of the unfortunate inhabitants whose houses were periodically inundated. There was often 2 ft. of water in his breakfast-parlour, which was 2 ft. above the level of the outside ground. In the course of the discussion the chairman explained the reason of the delay in providing the works to stop the flooding, on the part of the Metropolitan Board of Works. He said the Metropolitan Board had been in negotiation with Mr. Denny for the purchase of a site for a pumping-station, and the delay was entirely owing to Mr. Denny's unreasonable demands. The Metropolitan Board had, however, served notices to purchase another site. This explanation had no effect on the District Board, which almost unanimously adopted the course above indicated.

MUNICIPAL BUILDINGS, GREAT YARMOUTH.

The following references to the plans published in our last number* will further explain the appropriation of the various parts:—

1. Staircase to law courts.
2. Staircase to courts.
3. Turnkeys' lobby.
4. Staircase to court.
5. To jury-room and gallery.
6. To turnkeys.
7. Food-lift.
8. Coal-lift.
9. Staircase to gallery.
10. Judge.
11. Clerk.
12. Witnesses.
13. Witness-box (engraved as 18 on plan).
14. Jury.
15. Dock.
16. Magistrates.
17. Public.

Sir,—In looking over the plan of these buildings, I could not but notice that provision for a fire-engine station was conspicuous by its absence, although the town possesses an excellent engine hitherto stationed at the old town-hall. It is a pity that architects on this side of the Atlantic fail to see the importance of accommodating suitable corporation fire departments, and I have often thought that if town councils would take a greater pride in their brigades, instead of "snubbing" them and keeping them in the background, as is so generally done, the efficiency and status of the service would be considerably raised. The Editor of the "Fireman."

Trade Unions and the Church.—A series of three conferences has been arranged, to be held in the Chapter House, St. Paul's-churchyard, on Saturday afternoons, March 1, 15, and 29, at three p.m., on the following subjects:—March 1. "How far is over-production a cause of the present commercial depression?" March 15. "Organisation of Women's Industry." March 29. "Arbitration and Conciliation." The aim of these conferences is to bring together,—on a friendly footing upon neutral ground,—the representatives of opposite opinions, who are not otherwise likely to meet.

* See pp. 205, 207, 208, *ante*.

THE INTERNATIONAL CONGRESS OF ARCHITECTS IN PARIS.*

Returning again to Wednesday's proceedings, in the second section, "l'Organisation des Chantiers,"—the education of working men,—was the subject taken up. M. Lucas read a paper advocating the establishment of a technical school of apprenticeship for workmen of all classes, instead of the present system, whereby they pick up their information as best they can on the old principle of apprenticeship. M. Lucas would place the establishment of such schools under the management of committees, which should consist of State officials, professional architects, and contractors, and the schools should be established at the cost of the State, of the provincial town, and of the contractors who take their *employés* from them.

In the afternoon of the same day, in the Trocadéro, M. Trélat, director of the École Centrale d'Architecture, delivered an address. The École Centrale is a school which was established in 1863 with a view of giving a more complete education to architectural students, and where they would be obliged to attend as regularly as if in a college or school, instead of being left free to follow out those lectures and courses of study which might please their fancies, as in the École des Beaux Arts. M. Trélat's address, which was *extempore*, and lasted nearly an hour, was full of eloquence, thought, and learning. He contrasted the aim of the architect with that of the engineer. The architect has three conditions to fulfil,—he has to distribute, to form, and to construct. When we examine these three conditions, we discover the great difficulties with which he has to contend, for these conditions are absolutely contradictory to one another. It is for the architect to create the greatest harmony he can with the three. When the plan, elevation, and sections have been distributed in accordance with the conditions required, then the artistic element has to be considered, and various changes have to be made to bring the former to accord with the latter. Both of these conditions, again, may require attention and modification to bring them in accord with the requirements of construction. We constantly see buildings which are admirably constructed from the point of view of their stability, their economy, and the excellence of their materials, but which are incompatible with or contradictory to beautiful forms. There is no style,—no expression in them, and yet they are well built. What is it, then, which characterises the architect's special mission? The engineer can plan and calculate the strength of materials; the contractor can build; it is the architect's mission to unite the two with forms of beauty and expression. To do this he may,—he must sometimes,—sacrifice a part of his art; but if he once allows the unity of his design to be sacrificed, he sacrifices his especial characteristic. Now, what is the engineer? He is young, but he is at present the conqueror. The architect is as old as the world: he has passed through all states of civilisation. The engineer is quite young: he dates only from the seventeenth century. He has only two conditions to fulfil,—to distribute and to construct; he has to arrange the distribution of his building to accord with its proper construction, so as to combine with a minimum of material employed a minimum of stability. With form he does not concern himself,—he does not know what it is, he does not care. There is no question of unity or of form; you do not find it in the work of the engineer. Take a bridge or roof-truss, or a support,—it matters not what. You do not find that uniformity of form, that beauty of expression, to which as architects you are bound to give your first attention. M. Trélat then pointed out that the education required by an engineer was quite different from that which the architect should possess. It would be waste of time; life would not be sufficiently long to allow architects to make those careful and elaborate calculations of the force and resistance of matter,—that study of the minimum of material to produce the minimum of stability. From the day when you require an architect to make calculations of the stabilities and resistances required for each of the materials used in building, he will no longer be an architect,—the artistic element will be dead; there will remain only the engineer. Whilst demanding, however, before all, an artistic education for the architect, M. Trélat contended that other studies should go hand-in-hand with it. These should be of two kinds; first, the sciences,—physics, chemistry, geology; and then the results of technical experience. M. Trélat, therefore, reserved for the last his advice to take up those special studies for which he founded his school. At the time when the lecturer studied in the École des Beaux-Arts, students were in the habit of getting through their course of construction in the first year, in order to be free to pass on to the artistic designs. Their notions, however, of architectural construction were too theoretical to be of much value, and they managed to copy all they wanted from other men's work, and from books, without understanding it. Consequently, they soon forgot what they had learnt, and the practicability of their designs suffered in consequence. It was to remedy this that M. Trélat established his school,—to insist upon a better groundwork of knowledge of the sciences and of the theory and practice of the economy of construction. There was a large staff of professors, and periodical examinations were held. Three years, however, with so many different courses of study, were insufficient for the student to acquire any great proficiency in artistic design, and as a rule I believe most of the students entered the École des Beaux Arts afterwards, but with a sounder elementary education than they would have acquired had they only taken up the courses in the latter.

On Thursday, August 1, there was an excursion to Rheims.*

On Friday, August 2, at the morning meeting held in the Tuileries, the question of competitions was discussed. I was not present, being in the other section. The result of the discussion, in the form of two resolutions, was, however, brought before the meeting at the Trocadéro at one p.m. in the afternoon. The resolutions were as follow:—

1. "That the Minister of Public Works be requested to re-organise the system of public competitions throughout France, and to place them on a basis which would give satisfaction to the interests of artists, the common welfare, and the requirements of state administration.

2. That the basis should consist of a series of rules defining the drawing up of a programme and the nomination of a jury consisting of architects, instead of leaving the selection and judgment to the prefects and mayors."

Mr. R. Phené Spiers expressed the opinion that as the Congress was an international one, it would not be asking too much that the resolutions should be modified so that they would be applicable in other countries. He doubted whether even in France (where the centralisation of power in the hands of the Government gave the latter jurisdiction in all the provinces) the prefects and mayors would be inclined to give up their power and rights of selection, especially when it was the money of their own provincial towns which was about to be spent. He laid before the meeting a copy of the Institute rules on competitions, in which, he pointed out, the utmost demand was that an assessor (who should be an architect by profession) should be appointed to draw up the programme and assist the municipal authorities in their decision.

Señor Belmas and Herr Klein, the delegates from Spain and Denmark respectively, urged upon the meeting the advisability of laying down some more definite regulations, and deplored the mismanagement of competitions.

M. Strohm, the delegate from Russia, contended that architects should always be placed on the committee of adjudicature; and that competitors ought to be allowed to appear before the committee, not only to explain their own designs, but to criticise those of the other competitors (!).

M. Dognée, the president of the Belgian Academy, then delivered an impassioned and eloquent *extempore* address on the Lebanon, Damascus, and Baalbec. It possessed no architectural interest, and therefore I do not propose to give any *resumé* of it.

On Saturday, in the Tuileries, in the Second Section, M. Sedille read a communication from the Commander Da Silva, architect, of Lisbon, president of the Architectural Society there, giving an account of the cathedral of Batalha and its late restoration. M. Sedille, who had been asked by M. Da Silva to read this paper, and had lately visited Portugal, gave a general description of some of the towns he passed through, and which were but rarely visited by strangers,—Crato, Avrantes, and Santarun on the Spanish frontier. Lisbon, of which two-thirds were destroyed by the earthquake in 1755, has sprung up again, being rebuilt in a rich *rococo* style, not wanting in picturesque and effect. The convent of Belem, portion which were reproduced by M. Pascal to the frontispiece or entrance to the Portug Court in the International Exhibition; d'Orena, where there is an interesting chu half buried; Oviedo, a town which still re its Mediæval character; Alcobassa, where is a celebrated convent, with accommoda for 999 monks, were also described. Nervil, an English architect who travelle 1789 in Portugal, was astonished to find there were more barrels of wine in the mag cent cellars of this convent than there books in the library. This same Nervil lished a book on the convent of Batalha, w is specially interesting to us because he sidered that the architect must have bee Englishman, from the resemblance of the b ing to some of our cathedrals, notably chester. It was built towards the end o fourteenth century by King John I., of Cas who is known to have imported a large nu of architects of all countries, being desiro constructing a building which should be wit a rival. The building has just been restore the Chevalier Santos Pereira.

The concluding meeting was held at the T déro in the afternoon at one p.m., when the was taken by M. Guillaume, Member of the I tute of France, and Director of the École Beaux Arts, who gave a *resumé* of the work by the Congress, and then proceeded to distri the medals and prizes given by the So Centrale des Architectes; and here necessary to give some explanation of rewards. The large number of prizes give the Academy of France and at the Écol Beaux Arts,—prizes which commence wit *Grand Prix*, which is worth 1,000*l.*, and with bronze medals,—renders it unnece that the Société Centrale (which to a c extent represents the Institute) should hol further competitions or give prizes to be peted for by students. It is possible for however, to take up another field,—whic the way, is entirely neglected in England, e in the case of the Queen's Gold Medal,—a give rewards for executed works. This seem at first sight to be a very difficult and one which might lead to invidious di tions. It is now five years, however, since rewards have been instituted, and so fa could ascertain there seems to have been feeling or jealousy created, the justice decision in each year being always accord There are two classes of prizes,—those gi architects for the best specimens of do architecture erected within a certain num years (five, I believe), and those given to men employed in the building trade manufacturers of special wares used by tects. I am unable to describe to yo special machinery by which the award medal is arrived at. There is, I believe, a mittee, which places itself in communi with all the provincial societies, and asks to submit the names of architects who may by their works, distinguished themselves ciently to be competitors for these reward Paris a personal inspection of the bui would be possible; from the provinces, graphs, probably, are forthcoming. The re to contractors and workmen are given similar inquiry, that is to say, all the arch of Paris and the provinces are request report to the committee-of-the-rewards Société Centrale the names of any contr or workmen who have executed work their orders of such merit as to be of special notice. It must be remem that the "contractors" here spoken of a the capitalists and speculators of our co but the actual workers themselves,—the pendent foremen of each trade. The com deliberate carefully on the reports subm and then make their choice, which has approved of by the council of the socie will just run through the principal re which were given this year, stating, w can, the reasons, which will explain the more clearly. MM. Henri Blondel and C Delalande, architects, in Paris, and M. architect, at Rheims, were awarded medals their executed designs of domestic work Henri Revoil was awarded a medal for portant work on the Romanesque architec the South of France, known, possibly, to of you. M. Metz, *architecte-expert*, re a medal "for valuable assistance rende the courts of justice"; and to M. H

* By Mr. R. Phené Spiers. Read before the Architectural Association on the 14th ult. (See p. 197, *ante*.)

* Described in vol. xxxvi., p. 826.

rge medal in bronze of the Société Cen- was awarded for his archæological exca- ns in the Island of Delos. I observed ow that the number of rewards given by cole des Beaux Arts precluded the neces- f awarding any more there. The Société ale, however, desiring to show its interest e several educational establishments in connected with architecture, gives a medal student who within the year has received reatest number of prizes and medals at cole des Beaux Arts; to the École National Arts Décoratifs (formerly the École de n et de Mathématique), the society gives al to the student who has carried off the *prix* for ornamental design. To a member e Société Centrale des Ouvriers Maçon et urs des Pierres (the Working Masons' and uutters' Society), and to M. Datheil, stone- n and *piqueur* (setter-out of masonry?), passed a brilliant practical examination in otomy, a silver medal was awarded; and . Dumain, stonemason, a bronze medal. last medal is one of a series which since have been offered each year for the best in masonry, in ironwork, carpentry, y, the covering of roofs, plumbing, venti- n, and warming, &c. The next medal was ded to M. Delhormel, aged 73, who in 1829 ed the service of the contractors for the ration of Amiens Cathedral, and who for five years has been the foreman of ns employed in setting the stonework at athedral, having been especially selected is exactitude, his intelligence, and his up- character by the various architects who been from time to time the superintendents work done there. To M. Banet, described good builder" (not contractor), was awarded next medal. It is recorded of him that the great demolitions were commenced in about thirty years ago, he was employed e work, being allowed to sell for his own it the materials pulled down, that being ward for his labour. Finding his *bénéfice* too great, after deducting what he thought fair remuneration for his services and e offered the remainder to the municipality, finding that there was really a considerable in the undertaking, since that period have up to auction the privilege of demolition. is chief foreman was also awarded a bronze l. To M. Baudet, civil engineer and con- tor of ironwork, who carried out the iron ruction of the roof of the National Library other public buildings, and various gates grilles of great importance and beauty, was ded a silver medal, and to his pupil and foreman a bronze medal; to M. Meril, r of wrought ironwork, a silver medal, and is chief foreman a bronze medal; to M. ard, working joiner, and the executor of the bishop's throne at St. John of Lyons, the it of the church of St. Nigra in the same n, and the restorer of the ancient joinery in own-hall, a silver medal; to MM. Geneste Herscher, civil engineers, and manufac- rs and patentees of ventilation and warming ratus used in the Trocadéro, the new Hôtel ille, and elsewhere, silver medals; and to e foreman, Signor Ferrari, an Italian, a ze medal. Any one of you who may have ed the Palace of Versailles will remember magnificence of the lead cresting which ounts the chapel roof and other parts of palace. This has lately been restored er the superintendence of my former pro- or and principal, M. Questel, the architect he Palace of Versailles, and to the chief nber and his foreman were awarded a silver bronze medal respectively. Two other dals, given to M. Parvillée and M. Leibnitz, manufacturers of that wonderful glazed ta-cotta work which was used in the oration of the two porticos or *loges* the centre of the Exhibition buildings, cluded the list of awards. It must be re- bered that it is the custom in France to ust the different trades of a building to a cialist in each trade. This, of course, in- ses the labour and the difficulties of the itect; but it has a counter advantage: the cialist-contractor, who has been, and in many s is still, the actual worker on the building, the whole subject at his fingers' ends. If want to develope or increase the material loyed in one part of the building, he can t out where you can economise in another ; and as regards the actual cost, he is able xecute the work for much less than would sfy a general contractor, being content with a small profit, and being able to calculate with greater nicety the actual cost to himself. Beyond this he takes a greater interest in the work than any general contractor can do; it is not a question of so many hours per day, and overtime if you can get it; his heart is in the work, and his desire is, not to make the most out of the job, but to do the best he can for the architect who employs him. I am informed by one of my friends, who has the largest private practice in Paris, that none of his buildings are put up to competition; he chooses his own contractors, who have worked with him for years, and who thoroughly understand the nature of his work. With such a class of men working under you the object of the Société Centrale in giving the prizes mentioned is more easy of explanation; and its success since the establishment of the rewards has quite justified the expectations and the desires of those who instituted it.

Following on the presentation of the prizes was the last address given by M. Desjardins, professor at the Sorbonne, on the Campagna of Rome,—an address full of poetical allusions to the cities of Roman antiquity, but without any special architectural character to warrant my detaining you upon it.

The whole proceedings were terminated by a banquet given in the Grand Hôtel, followed by a concert.

As to the results of the Conference, from a practical point of view I do not think that much was arrived at beyond the fact that a congress of this kind, which has to deal with subjects of extreme variety, which brings together, in many cases for the first time, a number of architects from the provinces and abroad, all with their own particular views and predilections, requires a very great amount of preliminary work,—work which can only be carried out by a number of sub-committes working for months beforehand, and even then with the tradition of former work done. Here in London, at the Biennial Conference, it is the custom to appoint sub-committees (each with its own secretary) to take charge of the several subjects to be treated, to require all papers and essays to be sent up in advance, to send out lists of questions to be answered, to appoint chairmen to preside over the different meetings,—in fact, to reduce everything to system and order before the Congress commences. At the International Congress in Paris, scarcely the titles of the subjects were known before the meeting, and each reader commenced his discourse with an apology for what was called the "tyranny of the title." Excepting at the first and last meetings at the Trocadéro, none of the chairmen or the officers at the high table were chosen till the meeting took place, and then half an hour was lost in the operation. The resolutions were not formulated in advance; in some cases were scarcely put in a definite form to the meeting. No committees were appointed to continue the work, and one's only astonishment is that so much was got through; that so many excellent addresses of a very high intellectual order, though, perhaps, too theoretical, were given; and last, but not least, that so much interest and sympathy were awakened, from first to last, in those who took part in the proceedings. I cannot terminate this address without expressing my personal obligation to M. Lucas, the hon. sec., who, almost unaided, controlled the whole work of the Congress throughout, from its commencement to its termination, and gave me, as your representative, all the documents which it was necessary I should have.

In the discussion which followed,

Mr. L. C. Riddett said he had great pleasure in moving a vote of thanks to Mr. Phené Spiers for the interesting account he had given of the Paris conference. He had been very much struck by the absence of business-like procedure which seemed to have characterised the gathering. In England he thought the congress would have been carried out with much greater order and method. Few meetings of any bodies of men were better managed than those of the two architectural societies in London, and their members must necessarily receive benefit by the knowledge they gained as to the proper conduct of meetings. He had also been very much struck with Mr. Spiers's statement that in France, as in England, there was great rivalry, if not actual conflict, between architects and engineers. He trusted that, as time went on, all antagonism between the two professions would cease to exist,—not only so, but that a perfect alliance would be cemented between them. As to clerks of works, he thought it was scarcely to be wondered at that some members of the Paris Congress had expressed surprise at the existence of such functionaries. He thought the position of a clerk of works in this country most anomalous. Instead of being chosen from the ranks of men who possessed a good general knowledge of architecture, he was generally chosen because he happened to be a "smart" man in some one branch of the building trade. There were many notable exceptions, but he (Mr. Riddett) did not think that, as a general thing, architects had reason to be satisfied with clerks of works. He thought the architectural profession ought to aim at the adoption of the custom in vogue amongst engineers, and just as in that profession there were resident engineers, appointed by and responsible to the chief engineer on all important works, so ought the architects to appoint the younger members of their profession to be resident architects on the works, thus dispensing with clerks of works. Such a change of practice would be of the utmost benefit to the members of the profession.

Mr. S. Flint Clarkson, in seconding the motion, said that the first thing that struck him with reference to the Paris congress was that it was perhaps a matter for congratulation that they did not manage everything better in France,—at any rate, we managed our architectural congresses equally well, for in both countries such gatherings seemed to result in little else but talk. Perhaps, however, it were unjust to compare our English conferences with the one held in Paris last year, because in this country we had never attempted to hold an *international* congress of architects. In connexion with the rivalry between architects and engineers, the great necessity of the times for architects was the bestowal of increased study in meeting modern requirements. There could be no doubt, he thought, that a considerable influence for evil had been exerted upon the architectural profession by the very large amount of ecclesiastical architecture which had been in progress since the Gothic revival started into being; and he was, therefore, glad to see that there was now a tendency, in architectural writing, in favour of students being diverted from the too-exclusive study of antique or old architecture to the solution of modern problems in architectural design. It was, he thought, desirable that students should be sent abroad, not only to study old buildings, but to observe the way in which modern requirements had been met in the various public and municipal buildings of Germany and other countries.

The President (Mr. Florence), in closing the discussion, said that, as one of the delegates from the Association to the Paris congress, he could bear testimony to the zeal with which Mr. Phené Spiers had entered into the work of the Congress. As to the conduct of the proceedings, he had expected to find them conducted with more order and with greater attention to detail than actually prevailed. Certainly the whole scheme of the congress was very well arranged; the general divisions were good, and these were again very carefully divided into sections; but apparently sufficent care was not taken in allotting the proper work to the respective sections. In reference to the paper by M. Charles Lucas on establishments for the technical education of workmen, it was very interesting, and contained a description of the municipal school of industry at Reims, of which an account was given in the *Builder* about the same time.* On the whole, he thought the Congress was very successful, and in his opinion it contrasted favourably with the architectural conferences held in London of late years. All the subjects discussed were of great importance, either practically or theoretically, and had a distinct bearing on the needs of the profession. He did not think the same thing could be said of all our conferences, where many of the papers read were not so appropriate or so specially noteworthy as to be discussed by the Conference: they could have been equally well, and perhaps better, discussed at the ordinary meetings of the Institute. As to the mode in which building work was carried out in France, although subdivision into trades gave the architect more trouble, the work was certainly done better than under the general contract system; and in this connexion he thought it would be well if more freedom were left to architects in England to exclude certain branches of the work from the contract, and to get it done by specialists under his own superintendence.

* Vol. xxxvi., p. 814.

The vote of thanks having been carried by acclamation,

Mr. Phené Spiers, in replying, said he had forgotten to mention that French building contracts were based on schedules of prices, the contract being taken by the builder at so much per cent. above or below the schedule prices. Paris, of course, had its own schedule, and all the provincial towns had theirs. These schedules of prices, of course, varied with the localities according to cost of materials and labour, and a Parisian architect, having to erect a building, say, in Bordeaux, could readily determine its approximate cost by reference to the schedule of prices authorised by the municipality of that town.

OPPOSITION TO THE PROPOSED UNDERGROUND RAILWAY ALONG WHITECHAPEL.

THE railway under Whitechapel to join the East London line, promoted by the Metropolitan and Metropolitan District Companies, in connexion with the Inner Circle completion project, is to be strongly opposed by the local authorities at the East End. At a special meeting of the Whitechapel Vestry which has just been held on the subject, it was agreed to oppose the Bill in Parliament, and to petition against the preamble, and also against the clauses of the Bill, and to appear by counsel before the committee for that purpose. The petition which is to be presented against the Bill refers at length to the proposals of the promoters, and sets forth that its effect would be to seriously interfere with the trade of Whitechapel, and thus to cause great loss to the inhabitants during the construction of the line, besides reducing the rateable value of the parish. The petition further denies the necessity for the line, seeing that there is a railway from Fenchurch-street to Bow, and also from Liverpool-street to Bow, in addition to a double line of tramway along the main thoroughfare. It is also alleged that the Bill is defective in engineering respects, and ill-devised, and that there are no clauses offering sufficient protection to the existing interests that would be injuriously affected by the works. The trustees of the parish of Whitechapel have agreed to join the Vestry in opposing the Bill.

OBITUARY.

MR. PETER LE NEVE FOSTER, M.A.

WE have received, with great regret, intelligence of the death of this gentleman, which occurred quite suddenly at his residence, Wandsworth-common, on Thursday, the 20th ult. The deceased was a native of Norwich, born in 1809, and, entering at Cambridge, took his degree in 1830, and was elected fellow of his college. He took a prominent part in organising the first International Exhibition in 1851, and was two years afterwards appointed secretary to the Society of Arts, which office he filled to the day of his death.

His great administrative ability and extensive knowledge peculiarly fitted him for such a post, and he was ever ready to help forward any movement tending to raise the standard of artistic or scientific culture. His truly genial temperament led him to afford ready access to any who needed information or counsel.

A subscription was started a short time since for the purpose of presenting him with a testimonial, on completion of the twenty-fifth year of his connexion with the society, and it is hoped that the fund may now be augmented, with a view to making it a valuable offering to his widow.

M. EUGÈNE MILLET.

The death is announced of M. Eugène Millet, architect, Paris. He was a pupil of M. Viollet-le-Duc, and was a member of the Commission des Monuments Historiques. He was the restorer of the Cathedral of Troyes, and architect of all the new portions of that of Moulins. He entirely remodelled (during many years) and largely rebuilt the Château de St. Germain. Unlike many of his French colleagues, M. Millet introduced into the drawings he made, generally with his own hand, all the minutiæ of construction and detail. Latterly he had a large practice in Paris. Had the Empire continued, he would in all likelihood have succeeded M. Viollet-le-Duc as Inspector-General of Diocesan Edifices. The Republic gave the post to M. Ballu, and Millet is stated to have felt this bitterly.

THE PROPOSED RESTORATION OF PRESTBURY CHURCH, NEAR MACCLESFIELD.

SIR,—Learning recently that there was a scheme afoot for the restoration of Prestbury Church, and knowing but too well that the term "Restoration" is, generally speaking, a modern euphuism for wholesale destruction and the worst desecration, I have paid two visits of some duration to this venerable shrine, having upon the last occasion the advantage of the company of a friend, a well-known archæologist, whose observations were most valuable suggestive. We made a careful examinatio the buildings, and I shall be glad if you can space for what I have to say upon this re important question.

The following chronological table, ch compiled from a pamphlet issued by the wo be restorers, may be of service to those of readers who care to visit the church while still worth visiting. It shows, too at a gl what a storehouse of the handiwork of diffe ages the people of Macclesfield and its ne bourhood now possess in the grand old struct

Part.	When Built.	Notes.
Chancel.	1181–1230.	The only *original* window remaining is triplet lancet on the north side: there is very fine rectilinear east window scarc touched by restorers. The walls lean considerably, and require some support.
Nave (body).	After 1230.	Some portions may be still earlier.
South Aisle.	About 1350.	The easternmost window on the south s is a beautiful flamboyantly-curvilin example; the other south windows are p ones of 1613. The east end window restoration of 1856,—a poor, spiritless, copy probably a good original: the ancient st beneath it escaped by a miracle.
Nave Clearstory.	Beginning of sixteenth century.	Has extremely small two-light windo blocked on the north side; but this scarc affects the lighting of the church.
South Porch.	Ante 1182.	Almost untouched.
Tower.	About 1480.	
Stained Glass.	1601.	Only a fragment remains in the Legh chi
Pulpit.	1607.	In perfect condition.
Nave Roof.	1674.	It is stated that the roof pitch was previo higher: this is questionable.
Nave Pewing.	1707.	A great deal of it much earlier: pieces the earlier bench ends are incorporated.
West Gallery.	1711.	Very good screen under.
Nave Ceiling.	1720.	
North Aisle.	1739-41.	At the east end is the Legh chapel, splendid oak screen and wainscoting.
Chancel screen and arch.	End of last century.	

Let us now examine the scheme of restoration. A proposed outlay of upwards of 7,000*l.* (say 10,000*l.* in the long run) is to be applied thus:—First Division: (*a.*) Nave, 2,004*l.*; (*b.*) north aisle, 1,905*l.*; (*c.*) tower, 563*l.*; (*d.*) south porch, 97*l.*; total, 4,569*l.* Second Division: chancel, 920*l.* Third Division: organ-chamber and vestry, 1,795*l.*

Taking the projects *seriatim*, in detail, so far as publicly known. *Imprimis*, the nave is to be completely gutted of its fine oak pewing and west gallery,—a piece of utterly wanton waste, for this woodwork is in excellent condition, and all time-mellowed to a deep rich brown; the pews are most of them comfortable and capacious, and in no sense deserving of the hard names showered upon them by the author of the pamphlet already mentioned. In many of them portions of the early sixteenth-century carved bench-ends are to be found in use as seat-bearers, where they are secure from damage, and accessible to the student or lover of good work who may wish to see them. If disturbed, the whole will inevitably be lost. The old west gallery harmonises with the seating, and, though plain, has some interesting heraldic decorations. It might be straightened and made secure; whilst its destruction would involve that of the handsome oaken screen of earlier date beneath it, and of another such screen between the organ and the ringers' floor.

The present stone floor of the nave, in quiet unison with the simplicity of its surroundings, appears to be condemned to follow the oak-seating, probably to make room for a showy pavement of many colours from the potteries. Still, with a judicious application of soap, sand, and scrubbing-brush, the old floor, with some repairs and the cure of damp, would remain by far the best for its purpose. There is not so much objection to the removal of the flat ceiling of the nave, although it was probably placed there for acoustic reasons, or to make the church warmer.

The restoration guide is suspiciously silent as to the intentions with regard to the nave piers and their varied and interesting caps, but the amount of the estimate leaves ground for fear that, as is usually the case, they may be so tempered with as to annihilate their historical artistic value. Some quaint little wro candle-holders, the work of former vi smiths, will doubtless be carted away a the builders' *débris*, to make way for "Mediæval" (save the mark!) metal "New lamps for old!"

The fate intended for the north aisle is ini a piece of restoration *à outrance*. The ing is a plain specimen of the style in Sir Christopher Wren and his disciples wo but a style which strikes the restorer "architectural taste at its lowest ebb, whe idea of the beautiful, the decorous, and decent in the services of the sanctuary passed from men's minds." Now, would pe of this sentiment experience a sensation relief were St. Paul's burnt to the grou But meantime, if the custodians of our anc buildings are to recklessly make away whatever they cannot understand or appreci neither the friends nor the foes of their honoured monuments will much longer any work for their hands. It is propose lower the north aisle walls about 10 ft. abolish the present lofty lights, substitu comparatively short windows filled with h stone tracery; further to interpolate slo buttresses on the outside between these wind Those who can picture this astonish metamorphosis will form a lively conceptio the effect of these thoroughly Gothic feat embedded in the strictly Classic masonry of present wall, with its Classic plinth-cou The thing is really too preposterous. Geome tracery, too, is spoken of, although there not appear to be an atom of work of Geometrical period about the whole place.

The restoration pamphlet bemoans a "gen gloom and disfigurement." Truly the ed shows signs of neglect, many of the wind being obscured by repeated coats of what was whitewash; but does no better rem for this suggest itself than *the reduction by two-thirds* of the lighting capacities of north-aisle windows? In point of fact, these very Wren windows which now brig

whole church, and there is an excellent lth and repose about the lofty round-ed openings and their filling of undulating l glass in plain leadwork.

) Why "*renew*" the tower battlements? present ones are the original ones, deeply ed by the storms of centuries. Why not e and sustain these? Will spick-and-span copies harmonise better with the grave ue tower below? Whence the authority nsirability for the innovation of new pin-s in the centres of the sides? It would be esting if any one of your readers could in the meaning of the curious carving of a of shears or scissors now upon the south of the old embattlement.

en, again, why sweep away the outer stone ocases on the sides of the tower, which so ance the picturesqueness of the west-end ? One of them needs but little attention, the other might, with some trouble, be tained.

) The south-porch floor is to be lowered, eby the destruction of the present old doors the very early stone seats built into the of the porch will become necessary. Why all this be attempted?

e second division of the restoration ne comprises the destruction of the present cel arch, which corresponds with the cel roof, and I presume of the present cel screen also, which is about a century nteresting and quite perfect. Then the cel arch is to be "restored," which means ably that a brand-new copy of the earliest any trace of which is almost obliterated) be erected,—an extravagant idea when now that this original chancel arch must been designed to accompany roofs of very h pitch, not low ones, such as the present.

e third division consists of the proposal for w organ-chamber opening both into the cel and north aisle. This wildly revolu-ry scheme will demolish the ancientest re of the whole church,—the lancet triplet ow on the north side of the chancel, with its il mullions and well-moulded caps. Let gash be cut in the chancel wall, and the ning old vestry building be overthrown, and ems almost a certainty that the whole cel, already insecure, must crumble to the nd. Are we to suppose, then, that an en-w new chancel is contemplated as the crown-o erformance of this restoration? Further ental to this part of the enterprise will be emoval of a number of memorial brasses marble monuments, the loss of the east ow of the north aisle, with its fragment of lass, and an unknown quantity of chopping, ing, and sawing of the beautiful old oak-s of the Legh chapel.

t have not the parishioners of Prestbury good sense, too much love and sympathy, heir reverend old edifice to vote the neces-supplies for its spoliation and degradation? the bounden duty of all who in any way lo so, to resist such deplorable undertakings e uttermost; for these reliquary-houses of arts of past periods are the finest of all an monuments.

A Member of the Society for the Protection of Ancient Buildings.

DRAINAGE WORKS.

Wood Green.—A new pipe sewer, called the hgate-road sewer, is approaching comple-

It commences by a junction with the ing main sewer at the Wood-green end of lship-lane, and runs under Jolly Butchers'- and the High-street to the Bowes Park Estate nging to Mr. Alderman Sidney), where the sh of Edmonton joins that of Tottenham, entire length being 1,400 yards. The age depth is 30 ft., the greatest 45 ft. The cipal part is through strong London blue . The pipes are 18 in. in diameter, with ged clay joints. There is a manhole at ry 500 ft.,—ten altogether. These manholes composed of 9 in. brickwork, and are oval plan. That near St. Michael's Church is ft. deep, and that close to the Fishmongers' shouses, 38 ft. There are ten ventilators. re are also junctions for connexions with se sewers every 50 ft. In order to save ense, these junctions are brought up within of the surface, and the terminations run way the general body of sewage will flow. h of these junctions will be able to take the nage of a number of houses. The work has been carried out, from plans by the surveyor to the Tottenham Local Board, by Mr. John Bell, of Wood-green, the contract price being 2,637*l.* 18s. 6d.

CONVERSION OF THE HACKNEY MASONIC HALL.

The Hackney Public and Masonic Hall, which was erected by a company a few years ago, at a cost of about 3,500*l.*, has just been purchased by a body of capitalists, and is intended to be appropriated to other purposes than those for which it was originally built. At present the building remains in an unfinished state, and the intention is to complete it for church purposes, Sunday schools, concerts, and lectures. In front of the existing building spacious rooms are to be erected, and when the hall is finished there will be accommodation in it for 2,000 children. It is estimated that about 4,000*l.* beyond the purchase-money will be required to complete the building for its future intended purposes. It will henceforward be known as the Morley Hall, this name having been given to it in honour of Mr. Samuel Morley, M.P., whose liberality in this part of London is said to have been freely exercised.

COMPETITIONS.

Proposed University College Buildings, Bristol. A meeting of the council of the University College was held on the 20th ult., at the Fine Arts Academy, for the purpose of selecting an architect for the new building that it is proposed to erect adjacent to the Grammar School in Tyndall's-park. Mr. F. N. Budd, the chairman of the committee, presided. Eight architects sent in designs and plans, viz.:—Mr. Henry Crisp, Mr. Stuart Colman, Mr. C. F. Hansom, Mr. Moncrieff, Mr. S. C. Fripp, Mr. J. H. Hirst, Mr. H. E. Edwards, and Messrs. Lysaght & Scoones. After giving the designs some hours' consideration, the council decided that they would not definitely adopt any plan, but that whatever building might be erected, Mr. C. F. Hansom should be the architect. Mr. Hansom submitted plans of a Tudor building, the larger one containing 12,000 feet of space, and the smaller one 10,000 ft. The portion that he proposes to erect at first is estimated to cost 14,000*l.*

Taunton.—The proprietors of the North-town Nursery Estate, having advertised for plans for laying out the property for building sites, received about 100 sets of plans from architects in all parts of the country. In the work of selection, Messrs. R. Barnicott and George Saunders, jun., the owners, were assisted by Mr. Davis, builder, of Taunton. The premiums were awarded as follows:—No. 1 (50*l.*), Messrs. Habershon & Tawckem, 38, Bloomsbury-square, London, W.C., and Newport, Monmouthshire; and No. 2. (10*l.*), Messrs. Poole & Jones, Wandsworth-common, London, S.W. The two plans next in order of merit were from Messrs. Medland & Son, Clarence-street, Gloucester, and Messrs. Enil & Clive, Chepstow.

OPEN SOIL PIPES AND FROST.

Sir,—I was glad to see Mr. Norman Shaw's letter in your issue of the 15th ult., as it gave some valuable experience on a very important question from a sanitary point of view. The distinguishing feature of the modern sanitary system of drainage is that all drains and discharge-pipes are, as far as possible, kept outside the houses, and opened freely to the air by "disconnexion" and ventilation. That waste-pipes from sinks, baths, &c., should be so treated is now generally admitted, but objections of various kinds have been raised to this proceeding in the case of soil-pipes: witness the correspondence in your paper last year. These objections had all been proved by experience to be groundless, except that we were waiting for evidence to prove or disprove the apprehension that the system would be disarranged by frost. There was strong reason to think that this fear was as groundless as the others; at the same time it was impossible to affirm with certainty that it was so, as there had been no really cold winter since the system of disconnecting soil-pipes had been carried out to its full extent. We have now just passed through the coldest winter there has been for the last forty years, and have therefore had an excellent opportunity of bringing the objection to the crucial test of actual experience.

Mr. Norman Shaw has given you his experience, which of itself ought to be almost conclusive, as he has carried out the system of disconnecting soil-pipes more boldly than most people, and his own house is situated in an exposed position on Hampstead Hill. It is important, however, to collect as much experience as possible on the subject, and you may, therefore, like to know mine, as I have been at some pains to investigate the matter. I have obtained particulars from forty-seven houses, schools, institutions, &c., in London and different parts of the country where I have myself superintended the execution of the drainage, and therefore know all the details of the arrangement, and the following is the result of my investigation,—

In the houses in question the soil-pipes are all open at the top for ventilation, and (with one or two exceptions) all cut off at their lower end from the sewer or main drain by open disconnexion, the vast majority of the pipes are all outside of the house. I find that in *no single case* has the outside disconnexion of the soil-pipe frozen, and in only one case has there been any freezing in the soil-pipe itself. The soil-pipe in which the freezing occurred was curiously enough for the greater part of its length inside the house, and the freezing arose from a leaky valve, which allowed a constant trickle of water down the pipe. Directly the leakage was stopped the freezing in the soil-pipe stopped, though the frost continued. In the remaining forty-six houses, schools, institutions, &c., containing considerably more than 100 open soil-pipes and disconnexions, these worked throughout the frost without a single hitch.

Mr. Norman Shaw and myself are entitled to claim for this experience that it proves the safety of our disconnexion system against injury by frost. My own single exception is one of a kind that proves the rule. A continuous trickle of water would, of course, freeze in an exposed pipe of any kind. The reason why we are not troubled with frost in the open soil-pipes in the fashion that people expected is, that with our system in good order we keep the pipes empty to the completest possible degree, and just as there is nothing in them to stink, so there is nothing to freeze.

Rogers Field, M.Inst.C.E.

POSTAL REFORM.

Sir,—Within the last few weeks we have sent out a good many hundred circulars to various parts of the West of England, and were surprised to find them all surcharged, because, forsooth, they contained four thin pieces of paper about half an inch square, each spread with calcarium. There was no pretence that they were overweight; but after a correspondence with the General Post-office in London, we were obliged to be satisfied with the secretary's dictum that each packet is liable to extra payment (greatly, we fear, to the annoyance of our customers as well as ourselves), because the thin wash of colour was spread direct with a brush instead of being first spread on a lithographic stone, and then transferred to the small pieces of paper.

It appears, by yesterday's Parliamentary reports, that Government has in contemplation an Act for the amendment of some of the anomalous regulations of this department, and it is to be hoped that sufficient outside pressure may be promptly brought to bear upon it, to secure the public for the future from the blunders and imperfect definitions in force with regard to the book and sample post, as well as securing greater liberality with regard to the whole management of the half-penny post.

J. Sessions & Sons.

VACANT APPOINTMENTS.

Sir,—In reply to a letter signed "P.," which appeared in your issue of February 22nd, I beg to inform the writer that a circular was on the 14th inst. addressed and sent by post to each candidate for the Surveyorship of Skipton, informing him of the appointment of Mr. Arthur Ramsden, of the borough surveyor's office, Huddersfield, to the vacant situation.

John H. Ellis, Clerk to the Board.

BOOKS.

Sir,—Will some fellow-reader kindly give me advice as to buying the best *elementary* works on Architecture; also the prices where they can be obtained?—And oblige

Youngster.

DANGER FROM PLUG-HOLES.

UPWARD *v.* WEST MIDDLESEX WATERWORKS COMPANY.

The plaintiff in this case (tried in the Exchequer Division on the 25th ult., before Mr. Baron Huddleston and a special jury) sought to recover compensation for personal injuries caused by the alleged defective condition of a plug-hole.

The defendants denied their liability, on the ground that the plug-hole was of the description generally used.

The plaintiff is a civil engineer, living in Linden-gardens, Uxbridge-road, and carrying on business in Great George-street, Westminster. While he was walking with his wife to church on Sunday afternoon, the 9th of February, 1877, and crossing the road at the junction of Linden-gardens and Uxbridge-road, his wife asked him to step back, so as to avoid a Hansom-cab. In doing so his foot caught in one of the defendants' plug-holes, and he was thrown down with such violence that he was much bruised and shaken, and one of his ankles became permanently injured.

The jury gave a verdict for the defendants. Judgment was entered accordingly.

MASTERS AND MEN.

Jedburgh.—The wages of the Jedburgh masons have been reduced from 7d. to 6½d. per hour.

Greenock.—In consequence of the intimation of the Greenock master masons of a reduction of a ½d. per hour, the men have, at a meeting, referred the matter to the Central Executive at Aberdeen, by whose advice they will be guided.

Carlisle.—A suite of shops on the Victoria Viaduct have just been completed, for Messrs. Johnston, Brothers. Messrs. Hetherington & Oliver were the architects.

REPAIR OF CHURCHES UNDER THE METROPOLITAN BUILDING ACT.

AT Southwark, the owners of St. George's Church, High-street, Borough, were summoned before Mr. Partridge by the Metropolitan Board of Works for an order to take measures for securing the head of the south-west door and west front of the parish church, and so much of the brick and stone work of the front or flank walls as was in a cracked and otherwise insecure condition.

Mr. Roger Smith, district surveyor for St. George the Martyr, Southwark, said that on the 7th of January he made a survey of a portion of the west front of St. George's Church. He found it in a dangerous condition, and certified that fact to the Metropolitan Board of Works. He was of opinion that the head of the doorway was in great danger of falling.

Mr. Partridge asked what material it was composed of.

Witness replied that it was of heavy stonework, and might fall on the doorsteps leading to the pavement and public streets. It was dangerous to persons more especially entering and leaving the church. The head of the doorway ought to be shored up as a temporary security.

Mr. Partridge asked what would be the probable expense.

Witness replied about 30*l.* or 40*l.*

Mr. Partridge observed that he understood the churchwardens were in court. Did they wish to say anything on the subject.

Mr. Robins, the senior churchwarden, said they did not wish to shirk their duty. They were aware that portions of the front of the church were in a bad condition, and they had placed the matter before the Vestry. The latter had repaired the interior and the exterior, and ought to pay for the repairs required by the Metropolitan Board of Works. The legality of doing so was disputed, and to test that point he had placed the whole of the facts before counsel, and on Tuesday the opinion would be before the Vestry.

Mr. Napier thought the churchwardens could make a voluntary rate for the repair of the church, as it was a very small sum.

Mr. Partridge observed that about two years ago All Saints' Church, Paddington, required to be repaired, and that was done by a voluntary subscription among the congregation. He then made an order for the repairs to be carried out in six weeks

Mr. Robins trusted that before that time the vestry would do all that was required.

VARIORUM.

WE mention at once that "Lectures on the Rise and Development of Mediæval Architecture, delivered at the Royal Academy, by Sir Gilbert Scott, R.A.," has been published by Mr. Murray, as many of our readers are simply waiting the announcement in order to obtain the book. It forms two handsome volumes, with a large number of illustrations, and will receive full consideration at our hands in due course. ——We would mention also the publication of a "History of Egypt under the Pharaohs, derived entirely from the Monuments, by Henry Brugsch-Bey," and translated by the late Henry Danby Seymour (John Murray),—a book which should be read in conjunction with the new edition of Sir Gardner Wilkinson's work, lately reviewed in our columns. The "History" is in two volumes, and has coloured plates and maps.—— The March number of the *Nineteenth Century* includes two articles that will specially interest many of our readers,—one on "Artistic Copyright" by Mr. Holman Hunt; the other, "The Evils of Piecework" by Mr. W. Latimer. Mr. Gladstone, too, contributes a very elaborate and remarkable paper "On Epithets of Movement in Homer."——We have before us, in one volume for convenience of reference, "Debrett's Peerage and Titles of Courtesy," and "Debrett's Baronetage and Knightage," for the current year, and a very important, indeed almost essential, volume it is. "Debrett" has been a standard work for so many years, and the care taken in annually reviving the lists is so well known, that we need do nothing more than mention the appearance of the new edition. ——The "Boy's Own Paper" is intended not only to provide the youngsters at home and at school with wholesome reading, but to supplant, if possible, some of the literature the injurious effect of which all deplore. The first monthly part, just now issued, includes a large amount of amusing reading, with lots of pictures for sixpence.

Stannah's Patent Stuffing-Box.—Mr. J. Stannah, engineer, has patented a new stuffing-box, which appears to deserve examination. Some of the advantages are, the packing can be kept tighter; at the least, two loose parts are saved, the gland and one screw; the engine or machine to which it is applied is rendered more compact; the liability of the rod to get jambed, through the ordinary gland being unevenly tightened down, is done away with; and to put more packing in it is only necessary to take out one screw. The patentee has adopted the arrangement in his "patent pendulum pumps" to very great advantage. It renders them more convenient, lighter, cheaper in construction, and more effective, through the packing being tighter.

Miscellanea.

The Guild of St. George.—The first ordinary general meeting of Mr. Ruskin's Company or Guild of St. George was held in Birmingham last week. The Company was formed for the purpose of buying land in England, and thereon to train into the healthiest and most refined life possible as many men, women, and children as the land can maintain in comfort. The vital principle of the guild is that whatever profit is made out of the management of the land is to be applied to the comfort and welfare of the workmen themselves. Alderman Baker presided, and read a letter from Mr. Ruskin in which he said, "I never contemplated any legal difficulties of the kind I meet with. I entirely decline any further responsibility in such matters. The office of master as defined in *Fors* is one of authority over persons voluntarily rendering obedience to great principles, and not authority enforced by law at present constituted. For all the organisation of guild, a clerk or secretary must be appointed to be responsible, with directions from solicitors, for I am virtually dead to such business." A report from Mr. Ruskin was read, stating that the guild had estates at Sheffield, Bewdley, Cloughton, Mickley, Barmouth, and 500*l.* vested in Consols.

Consequential Damage. — Mr. Under-Sheriff Burchell presided over a special jury at the Middlesex Sheriffs' Court, in the case of "Fitzwilliam and Hall *v.* The London School Board," in which a question arose as to "consequential damage" to the Hall Park Estate, Paddington, by the London School Board taking two houses in Campbell-street for a school. The sum of 426*l.* 7*s.* was agreed upon as to the houses, and the principal question was the damage to the rest of the estate by the severance. The evidence on the point was conflicting. The surveyors for the claimants estimated the damage at 1,000*l.*, and described all schools as a nuisance to property, except of the lowest description. On the part of the School Board several surveyors stated that, so far from damage being done to the property by the school, a benefit would be conferred on it. The neighbourhood was inhabited by artisans, and schools in such places did not injure property. The jury, after a brief consultation, gave 424*l.* for the severance, which, with the value of the houses, made the verdict of 886*l.* 7*s.*

Newspaper Press Fund.—The report read at the annual meeting, held on the 22nd ult., stated that the roll now comprises 275 members resident in London, and 120 in the country, making a total of 395, of whom 81 are life members. The grants to members and the relatives of deceased members during the past year were forty; the number of persons assisted was twenty-seven, and the amount granted 1,082*l.* 19*s.* The grants to non-members were twenty-one; the number of persons relieved sixteen, and the sum disbursed 102*l.* 5*s.*; making an aggregate of sixty-one grants to forty-eight persons, and the total amount paid 1,185*l.* 4*s.* 700*l.* Canada Four per Cent. Guaranteed Bonds has been purchased, the society's investments in the hands of the trustees being thus increased to 11,450*l.*

London Cottage Mission.—A large concourse of hungry children on Wednesday again visited Conder-street Hall, Limehouse, to partake of the eighth Irish stew dinner which had been provided by the London Cottage Mission, of 14, Finsbury-circus. The children's parents, being mostly unemployed, the little ones are deprived of the nourishment they require, and though the weather was not cold, they ate as ravenously as ever the warm and nourishing meal. This week, in addition to the dinner, free teas have been given to a large number of children. We learn with regret that this work of charity must cease, unless the benevolent send help, for we are given to understand that the funds are exhausted. This mission has free reading-rooms for working men, extensive Sunday schools, and does much good work. Contributions may be sent to Miss F. Napton, 304, Burdett-road, Limehouse.

End of the Strike at Liverpool.—On Monday about 6,000 labourers who struck work at Liverpool docks three weeks ago resolved to resume work at the reduced rates of 4*s.* 6*d.* per day and 7*d.* an hour overtime. The men gave way on the advice of their own leaders. It is computed that over 40,000 men were at work at the docks at night.

"Deeds."—This is the title of an or comedy, written and now re-written an proved by Mrs. C. J. Freake, and whic performed before a large and critical aud at Cromwell House on Tuesday night last remarkable success. We do not profess t note of amateur theatricals, as a rule Mrs. Freake's name is so well and w known amongst our readers that the doin Cromwell House have a particular int The play has an interesting story, geniously constructed, and very well wri and when we add that it includes both French and English, written and com by the author, it will be seen that no praise is due to Mrs. Freake. The piec very well acted by Mrs. Copplestone, Miss more, Mr. Dundas Gardiner, Mr. Cotsford Mr. A. G. Samson, and Mr. Chas. Coln especially by the two last-named gentle indeed, as respects Mr. Colnaghi, we d recollect any professional actor on the who could sing the music of his part, a fo nobleman speaking broken English, *and* better than he did. A charming scene built up for the performance.

Bedford High-street.—The High-stre Bedford is filling up. Describing the fro of the business premises of the Messrs. Bo editor of the *Bedfordshire Times* writes,—"A of red brick, highly worked, it is a novelt our town, and as there is remarkably litt offend an accurate taste, the numerous d it presents are interesting. The work of g is to blend structure with art, and it has said that English building contains in provi districts very little architecture. Incongr mixtures of material certainly often offen feelings either as regards structural req ments or more often as regards colour. D and decoration often from being misplace to convey effect, even if they do not offen their nature; but here is a specimen of Q Anne style which is an acquisition to the st none the less so, it may be said, from extreme contrast it presents to our own white stone structure just opposite, in v decoration, if not detail, has been almost ave The shop is the sumptuous and elegant of Mr. Sage, of Gray's-inn-road, and is ca up with a fluted brick pilaster on either These support a massive cornice with d panels under it, while above rises a wel sidered gable with attic windows and the in large letters. The first floor has a window in Dumfries stone. Between the and second floors reappears the Bull with the motto 'Greenwich Time,' and niche above is a figure of 'Father Time,' with the panel work is the production of Harry Hems, of Exeter. For the design a building itself Bedford is indebted to Mr. Day, of Victoria-terrace. The moulded b are from Cossey, near Norwich, the rest Fareham."

National Water Supply, Sewage, Health.—The annual conference will be he the rooms of the Society of Arts, on Thur and Friday, the 15th and 16th of May, 187 National Water Supply, Sewage, and Hea Papers relating to the above subjects wi read and discussed. There will be an Exhib of Mechanical and Chemical Apparatus in nexion with Water Supply, Treatment of Sew and Health. The Council of the Society of have determined to offer the Gold Medal o Society, and three silver medals, for the suggestions, founded upon evidence alr published, for dividing England and Wales watershed districts, for the supply of pure w to the towns and villages in each district.

The Streets and the Snow.—The Edit the *Fireman* writes:—"There need not be difficulty in removing the snow from the tr impeded thoroughfares that local authori would have us believe. I remember seei very simple operation performed two or t years since in Leicester-square, and ca understand why it has not been repeated du the exceptionally severe winter, from which only too evident we have not yet emerged. *modus operandi* was as follows:—One of M weather's steam fire-engines was placed ne drain, beside it being a receptacle into w the snow was thrown. A small steam-pipe the boiler of the engine acted on the s which was quickly thawed, and allowed to into the sewer, disappearing as fast as t could bring it up."

e Hosking's Patent Blind Roller.—
ller patented by Mr. W. Luce Hosking, of
r, can be made in any length, of two
semicircular in section. The bottom
s a groove along the entire length of its
upper surface, and close to its front edge.
p half is hinged to it at its back edge,
s a rib or feather along its flat surface.
the two halves are brought together, the
into the groove, and between these parts,
r four or more pin-points in the bottom
the roller, the top edge of the window-
s gripped, and the whole secured by a
latch, the roller being then round, and
arance solid, with the blind hanging from
oint of its diameter. Tin-tacks and
on of the blind are superseded; the blind
better over the window it has to cover,
venly round the roller. The roller can
d with end sheaves for either a single or
cord; but when the single cord is em-
a novel kind of cord-holder can be used
requires no other fastenings. The cord-
is a small circular box, about the size of
nny, for screwing to the window-frame;
d passing down perpendicularly from the
threaded through the holder, and when
nd is required to be raised, is pulled
eely, or when lowered is allowed to run
ough it. When, however, the blind is
to remain in any height up the window,
d is pulled a little to the right by the
and finger, and catching against a loose
am inside the holder, the cam rises and
he cord between it and a raised surface
he cord-holder, till it is again relieved by
mb and forefinger.

ington Sewage Farm, Croydon.—
oal Board of Croydon have decided to
Mr. Bailey Denton to advise them gene-
the sewage arrangements of this farm,
as on the advisability of deep-draining
d, and the establishment of filter-beds
nward filtration, so as to relieve the
nd to make it more profitable.

TENDERS

ishings, &c., to the Hastings Public Baths.
ross, Jeffery, Skiller, & Wells, architects:—
ks £2,363 0 0
rman & Co. 1,850 0 0
lor 1,830 0 0
od 1,773 0 0
ury 1,765 0 0
ttenden 1,760 0 0
ches 1,753 0 0
da (accepted) 1,720 0 0

Building premises, No. 70, 71, and 72, King
l-street, City, for the Reliance Mutual Life Assur-
ety. Mr. F. Chancellor, architect. Quantities
by Messrs. Curtis & Sons:—
wn £13,500 0 0
re, Brothers 13,375 0 0
man & Fotheringham 13,370 0 0
der 12,946 0 0
ad & Co. 12,290 0 0
ter 12,243 0 0
wns 11,973 0 0
ry & Co. (accepted) 11,921 0 0

e erection of an Infirmary at Notting-hill, for the
es of St. Marylebone. The whole of the works to
cted in twelve months. Messrs. H. Saxon Snell
chitects:—

	Walls in Mortar.	Walls in Portland Cement.
t	£127,685	£136,755
dem & Co.	124,993	131,993
	120,190	126,860
rett	119,783	126,990
ster	118,800	126,000
& Co.	117,350	123,850
and, Brothers	116,415	121,800
Brothers	114,831	124,331
& Co.	111,463	118,315
& Son	108,348	115,935
spell (conditionally)	105,117	110,9.7

storation of St. George's Church, near Bristol,
ury by fire. Mr. P. E. Masey, architect.
s by Mr. Arthur Deane:—
pheason £7,585 0 0
rtin 7,000 0 0
lliams 6,237 0 0
mphries 5,697 0 0
cker 5,575 0 0
well 5,527 0 0
wis & Edbrooke 5,427 0 0
ker & Son 5,350 0 0
therley 5,156 0 0
ris 5,145 0 0
berts & Thompson 5,119 0 0
ll & Hook 5,118 0 0
lips 5,000 0 0
ue & Ashley 4,999 15 0
phens & Bastow 4,999 0 0
les 4,995 0 0
ven 4,981 0 0
vett 4,898 0 0
nus & Son 4,874 0 0
uss 4,727 0 0
kins & Hill 4,697 0 0
ner 4,600 0 0
es & Shipp 4,555 0 0
ven 4,490 0 0
rkin & Son (accepted conditionally) ..... 4,390 0 0!

For rebuilding premises, Union-court, Old Broad-street. Mr. Sextus Dyball, architect. Quantities by Mr. E. W. Stoner:—

Greenwood	£3,366 0 0
MacCowan	3,358 0 0
Taylor	3,345 0 0
Brass	3,280 0 0
Merritt & Ashby	3,194 0 0
Kirk	3,180 0 0
Shepherd	3,090 0 0
Scrivener & White	3,014 0 0
Toms	2,967 0 0
Rudkin	2,955 0 0
Morter	2,949 0 0
Faulkner	2,921 0 0
Croaker (accepted)	2,819 0 0
Lyons	2,700 0 0

For works, Kings-road, Chelsea, for Mr. Jones. Messrs. Perry & Reid, architect. Quantities supplied:—

Brass	£2,394 0 0
Craske	2,116 0 0
Browne & Robinson	2,091 0 0
Clemence	2,090 0 0
Richardson	2,075 0 0
Clarke & Bracey	1,986 0 0

For two houses and shops at Hersham, Surrey, for Mr. F. J. Kerry. Mr. Henry Peak, architect. Quantities not supplied:—

Faulkner	£2,890 0 0!
Kerry	2,020 0 0
Lee	1,950 0 0
Farley	1,850 0 0
Wood	1,770 0 0
Clark	1,750 0 0
Brown, W. & A. (accepted with modifications)	1,599 0 0!

For new show-room and alterations at No. 28, High-street, Guildford, for Mr. John Simpson. Mr. Henry Peak, architect. Quantities supplied:—

Nye	1,294 0 0
Clark	1,227 10 0
Moon	1,120 0 0
Smith & Sons (accepted)	1,096 7 0

For the erection of dispensary and warehouse premises in Bartholomew-close, for the Committee of the Royal General Dispensary. Mr. William Ward Lee, architect. Quantities by Messrs. Welch & Atkinson:—

Rider & Son	£8,148 0 0
Ashby, Brothers	7,965 0 0
Conder	7,896 0 0
Woodward	7,750 0 0
Browne & Robinson	7,724 0 0
Colls & Sons	7,631 0 0
Brass	7,628 0 0
Brown	7,500 0 0
Higgs & Hill	7,494 0 0
Nightingale	7,483 0 0

For rebuilding No. 4 and, 5, Grocers' Hall-court. Messrs. Davis & Emanuel, architects. Quantities by Mr. H. P. Foster:—

Pritchard	£3,834 0 0
Williams	3,783 0 0
Colls & Son	3,739 0 0
Nightingale	3,690 0 0
Merritt & Ashby	3,667 0 0
Brass (accepted)	3,545 0 0

For vestry-hall and offices for the parish of Bromley St. Leonard, London, E. Messrs. A. & C. Harston, architects:—

North, Brothers	£7,170 0 0!
Abraham	5,990 0 0
Braid & Co.	5,986 0 0
Wood	5,943 0 0
Palmer	5,645 0 0
Sheffield & Prebble	5,643 0 0
Reed	5,549 0 0
Shapley	5,495 0 0
Gregar	5,389 0 0
Perry & Co.	5,370 0 0
Cocks, J. & H.	5,266 0 0
Stephenson	5,239 0 0
Beale	5,220 0 0
Parker & Evans	5,095 0 0!

For the erection of a factory and warehouse, High-street, Homerton. Mr. A. H. Kersey, architect. Quantities by Mr. Henry Lovegrove:—

Thomerson & Co.	£2,417 0 0
Woodward	2,405 0 0
Farrant & Sons	2,394 0 0
Nightingale	2,314 0 0
Stimpson & Co.	2,263 0 0
Scriviner & Co.	2,161 0 0
Jarvis & Son	2,147 0 0
Batchelder (accepted)	2,130 0 0

For the erection of five cottages, Shepherd's-lane, Homerton. Mr. A. H. Kersey, architect. Quantities by Mr. H. Lovegrove:—

Batchelder	£1,697 0 0
Thomerson & Co.	1,695 0 0
Tarrant & Sons	1,690 0 0
Niblett	1,680 0 0
Nightingale	1,643 0 0
Stimpson	1,643 0 0
Jarvis	1,561 0 0
Scrivener	1,538 0 0
Bishop & Hooper	1,488 0 0
Brealy	1,450 0 0

For Venetian blinds for the Guardians of the Poor of the Holborn Union. Messrs. H. Saxon Snell & Son, architects:

Clarke	£833 5 4!
Axford	718 0 0
Gunnan & Sons	625 0 0
Williams	620 10 3
Baxter	617 7 8½
Godlonton	609 1 10
Collyer & Son	590 2 0
Huskins	580 0 0
Hodkinson & Clarke	581 15 0
Janes & Co.	563 0 0
Scruton	545 0 0
Atkinson & Co.	525 0 0
Davey	518 0 9
James & Son (accepted)	495 18 9!

For new roads, sewers, and surface-water drains for the British Land Company (Limited), on their estate at Croydon. Mr. Henry B. Michell, surveyor:—

Killingback	£3,633 0 0!
Crockett	2,996 0 0
Thompson & Son	2,835 0 0
Richardson	2,520 0 0
Harris	2,500 0 0
Jackson	2,478 0 0
Pizzey	2,469 0 0
Keeble	2,459 0 0
Dunmore	2,347 0 0
Peill (accepted)	2,330 0 0!

For works and alterations at Glasshouse-street, Whitechapel, for the Metropolitan Board of Works:—

Nowell & Robson	£2,542 0 0
Griffiths	2,530 0 0
Aspinall & Son	2,490 0 0
Mowlem & Co.	2,290 0 0

For a house at Bickley, for Mr. J. Dakers. Mr. J. B. Wones, architect:—

Thompson	£2,240 0 0
Moat	2,150 13 8
Crossley	2,120 0 0
Jenkins	1,950 0 0

For seven houses in the Geraldine-road, East-hill, Wandsworth, for Messrs. R. & G. Neal:—

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Osborne	6,967 0 0
Parsons	6,927 0 0
Lathey, Brothers	6,877 0 0
Lorden	6,789 0 0
Price	6,279 0 0
Holloway	6,148 0 0
Johnson	5,439 0 0

For taking down and rebuilding No. 281, East India Dock-road, for Messrs. B. Jones & Co. Quantities supplied:—

Reader	£1,492 9 0!
Edgecombe & Co.	1,484 0 0
Stamp & Bowtle	1,439 0 0
Webb & Co.	1,303 15 3
Hunt	1,290 0 0
Niblett	1,243 0 0
Crisp & Tomlin	1,237 0 0
Frost & Co.	1,226 14 6
Walker	1,200 0 0
Parker & Evans	1,139 0 0
Johnson	1,127 0 0
Bulford	1,069 0 0
Hardridine	1,028 0 0
Hart	958 10 0
Shields	943 0 0!

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Riddett	6,319 4 0
Bland & Son	6,040 0 0
Clark & Garrett	6,005 0 0
Potter	5,950 10 0
T. & H. Herbert	5,903 0 0
Stevens	5,801 4 0
Yeo	5,750 0 0
Thrall & Payne	5,720 0 0
Hall	5,700 0 0
Hewitt, H.	5,590 0 0
Hutchinson	5,482 0 0
Lindley	5,480 0 0
Hewitt, G.	5,399 0 0
Duxbury & Son	5,392 0 0
Allen	5,352 10 0
Lineham	5,330 17 0
Eagle	5,320 0 0

For the erection of a residence and stabling, exclusive of fittings and decorations, at Upper Norwood, for Mr. E. B. Normand. Mr. W. Paice, architect:—

Gibbon & Mitchell	£4,025 0 0!
Ward	3,971 0 0
Ward & Son	3,040 0 0
Colls & Son	2,990 0 0
Patman & Co.	2,965 0 0
Bowyer	2,879 0 0
Colley	2,849 0 0
Gibbs	2,844 0 0
Downs & Co.	2,835 0 0
Nightingale	2,763 0 0
Smith	2,697 0 0
Moore	2,324 10 0!

For rebuilding No. 68, 69, Cornhill, for Mr. Kino. Mr. W. Newton Dunn, architect. Quantities supplied by Mr. F. Lee:—

Adamson & Sons	£8,630 0 0
Marks	8,327 0 0
Dove, Brothers	7,995 0 0
Clemence	7,950 0 0
Bangs	7,887 0 0
Downs	7,333 0 0

For alterations and additions to the Charterhouse-street Branch of the London Joint Stock Bank. Messrs. Isaacs & Florence, architects. Quantities by Mr. L. C. Riddett:—

Brass	£1,112 0 0
Scrivener & Co.	1,075 0 0
Conder	1,058 0 0
Patman & Fotheringham	1,049 0 0
Hook & Oldrey	1,047 0 0
Browne & Robinson	1,039 0 0
Simpson & Son (accepted)	998 0 0

For rebuilding No. 106, Cheapside, for Mr. T. W. Bickerton. Mr. William Wimble, architect:—

Dove, Brothers	£5,935 0 0
Ashby & Horner	5,901 0 0
Scrivener & Co.	5,884 0 0
Ramsey	5,524 0 0
Laurence	5,397 0 0
Morter	5,393 0 0
Brass	5,161 0 9

The tender of Messrs. Guynan & Son has been accepted for blinds for the Borden Trust Schools, at Sittingbourne. Mr. C. Bryan Oliver, architect.

In list of tenders for alterations at the Prince Albert, Blackfriars-road (page 190), for "Regat" read *W Royal*.

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The Builder.

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A Group of Lighthouses.

O province in the vast field of structural design and execution is at once more special, and more interesting, than that in which the builder of the Lighthouse is called upon to exert his skill. Almost every problem which the architect has to solve has here to be met. The first consideration, under ordinary circumstances,—the choice of site,—is here usually determined by the imperative voice of necessity. It is not the site which is most imposing, most convenient, or most readily attainable, is selected by the architect of the Light-. It is, in nine cases out of ten, precisely that is most dangerous and most inaccessible. ne would dream of building a lofty tower ock that was covered by the sea at every and that lay twelve miles from the nearest except for the all-sufficient reason that a rock was a pregnant cause of fatal dis- and required to be distinguished by a s,—not to attract the sailor, but to warn om its treacherous vicinity.

calling the attention of our readers to a of these noble structures* (which may be to be the architectural symbols of charity, true sense of the word, as being costly efficient life-preservers), it is impossible to over the first on the list in point of time, ar as our own coasts are concerned, the stone Lighthouse of Smeaton (G on our), although the story has often been told, although this beautiful shaft will soon be ced by another tower. "By the design construction of the celebrated Eddystone house in 1755-9," said Sir John Rennie in exhaustive address to the Annual General ing of the Institution of Civil Engineers 846, "Smeaton introduced a new era in ary, which forms a brilliant epoch in his ble life, spent in the service of mankind, more particularly for the benefit of his ry."

e Eddystone, of which the name intimates haracter, rises abruptly from a great depth ter, about ten miles from the shore, near outh. The rock itself is a gneiss. On the visit of inspection paid to it by Mr. Robert nson (not Stephenson), the engineer to the hern Lighthouse Board, in 1818, that able noted that it was "shaken all through," ips at a considerable angle, perhaps one in , towards the south-west, and being under- on the north-east side for several feet, it be confessed that it has rather an alarming arance. "I am not, however," continued Mr. Stevenson, "of opinion that it has altered its state since the date of the erection of the tower. Since my last visit in 1813 I am not aware of any change upon it. On the north-east side, however, at what is called the 'Gut' landing-place, where the men sheltered themselves from the fire of Rudyerd's Lighthouse, but especially at low water of spring-tides, there is a hollowing of the rock which penetrates at least to the circumference of the base of the lighthouse. I therefore conclude that when the sea runs high there is danger of this house being upset, after a lapse of time, when the sea and shingle have wrought away the rock to a greater extent. Nothing preserves this highly-important building but the hardness of the rock and the dip of the strata; but for how long a period this may remain no one can pretend to say."

On the rock of which we have thus cited the best extant description, a lighthouse was built, in 1696-9, by Winstanley. So confident was the architect of the strength of his work, that he often expressed his wish to be in the lighthouse during the heaviest storm that could assail it. This wish was accomplished on the 27th of November, 1703, when, during a night of terrific tempest, the structure and its inmates altogether disappeared. In 1706 a wooden lighthouse was erected on the same spot by Rudyerd, which was burnt in 1755. Smeaton was then applied to as to its replacement, and his "Narrative of the Building, and a Description of the Construction of the Eddystone Lighthouse; with an Appendix giving some Account of the Lighthouse upon the Spurn Point, built upon a Sand," in folio, and illustrated with plates, was published in 1791, and may, no doubt, be consulted at the British Museum.

The idea present to the mind of Smeaton was to follow the outline of such a forest-tree as most easily resisted the force of the wind, and to articulate together his masonry, so as to give his tower as far as possible the strength of a monolith. He cut in steps the surface of the rock, which was entirely covered by the sea at high water. He notched the risers of the steps, so as to form dovetailed mortises, into which the blocks of the lower courses were accurately fitted. Each block had a level bearing, and a border of live rock rose around the sunken base. The stones in each course were dovetailed together, and additionally secured by cramps or joggles. The successive courses were fastened to each other by similar means. Six courses, rising together 8 ft. 4 in., brought the work to a level surface. The eight succeeding courses were built solid, and from this level the tower rose as a hollow structure to the extreme height of 85 ft. 6 in.

The floors of the tower were constructed on the principle of the arch, the haunches being bound with chains, to prevent them moving outward, to the injury of the walls. In this structural method Mr. Smeaton is thought to have followed the example of Sir Christopher Wren, in the construction of the dome of St. Paul's; being limited in the size of the stones he would employ by the then state of the granite quarries of Cornwall. The work was completed in 421 working days, being finished on the 16th of October, 1757, according to one authority (but in 1759 according to Sir John Rennie). The light was originally a chandelier with twenty-four candles, which, in 1807, was replaced by a catoptric light, consisting of an Argand lamp with parabolic reflectors.

That a structure which was so wholly original, and which was erected under such disadvantageous circumstances as naturally attended on the exposed site, should have resisted the storms of the Atlantic as long and as well as has been the case with this noble work, must always be considered as incontrovertible evidence of the genius of Smeaton. In course of time the tremor of the building, with each wave stroke from the westward, more especially during a storm from the west-south-west, has become more and more alarming. The joints of the masonry have yielded to the heavy strains thrown on them, and the sea-water has been driven through them into the interior of the building. The upper part of the structure, according to a report from Mr. James Nicholas Douglass, the worthy successor of Mr. Robert Stevenson as our chief living authority on lighthouses, has been strengthened on two occasions, viz., in 1839 and again in 1865, with strong internal wrought-iron ties, extending from the lantern floor downwards to the solid portion of the tower. On the last occasion it was found that the chief mischief was caused by the upward stroke of the heavy seas acting on the projecting cornice under the lantern gallery, which lifted the portion of the building above this level. After reducing the projection of the cornice about 5 in., and well fastening the stones together with through bolts, no further leakage has occurred at this point. The tower is now in a fair state of efficiency, but the gneiss rock on which it stands, as anticipated by Mr. Stevenson, has been seriously shaken by the incessant sea strokes on the tower; and the rock is considerably undermined at its base. It has, therefore, been determined to erect a new tower on a spot which affords a good foundation, near low-water level, at about 127 ft. distant from the present site. The focal plane of the present lighthouse is at an elevation of 72 ft. above high water. That of the new building will be 130 ft. The actual useful range of the light, which is now about fourteen nautical miles, will thus be extended to seventeen miles and a half. On the completion of the new tower, it is intended to take down the present lighthouse to the level of the top of the solid work, 29 ft. above high water at spring tides.

The new tower will be constructed entirely of granite. It will have a cylindrical base, 44 ft. in diameter, and 22 ft. high, rising to 2 ft. 6 in. above high water springs. From this base will spring the shaft of the tower, the section of which will be a concave elliptic frustrum, the generating curve of which has a

* See p. 257.

major axis of 346 ft., and a minor axis of 74 ft. The diameter at the base will be 35 ft. 6 in., leaving around it a margin of 4 ft. 3 in. as a landing platform. The height will be 138 ft. above the rock to the top of the cornice, and the diameter of the tower, under the cornice, will be 18 ft. 6 in. The tower will be solid (with the exception of containing a water-tank) to the height of 25 ft. 6 in. above high-water springs. At this level will commence the side-walls, with a thickness of 8 ft. 6 in., diminishing to 2 ft. 3 in. at top. The tower will contain nine apartments, each 10 ft. in height, in addition to the lantern, the seven uppermost being 14 ft. in diameter. The whole of the work will be dovetailed and cemented, both horizontally and vertically, according to the system introduced by Mr. Stevenson, and adopted at the Hanois, Wolf, and Longships Rock Lighthouses. The total cubic contents of the granite masonry will be about 69,000 cubic feet, and the estimated cost is 78,000*l.*

Before proceeding to give some account of a lighthouse which forms a very striking contrast to the grand simplicity of the design by Smeaton, it may be instructive to put on record the several heights to which different engineers, in different situations, have carried the solid portion of their lighthouse towers. Mr. David Alan Stevenson, in a description of the Dhu Heartach Lighthouse, which is to be found in volume 46 of the Proceedings of the Institution of Civil Engineers, thus cites them:—

Name of Lighthouse.	Engineer.	Height of Solid above High Water.
Eddystone.....	Smeaton.....	10 ft. 3 in.
Bell Rock	R. Stevenson	14 „ 0 „
Wolf	J. Walker and J. N. Douglass	16 „ 4 „
Bishop	J. Walker	23 „ 0 „
Chickens	D. & T. Stevenson...	21 „ 0 „
Skerryvore ...	Alan Stevenson.....	30 „ 6 „
Dhu Heartach	D. & T. Stevenson...	64 „ 4 „

The most magnificent lighthouse of modern times is the Tour de Corduan, the upper part of which occupies the centre of our illustration. It is built on a rock at the mouth of the river Garonne, on which river, at a distance of seventy miles from its mouth, stand the important commercial city and port of Bordeaux. The tower was commenced in 1584, under the reign of King Henri II., and was completed in 1610, in the reign of King Henri IV. The architect was Louis de Foix.

The island rock on which this great Pharos is built is exposed only at low water, when an area of 3,000 ft. of rock in length, by half that dimension in width, is left dry by the tides of the Bay of Biscay. On this rocky area is provided a cylindrical base, 135 ft. in diameter, which is built solid up to 10 ft. above high-water mark, with the exception of a cistern in the middle, and an opening for the stairs, which rise from the high-water level. This opening is closed by heavy doors, and is reached by a ladder from the rock below, when the tide permits. The sides of this circular base have a batter of 5 ft.; and around the platform of 125 ft. diameter, thus arrived at, a wall is carried, 12 ft. thick at its base, and 12 ft. high.

On the centre of this circular area is erected the tower, which is 50 ft. in diameter at its base, and consists of successively diminishing stories. The lower story is Doric; the second and third, Ionic; the fourth, Corinthian; the fifth, Composite. The interior was handsomely decorated and furnished; the apartments of the first and second stories being fitted for storerooms, and for domestic use. The third story formed a chapel, 31 ft. in diameter, and having a dome 40 ft. high. Over this rose the Corinthian cupola, of 21 ft. in diameter, to the height of 27 ft. It had a stone balustrade around, and supported the lantern, which formed the summit, and which was 9 ft. in external diameter, 5 ft. within, and 17 ft. high. The total height of this Pharos is 182 ft. 6 in.

When the tower was first built the light used was that of blazing wood, which was burned on a cresset in the lantern. Coal was afterwards substituted. The smoke rose through an opening of 18 in. diameter in the dome of the lantern, passed into a finial chamber above, and escaped by side openings.

In 1727 the lantern was destroyed, and an iron one substituted by M. Betri. In 1780 the catoptric system of illumination was introduced by Borda, and an Argand burner was placed in the form of a parabolic reflector of silvered copper. In 1810 the dioptric system of Fresnel replaced the catoptric method. The Argand lamp now used in this and in other French lighthouses contains four concentric circular wicks, which are supplied by pumps with a constantly overflowing supply of oil.

One reason for the ornate character of this lighthouse is said to be that it was designed as a part of the projected chain of water communication to connect the Atlantic with the Mediterranean. This is actually effected, on a minor scale, by the canal of Languedoc, which is 150 miles long, and connects the Garonne with the Mediterranean.

In the year 1786 the Board of Northern Lighthouses was constituted by Act of Parliament. The preamble of the Act states that it would greatly conduce to the security of navigation and of fisheries, if four lighthouses were erected in the north part of Great Britain. In 1874, according to M. de Franqueville (whose work "Du Régime des Travaux Publics en Angleterre" gives a bird's-eye view of our public works such as is not extant in the English language), the number of lighthouses in Scotland was 153, over a coast line of 4,469 nautical miles. At the same date the Irish lighthouses were 109, for a coast line of 2,518 nautical miles; those of England 335, for a coast of 2,405 miles; and those of France, 346, over a coast line of 2,763 nautical miles in length. The annual cost of the maintenance of the lighthouses of the United Kingdom is given by the same writer at 440,000*l.*, while the light dues paid by the shipping amount to the sum of 520,000*l.* per annum.

No name is more deservedly distinguished, among the architects and builders of Lighthouses, than that of Mr. Robert Stevenson, the second Engineer of the Board of Northern Lighthouses. He succeeded his stepfather, Mr. Thomas Smith, in this appointment, in 1798, and his annual reports to the Board come down to the time of his resignation in 1843. The commencement of that great change in the safety of our Northern shores which is intimated by the above-cited figures may be said mainly to be attributable to the successful erection, by Mr. Stevenson, of the Bell Rock Lighthouse, which occupied the years 1807 to 1811.

The Inch Cape or Bell Rock lies off the East Coast of Scotland, abreast of the entrance of the Firth of Tay, at a distance of eleven miles from Arbroath, the nearest point of land. This dangerous rock, of which the name is so familiar to every student of Scottish ballad, is barely uncovered by the sea at low water. In December, 1799, occurred a dreadful storm, beating from the north-east on the Coast of Scotland, in which it was ascertained that no fewer than seventy sail of vessels were stranded or lost, with many of their crews, on that coast alone. Among these, the *York*, a 74-gun man-of-war, is believed to have struck on the Bell Rock. She went down with all hands, leaving no one to tell the tale. The coast for miles was strewn with the wreck. "There was now, therefore," says Mr. Stevenson in his memorandum on the subject, "but one voice. There must be a Lighthouse erected on the Bell Rock." It was not, however, until 1806, on a second application to Parliament, that a Bill was passed, chiefly on the evidence of Mr. Robert Stevenson and Mr. John Rennie, authorising the Commissioners of Northern Lighthouses to erect a Lighthouse on the Bell Rock after the design of Mr. Stevenson, at the estimated cost of 41,843*l.* 15s. The tower is the one marked I on our plate.

While taking the Eddystone tower to a certain extent as his model, Mr. Stevenson's design showed admirable originality in detail. He adopted a height of 100 ft., instead of 68 ft., for the masonry, and he carried the solid part of the tower to the height of 21 ft. above high water, instead of 10 ft. 6 in. He adopted a greater thickness for the walls, and he introduced important changes in the internal structure, by which he secured a greater continuity, and obtained greater strength, in the masonry of the floors and walls. Instead of the arched floors of Smeaton, Stevenson made each floor-stone form a part of the outward walls, extending inwards to a centre stone; independently of which they are connected with copper bats, with a view to preserve the square form at the extremity, instead of dovetailing. These stones are also modelled with joggles, sideways, upon the principle of the common floor, termed feathering in carpentry, and also with dovetailed joggles across the joints, where they form part of the outer wall. At Mylnefield quarry there was no difficulty in procuring stones of the requisite dimensions, and the engineer foresaw many advantages that would accrue f this change in the method of the structure.

The spring of 1807 was occupied in prepa a floating lightship to be moored off the r erecting the timber framework which wa support the barrack to be occupied as a ten rary dwelling by the workmen, and carrying other preliminary arrangements. During season the aggregate time of low-water w caught by snatches of an hour or two at a t amounted to no more than thirteen and a days' work of ten hours each. The particu are given in the interesting life of Mr. Steven written by his son David. In this book, w is a worthy monument to his father's fa Mr. David Stevenson has addressed the gen rather than the professional, reader. He thus, while giving much interesting detail a the extraordinary demands on the courage and severance of the engineer that were continu made in the course of a work of such diffic and danger, given less than could be wishe structural detail, and has not even adde his biography a list of his father's works.

From the section, however, which he given of the Bell Rock Lighthouse, we find the diameter at the base is 42 ft.; that u the cornice, 15 ft.; the outline being an e tical curve. The sill of the entrance-doo 30 ft. above the lowest through course masonry; the height of the doorway is 7 ft. This opening leads, through what is other solid work, to a circular shaft of 7 ft. diam and 14 ft. high, up which a winding stair is carried. With that exception, the towe solid to the top of this shaft, which is 3 above the lowest course. Above this the w taper from a thickness of 3 ft. 6 in. to on 1 ft. 9 in., this part of the tower being divi into five apartments, each 10 ft. high, com nicating with one another by staircases titioned off from the rooms. Four of the thro floors above described cover the four lowe these rooms, and the fifth is covered b masonry dome. The cornice projects 2 ft. 6 all round, and is surrounded on the top b iron balustrade of a reticulated pattern. Wi this stands the lantern, 24 ft. in extreme hei A lightning conductor rises above the finia the dome-shaped top of the lantern, to height of 26 ft. above the top of the corn The tower is pierced for lights for the t upper chambers.

In the year 1808 the foundation-pit was s in the solid rock, and was filled up with masc to the surface level. The aggregate of all time which it was found possible to work du that year was only 220 hours, so that more than a month's working time was obta during the first two years. In 1809 the woo barrack for the workmen was completed, the masonry was brought to a height of 1 above high water of spring-tides. In 1810 masonry of the tower was finished, and lanterns fixed in place; and on Februar 1811, the light was, for the first time, exhibi The total height of the building measures 12 on the section. It is usually called 115 ft 85 ft. above the sill of the entrance doorway

We must defer to another opportunity further remarks on the lighthouses of Stevenson. We have also to bring before readers some account of that very different s of construction which has been adopted in Red Sea, and in some other parts of the w by the substitution of iron for stone as material for lighthouse construction. In c paring the work of the lighthouse archi with that of any other builder, it must borne in mind that, while the lofty tower churches and of cathedrals are founded pleasant plains, or on well-protected sites, t of the Pharos builder have to rest on a b swept by the most tempestuous seas. W the force of the wind, or the drifting delug the storm, is the roughest test of the forc ordinary buildings (except when the fir artillery is to be met), the lighthouse tow exposed to the constant blows of heavy w and to the fury of seas that run up the sle shaft, and, unless thrown over by the corn dash themselves over the lantern at 100 above high-water level. In the structure o lighthouse, the lofty height of the most a towers has to be combined with the strengt the breakwater.

* Full particulars of Catoptric Lighting will be f in one of our earlier volumes, with a view of lantern lighting apparatus. The lanterns and apparatus of se of the lighthouses shown in our present view were structed by Messrs. Wilkins & Co.

OYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

D PERIOD OF RENAISSANCE.—BRAMANTE AND SANSOVINO.

he time of the death of Brunelleschi, in the Renaissance in architecture was an plished fact. The Italian architects had to look for precedents to the remains of t Rome. We found Brunelleschi applying , founded on such study, to the comple- a cathedral designed by a Gothic archi- Such an act tells its own tale of the tion, which was then in progress. It was mated in the time of the immediate ors of the great Florentine architect. e Duomo at Florence the old was merg- dually into the new, and the change was ore visible in principles of construction details of design. Brunelleschi's dome ed, but it is not Gothic; on the other ts details are few and simple, and can y be held to confer a classical title. e Brunelleschi was engaged at Florence, naissance was making converts else- , and the name of Leon Batista Alberti es a word of notice. Contemporary with leschi, he died soon after him in 1472, previously designed some important s in the neo-Roman style, then fast into use. His case is the more interest- being typical of the Renaissance move- rising from a general revival of interest sical literature. Alberti was well born ll educated, and his affection for the was so great, that he adopted Latin in tings, and even in his conversation. ng his attention to architecture, he did , both by precept and example, to revive ient manner, and his church of St. Andrea ua is interesting, as being one of the of the Renaissance edifices. The design f much refinement, and the employment Classical details is marked by a free f adaptation, rather than by one of copying. The plan, by its cruciform ment, is consistent with Gothic tradition, he semicircular arched roof, and the g dome, illustrate the style, which was erting its claims to rule the architecture . The treatment of the aisles, or rather uppression, in favour of chapels, ren- possible for the architect to adopt a system of vaulting, recalling the designs reatRoman bathe. The same may be said rnamentation of the decorative portions, more suited to a secular building than urch. The design has the merit of con- , as a work of art, although we may o it that of fitness,—a no less essential n of satisfactory architecture. serves remark that the Renaissance was roughout on Roman ideas. The beauties k architecture were a sealed book to the till long afterwards. Roman art was doors; it was the work of those whom imed as ancestors. It was like a rela- the gate knocking for admission. It er for regret that this was so. If at men of the Early Renaissance had quainted with the pure and noble archi- of Greece, from which their favourite style had been evolved, their work must ined both in truth and refinement. In spect modern architects have not the xcuse, if they fail to benefit by the ilge now placed at their disposal. early examples of the new style en- d the hope that, in hands like those of , a free development might result, so chitectural art might take a new de- , based upon existing Classical forms. pe was only partially realised, and, at e pedantic rules of the later architects correctness of precedent before every l artistic principle. odern practice, if the architect is to he title of professor of a reasonable it is impossible that he should bind him- olutely by tradition. He must learn to art with freedom, and there is little in an arbitrary selection of a special f historical art, if he is to seek to bend nts of to-day to its rigid forms, rather apt and modify the latter to satisfy the ments of his own time. The enthusiastic of revivals is not always favourable to the calmer maxims of common-sense; but, nevertheless, our architecture, if it is to be more than a passing fashion, ought to be ruled by the latter.

In Italy, at this period, enthusiasm carried all before it, and the direct imitation of Roman buildings, even to their faults, became common. At Rome, the Popes caught the infection, and all were in haste to realise the promised glories of the new style. The re-building of St. Peter's became an epoch in art, and, to this day, its effects are visible. It might have been supposed that, at Rome, if anywhere in the world, and by the Popes if by any persons, the preservation of ancient buildings would have been religiously insisted on. Such a spirit is, however, rarely to be detected in architectural history. Men might be, and indeed were, so influenced by old associations, or prejudices, that their work was unconsciously affected by them; but a deliberate preference for old things, because they were old, was as rare with our Mediæval forefathers, as with the art-reforming Popes of the Renaissance. A sublime confidence led both the one and the other to remove, without scruple, the works of their predecessors, that they might substitute their own. We have learned to be more diffident, and as we have not been able to agree on a school of architecture, to whose dictates all must bow, our love for ancient work, and desire for its preservation, are both right and logical. It is, of course, possible to press such sentiments too far, till they become burdensome, and provoke reaction, and the question is, as you know, one on which controversy is always busy.

However we may decide in the nineteenth century, conservatism in art was not the rule in Rome at the time of which we are treating. The old and venerable basilica of St. Peter was neglected and tottering to its fall. Erected in the age of Constantine, and reputed to mark the place of the martyrdom of St. Peter, it had, we might suppose, a special claim on the reverence of the faithful. Of magnificent dimensions, it could not be accused of deficient accommodation. Although the exterior might have been deficient in architectural dignity, the same could hardly have been said of its internal effect, with its double aisles, and their long vista of columns. Those who have seen the basilica of St. Paul, without the walls, at Rome, will be able to realise somewhat of the effect of old St. Peter's.

Restoration, or preservation, would have been the course to be adopted, according to our judgment of such things now; but this was not the view of the Popes or their advisers. Everything must be changed. The basilica, however venerable, had an incurable fault, which many of us have, and all are contracting. It was old, and it was getting older. It must go, and in its place must rise a new St. Peter's, a wonder of the world, the greatest and most splendid church which had ever been seen.

Such was the decision of the Papal Court, and when Julius II. was raised to the pontifical chair, he eagerly sought for an architect imbued with his own taste, energy, and enthusiasm. He found such a man in Bramante, who was born just as Brunelleschi died, and on whom the mantle of the latter seemed to have fallen.

Born of poor parents, he soon displayed a taste for drawing, and was encouraged by his friends to become a painter. Finding architecture more to his taste, he travelled, first in North Italy, to inspect the architecture of that district, and then turned his steps to Rome. Here, like Brunelleschi, he was fascinated by the ruined monuments of the ancient city, and set himself to work to measure and study them with labour and research. He thus acquired, not only accurate general ideas, but also a knowledge of details, such as mouldings, consoles, vaultings, &c., which no one had hitherto possessed, so that Michelangelo subsequently declared that no one had yet excelled Bramante. It is unfortunate that we have not fuller materials for estimating his talents; for, even at St. Peter's, very little of Bramante's work remains. He was largely employed by Pope Alexander VI., as well as by Julius II., at the Vatican. The Palace of the Cancellaria was partly designed by him, and is remarkable for refinement of detail. We find in it no signs of that worship of bigness which was to triumph at St. Peter's after Bramante's death, but, on the contrary, the parts are small, and perhaps even over-minute. The introduction of pilasters in the two upper stories, a common expedient of Renaissance architects, has met with criticism, and it may be admitted that it is open to question both in this example and elsewhere.

At the Cancellaria, the pilasters are too much scattered over the surface of the elevation, and are not happily grouped. Their smallness of parts is also inconsistent with the plain, and even severe, character of the rusticated basement, and though well proportioned in themselves, they appear unsatisfactory, because out of place. Another work of Bramante was the Belvedere Court of the Vatican. Owing, it is said, to undue haste in building, the few remains of the design have been so much altered that no opinion of the original effect can now be formed, while most of Bramante's work has been removed in consequence of alterations and extensions of the Vatican. Bramante did not leave behind him the reputation of a good constructor. His building operations were hurriedly conducted, and in such matters the Italian maxim of, "Chi va piano, va sano," holds good. When architects are criticised, it is often forgotten that they are commonly pressed to complete their works in too short a time. Bramante committed an error of this kind, and his work, even at St. Peter's suffered in consequence. In his designs generally, the exuberance of the Early Renaissance became chastened or controlled by a more severe taste, and luxuriance of detail gave way to a grandeur of style.

When summoned by the Pope to advise on the rebuilding of St. Peter's, Bramante was prepared for the occasion, and submitted a plan of great size and pretension. The arrangement was that of a Latin cross, with five bays of nave arches, and three tribunes for choir and transepts. A dome marked the intersection of nave and transepts. The principal tribune, which is at the west, instead of the eastern end of the church, was erected before the appointment of Bramante, from the designs of Rosselini, by order of Pope Nicholas V. This tribune was retained by all the other architects who were afterwards engaged upon St. Peter's. In his early travels, Bramante had been much impressed by the cathedral at Milan, and had conferred with those who had the direction of the works. This building had a German origin, and exhibits many of the peculiarities of a Northern Gothic design. The influence it had gained over Bramante's mind is to be traced in his plan for St. Peter's, which resembles the design of a northern cathedral, in its division into nave, aisles, choir, and transepts. The semicircular terminations of the latter were due to the previous existence of the Western tribune.

There is a general disposition, from Bramante's great reputation, to credit him with a good design for the exterior of St. Peter's. It may doubtless be assumed, from his work at the Cancellaria Palace, that he avoided the error of the gigantic order which has been adopted in the existing building. Indeed, the pilasters indicated in the plan ascribed to Bramante, are of small dimensions. It was his misfortune, however, to leave behind him few illustrations of his proposals, and we are, consequently, left very much to conjecture. At Bramante's death, in 1514, the work had not far advanced. Raffaelle and Peruzzi followed him as architects, and passed away in rapid succession, after which the work was entrusted to Antonio San Gallo. The design of this artist is preserved, and it is probable that it was based, more or less, upon the proposals of Bramante, modified by his own views.

Bramante's plan is of too vague a nature to explain the details of his design; but from his ordinary practice some notion may probably be formed of the manner in which he would have treated the exterior of St. Peter's. The general arrangement of his plan gives, in the first place, a greater number of piers, and arches, pilasters, niches, and other details, than we find in the existing building. The slight projections indicate the intended employment of a small order in place of the great columns and pilasters subsequently erected. Bramante seems to have been fully aware of the advantage of scale in a design, and knew that a mere magnifying of details was not enough to produce a grand building. Both in his church at Lodi, and in the dome which he added to the church of Sta. Maria delle Grazie, at Milan, he placed columns over columns, rather than resort to the dangerous expedient of a large single order. We may presume, therefore, that he would have carried out

* Fifth Lecture. See p. 219, *ante*.

similar principles at St. Peter's, and that the building, in his hands, would have at once impressed the visitor with its vastness, instead of that result being only reached, if reached at all, as at present, by a process of reasoning and comparative observation.

San Gallo's design was evidently based on Bramante's principles, carried possibly to extremes. After the death of the latter, the Renaissance architects seem to have sought simplicity in exaggeration. Nothing was too large, and scale and refinement were lost in the vulgarity of mere size. It is at this point that the Renaissance lost much of its charm, and even the genius of Michelangelo fails to reconcile us to the change. Notwithstanding such divergence of principle, however, Michelangelo had a genuine admiration for Bramante. He wrote "that Bramante was equal to any architect who has appeared from the time of the ancients to our own can by no means be denied. The first stone of St. Peter's was laid by him, not after an obscure or confused plan, but in accordance with a design which was clear, comprehensive, and luminous; he had, besides, so isolated the church that it was in no respect detrimental to the Palace, and those who have departed from the plans of Bramante, as San Gallo has done, have, in so far, departed from the truth." He further denounced severely the design of San Gallo, not in respect of its details, which present many points of criticism, but on the ground of the multiplicity of features. He declared that "it was broken into too many parts, and with an infinity of columns, would convey the idea of a Gothic building rather than of an antique or classical one."

In this censure we have a key to the artistic feeling of the time. The period of copying had set in. Any lingering love for the Gothic style was to be cast out; the Transition, with its attempts at fusion, was over; and every building was to be, more or less, directly imitated from the antique remains. The five orders became the rule for the future, and the great difficulty of Renaissance architecture has always since been in the right use of columns. If they are too few, and large, they injure the scale of the building, as at St. Peter's; if they are too numerous, and small, they produce a pettiness of effect, as in San Gallo's design. In the first case, they arouse the same feelings which are excited by colossal statues, with their exaggerated features. In the second, they tend to confusion, and the loss of simplicity of general effect.

Michelangelo's assertion of the quasi-Gothic appearance of San Gallo's design was not unfounded, although it was, in truth, less uncomplimentary than he intended. One of the greatest merits of the Mediæval architects is to be found in their realisation of scale. They delighted in the use of small parts, frequently repeated. Moulding upon moulding, arch beyond arch, and piers in long ranges, give an idea of size, and charm of perspective, in many a humbler edifice than St. Peter's, which the latter cannot rival.

Bramante was clearly right in his preference for orders of a moderate size, and his introduction of them into his buildings, already referred to, may be studied with advantage. It may, I think, be concluded that he would not have raised the dome far above the rest of the building. A great admirer of the Pantheon, he intended the dome of the Basilica to be of the same design and dimensions, and the boast afterwards attributed to Michelangelo, that he would raise the dome of the Pantheon into the air, probably referred to the less altitude proposed by Bramante. San Gallo had already adopted the principle of height when Michelangelo criticised his design; but this took place long after Bramante's death, when the whole question of finishing St. Peter's was in a state of chaos, and his original designs already obsolete. They were, then, probably, indeed, regarded with some disfavour, for, owing to the indisciplined zeal of Pope Julius, the work executed in haste by Bramante was already showing signs of weakness and incipient decay. We may perhaps suspect that such a discovery was not unwelcome to those who already contemplated the erection of a dome more lofty and weighty than Bramante intended. The piers which he erected were evidently not designed to support so great a burden, and the hypothesis that he wished to repeat the more moderate design of the Pantheon, is thus strengthened. Beautiful as the present dome of St. Peter's may be, it is to be regretted that Bramante had no opportunity of carrying out his design, or some similar design, on a grand scale. The fault of St. Peter's is its great altitude in proportion to the width, the dome being two diameters and a half high. The Pantheon has a height of only one diameter, a proportion undoubtedly more favourable for internal effect.

The time of Bramante has always been considered the best period of the Renaissance, and he occupied the foremost place among the architects of the new faith. His early training as well as his later convictions led him to appreciate beauty of detail, as well as greatness of conception. Familiar with the works of the Lombard architects of North Italy, and the employment, by them, of small clustered shafts, he was not tempted by the comparatively colossal dimensions of the old Roman columns. Although full of Classic feeling, and even prejudices, he yielded but little to the temptation of actual copying, and his designs show an attempt to adapt the style to the requirements of his day, which is the only reasonable justification of a revival. His designs appear to have been based, as regards conception, on the simplest and most noble forms, such as the Pantheon; and as regards details, on the architecture of the Roman theatre, with its numerous features of small niches, pilasters, and ornaments, all of them susceptible of elaborate treatment in their decoration.

After the time of Bramante and his contemporaries, the Renaissance entered into a new phase, less satisfactory and artistic; and it has thus happened that many persons have passed a wholesale condemnation on the entire movement, and have been blind to the merits of Bramante and other artists, who worked for the same ends, and at the same time. One of the most famous of the latter was Sansovino, who had begun palace-building at Venice, while Bramante was engaged at Rome in carrying out the Pope's dream of a Christian temple which should surpass every building of ancient or modern times.

The Renaissance appears to special advantage in Venice. It seems to have been more easily adapted to secular than to sacred purposes, and the palaces of Sansovino and his brother architects rival their predecessors. Being isolated from Rome, politically, no less than by reason of distance, the Venetians had less knowledge of the antique, and were more free in their treatment of Classical precedents than other Italian revivalists. They were also already in presence of noble Gothic buildings which might well excite their emulation, while in their semi-Classic adoption of the horizontal principle, such buildings seemed to lead the way to fusion rather than to forbid change. The Transitional period of the Renaissance lasted longer in Venice than elsewhere, and the non-Gothic portion of the Ducal Palace, namely, the north-eastern angle of the court-yard, was not completed until the middle of the sixteenth century. In the design of this work, semi-circular and pointed arches appear in the same composition, with pseudo-Classical pilasters, and clustered shafts of Gothic origin. The general effect recalls the unchastened richness of the Certosa, and the sculpture is profusely distributed over the surface of the elevation. The execution of the latter is good, and the whole presents a not unsuccessful attempt at the treatment of an internal court; though, for an important exterior elevation, there is too little dignity of general conception, and too much confusion of detail.

The later palaces of Venice exhibit Classical details, adopted more extensively, and applied less intelligently; for too many of their façades are mere frontispieces, to which are attached columns and pilasters, which serve the purpose of mere decoration. Thus at the Grimani Palace we find no less than three orders employed. This building has many admirers, but I do not consider it an undoubted success. The treatment of the three stories is monotonous, and the proportions of the openings ungraceful, and not consistent with each other. The columns and entablatures seem to be built up against the front, without forming part of it; while a definite design of the actual wall is interrupted by the orders, so that the effect is that of a completely designed building of plain character, seen through an intervening screen of columns, interposed for ornament only.

The Casa Grimani, however, has many merits, and the details of the various orders, the delicacy and finish of the ornaments, and the dignity and solidity of the general
deserve the admiration they have rec
Not the least of its good points is that
placed upon a good and solid basemen
thus seems to stand, as it were, upon
among the waters.

A design which is, to a great extent
from the objections above mentioned, i
seen in the Palazzo Camerlinghi, ne
Rialto. This, although only a small fa
a pleasing example of the use of Classic
without a wholesale reproduction of an
and all its parts. There is here an abse
the duplex system of design complai
at the Grimani. The pilasters employe
the character of piers, forming part of th
which they strengthen. They have, mo
an effect of their own, and do not repe
literally, the details of a regular order.
are, in fact, panelled piers rather than pi
and it is evident that such a design give
for an artistic treatment of the panels
that which has been adopted. The openi
designed in a manner which recalls the e
Renaissance examples, being of proportion
usually seen in Gothic, than in Rena
buildings. The details of the window ja
small and delicate, and the grouping of th
with the central window, of two lights, sep
by a mullion, is agreeable and suggestiv
the other hand, the windows are to
for their width, and the whole elevation p
a somewhat cramped appearance, and
gain greatly by lateral extension. Tha
story is the least satisfactory portion.
adoption of panelled pilasters here, as
above, gives it an insipid character, mar
too much sameness. The details are, mo
too fine and delicate for the rough usage
an entrance must expect, particularly fr
gondoliers at Venice. The large arch o
doorway does not appear consistent w
smaller arches of the windows on eith
and there is no correspondence in the
springing. It would have been better,
pilasters of this story had been omitted
plainer treatment adopted, with rusti
and a bolder character of design give
doorway as in Florentine work. A pr
balcony on the first floor would proper
crowned such a story, while correct
exaggerated length of the windows
first floor. Taken altogether, however,
pretending example well deserves attent
architects, who, like ourselves, are ofte
upon to design buildings in places
London and other large towns, where la
valuable to allow us much wealth of spa
light is of such importance that we are co
to obtain as much window area as possib

The most important of the Renaissance
is the great work of Sansovino, the Li
St. Mark, which I described on a formi
sion. Placed exactly opposite to the
Palace, it challenges a somewhat unequ
parison. On architectural grounds al
Library may well hold its own, but the
men feel and express in the Ducal P
not purely architectural. The latte
ing is connected with the distant
associations which are full of romance,
and interest. Sansovino's work stand
us, on its merits alone, as a work of
day; about which everything is kno
which has not had time to grow ve
It was designed for modern use, and ap
modern ideas.

We have here, in one spot, cham
the rival styles of Gothic, and the
sance,—of the old and the new.
been told that the latter must be pro
inferior, because artists do not sketch
and fill their commonplace books
details. If this be so, we must m
that men do not regard such matter
from historical associations, and it
remarked that while no one has pro
copy for modern use the Ducal Pa
Library of Sansovino has found many i
The effect of the latter design, as a
certainly very good. The orders of
are well proportioned and detailed;
small window columns in the upper s
skilfully introduced, so as to gi
to the larger order. The proportion
arches recall Roman precedents, and
agreeably with the elongated types us
Camerlinghi Palace.

Sansovino was a sculptor as we
architect, and it is probably to this
stance that the profuse ornamentatio

n is due. Greater restraint would per- have been better, and partial suppression d have added to the value of the re- der. At the same time, the sculpture itself ll designed and executed, and we feel we take the design as it is, and regard it whole. It is certainly one of the best of the issance palaces, and though it is doubt- liable to the charge of imitation of the n orders, if that be admitted to be a t, it must be confessed that very few tects of more recent times can afford to stones at Sansovino. It may perhaps be while for some architectural critics to der how far such reproduction of ancient is is, of itself, an unpardonable defect, and far it is a special reproach to the Renais-

at mere unintelligent and wholesale copying be reprobated, must, of course, be granted ine; but, unless we are to have that dream thusiasts, an original style, perfect in parts, recourse must be had to prece- A Gothic shaft, with Early English e, affixed to a wall, is as much a repro- n, and an applied ornament, as a Doric quarter column or pilaster, treated in the way. The former has often, indeed, the onstructional justification; for, while the cal column strengthens the wall, and a part of it, while being built, its Gothic is, in many cases, a mere piece of added ation unnecessary to the structure, and not t in position until the building has been od.

must use the old styles, though it should aim to adapt them to modern use. With ditional styles, certain details have come so intimately associated that the absence n, or their indiscriminate association with forms, shocks us, like a false quantity try, or a *lapsus linguæ* in speech. Any of diverse architectural schools is conse- y a task of the greatest difficulty, need- vere restraint, great caution, and abundant dge. The architectural student requires on his guard in this respect. Our fashions lic taste change so rapidly that in search velty he may be tempted to snatch at ing popularity, by forgetting the sound ples on which architecture should rest; ay allow himself to believe that a general potch of features, taken indiscriminately the monuments of the past, is to be the of the future.

is sometimes thought to be a right freedom, and is miscalled "Originality," it rather merits the name of "Care- ss." It is an offshoot of the same which seeks to attain a so-called esqueness of plan by throwing the parts er at haphazard, with little attempt at gement, and less thought. It has been well y Sir Joshua Reynolds, if such a system of sition, or rather neglect of all principles nposition, that "simplicity, when so inarti- as to seem to evade the difficulties of a very suspicious virtue." If a laboured n of symmetry be displeasing, what can d of artificially-devised irregularities not ed by the circumstances of the particular

Renaissance architects have been much ed in modern times for the regularity of designs, but in a compound art like archi- e, which demands scientific treatment, the mption must be in favour of regularity in ngs of importance. It is not only the Par- a, or the Renaissance palaces, which this principle: it is found admitted in ce in the best remains of Mediæval archi- e. What can be more symmetrical than lan of any great cathedral with aisle ing aisle, transept corresponding with pt, sometimes tower with tower? Although ful architect will decline to be controlled absolute symmetrical law, he will always nber that symmetry appeals to a natural t, and that good reasons should exist, if to be disregarded, in his designs.

early works of the Renaissance are full riety, and gave picturesqueness at the se of dignity. The later examples re- the process, and have been complained cold correctness, without interest. This doubtless be urged, with truth, against of the buildings erected in the decadence movement; but, as it seems to me, it ot fairly apply to the designs we have just been considering. Sansovino's Library is ly not more, but less, regular and mono- tonous, in general design, than the Ducal Palace; and there is even too much variation of detail in the small façade of the Camerlinghi Palace.

The aim of the architect should be to apply the knowledge he possesses, with intelligence, consistency, and beauty. He need not be too much afraid of the cry for novelty. If the Renaissance architects have failed in their attempt to reconcile the antique with the modern, no appeal to authorities will save their work from condemnation, and their principles from neglect. On the other hand, if they succeeded in proving that the old architecture of Greece and Rome was capable of a development which should meet the altered circumstances of modern society, the accusation of copyism will not destroy their influence.

While I advise the young student of architecture to make the most of his opportunities of studying the various forms his art has assumed in the past, I do not for a moment say that he should copy all he sees. He is to gather facts from the experience of others; he is to use his knowledge to improve his taste. Let him by all means choose his own line, and attach himself to whatever school of practice he deliberately prefers. When he has done so, he should study it in all its parts and varieties, and he may depend upon it he will find that originality springs best from knowledge. Novelty is always easy, if the restraints of good taste are laid aside, and eccentricity in society is a poor substitute for good breeding.

The actual forms of architecture obviously do not admit of indefinite variation. The possible curves of an arch, or shapes of openings, are soon exhausted. These things are as the grammar of our art, or perhaps, more correctly, the language in which architecture expresses her ideas. It is as to such matters, that we need not be afraid of following precedents. None are so clever that they can afford to neglect the stored experience of the world, and when we occasionally see some nondescript design, and are asked at least to admire its originality, we seem to remember a saying we have heard, that "fools rush in where angels fear to tread." If the modern architect think properly of the purposes for which his buildings are intended, it is scarcely possible that he can be a literal copyist, while, as to the rest, it is better to copy good details, than to invent bad ones.

The circumstances of each age are so different that an architecture which really serves its needs can scarcely fail to have a special character stamped upon it. Here is scope for the originality of genius,—originality not of this or that detail,—not an originality which sets at defiance the hard-won experience of centuries,—but an originality of conception, application, and general treatment,—the skill which seizes on the knowledge of the past, to apply it to the wants of the present,—the conviction that the inmost wants and aspirations of man are and have been ever the same,—"that the thing that hath been, it is that which shall be,—and there is no new thing under the sun."

We have seen, in our past review of architectural history, that while Gothic art cherished the vertical principle, the Classic architects, and, following them, the Renaissance revivalists, adopted horizontalism as the ruling idea of their designs.

In ornamentation, the conflict has been between the natural and the conventional, not so much in the minor architectural details, such as capitals, cornices, &c., as in respect of the application of the higher artistic development of sculpture and painting. While men have cherished the old eccentricities of detail in their churches, the artists of the Renaissance went direct to Nature for inspiration. The old Greek worship of beauty became again with them a passion, and their saints recalled the gods and goddesses of old, by their idealisations of human perfections. To the Mediæval spirit such ideas were abhorrent, a danger to the believer, a snare to all who encouraged them. If sculpture could be admitted to the sanctuary, it must be of a special character, prescribed by conventional religious rules, which ignored, as much as possible, the human element. The painter and the sculptor might dwell in an ideal sphere, peopled with saints and martyrs, but a frank reference to actual facts was forbidden to them. They might wander in clerical pastures, guided by ecclesiastical leading strings, but they must not go beyond. The free air, the open sky, the world in all its wondrous beauty, was not for them; they must not gather from these a spontaneous inspiration; they could not be trusted to look through Nature, up to Nature's God.

In as far as the Renaissance constituted a protest against such conclusions, we may be sure it will not be reversed. Freedom once tasted is never willingly relinquished, and an artist without freedom is at best a strong man in chains. Our architecture must welcome the best art of its time; and if we expect painters and sculptors to do their best in co-operation with ourselves, we must see that they are afforded free scope for the exercise of their genius.

In determining the style of our architecture, such considerations should have weight. We must inquire not only into its special historical and æsthetic merits, but as to its adaptability to modern requirements, not forgetting its flexibility with reference to the assimilation of the sister arts.

The student will find much to reflect upon in such questions. Let him think them out for himself by the light which reason and history afford him; let him bear in mind that he has to work for the present, and not dream only of the past; and especially let him remember that an architect must possess, in addition to good taste, sound judgment, and common sense; not only as to the ends he has in view, but also in respect of the choice of a style, as the means to such ends.

CHOICE EDITIONS OF ARTISTIC WORKS.

One of those brilliant American correspondents, who write history for the *New York Times* or the *Evening Post*, narrated last winter how one evening in Paris he saw at a reception a distinguished London publisher seated in a corner apparently in great dejection; on being asked what afflicted him, he replied, "I have been making one of my periodical visits of inspection among the publishing houses here; and I must say that it is quite heartbreaking to see what a mass of fine books these Frenchmen turn out in the course of a year. And so richly illustrated and bound, too! There is no approach to it in England, and it seems to me that that is enough to make one sad."

What the state of that justly sensitive gentleman must be at the present season it is painful to reflect upon, when we consider the promise that one Parisian publisher alone makes us of forthcoming works.

France, the home of the Elzevirs and the Étiennes, the cradle of the Plantins, may be said to be the land of choice editions. Even in the last century the inferior writers, such as Dorat, insured a ready sale for their now forgotten works, by employing as illustrators, Eisen, Cochin, Gravelot, Choffart, Wille, Schmidt, Marillier, Mareau, and many other artists, the beauty of whose works has remained for four generations unappreciated.

More than one bibliopole, not alone in France but in England, will point with sad regret to the fox-marks on the glazed paper of the choice editions of Curmer, published in the days of his youth, at the height of the French romantic school, on which English literature and English art exercised at the time so powerful an influence.

The first successful efforts made in the direction of the publication of choice editions in France may be said to reach back some twenty-five years or so, when Jannet commenced his "Bibliothèque Elzevirienne," and Perrin, of Lyons, delighted bibliopoles with his tinted paper and reproduction of sixteenth-century capital letters and *culs de lampe*; and these traditions are now worthily carried on by the well-known firms of Alphonze Lemerre and M. Jouast, whose delightful little volumes charm us each season as they appear.

The announcements of the forthcoming works of one of these publishers, M. Quantin, the head of the well-known firm of Claye, is certainly attractive. Here we have promised, among other interesting literary and artistic treats, the "Letters of Eugène Delacroix," 1815—1863, collected, put in order, and published by the indefatigable care of M. Philippe Burty,—letters furnishing a mass of novel information on the life and works of the famous head of the French romantic school, upon his early struggles, his travels, his pictures, his intimate friends, the famous personages in the world of art and letters of the period in which he lived.

There are no less than 330 letters, all of which are interesting; a portrait, engraved in

mezzotint, under the direction of Delacroix himself, and from a picture by him, showing us the painter of the famous "Dante and Virgil in Purgatory," in the characteristic costume of the Restoration. Some ten *fac-simile* autographs show his writing at different periods of his life from 1815, when he was still at school, till 1862, the year which preceded his death. An addition, which every one would wish to see, were it possible, in the biographies of famous painters, is the chromo-lithographed reproduction (in no less than forty tones) of three of Delacroix's palettes,—that which he used when he came from the *atelier* of Guerin, the Benjamin West, one might almost say, of France; the palette he used for his well-known picture, now in the Louvre, of the "Massacres at Scio," and the palette he worked with in the decoration of the Salon de la Paix at the now no longer existing Hôtel de Ville. These letters form a work that will interest all art-lovers in England who remember the Delacroix of the magnificent collection shown some years ago by Sir Richard Wallace at Bethnal-green.

Suffice it to mention among the other features of M. Quantin's catalogue, "Researches on the Jeweller's Art in Spain," by the Baron Ch. Davillier, illustrated with numerous etchings, and to appear this month, as also the same author's "Notes on Cordova Leather"; M. Bonaffé's "Inventory of the Duchesse de Valentinois"; M. Vidal's "Stringed Instruments," with 180 etchings; the "Imitation de Jesus Christ," literally, as it is stated to be, a "*publication d'amateur*," illustrated with ten compositions by Paul J. Laurens, etched by Leop. Flameng, and the "Renaissance in France," by Léon Palustre, to appear in parts, and when finished to form three volumes in 4to, all works which, in their artistic perfection, are calculated to delight the amateur, and yet of a nature so practical that the mechanic or the professional man cannot fail to be at a disadvantage, who is not either in possession of them, or who has not read them.

But the *pièce de résistance* of M. Quantin's catalogue is the superb work on "Hans Holbein," by Paul Mantz. The object of the publisher in producing this volume is to inaugurate a series of monographs on the great artists of all countries and all epochs, and containing not alone faithful reproductions of their finest works, but a careful study of their methods and their lives; an enlargement, in fact, of M. Charles Blanc's "History of Painting." The series is commenced with Hans Holbein, the indefatigable draughtsman whose genius has left such traditions in Switzerland, Germany, and England. M. Paul Mantz describes the life, till this time almost unknown, of Hans Holbein, and the author has not confined himself to putting in order the various documents found in the archives; he shows us Holbein in the noble period in which he lived, now working for the printers at Bâle, or beautifying with his brush the walls of the rich Swiss burghers' houses, now illustrating the works of Erasmus or Sir Thomas More, and eventually becoming the court painter of Henry VIII. The lost works are referred to, as also those that still exist, and passing through the principal galleries of Europe, we see the successive evolutions of Holbein's talent.

Such a work, it can be understood, affords a rich field for illustration. Aided by the counsels of M. Edouard Lièvre, the author of the "Musée Universel," some of the finest drawings and pictures at Bâle, at Windsor Castle, at Darmstadt, at the Hague, Berlin, and Dresden, and the Louvre, are reproduced. Here we see the Bible illustrations,—the "Dance of Death," the old editions of which are now almost impossible to find. The volume comprises in addition a certain number of etchings, among which are the Erasmus of the Louvre (once in the collection of Charles I.), the costumes of the Bâloises, the series of drawings of the "Passion," and the portrait of Holbein's wife.

In one volume it was impossible to bring together all the works of so industrious an artist, and more than one omission must be regretted; but no work yet produced on Hans Holbein gives so complete an idea of the varied powers of one of the greatest masters of the Renaissance.

Nothing can exceed the care with which the edition has been prepared, and the heart of the most ardent follower of Dibdin cannot fail to expand as he reads the "*Justification du tirage*.a "No. 1 on vellum, Nos. 2—6, text, on extr' strong Japan paper, plates before letters on Japan paper, in black; on Whatman's, in red, on Dutch with letter"; and so on. The text consists of some 200 pages, illustrated with twenty-seven separate engravings, of which twenty-six are etchings; the other illustrations, woodcuts, and photo-gravures number more than 300. Each year, and even oftener, M. Quantin promises to produce in the same careful manner the works of some famous master.

Such an announcement should make our London publishers "look to their laurels." Who can fail to remember with pleasure, constantly recalled by Mr. Parsons's inviting catalogue, the superb edition of Chamberlayne's "Holbein," with its choice *fac-similes* by Bartolozzi from the drawings which Queen Caroline, as Walpole tells us, found in a bureau at Kensington Palace?

What treasures have we not in England of the same nature that might be reproduced;* say, for example, the truthful portraits by John Payne, the even more exquisite portraits in three colours, by Faithorne, which surpass, perhaps, the works of his master, Nanteuil, the stately portraits of George Vertue or Robert White, or those of that early member of the Royal Academy, Dance, those of that fine old landscape-painter, Linnell, or the treasures of delineated portraiture in the locked-up folios of the British Museum?

* "In nothing," has remarked M. Geo. Duplessis, the director of the Print Department of the Bibliothèque Nationale, "have the English artists succeeded so well as in the delineation of the human physiognomy."

BIRMINGHAM.†

IN the year 1876 the Corporation of Birmingham resolved to publish a history of itself, and invited Mr. John Thackray Bunce, F.S.S., to undertake to edit the history. Upon further consideration, it was thought desirable to include an account of the earlier local government of the town.

Birmingham is probably regarded by most people as a modern town, but it existed in Saxon times. In 1309, the lord of the manor defended a right by contending that his predecessors levied customary tolls before the date of the Norman invasion. The ancient records of the courts leet and courts baron, and parochial records, are lost, but it is found that in 1392 was established the Guild of the Holy Cross, which was an attempt to develop, by the union of all classes, a kind of local government, and in some respects the character of the guild was peculiar to Birmingham; it was not a craft guild, nor a guild of merchants; it was not a town guild, in the strict sense of that name; it was to some extent a religious association, and also a social and friendly guild. The bailiffs and commonalty of "Bermyngeham" prayed the king (Richard II.) that they might make and found in honour of the Holy Cross a guild and lasting brotherhood of brethren and sisteren among themselves in the town, to which should belong as well the men and women of Bermyngeham, as men and women of other towns and of the neighbourhood who were well disposed towards them; and that the king would grant licence to John Colleshulle, John Goldsmythe, and William atte Stowe, that they might give and assign certain houses, land, and rents to the master and wardens of the guild for works of charity, according to the orders and will of the bailiffs and commonalty. A jury was appointed to examine whether the giving of this property by John, John, and William, would leave them sufficient to meet their engagements to the crown, and other burdens which it belonged to them to bear; and whether they would still be liable to be put upon assizes, juries, &c., so that through the proposed gift, and in default of the givers, their neighbours might not be charged with more than their due burdens. The jury answered in favour of the petition, and the guild was established; and 50*l.* paid to the king, said to be equal to at least 1,000*l.* in the present value of money.

The first local governing Act was obtained in 1769, at which time the population was 30,000, and the number of houses 6,025. At that time the streets were narrow and irregular; the pavements wretchedly imperfect; there was no drainage; the removal of refuse was unprovided for by any public organisation; there were no scavengers; at night all was pitch dark, save for the light of the moon or the rays of a friendly lantern. New-street was entered through a narrow gateway, and was used as a pig-market. The Bull Ring, the only open s was blocked by shambles and slaughter-ho and other offensive buildings. The parish ch was literally hidden by obstructions of the character.

This first Act appointed commissioner "laying open and widening certain ways passages within the town of Birmingham for cleansing and lighting the streets, lanes, and passages there, and for removing preventing nuisances and obstructions ther and gave powers to buy and sell pro scheduled in the Act, to appoint and di "such and so many scavengers, raker cleaners of the streets, and lighters of la and so many clerks, treasurers, and other of as they shall think proper." Every Fr between the hours of six in the morning an in the afternoon, the inhabitants were to s the streets and ways in front of their pre and collect and put together the dirt i streets, ways, lanes, and passages, to the that it be ready for the scavenger to away. This obligation extended to a spa 12 ft. from the front of all occupied pre The scavengers were to give notice by ri a bell, so that the inhabitants might brin ashes and other refuse from the house removal. All this might be done by the missioners for those inhabitants who cho make a payment for it.

In describing what officers should be appo it appears not to have occurred to the fr of the Bill that a surveyor would be nece or a superintendent of the sanitary affairs town; this, we may suppose, would be int to be well performed by committees. market for cattle within the town was removed from High-street to the street Dale-end, and not elsewhere. Subsequen 1769 the Street Commissioners obtained a s Act; a third, a fourth, and, finally, a fifth in 1828.

This last gave the Commissioners auth over lighting, watching, paving, cleansing draining the town. All new streets were 14 yards wide; gutters were to be mad paved by the Commissioners, the cost charged to the "ground tenants or owne the properties; owners of houses in new were to cause the square of their house the middle of the street, both carriagewa footway, to be paved; and thereupon al owners were to be exempted for the of ten years from paying any of the ra assessments called the highway levies.

By the Reform Act of 1832 Birmingha erected into a Parliamentary borough; while the political rights of the town admitted and established, the local gover was left untouched. It remained as it wa stitated more than sixty years before, paving, sewering, and other sanitary wo still vested in the Streets Commissioners.

The Municipal Corporations Act of 18 not directly incorporate any towns, bu power to the Crown to grant charters t on petition of the inhabitants, and it w until 1838 that Birmingham was incorp The charter was received in Birmingha November 1st, 1838, and was taken to th of the *Journal* newspaper, and was there by Mr. William Scholefield, the high baili immediately published it in full in the papers. Mr. R. K. Douglas, the editor *Journal*, afterwards in a speech, at the reading of the charter in the Town-hal that when it was received at the *Journa* all the members of the committee were out for the arrival of the precious doc Mr. Hutton went twice to the railway-sta search for it. The validity of the chart disputed, owing to the vagueness of some clauses, and the control of the police wa away from the Corporation, but in 1842 restored, and the charter confirmed.

But the Act gave the Corporation only powers. The old Streets Commissioners the Act of 1769, remained, and there wa division of opinion in the borough unt when the establishment of the General B Health seems to have had the effect of all parties,—uniting them to oppose it.

This measure gave the General Boar powers of interference with local gover particularly with regard to sanitary refor authorised the Board to prepare and su Parliament provisional orders erecting n authorities, consolidating conflicting j tions, and extending the area of united The Corporation petitioned against the l

† History of the Corporation of Birmingham. By John Thackray Bunce, F.S.S. Vol. I. Published for the Corporation, by Cornish, Brothers, Birmingham. 1878.

is amended, and the Council of the Borough constituted the Local Board of Health.

e Bill having passed, steps were taken to effect to it, and a memorial was presented e General Board asking for an inquiry into anitary condition of the borough. "Mr. rt Rawlinson, C.E., was appointed to hold nquiry. For this purpose Mr. Rawlinson d Birmingham on the 12th of February, 1849, the inquiry occupied four days, and again ne 1st of May, 1849, when he again sat for al days, besides making a thorough personal ination of the town. All the local governodies were represented at the inquiry, and sses on their behalf, as well as independent sses, were examined. Indeed, there was eral willingness to offer evidence, so that spector had abundant materials for his t to the Central Board. Mr. Rawlinson's t, dated May, 1849, constitutes a volume pages."

n came the united opposition.

Mr. Rawlinson's report was vigorously and itterly criticised, many of its conclusions disputed, and its recommendations were ted with a vehemence which seems very ge when looked back upon from this dis of time. The controversy was general—privileged governing bodies, in the town ill, from landowners and companies who ht themselves aggrieved, and from private ns who had interests to preserve or theories ocate."

er a long period of dispute between the Council and the Streets Commissioners, tter body introduced a Bill into Parlia- in which they proposed to make provision e following objects:—1. To constitute the Council the sole governing body for muni- purposes, and to transfer their own powers roperty to it; 2. To constitute, for drain- and other purposes, a district extending the limits of the borough, and including of Aston, King's Norton, and Hands- defined by them as "the natural drain- ea"; 3. To alter and renew the system ing.

, it appears to us, would have been a ise measure (and, in fact, the extension drainage area has since been crrried out), did not pass the Standing Orders Com- of the House of Commons, and was ore thrown out. The Town Council now st, 1850) resolved to prepare a Bill to ith the whole subject, and at a conference e Commissioners, the two bodies agreed a draft scheme; but the idea of central rence still haunted the Commissioners, ey opposed the Bill before Parliament; degrees the opposition of the Commis- and other bodies was conciliated, ed, or withdrawn, and the Improvement as passed on the 24th of July, 1851. The transfer of the Commissioners' powers roperty took place in December of that nd the Council proceeded to arrange its ittees for the transaction of the extended s entrusted to it.

e Birmingham people are evidently y against receiving instruction from a al authority." As to control, beyond instruction in those things which the ment had fuller means of arriving at the f, and which concerned all the people every town,—*i.e.*, in sanitary affairs,—pose there never was an intention to e "control" by any Government. And not been only Birmingham which has this opposition, but Manchester and, in wake, towns generally. Whether they en wise in their resistance we shall see. ve an idea that the bottom of it all has olitical rancour and animosity, and that overning bodies have cared more for the l supremacy of Whig, Tory, or Liberal, r the health of the people. But if their le be right there can be no denying great to the people of Birmingham in this .

Society of Engineers.—At a meeting of Society of Engineers, held on Monday t last, a paper was read by Mr. Joseph s, vice-president, on "The New Pits and Machinery for the San Domingos Mines ugal." The following gentlemen were for as members, and duly elected, Mr. Charles Aspull Wells, Mr. John Has- r. Charles Harper, and Mr. James John

THE GLASS WORKS OF MURANO.

The Cross of the Legion of Honour has been awarded to M. Giovanni Castellani, the director of the Royal Society of Murano, for his efforts in aid of the Murano Glass Works.

These are the most celebrated works, of their class, in Italy, though, for a considerable period, their ancient reputation had been obscured. Some enterprising Italians, however, of recent years, so remarked the avidity with which specimens of old Venetian glass were sought throughout Europe, not merely in the forms of mirrors, mosaics, and enamels, but also in those of coloured pearls, and false gems, that they conceived the idea of re-establishing at Murano the manufactures which once made it famous. The town had never, indeed, entirely lost its supremacy in this respect, and still contained a race of artisans to whom the secrets of their forefathers were not altogether unknown. Murano was, in the Middle Ages and during the Renaissance, the great centre whence Europe was supplied with this species of commodity, and with mirrors and ornamental glass, for decorative purposes, more especially. The island on which it stands was favourably situated for commerce with Egypt and the East; it possessed, and still possesses, admirable materials for the fabrication of crucibles and furnaces; brick clay, sand in abundance from the Adriatic shores, and alkalis inexhaustible. So far back as 1383 a decree of the Senate invested it with privileges for the pursuance of this art, "which," it set forth, "must for ever be a noble one, and shall find a permanent home here." The manufacture was divided into four classes:—window and rough glass, goblets and blown glass, blow-pipes for bugles, and so forth; and blow-pipes for more delicate and special fabrications. There was a regular administration established, the details of which need not be dwelt upon, seeing that they are mere antiquarianisms now; but one regulation was curious, enacting as it did that, between the first day of October and the last day of July,—the rest of the year being a kind of close season,—no manufacturer should vary either the number of his crucibles or the processes of his industry. The fame of these works extended itself rapidly through the countries of the West and of the East. Marco Polo, it was said, brought home from the Indies the art of making goblets encrusted, to all appearance with garnets, agates, and even steel beads, which were eagerly bought up by the Oriental merchants, as preferable to their own, while "Venice pearls" became a fashion in rosaries, particularly those worn by pilgrims to the Holy Sepulchre. The manufacture went on from these beginnings to flagons and glasses for tavern-keepers, and even to lighthouse lanterns,—the richer sorts being white, tinted, gilt, or enamelled, illustrating a marvellous variety of fancy and luxury of taste,—in chalices, cups, candelabra, drinking-flagons, mirrors, decorations for buildings, mock jewellery, and imitations of almost every flower that blooms on the earth. To reach this favoured spot, on which none of the dreaded Venetian secret police, or the *sbirri*, were ever permitted to land, the only means is a gondola, which carries the visitor up the canal that forms "the principal street" of the town, and on the banks of which,—the Glassmakers' Strand,—the whole of the factories are situated. On each side runs a narrow quay, whereon are landed the raw materials necessary for the works, and whence are embarked the fabrics in their completed state. The least artistic of these, perhaps, though that giving employment to the largest number, is that of those artificial pearls, in amber or agate, which so largely figure in popular Parisian embroidery, though they find a market in every quarter of the world. It was by them, indeed, that Columbus and Cortez originally established a trade between Europe and the Americas, and to this day, in some parts of the East, they, strung on threads, are used as money. The principal interest of the Murano works consists, however, in the process and apparatus of manufacture. The materials employed in making the glass paste are, then, speaking generally, the sand of Pola, the "soda" of Catana, and Egyptian alkali, variously coloured with antimony, arsenic, manganese, and minium, though, for tinting the finer qualities, other substances are employed, among them being silver and gold, the latter more commonly. As much as 5,000*l.* worth of it has been consumed by one establishment in a single year. The whole of the materials to be used are first pulverised, mixed, and thrown together to "try,"—in other words, to be calcined, in a furnace, whence it is taken and deposited in a close space to cool down to a particular point, the attainment of which is most sedulously watched for. These furnaces are made from what is called, by the Muriani, the "refracting earth" of Cerona, brought from the Friuli Hills, mingled with a kind of sand recently discovered among the neighbouring rocks of Schio, and will bear any degree of heat, but they only last for about two years of forty-four weeks each, the remaining eight weeks being always given up to settlements of accounts, and arrangements for the execution of future orders. During the latter time, not a solitary furnace-fire is allowed to be kindled on the Glass-makers' Island of Murano. But, while the working season lasts, they are kept incessantly going, rarely needing repair, until condemned and broken up, to be made into new ones. Their dimensions, of course, are various. Those dedicated to ordinary pearls may contain as many as five large crucibles holding 12 cwt., each, of material to be calcined, while those for the more delicate varieties, requiring more separate care, require only one, the gradations of temperature, moreover, being different for the different qualities. No coal is used, but only wood, and it is essential that this shall be perfectly dry, to which end special stores have lately been constructed.

The vitreous paste remains in the crucibles from twelve to seventeen hours, according to the specialities of its composition and colours. When once the glass becomes sufficiently malleable to be dealt with, it must undergo a preliminary operation, indispensable to the entire Murano manufacture, and distinguishing it from many others: it must be wrought into long rods, hollow or solid, called by the workmen "canes," and it is from these "canes" that the Muranese glass-maker elaborates the marvels of his art. This process, whether applied to glass or to enamel, demands an almost natural aptitude,—the natives protest that it is their secret,—but, at all events, an extreme dexterity of manipulation. The workmen employed upon it are distributed into relays, succeeding each other every six hours, for the labourers must never cease by day or by night, and the division of labour among them is interesting. There is a chief of the bank and a chief of the place. There are two sub-masters, who superintend the making of the paste into a cylindrical form, and these have four assistants. One sub-master takes a rod of iron, which may be of any thickness, about a yard and a half long, and heated at the end farthest from his hand. This he plunges into the cauldron, appropriates a certain quantity of the paste, and lays it, still almost liquid, on an iron table, fitted with a stool, and upon this it is deftly rounded. Sometimes he then dips and cools it in a vessel of water, and plunges it into another cauldron, to get a new incrustation, and so, alternately heating, cooling, and hammering, obtains the mixed material upon which another set of artists then proceed to work. The rod is often drawn out in the "galleries" to an immense length, after which, whether the size of a finger or attenuated to a thread, it is given over to the cutters and reducers, the latter preparing it for conversion into pearls, with various inlays of colour. There is, in the Murano Museum, an example of which the people are naturally proud, as demonstrating the wonderful delicacy of their manipulation, a glass rod, the section of which exhibits a portrait of the late King of Italy in flesh tint, but with hair, moustachios, eyes, and uniform variously coloured, and if, says an enthusiast, this rod could be sliced through its whole length, into thin cylinder-shaped pieces, the portrait of the king might be almost indefinitely multiplied. Flowers, animals, innumerable types of decoration, marvellous combinations of colour,—pink, black, brown, silver, purple, blue, and so on, spring from a pure surface of opaque white paste. The sections, however, are far from being invariably round; they are often square or triangular, to furnish ornaments and drops for lamps and chandeliers. Of course, in the imitation of ruby, coral, opal, and so forth, different bleadings are necessary; but in all the glass into the composition of which gold enters,—as in the red and rose tints; or in silver, as in amber,—a second exposure to heat is essential. So with enamels, with the celebrated "Venetian" glass, and that renowned aventurine, discovered

by Miotti about 150 years ago. This is the substance which the old masters, according to tradition, employed when they introduced vases, chalices, or goblets, into their pictures. The elaborate character of the work is suggested by the fact that every pearl sold to children in the streets of Venice has passed through seven different workshops in succession; but machinery bids fair to simplify the processes,—possibly to deteriorate the results. But it is for the nobler branches of the manufacture,—the art, as the old senate styled it,—that the little neighbour of Venice is chiefly concerned, and upon the production of its masterpieces, labour and patience little short of miraculous are often bestowed. Examples are known of success after a hundred failures; while, again, the workman who sees that he cannot fulfil his actual idea, but must change it for another, cannot stop to think,—cannot stay his hand; he has instantaneously to alter the design of a swan into a dolphin, or of a rose into a dahlia, or his task is irretrievably spoiled. We have left ourselves no space to enter the other workshops wherein the celebrated Venetian mirrors, with frames of the same material, are cut and polished; but the modern revival has not been so triumphant in this as in other respects, and, besides, specimens of them are to be found in nearly every museum of Europe.

MONUMENTAL SCULPTURE.

There is one branch of sculpture in which it must be admitted that nearly every one, be he a lover of art or not, is interested, and that is monumental sculpture. Each one of us, in passing through the term of his life, if he attains to manhood, must be, more or less, at one time or another, concerned with some monument or memorial of those who have passed away before him. Thus, however little the world at large may interest itself with the ideal productions of the sculptor, it must, from the very nature of life, be sensibly concerned with monumental sculpture. Hence there is a wide field open in this department for modern sculptors.

But let us see what is the actual state of matters in this respect, and whether there is a demand by the public for fine monumental works of art, or, on the other hand, any effort by the sculptors to raise the national taste by supplying pure memorial works of art. Regrettable though it may be, it must be acknowledged to be a piece of common knowledge that the people at large are quite careless about the character of their sepulchral monuments, and that there is no vigorous attempt made by artists to produce monumental works which are grand and solemn, or simple and elevated, in their nature. Let any one pass through any of our large public cemeteries, such as Kensal Green or Brompton, and his eye in a very short space of time will be utterly disgusted with the complete absence of anything like genuine works of art. Those monuments which are not absolutely bald and characterless are pretentious and vulgar, devoid of any traces of a cultivated imagination or a knowledge of the principles of sculpture in the artist. Those to whose lot it falls to erect these melancholy memorials, if possessing taste or delicacy of feeling, will do no more than seek for the simplest and most inoffensive design, such as a Latin cross. If they endeavour to obtain some work of a more suggestive or more ambitious character, there is at the present day an utter absence of anything like pure work to be obtained. And the same may be said of monuments of the most important description,—an utter absence of freshness, a complete conventionality, are visible. As a matter of fact, there has, in regard to these, been a great diminution in number; bas-reliefs in the interior of churches do not meet with much approbation from the modern ecclesiastic; he is all for windows of glowing colour, and not by any means in favour of marble monuments. For many reasons this tendency is to be regretted: sculpture is eminently suited, in its purity and grace, its calmness and solidity, to be employed in monumental works; nor should it ever be forgotten that Flaxman, the greatest sculptor whom this country has produced, owes some of his justest fame to his monuments. We need only mention that magnificent work of art, the Baring monument in Micheldever Church, in which the scenes illustrative of the Lord's Prayer are to be found, without going into further details to show how the first of modern English sculptors gave himself up from time to time to this species of artistic creation. Nor is it necessary to recall the practice of the ancients. Think only, by way of one example, of the great monument of Queen Artemisia of Caria to her royal husband, the Mausoleum of Halicarnassus, and we must acknowledge that the most skilful of ancient artists devoted their imagination and their powers to monumental sculpture. Therefore it must be obvious that the coldness with which ecclesiastics regard internal monuments in churches acts to the detriment of modern sculpture. For the monumental bas-relief affords opportunities of the amplest kind for the exercise of the imagination and for technical skill. It brings the art of sculpture home to the most uncultivated of mortals; it may symbolise with purity and taste, or depict with restrained vigour, the virtue and the character of the humblest mother or the most celebrated statesman. And we feel quite convinced that this present tendency to which we have just adverted is seriously damaging English art; for, looked at from the lowest point of view, it cuts away a large and a lucrative field from the sculptor's reach,—a field where he could be at once usefully and honourably employed.

But there yet remains the open churchyard or cemetery, which we began this article by noticing, where, as we have already said, the absence of popular taste and of any high efforts on the part of artists is now so strikingly apparent. Yet the principles of ornamental sculpture are plain and few, whether a monument be symbolical or personal. Purity and solemnity of style, taste in the conception of the subject, are the cardinal rules of this kind of work. Every sculptor cannot be a Flaxman, but every sculptor can seek to make him his model, for in his monumental works we have, perhaps, the finest examples of this class of sculpture which this country is ever likely to produce. But the man who does not possess the power of his imagination, can yet cultivate his purity of taste, and thus avoid the flaring vulgarities of treatment which are most obnoxious in monumental work. That the public generally do not demand a higher class of work than is turned out from the workshops of the Euston-road, is, to our mind, a somewhat melancholy commentary upon the value of the art-teaching and literature of which so much now-a-days is heard. A mind which is genuinely educated in the principles of art, whether they be seen in Grecian marbles or Italian pictures, should be able to apply these rules to the most important and the most trivial matters of everyday life which are concerned with art. The principles of proportion and of harmony of grace and form which are required by a well-dressed woman in her costume are equally applicable when she comes to choose a tombstone for her husband.

It seems clear, therefore, that those who would improve the art of this country, of which monumental sculpture within or without places of worship form a most important part, should endeavour to raise the character of this kind of work. Foremost among these are the clergy of the Church of England. When nothing more pretentious is required than the simple piece of wood which moulders under the elm-trees of Hertfordshire graveyards, beneath which lie the village elders, he can do nothing; but when a more pretentious monument is needed, it is eminently the duty of cultivated clergymen to raise popular taste in this respect. And next, the sculptors of the day, rising or risen, should not neglect this field. The young sculptor, like the German Schwanthaler, may well give to it some of his hardest work and clearest thought, and the man of fame, thinking of Flaxman, of Canova, and of the ancients, may well devote to it some of his mature powers. Then there would be some prospect of seeing the present glaring dreariness or intense vulgarity of our monumental sculpture disappear, and in its place we should find work more calculated to please those who survive, to elevate the taste of those who take note of these things, and to do honour both to those whom these works commemorate and the sculptors by whose brain they were devised, and by whose hands they were executed.

A Fine Art Exhibition for Dundee.—A meeting of the general committee of the proposed fine-art exhibition, Dundee, was held on the 24th ult., when it was resolved that a fine-art exhibition should be opened in June, and that an industrial department should be added.

ROBA DI CARNAVALE.

Carnival has come again, and with it al traditions, here in Venetia of such excepti celebrity, in spite of the renown of Milan, R Turin, and so many other Italian cities. weeks past the innumerable grocers who s some of the few successful tradesmen of larger towns, have piled up in their win countless lumps of by no means too-inv butter, *di Milano*, of course, surrounded picturesque festoons of the small sausag *luganega* of this province, and all the luxuries of the Italian kitchen, not forge the appetising *prosciutto* and the Parm cheese,—a daily necessity in Italian famili nearly every class. For days past good h wives have been preparing all sorts of things of a sweet nature, generically te *Roba di Carnavale*, while appetising a fritters, indigestible dough nuts, and what frizzle and sputter at the door of nearly e fruit-shop.

Carnival is the foreign Christmas, Carnival, like that time-honoured feast us, comes but once a year, and with li fortunately, or unfortunately, we do not ha forty days' fast succeeding it, during no meat or butter may be taken by C Catholics. Traditions, so far, are still as as ever, but the riotous enjoyment and abandonment of all common sense, which so inseparable from Carnival, are rapidly out, alone fostered by a few traditionalist children, and the interested tradesmen. C committees, notwithstanding, have been h and funds collected, with difficulty, as m imagined, and programmes issued in a large cities.

In Venice, as also in Treviso, for of the cities in Venetia we can alone speak, a pla is raised in the *piazza*, where dancing is k in costume to the strains of appropriate tombola and raffles are held, and various amusements go on.

In Venice, where the antique tradition rank, demand certain obligations, efforts been made this year to procure the st and citizens some genuine amusemen addition to the usual fund of enjoyment al by the ever-joyous "Chiozzotti" an "Napolitani" of Venetian fame, the C has offered this season an especial and attraction in a Gastronomic Exhibition the well-known *Libreria antica* of the R Reale, Scamozzi's Procurazie Nuove of republic.

"Gastronomes of Italy," ran the entica gramme issued some while since, "'we live, we do not live to eat,'" Molière has his famous comedy of the 'Avare.' The is true, but no less true is it that to li we must eat well. We see, indeed, in motest times, Achestrates of Syracu contemporary of Pericles, undertaking and perilous journey through the world t in every country the art of cookery, an return singing the praises of gastrono poem which Ennius did not disdain to tr And under the Romans, Apicius and H both rendered glorious the gastronomic our days Cambacères, Brillat Savarin, Marquis de Cussy. Wishing, therefore, the culinary art to the level of these pro days, and give life and soul to such an in production of human good taste, the committee has decided to open a great nomic Exhibition, in which are invited to all the cooks, pastry-cooks, and confecti the city and the provinces," &c.

As for the programme, with its pr fifteen medals, in gold, bronze, and sil rules and the division of the exhibition different groups, it cannot be too praised, while the raffle of the exhibits plete the show added with the general further interest. Such an exhibition in we feel sure, could not fail to meet w versal success, though in reality the tioners' shops of any large city afford gastronomic exhibition at the disposal who take an interest in such matters.

On Tuesday, the 18th ult., opened t expected treat, and many hundreds visitors who crowded through the *Porta delle Cariatide* in the Piazze ascended the graceful staircase, the which has roused the admiration of generations, and which our own Sor sington authorities have made such an reproduce; but few, we suspect, ex

ciative stranger, stopped to admire the
ently facile work of the past which we
now so difficult to revive; or the beauty
antechamber, whose chief decoration, by
ay, consists in the two dozen superb six-
-century chairs which are ranged round
alls, in undisturbed order, their covers,
o say, worn out, and replaced by dark-
ed American leather.
a large central table, in the once mag-
tly decorated *Libreria antica*, of which
he ceiling seems to have been spared from
d days, were displayed the dainties, sur-
ed by an admiring crowd of gastronomic
.
dless to describe these dainties in all their
ing beauty, though this we may say, that
a London or Parisian supper-table is sup-
with as attractive objects, made, it is true,
e Venetian artists who have left, as so
l talent seems to have left, their native
.
o does not remember in Voltaire's romance
inner at Venice of the thirteen dispos-
n kings, and here really one might imagine
banquet revived in the superb dish of
lobsters, pheasant pie, the stuffed boar's
in galantine, or the nauseating sweets.
, in his "Purgatory" and "Inferno," has
us all an excellent idea of the possible
nts of a future existence; the Holy Inqui-
from all accounts, possessed a genius in
vention of fresh tortures; but neither
nor Torquemada, nor Pietro Arbues, of
s memory, notwithstanding the classic
rity of Tantalus, seems to have dreamt of
ronomic exhibition for a hungry heretic,
den to touch anything by placards at
turn.
Gastronomic Exhibition was a complete
s, and will, doubtless, long mark the
al of 1879. As for the festivities of the
opening of the season, the fun of *Giovedì*
, and still more of the last days, and
Grasso (completely annihilated by the
ane which the New York bureau so cor-
announced), these have been too often
bed, and really this year in Venetia have
off in the midst of such solemnity and
rence, that they need little more than
nce.
glories of Carnival seem to have dis-
ed with the death of the *Descente de la*
lle at Paris; alone kept up in their old
, if not ruffianism, in some of the western
of the United States. The advertisement
of a Parisian paper at this season scarcely
as a single announcement connected with
val, though not a few may be found in the
journals. There are still traditionalists
fter the enjoyment of Carnival in Venice,
to don the hair-shirt of Ash-Wednesday,
rry off instead to Milan, where a special
ge allows Carnival another week's exist-
But these are dying out. We have now
val every day, and the enjoyment which
s past came but once a year, we have
moment at our command, and Mrs.
's famous holiday comes to every one now
n as many days as then it occurred in as
years. But, above all, the beauty of the
val of the past is gone, replaced by
rity and degenerated traditionary emblems
decorations, as in our own Lord Mayor's
. Gone are the days when such a Carnival
could be enjoyed as that held in the early
of the thirteenth century in Treviso, and
as in the history of ceremonies.
rible as were the wars and vengeance of
iddle Ages, splendid were their fêtes and
ements. In 1214, in the chief Piazza of
so, was erected a wooden castle, covered
rich silken hangings and tapestry. Two
ced beautiful damsels, chosen from among
ost attractive of the city and the country
ll, held this tower, the Castello d'Amare, all
d with elegant cuirasses, their head-dresses
ndent with gems and gold. The youths,
ly gorgeously costumed, were the besiegers.
ges, sweets, and fruit whirled in the midst
nds of flowers and scented waters, formed
ffensive and defensive arms, though the
deadly weapons were shot from the con-
ng eyes of the two hundred horseless
ons. Nearly six thousand strangers came
invitation of the city, not alone from the
bourhood, but even from Lombardy, and
fêted for a week with all their retainers, at
ost of the city, then in its most glorious
d of prosperity. And in the midst of this
urse the siege proceeded merrily, to the immense satisfaction of all; but the warm-blooded Venetian youths, having first planted the rose-coloured standard of St. Mark on the castle walls, the Paduans could not contain their wrath; indeed, the struggle would have been a serious one, had not the authorities intervened. Eventually the castle capitulated, and with it its charming garrison, amidst the cheers of the delighted spectators.

Another Carnival, during the last years of the sixteenth century, was marked by a superb jonst carried out with all the formalities of the Middle Ages, and after the joust, came a bull-baiting, gay masquerades, music, and dancing, succeeded by the dull, monotonous psalmodies of the votive procession of Holy Week, lighted by the flickering torches of the devotees who had religiously kept their forty days' Lenten fast.

But now, much in the same spirit, both Carnival and Lent are but little regarded, and in Venice, as also here in Treviso, so few masks have been seen about this season that even among the people themselves surprise has been expressed. As for the costumes, gone are the days of the gorgeous dresses of the Castle of Love, and the rich silks and satins and hanging tapestries of later days, the silken banners, and the flowers. Mr. Nathan, the well-known costumier, who has so long been, notwithstanding his reputation, the horror of all artists,—Mr. Nathan, we repeat, is a perfect Planché in the correctness of his taste and knowledge to the costumiers of Venetia.

The success of Carnival depends on the temper and feelings of the people, and here in Italy, especially in Venetia, these feelings are not too buoyant or over-elated at the general prosperity. Hawthorne, in that most charming of all Italian romances, "Transformation," is right when he says,—"Unquestionably a care-stricken mortal has no business abroad when the rest of mankind are at high carnival; they must either pelt him and absolutely martyr him with jests, and finally bury him beneath the aggregate heap, or else the potency of his darker mood,—because the tissue of human life takes a sad dye more readily than a gay one,—will quell their holiday humours like the aspect of a death's-head at a banquet."

Here, in Venetia, the death's-heads of all the departed Carnivals seem to have been lurking at every corner, to judge by the solemnity with which the season has passed off.

As a piece of disinterested advice to all in England who may wish to enjoy, without much trouble and at no great expense, the pleasures of Carnival with some of its old fun and *Mardi gras* festivities, we would counsel them to pass Carnival week in Brussels,—a gay yet thoughtful city at all times worthy a visit, and where the ceremonies of Easter Sunday in the quaint old church of St. Gudule are, in the opinion even of those who know both, but little surpassed by the ceremonies of St. Peter's when Rome was still the Pope's capital.

Venetia.

THE EXHIBITION OF WEDGWOOD WARE AT THE LIVERPOOL ART CLUB.

The Liverpool Art Club is deserving of very much praise for the way in which it fulfils its functions; for we take it that no art club can be said, at least in a provincial town, to be worthy of the name which does not in some way, small or great, endeavour to enlarge the intelligent appreciation of art. We say, at least in provincial towns, because in the metropolis there are other bodies and exhibiting institutions which are continually at work, so that an art-club in the metropolis is naturally and properly chiefly social in its character. But to return to our immediate subject. By the present collection of objects, nearly 1,500 in number, in Wedgwood ware, the people of Liverpool will be enabled to obtain a distinct mental grasp of Wedgwood ware as a whole; for there is no way so certain to convey a distinct impression of an artist's or a workman's power, as by bringing together a large number of examples of his work. This same club indeed, was very successful in this respect in the collection of David Cox's work some two years ago, one of the most interesting and satisfactory exhibitions which we have ever seen. Nor, to take another art, can any one visit the collection of Flaxman's casts and drawings in the University College, London, without coming away with a really distinct impression of some of that great artist's special qualities.

And it is very fitting that Liverpool should be the place where such an exhibition should be held, for it already possesses a fine collection of Wedgwood ware in the Brown Museum, now the property of the Corporation, and presented to it by that enthusiastic and able student of Wedgwood, Mr. Joseph Mayer. Moreover, Wedgwood was essentially a north-countryman, not only from the locality where he was born and worked, but also from the shrewdness and ability which he possessed in addition to his fine and delicate taste. So that the producers of the interesting and carefully compiled catalogue are well justified in saying that "this exhibition is a tribute to Wedgwood's memory; not only because the Liverpool Art Club would wish to represent all our national art productions, but because Wedgwood was a neighbour to this town, and because the contents of this exhibition were produced within sixty miles of this building from the soil of an adjacent county."

The catalogue, indeed, reflects very great credit upon its compiler, Mr. Gatty, for it is something more than a mere list of the objects at the exhibition: it contains a number of biographical and critical remarks which will be a useful *aide-mémoire* even to those who have become familiar with Wedgwood and Bentley in Miss Meteyard's elaborate life of the great potter. And in it further is to be found an excellent little essay, with designs, on the "Marks on Wedgwood Ware" from the pen of Mr. Frederick Rathbone, of Brighton.

Coming more particularly to the collection which is arranged in the exhibition-room of the Art Club's premises, the most remarkable and striking characteristic which is at once apparent is the extraordinary variety of the ware which was turned out from the potteries of Etruria. Objects, both useful and ornamental and also purely ornamental, are here in abundance; and Wedgwood ware must be held to be the most remarkable from the fact that it was as much made for purely ornamental purposes, to depict graceful form with delicate colouring, as to serve the ordinary and commonplace purposes of every-day life, whether to hold dishes of tea or toast and butter. And there can be no doubt that Wedgwood had in view quite as much purely artistic as purely utilitarian purposes in the manner of his work; for in his own catalogue he thus expounds his views upon this point,—"Those who duly consider the influence of the fine arts on the human mind will not think it a small benefit to the world to diffuse their productions as wide and to preserve them as long as possible. The multiplying of copies of fine works in beautiful and durable materials must obviously have the same effect in respect to the arts as the invention of printing has upon literature and the sciences; by their means the principal productions of both kinds will be for ever preserved, and will eternally prevent the return of ignorant and barbarous ages." So that we find united in Wedgwood qualities which could not fail to produce a remarkable result, untiring energy, and great shrewdness and capacity for business, a quick and fine natural taste, and high artistic aims working in a practical form. As an example of the variety of Wedgwood's productions, we have no more to do than to give the several divisions of the catalogue itself. There are, first of all, cameos and intaglios; secondly, bas-reliefs, medallions, and tablets; thirdly, the portrait and character heads, figures in the round, and on small or large medallions; and fourthly, the purely useful articles, such as ink-stands, dessert-dishes, and things of a kindred kind. But certainly, to our mind, the most attractive articles which Wedgwood manufactured were the bas-reliefs, such, for example, as the beautiful work the Apotheosis of Virgil (No. 645), an oblong bas-relief modelled by Flaxman,—"the genius of sculpture," as Wedgwood, long before the sculptor became famous with kindly and prescient mind, liked to call him, with white figures standing out of the delicate pale blue jasper ware; or, again, we might mention another noticeable object (No. 653), "Hercules in the Garden of the Hesperides," also an oblong bas-relief from a beautiful Etruscan vase, in the collection of Sir William Hamilton, which is now in the British Museum. This, too, was modelled by Flaxman, in August, 1787, and has a white jasper ware body, with the ground and back washed green, and is in size 13 in. by 5 in.

Not the least interesting objects in this collection, and quite unique, and irreplaceable of their kind, are the portrait heads, especially of illustrious moderns. Of these, Wedgwood him-

self thus wrote:—"These heads are made either in black basalts, or blue and white jasper. They are of various sizes, and different prices, from one shilling a head to a guinea [we wonder how much a shilling medallion would now fetch], with and without frames of the same composition, but most of those without frames in one colour are sold at one shilling each." In form they are generally oval, and of jasper ware. Among them are to be found portraits of all kinds,—Sir Joseph Banks, the naturalist, Captain Cook, William Pitt, Sir Joshua Reynolds, and so on, *ad infinitum*.

The examples which we have given will illustrate to some extent the richness of the present collection. We might, indeed, give numberless other instances. We might cite the celebrated copy of the Portland vase, bracelets, allegorical figures, and the famous set of chessmen (No. 1,396) in blue and white jasper, designed, like so many of Wedgwood's best productions, by Flaxman. But of such enumeration there is no end. All the objects exhibit the same beautiful material, and all show designs and forms more or less graceful and full of taste. No doubt Mr. Gatty's criticism in this respect is well founded when he says that "it is a matter of regret that so much power was expended over what is, after all, only the reproduction of another man's design, and it seems a pity that Wedgwood, who wrought such exquisite fabrics from the soil of his native country, should not have gathered also from England and English thought the art conceptions which were to give form to his materials." But it must be borne in mind that, so far as designs upon his china went, Wedgwood had to use the best agents he could find, and that in the part of the designs of the actual articles with which he himself had to do,—namely, their elementary form,—he effectually carried out the principle that the first object of articles of utility was that they should be the best and most fitted for actual use. "There are," to quote again from the compiler, "no plates and dishes, teapots, and cups and saucers, so admirably adapted to their purpose, and provided with such efficient rims, spouts, and handles, as his." Here he was eminently successful, as we hold, too, that he was in respect of his surface designs; for, though the latter may have seldom been original, they were always copies of or suggested by fine models, and these are very preferable to insipid or vulgar designs of an original kind.

The exhibition which the Liverpool Art Club has now thrown open to the public possesses, it thus will be seen, far from a merely local interest in a place of vast commercial importance. The members of this society have given to the public view the productions of a man who showed unspotted integrity and the keenest faculties of business, united with a cultured taste and high and artistic aims. No man could be a more fitting example and contrast to many of the commercial men of to-day.

ENGINEERING PROGRESS IN FOREIGN COUNTRIES.

We announced some little time since that the Institution of Civil Engineers were about to add to their usual annual publications an abstract of the progress of engineering in foreign countries. The first of these abstracts has just been issued, and its interest is such as fully to answer the expectation we expressed as to the utility of such a publication. It is, of course, out of the question to give an abstract of this little pamphlet; because, though containing only forty-one pages, it is itself only an abstract of the series of abstracts published in the proceedings of the Institution, to which it is thus of value chiefly as an index. At the same time, it is an index which points out the great value of the more detailed publications of the Institution.

The abstract is divided into four parts. The first comprises public works; the second, machinery; the third, mining and metallurgy; and the fourth the application of electric science to engineering. So rapid is the progress of science, and so vast the field now covered by the labours of the engineer, that each one of these several departments furnishes enough of novelty and importance to make a great demand on the time of the general student, while furnishing in itself a special department of the profession.

As bearing upon building, the most important progress indicated by the great public works of the year has been in the construction of bridges, including the spanning great widths by steel girders, the fixing of the same without the use of centreing, and the sinking of foundations to depths hitherto without example. Thus the St. Louis Bridge over the Mississippi has two spans of 502 ft. each, and one of 520 ft. formed of two arched steel tubes braced together. The Kentucky River Bridge has a centre truss of 375 ft. span, which was erected at a height of 275 ft. above the water without scaffolding. The Moerdjik Bridge over the Hollandsche Diep crosses an estuary 2,840 yards wide. The foundations of a bridge in North Jutland are sunk to the extraordinary depth of 118 ft. below low water.

Great advance has been made in the appliances for preparing foundations, a subject of as much interest to the architect as to the engineer. On the River Dwina, a steam pile-engine, in which one machine works several rams, has been driving fifty piles per day; and effecting twenty-eight times as much work as an ordinary pile-engine worked by four men, at a sixth of the cost per pile. Another remarkable engine of this kind is worked by the explosion of gunpowder, a cartridge at the head of the pile being exploded by the fall of the ram, the explosion driving the pile down, and the ram up again to its original position. Pile-driving in sand by the injection of water has proved efficient at Calais. We do not see any reference to the new invention of hollow piles, with solid points, which form their own pile-engines, the ram falling within the pile.

Hydraulic works have been carried on to a large extent, and two masonry dams across valleys deserve note. One of them, across the Gileppe Valley, is 154 ft. high, 210 ft. broad at the base, and 49 ft. broad and 771 ft. long at the top. The other, across the valley of Enfer, is 170 ft. high, 110 ft. wide at the base, and 9·8 ft. wide at the top. The Gileppe reservoir will contain 16,000,000 cubic yards of water.

The activity displayed in the treatment of what are called secondary railways, comprising both steep mountain ascents and cheap light lines, has been far greater in America and on the Continent than in Great Britain. Of small-gauge railways it seems that Great Britain has only 26 miles, or actually 12 miles fewer than Java. In the United States 2,040 miles of small-gauge lines are open, and 7,552 miles are in course of construction. Throughout the world, in 1874, 5,040 miles were open, and 10,812 miles under construction. On these lines the rails, made of steel, are in some cases as light as 41 lb. per yard. Curves of 3 chains radius, and inclines of 1 in 28, have been introduced, and the cost has been kept down, in some instances, to below 2,000*l.* per mile. In the Grand Duchy of Oldenburg a line of 4¼ miles long has been constructed for 10,450*l.*, including rolling-stock. The gauge is ·75 mètres; the rails, of Bessemer steel, weigh 25 lb. per yard. Four trains run daily each way, at a speed of about 13½ miles per hour. The fuel used is peat, and the daily expenses amount to only 29*s.* The construction of fireless, or hot-water locomotives, and of compressed air engines, for city tramways, has also engaged much attention; and a steel steam coach for the common road, weighing 4 tons, and carrying 12 passengers, which has been designed by M. Bollée, accomplished a journey of 150 miles in 18 hours. It is said to make 5¼ miles per hour up an incline of 1 in 20. It may be observed that when inclines of this nature are to be surmounted, it becomes questionable whether the diminution of friction caused by the introduction of rails is worth the cost. To ascend an incline of 1 in 20 demands a tractive force of 112 lb. to the ton for gravity alone. If we regard the diminution of running friction as being from 45 lb. to 12 lb. per ton, we only obtain a gain of 33 lb. per ton, or little more than a quarter of the power required. Mr. Stephenson's rule was that the gradient should, as far as possible, be such as to make the resistance from gravity equal that from friction, which he considered was attained by a grade of 1 in 330. When we consider, on the one hand, the economy of weight to be attained by the use of steel, and, on the other hand, the economy of power to be effected by reducing the velocity of the driving-wheels below that of the piston (which may be admirably effected by hydraulic connexion), it seems probable that steam coaches will yet hold their own against light railways in many country districts.

In the departments of machinery, mining and metallurgy, and electricity, steady and rapid development is everywhere to be traced. The diamond-boring system has attracted [illegible] attention in Bohemia and in Switzerland. American system of rope-boring for petro[leum] wells is another novelty in this branch of [engi]neering. The Prussian Government have ca[rried] the workings of the Pribram metalliferous [mines] to a depth of more than 1,000 mètres [below] the surface, so that this is now the de[epest] mine in the world. The introduction of ta[pered] steel ropes has been rendered necessary by [the] great depth to which the mines in que[stion] have been carried.

While it will be evident that the first nu[mber] of these new abstracts is full of informati[on] may safely be anticipated that their valu[e will] increase year by year; and that not so mu[ch as] an index to actual movement as by wa[y of] record. The Transactions of the Instit[ution] now form almost the only record that we [pos]sess of the history of engineering in Eng[land]. From their very fulness of matter the[y are] somewhat inaccessible, though the pro[mised] completion of the index will do much to re[move] this defect. The value of a series of a[bstracts] abstracts is too great to need comment. [The] only point in which we observe that th[e ab]stracts are hardly up to the science of th[e day] is in reference to the electric light, where [esti]mates of the cost which have been long b[efore] the public are returned in place of the [actual] different results that have attended the e[xperi]ments in London and other parts of Eng[land]. These, no doubt, will be duly chronicled [in the] year. The Gramme and the Siemens mac[hines] are still spoken of as the most econo[mical] sources of electricity. We shall no doubt [learn] by-and-by, instructive facts put on record [as to] the fate of not a few attempts to obtain co[mmer]cial power, whether applied in the shape of [light] of heat, or of work actually done. We [con]gratulate Mr. Forrest on his first accou[nt of] engineering progress in foreign countries.

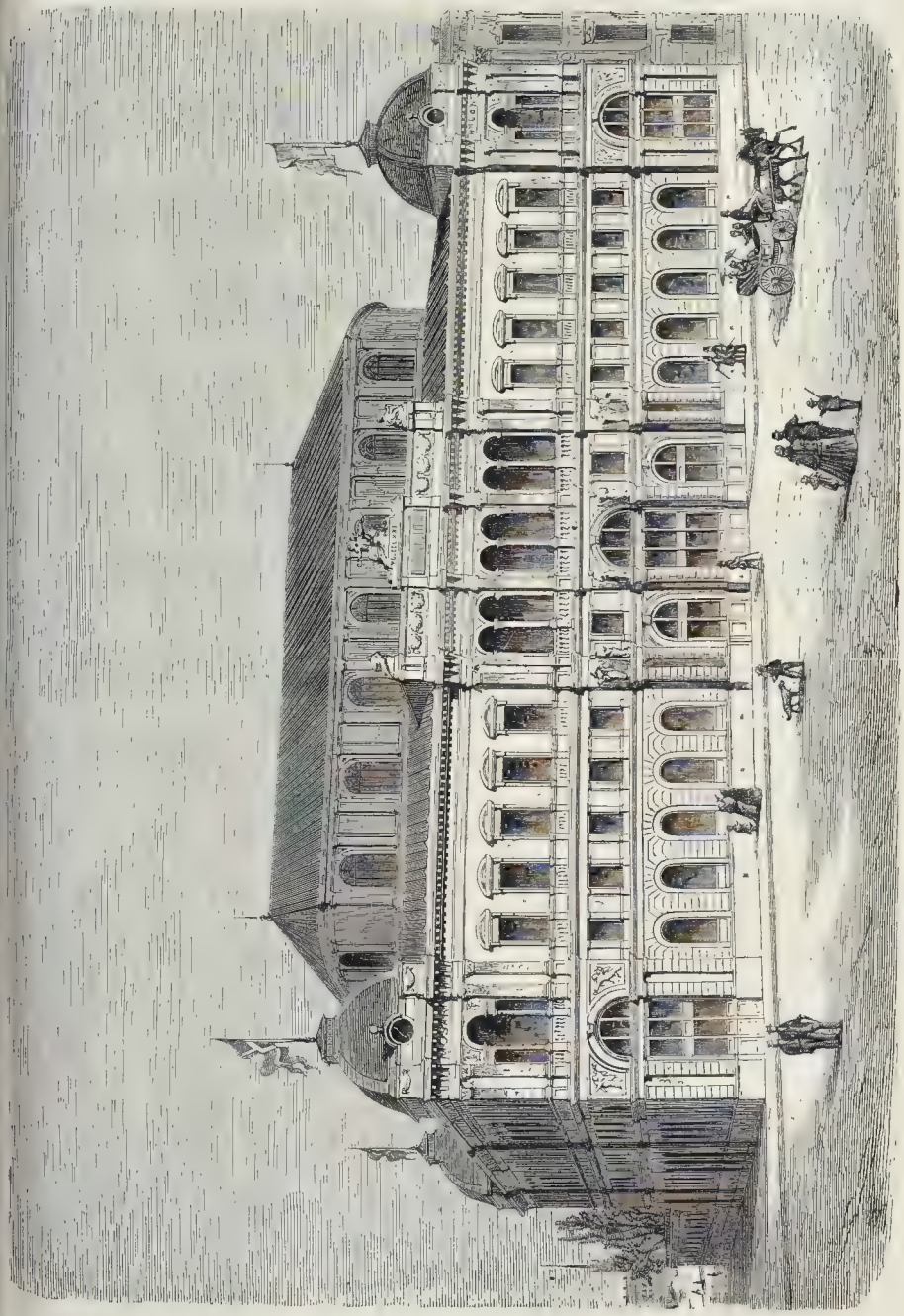
THE INJURIES TO WORKMEN QUES[TION] IN ITALY.

For a considerable period the question [of] liability of masters for injuries received by [their] workmen during the course of their em[ploy]ment has caused not a little discussion i[n this] country. And already notice has been [taken] that it will occupy the attention of Parli[ament] during the present session.

But it is not only in England that this r[ight] has received much public notice; in Italy [like]wise it has come in for a large amount [of] cussion. In that kingdom, however, its s[ubject] considerably wider, and the character [of the] discussion shows that many advocate char[ges] the legal relation of masters and worko[men] regard to this matter which have no supp[ort] here, and which, by the fact of their being n[ot] at all, seem to show that the administrat[ion of] the law in Italy is much at fault. The s[ubject] is one which interests so many classes [of] readers that it will well bear some brief [no]

The number of accidents to workmen it[self] seems very large, though no general trustw[orthy] statistics are to be had from official so[urces]. But some figures are available which give, [at] rate, a notion of the extent of the injuries re[ceived] by workmen, and these we take from thel[ast] of a recent number of an able and inter[esting] Italian weekly journal, *La Rassegna Settim[anale]*. From the year 1872 up to October 31st [there] about 1630 workmen were brought t[o the] Hospital della Consolazione at Rome, w[ho] been injured while engaged at their [work]. Out of this number 169 died, and the rem[ainder] were either injured for a time or for the[ir] their lives; and in considering the figur[es] nished by one hospital only, it must be r[e]bered that there are many other persons t[aken] other hospitals or treated in their own home[s] in Italy it is not so much the absence of r[ed]ress when the injured man is maimed or killed[by] fellow-workman, which is the main b[one of] contention in England, but the fact that [the] apart from this question is almost out of the[ir] of the workman, and that consequently m[en] do not much mind whether their workm[ates] injured or not. The law, it is contended, [is] enough in principle that one man who r[eceives] an injury by another, or at the hands [of his] agent, should have recompense from him.

But, say the friends of the Italian wo[rkman], it is almost wholly impossible for him to [obtain] the redress which is theoretically due t[o him]. Possibly almost a pauper but for his [daily] earnings,—certainly, at any rate, a ver[y]



STOCKHOLM ARCHITECTURE: CONCERT ROOMS IN BLASIHOLMSTORG.

man,—he can hardly afford to obtain legal assistance in the first place, or go through the great expenses of litigation in the next; and finally, it is necessary to prove the negligence of the employer or his servant.

The proposal (which has received not a little support by which all this is to be changed), is to the ordinary Englishman rather startling in its character. For the responsibility for accidents is presumed by the proposed law to rest on the employer, and it is on him to prove either that the injury complained of has been caused by some unavoidable accident, over which no party had control, or else that the reason for it is the negligence of the injured workman himself Thus the whole burden of proof is shifted, and the employer, as soon as the accident takes place or the injury is done, would be in the eye of the law the wrongdoer and liable to pay compensation until he had proved facts to take away the legal presumption. This, we confess, is an innovation which we do not think would be tolerated in this country, nor do we believe that it could fairly be considered in harmony with the principles of justice. No doubt it is often difficult for a poor workman to obtain redress when his legal opponent is richer than himself, but certainly in this country we see every day quite poor men obtain substantial damages from railway companies, one of which is richer than any band of a score or two of Italian master builders combined together in one body. The next proposal is that damages shall be calculated strictly on the base of the wages paid to the operative at the time that he is injured. But what the more advanced supporters object to in the Bill of Signor Pietro Pericoli is that it leaves the ordinary procedure untouched. They would propose an addition very radical in its character, namely a special procedure applicable to this class of cases, by which some public legal body should be the real pursuer, or, as it were, legal trustee of the injured man's interests. We do not for a moment deny that the Italian workmen are suffering under various ills, especially in reference to this matter of injuries received in the course of their employment. But what is astonishing to an Englishman is the fact that no attempt seems to be made to improve the existing laws; but that, instead, a fundamental legal principle is wholly to be changed, and a special and very unusual procedure is sought to be introduced. And, strange as it may seem to us now, there is no reason why some, whose sympathies with the workman are possibly stronger than their appreciation of justice, should not bring up similar proposals in this country. But we say advisedly that there can be nothing more injurious to the real system of justice in a country, or to the proper and various relations between various classes, than to give exceptional privileges to one set of men over another. It would be just as reasonable to make it a legal presumption that if a man is injured in a railway accident it is the negligence of the company, or if a sailor sues a shipowner for wages that they are due unless the master first prove the contrary, as to make it a presumption that when a workman is injured the master or his servants have been, in some way or other, negligent. We are far from having no sympathy with workmen, and during the recent Midland Railway strike we at once stated that we thought hard measures were being dealt out to the men by the employers. But we should regret very much to see what we should consider wholly inequitable remedies proposed in this country which are received as proper by sensible and able Italian writers and politicians. And such schemes seem to us also to point a kind of indirect moral to English workmen, for they show that English workmen have no grievances to complain of in the way of obtaining justice when required; whereas, the mere mention of these plans in Italy shows that the workmen there are baulked at the very gateways of the Courts of Justice. We are not now saying anything in respect to the vexed question of the liability of employers for the acts of workmen by which fellow labourers are injured. All we have done here is to show something of the state of feeling in Italy in the broader aspect of the question, and the undesirable remedies which are proposed in the South of Europe.

The Improved Industrial Dwellings Company.—Mr. Henry Jarvis, jun., of Trinity-square, Southwark, has been elected architect and surveyor to this company. There were 181 candidates for the appointment.

STOCKHOLM ARCHITECTURE.

CONCERT-ROOMS IN BLASIHOLMSTORG.

Stockholm was long in need of a building in which large numbers of persons might assemble for public meetings or festivities, for concerts or lectures, or for other similar purposes. To supply this long-felt want, a committee was formed some years ago, and the result of its labours was the spacious building of which we give an illustration. The portion of the town on the Blasiiholm, one of the numerous islands on which a great part of the Swedish capital is built, being most centrally situate, was selected for the site. The façade of the building fronts the Blasiiholmstorg, and is 194 ft. long; the side facing the Stallgatan is 175 ft. long. The whole foundation rests upon rock. The edifice rises in four stories,—ground floor, mezzanine story, and two stories above this; the height of the building up to the parapet being 53 ft., the concert-room rising another 27 ft. On the ground floor there is a carriage approach, with spacious entrance on either side for the more humble visitor, as well as large cloak-rooms, in connexion with the upper stories by staircases leading to the concert-room. The latter has an area of 13,400 square feet. A room of such large dimensions, with large rooms below for lectures, meetings, concerts, and so on, provides accommodation for thousands. Refreshment-rooms are also to be found in the building.

The large edifice fulfils all the requirements of public assembly-rooms: central position, convenient approaches, with a large hall of good acoustic properties. The cost of the building is stated at half a million riksdalers (22,000*l.*), for which outlay an annual income of 48,000 riksdalers (nearly 3,000*l.*) is obtained.

BUILDING NOTES FROM BRISTOL.

Much has been lately said about the depression in the building trade in nearly all quarters, and the statements as to the badness of things in the West of England has been certainly corroborated by the large number of those either directly or indirectly connected with the business, who, soon after the bank suspension in Bristol, found it necessary to file petitions in liquidation, some for small, but others for considerable, amounts. Notwithstanding this, many works of a rather important character have recently fallen to the share of the local contractors. Some of these have been finished within a few weeks, others are approaching completion, and one or two are making satisfactory progress.

Amongst the buildings entirely completed, Christ Church, Stoke, and Redcliff-crescent Chapel may be noticed. The former is ornamental, and very little expense was spared by the Congregational body, for whom it was erected. The second chapel named belongs to the Bible Christian denomination, in a much less fashionable quarter; its architectural pretensions are not so great as those of Christ Church. The place is spacious, well seated, and lighted. The building cost about 8,000*l.* At two other places of worship near at hand the builders have been at work. On Zion Congregational Chapel, 1,500*l.* have been spent in refitting and thorough renovation, and 300*l.* or 400*l.* have still to be laid out in exterior work; while 1,200*l.* or 1,300*l.* have been expended in erecting new schools attached to Philip-street Baptist Chapel.

Amongst the works nearly completed, perhaps the Grammar School in Tyndall's Park is the most important. The total cost of this structure is nearly 20,000*l.* (inclusive of the site), and the arrangements made by the architects, Messrs. Forster & Wood, and carried out by the builders, Messrs. Wilkins, of Surrey-street, Bristol, are of a satisfactory character. The original grammar school was founded by Robert Thorne, in the fourteenth century, and the design of the new institution is in the style of this period. The dimensions at the ground line are 158 ft. by 68 ft., the height to the terminals of the gables being 90 ft. The east and west fronts are of similar character, and the main entrance-porch on the east side is adorned with niches and carved canopies for the reception of a statue of the founder and others. The lines of frontage are broken up by massive buttresses, which terminate at a line marked with a moulded cornice of freestone round the entire building, with gargoyles above the terminal of each buttress. The walls around the structure are battlemented, the pointed roof is covered with green slate, and surmounted with terra-cotta cresting, and the turrets rising above each transept are features. The build is of red local stone, with freestone dressi The chief schoolroom is said to be unsurpas in dimensions by any place of the kind ex one at Birmingham, which is a trifle larger. is 140 ft. long, 50 ft. broad, and 50 ft. high f the floor to the collar-beam of the roof. class-rooms are also spacious and lofty, and commodation is provided for 400 or 500 b In the upper portion of the west transept intended to place a fine organ, costing 1,0 presented by Mr. W. H. Wills, one of the sc trustees. The head-master's house stands prominent position on high ground, adjoi the school. A cricket-field of four acres an half has been levelled close by, and ample sp is retained for a school library, gymnasium swimming-bath. Tyndall's Park will be long become noted for its fine buildings. Deaf and Dumb Institution occupies a manding position on the estate, and it i addition proposed to build the new Univer College (referred to in our last) near at hand

The new Bristol Police Courts are also p tically completed. The old Council-house the top of Corn-street has long been found sufficient for the police business of the city; when the new institution is entered upon, suggested that the present somewhat in venient Council-chamber may meet with s alteration. The new courts are in Bridew street, next door to the Central Police Sta Extensive property of a valuable description to be taken to obtain the site, and the total of the erection will, therefore, be very consi able. The external appearance of the pla unassuming and neat, and yet not devoi ornamentation and architectural effect, an the internal arrangements much attention been paid.

Corn-street is to have two new banks at corners. The London and South-Western B ing Company secured the site of St. Werbu Church, and are getting on at a good pace their new premises; and the Wilts and D Company have demolished extensive comme premises lower down the street, and the buildings will shortly be in full swing. these structures are completed Corn-street possess nearly all the banks of the city.

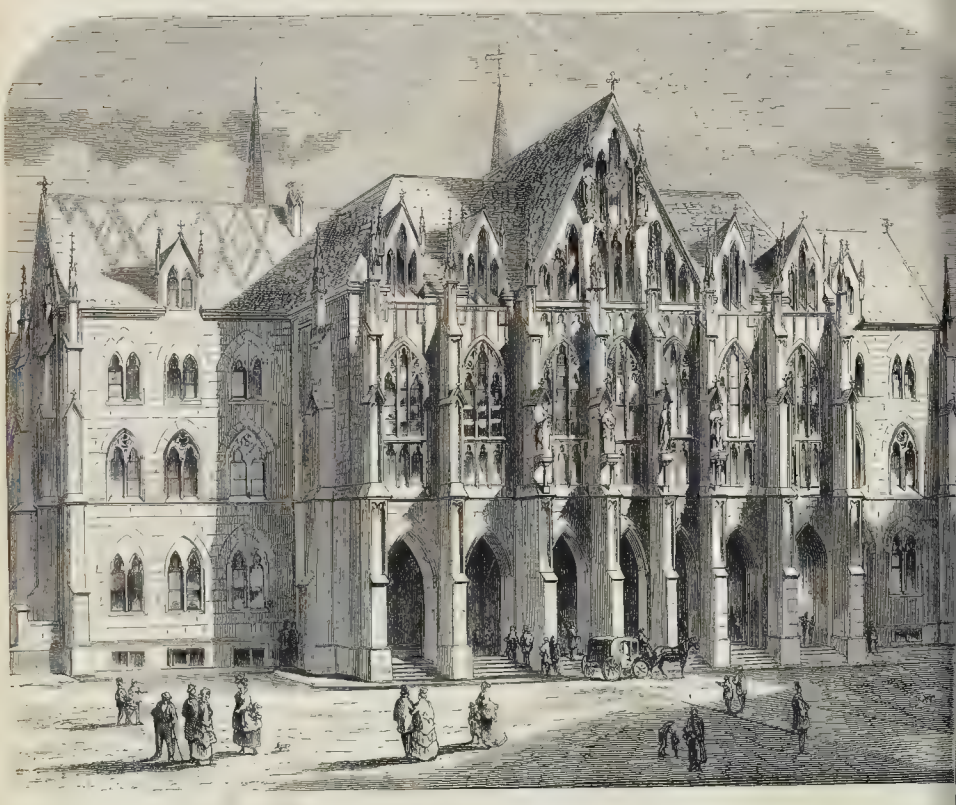
The St. Raphael's House of Charity, a sch of some magnitude, is in a tolerably for state, but some time must elapse before occupied. A new chapel is to be erecte North-street, Bedminster, by the Wesleyan

Though of an engineering rather than architectural nature, the new Princes-s Bridge, which replaces an old wooden bridge, may be mentioned in treating of undertakings. This is of iron. It swings, the most approved hydraulic machinery, motion by a gas-engine. The work has bee expensive but very necessary one, in orde open up a connexion between the centre o city and an important suburb,—Bedmin The city had to purchase the right of the G Western Railway Company to the foot and riage tolls.

It may be added that, following on the fo tion of the National Builders' Associatio effort is being made to place the Bi Master Builders' Association on a footing in accordance with the size and importan the city. In connexion with this matter a di has been held at the Imperial Hotel, an impo building just erected near the Clifton R Railway-station.

SCHOOLS IN DRESDEN.

If in a country like Saxony,—whose sc and educational institutions have for a time been looked upon as models, and whic frequently visited by schoolmen from far near, for the purpose of studying their arr ments, the plan of teaching pursued, and details,—her capital and principal city, Dre takes the lead with a good example, this cedence has its reason, on the one hand, i fact of its possessing good educational blishments, and, on the other, in the rec ments of the population of a large tow gether with the increasingly various claim a superior education demanded by our t Although there is more of the will than way at the present time for executing imp ments, nevertheless they are constantly effected, new buildings are erected, and tions to the subjects taught are made. Be providing for the intellectual developme youth, their physical welfare is also well



THE "KREUZSCHULE," ON THE DOHNAPLATZ, DRESDEN.—PROFESSOR ARNOLD, ARCHITECT.

after in the Dresden schools, gymnastic exercises being an obligatory branch of instruction, and training institutions for teachers of gymnastics having also been established.

While formerly the school-going youth of Dresden had to spend a great part of the day in dark, dreary rooms, now buildings on a scale ample in every respect, embodying and fostering the principles of human well-being: air, light, and heat, are being raised everywhere. To give only two striking examples of the schools of Dresden, we may mention the Kreuzschule, on the Dohnaplatz, and the Annenrealschule, in the Neue Humboldtstrasse, of the former of which we present our readers with a view.

In the erection of new schools, provision has naturally been made for the gradual increase in the population and the extension of the city. In comparing the number of about 9,700 pupils who visited the various Dresden schools of all descriptions in 1845 with the number of scholars in 1868, which in that year, in three middle-class, nine district, and five parochial schools,—and without including those in the numerous higher schools and private institutions,—was about 14,000, it may be said that during that period the number of scholars has been doubled, the population of Dresden having in the latter year risen to 150,000 souls.

Without being able to enter into details respecting the various excellent public and the private institutes, it may be mentioned that,—besides the two high-class schools above referred to, the excellent so-called Freimaurer-Institut (Freemasons' Institution), in the suburb of Friedrichstadt, the Realschule of Director Zschoche, the Realschule in Neustadt, the institution and boarding-school of Director Krause, especially visited by foreigners, the establishments of Director Böhme and recently of Dr. Hölbe, and many other private institutes, and several Protestant and Roman Catholic free-schools,—Dresden possesses in the Vitzthum-Blochmann Gymnasium an institution which is frequented more particularly by princes and the sons of the upper classes. No less known are the Kreuzschule (to the architecture of which we shall recur below) and the Annenrealschule; the seminary for teachers in Friedrichstadt, founded about 1787; the much frequented Polytechnic School, three Veterinary Colleges, as well as the Flechter Seminary, established in 1818, but founded already in 1769, by a gift of Lady Flechter, its definite establishment being delayed by the claim of Prussia to this foundation, the bequeathal of which fell in the time before the partition of Saxony. The Building Trades' College, in connexion with a Sunday school; the greatly frequented Trade School of Director Clauss; two commercial colleges; the preparatory institute of Lieutenant Neumann, for candidates for commissions in the army; the establishment for the nursing and reforming of children; institutions for the blind and deaf and dumb; and the Conservatorium of Director Pudor, connected with which is a dramatic college, are merely referred to by the way, similar establishments being found in nearly all larger towns. A more detailed discussion of the administration and organisation of schools and educational establishments is not within our scope; but we may, for the sake of completeness, just refer to the institution of Dr. Pietsch, which is situate in a healthy and picturesque spot at Blasewitz, near Dresden, and comprises three preparatory and two hi classes.

In the erection of the new district schoo the suburbs of Pillnitz and Oppelvorstadt that of the Stiftsstrasse, regard is pai already referred to, to the requirements o population, increasing from year to year. T schools are not only of great size, they are suitably, in parts richly, adorned both exte and in the interior. This circumstance by reflects credit upon the city and the archit it likewise serves the useful; for unconsci the impressible nature of children will be acquainted with fine lines, forms, and pr tions, and these will act beneficially on æsthetic feelings.

The handsome gymnasium on the Dohna in the Gothic style, with high windo the middle portion, slender buttresses artistic decoration, is the work of Pro Arnold.

The area occupied by the building is 24,000 square feet, there being, besides, a ground for the scholars and a garden f teachers. The class-rooms are on the ea of the building, the *aula* facing the Dohn and forming the projecting middle p which, on the ground-floor, constitutes a entrance-hall, with a rich façade. This also includes steward's rooms, and various dining-hall, and five class-rooms. The pri staircase, 14 ft. wide, with its balustr open sandstone work, its groined ceilin the pretty capitals, as well as the cor to the right and left, presents a pictu perspective. On ascending it, on the first the principal hall, 60 ft. long, 38 ft. wid 30 ft. high, lighted by five high windo



A GROUP OF LIGHTHOUSES.

A. Lighthouse at Ardnamurchan Point, Argyllshire. B. Wrought-iron Lighthouse on the Dædalus Reef, in the Red Sea. C. Lighthouse on the Skerryvore Rocks, on the ast of Argyllshire. D. Iron Lighthouse at Cape Pembroke, Falkland Island. E. Tour de Corduan, on a reef at the mouth of the River Garonne, Bay of Biscay. F. Light- use at Plumb Point, Jamaica. G. Eddystone Lighthouse. H. Wrought-iron Lighthouse on the Ushruffee Reef, in the Strait of Tubal, in the Red Sea. I. Lighthouse on Bell Rock, Scotland. (All are drawn to one scale.)

[See p. 243.

ed. On each side is a spacious balcony for choir, and underneath each are side-rooms. groins and transverse arches are simple, well membered; the decorative painting, conjunction with the gilded capitals and s of the vaults, notwithstanding the great ay of colours, produces an agreeable effect. spandrels are decorated with frescoes. the corridor, besides five class-rooms, each ated for from forty to fifty pupils, open rooms containing the library. The second comprises the residence of the rector, our large class-rooms, while the attic story ins living and sleeping rooms for the pupils, ance of the inspector, patients' rooms, and s for singing-classes.

e building is of sandstone, of a yellowish he carving being in white sandstone. The esses of the middle portion are adorned by es of Luther and Melanchthon, as well as sentations of Poesy, History, Grammar, and ematics.

e cost of erection was only 12,000*l.*; but ncurred several years ago.

ELECTRIC LIGHT IN THE BRITISH MUSEUM.

HEN we wrote a few months ago on the ficability of using the electric light in e libraries, museums, picture-galleries, and art collections, perhaps no one would thought it likely that, of all our public utions, the British Museum would be the to admit the new lighting agent to a ical test. There were several reasons st the adoption of such a step, but we need point to what was urged as the principal. British Museum is a vast storehouse of less treasures, priceless because by far the er portion of them could not be replaced, d destruction ever overtake them. Jealously rding the valuable objects confided to their against annihilation from such a cause, the um authorities have hitherto resolutely, and properly, resisted, and still resist, the introon of gas. It is a high testimony to their l views that they have opened their ls to experiment when experiment is posand with a lighting agent acknowledged entirely free from danger, and which they herefore safely adopt without apprehension probable consequences.

e few who were present last week on Tuesday hursday evenings in the Reading-room to ss the display of the electric light must left it with the impression that the iment, so far as experiments go, was y successful. It was fully demonstrated, ink, that the Reading-room of the British um is a space particularly suitable for ng by electricity, and those present must been greatly impressed with the softness eauty of the light for study. It has been ed that the electric light is injurious to yes. We are not aware that there exists medical testimony to this effect; in fact, a matter which invites investigation, for ience we have not had yet, the electric being still too "young."

e arrangements in the British Museum may oticed in a few words. There were altogether twelve lamps placed on standards about high,—a height which, we think, ought reduced to about 10 ft. As no perceptheat is emitted, and the glare is not exve, we cannot see the object of placing the at such a distance, which must reduce its inating power. The standards, we further , will have to be placed above every pardividing the desks. The shadows thrown ich a powerful light are necessarily very and ought to be avoided. Small print not be read with ease sitting at the interg desk above the partition of which no was placed; and this would be quite imble with the back turned full to the light, nadow thrown being so dark. There was er peculiarity which was noticed, and this a curious humming noise, not nearly so as the "roaring" of gas when turned on all, but quite audible enough to become asant, if not positively disturbing, by its nuance.

looking at the experiment, it is pleasing eflect how many doors the admission e electric light into our museums and libraries may open. Taking the British um as an example, at present it is open for a few hours each week-day, Sunday being still a *dies non* for æsthetical enjoyment. In consequence, the Museum is only frequented by holiday folks, *i.e.*, people out for a holiday, and visitors from the country or abroad. The hours of the Reading-room are about the same, and a student who has to earn his daily bread during such hours as the Reading-room is open finds that the splendid library is almost closed to him,—though he may have the privilege of entering it,—unless he is willing to make a sacrifice. The gratefulness with which an opening of the library in the evening would be welcomed by that class of students can only be equalled by the great benefits with which such an opening would be accompanied.

THE "MANSEL" WINDOW IN ST. PAUL'S CATHEDRAL.

Sir,—It is more than a little disappointing, from time to time, as objects are added as intended embellishments to the metropolitan Cathedral, that it should be found, to adopt the words of a recent critic, that they are "quite distinct from works of art."

I have just been into St. Paul's to see the "Mansel" window in the north-west chapel. A first view makes one sigh at the absorption of a capital position by another object of mere manufacture "quite distinct, &c." The general weakness of the design would be extenuated if some relief could be found in the details; but these, unfortunately, in greater part, are worse than the whole. I avoid raising the question of the propriety of filling so much of the field of the window with unmeaning quasi-architectural members, as this would lead to a separate argument; but about the way these members are elevated, it is sufficient to remark that they appear to have been set out by some draughtsman accustomed to *think* in Classic form; and that he has expressed himself as best he could in these unfamiliar figures. The feebleness and poverty of the ideas are pitiable. As a "St. Thomas" window it might have been supposed that the figure of that Apostle would have been an especial object of careful and studied design. Let any one gaze at the face out-of-drawing, the eye out of place, and, for very sadness, repress a laugh (if he can) at the wretched object they have made of the incredulous saint! St. Thomas has suffered unfairly, in my opinion, the objurgations of centuries. But a cartooned caricature by one of the leading glass-painters in England is an indignity his memory might have been spared. The other principal figures will not bear examination. The left leg of the Saviour is a fearful member. All these parts should be, unhesitatingly, condemned, knocked out, and re-painted.

The "scene" on the window is misplaced; it should be a foot or two higher; and thus would allow for a base of more decided character. The under panel is, perhaps, the most puerile thing of its kind to be found in the windows of the building. The colour of the window is patchy; and, generally, wanting in refinement, glassiness, and purity. With such magnificent and well-known examples, close to our shores, as those at Brussels, in the "Sacrament" chapel, and the exquisite lights at St. Jacques at Liége, it is intolerable that our modern painters should persist in repeating these barren "art" manufactures.

The window has one merit which should be, ungrudgingly, allowed. It most effectually darkens the atrocious mosaic placed in the chapel a year or two ago, to the memory of Archdeacon Hale. This coarse production, fit for the façade of a terminus or a tavern, is now, happily, almost obscured.

The whole matter, sir, has a serious interest. Is it really to be supposed that a window like this has passed the scrutiny of such a veteran as Mr. Penrose, the cathedral surveyor?—a gentleman known, and valued wherever known, for his learning and acquaintance with every form and phase of Classic art. Or, is it that these things are relegated to the cumbrous examination of the "committee," who are supposed to be "sitting" over successive incubations of these permanent encumbrances?

There has just been formed, I am told, a "St. Paul's Ecclesiological Club." I would suggest to them to commence their exploitations with a candid criticism of the modern inanities perpetrated in the name of "art" within the magnificent fane just before their eyes.

J. J.

THE RAILWAY, TRAMWAY, GAS, AND WATER BILLS.

The Report of the Board of Trade upon all the railway, tramway, gas, and water Bills to be investigated during the present session of Parliament has just been issued, and from this document we find that the Bills relating to railways, which are 98 in number, involve the construction of 458 miles of additional railways, at an outlay of 19,387,636*l.* Of the entire number of Bills, 74 are promoted by existing companies, for the construction of 248 miles, with a proposed capital of 11,513,870*l.*, of which 8,594,000*l.* are by shares, and 2,919,870*l.* by loan. Of the whole of these Bills, 52 relate to England, 9 to Scotland, and 13 to Ireland. The proposed expenditure on these works in the three countries is 10,301,570*l.* on lines in England, 514,000*l.* in Scotland, and 698,300*l.* in Ireland. The Bills promoted by the new companies are 24 in number, for the construction of 206 miles of railway, at an outlay of 7,873,766*l.*, of which 5,906,000*l.* are by shares and 1,967,766*l.* by loan, thus bringing up the proposed expenditure by existing and new companies to 19,387,636*l.*, as above stated. Twenty of the Bills promoted by the new companies are in respect of lines in England. More than four-fifths of the amount proposed to be raised and expended by existing companies is by twelve of the great railways in England and Scotland, the amount of capital sought by the Bill of the London and North-Western Company being 2,003,000*l.*; by that of the Midland Company, 1,200,000*l.*; the Manchester, Sheffield, and Lincolnshire, 666,000*l.*; the London and Brighton, 573,333*l.*; the North British, 444,000*l.*; the London, Chatham, and Dover, 400,000*l.*; the South Eastern, 133,333*l.*; the Taff Vale, 133,000*l.*; the Teign Valley, 133,000*l.*; the East Norfolk, 166,000*l.*; the Yarmouth and North Norfolk, 210,666*l.*; the Metropolitan and Metropolitan District, a separate capital for the completion of the Inner Circle line, 3,300,000*l.*; and twenty of the other existing companies, 2,151,538*l.*, making the total 11,513,870*l.* The report goes on to observe that with the exception of the new lines proposed for connecting the Metropolitan and Metropolitan District Railways, which form a very large item in the new capital, the new mileage proposed by existing companies appears to be designed more for the relief of traffic on certain lines than for affording railway accommodation in new districts. A very large proportion of the proposed capital by these companies is for additional works, improvements required at stations, and for the widening of lines, matters which have become necessary by the requirements of the traffic, and for the better accommodation and safety of the public. The report states that the most important of the Bills by new companies is that of a railway for completing the inner circle, between the Mansion House Station and Aldgate- Station, and is consequently a competing scheme with that proposed by the Metropolitan and the Metropolitan District Companies. The capital proposed for this competing scheme, which provides for connecting the South-Eastern Railway at Cannon-street with the Metropolitan District line, and the London and Blackwall Railway at Fenchurch-street with the Metropolitan line at Aldgate, is 4,000,000*l.* for a line one mile and sixty-two chains in length; whereas the capital for the line jointly promoted by the Metropolitan and Metropolitan District Companies is 3,300,000*l.*; the proposed connecting line between the Mansion House Station and Aldgate, and also with the East London line in Whitechapel, being two miles and ten chains in length.

The Report shows the number of Bills which relate to tramways to be 33, for the construction of 209 miles of tramway at a cost of 2,752,000*l.*, of which 2,070,500*l.* is by shares, and 681,500*l.* by loan. Nearly the whole of the Bills relate to proposed tramways in England, there being 27 schemes for the construction of 174 miles, whilst there are three Bills for making 22 miles in Scotland, and three for 13 miles in Ireland. In addition to the above-named Bills, however, there are 32 Board of Trade applications for Provisional Orders to construct 57 miles of double-line tramways, and 90 miles single-line, in different parts of the country, at a cost of 901,342*l.*, making the total length of the proposed tramways 356 miles, and the outlay 3,653,342*l.* The Report observes that the number of Bills and the amount of capital proposed are about double that for the session of 1878. Several of the Bills provide for the use

of steam for working the tramways, and one Bill proposes the use of underground wire-ropes, and stationary engines.

The number of Bills which relate to the supply of gas is 39, the proposed capital for which is 2,068,100*l.*; in addition to 10 Board of Trade applications, with a proposed capital of 180,425*l.*; total in respect of gas 2,248,525*l.*

The number of Bills in respect of a supply of water is 24, of which 20 are in England, and the proposed capital is 5,759,650*l.* There are also 11 Board of Trade applications, involving a proposed capital of 203,000*l.*, being a total capital in respect of water-supply amounting to 5,962,650*l.*

There are also 24 Board of Trade applications in respect of gas and water supply jointly, the proposed capital for which is 118,750*l.*

The total number of Bills in respect of railways, tramways, gas, and water, is 194, with a proposed total capital of 29,967,386*l.*; in addition to 56 Provisional Orders in respect of tramways, and gas and water, with a proposed capital in respect of the various projects being 31,370,903*l.*

THE FRACTURE OF WROUGHT IRON.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

The following interesting paper, by Mr. James Love, F.R.A.S., was read (in the absence of the author) by Mr. R. M. Bancroft, at a recent meeting of the above society:—

We occasionally have our attention called to the deterioration of the material of which bridges and girders are made, and the chief cause of such deterioration that is usually pointed out is the gradual change of iron into rust, or oxide of iron. This change is one that can be watched from time to time, and the parts affected can be taken out and replaced when found to be so much weakened as to render them unsafe.

I should like to call your attention to another cause of decay, which does not usually receive much attention, probably because its action is not seen, but which will ultimately destroy a great number of bridges, and especially railway bridges. I allude to the decay that is caused by long-continued vibrations, and the frequent changes in the amount and distribution of stress in girders, due to heavy loads passing over them.

When a piece of wrought iron is broken, the fracture presents an appearance which depends upon several conditions, such as the quality of the iron, and the way in which it is broken. If the iron be of good quality, and it be broken by a pressure applied slowly and gradually, the fracture will present a silky, fibrous appearance. If breakage be caused by a sharp blow, the fractured surface will usually show a number of bright, shining facets, lying in planes forming angles of no very great amount with the mean plane of fracture. When iron breaks in the manner last mentioned, it is said to be "crystalline." Iron does not always need a sharp blow to produce this so-called "crystalline" fracture; but will often show it when broken in other ways. For instance, when a piece of iron forming a part of a machine has been long in use, and has been subjected to a great deal of concussion, it will, not uncommonly, break, and the fractured surface will present this appearance. Pieces of iron that are subjected to many alternations of temperature will suffer in a similar manner. This change in the apparent structure of iron is generally explained by a theory in which it is assumed that there is some sort of rearrangement of particles by which the original fibres are converted into crystals, and hence it is said that the action to which the material has been subjected has developed a crystalline structure. Now this to my mind is not a very satisfactory explanation; and I venture to offer a theory which appears to me to be much nearer the truth.*

In North Wales, and some other countries where old geological formations abound, there are rocks that split in parallel planes. These planes, which are called cleavage planes, have no sort of relation whatsoever with the lines of original stratification of the rocks, but may lie in any direction with respect to them. This curious structure is known by the name of slaty cleavage, and used to puzzle the philosophers a great deal. Several theories were formerly put forward for its explanation, but were set at rest when Professor Tyndall showed how cleavage could be produced in wax, clay, and other substances, simply by the application of great pressure. The theory which is now accepted is that slaty cleavage was produced by great pressure acting in a direction perpendicular to the planes of cleavage; and the evidence in the rocks themselves fits in with this theory. A substance possessing this structure may be split into a number of thin plates by the insertion of a thin wedge between any pair of plates. Crystals may be split in a similar manner; for cleavage is one of their properties. They may also be split by a sharp blow. Some of them may be more easily split by the application of heat. The cleavage of crystals has not been satisfactorily accounted for; but it appears to have some connexion with the molecular forces that helped to give the crystals their peculiar form. It would not be difficult to show that the several methods of splitting crystals are merely different modes of pressure. For instance, a thin wedge pressed in between two laminæ exerts a side pressure in a direction perpendicular to the plane of cleavage, and causes the crystal to split along that plane. A blow delivered upon a crystal causes a wave of pressure to travel rapidly through the crystal. This wave, carrying with it a local pressure which acts between neighbouring particles in succession, overcomes the cohesion of the particles along the plane of least resistance, and causes the crystal to separate along that plane. Again, crystals that are split by the application of heat owe their splitting to the same cause; for a crystal placed in the fire cannot possibly be heated throughout its entire substance instantaneously. It must necessarily take time for the heat to be transmitted from particle to particle. Neighbouring particles will therefore be at different temperatures at the same time; and, since bodies expand with the rise of temperature, it follows that these neighbouring particles at unequal temperatures must exert pressure against each other. This pressure being of a local character, sets up two kinds of stress, viz., a compressive stress among some particles, and a tensile stress among their neighbours, and thus loosens the cohesion of the particles, causing the crystal to give way along those planes in which the cohesion is least; that is, along the cleavage planes.

So much, then, for the cleavage of slates and crystals. But what has all this to do with the fracture of iron? This. You cannot produce a crystalline structure in iron, for the crystals are already in that metal after it is reduced in the puddling furnace, and are drawn out into fibres by the action of the rolling-mill. The silky fibres that are observed when good iron is broken slowly are, in fact, the crystals; and the bright facets that are seen when sudden fracture takes place are the cleavage planes along which the crystals have separated. Such a fracture as the latter would, therefore, be more properly called a cleavage fracture.

Cleavage, then, is latent in wrought iron, and only wants the necessary conditions to bring it it into full development. These conditions often exist, and cleavage is constantly being developed in wrought iron that is in ordinary use. It may be observed in foundries, where iron rods, hooks and chains, that are used for lifting hot castings, are, in time, weakened to so great an extent that they break by the application of a very small stress, or by a very light blow. A more homely illustration of this kind may be cited in the case of an old poker. Most of us have seen an old poker, bearing the evidence of a great many heatings in the fire, break just behind the square part when used as a lever for poking the fire. If the fractured surface of such a poker be examined, it will be found to possess the characteristic appearance of the cleavage of iron. In forges where there is a great deal of thumping going on, some parts of the machinery have to bear a large amount of concussion. The parts so affected are found to last but a very short time, for they break by cleavage, and have to be replaced by new parts, which, however, go to destruction in a similar manner. A smith is careful to have his iron sufficiently hot whilst working it, for he knows by experience that if he work it at too lo temperature it will split under the blow of hammer. It is observed that iron rails s from thin laminæ peeling off their upper surf

Now, all these are instances of fracture cleavage which has been for the most par not entirely, developed while the iron has b in use. The last instance cited may be w considering. In this case the pressure applied to the rail by the wheels of very he engines; and since only a small portion wheel is in contact with a small part of the it follows that a large pressure bears upo very small surface. As a result, the separates along a plane perpendicular to direction of the pressure. It is noteworthy in this case the separation is caused, not *tension*, but by *compression*, and in this res resembles the case of slaty cleavage, w compression is also the cause of separation.

There are other cases in which this cleav becomes of the greatest importance, and which it sometimes leads to the most disast results. The wheels of railway carriages mand constant attention; for it is well kn that, however strong they may be when they ultimately come to destruction. Cleav is the means of their destruction. All locc tive engines have a careful record kept of number of miles they run; for it is known there is a limit to their running distance. limit has rather a wide range. Some eng will run a far greater distance than others; the lowest limit is taken at which an engi overhauled to ascertain whether it shows signs of weakness. Perhaps the part receives the most careful attention is driving-axle. This axle will sometimes ex a crack after running a certain number of m In some cases the crack is longitudinal, in cases it is transverse, and in others again both. Sometimes a crack will begin in portion of a shaft that is inserted into the of the wheel, and will run along the shaft it reaches some part or other of the jou where it will take a sudden bend round shaft. When a crack is found, the shaft i course, taken out and a new one put int place.

Now, all these instances, and many other numerous to mention, are cases of cleavage it becomes an interesting question to ask long does it take for cleavage to do its w If it be left to time alone the question will bably be left unanswered; for I believe pure time (that is, the lapse of time withou operation of any forces whatsoever) has little to do with the matter. By closer obs tion we find that fracture is brought about great many alternations of stress; that wheels and axles are, in fact, broken by a large number of applications of a weight or The question resolves itself, then, into, many applications of the load are necessa bring about fracture? This question cann handled with such mathematical exactitu to give an answer for the case of any piece of iron. We cannot with our pr knowledge formulate for the length of any particular piece of iron will last any than we can say when any particular is going to burst, or how long any parti man is going to live. All that we can to examine the evidence furnished by e ment and experience to see if any so general answer can be found.

In the *Philosophical Transactions* for the late Sir William Fairbairn publishe account of some experiments that he made a wrought-iron plate girder with the obje answering this question. In those experi he had a machine for putting on a load taking it off again at the rate of about changes per minute; and he found that 596,790 changes of a load equal to one-f of the breaking-weight of the girder, foll by 403,210 changes of a load equal to sevenths of the breaking-weight, and by changes of a load equal to two-fifths o breaking-weight, the girder broke at a distance from the middle. The girder was repaired and subjected to 3,150,000 chang a load equal to one-fourth of its breaking w without suffering any apparent injury. this, the load was increased to one-third o breaking-weight, and the girder broke 313,000 changes of the load. From results, Sir William inferred that a girder be safe for a great number of years if it not loaded beyond one-fourth of its brea weight. His inference is no doubt correct

* Although this theory will be strange to most of our readers, it is worth careful consideration. We believe that Mr. Love,—who is a geologist as well as a civil engineer,—has devoted a great deal of thought to this subject, and his views thereon were partially expressed in a paper on "The Optical Expression of Stress," read before the same Society two years ago, and printed in the *Builder* at the time (vol. xxxv., p. 188). Mr. Love is now engaged in conducting an extensive series of tests of iron, and so far as they have gone we understand that they have confirmed his views as expressed in this paper.—Ed.

must not, however, be supposed that this or a smaller load can be applied an indefinite ber of times without endangering the ture which receives it; for such a supposi- would be contrary to the evidence furnished xperience. The instances cited above (and y others might be given) are sufficient to v the destructive power of the frequent ge of load.

ferring to the case of locomotive engines, d that about twelve million changes of ad, that is, far less than one-fourth of breaking-weight, are enough to cause destruction of an axle; and it is well vn that locomotive axles are made of the possible material. Now the action of load on locomotive axles is vibratory, somewhat concussive; and is very ly similar to the action of the moving on girders over which engines run. efore, since this action is so destructive to and wheels, it may be very reasonably red that it will be also destructive to the ges over which they run. It may be oted that bridges, being heavier than nes, will, on account of their greater inertia, ss affected. To this can be answered that ges may be heavier than engines; but the of a bridge are not necessarily heavier than parts of an engine. Indeed, in many cases, cross girder were balanced against an axle a pair of wheels, the advantage would be vour of the latter. Again, from the high bers given above, it will very likely be arked that we need not feel at all concerned the safety of our bridges, since it must take eat number of years to apply the load so y times. True, but it should not be for- n that these high numbers belong to com- tively small loads; whereas, the greater s have much lower numbers. Furthermore, the earlier bridges were built, engines not so heavy as now, and it was not osed that they would ever attain their nt weight. The older bridges, therefore, were designed to carry the heaviest weight eir time have now to do a heavier duty; t must not be expected that they can go ing this extra duty for any great length of Besides, many of the older bridges were ned at a time when the distribution of s was not so well understood as it is now, hat girders were not made of uniform gth. Some parts were made too strong, other parts were made too weak; so that eak parts have more work to do than they to have. This in itself is an element of er. It is now well known that when a is made too strong in any part, and too in another, the weaker part suffers more it would if there were no stronger part; when there is a want of uniformity of gth there is a concentration of vibrations e weaker part; consequently a beam that nstructed in this manner is more likely to han if it were made too weak throughout. is, of course, defective construction, and s to a few words about defective attach- ts.

rhaps the most important of these is the chment of cross girders to main girders. the case of cross girders resting upon lower flanges of the main girders. The l way of doing this in bridges of short span ther to continue the angle irons around the of the cross girder and rivet them to the of the main girder, or to rivet short pieces ngle iron to the webs of both. For a bridge ying only a single line of rails, this arrange- t will do very well. Where there are two nore lines of rails, the rivets which hold a s girder under one line of rails also hold a s girder carrying the next line; and this nod of attachment is repeated at the ends of s girders abutting against each other some- s to the extent of three, or four, or even half zen in succession. See now, what is the lt? There are half a dozen distinct girders, designed to do the duty of an independent er, strung together and forced into doing work of one continuous girder; a work for h they are not at all fitted. When attached his way the greatest stress comes on the t of attachment; not, as is commonly sup- d, at the centre of span; and since there is dequate provision made for receiving the ss at that point, the elastic reaction, instead eing uniformly distributed, as it ought to be, the whole girder, is very largely concen- d on the weak point. A girder which concen- s its stress in this manner is in a very poor condition for receiving shocks or vibrations of any kind, and is not at all fitted to endure the constant work of a heavy railway traffic. It is no use attempting to remedy the evil by putting in extra rivets; for if by so doing the part be really strengthened it will only shift the work on to the next weak part, and perhaps make matters worse than before.

Now, this is no mere fancy sketch of what might happen; it is an illustration of what really does happen in a great number of bridges, and will in time make them very dangerous to travel over. I could point out certain bridges in which this action has gone on to such an extent as to cause the cross girders to separate from the main girders to which they had been attached. These cross girders were so securely riveted to the main girders that the rivets remained entire while separation occurred by tearing through the webs of the cross girders very near their attachment to the main girders. These cases were fortunately discovered in time; but had it not been for the vigilance of the platelayers, who found a deflection in the rails, the consequences might have been very disastrous.

The defective method of attachment pointed out above can be avoided, to a great extent, in designing future bridges, by a different arrangement of the cross girders. Instead of arranging them to meet each other to be riveted together with the same rivets, it would be better to make them miss each other to the extent of half their distance apart. By this arrangement there would be sufficient length of web between one girder on one side and the next on the other side to accommodate, by its elasticity, the small amount of horizontal displacement caused by the deflection of the cross girder when a load is passing over it. In the present way of arranging the cross girders to meet each other there is not sufficient range of elasticity in the fastenings to allow for the deflection; hence the undue amount of stress brought on the ends of the cross girders. Other methods might very easily be pointed out, but it is unnecessary to trouble you with any detailed descriptions of construction, since plenty of good methods of attachment will suggest themselves to the minds of any engineers who will take the trouble to think about the matter.

I would in conclusion strongly recommend that all the older bridges and girders be carefully examined to see whether they are in a condition to bear without risk the heavy work that is imposed upon them now.

THE SPRING RAILWAY DIVIDENDS.

The spring railway dividends have now been declared on fifteen principal lines of England and Wales. The result is such as to give a new and somewhat unexpected proof of the financial elasticity of our railway system. There has been, on the half year, a decline in gross revenue, on the aggregate of the lines in question, together with the Caledonian and North British (of which the dividends are not yet announced), to the extent of about 192,000*l.*, or about one-third of 1 per cent. per annum on the capital. But the diminished revenue has had further to provide interest, in the form of preferential charges, amounting to a little over 340,000*l.*, or nearly twice as much as the decrease. The decrease, however, has not been evenly distributed. It has occurred on six lines, namely, the Caledonian, Great Western, Lancashire and Yorkshire, London and North-Western, Manchester and Sheffield, and North-Eastern. On these lines collectively the diminution of gross revenue during the half-year has been 491,417*l.*, that on the North-Eastern alone amounting to 185,000*l.* The added charges on these lines amount to 197,000*l.*, making a total decline of 696,000*l.*, which is more than 5 per cent. on the capital for the half-year. That a reduction of only from ¼ to ½ per cent. in the dividends of four out of these six lines should yet have been effected, and that without diminution of the balance carried over, is a very remarkable as well as a gratifying fact.

It is clear that a great reduction in the working expenses has been generally effected. The directors have also generally taken credit to themselves for having spent less on capital account during the half-year than was authorised and expected. This, no doubt, is a feature for congratulation; but it is one of which the benefit will be felt in the July dividends, not in those for the last expired year.

There is, however, one remarkable feature in the case which demands serious attention. The damage apparently done to the net profits of the companies by the diminution of revenue is considerably less, and the advantage gained by the augmentation of revenue is also considerably less, than the difference in the gross receipts. The question that suggests itself is,—how far have some of these companies gained by the handing over of unprofitable traffic to their neighbours?

A few figures will show that this question is not an idle one. We premise that they are approximate, to this extent, that as we take our information from the Government returns, we speak of half the income and expenditure of 1877, which may not be the exact equivalent of the income and expenditure of the last half of 1877. We mention this, not that it will make any very great difference, but to avoid any charge of want of precision.

We take the four English companies which have paid reduced dividends. These are the Great Western, the London and North-Western, and the North-Eastern, which have paid each ¼ per cent. less; and the Lancashire and Yorkshire, which has paid ½ per cent. less, according to the table given by the *Standard*. The ordinary capital of these four companies amounts to very nearly 80,000,000*l.*, and the diminution of dividend is thus equal to about 117,600*l.* But the extra dividend paid on preference stock has been 143,700*l.* So that these companies have really divided 26,100*l.* more among their shareholders than they did in the spring of 1878.

The aggregate decline in gross revenue for the half-year on these four lines has been 336,500*l.*, which, at the rate of working cost that ruled in 1877, would give a net deduction, or decrease in net earning, of 155,500*l.* To pay 26,100*l.* more, while earning 155,000*l.* less, requires a very large economy in the working expenses of the last half-year; and however it was distributed, such an economy must have been in some way effected.

Now, if we turn to the three companies of which the increased earnings must, at all events to some extent, represent traffic diverted from their rivals, we find that the Great Northern, the Midland, and the Great Eastern, have received a gross revenue larger by 96,100*l.* than in the corresponding half-year of 1877. This may be set down, if it were a traffic of the ordinary kind, at a net gain of 44,200*l.* A reduction at the rate of two and a half per cent. on the aggregate working expenses of the three lines for the half-year amounts to 84,000*l.* The sum of the two amounts is 128,200*l.* to the good. Extra preference charges come to 98,000*l.*, leaving 30,200*l.* to the good. This sum, if divided according to the increasing traffic, would be nearly equally shared between the three companies. But the only extra payment made to the shareholders is one at the rate of a half per cent. per annum on the Great Eastern; the ordinary stock of which is 10,365,000*l.*, and will, therefore, absorb 28,400*l.* out of the disposable sum.

But as the Great Eastern has earned only one-third of this additional income, while it has derived nearly all the advantages that would ensue from this addition if all the lines were regarded as one concern, it seems tolerably certain that very much of the 65,000*l.* which the Great Northern and Midland have diverted from the London and North-Western and Great Western lines (which have lost together in the half-year 112,000*l.* of gross revenue) must have been traffic which either line would have been better without. This, of course, points to the cost of the conveyance of the mineral traffic.

At all events, it appears from these figures, either that there is a certain amount of non-remunerative traffic (when interest on capital is added to working charges) for which these lines contend; or that there is a considerable difference in the degree to which an increased economy of working charges has been effected on the respective lines.

This becomes still more evident if we look at the case of the North-Eastern. That line has lost 185,354*l.* of gross traffic in the half-year, which, at its rate of working expenses for 1877, is equal to a net loss of 85,000*l.* To this has to be added 32,500*l.* of additional charges, making 117,800*l.* to the bad. But we only find a reduction of ¼ per cent. per annum made on the ordinary capital of 19,610,000*l.*, or about 24,500*l.* for the half-year. The company, therefore, have economised no less than 93,000*l.*, which is more than 5½ per cent. on their working cost, as compared with 1877. Is it most

likely that this company should have effected more than twice as much reduction in the proportionate expenditure as the other three, or that the ninety odd thousand of revenue that they did not earn from mineral traffic during the past half-year represented a class of business which they were better without?

It is not as if these were solitary questions. It is indisputably shown by the Government returns that the proportionate running charges of the great trunk lines, including maintenance of way, locomotive power, and repairs, increase in a ratio corresponding to, but greater than, other increased proportion of mineral traffic. This might be naturally anticipated as regards maintenance, because the mineral trains are three or four times as heavy as the passenger trains; and, as was lately cited in our columns from the authority of Mr. Stephenson, the wear and tear incurred per mineral train-mile must thus be from three to four times as much as that per passenger train mile. But the Government returns show that there is a pretty nearly corresponding increase in the three items. Bearing this in mind, we again call the attention of those of our readers who are interested in the welfare of our railways to the lessons which are to be derived from the working of the last half-year.

THE CLERGY AND TRADE UNIONS.

THE first of a series of three conferences, promoted by a committee of clergy, in reference to trade-unions, was held on the 1st inst. in the Chapter-house, St. Paul's Churchyard, the Rev. Canon Oakley in the chair. The question for discussion was, "How far is over-production a cause of the present commercial depression?"

Mr. T. Brassey, M.P., read a paper, in which he asked the clergy to recognise the trade-unions, and, if brought into contact with their leaders, to regard them, not as conspirators against society, but rather as men weighted with heavy responsibilities which had been cast upon them by the force of circumstances. Trade-unions were the natural outcome of the present extended development of industry, and their existence must be dealt with as an accomplished fact. If wages must rise with prospering and fall with languishing trade, trade-unions could not exercise any paramount influence in determining the rate of wages. Their committees might do good service by collecting information as to the state of trade and the cost of production in foreign countries, and by watching legislation. It was desirable that working men should look to Parliament for the redress of their grievances, and it was gratifying that they had been encouraged by the sympathy of the House of Commons to seek relief through legislation rather than revolution. In their opposition to piecework, in restraining emulation, in giving no encouragement to diligence and skill, trade-unions were wholly in the wrong. As an advocate of liberal wages for an equivalent in work faithfully and diligently wrought, he was convinced that the future of British industry depended upon our workmen being allowed to give full scope to their natural energies. If their vigour were repressed, our commerce would yield to German and Anglo-Saxon energy in the West. The subjugation of the individual to the arbitrary authority of a guild or corporate body was a cherished fallacy of the workmen of all countries; but the freedom of labour was absolute and inalienable, as was asserted in Turgot's preamble to the edict of 1776, by which Louis XVI. suppressed guilds and monopolies, and repeated in the report of the recent French Commission on the condition of the working classes. In these matters there was wanted more light, a higher education, and a clearer and fuller knowledge of all the facts; and the clergy, if they made themselves masters of the subject, could proclaim the truth from the independent standpoint it was their privilege to occupy. Conflicts between employers and labourers were inevitable, and, as Mr. Mill said, their relations were nearly as unsatisfactory to the payer of wages as to the receiver, both in trade and in domestic establishments. In the latter case an effective means of diminishing the evil was to live simply and unostentatiously. A feeling of interest in work was an essential condition in efficient and economical organisation. Under the form of piecework this principle had been introduced by every successful employer of labour. It was adopted in all cases by his father, and on no other system would it have been practical for an individual sitting in an office in London to undertake large contracts in every quarter of the globe, and to realise that the cost of labour was approximately the same in all countries. As Mr. Siemens had urged, both parties would be materially benefited by so arranging wages as to make them depend in great measure upon the quality and quantity of the work produced. The objection that piecework led to competition was an anachronism in an age of competitive examinations. Co-operative distribution was an undoubted success, but in production co-operation had worked most satisfactorily when only the industrial or practical part of the work had been handed over to the workman, the capitalist retaining the general control in his own hands. The principle had been so applied in the slate quarries of North Wales. The clergy could inculcate the principle of justice embodied in the maxim, "A fair day's wage for a fair day's work." They could teach the vanity of riches, which only the few could learn by experience; they could warn against the perversion of emulation into envy and jealousy; they could enjoin the self-denial and thrift by which provision could be made in good times against inevitable reaction; and they could advance education as the surest means of restoring social harmony, technical perfection, and material prosperity to the trade and industry of the country.

Mr. George Potter read a paper, the object of which was to show that the working men who had urged the limitation of production, and whose advice had been rejected with scorn, had been vindicated by the fact that their remedy had been at last adopted under the pressure of necessity. If the employers had any other remedy to suggest, they ought to make it known. He asked opponents to explain why foreign manufacturers should be beating us in neutral markets when they could not do so in their own markets without protection.

Mr. E. J. Watherston said it was evident that buyers must benefit from over-production, and that manufacturers suffered, as all men must do who made miscalculations. But the evil was temporary, and would rectify itself.

Mr. Mundella, M.P., said we were threatened less by low-priced than by skilled labour and the education and intelligence which adapted products to the wants of customers, which our manufacturers sometimes refused to do until they were losing trade. He wished the Foreign Office would translate and publish the report of the French Commission, which was one long moan about English competition.

Mr. Broadhurst denied that trade-unions did the things suggested by Mr. Brassey, and contended that extra production could not be the panacea for the present depression.

THE NEW FRONTAGE BUILDINGS OF THE LONDON AND SOUTH-WESTERN STATION, WATERLOO-ROAD.

THE scaffolding has been removed from the new frontage of the South-Western Railway Company's station in the Waterloo-road, fully exposing to view the architectural and other features of the structure, which is 160 ft. long, making the entire length of the Waterloo-road frontage of the company's station, from north to south, upwards of 300 ft., and including two broad carriageways on an incline, from the Waterloo thoroughfare to the level of the railway platforms, in addition to another approach to the station by a flight of steps 10 ft. in width, from the ground portion of the new structure now nearly completed. The ground-floor of this addition to the station buildings consists of an arcade or carriageway, 30 ft. in width, in addition to a footway 10 ft. wide, and is about 25 ft. in height to the underside of the floor of the range of offices, waiting-rooms, and refreshment-rooms immediately above. This block of buildings rests upon massive iron girders running longitudinally the whole length of the structure, intersected by cross girders, and resting on two ranges of ornamental coupled iron columns, and on the west side on the walls of the building, one range of the iron columns running along the Waterloo-road frontage, and the other parallel with it, along the centre of the carriageway, which is enclosed from the Waterloo thoroughfare by a low brick wall, with stone coping, surmounted by an ornamental iron railing. The carriageway will be closed at stated periods by ornamental iron gates, both at the north and south ends. The Waterloo-road elevation the block of buildings above the carriagew is faced with Portland cement, and has a ran of seventeen windows, with moulded colum and capitals, and is surmounted by a bold ov hanging cornice. At the south side the buildi is carried on arches westward to a depth upwards of 1,000 ft., forming the several u lines of rails and the platforms above.

It may be incidentally stated that the tended station is now said to be the largest the metropolis, occupying an area of upwa of eighteen acres, and stretching in a weste direction almost to Westminster Bridge-ro Its enlargement has been rendered absolut necessary by the enormous suburban traffic almost every direction south and west, in ad tion to the traffic on the main lines. Upwar of 1,000 houses have been demolished, several streets absorbed, in order to carry the works.

THE NEW BOW-STREET POLICE COU BUILDINGS.

THE works at the intended new Police Co and Station in Bow-street were commenced Monday last, the 3rd instant, when the exca tions for the foundations were proceeded w this preliminary portion of the work having b undertaken by Mr. H. Covington, of Pimlico whom it has been sublet by Messrs. Geo Smith & Co., who are the general contract for the building. The structure will cove ground area of 21,000 superficial feet, or nea half an acre in extent, the site having b acquired by the Government by the purchas several houses and places of business at a he outlay. The excavations will involve the moval of several thousand yards of earth, basement floor being intended to be upw of 20 ft. below the street level, and formed deep bed of concrete.

The building will have a frontage to B street 170 ft. in length, immediately opposit Covent-garden Theatre, with a bold architect elevation in Portland stone. Under one ro will contain both the police station, including general offices, spacious and convenient acc modation for upwards of 100 officers of force, with prisoners' cells; and also two p courts for the transaction of public busin attached to which will be two magistr retiring-rooms, a magistrates' consultation-r a law library, together with the magistr clerks' and other general offices. The prin court, on the ground-floor of the building, be 40 ft. in length and 30 ft. in width, w height of 26 ft. to the ceiling, above whic the centre, there will be a lantern, for light ventilation purposes, 19 ft. in height. In tion to two large entrances to the court ingress and egress, for the general public, will also be separate and independent entra for witnesses, solicitors, and reporters re tively. The second court will be on the floor, and is intended to be called the Ext tion Court, where cases of that chara amongst others, will be heard. Attached t spacious apartments for the officers of the there will be a mess-room, and likewise a li and recreation-room on the first floor. principal street-entrance to the building w at an angular elevation at the corner of street and Broad-court, whilst the prisc van-entrance will be about the centre Bow-street frontage, leading into a court The estimated cost of the building, incl the property and land which have had to b chased by the Government, is set dow 120,000*l*. It is expected that the buildin be completed and ready for occupation in eighteen months.

The designs and plans have been prepar the architects of her Majesty's Office of W and the erection of the building will be und personal superintendence of Mr. John T who is connected with the architectural de ment of this branch of the service.

Secretaryship, Society of Arts.—W glad to see that the Council of the Soci Arts, at their meeting on Monday, appo Mr. H. Trueman Wood secretary, in the of the late Mr. P. Le Neve Foster. Mr. man Wood had for some time past act assistant-secretary, and has been for some editor of the Society's *Journal*.

A FREE LIBRARY, MUSEUM, GALLERY OF ART BUILDINGS AT PRESTON.

e town of Preston is likely to possess, very ly, a block of buildings on a very compre- ve scale, containing a free library, a um, and a gallery of art, the cost of which imated at 70,000*l.*, exclusive of land, which be defrayed with the funds arising out of a ficent bequest which was recently made by Harris, a gentleman well known in the , who left a large sum at the disposal of ees for the establishment of such an in- tion, and other educational agencies.

is bequest has led to the Free Library mittee of the corporation appointing a sub- mittee of their body to inspect and make a rt as to the erection of the proposed new ing. The sub-committee have just made ng and elaborate report, in which they that they have visited many of the chief e libraries, museums, and art-galleries in kingdom, and have obtained information ecting the structure and arrangements of . They add that they have also made selves acquainted with the principal fea- s of the most noted libraries and museums ad. The committee, in continuation, re- mend a comprehensive permanent founda- for the encouragement of learning, the vation of the arts and sciences, and the free sion of a varied literature, for the benefit advancement of all classes in Preston and mmediate neighbourhood. As regards the to form the site of the proposed build- the committee suggest that a site in market-place, consisting of 3,800 square s, or upwards of three-quarters of an acre xtent, and belonging to the corporation, ld be offered by them to the Harris trustees, they estimate the value of this land at 00*l.* On the Harris trustees obtaining the , the committee propose that they should t upon it a structure at a cost of 2,500*l.*, onsist of lending and reference libraries, ing and news rooms, museum, and art- ries. The committee further propose that Harris trustees should expend 5,000*l.* in s for the Harris reference library, consist- chiefly of the works of modern and living hors, and comprising some 15,000 volumes, these, with what is known as Dr. Shepherd's ary, now under the control of the corpora- , would make 25,000 volumes to commence . The committee likewise propose that the ris trustees should expend a further sum of 0*l.* in purchasing examples of the fine and strial arts, and objects of scientific pursuit, finally that the trustees should place the of 10,000*l.* with the corporation, on interest per cent., to be annually expended by the poration in adding to the reference library, seum, and art galleries; the corporation also provide books, periodicals, and newspapers, to take care of the building in perpetuity, the collections contained it. The committee wise suggest that the institution should be connexion with the establishment at South sington, like those at Nottingham and other ns. The project will involve the expendi- e of 70,000*l.* at the disposal of the Harris stees.

his important and comprehensive proposal its details are now under the consideration he corporation and the Harris trustees re- ctively, and there seems every probability t in its main features it will be adopted and ried out.

Water from the Lower Green Sand.—is reported that the Lower Green sand at terham has just been reached at the depth of ft. from the surface, and an abundant pply of pure water is now flowing therefrom l will shortly be used in the district supplied the Caterham Spring Water Company. The ring operations were commenced on the 29th July last with a boring of 18 in. diameter, l the Lower Green sand was reached with a meter of 15 in., solid cores of the strata ssed through having been obtained. Other ings are being put down by the New River mpany at Turnford and Ware, to prove the wer Green sand at those places; while the mbeth Water Company is putting down a e-hole at Ritton to test the depth of the lk-basin at that place. The boring at Cater- m has been carried out by the Diamond Rock- ring Company.

PNEUMATIC SEWERAGE.

MANCHESTER ARCHITECTURAL ASSOCIATION.

A PAPER was read on the 25th ultimo by Mr. Charles Tuke upon the subject of pneumatic sewerage. It was illustrated with plans and details of the two systems invented by Capt. Liernur and Mr. Isaac Shone, C.E., respectively.

Mr. Tuke explained his subject practically by means of plans of the new watering-place, St. Anne's-on-the-Sea, which he showed laid out upon the two systems. There was no very serious engineering difficulty in sewering the inland half of the town so that the sewage might be taken from the beach, but there was a considerable difficulty in draining the seaward side inland, except by means of a deep sewer at a very slight gradient, assisted at the outfall by pumping machinery. The writer then entered into a description of the Liernur system, which has been described before now in our pages. He considered the weak link in the chain was the method of treating the slop-water, which was, in fact, turned into a separate system of sewers in its crude state, minus the gross particles in suspension, which were intercepted by a fine screen.

Mr. Shone's scheme was then entered upon. Mr. Tuke pointed out that this system did not claim to deal with the sewage at the outfall further than to aid, by means of pneumatic power, in its distribution upon the land or into the sea, or into tidal rivers at all and any state of the tides, neither did the system interfere in any degree with the ordinary domestic sanitary arrangements, except that it urged in unison with all advanced sanitary authorities,—as complete as possible disconnexion of dwelling-houses from the sewage-gas inlets, in the form of the soil and waste-pipes and cellar-drains. It was recommended that a separate system of drains should be provided for the surface-water, so as to reduce the steam-power needful to work the "ejectors"; but even this restriction was not a *sine qud non* of its adoption.

In the plan of St. Anne's, laid out under this system, the town was shown laid out into five groups or areas, each drained to its centre with ordinary glazed earthenware gravitating pipes, laid to a minimum fall of 1 in 200. In each of these centres was placed a "Shone's pneumatic liquid ejector," served with compressed air, by means of small iron underground pipes, communicating with an automatic air-compression and steam engine, situate near the gasworks. The ejectors were shown placed in underground chambers, having access to the street by manholes. From each of the two ejectors at the intersection of the Drive and St. Anne's-road and a parallel road at the Blackpool end of the town, the main sealed sewers, of cast iron, run up-hill, until the high ridge at the railway was crossed, after which they discharged into glazed earthenware gravitating pipes, with rapid gradients, and consequently reduced sectional areas, by which the sewage was conveyed on to the moss. The other three ejectors discharged their contents directly into the upper part of this pot sewer at such a level as given to gain additional head to the fluid.

The statements made as to relative costs were vague.

GLASGOW INSTITUTE OF ARCHITECTS.

A MEETING of this Institute was held on the 27th of February, Mr. Campbell Douglas, the president, in the chair. The secretary read the correspondence which had taken place between the Council of the Institute and the Town Council of Greenock regarding the terms of the proposed competition for the new Municipal Buildings.

The President said that while it was to be regretted that the Greenock authorities had disregarded their remonstrances, and refused to alter the stipulation limiting the rate of remuneration to 4 per cent., he did not think that the action taken by the Institute laid any obligation upon its individual members to refrain from engaging in the competition. They by no means advocated uniformity of payment irrespective of circumstances.

Mr. Honeyman adverted to the prejudicial tendency of inadequate remuneration in the way of undermining the independence and integrity of the profession. An architect, more, probably than any other professional man, should be above suspicion, and an underpaid architect is exposed to strong temptation to indulge in sins, both of omission and commission. This was the aspect of the matter which really most interested them. They were jealous of their professional honour. But the ratepayers of Greenock should understand the probable result to them of their Town Council's short-sighted and most mistaken attempt at economy. There were plenty of architects who would be very dear architects for their employers, although they should receive only half of the proposed fees. No one who understood such matters could doubt that if these unsatisfactory conditions resulted in the work being entrusted to an inexperienced architect, or an architect who had made up his mind to be well paid for his labour indirectly, if not directly, there was no saying to what extent needless expenditure might be carried. The proposed paltry saving would be but as a drop in the bucket. He sincerely hoped that the people of Greenock would learn this by bitter experience, so that their mistake might be manifest, and their conduct hereafter might be referred to as a caution, not as a precedent. He thought that the course followed by the Glasgow Institute in sending an independent remonstrance to the Greenock authorities was, upon the whole, preferable to that proposed by the Liverpool Society. We have no idea, he said, of insisting upon every member of the profession being paid at the same rate, and the combined protest suggested by the Liverpool Society might have been misunderstood by the public as a demonstration in favour of such a demand. He had no doubt that the Royal Institute had taken this view of the matter, and had, therefore, declined to co-operate in the way proposed.

Mr. James Thomson thought that if the promoters of a competition were alive to their own interests they would make it the means of securing the services of the best man, irrespective of the question of fees altogether.

ASSOCIATION OF SANITARY INSPECTORS.

A MEETING of the recently-formed Association of Sanitary Inspectors has been held at the Hare and Hounds Hotel, New Elvet, Durham. There were present Mr. J. W. Spoor (chairman), Mr. William Ground, Lanchester; Mr. Barras, Chester-le-street; Mr. Hindmarch, South Shields; Mr. Croad, Darlington; Mr. W. C. Blackett, Durham; Mr. James Raine (hon. sec.), &c. The Association was formed a short time ago to advance the principles of sanitary reform throughout the country, which it is proposed to do by the reading and discussion of papers on sanitary subjects, visiting and inspecting localities where sanitary works are in progress, and by mutual assistance in applying the laws upon the subject, and generally to diffuse information and advance the sanitary condition of the country.

The Chairman announced that several gentlemen throughout the country had expressed their approval of the scheme, and had promised their assistance and co-operation in carrying it out. The membership at present was limited to about thirty; but any public officer engaged under a sanitary board, either urban or rural, was eligible for admission, so that a large addition of members was anticipated.

A discussion ensued on the provisions of the Public Health Act and the Contagious Diseases Act, as a means of checking and preventing disease.

Mr. Blackett drew the attention of the meeting to the great need of sanitary reform in the construction of farm-buildings. An immense amount of sewage, which ought to be collected in tanks and utilised in fertilising the land, was now running to waste, and endangering the health of the community by polluting springs and streams. Not only did this waste tend to diffuse the spread of disease, but it also impoverished the land, and rendered the farmer less able to pay his rent, or compete with other countries. All fold-yards, ashpits, &c., ought to be covered in and kept dry.

Mr. Ground drew the attention of the meeting to the new Order in Council recently issued by the Government for licensing and registering cow-keepers. He thought the time was not far distant when sanitary officers would be entrusted with the supervision of cow-byres, to see that they were properly lighted, drained, and cleansed, with a view to the prevention of disease amongst cattle.

It was suggested that the members should visit the sewage-farm at Darlington, or the drainage works now being carried out at Chester.

le-street; but, after some discussion, it was decided that the next quarterly meeting should be held at Durham, on the 6th of June.

THE GREAT PYRAMID.

Mr. R. A. Proctor, F.R.A.S., has delivered a lecture in the Royal Institution, Manchester, on "The Great Pyramid." The lecturer said it would be in the knowledge of some that he had brought forward a theory which was intended to account, and he thought did account, for the principal characteristics of the Great Pyramid, and of the series of pyramids of which it was the chief member. The theory generally adopted was that the pyramids were built solely for the purpose of containing the bodies of the kings of Egypt. Another theory which had occupied a great deal of attention was that the pyramid was intended to symbolise certain forms of knowledge which were divinely communicated to the architect and the builders; in fact, that it was a sort of stone Bible. In this view, the Great Pyramid contained wonderful information about the past, and wonderful information or prophecy as to the future, for it told us, if the pyramid was to be regarded as a true prophet, that the year 1881,—the year when Mother Shipton said the end of the world was to take place,—was the date of the second coming. The theory he had to advance as reasonable was, that while the pyramids were erected with the object of advancing astronomical observation in some way, it was not for the interest of science. He could not but think that astrology was at the root of all the work; that they thought that by erecting those buildings, placed opposite the cardinal points of the compass, and making observations from them at stated times, with particular ceremonies, and with the help of the priesthood, who were the astrologers of those days, they would be able, by studying the stars, to learn the future of the kings, learn the times when they could carry on their campaigns against their enemies or other operations with advantage, and study the motions of comets and all strange appearances in the heavens, and so ascertain how the interests of the kings could be best advanced. He described the peculiarities of the interior construction of the Great Pyramid, and criticised the different theories advanced in regard to the structure. In conclusion, he said that if we considered the pyramid aright, instead of looking at it with admiration,—although we could not but admire it as a great work,—it seemed to him it was one of the most painful records of selfishness, tyrannical abuse of power, of forgetfulness of the interests of hundreds and thousands of men, in order to advance the interests of one man possessed for the time being of power.

THE MATHEMATICAL THEORY OF THE GREAT PYRAMID.

Sir,—In your issue of June 16th, 1877, you did me the honour to insert a letter of mine containing a statement of the principal results which I have deduced in reference to this interesting subject.

I have now arrived at what I think a very remarkable conclusion; and, as it may be of general interest, I hope you will not deem this communication unworthy of a place in your valuable and widely-circulated journal.

I find by a comparison of numbers that the Egyptian mathematicians evidently arrived at the same results as Archimedes did, long after them, in regard to the ratio of the circumference of a circle to its diameter.

In the letter above alluded to, I omitted to state (for it was known to me at that time) that the circle circumscribing the original base of the Great Pyramid would be approximatively equal to the *sum of the vertical height and the four corner heights* (corresponding to a ratio of 3·14064...); but it did not occur to me till recently to try and see if any connexion existed between the Pyramid numbers and the results obtained by Archimedes. This I have now done, and the results may be exhibited as follows:—

Each side of the base of the pyramid being equal to 440, and the height being 280 great cubits ($=\frac{7}{11}$ of a side of base).

The diagonal of the base = 622·2539 . cubits.

The sum of the vertical height and the four corner heights = 1954·2756... cubits.

The circumference of the circle was found by Archimedes to lie between $3\frac{1}{7}^0$ and $3\frac{10}{71}$ of the diameter, the mean of these values being $=\frac{\ldots}{\ldots}$.

Multiplying the pyramid numbers by 8, we have,—

$$\frac{8 \times 1954{\cdot}2756}{8 \times 622{\cdot}2539} \quad \frac{15634{\cdot}2048}{4978{\cdot}0312} \quad (=3{\cdot}14064\ldots).$$

A result very near the Archimedean mean, differing (omitting the decimals) by an increase of 19 in the numerator, and 8 in the denominator; the Egyptian mathematicians doubtless *inferring* that the mean fraction would express too great a ratio, and they therefore varied it so as to obtain a result less than the mean, which would be equal to a ratio of 3·141644.... By experimenting with a large arc, such, for instance, as 45°, they would soon find that the arc itself is *less* than the mean between the sine and tangent; this, I suspect, they did, and made an allowance accordingly. I am inclined to think, however, that the ratio actually inferred, was that of 977 to 311 (=3·141480...), which numbers are exactly half the pyramid values, if the decimals be omitted—$\frac{1}{2}$ 1954 = 977, $\frac{1}{2}$ 622 = 311, and their difference = 666 (curiously coinciding with the number of the beast).

The number 666 may certainly be connected with the pyramid, for $400 + \frac{666}{36} = 418\frac{1}{2}$ great cubits, which is the height from the corners of the base to the vertex, correct as far as the figures go.

The Hindoo ratio, 3,927 to 1,250, for the circumference, can be similarly identified with the Archimedian results, for multiplying by 4 we obtain $\frac{4 \times 3927}{4 \times 1250} = \frac{15708}{5000} = \frac{15615 + 93}{4970 + 30} = 3{\cdot}1416$, showing that the Hindoos also independently arrived at the same results as Archimedes.

Thus we find that the celebrated Greek mathematician was anticipated by the Egyptians by at least some eighteen centuries, and probably by the Hindoos as well. As it is most likely that all the pyramids were intended to be of the same proportion as the great one, the question naturally arises, Why should the Egyptian monarchs choose such a design for their tombs? The only reply which suggests itself to me is, that the circle being an emblem of eternity, the pyramids, from their magnitude, were intended to stand for all time; and, if this was the idea of the builders, it cannot yet be said that they have failed of their object.

W. Hayden.

P.S.—As previously stated, the cubits were in the proportions of 22, 25, and 30 digits, and of the respective lengths of 18·216, 20·7, and 24·84 inches.

OBITUARY.

Mr. E. Leader Williams, C.E., died at his residence, Worcester, on the 26th ult., aged 75. His name is identified with the improvement of the River Severn, of the works connected with which he was resident engineer.

The late Mr. C. J. Adams, some time honorary secretary of the Architectural Association, whose death was announced at the last meeting of that body and of the Institute, had been for some fifteen years settled at Stockton-on-Tees, and carried out several public and private works in that neighbourhood. Amongst them may be mentioned the Royal Exchange Buildings, Middlesbrough, and the Darlington Workhouse,—both gained in competition; Grammar School, Coatham, Redcar; British Schools, Ragged Schools, and Primitive Methodist Chapel, at Stockton; flour-mills, oil-mills, and additions to brewery, South Stockton; and residences at Stockton. Latterly he was principally engaged in the manufacture of cement, plaster, and their products. He had been for three years a member of the Town Council, and held a good position both socially and as a man of business.

Drawings in Brittany.—At Mr. Rogers's establishment, 29, Maddox-street, Miss Eliza Turck exhibits nearly forty drawings in water-colours, made in Brittany, and showing many of the most interesting objects and sites to be found in that country. Having been mostly finished on the spot, they show some inequality of merit, but all are entitled to commendation for conscientious, honest work, and we were glad to find that about a fourth of them were already sold.

"ART FOR ART."

Sir,—May I say a few words in referen
Mr. Caine's recent lecture at Liverpo
Rossetti's poems, and the letter in
columns, signed "Art for Good," which
what violently attacked the lecturer? Evid
the writer agrees with Mr. Rathbone, the
man on the occasion of the lecture, wh
its close, did his best to undo the effe
the whole address, and delivered himse
those flowing and glowing moral sentir
which I find at the end of your report
lecture. Mr. Rathbone and "Art for G
are in perfect accordance: they equally
entirely misunderstand Mr. Caine, and the
purpose of his paper.

But the real truth of the matter is
simple. What the lecturer chiefly insisted
(and this is the point which has given
offence to the imagination of "Art for Go
was, that no great art,—indeed, no true
is ever self-conscious, or pursued with a
moral aim. "Art for Good" talks much abou
assertion of the lecturer. But the statem
undoubtedly true, and no one who has st
art with any insight can help seeing it.
in proportion as the work becomes self-cons
and is pursued with a direct didactic ai
fails in something of its inspiration, and
so much the less, perfect art. Shakspea
the views of Mr. Rathbone and "Art for G
be correct, was the most immoral of all wr
Are they prepared to maintain this?

To descend from Shakspeare's to our
time, how much of the genius of Tennyso
been squandered through the over-did
nature of a considerable portion of his w
And so most notably with Wordsworth.
a most notable example of the very opposi
an example of what, in fact, I should call a
fectly moral artist,—perfectly moral, be
given up with complete and passionate abar
ment "to his mood,"—is to be found in K
Mr. Caine would probably agree with me.

There are three aspects of the d
it seems to me,—truth, beauty, and good
The second person of this divine trinity
ever be the deity worshipped by all who
any part or claim in the sunlit land of
Beauty shines upon them; and they do n
quire further, but are passionately exulta
calmly content. It is one of the first du
an artist not to be over-anxious as to the r
bearing or ethical nature of any of his sub
of song. If it but be beautiful, to him,
events, it is right.

And then there remains, of course, the bala
and correcting fact to which Mr. Caine alls
that an artist of noble nature cannot be
moral, because his nature will ever "perme
his works, and an unconscious purity will ev
there. To aim consciously at inculcating r
tenets in verse is to descend from the level
poet to that of a mere hymn-writer. The r
teaching should be there, but it should tea
the sun teaches, as the stars, as the sea, as
pure white rose; indirectly, and without
clamorous intrusion of ethical common-plac

In the meantime, the philosophers and
men of science will ever pursue Truth, and
preachers, Goodness; and this is both
right and their duty.

One word with regard to the extraordi
utterances of Mr. Rathbone from the chai
reported in your columns. Rossetti, he
depicts in his poems, "The love of mar
woman, not the love of man for man."
this latter expression Mr. Rathbone mea
suppose, "The love of man for humanity
the race." Well, it is not true that Ros
never yearns over the race, never sing
though it is certainly true that his singi
not, as a rule, political or national. But
of Mr. Swinburne, whom Mr. Rathbone w
probably condemn even more vehemently
he condemns Rossetti? No poet (*vide* "S
before Sunrise," for only one example) has
sung of humanity with more exalted passio

And as to "the love of man for wom
being in itself a less noble thing than the
of man for the human race, I can only say
if Mr. Rathbone is prepared to take up
dying embers of this old theological drear
the impurity or unnobility of simple love
passion as such, I am prepared, in love's n
and in art's name, to meet him with the fea
counter-statement that "the love of man
woman" is at the root, and is the crown, o
nobleness, and purity, and beauty whatsoe
and is the very basis of all religion, and

al recompenser thereof; being here, in the
. of suffering, and sorrow, and death, the
lainless unsorrowful death-defying immu-
thing.
For me the wonder ceases not, but increases;
A stern belief I'm holding as mine own,
That only in the bud, in broken pieces,
Has *love of man and woman* yet been known:
That time it is, when earthly passion ceases,
To hurl the planet from its central throne."

GEORGE BARLOW.

THE CITY OF LONDON SCHOOL COMPETITION.

,—You deserve the thanks of all architects
our well-timed remarks as to this com-
on. Such requirements in an open com-
on of the sort are really monstrous. But
are we to do? No architect of eminence
set the example of publicly declining to
ete. Several eminent architects will be
o send all the things asked for or sug-
d, and a lot more besides. I will do some
em the credit of saying that they will
their teeth occasionally, and think them-
ill-used; and regret that devising new
ds of swamping other competitors affords
no lasting consolation. Many a one will
matter of course, act as though he thought
leverest way of cutting some one else's
t was to begin by cutting his own. The
nte is powerless; even the Association
s to find the task of dealing with competi-
oo heavy. A profession with leaders such
n have,—with so little confidence in the
intentions of anybody,—must, I fear, go on
bad to worse, meriting more and more the
mpt of the world.
there was any one among us with influence,
e, and good will enough to bring about a
al change of temper and conduct about
etitions, he might earn for himself enviable
and the real gratitude of the members of
wn profession. A.

STBURY CHURCH, MACCLESFIELD.

,—Being intimately acquainted with this
h, and having several friends among the
men who are endeavouring to promote its
ation, I am in a position to know what is
sed to be done, and am able to contra-
he untrue statements and false assump-
of the correspondent who has addressed
opposition to the contemplated works.
desirability of some of the proposed
tions which your correspondent denounces,
n to difference of opinion. These I shall
o into. My objection is to the mis-state-
of facts and the hazarding of wild con-
ces.
removal of the gallery does not involve
emoval of the screen in the tower-arch.
screen, including the upper portion or
d screen, will be retained *in situ*, together
the interesting pews of the seventeenth
ry, which abut on it on the church-side.
e stone floor, of lozenge-shaped quarries, is
condemned," but is to be jealously retained
o be imitated for such parts of the floor as
to be repaved.
e idea of alteration to the piers of the
ies is wholly alien to the thoughts of the
odians of the building, and your corre-
dent must have ransacked his brains for
ers of objection when he conceived so
ge a notion as this.
o candle-brackets, which have an interesting
ry, are especially cared for, and will not
be removed from their places in carrying
he repairs.
e plinth of the modern aisle is intended to
tered, in connexion with the new buttresses.
term "Geometric," as applied to the tracery
he windows is a *lapsus pennæ* of the writer
e pamphlet.
e battlements of the tower are to be re-
because they are dangerous, and not
wed, as is gratuitously assumed. Your cor-
ndent, in his old age, must have become
short-sighted, or he would have seen that
ions of the intermediate pinnacles remain
ll sides of the tower.
he rude external staircases built against the
ern walls of the aisles are modern, of the
of the gallery, to which they were in-
ed to give access. One of these has been
many years in a ruinous condition, and dis-
, and with the removal of the gallery neither
be required.

The interesting eighteenth-century chancel-screen is intended to be kept in its present position; the "presumption" of your correspondent is quite out of place.

The "ancientest feature in the whole church, the lancet triplet-window on the north side of the chancel," is not to be removed. The organ-arch will be between it and the chancel-arch.

The chancel will not be new, nor will the brasses and monuments be swept away. The small panels of painted glass in the large eastern window of the modern north aisle will be replaced in another window. The eighteenth-century screens and pews at the end of this aisle are intended to be retained, together with the high wainscoting on the north wall.

On all these matters your correspondent would have been correctly informed if he had but inquired of any of those gentlemen who have had a share in putting forward the scheme which has aroused his opposition.

Such false charges as are here noticed can only be called *wilful misrepresentations*, for nothing short of this they can be when no attempt has been made to ascertain the truth.

VERITAS.

THE MELBOURNE INTERNATIONAL EXHIBITION, 1880.

IN accordance with a Commission issued under the great seal of the Colony of Victoria, and with the co-operation of the Imperial Government, an International Exhibition of Arts, Manufactures, and Agricultural and Industrial Products of all Nations will be opened at Melbourne on the 1st day of October, 1880.

The Exhibition will be held in buildings specially erected for the purpose in Carlton Gardens, centrally situated in the city of Melbourne, and the cost of erecting the buildings, and all expenses incidental to the Exhibition, will be defrayed out of funds voted by the Parliament of Victoria. We gave a view of the design at the close of last year (see vol. XXXVI., p. 1305), and the first stone of the building has just now been laid.

The Commissioners are inviting the British, Foreign, and Colonial Governments to take part in the Exhibition.

Information upon any question of details can be obtained upon application to the Agent-General for Victoria, 8, Victoria Chambers, Westminster.

THE PARKES MUSEUM OF HYGIENE.

SINCE the commencement of the present year the contents of the museum have increased considerably, and it is expected that it will be ready for opening to the public by the end of April. The additions include drawings of the Peabody Dwellings for the Poor, presented by the architect, Mr. H. A. Darbishire, and a number of designs for cottages, villas, &c., by Mr. Norman Shaw, R.A., given by Mr. W. H. Lascelles. The collection of sanitary appliances now includes Messrs. Verity's new ventilators, as fixed in the Reform Club, to work which water is used as a motive power by means of a small jet direct from the fire-main. One of Benham's ventilating globe lights has been fixed up in the museum, with section of joists, floor and ceiling showing every detail of the construction. Specimens of many other means of ventilation are also to be seen, including the several patent contrivances by Messrs. Tonks & Son, of Birmingham. The library now consists of upwards of 400 volumes, exclusive of pamphlets. Pending the opening of the museum to the public, tickets of admission may be had on written application to the curator, Mr. Mark H. Judge, University College, Gower-street.

New Fruit and Flower Market for London.—The Markets Committee of the Court of Common Council have drawn up a report recommending the construction of a new fruit, vegetable, and flower market for the City, at a cost not exceeding 30,000*l.* The City Architect had prepared plans and a model, estimating the cost at 56,000*l.*, but the committee thought that a design of less expensive character would meet all the requirements. The site extends from Charterhouse-street to Snow-hill, and from Farringdon-road to the London, Chatham, and Dover line. All the excavations have been made, so that the basement can be at once proceeded with. The report has been adopted by the Court.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE twelfth Annual General Meeting of this Institution was held at the Offices, 27, Farringdon-street, on February 25, Mr. T. F. Rider, president, in the chair. There were also present Mr. George Plucknett, Mr. Thomas Robinson, Mr. E. Graystone, Mr. E. Brooks, Mr. J. A. Robson, &c.

The Report showed an income for the past year of 297*l.* 17s. 11d., and included some liberal donations from the President, the Builders' Society, Mr. E. S. Rider, Mr. Charles Knoch, and Mr. Edwin Lawrence.

One additional pensioner, Mrs. Hannah Wade, had been elected, and a second presentation to the Orphan Working School had been purchased, Ethel Mary Jeffreys having been elected to enjoy the benefits afforded by this excellent school. During the year the pensions had been increased to 25*l.* per annum to men, and to 24*l.* to widows, and the Report concluded by expressing the hope that more of the Builders' Clerks would become subscribers.

Mr. Rider, in moving the adoption of the report, after referring to the lamented death of Mr. B. Col's, one of the trustees, and to the severe illness of Mr. T. F. Cook, one of the original promoters of the Institution, said that the year 1878 had certainly been a wretched one. Strikes, war, badness of trade, and other calamities had characterised it, yet amidst it all he was happy to say that the Institution had held its own, and good work had been done. They had elected an additional pensioner, and had purchased another presentation to the Orphan Working School. Looking to the balance-sheet, he observed that while the income of 1877 was 292*l.* 7s. 10d., that for 1878 was 297 17s. 11d., showing a balance in favour of the latter year. Again, an alteration had been made in the rules, by which the pensions had been increased, and he might observe, with regard to the latter point, that the news had been received without any grumbling on the part of the pensioners. He certainly desired to see a greater number of builders' clerks on the list than was the case; and it had occurred to him that if a dinner were held, which he hoped would bring together a good number of clerks, and if they could get gentlemen like Mr. Plucknett, Mr. Robinson, and Mr. Conder, to come and encourage them, he thought it might be a means of benefiting the Institution.

The ordinary business of the meeting was then attended to, and on the motion of Mr. Plucknett, seconded by Mr. Robinson, a vote of thanks was accorded to the Chairman, and the proceedings closed.

COMPENSATION CASE.

TRUSTEES OF STARLING'S CHARITY *v.* METROPOLITAN RAILWAY COMPANY.

MR. UNDER-SHERIFF BURCHELL on Monday presided over a special jury at the Middlesex Sheriffs' Court, in the case of the "Trustees of Sir G. Starling's Charity *v.* The Metropolitan Railway Company," to ascertain the value of some land in the Minories required by the company.

On one side the value of the property was put at 4,100*l.* and upwards, and it was stated that in consequence of the city improvements during the last seven years property in the Minories had increased in va ue 50 per cent.

On the part of the company the value was estimated at 2,600*l.*, and the great increase in value was denied. As the notice to treat was given in 1877, it was maintained that the intended widening of Eastcheap should not be taken into consideration.

The jury, who had taken a personal view of the locality, assessed the compensation at 3,655*l.*

IMPORTANT TO CONTRACTORS.

LYSAGHT *v.* PEARSON.

THIS action was brought to recover 240*l.*, the price of a corrugated iron roof, made and erected by the plaintiff for the defendant.

The facts of the case were that the defendant entered into negotiations with the plaintiff for the supply of two corrugated iron roofs in January, 1877, and after some correspondence it was agreed that the plaintiff should supply and erect them for 520*l.* The plaintiff supplied and erected the larger of the two roofs required, but refused to supply the second and smaller roof until the price of the larger one had been paid to him. The defendant refused to pay the price of either roof until the whole of the work contracted for had been completed, and gave the plaintiff notice to proceed with the erection of the second roof. On the plaintiff still neglecting to proceed with it, the defendant employed another person to supply and erect it. The plaintiff then brought this action.

The defence set up by the defendant was that, the contract being entire and indivisible, the completion of the whole work was a condition precedent to the plaintiff's right to sue for the whole or any part of the price of it; and he further alleged that the larger roof was deficient and not according to contract, and made a counter-claim for damages for loss of profit occasioned by the delay in completing the second roof.

At the trial, at the Bristol Assizes, before Mr. Justice Stephen, a verdict was taken by consent for the plaintiff for 320*l.*, subject to a deduction of the amount of the fair value of the small roof, the expense occasioned by the deficiency (if any) of the large roof, and the damage (if any) occasioned by the delay in completing the small roof, these sums to be ascertained by a reference to arbitration: and the learned Judge decided, as a matter of law, that the plaintiff was entitled to recover the 320*l.*, subject to the deductions above mentioned. The defendant appealed from that judgment, and the case came before Lords Justices Brett, Cotton, and Thesiger on the 1st inst.

Their Lordships held that as the contract was entire, the plaintiff would not have been entitled to sue if the defendant had done nothing to alter the position of the plaintiff, for the plaintiff had throughout been in the wrong, and was not ready and willing to perform his part

of the contract. But the defendant had taken the matter into his own hands, and completed the second roof. He had not merely taken possession of the property; if he had only done that, he would not have been liable; but he had completed the second roof, so that it was impossible for the plaintiff to complete it. The plaintiff was, therefore, entitled to sue on a *quantum meruit*, and the judgment of the Court below must be affirmed.

THE LAW AS TO TRADE UNIONS IN SCOTLAND.

An important judgment was given on the 22nd ult. in the second division of the Court of Session, Edinburgh, affecting the proceedings of employers and *employés*.

It appeared that during a lock-out or strike, a glass-cutter in Glasgow, a member of the Birmingham United Glass Cutters' Association, was mulct in 50*l.* damages in the Glasgow Sheriff Court, on the ground that he was a member of an unlawful combination, and had been guilty of "inducing" or "seducing" workmen to break their contract with Messrs. Cowper & Sons, glass manufacturers, Glasgow, whose old hands were at the time locked out.

On appeal to the Court of Session, the workman has obtained a reversal of the judgment of the inferior court; Lord Ormidale and Lord Gifford deciding in favour of the appellant, on the ground that there was no evidence of his seducing or intimidating, and the Lord Justice Clerk sustaining the Sheriff's decision, his opinion, as he said, being diametrically opposite to that of their lordships. The majority held that just as the masters paid the strangers' expenses to come to Glasgow, it was just as lawful for the workmen to pay their expenses home again, so that prior to this they had not by violence or threats of violence, molestation or obstruction, done anything calculated to force the new men to break their contract, or prevent them enjoying free market for their labour. According to the law of Scotland, an act which it was lawful for one person to do did not become unlawful where one or more persons combined to do it. Messrs. Cowper & Sons were found liable in the expenses of both courts.

RUINOUS HOUSES UNDER THE BUILDING ACT.

At Marlborough-street, Mr. Napier, on the part of the Metropolitan Board of Works, applied to Mr. Mansfield under the Building Act, 18 and 19 Vic., cap. 122, section 80, for an order for the removal of the inmates of the houses 17, King-street, and 7½, Cross-street, those houses having been certified by Mr. Kerr, the district surveyor, to be in a dangerous state. Orders had been made at that court, but had not been carried out. Although the application was an *ex parte* one under the Act, yet, out of courtesy to Mr. Banister Fletcher, notice had been given to him that an application was to be made so far as regarded 17, King-street. Mr. Kerr gave evidence to the effect that the house was in a most dilapidated state, and might fall at any moment, and also that the order of the Court had not been obeyed. A person asked for an adjournment on behalf of Mr. Fletcher. Mr. Mansfield said that, after what had been stated by the surveyor, he should make an order.

THE SOUTH SHIELDS CORPORATION NEW STABLES.

The new stables erected by the Corporation of South Shields in Victoria-road were formally opened on the 18th ult. The stables are approached by a large gateway, having on either side houses for the horse-keeper and foreman. They are built upon an eligible site, a large portion of which will be utilised as a stone-yard. Extending nearly the whole length east and west is a covered shed for carts and street-cleaning implements. This shed is 150 ft. long, and provides ample accommodation for the carts and implements. The stables are 90 ft. by 30 ft., and have standing-room for twenty-six horses, and two large boxes. The horses stand back to back, and the heel-posts of the stables are contrived as iron columns, to carry the granary floor above. There is a window which opens over every horse's head, in addition to the ordinary air-passages through the walls, and from the centre of the ceiling, between the two rows of horses, are shafts carried up through the granary to the roof, and terminating outside with Howard's patent revolving foul-air extractors. At the east end of the stables is an engine-room. From the engine belts are carried up to the granary, and these can be adjusted to the machinery for crushing oats and corn, chopping hay, and hoisting horses' food to the granary. A covered lobby-entrance contains the boiling or mash furnace-pots, and there are also a blacksmith's or farrier's shop, with two forges, a large cartwright's shop, with broad folding doors, and a hospital for sick horses. The whole of the buildings are bounded on three sides by a buttressed brick wall, and on the fourth side by another extensive cart-shed, back to back with the one above mentioned, and under the same roof. There are likewise a store-room and office, and a covered shed for the Corporation workmen. The space within the walls is an acre and a half, and paved surfaces are provided for all working purposes. Water and gas are laid on throughout, and hydrants are provided in case of fire.

The buildings were designed by Mr. Matthew Hall, borough surveyor, assisted by Mr. R. Greaves, and Mr. C. Cobham has discharged the duties of clerk of the works.

The contract has been carried out by Messrs. D. Kennedy & Son, of Jarrow, at 4,000*l.*

WATER PIPES IN FROST.

Sir,—About five years since you inserted a letter from me suggesting what I still think would afford a remedy against the bursting of pipes by freezing. If the pipes were squeezed to a slightly elliptical form before fixing, the expansive force of the freezing mass inside would gain room by restoring the circular shape, and even if the lead is not sufficiently elastic to revert to the elliptic form after a thaw, it would still take a series of frosts before the unyielding circular form is attained. Objection was made that the longer axis of the ellipse having to contract against the expansion of solid ice, the elliptic form would be impracticable, but if the opinions of your recent correspondents and myself are correct, the objection would fail. Supposing the other view to be correct, it would be easy to find, though not so economically, a suitable section for a pipe that would yield readily to the uncompromising equal expansion of a solid mass. Perhaps the simplest form would be a corrugated circle, or a more convenient shape for fixing to wall would approach a D shape, the flat side being made slightly concave.

F. H. McLauchlan.

"FROST AND MORTAR."

Sir,—With regard to the position of contractors and their liabilities respecting the above matter, permit me to submit the following remarks:—

In the first place, I presume that your correspondent "Contractor" is now engaged in performing his part of a contract,—hence his query. I must also suppose that his contract is as stringent as contracts usually are,—namely, that he has agreed with the other party to his contract to do, make, form, complete, and deliver to the other party whatsoever on his part, with the materials, and subject in every respect to all the terms, conditions, and provisions contained in the specification and drawings, for a certain consideration, say the amount of his tender. There is, doubtless, a condition in his contract that on the certified completion of the works by the engineer or architect, the contractor shall, or within a stipulated time after, receive his retention-moneys.

Now, sir, you will observe the absolute necessity of "Contractor" having a certificate of similar import as the one described, because it is a condition precedent to his being entitled to receive the balance of the consideration for his contract. Again, the law presumes that he has exercised sufficient diligence in the preparation of his estimate, thereby providing ample means in his estimate to meet all contingencies that he might come in contact with, other than deviations of great magnitude from the original contract. "Contractor" will also perceive that he will have to make good, at his own expense, all damages that might have been caused by frost or other sources other than by the act of his employer, to ensure his eligibility in being entitled to the necessary certificate.

In conclusion I may say that his liability depends in a great measure on the construction of his contract.

G. W. France.

Water Pipes.—At a meeting of the Royal Scottish Society of Arts, on the 24th ult., communications were submitted on a "Method of adjusting the sizes of branching water-pipes," by Mr. John Sang, C.E., Kirkcaldy, and on a "Cause of the bursting of water mains, and the cure of it," by Mr. Edward Sang.

SPECIAL WORKS AND BUILDERS' CONTRACTS.

Sir,—It would be desirable if every arch would adopt the suggestion thrown out by Florence, the president, at the meeting of Architectural Association of the 14th ult., as ported in the *Builder* of the 1st inst., to exc certain branches of the work from the cont Its advantages are so important to everybody, no architect ought to act otherwise. Thoug Mr. Florence justly remarks, it might give more work, he is certain to benefit his c to a large extent, who would get his work cheaper and better,—cheaper, as the addit profit put on by the contractor when a speci is provided for is saved, besides the black levied by him for the payments he m although he rarely does so before he rec them from the client, and which the spec has to include in his amount, as well as the he runs in not being paid at all, the majori builders being very fond of paying in bills, w would certainly be avoided if the client direct; better, as every specialist takes his to heart, and must satisfy the architect, to w he has to look for future work, and therefor client gets superior work at a lower rate. builder naturally goes to the cheapest ma sacrificing art to interest. I believe advantages are great, and we poor speci ought to be grateful to Mr. Florence for hi mentioned them, and this course ought adopted, as it is in France, to the interes client and satisfaction of architect.

Speciali

APPRENTICESHIP.

Sir,—I am apprenticed as a builder's before my time has expired, my employ compelled to compound with his creditors offers 20s. in the pound, which offer is acce and he is allowed two years in which to In the meantime he decides to relinquis building trade and carry on that of an arch and surveyor. Being bound as a "Bui clerk," should I be compelled to complet apprenticeship, or are the indentures can by these proceedings? H. C.

STATUES.

William Harvey.—The models by the artists who were invited to furnish desig the statue of Harvey, the physiologist, wh to be erected at Folkestone, his native are, by permission of the Lords of the mittee of Council on Education, now exhibited at the South Kensington Museum will remain on view until March 29th, ten a.m. to four p.m. daily.

Captain Cook.—The statue of Captain which has been erected in the Hyde Sydney, was unveiled on the 25th ult., b Governor, Sir Hercules Robinson. The s is by Mr. Woolner, and was the subject of remarks in last year's volume of the B (p. 717), on the occasion of its temporary tion in Pall-mall.

PARLIAMENTARY JOTTINGS.

Manchester Water Supply.—In the Hou Commons, on the 27th ult., the Manchester poration Water Bill was read a second and ordered to be referred to a select comm

Thames River Floods.—In the House of mons, on the 28th ult., the Thames River vention of Floods) Bill, was, on the mot Sir J. McGarel-Hogg, read a second tim referred to a select hybrid committee.

Ancient Monuments.—On the House into committee, on the 28th ult., on the A Monuments Bill, Earl Percy moved that gress be reported. Sir J. Lubbock ad Beresford-Hope were desirous of the m being allowed to proceed. The House divided, when the motion to report pr was negatived by fifty-four to thirty-eigh motion for adjournment was withdrawn the Bill was read a third time and passe is stated that Earl Percy proposes to st further progress of the Ancient Monu Bill on Monday next by moving that th sideration of the amendments made in mittee be postponed for six months. [Th as amended in committee, confides the d seeing after the preservation of ancient ments to the Trustees of the British Muse

ESSRS. MERRYWEATHER AND SON'S NEW FACTORY, AT GREENWICH.

HESE works are being modernised, and ral new buildings are being erected: when hed, there will be room for upwards of 0 workmen. The smithy is already com- ed: it has fourteen fires and a steam- mer. Labour-saving machinery is being ely adopted. Messrs. Smith & Coventry, & Co., and Shepherd, Hill, & Co. have each rs in hand for such appliances for these ks.

nese premises were taken by Messrs. Merry- ther, about two years since, for the manu- are of tramway engines, and already up- ds of ninety such engines have been turned

Rails upon which to test these engines are g laid down, and there is a creek to the nes upon which the steam fire-engines can ested.

r. Jerrard, of Lewisham, is the builder, Tabberer, the architect.

MASTERS AND MEN.

Huddersfield.—The masons in the employ of Huddersfield Corporation struck work on the ult. against an attempt to increase their king-hours from 8 to 8½ hours. In conse- nce, the building of the new Town-hall and covered market is suspended.

Bangor.—After a month's strike, the majority the bricklayers and carpenters employed in building trade at Bangor resumed work on 24th ult. upon the employers' terms,—an ension of hours.

Greenock.—The Greenock operative masons e resolved to submit to a reduction of ½d. hour on their wages, and consequently the atened strike will be averted. The men a meeting have, however, denounced the on of the masters as a "piece of tyranny," much as they had had three reductions since ember, since which time they had had only nt a fortnight's work in consequence of the ..

The Brickmaking Trade.—On Monday a meet- of the master brickmakers of the London rban district was held at the Cannon- et Hotel, for the purpose of discussing the es question in their trade and to decide on reduction to be made in wages during the ing season. A motion that the reduction ld be 6d. per 1,000 for moulding was unani- sly agreed to. The following were elected committee to draw up a scheme for the nation of a Brickmasters' Central Associa- :—Messrs. Warburton, Richardson, Lee, ock, Rhodes, Featherby, Lout, Harris, ght, Burchett, Collis, Colson, and Nichola.

Federation of Trade Unions.—At a meeting of Birmingham Trades Council on the 1st inst. solution was passed in favour of establish- a federation of trade unions. It was stated the trades councils of Derby, Leicester, tol, Walsall, Wednesbury, and Wolverhamp- were willing to join the Birmingham Trades ncil in forming the federation, and that the mbers of these unions represented ninety des and about 15,000 workmen.

Sunderland.—At a general meeting of the se-painters of Sunderland, it has been unani- sly resolved to accept no reduction on the sent rate of wages, 7½d. per hour.

Forfar.—The master joiners of Forfar have ced the wages paid to their men ½d. per r.

Dunfermline.—The Dunfermline masons have ived notice that their wages will be reduced d. per hour.

Newcastle-on-Tyne.—The joiners' strike here continues. This is the twenty-fifth week its duration. Before the strike the men e being paid 8½d. per hour, and the masters, ng to the slackness of trade, proposed to ce the rate of payment to 7½d.

Dumfries.—The threatened strike of masons Dumfries has been averted. On the 28th ult. eeting of representatives of masters and men held, when a compromise took place. The agreed to the reduction to 7d. per hour, pro- ed no further reduction took place for twelve ths, and the masters promised this.

Edinburgh.—The *Scotsman* understands that mber of the master builders in Edinburgh e given the masons in their employment ce of a reduction of wages at the rate of 1d. hour, the same to come into operation on and r Saturday, the 8th. This will bring the rate of remuneration per hour down to 6d., being 3d. per hour or 12s. 9d. a week less than the standard rate of wage paid to masons prior to May last.

Books Received.

Elementary Text-book of Physics. By J. D. Everett, M.A. Blackie & Son.

This is a text-book for elementary classes, and presents those portions of theoretical physics which are, in the opinion of the author, most essential as a foundation for subsequent studies.

Dynamics, hydrostatics, heat, light, sound, aad electricity are the subjects upon which the author,—Professor of Natural Philosophy in the Queen's College, Belfast,—treats in this little book: of course, therefore, briefly on each.

In England we usually speak of pounds weight and of feet measures, and therefore of foot-pounds as units of force, but the author puts weights into grammes and measures of length into centimètres, and makes the unit of force that which, acting for one second of time upon a mass of one gramme, produces a velocity of one centimètre per second, and this is called the *dyne*; and the unit of work which the author adopts is the force of one dyne working through the distance of one centimètre, and this is called the *erg*.

It may be very well to adopt these values as units, for, taking weights and measures universally, there are certain conveniences in using them, a gramme being the weight of a cubic centimètre of distilled water, but it would have been very proper, we think, if the author had set forth,—as writers of more important works on physics have thought it proper to do,—the relations which subsist between the method adopted by the English nation and that which he prefers to teach.

Miscellanea.

Union Bank Buildings, Glasgow.—The alterations and additions which have been in progress for several months at the head office of the Union Bank in Ingram-street, Glasgow, have now been completed, and on the 24th ult, the new portion was opened for the transaction of business. The old front has been entirely demolished, and a new one substituted, which gives 46 ft. additional frontage, making in all 105 ft., while the building extends backwards a distance of 132 ft. The style adopted by the architect, Mr. Burnet, is Italian, freely treated. The basement of the building is of polished Peterhead granite, while a range of sixteen granite pilasters of the Doric order, relieve the masonry of the second story. Ornamented trusses rise between these, and form the basis of pedestals on which are placed a series of sculptured figures. On the third story is a range of Corinthian pillars, all in polished granite of the same character, the entablature, which is of rich design, being surmounted by a balustrade in harmony with the general architecture of the façade.

Birmingham Wire and Metal Gauge.—The annual report of the council of the Birmingham Chamber of Commerce says:—"Your council have had under consideration the great inconvenience and uncertainty arising from the existence of a number of varying wire and metal gauges, and have been in communication with Sir Joseph Whitworth and other authorities. They find the subject surrounded with great difficulties, but it is extremely desirable that an authorised and uniform standard gauge should, if possible, be constructed and based upon some definite principle, such as the decimal divisions of an inch. In process of time such a gauge might be universally adopted, and your council invite the co-operation of any members of the Chamber possessing a special knowledge of the subject."

Public Works in Ireland.—There has been issued an account of receipts and payments by the Commissioners of Public Works (Ireland) on account of the Irish Reproductive Loan Fund for the year ended the 31st December, 1878. The number of loans made during the year was 275, and their amount 4,878*l.*; the total number of loans since the passing of the Act being 1,078, and the amount advanced 19,352*l.* The repayments to the end of last year amounted to 10,776*l.* 3s. 6d.

British Archæological Association.—At the fifth meeting of the session, it was announced that the Council had resolved to undertake some excavations at Castor, Northants, on the supposed site of the Roman Station, Durobrivæ, with a view to recommencing the work of exploration left by Mr. Artis fully fifty years ago. A sum of money had been collected, and a local committee was in course of formation in aid of this object. Mr. Loftus Brock exhibited fragments of two Roman tesselated pavements which have been recently met with in London in course of building works. One was from Billiter-square, and the other from the south side of Cheapside. The first paper was by Mr. G. Patrick, who entered into the history of Burleigh House with great minuteness, illustrating his subject with many plans and views, including some of old date, as well as copies of Thorp's plan. The question of Thorp having been the architect was discussed, and the evidence is in favour of this, although there is evidence that Gresham brought materials for the work from Flanders, and that Gresham's architect directed this part of the work. The dates 1577, 1585, and the latest, 1587, occur on the building, and thus disprove the belief that the house was not erected for Lord Burleigh, but for the Earl of Exeter, his son. There are historical evidences of the existence of an earlier house, and traces still exist. A resolution was passed to urge the Mayor and Corporation of Newcastle in favour of their preserving the Carliol Tower, one of the most interesting relics of the fortifications of that town, and which is threatened, as we have already said, with destruction.

Archæology and the Universities.—A memorial to the University Commissioners is being circulated for signature, praying them to make provision for the establishment of an English school of archæology abroad, such as the Governments of France and Germany maintain at Rome and Athens. The memorial suggests that by joint action of the two Universities of Oxford and Cambridge a fund should be provided for the establishment of one or more studentships of 300*l.* per annum, tenable for three years, on condition of residence for nine months in each year in Italy, Greece, or Turkey, and of sending periodical reports of work done or researches made.

Engineering at University College, London.—At the annual meeting of the governors of University College, held on the 26th ult., much satisfaction was expressed at the completion of the Technical Laboratory for Engineering, which has long been a desideratum in the college, and which was visited by several of the governors, who were received by Professor Kennedy. The laboratory is furnished with a testing-machine of great power, in addition to various other appliances for teaching the engineering students the practical application of much that they learn in the lecture-room. On the motion of the Rev. H. Solly, seconded by Mr. J. Chisholm Gooden, the following resolution was put and carried unanimously:—"That the governors desire to express their gratification at the opening of the new engineering laboratory for the use of students at this college; and they trust it will be extensively useful both to the students and in furtherance of engineering science generally, by affording eminent members of the profession opportunities for important experiments under the able superintendence of Professor Kennedy."

Dwelling-houses: their Sanitary Construction and Arrangements.—This is the title of a course of six Cantor lectures now being delivered under the auspices of the Society of Arts by Professor Corfield. The first lecture was on situation and structure; the second on ventilation, warming, and lighting; and the third, delivered on Monday evening last, was principally devoted to the subject of water supply. The lecturer said that the system of constant service, which is now gradually being adopted, is preferable in every way to that of intermittent service. But it is necessary to have duplicate reservoirs in order that the water may not be supplied intermittently while the reservoirs are being cleaned out, as serious results may ensue, as was the case at Croydon. With the intermittent service, galvanised iron cisterns, or, for cottages and basement floors, the new stoneware cisterns are the best, and in every case the waste or overflow pipe should discharge in the open air. The lectures are illustrated by specimens from the Parkes Museum of Hygiene at University College.

Liverpool Engineering Society.—At the last meeting of this society, held at the Royal Institution, Mr. M. E. Yeatman, M.A., in the chair, a paper on "The Design and Construction of Sewers" was communicated by Mr. Graham Smith, past president. In opening his subject, he remarked that sewers should not only be constructed in a manner to carry with despatch to the outfall the sewage which might find its way into them, but they should likewise be built in such a manner that no portion of the sewage should percolate through them into the surrounding earth. He quoted the general Board of Health returns to show that zymotic diseases largely exist, and are much due to improperly-constructed sewers and imperfect drainage arrangements. The question of the proper forms of sewers to be adopted under various circumstances was dealt with at some length, and the author advocated the circular section when a large and constant flow could be depended upon, and the egg-shaped sewer when a variable flow had to be accommodated, as the smallness of the invert increases the scouring action of a small quantity of sewage, whilst the increased size of the upper portion provides for any augmentation of flow.

Northampton Castle.—The answer of the chairman and directors of the London and North-Western Railway Company to a memorial lately sent them for the preservation *in situ* of the old wall, with the postern doorway, has at length been received. The request of the memorialists has not been complied with, although the directors have made some concession to the appeal. They say "that the intention is to take down the postern doorway and rebuild it in the boundary wall of the station, which wall it is also proposed to face with the ashlar veneering of the castle-wall. Every care will be taken in removing the old stone-work to be re-used, and the portions forming the postern doorway will each be numbered, so that they may be reinstated in the same relative positions (on their new site) that they now hold." Much disappointment is felt by the Castle Committee at the answer of the company, and it was resolved that, in acknowledging its receipt, an appeal should be made to the directors to cause a gun-metal plate to be affixed to the wall near the postern doorway in its new position, to contain an account of the removal.

A New Method of Working Coal-mines.—At the ordinary monthly meeting of the Manchester Geological Society, on the 25th ult., a paper was read by Mr. W. E. Garforth, on "The advantages of compressed air at high pressures (8,000 lb. and upwards per square inch) as compared with blasting by means of gunpowder or other explosives." In the course of his remarks Mr. Garforth observed that Messrs. Garforth, of Dukinfield, had constructed a machine for bursting down coal instead of blasting it with gunpowder, by which 14,200 lb. pressure per square inch of compressed air had been obtained. The machine was a portable one; it could be worked by two men, and its dimensions made it suitable for small mines. Trials had been made with the machine for some time past, and on the 24th ult. experiments were conducted at the Bower Colliery, Hollinwood. The machine on that occasion, working at a pressure of 9,550 lb. to the square inch, broke down from five to six tons of very hard coal. Part of the invention related to a drilling-machine, patented by Mr. Ernest Reuss, of Manchester. The merit of Mr. Garforth's machine is, however, claimed by Mr. Samuel Marsh, by virtue of a patent obtained by him in 1876.

Excavations and Foundations in Sand. M. Plocq has published an interesting note upon the recent harbour improvements at Dunkerque and Gravelines. There are ten sluices for controlling the fresh and salt waters of the districts, for various purposes of maritime and domestic economy, as well as for the wants of the military service and for defensive operations in time of war. The sluices are built in a soil which is wholly made up of pure sand, of flour-like fineness, reaching to a depth of 15 or 20 mètres (16·4 to 21·9 yards) below the lowest tidal levels. The works were all executed by the help of coffer-dams, in preference to dredging, and the preparations were so thorough that it was always easy to work in dry sand even at the lowest foundation levels. The total cost was less than half what it would have been by the whole method of dredging, and the saving of time was in about the same ratio.—*Ann. des Ponts et Chaussées.*—C.

Vinovium. — An interesting lecture was delivered in the Town-hall, Bishop Auckland, by the Rev. R. C. Hooppell, LL.D., rector of Byers Green, on the Roman station of Vinovium, the modern Binchester, near Bishop Auckland. The lecturer began by describing the successive wave of Gaelic, Cymric, and Teutonic immigration into Western Europe and Britain, the third wave coming after an interval of several hundred years, during which the Romans, to whom we owe so much in language and literature, laws and religion, acted as a mighty breakwater, stemming back the advancing Germanic hordes. These successive arrivals on our shores, each bearing its traces in the names of rivers, mountains, and towns or villages, were rather absorbed than annihilated by their respective followers, so that our present population combines the blood of them all. Quoting largely from Tacitus, the lecturer described the desperate struggles between the Roman invaders of Britain and the tribe of Brigantes, the most powerful of all the British tribes, who held the territory now covered by the counties of Yorkshire, Durham, Lancashire, Westmoreland, and Cumberland. Vinovium was one of their strongholds, and was not captured by the Romans till the time of Hadrian, about A.D. 120. It was Hadrian who reared the great wall across the island from the Tyne to the Solway, and to him are attributed the strongly fortified stations on the main roads to the south of the wall, such as Corbridge, Ebchester, Lanchester, Catterick, and others. These stations all lay on the Watling-street which ran from York,—for centuries the head-quarters of the 6th Legion, originally brought to Britain by Hadrian,—through Vinovium to the central districts of the great wall. The more eastern route passed from York through Thirsk, Northallerton, Sadberge, Stainton-le-Street, and Old Durham, to Jarrow and South Shields.

Launch of a Steamer on the Tyne.—Last week there was launched from the yard of Messrs. Wigham Richardson & Co., a screw steamer of 3,000 tons burthen, for the Royal Exchange Shipping Company of London, whose steamers are managed by the well-known firm of John Patton, jun., & Co. This steamer was christened the *Celtic Monarch*, by Miss Constance Wawn, and immediately after the launch the ship was taken under the builders' shears to receive her machinery, which is a duplicate of that of the *Alton Tower*. The engines are especially designed so as to develop their full horse-power, with a fewer number of revolutions than has hitherto been the current practice. It may make the matter clearer to a non-professional mind to state that the tips of the fans of the *Celtic Monarch's* propeller will revolve even at the fifty revolutions, which is her destined pace, over twenty knots an hour. The *Celtic Monarch* is 300 ft. long, 35 ft. beam, and 25 ft. deep, with full poop, topgallant forecastle, bridge, houses, and every requisite in outfit and spare gear for her destined voyage.

Amateur Work.—A set of altar-rails has just been erected in Mytton Church, which is an ancient ecclesiastical structure, and celebrated as the resting-place of the Sherburnes. The church is situated on the western borders of Yorkshire, overlooking the Stonyhurst Roman Catholic College, and immediately adjoining the river which divides Lancashire from Yorkshire. The altar-rails are the gift of Mr. John Hicks, the senior member for Bolton, and Mr. R. J. Aspinall, of Standen Hall, near Clitheroe, and a special interest attaches to the gift from the fact that the rails are the sole work of Mr. Hicks, one of the donors. A new stained-glass window is about to be erected at the east end of the old edifice, the present window being in a very dilapidated condition.

Wyld's New Maps of Zulu Land and South Africa.—Many will be glad to know that Mr. Wyld has published a Military Sketch of Zulu Land, Transvaal, the Frontiers of Natal, and the Orange Free State, with the Portuguese possessions around Delagoa Bay, showing the kraals and military localities of Zulu Land, with the military positions, on a scale of ten miles to the inch. This part of the world has become very important in the eyes of Englishmen.

Westminster Abbey.—Mr. John Pearson has been appointed to the office of architect and surveyor of the fabric of Westminster Abbey, vacated by the lamented death of Sir Gilbert Scott. The special works already commenced by Sir Gilbert Scott will be continued by his son, Mr. John Oldrid Scott.

Dr. Schliemann at Work.—Extracts f
private letters recently received from the
are published in the *Carlow Sentinel*.
writer says:—"The next day we rode ou
Ilium Novum, Schliemann's Troy, and f
Schliemann himself there, excavating the f
dations of Priam's Palace from a heap of a
and picking out gold and silver ornaments e
five minutes. He was very kind, and took
amount of trouble to explain the different
he had dug into before he discovered the a
of the big fire which laid the first Troy in r
He has 200 men working, and has cleared o
astounding amount of *débris*, until, at s
30 ft. from the surface, he has disclosed
massive substructures on which Priam's Pa
of wood and the lofty tower were built. Mo
the things he has found, such as gold earr
necklaces, hair-pins, &c., are rather spoiled
fire; in fact, the whole of the deeper digg
showed on stones and everything the effect
severe fire. Schliemann is, of course, an
thusiast, and talked to us for a couple of h
explaining things, but all the time keepir
sharp eye on the diggers, to prevent
bagging any of the gold objects they found;
manages the natives well, pays them so mu
day, and at once gives baksheesh to any
who finds the smallest thing and brings
him. While he was spouting Homer and V
to us, a native would rush up and shove s
thing under the old chap's nose, shouting '
sheesh!' He paid according to the valu
penny for stone hammers, knives, spindles,
and half a franc for gold and silver things.
found this requisite, as the lazy beggars w
not half examine the rubbish. Schlie
treated us to coffee and wine in his shanty,
presented each of us with a stone ham
spindle, and earthenware jar to match.
would not lunch with us, he was 'too busy,'

Public Works Loans.—The Chancello
the Exchequer's Bill relative to loans for pu
works has been printed. It provides tha
borrower shall in any one financial year ob
from the Public Works Loan Commissione
larger loan than 100,000*l*. Another of the
visions relates to the amount of interest t
paid. Under the Act of 1875 the rate of
rest was fixed at not less than 5 per cent.
in cases where a rate was authorised by
special Act allowing the loan, when the
was to be not less than that so authorised.
Bill now further proposes, with regard to t
latter cases, that whatever may be the
authorised by the special Act, the interest
also be not less than 3½ per cent., if the pe
within which the loan is repayable does
exceed thirty years, and not less than 4
cent. if the period is between thirty and
years, and not less than some sum as ye
named if the period exceeds forty years.
repayment is no longer in the form o
annuity, as was allowed by the Act of
It is not proposed that the measure shall
to any loan granted before the 1st of April,
or to any instalments subsequently advanc
respect of such loan.

Thames Floods in the Metropolis.—O
25th ult. a conference of delegates represe
the Vestry of Lambeth and the district b
of Fulham, Wandsworth, Westminster, an
Saviour's, was held at the Lambeth Vestry
to consider the present position of this ques
The subject was considered by a Committ
the House of Commons in 1877, and
Committee reported that the works nece
to prevent the floods ought to be execute
the Metropolitan Board, at the cost of
entire metropolis. It was resolved "That
Conference expresses its regret that, not
standing the decision of the Select Comm
of the House of Commons of 1877, the M
politan Board is prosecuting a private Bill
on the principle of charging owners and le
ties with the expense of preventing the ove
of the Thames;" and "That the Home S
tary be respectfully requested to receive a
tation before the second reading of the B
the House of Commons."

St. Mary-at-Hill, Eastcheap.—With
rence to the threatened destruction of W
church of St. Mary-at-hill, Eastcheap, b
Metropolitan and Metropolitan District B
the Inner Circle Railway, it is satisfacto
learn, on the authority of Mr. Percy Wynd
that the railway companies have agree
insert a clause in the Bill which will ensu
complete preservation of both church
churchyard.

...ting of Lighthouses.—While the ...r had attained some of his greatest ...ss in the construction of lighthouses, the ...n had not once directed his attention to ...ention of a brilliant light, worthy to be ... upon the structure which proudly rose ...ove the fierce waves with the strength ...idity of a rock. During a period of forty ...after the completion of the Eddystone ...y Smeaton, the lantern was illuminated ...w candles stuck in hoops, just as a stand ...h is lighted at a country fair, and so ...as the year 1811 it was lighted with ...four wax candles. In 1812 the Lizard ...as maintained with coal fires; and in ...hen the Isle of May Light, in the Frith ...h, was taken possession of by the Com...ers of the Northern Lighthouses, a coal ...n exhibited in a *chauffer*,—a description ... which had been exhibited for 181 years. ... the light at Harwich, in addition to the ..., had a *flat* plate of rough brass on the ...d side, to serve as a reflector. Such ...s of lighting were, of course, very deficient ...er, and did not enable the mariner to ...uish one light from another,—a point ...s often of as much importance as the ...y of the light itself. Prior to the in... of the Argand lamp (about 1784) the ...ion of a strong and brilliant light ... single source was scarcely possible, and ...ch a lamp, by its unassisted powers, ...st be of very great value in giving early ...o the mariner of his approach to the ...rhich ought to be the primary object of ...ouse. As the rays of a luminous body ... in all directions in straight lines, it is ...that in the case of a single lamp the ... would derive benefit only from that ...ortion of light which proceeded from the ...f the flame to his eye. The other rays ...roceed to other parts of the horizon, or ...pwards to the sky, or downwards to ...h, and thus be of no value to him. ...easing the number of burners a small ...of light from each burner would slightly ... the effective action, but by far the ... portion of the light produced would ...aselessly above and below the horizon, ... at the back of each flame. Next, these ...were remedied, and the efficiency of the ...eatly increased, by placing behind each ...reflector of such a form as to collect the ...t would otherwise be lost, and throw ...ward to the horizon. The adoption of ...t method has led to what is called the ... system of lights.—*The Sea: its Stirring ... Adventure, Peril, and Heroism.*

...burgh.—The North Canongate school, ...h which has been built in Edinburgh ...he passing of the Education Act for ..., was opened on the 7th ult. It is ... in Cranston-street, and is one of the ...chools in the city. It has accommoda... 1,050 children, on the eight square feet ... per child. It is built in the Scottish ... style, and has a frontage to the north. ...re separate playgrounds and entrances ... two sexes. The infants' department is ...round floor, and consists of a hall, one ...ass-room, and two smaller ones. On ...r accommodation is provided for 360 ... The second floor is devoted to the ... the three lower standards; the accom... consists of a hall, a large double class-... smaller one, and a spacious sewing-... On this floor there is accommodation for ...50 pupils. The top floor, which affords ...odation for 240, is occupied by the ... in the higher standards, and com... hall and two commodious class-rooms, ...hich is specially fitted up with a view ...nior class carrying on all branches of ... it, including drawing.

...nary for the Barton Union, Man...—At a meeting of the Barton Board ...dians on the 26th ult., the Clerk read ...utes of the house committee, which ...hat at its last meeting Mr. Barker (of ... of Messrs. Barker & Ellis, architects) ...nded and presented plans for the erec... a new infirmary for the union, at a cost ...l. The committee recommended the ... the approval of the guardians.

...y Gallery: Water-Colour Draw...—The fifteenth general exhibition here ...r-colour drawings is now open, and ... 642 works, mostly indifferent. It ...e little less than a waste of time and ... give any detailed account of them.

Scene-painting.—A good deal of space is given up in the Museum of Decorative Arts, Paris, to the designs of scene-painters,—cruellest of reproaches to an artist in the opinion of the true American! Ah! If the young genius who is crushed when scoffed at as not being fit to be a "scene-painter" could realise the honour in which the leaders of that profession are held here, he would take courage, and, genius though he be, perhaps condescend to undertake one of the grandest branches of art. Certain it is that the development of modern theatrical representation has opened a splendid field to the true artist, where not only can he display every quality of colour and composition of landscape-painting on a monumental scale, but people them with magnificent masses of shifting colour. Nothing contributed more to the renown of one of Germany's greatest artists, Schenkel, than his designs for opera scenery; and the French set apart in the late Exhibition a special room in the Beaux-Arts section to display a series of miniature stages, with the scenery of well-known dramas and operas, from the theatre of Corneille in 1636, to the more sumptuous settings, beginning with "William Tell" in 1829, down through all the elaborate *mise-en-scène* which has distinguished the French stage, to the unparalleled magnificence of the new Opera-house. But even here I do not think the merited celebrity is given to the scene-painters. The name of the painter of an interesting picture at the *salon* is on every one's lips, but out of the thousands who are enthusiastic over the beautiful scenery in the theatres,—and which alone will often draw full houses,—few ask the name of the painter, and beyond the real art-world he is not much known. It would but be fair to have the painter's name upon the playbill; as he always receives his share of attention at the *première*, why not afterwards? Among the foremost of these artists are the two Lavastres, the younger of whom, for his noble scene in the second act of "Don Juan," received the Cross of the Legion of Honour. Chéret received a like distinction for scenes in "Le Roi de Lahore" and other operas, while the elder Lavastre, Carpezat, Daran, and Rubé had *diplômes d'honneur*. All these are men of the highest artistic powers, and deserve to rank with the best painters.—*American Architect.*

North Wales Slate Trade.—The slate trade of North Wales, after being in the most depressed state experienced for many years past, is at length presenting some signs of improvement, the management of Mr. Assheton Smith's quarries at Llanberis, which are among the largest in the Principality, having notified their intention of working the quarries four instead of three days weekly. At Lord Penrhyn's Bethesda quarries the men continue working four days weekly, but on the 22nd ult. nearly 300 were paid off; and the smaller quarries are still working with the smallest possible staff, many preferring to close in lieu of increasing stock.

New Clocks.—An "In Memoriam" turret-clock has just been fixed in the tower of St. Mary's Church, Burrough-on-the-Hill, near Melton Mowbray, the gift of Capt. Burnaby, and the work of Mr. J. W. Benson, of Old Bond-street and Ludgate-hill. The time is shown on two dials, 4 ft. 6 in. diameter, painted blue with gilt figures.——A turret-clock has just been fixed in the tower of Highcliffe Church, near Christchurch, by the same manufacturer. The time is shown on a copper dial 3 ft. 6 in. in diameter, and the clock strikes the hours on a bell of 5 cwt.

Suffolk.—All Saints' Parish Church, Hoptonby-Thetford, Suffolk, in the diocese of Ely, is about to be restored from the designs of Messrs. Satchell & Edwards, of London. For the execution of the work the tender of Mr. Brooke has been accepted.——The restoration of St. Margaret's Parish Church, Wattisfield, in the same county and diocese has also been entrusted to the care of Messrs. Satchell & Edwards.

How the Actors do it in America.—According to the American *Plumber*, "Mr. Dion Boucicault's bath-room, floor and ceiling and walls, is made of blue china tiles. The doors are heavy plate mirrors set in ebony, and the bath is a huge marble basin, with water coming in fountain-fashion from the bottom."

The Two Dukes.—Life-size marble medallions of the late Duke of Wellington and the first Duke of Marlborough are to be placed in the Guards' Chapel, Wellington Barracks. Mr. George G. Adams, sculptor, of Sloane-street, has been commissioned to execute them.

Bristol Master Builders' Association.—The annual banquet of the Master Builders' Association, elsewhere mentioned, was held on the 27th ult., at Clifton, when about seventy friends were present. Mr. W. H. Cowlin presided, and, on behalf of the members of the association, presented Mr. J. Yallaun, ex-president, with a drawing-room clock and ornaments.

A Protest from Fulham.—The Metropolitan Board of Works are endeavouring to pass a Bill through Parliament to impose upon the Fulham district the total cost of embanking its river frontage. Public meetings have been held to protest against this, which certainly seems unjust, considering that Fulham has had to pay towards embanking the river elsewhere.

Town-hall for Hove.—At a special meeting of the Hove Commissioners, on the 1st inst., it was resolved, on the recommendation of the Town-hall Committee, to adopt the plans prepared by Mr. Waterhouse, A.R.A., for the proposed new Town-hall, and it was also decided to take steps to commence the work at once. The materials of which the exterior is to be constructed are red brick and terra cotta.

St. John the Evangelist, Bromley, Kent. The committee for the erection of this church having lately invited five architects to compete, have received the designs, and selected those by Mr. George Truefitt, of Bloomsbury-square.

Dangers of Window-cleaning. — The Liverpool borough coroner has just held inquests upon the bodies of two women killed through falling from windows which they were engaged in cleaning.

Castleisland, Co. Kerry, Ireland.—Out of seven designs sent in for a new (R.C.) church at Castleisland, Co. Kerry, Ireland, that submitted by Mr. D. J. Coakley has been selected. The church is to cost 8,000*l.*

Victoria (Philosophical) Institute.—At a meeting held on Monday, Prof. M'K. Hughes, F.R.S., delivered a lecture upon "The Antiquity of Man," in which he analysed the nature of the evidence brought forward by others.

TENDERS

For alterations and additions to the Workhouse, Llanrwst. Mr. T. Roberts, architect:—

Parry	363 0 0
Hughes	360 0 0
Rees	360 0 0
Jones (accepted)	325 0 0

For the erection of a shop, dwelling-house, and two cottages in the Cromwell-road, Redhill. Messrs. Small, peice & Bishop, architects:—

Apted, Brothers	£865 0 0
Worsfold	823 16 0
Stoneman & Sons	721 0 0
Scougal (accepted)	665 15 0

For completing eight houses at Tulse Hill Gardens, for Mr. W. S. Iles:—

Holliday, jun. (accepted)	£425 0 0

For alterations and additions to No. 59 and 60, Cornhill, for Messrs. Harvey & Davids. Mr. B. Tabberer, architect:

Marks	£194 0 0
Johnson & Co. (accepted)	169 0 0

For alterations to new premises, Great Eastern-street, for the Hon. Mrs. Geo. Brown:—

Johnson & Co. (accepted.)

For block of model dwellings, Aske-street, Hoxton. Mr. T. C. Clarke, architect:—

Wheeler	£20,445 0 0
Conder	20,429 0 0
Colls & Son	20,378 0 0
Browne & Robinson	20,172 0 0
Clarke & Bracey	19,520 0 0
Grover	18,598 0 0
Ashby, Brothers	18,323 0 0
Macey & Sons	18,315 0 0
Patrick & Sons	17,928 0 0
Ashby & Horner	17,620 0 0
Pritchard	17,519 0 0
Laurence	16,461 0 0

For alteration and additions to Redford Cottage, Chelmsford-road East, Woodford:—

Willis (accepted)	£824 9 9

For erection of residences and photographic studio for Mr. W. Perry, Sandgate. Mr. Burgess J. Reeve, architect:—

Payne (accepted).

For partial restoration and new bell-floor to tower of the Parish Church, Folkestone. Mr. Burgess J. Reeve, architect:—

For new Bell-floor, &c.

Holdom	£192 10 0
Dunks	175 0 0
Brooks (accepted)	164 0 0
Prebble	130 0 0

For Tower Restoration.

Brooks (accepted)	211 8 9

For alterations, &c., to 16, Clifton Gardens-street, Folkestone, for Mr. R. Henderson. Mr. Burgess J. Reeve, architect:—

Brooks (accepted)	£115 7 7

For completing a block of four shops and three houses at Plaistow, E., for Mr. F. Sewell. Messrs. Walter Graves & Hulbert, architects:—

Ellis (accepted)	£890	0	0

For the erection of two houses and shops at Streatham Common, for Mr. E. Janes, Sen. Mr. Cruwys, architect. Quantities not supplied:—

Evans	£1,400	0	0
Tibbett & Adams	1,398	0	0
Mason	1,323	0	0
Bassett & Sons	1,250	0	0
Smith, R. & E.	1,229	0	0
Simons (accepted)	1,125	0	0

For the Norfolk and Norwich Hospital (new building, old building, and chapel). Messrs. T. H. Wyatt & E. Boardman, architects:—

	All kiln bricks.	Clamp bricks and kiln facings.
Brummage	£58,345	£59,875
Holland & Hannen	57,733	57,333
Dove, Bros.	56,160	55,890
Lucas, Bros.	55,863	55,495
Hill & Higgs	54,520	54,200
Braid & Co.	53,990	53,584
Cornish & Gaymer	51,279	50,994
John Downing	48,811	48,076
J. W. & H. Lacey	45,600	44,450

For the erection of Wesleyan school, chapel, vestries, &c., Plymouth Grove, Manchester. Quantities supplied. Messrs. Hetherington & Oliver, architects:—

Danbrough	£4,470	0	0
Burton & Sons	4,420	0	0
Shaw	4,340	0	0
Hurst	4,325	0	0
Howard & Co.	4,210	0	0
Statham & Sons	3,943	0	0
Ward	3,900	0	0
Butters & Carson	3,890	0	0
Davies & Mawdesley	3,803	0	0
Cordingley & Stopford	3,767	0	0
Shaw	3,759	11	0
Rome	3,754	0	0
Johnson	3,749	0	0
Robinson & Son	3,700	0	0
Brown	3,700	0	0
Davison (too late)	3,699	0	0
Union Land and Building Company	3,693	0	0
Connor	3,614	10	0
Harrison	3,573	13	0
Sanders	3,569	0	0
Maben & Fairmington	3,567	0	0
Herd	3,567	0	0
Elms & Evans	3,555	0	0
Whitell	3,553	0	0
Foreman & Todd	3,480	0	0
Webster (accepted conditionally)	3,402	0	0
Haynes	3,375	0	0
Napier	3,360	0	0

For alterations to the mansion, Ware Park, Hertfordshire, for Captain Parker, R.N. Messrs. Fowler & Hill, architects. Quantities by Messrs. Fowler & Hingman:—

Condet	£8,433	0	0
Scrivener	8,380	0	0
Nightingale	8,283	0	0
Manley	8,237	0	0
Roberts	7,913	0	0
Wagner	7,540	0	0
Wontner, Smith, & Son	7,349	0	0
Hook & Oldrey	6,995	0	0
Kirk & Randall	6,940	0	0

For the erection of villa residence, coach-house, stabling, &c., Egremont, Cheshire. Mr. W. H. Stead, architect. Quantities supplied:—

Johnson	£1,885	0	0
Clark	1,855	10	0
Hudson (accepted)	1,812	10	0
Williams	1,795	15	0

For completing additions and repairs at 50, Hamilton-terrace, St. John's Wood, for Mr. J. Fair. Mr. Thomas Harris, architect:—

Hobson	£1,146	0	0
Salen	1,111	0	0
Watson Bros. (accepted)	1,070	13	0
Maccormody	936	0	0

For repairs and decorations at Long's Hotel, Bond-street. Mr. Thomas Harris, architect:—

Saimon	£598	0	0
Watson Bros.	489	0	0
Boothby	405	0	0
Hall	320	0	0

For new shop front and various alterations at 122, High Holborn. Mr. G. H. Elphick, architect:—

Watson Bros.	£379	0	0
Croaker Bros.	363	0	0
Drew	342	0	0

For new roads, sewers, and surface water drains, for the British Land Company (Limited), on their Estate at Leyton. Mr. Henry B. Michell, surveyor:—

	Contract 1.	Contract 2.
Dunmore	£5,139	£1,070
Crockett	4,331	774
Killingback	3,795	756
Acock	3,780	855
Blackmore	3,685	705
Thompson & Son	3,631	670
Keeble	3,625	738
Harris	3,580	645
Pizzey	3,471	639
Jackson (accepted)	3,290	600

For alterations, &c., at the George and Dragon, St. John-street, Clerkenwell, for Mr. Pierrpont. Mr. H. J. Newton, architect:—

Martin	£665	10	0
Blundell	582	0	0
Lauble	483	0	0
Taylor	465	0	0
Godden (accepted)	457	0	0
Grimwood (too late)	437	0	0

For alterations and additions to the "Pack Horse," Turnham Green, for Messrs. Fuller, Smith, & Turner. Mr. G. More, architect:—

Adamson & Son	£933	0	0
Hunt	813	0	0
Nye	762	0	0
Lamble (accepted)	747	0	0

For the erection of a house at Cambridge. Mr. W. C. Marshall, architect:—

Seymour	£4,450	0	0
Farnell	4,140	0	0
Hearn	4,045	0	0
Foster	3,800	0	0
Bell	3,476	0	0

For mill and packing-rooms at West Ferry-road, Millwall, for Mr. J. T. Morton. Mr. Wm. Eve, architect:—

Abraham	£1,897	0	0
Hunt	1,814	0	0
Heiser	1,797	0	0
Linn	1,778	0	0
Sheffield & Prebble	1,697	0	0
Salt	1,670	0	0
Harris & Wardrop	1,635	0	0
Crabb (accepted)	1,573	0	0

For chimney-shaft, West Ferry road, Millwall, for Mr. J. T. Morton. Mr. Wm. Eve, architect:—

Heiser	£580	0	0
Harris & Wardrop	549	0	0
Abraham	530	0	0
Salt	510	0	0
Linn	490	0	0
Hunt	432	0	0
Neil	414	0	0
Sheffield & Prebble	344	0	0
Crabb (accepted)	345	0	0

For alterations at 173, High-street, Stoke Newington, for Mr. Musson. Mr. Wm. Eve, architect:—

Hicks (accepted)	£351	0	0

For alterations to the Albany Tavern, Great Portland-street. Mr. Charles J. Shoppee, architect:—

Green & King	£1,390	0	0

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1884. SATURDAY, MARCH 15, 1879.

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More about Lighthouses.

SKERRYVORE Lighthouse, off the Argyleshire coast, is the noblest example that we have presented to our readers of the masonry-built towers springing from a rock in the sea.* It was erected by Mr. Alan Stevenson on a small desolate rock, situated about eleven miles west-south-west of the island of Tyree, and fifty miles from the mainland ...otland. The rock is exposed to the full fury ...e North Atlantic, and is surrounded by an ...t perpetual surf. "The talent and perse...ce of the engineer," to use the language of ...illiam Cubitt, in his address to the Institu... of Civil Engineers, on January 8th, 1850, ...bled him, however, to complete, without ...f life or limb, great as were the difficulties ...d to contend with, a structure far exceeding ...imensions of the famous Eddystone and ...Rock Lighthouses, their relative heights ...—

...The Eddystone..... 68 ft.
...The Bell Rock ..... 100 ft.
...The Skerryvore ..... 138 ft. 6 in.

...difficulties of the construction, the merits ...e structure, and the system of lighting are ...ly described in Mr. Stevenson's published ...nt of it, that it is not necessary for me to do ...than to point to it as one of the remarkable ...s of the present day of which we have justly ...a to be proud." The work alluded to by ...illiam Cubitt is called an "Account of the ...yvore Lighthouse, with Notes on the Illu... ion of Lighthouses, by A. Stevenson," 4to., ... plates. Edinburgh, 1848. The diameter ...e tower at Skerryvore is 42 ft. at the base, ... 6 ft. at the top, under the cornice. The ...height to the top of the lantern is 158 ft., ...he cubic contents of the masonry are ...0 cubic feet. The light is revolving, and ...es its brightest state once in every minute. ...roduced by the revolution of eight great ...ar lenses around a central lamp with four ..., and belongs to the first order of dioptric ... in the system of Fresnel. It may be seen ... the deck of a vessel at the distance of ...een nautical miles. The entire cost of the ...ouse, including the purchase of the steam... ...l and the construction of a harbour at ...sh, for the reception of the small vessel ...n is now employed for the service of the ... was 86,977*l.*

...Inamurchan Lighthouse, lighted in 1849, ...markable for presenting somewhat of the arrangement of an ancient castle, the tower itself being the keep. It stands in an open court, surrounded on one side by a semicircular wall, between which and the base of the tower are store-rooms for fuel and dry stores. In the rear of the tower the court extends for 90 ft. by 35 ft., and at the side, opposite to the lighthouse, the dwelling-houses for the attendants, and store-houses form a building of some 75 ft. by 35 ft.; the area occupied being somewhat over 30 yards in each direction. There is an air-tube for the conveyance of signals from the lighthouse to the lighthouse-keepers' bedrooms. The tower has a circular plan, tapering from 21 ft. diameter above the flat roof of the store-rooms, to 16 ft. below the machicolated cornice. The height of the masonry, measured from the elevation given in Mr. Alan Stevenson's "Rudimentary Treatise on Lighthouses," is 100 ft. According to Mr. Alexander Finlay's description and list of the lighthouses of the world, it is a "stone tower, 118 ft. high," showing one fixed bright light. The height here given is probably that of the top of the lantern, as the reference to the sea level gives a height for the focal plane of the flame of 180 ft. above high water. The opportunity afforded of arranging the dwelling-rooms and store-rooms independently of the tower itself appears to have been admirably utilised in this lighthouse.

At the close of the year 1859, Mr. William Parkes, M.Inst.C.E., was instructed by the Board of Trade to proceed to Egypt, in order to make the preliminary surveys necessary for determining the best mode of lighting the course of vessels through the Red Sea. The result of his survey was a recommendation that lighthouses should be erected on three sites, namely,—1. Zafarana Point, on the Egyptian shore, fifty miles from Suez; 2. The Ushruffee Reef, on the western side of the navigable channel of the Straits of Jubal, 150 miles from Suez; and 3, The Dædalus Reef, in the centre of the Red Sea, 350 miles from Suez, and 180 miles from the entrance of the Gulf of Suez.

The shores of the Red Sea are in many parts fringed with coral reefs. These are in some places continuous; in others detached. They rise abruptly from great depths; so that no indication of their vicinity is to be obtained by means of soundings. For this reason the pilots and commanders of vessels that navigate the Red Sea are in the habit of taking as central a course as possible; the headlands and islands, which are, for the most part, visible by night as well as by day in that clear atmosphere, affording them the land-marks by which to steer. Mr. Parkes suggested the principle of placing lights on the intermediate points, where the continuity of the series of landmarks was broken, and thus converting what had been elements of danger into means of safety.

The most intricate part of the navigation of the Red Sea is that through the Straits of Jubal. The width there from shore to shore is from twenty-five to thirty-five miles; but the outlying islands and reefs reduce the navigable width to six miles. The length of this portion of the navigation is about thirty-five miles, between the high land of Zeitee at the northern end, and the high bold island of Shadwan at the southern end. Deep water is found near the shore at each of these points. But between them lies the dangerous reef of Ushruffee, to avoid which, previously to 1860, there was no guide whatever. And abreast of this reef, on the opposite side of the navigable channel, and at a distance of about six miles, lies the equally dangerous and treacherous Shab Ally Reef. By fixing a light on Ushruffee, which should be visible from either end of the Straits, a line of navigation is marked out which runs clear of all danger.

The Dædalus reef lies in the direct line of navigation. It is a little south of the parallel of 25° north latitude, and almost in the midst between the Arabian and the Egyptian shores. In order to avoid it, ships were accustomed to steer some twenty miles to the westward, thus coming so much nearer the danger of the shore. By fixing a light on this point, a clear safe course was marked out for some hundreds of miles. The question of the Zafarana point was a more simple one; merely requiring a light on the most projecting point of the mainland. The sites selected, and the designs prepared, by Mr. Parkes, were approved by the Egyptian Government, by the Board of Trade, and by the directors of the Peninsular and Oriental Steam Navigation Company. The ironwork was prepared by Messrs. Forrester & Co., of Liverpool, despatched from that port on the 28th October, 1860, and arrived at Alexandria on the 12th of the following November.

The two insular sites so far resembled each other that a somewhat similar structure was thought suitable in both cases, although as the Ushruffee light is intended to lead vessels past danger lying at twelve or fourteen miles distance, while the Dædalus light is intended only as a beacon to warn from that single reef, the height and illuminative power required for the former were considerably greater than those requisite for the latter lighthouse. It should be remarked that Mr. Parkes has incurred double toil on his own part, in order to save cost to the Government, as the simple expedient of building a twin pair of towers would probably have been at once adopted if recommended by him.

It has been remarked that the Dædalus reef lies nearly in the middle of the sea. It is, more accurately speaking, 45 miles from the Egyptian, and 60 miles from the Arabian, shore. It is described as a submerged island, with a flat top of an oval form, 1,200 yards long from north-west to south-east, and 450 yards in breadth. Its sides are vertical, or slightly overhanging, so that a common ship's lead may be dropped from the edge of the reef without finding bottom. The nearest soundings are between

* See p. 243, *ante*, and p. 257 for illustrations

700 and 800 fathoms, deepening as they approach the island. The range of tide is about 2 ft. at springs; and the surface of the coral rock is about 6 in. below low-water level.

The coral reefs of the Red Sea originate in branching corals, such as are to be seen in most museums. These growths intertwine and accumulate, rising from the bottom of the water. As the polyps which form them die, a calcareous deposit forms on the surface of the coral, and this becomes the foundation of a new growth. A complex skeleton thus rises towards the surface of the water; on nearing which the growth becomes horizontal instead of vertical, and the branches ultimately coalesce into a sort of platform, which attains the highest level that is always covered by the water. The surface is extremely hard, so as to turn the edge of an iron tool. It sometimes overhangs the stem which supports it. In some places on the Dædalus reef small apertures are found as much as 10 ft. from the edge, down through which the blue water may be seen extending to an unfathomable depth below. Sometimes branches of the coral are broken off before the platform is consolidated. It will be seen that the foundation thus offered is one of a somewhat ticklish nature. The extreme hardness of the rock prevents the ordinary modes of attachment. At the same time, from the irregularity of the growth it is by no means clear what would be the effect of throwing great weight on any portion of the surface.

There is, however, the advantage that the force of the sea is usually broken at some distance within the edge of the reef, so that the waves cannot fall with any volume on the base of a structure reared in the centre of an island of the area described. This counteracts the disadvantage of having to build on the surface of the reef without being able to sink a foundation beneath it.

In the case of the Dædalus, it was desirable to limit the bulk of material to be employed as closely as possible, as it all had to be brought a distance of 350 miles by ship from Suez, and there was no anchorage at the spot. It was, therefore, necessary to have a steamer capable of keeping close to the reef in any wind, which should provide accommodation for the workmen and store-room for the materials, until the work was in some degree advanced. A further consideration which the architect had to bear in mind was that the buildings should be so constructed as to be habitable in the intense heat of the locality.

Another point against which it was necessary to take precaution was the force of the wind. It is remarked by Mr. Parkes, to whose report on the construction of the Lighthouses we are indebted for the information, that the Red Sea is never visited by the hurricanes which are prevalent in many tropical regions; and that even such gales as in this country give a pressure of from 20 lb. to 25 lb. per foot are there unknown. The possibility of an outside pressure of 80 lb. per square foot was therefore taken as the basis of the calculations; and the action of the wind which was regarded as the most dangerous, was that which would have a tendency to twist the structure, or give it a rotatory motion. When the Ushruffee Lighthouse was erected in the yard of the builders at Liverpool (with the exception of the piles at the bottom and the lantern at top), the joints being only bolted together, it was exposed to two gales of wind, respectively of the registered power of 20·5 lb. and 24·3 lb. on the square foot, without suffering any strain, or showing undue vibration. Since erection in the Red Sea a heavy gale in 1862, and another in 1863, produced no bad effects.

Bearing in mind the fact, that while the height of the lantern of the Dædalus Lighthouse is at an elevation of 62 ft. above the level of the sea, that of the Ushruffee Light is 126 ft. above that level, the same general description applies to the two structures.

The basis of each is formed of two concentric circles of piles, the inner one of 15 ft. diameter, and the outer (in the larger lighthouse, to which we shall now continue to refer) of 39 ft. in diameter, at the level of the heads of the piles, which stretch out at a batter of one in twelve. Six piles form the inner, and six pairs of piles, the outer circles. The piles (or more properly legs, for they are not driven into the coral) are of teak, 18 ft. long, and 18 in. diameter. They rest on the surface of the rock, and are connected by transverse cills at the height of 4 ft. from the same, being there embedded in a mass of concrete, 5 ft. thick, and 47 ft. in diameter. This concrete is contained in a caisson of boiler plate, ⅜ of an inch thick, set on edge, and bolted and riveted together. The heads of the piles are fitted with circular wrought iron collars, 18 in. deep, into which they are wedged with wedges of greenheart timber. To these collars is attached the open wrought iron framework that supports the lantern.

The framework of the superstructure consists of the repetition of three main parts, which may be called respectively standards, cills, and radiators. Each tier consists of twenty-four standards, twelve in each circle, connected at the top and bottom by cills, forming two concentric twelve-sided polygons; and the corresponding angles of the polygons are connected by the radiators. The standards are in lengths of 9 ft., and consist of a web-plate and two angle-irons riveted on it. The web-plates are 8½ in. by ½ in. for the lower tiers; 7 in. by ½ in. for the middle tiers; and 5½ in. by ½ in. for the upper tiers. The angle-irons are of proportionate sizes. They project at top and bottom beyond the web-plate, so that when one standard stands upon another there is a space left between the angle-irons through which the end of the radiator passes. Joint plates on each side of the web are riveted to the head of one standard, the foot of another, and the radiator between; forming a very stiff connexion of the whole. Where there are no floors the radiators consist of ½-inch plates, 7½, 6½, and 5½ in. deep respectively, at increasing heights. Where there are floors, angle-irons are riveted on to the top and bottom of the radiators, which then serve as girders. The cills are riveted to the angle irons of the standards, and to one another, through the joint-plates and webs of the standard by means of small knee-pieces of angle iron. The system of framing is carried up to the top.

With the exception of a few of the parts near the bottom, no separate piece of iron used in this framework weighs more than 4 cwt.; so that the whole could be carried by two or three strong men from place to place, and lifted by self-acting tackle. It should also be remarked that with the exception of the angle-irons of the standards, which had to be opened out from the square to the bevil of the angle of the polygon, none of the main parts had to be heated for fitting.

The floors are five in number, each composed of ½-inch iron plates, resting on the lower flanges of the cills, and covered with 6 in. of concrete. Additional support is given (except in the case of the lowest floor) by two wrought-iron beams riveted to the standards under them. From the lowest floor is suspended a hemispherical water-tank, capable of holding 1,500 gallons of water.

The floors of the galleries are formed of open cast-iron gratings, which rest on the cills and radiators, and permit a current of air to circulate freely. In the Ushruffee tower there are three rooms arranged at the base of the structure and one immediately below the lantern, six intermediate floors being open. In the Dædalus Lighthouse the whole elevation of the framework is connected with four apartments.

The sides of the rooms are formed of corrugated iron ⅛ in. thick, riveted to the standards and cills. The distance between the outer and inner standards near the bottom, in the more lofty tower, being unnecessarily great for the width of the galleries, an intermediate circle of T-iron standards and cills, similar to the main cills, but lighter in proportion, is inserted. The spaces which occupy the short sides of the polygon are completely filled in with corrugated iron; and those which occupy the long sides are so filled to a height of 4 ft. from the gratings, the top being finished by a handrail of teak.

The upper of the three rooms at the lower part of the Ushruffee tower is covered with two wrought-iron roofs, the lower one covering the room only, and the upper one, at a distance of 1 ft. in height, covering also the external gallery. Each has an aperture in the top, covered by a detached cone.

The sides of the watch-room, at the upper part of the framework, are enclosed in a manner similar to that of the rooms below, except that the gallery occupies the whole space between the inner and outer circles. The inner circle is carried up 7 ft. above the top of the watch-room, and is fitted with the usual details of a lantern pedestal, with some modifications peculiar to the present structure. The two circles are connected by a ring of cast-iron plates, forming a gallery round the pedestal of the lantern. The gallery is furnished with a projecting cornice of cast-iron plates, bolted to the top cill of the outer circle, and the space between it and the sides of the lantern pedestal is filled with concrete. A railing is carried round the gallery, supported on cast-iron pillars bedded in the concrete.

As an additional precaution against any twisting action from the force of the wind, two tiers of radiating diagonal ties, 1½ in. in diameter were introduced, passing from the upper end of the outer standards to the radiators immediately in front of the corresponding inner standards. In the Dædalus tower, as the lantern is small, other arrangements were necessary for reducing the diameter of the polygon above the watch-room. This is done by placing in the watch-room standards or circles of cast-iron coved plates.

The lanterns and light apparatus were prepared by Messrs. Wilkins & Co.; the optical portion being manufactured by Messrs. Chance & Co. Zafarana is a fixed light of the first order. Ushruffee, a revolving light of the first order; and the Dædalus, a fixed light of the second order. The improvements introduced by Messrs. Chance into the lenticular apparatus are stated by Mr. Parkes to be so valuable as to be worthy of a special and detailed notice. Mr. Parkes further notes, with a very honest pride, that, within ten months from the date of receiving his instructions, the sites were surveyed, at a distance of nearly 3,000 miles from home; the sites and designs were approved by the Egyptian Government, the British Government, and the Peninsular and Oriental Company; the contracts were executed, drawings and specifications prepared, the materials for the lighthouse towers and three lanterns, with their illuminating apparatus, manufactured, shipped, erected, taken down, and despatched to their destination.

It would occupy too much space to enter into the very interesting details of the erection either the iron or the stone lighthouses, of which we have given the above notices. For the "perilous hair-breadth 'scapes" incurred in the erection of the Bell Rock Lighthouse the reader should consult the Life of Mr. Robert Stevenson, to which we have before referred. We have also indicated the authority as to the execution of the Skerryvore light tower and the Red Sea lighthouses, details will be found in addition to those which we have cited in vol. xxiii. of the Proceedings of the Institution of Civil Engineers. The cost of these two light towers is stated at about 55,000*l.*; of this sum as much as 23,000*l.* is put down due to the remote and isolated position of the work. Taking the engineering expenses as exclusive of extra freight, hire of steamers, and similar costs, Mr. Parkes considers that the cost of the Ushruffee light will have been nearly as possible 22,000*l.*, and that of the Dædalus light 10,000*l.*

In speaking of lighthouses erected, by Egyptian skill and enterprise, on the shores of the Red Sea, we must not omit a word of reference to those works of Roman engineers in past times which, if the accounts can be relied on, exceeded in grandeur the productions of our day. Of course, there is to be remembered the difference between an erection on shore and one on an isolated rock. But for approaching the latter sites we have, as compared with the Roman engineers, the incalculable advantage of steam power. In the fourth book of the "Wars of the Jews," cap. 10, sec. 5, Josephus tells us that the port of Alexandria is difficult of access even when the sea is tranquil, by reason of the narrow mouth, and the hidden rocks near it. On the right hand, he proceeds, lies the tower called Pharos, which supports a very large tower, which sends its light to a distance of 300 stadia. If we consider that the light is actually visible from the deck of a ship thirty-four miles out at sea, Mr. Alan Stevenson calculates that the height of the tower must have been 550 ft.! The ground plan of the tower was hexagonal, the sides being alternately concave and convex. There were five decks or stories; the fifth being circular, with a winding staircase to the top. The idea of the Tour de Corduan may have been taken from the description of this famous Pharos. Nor is the single instance of masonry without an example 2,000 years old. In the fifteenth book of his "Antiquities" (cap. 9, sec. 6) the same historian tells us that the harbour, situated between Dora and Joppa, which Herod the Great constructed in Phœnicia, of a size equal to that of the Piræus.

) ft. in length, 18 ft. in width, and 9 ft. in
ness, were laid for the foundation of the
cwater; and of special interest is the
rk that the towers, one of which was
d Drusus, in compliment to Cæsar, was
to a height of 100 ft., and rose to a second
t. as chambered buildings. At the present
ent the remains of marble columns,
ed by the waters of the Mediterranean,
witness to the former magnificence of the
of Cæsarea, as described by Josephus.

THE DETERMINING CAUSES OF ARCHITECTURAL STYLE.

e remarks of Professor Barry, in his
d lecture on architecture at the Royal
emy (*ante*, p. 171), are so thoroughly in
ony with our recently expressed opinions
n article on the study of comfort in archi-
re, as to suggest a natural sequel to that
. The "transfer of the mission of the
ect to the bricklayer and carpenter," to
he pointed language of the Professor, is,
d, as fatal to the æsthetic as it is to the
stic character of house-building. And
t in our own words, Mr. Barry has referred
he speculative builder, who, placing his
on another man's land, not unnaturally
ht more of a speedy profit than of archi-
ral excellence." It is a significant, and we
a hopeful sign, that side by side with the
which contains the examination, in the
Academy lecture, of the opposition
en Classic forms and the architecture of
hern Europe, should be found an investiga-
of the geometry of the former style of
ecture, coupled with the admission that
ust "dismiss from our minds all ideas of
ng Greek architecture in its original

fessor Barry has characterised, in a single
se, the essential opposition existing be-
the Classical and the Mediæval spirit and
of treatment. Of the first, he says, "We
find in all its examples a spirit of horizon-
which opposes itself to the all-pervading
ality of our own Mediæval architecture."
ng can be more just. We call renewed
ion to the contrast drawn between the
oble churches of the Duomo at Florence and
wn Abbey of Westminster. Our present
, however, will be to trace the sources of
two distinct principles. When we are
igating the most splendid examples of the
of the architect, it is enough for us to
the principles that have inspired or con-
il the designs. But when we descend to
umbler level of domestic architecture we
e to take a step further in advance. We
to know the causes that led to the original
ion of modern ideas of so different and even
ite a nature. And this is needful, for this
. The adoption of a rule, without the
of that rule is known, leads to the prac-
f the conventional, instead of to the search
e most appropriate. We may see illus-
ns of this truth wherever we turn. We
in the absolute uniformity of the re-
tations of the human figure in Egyptian
o which Mr. Pennethorne refers, and to
some references will be found in our own
. But it is, unfortunately, unnecessary to
far afield for illustrations for the truth of
esearch. They are to be found in every
. They control "the bathos of Harley-
and Bloomsbury." They are to be found
e pillars, of massive stucco, or rather
ed brick, supporting heavy entablatures
same noble and durable material, which
in endless succession, street after street,
ndon; and which continually reproduce
tures of Greek porticos, or even of
ian pylones, for the appropriate purpose
ltering a visitor from a few drops of rain
the time which is consumed by a servant
king from the basement of the house to
r a knock at the door.

v in cases such as these, it is evident that
quire a knowledge not only of principles of
, but of the primary motive which has led
adoption of that principle. The builder
ay, and has said,—we wish we could add
he architect has never done the same,—
rinciple of Classic architecture is horizon-

The trabeate structure is followed in
blest buildings of ancient times. If, then,
sh to adorn our streets and ways we must
rizontal. We must respect the trabeate
ure. The finest architects of past times built porticos round their temples. Our houses are too close together to build peristyles, in imitation of the Greeks; but we can at least place a little slice of a peristyle before every street door," which accordingly they proceed to do.

Now as long as any discussion on this point is relegated to that region of which people speak as "matter of taste," it is by no means easy to execute justice on the caricaturist of the Greek peristyle. We do not for a moment admit the extent that is claimed for what is called allowable difference of taste. There is one primary difference, and that is between good taste and bad taste. And we hold that those writers on æsthetic subjects best serve their country who most lucidly point out that this contrast exists in fact; and also give the best indications of the course to be followed by those who wish to know what good taste is. We admit, of course, a certain latitude, which may be called a personal equation, in taste. There is a latitude of this kind even in so indisputable a matter as astronomical observation. No two astronomers would observe the same phenomenon, through the same telescope, as occurring at precisely the same fraction of a second of time. The difference of the rate at which the nervous system of different individuals works is thus shown. In an observatory it is actually made matter of study, under the name of the personal equation. So it will ever be in art. But we must confine the licence within due limits. To a great extent it may be not only observed, but understood. Thus there is a tendency in human nature to admire something which it does not possess. This is blended and complicated with the tendency to value what one does possess. Sometimes one of these principles of action is most powerful, sometimes the other. Thus a dark-haired man is more likely to admire a flaxen-haired beauty than a brunette. The golden-haired Saxon admires the dark-eyed and dark-haired Norman woman. But this idea of contrast does not go so far as to lead him to admire the negress. On the other hand, the negress may passionately admire the golden-haired, white-skinned Teuton, as one of a superior order of beings. Another class of motives here comes into play. We cannot stop to pursue the analysis; but we must repeat that when people say anything is "matter of taste," the first point to decide is whether that means good taste or bad taste, educated or uneducated admiration; or whether it only means that range of personal difference in appreciation of what is in itself good, to which a certain latitude must always be accorded.

To return to Architecture. When the perpetrator of the box-portico tells you, in a word, that he likes it, and that his taste is as good as yours, it is not enough to go back only to the statement that the principle of Classic art is horizontal. That is so, as we before admitted. But when the builder, whom we now condemn, takes up this unquestionable truth, and appeals to it as his justification, how are we to meet him? "My portico," he says, "is a true bit of trabeate architecture. That is to say, it represents the trabeate. My entablatures are not beams, but they represent beams. What else did the entablatures of the Greek temples? What were their triglyphs? They were mere hieroglyphics or symbolic representations of the ends of wooden beams. They were executed in marble, because it was convenient at Athens to build in marble,—Pentelicus, I suppose, being handy; at all events, you cannot say that this work was realistic. It was conventional; so is mine. They built in marble; I build in brick and stucco. Marble was the material of Athens; brick and stucco form the material of London. The latter is not my fault, any more than the former was due to any merit on the part of Phidias, or Pheidias, as æsthetic-minded people call him. What have you to object? He imitated wood structures in his material; I do so in mine. Talk about taste! Who are you to object to an imitation of the Greek models to as thorough an extent as my materials or my purse will allow?"

It will, we think, be pretty clear that we have to go a step further to bring this gentleman to his bearings. It is not for a moment to be supposed that we are hinting that we find any defect in the lecture which gives occasion to our first remarks; far from it. The inquiry we have now started would have been there out of place. At the same time, it is one as to which the respected professor will, we do not doubt, fully agree with us. The step to be taken, then, is to inquire, "why did the Classic architect adopt the horizontal principle?" Was his motive one as appropriate to the latitude and the climate of London, as it was to those of Athens?

Side by side with this inquiry ranks the corresponding question, Why did the Northern builder adopt the perpendicular motive? Why did his columns cluster like bundles of saplings or of osier rods? Why did his arches spring into lofty lancets? Why did his spires, forms unknown to Greece or to Rome, pierce the heaven with their airy lances?

The reply to both questions is the same. The Classic artist on the one hand, the Teutonic builder on the other, wrought under the influence and limit of CLIMATE. We will not now attempt to trace the pedigree of architecture by a sort of structural Darwinism. We will not stop to inquire into the gulf which separates the arboreal home of the "nest-building ape" from the cyclopean walls of the forgotten builders of Tiryns. We will confine our observations to known and existing forms of building. And in these, we think it is undeniable that two main requisites have been respectively dominant. Each artist, in designing a structure that should be at once durable and convenient, had a special difficulty to contend with. One regarded the Southern summer, the other, the Northern winter. Both had to provide, and did provide, against rain. But the Teuton required a roof that should throw off the snow, when all was snug within. The Greek and the Italian required a space accessible to the cooling breeze, and sheltered from the beating rays of the sun. To them snow was almost unknown, except as lying on the peaks of the Apennines. We may say, and that perhaps with justice, that the idea of the one may be thought to be shadowed forth in the natural arcades of the forest, and that of the other in the vine-covered trellis of the garden. Certain it is that the principles adopted are in harmony with these two different modes of treatment. But, for ourselves, we rather lean to the idea that those necessities of structure which suggest to thousands of different minds the same method of encountering them, were the seeds of the architectural styles. The early habitations of both Northern and Southern people were, no doubt, extremely simple. But they followed, from the exigency of the case, different paths of development. Little by little, after centuries of education, one great workman arising to take up the mantle dropped by his predecessor, the work went on. Had we any pictorial records of the past, they would tell us how, by natural but ingenious steps, the original huts or cabins, which may have been very much alike on the shores of the Rhine and on those of the Ilyssus or the Meander, rose, and grew, and throve, till the Parthenon of the Acropolis, and the stately abbeys of Mediæval Europe, rose like magic exhalations from the earth.

Thus back we come to the true underplot of all excellence, and of all beauty,—fitness. We are not of those who hold that it is desirable to be bald, even though the use of hats and of umbrellas has greatly impaired the original importance of the hair as a shelter and protection to the head. We hold that the introduction of a narrow utilitarianism into architecture is as great a mistake as its exclusive adoption anywhere else. That there is a beauty in simple fitness is undeniable; but it may be a beauty that appeals more to the intelligence than to the eye. It requires education to admire. We have a signal instance in organic life, and notably in that which to the artist is the highest form of organic life,—the human figure. We are not about to lay down any teleological dogma, or to assert that it is not possible to imagine any thing more perfect than a beautiful man or woman. Art, indeed, from its earliest birth, has striven to body forth something more perfect. She has striven to clothe the human form with the plumage of the most beautiful birds, and to add to the lordship of earth the soaring powers of the eagle. Anatomy, indeed, rebukes art,—and declares that the winged Victory is no less a monster than the cherub or the sphinx. But, at all events, anatomy commands respect when she is confined to her own true limits; and when, instead of telling us what can or (in her opinon) cannot be, she tells us what is. In that respect her voice speaks with unhesitating accent as to the human skeleton. Take any individual bone, in a thoroughly well-formed individual, and you have a portion of structure perfectly adapted for its purpose, and thus structurally and mechani ally beautiful. It does not follow that it is beautiful to the eye. On the contrary, there is a wonderful economy

of beauty maintained in this respect. A very small number of what may be properly called bones, though they possess a structure and a function, as well as a mode of development, peculiar to themselves, are visible in the animal organisation. The shape, the texture, and the colour of those solid enamelled bones are such as to form, when perfect, one of the most beautiful features of a beautiful countenance. Nothing gives a greater personal charm than the possession of a really perfect set of teeth. To be seen is part of their object, and admirably has it been carried out. But the moment we turn our attention to any invisible bone the case is quite altered. No brilliant enamel is wasted on the finger bones or on the skull. On the contrary, a certain roughness, unpleasing to the eye, is useful for the surface of the hidden bones, as allowing a firm hold for the sinews or the muscles. Here, then, we see that there is a structural beauty which is not a beauty to the eye, but the reverse; and that the eye requires to be carefully educated by the study of anatomy before it can convey to the mind the impression that a rough, shapeless, at first sight disgusting, object is a very perfectly adapted portion of the wonderful machinery of organisation.

Fitness, then, though an essential of beauty, is not all that is essential to beauty. It is, of course, imaginable that there may be a structural reason for every form or tint of beauty that, constituted as the human organisation actually is, gives delight to the artist. Thus it may be said that the enamel of the teeth is useful for their preservation. No doubt such is the case. But, judging from the skeleton as a whole, it does not appear that a pure white is the colour most naturally or most generally given to bone. A black or brown enamel would, no doubt, be as useful as a preservative, and would seem, to our imperfect knowledge, to have been a more easy protection for the laboratory of nature to produce, than an enamel of either pearly, ivory, or creamy, white. The production of the latter is an homage rendered to beauty; and if it has also a special scientific advantage it is one that we have not yet discovered. So again with regard to what may be considered as almost the most wasteful lavishing of beauty in nature, the *striæ* of marine shells, or the exquisite colouring of that under-plumage of the wings of certain minute insects which it requires the microscope to render visible to man. There may be,—very likely is,—utility in all this. But what is certain is, that there is a glorious wealth and loving display of beauty. We prize it for its own sake, and only for its own sake. If wiser minds can do more, that fact does not interfere with the truth that the human mind, as actually constituted, admires and loves the beautiful, because it impresses it with an inexplicable and sympathetic admiration, love, and wonder.

And so we come back to our porticos, with the unfortunate admission that they possess neither the beauty which charms the eye, nor the beauty which appeals to the intelligence. They are not pictorial features, imposing from their mass or their arrangement, like the richly-carved balconies of Ghent, or some others of the old Flemish towns. They certainly are not adorned by the beauty of structure. If the cubic contents of the pillars be calculated, and if that of the entablature above (more massive, happily, in appearance than in reality) be added; and then the cost be compared with that at which an equally effective shelter could be given, the argument as to fitness will be at an end. We are not speaking with any especial spite against the villa portico. It is often a consistent part of an odious whole. What we have at heart is to show that if the producers of what Mr. Barry well calls the "bathos of Bloomsbury" raise their defence on the plea that they follow the horizontalism of Grecian architecture, they must be nonsuited on the ground that the climatic conditions which induced that horizontalism, and under which it was developed into structural forms of such exceeding beauty, do not exist on the clay of the London basin, or amid the sulphur-laden vapours that haunt the valley of the Thames.

Thus by tracing the predisposing or controlling influences under which the long series of Classic architects wrought out the idea of the horizontal or trabeate structures into forms of such perfect and abiding beauty, we at once arrive at a sound reason for forbidding any servile, partial, *mesquin* imitation. Into the question of imitation, pure and simple, on an appropriate scale, we do not now enter. That is a very large question, and it is one on which there is much to be said, and worthily said, on both sides. To the student who beholds for the first time the solemn grandeur of the temples of Pæstum, who is impressed, and even for a time overwhelmed, by the passionless beauty of that reflection of a forgotten worship and a lost civilisation, the idea of reproducing a Greek temple in Paris or in London is intolerable. But to another observer, who has long dwelt upon the noble proportions and highly-finished work of the Church of La Madeleine in Paris, it is very possible that quite the opposite opinion will occur. At all events, the erection of that building was a consistent outcome of the taste which sought to re-establish the grave republican order of ancient Rome in the gayest and most light-hearted city of Europe. A third observer, again, will pass from La Madeleine to La Sainte Chapelle, or even to Notre Dame or to St. Denis, with a sigh to think that Greek forms should ever be thought fit for a French church. These are not cases of ignorant difference of taste. There are primary intellectual dispositions which prompt one man to look in one direction and another in another, and amid this clash and divergence of opinion, that conflict of the two opposite principles of structure, to which we cannot at this moment more than hastily refer, has been wrought out, under conditions, and in accordance with rules, which it should be a chief study of the architectural student thoroughly to master. In the course of that natural conflict new forms have arisen. Where Genius has comprehended what Nature asked of Art, those forms have assumed a special beauty of their own. Where the philosophy of design has been unknown, and where nothing but a conventional imitation of fine models,—just so far as that imitation was convenient,—has guided the builder, every kind of bad taste has been rampant. As to this we shall have the consent of all ripe students of the subject. Nor do we suppose that there will be any hesitation in according to us an assent as to the essential importance of grasping, not only the leading ideas or principles of each distinct architectural style, but the conditions and influences which led to the development of these ideas. Thus shielded from the danger of servile or ignorant imitation, the student will be best able to draw their true lessons from the architectural monuments of the past. And thus he will be led,—if not at once to produce what we all desire,—works in the true style required for the country and for the age, yet to avoid those purposeless and unsuitable imitations, in the execution of which good work is thrown away, and bad work becomes tenfold more execrable.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

THIRD PERIOD OF RENAISSANCE.—PALLADIO AND VIGNOLA.

In my first lecture, as in this, the last of the present series, architecture in process of revival is the theme; not that I would have students think of revivals only; but that I trust they may find in the past, encouragement for the present, and hope for the future.

In commencing my course I spoke first to you of the Gothic Revival of our own day, which seemed to claim from us a special attention, from the recent loss of its chief leader, and I have since sought to interest you in the older and rival movements, which made the Renaissance triumphant in Italy, and more or less successful elsewhere.

In both cases, we have found that causes deeper than mere æstheticism have been at work. It is, or should be, the privilege of the architect to be the exponent of the convictions of his time. In this way, his calling acquires a dignity exceeding that attaching to professions, which aim at giving a fleeting pleasure to the sense of beauty only.

The Renaissance was a revolt from Mediævalism. Our recent English Revival was, to a great extent, a return to it. I say, "to a great extent," for a complete surrender of modern convictions was impossible, and thus, as far as permanent results are concerned, the movement already appears to have dealt chiefly with externals.

The Italian school prided itself on referring back to the precedents of an antique and P past. Our own revivalists have turned t Middle Ages, and have claimed for their fa ite types the exclusive denomination of "C tian architecture." The Italians turned b wards for artistic freedom, while we seemed to desire to submit our revived pra more completely to the influence of autho In both cases precedents have been appeale and precision of reproduction applauded.

The Renaissance movement, properly called, ended with the skilful architects w works we shall discuss this evening. We therefore, able to survey it as a whole, note its successes and defects. Separate we are from it, by lapse of years, a discussion is possible of the qualities w obtained for the Renaissance no inconside part of the suffrages of succeeding genera

The Gothic revival is too near to us for t ment equally dispassionate. It still exi the scene of conflict, and the din of b appears to be only temporarily hushed. time for its complete history is not yet nor can we confidently prophesy its ulti results.

No one had better claims than Sir Gilbert to address us on "The Rise and Develop of Mediæval Architecture," and his lectur this subject, which have been published his death, speak with the authority of experience and varied practice. We ca however, predict the future, nor can we be that we have seen the last of our revivals. English movement has not yet run its co but it has never acquired the undisputed eminence enjoyed by the Renaissance in To the latter we will now return, and term our examination of the same, in its later dev ments.

We have already traced the progress o restored taste for antique architecture in up to the time of Bramante and Sanso This has been called the Golden Age t movement; and if the latter be divided three periods, we shall find it ranking a second, or middle stage.

The first period was Transitional, a tim fusion, when the architecture was subordina the decoration. On all sides there were evid of principles half accepted, or but partially c out. The second period carried the revival forms a step further, and broke more deci with Gothic precedents. Its architects st Roman principles of construction, as w Roman types of design. The science whic erected the Pantheon and the baths of Car was now invoked to assist the revived tecture of the day. Brunelleschi's do Florence was the first fruit of the process, led to the triumph of Michelangelo at St. P Bramante and Sansovino applied Roman tecture to modern wants, with a success perhaps, has never since been exceeded. only did they adopt the columns, pilaster entablatures of the Roman orders, but sought also in the details of their wo resuscitate the old Classic spirit. Their has, therefore, been appropriately called Roman Period of the Renaissance.

We may now pass onwards to notic concluding phase of the Revival. Bra did not live to perfect his plans for St. P and the completion of this great wo Michelangelo may be held to mark the when the second period of Roman vigou giving place to a more formal accuracy, precision which may be called pedantic. strong hands of Michelangelo, architecture seem to scorn the restraint which was ever, soon to be imposed. His genius bu no fetters, and although he declared in fav Bramante's plans for St. Peter's, he wo suffer them to bind himself. Simplici general design, with a colossal largene detail, were the principles which suite impatient nature of Michelangelo; and are illustrated by his abandonment of Bram plan in favour of a Greek cross, and h introduction of the huge order, with th sequent exaggeration of subsidiary which detract so greatly from the and apparent size of the building, now see it. The present nave is, as we all not a design of the great Florentine; t though it has faults of its own, for which not responsible, the scale of the archi was given by the work of Michelangelo, a building is, to this extent, an illustration principles of architectural design.

It was probably a reaction again

* h and last lecture. See p. 245, *ants.*

ration, only tolerable, when directed
ius, which led to the colder and more
it designs of the later Renaissance.
ucture, which, at the revival of letters,
llowed scholarship, still felt the same
ce. The first burst of enthusiasm had
succeeded by knowledge; and know-
was now giving rise to a critical pedantry.
've already seen that Alberti adopted even
language as well as the ancient archi-
, and addressed his friends in Latin.
uness of taste was the aim of the archi-
it was of the poets and authors of the
th century. The first was as anxious
w that his work was accurately in
nce with ancient precedent, as was
tter, to demonstrate the purity of
nguage he used. False quantities
s much condemned in the architecture as
poetry of the day. A spirit of inquiry
road, and the effects were visible, not
lone, but also in religion and manners.
ot mysteries, which had been tacitly
d, were now questioned; and the
l spirit of olden days had given place
sposition to touch, taste, and handle.
this process had been completed, and
of taste in architecture established, no
could be allowed. The instinctive and
plined aspirations of the many were to
essed by the Classical fastidiousness of
ltured few; who, on their part, were
o be able to produce, when challenged,
and verse for their decisions.
and severer rules now came into play,
nce of decorative fancy must be re-
, and the question must always be, not
should we like to do?" but "What did
mans, or what would the Romans have
nder similar circumstances?" The
was,—that problem which has ever
unhappiness and despair in the attempts
it,—to recall the past,—to ignore the
,—to bring back the dead to life.
we wonder if the later Renaissance
ts failed at so hopeless a task? We
selves sure that architecture should be
m fetters such as these. Nevertheless,
have our own revivals, and perhaps may
w be told, "*De te fabula narratur.*"
pplication of the spirit pervading society
time, to architectural design, was chiefly
ted by the works of Palladio, of Vicenza.
e, indeed, a name to the architecture which
, and we have not ceased to speak of the
an style. Like most popular definitions,
r, this term has come to be used with
accuracy, and much elasticity of mean-
When men say they like or dislike Palla-
chitecture, they do not generally mean
to the architectural forms which Pal-
imself actually used, but rather to Italian
ture generally, which has come to be
ed by a term only applicable in reality
hase of its development.
dio's school referred every detail to prece-
nd considered that the limits of invention
n reached. They forgot that architecture
er been progressive, and that the five
of Classic times could not be permitted
inte authority over all succeeding ages.
us had described the edifices of the
an age, and his writings were now
studied as a very gospel of architecture.
oportions which he laid down, and the
s which he inculcated, were to dictate
itects for all time the principles on which
eir art must properly be based.
dio's principal works are to be found at
, of which place he was a native. His
sign was certainly the arcades of the
all,—a building which, notwithstanding
ed defects, has a charming effect of pro-
, and of light and shade. Mr. Fergus-
aks of this achievement of Palladio's as
the only instance of a Gothic edifice
been improved by subsequent additions
ferent style of architecture. The Town-
as one of Palladio's earliest designs, and
liable to the charge of formality than
nd later works.
ola and Scamozzi are generally ranked
Palladio as members of the same
and it may be remarked that the
y, of which it is accused, is more
attributed to their followers than to
istinguished architects themselves. If
d defects as to this matter in the
of Palladio and his comrades, we may
oer that, excepting in rare cases, they
e, avoided the opposite errors of exag-
geration, in which Michelangelo and his followers indulged. One of the exceptions is to be found in the Valmarina Palace by Palladio. Here there is a large order, running through two stories, and supporting nothing. The order is obviously a mere application of what is intended to be ornament, and the elevation would be better without it. The angles, moreover, are the weakest part of the design, whereas they should have been the strongest. In other buildings at Vicenza, by the same architect, there is greater purity of detail, and a general elegance of effect, and it is not often that a gigantic order like that at the Valmarina Palace, was indulged in.

A peculiarity of Palladio's designs is found in a weak treatment of the angles. This is especially noticeable in the example above named, and, in other instances, a single pilaster is placed at the angles, or even a three-quarter column, as at the Barbarano Palace. The effect of such a method is far from satisfactory. In Sansovino's library of St. Mark, the angles are marked and accentuated by doubling the numbers of the order, so that there is not only a three-quarter column, but also a pilaster, which emphasises the ends of the design. In Palladio's case, there is an order which is obviously placed against a wall, to which there is no necessary termination, and which indeed might be indefinitely continued. Notwithstanding such criticisms, however, Palladio's designs are usually well studied, and the fame which he obtained was chiefly owing to his eye for proportion, while the general distribution of the parts give a pleasing character to his buildings generally.

Like his contemporary Vignola, Palladio aimed at harmonising Roman ideas with those of his own day, domesticating, so to speak, the antique; while using it for very different purposes than those to which the Romans had applied the forms now adopted. It is scarcely fair to exclaim against this process, as being one of copying only; for Palladio's aim, like that of other revivalists, was to make the forms of ancient art his own, and by a process of adaptation evolve out of them a system of design, which should at least possess the merit of originality of treatment. Bearing in mind that absolute originality in architecture is out of the question, we cannot say that Palladio and his brilliant comrades were wrong, though opinions will, of course, vary as to the success which they obtained. If they had regarded the arbitrary proportions of the Classic orders with less reverence, their undoubted talents might have carried the Renaissance to a further and more successful development. This, unfortunately, was not the case, and the rules which were to achieve perfection served to stifle art.

Architecture cannot be satisfied with appeals to the learned only, and must appeal to the unlettered masses as well as to the educated minority. The qualities which will ensure success will not be found in a careful adherence to precedent alone, or in a rigid application of pedantic rules. The buildings of the post-Palladian school possessed these qualities, but they were incapable of exciting enthusiasm, and can at best be regarded as careful academic studies. As time went on, men spurned the fetters which were sought to be imposed upon them, and rushed into the excesses of exaggerated detail, which are known by the name of "Rococo." It is always thus with attempts to strain unduly the rules which bind the human intellect. Men will be free in art, as in the more stirring questions of religion, or politics, and repression will generally end in revolution. The Renaissance was nothing if it was not to be progressive, and the ultra-Classic formality which now reigned supreme, was the herald of decay. The earlier architects showed signs of originality; but after Palladio and his school, all was again a chaos, and further progress appeared to be abandoned. Why was this? We may perhaps learn from it a truth useful to ourselves, that no selection of a past style of art, and no mere careful reproduction of its details, will ultimately satisfy a society which has little in common with those, for whose needs such architecture was originally invented and used.

Vignola's greatest work was the noble Palace of Caprarola, near Rome, a building simple in plan, and so treated as to present a castellated, rather than a domestic, aspect. The design is graceful, with a double order, and a well-proportioned arcade to the entrance-front. The weakness of the angles, noticed in Palladio's designs, is here avoided. The plan is a pentagon, with a circular cour within and was evidently controlled by military considerations. Architects in those days were the chief builders of all necessary works, and had not yielded any part of their province to the engineer. In a former lecture reference was made to this subject, with reference to the castles of Mediæval times in France and England, and in the case of Coucy, we found, as you may perhaps remember, that, while the architect had constructed the building with such solidity as to be impregnable, he had likewise secured no inconsiderable amount of architectural character and even beauty. The varied outline of such works as Coucy is, in itself, pleasing, and the donjon keep, the machicolations and galleries, the turrets and gateways, all contributed to the architectural effect. The use of gunpowder brought about a revolution, and now that the whole question has passed into the hands of men of science only, our military structures, no less than our ironclad ships, have become miracles of ugliness.

It may be that this result was inevitable, but in some cases, especially those relating to civil works, the question may suggest itself, whether architects have been wise in leaving works which used to be theirs to others? Have they done well to allow their profession to be divided in favour of the engineer? When the history of this age is written, the latter will claim a distinguished record. He will tell of the scientific application of the powers of nature to the service of man,—of facilities given to all,—of the necessaries of life cheapened, and made available for millions. His works have been devised with a single-minded directness of aim, and the architect may perhaps ask himself why his own co-operation has not been made available? Could not these useful works have had some artistic grace? Can we admit that, in such cases, Truth and Beauty must necessarily be divorced? It may be that we have been dreaming of the Past, while the great living world has been waking, moving, acting. Mankind will thank those who show the way to unite the Necessary with the Artistic, and this should be the duty of the architect. In the meantime, if we ignore these needs, men will turn elsewhere, and will say of the engineers, that they, at any rate, have known what to do, and how to do it.

In Italy, the importance of engineering was beginning to assert itself during the Renaissance: but architects were still consulted about fortifications. Michelangelo was at one time engaged on the walls of Florence; and at Verona, the gateways designed by San Michele still remain. The latter architect devised here the fortifications of the city, and has been considered the inventor of the pentagonal bastion.

This is the form of the building at Caprarola, as to which Vignola evidently followed the rules for fortified places, laid down by San Michele. Nevertheless, as he was designing a palace, and not a fortress, he gave to the whole design an architectural character, rather than one exclusively appropriate to military engineering.

It is probable that there were good reasons for seeking to obtain a certain amount of defensive strength, for Italy was full at that time of soldiers of fortune, willing to sell their swords to the highest bidder. They wandered over the country in small bands, and, although insufficiently equipped for attempting a siege of any really strong place, made their name terrible to those who had no means of resistance. Against such adversaries, Caprarola possessed considerable powers of defence.

The building is a fine specimen of Vignola's talents, and, with a few additions, would be a grand architectural monument. The pentagonal form, however, is not agreeable, as the angles caused by it present an awkward appearance. The castellated treatment of the plan is, moreover, not adequately carried out in the external design. The elevation of each side of the pentagon is that of a palace fit to grace the streets of a city like Rome, and in the details the military character is altogether absent. The latter might have been preserved, and the place greatly strengthened, if the angles of the pentagon had been marked by towers, projecting so as to command the flanks. These towers might have been carried up, so as to break the long and monotonous line of the present roof, and in that case would have had a further practical use, as turrets of observation. If this had been done, and the central circular court covered by a domed roof, the building might have been rendered far more effective architecturally than it is at present. The idea of

half fortress, half palace, would have been more thoroughly developed, and the present somewhat insipid formality would have disappeared. With all drawbacks, however, Caprarola must be reckoned a dignified and stately work of architecture, and we may see by this instance, as well as by that of Coucy, that fortified buildings, in the hands of the architect, need not be ugly. Each was fitted to meet the existing circumstances of the time and country. Each was designed on the best military principles, as then understood; and each had a decided and striking architectural character.

Vignola was, as we may say, more Palladian than Palladio in his exact reference to ancient rules, as deduced from classical examples. His treatise on the five orders aims at the authority of a text-book, and is still, in that sense, deserving of study. He did not give the proportions of any actually existing details, but by a principle of selection, he sought perfection, so to speak, in the survival of the fittest, and thought to weld the whole together, into one harmonious system. He was invited by Philip II. of Spain to visit that country in order to superintend the erection of the Escurial, for which many designs had been obtained from various architects. He seems to have compiled from their suggestions a design of his own, which commanded the king's approval. He was unwilling, however, to give up Italy for Spain, and his age and other circumstances induced him to decline the royal invitation, so that his proposals were never carried out.

Vignola was then established in Rome, in high favour with the Pope, and on the death of Michelangelo became for a short time the architect of St. Peter's, in which capacity he designed and erected the two lateral cupolas of the building. His works rank on equal terms with those of Palladio; and, indeed, in elegance of detail may be held to surpass them. He disliked extravagance, and referred his art too much to system and rule; but he applied such rules with a taste and refinement which few have surpassed. He had no inconsiderable talent as a painter, particularly of perspective, and used to say that a study of the latter science had led him to adopt architecture as his profession. His inclination towards the Renaissance was determined, as was that of Brunelleschi, Bramante, and other leaders of the movement, by the study and careful measurement of the remains of Roman art in and about the imperial city.

Vignola visited France, and remained there about two years, which circumstance probably accounts for the tradition that he designed the Château de Chambord. This could scarcely, however, have been the case, as the building was commenced before the time of his visit, and certainly does not accord with his usual principles of design. It is possible that he may have advised the royal builder Francis I. during the progress of the building, and that from its semi-fortified arrangement of plan he may have been influenced in his subsequent designs for Caprarola. The elevation of the latter building, however, has nothing in common with Chambord.

The French architects were working out the Renaissance in a different spirit from that of Vignola and his Italian comrades. They had not the same wealth of ancient buildings of Classical architecture to appeal to for precedents, while around them were the evidences of the skill of the Gothic architects of the Middle Ages. In examining the design of Caprarola, I ventured to remark on the monotony of its sky-line, and to suggest how it could have been avoided. At Chambord we have the opposite extreme, with a multiplicity of circular and pyramidal roofs, and other details, which is confusing and even bewildering in variety of outline. In this building we have semi-Classic details, combined with a Gothic principle of general composition. It has none of the advantages of position enjoyed by Caprarola, which is seated on a hill surrounded by rocks, and with a natural amphitheatre about it. Chambord, in the midst of a flat and sandy plain, in uninteresting country, owes nothing to nature. Its picturesqueness is the work of the architect alone, and although the critical judgment refuses to be satisfied with the medley of forms which seem to have been thrown together in wanton exuberance, it is impossible not to feel interested in this most characteristic example of the French Renaissance.

The Château of Chambord recalls, in its curved wings and turrets, the defensive details which we noticed at Coucy, as being common in French military architecture. The projecting turrets with conical tops, so often to be met with in the great country-houses of France, had become meaningless as a provision for defence; but they were still cherished, not only as an architectural ornament, but as an outward sign of social importance. This is still the case, for to the present day a Frenchman of position thinks his château incomplete without the characteristic "*tourelles*," and the *nouveau riche* hastens to add them to the villa of the bourgeois. Apart from such interesting and picturesque relics of military architecture, Chambord and its kindred châteaux offer many suggestions to us in respect of civil architecture, particularly where a certain dignity is required, without sacrifice of domestic comfort. The style is more flexible than that of Palladio or Vignola, and adopting, as it does, the round arch, numerous and ample windows, both arched and square-headed openings, and a horizontal treatment generally, it seems to offer solutions of many difficulties in our modern architecture. No one, on the other hand, can accuse it of tameness or monotony, with its high roofs, dormers, turrets, arcades, and chimneys, such as are to be seen at Chambord or Chenonceaux.

Although the evidence of the design indisposes us to credit Vignola with much influence upon it, the statement may perhaps be more readily believed in respect of the palace at Fontainebleau. The effect of his counsel, here, is not indeed very apparent, and it was probably limited by the jealousy of foreigners, which existed at the French court, and in the nation. The general appearance of the design of Fontainebleau is, however, far more consistent with Vignola's architectural principles, than the quasi-Gothic picturesqueness of Chambord, although the details are not to be compared with those to be found in his best works, in Italy.

At the time of Vignola's death in 1573, Palladio was nearly at the end of his career; but their traditions were, for a time, upheld by Scamozzi, a young man then rising into fame. He, too, was a native of Vicenza, and devoted himself to architecture, from an admiration of the Palladian school in that city, and of the works of Sansovino at Venice. In accordance with the prevailing fashion, he sought to base the practice of his art on the writings and canons of Vitruvius, and then visited Rome to drink at the great fountain of inspiration of Classic art. Returning to the north, with his mind full of the records of Roman greatness, and his sketch-books crowded with measurements of temples, baths, and theatres, he settled in Venice, and took up the work of Sansovino and others. He continued the design of the Library round the south side of the Piazza of St. Mark, adding a third order, and altering the deep frieze and cornice of Sansovino. These were not improvements, and his work wants dignity and interest. The Cornaro Palace, commenced by Sansovino, is believed to have been finished by Scamozzi.

Like other architects of his time, he also turned his attention to military engineering, and laid out the fortress of Palma, near Friuli. San Michele's work at Verona appears to have determined the type of the architectural details, generally adopted for such structures. The latter architect used, as a matter of course, the forms of the Renaissance, and gave them a peculiarity of character, by the use of simple rustication. For the massive walls of fortifications, such a treatment sufficed; as in such cases delicate mouldings, and other such details, would have been out of place, and unnecessary; but for the gateways, the architects of the Renaissance adopted somewhat more elaborate designs.

In such structures, the orders could be employed, as in other buildings of the time, and an example of their use is to be seen at the Gateway of the Lido, at Venice, as well as in those at Verona. In those gateways, the attached columns and pilasters are apparently built up with rough stones, each forming a course of rustication, while the arches show every voussoir constructed in like manner. The order chosen is the Doric, with the cornice simplified, and the decoration of the architrave and frieze in some cases omitted. Such works were common in the time we are noticing, and from this cause, probably, arose the fondness of the later Renaissance architects for rustication, which was freely used by the Palladian school. It was employed by them, however, in subordination to the general effect, and, therefore, in a different manner from of the older Florentine school, who had their most characteristic designs, since the of Brunelleschi, on rustication extending the whole building, so as to allow little sco other details. Examples of such a trea are found in the Pitti, Riccardi, and S palaces. The latter building is, perhap most characteristic of the semi-military, domestic architecture of Florence.

Italy was; at this period, a collection c vinces rather than a single country, and its tecture had, therefore, many local peculia The sumptuous splendour of the palac Venice finds but little counterpart in the a and stately fortress-like buildings of rence. The simple details, the bold r tion, the small windows, and the large of unpierced and solid wall, give a gl and almost forbidding aspect, to those half-fortified dwellings. The Palladian usually rusticated portions of their bu only, preferring such parts as seemed to r additional strength, as the ground or bas stories. Vignola did this at Caprarola, also carried up rusticated quoins, at the of the projections of the upper story.

This system of marking the courses ha generally adopted in revived Renaissance tecture in all countries. Wren used it Paul's, and Inigo Jones at Whitehall, s characteristic Water-gate of the latter Savoy is a pleasing specimen of the m type, similar to that adopted by San M The Gothic architects, building with stones, and relying on constructive form not care to emphasise the various joint maintain regularity of courses; but in the use, in Mediæval times, of vo to the arches, of different colours, effect nearly related to a system of r tion; and a similar method was com Byzantine and Eastern work. Of late y has been customary to condemn rusticati it is no doubt liable to abuse. It has, ho an appropriateness in many situations, a be used by an architect so as to give s his work, and to modify the monotonous of too much plain surface. An example meaning may be seen at Bridgewater particularly in the part facing the Gree The rustication of this front is applied ground-floor only, over the surface of th and at the angles of the projections abo we feel, as we see it, that it is both rea and effective, and could not have been t with advantage.

In speaking thus of rustication, I ass course, that it represents the jointing of masonry, and is that which it appears The exhibition of sham jointing has n confined to one school or time, for in m buildings may be seen a sort of rust caused by marking out the walls in courses, by means of colour. This i different from the system of the Florent any other method of legitimate rusticati

With Palladio, Vignola, and their fol we terminate our examination of the a tural Renaissance of Italy. Their wor trate the third and last period of the mo The vigorous efforts of the earlier styl their elaboration of decorative detail, we and in their place, men came to substitute regulated and formal manner, with much ledge of precedent, and adherence to rul has been said that Vignola by his tre proportions, and Palladio by his prescri strict regulations, would have made o tecture an exact science, in which precis ledge might render success certain. however, very far from being a fair state the case, as is proved by the examin Palladio's own works. It is true that h at precision in his application of the but there is nevertheless much variety different designs, and his arcades at th hall of Vicenza, already referred to, ar conceived, and happily treated. His were usually refined, and we must r the difficulties of the task he atten discharge. His palaces at Vicenza, w their faults, have served as models to th tects of most civilised countries, and th survived the attacks of the most unspari cism. We may, perhaps, realise more merits of Palladio, when we cont measured and studied compositions, v reckless and bizarre specimens of tricky of so-called architecture which followe fantastic reaction of later days.

alladio's buildings we find occasionally take of enormous details misapplied, as almarina Palace; but in other instances r was used to each story, with details pro- ubordinated. Propriety of detail and pro- has thus given a fame to Palladio which not have been gained by the picturesque- his designs, or the fertility of his inven- ion. We are, at least, thankful to escape, is guidance, from the gigantic orders, ortioned mouldings, and broken pedi- which even the great name of Michel- cannot justify. We feel that, at least, itecture is the work of a trained scholar, n the use of the materials which a not- rgotten past had placed in his hands. le has influenced the revival of Classical nture throughout modern Europe, in- this country. Wren, Jones, Vanbrugh, any others, have followed more or less n precedents, and Somerset House, by Chambers, is just such a building as have been erected by Palladio or

se of Classical architecture is still com- hough its progress has been checked by hic Revival. The increased knowledge istory of architecture has brought to the a variety of opinion, often fiercely self- e. We have heard the architecture from the principles of ancient Greece ne, denounced as inadmissible, and stig- under the name of Pagan, as unfit for of Christian men. An active spirit of cal revival has led to the restoration of rches, in the old Gothic styles, in which re erected. In the city which boasts aul's, Mediæval architecture has been the only form of art admissible for the of the church. Eloquence of critical ion, which has never been surpassed, pied itself with declaring the Renais- n unholy thing; an evil spirit to be d; a fault to be purged by a return to ghter and better ways of Mediævalism. among us, the choice of a style might eem to be a question of morality, rather rchitecture.

iding such a question, it must ever be ered that a complete revival cannot but sible, whether of the architecture, or of h of the past. The world moves onward, argue, and each generation has its own ments. An age of Faith is succeeded e of Inquiry, to be followed, it may be, a of Superstition. A time of freedom on the heels of a *régime* of authority. y copy Greek temples, but we cannot e Greeks were, or think their thoughts. can we revive the Mediæval spirit by our architecture in a Gothic garb. not be admitted by reasonable men, its are to be placed to the adoption kind of the extension of their powers increase of knowledge. The employ- f machinery, for example, sometimes ly denounced, is but a natural con- e of that use of his intelligence by ich has been implanted in his nature by power. To be for ever protesting against gs of to-day is a profitless, as well as task. The evils before us are always while those which might be caused, or whether by our action or our inactivity, en from our view. There are some critics nk the present always bad; their artists failures; their own country always This is not a spirit which is likely to healthy development in architecture. cannot recall the past, it does not follow may not be gainers by its experience, s take a new departure. We may fairly y its achievements, and draw precedents treasuries. This is one of the reasons ery true architect must respect anti- nd wish to preserve our ancient monu- and as we know, in these days, all ers have done in ancient times, we aturally the responsibility of choice e placed upon us. It is not, there- asonable, that we should be forced to one type, and use it for all purposes, because our predecessors did so, in igno- f any other. Still less can it be fairly ed, that we are not at liberty to avail s of successive phases of the same style, the history of our art shows that such is inconsistent with chronological accu- It is not the business of the modern t to erect buildings which may deceive essors as to the date of their execution. This would be to aim at architectural forgery, while our duty is to do our part, in our own day, in the same spirit, as that in which our predecessors worked in theirs.

We may, therefore, claim the liberty to select different architectural types for different things: thus, to some of us, the Gothic styles may appear the most suited for churches and sacred buildings; and the Italian more appropriate to secular work.

The first of these decisions has already been accepted, for the present, at least, in this country, and Gothic architecture has been practically adopted for church building. It is natural that this should be so. The charm of our old mediæval buildings, and the hallowing associations which cling to them, are enough to justify such a choice, if justification be needed. This is not only, or chiefly a question of architecture. We do not want to break with tradition, in our ecclesiastical buildings; we prize the continuity of our religion; we like to think that we are worshipping, as our fathers did, in so far as the external forms of our churches are concerned. We are glad to free ourselves, if only for a time, from the pushing, selfish, bustling world,—from the vulgarity of newness,—from the ever-active pursuit of the last fashions of thought or deed.

In our venerable cathedrals, we wish for no change, we ask for no novelties. As we commune with past centuries, we find ourselves confronted with the old, old realities of human life. Here, at any rate, the weary are glad to rest: let others agitate for change and newness; for us the Old is better. The most advanced science can here do nothing for us; new discoveries, whether philosophical or architectural, have no bearing on the momentous questions, which bring worshippers to the churches. There has come to us no modern solution of the mysteries of life and death, the origin of evil, the eternal conflict between right and wrong. Our old churches are thus precious to us, for what they are. They stand out as beacons on a dreary shore, which must not, in the public interest, be either removed or tampered with.

The preservation of such buildings is, therefore, our bounden duty, and now that Gothic principles have become well understood, through that revival, in which the distinguished architect, whose loss I deplored in the first lecture of this series, took the leading part, there can be no doubt that every architectural student should qualify himself for the important responsibilities that will be laid upon him, in practice.

Palladio and Vignola did not take more pains to study and follow ancient precedents, than Sir Gilbert Scott, and the pioneers of the English Gothic revival. The conflicts of taste waged over the five orders, have found a modern parallel, in the discussions we have heard of Norman, Early English, Decorated, and Perpendicular Gothic, and in the ecclesiological wrangles of our day, on the religious symbolism of First, Second, or Third Pointed.

In the first stages of a revival, accuracy is difficult of attainment, and so it happens that to be able to copy well is a distinction. It is only afterwards, that more is asked for, and that an originality is required, in the use of accepted details. The young architect in an old country like our own has great advantages over those in more modern lands, such as America and our colonies. He has his precedents at his door, and can more readily imbibe the spirit of the past. It is well that he should do so, provided he remembers that modern society has its own claims, which must not be set aside in favour of antiquarian lore. A system of merely retrospective design easily becomes archæology instead of architecture; a science rather than an art. Architects having the courage of their convictions should strive to lead the public taste from bizarre oddities to sterling merit of design, to think of present excellence and future progress, as well as of the triumphs of the past.

While recognising the existing preference for Mediæval architecture for ecclesiastical works, and conceding that in Gothic churches a certain amount of actual copying may be defended, it cannot be allowed that the Classical style must of necessity be neglected. The Palladian school of architects had a definite intention, which was to design a modern style, that should be based upon the architecture of the Romans. Whatever merit may be assigned to their works, they certainly produced buildings unlike any that had previously existed. They copied, or intended to copy, literally, the details of the orders; but neither Palladio's arcades nor Sansovino's palaces are direct reproductions of actual buildings. They, at least, succeeded in applying ancient art to modern use, in a manner which has been imitated ever since.

We have had, in this country, many tastes, and various revivals; but through them all, the Palladian or Italian manner of Wren and Inigo Jones has held its ground, and something of a reaction towards it has lately appeared in unexpected quarters.

In most European capitals the chief public buildings, as well as almost the whole of the private houses, are in this style, however divided may be our allegiance at home. If we have erected Mediæval Houses of Parliament, the French have shown us in their Hôtel de Ville of Paris, now unfortunately destroyed, how convenient and magnificent a civic building may be designed after a Classic manner. The application of the highest class of painting, and of the best sculpture, is natural and welcome in the case of Classical architecture, the Renaissance of which was fostered and directed by painters and sculptors.

If it be said that such architecture is unsuited to our climate, it may be pointed out that it has been generally adopted in climates not much unlike our own, and those who have lived in one of the solid houses, of simple outline, which the architects of the English Renaissance have left to us, would not always care to change, to the so-called picturesque creations of Modern Gothic, with their voluntary carelessness of plan, and the maximum of surface of external walls and roofs.

In modern domestic work we must often welcome novelties, which we do not desire to see in our churches. We may, in the latter case, be content to rest satisfied with piers, which are obstructive, and arches of unnecessarily contracted span, while, in secular buildings, convenience must rule, and science be invoked to aid us to overcome difficulties, and economise space. It is not wise of the architect to leave such matters to the engineer. He must use his art intelligently, being ever ready to adapt it to all reasonable requirements, and the Renaissance, as a modern style, will apparently have less difficulty in accepting this position, than the more stern and stiffer types of Mediæval art.

For grand architectural effect, moreover, and for the convenience of a spacious interior, Classic architecture possesses the dome, if not absolutely, at least more fully, than any other style. Those among us who are accustomed to visit St. Paul's, cannot even accept, unreservedly, the popular doctrine that all our churches must of necessity be Gothic. We require in modern days, and for Protestant services, wide areas more than "long-drawn aisles," and in few other English buildings can anything be seen grander than the effect of St. Paul's during the services of the church, with its congregation of thousands filling the vast area under the dome, and hanging on the words of the preacher, in the dim twilight of a winter afternoon.

A calm review of the history of the Renaissance, and of the circumstances which led to it, conducts us to the conclusion that the movement is not yet over. The Classical tastes which gave to it the first impulse, still exist among us, and are likely to continue. An architecture which can give us solidity and magnificence; which can adapt itself to purposes of utility, and assimilate progressive scientific construction; which unites elegance of proportion with refinement of detail; and which welcomes the best efforts of the painter and the sculptor in a loving combination of art, cannot be easily banished from the modern practice of the civilised world.

Nell Gwynne's Birthplace at Hereford. During the Assize week in Hereford, Baron Huddleston walked down Gwynne-street in search of the exact spot on which the old cottage stood wherein by birth Nellie Gwynne became a citizen. There is no vestige of the cottage remaining, either to "point a moral or adorn a tale." Two Hereford citizens are ready and willing to bear the cost of a suitable tablet being erected in the garden wall of the Palace, at the precise spot where the cottage stood, if the Town Council would assist the object so far as to make a formal application to the Bishop for consent to have his lordship's boundary-wall pierced to receive the carved entablature.

BABYLONIAN FOUNDATION STONES.

AMONG the various customs which centre round that important event the erection of the house or home, there is none so universally met with as that of the placing of some particular brick or stone, or selected object, as the foundation record. Strange ceremonies centred round the laying of the first stones of many of the great edifices which now stand before us as the ruined memorials of the heroic past. In China, where land and almost every object in nature is possessed by the spirits, many and strange customs are resorted to in order to propitiate these celestial freeholders. Ancient legend tells of how, in many of the hoary castles by the Rhine, human beings have been immured to pacify the supposed anger of an offended spiritual landowner. In most of the museums, both in England and on the Continent, are to be seen stones bearing dedications and invocations to the gods, which have formed the foundation-stones of the great edifices of the Greeks and Romans. Considering how prevalent such a custom is among nations, both savage and civilised, it is but natural that we should expect to find some traces of such a custom prevalent in that early cradle of the arts and sciences, the Babylonian empire.

It had long been known that the terra-cotta cylinders which form such important records of the history of the descendants of Ninus, and Semiramis were nearly always to be discovered in the foundation-courses of the temples or palaces. But these carefully-compiled and beautifully-written records of the kings of nations were a very great advance on the ruder examples which formed the memorial records of the most ancient kings of Babylonia. Still it is curious to note that these highly-finished records, preserved even till the latest periods,—the old primitive Akkadian name which had served to designate the ruder examples of which I shall speak,—they were called the "Timēn"; that is literally, "the floor-mark," or foundation-mark. The word is a compound one, built on a similar principle to the numerous Chinese words. The first syllable, "Ti," means a line, or horizontal line, in particular, and the second is "mēn," the substantive verb "to be." It is, therefore, clear, that these objects indicated the floor or foundation course. But the word did not originally indicate these elaborately-compiled records, which have been so great a treasure to the historian and the philologist. That most interesting compilation which the researches of Assyriologists have recovered for us, the cuneiform syllabary enables us to see very clearly almost step by step the growth of many of the customs of that most wonderful people. Here we find the plain perpendicular wedge standing as an ideographic representative of such centralised ideas as "one," "man," "reed," "record," "memorial," "spear," "arrow," and the *Timen* or "foundation record." Hence we can see very clearly that the earliest record of the proprietorship of land was the "reed" cut from the adjacent river or marsh bank, and stuck in the spot where primitive man intended to erect the home.

The spear and arrow were also used, they being the daily handlings of the subjects of Nimrod.

The pictorial nature of the primitive sign which represents the house, or home, indicates very clearly that it was of the rude wattle and dab construction in its earlier stages. Being evidently composed of the rough reeds cut from the marsh lands on the banks of the dual rivers of the delta, and the one tall reed, they being on an average 12 ft. or 15 ft. high, would form a fitting corner-post as a record and type of the corner-stone of after-time.

The architectural history of the Babylonian empire may be very distinctly divided into three periods,—the Primitive, a period the only evidence of which is to be found in the record of the pictorial signs of the syllabary; the second period is the Brick, a period which extends from the twenty-third century before the Christian era until the end of the Empire, but which, in about the eleventh century, gave rise to a new style, in which stone and brick became combined, and gave the system of building which was adopted in the Assyrian and later Babylonian palaces. Fine examples of this mixed construction of huge, massive brick terraces, faced with stone, are to be found in the palace of Tiglath-Pileser, at Kileh Shergat, the site of the ancient city of Assur, and in the royal residences of Assur-nazir-pal and Shalmanesar III., at Nimrud or Kalakh.

The brick period gave rise to a new species of memorial or foundation record; this was the inscribed brick which is so common a record, and which became the established custom, every brick in some of the great temples being stamped with the name and titles of the great king who built the edifice.

The legends on these bricks were very curt, at first being confined to the name of the king and his pedigree, together with such primitive titles as the "Strong Man," "The King," and the name of the city over which he presided, together with the name of the divinity to whom the fane was dedicated. These brick legends, meagre as their contents are, have still served to preserve the names and titles of more than a hundred Babylonian kings, and to establish beyond doubt the site of many of the most ancient cities.

In about the eighteenth century before the Christian era a new form of memorial record came into use, and was adopted in most of the sacred edifices, and as one of these most interesting records of the past has just come into my hands, I will append a translation of the document, which very fully illustrates the character of these monuments.

Most of these interesting records which are now in the British Museum are written in the most ancient language of Babylonia, the Akkadian or Turannian dialect of the tribes which first colonised the delta of Tigris and Euphrates; but the one which forms the subject of this notice is of great value as being written in the pure Semetic dialect of Babylonia, and being, therefore, one of the oldest known,—Semetic documents more than six centuries older than the Moabite stone.

This monument is a small alabaster tablet of fine surface, and evidently a selected stone about 5 in. broad by 8 in. long, and inscribed on both sides. It is curious to note that the stonemason who prepared this tablet for the reception of the inscription has evidently taken one of the terra-cotta tablets as his model, for he has cut the alabaster so as to assume a pin-cushion shape, rising in the centre,—exactly similar to that of a tablet, which, when baked, swells and rises into a cushion shape.

The scribe who wrote the inscription has evidently treated it with a true religious devotion, expending on it great care, and striving to attain the greater neatness, and, indeed, some degree of ornament. The inscription is carefully written upon lines ruled on the stone, and accurately spaced. The script adopted is the old archaic type; but, as an example of that class, and considering the age of the document, it is entirely finely written, nearly equal to the documents of many centuries' later. Before proceeding to give any further details of the age and importance of this interesting record of the past, I will give a translation of the document:—

1. To Merodach the great Lord,
2. The giver of fertility from the gods.
3. The Lord of the Temples of Bit Saggal and Bit Zida.
4. His maker, Khammuragas,
5. The proclaimed of Anu (Heaven).
6. The hero of Bel, and the
7. Offspring of the Shamas (Sun god).
8. The Prince (Shepherd), the beloved of Merodach.
9. The heroic King. The King
10. Of the Tribes of Sumir (and) Akkad.
11. King of the Four Quarters.
12. Male and female to his
13. hand he had given.
14. Their seed to his hand they have poured.
15. To Merodach his maker,
16. The Lord of Barzipa (Borsippa)
17. His beloved city
18. Bit Zida, his favourite shrine,
19. He has made it.

From this inscription we learn many points of great interest, both as regards the history, and the mythology of the early Semetic population of the Tigro-Euphrates delta. This temple of the god Marduk or Merodach, of which this stone is the dedication record, was situated in the city of Borsippa, a sacred suburb of Babylon, now represented by the mound and ruins of the Birs Nimrud, situated about four miles north-east of the ruins of Babylon. From this inscription we learn that a monarch named Khammuragas, whose name indicates him not to be of Semetic but Turannian origin, desirous to propitiate the great god of the Semetic Babylonians, built for him, in the sacred city of Barsippa, a temple called Bit Zida, *i.e.*, "the House of Perfection."

From the canon of the Babylonian k
can trace the date of this religion
Khammuragas, to be about 1680 B.C.,
which forms an important epoch in the
of Babylonia. Those who have exami
collection of early Babylonian antiquities
galleries of the British Museum will no
the majority of the inscriptions of this m
the reading of whose name is now
beyond doubt, to be Khammuragas, in
the old form, Khammurabi, adopted b
decipherers, are written in the ancient
native Turannian Akkadian. Still, h
there is in the Central Saloon a most
exception to this rule in a bilingual inscri
this monarch, written in Akkadian and S
on the drapery of a statue,—the two
being arranged in parallel columns.

The inscription which I have here tra
together with a Semetic text on a clay
now in the Louvre, all tend to prove th
than thirty-five centuries ago there m
existed in Babylonia a numerous and in
class of Semetic origin.

This monarch, Khammuragas, was t
of the Kassite or Cossean tribes who
the southern provinces of Elam, and
for some time been growing in power.
bined his forces with the rich trading
classes of Babylonia, and succeeded i
throwing the Elamite dynasty, which
time had held rule in the land. In his
tion he assumes the title of the "Heroi
and in the bilingual in the British Mus
assumes still more grandiloquent att
such as the "vanquisher of his enemi
"maker of war." There is, however,
important title in this text which pro
clearly the idea which, more than fi
ago, I put forward, that this monarch w
in the monuments of the period of his re
two names,—the one Semetic the oth
Semetic. The king here calls himse
spring of the god Shamas"; and in th
ments of the Kassite dynasty we find t
Khammuragas, occurring at the same
another king named Samsi-itibna, a nam
can only be translated "the sun has
It is, therefore, evident that these name
sent the same person.

There is another extremely curious fa
appears in this short dedicatory legen
will be of great interest to the studen
thropology. In lines eleven and twe
monarch mentions "the people of
quarters, male and female." Now, in the
inscriptions of the purely Semetic per
extremely rare to find any mention of
but among the Akkadians the women
spected and protected, and the mother
beautiful title of the "house goddes
therefore, shows the dual ethnic influenc
were at work. This monarch, Khamm
seems, from his records, to have been
patron of the builder's trade, as carri
that period, and even to have exceede
greatness of his work many of the ki
succeeded to the throne.

Bricks inscribed with many of his leg
found in the foundation-courses of the
of Babylon, Borsippa, Ur, Erech;
sort of outpost palace on the border
Elamite provinces of his realm, he bui
neighbourhood of Baghdad a small p
the ruins of which stone and bronze mo
bearing his legends have been found.

The chief and greatest of his works h
the great canals which he constructe
neighbourhood of Babylon. The largest
was called "The River of Khammurt
Joy of Men," and is probably represent
large canal on the north-west of Bal
perhaps, by the Nahr Malkah, or Royal

At the time when the foundation re
written, the Babylonians appear to hav
regular chronological system; for, in
mercial documents of the period we
they date by the year of important
The two principal of these epochs are
when Khammuragas, "the River [
Khammuragas, the Joy of Men, open
event which is recorded in the inscript
French collection now published in fac
M. Menant, and a second great event i
when the king made the temple of
which is recorded by the foundation-st
I have translated.

There appear to have been two
preserving these precious records.
cases, as with the cylinders, they we
in prepared cavities in the foundatio

g placed there with all the ceremonies ndant upon great religious events; victims slain, and prayers said to the gods, the s protectors. Another mode was to place tablets of the class to which the present ple belongs,—in a stone or metal cist, covered lid, and bury them beneath the altar, or in sacred spot in the temple. Such are some e facts to be gathered from this short interesting inscription, which, thirty-five uries ago, was written for a pious king, which at the present day forms the subject y article.

my next contribution I intend to give an nt of some most interesting antiquities h were discovered by Mr. Hormuzd am, in his excavations on the mound of wat, including an Assyrian foundation-

W. St. C. B.

"HISTOIRE ET THÉORIE DE L'ARCHITECTURE."

s have already, and at some length, noticed eneral scope and some of the views in detail Lesueur (see p. 217, *ante*), chiefly in regard gyptian architecture and its influence on the quent development of the art.

rning to his chapters on Greek architecture, nd in the introductory chapter a full recog- n of the fact, the significance of which has ly, perhaps, been sufficiently appreciated, on the soil of Greece itself there is little or ng to furnish us with the materials for ng of the mode of development of their kifully-perfected and logical architecture. fact affords remarkable evidence of the e mind of the nation and their aspiration progress and perfection. Much of what t have formed the links in the chain must been destroyed and rebuilt, in contradic- of the modern principles which would be ected by a society for the preservation of nt buildings. The other fact in Greek tecture which is equally remarkable is the ence, and, to a great extent, at the same of styles of detail so radically diverse as illustrated in the Doric, Ionic, and thian buildings. People who take a super- view of Greek architecture often speak of if these three stood in a relation of ence to one another, as if they illustrated progress from a simple and stern to an e architecture, which is so familiar a fact any pages of architectural history; and, in ense, they perhaps may be thus regarded,— it is at least obvious that Doric was the most early employed, and that Ionic and thian came in as somewhat later fashions. the peculiarity of the matter is that there connexion between such leading details as three capitals, for example, of the three s. The development of several forms of ic capital from one another is perfectly ous, and, in fact, after pure Norman ce left, is so continuous that it is hardly ible to fix the dates at which the changes be said to have taken place; and the an composite capital, also, is a direct endant from, and a logical development the Corinthian capital. But the three s of capital as existing in Greek architec- have no such historic relation; they are all gned on different principles and lines, and one of them could be evolved out of the rs. The conclusion necessarily is that they successively chosen, developed, and adopted matter of deliberate choice and artistic in- ion; and the importance of this fact in its ing upon our estimate of Greek architecture hardly be overrated. In fact, it has an im- ant meaning in regard to architecture gene- ; for it is a fact which is directly contra- ory of the theory, so much favoured by ot writers on architecture, that this art is ely governed in its developments by what be called spontaneous generation. Much othic architecture might be brought forward pposition to this theory; but in regard to k architecture, at all events, the existence he three different orders side by side is bsolute proof that the Greek architects, the zenith of their art, deliberately chose ain forms as worth working out, and were impelled merely by the unconscious pro- s from a simple form to successive elabo- ns by little and little in the way which ic ornament illustrates; and having worked n into what they considered a perfect form, seem to have had no desire to depart from or to go beyond this merely for the sake of variety.

In architecture, however, it is true that *ex nihilo nihil fit*, and we are not to infer that the Greek architects invented their styles out of nothing. In the case of the Doric it has long been recognised that they were indebted to Egypt for the originating motive, and the connexion is not difficult to trace. Where are we to look for the originating motives of the Ionic and Corinthian capitals? Some eminent critics refer them both to Asia Minor, and adduce examples of work having a sufficient resemblance to give colour enough to the theory, which is, besides, in accordance with what is believed to be the most probable ethnological theory of Greek connexion. The evidence, however, is scattered and fragmentary, rather such as to give colour to the supposition than to furnish any connected argument for it. And one point in the Asiatic theory of Greek orders has always seemed to us very much open to question; that, namely, which derives the Ionic order from a detail of a Persian form of capital in which similar scrolls or volutes occur placed vertically, not horizontally. It is not in accordance with anything we know of in architectural development that a form should be taken from one position and deliberately turned round, so to speak, and made to serve a new function of design (which is really what the change in question would amount to). It is almost as if one were to transmute a Gothic capital into a boss. We looked with some interest through M. Lesueur's pages to see if he had any definite suggestion to make as to the origin of the Ionic and Corinthian capitals, and are not disappointed. He has formulated pretty positively the theory that they are both, like the Doric capital, of Egyptian origin. It will appear, no doubt, at first view, difficult for those to whom the idea is new to trace the connexion; and it may be said that M. Lesueur has so obviously adopted the idea of a very close relation between Egypt and Greece, that one must allow something for the proclivities of a theory which would naturally lead towards the emphasising of any such similarities between Egyptian and Grecian work as would seem to support the theory. But his suggestion on the subject is ingenious, novel, and, so far as the Corinthian capital is concerned, it has the merit of suggesting transmutations, which are natural and not improbable in themselves, although in this case, too, we have lost the intermediate steps of the change which might have rendered the argument conclusive. But he refers the Corinthian capital to the larger and principal form of Egyptian lotus capital as found at Karnac and elsewhere,—the capital with the spreading bell. Although the aspect of the Egyptian capital, with its foliage merely lined out on the surface of the bell, appears at first sight different enough from that of the Corinthian capital, the shape of the bell is there in both, with very considerable similitude, and, as Quatremère De Quincy puts it, the Egyptians used in their capitals the plant of their own country, and the Greeks, in adopting the same principle in a capital founded upon the general form of the Egyptian capital, naturally took the plant in turn of their country. So far De Quincy's argument, which M. Lesueur quotes as an important witness in his favour, though we observe that he does not pay by any means the same degree of respect to De Quincy where that author's opinions are adverse to his own. However, in this case we are inclined to think both are right; and we may add on our own part that the distinction between the two styles of capital in regard to carving and relief is not more than the difference of the materials in which they are executed would almost inevitably lead to in the end, even if we were to find early examples of Corinthian capitals approaching much more closely to the Egyptian type. The case of the Ionic capital is more doubtful; in fact, the genealogy suggested for it strikes us as decidedly whimsical. M. Lesueur derives it from a form of Egyptian capital which consists of the head of Isis with the hair, at least a very distant conventional semblance of hair, descending in a heavy fillet on each side of the face. His idea is that the Ionic capital is a Greek adaptation of this with the fillets of hair coiled round in a scroll instead of descending perpendicularly; the representation of the face having disappeared in the process of the advancing severity of Greek architectural ideas, but the shape of the rounded chin of Isis still existing, as a kind of "survival," in the dip of the fillets which connect the two spirals on the face of the capital. In support of this idea the author refers to the fanciful notions of Vitruvius in regard to the Ionic order, to the effect that th Greeks twined round the fillets of the Ionic capital to represent the manner of curling round the hair in a woman's *coiffure*, and that they increased and made more conspicuous the flutings of the shaft to represent the long folds of the robe. If there were any certainty or probability that Vitruvius was in this case repeating an idea actually borrowed from the Greeks, the illustration would no doubt be very much to the purpose; but it is impossible to believe that it is anything more than mere romancing on his part; and the whole theory, ingenious and pretty as it is in a way, seems to us a great deal too far-fetched and improbable.

If there is, indeed, any connexion between the Ionic and the Isis-headed capitals, we want a great many intermediate steps in the connexion to make it evident; it must have been a very gradual and almost insensible evolution of the one form from the other, and we certainly ought to find some traces of the intermediate steps either in Egypt or in Greece: and the idea that the Ionic volutes could have had in the Greek mind any relation to curls of hair is tacitly contradicted by the fact that there is no representation in Greek sculpture of such a *coiffure* as that would imply. We do not believe that the origin of the Ionic capital can ever now be satisfactorily traced; but its feeling seems to us to indicate almost unmistakably an Asiatic connexion, and has no consonance with anything known in Egyptian work.

The chapters of the book which are devoted to Greek architecture, and which form about one-half the volume, run to a great extent into what we can only call architecture by arithmetic. Over and over again we have tables of heights and subdivisions of heights, and every temple the proportionate heights in which do not correspond with any other example, is made into a separate variety: so that Doric architecture is credited with almost as many distinct varieties as there are examples in existence. What is the use or the sense of this, except to make a show of learning, and to create difficulties and intricacies to perplex the memory of the student, we profess ourselves quite unable to understand. Some of the special announcements in regard to the older temples, the early examples of Doric, are rather startling. M. Lesueur has come to the conclusion that the Temple at Corinth is not an old Greek building at all, but an archaism constructed by the Romans! He has discovered "*des indices certains*" which prove this, but we do not learn what they are, except that the entasis of the columns is "*affreusement exagérée*," and that an entasis is not required except in a column resting on a base (but he gives no reason for this statement either). He does not tell us why this is, or how we are to excuse or account for the entasis in the Parthenon columns. The only other reason for this theory about the Corinth temple is that Mummius sacked and destroyed Corinth 146 B.C., and that it is inconceivable that this temple should have been spared. Is it, however, any more conceivable that the Romans, having destroyed the existing Doric temples at Corinth, should subsequently have built an imitation of them deliberately? It would require a good many more "*indices certains*" than M. Lesueur has supplied us with to make us believe that. A page or two further on we are equally struck by the curious theory started about the great temple of Pæstum, that an earthquake has partially submerged it beneath the sea, and that it has subsequently risen again; by another earthquake we presume. The author might well comment on its remarkable state of preservation after this. Some of the other remains, the "portico," for instance, show, it is admitted, no traces of this submersion, which must therefore have been effected, and the subsequent upheaval have followed, within a very short period, unless we accept M. Lesueur's theory that the temple of Ceres and the portico are, like the temple of Corinth, late Roman imitations, a judgment passed upon them chiefly on account, again, of the disproportionate entasis of the columns. Whether this theory and that in regard to the Corinth Temple are really worth any consideration or not, we should hardly wish to say positively without having made a fresh examination of them on the spot; but certainly the idea of the Romans, who were so peculiarly practical builders, having anticipated the modern architectural sentiment which has led to archaic

mitations, seems inherently about as improbable as anything could well be.

We can hardly undertake to follow the author through the various rules and regulations of architectural design, many of which seem evolved from very insufficient and even fanciful premises. He has derived from Egyptian architure, for example, the principle that "the shorter are the columns, the greater should be the number of the flutes"; but supposing that it is possible to bring examples to countenance the idea that such a rule was adopted by the Egyptians, what is the use of it in relation to architectural design? It would appear to us to be, on the whole, a mistaken idea, and there is certainly no connected evidence of the Greeks having adopted it. It is true that the short order of the Pæstum temple has twenty-four flutes, and finding it so (and apparently for no other reason than because he finds it so) M. Lesueur says "the hexametrique order demands imperiously that we should raise the number of the flutes to twenty-four." It is impossible to see any logical or artistic reason for this, and the author quite ignores the one really good and comprehensible motive which can be given (and was first stated, we believe, by Mr. E. L. Garbett) for preferring twenty flutes to either sixteen or twenty-four, viz., that this number brings an edge of the fluting under the angle of the abacus, and the flat of the fluting under the centre of the abacus, and thus establishes (as in the Parthenon) a more direct relation in design between the shaft of the column and its capital. Of M. Lesueur's remarks on the curved lines of the Parthenon we have already spoken; he, however, admits one "courbe très-réelle" as existing in the Parthenon, that of the columns, which, however, he dismisses with a good deal of contempt. He states that it was merely a question of a large arc of a circle, but that even that way of regarding it is only of use as a geometrical illustration, the centre of the arc being two far away for any practical use, and that "dans la pratique, on se servait déjà probablement d'une règle pliant," a bent rule we suppose being intended by this expression. Mr. Penrose has explicitly stated that the curve is a hyperbola, and that in those places where the surface is sufficiently in preservation to be minutely measured, the actual curve hardly differs from the calculated curve by the thickness of a sheet of writing-paper; and we are content to accept Mr. Penrose for *facts*, at all events. And then M. Lesueur supposes this curve was got in a kind of approximate manner by a bent rod. It is difficult to read such nonsense with patience. Is the idea of drawing out the curve correctly, and then taking templates from it, beyond the experience of the Professor of Theory at the School of the Beaux Arts? At that rate, it would seem to be all theory and no practice in that institution. Before quitting the subject of the Parthenon, we must credit M. Lesueur for the one point in his criticism of the refinements of that building which seems to have some reason in it. He objects to the building of the walls with a deviation inwards from the perpendicular, simply on the ground that it is bad building; he would not object to it if it were an external batter for optical effect, with a perpendicular face inward, but he objects to the "surplomb" of the whole wall of the cella: and this is at least a reasonable and comprehensible objection. At the same time it may be urged in reply that the over-sailing is so slight as to have no practical effect on the stability of the walls, and that the optical considerations which led to the adoption of a diminution upwards of the external lines, viz.,—the admitted tendency of parallelograms with vertical sides to appear larger at the top, would operate equally in the interior of the building.

Into the long examinations and criticisms of the respective restorations of the Mausoleum by Mr. Pullan, and of the temple of Ephesus by Mr. Wood, we cannot here enter; they are special subjects in themselves, and seem to occupy a disproportionate space in a book which professes to represent the "History and Theory of Architecture" at large. But the more we consider the book, the more we are astonished that such a title as this should be claimed for it. The whole course of architecture, from the eleventh to the sixteenth centuries, is "polished off," as one may say, in a single sentence, to the effect that the monuments of the eleventh and twelfth centuries in France are the logical development of the Roman system of construction, and that unfortunately the decadence of architecture commenced to make itself felt, in the thirteenth century, by the introduction of the Teutonic style, and continued to the end of the sixteenth century. In Italy the revival of architecture came just at the epoch of the greatest decadence "*chez nous*":—"If we had continued to follow the tradition after the twelfth century, the Renaissance would have appeared in France three centuries sooner than in Italy." And Rheims and Amiens would never have been built; and this M. Lesueur would have regarded as a gain to architecture! It does not seem to be considered worth while even to recognise the fact that generations of cultured people have looked on the Mediæval cathedrals as among the great glories of architecture, and as the source of some of the highest aspirations with which art has furnished them. Truly we may be pardoned for again saying that it is difficult to read such stuff with patience.

Regarding the book merely as a study of "the orders" (which is what it really is), it contains an important and useful collection of facts, which might, however, have been made more valuable by more copious illustration. It contains theories a good many of which have the merit of originality, and some of which are very suggestive; but some, on the other hand, exceedingly fanciful and improbable, and based certainly upon no sufficient data; and the author's apparent facility for seeing facts in such a light as to support his own theories (and in such a light only in many cases) is so marked as to compel us to be very cautious in even accepting his facts where they are not such as are supported by the general knowledge and experience of architectural students: and this again much weakens the value of the work even as a collection of facts. In regard to the view which is prevalent throughout, as to the method of design of Classic architecture and the method to be followed in studying it, we should say that what might be called the mathematical view of architecture is far too much insisted upon in those points on which it is most open to question (for instance, in all the complicated rules as to proportionate heights in various orders or varieties of orders) and the value of which is really very arbitrary; and it is ignored and undervalued in those very points, such as the optical corrections of the Parthenon, which really have a practical meaning and are based on physical facts. This is an unsatisfactory summary to have to make even if the book be regarded only in the light of a guide in the historical study of antique architecture. But if we regard it, as from the title we presume is intended, as a basis for the practice of architecture by the modern architect, we should say that nothing could be more likely to check and to freeze the development of genius, fancy, or originality, in young architects, than to have presented to them as a text-book this collection of frigid calculations, under the name of architectural design. It is not in this way that new life and interest will be put into modern architecture; and as the book is not a safe or an accurate guide even in the narrow view of architecture which it recommends, we cannot see anything to justify the flourish of trumpets with which it has been sent across the Channel, nor can we congratulate our neighbours on the adoption, in their much-vaunted national school of art, of a theory of architectural instruction so rigid, formal, and lifeless as that conveyed in the laborious pages of their Professor of Architecture.

THE DEAD LOCK OF THE THAMES VALLEY DRAINAGE.

The rejection by the House of Commons of the Bill for the drainage, or, more properly speaking, for the outfall sewerage, of a large district of the Thames Valley, is a very instructive illustration of the truth of the view which we originally took of the Public Health Act of 1872. We have not been present on a single occasion, or seen any comprehensive report of any meeting for the discussion of sanitary measures, in which the inefficiency of that measure has not been made a ground of complaint by those who were desirous for sanitary improvement. The local power, instead of being rendered automatic, has been simply frittered away by the creation of a number of unconnected, uninstructed, unregulated, local authorities. No doubt the Local Government Board has done all in its power to aid; but that power has been purposely curtailed by the Act. Even such a useful and inoffensive step as the publication of an annual report of the proc
ings of each local authority, for sanitary
poses alone, has yet to be asked for. W
information is given is buried in the thick vols
of the Reports of the Local Government Bo
The public are only aware that local indeb
ness is increasing at an enormous rate; ths
some places (perhaps in more than some)
sanitary rates have been swollen to a
amount, without any measure of a radical na
for the disposal of sewage having been
attempted; and that in certain cases, as
instance at Bournemouth, expensive works
now being carried on on a principle wh
according to some of the most reliable au
rities as to sanitary matters, will have
result of making the place uninhabitable
the discharge of concentrated and unpur
sewage into the sea. Again, there is the st
ing complaint of the sanitary officers, that t
reports meet no attention because the au
rities to whom they address them have
faculty to treat them as waste paper,—from
want of any superintending general autho
Month after month, year after year, there
been a dull uniformity of reports of this na
And the resolutions of the Congress on W
Supply held last May at the rooms of the So
of Arts do not seem to have had any b
sequence or result than the hosts of prop
that have preceded them.

To these old griefs, arising from the wa
organised system, is now added a new
of the impossibility of self-originated orga
tion. We have seen, with the advice of
officers of the Local Government Board, tha
various towns and districts in the Th
Valley between the metropolis and Win
have come to Parliament in order to autho
on their joint behalf, the execution of
scheme which, out of twenty-three, was fi
taken to be the best. Into the merits of
scheme we do not enter. It seems to be w
unimportant whether it were the ablest s
tific plan or the most notorious job and bu
that can be conceived. The result is muc
same. The concentrated power of the oppo
is in excess of the power of the promoters.
we imagine, it always will be, as long a
morcellement adopted in 1872 is not rem
The strength of the numerous party which
"No" will always over-balance that of
feeble union that says "Yes."

It is probable that the experience of our
ways was taken by the framers of the A
1872 as their guide. "Self-constituted bo
they may have argued, "prepared their p
raised their capital, and obtained their A
Parliament. Local Sanitary Authorities,
cially as they have only to find the mon
the pockets of the ratepayers, will do
same."

The analogy is superficial. Even as t
railway companies, the waste of money inv
by allowing them to scramble helter-skelt
the traffic of the country has been estimat
from a fourth to a third of their entire ca
But these bodies had the strong incentive
hope of gain. This the local authorities
not, or, at all events, ought not to have. It
much to bring a Board of this nature up t
point of deciding on one measure out of d
of agreeing with rivals or opponents, a
finally applying for an Act of Parliament.
often no one would be better pleased tha
promoters of such a measure for the ap
tion to be refused. To expect the energy
practised skill, and the fearless expen
that characterised the early days of ra
legislation from Mr. Stansfeld's "Sas
Authorities," is puerile. Indeed, it would
sore day for the ratepayers if such an exp
tion were fulfilled. But what is the alterna
Dead-lock.

Such is now the case with regard t
Thames Valley scheme. What is to be
Who will recommend the various Boards t
again?" Why should an application to Parli
be more successful in 1880 than in 1879? C
in any subsequent year? Meantime what i
done? Coerce the Boards? Who is to
Have they not a good reply? "It is n
fault," they will say, "it is that of the
of Commons. We did all that men cou
We gave up each something for the sa
common agreement. We called for the
advice. We took council of the Local G
ment Inspector. We spared no cost. W
to Parliament only to be ignominiously
out. We cannot and will not play this
year after year." The probability will

of any spirit or capacity will refuse to e on the Local Boards, and that the autono- s regulation of sanitary measures will, by- -by, either be handed over to those who k they can make something out of their tion as councillors, or collapse in utter hope- ness. What does the Local Government rd suggest by way of remedy? We pre- ed what has occurred.

AUCTIONEERS.

UCTIONEERS, as a class of professional men, almost wholly a growth of quite modern s, though it is true that we find these ions mentioned at a very early period in nexion with certain practices common in ent Rome. For among the Romans there e, broadly speaking, two classes of auctions, h may be called the civil and military. first was the *auctio hereditaria*, which was public sale of the property of deceased ions, when the sale was usually managed by rtain number of *argentarii*, or bankers, and one of these who actually registered the s and received payments was termed *magister ionis*. The military auction, or the *auctio hasta*,—the auction under the spear,—was n military spoils were disposed of by the iers. A spear was erected in the ground, at this spot the sale took place. But, as we e already said, it is during modern times, to meet modern requirements, that auction- have become a very numerous body. So back as the reign of Charles II., auctioneers e employed in this country, but it is the ease of wealth, the constant distribution of 's, houses, and goods, and the easiness of motion, which have caused auctioneers to ease and multiply as they have done during present century. It was, therefore, by no ns unfitting, and indeed was time, that a ch of their history, position, and duties, ld find its way into print, and Mr. Squibbs is recently-issued work* has touched upon hese points compendiously and clearly. At same time, there are one or two adverse cisms to which this book seems to be open. example, in chapter IX. we have "a short ry of property law." Of course, some wledge of the laws regulating the tenure descent of real and personal property is ssary for the proper fulfilment of an ioneer's duties, but in the first place it is lly impossible in five-and-twenty pages to even a satisfactory sketch of the laws ting to property; and, in the next, it is not ciently relevant to the duties and liabilities auctioneers as to make it advisable to into a small book twenty-five pages of ter which the reader will obtain much more sfactorily from elementary legal works. Such ences, too, as the following, we should have ght, have very little to do with public sales. ciety would have no existence without some of civil government; property could not be ired without some law to govern both its uisition and its exclusive enjoyment." We ect next to be told that "an auctioneer t eat in order to live, and his business not be carried on without cash to pay clerks," and so on. Nor is it strictly the point to go into a description of the al system in Mediæval England, and when find ourselves conveyed in a few pages n it down to Lord Cairns's Land Transfer , we feel that we are having even more than rdseye view of our law of property. Again, Squibbs will find that those who desire to r to the legal decisions which he quotes will regard his work with the friendly eye with ch on the whole it deserves to be viewed n they discover the slips and inaccuracies ch have crept in in regard to the references. have, without seeking for such on purpose, merely in going through this work, marked f a dozen, and we should be able to find a le dozen by seeking for further slips. Thus, age 49, we find the case of Sykes *v.* Giles re- ed to Meeson & Welsby's Reports without one of the sixteen volumes being given; on page 67 we find the reference to the case Parker *v.* Farebrother as being C. L. R. &c. 323, which we suppose, from knowing some- ig of legal matters, means the first volume he Common Pleas Series of the Law Reports, which would certainly be a regular puzzle the non-legal reader.

But it will not be out of place to give one or two of the leading propositions in regard to auctioneers' duties and liabilities which have been formulated clearly and distinctly by means of judicial decisions. A large number of these decisions have been satisfactorily collected in Mr. Squibbs's work, and form indeed the most useful part of this book.

One of the principles which may be first noted, since it is connected with the initial part of the auction, is one which has twice been the subject of legal decisions,—first of all, a good many years ago; secondly, in the year 1873. It is that an advertisement of a sale is a mere declaration, and does not amount to a contract with any one who may act upon it, nor is it a warrant that all the articles advertised will be put up for sale. In this instance the sale was at Bury St. Edmunds. A commission-broker went down from London on the third day, and found all the lots were withdrawn, and therefore brought an action against the auctioneer for loss of time and expenses, but the latter obtained a judgment on the above principle.

Another point of interest is that a bidder may always retract before the hammer is down, so that once a bid is not necessarily always a bid. In the case in which this was decided, a buyer bid 40*l.* for the article which was put up, and then asked whether the auctioneer would warrant its weight; upon his refusal to do so the would-be purchaser declared he would not have it. It was, nevertheless knocked down to him; but when the matter came before the law-courts it was decided that he had full liberty to retract if he desired, so long as the hammer had not fallen to his bid.

Another point of some importance is the difference in regard to the power of an auctioneer to make a binding contract at and after a sale. We need at this time of day hardly point out the cardinal axiom, settled by several cases, that an auctioneer has authority to make a binding contract between seller and buyer, by inserting the buyer's name in his book. But it is important to notice that this authority does not continue after a sale, so that if some lots are not disposed of, and after the sale a person enters into a contract with the auctioneer to buy the unsold lots, or some of them, the latter must obtain the purchaser's signature to the contract, otherwise the vendor will be unable to maintain an action against him for the price agreed upon. In the instance before us, an auctioneer put up some timber for sale, several lots of which were ultimately not sold. Thereupon, some days after the sale, a person named Carr called on the auctioneer and selected two of the unsold lots, which he agreed to purchase, and the auctioneer then, in Carr's presence, wrote his (Carr's) name in the sale catalogue opposite these lots. But, said the Court of Exchequer, this was not a binding contract, for "here the auctioneer signed Carr's name, not purporting to act for him, but as the person who sold the goods." And here we may conclude with a final and important principle to which the case leads, namely, that if by any inadvertence at an auction the auctioneer does not make a binding contract between buyer and seller, so that the latter, for instance, fails to obtain the price of the house or goods sold, the auctioneer is liable in damages on the ground of negligence. The leading and last case upon this point was decided in 1874, and the main fact was, that the auctioneer's clerk signed the purchaser's name in the sales-ledger, which contained nothing but the number of the lot and the subject-matter of such lot: hence there was no sufficient connexion with the catalogue and conditions of sale as to make a binding and legal memorandum. Hence, too, the vendor was defeated in an action against the purchaser, and immediately brought his claim for damages against the auctioneer, the Court deciding that such an action was quite available.

With this proposition, that the auctioneer is liable for any negligence in the performance of his duties, we may conclude this paper, since it would not be fair to Mr. Squibbs to take all the useful or interesting parts bodily out of his book.

There is only one further point which we would notice, and that is Mr. Squibbs's complaint that the 10*l.* annual licence is too high. The writer points to solicitors, who pay 9*l.* or 6*l.*; but he should bear in mind that before a solicitor can have his name on the rolls he has to pay other fees; so has a barrister; and both of these have a long and expensive technical education to go through. Without in any way underrating auctioneers, we may fairly say that so long as a man has had a good, solid, and broad education, and is quick in taking note of what passes around him, and in assimilating information, he requires very little of the technical training which is necessary for the lawyer, the doctor, or the architect.

THE NEAR FUTURE OF VENICE.

It is at a moment when all of us are disposed to look seriously upon the near future of our own country, when our Prime Minister, on a recent important occasion, in speaking of the prosperity of England, referred to the past power of our old enemies the Dutch, and the vanished splendour of the home of his ancestors, that the question of the near future of Venice has been brought under the consideration of patriotic Italians and the world at large; a question interesting to ourselves at the present moment from its bearings on our own position.

The past of Venice has been a maritime one; her future equally depends upon the sea, almost entirely deserted by Venetian ships since the fall of the republic at the end of the last century. Nearly 400 years ago, when Venice was at the height of her prosperity, the future of the state was looked forward to with apprehension by the long-headed councillors of the Doge, and the strange position of the city, which, from its very foundation, had served as its protection, it was seen might in time be destroyed.

Siemondi, in his fascinating pages, has long since made us all familiar with the early commencement of Venice, its situation, the formation of the lagoons, and of the numerous islands lying at the united months of the Adige, the Brenta, and the Piave. In the early years of the sixteenth century, this position of Venice, situated in the shallow lagoons, yearly made shallower by the continual deposits washed down by the rivers, raised the fears of the famous engineer, Fra Giocondo, who, by his precautionary measures by cutting deep water-channels, saved Venice from an early solution of the problem of her near future. Vasari tells us of this incident,—one which, by the way, was not referred to in the course of a valuable lecture recently delivered by Sig. Fambri to the Venetian *circolo artistico* on "The Future of Venice."

It was with an interesting quotation from an early source (the oldest known document relating to Venice) that Sig. Fambri commenced his lecture; the letter from Cassiodorus, secretary, in the sixth century, of the wise and virtuous Theodoric, to the Venetians, asking their assistance; the orator, forgetting the argument of his letter, describes somewhat naïvely to the Venetians themselves, to whom it is addressed, the strength of their position, their industry, activity, and liberty. In no "other country do riches and poverty," he writes, "live on such equal terms. The same food is supplied to all tables, the same thatch covers each house. The commerce of salt is your principal occupation, and the instruments necessary for this take with you, the place of the plough and the sickle."

It is not our purpose to enter into the discursive, even if interesting, details of Sig. Fambri's lecture (printed at length in the *Gazetta di Venezia*); we come, therefore, to that portion more directly bearing on the question, and the criticism of Sig. Fambri on views recently expressed of Sig. Manfrin regarding the "Future of Venice."

Passing rapidly over the conclusive details of the statistics of Venetian industry, one point is beyond question proved,—that the Venice of 1872 is in a worse condition than that of 1845, even when under the detested Austrians; while further statistics unmistakably show the by no means comforting fact that the sum yearly paid in town dues on articles of consumption taken into the city exceeds by half a million of francs (some 20,000*l.*) that of any other city in the province of Venetia.

To these facts,—dispiriting signs for the future,—what remedies are proposed by Sig. Manfrin? According to him, the city of Venice shows in the present day an inclination towards agricultural pursuits, which have so long formed the wealth of the *terra firma* provinces, and a tempting picture is held up in the success of the project of draining the Haarlem Sea in Holland. With this view, the shallow *lagune morte* (those near the mainland, and

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Auctioneers: their Duties and Liabilities. By Robert bbs, Auctioneer. London: Crosby Lockwood & Co.

entirely unaffected by the tide, Venice itself being situated in the *laguna viva*) are to be filled up and used for cultivation. By this means there would take place an active immigration that would restore to the capital the commerce of past days, and thus soon would be noticed a gradual and material transformation. Incidentally, Sig. Manfrin warns the Venetians from relying too much on strangers. They, he says, do not raise in any important degree the economic level and still less the moral.

Criticising this proposition, Sig. Fambri entirely puts aside the idea of filling up the lagoon (with an area of something more than five hundred millions of square mètres of water surface), to carry out which project, he tells us, would require the finding, bringing, and distribution of some two millions of cubic mètres of materials,—an idea worthy the conception of a Jules Verne alone, and demanding an enormous outlay of capital. There are others, again, who speak of allowing the rivers to do their work of drying up the lagoons by their annual deposits of alluvium; this process, it must not be overlooked, however, would take centuries to carry out.

To all such proposals, Sig. Fambri objects, and very decidedly states as his opinion that the idea of filling up the lagoons will never be carried out, at the same time urging that this view, though held by many others, should not prevent the project from being properly studied.

Two centuries ago Benedetto Castelli, the friend of Galileo, prophesied that the insular position of Venice could not be insured for ever, nor the lagoon be kept open. He added, however, that the danger might be staved off for "many many centuries." With such a prediction from so experienced an authority the more patriotic lovers of water-girt Venice may rest satisfied.

With, at the utmost, a third of the expense necessary at present to enlarge the port of Genoa, the Porto del Lido may be re-opened and the lagoons rendered as accessible as those of Malamocco. The channelling of the rivers and the clearing of this ancient gateway are a condition, not alone of the future prosperity of Venice, but of her very existence; a complete freedom of entry, and the re-establishment of all the accessories of the old commerce are as equally urgent, and then the symbolic ceremony of Ascension-day, and the solemn marriage of the Doge with the Adriatic may again be fraught with as much meaning as in the days of the past. Then the royal yacht of King Umberto will be able to land at the famous Piazzetta, as did, in the old days of the glorious past, the galleys of Enrico Dandolo and Sebastiano Venier.

What is necessary for the future prosperity of Venice is, in the opinion of Sig. Fambri, the production of those objects indispensable for the refinements of every-day life, objects which render our existence convenient and agreeable; an opinion amply justified by the example of Paris in its manufacture of such *objets* which may be said to form, at least, two-thirds of the extraordinary industry and riches of the capital of France.

Venice has inherited from the past more than a usual share of noble monuments, attracting yearly many thousands of visitors, but Venice has inherited besides more than one source of important revenue. The glass, for which she has been famous since the Middle Ages, has invaded the world; her mosaic work is renowned, her Mediæval and Renaissance furniture is admired by the numerous visitors, and the beautiful lace which (thanks to the efforts, if we mistake not, of Lady Marian Alford, Lady Layard, and others) now employs several thousand women who produce work, ranging in value from the modest sum of three halfpence a yard to eighty and a hundred pounds, is justly prized by the world. All that is necessary to render active these artistic industries, so well suited to the good-natured, light-hearted, Venetian population, which Goldoni has with such skill portrayed in more than one of his brilliant comedies, is the modern spirit of association.

It was with truth that the late Massimo d'Azegli remarked, that, Italy formed, the Italians must be made; to the Venetians this is particularly applicable. Venice, in her struggle for supremacy, received more than one severe blow: the conquest of Constantinople, the discovery of the Cape of Good Hope, the baseness of a Manin who allowed the republic to fall, alone redeemed by the patriotism of that other Manin who but yesterday, as it seems, tried to raise the republic to its old height, and partially succeeded.

On the re-formation of the Porto del Lido hangs, so to speak, the problem of the near future of Venice; her geographical position is secure, safer even than ever, called upon to play an important part in the commerce of the East; Lesseps has already virtually restored to Venice all that the discoveries of Diaz and Vasco di Gama deprived her of.

The *Edinburgh Review*, in a recent article, "Venice Defended," has praised the custom of the old Venetian families in sending their sons out into the world to make them men and merchants. But a maritime life, though the sea may be regarded as the principal field of action for the Venice of the future, would come less easily to the Venetians than might be at first supposed. When the republic was destroyed, all activity was suspended. Commerce, when happily pursued, consists of a multiplicity of well-organised relations, and is brought to a stand-still when some sudden shock breaks but a few threads of its complicated machinery. To the destruction of the republic came the long torpid period of the first Empire; the stout timbers of the laid-up vessels of the state were riddled by the worm, and the traditionary occupation of the Venetians interrupted by the lapse of a comparatively idle generation, could not be taken up again.

Venice must begin again from a new point, not alone relying on her past inheritance of the sea, but on her art and industry to help her out in the problem of her future, whose past has been rendered so glorious by the serious art of Titian and Giorgione, and the gayer and more attractive traditions of Paul Veronese; the first foundations of this future are already laid in the noble city in which so much romance has been centered, in the art and industry which only recently have been carefully described in the pages of M. Charles Yriarte's capital work on Venice, by a portion of a review of which, by Philippe Burty, we cannot do better than close this article:—"The brilliant and delicate splendour of her atmosphere, the courtesy of her inhabitants, the silence of her thoroughfares, without horses and without children (the children are all brought up on *terra firma*), the grace of her very poverty, the complaisance of her learned librarians and the curators of her museums, the facilities of her material and intellectual life, left the sweet and well-ordered impression upon me of a sort of vast convent, similar to the one described by Rabelais under the name of 'L'Abbaye de Thélèmes.' One must think of Venice often, talk about her in low tones with a friend,—and not look at her in photographs."

Treviso.

NEW GREEK CHURCH, AND NEW SYNAGOGUE, BAYSWATER.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday last the Architectural Association visited two buildings of exceptional interest, both situate in Petersburg-place, Bayswater.

The first building visited was the new Greek Church, now practically completed structurally, although much remains to be done in the way of internal fittings and decorations. The decorative portions of the work will, however, be taken in hand as occasion offers after the opening, which is fixed to take place at Easter. The building, of which Mr. J. O. Scott is the architect, is one of extreme interest. It consists on plan of a Greek cross, the central area being covered by a hemispherical dome, 42 ft. in diameter. This dome is lighted by twelve small windows, and to the height of 2 ft. above the window-heads, is of brickwork, the upper portion being entirely of concrete composed of Portland cement, gravel, brick ballast, stone chippings, &c., in proportions which were determined by a careful series of experiments. The concrete portion of the dome is 14 in. thick at the springing, and 9 in. thick at top. The height from floor level to underside of centre of dome is about 75 ft. The church is not "orientated," but stands nearly north and south, the altar being placed in the centre of a semicircular apse formed in the northern arm of the Greek cross of which the plan consists. This recess is flanked on either side by a shallower recess, the three recesses all communicating. The semicircular arches spanning the four arms of the cross are of concrete, the span being that of the diameter of the dome, viz., 42 ft. The eastern and western arms of the cross are, like the northern arm (in which the altar recess is placed) comparatively shallow, but the southern arm is more deeply recessed, and is crossed gallery, partly beneath which is the ent vestibule. The total length from nor south is 119 ft. 4½ in., the extreme width 88 ft. 9 in. The whole of the surface dome will ultimately be richly decorated, probably in mosaics, and the pendentive the concrete arches spanning the arms cross will be decorated in like manner. the whole of the wall surface internally w covered with various-coloured foreign ma and what brickwork is intended to be exposed internally is red, relieved with stone. Beneath the drum of the dome cornice of red terra-cotta. Externally building is of yellow stock bricks, relieved red terra-cotta string-courses and ban red brickwork. The clerk of the works Thomas Leigh, received the visitors, and good enough to explain in detail many m into which we will not enter at the present hoping shortly to have an opportunity of describing the building. The contracto Messrs. Kirk & Randall, of Woolwich, foreman being Mr. Leake.

At the new Synagogue, the visitors we ceived by Mr. Audsley. In our last volume (p we gave a perspective view of the exterior building, which is now nearly completed, the exception of the decorative work, the g part of which is deferred for the present. synagogue has a frontage of about 71 Petersburg-place, and a depth of about 1 and is well lighted on all four sides. The entrance is by a recessed porch in the cen the west frontage, flanked by two turrets terminate with minarets. There are, in tion, two subsidiary entrances at the north and south-east corners. There are four cases, leading to the galleries. The dimen of the building on the ground floor are by 61 ft., and on the gallery level, 83 61 ft., and it is calculated that the entire ing will accommodate about 900 worshi although seating for a much smaller nu is provided in the first instance. The si are of pitch-pine, and the gallery-fronts, and other joinery work are of the same having a remarkably beautiful "figure grain. The whole of the pitch-pine used from Liverpool, Mr. Audsley stating that pine of good quality was scarcely to be London, although it was always to be obt in Liverpool. The style is Byzantine. T ternal arrangements differ somewhat from which usually obtain in the orthodox London gogues, the ark being in the nature of a placed in an apse or vaulted recess. Th and tribune or reading-desk are of n and Caen stone, the stone wherever used coloured and decorated with gold-leaf. exterior of the building is of red brick, dressings of red Mansfield stone. Mr. Joseph, of Coleman-street, and Messrs. Au of Liverpool, are the joint architects. works of the substructure have been carrie by Messrs. Adamson & Son, of Turnham-g and those of the superstructure by Mr. G Shaw, Mr. Petheridge being general forem

LONDON STREET ARCHITECTURE

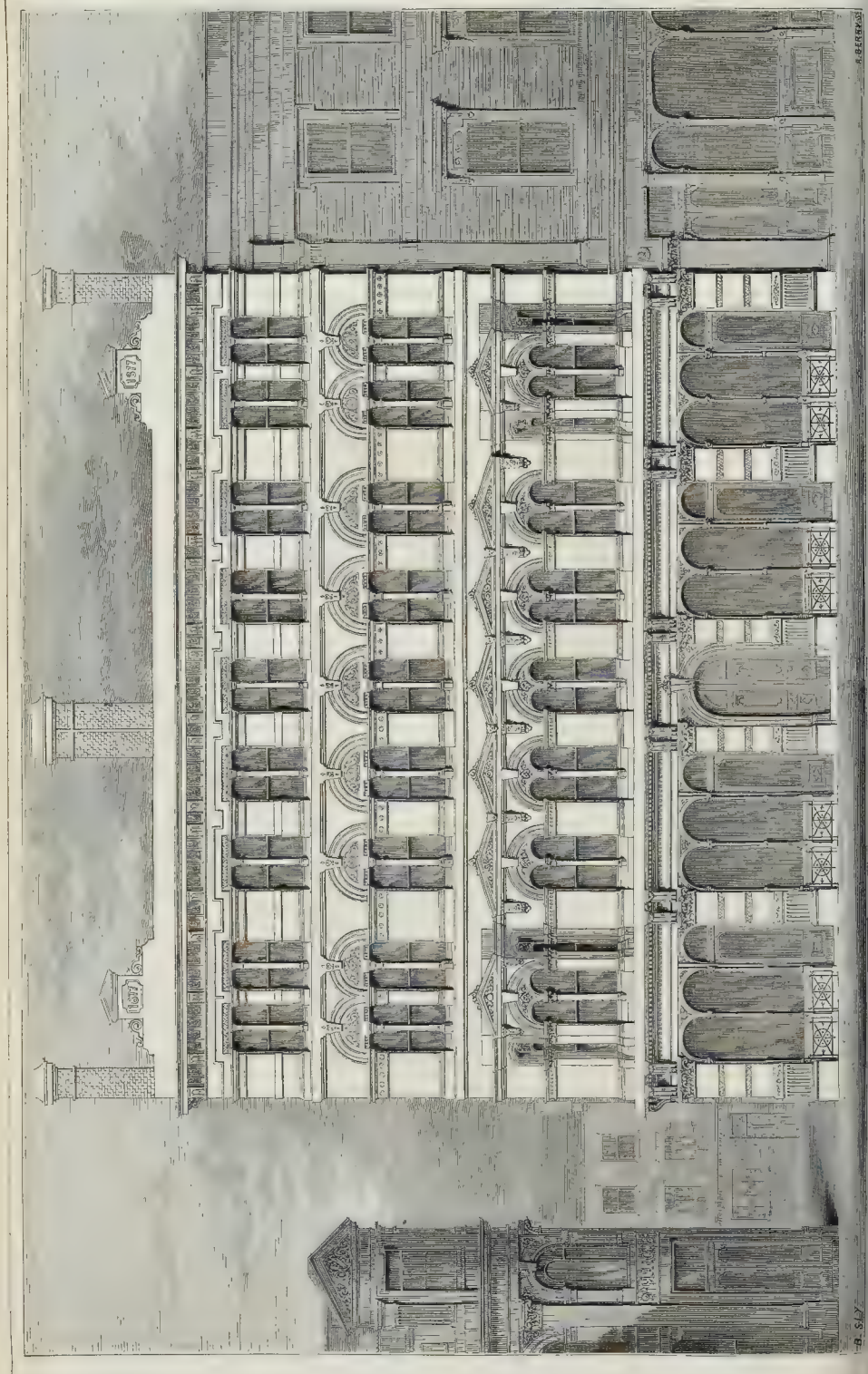
NEW BROAD-STREET, CITY.

The building,—a view of which we giv erected over the Metropolitan Railway, passes under the eastern end of New B street, City, the Metropolitan Station erected over the railway on one side, and building on the other, immediately opposite.

The foundations of the building, there consists of three massive wrought-iron gi each about 5 ft. deep, thrown across the ra and resting upon the embankment-walls a east and west ends of the structure, and three massive iron columns placed intermedi about one-third the length from the we abutment wall.

The weight of the building has been of n sity adapted to the safe load these girders viously erected by the railway company) carry (viz., about 300 tons each), for which pose the weights of the walls and floors been carefully taken out and calculated, an height of the building was kept down to s having been originally intended to have an story. The staircase, intended to be of s is made of oak, for lightness and strength.

The building is planned to contain four on the ground-floor, and twelve sets of offic the several floors above. The arrangeme





THE MANCHESTER HOTEI, ALDERSGATE STREET.—Messrs. Bateman and Corsen, Architects.

is simple. A staircase, placed in the at the rear of the entrance doorway, up to a corridor running longitudinally in entre of the building (lighted by windows end, and by the centre staircase windows ay).

divisional walls, including chimneys, are rried by strongly-constructed wrought-girders running transversely across the ng, and bearing on the three main girders ously mentioned. The whole of the front ounted in Portland stone.

vill thus be seen that the railway company a valuable frontage, and obtain a large , viz., upwards of 1,000*l.* per annum, as d-rent, being at the rate of about 10s. per ver the superficial area thus realised, , as the building does, an important ghfare, and being in close proximity to ailway stations.

se offices were designed by, and erected , the joint superintendence of Mr. Edward ll and Mr. Henry S. Legg, architects, s. Newman & Mann being the builders. arving was executed by Mr. Bradford, of ington.

THE MANCHESTER HOTEL, ALDERSGATE STREET.

TERY large building for the Manchester Company has been in progress for some in Aldersgate-street, close to the Metro-n Railway Station. It is Gothic in style, mullioned windows, gables, finials, and a turret at the angle. Our engraving repre-he Aldersgate-street front and a portion return side, but this extends far down the treet, Long-lane. Messrs. Bateman & Corser e architects, and Mr. Brass is the builder, mount of the first contract being about 7. Mr. Goodwin is the clerk of the works. old line of frontage to Aldersgate-street ong-lane has been considerably set back a width of 45 ft. to both streets, and the r corner set back 22 ft. to facilitate the raffic to the adjoining Meat and Poultry ts, and the railway station, also the large ss traffic in the Barbican. The building ve two other street frontages to Cloth w streets, the site being nearly isolated. ground-floor is a lofty coffee-room, 50 ft. ft.; a smoking-room, 60 ft. by 24 ft.; rcial-room, 35 ft. by 28 ft., with corridors munication.

ards Aldersgate-street and Long-lane are shops; that at the corner of Long-lane oth-street it is proposed using as a *re-rt*, which will greatly reduce the rental able to the hotel.

he first floor are two billiard-rooms, one and the other private, with separate stair-ot communicating with the sitting and bed

building will contain upwards of two d bed-rooms, exclusive of servants' accom-on and sitting-rooms.

e basement are the necessary servants' stores, &c., with coal-vaults under the nts. The kitchen and culinary offices the top story, with necessary supply and -lifts. A large luggage-lift is provided ng the central staircase from the base-o the top story. The building will be vith baths, warming apparatus, and other appliances.

exterior is of red brick walling, with dressings to openings, and other deco-nishings, as shown in the view.

notel is being erected by the Manchester Company, the freeholders being Messrs. & Lewis, of Noble-street, City, and is d to supply a long-felt want of hotel nodation for commercial men and others business in the City. The site, being in ntre of large and increasing warehouse nodation, near the meat and other s, and close to the Metropolitan Railway , is most conveniently placed.

rge geometrical staircase in stone from to top of the building, is a good piece of work; we should prefer, nevertheless, some additional support given to the nds of the steps.

ng the progress of the building some little has been made in the arrangement of le, the doorway shown there having been d to the front in Aldersgate-street, and le itself being used as a shop-front. The ts preferred that our view should show inal design.

The mass of the building in Long-lane is completed externally, but the upper part of the Aldersgate-street front has been delayed by the objection of neighbours, a cause now too often interfering with the architecture of our streets.

THE ART DECORATION OF THE STAGE.

THIS was the subject of a lecture delivered on the 6th inst. by Mr. Walter James Allen, at a meeting of the Society of the Fine Arts, Conduit-street. The Marquis of Townshend presided during the earlier part of the meeting, and in taking the chair prefaced the lecture by a few remarks in reference to the work of the Society, with which he has lately become connected as a member of the Council. His lordship observed that the society was doing a useful work in promoting the study and appreciation of the fine arts. All classes of the community must receive benefit by the promotion of the objects which the society had at heart, for art appealed to the highest feelings of which human nature was capable. Next to Religion there was nothing so elevating as Art. We lived in days when we were likely to see the poorest classes appreciate and enjoy thoroughly the noblest works of art.

Mr. Allen then proceeded with his lecture. He commenced by saying that in the time of Elizabeth, the decoration of the stage was very poor, the only accessories consisting of hangings of tapestry, the floor being strewn with rushes. Most of the halls of the different inns of court had been the scenes of dramatic success. In such halls the stage merely consisted of a platform, and the entrances and exits were by steps at each end, so that the performers had to enter and leave the stage in the sight of the audience. It is strange that such a state of things could possibly have existed,—the absurdity seems so great for an actor, after a great burst of pathos, to calmly leave the platform or stage and deliberately walk down-stairs. There could be no doubt that the scenes of the modern theatre help the illusion greatly, breaking, as they do, the actor away from the spectators. But the art decoration of the stage must have advanced rapidly, for the Globe Theatre in Southwark was destroyed owing to the circumstance that Shakspeare's "Henry VIII." was placed on the stage with all necessary decorations, so complete, in fact, that real cannon were fired, and some of the real wadding alighting on the "thatched hide" with which Taylor, the water-poet, told us the building was covered, the theatre was burnt down in a very realistic manner. The art decoration of the stage in the reign of Queen Anne must have been in a curious state. Booth, who was the original Cato in Addison's tragedy of that name, is referred to in Pope's line as appearing in—

"Flowing wig and lacquer'd chair."

Fancy the stern Roman in a Ramillies wig and a chair of the *rococo* sort of Queen Anne's time! It was not necessary to say much of the progress of stage decoration between the time of Queen Anne and the latter part of the last century. We looked with wonder at the portraits still preserved to us of the great actors of the period. To think of Macbeth arrayed in scarlet coat, blue facings, powdered wig, jack-boots, spurs, &c., and Hamlet in black court dress! Canaletti supplied the scenery for His Majesty's Theatre in the Haymarket, when George III. was king, as did also Paul de Loutherbourg. The scenery in those days depended more on the artist than on either the property-man or the carpenter, though in turning up the different gazettes and newspapers between the middle and the end of the last century, we find constant descriptions of the most gorgeous scenery for the pantomimes, where the property-man and the carpenter must have done very important work. To the late Madame Vestris must be given great praise for having done immense service in this important art, by her wonderful taste and judgment, as shown in the plays produced in the different theatres under her management, though Mr. Allen suspected that that great master of poetic fancy, the veteran Planché, had a great deal to do with these graceful productions. But the revivals presented to the public by the great tragedian, William Charles Macready, must still be very vivid in the memories of many yet living. The arrangement of the vineyard scene in Handel's 'Acis and Galatea" was in its way perfect. The whole of the vast stage was brilliantly illuminated. The scenery, supplied by those giants in art, Clarkson Stanfield and David Roberts, was of an order never seen before, and probably never equalled since. To Macready must be given the praise of having brought forward Stanfield and Roberts, who elevated scene-painting to an art, and who made it a splendid field for landscape-painters. Great as they were, we have still spared to us some who are not unworthy successors,—such as William Beverley, William Callcott (whose scenery at the Lyceum, under the management of Madame Celeste, was perfect). Again, Hawes Craven at the Lyceum is setting an example of true art which is a great satire on the intense and vulgar realism of some other theatres. At the Strand Theatre, where the stage is very limited, the scene-painter, H. P. Hall, manages to secure an effect of space which shows in a thorough manner the knowledge of his art. The late lamented Samuel Phelps thoroughly understood the art-decoration of the stage, and at Sadler's Wells, under his management, the scenery was always perfect, sound in its principles, and never too glaring. The dresses were archæologically correct, and in perfect harmony. Contemporary with Samuel Phelps was Charles Kean, a highly-cultivated gentleman, and, in the opinion of many, a very great actor. Of his great abilities there could be no question. At the Princess's Theatre he produced a series of Shaksperian revivals which for magnificence have probably never been surpassed. The Banquet Scene in Byron's "Sardanapalus," the Rising of Phœbus in the "Winter's Tale," Cardinal Wolsey's Revels at York-place, were the talk of the town; but the art-decoration was overdone. The delays between the acts, the time taken to work the different scenes, and, if the expression might be allowed, the monotony of splendour, all combined to break the interest of the play itself, and in reality the gorgeousness of the frame entirely killed the picture. But in some of the productions at the Princess's under Charles Kean there was shown a rare appreciation of the true art-decoration of the stage. Of Mr. Fechter's archæological knowledge of costume the lecturer related the following anecdote:—When Fechter had the Lyceum Theatre, some years after his first performance in London, he went into the wardrobe, and, taking up a dress for a piece then being rehearsed, said, "For whom is this?" The reply was, "For Mr. So-and-so," who had to play a part in the piece. Fechter answered, "Yes, it is very pretty so far as it goes, but it goes rather too far. You have absolutely got a space of about 150 years in one costume! Give me a pencil and some paper." He sat down, and there and then drew the dress perfectly correct. In most theatres, the gas was either too strong for a light scene or too dark for a sombre one. But in the revival of Hamlet at the Lyceum, by the judicious lowering of lights in some parts and by raising them in others, the production of what may be called accidental effect is most successfully attained. People went to the theatre to see the acting, to listen to the play. The acting and the play ought to be as planets, the scenery and decorations as satellites, as in a picture the background should be subservient to the subject, and ought to help to produce the harmony necessary for the general effect. But although good acting would cover almost any amount of bad scenery, theatrical managers might, at a much less cost than was now incurred, attain much better results than were seen at present, if in every theatre could be appointed an artist (using the word in its broadest sense) who, having a keen appreciation of art in its various phases, and working cordially with the principal performers, could direct the action of the piece completely, and arrange the grouping so that the stage picture should look unstudied, and help the action of the play. All art was careful art, and the more careful the art the more it was hidden.

Mr. Cave Thomas, who took the chair in succession to Lord Townshend, moved, and Captain Mercier seconded, a vote of thanks to Mr. Allen for his interesting lecture.

National Art Training School, South Kensington.—The annual prize of 10*l.*, granted by the Royal Historical Society for an essay on Art History, to be competed for by the male and female students of the above school, has been awarded to Mr. W. J. Merritt, for an essay "On the Influence of Greek Art in Italy, France, England, and Germany, from 1300 A.D. to the End of the Eighteenth Century."

ARCHITECTURAL PUBLICATION SOCIETY.

THE DICTIONARY OF ARCHITECTURE.

A SPECIAL meeting of the subscribers of this society was held on Wednesday afternoon last at 9, Conduit-street, Mr. John Whichcord in the chair.

Mr. Arthur Cates, hon. sec., read the report of the Committee, which contained the following passages:—

At the Special Meeting of the Subscribers, held May 21st, 1874, a series of resolutions was passed unanimously authorising the Committee to proceed with the work of carrying on the "Dictionary of Architecture" in accordance with the recommendations contained in the report submitted to and accepted by such special meeting. Acting upon this authority the Committee proceeded to instruct Mr. Wyatt Papworth to renew his labours on the basis of the new terms so agreed upon, and in result there was issued at the commencement of last year a part or rather volume of text comprising in 264 pages the letters M, N, O, with Title-pages, Table of Contents, and Indexes to the Plates of Illustrations, for binding in several volumes the "Dictionary" from its commencement.

The audited balance-sheet, dated June 27th, 1878, appended hereto, sets out the financial condition of the Society after the entire cost of producing and issuing the letterpress above mentioned had been discharged.

It appears therefrom that the balance in hand in April, 1874, having been 1,290*l.* 7*s.* 11*d.*, and the receipts up to June 1st, 1878, 671*l.* 5*s.* 6*d.*; the total available capital was 1,962*l.* 3*s.* 5*d.*, while the expenditure having been 849*l.* 15*s.* 9*d.*, the balance then remaining in hand and available for further proceeding with the "Dictionary" was 1,112*l.* 7*s.* 8*d.* Thus, without any call on the old subscribers, the production of the volume last issued and the incidental expenses of four years have only reduced the capital by 178*l.* 0*s.* 3*d.*

All debts and outstanding liabilities having been cleared off, the entire balance of 1,112*l.* 7*s.* 8*d.* was available for the continuation of the work. This is the more satisfactory, since not only, as authorised at the special meeting, has the expense of producing the MS. been considerably enhanced; but in the printing and all other departments, the cost has considerably exceeded that incurred in former years, and on which the estimates of the cost of completion were based.

The result, which is shown on the balance-sheet, has not been obtained without much labour and attention, and the committee wish to express the obligation of the society to two or three members by whose exertions the accession of several new subscribers has been obtained, and to express a hope that the success thus shown will induce others to a like exertion, so that the next financial statement may present a result as satisfactory as that now submitted.

There is still a wide range within which the "Dictionary of Architecture" may be found to be acceptable, and it rests only with the members of the Society to make it known, and to secure the disposal of the few copies remaining available for new subscribers.

The committee would urge on those who, possessing the earlier issues, have not continued their subscriptions,—not to delay acquiring those portions deficient,—since, as the stock diminishes, it has been found expedient to raise the price.

In order to afford opportunity of acquiring the continuation to those who might not be entitled otherwise to receive it, the Committee fixed the price of the new part, M, N, O, at 2*l.* 12*s.* 6*d.*, and determined that the annual issues, which hitherto had been charged at 1*l.* 1*s.*, the former subscription rate, should, for the future, be charged 1*l.* 5*s.*; the subscription for the "Dictionary," so far as funds may be provided for its production, being in one sum, 21*l.*

Satisfactory, from one point of view, as the condition of the Society may from the balance-sheet appear to be, the experience gained by the production of the letters M, N, O, and the commencement of P, has convinced the Committee that it is only by a careful system of condensation that it will be possible to approach a realisation of the anticipation formed in 1874, and submitted to the special meeting on May 21st of that year; and much must depend on the additional funds obtained by further disposal to new members of the stock. Under any circumstances, however, the condensation referred to appears to be essential, as the only means by which the work in hand can be completed within reasonable limits of time and expenditure, and with any proper relation to the funds likely to be available; the Committee, therefore, intend, with the approval of the members, to devote their best endeavours thus to attain this end.

In recent years, in almost every report it has been the sad duty of the Committee to lament the loss of some earnest friend or valued contributor to the work, and this occasion forms no exception. The death of Mr. Sydney Smirke, R.A., will be in the memory of the subscribers: his earnest labours on behalf of the Society from the period of its foundation, his kind contributions of sketches for the plates of illustrations, the care and learning displayed in the revision of the MS., and the attention paid to the interests of the Society in fulfilling the duties of treasurer for so many years, make his loss one deeply to be felt.

More recently death has removed another valued friend and assistant in Mr. Charles Charnock Nelson, whose careful consideration and condensation of articles and critical perusal of the "Dictionary" during revision, have, from the commencement of the work, been of the highest value; while the conductor of the text testifies to the valuable information obtained from Mr. Nelson's extensive reading in foreign as well as English literature, and for the sources pointed out by him for the amplification, elucidation, and completion of articles.

Mr. Wyatt Papworth continues his labours in the preparation of the manuscript for the continuation of the "Dictionary"; much of the letter P is printed, while a further quantity is ready for setting up. These labours, it is needless to say, are very onerous; so that any contributions to the text will be thankfully received by him; and as the number of the revisers of the sheets is now seriously diminished, he would gladly take advantage of further assistance, if any subscriber will kindly offer his services for such an occasional purpose.

The Chairman formally moved that the report and balance-sheet be adopted, and that the committee be authorised to proceed as therein recommended. The motion was seconded by Mr. O. Hansard, and led to a long discussion, the opinion being very generally expressed that the "Dictionary" should be finished with the same degree of completeness of information and copiousness of illustration that characterised the earlier parts. It was also the opinion of some speakers that the subscribers would rather increase their subscriptions by a guinea or two than that the work should not be completed in a manner worthy of the profession and of the Society.

The report was adopted, on the understanding that the views expressed during the discussion would be further considered by the Committee.

The officers and committee were then re-elected, Professor Hayter Lewis being elected hon. treasurer in the room of the late Mr. Sydney Smirke.

THE SOCIAL NECESSITY FOR POPULAR AND PRACTICAL TEACHING OF SANITARY SCIENCE.

A PAPER on this subject was read by Mr. Josh. J. Pope, M.R.C.S., at the Society of Arts, on the 5th inst., Dr. Richardson in the chair. In the course of the discussion which took place at its close, Mr. Hale said he considered it a matter for regret that none of the gentlemen who came forward to teach sanitation were able to point to any house which the public might inspect as an example of what a healthy house should be.

The Secretary (Mr. Wood) said it might be interesting if he mentioned what the Society of Arts had been trying to do in connexion with this subject. In 1876, an examination in domestic economy, which included health, clothing, housekeeping, thrift, and cookery, was instituted, and in that year there were thirty-seven candidates, eight of whom were examined in health; in 1877, the numbers rose to ninety-seven, thirty-five taking health as their subject; and, in 1878, there were 170, of whom sixty took up health. A considerable number were students from the Birkbeck Institution, who had profited by Mr. Pope's instructions. The domestic economy examinations in the Education Code were limited to girls, whilst the Society's examinations were open to both sexes. The reasons for the change in the conditions of the Prince Consort's prize were these. The subjects of examination were of various degrees of difficulty, and it was thought by the Council, after a good deal of discussion, that the subjects included under domestic economy were of rather an easier nature, and perhaps lent themselves more readily to cramming than some of the other subjects, such as arithmetic or languages. It was, therefore, decided that the domestic economy subjects should not count equally with the other subjects.

Mr. C. Cook said that only last week there was a letter in the *Times* complaining of the bad ventilation of Westminster Hall. He hoped that in the New Law Courts this would be seen to. There was a good plan of ventilation in the British Museum, the opening of a door opened a ventilator, and the shutting of it opened another. He thought clothing was an important part of the subject, and asked what could be more ridiculous or unhealthy than a chimney-pot hat.

Major Webber remarked that few, if any, could claim that they had always lived healthy lives, or inhabited healthy homes; but, by coming there that evening, they showed that they wanted to improve. He quite agreed, however, that it would be a good thing if there were a range of dwellings anywhere suitable for those who could only pay a small rent, which could be pointed to as models of what such houses ought to be, and he was sorry that no such building existed. He remembered some years ago, when the Society appointed a committee for investigating the different kinds of sanitary appliances, it was suggested that one or two small dwellings should be built and fitted up with all suitable appliances would not be too expensive for ordinary use. It had always struck him that this was one means of instructing the public, which was much wanted, and if money were forthcoming, he thought it would be better spent in that way than in giving prizes. In the Exhibition of Paris, in 1867, there was a very useful instance of this kind of thing, in a set of model barracks, showing how such buildings could be made healthy even when crowded with men.

Mr. Blashfield thought it would be extremely difficult to lay down a law as to the building of houses. The scheme of building round London was of so independent a character that it would take a very powerful Act of Parliament with it. Mr. Chadwick, some years ago this matter received a great deal of att laid down some very useful schemes for h dwellings of a small and cheap charact from that time cottage building had im to a considerable extent. It would be in to mention names, but in the Midland c there were several noblemen who were b cottages of brick and stone, well drained, for people to occupy. There were also i of the new houses being built in Londo lent modes of ventilation and drainage s but these were not all alike. New schem being brought forward almost daily, would not do to make one unvarying Something of this sort was going on a bridge. There was a great scheme fo lating the Post-office, which he had b formed was a very efficient one. Every d schemes were proposed, and were discu the Institute of British Architects and places. Although they were often defec believed houses were of a better charact they used to be. An exhibition of the i ments that had taken place with refe drainage, ventilation, gas, and water w thought, be very useful.

Mr. Meyer thought that good arrang for working-class dwellings could be see Peabody buildings for artisans' dwellin had seen it reported that the rate of m in those houses was less than elsewhere might, therefore, be taken for granted t were properly constructed with regard to Still this was rather travelling away f subject, which was how to bring the kn of health within popular appreciation suggestion made by Mr. Pope that the might help, was a very good one, and could induce ladies to make themsel quainted with the laws of health, and t that knowledge among the poor they they would be doing a great deal of go would also suggest that it should be con on those who managed large schools t quainted with those laws, in which c would not have such cases as they had to-night, of a child suffering from w cough being allowed to continue at sch several other instances of which he had

Mr. R. Manuel said that Mr. Pope had to a margin of legislation already pro the State, but which, owing to ignoran difference, was not used. Now there direction in which great sanitary impr might be made, and he wished to know existing legislation provided for it. urban neighbourhoods it was well kn when a district was laid out for buildin the practice, especially if the soil was for the speculative builder to cart it a fill in the space with all sorts of refus in a sanitary sense, nothing could be m to the health of a new neighbourh standing it on such a foundation, and l like to know whether the power really e preventing the process.

Mr. Francis Cobb drew attention to t of Cantor lectures now being delivere hall, which dealt practically with this and at which the various sanitary ap were freely exhibited.

Mr. Dipnall said the Metropolitan Works had certainly the power of me evil referred to by Mr. Manuel, by houses to be built on a solid concrete tion.

Mr. Blashfield believed district surve power to prevent the throwing of rubbi new houses, but the whole matter w consideration, and he believed that, in Building Act, a great amendment made on this head.

The Chairman said they might con themselves and the country on the which had been made in sanitary scie about the year 1854, when the Crim paign directed a great deal of attenti matter. About that time, and three years later, they were beginning to sanitary science, but at the time to Pope referred, when he said he was his was probably the only systematic London on public health; and he th could then have reckoned on his fi number of men engaged in giving ge tures on the subject. At the present t was this great Society encouraging le health, and getting the best men they to give practical useful information

ck and London Institutions also, and now en at the Royal Institution, the subject alt with, and throughout the whole of edical schools there was a desire for teaching. Not only so, but there were rs going about to different parts of the y, and in many important institutions they a difficulty in filling the professor's chair. as very hopefnl, and he could say from a dge of some of the workers in similar s of action in France, Germany, Italy, and America, that we were both envied mired for what we had done in this . Only a week ago he received from Italy t journal of a great sanitary institution was being established there, and in France ermany similar institutions were being shed. We might, therefore, be well satisth the progress which had been made, and gratulated the meeting on the forcible which the subject had been brought for- by Mr. Pope. Mr. Pope had not come o lecture on sanitary science, but to read r which should raise a discussion, and in ort he had certainly been successful. It this way that the public mind was edu- He should rather differ with the reader point, viz., where he seemed to intimate sanitary science were taught strictly ould be many people of common-sense od scholars, but that the number of men us would decrease. He did not think eed have any such fear. In a sound here was usually a sound mind, and the horoughly cultivated was the physical man's nature, the more certainly would e a fine intellectual development; and as genius were born, not made, he should s they would be born quite as frequently re, and when their bodies were thoroughly veloped there was no reason to suppose eir mental faculties would suffer. That t the case amogst the Greeks, who paid ttention to physical development; and oduced such men as Plato and Socrates. e had remarked on the facility with hysiology could be taught to the young, had been much struck by this, as a himself. He had taught some 300 or ies and gentlemen, themselves engaged hing, for the Gilchrist Trust, and on casions several times, and had found the g of physiology the most pleasant, easy, ful of tasks. He quite agreed with Mr. hat the foundation must be laid in the g of the basic principles of life to the in the same manner as the teaching readiting, or languages; and he agreed with , as to the importance, particularly of g girls.

A BURIED ROMAN CITY.

he paper by Dr. Hooppell, on the results exploration of the Roman station of m, at Binchester, in the county of n, made in the latter half of last year, to ve referred in our last, the writer said:— can be no doubt, I apprehend, that ster is the Vinovium of the Itinerary. ave also thought it to be the Vinovium my. Of this, however, I do not myself olutely certain; though when the great pebbles underlying the massive masonry e was discovered, I thought a striking e of the correctness of Ptolemy's infor- had been brought to light. It is unly an evidence of preoccupation of the our Keltic forefathers, and leads us to hat possibly some other remains, earlier an those of Rome, may also be brought . Accident led us from the north-east of the station to a point far to the south- f the spot where we had been working. tion is a very large one, and its outline, en by Mr. McLauchlan, differs widely s outline as given on the Ordnance Map. ot say, therefore, whether the point to we next went was inside or outside the ramparts. I imagine, however, outside. rked from it upwards and onwards to- the central parts of the station, and in rse of many weeks laid bare the walls of vidently was a range of extensive buildxtending along the southern side of an ant street. Further explorations afterled us to conclude that this street was ther than the great road, Antonine's which, coming from Isurium and Cattarum, passed through Vinovium, and went indomora, Corstopitum, and Bremenium. The northern gate is hopeless of access to us; but I believe it is Mr. Proud's intention to endeavour later on to find the place of the southern gate, if the portion of the street we have already explored is really outside the Roman rampart. I have several views of the trenches opened along the western end of this street, and the members will find them very instructive. Along the whole course of it, next to the buildings, was a continuous line of channelling. The depth of the channelling below the surface is on an average about 6 ft. The side walls of all the buildings run at right angles to this street. Some of the buildings were very large. The outside length of one, the whole circuit of the walls of which was excavated, is perhaps 70 ft., the outside breadth perhaps 25 ft., the thickness of the walls 2 ft. The remains, more or less complete, of several such buildings have been uncovered. A very singular feature in them, and one which at first puzzled us exceedingly, is the existence of two cubical stones with a square hole in the centre of each, in connexion with each building. The size of these stones, to take one at random as a specimen, is, say 14 in. × 14 × 16, with hole (3 in., × 3 × 3). There are about fifteen of them in all. The use of these mortised blocks was at first a great mystery. I have come to the conclusion for a long time past, however, that they formed portions of the doorways. Pillars, either of stone or wood, doubtless, stood upon them, and the hole was a socket into which the tenon of the post was inserted. Some of these holed stones show signs of having been raised in the course of time from their original positions to a higher level. In fact, one of the most interesting features of this street is the visible indication it affords of the long period of time, amounting plainly to centuries, possibly to many centuries, that Vinovium was a place of strength and population. The street appears to have been the road till comparatively modern days. It is piled with enormous stones, the *débris* of innumerable buildings. Among them are pillars and ornamented work of many kinds. Again and again has the channelling here and there been raised; again and again have the entrances to the building been elevated likewise. In several places huge slabs pass from the street to the adjacent buildings, forming a door-step across what may have been when it was laid down but a muddy gutter, the capacious stone channelling of the earlier and wealthier age being buried far beneath."

INDIAN POTTERY.

At a meeting of the Society of Arts, on the 26th ult., Dr. George Birdwood read a paper upon "The Indian Pottery at the Paris Exhibition." He remarked that former international exhibitions held in this country had caused a widespread demand for Indian carpets and jewelry, and, as much interest had been awakened in Indian pottery amongst the cognoscenti and the curiosos at Paris, he wished to raise a warning voice against the influences which were even now enfeebling and corrupting the artistic character of the wares, and which would assuredly become aggravated by the commercial demand which would spring up for it unless they were from the first intelligently resisted alike by purchasers, importers, and manufacturers. In all the varieties of Indian pottery which were suitable for exportation, an artistic effect was consciously sought to be produced, but as examples of the pottery made at Azimghur, in Scinde, and the Punjaub, and in the Bombay School of Art only were exhibited at Paris, it was only of such types that he intended to speak. The Azimghur pottery, like most of the art-work of the Benares district and eastward, was generally feeble and rickety in form and insipid and meretricious in decoration, defects to which its fine black colour gave the greater prominence. Very different, however, was the glazed pottery of Scinde and the Punjaub, which possesses charms in its simplicity of shape, the spontaneity, the directness, and the propriety of its ornamentation and the beauty of its colouring. The art was of the highest antiquity in India, and the unglazed water-vessels made in every Hindoo village were still thrown from the wheel in the same antique forms as were represented on Buddhistic sculptures and paintings. None of the fancy pottery made in India was equal in beauty of form to this primitive village pottery, and much of it was utterly insignificant and worthless. Dr. Birdwood then described in detail the mode of manufacture as carried on in Scinde and the Punjaub, and said the potter was, in virtue of his calling, an hereditary officer in every Indian village, and the patient Hindoo handicraftsman's dexterity was a second nature, developed from father to son, working for generations at the same process. There was an immense demand for water and cooking utensils, as the Hindoos had a religious prejudice against using an earthen vessel twice, and generally it was broken after the first pollution. The potter had, therefore, to supply an entire village community, and altogether he earned between 10*l.* and 12*l.* a year. He enjoyed besides that dignity certain ceremonial and honorary offices. He beat the big drum and chanted the hymns in honour of Jamee, an incarnation of the great goddess Bhowanee, at marriages; and at the "dowra," or village harvest-home festivals, he prepared the "burbu," or mutton-stew. He was, in truth, one of the most useful and respected members of the community, and in the happy theocratic organisation of Hindoo village life there was no man happier than the hereditary potter, or "koombar." With reference to the Bombay School of Art Pottery, the students had not as yet sent out anything of much merit, and one of the worst faults of their imitation pottery was in the application of Scinde and Punjaub decorative designs to vessels of Chinese and European forms.

In the discussion which followed, some of the speakers regretted the decadence of art in India, as had been shown in the designs of carpets, shawls, and jewelry; and some diversity of opinion was also expressed with regard to the quality of pottery produced by the School of Art at Bombay.

The Chairman (Sir P. Cunliffe Owen) in asking for a vote of thanks to Dr. Birdwood, said that the French people went mad over the pots at the Indian section of the Paris Exhibition, and showed so much anxiety to obtain specimens, that if the whole of the vestibule had been filled with pottery it would have been all sold. He hoped that the native workers and the schools of art in India would be encouraged by this marked success.

BABYDOM OF MACHINERY.

A lecture, having the above title, was given by Professor Kennedy, of University College, at the rooms of the South London Free Library, Upper Kennington-lane, on Friday, the 7th, to an audience consisting chiefly of engineers. He described the fire-drill (by which fire can be obtained by the friction of two pieces of hard wood) as probably the oldest machine in the world, and as being still in use in some parts of the world. This was developed into a boring-drill by the addition of strings and the change of wood for metal, and next into a hand-lathe, with a bow-handle. The potter's wheel was said to be the next oldest machine. Continuous rotation was unknown until about the end of the seventeenth century, all rotation until then having been to-and-fro. The first known instance of circular rotation was a water-wheel, used in Thibet, to turn a prayer-mill, though it was also used nearly as long ago in Egypt for purposes of irrigation. The corn-mill also is very ancient. The use of the lever is also of great antiquity. The lecture was illustrated by the exhibition of some very old books on machinery. The chair was taken by Mr. Wyke Bayliss, one of the Council of the Free Library and Reading Rooms, who in a few well chosen words described the South London Free Reading Room, as also a "baby" destined to grow, but requiring at present very urgently the materials for growth in the way of funds. He alluded with satisfaction to the large number of readers, but regretted that South London, for which it is established, had not as yet supplied any funds for its support.

Professor Morley, also of University College, will lecture on "Newspapers, New and Old," on the 25th, in the same rooms.

Salisbury Cathedral.—A canopied tomb, designed by the late Sir Gilbert Scott, with a carved recumbent figure of the late Bishop Hamilton upon it, is to be erected opposite Bishop Poore's tomb, as a memorial to the late bishop. The figure has been carved by the Hon. and Rev. B. P. Bouverie.

"GEOMETRY AND OPTICS OF ANCIENT ARCHITECTURE."

SIR,—The Institute of Architects has issued what purports to be a "report" of the discussion on this subject at the meeting on the 24th of February. In the long essay communicated by Mr. Cates, and which we are asked to accept as the report of his reply on behalf of Mr. Pennethorne, I find he has contradicted me upon points on which he had no reply to make at the time; having apparently, to borrow his own phrase, been "getting up his lesson" since;—not, however, very successfully.

I pointed out at the meeting that Mr. Pennethorne had manipulated Vitruvius to suit his own views by translating the word "*providere*" to "calculate," and italicising the word to draw special attention to it as supporting his view of the process of design of Greek architecture. Mr. Cates says in the report that Mr. Pennethorne's translation of the word is quite justified, but he gives no authority for it, and I am not aware on what ground he is to set me right on a question of that kind. However, to be more safe, I referred the passage to a man who is a Cantab. M.A., and took a high classical degree, who says, as I expected, that he never met with such a use of *providere* in the whole course of his Latin reading, and that, at all events, to underline or italicise the word *calculating* as a translation of *providere* would be "as forced an idea as could be imagined"; and I will challenge Mr. Cates to find a single instance of that arithmetical meaning being attached to *providere* in any Latin dictionary, however large and copious. The point is of some importance, because when we find a writer so obviously manipulating his authorities in one case we naturally feel an increased scepticism in regard to his other arguments. I also mentioned that, in the same chapter, Vitruvius observes that the corrections of proportion for effect must be the work of genius, "and cannot be taught by rule" (quoting Newton's translation for convenience). Mr. Cates has, I see, kindly set me right on that point also, in the report, and says it is to be regretted that I laid stress on a sentence which "was not even hinted at in the original." It is a pity Mr. Cates committed himself to such a statement in the Institute Transactions without knowing better what he was talking about. The words are in the last paragraph of the chapter of Vitruvius referred to. After mentioning the "*adjectiones*" and "*detractiones*," he proceeds,—"Hæc autem etiam ingeniorum acuminibus, *non solum doctrinis* efficiuntur," the force of which is correctly rendered in Newton's language.

The comparison suggested by Mr. Pennethorne between the proportional sizes in Greek architecture and the harmonising of certain notes in music I pointed out was a fallacy, as the reason of musical concords is scientifically known, and they depend on absolute and unalterable physical laws. Mr. Cates says, in his essay, my "so-called reasons are only facts." They are facts the bearing of which on the question neither he nor the President (who also referred to the point) seem to have understood. The essential distinction of a musical sound is that its vibrations are isochronous; the essential distinction of a concord is that the vibrations of the two sounds bear a certain fixed and unalterable ratio to one another, the necessity of which is demonstrable on paper without recourse to the ear at all: it is not a matter of æsthetic perception, but an absolute physical fact incapable of dispute. Now it is absurd to say, even taking the most severe view of Greek architecture, that there is any physical necessity underlying it of the same nature as that which governs the relation between the keynote and the fifth in music. Even in Doric examples alone there are traceable at least half a dozen different rules of proportion, and it is impossible to demonstrate by any physical law that one is right and the others are wrong. People are always getting into a muddle in their comparisons between music and architecture, through not drawing the line between physical and metaphysical resemblance. The real analogy between musical and architectural proportion is to be found in regard to forms of musical composition. There is here a very close analogy between "Classic" architecture and the older forms of musical composition, such as the fugue, in which the treatment of the composition is regulated by very strict rules; and then the modern forms of composition, which are much more free, have their analogy, both in regard to form and feeling, in Mediæval or "romantic" architecture. But all that is metaphysical: there is no direct physical relation between the two arts.

The manner in which a discussion at the Institute seems to be "reported" (when a member of the Council takes part in it) is really instructive. When the report of my own remarks reached me, I found it so hopelessly incorrect that the simplest thing was to write it out afresh; but in doing so I conscientiously abstained from inserting anything that I had not really said at the meeting (except a footnote to explain the musical point, which was confessedly a subsequent addition), considering that the Transactions were intended as a *bonâ fide* report. When I turn to the report of Mr. Cates's remarks, I find a long essay containing what he never said, and what he obviously could not say, for he was so short of arguments that he had to descend to personalities. The result of this is amusing enough in some ways; for instance, it appears in the report that Mr. Cates expressed great regret that in the discussion no reference had been made to the correction of the visual angles of the Parthenon, as Mr. Pennethorne had prepared three large diagrams to show that he had been misrepresented on this point by a writer in the *Builder* (a misrepresentation for which I suspect his own confused and unmethodical way of demonstrating his case was partly to blame). It will hardly be believed that at the meeting, of which this is a "report," Mr. Cates took down off the wall with his own hand the very diagram referred to, saying he "did not know what it was for," considerably to the edification of some of those to whom its object was quite obvious and who expected it to be a main point in the reply of Mr. Pennethorne's champion. Now it would be all very well for a man who felt he had done himself injustice in a discussion, to send openly a written communication to supplement his remarks; but to send such a communication and have it printed as what was said on the occasion by "Mr. ——, Fellow," is a disingenuous proceeding, and very unfair to other speakers who do not care to adopt such tactics.

H. H. STATHAM.

EVASION OF THE METROPOLITAN BUILDING ACT.

A PECULIAR instance of the attempted evasion of the Metropolitan Building Act came before Mr. Ellison, at the Lambeth Police-court last week. Frederick Vyne, a journeyman builder, was summoned by Mr. Parsons, the district surveyor of Lambeth, for neglecting to give him the proper notice under the Building Act as to two houses in Tintern-street.

In explaining the nature of the case to the magistrate, Mr. Parsons said that it was a common practice with builders of a certain class of houses to commence the erection of houses, and carry them up to a particular height, and then to leave them for some time in an unfinished condition. After remaining in this state for a certain period, the work upon them was resumed, but although ostensibly by the original builder, the continued building was really by the mortgagees, or some other persons unknown to the district surveyor, who, in consequence, found himself greatly impeded in enforcing the provisions of the Act of Parliament. This kind of proceeding was carried on by the agency of working men like the defendant, who, on being questioned, almost uniformly said they did not know for whom they were working, or where their employer resided.

Mr. W. H. Rawlings, assistant to Mr. Parsons, on being examined, stated that on the 25th of March last year he found two houses in Tintern-street, Brixton, being commenced by a Mr. Iles. By the end of May the roof was put on the front portion, and after that they remained for several months in an unfinished state, when at the end of the year he found the works had been resumed under the direction of the defendant, who gave him (witness) to understand that he was working for Iles, but said he did not know Iles's address. Witness again visited the works in January last, and found the defendant still working at the houses, but on being questioned as to whether he was still working for Iles, he prevaricated, and on being threatened with a summons, he admitted that he was working as foreman for the mortgagee, Mr. Bartlett, of Gresham-street, City,—that he engaged and paid the men, and that Mr. Bartlett sent him the money. Witness then desired defendant to inform Mr. Bartlett that a notice to the surveyor of change of builder or resump the work was required under the Act of ment. No such notice had been sent in district surveyor, and hence the presen mons.

The defendant, in reply to the charg that as he was only working for Mr. Bar did not consider that he was the build Mr. Ellison, the magistrate, observe "builder" should mean not only the builder, but any person engaged in de work upon a building, and that he, accor his own admission, was clearly so engage Act provided that a notice should be g the surveyor after work had been suspe if the builder was changed, and it portant that the Act should be complie He should inflict a penalty of 3*l.*, and costs, and he advised the defendant to Mr. Bartlett to pay it.

THE PURIFICATION OF THE CL

BY direction of the Home Secreta Clark, the Sheriff-Principal of Lanarksh a public inquiry at Glasgow, on the 2 as to the application of the local and authorities of Glasgow and the neigh burghs for the suspension of the "Rive tion Prevention Act, 1876," so far as th and its tributaries are concerned. The applicants were represented at the appearances were put in for Lord Blan other proprietors along the banks of as objectors to the application.

In opening the proceedings, Mr. Lang Glasgow authorities, remarked that the sion of the Act was necessary to adm completion of some chemical experime sewage. The authorities had under c tion a scheme by Mr. Bateman, C.E., it was stated by that gentleman that he know how long sewage water, afte filtered and precipitated, would remain the river. It had been remitted to Dr. the city analyst, to ascertain the fact report was not yet ready. The autho added, were anxious to secure the pu of the river if they could obtain which could be adopted consistently wi health. It was stated that the whol other applicants concurred, while Mr for the Govan authorities, urged tha Clyde was a tidal river, it was que whether the designation stream in the be applied to it.

On behalf of the objectors, Mr. remarked that if the applicants did how to deal with the sewage quest knew how to evade it, as they had fo twenty years, although pretending to done absolutely nothing. The object large quantity of land, which was a worthless, not only for building, but cultural purposes, on account of the the river. It seemed to him that as t rities had not done anything, were not to do anything now, and would no themselves to do anything in the fu application should not be granted.

The Sheriff-Principal asked Mr whether he had any remedy to sugge replied in the negative, adding that think any suggestions of his would b when the plans of a large number o engineers had been rejected. It seem Lordship that while there was much this observation, the applicants had best to solve what was a confessedly problem. The report he had to ma subject would, he indicated, be forw the Home Secretary.

It was arranged that the Glasgow a should pay the expenses of the inquir

Buddhist Caves.—The *Times* corr from Jellallabad says the archæologica gations of one or two officers in the revealed both sculpture and fresco pa few of the caverns which abound But funds are sadly needed to star parties. It is to be regretted that t has no taste for antiquities, else ma fatigue parties who are now doing sin up and down the camp merely to pas might be employed with splendid unearthing the archæological treasu teeming district.

CAVE OF THE ORACLE AT DELPHI.

This was the title of a paper read by Dr. ...6, F.S.A., before the British Archæological ...ciation, on March 5th. It first described ...opography of Delphi, and stated that there ...no appearance, either geologically or phy...ly, of any cleft or fissure, or any protected ...ce, except that near the Castalian fountain, ...er could he (the reader) trace on the spot ...traditions of another. From this he ...med that the emanations which produced ...furor of the Pythia were given off at or ...the fountain. This place was shown, by ...rams, to be still of confined area, and pre...ly to the damage it was known to have sus...ed by even recent earthquakes, must have ...closely protected all round by lofty natural ...s of rock, and so would retain, as a receiver, ...gases given off. The stream was shown, by ...bation from Pausanias, to disappear at a ...distance, and to reappear, under its name ...alia, at this spot, showing a passage through ...ms no doubt charged with the gas. The ...er temples mentioned by Pausanias and ...s must have been of very small dimensions, ...were, therefore, no doubt, placed in this ... When a new temple was to be built, ...decorated with the marble of Paros by the ...ceonidæ, a new and imposing site would ...lected, which Herodotus distinctly indicates ...the case, but the place of inspiration would ...in the same. The cave and the site of ...ew temple (that now recognised) were not ...part. This was shown by drawings made ...ne spot, and Dr. Phené attributed to this ...ge of site of the temple the excavation of ...large chamber, 36 ft. by 24 ft., and about ... from floor to under side of roof, cut into ...liff somewhat south-east from, but in close ...mity to, the fountain. There is a subter...n cutting beneath this chamber which ...d have allowed persons to be introduced or ...ved from it unnoticed, and even if the ...cal gas failed, a substitute could have been ... to influence the priestess unknown to her, ...ushing water preventing movements from ... heard. The cave agrees as to position ...the temple with the cave of Apollo's Sibyl ...umæ, near Naples, and Apollo's temple ..., as described by Virgil. In each case ... was the same influencing vapour. Com...ons were made between Delphi and the ... principal sites of the worship of Apollo, ... Delos, Amyclæ, Tenedos, &c. At each ... remarkable symbols were illustrated by ...ings; the site of his great temple at ...clæ was said by the lecturer to have been ...ed on a vast earthwork representing three ...nts with their heads united by a disc or ...lar platform of earth, which overlooks the ... Eurotas from Sparta to the sea.

COST OF HIGHWAY MAINTENANCE.

Mr. WILLIAM BIDDELL, land agent, and head ...e firm of Biddell & Blencowe, in a letter to ...*Ipswich Journal* on the difference between ...cost of maintaining highways under the old ...h system and under Highway Boards, ...s:—

"Like three-fourths of the waywardens, I was ...r the impression the Board system had ...iderably increased the cost of maintaining ...roads. I resolved to investigate the case of ...wn parish [Lavenham], and now give you ...results. For the seven years ending with ..., I found the cost of maintaining our roads ...aged 141*l.* a year. [I had not the informa... by me to take a longer period.] For the ...en years of the Board system the annual ...nt paid in averaged 209*l.*; included in ...h is about 46*5l.* expended in permanent ...rovements,—equal to 33*l.* a year. Deduct... this, we have our expense for 11 miles ...longs of road reduced to 176*l.* Analysing ...old expenditure of 141*l.*, I find it was made ...f the following items:—First, labour: the ...ased cost of this is not over-estimated when ...n as from 9s. to 12s. a week, or one-third. ...rials come second: they have advanced ...iderably. Royalty, from 1s. to 1s. 6d. a load; ...as probably this is exceptional, I will, ...ad of 50, take it at 40 per cent. Thirdly, ... labour: a man with two horses and cart ... risen from 7s. to 9s. a day, say one-fourth. ...th, tradesmen's work is certainly 25 per ... more costly. The fifth item, incidentals, ...be taken to have advanced in like manner. ...sixth item may remain the same. The comparative cost between old and present time will, then be as under:—

1. Labour	£37	advanced to	£34
2. Materials	53	,,	74
3. Team labour	26½	,,	33
4. Tradesmen	20½	,,	25
5. Incidentals	4	,,	5
6. Salary	10	,,	10
Totals	141	and	183

With this rise of 30 per cent. (with which the Board has had little or nothing to do), we might fairly have calculated our roads to have nearly cost 183*l.*, whereas they cost but 176*l.* a year. This is but a trifling gain, but in addition we have undoubtedly the comfort of better roads. I might also have made allowance for the increased wear and tear of our roads by the formation and working of the railway and station, and by the establishment of the sugar works; also for the cost we contribute towards the Melford turnpike, where a gain of 15*l.* to 20*l.* a year could, I think, easily have been shown.

In small parishes where the surveyor is largely interested, and well manages the roads, the new system, no doubt, presses heavily. The old is no doubt preferable where the "right man is in the right place"; for a good, working, intelligent man will, of course, succeed better than a paid surveyor who can give but little time to one parish. But intelligent farmers are grown commercial, and are less disposed in great parishes to work for the public weal than formerly. They know full well that, like the shopkeepers and others, they cannot leave their business without loss. The result is, in such parishes office is frequently given to men ambitious of parish honours, whose gratuitous services turn out to be very dear.

LONDON LABOURERS' DWELLINGS SOCIETY, LIMITED.

At the annual general meeting of this society, held on the 6th inst., the report brought up by the directors was adopted, a dividend at the rate of 5 per cent. per annum was declared, and ordered to be paid for the half-year ended Dec. 31, 1878, and the three retiring directors were unanimously re-elected.

According to the report, the directors have erected a block of buildings (Murray Buildings) on the society's vacant ground at Vauxhall. These buildings were commenced in the month of April, and were ready for occupation early in December. Each tenement is self-contained, having a scullery with a copper, its own water supply, and other conveniences. There are twelve tenements of two rooms (including the scullery), thirty-two of three rooms, and eight of four rooms, making in all fifty-two tenements, the whole of which are now occupied. In the month of May a piece of freehold land, at "The Ferry," Upper Clapton, was purchased, on which twenty cottages are being built, and the greater number of them are now approaching completion. The directors further purchased, in the month of August, forty freehold houses in New Gravel-lane, near the London Docks. These operations have called for an outlay of upwards of 20,000*l.* The society's tenements have been well let, it is stated, and the rents satisfactorily paid.

THE METROPOLITAN BOARD OF WORKS AND THE WATER BILLS.

ALLEGED ILLEGAL EXPENDITURE.

THE legality of the promotion of the water bills of last session by the Metropolitan Board of Works is questioned, and an attempt is to be made to have the cost struck out by the auditor. At a meeting of the St. Olave's District Board of Works, which has just been held, the Parliamentary Committee reported that they had taken counsel's opinion with respect to the recent action of the Metropolitan Board of Works on the water supply question, and they were advised that the Metropolitan Board were not acting within their statutory powers in promoting the Water Supply and Waterworks Purchase Bills introduced into Parliament last session, and consequently that the Board were not justified in paying the expenses incident to the promotion of such Bills out of the rates. Counsel had advised that the remedy was for the ratepayers in their individual capacity to attend before the auditor, and make their complaint to him, this Board having no power to take legal proceedings on the subject. The report was received, Mr. Besley, one of the members, stating that the Metropolitan Board of Works had squandered a sum of over 16,000*l.* in promoting the water Bills, without having any authority to undertake the work, and that he intended, with others, to go before the auditor and object to the payment.

THE BATTERSEA NEW VESTRY-HALL.

THE site to be purchased for the proposed new vestry-hall for Battersea has been decided upon. At the last meeting of the vestry, the special committee appointed to find a site presented a report on the subject, in which it was stated that the committee had found two available sites, both of about half an acre in extent. The first was on Lavender-hill. It was the property of Mr. Hiscox, a churchwarden and vestryman, but had been independently valued at 3,500*l.* It had 191 ft. frontage, and a depth of 115 ft. It was geographically the centre of the parish, and easily accessible. The other site was at the north end of Falcon-lane, and was the property of Mr. Fownes. Its value was 3,000*l.*, and it had a treble frontage to Falcon-lane, Battersea Park-road, and Fownes-road. It would not, however, be possible to have basements to the new buildings proposed to be erected, owing to the sewer floodings, which were continually occurring at this point, and it was generally found near that spot that water and running sand were discovered, creating great difficulties in the way of obtaining a proper foundation. The committee, therefore, recommended the purchase of the first-named site, not only on account of greater centrality and convenience, but owing to the probability of their deriving a large rental from letting the hall, a large public hall being much required in that neighbourhood. The committee further recommended that a vestry-hall, to hold 1,000 persons, and vestry and other public offices, be erected on the site, at an estimatad cost of 18,000*l.*, the total outlay being set down at from 22,000*l.* to 23,000*l.*

THE GOLDEN-LANE AND PETTICOAT-SQUARE IMPROVEMENTS.

UNDER the Artisans' and Labourers' Dwellings Improvement Act, the materials of upwards of one hundred houses were sold in the City last week by Messrs. Horne, Eversfield, & Co., preparatory to their demolition in order to carry out the improvement schemes in Golden-lane and Petticoat-square. On Tuesday, the materials of fifty houses in Golden-lane, Barbican, and Crown-court adjoining, under the Golden-lane Improvement project, were sold. By this scheme Golden-lane, in the re-building, will be doubled in width on the west side, from its northern extremity, at the junction with Old-street, to Barbican, and made uniform in width with Red Cross-street opposite, on the south side of Barbican. Fann-street, on the west side of Golden-lane, which is included in the improvement, has already been almost entirely re-built, the new building consisting for the most part of large warehouses and other business premises. On Friday there was another sale of the materials of upwards of sixty houses in Petticoat-square and Harrow-alley, Houndsditch, under the Petticoat-square, Stoney-lane, and Meeting-house-yard Improvement Scheme. This improvement will have the effect of sweeping away several of the notorious haunts and dens in the neighbourhood of Petticoat-lane.

As regards the Golden-lane Improvement, the St. Luke's Vestry and the Metropolitan Board of Works are at issue with respect to the cost. At the last meeting of the first-named body a resolution was moved by Mr. Churchwarden Pedder to the effect that a deputation from the Vestry wait upon the Metropolitan Board to urge upon them the desirability of their advancing or allowing the Vestry to borrow the sum required to complete the improvement. The time had now come, he observed, when some steps should be taken to obtain this money, if possible, from the Metropolitan Board. For the Vestry to attempt to force the sale of the land at the present time would certainly result in a great loss to the parish, and to raise the total amount required by means of rates would be a course equally objectionable. Considering that the Metropolitan Board agreed to the improvement, and were really parties to the contract, he trusted they would now see

the propriety of complying with the application of the Vestry. The resolution was adopted unanimously; but subsequently, before the Vestry separated, a letter was received from the Metropolitan Board stating that they had again fully considered the whole of the circumstances connected with the improvement, and were unable to see any reason for departing from the terms of the resolutions previously arrived at on the subject, and communicated to the Vestry.

MEDALS AND PREMIUMS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT a special general meeting of members only, held on the 10th of March, Mr. Charles Barry, president, stated that his Royal Highness the Prince of Wales had signified his intention to dine this year with the Institute, and had suggested Saturday, the 26th of April, as the evening on which the dinner should take place, which date had consequently been adopted.

The Royal Gold Medal.

The President announced the intention of the Council to recommend to the general body of members the name of the Count Melchior de Vogué.

Professor Donaldson said,—Having been for a long time personally acquainted with Monsieur de Vogüé, I rise, sir, to second the proposition which has just been made from the chair. Some years ago, when I was in Paris and paying a visit to the Director of Antiquities at the Louvre, there was with him a gentleman to whom he introduced me. This, my friend said, was a nobleman who had travelled a great deal in the Holy Land, and had made discoveries of many churches, of the fourth, fifth, and sixth centuries, in Aleppo and the Hourân. We had some conversation together, after which he invited me to his house, where he showed me the drawings he had executed. Those drawings were very beautiful, and formed the originals of engravings which were then being prepared for a now celebrated work, and they were executed with great artistic skill and taste. I immediately had this Institute in my mind, and asked him if he would object to my laying some account of his travels and the edifices he had discovered before my brother architects, when he most kindly said I might make what use I liked of the materials at his command for that purpose. On my return to England I drew up a paper, which I read here, giving an account of those remarkable buildings. They were very remarkable because they were of the earliest ages of the Christian era. They were remarkable buildings erected in a stone country where there is hardly any wood. The staircases were of stone, the walls were of stone, the floors were of stone, and carried in a most remarkable way by arches very near apart and covered with slabs from arch to arch. The doors of the chambers were also of stone, and the architecture throughout was of a very remarkable kind indeed; there is a great deal of boldness and character in the several buildings which are illustrated in the books now lying on the table. It was a very agreeable thing that about that time Monsieur de Vogüé was elected one of our honorary and corresponding members. An old and honoured friend (Mr. Fergusson), who is sitting near me, has, like Monsieur de Vogüé, published a very valuable work on the buildings of Jerusalem, in which he has expressed some views at variance with those of the French author. Men of intellect and imagination will hold different ideas upon ancient monuments, and if they do there is nothing to say about it. Monsieur de Vogüé, not an architect, but a learned amateur, has told us his opinion with regard to the site of the Holy Temple at Jerusalem, and we are obliged to him for having given us the benefit of his ideas and the result of his remarkable inquiries. I support with great pleasure the recommendation of the council that the recipient of the Royal Gold Medal for the current year shall be Monsieur le Comte Melchior de Vogüé.

Mr. James Fergusson, F.R.S.:—After what Professor Donaldson has stated I can add nothing, except that I am delighted to find the recommendation of the Council so well received by the members present. I think no man in the world has devoted himself more signally to the advancement of archæological pursuits than has the Count Melchior de Vogüé. True, he and I may differ on some points with regard to the Holy Temple, and I cannot suppose that the whole world will go with me; but the contentions, such as they are, have been carried on in so straightforward and gentlemanly a manner that nobody can make any objection to them. The books of Monsieur de Vogüé now lying on the table are perfect; and I think they add more to the knowledge of the architecture and archæology of Syria than any works that have ever been published. They have been brought out with a degree of ability, earnestness, and knowledge which places them far beyond any books I know. I am sure that a more worthy recipient of the Royal Gold Medal could not be found.

It was then, in accordance with precedent, resolved to humbly submit for Her Majesty's gracious sanction that the Royal Gold Medal for the year 1879 be presented to Monsieur le Comte Melchior de Vogüé, hon. and corr. member, late Ambassador of France at Vienna.

The Pugin Travelling Studentship, 1879.—It was resolved that W. J. N. Millard be elected the Pugin Travelling Student for the year 1879, and, further, that Frederick Hemmings be commended for the care shown in the drawings and sketches submitted by him. There were eight candidates.

Soane Medallion.—Four sets of drawings were submitted. The Soane Medallion, with the sum of 50*l.* added under the usual conditions referring to Continental study, was awarded to the author of the drawings distinguished by the motto, "I strive," found to be by William R. Lethaby (aged 22), Ebberley-lawn, Barnstaple.

Sir William Tite's Prize of 30*l.*—Six sets of drawings submitted. The prize was awarded to the author of the drawings under the motto, "Green Margins," found to be by C. E. Sayer, 17, Soho-square, W. A Medal of Merit was awarded to the author of the drawings distinguished by the motto, "Patientia et Spes,"—Herbert Alexander Pelly, Morden, near Mitcham, Surrey. Certificate of Honourable Mention was awarded to the author of the drawings distinguished by the motto "Acanthus," Frederic Edwards, Queen's-chambers, John Dalton-street, Manchester.

The Grissell Gold Medal. — Four sets of drawings.—The medal was awarded to the author of the drawings submitted under the motto "Dulce Domum," Mr. G. H. Blagrove, 84, Southampton-row.

The Institute Silver Medal (with Five Guineas). Five sets of drawings submitted. This medal, with the sum of five guineas, was awarded to the author of the drawings distinguished by the motto "Labor," Frederick Pinches, 359, Strand. A certificate of Honourable Mention was awarded to the author of the drawings distinguished by the motto "Architecture," Sydney Vacher, 7, Stanley-crescent, Kensington Park.

The Institute Silver Medal.—The President announced that not a single essay had been sent in, and that last year the same thing had occurred. It was much to be regretted.

Professor Kerr suggested whether something could not be done to stimulate the production of essays, in which they had been lamentably deficient. He only recollected one really good essay that had been sent in, but that did not get a prize, though he and Professor Lewis voted in favour of it. He thought a fair amount of money prize would stimulate work in that direction.

Professor Donaldson remarked that the essay of greatest merit was that which was first sent in,—that on "Concrete."

ARCHITECTS' BENEVOLENT SOCIETY.

A SPECIAL general meeting of this Society was held on Wednesday afternoon in the meeting-room of the Royal Institute of British Architects, Conduit-street, Mr. David Mocatta in the chair, when it was resolved, after some discussion, that Bye-laws 58 and 59 shall hereafter stand as follow:—

58. All legacies and all donations, unless otherwise directed by the donors, shall be invested in Government securities or in first-class railway debentures, under the direction of the council.

59. All the annual subscriptions and dividends of stock shall be applied to the payment of the necessary expenses and the relief of applicants.

The annual general meeting was then held. The report, read by the Chairman, was follows:—

"The Report which your Council had to lay before subscribers to the Architects' Benevolent Society in was of a very depressing nature, and a fresh appeal subsequently made to the profession, with such suc that in their Report for 1878 they were enabled to nounce to the general body a gain to the Society upon year of 488*l.* 12*s.* Gratifying as was this result, Council cannot feel that the claims of such a charit this, appealing as they do to the warmest feelings of nature, are as fully and continuously responded to as increasing numbers and influence of our profession n fairly have anticipated.

There is, however, one bright spot. The Council refer with pleasure and with gratitude to the mag of the generous donors of the two legacies which left to this Society during the last year by two former scribers, viz.:—one of 100*l.* by Mr. Charles C. Nelson one of 1,000*l.* by Mr. John Johnson,—an example w the Council trust may not be lost sight of, or be wi imitators. Since the formation of the Society in 1860 t have been only two legacies bequeathed, amounting t to only 220*l.* In one year to have succeeded to five t this amount is a very gratifying announcement.

These sums (as well as all subsequent donations) by a recent resolution of the Council, if confirmed by meeting, be invested, and with the stock already stan in the names of the trustees, will give a tota 3,551*l.* 1*s.* 2*d.* invested, the interest of which wi applied to the wants of annuitants and applicants.

The Council have to announce that in 1878 there has a gain of seventeen new subscribers of one guinea and of four new subscribers of two guineas each, w gain of 61*l.* 19*s.* from new donors. The subscription ceived amounted to 314*l.* 4*s.* 3*d.*, and donations 109*l.* 4*s.* 6*d.*

The gifts to twenty-five applicants amounted to and the working expenses to 74*l.* 3*s.* 4*d.*, leaving a ba in the hands of the treasurer of 27*l.* 11*s.* 3*d.* former subscribers, five have died, and two have di tinued their subscriptions.

The Council have this year again to announce the lo another honoured officer of this Society, one of its tees, Sir Gilbert Scott, R.A., to whose family a lett condolence has been addressed. To fill up the va thus caused by death, the Council have unanim determined to recommend for the election of this me Mr. Charles Barry, President of the Royal Ins of British Architects, who has kindly consented t if elected.

The Council cannot close this report without thanking the Royal Institute of British Architect continuing to this Society the useful aid of accomm tion for all its meetings, rent free, and they gladly o the members of the Institute their warm congratul on its present energy, prosperity, and influence, the of which they dare believe cannot but be reflected in degree on the objects and usefulness of the kindred Be lent Society."

The balance-sheet, read by Mr. J. Gold Turner, hon. sec., showed that the total in on the general account for the year 591*l.* 3*s.* 7*d.*, including 10*l.* 3*s.* 10*d.* ba brought from the Pension Account, 314*l.* 4 for subscriptions, 108*l.* 4*s.* 6*d.* donations, legacy by the late Mr. C. C. Nelson, and 5 balance in hand brought forward from previous year's balance-sheet. The total e diture on the general account was 563*l.* 12 including 74*l.* 3*s.* 4*d.* for working expe 169*l.* 9*s.* invested in Stock (New Three Cents.), and 320*l.* cash gifts to appli leaving a balance of 27*l.* 11*s.* 3*d.* to be ca forward to next year's account. The Pe Account showed that 70*l.* 13*s.* 10*d.* divi on stock had been received, and that 60 been paid to annuitants, the balance, 10*l.* 3*s.* being carried to the general account. amount of stock (New Three per Cents) be ing to the Society is now 2,551*l.* 1*s.* 2*d.*

The report and balance-sheet were mously adopted, and ordered to be printed

It was unanimously resolved, on the mot the Chairman, that Mr. Charles Barry be el a trustee of the Society, in the room of th Sir George Gilbert Scott.

It was also resolved that Messrs. Ewan tian, T. Hayter Lewis, A. W. Blomfield, J. Aubyn, and W. A. Boulnois, be elected me of Council, in the room of Messrs. R. R. H. H. Collins, James Edmeston, E. A. Gr and Edwin Nash, who retired by efflux time.

Messrs. James Edmeston and D. C. N were elected auditors for the present year

The other officers of the Society we elected, and votes of thanks accorded to to the auditors for the past year (Messrs. G Williams and J. Douglass Mathews), and Institute of Architects for the use of the ing-room.

Bye-laws 58 and 59, as amended by resc of the special general meeting, were ad and a vote of thanks was accorded t Mocatta for his services in the chair (absence of the president, Mr. Thomas Wyatt, who was in Ireland).

Mr. Mocatta, in acknowledging the c ment, said that the architectural prof held a very high position in this country he was afraid that some of its members at to and maintained their high position w much thought for those who had not

y successful in their career. He had been thoroughly satisfied with the financial on of the Architects' Benevolent Society, e thought that if its friends would make rong pull and a pull all together," they , in a very short time, increase the in- fund to the sum of 5,000*l.* Only . were required to do that. Such an se of invested funds would be a great for the Society, which was not always able al with all the deserving cases coming it, and in those cases where help was the amount of relief which the Society able to afford was frequently not at all ate to the needs and deserts of the appli-

sations to the amount of 46*l.*, and subscrip- amounting to 13*l.* 13s. were announced as g been received since the date of the and balance-sheet.

ITE CTS' LIABILITIES TO BUILDERS

STEVENSON *v.* WATSON.

s case came before the Common Pleas ion of the High Court of Justice on the 7th (Sittings *in Banco*, before Lord Chief e Coleridge and Mr. Justice Denman) upon rer to a statement of claim, and it raised tion of considerable importance as to the y of architects in relation to their duties building contracts between master and t.

plaintiff (we quote the *Times* report) was ler employed under a contract to erect a building as a temperance-hall near gham, and the defendant was an architect yed by the building-owners to superintend ecution of the works. The defendant had usly prepared plans and bills of quantities ificers' work, and these plans and bills d the bases of the contract which was ed between the plaintiff and the building- s. The bill of quantities contained also ther stipulations,—first, that should there re or less measure than was there given, would respectively be an addition to or ion from the contract; and, secondly, all rements were to be made in the same r as the quantities had been taken, and all ons or deductions were to be priced at the rate by the architect. The contract then the following conditions, which appeared statement of claim:—The architect might any additions to or deductions from the ct without in any way vitiating the con- and the amount of such additions or deduc- was to be ascertained by him in the same r as the quantities had been measured, t thesame rate as they had been priced nother clause provided that all disputes en the plaintiff as contractor and the build- ners, which might arise during the pro- of the works, were to be settled by the tant, whose decision was to be final and g on all parties; and lastly, it was pro- that the plaintiff was to be paid on certifi- signed by the architect, of the work done oney which was due. The claim then that from time to time the architect did accordingly until the works were com- . A final statement of accounts was then by the plaintiff to the defendant, showing fter adding to the contract the amount additions ordered by the defendant and ing the amount of the deductions ordered e defendant, and making all necessary tions to errors discovered in the bill of ties, a net balance was owing to the iff of 1,616*l.* 6s. 7d.; but the defendant, t calling upon the plaintiff for an explana- ertified only for an excess over the esti- of 251*l.*, and thus did not use that due nd skill in ascertaining what was really the plaintiff, on the faith and expectation ch he had been induced to sign the con- but knowingly and negligently certified inferior sum. The claim concluded that complaint made by the plaintiff the de- nt refused to give any reasons or to recon- he matter.

this statement of claim the defendant red, on the ground that the statement d the defendant to be in the position of an itor who had acted and declared his on, and that, as no fraud or *mala fides* was ted, no action was maintainable.

Alfred Wills, Q.C. (with Mr. Graham), d for the demurrer; Mr. Cave, Q.C., and ood Hill appeared for the plaintiff.

At the conclusion of the arguments, which occupied several hours, the Court gave judgment as follows:—

Lord Coleridge said the case was one of considerable importance, and but for the intimation that had been given that, which ever way the Court decided, the matter would be afterwards reviewed by the Court of Appeal, he should have taken time before giving his judgment. In his opinion this action would have been maintainable if it could have been fairly contended that the relation of the parties was this, and this only,—that the plaintiff had undertaken to do certain work under a contract with a third person; that the contract was one to which the defendant was in terms no party, but that he was aware of it, and had acted under the duty which it imposed on him of doing certain work requiring no judgment or opinion, but only what he might call the exercise of ordinary arithmetical powers, and that his performance of that duty under the contract was necessary to enable the plaintiff to recover his money, and that he had neglected that duty. If this was the true construction of the present contract, he was of opinion that an action would lie; for none of the cases cited in the argument were cases in which the imposed duty was such as he had described, and the breach of duty of the sort that he had indicated. The present claim, however, was not such an action, but was really an action for that which had been attempted over and over again without success,—viz., to bring an action for the negligent performance of duty to the exercise of which the exercise of judgment and opinion was necessary. This being the true view of the claim, the cases on the point which had been cited were binding, cases which the Court was bound to follow, and which, speaking for himself, he entirely concurred with. It had been argued for the plaintiff that the statement of claim set out a cause of action founded on this,—that the only duty which the defendant had to fulfil was a ministerial, clerkly duty in making certain arithmetical calculations which called for the exercise of no judgment or opinion, and that as damage had accrued in consequence the defendant was responsible at law. In his opinion this was not a fair view to take of the contract, nor did he think that the word "knowingly," which had been relied upon, meant necessarily that the defendant had acted "fraudulently," the word being one which was capable of a more innocent meaning. If the contract and the duty to be performed were looked at carefully, he was of opinion that the duty was something beyond what was merely ministerial, and was a duty requiring considerable knowledge and calling for the exercise of sound professional skill and judgment. If he was right in this view, the cases of "Pappa *v.* Rose" and "The Tharsis Sulphur Company *v.* Loftus," which had been cited by Mr. Wills, were strictly in point; but they were not this case; for in this case there had been no fraud or *mala fides*, unless covered by the word "knowingly," which, in his judgment, as already expressed, did not necessarily imply fraud. The case was within the authority of those cases which decided that where the exercise of judgment or opinion on the part of a third person was necessary between two persons, and in the opinion of one of the two such opinion or judgment had been wrongfully or negligently exercised, no action could be maintained against a person standing in the position of third party. There remained only that part of the statement of claim which alleged that when the plaintiff received the certificate for the lesser sum he asked the defendant to reconsider his decision, or to give the grounds of it, and that the defendant refused. In his judgment no action would lie for such a refusal on the part of the defendant. The contract only required that disputes between the contracting parties should be settled by the defendant, and he was in no way bound to enter into any reasons for any decision he arrived at, having regard to the relations that existed between him and the plaintiff.

Mr. Justice Denman concurred. There was no direct contract between the plaintiff and the defendant, but it was contended that the defendant was liable, either as a person who had entered into an implied contract with the building-owners and the plaintiff, or that by virtue of his office he owed a duty to the parties which he had neglected toward the plaintiff. The duty of the defendant, in his judgment, was to perform what he had to do honestly, and there was no suggestion in the statement of claim of any *mala fides* or dishonesty. The nature of his duties was strictly analogous to those of an arbitrator, and not, as had been suggested by Mr. Cave, to those of a mere appraiser. Ordinary acquaintance with building contracts showed that an architect could not be regarded as a mere caster-up of figures, and ought not, therefore, to be held liable for negligence when a mistake in figures or measurements occurred. He concurred with Lord Coleridge that "knowingly" ought not to be stretched into meaning "fraudulently," and agreed that the defendant was not called upon to give any reasons for his decisions to the plaintiff, or to re-open the matter at his request. The demurrer, therefore, would be allowed.

SANITARY CONDITION OF PLYMOUTH.

An elaborate report by Dr. Baxall to the Local Government Board has been published, and demands the immediate attention of the authorities. It is evidently the result of careful examination, and shows the existence of a frightful state of things in parts of the district. Having personally examined a considerable part of the town we are able to confirm many of Dr. Baxall's statements.

Take two or three of the special cases of filthiness pointed out.

Jays-court is thus described:—"Closed at one end; contains eight or ten houses, some of which face King-street, which is some feet higher than the court, being on a level with the rooms on the first floor. The refuse of some twenty families is stored under one of these houses, and is said to be cleared away once a fortnight, but only very partially, much of it being left behind, as I observed to be the case on the morning of my visit, soon after the scavenger had left, when 8 in. or 10 in. deep of decomposing filth remained draining into the court, there mingling with slop water and stagnating in puddles in the broken pavement. Three very filthy closets stood in the court, one discharging direct either into a cesspit or a sewer, which of the two I was unable to ascertain owing to the revolting state of the closet precluding further investigation."

Again:—

"11, *Notte-street.* — Occupied by several families. House damp, and generally pervaded by sewer air. The closet, situated on the stairs, is unprovided with means for flushing. A small window in it opens into a warehouse, but at the time of my visit it was closed up, the persons hiring the warehouse stating that the stink was so bad that they could not endure it. In the passage on the ground-floor is a sink, the pipe from which, together with the soil-pipe from the closet, leads to an old drain in the cellar, which was broken in for many feet, the sewage escaping and flooding the cellar to such an extent that it could be entered only at one spot. I received a long and sad history of sickness from the family occupying the rooms immediately over the cellar."

"*Granby-green, Granby-place, Granby-square, Granby Cottages, and Stafford-row.*—Are all confined courts situated in Granby-street, and or the most part offer examples of aggravated unwholesomeness. Each court is about 16 ft. wide, closed at one end, and opening into a narrow street at the other end; while on either side are situated about five houses standing back to back with other houses in the adjoining courts. Granby-green and Granby-place may be specially mentioned. The former has a rough stone pavement full of holes; and an open drain, half filled with stagnant filth, in untrapped communication with the sewer; while built up in one part of the court is a large receptacle which at the time of my visit contained accumulations of fish and vegetable refuse. The so-called closets in the court consist of pans set in brickwork, so revoltingly foul as to preclude their being used except for emptying vessels into them."

As to the distribution of mortality within the town, the reporter made a careful analysis of the death registers for the last five years and a half, with the result of finding a decided incidence of mortality upon certain streets that are, as matter of fact, characterised by prevalence of unwholesome conditions in an exaggerated degree. This is quite in keeping with the experience of the parochial medical officers and other medical gentlemen practising largely amongst the poor, who were unanimous in stating that they got a preponderance of sickness in these streets and in the immediate neighbourhoods. In order to enable comparison to be made between the health of these streets and the rest of Plymouth, Dr. Baxall selected a few of them, and instructed persons in whom he could place confidence to obtain their respective populations.

The general mortality of the given streets amounted to 764 deaths, showing a yearly rate of 30 per 1,000 of the population. Of these 764 deaths, 164, or nearly 22 per cent., are referred to the seven principal zymotic diseases; 105, or nearly 14 per cent., to phthisis; 134, or more than 17 per cent., to pneumonia and bronchitis. Thus, about 53 per cent., or more than one-half of the total mortality, is referred to diseases which are more or less preventible.

Again, comparing the annual death-rates obtained in these streets with corresponding rates for the remainder of Plymouth, we find the general death-rate of the streets is 30 per 1,000, against 21 per 1,000 for the rest of Plymouth; also that the total death-rate from the seven principal zymotic diseases is double that from the same causes in Plymouth, being 6·4 against 3·2 per 1,000; while the death-rates from phthisis, and pneumonia and bronchitis, are also considerably in excess, being 4·1 and 5·2 respectively, against 2·2 and 3·07 for the rest of Plymouth. Lastly, the infantile death-rate is 199·9 per 1,000 of the births, against 161·1 per 1,000 for the remainder of Plymouth. The significance of these figures will be better appreciated from consideration of the fact that, had the rates of mortality obtained in the given street from all the specified diseases been equalled by the remainder of Plymouth, the corresponding deaths in the latter would have amounted to 5,806 instead of 3,137; in other words, there would have been an increase of 2,669 deaths. With reference to the given streets, it is pointed out that while the high mortality from all causes is undoubtedly attri-

butable to the general unwholesome conditions that prevail, the excessive fatality from "fever" and, perhaps, from diarrhœa, may be regarded as the results specially of excremental nuisances; and, in like manner, the very high death-rates from diseases of the respiratory organs may be connected more particularly with dampness, overcrowding, and other unwholesome conditions tending to vitiate the atmosphere of the dwellings.

The report closes with a number of Recommendations, all of them of obvious necessity.

THE HOUSES OF PARLIAMENT. PROPOSED ALTERATIONS IN THE REPORTERS' GALLERY.

It has transpired within the last few days that there is a probability of the reporters' gallery in the House of Commons undergoing reconstruction and enlargement. A select committee on Parliamentary reporting has been sitting for some time, and it is stated that the committee have just decided upon a recommendation to the effect that provincial newspapers prepared to give an independent report of the proceedings ought to be represented in the reporters' gallery. Should this recommendation be adopted by the House, a considerable enlargement of the "gallery" will be absolutely necessary, as although the admission to it is at present confined almost exclusively to the representatives of the metropolitan daily press, the space is inconveniently small and limited. The select committee of the House are said to have adjourned for a fortnight in order that the architect may have time to report upon the necessary alterations.

THE PORTSMOUTH, GOSPORT, AND ISLE OF WIGHT BUILDERS' BENEVOLENT ASSOCIATION.

The annual dinner in connexion with this Association was held on Tuesday evening, at the Railway Hotel, Portsmouth. The chair was occupied by Mr. W. Pink, ex-mayor of Portsmouth, and there were many gentlemen connected with the trade, holding good positions in the borough and county and in the Isle of Wight, present, among whom were Messrs. T. Bailey, H. P. Foster, C. Light, W. Gunnell, H. Moody, C. Whitcombe, Bainton Cousens, T. C. Cooper, Farminer, Roberts, Burbidge, H. Evans, Winter, Slade, Closeley, Lewis, Hicks, Basket, Greswell, Quick, C. Harding, Adams, A. H. Ford, E. J. Smith, R. H. Bone, Kerwood, Earwicker, H. Harding, Moody, Evans, J. Street (secretary), and others.

The Association, which is composed of employers of labour connected with the building trade of Portsmouth, South Hants, and the Isle of Wight, was instituted in 1877, at the suggestion of the then Mayor of Portsmouth, who continues to take the greatest interest in its welfare. The object of the Association is to relieve necessitous members who may be incapacitated for business through infirmity or other inevitable calamity, and also necessitous widows of deceased members, by granting yearly pensions or annuities not exceeding 20*l*. Nearly the whole of the master builders of the borough of Portsmouth are members of the Association, and its ranks are being rapidly strengthened by the joining of numbers of master builders of the district.

On the removal of the cloth, the customary toasts were given and duly responded to.

Mr. H. P. Foster, architect of London, one of the vice-presidents of the Society, proposed the toast of the evening, "Success to the Association," and challenged any member to a contest with him as to obtaining the highest amount of subscriptions before the next meeting, the loser to contribute 3*l*. 3s. to the funds. He was quite sure that when the objects of the Association were better known among the members of the trade, it would be very strongly supported, and he was therefore very glad indeed to find that the directors had determined to issue a prospectus setting forth the objects of the Association. Mr. C. Right, one of the directors, responded, and in the course of his observations, dwelt upon the importance of the members of the trade banding themselves together for the purpose of helping each other in times of sickness.

Other toasts, principally of a complimentary character, followed, and the proceedings of a very satisfactory gathering terminated.

THE NEW SEWERAGE DISTRICTS, RIO DE JANEIRO.

The works of the fifth district of the Rio drainage have been officially inaugurated.

Engines pump the sewage into the mixing cylinders, where the different chemicals, lime, sulphate of alumina, and charcoal, are added and incorporated with the sewage by means of iron stirrers. From the cylinders the sewage passes into the precipitating-tanks, where the solid matter is deposited, and, after a short period of rest, is drawn off by sluices and passes through an upward filter, clean and bright, into the bay.

The precipitating-tanks are three in number, each 100 ft. long, 14 ft. wide, and 8 ft. deep, constructed of iron, with flues below for the purpose of drying the sewage deposit by the spare heat from the boilers. A tramway is fixed on the top of the tanks and continued out to sea, with a steam crane and iron buckets for raising the dried deposit out of the tanks, whence it is conveyed in small iron trucks to barges for carrying away.

The system, with some slight modifications, is the same as that which was adopted for the drainage of the three original districts of the city, and which has been working successfully for some years past.

The rain sewer in each district is 4 ft. in diameter, continued by egg-shaped sewers 3 ft. 9 in. by 2 ft. 6 in., with barrel sewers and stoneware pipe sewers in the side streets. At each of the new outlet works there are duplicate high-pressure horizontal engines of 20-horse power, provided by Messrs. James Watt & Co., of Soho, with three Cornish boilers and duplicate centrifugal pumps.

The chimneys are carried up to a height of 146 ft. above the level of the wharf, that at St. Christovao on a foundation of piles and concrete, and that at Botafogo from the top of the solid rock. The works have been designed by Messrs. Gotto & Beesley, engineers-in-chief of the company, and have been carried out under the personal superintendence of Mr. Beesley, assisted by Mr. J. H. Whittle and a numerous staff. The contractor for the whole of the works is Mr. John Dixon, of London, who has been represented by Mr. E. E. Benest, assisted by Mr. Clement Wilmot, Mr. Rodiger, and a large personal. The estimated cost of the works for the new districts is 300,000*l*.

ROADS.

It is a misery to drive on the Victoria Embankment just now, the state of the road is so bad. It seems but a short time either since the steam roller was at work there. Roads everywhere seem to get out of order more rapidly than was the case formerly. What are the statistics as to the results of the use of the steam roller? Will some of the town surveyors give us a few positive facts thereanent. Looking to the wood pavement, part of that in Piccadilly is approaching the character of the Russian "corduroy" roads (formed by laying unsquared trunks of trees side by side transversely), and jolts one to pieces in passing over it. This road question in London is becoming more and more important.

Woods and Forests.—The abstract accounts of Woods, Forests, and Land revenues for the year ending March 31, 1878, have been issued. The capital account of the land revenue showed that at the commencement of the year there was a cash balance of 43,244*l*. The sales of stock brought in nearly 250,000*l*., and the other receipts brought up the total to 384,300*l*. The expenditure included 270,133*l*. for purchases of estates, and after defraying other payments there remained as balances at the end of the year 51,148*l*. odd, and 15,320*l*. stock and securities. The account of the income of the land revenue shows that, including the balances brought forward, the total receipts were 537,029*l*., of which 456,489*l*. were derived from land revenue (principally from Crown rents); 5,978*l*. from Windsor parks and woods; and 28,352*l*. from the royal forests and woodlands. The land revenue expenditure was 39,817*l*.; the expenditure in Windsor parks and woods, 26,969*l*.; and on royal forests and woodlands, 20,302*l*. A sum of 410,000*l*. was paid over to the Exchequer as surplus income, and there was a net cash balance at the end of the year of 39,940*l*.

HEAVY PENALTY UNDER THE BUILD ACT.

DISTRICT SURVEYOR FOR EAST HACKNEY (NOR *v.* HENRY SHIPP.

This case was heard at Worship-street P Court, on the 6th of March, 1879, before Bushby. On the 9th of March, 1878, an had been made for the defendant within month to amend certain irregularities to dwellings, Lockhurst-street, Clapton Park, on the 19th of February, 1879, the order not been complied with.

This was proved by the district surveyor the defendant was fined 100*l*., having been viously fined 56*l*. 0s. 6d. in respect of the matter.

CLAIM FOR "EXTRAS."

BINGHAM *v.* REEVES.

This case, arising out of a building cont was before the Master of the Rolls last we

The plaintiff was a builder, of Headcorn, and the d ant was an auctioneer, of Ashford. It appeared tha years since Mr. Reeves became the owner of an property in the middle-row of High-street. He dete to rebuild it, and employed Mr. Baldwin Fyke, b ford, architect, to prepare plans. The building w put out to tender, and the lowest tender was acc which was that of Mr. Bingham, the amount bein A good deal of work was done by the builder outs contract, and it was this extra work which gave rise litigation. Mr. Reeves had paid over in the course work sums amounting to 776*l*., and he disputed the made above that sum, alleging that the work wa without his orders, and that it came to less money action was at length brought for 869*l*. The defendan into Court 400*l*.

The case was about to be referred to a Master in cery for argument and evidence, when the defe counsel consented to a verdict for the amount claima also to pay the plaintiff's taxed costs.

WATER SUPPLY.

Margate.—The Margate Town Council, 25th ult., decided to purchase the Water pany's property, and to take the supply their own hands. The sum agreed upon value to be paid for the acquisition is 59,0

London.—At a meeting of delegates fro various vestries and local Boards of the polis, held last week at St. Martin's V hall, under the presidency of Mr. Churchw Watherston, for the purpose of consideri metropolitan water supply, the foll resolution was proposed:—"That whereas complaints have for some time past be pressed in the various localities in the polis supplied by the water companies regard to the increase of the water-rate out apparent justification, it behoves th sumers to institute inquiry and collect in tion, with a view to obtain the means of en the adjustment of the burden." In the sion which followed, the meter system supply and charge of water was adv Several of the delegates condemned th ciple of charging according to the r value of the property, and it was sug that a deputation should wait upon the Secretary, with a view of asking him t the matter in hand as a great public du independently of the Metropolitan Boa Works. The motion was seconded and unanimously. It was also resolved that that certain inequalities prevail, not only pound rate of charge, but also in the incidents, viz., the graduated scale char baths, water-closets, high service, and matters; and that by a return of the politan Board of Works, the rateable v the metropolitan parishes, which in 18 11,283,663*l*., was in 1876 increased to mor double that sum, namely, 33,111,313*l*. showed that the income of the water com must have enormously increased in the " This meeting is of opinion that it is de that each of the vestries and district should obtain a copy of the Act of the par water company which rates their parish trict Board, in order to ascertain the conferred upon the company for the pu and that such vestries or district Boards obtain from some of their chief com information showing in what way those are exercised, as to annual value and oth and what have been the nature and r amount of any late increase in the rate that such information as early as pos forwarded to St. Martin's Vestry-hall. delegates present were then formed into mittee to carry out the object in view.

OBITUARY.

R. J. King.—Mr. Richard John King, an ry and voluminous and pleasant writer ient religious foundations, folk-lore, &c., Crediton on the 10th ult. He was the of the six volumes of "Hand-books to thedrals of England," published by Mr. during the years 1861-69. The parts to Gloucester, Hereford, and Worcester ublished in a separate volume under the the "Three Choirs," and in 1873 he pub- a similar volume on "The Cathedrals of Many of Mr. Murray's County Hand- were also written by him.

OLD LONDON.

laborious and useful volume of Mr. 1821, descriptive of the parish of St. -the-Fields, contains, besides engravings ns, seals, and autographs, a plan of rish,—*circiter* A.D. 1250,—which shows Tyburn-road, now Oxford-street, with lows, subsequently the pound, at the d. Great Russell-street, leading to Red fields, and the space between, north of reet, consisting of the Pittance Croft, W. Russell; Blemundsbury, and Hos- lands, with buildings extending eastward north of Little Turnstile in Holborn. are seen on the north side of Broad- nd Holborn with a rivulet behind them, ng from Great Russell-street, west end, Hospital. North-west of this street is a se with a mansion, bounded on the west enham-court-road. On the south-west High-street, a triangular plot contained pital of St. Giles, and below, separated s is now Denmark-street, another plot is bounded on the south by Castle-street, uns from St. Martin's-lane to Drury-lane. plots and houses are shown as Campo wich, &c., between Drury-lane, and Cam- nplariorum, or "Fikate's Fields," a large now Lincoln's Inn-fields. In Holborn, Drury-lane, a stone cross is seen. treet is now Long Acre, and the Great Queen-street is shown in this Plan 2 shows this parish, A.D. 1570, with rches, 1631, 1734; and it includes the - garden wall, extending from St. -lane to Drury-lane. North of Holborn upton House is seen on the site of the de of Bloomsbury-square. South of a ow Monmouth-street, appear Cock and ls, now Seven Dials. This plan seems om Aggas, 1560, and Hogenberg, 1574. House is seen at the lower end of the nd a few houses appear at the upper so on the other side of Broad-street, and to "Fickett's-fields" on the north side of . Plan 3 denotes the boundaries of s's parish, *circiter* A.D. 1300. This plan from Gray's-inn-lane, opposite the site ld Temple, to Tyburn-street, and south- St. Martin's Churchyard. Red Lion ay's-inn fields occupy the space from nn-lane to Blemundsbury. Eastward attesfeld," which extends southward to and, the Blackfriars, now Lincoln's Inn, Cotterell-garden or Coneygarth, appear, w-square, and a road is seen which runs reat Turnstile to the Strand. An oblong n Herlirum's garden, is now occupied obester-rents, bounded eastward by lor's-lane or Newe-street, Serjeants' Inn, Rolls, being seen below, with Clifford's d St. Dunstan's Church eastward of Novi Templi.

are views, also, in this volume of the nead Inn, in Dyot-street, which flourished reign of Charles II., and of Totten or Hall, the residence of William de Totten- the reign of Henry III. It was known ently as the Adam and Eve public-house, orth-west angle formed by the New-road Hampstead-road. I find also views of ow, Dyot, and Thanet houses, as these d sixty years since, the latter being in tussell-street. Newcastle House, at the est corner of Lincoln's Inn-fields and Queen-street, A.D. 1686, is engraved at and several houses situate in Great treet, at p. 250. These are mentioned ant ("London," p. 149), and in Evelyn's " St. Giles's Hospital was founded by Matilda for forty lepers, in 1101, and be- A.D. 1166 and 1189. Henry II. granted r in its favour. The name of St. Giles-in-the-Fields, to distinguish this church or hospital from St. Giles of Cripplegate, &c., was applied originally in the deed of gift of the hospital by Henry VIII. to Lord Lisle. Stowe stated, 1595, "On the High-street, Holborn, have ye many fair houses builded,—lodgings for gentlemen, inns for travellers, and such like, up almost to St. Giles-in-the-Fields."—Survey, ed. 1595. The plan at p. 108, in Parton's volume shows modern St. Giles, A.D. 1815, before recent alterations, and the destruction of The Rookery and Aldewych Highway or Drury-lane, may be derived from Saxon *Ald*, old, and *Wych*, a village, hence Wych-street, at the south-east end of Via de Aldewych. A Mr. Weedon, barrister of Lincoln's Inn in 1698, issued plans for the building of a beautiful range of buildings, to form an eastern row of houses in Lincoln's Inn-fields, with official chambers, &c., being preferable to the old black wall, and profitable for its rent. The plans included a chapel in the centre of the square, with waterworks at each corner. But, as I stated in the *Builder*, vol. xxxvi., No. 1865, not until 1735,—8 ann. Geo. II.,—was there any inclosure here. In the *Grub-street Journal*, I find this paragraph, viz.:—"Yesterday [the 10th of June, 1736, old style] they began to plough Lincoln's Inn Fields in order to raise the ground and make it fit for the walks, &c., and the said square being almost railed up with iron rails, several workmen are ordered to begin on the basin next week." Plan 3, p. 161, includes Maypole-lane at the bottom of Drury-lane, and a cross in the Strand, below. C. C.

"ART FOR ART."

SIR,—My attacks, if my arguments deserve so strong an epithet, are generally directed against what I conceive to be error, and not against persons. I am tolerably free from malice, and I scrupulously avoid naming names if that can possibly be avoided.

Whenever writers are rash enough to leave the highway of common sense for the bye-ways of rhapsody, they are sure to follow these misleadings into the slough of inconsistency and error. Your most recent correspondent on "Art for Art" follows his leader, and therefore soon flounders in misapprehensions and misconceptions. Let him logically carry his premisses to their legitimate conclusions. He, like other rhapsodists, is fond of alluding to the Divinity in his writing, as if he were His by the laying on of hands. Genius with the enthusiasts is always *divine*. Let us grant them that it is, and what must be the logical conclusion? Why this: that genius is most genius when it is most God-like. Now, sir, is it more God-like, according to our human apprehensions, to do things with conscious foreknowledge, or with unconscious instinct, like brute beasts? Does the Almighty *abandon himself unconsciously* to his work? Need I pause for a reply?

The Liverpool lecturer, however, gave expression, if your report be correct, to two opposite and contradictory opinions. In one place he is for conscious, and in another for unconscious, well-doing. I only noted the inconsistency; and I was then, as I am now, ready to give him credit for holding the more sensible doctrine of the two. I can also admire his chivalrous defence of the artist of his election. I am only at issue with him as to his choice of weapon. Sophistry is but a weak lance at best, and one which is sure to be shivered at the first tilt against the breastplate of Truth.

"ART FOR GOOD."

The Artisans and Labourers' Dwellings Improvement Act.—At the inquiry at the office of the Westminster District Board of Works into the Great Peter-street (Westminster) improvement scheme of the Metropolitan Board of Works, Mr. Biron, for the Board of Works, stated that the area it was proposed to deal with was bounded by Great Peter-street, by St. Matthew-street, by Rochester-buildings, and by St. Mary's School. It was proposed to erect in the place of the buildings now covering the site a block facing Great Peter-street, six stories in height. There would be accommodation for 180 persons, there being thirty tenements of one room, thirty others of two rooms, or ninety rooms in all. With regard to the expense, the cost of the clearance was set down as 11,000*l.*, and the site when cleared it was calculated would be worth 3,500*l.*, leaving a net cost of 7,500*l.* to be borne by the Board.

THE STREETS AND SNOW.

SIR,—I noticed in your number for the 1st. the remarks from the editor of the *Fireman* respecting means of melting snow. Isaw the apparatus he refers to, but think the best and most perfect method is that adopted by the City authorities, and which they have had in use, more or less, for some time past, in Fore-street.

I am not acquainted with the construction of the apparatus, which I have ascertained "is heated by gas and worked by one man," but the plan is to open one of the sewer entrance-flaps in the pavement, down which the snow is discharged, "being carted from the different streets," and apparently dissolved and allowed to run into the sewer.

I feel certain that if a sufficient number of these arrangements had been ready for use, we need not have had the City streets in the disgraceful state they were after the last fall of snow, which certainly was heavy, but of a very short duration. PEDESTRIAN.

FROST AND MORTAR.

SIR,—Referring to the letter from "Contractor," in your issue of the 22nd ult., I also should feel obliged if some gentleman would kindly inform me of any test case on this subject, as Portland cement rendering on outside work, which I had executed in October and November last, is now coming off in large pieces. The concrete covering the slope of excavation, put on in October, is also badly cracked, the crack extending from the top to the bottom of the slope (about 25 ft.). The maintenance of the work still lies with the contractor. Is he therefore bound to repair all damage, no matter though that damage was not caused through bad material or workmanship? C. E.

WESTMINSTER AND PIMLICO INDUSTRIAL EXHIBITION.

SIR,—The Committee of this Exhibition have received a handsome offer from Mr. T. Christy, F.L.S., and the proprietors of the *Live Stock Journal*, of extra prizes to exhibitors of the best designs for conveying live poultry and eggs. There are probably many other gentlemen among our leading employers of labour who would be glad of such an opportunity as will be afforded by the coming exhibition to encourage skill in design and excellence of workmanship in various branches of handicraft, by also offering special prizes. Perhaps some of the City companies might see their way to do the same. Our Committee would be glad to hear from such persons, and to make their offers widely known as soon as possible.

H. E. FOX, Chairman of Committee of the Industrial Exhibition.

70, Warwick-square.

SCHOOLS OF ART.

Manchester.—The annual meeting of the friends and supporters of the Manchester School of Art, and the distribution of prizes to the successful students in the examination previously held, took place on the 26th ult., Mr. F. W. Grafton, presiding. The report of the committee submitted stated that the work of the school has been well maintained. The committee observe with regret that the income of the school is again less than its current expenditure. To maintain it in efficiency they hope to be aided by additional subscriptions, to restore the balance of the annual financial statement. As a valuable contribution towards the permanent endowment of the institution, with means to supplement the fees from students, the committee desire to record their high appreciation of the liberality of Sir Joseph Whitworth, bart., who has transferred to trustees, on behalf of the school, shares of the value of 1,000*l.* in the Whitworth Land Company, Limited. Since the last annual meeting the building committee have been much occupied with forming the art-treasures exhibition, settling with the architect (Mr. George T. Redmayne) the final design for the new building, and continuing the canvass for subscriptions. In the last report the general design of the new building for the school of art was referred to; the committee, however, regret to find that the continued depression of the trade of the district has interfered with the provision of the necessary funds to such an extent that they have thought it advisable to reconsider the scheme, and have determined to erect a building which, though architecturally less ambitious, will contain all the accommodation essential for the school, as well as the gallery for an art museum connected therewith, and this they hope to commence during the spring. With respect to the building fund, the amount subscribed now amounts to 16,722*l.* 10s.

Southwark.—On the 28th ult. the first general distribution of prizes to the students of the Southwark, Greenwich, Stepney, Nine Elms, and Woolwich Science Classes took place at the

St. Olave's Grammar School, Southwark. These classes, conducted by Mr. Parton Parry, are in connexion with the Science and Art Department at South Kensington, and the course of instruction includes geometrical, machine, architectural, freehand, model, and perspective drawing, together with, speaking generally, all branches of pictorial art which have a bearing on skilled mechanical industry. The prizes were distributed by Professor Thorold Rogers.

WOOD-PAVING IN CHELSEA.

The Chelsea Vestry have decided to expend a large sum in laying down wood pavement along the main thoroughfare within their district. At their last meeting, the Committee of Works recommended that the Metropolitan Board of Works be asked to sanction a loan of 20,000*l.* for wood-paving, commencing at the North-end of Sloane-street, and ending at Park-walk, Chelsea, including Sloane-square. The adoption of the recommendation of the committee having been moved and seconded, the proposition was, to a certain extent, discussed, Mr. Cole, one of the members, observing that Sloane-street had only recently been put in repair, and the roadway would last a couple of years. He moved, as an amendment, that the Vestry borrow 10,000*l.* to lay down wood-pavement in such parts of the parish where the roads require thorough repair. The amendment was negatived, and the motion for power to borrow 20,000*l.* to lay down wood-pavement along Sloane-street, as recommended by the committee, was carried by a large majority.

SEWAGE DISPOSAL.

Canterbury.—At a meeting of the General Purposes Committee of the Town Council on the 26th ult., the surveyor (Mr. Hall) presented a report upon his interview with Mr. Rawlinson, C.B., who had looked over Mr. Hall's plans for disposing of the sewage, and had approved of the modified plan for irrigation which was adopted at a former meeting of the committee a short time ago. The committee now resolved, after considering Mr. Rawlinson's report, to recommend the Council to carry out the plan in question.

Prestwich.—On the 27th ult. Colonel Ponsonby Cox, R.E., attended at the Local Board offices, Prestwich, to hold an inquiry respecting an application of the Board for powers to put in force the Lands Clauses Consolidation Acts with reference to certain land required by them for the purification of the sewage of the district. The trustees of the late Mr. T. Drinkwater, whose property it was proposed to utilise for the purpose of the sewage works, were represented by Mr. Kirkman. The plans of the Board's scheme were laid before the inspector. Mr. Kirkman said that the objection of the trustees was that the scheme would, by a road, cut their estate in two, which was very objectionable. They suggested two other sites, one near Messrs. Buckley's works, and the other near Bradley Fold. The inspector said he was bound to consider the site stated by the Local Authority, and unless there was some fatal objection he would have to recommend it to the Local Government Board, so that the provisional order could be issued.

CHURCH-BUILDING NEWS.

Foord.—A new church at Foord, an outstanding district of the parish of Christ Church, Folkestone, was consecrated on February 3, by the Bishop of Dover. The church which, when complete, will consist of nave, aisles, chancel, organ-chamber and vestries, tower and spire, is built in the Early Decorated style, the material being local ragstone laid in random courses, with Box-ground Bath-stone dressings, the internal walls being lined with rich-coloured red brick-work, coursed with grey. The roofs are of fir, left clean without stain or varnish. The windows are glazed with varied-tinted cathedral glass, and are provided with ventilating casements. The walls are built hollow. The seating is of red deal, varnished only. The font is of Caen stone, with richly-carved and moulded caps and Peterhead granite shafts on a base of Robinhood stone. The church is lighted by gas-jets round the caps of the arcades. The heating with hot air has been carried out by Mr. John Grundy, of Tyldesley, near Manchester. The whole of the works have been carried out from the designs and under the superintendence of Mr. A. Rowland Barker, architect, London; Mr. Burgess Reeves, architect, Folkestone, acting as clerk of works. The works have been carried out by Messrs. R. & D. Baker, of Folkestone, at a cost of about 3,500*l.*

Wensham.—The parish church of Wensham, near Chard, has just been re-opened for divine worship, after undergoing repairs and alterations. The work has been carried out by workmen in the employ of Viscount Portman, who have been paid out of the fund subscribed for the purpose. Mr. W. Hodder, "foreman and architect" (!) to Lord Portman, superintended the work.

Staverton.—Under the superintendence and from the designs of Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, the chancel of the parish church of Staverton, near Totnes, has been restored. Its roof, quite new, is of the local wagon-shape, and of pitch pine. Its timbers are richly decorated in colour, the ribs and purlins painted, and the carved bosses at the intersections gilded. Over the chancel proper the panelled boarding is varnished only, but within the sanctuary the ground is of a beautiful blue, spangled with golden stars. The roof springs from wall-plates, in which are carved pateræ, and at the western end springs from corbels of stone, upon which are sculptured representations of angels in attitudes of adoration. The floors are laid with Minton's encaustic tiles; and by four steps of Robin Hood stone the ascent is made to the altar. The stalls are of English oak, having carved poppy-head terminations. The walls of the chancel are plastered and stuccoed a quiet colour. The reredos is in the main of moulded and carved stone, having a central compartment of wood highly decorated. The stone and wood carving and sculpture have been executed by Mr. Harry Hems, of Exeter; and Mr. Chudleigh, of Newton Abbot, is the contractor for the restoration generally.

Manchester.—St. John's Church, Deansgate, Manchester, has been re-opened, after restoration. It is one of the old City churches. A clean sweep has been made of the boxed-up pews, three-decker pulpit, desks, and most of the old fittings on the ground floor. The design included a new chancel, keeping the present sanctuary as its western bay, and adding to other bays to the east. The new chancel, carried out eastwards, is, however, not yet undertaken, from the want of sufficient funds, and for other reasons. An inner chancel, or "chorus cantorum," has, however, been formed within the existing walls. From the floor of the old shallow chancel, or sanctuary, a broad platform has been raised, towards the west, about 15 in. above the nave floor level. Surrounding this on three sides (save an opening on the west), is a screen of oak panelling surmounted by a railing of light open wrought-iron work. North and south of the chancel are ranged carved oak stalls and subsellæ with two detached prayer-desks of corresponding design. The fronts of the boys' desks and the prayer-desks, and some of the stall-ends, are enriched with elaborate tracery. The whole of the choir fittings are of oak. The four principal stall-ends terminate in pedestals on which stand carved figures of the four Evangelists, facing west. On the ends of the boys' desks are figures of angels kneeling, each bearing a scroll with words indicative of the Evangelist above. The Communion-table (the gift of Mr. Richard Hanby) is of oak, open-framed. It stands upon a double foot-pace, which has curbs of fine-grained stone, and is inlaid at the top with encaustic tiles. Above the oak panelling the walls of the sanctuary are decorated in colour and gold, with a banded diaper and four vesica-shaped panels, on which are inscribed the Decalogue, the Lord's Prayer, and the Creed. The plaster-groined ceiling of the apse is also decorated in colour and gold, and is powdered with stars. The walls and ceiling of the body of the church require, and are to have, a corresponding, but far less elaborate, treatment as soon as the funds permit. The brass lectern, which stands about 7 ft. high, and is approached by a flight of three steps, will be temporarily used as the pulpit. This lectern was specially designed and manufactured for St. John's Church by Mr. Skidmore, of Coventry. The font, the work and the gift in 1876 of Mr. William Goldstraw, has been removed from its position in the central aisle to a more convenient site near the north-west door. Low open-b have been provided for the congregatio for the most part these benches have formed out of the old oak pews.

Paddock.—All Saints' Church, Paddoc been reopened, after alterations and add The old vestries and east walls have entirely removed, a new chancel and v built, and the south-west porch pulled and enlarged. These additions have designed in the style predominant abo reign of Edward I. (A.D. 1300), and ar turally classified as late or transition English." The planning of the addition follows:—A large chancel arch has been t in the east wall of the church, and beyon a new chancel and vestry built, the in dimensions of the chancel being 30 ft. l 22 ft. wide, and on the precentor's sid vestries are placed, one for the clergy a other for the choir, communicating wi adjoining each other. On the opposite the chancel is the organ-chamber or Double arches in pairs are formed betwe chapels and the chancel, and these arch filled in with pitch pine polished screens 8 ft. high, leaving the upper portion of th openings entirely open. The floor of the is raised two steps from the level of the floor, and here are placed the choir wrought out of English oak, and the st richly carved, the precentor's desk be open tracery carved panel work, and the of the desk screens to the choir-stalls o side are carved and pierced to match; t boards (or manuals) of the organ are pl the north chapel screen, so that the orga at his instrument along with the choir. the altar-table is a stone "super-altar" s in face with seven cross-croslets, and thi shelf supports the reredos, executed in different coloured marbles. The execu this work was entrusted to Mr. Brooke, mason. The east window is filled i painted glass, which is the gift of Mrs. Crosland, executed by Messrs. Lavers, B & Westlake. The whole of the nave h reseated with pitch-pine benches, with p panelled stall ends. These panels of st have drapery carvings, and the front have pierced panelling to correspond w choir-stalls and precentor's desk. Each fitted up with umbrella-stands, supp Messrs. Heaps & Co. Fresh air is supp means of "Tobin's" patent tubes let i walls; these were supplied and fitted by Harding, of Leeds. The warming, lighti tiling in the nave of the church, the or moval of the font, reseating the gallery, and hassocks, have been subscribed for congregation and the friends of the chu cost about 1,200*l.* The new chancel, and all other alterations and additio entirely the gift of Mr. Joseph Crosla and have cost about 3,500*l.* The whole works have been designed and carried ou the superintendence of Messrs. John Sons, architects, Huddersfield and De by the following contractors:—Mes Graham & Sons, masons; Mr. James joiner; Mr. Geo. Garton, plumber; Mr. plasterer; Messrs. Goodwin, slaters; Heaton, painter; and the heating ap by Messrs. W. & S. Thornton, all of H field.

DISSENTING CHURCH BUILDING

Pewsey.—On the 23rd ult. a new P Methodist chapel, capable of seating sons, was opened in this village. The has been erected from designs prepared W. Baverstock, architect, Marlborough.

Manningham.—The foundation stone Primitive Methodist chapel at Heat Manningham, has been laid by Mr. Holden, mayor of Bradford. The edi be erected in what is known as the Lo style of architecture, from designs Thomas Howdill, of Leeds, and the e cost is 4,000*l.* When completed, the will provide accommodation for 1,000 pers.

Edinburgh.—For some time past the Free Church congregation have be shipping in the Gaiety Theatre, Ch street, in consequence of their own being badly lighted and ventilated, a insufficient for their wants. They hav ever, secured from the City Impr Trustees, a piece of ground lying betw

and Guthrie-street, and upon this ground rch is to be extended, and offices erected ng to the plans prepared by Messrs. R. n Shiells & Thomson, architects. These ow the old south gable to be removed, church extended to accommodate 130 itters. There are two halls, vestry, ' room, and other offices included in the ments, besides improved means of en- nd exit to the church. The work is now ing.

VARIORUM.

'Practical Cabinet-maker, being a Col- of Working Drawings, with Explanatory by a Working Man" (Wyman & Sons), found very useful by young workmen. fully into the subjects of which it treats, ly written and illustrated, and even in of art the designs are very much better e title gives us reason to expect. There ood common-sense uprightness and forwardness about them which deserve ion. The furniture made well after atterns would last.——"The City of Directory for 1879" maintains its right ood opinion we have always expressed The section devoted to the public com- of which particulars of every company City of London are recorded; and the Companies' Guide, giving the officers of Guilds, with the history of their halls, arms, charities, and schools, are espe- nteresting; and the volume includes a ured map on a large scale, expressly d, and showing clearly every street, railway, with the boundaries of each d parish, together with latest street ments.——As preparing for publication, ol. octavo, with numerous illustrations, of "A Popular Introduction to the of Greek and Roman Sculpture, de- o Promote the Knowledge and Appre- of the Remains of Ancient Art," by Copland Perry. This work is designed litate the study of a very important in the civilisation of ancient Greece, and ote the knowledge and appreciation of ains of ancient art. The author has ken this task in connexion with the for the formation of a Museum of Casts e Antique, which Lord Beaconsfield, in se of Lords, promised to take into ble consideration during the last recess. *Victoria Magazine* is brightened up by a ory from the pen of Emilia Aylmer Blake, ly Love." It shows much knowledge of an heart, and holds closely the attention ader.——Another Dictionary! We are d that Messrs. Griffith & Farran will with the April magazines, Part I. of "A al Dictionary for Architects, Civil Engi- Surveyors, Sculptors, Archæologists, Clerks of Works, and Building Artifi- ontaining a copious vocabulary and prac- planation of the usual terms current in hitectural profession and allied trades, servations and illustrations, by Wyvill ristry.

Miscellanea.

nage in Dublin.—At the monthly of the Dublin Municipal Council on the ., a letter was read from the Local ment Board in reference to the request Corporation that the Board should end a loan of 35,000*l.* to the Corpora- the purpose of completing the sewer f the city. Before submitting the appli- o the Public Works Commissioners they sirous to be enabled, in the first place, fy the Commissioners, in writing, that e falls within the provisions of sub- 1, 2, and 3 of the 238th section of the Health Act, 1878, and that the require- f those sections had been observed. In ual Report of the Public Health Com- or the year ending 31st August, 1878, it ed that the plans and specifications for ks termed "Urgent," upon which it was l to expend 15,443*l.*, could easily be y April next, and an examination and of the sewers "Not urgent" could be ced as soon as the others were com- nd would be completed in five or six The letter was referred to the Public Committee to draft a suitable reply.

The Royal Albert Hall.—Arrangements are being made for the delivery here of a lecture by Mr. Preece on Electric Lighting. Wednesday, May 1, will be the date, and as the Society of Telegraph Engineers are kindly co-operating with the Council in endeavouring to obtain the exhibition of various systems, there is every reason to expect a very complete exposition, and a brilliant evening in more senses than one. Several entertainments have been arranged for. On the 13th, the Royal Albert Hall Choral Society gave a successful concert in honour of the Duke of Connaught's wedding; on (this) Saturday, 15th, the Royal Albert Hall Amateur Orchestral Society, under the presidency of H.R.H. the Duke of Edinburgh, will give their first concert for the season, with good assistants. On St. Patrick's day, the 17th, will be given a grand Irish Festival, with numerous singers. On the 19th there will be an entertainment and speeches in aid of the Home for Little Boys, near Farningham, and on the 19th, in the afternoon, an Opera Concert under the direction of Mr. William Carter.

Worcester Dwellings Improvement and Land Company.—The fourth general meeting of this company was held on the 28th ult. The report of the directors stated:—

"The dwellings comprising St. Alban's-square, and formerly known as the Worcester Model Dwellings, have been uniformly well let throughout the year, and the six freehold dwelling-houses situate in Lower-street-walk, Tallow-hill, which were purchased in the early part of the year, have been repaired, and much improved, and are now all let at an advance of rent. Additional land has been sold at Upper Mitton and former purchases completed. The Firs estate, situate close to the town of Bromyard, and containing about 18 acres of land eligible for building purposes, has been purchased during the year, and about one-half of it has been laid out in suitable lots, several of which have been sold, but as possession cannot be obtained until March, none of the purchases have yet been completed."

A dividend at the rate of 7½ per cent. per annum was declared.

The National Gallery.—In the House of Commons, Mr. Ritchie asked the First Commissioner of Works whether his attention had been called to the blistering of several of the paintings in the new rooms in the National Gallery; and whether he could state the cause, and what steps are being taken to prevent further injury. Mr. Gerard Noel said during the severe frost it was very difficult to obtain an even temperature in the large room of the National Gallery, and it was due to the overheating on one or two occasions that the blistering took place. The paintings affected had been removed to another room, and he was happy to say Mr. Burton had informed him that no irreparable damage had been done to the pictures.

Value of Property in the City.—On the 28th ult. the block of buildings in Fleet-street, near Chancery-lane, occupied by Messrs. Dunn & Duncan, stationers, was sold at the Auction Mart, Tokenhouse-yard, by Messrs. Farebrother, Ellis, Clarke, & Co., under an order of the Court of Chancery. The property is situated on the south side of Fleet-street, between the Law and General Insurance Office and Dick's Tavern, and occupies a ground area of 1,660 superficial feet, the buildings themselves being old and in a rather dilapidated state. The property is freehold. The biddings for the property were very spirited, commencing at 7,000*l.* It was eventually sold for 12,000*l.*, that being at the rate of about 8*l.* per foot.—*Metropolitan.*

The Bradford Borough Surveyorship.—At a meeting of the Street and Drainage Committee of the Bradford Corporation, a resolution was passed recommending to the Town Council the appointment of Mr. J. H. Cox as borough surveyor. There were eighty applications for the vacancy, which were ultimately reduced to seven. Mr. Cox at present holds the office of deputy surveyor to the Bradford Corporation. The final appointment of surveyor will probably not take place until April.

Sir J. Whitworth at the late Paris Exhibition.—Three *Grands Prix* and a Gold Medal were awarded to Sir Joseph Whitworth. Two of the former were for Whitworth's lathes, machine tools, measuring instruments, and screwing apparatus; and one *Grand Prix* was for fluid pressed steel, the principal exhibits of which were a cylinder lining, an air-vessel for torpedoes, and a hollow screw-propeller shaft.

Royal Society.—The President's *conversazione* will take place on Wednesday, April 30th. A reception was held on March 12th, and there will be another on April 2nd.

Sir Philip Cunliffe Owen, C.B., Secretary of the British Royal Commission at the Paris Exhibition, was entertained at a dinner given in his honour, at Willis's Rooms, on Wednesday evening, and, in recognition of his services, he was presented with a testimonial consisting of an address illuminated and engraved on vellum and handsomely bound, a cheque for 3,500 guineas, and a diamond Maltese cross for Lady Cunliffe Owen.

Pictures at Manchester. — The special feature of Messrs. Agnew's tenth annual exhibition of pictures, just opened at their galleries, Exchange-street, is the appropriation of one room to works by Early English masters. Sir Joshua Reynolds, Romney, Opie, George Morland, Old Crome, Richard Wilson, and Sir A. W. Calcott are among the masters whose works are on view.

The Free Library, Bradford, and also the Liberal Club, have been fitted with Messrs. Robert Boyle & Son's patent self-acting air-pump ventilators, and we understand the ventilation is pronounced to be quite satisfactory.

Female School of Art. — H.R.H. the Princess Mary Adelaide will present the prizes, on Tuesday, March 18th, at the University of London, Burlington-gardens.

TENDERS

Revised tenders for the erection of an infirmary at Notting-hill, for the Guardians of St. Marylebone. The whole of the works to be executed in two years. Messrs. H. Saxon Snell & Son, architects:—

Mowlem & Co.	£117,343	0	0
Braid & Co.	116,850	0	0
Lovatt	115,760	0	0
Perry & Co.	115,000	0	0
Cowland, Bros.	113,915	0	0
Crockett	113,794	0	0
Shaw	110,875	0	0
Wall Bros. (accepted)	109,000	0	0
Chappell	108,860	0	0

For pulling down four cottages in Green-street, Bethnal-green, and erecting three houses and shops on the site, for Mr. E. Reymer. Mr. J. Harris, architect:—

Kiddle & Sons	£1,495	0	0
F. & F. J. Wood	1,473	0	0
Beal	1,451	0	0
Anley	1,330	0	0
Cox	1,325	0	0
Walker	1,220	0	0
Judd	1,139	0	0
Thorpe	1,050	0	0
Barrow	1,019	0	0
Seymour	940	0	0
Russell	940	0	0

For Benacre Rectory, Suffolk. Mr. R. Makilwaine Phipson, architect:—

Cornish & Gaymer	£2,087	0	0
Downing	2,010	0	0
Morris	1,940	0	0
Hawes	1,820	0	0
Grimwood (accepted)	1,755	0	0

For South Cove Rectory, Suffolk. Mr. R. Makilwaine Phipson, architect:—

Cornish & Gaymer	£1,370	0	0
Downing	1,320	0	0
Morris	1,180	0	0
Hawes	1,131	0	0
Grimwood (accepted)	1,152	0	0

For four shops, The Grove, Stratford, E. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Hosking Bros.	£3,527	0	0
Perry & Co.	3,434	0	0
North Bros.	3,404	0	0
Norton	3,397	0	0
Morter	3,321	0	0
Marr	3,298	0	0

For drainage works for fifteen houses, Penton-place, Newington-butts, for the Rent Guarantee Society:—

Ricketts	£146	0	0
Wilson	130	0	0
Wookey	120	0	0
Frost & Co. (accepted)	106	0	0

For the completion of seven houses, at Stoke Newington. Mr. Robert Blackmore, architect:—

Uff	£1,355	0	0
Minty	863	0	0
Niblett	813	0	0
Parker & Evans	798	0	0
Lane	705	0	0
Surridge	655	0	0

For alterations and additions to a house at Kenley, near Caterham. Mr. Horace T. Bonner, architect:—

Burman	£950	0	0
Kirk	835	0	0
McCowan	830	0	0
Higgs	797	0	0

For building factory and stabling at Ladywell, S.E. Mr. Horace T. Bonner, architect:—

Somerville & Hill	£987	0	0
Hart	972	0	0
Staines & Son	936	0	0
Burman	910	0	0
Kirk	875	0	0
Smeaton	859	0	0
Jerrard	847	0	0

For new roads, sewers, &c., at West Hill, Hastings, for Mr. G. Clement and Mr. A. L. Sayer. Messrs. Cross & Wells and A. G. Colpoys, architects. Quantities by Messrs. Cross & Wells:—

King	£1,400	0	0
Longhurst	1,312	0	0

For additions and alterations to "Hernelee," Lyme Regis. Messrs. Batterbury & Huxley, architects:—
Randall & Son (accepted) £1,050 0 0

For alterations at the Grafton Arms, 21, Grafton-street, Fitzroy-square, for Mr. Thomas Butters. Mr. James Robert Furniss, architect:—

Edgson	£410 0 0
White	396 0 0
Anley	387 0 0
Homan	374 0 0
Bishop	327 0 0
Edgley (accepted)	307 0 0

For the erection of warehouse, 5 and 6, Paternoster-row, for Mr. Walter Smith. Messrs. Taylor & Locke, architects:—

Braid & Gwynne	£4,900 0 0
Howard	4,889 0 0
Rider & Son	4,838 0 0
Brass	4,584 0 0
Morter	4,483 0 0
Deards	4,071 0 0
Conder	4,061 0 0

For pneumatic malting and stores, for Messrs. Flower & Sons, Stratford-upon-Avon. Mr. Wm. Hull, architect. Quantities supplied:—

	Builder's Work.	Ironwork.
Selby	£3,469 0	—
Lascelles	3,410 0	£1,600 0
Goddard & Massey	3,200 0	1,240 0
Green & Son	3,127 0	—
Mills	3,014 0	1,368 0
Bailey	2,985 0	—
Lovatt	2,907 0	—
Kimberley	2,935 0	—
Kingerlee	2,800 0	—
Davis, J. & T.	2,788 0	—
King	2,733 0	1,358 0
Bromage	2,680 0	—
New & Co.	—	1,288 0
Brettell	—	1,233 0
Mobbs	—	1,242 0
Rice & Co.	—	1,223 0
Lucy & Co.	—	1,160 0
	For the whole.	
Smallwood	£4,144 0 0	
Hodson & Facon (accepted)	3,869 0 0	

For alterations and additions to the Brunswick Hotel, West Worthing, Sussex:—

Patching & Son	£498 0 0
Snewin	470 0 0
Bennett	469 0 0
Smith	460 0 0

For repairs at the Licensed Victuallers' Asylum, Old Kent-road. Mr. W. F. Potter, architect:—

Pritchard	£387 10 0
Wood	365 0 0
Butler	322 0 0
Hayworth	284 0 0
Hersee (accepted)	258 9 0

For the erection of a caretaker's residence at the Channelsea Schools, Stratford. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

North, Bros.	£443 0 0
Hosking, Bros.	439 0 0
Page	428 0 0
Reed	392 10 0
Gregar (accepted)	359 0 0

For new staircases and alterations, at 3, Castle-court, Birchin-lane, for Mr. C. J. Prior. Mr. Geo. Jeffery, architect:—

Frost & Co. (accepted)	£132 12 0
Heeps	60 0 0

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A Protest against Civil War.



AT no period during the last half-century has the condition of the productive industry of the United Kingdom afforded occasion for graver consideration than at the present moment. It is possible to go further. It is very much to be doubted whether the circumstances affecting this part of our national life have ever been so full of menace. It is not of serious and positive suffering that we speak. That there has been, on former occasions, especially within certain localities, or among persons employed in certain industries, more than at present exists. Again, on former occasions, as about forty-two years ago, as well as earlier periods of our history, the tone of enmity between different classes, or supposed different interests, has been more loud and violent than is now generally the case. Of overt and open mischief (although both London and Liverpool are beginning to contribute their quota to the criminal section of society), there has as yet been but little. Why, it may be asked, do we regard the present moment as one of evil augury and persistent menace?

The answer, unfortunately, is not far to seek. Not a single morning newspaper is now published without containing some contribution to that effect. We see, in every part of England, and in almost every department of industry, discontent, difficulty, and all those evils which characterise a falling market, or a decline in the demand for commodities. That, no doubt, ugly phenomenon as a strike has been seen before, if not to so wide an extent. But the part of the case which to us appears most alarming is the total and resolute blindness with which those who are, in the first instance, the most interested, turn their backs on the essential fact.

There is one point on which, and that not for the first or twice alone, we have expressed opinions which very closely resemble those of the mass of the working classes. We refer to the influence on human life of the doctrines of the so-called political economists. Questions which we have often and often raised are now brought strenuously to the fore. The most philosophical writers of the day are putting the question in plain words. Is political economy a science at all? Does it discover truths, or only drivel out truisms or platitudes? And the reply which is forming in the alembic of public opinion is to the effect that, while the original investigation, by Adam Smith, of the elements of the wealth of nations, is a work of high philosophical value, the more pedantic successors of that great man, in their efforts to give to his views an extension which is foreign to their nature, have only elaborated a pseudo-science, which breaks down whenever it is expected to operate. Thus, persons speak of "the great law of supply and demand" with the same sort of reverence with which they speak of some great moral or religious tenet. We have not been alone in showing that, while there is a relation between the two which is like the relation between convex and concave (reference to which comes under the head of truism or of platitude), no effort has ever been intelligently made to show how, when, or where, either one of these conditions produces or affects the other, in any manner that can be predicted or anticipated.

What we have ourselves arrived at as matter of pure, though very simple, logic, the great mass of the industrial classes of this country have arrived at by the short, straight cut of practical experience. They have seen that, in certain journals there was advocated a sort of worship of capital. They have seen that this worship required victims, and that those victims were usually to be furnished from their own ranks. They have seen that when any question arose involving a large and generous policy, the journals and writers in question instantly denounced this as fatal to the cult. Offer a man a helping hand, and you are denounced as "pauperising" him. Whatever was most harsh, most narrow, most mechanical, whatever most fully ignored all the motives of human action, except a base and sordid passion for gain, has been held up as the inflexible law of nature. Against this we have argued, as publicists; and against this the great mass of the industrial classes have revolted, simply in their capacity of human beings.

Now the point which at the present moment appears to us so extremely full of menace is, that the working classes appear to be resolved to show that the political economists are, after all, in the right. They are about to allow those rules and laws, which we have always admitted to be operative, unless they were checked by other influence, to have their full swing. We fear that the result will be to establish a very frightful corollary to the main propositions of the author of the "Wealth of Nations."

What do we see everywhere? There is no need to pick and choose. The extraordinary cheapness of wheat is one of the features of the time which is almost without precedent. According to the *Gazette*, the average price of wheat throughout England and Wales last week was no more than 38s. 1d.,—a price rarely, if ever, witnessed by the present generation. It is true that this cheapness renders lower wages adequate to the support of a family,—but what state of business in general is indicated by such a price for wheat? This is only one point,—rather a bye-signal, it may be said, than a main feature in the case,—but let it not for a moment be forgotten.

Let us take another extract from the same journal, which comments on the price of wheat:—"The strikes which disgraced Liverpool on the 8th of February, and the military precautions there rendered necessary by the attitude of the men on strike, show how little progress has been made by the masses of the population in the past quarter of a century of extraordinary prosperity. These Liverpool riots, following close upon the outrages committed at Blackburn last summer, afford evidence, we fear, that the *morals* of the working-classes is unchanged." These are not our words. They are not pleasant words. But the question is, are they true? We can only say that we shall be too delighted if we are enabled truthfully to contradict them.

London keeps pace, to some extent, with Liverpool. It is computed, says the journal from which we before quoted, that about 2,000 of the men employed in the London engineering trades have already gone out on strike. And already have the police-courts disclosed the violence with which those who wish to work in peace have been treated. The contention of the London engineers is, from our point of view, one of extreme menace to the future welfare of British industry. While the skill required in the working engineer is high, there is hardly any department of human production in which steam does so much, and man so little, comparatively speaking, towards the output of a factory. All that can, by the most zealous friend of the English workman, be claimed in his behalf, as his peculiar advantage in the execution of work of this nature, is superior finish. Of that,—not only in small and delicate work, but in machines, and in fittings of a certain magnitude,—the English workman has somewhat of a monopoly; and purchasers are usually ready, and rightly so, to pay something more for finish. But there is a limit to this disposition, and unfortunately it is a receding limit. The man who bought a Belgian machine because it was considerably cheaper, when delivered in London, than an English machine would have been, did it at first reluctantly. He missed the exactitude of proportion, the absence of any extra metal, the perfect smoothness of external angles and faces, in which he was accustomed to pride himself. "I would cheerfully have paid something more," he will say, "for an English engine; but I had no certitude; and the difference asked was too much.' Yes; but the next machine that he requires he will take more readily from the foreigner. And

if he wants more, and more, he will cease to ask for an English price at all, or to trouble himself about an English finish. From the point of view of the man who requires the best work, the purchaser has become demoralised. And that demoralisation is proceeding, there is too much reason to fear, at a frightful rate.

Again, there is the peculiarly unhappy feature in the London strike, that it has been originated, we will not say at all in bad faith, but still in a manner of which the public have some cause to complain. "All over the country," is the report, "wages are being cut down, and workpeople discharged. There is a superabundance of people seeking employment." It was in anticipation of the actual state of things that, some months ago, the London engineering firms attempted to avoid reducing the wages of their hands. They proposed that the men should return to the old hours of labour. The proposition was met by the most instant and determined opposition. Wages, it was admitted, must rise and fall; but short time, once gained, was not to be impaired. It was owing to this very determined opposition that the employers, after some little delay, came to the alternative reduction; one that would be, at the same time, less beneficial to themselves, and more prejudicial to the working man. On that point they are met,—not indeed professedly as a matter of principle, but on the ground of expediency and of want of necessity for change,—with an equally unflinching denial. And here, we fear, the dispute is about to be referred to the decision of that very tribunal of which we have been contesting the jurisdiction,—to the hard, inflexible, inhuman action of the laws of economic balance.

But the main point which causes us alarm is one as to which it is inexplicable to find how little attention has been paid by the working men. It is the universality of dispute. There may be cases where masters are grasping, where reductions are uncalled for, where a little firmness will have a good result, and so on. But no one who walks on two legs can, one would think, be so foolish as to imagine that employers throughout the country have engaged in a general and iniquitous league unnecessarily to reduce the wages of their workpeople. Yet of two things one must be true. Either the employers of England,—colliers, ship-owners, ship-builders, engineers, cotton-spinners,—and other capitalists, have entered into a conspiracy which is as foolish as it is wicked, and which is as certain to be exposed to public detestation as it is ridiculously contrary to fact; either this, or there must be some great, pressing, general cause which has produced an unconcerted but inevitable community of action on the part of the great body of what are called the employers of labour, but who, as far as the public are and concerned, are only themselves the master and foremen labourers.

From 50,000 to 60,000 men were reported to be on strike at Liverpool. Not only engineers, boiler-makers, and firemen, but coal-heavers, labourers, and sailors have joined in the madness. Carters stand idly by their teams. Troops are called out to protect the lives of the industrious workmen. "Never," said Mr. David MacIver, M.P., at the annual meeting of the Liverpool Chamber of Commerce, "was there a more hopeless struggle than that in which the men are now engaged. If the ironworkers were to succeed, it would drive the iron trade from Liverpool, as it had already been driven from the Thames." Mr. Mac Iver might have added that unless some new complication of the political face of Europe should drive the country into yet more active preparations, the impending discharge of a very large body of workpeople from our dockyards and arsenals cannot be much longer delayed. The London engineers will feel the effect of this, even sooner than those of Liverpool. But it is not shipbuilding alone that will suffer. If riot and mutiny are to fix the rate of wages in her dockyards, farewell to the commerce of Liverpool. At Blackburn, the workers of three mills resolved to come out on strike on the 13th current. At Bangor the men employed in the building trade struck against a proposal to extend the hours of labour. At Dundee the strike of the mill-workers has only been closed by the resumption of work at reduced prices. We might extend the list *ad infinitum*. Week after week our own columns echo the like statements from every part of the kingdom. What blindness can have stricken the working people of England that they should thus in every corner of the country quarrel with their bread and butter?

Political economy, if rightly followed out as a system of inductive inquiry, would render such a state of things as this impossible. If those statistics which we are now commencing to collect were exhaustively gathered and published, month by month, in a well-digested form, it would be quite possible to predict the effect, six or twelve months hence, of the advance or the decline of productive price, in any industry, within say five per cent. It is within the capacity of the human intelligence to do this. It may be thought that the Government would be only discharging its duty to the country if it gave a much greater activity to its statistical action. But who would be the better? Who would study the returns? Who would read the fiery signs, full of menace as the handwriting on the wall of the Babylonian king, if they did not like the meaning? When we see that the very extension of the line along which the fight is now waging has not been comprehended by one of the combatant parties, or, that if it has been observed, its import has been wholly misunderstood, we very much fear that no effort of the true political economist will have any avail in preventing the hardest of lessons.

And if so,—what will be the result? The hard, inflexible tribunal of abstract balance of price will come into function. All that the most mechanically-minded writers have foreboded will have full swing. The exceptions which we, and those who think with us, have made as to the unchecked operation of the simple question of price, will be swept away. And why?—Because we have always urged that other motives besides the base desire to gain as much money to-day as possible actuated mankind. Because we have credited our fellow-creatures with a little more sagacity and a little more forethought than they seem now to possess. Because we did not think that one of the most famous fables of antiquity would have to be re-written in England in 1879. The man who killed the goose that laid the golden eggs did, indeed, realise the egg that the bird was about to lay. A universal strike,—and that is not far from the actual state of the country,—resembles the chasing of the precious goose into the yard of a greedy neighbour.

If the sharp bitter issue could be tried by one trade or industry alone, if any hope could be entertained that the result, whatever it was, would be accepted as settling the main question in dispute, for ten, for five, or even for a single year, we might look on with less concern. It is true that loss would be great, and suffering more. But something would be gained at the price.

But when a general phenomenon of so black and menacing a nature as a general fall in the demand for produce, and a general attempt to reduce productive cost by reducing wages all over the country, has no apparent effect on any body of working people,—when the result of struggles with which we openly sympathised has been identical with that of struggles which we openly condemned, what hope is left? What but the sharp teaching of hunger will induce men to try any and ascertain the ruling facts? And let it be remembered that the verdict of the court which is now invoked is as irreversible as it is pitiless. A trade that is chased from a country to-day cannot be coaxed back to-morrow. We cannot but say, in the plainest as well as in the most sorrowful language, that the permanent welfare of England is at this moment in greater jeopardy from the intestine struggle of labour with itself than it ever was in the civil wars of the Roses.

We are not now attempting to decide the merits of any particular case. We have not before us either the rate of wages paid in the Liverpool docks, compared with the number of able-bodied men employed and out of employ in Lancashire; or the average earnings of the London engineers, coupled with the state of the payments at Woolwich, Chatham, and other places where great works are about to be discontinued. What we look at is the universal aspect of wage warfare, showing the certitude of the action of some common and mighty cause, that drives the producers of England, as a rule, to try to lower the cost of production; and the utter failure on the part of a portion of these producers to see, mark, or understand the cause of that general movement.

"Mind your own business," we almost fancy we hear the working man reply. "Is it not likely that we know best what we are about? You, Mr. *Builder*, may represent the opinion of a dozen men, or, may be, a hundred, or a few hundreds. We are five millions. We are people. We know what we want, and we m to have it." Alas! if such be the reply friendly counsel! We have shown, in a mar that is impossible of contradiction by any acquainted with the simple rules of arithm in recent numbers, how the history of steam-engine has been the history of the con of the workman against his best friend most valuable slave. To this moment that is disregarded. But the contest is now gether changing ground. The rivalry that existed between the British and the for workmen is being displaced by the rivalry exists between the British and the for factory. Questions of wages are epheme Day by day they do, and must, settle th selves. They settle themselves at a tem cost, no doubt, but they are not very long a it. A few weeks usually terminates a s one way or another. Three quarters of a ye a period of exceptional duration for such a test. But meantime the deeper, graver, r vital question is also, silently but certa advancing towards its solution. Every mon publication of the Board of Trade shows progress of that question, and for the last years it has been unquestionably a dow progress, as far as England is concer The working men are correct in their that the question of the hours of labo one of far more importance to their class that of the rate of wages. It is also important to the country. And it is as co as any deduction from ascertained fact co that as freedom of intercourse more and breaks down the barrier of distance, equalises the burdens and the advantage European peoples, the command of the ma of the world will fall to the people who di most individual industry, and to the machi that is kept in motion for the greatest nu of hours in the year.

Great as is the evil of the contest as to w cruel as will be the suffering involved allowing it, on the hardest lines of the pol economists, to settle itself, instead of settli by a little practical sagacity, the evil is small compared to that wider source of co to which we now hear little, but the resu which become every year more disastrously rent. We mean the evil of keeping our engi steam power idle for so many hours in the

A kindly correspondent from the wo classes, and an able one, too, reproachf gently for some previous observations, w like tendency to these, says,—Surely the *Bu* of all journals, after what it has said and for the struggling thousands, cannot desi lessen the wages of the hand-workers, lengthen their hours of labour? Desire Certainly not. But what does our desi such a case avail? We may wish,—we do heartily and earnestly,—that every man s have time to develop and enjoy himself *as a* that he should have a good piece of beef i fire, and a nest-egg in the Savings Bank will all the wishing in the world bring about? Sentiment and good-will are u here. Facts must be looked in the face. civilised Europe is playing against us, ar less we are as alert, instructed, and hardi ing as our opponents, we must lose the gar

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Traction Engines on Highways.

Oswestry, on the 13th inst., Mr. Thomas H quarry proprietor, was summoned befor county magistrates by the District Hig Board, under the 23rd section of the High and Locomotives Act, 1878, for the recove 50*l.* damages done to a certain highway district of the Board between Porthywae Penybont, a distance of four miles, by use traction-engines. The defendant's solicito tended that defendant's use of the road legitimised by the Act of 1861. He s that the Act of 1878 was never intend override that of 1861, and that the res bility should fall upon the locality in whi engines were used, and which benefited by use. Another point was that the road had been properly constructed, and that the r had been done in a lavish and extrav manner. Several witnesses were called on sides, and in the result, the bench unanim made an order against the defendant fo payment of the 50*l.* claimed, and 30s. but stayed execution to give the defend opportunity to appeal.

SCOTT'S LECTURES ON MEDIÆVAL ARCHITECTURE.

IN two volumes which have been published der the general title of "Mediæval Architec- re," are now collected (as the fuller descrip- n on the title-page informs the reader)* the tures delivered at various times at the Royal ademy by the late Sir G. Scott, in his capacity Professor of Architecture. All these have peared in full, at the times when they were ivered, in our own columns. Their collection o a two-volume book is fully justified by the erest and value of the lectures and the mount of information they include, not only on the Gothic style generally, and according accepted views, but on special points in its tory and development, in regard to which ocial suggestions are to be found derived from ceptional observation extending over a long of study of the author's favourite field of hitecture. The book was the last thing ich received the author's personal supervi- n, he having examined and approved of proofs a number of the illustrations only two or ee days before his death.

We may, therefore, regard this work no longer the light of a set of isolated lectures, but as final summing up of the theory of the study practice of architecture to which Scott had voted his life. Although the bulk of the book illustrative and descriptive, some of the sec- ns also are entirely devoted to the critical sideration of Gothic architecture as a basis modern practice, so that the book becomes a certain extent a "confession of faith" in ard to principles of architecture, as well as illustrative history. We may glance over book in the first place in its illustrative acity.

From an historical point of view, we have here istory within a history. In the first volume historical portion of the work commences h the "Rise of Mediæval Architecture" in rope generally; the second volume commences h "Early Architecture in Britain." The atment of the rise of Mediæval architecture ludes a statement of its circumstances and of relation to preceding styles such as is now ally accepted as representing the outline of most interesting phase of architectural ory, as correctly as we can formulate it from testimony of ancient monuments and the clusions to be drawn from their characteristics construction and design; and it may be erved that for much of what is said on this ject in the lectures their author was largely ebted, like every other recent student of hitectural history, to the steady labours and ad and comprehensive deductions of Mr. rgusson in this country, and of M. Viollet-le- in France. In speaking of the development vaulting, however, the author brings out more inly and fully than is sometimes done in ating of this subject, the great importance of introduction of the vaulting-rib as governing design of the vault, reducing this to a blem of the accommodation of leading lines construction instead of vaulting surfaces, and wing a far more free and independent treat- nt of the latter in regard to their planes of lination. In the following chapter (Lec- e III.) we may note again, as especially nificant and clearly put, the passage sugges- e of some of the main causes which led to the ption in France, more especially than in any er country, of the systematised development the completely-vaulted masonic cathedral hitecture out of the timber-roofed basilica ich was its lineal ancestor. The matter lay, s Scott, between France and Germany, as two representatives of the successors of arlemagne's power in its kingly and its erial phases respectively. Italy was too ch influenced by her proximity to Classic numents, and England had too recently risen m her position as a conquered country to take first place in such a movement. But Ger- ny had already made her great architectural vement, and produced results of which she ght well be proud, and which it has often been rretted, we may add, by historians of archi- tural style, that she did not follow up ts full development, instead of falling (as she bsequently did) into an inferior adaptation of nch Gothic forms. Up to this period the t of France under the royal power had not n able to erect structures worthy of her posi- tion as the great representative power of Western Europe.

"The immense influence gained just at this time by the French monastic establishments, as well as their schools of learning and science, and still more the increase of the regal power under the wise government of Louis VI., and by the annexation of the Southern provinces through the marriage of his successor, brought about the commencement of the great building period in France, a little before the middle of the twelfth century, and the active genius of the people decided the rest. The consequence was that, though the refinement and perfecting of the Romanesque architecture went on uniformly in all the countries I have named, and though its transition into the Pointed style is as distinctly national in England and Germany as in France, the precedence as to the *time* at which the grand advance was made must be unhesitatingly awarded, I will not say to *France* (for some parts of it were peculiarly tardy), but to that district of France round Paris, the focus of the royal power,—that portion of it, in fact, which was immediately under regal government, as distinguished from that of the great vassals of the Crown. We must further, in justice, admit that though each country had its own transition, founded directly upon its own national and even local variety of Romanesque, each was also in some degree tinged and influenced by the early developments arrived at in the royal domain of France."

This influence of the regal power in determining architectural development in France is an interesting example of the frequently close connexion between architecture and political condition, often unsuspected until it has been traced out by a parallel consideration of the architectural and political history of a country.* Another suggestion which is, we believe, due entirely to the author himself, is that there was a closer artistic connexion between France and Constantinople than that of mere indirect influence through the intercourse of travel; that, in fact, Byzantine carvers may have been employed on many of the capitals which (in the South of France especially) retain so long, and in so marked a manner, the characteristics of Byzantine form and feeling. Two other points we notice in Scott's sketch of the development of the Mediæval style, which are a little out of the line of the central and generally understood facts with which these chapters necessarily deal for the most part. One is the suggestion of the desire for increased height in the buildings as a factor in bringing about the adoption of the pointed arch. This is put thus,—"If you take the internal bay of a Norman cathedral, and simply set yourself the task of increasing its height in a given proportion, the result will be a Gothic bay, for the arches cannot participate in the increased elevation without becoming pointed." This we do not altogether see, though the remark is certainly worth consideration. The variations in proportion of height in Norman buildings are very great, and the effort after a lofty nave (as at Gloucester and Tewkesbury), seems to have been made often enough without leading to any suggestion of the pointed arch. We should rather put it the other way, and say that the adoption of the pointed arch for constructional reasons suggested and at the same time furnished opportunity for an increased height, and a more marked verticality of design. The other remark we noted is in regard to what Scott terms the "immense practical utility" of the mullioned window, but what we should rather term "artistic utility," as what the remark refers to is this, that it rendered possible the formation of windows of any width which might be wanted, without injury to the beauty of the building. "This is the great use of the mullion, to enable you to use wider windows than you could use without it,—indeed, to render their width unlimited; and the consequence of the invention was the introduction of windows in some cases not less than 30 ft. or more in width, and 60 ft. or 70 ft. in height, and that without appearing to make any unseemly gap in the walling, which would otherwise have been the case with a window of one-sixth the size." This is a strong point in favour of the mullioned window, often overlooked by those who object to Gothic as deficient in light, and is here put in a very forcible and practical manner. We may also commend to the notice of readers the chapter following the conclusion of the first set of seven lectures, and entitled "a digression on windows." This is new matter, and not a lecture previously delivered, and brings together some important facts in the practice of the Mediæval architects in regard to windows, especially as to the situation of the glass-plane and its relation to the external and internal design of the window; not new, but here followed out more consecutively and formally than we have before seen them.

So rapid are the changes of architectural fashion now that the chapters in this book which treat of Gothic architecture at large in relation to the uses of the present day and its fitness,—the *rationale* of the whole subject, in fact, from a practical point of view,—seem already out of date; we may say, in one sense, unfortunately so, since the fashions which have supplanted that of English Gothic are certainly not an advance upon it, architecturally speaking. It is, unfortunate, however, that ideas are stereotyped in this book which were only the offspring of a passing enthusiasm, and will hardly be accepted now as representing the broadest and most comprehensive judgment which can be brought to bear upon the subject. Among these is the argument in favour of Gothic architecture as a "Christian style" *par excellence*, revived in Lecture I. of the series. This idea is, in fact, an utter illusion and misapplication of terms, appealing to false sentiment and imperfect generalisation of history. The architecture of the Middle Ages was, if people like, a *church* style; at least, it was a style of which all the principal monuments were churches and monasteries, and the great development of which owed its existence to the power and ambition, or aspiration, of great churchmen. But it may be doubted, in the first instance, whether the peculiar ascetic enthusiasm of the times had really any direct influence on the style of the architecture; it gave rise to the expenditure of money on great buildings; but if any other paramount influence, such as that of a succession of rich and selfish despots, had (as in the days of the Roman Empire), operated to the expending of great sums of money on show palaces, there seems little reason to think that the architectural expression and design of Mediæval buildings would have differed in any appreciable manner from what it actually was, though their plan would have been different. Their design and detail arose from the purely architectural development of previous styles, and were almost certainly not felt as in any peculiar degree religious at the time the buildings were erected. And what is quite certain is, that the social and religious temper of the times in which these cathedrals were built was as far removed as possible from those which characterised Christianity in its normal shape. There is, in short, not the least more ground for applying the term "Christian architecture" to the Western Mediæval styles than to the Byzantine; each is Christian equally in a certain conventional sense of the word, and yet Christianity in these two cases took utterly different forms of architectural expression, in each case governed by causes connected almost entirely with architectural tradition or neighbourhood, and only in the most indirect and partial way influenced by religious creed. A much better recommendation of Gothic architecture as a basis of modern practice lies in what is said in the same chapter, and said very well, in regard to its intrinsic beauty and fitness as a noble and complete style of architecture; though here again a part onable enthusiam carries the author a little too far in the abstract importance he attaches to Gothic sculpture, and in such exaggerated expressions as that in regard to Gothic mouldings standing unrivalled "for variety, depth, and refined delicacy of the profiles of the mouldings." Depth of moulding is only a relative excellence dependent on conditions of climate, and the statement about unequalled delicacy of profile is nearly absurd, when we think of the Greek profiles, and remember that in Gothic mouldings, as every one knows who has cymagraphed a good many of them, even the simple circular curves are not correctly executed in many cases: and indeed the material did not admit of executing the refined curves of the Greek architect, even if they had been so designed by a draughtsman, instead of being, as they obviously were, sketched out by hand, with little regard to theoretic correctness of curve.

* Lectures on the Rise and Development of Mediæval Architecture, delivered at the Royal Academy. By Sir Gilbert Scott, R.A., &c. London: John Murray. 1879.

* This connexion between the architecture and the monarchical power of France is also the subject of comment by Viollet-le-Duc, who states the same conclusions in a slightly different manner.

Quitting mere details, and regarding these lectures, as we said above, as the summing up of the author's ideas upon Gothic architecture from the modern point of view, we may turn for a moment to some of the remarks upon the broader view of the subject embodied in lectures i., ix., and xviii. Lecture ix. deals with the study and practice of Gothic architecture, urging that the study of old examples and the execution of new work should go hand in hand; having investigated as much as possible the actual details of construction (and not of design alone) in ancient work, "you will do well to consider whether there are or are not practical faults in the old work which we should do well to remedy." Even this is a great step from the unreasoning admiration and reproduction advocated by the earlier school of Pugin. To carry out this co-operation of practical work and the study of old examples, the student is recommended to "note down any puzzle you fall into in your work, and any doubt as to how a perplexity is to be got over, and any uncertainty that may occur to you as to the best mode of treating a particular feature, so that when you next go out sketching, you may have a list of questions for which you have to seek for practical answers from the old architects themselves, still speaking to us and instructing us through their works." Well, yes, one may say, if your main object is to reproduce the sentiment and feeling of Mediæval architecture in combination with modern building; but even then the practical instruction to be specially derived from this source is only about points in design. If the question is really about a *practical* difficulty, the student will be more likely to find a solution from modern engineers than from Mediæval builders; or if the difficulty is (as it often is) how to combine the use of Mediæval features and expression with some modern requirement of building, that seems to us a sentimental and self-imposed difficulty, not a practical one. The stringent remarks in regard to restoration will be thought by many to read oddly in comparison with their author's own practice. A literary defect, prominent throughout the volumes, is carried to excess in this chapter,—the constant italicising of words, to an extent which is as annoying to the reader as it is entirely unnecessary.

The eighteenth lecture, the concluding one of the series, "Architectural Art in reference to the Past, Present, and Future," embodies an historical summary of architecture combined with a kind of plea or apology for the revival of styles, as having been, at least in the case of the Classic and the Gothic *Renaissances*, a spontaneous movement, and not a fashion deliberately selected and taken up; and, to a certain extent, this is true. In regard to the Gothic Renaissance, Scott certainly had a right to appeal to his own experiences and feelings, and he assures us that, with himself and others who took it up, there really was no organised action, and that no one engaged in it ever thought of it being a "movement" at all. And the almost painful efforts which the lecturer seems to have made to assume the position of an unbiassed exponent of architectural style must certainly be recognised, though one can hardly admit that they were successful. He goes through the form of recommending Classic architecture as an alternative, but it is a very half-hearted recommendation, and the wish that it should not be taken literally is obvious enough. In the first lecture upon the claims of Mediæval architecture upon our study, a consideration which is often overlooked by students of specially favourite forms of architectural style, namely, that our subject is art rather than antiquity, is well and usefully brought forward. "The fact that the types from which we have to study have grown old is accidental, their merits and their value are perfectly irrespective of their age, and would have been as great had they been erected in our own day"; though the natural deduction from this, that the object of studying the style should be to improve our artistic power, and not to reproduce merely, is not brought forward. Another point is touched upon in this lecture, also often overlooked by students of Mediæval architecture, from which again, however, the rational deduction is hardly drawn. After urging that Mediæval architecture should be studied even for the mere sake of acquainting ourselves with one of the most remarkable phases in the whole history of art, he adds, "It is one of the most striking characteristics of our day that in it alone, of all periods of the world's history, the arts of all preceding time are studied and their history understood, and strange would it be if we should neglect to acquaint ourselves with that noble style which prevailed among our own forefathers, and whose glorious monuments surround us on every side." This last conclusion, of course, "goes without saying"; but obviously the main deduction from this modern critical standpoint in regard to architecture must be, that it is impossible that we can ever be in the same position in regard to the art as those were who practised it in the Mediæval times in an intuitive and unreflective manner, depending simply upon the circumstances under which they worked, and on the natural sequence of one effort after another to correct defects, and to carry further and further the particular form of art of which alone they were practically cognisant. In place of acting from intuitive tendency, we have to choose out of the mass of materials and precedents of which we are now cognisant, and to turn them all to account in the production of works which are no longer determined by any necessary sequence, but must be the result of deliberately applied thought and of critical selection and elaboration.

And it is this very consideration which leads to the conclusion that the body of lectures before us does not occupy quite the ground which lectures on architecture at such an institution as the Royal Academy should occupy in the present day. So far as Scott's lectures were concerned with the exposition of the facts and history of Mediæval art, hardly anything could be better, and no person perhaps could have been better qualified to deliver such lectures than he. But, taken as a whole, these volumes certainly do constitute not only an exposition, but an advocacy of Gothic architecture, and so far we hold that their author took up a position not logical even in addressing the general public of to-day, and hardly even defensible in addressing the students of a central educational institution for the arts. Those who attended them must have learned, and those who read them may now learn, a great many facts about this school of architecture, put together and illustrated with a complete knowledge of the subject. But they certainly seem to us overweighted in one direction for the place where, and circumstances under which, they were given, and we should have feared that the continual addressing of the Academy students by a professor of architecture with such a manifest bias,—a bias which even some conscientious but certainly not very marked efforts at a more comprehensive view hardly availed to conceal or weaken,—must have resulted in fettering and narrowing the ideas of those who listened to them in regard to the possibilities of modern architecture, and the relative value of other styles quite as important as that to which their late lecturer had given all his labour and sympathy.

A word may be added in regard to the illustrations added to the published edition of the lectures. These are very numerous, and very well selected and instructive in all the cases, especially, where they are given as illustrations not so much of particular buildings as of points of marked interest and significance in the history and development of the art. They are not, however, satisfactory in all points. They are mostly executed by the photo-lithographic process, which has been so much glorified of late as a medium for architectural illustration. This method certainly has great advantages in respect of its economy in proportion to the results, and it has also a certain degree of "tone" somewhat analogous to that produced in etchings, though not nearly so delicate. But we cannot say these illustrations do anything to create a belief in the superiority of this system over engraving as a means of illustrating books of this class, a superiority which is often assumed at present as a recognised fact. Some of the impressions are very clear and very pleasing in effect, especially the details of ornament, &c.; it is in such points that photo-lithography comes out best. But a good many are more or less misty and uncertain in appearance, especially where effect of shadow is aimed at; and they are, besides, overshaded and hatched with lines in a style which has become common among draughtsmen, and produces what is supposed to be a picturesque effect, but which to our thinking is scratchy, ragged, and unsatisfactory in effect, and a great descent from the careful and "severe" style of drawing which used to be regarded as essential to a high class of architectural illustration. There are some curious inaccuracies in the illustrations, which we ca hardly suppose passed under the eye of th author, and which suggest the idea that the were completed rather hurriedly and witho sufficient attention, after his death, and in orde not to delay the publication. The most curiou of these is the small interior view of St. Fron Perigueux (ii., 272), which is shown wit Romanesque or semi-Gothic clustered pier quite unlike its actual design, and not agreein with the section on the same page, and with perspective of more domes than could be see from any point of the interior. In the plan Durham Cathedral, also, the piers of the nav are only about half the right proportional are giving the idea of a late Gothic church rathe than a Norman one. The restored plan of th Abbey Church at Bury St. Edmund's omits th important point of the deflection of the axis the choir from that of the nave (which ma be easily seen from some of the bases that ar still *in situ*), as at Bristol and elsewhere. Th bulk of the drawings, however, we have doubt have been carefully and correctly done

SUGGESTIONS FOR THE ESTABLISHMENT OF A NATIONAL OR ENGLISH ART THEATRE

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The desirability of the establishment of theatre in London "not wholly controlled b the predominant taste of the public," w eloquently advocated by Mr. George Godwi editor of the *Builder*, in his speech as chairma of a meeting of the Society for the Encourag ment of the Fine Arts, at their rooms in Conduit street, when the late Dr. Doran delivered h lecture "For and against Shakspeare," and th question then mooted has since been unan mously answered in the affirmative at the Soci Science Congress at Cheltenham, where M Godwin reproduced his arguments, strengthene by the cordial support of Mr. Henry Irving, M Hermann Vezin, and several others eminent qualified to pronounce an opinion on the subje

A considerable number of gentlemen, we wishers to the cause, including many of t theatrical profession, having both publicly a privately expressed their approval of the ma object of the movement, the views of some the original promoters of it are now formulat for the consideration of all who are interest in its success.

In the first place, it is necessary to declare explicitly as possible that no rivalry or compet tion is contemplated with any existing establis ment, the objects of the direction of the pr posed theatre being strictly limited:—1. To t restoration to the stage of the master-pieces the great dramatists of the last three centuri which, with some very few exceptions, have be either wholly neglected or spasmodically revive by modern managers, and are unknown to t present generation of playgoers. 2. The pr duction of original plays of the highest clas which, for commercial or other reasons, have notwithstanding their intrinsic merit, be unable to obtain representation. And 3. T general cultivation and encouragement of hi trionic art, and the welfare and respectability its professors. It is believed that these objec can only be attained by the foundation of theatre on the model of the "Théâtre Français at Paris; but it is almost hopeless to expe that, although thousands upon thousands a annually voted by our Parliament for the su port of academies, museums, school-board and other institutions connected with art an education, it would sanction the appropriati of the smallest subsidy in aid of an art in whi are combined the graces of all the others, a of a school which, for educational purposes, su passes any as yet existing.

In default, therefore, of such assistance fro Government, at any rate at present, as afforded to the National Theatre in France, t stability of a National Theatre in England mu be assured by annual subscriptions amounting to a sum sufficient to cover the natural expens and guarantee the direction from loss, and t company from a calamity of too freque occurrence,—the choice between taking ha salaries and a sudden termination of their e gagements, perhaps in the middle of the seaso

As the raising of such a fund is necessari the first step to be taken, and as, unless sat factorily effected, the project must fall to t ground, it may be held useless to enter into t explanation of the mode in which it is suggest

he fund should be employed and the theatre onducted; at the same time, it is obvious that ithout some information on those subjects, it ould be idle to expect any one to subscribe. he following propositions, embodying the prinpal points of the scheme, are therefore spectfully submitted to the public for conderation.

It is estimated that the sum of 20,000*l.* would e amply sufficient to cover the whole expenses a season of eight months, or, more strictly eaking, thirty-two weeks, commencing at the nd of October, and terminating at the end of ine. This estimate is formed on the rough lculation that the total average daily expendire would not exceed 100*l.* or 600*l.* weekly (3,200*l.*) at starting, that expense being natuly reduced by the gradual increase of scenery, esses, and decorations available in future asons, the original cost of which must be frayed during the preceding, and would evenally constitute a valuable property.

The subscribers to this fund to be considered roprietors, who should have a first charge on e receipts of the theatre of three per cent. r annum interest on the amount of the sums dividually subscribed, and in whom should vested the property of every description elonging to the theatre, before or behind the rtain. They should have power to appoint the easurer of the theatre and box-office keeper, id be legally secured against any responsiility beyond the amount of their original subription. Their privilege to be limited to their rsonal free admission to any part of the house fore the curtain, except private boxes, with e liberty of securing a seat in advance of the rformance.

Assuming the sum raised, the next step would the possession of a theatre the auditorium of hich was capable of accommodating, without convenience, at moderate prices (say stalls, .; lower boxes, 5*s.*; upper ditto, 3*s.*; pit, 2*s.*; d gallery, 1*s.*), a sufficient number of persons produce a receipt of not less than 250*l.* per presentation, at periods of special attraction, clusive of private boxes, the number of which ould have to be regulated according to the nstruction of the theatre.

The general control of the theatre to be ercised by a board of directors, say seven in mber, none of whom should be either amatists or actors, but men of acknowledged minence in literature and art obtainable, and ose names and character would be a sufficient surance to the public that their councils ould be guided by sound judgment, cultivated ste, and strict impartiality. Their services ould be gratuitous. Their privileges,—the ppointment of the acting manager, free access at l times to every part of the house, and a comodious private box for their joint occupancy, t not for disposal.

The acting-manager to be entrusted with the rmation of the company, the appointment of e stage-manager and his subordinates, the ads of the scenic and mechanical departments, e master and mistress of the wardrobe, and e musical director, all salaries being submitted the board of directors for sanction previously the signature of an engagement.

The acting manager to select the plays for presentation (the board of directors having the wer of veto), and decide on the days for their roduction and repetition. Also to make out the bill of the play," which should contain mply the title of the piece, the name of the thor, the distribution of the characters, the me of performance, and the prices of admission, or other necessary information.

With respect to the time of performance, independently of the rapidly increasing favour ith which morning, or more correctly speaking, ternoon represen ations appear to be regarded the public, there are many and very imrtant advantages attending such a practice, hich induce the promoters strongly to recomend its adoption by the directors of a National eatre. First of all the inestimable one to the tor, whose daily labour terminates at an early ur in the evening, leaving the remainder of it be devoted by him to repose, recreation, or udy, according to his inclinations, and affordg him valuable opportunities of visiting other eatres, and witnessing the impersonations of e most distinguished artists, English or reign. To the public the advantages are ually considerable. The hours from three to p.m. are specially those which are most at e disposal of the fashionable world, and for all asses the convenience of morning dress, particularly in bad weather, the liberty obtained for social or domestic enjoyment in the evening, and the ability to reach even a distant home without the risk of "missing the last train," especially when accompanied by children, an anxiety which not only detracts from the pleasure of the spectators, but constantly compels large parties to rise and hurry from their seats before the fall of the curtain, to the great annoyance of both actors and audience, as well as regret to themselves, must surely be obvious to every one. Still this is a point which would remain open for discussion.

It now only remains for us to suggest the mode by which the subscriptions and receipts should be apportioned for the general benefit of the institution.

Taking the aforesaid estimate of the weekly expenses as fairly correct, the first sum to be provided would be the interest on the 20,000*l.* subscribed, amounting to 600*l.*, which, for the better security of the proprietors, it is proposed should be taken from the receipts at the doors daily. Excluding Passion-week, Ash Wednesday, and, say four or five days before Christmas, the number of play-days in the season would amount to 180, and the deduction to about 20*l.* per week, which must be regarded as rent.

We now come to the working expenses of the establishment, the largest portion of which would, of course, be the salaries of the company and its officers. Here we arrive at a point on which there will probably be more difference of opinion than any other. It being impracticable, in the first instance, to place the actors engaged in this projected theatre in a relative position to the *Membres Sociétaires* of the Théâtre Français, the question is how nearly we can enable them to approach it beneficially, both as affects their pecuniary and professional interests.

As it is the avowed intention to avoid to the extent of their power any cause for the hostility of contemporary managements by competition with them in the market for the services of popular artists, the promoters suggest that the highest salary should not exceed 25*l.* or 30*l.* per week. Actors and actresses who, in consequence of their individual attraction, can and do command double such sums are not expected to reduce their terms for the love of art or the cultivation of it in others. The principal object of the national theatre is the education of the profession as much as that of the public, and its promoters confidently believe that there are hundreds on the metropolitan and provincial stages who only require the opportunity, under judicious guidance, to develope the latent genius that is smouldering in their souls. Every day the list is increasing of young and intelligent women and men who have attracted the notice of the press and the experienced playgoer, and independently of them, the list of supporters of a proposed national theatre includes members who have already won their spurs as far as it has been possible for them to do so in the class of characters to the interpretation of which they have been limited, and which, whatever their merits, are not to be named in comparison with those in the standard drama of this country which they have the laudable ambition to prove they are worthy to illustrate.

To them and all who are inclined to volunteer in this "forlorn hope," as some consider it, of the English stage, the following propositions, founded on the usages of the "Théâtre Français" are offered for their consideration. As no play, however attractive, would be repeated any number of days consecutively, the same principal performers would not be called upon to appear more than twice or three times in the week. If, however, any of them should be required to strengthen the cast of pieces performed on alternate days, they would in addition to their fixed salary receive a stipulated sum per diem, on the principle of the French theatre, known therein as their "feu"; and it is also suggested that the members should have a beneficial interest in the success of the institution by a distribution amongst them of one-third of any profits resulting from it in the shape of a percentage according to the annual amount of their fixed salary; the other two-thirds being appropriated, one to a fund to be called the directors' fund, to provide for casualties or extraneous expenses, and the other to the formation of a fund for the gradual paying off of the subscribing proprietors, with a view to eventually transferring the entire property of the theatre to the members for their sole use and benefit.

It is unnecessary here to enter into details affecting minor though not less important arrangements, as they must depend upon the adoption or modification of the above programme, which is respectfully submitted to the provisional committee, which has been already formed, and to all well-wishers to the movement.

BREWERIES IN LONDON.

The art of brewing is of very ancient date, and is among the inventions of the Northern nations of Europe; for though Herodotus tells us in his Histories (ii. 77) that the Egyptians made a drink of barley, there is no proof that any such liquor was imported, or even the custom followed by the Greeks or the Romans, who, living in lands where the vine grew plentifully, made wine and water their usual drink. Hence Tacitus remarks that the Germans of his day, in lieu of sacrificing to Bacchus, manufactured an intoxicating beverage made out of wheat and barley; and Virgil in his Georgics, in like manner tells us that our Scythian and German forefathers made themselves comfortable during the long winter frosts in their underground caves, on a liquor which certainly, to judge from his description, must have been ale or cider, or something of the kind. His words are, —

> *"Hinc noctem ludo ducunt, et vitea læti*
> *Fermento atque acidis imitantur pocula sorbis."*

The Saxons, too, appear to have had various drinks of the same class; some being made from grain, as "mum," and some from honey, as metheglin; and it is more than probable that the early fame acquired by the men of North Germany for their beer and ale was a cause of their importation of it into England, either in the shape of the liquor itself, or else in that of the original recipe. We know that in the Middle Ages the towns of Lübeck and Rostock stood very high for their "double beer or Brunswick mum," as it afterwards came to be called.

But, although Lübeck and other German ports might manufacture the very best beer in Europe, and indeed exported in the reign of Elizabeth nearly three-quarters of a million of barrels, very little found its way to the Thames. Our citizens knew well what they were about, and they could and did produce so good an article even in London, that they would not allow the German beer to enter; at all events, they put upon it a very heavy duty per barrel, which proved a virtual prohibition.

In the Middle Ages, the London breweries were situated on the river side, in the neighbourhood of the Tower, for the convenience of a water-supply at a time when hydraulic and engineering science was in its infancy. St. Katharine's by the Tower was especially famous for its breweries. Honest John Stow tells us that "one Geoffrey Gate, in King Henry VII.'s days, spoiled the brewhouses at St. Katharine's twice, either for brewing too much to [the taste of] their customers beyond the sea, or for putting too much water into the beer of their customers that they served on this side of the sea, or for both." Hence, the "Beere House" figures prominently between the Tower and St. Katharine's in Ralph Aggas's map, and also in the map of London given in the "Civitates Orbis" in the reign of Elizabeth. The "Old Swan," too, between London Bridge and Queenhithe, is mentioned by both Stow and Strype as a great brewhouse in their day. Another especial haunt of the brewers was on the opposite shore of the river, namely, the Bankside in Southwark. Hence Stow was not far wrong when he wrote that the brewers of his time for the most part remained "near the friendly waters of the Thames." It has long been established, however, that this idea of the superiority of the Thames water is a mistake, equally good beer being obtained from the New River and from private wells.

We fear it must be owned that, whether from the nature of our climate or from other causes, the English have always been addicted to the use of strong liquors, and that Fitzstephen is not far from the truth when he states that "quaffing" is "an ancient vice of the Londoners"; at all events, he is confirmed by William of Malmesbury, who says that in the reign of Henry II. the English were "universally addicted to drunkenness, continuing over their cups day and night." The monasteries were always remarkable for having good wine and ale, the latter of which they brewed with great

skill and care. "The best wine," writes Hollingshead, "was called *vinum theologicum*, because made in religious houses"; and doubtless the same was the case with the ale and beer also, for they generally went together, as, for instance, at the installation feast of George Nevill, Archbishop of York, in the reign of Edward IV., when the guests had set before them "300 tuns of ale and 100 tuns of wine."

But ale and beer are of far greater antiquity in England. After the introduction of agriculture by the Romans, they became the common drink of these islands, as they had been of the Celtic peoples on the Continent. "Beer or whey" is mentioned as the drink of St. Finian, bishop of Meath, in the middle of the sixth century; and Isidorus and Orosius, a century earlier still, thus describe it,—"The grain is steeped in water, and made to germinate; it is then dried and ground; after which it is infused in a certain quantity of water, which, being fermented, becomes a pleasant warming, strengthening, and intoxicating liquor." This ale was commonly made of barley or wheat, oats or millet. Its taste must have been very different from that of modern ale, for no hops were used in its manufacture, though, no doubt, their absence was supplied by various bitters. The Danes, when in Ireland, are said to have used heath in brewing their ale.*

There can be little doubt that in the absence of such modern and exotic beverages as tea and coffee, some kind of ale or beer was the customary drink at all the meals of our ancestors under the Anglo-Saxon, the Norman, and the Plantaganet kings, and that its use was as well known and as general then as it was subsequently under the Tudors. When we read that a gallon of the best "spiced" ale could be bought in London, fifteen years before the Norman Conquest, for eightpence, and common ale for half that sum, we may be sure that there was a constant and large demand for it. And in the days of the eighth Henry, beer and wine formed as certainly part of the breakfast in great houses as tea and coffee do now, and even for the ladies. "A quart of beer" and a "quart of wine" figure both on flesh-days and on fish-days on the breakfast-table of the Earl and Countess of Northumberland in that reign; for their daily *menu* is detailed in the "Household-book" of the Percy family. Queen Elizabeth also, as we know from other sources, drank ale and beer for breakfast; and there can be no reason for believing that her example was not followed by her loyal subjects. It is fair, however, to state that Mr. Brayley, in his "History of London," expresses an opinion to the effect that the use of beer was not generally introduced in London till about the time of Henry VII.

After the introduction of hops from the Netherlands, which is generally thought to date from the beginning of the same reign, the quality of the malt liquors drunk in London was very much improved, and they became much more extensively used. And this is probably what Mr. Brayley means to assert. Shortly afterwards, according to Baker's "Chronicles," "during the Dutch war, the English learned to be drunkards, and brought the vice so far to overspread the kingdom that laws were fain to be enacted for repressing it." Into these laws, however, we shall not enter; but merely add our opinion that the introduction of tea and coffee,—those novel and effeminating drinks, as they were at first considered, did more than all the legislative and repressive acts of kings and Parliaments to keep the consumption of malt liquors within reasonable bounds,—at all events, among the better classes of society. It may be mentioned here incidentally that beer was first made an article of excise by the authority of the Parliament in 1643.

From the information gleaned by Stow, it would appear that in the middle of Elizabeth's reign there were about twenty-six brewers in the City, suburbs, and Westminster, about half of whom were English, the other half being foreigners. The circumstance of half of the London brewers in the sixteenth century being foreigners seems to point to the conclusion that hops were imported at that time; and probably along with the hops there came to England some practical brewers who understood their use. Hops, as we all know, were grown in large quantities near the Hanse Towns of Pomerania as early as the thirteenth century, and beer was one of their staple exports.

* Ale takes [illegible] from the Danish word *oelr*; the Britons gave it the old name of [illegible], for which we have in [illegible], a corruption, *curmi*.

Chaucer grows eloquent occasionally upon the subject of "a draught of moist and corny ale," and Skelton has sung the praises of that liquor, as might have been expected; but the dramatists of the Elizabethan age have little to say in its praise, or indeed about it at all. "Our ancestors drank sack, Mrs. Quickly." Shakspeare, as our readers may remember, speaks of it rather compassionately as "that poor creature, small beer." The truth is that although, as we have shown, a sort of ale and beer was known long before, it appears that our forefathers were only just beginning to learn the art of brewing drinkable beer in Shakspeare's time.

The exaltation of ale, which is so common with later writers, is scarcely to be found in our oldest literature; for, as Charles Knight remarks, "The ale of olden time must have been at best but a sorry tipple. Hops came into cultivation in this country only about 1524; before that time brewers made a shift with broom, bay-berries, and the berries of ivy,—sorry substitutes enough. From the trial of Beau Fielding, and also from other sources, it would appear that an inferior sort of liquor, called "oat-ale," was in use in ordinary families.

But it was the invention or discovery of "porter" that gave the crowning life to the trade of the brewers in London, which is regarded with reverence by nations in all the five quarters of the globe as the birthplace of that beverage. The history of its birth is thus [illegible] from [illegible]:—

"Prior to the year 1730, publicans were in the habit of selling ale, beer, and 'two-penny,' and the thirsty souls of that day were accustomed to combine either of these in a drink called 'half-and-half.' For this they proceed to 'spin three threads,' as they called it, or to have their glasses filled from each of the three taps. In the year 1730, however, a certain publican named Horwood, to save himself the trouble of making, or rather of drawing, this triune mixture, brewed a liquor intended to imitate the taste of the 'three threads,' and to this he applied the term 'entire.' The concoction was approved, and, being puffed as good porters' drink, it speedily came to be called porter itself."

Those who are curious on such subjects will find the gradual growth of the beer trade in London, traced from the accession of William and Mary to that of George III., in the *Annual Register* for 1760.*

Half a century ago, the twelve principal brewers in London brewed no fewer than 2,100,000 barrels yearly. "The quantity of malt wetted by all the brewers in London in the year 1836," as we learn from Charles Knight's "London," "was 754,313 quarters; the quantity wetted by the illustrious twelve, 526,092 quarters. According to this proportion, the number of barrels of beer brewed in London at the above-mentioned period could not have fallen far short of 3,000,000. The beer manufactured for exportation and country consumption may be assumed, in the meantime, to have been balanced by the importation of Edinburgh and country ales, and Guinness's stout. In 1836 the population of the metropolis was estimated at 1,500,000. This would give, hand over head, an allowance of two barrels (or 76 gallons) of beer per annum for every inhabitant in the metropolis,—man, woman, and child." Returns of the malt and other ingredients used by the brewers, either in London or the country, are no longer published; but there is reason for believing that, in spite of missionaries, philanthropists, and temperance associations, the proportion of beer drunk towards the number of its consumers has largely increased. It may be safely asserted that the barrels of beer brewed in London in 1878 must have numbered over 6,000,000.

In the Post-office Directory for 1879 there are enumerated upwards of 150 brewers in London, not including the outlying suburbs. At the head of them stands the well-known firm of Messrs. Truman, Hanbury, & Buxton, with Messrs. Barclay & Perkins and Messrs. Meux as second and third. At the beginning of the present century the brewery of Messrs. Whitbread, in Chiswell-street, Finsbury, stood at the head of the list, and it became so much one of the sights of London that it was honoured by a visit from George III. and his queen,—a visit which has become historic because it is immortalised in the mock-heroic lays of "Peter Pindar."

In 1806, Messrs. Whitbread's is described in the "Picture of London" as the "largest brewery in the metropolis," the year's brewing of porter being above 200,000 barrels. "There is one cistern," says the account, "that contains 3,600 barrels; and there are forty-nine large oak vats, some of which contain 3,500 barrels; one is 27 ft. in height, and 22 ft. in diameter. There are three boilers, each of which holds about 5,000 barrels. One of Mr. Watt's steam engines works the machinery. It pumps the water, wort, and beer, grinds the malt, stirs the mash-tubs, and raises the casks out of the cellars. It is able to do the work of seventy horses, though it is of a small size, being only a 24-inch cylinder, and does not make more noise than a spinning-wheel. Whether the magnitude, the ingenuity of contrivance is considered, the brewery is one of the greatest curiosities that is to be anywhere seen; and little less than half a million sterling is employed in machinery, building, and materials."

Mrs. Brunton, in her account of a visit to Meux's brewery in Tottenham-court-road, about thirty years ago, says that one of the casks shown to her was 70 ft. in diameter and contained 10,000*l*. "The iron hoops on it," she adds, "weigh eighty tons; and we were told that it actually contained when we saw it 18,000 barrels, or 40,000*l*. worth of porter. Another contained 16,000 barrels, and others less measures down to 4,000. There are about seventy casks in the store."

The brewery of Messrs. Barclay, Perkins, & Co., in Southwark, owing to its great extent, and to its connexion with the Thrales and Dr. Johnson, has attained perhaps a greater celebrity than all the other London breweries together. The vats in this establishment are nearly 200 in number, the smallest containing 600 barrels of beer, and the largest 3,300 barrels, measuring 36 ft. in diameter at top, 40 ft. at the bottom (or 125 ft. in circumference), and 40 ft. in height. Altogether, they must hold more than 150,000 barrels; and the number of casks (butts and barrels), many of them filled, amount to some-thing over 64,000. Messrs. Barclay & Perkins' brewery, we need scarcely add, is a great attraction for visitors to London, and more especially for foreigners, and the "visitors' book" will be found to contain the names of many eminent personages. One of the best-remembered visitors, perhaps, is the notorious Hungarian woman-flogger, Marshal Haynau, who, in 1850, came to inspect the wonders of the place, but was very speedily and unceremoniously ejected by the draymen.

Having thus far dealt with the number of breweries of London in the present day, it may not be out of place to speak of the supply and demand of the national beverages in bygone times. The number of ale-houses and taverns in the various parts of London, as we know, was limited by Act of Parliament under our early Tudor sovereigns; but, in spite of any regulation, they continued to increase so rapidly that their growth was made a matter of complaint among the grievances noted by Lord Chancellor Bacon in the Star Chamber. Reference on this subject was also made to the Lord Mayor, who, acting in concert with the magistrates of Southwark and Lambeth, suppressed above 200 ale-houses in their several jurisdictions; and, as an example, Northouck tells us, was followed shortly after by the magistrates of Westminster and other places round London. Comparing the above numbers with those of the publichouses which now exist, it may be safely inferred that the breweries which were required to meet the wants of our ancestors must have been very few, the average number being, at the present time, about one to thirty publichouses or taverns.

* In England alone, the barrels of beer of all kinds on which duty was paid by the public brewers in 1788, were 6,254,403; in 1829 this number had increased to 7,385,269. The excise returns of malt consumed by the London brewers in 1845 mention 5,242,764 bushels, which would yield about 2,500,000 barrels of beer. Beer privately brewed was not generally subjected to duty.

Newhaven Harbour. On Saturday last the official visit of inspection was made to the works now being carried out by the Newhaven Harbour Directors. The inspection comprised the dredging operations now going on in the channel of the harbour, and also the construction of the sea-wall under the cliff at the mouth of the harbour. The works generally, which are being carried out under the superintendence of Mr. F. D. Banister, the engineer to the Brighton Railway Company, are in a forward condition.

THE PICTURE SEASON.

r this season of the year, whether our minds filled with rumours or the sad realities of , or all our interest be absorbed by the surable exactions of prosperity, or the de-sion of surrounding difficulties, journalists rive to find space to tell beforehand some-g relating to the pictures that may be ex-ed at the Royal Academy and elsewhere ng the coming months.

ears ago, forty or fifty years since, the t painters, the famous R.A.s whose pic-s delighted a former generation, endea-ed, with the greatest caution, to keep secret subject of the picture with which they were t to astonish the world during the early mer months, and many remember the mys-ous and diplomatic silence invariably observed the subject by the popular leaders of art in simple un-electric-lighted days of William 's reign.

the present day we get to know, in some or other, long before our exhibitions open, t Millais and what Leighton intend to con-ute to the Royal Academy, and we are pre-d beforehand with some description of the coming works by painters little less known. how even our most prosperous painters have rived to exercise their skilful hands, even ne silence of their studios, in the elaboration eir happy thoughts during the last sad ths of serious anxiety to the whole of Eng-, would be a mystery to us did we not re-ber how many thoughtful men in the past uced, during times of turmoil and trouble, ound works that could alone be created in s and days of undisturbed study.

go no further back in the history of art the beginning of this century, we find that as during Gericault's exile in London that ainted, in a large room at the Egyptian , his famous picture, the glory of French the "Raft of the *Medusa*," and in later , during the attack of Rome by the ch in 1848, George Mason and many other ers* did excellent work, which shows no s of divided interests.

gain, in 1871, during the Franco-Prussian Gérôme painted as carefully as is his wont, a little studio in Victoria-road, Kensington, several other famous French painters found selves in London executing not unappre-d work on the shores of "perfidious n."

t English painters for the last twenty years must have so thoroughly associated them-s with the sympathies and instincts of our busy mercantile world, that it becomes a er of wonder that they should not, like manufacturing friends in these hours of se, have some suspicion that their market have been slightly overcrowded.

t without knowing exactly what our ters have been doing during the last sad months of the winter, we can imagine the P. R. A. saying,—What modern nation does we its artistic culture to the Greeks? and ting for us, notwithstanding the troubles of ime, a magnificent picture of the Birth of rva, the goddess springing from the head piter, and receiving from the surrounding and men the reverence due to her august on; and we can imagine the exquisite grace e composition of these figures, and the ate tints and tones of their perfectly ied draperies, reminding us of the art to be in the remains of the wall pictures from pulaneum, or of the more elaborate and studious work of Mantegna at Padua.

yster, following also with a Classic subject, "Return of the Argonauts," wherein we see n standing in the stern of the ship *Argo*, his glittering spoil, Jason still grasping his r for the protection of his beloved Medea, nger erect and full of courage, but with cast down and filled with tears, her mind pied with anxiety at the deed which has done, and foreboding of the future; on the a dragon twisted and wound in many about a pine-tree, his heavy head resting the earth, Medea has put him to sleep, thus the golden fleece was stolen; the y father, Œtes, in the distance flourishing laming torch, and Absyrtus lashing along the steeds of his father's chariot, the dust of whose wheels darkens and subdues the surrounding objects.

Prinsep may paint for us Midas, the weak Lydian king, encircled by his beautiful maids rejoicing at having captured a graceful faun; or Moore might provide for us a number of lightly-dressed maidens passionately singing and bringing offerings to the ivory statue of Venus; or Watts might paint for us an illustration of Anacreon's famous ode, "Paint me, O Painter," rendered so sweetly by Moore. We are sure to see from historic Yeames some well-considered seventeenth-century subject; from Millais we should not be surprised to see painted with marvellous power a portrait, ever henceforth to be renowned, of John Bull, in all his glory, and perhaps another picture, a magnificent landscape, with some such title as "A Fragment of the Old Forest."

From Marcus Stone, "The Return of Cimabüé" from Sta. Novella, Fiesole in the distance; lovely maidens, with their lovely hands no longer playing their lutes and citheras; Cimabüé gracefully surrounding his magnificent white dress in the ample folds of his mantle, and dejectedly expressing a consciousness that the praise he had that day received was scarcely done to a painter who knew of the existence of his young pupil Giotto.

From Hunt we would like to see one of his noble landscapes, illustrating some of the many suggestive scenes of Wordsworth's poetry; and from Frith, the "Clearing-house" at the last hour, or the Stock Exchange at a moment of excitement, and so on, pictures from all our old friends down to the humble painters who have not yet found out that they are famous, and who are only trying to work out whether they are able to do anything they can safely repeat, anything for critics to discover sufficient merit in to string a column upon of praise or condemnation, in the style that seems to have the effect of making any painter famous for a season.

Should we ever see these pictures, we hope the critics will remember that the true artist rests firmly and securely upon himself; his endeavour, his mark, is the highest aim of art; in his own estimation he will ever be far from that aim, and will maintain that he has as yet accomplished but little, no matter how excellent his work may be, or how high his consciousness of superiority, in reference to the world, may reach.

Dilettanti (or, as Goethe translates the word, "botchers") seem, on the other hand, not to strive towards an aim, not to see what is beyond, but only what is beside them. On this account they are always comparing, are for the most part extravagant in their praise, unskilful where they blame, have an infinite deference for their like, thus giving themselves an air of friendliness and fairness which is, in fact, only to exalt themselves.

Let critics, who should all revere the name of Marc Musurus, remember rather the kindly words of that most laborious and studious of all the Greek collaborators of Aldus the elder, in his preface written to the first printed edition of Aristophanes (1498):—"It is for you, readers, to appreciate the difficulties of our task, and excuse those errors which in the course of our labour have escaped our notice; the details must not be scrutinised with the minuteness of the money-changer. Happy possessor of so many works already published, it is by exciting the zeal of those who direct this benefactor of our existence, the printing-press, that the world of letters will see books issue in crowds from the workshops of Aldus, for, as the proverb has it, it is to praise that the arts owe their progress."

During the whole siege, George Thomas, one of and's least known but able artists, resided in Rome, supplied to the *Illustrated London News* a series of rations that will always be regarded as the best rn realisations of Roman life in the nineteenth ry.

Waste Lands.—Messrs. Dowsett & Woods, land agents, show us that they have been seeking for some little time to bring waste lands into the market so as to lead to their cultivation. They advocate the necessity and desirability of the step, in a periodical issued by them. Although, as they candidly admit, their motive is partly a selfish one, much good might be effected by such endeavours. One of their correspondents suggests,—

"The formation of a company, with a capital of 500,000*l.*, with power to increase to 1,000,000*l.*, in 10*l.* shares, for the purpose of purchasing suitable tracts of waste lands, bringing them into a certain progressive stage towards cultivation, such as fencing and draining, and then reselling such lots as may be advisable, some large, some small, so as to suit all parties; also, with power to grant certain parts on leases."

THE NIGHT LIGHTS OF OLD LONDON.

CANDLES AND OIL.

WHEN Dr. Johnson, about a century ago, prophesied, "One of these days the streets of London will be lighted by smoke," he little thought that within some fifty years afterwards his Shiptonian prophecy would, to a certain extent, be realised; that the very street in which the remark was made,—Fleet-street,—would be the *first* London City street lighted by gas, and that the adjacent Whitefriars would be one of the earliest homes of gas manufacture in the metropolis. And yet it was within but a few years after the author of the celebrated Dictionary is said to have made the remark, that many ingenious and scientific men were pondering over the "ways and means" of more effectually lighting the greatest city in the world. And then, again, more than three score years and ten later, science is still being strained to its greatest limits in the endeavour to find out a still better method than that which has been the great illuminator since the days of oil and the Georges.

Ruminating over these matters, it has occurred to us to give a couple of chapters upon the progress we have made in lighting up "still increasing London" from the earliest times. Many of our notes have lain slumbering for years; they were jotted down and laid by, and only thought of when the flash of the electric light came across our path. We think our readers may be amused in perusing them, and we know they will learn a few facts "not generally known" both as regards the primitive candles and oil and the more modern gas,—especially some curious incidents relating to the establishment of the latter system. Seventy-nine years have brought about many changes in London, and yet it is not that number of years ago that gas-lighting was practically an unknown illuminator; for Winsor was full of his experiments in Green-street, Grosvenor-square; Dr. Henry was lecturing to wondering audiences at Manchester; and Samuel Clegg was constructing an apparatus for lighting up the *first* establishment with gas, near Halifax; while Murdoch,—to whom so much credit is due,—was also experimenting and carrying out his designs at the celebrated works of Boulton & Watt, at Birmingham. And yet the progre s we have made in seventy years has not been of that remarkable nature,—so far as the lighting up is concerned,—that we should have expected, seeing what progress we have made in other ways,—although "enlightened" Parliaments and Special Committees are ever sitting and reporting for the benefit of "the people" at large.

It is not our purpose to give a history of candle and oil manufacture, but it may be useful to our readers to know that Alfred the Great is supposed to have used a case of horn and wood, in which is placed a candle of wax, the burning of 3 in. of which told him the flight of time,—one hour.

Our retrospect shall commence in the reign of King Edward I., six centuries ago, and at that date, he having taken the franchises of the City into his own hands, and finding the watch and ward instituted by Henry III. very incomplete, issued special ordinances for the protection of the citizens, including the parade of armed persons through the streets and thoroughfares of the City. These watches were, as may be supposed, very necessary; for in those turbulent times it was often no easy task to keep the inhabitants quiet in the little space which then comprised London,—between Newgate and Aldgate, and Moorgate and the Thames. The precise character of "the City watch" is described in the old records, and the earliest is curiously dated 1379, exactly 500 years ago. The mayor ordered each of his brethren, the aldermen, to attend, with a certain number of the men, "good and true," of their wards, and meet him at nine of the clock on the eve of St. John the Baptist, "at Smethfeild," each man to be armed with bacinet and gauntlets of plates, with axe in hand, and arrayed in red and white cloaks, and each alderman to provide "three or four iron cressets burning." What these cressets were like may be better understood by our readers inspecting the one still preserved in the Armoury of the Tower of London. They were, in fact, fires or tar-ropes burning in iron swivel baskets, fixed to the tops of poles; and when the order came to the aldermen, in 1386, to meet the mayor in St. Paul's-churchyard, it contained the suggestive

addendum, "because of the wars at present existing, and for the view and report of strangers." At that date, and for centuries later, every person living in or passing through the City was known, and if he was not so, he was not only well watched, but, most likely, was sent to the Compter, until he satisfied his gaoler who and what he was.

The first one who appears to have commenced a regular lighting up in the city streets after dark was Sir Henry Barton, citizen and skinner, twice lord mayor, and one of its worthies. In the first year of his mayoralty, 1417,—the first after the battle of Agincourt,—he gave directions for lanterns to be hung out from the houses in the principal streets between All-hallows and Candlemas (All Saints day, November 1, and February 2), but even then it was only during the early portion of dark evenings that this was considered necessary, and this antiquated method of illumination continued down to the time of the celebrated John Stow.

It is now within a few months of four hundred years ago, viz., in 1480, that we find a very interesting entry in the accounts of the wardrobe expenses of Edward IV., which will to a certain extent prove, in a few words, more than we might be able to show were we to write columns of garnished "table-talk," for it exhibits a curious picture of London travelling after dark at that date. "To William Whyte, talough chaundler, for iij dozen and ix lb. of pis candell for to light when the king's highnesse and good grace on a nyght come unto his saide great wardrobe, and at other divers tymes,—price of every lb., 1d." To properly understand this entry, it must be borne in mind that the great wardrobe of the king's was then situated in Doctors' Commons (hence the name of Wardrobe Place there), and that all was open country outside the City gates; Whitechapel, Shoreditch, Clerkenwell, and Holborn being truly "in the suburbs," and even the Strand, the royal road to the Palace, was unpaved and bordered with groves of trees, and gardens of the town houses of the few favoured prelates who selected the position for their dwellings from its proximity to the Parliament-house. And only a few years later the history of Bow Church, Cheapside, informs us that the top of the steeple was constructed to admit a glazed lanthorn with candle lights in it, "whereby, during the winter, travellers to the City might have the better sight thereof, and not to miss of their way!" A very laudable idea, no doubt, but in practice we are afraid it proved far from effective, except acting as a beacon to travellers of the Dick Whittington stamp, as they might be trudging through the open country down Highgate Hill. Still, we must not suppose that "the watch" was neglected or was useless, for the City records give many interesting entries showing it to be in good working order, the crafts (the city companies) being, in 1483, ordered to "watch nightly from eight of the clock at night unto six of the clock in the morning, and mete in the Chepe."

There was, however, a civic celebration which, during the period it lasted, was one of the most gorgeous spectacles of the olden time in old London. It was called the setting of the marching watch on the eve of St. John the Baptist, and is depicted to us by Stow, the chronicler. He describes how the houses of the City were shadowed with green birch and garnished with garlands of flowers, with lamps hung before the doors, in the windows, and across the streets. The watch numbered some 2,000 men, variously dressed, 700 of whom bore those cresset lights, held aloft and blazing in the iron swivel baskets, like the one we see in the tower. There were 240 constables dressed in bright harness, some overgilt, and every one had a scarlet jornet or outer cloak, with "a chain of gold" round his neck. He was followed by his henchmen, with minstrels before him, and a cresset borne by his side. And with the cavalcade rode the Lord Mayor, sheriffs, wealthy citizens, and city officers, all dressed in their best, and well horsed with wiflers (pipers), drummers, trumpeters, "demi-lances on great horses, gunners with hand-guns or half-hakes, archers in coats of white fustian, signed on the back and breast with the City arms, their bows bent in their hands, with sheaves of arrows by their sides, pikemen in bright corslets," &c.,—the special attendants on the mayor and sheriffs being clad in bright armour, bearing arms and torches, not forgetting the chief magistrate's own giant, the ancestor of our Guildhall friends, whose presence was always required at every City festival. The fame of this "marching watch" soon got abroad,—and is it to be wondered at, seeing that no pageantry of modern times can be compared with it?

And we are told that "Bluff King Hal," incog. and clothed in one of the coats of his own body guard, came into the City specially to view the show, and to see for himself the civic doings in the year 1510. It must have been a gorgeous exhibition to see, and particularly picturesque in some of those narrow thoroughfares of the old City, the darkness for the nonce made into day, the display of banners and flowers and tapestry, the waving of handkerchiefs, and the playing of "sweet music," with the welcome to all country cousins given by their Cockney relatives, the wild 'prentice lads forgetting their clubs, and making merry instead. Henry VIII., having seen the muster, naturally looked with some degree of fear upon the congregation of so large a number of persons in the City at one time, and although he suggested to the citizens the necessity of preventing a recurrence, nothing was effected until 1539, when more than 16,000 persons, in bright harness, with coats of white silk, or cloth, and chains about their necks, met in the fields near the village of Mile End, and marched in procession to Westminster and back. This was a settler to the King's timidity. Such a mob was to him beyond a joke, for the greatest city in the world had not then the privilege of boasting its three millions of people, its staff of police, or its ways and means of quelling insurrection. And so the King forbad the next year's setting of the watch, and a great blow it was to the citizens, for a chronicle of the date tells us they had "prepared divers pageantes, with lights and other things, for to have had the seyd watche, and had noe knowledge till two days afore Midsomer that yt should not be kept, which was a greate losse to poore men."

As this festival had so much to do with the lighting up of old London, it may be interesting to our readers for us to give a few extracts from the records of the City, especially from the books of one of the companies who were always the paymasters for the pageantry. For instance, in 1539-40 the Ironmongers paid 38s. as their proportion, and this was for 600 cresset lights, costing 15s.; ten cresset and two badge-bearers, "for the labor for bering and holding the cressets both nights," 12s.; one dozen straw hats, 10d.; making twelve escutcheons, 12d.; attendance of two men watching the lights two nights, 2s.; mending four cressets and two new pynes, 6d.; carriage of the cresset-light twice to the hall, 4d.; four bowmen, for two nights, 2s. 8d.; four dozen poynts, 3d.; bread and drink for the cresset-bearers and watchmen, two nights, 8d.; miscellaneous, 2s. 8d.,—38s.! But some eight years after this, one of the popular lord mayors, none other than the uncle of the founder of our London Royal Exchange and Gresham College, thought proper to temporarily revive the old pageantry; but it only lasted for his year, 1548. The books of the Carpenters' Company have similar entries to those already quoted; but there are other items of interest worth recording. For instance, four bows cost 8s., and "four sheffe of arowes with their casses and gyrdylls," 10s.; sixteen yards of "whytt cotton for the bowe-men's cotts," 8s.; "payd to Wymon the smythe for makyng of ij new cresetts," 3s.; a staff for a cresset, one penny, and one dozen straw hats cost eighteenpence! Now it has been generally supposed that the year 1548 was really the last year of the "watch" festival in London; but in looking over the accounts of the City company before quoted (the Ironmongers') for the year 1568, we have been surprised to find evidence of another revival of the custom, and this was actually more than a quarter of a century after the forbidding of it by Henry VIII. The entry in the books reads:—"Paide to xx men that were harnyses of Midsomer night," 20s.; eight men that bare the cressets," 8s.; five badge-men, 5s.; "borrowing of xx guilt halberts out of the Tower," 20s.; sixty-three stone of cresset light, 31s. 6d.; "for birche to sett at the halle-doore," 4d.: total, 4l. 4s. 10d. For the provision of which the company received a precept from the Lord Mayor in these words:—"There shall be a standing watch in the city on the eve of St. John the Baptist. And these are to command you for that service that you have twelve cresset-bearers, and a convenient number of bag-bearers, with sufficient lights for that night, every one of them having a straw hat with cresset lights, together with some officers of your company, to go to . . . . . by seven at night on the said eve," &c.

The watch and ward of the City was al carried out with equal precision, the gates bein closely guarded by day, and shut for the night after dark. The books of the Merchant Taylor Company for October, 1571, show that a prece was received by them to appoint ten of the members to join ten of the Vintners,—to supp two men for each City gate and postern betwe the hours of six in the morning and five in t evening "watchyng and havinge continuall duringe the sayde tyme a vigillant eye to and everye such suspect and idle p'sones as sho passe and returne in, at, and by the same ga and upon sspicion to staye and examine the and so manye as they shall fynde suspect a faultie to commit to warde under safe custo untill our pleasure shall be knowne." Th custom of guarding the City gates did entirely die out until the Corporation passed order throwing them open day and night on a after the 1st of November, 1753.

It was in October, 1599, that the City ca to the resolution of appointing "a substanci standinge watch." An Act of Common Coun ordered the inhabitants to hang out can lights between the hours of six and eight ev evening during the months between Octo and March; and a very primitive lighting up and yet it would appear of sufficient importa to the makers of tallow, whose trade began suffer through strangers taking it up now t more of the fat was required to illuminate streets, added to the large exportation beyo sea. And it is curious to see one of th petitions stating that these strangers "buy u the choyse and best suett (which is fitter to preserved for the feeding and nourishing of m bodye than for those uses), bringing all pe to such curious nycenes that the verye poor sorte will burne no candells but made of su stuffe as is aforesaide." Whether this provis of candlelight for the streets of London can Nicholas Spicer to leave to the city of Exe in 1F09, an annual sum of 40s. for candlelig in that city on dark nights, and 6s. 8d. ye for the bellman, we know not, but it is cer the latter functionary became quite an portant personage in London, for the harnes constables of the marching watch now g place to the venerable-looking watchman v halberd and lantern, who was destined to be subject of much ridicule for a century la Our lamented friend, Charles Knight, speak him as one who "had to deal with listeners"; and Dekker, a contemporary ca him "the child of darkness,—a man that no men to wait upon him, but only a dog; that was a disordered person, and at midn would beat at men's doors bidding them in mockery to look to their candles when themselves were in their dead sleep." An he paraded the City streets he cried aloud,—

> "Lanthorn and a whole candle light!
> Hang out your lights! Hear!"

Our friend Knight says:—"The cry of watchman, 'Hang out your lights,' was exhortation to the negligent, which probably answered only by snores, equally indifferen their own safety and the public preserva A worthy mayor in the time of Queen provided the watchman with a bell, with w instrument he accompanied the music o voice down to the days of the Commonwe The statutes of the streets in the time of E beth were careful enough for the preserva of silence in some things. They prescribed 'no man shall blow any horn in the nigh whistle after the hour of nine of the clock i night under pain of imprisonment;' and, was a harder thing to keep, they also forb man to make any 'sudden outcry in the sti the night, as making any affray or beating wife.' Yet a 'privileged man was to go a knocking at doors and ringing his alarum, intolerable nuisance, if he did what he ordered to do." It is of such a night-w that Milton speaks:—

> "—— the bellman's drowsy charm,
> To bless the doors from nightly harm;"

while Herrick satirises still further, makin watch exclaim:—

> "From noise of scare-fires rest ye free,
> From murders benedicite;
> From all mischances that may fright
> Your pleasing slumbers in the night,
> Mercy secure ye all, and keep
> The goblins from ye while ye sleep.
> Past one o'clock, and almost two,
> My masters all, 'Good day to you!'"

But a print of the time of the first Jam more explicit, for it illustrates a watch

full costume, and underneath the following
nes :—

"A light here, maids, hang out your light,
And see your horns be clear and bright,
That so your candle clear may shine
Continuing from six to nine,
That honest men that walk along,
May see to pass safe without wrong."

Now it does seem strange that the greatest city
the world should have been contented with such
antiquated lighting up. And yet it was so, and
ntinued in this state for the best part of a cen-
ry more. Paris was no better, for lanterns
re not introduced there until 1667. In London,
wever, there were certain scientific individuals
work, some trying one thing and some another,
d all hoping against hope to bring about a
oper system of illumination. Oils, candles,
d lamps, were patented during the first fifty
ars of the seventeenth century, but nothing
real practical use towards lighting up the
reets. The first printed specification under
e official head of candle manufacture, was
anted to one Edward Biddle, March 18, 1636,
o "hath informed us that there is a greater
noyance in and about the Cities of London
d Westminster through the casting forth all
t of victuall bones into the street," and he,
erefore, proposed a new way of extracting
low from these bones, which was allowed him
fourteen years, paying the king 50*l.* per
num for the privilege, and "the rate of six-
nce for every one hundred pounds weight of
tuall bones, viz.,—one-third part thereof to
h person or persons as shall save them, and
other two parts unto such poor people as at
nominacyon of the churchwardens of the
spective parishes within our said Cities of
ndon and Westminster, and four miles round
out the same, shall gather, and bring them to
ne convenient place to be weighed." The
ond candle-making patent is dated 1640;
third, 1770. Under the official heading of
mps and Lanterns, the first patent is dated
7; the second, 1684; and the third, 1721;
le under the head of "Production and Dis-
bution of Light," the first is dated 1675; the
ond, 1683; the third, 1704; and fourth,
8; and it is of these four we shall have to
ak presently.

What the inhabitants of London were fully
sible of the remarkable disadvantages they
noured under may be gathered from the diaries,
ers, and other evidences still extant. Per-
s the most interesting record, however, is
be found in two wills still to be seen at the
rogative Court. The first is that of John
rdall, citizen and Grocer of London, dated
6, and proved in December, 1658, while the
ond is the bequest of John Cooke, citizen and
hmonger, proved in February, 1663. Wardall
s a good benefactor to his company, and was
ied in the Church of St. Botolph, Billings-
e. He was the owner of no less than nine-
n houses in and near Walbrook, which he
cially bequeathed to various persons, but it
nly one of these houses that relates to our
ject. He left to the Grocers' Company one
ssuage "called or known by the name or syne
The White Bear in Walbrook,"—the house, we
lieve, now known as No. 23 in that street,—
on trust to pay (among other things) the
rchwardens of the aforesaid parish of St.
tolph four pounds yearly, out of which "there
l be provided, and by the said churchwardens
maintayned and kept, one good and sufficient
n and glasse lanthorne, of like bignesse as
w it is, with a candle of no lesse size or
gnesse than three in the pound, therein to be
t and kept burning and lighted, for the direct-
of passengers to goe and come with more
furitie to and from the waterside all the night
g, the same lanthorne from time to time at
times to be fixed and fastened at the north-
st corner of the said parish church of St.
tolph" from St. Bartholomew's (August 24)
Ladyday (March 25) "every yeare yearlye
ever," and to be kept lighted "from six of
clocke every evening untill six of the clock
ery morning," twenty shillings yearly to be
id to the sexton for looking after the lantern,
d the residue, if any, to be reserved for
pairs. Now this bequest has been often
oted, but never before in the actual words, we
lieve, and neither is it generally known that
rdall, by a codicil, specially stated that the
hite Bear was then let to one Thomas Frewan
the annual rental of 16*l.*, but being "worth a
eater summe," he ordered, upon the expira-
n of the lease, "the rent be raysed to the
st value, and the whole rent then as nowe to
e and for the use and profitt of the said
Almsmen of the said Worshipful the Grocers' Company, and for no other uses whatever."

But John Cooke, the Fishmonger, in 1663, left to the churchwardens of St. Michael's, Crooked-lane, in which parish he dwelt, this special bequest, "That the said churchwardens and vestrymen and their successors shall every yeare yearly disburse the sum of twenty shillings for the maintenance of a lanthorne and a candle lighted, to be of eighte in the pound att least, to be kept hanged out at the corner of St. Michael's-lane, next Thames-streete," from Michaelmas (September 29th) to Lady-day (March 25th), "betweene the hours of nine and ten of the clock at night until the hours of four and five o'clock in the morning, for affording light to passengers and travellers goinge throughe Thames-streete and through the said lane." Now, although St. Michael's parish has been pretty well obliterated since the erection of new London Bridge, and the church, with the famous Boar's Head Tavern of Shakspeare's day, long pulled down, the site of the tavern being where the King William statue stands; yet, we believe, these 20*s.* are still paid towards maintaining a lamp thereabouts.

It was, however, in the year 1662 that things began to change in earnest; an improvement was effected upon the "lighting-up system, which, although far from perfect, was yet progressive. A clause in the Act passed that year ordered that every householder within the cities of London and Westminster whose house adjoined the high-street, should, from Michaelmas to Lady-day, nightly "set or hang out candles or light in lanthorns or otherwise, in some part of his house next the street, to enlighten the same for passengers, from such time as it shall growe darke until nine of the clock in the evening, upon paine to forfeit the sum of 1*s.* for every default," and this order was extended by another Act in 1690 "until twelve of the clock in the night," under the penalty of 2*s.*, "excepting such person or persons as shall agree to make use of lamps of any sort, to be placed at such distances in the street as shall be approved of by two or more justices of the peace."

On the 18th of November, 1675, a patent was granted to Richard Reeves, gentleman, for "The Arte of Casting and spreading of light by a new and unusual figure of foiled glasse, polished without grinding, with pipes of glasse to hold candles or lamps," and this patent was followed by another to Anthony Vernotty, dated the 1st of August, 1683, for "a new way of enlightening the streets and passages of this or any other citty, towne, or place of concourse in the dark seasons of the evening and night, by a new sort of lanthorn and lamps," which, said the patent, "hath been seen and approved of by us, and is now used in our palaces of Whitehall and Windsor." In these patents we begin to see the real commencement of a practical lighting up, and to the Corporation of London is due the "improvement." It would appear that, in order to raise the Orphans' Fund of the City, created in 1694, the Court of Common Council granted certain privileges in return for certain rentals or premiums. Among these was a lease for twenty-one years from Midsummer, 1694, to Sir Charles Hara, knt., John Stanyan, esq., Philip Neve, esq., John Lillye, gent., and others who were interested in the new Company producing the "convex light," throwing out extra rays of light wherever required, which company, for the yearly rent of 600*l.*, were privileged for that term to light up "all publick places within the City and liberties thereof," and which lease was confirmed by Act of Parliament the same year. The company immediately commenced operations, and appear to have extended their work to public buildings, for among the payments in the books of St. Thomas's Hospital, then situated in Southwark, we find this entry,—"To the patentees of convex lights for their lamps lighting the hospital, half year to Ladyday, 1695, six shillings," proving that the charge was made in the same style as the gas company make theirs now. Before the lease of 1694 expired, Queen Anne, on the 9th July, 1704, granted a patent to Richard Cole, gentleman, for "a new and extraordinary way or invention of forming glasses in conicoll figures and lamps peculiar to himself, that will to admiration increase, disperse, and cast light equally and certainly at all convenient distances never before used or known, and no ways subject to the glaring and incertainty of the lights now chiefly used," while another patent was granted to Michael Cole, of Dublin,—a relative of Richard, we presume,—on the 7th August, 1708, for "a new kind of light (quite different from any yet in use), composed of one entire glass, of a globular shape, with a lamp which will give a clearer and more certain light from all parts thereof, without any dark shadows," the usual fourteen years being granted in each case, but not to interfere in the City of London with the 1694 lease, expiring in 1715. This globular oil-lamp of Michael Cole's was exhibited at the door of the St. James Coffee-house, in the days of the *Spectator*, and is by him spoken of in special terms.

At the expiration of the lease to Hara and others, Alderman Sir Samuel Gerrard, bart., and Sir Fisher Tench, of Low Leyton, had another granted to them, empowering them, at an annual rental of 400*l.*, for twenty-one years from Midsummer, 1715, "to provide, maintain, and keep in good and sufficient repair and fit for use, such a sufficient number of the said convex lights, otherwise called lamp-lights, in goodness, bigness, form, and fashion like unto those which now are by them left in the Guildhall of the said city as sample, as shall and will be sufficient for the lighting all the publick places, streets, and lanes of the said city and liberties thereof, so that the lights may extend to and reach each other; and so always as there be not allotted, or appointed to be lighted by each lamp, more than eight front houses of a side in the great streets of the said city, nor more than nine front houses of a side in the less or smaller streets." And these were to be fitted with cotton-wick and rape-oil, "to give a sufficient clear light every dark night, (that is to say) every night between the second night after each full moon and the seventh night after each new moon, from the 29th day of September to the 25th day of March, yearly"; the lamps to be cleaned daily, lighted from dark till twelve o'clock, and "shall be dressed and snuffed twice every such night!" He who was to do the snuffing was to wear a badge of brass or pewter, by which he should be recognised. All the expenses of breaking the ground, fixing posts and lamps, were to be borne by Gerrard and Tench, who were to be fined 5*s.* for any default. On the 18th of December, 1716, an Act of Common Council confirmed this lease, and made it compulsory also upon every householder whose house was rated at or above 10*l.* "to hang out one or more lanthorn or lanthorns with sufficient cotton-wick candles lighted therein, on the outside of their respective churches, houses, doors, and gateways next the streets," for the like period between six and eleven, under a penalty of 1*s.* each. Thus, it is seen, certain contractors had the privilege of erecting the lamps, and the inhabitants were compelled to provide some as well; and yet we fail to see how the contractors made it "pay," as we do not find what rent was charged the inhabitants, or how Gerrard was able to provide the lamps and pay the 400*l.* a year as well, unless the householders were compelled to purchase the lamps of the leaseholders.

Before we proceed further, it may be a little interesting to dwell awhile upon candles, which, as may be supposed, were, with oil, the only illuminators of the period. An Act of Parliament granted, for five years from the 1st of May, 1710, a special tax of 4*d.* per pound on all imported wax candles, and ½*d.* on those made of tallow. Home-made was taxed the same; factories to be registered; concealing candles, 20*l.* fine; all found in private melting-houses forfeited; 5*l.* penalty for selling elsewhere than in shops and markets; and all stock on May 1 to be registered under a penalty of 50*l.* and forfeiture. During the continuance of the Act no person to use inside a dwelling-house "any lamp or lamps wherein any oyl or fat (other than oyl made of fysh) within Great Britain, shall be burnt for giving light, under the penalty of 40*s.* for every offence," and that all small rushlights made by any persons for use in their own houses only and not for sale, and such rushlights only once dipped in grease or kitchen-stuff, and not through tallow melted or refined, were exempted by the Act. In looking over the records of the past, it is curious to note the quaint evidences of "after dark" customs concerning candles. Thus, at the trial of Sir John Fenwick in 1696 the House of Commons actually proposed and carried a question "that candles be brought in," and this was made a standing order of the House in 1717, the serjeant being required always to produce them "when daylight shall be shut in." In 1701 the address of a person was given as living "two doors from

the glass candle-lamps at the White Hart, near Pall Mall, facing the Haymarket," while Nicholas Carew, when he went to take leave of Cambridge in 1705, entered among his expenses the modest item, "Paid for candles, 2d." All these items are trivial in themselves, and yet remarkably suggestive of the good old times.

In 1736, Gerrard's lease expired, and we find the Corporation in anything but an amiable mood about the working of it. The imperfect lights had brought about serious robberies and other crimes,—the very aim they had in granting the lease being frustrated. Ancient statutes specially provided against noises in the night, the blowing of horns, and fighting after nine o'clock, and gave the people the watch to go the rounds to see the law obeyed, and yet these very watchmen were permitted themselves to wake the slumbers by their "Past two o'clock: a very foggy morning" cry, their bell-ringing, their fast-expiring candle-lanterns, and last, but not least, their age,—for they were chiefly old, worn-out men, who assisted greatly to the fulfilment of the one great end,—protection to the criminal. No wonder, then, that the grave assaults, such as Dryden suffered in the reign of Charles II., and the "Mohocks" inflicted in the days of Queen Anne, made the peacable citizen tremble, and it is, therefore, not surprising to find the Corporation in 1735 declaring that "seeing the great defects in the present lessee's lighting the streets of the City, we have thought proper of having them lighted in a much better manner in the future," viz., from August to April until one o'clock in the morning. With this resolve, advertisements were issued for contractors to take the lighting for twenty-one years,—the lamps to be within thirty yards of each other, and "even with the posts of the foot passage" in the great streets, and thirty-five yards in the smaller,—and in this proportion we find that, while the old method only used 1,000 lamps, the new one actually increased the number to 4,000!

Now this was certainly a desirable improvement, but the proposition appears to have been more easily made than carried out. There were three committee meetings, and at each three firms tendered, but although they offered to carry out the contract at a less rate each time, the price could not be accepted by the committee. One firm offered to accept the work if they were allowed to tax the householders above 10*l.* rental at 9s., 8s. 6d., or 8s. per annum; the second firm offered at 10s. or 9s. provided they were not obliged to fix lamps where the inhabitants were too poor to pay; while the third agreed to provide 3,000 lamps, and to fix at 8s., if the Corporation paid them 4,800*l.* per annum! Here was a glorious state of things indeed. The citizens were greatly puzzled what to do, and, after several meetings, at last resolved to carry out the work themselves. That it was the wisest act we have not the least doubt, and subsequent events proved them in the right. An Act was passed empowering them to erect lamps, light them from sunset to sunrise, also public buildings (except hospitals), vacant spaces, &c. And with such spirit did they set to work that the first assessment was made by the Common Council in September for three quarters of a year ending Christmas, the rate charged being—every house under 10*l.* per annum, 3s. 6d.; 10*l.* to 20*l.*, 7s. 6d.; 20*l.* to 30*l.*, 8s.; 30*l.* to 40*l.*, 9s. 6d.; and above 40*l.*, 12s. In 1755 the tax was made at a fixed rate of 4d. in the 1*l.* on the rental, and the lamps were increased. Seven years later the City found it cheaper to contract for the lighting, and they let it at the rate of 1*l.* 12s. per lamp; for they had reported that the houses assessable numbered 14,014, the cost of lighting had been 2*l.* 1s., while the cost of fixing had been 14s. 6d. each lamp. But, after all, the first cost was the cheapest, for, as Entick says, "The City of London is better lighted [this was in 1766] than any town or city in the known world; whether we consider the goodness of the lights, the number of the lamps which amount to more than 5,000, or the hours of time, which is above 5,000 hours in the year."

All this "lighting up" was by oil, and the process had given quite an impetus to the lamp trade. The old lamp-maker became quite an institution, and it is one of the reminiscences of the past to note that the oldest of that business in existence has but only recently come to an end. This was long known as Mansfield's, in the Kingsland-road, Shoreditch, and was established as long back as 1740,—four years after the corporation carried out the first real lighting of the City. The last proprietor, Mr. Thomas Denham, died in September, 1877. It seems hard to have to part with the last link of a remarkable chain,—a chain that bound together the night-lights of London in the present and the past.

The Westminster Lighting Act was not passed until the year 1762, so that the linkmen, with their "pilfering band," kept up their good old pranks long after Gay studied "the art of walking the streets of London." Carriage-folk, it is true, kept their liveried footmen with flambeaux, and rolled home during the still small hours almost by this light alone; for it was no uncommon thing for the streetlights to go out; and it was the lamplighter's perseverance in trimming the City lamps that caused Dr. Johnson to express his Shiptonian thoughts. The antiquated and aristocratic age of flambeaux is still kept in memory, for the hornlike extinguishers, made of iron, may be found to this day existing on many of the doorposts and railings of the West-end mansions in the neighbourhood of the squares and Whitehall, exhibiting in many instances the holes of time, where the burning light had been thrust, vividly recalling those "time-honoured days" of the "good old times" of the Bow-street "runners," the "Charleys," the "box" which Tom and Jerry delighted to overturn, and the dimness of those venerable-looking oil-lamps which existed as late as 1839. In April of that year Byng wrote to the poet Moore,—"Are you aware that Grosvenor-square is at length completely lighted with gas? Are these new lights preparatory to taking office?"

But gaslighting in London had already become an established fact forty years ago, and our next article will give some new and interesting notes upon its discovery, and its first application as the Night-light of London.

UNEARTHED HISTORY.

IT is only very recently that the Italian Minister of Public Works made known the intention of the Government to practically consider the question of the Tiber and the engineering difficulties that turbid river involves. The announcement has revived the expectations of all artistic enthusiasts, from the prospect of the archæological discoveries that will undoubtedly be made; indeed, the old hope has again been raised that the seven-branched candlestick, which tradition states to have been thrown into the Tiber at the Ponte Molo, will be found, as the weight of this historic priceless treasure will have sunk it too deep in the thick mud to allow of its having been washed seawards further than St. Angelo. Since the day, in fact, when the Duchess of Devonshire, at the beginning of this century, subscribed a large sum for the dredging of the Tiber, such confident hopes have not been expressed in Roman society.

In the meantime, however, the various other improvements being carried out by the new Government in Rome itself are disclosing daily fresh objects of interest; no rival to the Laocöon, it is true, has yet been discovered, but numerous remains of antique and Mediæval Rome, which recall all the extraordinary history of the Eternal City, so many relics of which have, only within a few years, been dragged from the obscurity of centuries of neglected safety.

We ourselves have seen unearthed from a narrow vicolo in the Campo Marzio the splendid and now highly-polished *cipollina* column that stands in the Piazza di Spagna, supporting the Madonna raised by Pio Nono to commemorate the newly-established doctrine of the Immaculate Conception. For several days we watched this extraordinary column in its slow progress through the narrow streets from its resting-place in the Campo Marzio, where it had reposed with an unknown history, certainly for eighteen or twenty centuries.

And now in the excavations necessary for the opening of the new Via Nazionale, another Roman relic, dating from the first year of the Christian era, has been discovered, a mosaic pavement in perfect condition, not, from all accounts, of any very great artistic merit, not of the extraordinary beauty of the famous Palestrina mosaic, but a mosaic much resembling those pavements found from time to time in London in the course of City improvements, and the chief interest connected with which is unquestionably its unusual state of preservation.

From the pages of an Italian contemporary, the *Illustrazione Italiana*, we obtain some of the following details, the first that have as yet appeared regarding this interesting discovery more ample account of which, doubtless, Shakespeare Wood, the accomplished Rom correspondent of the *Times*, will shortly br before English readers.

It was at the point where the Via Della Pilo meets the Vicolo de' Colonesi that, in the cou of the excavations above referred to, the mos was laid bare. Although of the early years the first empire, and therefore now, at the le eighteen centuries old, such is its perfect co tion and brightness that the work might h been executed yesterday.

From its position, it is possible that mosaic formed the pavement of part of a priv house, though it would be difficult to determ the plan of this building, the space laid bare the excavations being too narrow to allow further research. The fact of some remain *coccio pisto*,—a species of red pavement *Veneziana*, used especially in the atrii and p styles,—being found in the direction of the Della Pilotta, has led to the supposition t the house had its entrance on this side, and room of which this mosaic formed the paveme was, if not a *stanza di passaggio*, or, as we sho say, a passage, at least a room for entert ment. Not being closed in any way on opposite side which looks towards the ri ground of the Tre Cannelle, and being situa in this direction alongside a room with a me pavement all black, and of greatly infe artistic merit, and with ample communica on this side, it might be supposed that house had its entrance on the opposite sid the Via Della Pilotta and the room with pavement recently discovered. Communica with the atrium and peristyle was the *tablin œcus*, a portion of the house almost exactly responding to the modern Spanish *patio*.

But leaving this question to be determine the archæologists, suffice it to say that mosaic discovered represents in colours bright, and almost uninjured by time, a st Greek pattern interspersed with small squ which, breaking the line, produce an admir harmonious whole,—a design by no means n but, as we have said, in a surprising sta preservation. In course of time the mosaic be exhibited in the Museo Capitolino. possible to discover to whose house this once belonged? It is, we are afraid, a difficult to decide. Certainly to some prin dwelling; for in this part of the city, in early years of the Empire, also at the clo the Republic, only rich and powerful fam lived.

It was in this neighbourhood, the Belgrav Faubourg St. Germain of those days, that immortalised by Cicero, Titus Pomponius Att who, next to Socrates, must be considered most humane and benevolent of all the g men of classic times, and of whom Corn Nepos, his friend, has left us such an invalu biography. And as the neighbourhoods of c city, like all things in this world *habent sua* the barons of the Middle Ages chose for home these pleasant slopes of the Qui where soon rose the stronghold and stout t of the Colonna family, even before Marti in the first years of the fifteenth century, menced their existing palace.

Only a few steps distant from the rece discovered pavement, rises, in the precinc the interesting convent of Sta. Caterina di S the torre delle Milizie (the absurdly-c "Tower of Nero" of the guides), built i thirteenth century by Pandolfo della Sub senator of Rome; while at no great dist and more towards the bottom of the hill exists one of the fortified towers of the family, which from 950 to 1250 gave six of their line to the chair of St. Peter.

How many memories are recalled and unearthed in the course of a demolition like necessary for the opening of the Via Nazio Not least interesting, the foundations of are believed to be the first walls of Rome been laid bare, though future investigation decide this somewhat doubtful point, as als history of several other Classic remains covered within the precincts of the Co Palace gardens, now green with their luxu and famous pines and box-trees which gri the ruins of the Temple of the Sun. These of a time gone by recall the antique splen of the past, the days of Leo X., when in gardens met, among many others, round Cas da Bibbiena, the author of the "Calan Francesco Berni, Angelo Colocci, Fran

ia Molza, and Pietro Bembo, the too intimate
id of the much-maligned Lucrezia Borgia
the Morosina, the favourite of Leo X. and
nent VII.; and the many happy hours that
oria Colonna, after divine service in the
el of S. Silvestro, passed in company with
elangelo and her numerous friends, not
cherished among whom was the Portuguese
nature-painter of literary renown, Francesco
landa.

l these associations and freshly revived
ories of a past so interesting, are called up
discovery the result of the opening up of
new street, the Via Nazionale, a sort of
well-road, that traverses the ancient South
sington of Rome, adding a renewed interest
ne neighbourhood of Hilda's Tower, and the
-cote over which Hawthorne, in his "Trans-
ation," has thrown, with all English and
rican readers, so weird a spell.

ARCHITECTS' LIABILITIES TO BUILDERS.

HE point discussed in the case of Stevenson
atson, which was reported in the *Builder* of
week (March 15), is of such great profes-
al importance that it may be touched on
n. For though it is stated that this case is
taken to the Court of Appeal, still, for the
ent at any rate, there is a direct decision
h, until it is,—if it ever is,—overturned by
gher tribunal, must be considered as strict

e real gist of that decision may be stated
alf a dozen words. It is, that nothing
pt *malâ fides*,—that is, legal wrong-doing,
and, as it is often termed,—can give a right
tion to a builder against an architect who has
ve certificates in respect of the work done.
is to say, where the common clause is
l that all disputes between the builder and
e-owner are to be settled by the architect,
when the builder is to be paid on the
tect's certificate, and the architect makes
nistake in so doing, he is not liable, unless
al fraud or dishonesty can be proved against

Now, undoubtedly, this is a very startling
it must be confessed, rather alarming
ion for builders. We do not for a moment
ose that the great body of architects do
bring to the performance of such duties,
her that of settling disputes between the
e-owner and the contractor, or the passing
ne builder's accounts, the most painstaking
and the strictest sense of duty. But there
negligent persons in every profession,
there is nothing which makes a man
careful than the knowledge that he is
ly liable to pay damages to another if
oes that which is entrusted to him with-
proper and reasonable care. Because
is the way the law now stands, as
unded by Lord Coleridge:—"Where the
ise of judgment or opinion on the part of a
person was necessary between two persons,
in the opinion of one of the two such opinion
dgment had been wrongfully or negligently
cised, no action could be maintained against
rson standing in the position of third party";
in another place it is stated that the posi-
of the architect is strictly analogous to that
n arbitrator. Now, in regard to this last
t, we strongly doubt whether Lord Coleridge's
ment will be upheld when it reaches the
t of Appeal. An architect is not in the
position as an arbitrator: the latter is
ly a judge appointed and chosen by two
sing parties to decide certain disputes
reen them. He comes into the matter only
n it reaches an acute stage, and when there
me question or questions which must be
ded by some kind of judicial machinery.
the architect is in a different position. He
nployed by one party to do certain work,
from the beginning he acts as the agent of
party in the interest of that party, and—we
n it in no unfriendly sense—against the
rest of the other party. If the builder does
use proper materials, it is the architect's
ness personally, or by a clerk of the works,
se that the right materials are substituted,
when it comes to the last stage of all, and
as to certify, and for that purpose to ex-
ne, the builder's work and accounts, he has
act in what—again, we repeat, we do not
n it in any offensive way—can but be termed
stile manner, or, at any rate, in a carefully
ical manner towards the builder. The archi-
is thus neither more nor less than the owner's agent, and the clause as to his settling disputes does not put him by its own force alone in a judicial position.

So far, indeed, as the architect has to settle disputes, he does, probably, in the eye of the law, fill the position of arbitrator; but, because he does so in regard to this part of his duty, it by no means necessarily follows that he does so in regard to the certifying and passing the builder's work and accounts. He is a person who, so far as this is concerned, has undertaken to perform a certain duty, for negligence in which he may be liable to an action. We have no intention of taking our readers through the various legal decisions which have a bearing upon this matter, but we may briefly point to the case of Turner *v.* Goulden, 9 L. R., C. P., 47, in which the defendant was engaged as a valuer on the part of the plaintiff to ascertain the sum to be paid by the latter on the purchase of the goodwill, stock, &c., of a business, and in this instance it was decided that an action could be carried on against the valuer. Now the architect in certifying is neither more nor less than a valuer. The man who values fifty bales of goods must exercise his judgment as to their quality, market price, and so on; and the architect must exercise his judgment as to the goodness of the materials, the proper finish of the structure, and so forth, and, therefore, as it seems to us, the decision in the case we have just mentioned is applicable to such a case as that of an architect called on to pass a builder's accounts and certify as to his work. As we have already said, we think the character of an architect, when he has to settle disputes and also to certify, is double in its nature, and that the fact of his having the character of an arbitrator in the first, does not necessarily give him such in the second instance. And there does seem to arise from this state of things a double duty on the part of the architect, namely, an implied duty to act with due and proper skill, so that the house-owner shall suffer no injury by his negligence, and a duty of the same kind towards the builder, so far as he has to do with him. Undoubtedly the first duty is an implied part of the contract with the house-owner; of that there can be no possible question. We quite confess that there are difficulties as to the second duty, because it is not a general one owing to all the world, nor yet an implied condition arising out of a contract; but it must be considered as a duty arising out of the architect's general engagement, coupled with his knowledge of what is required of him in his employment. This seems to be a view which will commend itself to the Court of Appeal, which is ever desirous of avoiding technicalities, and of taking a common-sense and equitable view of matters. In most cases, of course, this sort of a dispute need not and does not arise, but certainly it seems to us that builders would be on the safe side were they to insert a clause in the contract,—in view of this recent decision, that the house-owner is to be liable for all losses incurred by the builder in consequence of any negligence,—not error of judgment,—on the part of the architect in certifying. Of course, it would still lie upon the builder to make out an affirmative case of negligence, which, in nine cases out of ten, is a task of Herculean difficulty. Of course, as is evident from the whole tenor of the judgment we have been commenting on, *malâ fides* will at once give a right of action of the builder without any express proviso, but unless this judgment is reversed, it must be considered as settled law that, except for real dishonesty in certifying, the builder has no remedy against the architect.

In this same case, too, it was urged that the builder might and could demand the reasons for the decision arrived at by the architect, but here, again, the Court was against the builder. As to the legal soundness of this view and its propriety, we do not think there can be two opinions. It would open out a vista of endless disputes if the architect's reasons were to be inquired into, and as long as he has carefully and honestly exercised his judgment, that is all which either party can require from him. In this sense, indeed, the architect preserves some of the attributes of a judge, because no judge is ever required to state his reasons. Indeed, the fewer reasons a judge gives, very often the better, especially where he is not a member of the Court of Appeal, otherwise it may be his fate to have those above him arriving sometimes at his conclusions for opposite reasons.

Upon this point it is really unnecessary to say more. We think our readers will admit the soundness of this part of the case. Still, it is advisable that the readers of the *Builder* should have both parts of the case laid before them, not enveloped in the technical clothing of a legal report. The case is one deserving of attentive consideration by professional persons, and it is much to be hoped that so important a professional point will be decided once for all by the Court of Appeal, and not left standing, without further discussion, according to the judgment of a rather weak court in the Common Pleas division, given, as the judges themselves stated, in haste, and without mature consideration.

ANOTHER SALE AT HORSEMONGER-LANE GAOL.

THE second sale of the materials of Horsemonger-lane Gaol, by Messrs. Horne, Eversfield, & Co., took place last week, when the materials on the south side of the quadrangle were disposed of, which included, amongst other portions of the building, the chapel, the whole of the interior fittings forming a portion of the materials sold, together with the large bell in the roof, for which there was a close competition, several parties being desirous of becoming its possessor. The materials comprised ninety-five lots, the number of bricks being estimated at 1,000,000, and there were also upwards of five tons of lead, in addition to the stonework and timber. There was an active competition amongst builders for the bricks, which realised exceptionally good prices, it having been ascertained in taking down the materials of the west wing, which was sold about three weeks ago, that, although the prison was erected upwards of eighty years ago, the bricks are in very good condition, and of much greater value than the ordinary class of bricks manufactured at the present day. The total proceeds of the day's sale amounted to 1,076*l.*, which, added to the sum realised at the first sale,—1,200*l.*,—makes the amount already received for the portions of the gaol, so far sold, 2,276*l.* There will be two more sales, one in April, and the final sale in May, when the remaining portion of the materials will be disposed of, and it is expected that the entire site of the six acres will be fully cleared, and ready for building purposes early in June. Judging from the sums so far received for the materials, it is estimated that the aggregate proceeds will reach about 5,000*l.*, only about half of the structure having yet been sold. Large numbers of labourers are at present at work in clearing away the west wing, which will occupy some considerable time, as the walls are of great thickness and solidity.

THE "MADRID ARCHITECTURAL REVIEW."

THE editor of the *Revista de la Arquitectura Nacional y Extranjera*, Don Mariano Belmás, has published a translation of the Notes in Madrid which recently appeared in our pages, with running comments. With the view of complimenting our correspondent, Don Belmás describes him as an Englishman by origin, but not at all by character! The *Revista* is the official organ of the Madrid Central Society of Architects, is published in Madrid, and appears to be ably conducted.

THE LAW ON PARISH CHURCHYARD DRAINAGE.

AT the meeting of the Rural Sanitary Authority of Bridgwater last week, a legal point of considerable public importance was discussed, in reference to the liability for the expense of draining the parish churchyard of Puriton, the condition of which was represented to be such as to be a public nuisance, the water from it percolating into the wells of water used for drinking purposes. The Clerk stated that he had written to the *Justice of the Peace* on the subject, and the reply was to the effect that it was the duty of the vicar and churchwardens to take the necessary steps to remedy the nuisance complained of. It was pointed out, however, that church-rates having been abolished, the vicar and churchwardens had no funds at their disposal for such a purpose, and it was believed that the ratepayers were likely to object to the expense being borne by the parish. The Clerk was directed to take further legal advice on the subject. Meanwhile, the nuisance continues.

WROUGHT-IRON LIGHTHOUSES.

IN describing in our last number the wrought-iron lighthouses in the Red Sea, we referred to the paper upon them by Mr. Parkes, in vol. xxiii. of the Proceedings of the Institution of Civil Engineers. In the discussion that followed the reading of that paper (Nov. 1863) reference was made to two more lofty structures of a similar character; one of the height of 144 ft., erected several years before on the Florida Reef, from the designs of Mr. J. W. P. Lewis; the other, of which we now give an illustration, erected at the mouth of the river Ebro, and having a height from the mean level of the Mediterranean to the centre of the light at its summit of about 169 ft. This lighthouse has its details very minutely described and illustrated in a paper read by Mr. John Henderson Porter, in January, 1861, at the Institution of Mechanical Engineers in Birmingham, to whom we are in part indebted for the following account of it.

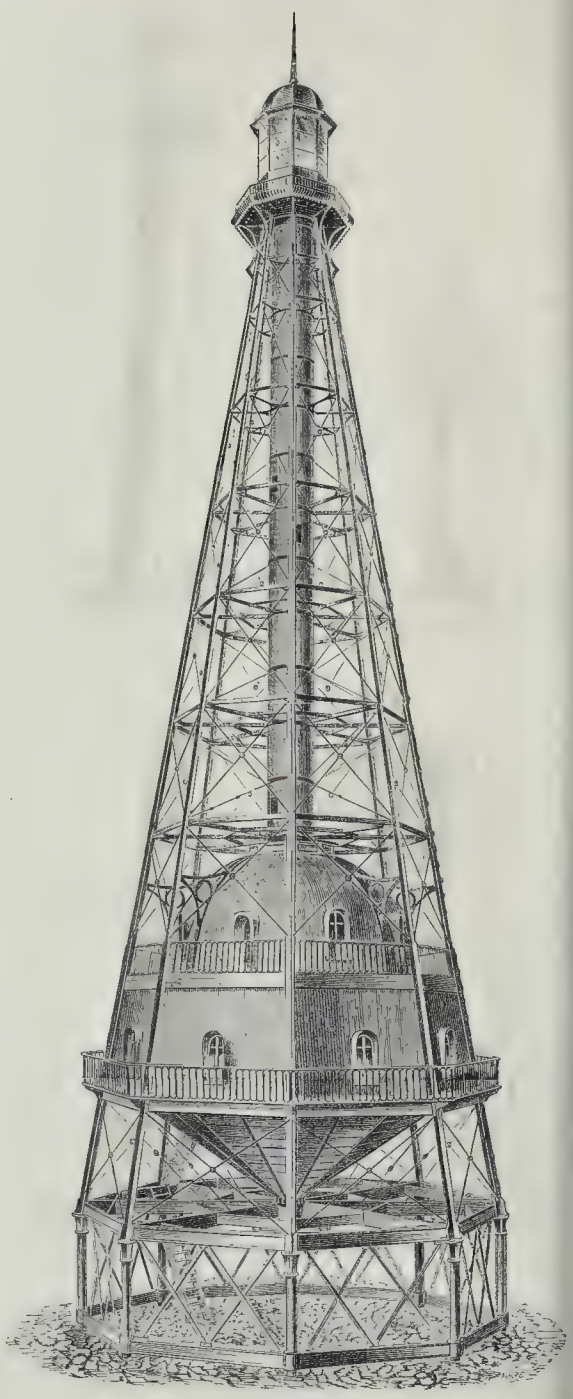
The Spanish Government, as represented by the President of the Corps of Royal Engineers for Public Works,—the late Don Lucio del Vallé,—had determined to erect three iron screw pile lighthouses upon the flat coast at the mouth of the river Ebro: one to serve as a leading light, visible at a distance of twenty miles; and the other two, smaller, to mark the positions of the two natural harbours of refuge, at Baña and Alfaques, formed by the configuration of the coast and of the flat delta, called the Isla de Buda, dividing the two channels by which the river meets the sea.

The Florida Reef Lighthouse had been studied by Don Lucio as the type of a structure to be erected on the Isla de Buda for the leading light; but, in his opinion, the tubes of cast iron, of which the principal uprights of the Florida Lighthouse are formed, suggested insecurity in a fabric so lofty, and likely to undergo the vibration or tremor to be expected on the occasion of great storms. Therefore, in inviting Mr. Porter to submit, for the approval of the Direction General of Public Works, detailed drawings of his views of how the lighthouses should be constructed, he stipulated that the piles and all the principal parts of the superstructure should be of wrought iron.

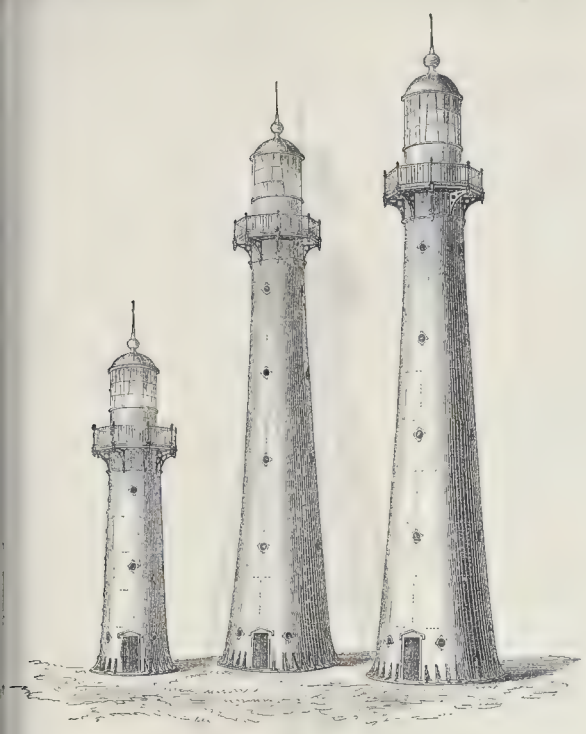
The total weight of the superstructure, including the lantern, is about 180 tons, of which 40 tons may possibly be sustained by the central pile, leaving 17½ tons to be borne by each of the eight external piles, forming an octagon of 56 ft. in diameter.

The ground on which these foundation piles are placed is a bank of sand and detritus brought down by the river, and although there already existed most satisfactory proofs of the sustaining power of "Mitchell's" screw piles under similar circumstances, it was thought well to have ample margin for contingencies. Thus, while the sustaining power of these screws in a foundation of sand has been found to be equal, in tons, to six times the square of the diameter of the screw in feet, it was determined to adopt screws of 4 ft. in diameter fixed upon solid hammered wrought-iron piles of 8 in. in diameter, and to provide for entering them to a depth of 30 ft. into the sand. These piles, forged in one length, are reduced at their upper ends to 7 in. for a length of 22 in., at which point a collar is welded to the body of the 8-in. pile, and upon this rests a cast-iron cap, fashioned to receive the feet of the wrought-iron uprights of the superstructure and the girders of puddled steel which unite them horizontally.

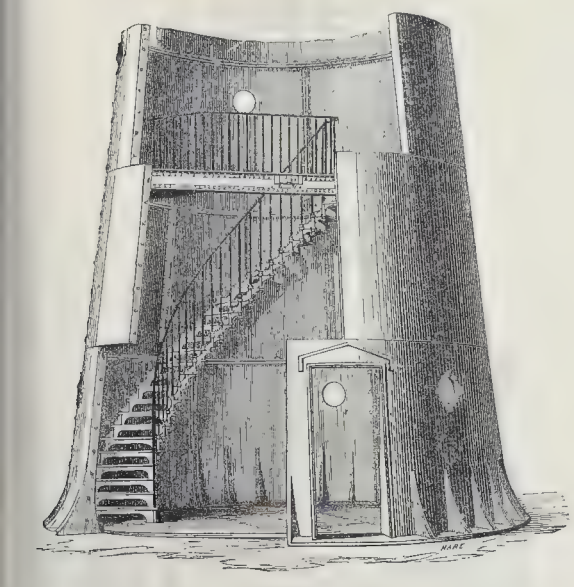
It turned out, in the work of erecting, that the great length of pile could not be forced further into the dense sand than 26 ft., and the portions remaining above were therefore braced together diagonally between the surface of the ground and the caps of the piles,—as may be seen in the illustration. On the other hand, the length of the piles proved to be of importance; for, as occasionally happens with large rivers of great length flowing through mountainous countries and debouching upon flat coasts, the river suddenly changed its course at its mouth, and the lighthouse, which was intended to stand upon the margin of the sea, had the ground scoured out from between its piles to an extent to render necessary the throwing between and around them large quantities of stone brought down from the mountains; and, whereas it was intended to have been entered on foot, it soon became an affair of three-quarters of an hour to reach it by a boat. The isolation thus occasioned rendered necessary an addition to the dwelling



THE BUDA LIGHTHOUSE.



WORMS. WERDER. KUNO.



No. 3.

ne lightkeepers, and the lower story of the
shown in the sketch was then added.
determining the form for the eight wrought-
uprights that rise from the base of 56 ft.
ameter, and converge to an octagon of
10 in. at the summit, the tubular form
ther circular or angular) was discarded, on
unt of the impossibility of protecting the
ior surface from corrosion; moreover, it was not considered an economical form in first cost for such dimensions as the circumstances seemed to require; and the connexions of the several lengths of a pillar with each other, and with the horizontal and other framing, seemed to be attended with more expense and less simplicity than was desirable. The solid circular form presented a minimum of surface for exposure to oxidation, and for the wind to act upon; but the weight of the material would have been costly in the dimensions that would have been necessary, its price per ton being considerably beyond that of ordinary sizes of bars and plates, and the form offered no economy in the several connexions. It was then decided to form these uprights of a solid flat bar, 12 in. by 1 in., having on either side an obtuse-angled angle-iron, of 4 in. by 5 in. by $\frac{3}{4}$ in. thick; and these three bars, being riveted together with rivets of 1 in. in diameter, spaced 6 in. apart, gave simplicity and economy in the manufacture and the longitudinal connexions, with lateral stiffness in the pillar itself, and with the desired facility of rigid connexion with the other portions of the framing, horizontal and diagonal. The section of pillar here described is in no portion of less thickness than three-fourths of an inch, and all parts of it can be conveniently inspected and carefully scraped and repainted when necessary. At a height of 5 ft. above the level of the platform that carries the upper dome-shaped dwelling, the centre bar is reduced to 9 in. in width for the remainder of the height, the thickness of 1 in. being preserved throughout. The sectional area of the lower portion of the upright is 24, and the upper portion 21 square inches. The connexion of the several lengths of pillar is very simple and strong; the angle irons "break-joint" 6 ft., passing respectively 3 ft. above and 3 ft. below the meeting ends of the centre bars of flat iron; cover-plates 3 ft. long are used at the junctions of the angle irons, and at those of the centre-bar. For connecting these main uprights horizontally, octagonal and radiating beams and frames of "channel" iron and of girder or "joist" iron are employed, stiffened with angle-iron bracing.

Upon the central pile is stepped a cast-iron hollow column, 31 ft. in height, from which point radiate the series of beams that support the platform of the dome-shaped dwelling; and a similar arrangement sustains the other portion of the dwelling beneath. From the upper of these platforms rises the wrought-iron cylindrical shell, 6 ft. 6 in. in diameter, containing the circular staircase. This cylinder is of plate iron $\frac{1}{4}$ in. thick, and above the dome of the house the plates are 8 ft. 2 in. in length, corresponding to the distance of 16 ft. 4 in. from centre to centre of the successive stages of horizontal framing. The stairs are of cast-iron, and at every revolution a double width of tread is provided as a landing.

The beams of the lantern platform are of plate-iron, 15 in. in depth, rigidly attached to the central cylinder, and to the eight main uprights, and their angle-irons are continued outwards to an octagonal frame 18 ft. in diameter, surmounted by a wrought-iron railing. The flooring of this lantern platform is of wrought-iron chequered plates, riveted down upon the radiating beams.

It will be noticed that each space formed in the sides of this octagonal structure is crossed diagonally by tie-bars, and that similar tie-bars radiate obliquely from the central staircase tower to the external uprights, and each fitted with a right-and-left-hand screw coupling,—these ties are attached to the tower midway between the tiers of horizontal framing; eight of them ascend and eight descend to the junctions of the framings with the corner pillars. By this arrangement the weight of the central tower and stairs is sustained at intervals in the height of the structure by the eight corner pillars, and but partially by the dome and central pile. The sets of eight descending rods assist with other portions of the framing in preventing any distortion of the general fabric.

In the general construction of this lighthouse, Mr. Porter had to consider, not only rigidity in all parts of the structure, and the character of the foundation, but the importance of simplicity, convenience, and safety in the process of erecting abroad and in a very isolated spot. With these objects in view, the jointing of the several lengths of the external corner pillars was arranged to admit of each stage or tier of horizontal framing being permanently attached to the pillars at a distance of 5 ft. below the centres of their joints. The lower angle-iron cover-plate is thereby some 6 in. clear above the horizontal framing, each stage of which thus afforded, with the addition of a few scaffold-boards, a most secure and convenient platform upon which to place the materials for the succeeding lengths of external pillars and central tube with its stairs. The junctions of all these parts of the structure were thus conveniently riveted and bolted together, the diagonal tie-bars attached, and

their degree of tension adjusted with accuracy. In this way, the central stairs rising, *pari passu*, with the other portions of the fabric, a permanent and secure means of ascending and gaining access to these platforms of framing was provided as the work proceeded; and the small window openings are so placed as to admit of a person passing conveniently from the interior to the platform next below it, giving thus facility for periodical inspection and painting of all parts of the fabric.

The light exhibited upon this, the "Buda" lighthouse, is of the "second order": it is a revolving light of the kind known as dioptric, of Fresnel's system, and giving bright flashes at intervals of a minute. The "Baña" and Alfeques lights are fixed lights of the third and sixth order respectively. The light-rooms, lanterns, and lights were provided by Messrs. Chance; the light-room of the "Buda" is a twelve-sided polygon, 7 ft. high, of cast-iron, upon which is fixed a sole-plate projecting 1 ft. on the outer side, all round, forming a narrow footway for the convenience of the light-keepers in cleaning the lantern above it. This lantern is 8 ft. high, and composed of twelve gun-metal stanchions, bearing a gun-metal cornice, up n which is placed a double dome of copper, fixed upon eight gun-metal rafters.

The Florida Reef Lighthouse above referred to is at Key West, and is rectangular on plan. There is another lighthouse of the same character, of cast-iron tubular piles and uprights, but octagonal on plan, upon the "Coffins Patches" Reef, Florida. This latter is described in a paper by Mr. J. Vaughan Merrick, in the Journal of the Franklin Institute, March, 1856. Its height from the rock, upon which eight cast-iron discs of 8 ft. in diameter support the cast-iron tubular piles and standards, is to the water level 10 ft., and thence to the focal plane of the Fresnel light, of the first order, 137 ft. Its diameter at the base is 56 ft., and at the lantern gallery, 15 ft. The weight is given as about 300 tons. Our example, the "Buda" lighthouse on the Spanish coast, thus remains the most lofty and the lightest of its kind as yet constructed. It is due to Mr. Merrick to notice that his paper recognises the English origin of this class of structure upon Mitchell's screw piles, while he claims for America the disc foundation upon rock.

Cast-iron Lighthouses.

We add illustrations of some cast-iron lighthouses, constructed (in 1865) for the Russian Government.

The "Kuno" is, in height, 73 ft. from base to gallery; the diameter at the base being 18 ft. 10 in., and at the summit 9 ft. 3 in. The "Werder" is of the same proportions, and the system of construction with cast-iron plates is shown in figure No. 3. As the meeting surfaces of these plates are carefully faced or planed, the faintest possible trace of the joints can be discovered on the exterior: they are made more conspicuous in our woodcut for the better illustration of the subject. The circular apertures for the window-frames are bored and faced by machinery; the window-frames, with their hinges and fastenings, are like those of the doors, also of brass.

The floors are formed of wrought-iron beams, covered with chequered plates of the same material, having their edges planed.

The small "Worms" tower is of similar construction; its height from base to gallery is 38 ft., and its lower and upper diameters, respectively, 13 ft. 5 in. and 9 ft. 3 in.

In speaking of lighthouses of this kind, the name of the late Mr. Alexander Gordon should be mentioned as that of one of the earliest constructors.

New Piers.—The Board of Trade have reported to the House of Commons that a provisional order has been made sanctioning the construction of a new pier at Ramsgate, commencing near the entrance to the "Établissement," and extending seaward for about 600 ft.; also for a pier at Westgate, extending from the cliff seaward for about 1,000 yards; also that provisional orders have been or will be made for a floating-dock at Penzance, and for piers, quays, sea-walls, or other harbour works at Cromarty, Fortrose, Lybster, St. Anne's (Lytham), Skegness, Strachur (Loch Fyne), Totland Bay, and Whitehall, Stronsay. In some of these cases the Board of Trade require a modification of the powers for which application was made.

THE PULSOMETER, THE CONTRACTOR'S PUMP.

This is an age of specialities, and the tendency to provide appliances specially designed for use in individual trades is undoubtedly on the increase. One of the special requirements of the contractor is a means of readily raising the gritty, sandy, or muddy water usually met with in foundations, with the least possible trouble in the shortest possible time, and without the expense for repairs incidental to the use of more or less complicated machinery. Another, but very similar requirement, is a means of keeping deeper excavations, such as wells, free from water during the process of sinking, or of emptying the cylinders now so largely used in the foundations of bridges and important buildings. There are many cases, especially in the first of the operations we have alluded to, in which chain-pumps or centrifugals can be and are advantageously employed, but each of these systems has its disadvantages; the cost of fixing, and difficulty of altering as the work deepens in the former, and in the latter the trouble of the strap, the impossibility of lowering the pump as the water recedes; and in both there is the necessity for an engine which has, no matter how awkward the ground may be, to be placed within a small distance, and in an exact relative position to the pumping apparatus.

A form of pump which can be very quickly fixed at any distance from the boiler, which requires the intervention of no steam-engine, and which will raise to any required height water containing a large per-centage of sand, without being stopped or injured by the process, is thus a great desideratum in the cases to which we have alluded, and the requirements we have mentioned appear to be met by the Pulsometer, an apparatus to which we called attention a year or two ago, before it was much known in this country.

The favourable opinions we then expressed have been amply justified by the rapid success the invention has attained, and the extent to which contractors and builders have availed themselves of it affords a proof of the need that was felt for some simple apparatus.

It is now no longer a novelty to find a pump hung down a narrow opening on a rope or chain in a confined space where five years ago it would have been considered impossible to place any pumping apparatus, and to have it continue for days and nights together to work without attention, the steam and discharge being added to, length by length, as the water recedes.

One instance which has come under our notice of its very satisfactory use in a position in London, where it can be readily seen by those who are interested in such matters, may be cited as evidencing its special fitness for the operations to be performed, and we consider it to possess sufficient general interest to deserve special notice.*

In the rebuilding at the corner of Spring-gardens of Messrs. Drummond's Bank, by Messrs. Waller & Son, contractors, of Belgrave-square, the foundations had to be carried, owing to the nature of the ground, to a depth below the road level of 30 ft., and so large a quantity of water was met with that steam pumping became necessary, and it was decided to use the pulsometer. A small well already existed on the premises. This was tubbed, and the pulsometer placed above it, simply resting on a couple of pieces of timber, and a cast-iron rising main, 3½ in. diameter, is taken up from the pump to a height of 30 ft., and then carried across to a tank placed at a height of 32 ft. on the scaffolding which is to be used in the construction of the building. Steam is brought to the pulsometer by a small pipe leading from the boiler of the portable engine used for grinding mortar, &c. Two suctions were made use of whilst the concrete foundations were being got in; one of these, still used, draws its supply from the well above alluded to; the other, which was flexible, and 60 ft. long, was taken to whatever part of the excavations the water was found to flood. Separate sluice-valves are fixed to the two suction-pipes, so that either may be shut off at will. The pump discharges into the right-hand tank at the rate of about 8,000 gallons of water per hour, and so heavily charged with sand was this water, whilst the excavations were proceeding, that this tank was rapidly filled with sand, which had to be constantly remo buckets. As a supply of clear water purposes was required, the left-hand tan arranged to receive the clear water fro first tank by a pipe connecting the two at the top,—that which is not required r away by an overflow-pipe. The clean thus obtained suffices for all the operati the building, so that there is no need supply from the main.

There is no necessity, owing to the rapi the vacuum formed by the pulsometer, for ing the sand from the suction-pipes of the as is usual when dirty water is raised by other pumps, and no stoppage takes plac withstanding the very large quantity o which has accompanied the water. A la attends to the stopping and starting pulsometer, but as long as it has water to it requires no attention of any kind. Alto we think that few contractors who ha opportunity of inspecting the arrangemen hesitate to adopt so satisfactory and sir means of keeping down the drainage into fo tions, and at the same time of utilising s the surplus water.

Several other works recently accomplish the pulsometer in the neighbourhood of L might be cited, amongst them the sinking first part of a well for the Lion Brewery Co where large quantities of gravel had to be r a well at Woolwich Arsenal, successfully under similar conditions, the pulsometer performing the part of an excavator as we pump; and a well recently sunk in the build the Metropolitan Board of Works by M Hook & Oldrey, who express themselves as pleased with the adaptability of the pulso for pumping water in confined spaces.

We do simple justice when we comme Pulsometer Engineering Company for the e they have shown in perfecting and br into use this pump.

* We allow the proprietors to give a pictorial illustration of their useful apparatus in our present issue. The works are at Battersea, and the offices, 61, Queen Victoria-street.

NORTH PORCH, WESTMINSTER AB

In May, 1878, there appeared a notice restoration of the eastern part of the porch, originally designated Solomon's no doubt from its extreme elaboration of tecture and sculpture. This porch ha mutilated and disguised by a subsequent which seems to have borne the same nam was attributed to the period of Richa This second porch was removed early eighteenth century, and further mutilati suppression followed; not the least of were the raising of the floor of the thereby destroying the grand proportions original openings, and the omission of the ment. On cutting away the restoration eighteenth century a diligent search wa for any missing features, several of whic found, most of them confirmatory of those the late Sir Gilbert Scott, with his pr judgment and experience, had been a supply.

It was Sir Gilbert Scott's wish to p next with the main central entrance, and ings and estimates were, under the direc the Dean and Chapter, submitted; but afterwards thought advisable to proceed the west portal of the porch, and lea central portal to a subsequent period.

The west portal was commenced early in and considerable progress has been made jambs of the doorway are of Purbeck mar which some parts even now retain a p surface where they have been covered adjacent stonework. There will be a lintel resting on marble corbels and c Against the jambs will be stone statues, on corbels corresponding with those in the and front of the porch.

These features, in conjunction with the oak doors covered with ornamental iro will produce an effect of dignity and b and there will be good reason to reta designation which the reverence of ou fathers bestowed on these entrances,—"Solomon's Porch."

Many pieces of wrought marble and have been found, confirming the fulness of Sir Gilbert's design. Whe whole area in front, inclusive of the c portal, is lowered to the proper and o level, then the full proportions of this front will be appreciated. This, it is will soon lead to the lowering of the surf St. Margaret's Churchyard, or, at least,



THE "PULSOMETER" AS EMPLOYED AT THE BUILDING FOR MESSRS DRUMMOND'S NEW BANK, CHARING CROSS, LONDON.



"SOLOMON'S PORCH," WESTMINSTER ABBEY.



FROM THE DESIGN OF THE LATE SIR G. G. SCOTT, R.A.

rn part near the abbey, and also the
ng of the enclosure of the north green,
although partially done some years ago,
equires to be deepened to show the
sses and their base-moulds in their proper
tions.

works are being executed by Messrs.
& Sons, of Westminster, who have for
ears past been employed upon the resto-
of the Abbey Church and Chapter-house.

MEDIÆVAL PARIS.*

URE herself seems to have selected the
ns of several of the great capitals of the
One has but to look at the map to see
his principle applies to Constantinople,
h, Cairo, Madrid, and some others; for,
ome cities are situated by mighty rivers
carry the commerce of the world to their
and warehouses, others are placed in
entral but less accessible positions, in the
entres of the countries of which they are
he key of defence and chief seat of govern-

Paris, which has been styled the capital
world in one sense, possesses none of
attributes, none of these advantages; for
either central in position, nor can that
stream on whose banks it is placed assist
er by natural defence or commercial
How, then, does it happen to be the
of France? The reason must be sought
re. Bordeaux, Lyons, Marseilles, and
might claim these natural advantages
ch I have alluded, but Paris can only
he accident of history. That little island
centre of the Seine, to which a small and
tribe would flee as a last place of refuge
s enemies, was the nucleus around which
ges would erect the gayest and brightest
of the civilised world.
rospective glance at its first recorded
will materially assist us before approach-
subject of the paper.

before the invasion of the Romans, was
with populous towns, and Cæsar, in his
able campaign, had to take 800, regularly
g some of them.† Paris, or, as it was
lled by the invaders, Lutetia, fell before
nant, Labienus, of the proconsul, at the
f a single combat. Camulogenus, the
the confederated tribes, thought it too
cant to defend, and set fire to its hovels
t and clay. Cæsar afterwards allowed
o be rebuilt, but accorded neither the
e of a colony nor a municipium or Julian

not dwell longer upon this period of the
of the chief town of the Parisii, but will
another period, when one begins to see
early through these early mists, and one
n firmer and safer ground.
ia, or, as it must be now first named,
fter a period of comparative repose,
again in the front about the end of the
entury of our era. Christianity had
apid progress in those forests lining the
f the Seine. Dionysius the Areopagite,
re St. Denis of France, had preached
pel and received the crown of martyr-
ppressed and ground down by a heavy
to imperial Rome, the inhabitants at
nade common cause with some neigh-
tribes, and rose in arms against the
of the world. Maximienus Hercules,
d with Diocletian (A.D. 286), soon sup-
his last effort of the barbarian races, and
an to shed a civilising influence the arts
ty destined in after-ages to play so im-
a part in their diffusion elsewhere. Con-
Chlorus (A.D. 292-306) built a palace
ere Julian the Apostate afterwards lived
years, and to this day remains of this
e to be seen in the Palais des Thermes,
Cluny, and here he was proclaimed

. 365, Valentinian visited it and his son
and it was from Paris that the latter
his expedition against the Allemani,
Paris that he (A.D. 379) marched
faximius, who had usurped the empire,
in the expedition, and from that time
eased its hold, and fell back on to its
to make its final stand against the
g hordes who threatened its very

efore the Architectural Association on the 14th
. George H. Birch, A.R.I.B.A.
e Thierry, Histoire des Gaulois, t. iii., p. 281.
livre vii., chap. lxii.

The early traditions of Christianity at this point throw a little light on the obscurity. Victorinus, a bishop of Paris, was present at the council held at Cologne (A.D. 346), and Paul, another bishop, was present at a council held at Paris to affirm the divinity of Our Lord against the Arians; and Prudentius built a church on the island of the city and dedicated it to Our Lady. Remains of this church were discovered in 1847. This church was afterwards sumptuously rebuilt by Childebert in the sixth century, and it is most probable that the remains discovered in 1847, and preserved in the Palais des Thermes, are those of Childebert's basilica, and not that of Prudentius, for Fortunatus has handed down a description which would agree with those remains, which consist of portions of a mosaic pavement and three columns of Aquitanian marble, one of which is nearly complete, with astragal and cap, figured in the "Itinéraire Archéologique de Paris, par M. de Guilhermy."

In extent the Roman city of the Parisii occupied the islands of the Seine, and was connected with the right and left banks by two bridges on the site of the present Pont de Change and the Petit Pont, from the two extremities of which branched the two main ways to the north and south. The Palais des Thermes would naturally be the villa residence of the Roman prefect "extra muros" on the left or southern bank, and on the northern or right bank, close to the church of St. Gervais, have been discovered from time to time the remains of a large cemetery which we know must have been "extra muros." From this time follow a number of legends, which, however interesting, are scarcely within the scope of this paper; a siege of five years by the Franks and the Huns, under Attila himself, in which the tutelary saint of Paris, St. Geneviève, figures conspicuously, is one among many, but in relief against this shadowy background stand the figures of Clovis and Clotilda.

In the meanwhile the city had grown; no longer confined to the islands of the Seine, it occupied a considerable tract on each bank of the river. Churches had multiplied, Childebert had founded the Abbey of St. Victor, afterwards St. Germain des Près. Clotaire and Charibert esteemed Paris their capital, but the latter having left two daughters, the kingdom of Paris was absorbed, and one hears but little of it during the remainder of the Merovingian dynasty.

Under the Carlovingian dynasty, Paris was abandoned by the first monarchs of this race. Charlemagne, the mighty emperor of the west, fixed his seat of dominion nearer to the German portion of his vast dominions, and Paris was left to the government of counts. The names of several have been preserved. Louis le Débonnaire, A.D. 814, visited Paris, and inspected the abbey churches of St. Geneviève and St. Germain des Près, and the cathedral church of St. Étienne, Childebert's basilica, to which allusion has been made before.

The repose of the city, undisturbed during the internecine warfare waged by the sons and successors of Charlemagne for the division of the empire, was now soon to be troubled by those fearful pests the Norse pirates. From 845 to 886 A.D. it was but one succession of pillages and burnings by these miscreants; bought off, as in Saxon England, for a time, they only returned to commit fresh ravages and extort fresh ransoms.

To prevent them from ascending the Seine a bridge was built much about in the position of the present Pont des Arts, by command of Charles the Bald the piers were of masonry, with wooden drawbridges between, and protected by a tower. This bridge was very stoutly defended by the Parisians during an attack and siege by the Normans, A.D. 886, which lasted for some time, and during which the sufferings of the inhabitants were terrible. Count Robert and Eudes and the Bishop Gozlin particularly distinguished themselves in this truly heroic defence,—neither the first nor the last which Paris was fated to undergo.

Disastrous as these repeated inroads must have been, yet they had this effect,—they consolidated the power of these Counts of Paris, who little by little broke away from the crumbling empire left by Charlemagne, and adding to their former title that of dukes of France, gathered around them a nationality especially Frankish as a bulwark against the Norman invaders and the German emperors, whose sway they once acknowledged.

Eudes was recognised as king at Compiègne, A.D. 888, and fixing his seat at Paris in the centre of the fiefs who had always obeyed the authority of the Counts of Paris, such as Meaux, Melun, Provins, Étampes, Chartres, and Poissy, this little confederation soon became the centre of a great kingdom, whose origin was to a great extent caused as much by the great ethnical division of races,—the Celtic population of ancient Gaul, and the Teutonic races of Germany,—as by the personal courage of the Counts of Paris.

You will now understand my statement that the capital of France owes its origin to an accident. By the irony of fate, Paris, that city which above all others has rendered itself famous for its hatred of its rulers, especially its kings, owes its very existence to the house of Capet, now dethroned and in exile.

But a period of repose succeeds these wars and invasions, and Paris, enlarging its borders, now begins to present an appearance which it is the object of this paper to describe. Literature and the arts once more begin to assert their sway. Crushed out as they had been, and extinguished to all appearances, on the banks of the Tiber, in the ashes of Imperial Rome, they re-appear on the banks of the Seine, and the schools of Paris transmit an honourable reputation to posterity. Peter Lombard, William of Champaux, Peter Comestoe, and the illustrious Abelard, here attract scholars from all parts of Europe, and form colleges, increasing the size of the city, and forming a quarter of their own on the left bank, still known to these days as the Latin Country, or Quarter.

It will be interesting to turn to the testimony of one of our own countrymen, John of Salisbury, who visited Paris in 1176. He thus writes:—

"Parisius cum viderum victualium copiam, Lætitiam populi, reverentiam cleri, et totius ecclesiæ majestatum et gloriam et varias occupationes philosophantium, admiratus velut illam scalam Jacob, cujus summitas cœlum tangebat, erat que via ascendentium et descendentium angelorum, coactus sum profiteri quod vere Dominus est in loco ipso et ego nesciebam. Illud quoque poeticum ad mentem rediit (felix exilium cui locus este datur)."

Although I have heard many of my countrymen extol Paris in the warmest terms of admiration, John of Salisbury outvies all; to liken it to Jacob's ladder, by which angels ascended and descended to and from heaven, is rather a comic application of Biblical knowledge; perhaps if he had lived in these times and seen the Paris of to-day, he might have turned to the Classics for a quotation, and with the ladder still in his mind's eye, muttered something about *facilis descensus averni*.

Louis le Gros, occupied as he was during his reign in reducing to obedience the great vassals of the duchy, to consolidate his kingly power, occupied himself very little in the adornment of his metropolis, but under Philippe Auguste great progress was made.

The vast suburbs, or, as they are termed, faubourgs, which had originally sprung up around the principal roads leading from the capital and around the large abbeys, and which, in the event of war, would have become a pressing danger, are now, for the first time, enclosed within the walls. These faubourgs were those of St. German l'Auxerrois, the beautiful Bourg, the Abbey, Thibourt, the cultivated fields of Saints Catherine and Gervaise, and the hermitage of Notre Dame des Bois. Philippe before starting for the Holy Land ordered the citizens to build a wall provided with towers and gates, and this was commenced on the north side first, and completed in 1208, and afterwards the south side was taken in hand and completed about the end of his reign.

In all views of old Paris, the Tour de Nesle forms a very bold and striking object; the gate next to it is that called the Porte de Buci, then follow in order St. Germain, St. Michael, St. Jacques, Papal Gate, St. Marcel, St. Victor, and at the point of junction of the wall and the river was probably another tower, similar to that of Nesle; crossing the river and the island of St. Louis, the next is the Tour Barbeau, then follow the gates of St. Paul, Baudoyer, Barbette Braquelde, St. Martin, St. Denis, another not recorded, close to St. Eustache, then Montmartre, Coquillière St. Honoré, ending at the river with a large tower at a corresponding point to the Tour de Nesle, these two towers forming the defences of the bridge at each end. By this arrangement the great tower of the Louvre was excluded; it formed a strong fortification of its own, resembling our own Tower of London. The royal residence was situated on the Ile de Cité, at its western extremity, but from its unpleasant

surroundings,—the mud of the streets, the cries of hawkers, and the rolling of wheels,—Philippe was so annoyed that the first edict for cleaning and paving the streets, was issued. We have another parallel in London to this: our royal residence was at Westminster, and when abandoned by the sovereign, the great courts of justice, over which the monarch was presumed to preside in person, remained as at Paris, and the Palais de Justice is now located where it had always been from time immemorial, in the ancient Palace of the Kings; La Sainte Chapelle, and a few outer walls, such as the Conciergerie, the Salle des Pas Perdus, the clock tower, and one or two other towers alone now remain of this palace. More fortunate than Westminster, it has preserved its beautiful chapel, while that of St. Stephen's was burnt in the last fire, leaving only the crypt, restored by Sir Charles Barry; but Westminster has preserved its grand hall and cloisters, while the walls only of the great hall of the French palace remain in the present Salle des Pas Perdus. Philippe Augustus, finding, as before mentioned, that the ancient palace was no longer a convenient or salubrious abode, from the contiguity of houses, built the great tower of the Louvre, and fortified it with all the art that military science was then capable of (A.D. 1204). It possessed, like all other feudal fortresses, a great central tower or keep, 144 ft. in circumference by 96 ft. high, and the usual collection of towers and walls forming outer and inner bailies or wards, and was used principally as a State prison, and was kept pretty well occupied. Among the principal prisoners immured within it were Ferrand, Count of Flanders; Enguerrand de Coucy; two other Counts of Flanders, Guy and Louis; Jean IV., duke of Brittany; Charles II., king of Navarre; Le Captal de Buch; and many others, all for the crime of *lèse majesté*.

Reference has been made before to the bridges spanning the river,—the two ancient ones, Le Grand et le Petit Ponts, and the one built by Charles the Bald.

Le Grand Pont, which afterwards received the name of Pont au Change, or Change Bridge, from the money changers who fixed their quarters on it (for, like Old London Bridge, these Paris ones were all covered with houses), was defended on the right bank by a fortress called the Grand Châlet, while a similar structure on the left bank protected the entrance to the Petit Pont. The bridge of Notre Dame was first called Pont de la Planche de Mibray, about which there is the following story. It had been rebuilt in 1413, but gave way in 1499, and the Provost of the Merchants, corresponding to our Lord Mayor, was put in prison with the sheriffs for gross carelessness in not looking after the bridge and taking proper precautions for public safety. Several skilled bridge-builders and master-workmen from Tours, Orleans, Amboise, Lyons, and other places, were called in to give their advice, and to make a representation or drawing of a new bridge. But a foreigner, Brother John Jocundus, of Verona, obtained the first premium, and with the co-operation of two Frenchmen carried it out. The Pont St. Michael was the next in antiquity. All these preceded the Pont Neuf, not commenced until 1578.

The first wharf or quay was commenced in 1312, by order of Philippe le Bel. It extended from the convent of the Augustines to the Tour de Nesle.

At the close of the thirteenth century, the churches, parochial and otherwise, but not including the cathedral, the abbeys, and other conventual churches, were thirty-six in number. In the Ile de Cité there were forty-three streets, 282 streets in the quarter of the right bank, seventy-six streets on the left bank, and eight others extra-mural; the number of inhabitants was estimated at 215,861, of whom 11,727 rateable and paying taxes lived on the right bank, 1,241 in the city, and 2,232 on the left bank. A citizen of Paris was compelled to contribute to the expenses of the city, to build or buy a house, and to live there or in the city from All Saints' to St. John's Day, or at least leave his wife there if he were married, or his servant if otherwise. During the fine weather he might absent himself, but for the principal feasts of the Church both he and his wife were to return, unless they could legally attest to a necessity for absence.

Paris was formerly only the seat of a bishop, and so continued from the time of St. Denis to A.D. 1622; it was one of the suffragan sees to the archbishopric of Sens, but Louis XIII. obtained of Pope Gregory XV. a bull erecting it into an archbishopric, which his successor very largely endowed, and created it a dukedom and a peerage of France. The ceremonies attending the installation of a bishop were very magnificent; the provost and sheriffs met him on his entry into the city, and conducted him to the principal portal, where he took the oaths. They were all on horseback, and the bishop on a white palfrey.

The Cathedral Church of Our Lady at Paris would alone occupy a whole evening. The description must necessarily here be rather brief. Reference has before been made to the Basilica, erected by Childebert on the site of a more ancient fabric.

Gregory of Tours distinctly says that there were two churches very close to one another, one situated on the southern portion of the present cathedral, dedicated to St. Stephen the proto-martyr, the other, a little to the north-east, to St. Mary.

In A.D. 829, the Council of Paris assembled in the nave of St. Stephen's, which was the largest and most sumptuous of the two. In the twelfth century, Étienne de Garlande, who died 1142, made considerable alterations and additions to the church of the Blessed Virgin, and Suger, the famous abbot of St. Denis, adorned it with some magnificent stained glass, and it gradually eclipsed in splendour its more ancient neighbour, St. Stephen.

Maurice de Sully had hardly attained to the episcopal dignity when he determined to unite these two cathedrals into one, and laid the foundation of the existing Notre Dame in 1163, Pope Alexander III. himself assisting; in 1182 it was sufficiently advanced that the High Altar was consecrated by Henry the Papal legate, and Heraclius, patriarch of Jerusalem, the same who dedicated our Temple church here in London, and had visited Europe for the purpose of preaching a crusade, officiated in the new choir; but at the death of Maurice in 1196 the choir was not completed, as in his will he directs 5,000 livres towards the lead roof to be paid.

The works actively progressed under his successor, Eudes de Sully, 1197 to 1208, and in the latter year the great west front was commenced, under Peter of Nemours, in 1218. The last remains of the old basilica of St. Stephen were removed to make way for the south transept. Under Philippe Auguste the west end was completed as far as the base of the gallery connecting the two towers, and the magnificent appearance of this front influenced the rebuilding of the two transept fronts, which before were of a sterner and less elaborate description.

An inscription on the south transept attests that the work was undertaken by Jean de Chelles, in honour of the mother of Christ, 1257. The north transept and first chapels and the Porte Boriga, abutting on the transepts, followed, and the upper part of the towers and the intermediate gallery were completed very shortly afterwards.

The end of the thirteenth and commencement of the fourteenth centuries saw a great change in the original grand and simple plan of the cathedral. Jean de Paris, archdeacon of Soissons, left a large sum for the addition of the lateral chapels of the nave between the buttresses. Those around the ambulatory of the apse date from the commencement of the fourteenth; as do many other considerable changes, both internally and externally, which totally altered the original severe style. M. Viollet le Duc has very carefully shown all these in the "Dictionnaire Raisonné."

The present appearance of this truly grand cathedral, which, in spite of the storms of seven centuries, and those other storms, even more destructive, of human passion and violence, and robbery and wrong, is marvellously majestic. The stern and simple grandeur of its west front, incomplete as it may be without its crowning spires (and long may it remain so), still dominates over the Paris of to-day, as it did over the Paris of the Middle Ages, lifting itself up like a rock, and defying, as it were, the surging waves of tumult and strife, which have been successively dashed against its base. It has looked down upon the strife of Burgundians and Armagnacs, and excesses of the Cabocheans, the Huguenots, and the fatal feast of St. Bartholomew, the League and the Fronde, the military glories of the "Grande Monarque," Louis, the infinitesimally Little, that awful eighteenth century of shame and its dire retribution, the Terror, the Goddess of Reason, and the dramatic spectacular extravagances of Napoleon; it looked down upon all this through the age it still looks down upon "Liberty, Equality, Fraternity." Silently it teaches to a thought world that lesson of eighteen centuries,—Fall, the Redemption, the Judgment, sculpt with all the art that religion could prompt mind to conceive and the hand to exec sermons in stones that even the most unlea as they run may read.

The Abbey Church of St. Germain des both in point of size and antiquity, ranks in importance to the cathedral. Situated a extreme south-west of the city, it was once side the walls, but the frequent depreda of the Normans caused it to be enclosed fortified and defended by a moat.

Childebert, on his return from a victo campaign against the Visigoths, was move St. Germain, bishop of Paris, to found abbey, to preserve the relics which he wrested from them, and amongst these wa tunic of St. Vincent, and the day on whic died St. Germain dedicated it to the Holy and St. Vincent. St. Germain dying very after, such miracles took place at his to the oratory of St. Symphonian, in the cry the great church, that he soon became m fashion than St. Vincent, and the church was afterwards called by his name. Nothing t knowledge remains of the splendid buildi the first home of the Benedictines in Paris surrounding the church, with the exceptio pile rebuilt during the Renaissance fo abbot's lodgings, but the church remains very perfect state, although shorn of two spires.

The plan is that of a large transeptal c with apse, ambulatory, and radiating ch towers in the very unusual position of fla the choir in the angle formed by the tran and a large western tower and spire.

It served as a place of sepulture for a kings and queens of the Merovingian dy until Dagobert founded and built the abb St. Denis, which became in after-year Westminster Abbey of France. The refe built by the same architect as the Chapelle, Pierre de Montereil, was looke as the most magnificent anywhere; vaulted, 115 ft. long, 32 ft. wide, and 47 f to the vault. Close adjoining to this w Chapel of Our Lady, only rivalled by the Chapelle. Internally, the nave of the church consists of five bays, then the tra of only two bays in depth, a choir of fou and an apse with five bays and apsidal c of very small projection. Unfortunate the architecture, it has been painted a utterly destroying all interest in it, al imparting another from the excellence painting by the late Hippolyte Flandrin date of the work in the nave is el century, that of the choir slightly later, Pointed arch, in conjunction with the c first makes its appearance. Pope Alexan dedicated the church in 1163, and the certain similarity in the magnificent caps of the columns in the choir to thos nave at Notre Dame. I am sorry to s many of the caps of the nave are moder originals are in the Museum at the Hôtel but as they have all been more or less and painted, it is now very difficult to which are ancient and which are Turned into a manufactory of saltpetre that demoniacal period of the Revolution pretty nearly utterly destroyed, and wor shared the fate of its superb abbey b Many of the royal tombs, which were firs ported to the Museum of the Little Aug were afterwards removed to St. Denis. closing this very brief description of th old abbey, there are one or two point calling attention to. The first is t marked deviation of the choir from the the nave; secondly, the very rare marbles worked up in the columns of forium stage, evidently the remains of bert's basilica; and, lastly, it was in th of this abbey (for the old abbots had pl seigneurial rights) that those horrible m first commenced, giving rise to that si term, *Septembrisés*, applied by those d the revolution to the horrible work month.*

Obituary.—Mr. Lewis Stride, Bedford-row, died suddenly on the 12t his 56th year.

* To be continued.

ANAL AND CULVERT TABLES.

ese tables* Mr. Jackson aims at extreme cy in calculating the velocity and quantity er flowing in rivers, water-courses, and s. Hitherto, only the two chief condi- f a stream have been taken into account, e mean radius of its cross section, or its lic mean depth, and the hydraulic inclina- the stream produced by the force of acting on the mass of water; it being ood that it is a stream of water in train ch reference is made; if the stream be rain the length also is taken into account. ckson complains that English engineers regard, so exactly as is desirable, the on of the surfaces over which the water as the beds of rivers and streams, the s and sides of water-courses and conduits, internal surfaces of pipes and culverts; has based upon the investigations of Herr of Berne, a series of tables constructed modification of Kutter's formula, in very great exactness is aimed at. MM. and Bazin had in 1865 advocated that s in contact with running water should rated into four degrees of roughness, as y smooth surfaces of pure cement and timber; (2) smooth surfaces of ashlar, ork, and ordinary planking; (3) mode- mooth surfaces of sections constructed le; and (4) sections in earth of all kinds. e Herr Kutter adds a fifth degree, viz., in earth, blocked with detritus, or over- with vegetation; but it is so evidently ble to ascertain the quantity of water uch conditions with anything like accu- at formulæ applied to such conditions of no use at all. In any such case some eans of gauging the water would have esorted to than that of attempting to n the sectional area of the stream and er.

ligating recorded experiments and e observations, Herr Kutter extended going degrees of roughness to twelve in and assigned values to them of their g effects upon a stream of water. They a the following order and relative

—

planed timber, 9; plaster in pure cement, ter in cement, one-third sand, 11; un- imber, 12; ashlar and brickwork in good a, 13; canvas lining on frames, 15; a good order, 17; rubble in a damaged ; canals in very firm gravel, 20; rivers als in earth, in perfect order and regimen, r free from stones and weeds, 25; rivers als in earth, in moderate order and , moderately free from stones and 0; rivers and canals in earth, in bad d regimen, overgrown or impeded by 35.

ven this extended classification does not Mr. Jackson, and he desires that it be d to include earthenware, glazed and ; cast and wrought iron, painted or and in various conditions; but for the he classifies artificial materials for atercourses as follows, viz.:—

ooth plaster and glazed material, 10.

ular, brickwork, cast and wrought iron, azed pottery, 13.

ible, 17.

anals in very firm gravel, in perfect d regimen, he assigns a relative value or canals in earth, above the average and regimen, 22½; for canals in earth, air working average order and regimen, canals in earth, below the average in regimen, 27½; for canals in earth, in d order, slightly damaged and partially rn with weeds and obstructed by 30.

alues derived by Kutter from experi- natural channels are as follow:—

rivers, including the Lech, the Rhine, , and the Ohio, all described as being free from obstruction, from 20 to 24·3; other rivers, including the Seine, the Speyer, the Saone, the Elbe, and the pi, from 25 to 29·4; six other rivers, d by detritus, from 30 to 35.

ificial channels, Kutter has three, from 10 to 11·1 in cement; three in nd brickwork, from 12·9 to 13·3; in rubble, varying from 14·5 to 23; rammed ground, from 16·3 to 19; and nine watercourses in earth, varying from 18·4 to 33.

There are wide differences in the nature of the surfaces over which water flows, but it has not been usual in this country to take account of them. Whether the surface be clay or gravel in rivers and watercourses, brick or stone in water-courses and conduits, or cast-iron pipes, the same co-efficient of velocity has been applied; except that in the case of pipes coated with pitch some allowance has latterly been made for increased velocity due to extreme smoothness of surface. Gaugings of large volumes of water flowing through pipes thus coated have shown that the quantities are somewhat greater than the usual formulæ would indicate; but this has been, probably, in the majority of cases an allowance not actually made in dimensions, but conceived as a set-off to some of the inevitable inequalities of a line of pipes.

In the case of a rough bottom and sides, such as rubble or rough stone pitching, an allowance is made in the dimensions according to judgment of the degree of roughness; and, indeed, with all the attempted accuracy of Herr Kutter, it must ultimately be a matter of judgment in each case as to what co-efficient to apply. We will not go so far as to say that the refinements of the author are too extreme, or call for too much time in finding the mean velocity of a stream of water; for accuracy of measurement of water is highly desirable, but it does seem to be practically of little use to calculate very nicely the retarding influence of different kinds of surface of a watercourse unless at the same time equal exactness of measurement of the dimensions of the channel can be obtained.

*and Culvert Tables, based on the Formula of r Lowis D'A. Jackson, A.-M.I.C.E. London; llen & Co.

MOVABLE BRIDGES.

THE INSTITUTION OF CIVIL ENGINEERS.

At the meeting on the 11th of March, the paper read was on "Movable Bridges," by Mr. James Price, C.E. The term "Movable" was used as being more general in its application than any other. Such bridges mostly occurred where delay of traffic was to be avoided. Hence rapidity of movement and minimum of repairs should be sought. There should be no unnecessary weight; for this reason steel was preferred to iron as a material, saving 25 per cent. of the weight of the parts strained. Movable bridges were divided thus:—1st, bascules; 2nd, springs; 3rd, traversing; 4th, lifts; 5th, pontoons.

1st. Bascules were illustrated by the railway bridge over the Ouse at Selby, erected in 1839. The largest of this kind had been opened at Copenhagen in 1867. Overhead beam bascules were much used in Holland, the beams being usually of timber. The author had erected a large single flap bascule over the Shannon, to carry a railway; the floor was open, to let the wind through when the flap was raised; it acted well. 2nd. Swing bridges formed the most important class, and all large structures in Europe and in America belonged to this type. Double passages were preferred, as obviating heavy counterpoise and wind stress; instances of both occurred in the South Bridge, Hull. Swing-bridges were classified thus:—Those that turned on rollers only; those that turned on rollers and a centre pivot; those swung entirely on centre pivots; those lifted on a water centre and tilted; those relieved by hydraulic pressure acting upwards at the centre; and floating swings. Unlimited hydraulic power available for turning was not conducive to obtaining light and well-designed structures. The earliest swing-bridges were of timber; then cast-iron was employed; and now they were universally of wrought iron. The Brest Bridge, having two leaves, spans the largest passage crossed by any movable bridge: it turned on rollers. To the same class belonged also the railway bridge over the River Ouse, at Goole, which was almost the largest railway movable bridge,—it crossed two passages of 100 ft. span each. There were several bridges of this kind at Birkenhead. The Duke-street bridge rested on rollers 5 ft. in diameter; it was not balanced over the centre, and was difficult to open. Athlone Bridge, over the Shannon, had rollers only 8 in. in diameter: it worked badly. The great majority of swings turned on rollers and a centre pivot, including all the large American bridges; the most notable was the Raritan Bridge, a double swing, with two passages of 216 ft. in width each. This bridge, which had been erected by the Keystone Bridge Company, of Philadelphia, was peculiar for being lifted entirely off its abutment supports, thus needing no wedging up. To this class belonged, also, the tilting bridges generally adopted in France, at Dunkerque, Gravelines, Havre, Cette, and Toulon. The same type had likewise been adopted in North Germany. The principle might be described thus:—The whole bridge being slightly out of balance, each leaf, or the heavy end, was set up by various methods; and when the abutment support was withdrawn, it dropped on two or more wheels, the main weight, however, being carried by the centre pivot. A bridge of peculiar construction had been erected at Grimsby, to carry the Manchester, Sheffield, and Lincolnshire Railway; it had no tail end or counterpoise; it was anchored at the pivot, and bore with a pressure of 122 tons on a pair of wheels near the edge of the passage. The Dutch type belonged to those turned entirely on centre pivots. They were to be seen at Rotterdam and Velsen, on the North Sea Canal. The girders were under the roadway; and the point of support was brought above the centre of gravity by means of a long cone passing up between the girders. In those lifted on a water centre and tilted, the leaves were slightly out of balance. When the centre was raised by hydraulic pressure, the bridge tilted so as to bear on wheels. In some cases, as at Leith and at the Albert Dock, Hull, the tail-end was heavier, and dropped with its wheels on to a tramplate. Or, as at Marseilles, Millwall, Stoboross (Glasgow), &c., the tail-end was lighter, and rose in tilting till its wheels bore against the underside of an inverted tramplate fixed round its sweep. The dimensions and arrangements of the Leith and Marseilles bridges, which were constructed in the same year (1874), were compared. Swing bridges, relieved at the centre by hydraulic pressure, were represented by the Tyne Bridge, which was the largest and most perfect in this country, having two passages of 110 ft. each. Floating swings, as constructed by the author in Dublin, were used, one to carry a double carriage-road, and the other a single line of railway; the latter acting also as a turn-table for wagons, so as to shoot them across the dock-entrance. The principle was to support nearly all the weight on a submerged buoy, which turned on a centre pivot on the bottom. These bridges were effective, and suitable for places where the foundation was bad. Traversing bridges required much power. The larger ones were represented by the bridge at Swansea, over the River Tawe, in which the heavy end was across the passage. In swing-bridges that turned on rollers, by withdrawing the supports from the long end, the tail-end rose till the wheels came level with an upper traversing rail, upon which the bridge was rolled back. In the case of the Millwall Dock, the centre was raised by hydraulic power, and the light end, which crossed the passage, was held down by horns, that prevented its rising; hence the heavy end rose to the proper level to be rolled back.

CONCRETE BRIDGES.

At a recent meeting of the Institution of Civil Engineers of Ireland, a paper, by Mr. Nathaniel Jackson, was read. Mr. Jackson said:—

For some years I have used concrete in the construction of county bridges, in the West Riding, county Cork, the span of the arches varying from 20 ft. to 35 ft.; and in one instance, where a foundation could not be obtained without going to considerable expense, I constructed an arch of 45 ft. span, with a rise of 7 ft. 6 in., the thickness of the arch at the crown being 3 ft., and at the springing, 4 ft.

Concrete has one great advantage over masonry,—viz., after floods a few pounds will repair any damage that may arise to the foundations; whereas in a stone bridge one stone loosened at the bottom of an abutment or pier will often cause the destruction of a great portion, or perhaps the whole, of the structure. The foundations can also be constructed in a more simple manner.

The plan I adopt is to drive a row of piles 6 in. by 6 in., 3 ft. apart, marking out the form of the footings, and then, as the gravel is scooped out to a firm bed, placing 1¼ in. sheeting as the excavation proceeds. Grass sods will always keep the foundations sufficiently free of water in summer weather to enable the workmen to keep tolerably dry. The water must then be let into the compartment, so as to form still water; for on no account must concrete be

put into a space where there is any running water. As large a quantity of concrete as can be made must be made, in the proportion of two of broken stones—broken so as to pass through a ring 2 in. in diameter,—three of coarse gravel and sand, to one of cement, and the whole, when well mixed, must be placed gently in the water, through a square tube, so as not to disturb the cement. It is a good plan to divide the space for the foundations into three or four compartments, in order that the concrete may be carried above the water-line with as little delay as possible. After the cement has been raised above the level of the water, large stones may be put into the concrete, and the whole well rammed. When the foundation has become firm, the outline of the bridge is to be formed with 1½-in. sheeting, firmly secured, and the work proceeded with. The concrete is now to be made in the proportion of four of broken stones, two and a half of gravel, screened through an inch screen, and one and a half of sand to one of cement, and about one-third of clean, large, rough stones bedded through the work, and all well rammed. When the concrete has been raised to the height of the springing, it is advisable to allow the work to rest as long as possible, as concrete does not come to a full set for months after it has been made, when it is used in any large body. The centreing can now be put up; it must be very firm. I invariably divide the arch into five parts; the haunches on both sides are first executed, the joints always radiating to the centre, then the centre, and, after allowing a sufficient time for setting, the spaces are filled in. The old work must be freely wetted before the concrete is continued. Packing is used in the haunches, but not in the compartments. Workmen are apt to be so very careless, that I think it better not to run the risk of dirty stones being used: besides, there is more elasticity in the concrete without the stones. As soon as the concrete has hardened, the boarding should be removed, to allow the air to act on the concrete. About six weeks must be allowed before the centres are eased. A careful examination must then be made to see if any cracks have taken place; if so, they will be found to take a vertical direction, generally at the springing. The concrete at the crack must be cut out in the shape of a U, about 6 in. wide at the bottom, and from 12 in. to 18 in. at the top, according to the depth of the sheeting, and the space carefully filled in with concrete well rammed. The surface of the arch must be finished off with a thin coat of cement and fine sand in the proportion of 1 to 3, and provision made in the haunches to prevent the lodgment of water. The arch can be either coated with tar, well boiled, or a bed of puddle 9 in. thick carefully worked over the whole surface. The parapet walls can be either 9 in. or 12 in. thick, instead of 18 in. or 20 in., as in rubble masonry. Concrete parapets cannot be thrown down in the wanton manner that the ordinary rubble masonry ones are subject to by idle people and schoolboys, &c. It is amusing to see the attempts to destroy the copings of the concrete bridges, but in no instance have they succeeded in doing any mischief beyond a few slight marks, although in derision they are called "stirabout bridges." Another advantage is the facility for corbelling out angles; also, bridges on the skew can be carried out without any extra expense.

In making concrete, too much care cannot be taken. The materials must be scrupulously clean, and all large smooth stones in the gravel broken. The gravel, &c., and cement should be first thoroughly mixed when dry, and then gently wetted with clean water, out of a watering-pot with a fine rose, and well mixed as the watering proceeds. The concrete must not be made too wet,—about the consistency of good mortar. It is the general practice to use too much water and too little mixing when the materials are dry.

In conclusion, I cannot too strongly impress on beginners the necessity of having the material used perfectly clean and sharp, the materials well mixed when dry, then carefully moistened, and mixed to the consistency of strong mortar. That the stones used in packing should be rough and clean, and, before using, well watered, thrown on the concrete, and then well rammed. The concrete should also be well rammed. Care should be taken that a space of fully 3 in. should be between each stone. It is also advisable to try two or three samples of the cement, as cement is liable to be injured by being exposed to wet and damp in its transit.

RAILWAY TO INDIA.

A paper was read before the Civil and Mechanical Engineers' Society by Mr. Haughton, C.E., on Thursday, the 6th inst., on the subject of "A Railway to India," Mr. C. H. Driver, F.R.I.B.A, in the chair.

Mr. Haughton exhibited a map showing the regions to be crossed, taking Constantinople and the town of Shikarpore, on the River Indus, as the terminal points of the railway; he spoke of the suggested Euphrates Valley Railway from Scanderoon or Swadia, on the mainland opposite the horn of the island of Cyprus to the head of the Persian Gulf, with its possible extension along the Mekran coast to Kurrachee, at the mouth of the Indus, as being quite out of the line of the terminal points named, and as being objectionable because of passing through a region destitute of towns after passing Bussorah: such a line, while forming a perhaps useful strategical road to India, entirely failed to tap the larger centres of population and trade of the countries intervening between Europe and India, viz., Asia Minor and Persia. He preferred a railway passing through Sivas and Diarbekir, in Asia Minor (where it would cross the Taurus range of mountains), Mosul and Kefri, in Turkish Arabia, with a short branch to Bagdad, crossing the Gates of Zagros range on the Persian frontier, and going through the Persian towns of Kermanshah, Hamadan, Teheran, Shahrud, and Mushed, crossing the Afghanistan frontier, and passing through Herat and Candahar, and through the Bolan Pass into Shikarpore, a station on the Indus Valley Railway. Such a line would open up the most populous and traffically-valuable districts of Persia, towards which country, as well as towards India, Russia is hastening every day.

Colonel Sir Arnold Kemball wished to impress on the meeting the vastness of such an enterprise. He believed it would be of much importance in view of the interests of England and of India, and of great value in opening up the trade of Turkish Arabia.

Mr. Trelawney Saunders said the importance of such a line of railway could hardly be overestimated, and that he thought the route indicated on the map would be eventually that selected for a railway to India.

FOREIGN COMPETITION WITH ENGLISH WORKMEN.

Mr. John Burns, of the Cunard Steamship Company, lately addressed a letter to the Lord Provost of Glasgow, thanking his lordship for his efforts on behalf of the unemployed. "But," says Mr. Burns, "mercifully remedial as all material and temporary help must be to the hitherto diligent and deserving classes, it is evident, from the very nature of the case, that such eleemosynary aid must sooner or later cease, and we shall have to look to a more healthy and permanent source of support for those of the working classes who desire to earn their livelihood by honest toil and wholesome labour. I would, therefore, venture to address the working men, through your lordship, and ask them to take to heart what came to my personal knowledge when inspecting the work being done on board the new Cunard steamship *Gallia*. That vessel is being supplied with parquetry made in Belgium, for the cabin floor on the main deck. It is being laid by Belgian workmen, who on Saturday were faithfully and diligently doing their work, when, at one o'clock, the hour at which our home workmen leave the ship, these Belgians specially asked that they might be allowed to continue at their work until dark. I inquired if these men were paid overtime, but was unhesitatingly told that they were not, but only received reasonable wages for their labour, and that their sole object in spontaneously desiring to be allowed to work beyond the usual early hour ruling on the Clyde was to get the job finished without delay. Here, now, is a fact for the serious consideration of our working men. It is but a speck in what is now going on, to the great detriment of this country and to the increasing distress of our artisans, for I might cite the fact that the entire panelling of the *Gallia's* cabin has been executed by Japanese carpenters, and that the ironwork of the office in which I now sit was made in Belgium; and instance after instance could be given of how all nations are competing with us, not only as regards the manufacture of articles used in their respective countries,—hitherto to a great extent su by Britain,—but the artificers of countries are, in spite of us, advancing in own country, and compelling us to e them, simply because they can do our w well and much cheaper than it can be do our own workmen. What does this bring but that the arbitrary curtailment of the of labour is a snare and a delusion to our ing classes, and the sooner they cast winds the doctrine of those who are im upon them, the better for themselves? doctrine tells the working man that he not work more than fifty-one hours week. That doctrine is nuts for the fo to crack, and is ruining our country a countrymen. It must be obvious unbiased man that the demands of our men are fast becoming so unreasona to put it beyond the power of emplo accede to them, and, unless, by the foreign workmen, unfettered by trade-un or otherwise, there can be obtained a fai work for a fair day's pay, British ca will simply have to abandon the develop commercial industries for sheer lack of to conduct them profitably. Here we time of languishing trade, and spring co with our working men throwing do tools at five o'clock in the afternoon o'clock on Saturdays, when I and hund men are in the thick of our work, an never pretend to compete with the wo were to be circumvented by mech limited hours of labour. I hold strou every working-man, in the ordinary sen word, may, by his own merits, rise to tion; but never will he do so if he himself to hard and fast rules, which face of them, are irrational and cont every principle of free trade and free have not a word to say against increase Let every man get as much as he can. will always be paid for according to it but if the British working-man does no live in a fool's paradise, let him realis self that people of other nations w when he is sitting still, and that, the behoves him to rouse himself to the plation of stern necessity, and hold his his country's own before the time co he may be forced to emigrate for profitable work in the mother countr above all things, let the honest artisan and independently upon his own shunning the contamination of fellow whose desires of self-indulgence would to enforced idleness, and avoiding the allurements of men who, for the sa gain which they themselves secure, i respectable operative to sacrifice pendence."

THE PICTON READING-ROO LIVERPOOL.

It was announced at the last meet Liverpool Town Council that within month or six weeks the town will be in and enjoyment of a new public buil Picton Reading-room,—which will itself confer a great benefit upon th but will, by its name, worthily com the services which Councillor J. A. for so many years past been render town in promoting the study of art a and in ameliorating the condition of inhabitants. Long may he survive the usefulness of the institution with name has (by, we believe, the unan of his fellow citizens as represented i Council) been so honourably associate

The new Reading-room forms a fi tion between the Walker Art Galler Free Library and Museum. The stone of the building was laid so December 2nd, 1875, the ceremony formed by Mr. Picton.

The building itself is a circular The roof, which is surmounted in the a corona surrounding a circular skyl by itself alone lights the building, f ment of a circle, and presents the ap a vast cupola. The simplicity of th is preserved interiorly, the vast hall the space of the building being unl single support for the roof or for any tion of the structure. According to *pool Post*, the floor and roof are eac in a remarkable manner upon m girders, which, springing in one ca

as, and in the other from the top of the
nverge upwards to the centre, where
of the girders are secured. In the
, supports branching from the arched
ustain the floor. The material used
in the construction of the Reading-
somewhat similar to that employed in
ngs at each side and in St. George's
oh fronts the three structures. Cefn
he material for the most part used,
stone being adopted for some portions.
ose of harmony is still farther served
tyle of architecture adopted for the
the particular characteristics of which
a most prominently in the front eleva-
e building is in the Corinthian order of
obitecture, which corresponds with the
the Walker Art Gallery, the Free
and St. George's Hall. From the
ouble flight of steps conducts to a lofty
, which, reaching the full height of the
s round the front elevation, and affords
communication with the Walker Art
n the one hand and the Free Library
her. Besides this, there are internal
ations with each of those buildings.
ipal entrance to the room is under the
. There is no excess of ornament upon
f the building. At the top the wall
relieved by a cornice with floriated
ved on the frieze. The roof is covered
zinc.

at hall which forms the reading-room
broken floor space of 100 ft. in diameter,
ight of nearly 70 ft. At a moderate
from the floor, which is of pitch pine,
enclosed by an ornamental iron balus-
rounds the room, and is approached by
cases. At the back of the gallery the
lined with bookcases, having movable
n Tonks's patent principle. The book-
disposed not only in the gallery, but
r it. Besides the cases against the walls,
ing bookcases radiate from the walls,
aced with triplet pilasters of the Doric
ved in oak. Beneath the projections in
y are thirteen coils of hot-water pipes
g the hall. These are covered over
mental ironwork, and surmounted with
which enable them to be used as
from which the books will be distri-
n harmony with the roof, the seats for
rs will radiate from the centre of the

ot yet decided whether the building
ghted with gas or by electricity. Much
anticipated in the ventilation of the
which fresh air will be admitted by
ntilators, which open out above the
hich surrounds the timber-work at the
e gallery. The special use to which
ent of the building will be put has not
determined upon. The original design
ilise the lower hall for an aquarium, for
ation of which the basement was, in
ially built. The idea of an aquarium,
seems to have been abandoned, and
suggestion is to adapt the basement
ure-room, seats in amphitheatre style
anged around from the level of the
he depth of the excavations.
igh Yates is the contractor for the
and Mr. Henry Firth for the internal
The whole of the work has been carried
the designs and under the superintend-
Mr. Cornelius Sherlock, the architect of
er Art Gallery.

Forfork Window in Ely Chapel.—A
ted window, the gift of the Duke of
has been recently erected at the east
St. Etheldreda's Church, Ely-place,
The five great lights of the window
gures of St. Etheldreda, St. Bridget,
h, the Blessed Virgin, and, in the
ening, Our Lord. They are represented
entered their life of Heavenly glory.
se figures, and in intentional contrast,
scenes from the humble life of Our
earth. The tracery is filled with
d archangels, the latter with their
, the former playing various instru-
music. The details are copied from
found amid the ruins of the church,
ster, from Merton College Chapel,
d other places. The work was de-
the late Mr. Lonsdale and Mr. F.
d carried out by Messrs. Saunders &
ll-street, Bloomsbury.

A VISIT TO A MINING DISTRICT IN CHINA.

Mr. G. J. Morrison, M. Inst. C.E., has recently contributed an interesting paper to the proceedings of the Civil and Mechanical Engineers' Society, entitled "A Visit to a Mining District in China." The paper contains so many interesting details, especially as to the Chinese method of working coal-mines, that we print the greater portion of it:—

In China,—that great land of undeveloped wealth,—there are villages and whole districts where all the men one sees are covered, I might almost say clothed, with coal dust, for they wear little else in summer, and where, as there are no railways, one meets long trains of coal-laden mules, asses, or camels, according to the nature of the country.

About ten or twelve miles to the west of Pekin, runs a river called the Hun Ho. This is a shallow river, fordable in many places in dry weather, but after heavy rains it is subject to great floods, which make its passage difficult and dangerous even by a ferry-boat. There is, however, one bridge across it which is always available.

Pekin is situated on an immense plain, but immediately to the west of the Hun Ho the country becomes hilly. Mount Conolly, as it is called by foreigners, which rises to a height of 5,000 ft. or 6,000 ft. above the sea, is the highest peak in the immediate neighbourhood. The whole of these hills abound in coal, and the district is generally termed by foreigners the Chai Taeng district, from the name of a village about forty miles from Pekin, and near which some of the best coal-mines are situated. Being in the neighbourhood in August, 1877, I had an opportunity of forming one of a party to visit these hills. The party consisted of Mr. Nicolson, of the Diplomatic service; Mr. Brenan, of the Consular service (who is thoroughly acquainted with the colloquial language), and myself.

Having started early one Monday morning, we crossed the Hun Ho by a ferry at a village called Ma Yu, and at once began to ascend the mountain-road leading to the mines. By ten o'clock we reached the entrance to the Ta Yao, or great mine, situated about eighteen miles west of Pekin, and 1,050 ft. above the sea.

The mines here are not worked as most mines are in England, by shafts sunk vertically, but by "adits" or entrances from the side of the hill, as is sometimes done at home. The people look for some place where the seam of coal crops out at the surface. They then begin making a tunnel about 4 ft. wide, and 4 ft. 6 in. high, carefully lining the side and roof with timber, so as to prevent any of the earth falling in, and they work on in this way until they have arrived at good solid coal, with firm rock above and below, the portion near the surface being generally more or less loose and broken up. When they are fairly in the solid coal, they begin working out coal to the right and the left, as well as in front. If they were to work out a large area without taking any precautions, the roof would fall in; they therefore place temporary props of timber where they are working, and, in addition, they carry forward their main road by carefully continuing the timber work of the tunnel, and also on each side, outside the timber, building a wall of the rubbish which is excavated with the coal, so that, even if the roof of any portion of the working falls, they are sure of having a road through which they can reach the solid coal further in. The coal, when originally deposited, was no doubt level, but since that date there have been great upheavals of the strata, and much of the coal now lies at a very steep angle, sometimes as much as sixty degrees to the horizontal. The road or tunnel, therefore, following as it does the seam of coal, is sometimes flat and sometimes steep, and as various local causes make it convenient, during the progress of the work, to carry the road to one side or the other, it happens that the main road in an old mine is as crooked as a corkscrew. There is yet one other peculiarity. Although the tunnel is begun so large that a man can enter by stooping, it often happens that, when the seam is thin and the roof and floor composed of hard rock, the miners grudge the expense of cutting it, and the road, therefore, gets lower and lower until the final limit is reached of a road so low that a man can only just crawl through it. Now, having come to see the mines, I was determined to enter into one and see the workings for myself. We, therefore, addressed ourselves to some miners whom we found at the mouth of the Ta Yao. At first they thought it was all a joke, and it was a considerable time before they could be persuaded that I was in earnest. Then they said it was impossible; that one foreigner had tried some years previously and had failed; that I would ruin my clothes, and made various other objections, but finally we prevailed. And so, divesting myself of most of my clothing, I took a lamp and prepared to follow my guide to the depths of the mine. The lamp was a curiosity in its way. In principle, it was the same as the ordinary open lamp used in the Scottish mines; but in general appearance it resembled a tea-pot without a handle. It was carried by a string passed round the head; and, being globular, it rolled about a great deal, and as it must have weighed over 1½ lb., it was a serious addition to the troubles of the journey.

On entering, I found that all along the floors there was laid a ladder about 2 ft. wide, having good large rungs 8 in. or 9 in. apart. The ladder was roughly made, but was tolerably level on the upper surface. My guide, who at first took a fatherly interest in me, at once signed to me to walk on the rungs of the ladder, and not to let my foot slip between, as, in the event of there being a hole, I might break my leg. Very soon the road got so steep that I had to sit on the ladder and let myself down gently, catching the rungs with my heels; then it became so steep that I had to turn my face to the ladder and descend in the ordinary way. For about 600 yards the road was of this varied description, but rather steep on the whole. I estimated the total fall in this distance to be about 500 ft. This part of the journey was tolerably easy. The roof was seldom less than 3 ft. or 3 ft. 6 in. high, so that the only difficulty consisted in passing the coal drawers, to whom I shall refer presently. After the first 600 yards, however, the affair changed. The road twisted a good deal, sometimes was up-hill, sometimes down, and sometimes level, and the roof was very low. The total length of this portion was 1,000 or 1,200 yards; and the total fall must have been between 100 ft. and 200 ft. Along almost the whole of this it was necessary to go on hands and knees or hands and feet; but this was not the worst. In several places the roof was so low that I could not go on hands or knees. I am, unfortunately, a trifle larger than an ordinary Chinese miner, and not being acquainted with the place, I probably required one or two inches more space than I should otherwise have done, for it must be remembered that the roof is not smooth, and if one thinks he can crawl under a projecting stone, and is mistaken, he will be painfully reminded of his error by the loss of a large piece of skin from his back, if he is not more seriously hurt. There was but one way for it, and that was to lie on my face, stretch out my arms, and, resting my weight on my hands and elbows, drag myself forward. There were two or three places where I had to do this for a length of twenty yards at a time, and I was very glad when I arrived at the working face, a distance of about a mile from the entrance, and still more glad when I again reached the fresh air, after having spent about three hours below ground. The coal which is here being worked, is a description of anthracite, but not so hard and clean as some found on the other side of the hill. The seam in this mine is only 1 ft. 9 in. to 2 ft. thick.

It is extremely difficult to give a fair description of the method of working. Being ignorant of the language, I could ask no questions, and as all old workings are full of rubbish, it is impossible to tell with certainty what was done last, or what is about to be done next. The main road running from the surface was crossed at certain intervals by roads running at right angles. The miner ascends from the road to the working face, and cuts away some coal, which he rolls down hill to the road, whence it is taken away by the drawers. While this is going on he is obliged to put temporary props to support the roof, and after a certain time these become so numerous as to interfere materially with the coal reaching the road, and for this reason the cross roads are placed at the distance which is found by experience to be most convenient. While the miner is working between the cross roads, the main road is carried lower, and a new road is opened, and another miner is set to work there. It must not, of course, be understood that all this goes on with regularity. There are faults and other difficulties to encounter. Some-

times the coal is too thin to pay, and in an old mine the workings are most irregular; but, judging from what I saw, this is the arrangement aimed at. At the working faces only the coal is cut away, neither floor nor roof being touched; the space in which the miner works is therefore only 1 ft. 9 in. high. It is hard to wriggle about in such a place, and the difficulty of working is very great. It is therefore not surprising that the output of the mine does not much exceed two piculs for each miner per day. A picul ought to contain 100 catties of 1⅓ lb. each; but the wretched practice exists in China of having piculs of 120, 140, or even 200 catties, just as at home we have stones of different weights. I imagine the output in this case was about 3 cwt. per miner.

The tools used by the miner are chisels about 12 in. long, and ¾-in. thick, and a small hammer. With these he cuts holes in the coal, and afterwards breaks off lumps of considerable size by means of wedges. The pick is very little used in these mines, although it is used in the bituminous coal-mines a few miles distant. The coal is drawn to the surface in baskets fixed to sledges. Each basket contains about 100 lb. A man or a boy draws the basket by a leather strap, which passes along his back over one shoulder, and back again between his legs to the basket. He progresses on hands and feet, and draws the load after him, the sledge passing smoothly enough over the ladder, whether the ground is levelled or inclined. When the ladder is steep the process looks dangerous, as, if the man were to slip, or anything to give way, the man behind would almost certainly be killed. The maximum work of a man is four journeys per day. In returning to the surface where the road is steep, the drawer sits on his basket and slides down the ladder, using his heels to guide himself, and to regulate the speed.

The mines here are never troubled with water. When any appears, as it does occasionally, the miners stop work for a few days, and it runs away through the fissures in the strata. The ventilation is effected through openings to the surface at various places, which I understood were either old entrances, or places where the workings had come to the surface. It was stated distinctly that in this mine no special air-courses were cut. On the day of my visit the temperature of the mine was much lower than that of the external air, and natural ventilation would be sufficient to keep the mine fresh; but they told us they sometimes used fans below ground,—"something like winnowing-machines," about 4 ft. or 5 ft. diameter.

They said that with thirty miners and thirty drawers the output of the mine was about sixty piculs, which I take to be about four tons and a half. The wages of the men are three tias (about 1s. 1d.) per day, and of boys two tias (about 9d.). This coal sells at the mine at three tias and a half a picul. This would appear to be a losing game, but the profit is made on the difference between the miners' picul and the selling picul. The mines are worked for the benefit of the owners of the land, and we were told that they paid nothing to Government, except a yearly present of small amount to the local magistrate.

After hearing this, I fancy most people will be surprised to find that the Chinese know so much and effect so little. The system of working is not unscientific, and only differs in detail from our long wall system at home. Although we place our fans for the ventilation of collieries at the surface, still, in the construction of headings, &c., they are often placed below. The Chinese would probably be unable to cope with large quantities of water; but it must not be forgotten that within a century our own Cornish miners failed in this, and only succeeded through the assistance of outsiders, of whom Watt was the chief. But with all this knowledge, here is a mine which has been worked for 100 years, and where the workings extend to the distance of a mile, with a daily output of four or five tons.

The great want below as above ground is that of roads. I am tolerably safe in saying that there is no drawing-road in any coal-mine in Great Britain like the one I have described. There are, doubtless, air-courses as small, but then men only pass through them occasionally. The worst roads are to be found in the Cornish mines, where, unfortunately, it is a common thing for the miners to take more than an hour to get from the surface to their working places, and the owners comfort themselves by thinking that in old workings nothing better can be expected, and by trying to believe that it is the miners' time and strength that are sacrificed, and not theirs.

Dreadful, however, as is the life of these poor Chinese miners, it must not be supposed that they appear to be discontented. Their wages are more than sufficient to provide them with plenty of good food and with houses to live in, and as they wear no clothes below ground, and very little in summer above ground, their tailors' bills cannot be serious matters. They are always civil and ready to chat and joke with any one, and here, as over the greater part of China, a foreigner has nothing to fear from the common people, unless either intentionally or accidentically he offends them.

I believe I am correct in stating that women are never employed in Chinese mines. In this respect the Chinese are far in advance of the Japanese, and, for that matter, of the Sicilians and some other western nations, in whose mines much of the drawing is done by girls. I have seen dozens of naked Japanese men working in the same mine with women, whose clothing was just visible to the naked eye.

Immediately to the west of the mine just described there is a low range of hills, and after passing these the scenery is very fine. The numerous coal-mines occasionally mar the landscape; but some of the cliffs are magnificent. The roads are execrable, taking one up and down hills at almost impossible gradients. Mules and asses are the only beasts of burden that can use them, and wheeled traffic is impossible. Twenty miles a day, as the crow flies, is hard work.

The following day we reached Chai Tang, about forty miles west of Pekin, and we visited some of the bituminous coal-mines in the neighbourhood. The seams which we saw are 6 ft. or 7 ft. thick, and there are some much thicker. The mines appear to be worked on the pillar and stall system; that is to say, large pillars of coal are left to support the roof, and these are worked out when any portion of the mine is about to be abandoned. Here they construct artificial air-courses, and also employ "brattices," or partitions of timber or similar material, to divide the passages in two, so that the air may travel in along one division, and out along the other. When asked about fire-damp, they replied that they were troubled with it occasionally, and in some neighbouring mines there had been explosions killing people; but they added, "these only occur when the air does not circulate."

It will thus be seen that they have not a great deal to learn in the theory of mining. The want of roads is not so much felt in these mines as in the thin anthracite seams. These seams are high, and the mines have not been worked so long. One drawer can bring out about a ton a day, and one miner can get as much. The tools used are picks with one head, that is to say, in the form of an ┐, and not of a T. We were told that the price at the pit mouth was 6s. a ton, but I believe it is often sold as low as 4s. The cost of carriage to Pekin is, however, 30s., so the coal is dear enough there.

About thirty-five miles west of Pekin we came upon a Roman Catholic village of 800 or 1,000 inhabitants, called Sang Yu. Not far from this village we came upon a mill for grinding wood and other materials to make joss-sticks. These sticks are about twice the length of an ordinary pencil, and rather thinner, and of a light brown colour. They are placed in front of the images in the temples, and when lighted, smoulder slowly, giving off a slight and not unpleasant odour. The mill was driven by a horizontal water-wheel,—a description of turbine. The wheel was 8 ft. or 10 ft. in diameter, and the spokes were flat and very wide. The water issued from a spout, and impinging on the spokes, drove the wheel round. The whole available fall of the water was not utilised, but as the axle of the wheel formed the vertical axle of the mill, there was absolutely no gearing whatever, and nothing that required skilled labour to erect, or was likely to get out of repair; and as there was abundance of water power to be had, the arrangement was very creditable to the designer.

The next day we visited the Imperial tile manufactory at Lien li ku, about fifteen miles west of Pekin. Here all the yellow tiles and bricks required for Imperial buildings are made, as also large numbers of green, blue, and other coloured tiles, for various ornamental purposes. The material used is a hard blue shale, nearly as hard as slate. This is allowed to lie in heaps for some time. It is then ground to powder by granite rollers, on a stone floor 30 or 40 ft. in diameter. The powder is then stored and taken to the works as required.

nary work the powder is mixed with proportion of water, and moulded in bricks, which are laid out to dry hours, after which they are dealt wi modellers. When bricks are to have a on them, say, for coping a wall, th the operation is as follows. Two pieces each cut to the shape of the moul placed upright on a slab. The clay placed between them, and two men mouldings roughly along with chisel then apply straight-edges to test the of their work, and finally rub the e moulds somewhat in the same way as make mouldings at home. The bric passed to a third man, who cuts any holes in it, and to a fourth, who trims repairs any defect. The more ornam and bricks, representing fabulous ani are first roughly moulded, and a finished off with tools exactly simila used for modelling in clay in Europe. this work has some pretension to artis All the bricks and tiles are baked and then, after having the glaze p baked a second time. All the wor this manufactory appears to be first the number of people employed, whe busy, is about 500.

Much of the work we saw, partic moulding of coping bricks, could n executed easily by machinery; but labour is so cheap, I doubt if any could be gained by its introduction example of the paradoxes to be see it is worthy of remark that these bri deserve to rank with the highest clas cial building materials in the worl reach the capital, distance fifteen being carried on camels or mules.

The Chinese manners and customs, of thought, differ so entirely from that it is extremely difficult to e general opinion regarding them. contrary views are stated by people perfectly on other subjects, and eve person is sure to bestow encomiums at one time, and to speak of the better than savages at another, in a v most perplexing. For instance, the the bulk of the inhabitants consists coins, varying in value in different di generally worth about $\frac{1}{12}$ of a penny coins, however, differ s much in size that it takes more time to select and of them than to perform the same o 1,000 sovereigns. Is it wonderful one set of people are fond to talk of able system of the Chinese, which poorest person to get the advantag of the market in buying a single others can only look upon it as a wasting the time of hundreds of t shroffs (or money-counters), who mig employed, and for extorting from classes payments under the name c to an amount which is absolutely Again, every particle of night-soil and employed as manure on the fie one man can talk of nothing but the bearable nuisance caused by the co distribution of this unsavoury stuff, speak only of the science and industr by the people in utilising the valuab which civilised nations allow to ru These differences may, to some ex plained by saying that one set of inclined to look at the ends aime another set look more at the mean but I fear it will be long before t writers on China cease to present c which appear inexplicable.

On one point most people are agre is, that of all the defects of China, w of internal communication is one of They have a few bridges, some use bridge at Foochou, over the river M a work of considerable magnitude ornamental (like the marble brid Palace in Pekin, which is unquestio elegant structure); but while a few talk of such works as evidences public spirit, most people can them to be monuments of disgrace which knows what such things ar will not take the trouble to repair and build new ones!

Of roads, I may say, although forced to employ the word occa

on-existent. It is the fashion among present, when they cannot find rds to express their meaning, and I suspect, when they are not very the meaning they wish to express, to ds from some other language. Any ing the tracks through China, may if he makes use of the Chinese name it is a fact, and one for which I am hat it has no equivalent in English.

CIETY OF LADY ARTISTS.

ibition in Great Marlborough-street h the present occasion 835 paintings gs, and would be better as an exhi- lf of them were taken away, so large n of them are small and indifferent s. Nevertheless, it is good that the should be afforded for the sale of those who are struggling not to be l are striving to obtain skill and mongst the oil paintings, No. 252, Vell," by Ellen Montalba, stands out of great merit, characteristic and No. 265, "The Private View," is an pecimen of Miss Louise Swift's skill rayal of dogs. Two other paintings ne clever lady (293 and 718) also tice. "A Windy Day," by Hilda 422), is only slightly short of being t work. Mrs. Louise Jopling's large The Five Sisters of York" (278), has before. Continuing amongst the oil picture by Mrs. Croudace, "Pilgrims to Kieff, Russia" (345) is valuable l representation of the people them- sketches on the spot.

the water-colour pictures will be capital works by Margaret Rayner bledon Church"); Louise Rayner ss Market, Edinburgh," 813); Mrs. Mrs. Naftel, Mrs. Champion ("Mar- 98); Annie Wilson, F. Assembaum hunderstorm," 272), Mrs. Val. Brom- ers.

the features of the exhibition is a Miniature Portraits on Ivory," by per (685). Mrs. Cooper has been n some of her subjects, and has ren- n beautifully. No. 629, "More Free me," by the same lady, is a clever

NAL ART TRAINING SCHOOL.

EORGE HAMILTON, M.P., on Monday the medals and other prizes won by f the South Kensington Schools in and national competition of 1878. r, R.A., Director of the Art School, he prize-winners were students of the at South Kensington,—one for male female students,—the schools being tion with each other, and with all e United Kingdom. Explaining that ition among the students in training al scholars was, on account of the advantages they enjoyed, separate f the general students, he enumerated distinctions,—one silver medal, two als, and thirteen Queen's prizes of n in the national competition, besides izes of books won in the local prize n all, eighty-two prizes. The students and national scholars competing for istinctions obtained three gold medals, r medals, twenty-one bronze medals, y Queen's prizes of books. In the n for prizes open to all students in al Art Training School, the awards en silver medals, and twenty-one izes of books,—a grand total of 171 e number of individual students he schools during the year had been hom 384 were male, and 465 female In the third grade or highest exa- wenty-nine of the students had he teachers' certificate. The fees nted to 3,832*l.*, of which sum 316*l.* evening students, and the balance day students. Mr. G. Morton had gold medal for a life study. A great nt in the life-school had, he believed, m the rule now enforced of limiting lowed for drawing a subject from the The power thus gained of grasping al features of the object was of great to the students in the life-room, time was necessarily limited. But d to say that the students of these schools had not gained the gold medal for studies of the antique, and that they had been beaten by the Edinburgh School, and also by the Bloomsbury School of Art,—a school composed entirely of ladies. The general standard in the South Kensington Schools was, however, now considerably above that of three or four years ago. In the modelling class they had carried off all the prizes worth anything. He rejoiced at this because he thought he saw a prospect of a general improvement in this important branch of art throughout the kingdom. It lay at the base of industrial arts even more than drawing, yet for some years past it had been in the very lowest condition, not only in these schools, but through the country. Much of the improvement here was owing to the excellent teaching of M. Dalou.

FEMALE SCHOOL OF ART.

THE theatre at the London University was filled on Tuesday last with the students and their friends, to receive the Princess Mary Adelaide, who had undertaken to present the prizes to the successful candidates. A report, read by Mr. Francis Bennoch, hon. secretary, showed that a great deal of work of a very high standard had been turned out by the pupils of this school. In April last, 2,026 drawings and seventeen models, the work of 143 students, were forwarded to South Kensington. Of the national awards, eight prizes were gained by Bloomsbury students, and in local awards the Queen's scholarship and gold medal. In the local Science and Art Department examination, thirty-eight students obtained fifty-one awards. Eight of the students had, within thirteen months, been admitted as students to the Royal Academy schools.

The Princess Mary handed the prizes to the large number of successful students, among whom Miss E. M. Spiller took the Gilchrist Scholarship of 50*l.* and other prizes; Miss M. K. Benson, the National Gold Medal for a study from the antique; Miss A. E. Hopkinson, the Queen's Gold Medal and other prizes; and Miss E. M. Lovell, the Queen's Scholarship and other prizes. Miss Alice Hanslip, Miss Rose Lovering, and Miss Maud Ashley West, also received important prizes.

This ceremony over, the Princess Mary read an address to the students, in which her Royal Highness said,—"It is with great satisfaction that I observe the National Gold Medal, open to all schools, the highest award you can gain, has this year been taken by one of you, now admitted a student of the Royal Academy. There is no branch of art that does not kindle in me a deep interest; but there is none I love more than that for which England is so pre-eminently famous,—her water-colours. It is, therefore, with pleasure I notice that several prizes have been gained in this branch. Sculpture is a branch of art that requires serious study of the classic past, and therefore, while encouraging the students in this branch to persevere zealously, I would ask the patrons and supporters of this school to assist them, as far as in their power lies, to travel, and thus enable them to acquaint themselves with the great art-treasures of Greece and Italy. Would that I could see here in London, for your advancement and encouragement, a gallery for the study of sculpture, such as is now to be found in many of the chief towns in Germany, and quite recently in Paris. I cannot end without offering my congratulations to Miss Gann and her staff on the success that has crowned their labours."

The Rev. Sir Emilius Bayley, Mr. George Smith, F.S.A., Mr. Bowdler, Mr. C. Forster Hayward, F.S.A., Mr. Phené Spiers, Mr. H. S. Bicknell, and other old friends of the school, were present.

The Morley Club, Nottingham. — Mr. Samuel Morley, M.P., on the 7th inst. opened the Morley Club premises in Nottingham, the building being at the corner of Shakspeare-street and Melbourne-street. The building has been erected by a number of shareholders, calling themselves the Morley House Company. It consists of four stories, the lowest of which is to form a *café*. One wing is occupied by the Young Men's Christian Association, and the other provides accommodation for the Morley Club. In the top story are several bed-rooms intended to afford a lodging for strangers. The architect of the building is Mr. R. C. Sutton, the builders being Messrs. Thomas Fish & Son.

VALUE OF GROUND RENTS IN THE CITY.

ON Tuesday Messrs. Debenham, Tewson, & Co. submitted for sale, at the Mart, several valuable freehold ground-rents of property situated in Fann-street, Golden-lane, and Whitecross-street, Barbican. The aggregate annual value of the several ground-rents offered was 1,702*l.*, and consisted of eleven lots, large warehouses and other new buildings having recently been erected upon that part of the property situated in Fann-street and Golden-lane, in connexion with the Golden-lane improvements. The first lot offered was a freehold ground-rent of 154*l.* per annum in Fann-street, containing 2,500 superficial feet, which was sold for 3,800*l.* The second lot, also in Fann-street, containing 900 superficial feet, and the ground-rent 78*l.* per annum, was sold for 1,900*l.* For lot 3, at the north corner of Golden-lane and Fann-street, containing 2,400 superficial feet, with a ground-rent of 155*l.*, 3,800*l.* were offered, but the lot was withdrawn. The next four lots were all in Fann-street. Lot 4, the ground-rent of which was 86*l.* per annum, realised 2,180*l.*; lot 5, ground-rent 88*l.*, sold for 2,170*l.*; lot 6, ground-rent 90*l.*, fetched 2,280*l.*; and lot 7, ground-rent 76*l.*, sold for 2,000*l.* The next lot was at the south corner of Golden-lane and Fann-street. A large public-house, called the Golden Anchor, has recently been erected on the site, the ground-rent being 150*l.* per annum. 3,800*l.* were offered for this lot, at which sum it was withdrawn. The next three lots were ground-rents of property in Whitecross-street. The first of these lots contains an area of 3,560 ft., the ground-rent being 435*l.* per annum. It realised 10,900*l.* The next two lots, the ground-rent of one being 208*l.* per annum, and the other 180*l.* per annum, were withdrawn, 5,200*l.* and 4,400*l.* respectively only having been offered for them. The total proceeds of the lots sold amounted to upwards of 25,000*l.*

OPENING OF ARTESIAN WATERWORKS AT LEAMINGTON.

A NEW source of water supply for Leamington has been inaugurated with considerable ceremony. The new artesian waterworks, which have cost about 20,000*l.*, were formally opened. There are two large shafts, with bore-holes at the bottom of each, and altogether a supply of about a million gallons of water per day has been secured, and is now being furnished to the town. Dr. Bostock Hill, analyst, pronounces the water to be of excellent quality. It is stated that the old supply, which was from the Leam, was impure, and frequently caused much dissatisfaction. The opening of the works was made the occasion for a public procession to the wells, where the Mayor received the keys from the contractors, and formally declared the works opened.

REFACING ST. JAMES'S CHURCH, KENNINGTON PARK-ROAD.

FROM the designs of Mr. Ewan Christian the Kennington Park-road frontage of St. James's Church has just been refaced. The old and dilapidated front has been replaced by a bold and handsome elevation, the general face of which is in red brick, with terra-cotta and Mansfield stone dressings and ornamentation. In the centre there is a wide deeply recessed arched entrance, immediately above which a band or string course, in terra-cotta panelling, surmounted by Mansfield stone, is carried across the frontage. The Mansfield stone serves for the sills of three lofty Gothic windows, the central window being higher than the other two, and on either side are recesses. Above the windows the elevation is still further carried up as a gable having a coping in terra-cotta, and a balustrade about 3 ft. in height. In the centre of the elevation, at the apex, there is a niche, containing a full-length sculptured figure of St. James, in stone. At the north and south angles the frontage presents small towers. Mr. W. Downs, of Hampton-street, Walworth, is the cont actor.

New Thames Tunnel.—The construction of the Thames subway between North and South Woolwich, which has been in abeyance for some time, is at length commenced. The contract has been entrusted to Mr. Walker, and it is expected that the tunnel will be completed and open for foot traffic before the end of the year.

SANITARY MATTERS AT WEYMOUTH.

A meeting of the Corporation of Weymouth has been held, under the presidency of the Mayor, to consider a report on the sanitary condition of the borough from Professor W. H. Corfield, who had been appointed to make an investigation into the sanitary condition of the town. The report was an exhaustive one, and strongly expressed the opinion that the sewage of the town should be diverted from the breakwater and harbour, and taken direct into the sea. Dr. Fezaid, the medical officer of health, and several other medical men, sent in a joint report endorsing the views of Professor Corfield, and letters were read from others to the same effect. The result was that the following resolution was passed:—

"Resolved, that Dr. Corfield having amongst other things been asked, by order of this Authority, 'what suggestions can be made by way of remedying the offensive smells complained of,' this Authority do adopt the words of the reply thereto, viz., to 'divert the sewage entirely from the breakwater and harbour'; and that this Authority do instruct the Town Clerk to call a committee meeting of the whole Urban Sanitary Authority of this borough on one day of the ensuing week, and from week to week if necessary, to consider and settle means for arriving at a scheme to carry the same reply or suggestion into effect."

It is some years since we pointed out the necessity of this divergence, but whether the sewage should be thrown into the sea is another question.

A SEWAGE DIFFICULTY IN WALES.

What may be regarded as a serious difficulty in reference to the sewerage of two of the towns in North Wales has taken place in consequence of a dispute between the Board of Trade and the local authorities of the two towns in question respecting the right of the foreshore in the neighbourhood of the Menai Straits. The Corporation of Conway have decided upon carrying out a system of sewerage works, and in order to enable them to do so they have applied to the Local Government Board for their sanction to a loan, which the Board have refused, on the ground that the Corporation refuse to acknowledge the right of the Board of Trade to the foreshore, alleging that such right is vested in the local municipal body. A similar difficulty has unexpectedly arisen at Beaumaris, on the opposite side of the Straits, where the Corporation, as at Conway, claim the foreshore under an old charter, whilst the Board of Trade, on the other hand, assert their right to it. The sanction to a loan for sewerage purposes at Beaumaris has thus been refused by the Local Government Board under the same circumstances as those which have occurred at Conway, the result being that the sewerage of the two towns, which, it is said, is urgently required in both cases, cannot for the present be effected.

DRAINAGE DETAILS.

The Bournemouth Commissioners, having recently adopted the model bye-laws issued by the Local Government Board, with a few additional clauses, passed the following resolution, viz.:—

"That, taking into consideration the large number of plans and sections for new buildings (on an average about twenty sets per month), and to save the time of architects and builders, and their own, the surveyor be instructed to prepare an index of the bye-laws, and a sheet showing the details of house-drainage, &c., and that the same be lithographed for the use of ratepayers."

Mr. G. R. Andrews, surveyor to the Bournemouth Commissioners, has carried these orders out in a very efficient manner. The circulation of similar sheets of details in all the districts could not fail to have a good effect. We are, of course, aware that it has been already done in some of them.

Civil Service Estimates: Public Works and Science and Art.—The estimates for the Civil Services and Revenue departments for the year 1879-80, just issued, show that the estimate for Class I., public works and buildings for 1879-80, is set down at 1,333,620*l.* against 1,426,898*l.* for 1878-79, showing a decrease of 93,278*l.* In Class IV., education, science, and art, the estimate is set down at 4,152,641*l.*, against 3,852,390*l.* in 1878-79, or an increase of 300,251*l.*

ALLEGED DANGEROUS CORNICE.

At the Marlborough-street Police-court, the owners of Nos. 4 and 6, Oxendon-street (the Civil Service Co-operative Society), have been summoned before Mr. Newton under the Dangerous Structures Act, Mr. W. Napier, on behalf of the Metropolitan Board of Works, requiring an alleged defective, insecure, and dangerous overhanging top cornice to be taken down, or to be tied down with iron chain band, or secured by some other means.

Mr. Walker, the district surveyor, said he had examined the structure in Oxendon-street, and found that it was dangerous, and ought to be removed or properly secured, the mortar having no cohesion. It was a matter of about 20*l.* to the company, but of peril to the public.

Mr. Frost, surveyor to the Duke of Bedford, gave it as his opinion that the cornice was insecure.

Mr. Isaacs, surveyor, was called for the defence, and he gave general and technical reasons to show that the structure was not dangerous.

The case having been adjourned for a week, the owners agreed to do all that was required. Mr. Newton said that being so, all he had to do was to decide that the structure was dangerous and to make an order for proper means to be taken to make it secure within fourteen days.

COMPENSATION CASES.

BRETT *v.* LONDON AND NORTH-WESTERN RAILWAY COMPANY.

Mr. Under-Sheriff Burchell and a special jury were occupied on the 14th inst. to a late hour in assessing the value of 2 acres 3 perches of land at Willesden, about a mile beyond the junction.

The case was one of some interest to builders and landowners near London.

The piece of land in question was a portion of the estate of Mr. Brett, a minor, and the claim was nominally by Messrs. Le Marchant and others, his trustees, against the London and North-Western Railway Company.

Mr. Webster, Q.C., and Mr. Moorsom appeared for the claimants, and Mr. Littler, Q.C., and Mr. E. S. Roscoe for the railway company.

The two acres lay close to the River Brent, and immediately adjoining the railway embankment, and were, in fact, required for additional coal-sidings. The formal claim was 2,350*l.*, but the amount actually claimed at the hearing by the counsel for the claimant was 1,900*l.* On the other hand, the company had paid into court 750*l.*, the amount at which the land had been assessed by the Board of Trade surveyor, for the purpose of its being taken by the company before the case was heard, but the company's counsel said that the real value was 500*l.*

The very large discrepancy between the figures of the two parties was kept up by the evidence of a number of eminent surveyors, who were called by the claimants and the company. But it appeared that the claimant's surveyors considered that the land would be covered with 80*l.*-rental houses in ten years, and assessed its value accordingly. The witnesses for the company said that the time when this land would come in for building purposes of any extent was yet quite in the distant future, and was too remote for reasonable calculation, and, moreover, that this actual bit of land was so damp, and liable to flooding, that it would never be fit for anything but accommodation-ground.

The jury viewed the spot, and finally assessed the amount to be paid at 770*l.*

TRUSTEES OF HATTON'S CHARITY *v.* THE METROPOLITAN BOARD OF WORKS.

This case was tried at the Middlesex Sheriffs' Court, Red Lion-square, on the 11th inst., before Mr. Under-Sheriff Burchell and a special jury.

The claim amounted to 3,200*l.*, for the freehold of two old houses in Gray's Inn-road, near Liquorpond-street, required for the Gray's Inn improvements, and an offer by the Board of 2,400*l.* had been refused. It was now alleged that the amount was 40 per cent. beyond the value of the property.

It appeared that Lady Elizabeth Hatton, the wife of Lord Chancellor Hatton, left by her will, dated 1645, 500*l.* for the poor of St. Andrew's, Holborn, and of that sum 250*l.* had been invested for the Middlesex poor. Two houses in Gray's Inn-lane, and the 250*l.* had produced a clear income of 100*l.* a year. It was stated that at the present price of Consols it would take 3,240*l.* to realise a similar amount.

The difference in the opinion of the "expert" on the present occasion was, as usual, very co One side put the value at 2,000*l.*, and the oth 1,550*l.* Ten per cent for compulsory sale was to

Mr. Under-Sheriff Burchell, in placing the ca the jury, told them that as the offer had not been they were to put out of consideration all senti the purpose for which the money was to be ap amid the conflict of opinion of the surveyors an to arrive the best way they could at the value o perty, irrespective of the offer or of the charit the sum they awarded would be devoted.

The jury, after a consultation of half an hou the compensation at 2,775*l.* The award, being offer, will carry costs.

CARTER *v.* METROPOLITAN DISTRICT RA COMPANY.

This case was heard in the same cour 12th inst.

The claim was for a little more than two a thirteen acres at Fulham, required by the rail company would cut through the land leased at 6 to the claimant as a market garden, and the question was the amount of "consequential d be given. The garden yielded a net profit of £ 30*l.* a year per acre, and by the severance the would be depreciated. The point was to w would the cutting of the railway injure the pro

The jury, after an absence of an hour, assesse pensation at 766*l.*

A CAUTION TO JERRY-BUILD

The Edmonton Local Board have t been instrumental in making an exar builder in Tottenham, who was found houses in that locality, and using a which could not be called mortar. Th in question, Frederick Bryen, was s before the Edmonton magistrates, at Sessions, on Monday last, for an infr of the building requirements of t Board. Mr. Crowne, clerk to the B peared in support of the summo De Pape, surveyor to the Local Boa that he had visited the houses, n built, and found that the defendant, i using the quality of mortar require Board, was making use of a substan ing for the most part of road sweeping was a very trifling admixture of what call mortar, but the chief ingred nothing more than street sweepings, g gether unfit to use for building. could be safe in which such a subs used.

The magistrates severely condemne duct of the defendant, and fined hi costs, expressing their regret that t not inflict a heavier penalty.

F. W. JACKSON'S "A 1" COMP ENGINE AND MORTAR MI

These machines, designed special a great want felt by railway and o contractors for a light, compact mac can be removed from place to pla unfixing or disconnecting, and at the possessing the same advantages as th portable engine and mortar-mill, have great success. The mills are of the w "A 1" type, commended in our pa years ago. The bridge framework is possesses the utmost rigidity and str proper compensating gear is provided and tear. The crushing gear is effe turns out first-class mortar. The e light and strong, and attached dir boilers, whereby the vibration of the little felt, and does no injury, the the thrust of the engines being tak boilers by suitable stay-rods. A su wheel is attached to the lay-shaft, b which the power of the engine can for sawing and other purposes (wh quired for grinding). The boilers multitubular type. The whole is mo strong timber carriage, with wrought- axles, and strong cast-iron trolley-w lock to fore-carriage and shafts for can be conveyed from place to pl ordinary portable engine. These mac now stood a test of over seven ye which time they have been advantag ployed on some of the large railwa at home and abroad, as also on p public and private buildings in Lond country.

Royal Scottish Academy.—The the late Mr. G. Paul Chalmers, R amongst other legacies, left 1,000*l.* t Scottish Academy.

COMPETITIONS.

Public Buildings.—At the last the Darlaston Local Board, the ldings Committee recommended the public offices, to include the neces- for the clerk, surveyor, collector, and f nuisances, and Board-room; and library, reference library, reading- all the necessary rooms and offices duct of the business of the library. yor reported that he had prepared or architects, and the total cost of as was not to exceed 4,500*l.*, and the ompeting architect would be engaged t the works at the rate of 5 per cent. unt of the contract. It was resolved port be received and acted upon.

son Hospital, Spalding.—The designs n competition for the erection of the Johnson Hospital," Spalding, were t week. The *Lincolnshire Chronicle* of the 60 designs sent in, about arked by the trustees as "selected consideration." Included amongst selected are:—No. 35, G. G. Hoskins, ; No. 54, Alfred Smith, Warwick; ldard & Paget, Leicester; No. 32, Naylor, Derby; No. 26, Holtom & eds; No. 48, Browning & Molecey, and No. 28, Weatherley & Jones, ho submit an alternative plan, with Marshall's Circular System"; No. 49, London; No. 16, Read & Wightman; rles Bell, London; 47, G. T. Skip- Dereham; No. 2, "Modicus"; and ensend, Peterborough. It is stated stees are likely to take professional uide them in coming to a decision. s have offered a premium of 50*l.* for finally selected. The late Miss Fairfax House, Spalding, was the donor of the funds for the hospital.

LISKEARD.

sh church, dedicated to St. Martin, ned, after restoration, on the 12th the Bishop of the diocese. The rch in Cornwall, save those of St. Bodmin, and SS. Finbar and Fowey, it has a nave measuring a chancel 40 ft. in length; while south aisles run the whole length l chancel alike, and another aisle,— apel possibly, — measuring some as out from the south aisle. The exceptionally fine, and the trans- s which separate the nave and the chancel and chancel aisles sely to the general good effect. ant style of the church is Early ar; but the tower, 57 ft. high, is onceded to be Norman. It is not old towers of St. Germans, and addition says that at one time, Germans, Liskeard possessed two ers. A drawing still exists, giving iew of the church in the reign VIII., and therein two towers are ed. The present work of restoration rried out at a cost of something over er the superintendence of Mr. R. itect, London, himself a Cornish works embrace the removal of the left and partition that formerly e tower arch, and cleaning off the by which the latter has been for ted. Fifteen out of the seventeen e new. The roofs are also new, but tion is mainly of a structural cha- y of the internal decorations and g left until a future day. A new ber has been built out from the north le. It is intended, when money raise the chancel floor above the el of the nave, to erect parclose veen the chancel and its aisles, deco- orarium, &c. The floor and seats The intersections of the ribs and the roof are all stopped by es, of which there are about 400. memorial window of four lights in aisle, representing the meeting of l Jesus after the death of Lazarus. e inscription: "In loving remem- Edward Hoblyn Pedlar, who died h, 1863; Sarah Pedlar, who died 1870; and Mary Pedlar, who died , 1854, erected by their surviving ."

The Mr. Edward Hoblyn Pedlar mentioned was the author of the "Anglo-Saxon Episcopate of Cornwall." There is also another memorial window in the east end of the north chancel aisle. Both windows are the work of Messrs. Ward & Hughes. The Lectern is the gift of the Restoration Committee's chairman. The pulpit is an old Jacobean one, bearing the date 1636. The contractor for the restoration was Mr. Thos. Lang, of Liskeard, and the architect, referring to him in his speech at the opening luncheon, said:—"Our builder has carried out his work in a thoroughly honest and satisfactory manner." Mr. H. Hems executed the carving.

BUILDING LAND IN GREAT QUEEN STREET.

On Tuesday, at the Auction Mart, Tokenhouse-yard, Messrs. Debenham, Tewson, & Co. offered to let, on a building lease for eighty years, the freehold site in Great Queen-street, opposite Freemasons' Tavern, upon which, until recently, stood the Home for Destitute Boys; together with the site and six houses in Parker-street, in the rear, the whole covering a ground area of about 6,014 ft. The property was described as being well adapted for the erection of premises for a large manufacturing or mercantile firm, printing-office, or for an institution, hotel, theatre, or lecture-hall. The first offer made was 300*l.* a year, 450*l.* a year being ultimately bid. There was no further advance, and the property was withdrawn after a bid of 500*l.* a year on behalf of the vendors, the auctioneer stating that the biddings did not nearly reach the annual value of the site.

THE INCLINATION OF CHANCELS.

Sir,—In your paper of February 15th there is a discussion on Mr. Penrose's "Notes on St. Paul's Cathedral," which took place at the meeting of the Royal Institute of British Architects held on the previous Monday. In the course of the discussion the President asked why the declination of the axis of a church (where it existed), if due to accident, as the previous speaker had suggested, "should always be found towards the north." Mr. Penrose, in bringing the discussion to a close, corrected the remark of the President, by stating that there were instances in which the deflection was towards the south, bringing forward, as one case known to himself, the church at Wisbech.

Perhaps it may not be without interest if other examples be brought forward. Allow me, therefore, to mention that the church of this parish, a late Norman one, has the axis of the chancel, which is of considerable length, distinctly inclining towards the south, and the same statement holds good of the chancel of the fine church of St. Leonard, in the adjacent town of Bridgnorth. I hope this letter may call forth others on the same topic.

Horatio J. Ward.

Morville Vicarage, Bridgnorth.

LAND AND LABOUR.

Sir,—There is one aspect of the question not yet touched upon, which, being a fact, seems to me even more serious than the reclamation of waste lands in this country. It has become notorious that not only is the land now under tillage very inefficiently cultivated, but a less area is being cultivated year by year. The statistics for last year are not yet to hand, but in 1877 there were only 49,778,676* acres, against 49,905,556 acres in 1876, and 49,826,041 acres in 1875. Last year, and up to the present time, in consequence of the low prices at which food from other countries can be imported, farmers have been unable to make a sufficient profit to induce them to continue in the occupation of their lands, and we hear from many counties of farms to be let, which cannot obtain tenants upon the terms demanded. I hear, upon what appears to be good authority, that this state of things prevails much in Kent and in the Midlands, where we have some of the finest land in England. Sir Robert Peel has some 3,500 acres given up by his tenants; and the Earl of Stamford and Warrington, at his estate at Enville, near Stourbridge, out of a total of twenty-seven farms, has twenty-four of them vacant. Some good land near Birmingham, belonging to Mr. Muntz, of Umberslade, has been out of occupation for these five years past, and a neighbouring farmer tells me that the land thus left idle bears splendid thistles 5 ft. high. This land, and much adjoining, lets for some 45s. to 50s. per acre per annum, and yet farmers are unable to get enough crops off it to pay them, because the game is *strictly preserved*. The land is so entirely given up to hares and rabbits, that the cereal and green crops are used up in their feeding, so that what remains after them is scarcely worth the gathering. And the poor suffering farmer is unable to move hand or foot to rid himself of his destroyers. He must either "submit or resign," and he is adopting the latter alternative, and the land is becoming a wilderness. Much has been said in support of this condition of things. Men eminent in Parliament consider it necessary. Mr. Beresford Hope has told us that we "must preserve the game, as that ensures the residence in the country of superior wealthy people, who cannot live in the country without it." Again, Mr. Greene, M.P., says:—"If the game is not preserved, what are you to do with your friends after breakfast? Why, they will be reduced to smoking all the morning." And so, in his view, there are not sufficient attractions in a country life, and that if the amount of game is reduced, no other alternative than smoking is left to fill up life's void.

What a contrast is presented by our cousins across the water, where the industrial crisis has been severely felt. There, no such restrictions exist as prevent profitable cultivation of the land by all who desire it, and as a result we find that during the past year at least 100,000 families have changed their occupation to the tillage of land from other pursuits, bringing 20 millions of acres more under cultivation than was the case in 1877. And yet their population was very little in excess of our own at the last census.

I have often thought what a great effect upon the building trade would be produced by free trade in land. Instead of crowds of men seeking work without finding it, we should scarcely for years to come be able to get building work done as rapidly as was required. I do not think we can conceive the beneficial change which would come over the face of the country by a redistribution of our people over the surface of the land. And then how much better would be the physique of the men themselves. For years past I have observed a deterioration in that respect, detrimental to both men and master. A return to a country life will restore that loss, and our countrymen become in the future, as they were in the past, some of the finest specimens of humanity.

E. Grimes.

ARCHITECTS' CHARGES.

Sir,—Will you kindly oblige me by inserting the following query in the next issue of your paper?

If an architect is asked to draw plans for a house to cost a certain sum, say *ex. gr.* 1,600*l.*, and it is found, when tenders come in, that it cannot be built for less than 1,750*l.*, can the architect charge commission on this latter sum, or only on the stipulated amount to be expended?

Clericus.

*** Why not on the larger sum, if all be done in good faith? If competent and respectable builders, with the exact "quantities" of a building before them, cannot agree as to its probable cost within 30, 40, and even 50 per cent., how can an architect (not paid for looking accurately into the question of cost, be it remembered) be expected to pronounce precisely?

ARE OUR OLD RAILWAY BRIDGES STRONG ENOUGH?

Sir,—The concluding paragraph of the paper you published a fortnight ago (p. 260) on "The Fracture of Wrought Iron," I consider is of great importance to the travelling public.

Two years ago the same warning was given in a paper read before the Civil and Mechanical Engineers' Society. I take liberty of sending you my copy, and trust you will continue to give the matter your serious attention, as the weights of locomotives have wonderfully increased since the days of the

Old "Rocket."

* Financial Reform Almanack.

DERBY.

Water Supply. — The Corporation of Derby have agreed to purchase the Derby Waterworks. The Derby Improvement Bill, which is being promoted by the Corporation this session, included, amongst other matters, the compulsory purchase of this undertaking. The sum agreed to be paid for the acquisition of the Waterworks is 351,300*l.*

The Artisans' and Labourers' Dwellings Act.—Mr. Robert Morgan, M. Inst. C.E., one of the Government inspectors, held an inquiry at the Guildhall, Derby, on the 11th and 12th inst., on the Derby improvement scheme under this Act, by which the Corporation propose to clear a site in the centre of Derby which has been reported upon as an unhealthy area. The scheme provides for the retention of sufficient land within the area for the erection of dwellings in flats or otherwise, for the accommodation of the working classes from time to time displaced. The approaches to the unhealthy area will be widened, and two new streets constructed through the same. The total cost of the scheme is estimated at 86,000*l.* The area included in the scheme is 7 acres, and the estimated net cost, after deducting the value of the surplus lands available for re-sale, is 38,000*l.* Mr. Clement Dunscombe, C.E., is the engineer for the scheme.

RAILWAYS IN THE DESERT.

It is argued that the French Republic, now definitely and happily established, ought to distinguish itself by great and pacific enterprises, including the more active and extensive colonisation of Africa. The great nations of Europe, notably England and Russia, are extending their colonial possessions on all sides, and unless France follow their example she will ultimately be eclipsed by the growing power of her neighbours. Fortunately, France possesses an excellent opening for colonisation, by which she may add greatly to her own wealth without in any way disturbing the interests of others. There are 300,000 French emigrants in Africa, and they have succeeded in governing and dominating two millions and a half of Arabs. Our position at the Cape Colonies is not nearly so favourable as that of the French in Algeria; though the colonisation of the Cape began in the sixteenth century, and the French have been masters of Algeria for only thirty-five years.

French ambition extends, however, far beyond the comparatively small colony of Algeria. We are reminded that they possess an excellent *pied à terre* on the Western coast, and it is now boldly suggested to unite the colony of Algeria with that of Senegal. It is true that there is nothing less than the great Sahara desert to separate the two countries, but we have it on the high authority of M. A. Duponchel, the chief engineer of the Government Committee on Roads and Bridges (*ponts et chaussées*), that this gigantic obstacle can be easily overcome. In a very interesting work, entitled "*Le Chemin de Fer trans-saharien, Jonction coloniale entre l'Algérie et le Soudan*," the whole scheme is worked out, and certainly deserves consideration. He urges that the colonisation of the Soudan should be the work of France; that it is separated from Algeria but by a distance of 550 leagues, and that the difficulties of crossing the Sahara have been greatly exaggerated. The line proposed by M. Duponchel would start from Algiers and reach the Niger near Ramba. Here it would be necessary to construct two short branch lines of about 300 kilomètres in length, the one to Timbuctoo so as to gather the trade from the Higher Niger district, the other branch line would run to Bourroum, which would embrace the commerce of the Lower Niger. The entire line across the Continent would be 2,574 kilomètres in length, a third running through districts already conquered or explored. Nor would this be an expensive line to construct; there would be no money required to compensate holders of land, and, as the country is generally flat, there would be no great engineering difficulties to be overcome.

The movable sand of the Sahara is, perhaps the chief obstacle, though M. Duponchel maintains that the soil of the desert is hard and firm; it is only covered by a thin layer of sand, the remnants of former rocks. In certain places this sand has accumulated and formed unsafe hillocks, which would have to be avoided. There is also far more vegetation in the desert than generally credited, and certain naturalists have even proposed to convert this arid ground into woodlands. Water is certainly rare, but there are many valleys, caused probably by subterranean watercourses which European genius might easily bring to the surface. Finally, there remains the opposition of the natives. They are not, however, considered very dangerous, with the exception of the Touareg tribe, who only number about 75,000. Skilful diplomacy might also convert these men into friends instead of foes, and, at the worst, they would not be more redoubtable than the Red Indians, who occasionally stop and plunder travellers on the Pacific line. Indeed, M. Duponchel constantly compares his proposed Trans-Saharian railway with the great line from New York to San Francisco.

The financial considerations are not described in so confident a tone. The venture, it is admitted, is not sufficiently enticing to be supported exclusively by private enterprise; but a State that can easily borrow at 4½ per cent. could justifiably undertake a work that must ultimately greatly increase the prosperity of the nation at large. When we consider that in Soudan a bullock is scarcely worth more than 4*s.*, while salt, on the other hand, will some times fetch as much as 6*d.* the pound, we can at once realise the large trade that easy railway communication would open out.

HEROES: 1879.

A Fair Correspondent, full of enthusiasm and the right feelings which are just now common property, sends us the enclosed, forgetful for the moment of the limits, of our scope. If one or two of the lines halt a little, the spirit does not: we yield to the infection, and let Heart take the place of Art for the space of two and thirty lines.

"Charge, soldiers all, for England! We can but fight or die!
The foe around us closes fast; Lo! see the dark'ning sky!
And ere to-morrow's dawn shall break o'er this far Afric land,
All will be lost save honour, run out life's go'den sand.
But we can leave to-day a mark for future years to tell
How Britons love their country, and how her true sons fell!"
The words are hardly spoken, — like a storm the foe rush on,
Barbarians train'd to bloody fight, a hundred quite to one;
The guns are spiked,—the gunners dead; round the stanch band they close,
No mortal valour 'gainst such odds can aught but death oppose;
But the colours, aye the colours! England's colours saved must be,
Nor these black devils' touch degrade the emblem of the free;
So brave young Melville grasps the flag, and wraps it round his heart,
Resolved nor life nor death itself shall make him with it part.
Cochill and he fight on their way these human barriers through,
See what these lion hearts can dare, these lion hearts can do!
And whilst a thousand savages press on his blood to drink,
Panting and wounded, dying, he has reached the river's brink,
Where the cold waves receive and bear him gently to the shore,
And his comrades meet his body, the flag still floating o'er;
And on his calm pale face a light not shed from land or sea,
But a gleam from the heavenly city, light of eternity!
And his name shall live in story, his fame be sung in song,
As long as we honour valour or fight with ruth 'gainst wrong.
'Tis not all death to die so young, shrined in our country's heart;
'Tis not all death to die so young when for the nobler part;
And in an age when greed of gold, or lust of what earth brings,
Like plague-spots, lie on hearts we feel were made for better things,
One deed like this can purify and teach us still to see,
That life counts not by length of days, but 'true nobility.'
Like that young hero may we hold our colours strong and fast,
Our faith, our honour, and our truth, unsullied to the last.

C.

The Ladies' Work Society.—A ball, under the patronage of their Royal Hignesses the Princess Louise (Marchioness of Lorne), Duke and Duchess of Edinburgh, and the Duke of Connaught, on behalf of the Ladies' Work Society, is be held on Thursday, May 8, at Willis's Rooms. Any who desire to help this useful society could obtain information from the Vice-President, Mrs. W. Playfair, at 31, George-street, Hanover-square.

STREET IMPROVEMENTS IN PROVINCES.

Derby.—On the 12th inst. Mr. Mon held an inquiry at the Town-hall, Derb ing a petition presented by the sanit rity to the Local Government Board, the issue of a provisional order, e them to put in force the powers of Clauses Consolidation Act with resp purchase and taking of certain lan improvement of St. Peter's-street and The Sanitary Authority had also permission to borrow 1,360*l.* for work improvement. Mr. Jones (clerk to th Authority) stated that the applicat pally referred to the improvement and a portion of St. Peter's-street. T in reference to the last-named stree the Green Man inn and some prem back of it, situate on the south Peter's Churchyard. A portion of B already widened, and the Authority take up the improvement at the poi was left off, and continue it as far street. The 1,360*l.* mentioned in was for the purpose of purchasing Wardwick, opposite Bass's Free L the view of widening the street, a the sum of 100*l.* for building a wall perty. There had been an arbitrat rence to the taking of property belo committee of the Mechanics' Ins widening the Wardwick, but the arb decided, without referring to the give 7,500*l.* The Sanitary Author quired 1,000*l.* for the purposes of provement in Albert-street.

Nottingham.—An alteration is which will effect a great improve junction of Heathcote-street and Up to the present time the corne occupied by a public-house called t Trumpet; but Mr. H. G. Jalland chant, has commissioned Mr. S. Du architect, to take improvements in will clear away the public-house A new building will be erected on back from the corner. On the gr is proposed to provide three larg above them large rooms, 60 ft. lo wide, suitable for lace warehouse for professional men, these suit being approached from the stree flight of steps. Facing Heathcot occupying that end of the proper commodious warehouse.

PARLIAMENTARY JOTTI

Rivers Conservancy Bill.—This second time in the House of Lords o the motion of the Duke of Richmond the establishment of river conser by giving power to ten or more owners of any district, to any exis vancy Board or any Sanitary Autho to the Local Government Board f set up a Conservancy Board in the Local Government Board, having motion, is to direct a local public made. If the Local Government B fied that a case has been made out a provisional order to set up a Board, and, for the purpose of me pense which will have to be incurr provisional order is opposed in P Local Government Board are to b take from the promoters of the sch taking that they will appear to order. The number of the Board in the provisional order. The B constituted of two descriptions o first, of life members; and, secon members. The former, who must b of the district, are to number on Board, and vacancies among them, or death, are to be filled up by the The second class of members will be sanitary authorities for a period o If there is to be only one electe must be a landowner; if there one member, then one-half the ele must be landowners. The duties so constituted will be to cleans deepen, and otherwise improve th rivers, and the boards will have move all obstructions and to enfo ties of riparian owners. They w to frame bye-laws, to have peri

e catchment basins, and to carry out
ns of the Pollution of Rivers Pre-
. It is also proposed to give a Con-
oard power to levy a general rate,
at view it is proposed to divide the
the uplands, the intermediate lands,
lands. It is proposed that the rates
nds should in no case exceed one-
whole rate. Tenants are to be
deduct from their rents one-half the
them. Powers are taken for the
f certain lands from the rate if they
and, on the other hand, where lands
d so that they may be considered as
what had been done, they may be
dingly. Power of appeal to the
nment Board is reserved to owners.
hole district is benefited in a sani-
view, it must all contribute to the
t is also provided that two or more
combine for the purposes of the

Liability.—In the House of Com-
sday evening, the Attorney-General
ve to bring in a Bill to amend the
to the liability of employers for
tained by their servants. He re-
the subject had been investigated
ttee, and had since been under the
of the Government, and they had
conclusion very similar to that of
tee. It was thought that those
he managers of a corporation or
should be placed in the position of
included in the category of fellow-
that if an injury were occasioned
gligence the corporation would be
ther under companies or in private
ts, the persons entrusted with
would be considered servants in
d if they were guilty of negligence
oned injury, the company or the
uld be liable. He did not know
separation of managers from work-
tisfy the demands that were made,
t think it possible to go further in
e liabilities of masters.

THE PROPOSED RESTORATION OF PRESTBURY CHURCH, NEAR MACCLESFIELD.

s," who addresses you (p. 263) as the
scheme, does not perform his duty in a very
he launches against me wholesale accusa-
statements and false assumptions, mis-state-
se charges, and wilful misrepresentations,"
h sneers at my supposed "old age." I
restoration of his manners should demand
on, for everything I wrote was either a
the promoter's pamphlet or a legitimate
le statements. I must add, too, that I am
a writer selected for the reponsible task of
cument who informs us that "Geometrical
e introduced, when no such thing is con-
hen calls it a *lapsus pennæ* simply.
y gratified to learn from "Veritas" that
and above the west gallery floor (which
vill be retained, even though their *raison*
disappeared in the *mêlée*; that the stone
will be replaced; that the little candle-
aved; that the small piece of stained glass
iew of the north aisle will be refixed,—
small mercies.
ew of the nave arcades will not be inter-
was as to the *pier caps* that we felt the
ion: can he guarantee *their* safety?
ing eighteenth-century chancel screen is
ept in its present position." Now, the
l to it—presumably with abusive intent
gan," &c., and muttered mysteriously of
d with pagan emblems and other decora-
for a Christian temple." *Hinc illæ*

blet on the north side of the chancel is not
but simply blocked, it appears: bad
better than we feared.
s "the battlements of the tower are to
e they are dangerous, and not renewed,
assumed." This is exactly what I pleaded
nd the pamphleteer distinctly says (p. 14)
arapet requires renewing." "Veritas" tells
s of intermediate pinnacles remain on all
e." I know they do; that is to say, their
the evidence of the building itself is dead
having been erected. Mediæval builders
odify or abandon their original intentions
out being ashamed of the primary con-
roying its traces; but our destructive
rush in where these constructive angels

vely gives out that "the plinth of the
tended to be altered in connexion with
ses." What more can any audacious
than this? Surely when we shall have
and traceried windows, and a Mediæval
erted in a Classic wall-veil, a something
ieved to secure the awe-stricken admira
Ruskin *et hoc genus omne* to the contrary

ts in my remonstrance, which you kindly
at inst. (p. 288), and to which "Veritas"
cations or excuses, were, the wholesale
rch of its fine old oak gallery and nave
pews (with their very rich early fragments); the pulling down of the large Wren-like north aisle built a century and a half ago, in excellent repair, and the mainspring of light and cheerfulness to the whole building; to replace it by a so-called "restoration" of something, the like of which has never yet existed there, with perhaps one-third of the window power of the present structure, and in the face of absurd grumbling about a "general gloom"; the demolition of the picturesque western stone stairs leading up to the gallery and the ringing-floor in the tower; the lowering of the floor of the untouched south porch, to the loss or derangement of its ancient stone benches; the tearing down of the chancel arch so correspondent with the screen beneath and the roof above, and the substitution of a high-soaring new arch, utterly incongruous with its near surroundings.

As "Veritas" has nothing to say about these weighty matters, I fear we can but cherish a faint hope that the Restoration Committee, or their supporters, will have supped full of horrors some time before the end of this chapter of iniquities is reached.

A Member of the Society for the Projection of Ancient Buildings.

A SAD CASE.

Sir,—Thirteen years ago you kindly permitted me the use of your columns for an appeal to the building trade in furtherance of a scheme to found an institution for the relief of necessitous clerks. By its powerful aid machinery was set in motion that since has been rendering assistance to all comers.

The earliest moments of that Society were carefully watched by its first three members,—one an old valued servant to an eminent building firm, which, failing, brought on suicidal tendencies, and which terminated fatally. The second, on whose behalf the third appeals, became a partner in a London building firm, which has carried out many prominent works both in town and country. Great losses, unsuccessful painful operations, apoplexy, deprivation of speech, suspension of business, and its concomitants, have brought the man of sixty, with a wife and two daughters, dependent on the slender resources of his sister. The Society he was partly instrumental in forming cannot assist him. Mastership precludes; its funds cannot be applied otherwise than to the objects it was founded for. To the Builders' Benevolent Institution I look for aid by your publicity for votes at the next election.

Some temporary assistance has been rendered through the efforts of that kind friend to all the trade institutions, Thos. Stirling. I have seen the case: an energetic man, nearly speechless and destitute. Pecuniary assistance is needed. The day of adversity has come to him who in years gone by helped to aid the destitute, the widow, and the fatherless. Though living, that voice is hushed, and they that knew him best plead now a cause for him who oft had done the like for others.

Aid or promises of support will be forwarded by

T. Peto Ward, Lower Edmonton.

SHELL BURNING.

Sir,—I should be much obliged if any of your readers would inform me if there be any means of burning shell *débris*, which is as fine as a coarse sand, with a view to making lime,—the difficulting being to get a draught through it. The fuel must be coal or peat, as wood is unobtainable in the vicinity. W. P.

MASTERS AND MEN.

Tamworth.—The builders of Tamworth have given the bricklayers, carpenters, and joiners notice of reduction in their wages of ½d. per hour, to commence on the 1st of April next.

Alloa.—Last week, the majority of the journeymen joiners of Alloa came out on strike against a reduction of ½d. per hour. On Monday last, however, they resumed work on the masters' terms. This is the third reduction of ½d. per hour within the past few months. The wages will now be 6d. per hour.

The Glass Trade.—The Glass-mrkers in the Birmingham, Stourbridge, and Dudley districts received notice from their employers on Saturday of a 15 per cent. reduction in their wages from that day fortnight. The manufacturers state in the notice that they are compelled to give it "in consequence of the present deplorable condition of the trade, produced by foreign competition and other causes," it being "absolutely necessary, if trade is to be carried on, that the cost of production be materially diminished." The movement for a reduction appears to be a general one, and it is exciting much interest in the Yorkshire, Lancashire, Scotch, and other glass-making districts.

Greenock.—The Greenock operative joiners, it is stated, are to be asked shortly to accept a further reduction of 1d. per hour on their wages. Their present wage is 7d. per hour.

Thurso.—The Caithness Flagstone Quarrying Company and the Thurso Co-operative Pavement Company have reduced the pay of their workmen be about 2s. per week.

West Bromwich.—At a conference of the carpenters and joiners of West Bromwich, Wednesbury, Oldbury, and the surrounding towns, it has been resolved that the standard wages be 7½d. per hour from the 1st of June.

The War in Africa.—Mr. Wyld has published a plan of the attack on the British Camp at Isandula.

CHURCH-BUILDING NEWS.

Norwich.—St. Augustine's Church, Norwich, which has been temporarily closed for restoration, was reopened for divine service on the 23rd ult. The high pews have given place to open seats of pitch-pine. A tesselated pavement has been laid down in the centre and side aisles. The old vestry, which occupied the south-east corner of the church, has been taken down, and a temporary one opened out under the tower at the west end. The whole work was carried out under the direction of Mr. R. M. Phipson, architect; the builders being Messrs. Downing & Son, of Pitt-street, Norwich.

Halifax.—The restoration of Halifax Parish Church, commenced by the late Sir Gilbert Scott, is reported to be proceeding satisfactorily under the direction of his son. Provision has been made for the careful storing away—in a fireproof chamber built westward of the old vestry—of the valuable records and registers of the church. The *Halifax Guardian* states that an important point has been discovered in the course of the work required for the raising of the roof at the east and west end of the nave, so as to avoid the square ceiling abruptly cutting into the crown of the arch at each end. At the east end, a beam 13 in. by 10 in. was found to be so utterly decayed, that one side was hollowed like a canoe, and the wonder is how the rotten and time-worn timber has held in its position. Before the work is completed, it will be well if all the timbers of this long roof (175 ft.) are carefully examined. A few days ago a very interesting fragment of carved screen-work was discovered. It had been ruthlessly shoved against the wall, and some modern panelling placed in front of it. It will be incorporated with the screens now being restored at Peterborough, and once again be exposed to view in the old church of which it was once no mean ornament. The roof of the south aisle is rapidly approaching completion, and it has been decided to remove altogether the dormer light which was erected about 120 years ago, and which projected over the south or Vicar Holdsworth chapel. No decision has yet been come to as to the completion of the extreme east end of the church; but it is stated that the reredos designed by the late Sir Gilbert Scott will not at present be erected.

Holcombe Rogus.—The chancel of the parish church of All Saints, Holcombe Rogus, having been restored at a cost to the impropriators of over 600*l.*, it is considered desirable to proceed now with the rest of the church, properly secure all vaults, graves, and memorial slabs, to relay the floor (the passages with Minton's or Godwin's tiles in plain colours), and to replace the old and incongruous deal pews with new seats of pitch pine, after plans by Mr. John Hayward, architect, Exeter, and, this accomplished, to pull down the old vestry and erect a suitable one in the rear of its present position, and to make all needful repairs to the Bath stone and general stonework of the exterior of the body of the church, and "point" the tower. The architect estimates the cost of the new floor and seats at about 300*l.*, and that of a new vestry at 140*l.*, exclusive of pulpit and lectern, while for the rest, including the churchyard walls, 200*l.* would barely suffice.

Caversham.—The work of enlarging and restoring the parish church of St. Peter's has been delayed, owing to the continued frosts, but it is now being rapidly proceeded with. The old wooden tower has been demolished, and a substantial one, 56 ft. in height, built of flint, has been raised in its place. The peal of six bells from the old tower will be hung in the new belfry. A new south aisle is being erected, of flint with stone dressings, and when finished will be capable of seating about 130 persons. The ancient Norman doorway is to be re-fixed; and the old porch will be replaced by a larger one. When the alterations are finished, the church will consist of a nave and two aisles. The alterations are being carried out from plans prepared by Messrs. Morris & Stallwood, architects, Reading, Messrs. Wheeler being the contractors.

Gamlingay.—Mr. J. P. St. Aubyn, architect, has reported on the condition of Gamlingay Church, in the diocese of Ely, with a view to restoration. The building is, for the most part, of the Perpendicular period, but the lower portions of the walls are of much earlier date. The church externally is in a bad state of repair; much of the stonework is in a dilapidated condition, particularly the dressings of the win-

dows. The roofs generally are in a fair condition; they are covered with lead, and will not require a very large expenditure, excepting as to the chancel, the roof of which is rough and under-ceiled with a flat ceiling. The chancel will, Mr. St. Aubyn believes, require an entirely new roof. The chancel-screen is a rich example of the wood-carving of its period, and so are the chancel-stalls, which must be carefully repaired and preserved. The cost of the proposed restoration, with a new chancel-roof, will amount to 3,000*l.* or 3,500*l.*

SCHOOL BOARD SCHOOLS.

Keighley.—On the 22nd ult. the fourth school built by the Keighley School Board was formally opened. The building, which accommodates 910 children, is situated at the south-west end of the town, in the Holy Croft district. Its site, an area of 7,200 square yards, was leased from the trustees of the Waddington Hospital, the terms being that it should be held for 999 years at a rental per annum of 3½d. per yard. The plans have been prepared by Mr. Geo. Smith, of Bradford, so as to favour the same method of classifying the scholars as was adopted in constructing the Holy Croft School, a building of similar size which was opened a year ago, that of dividing them into infants, mixed juniors, and mixed seniors. The building is in the form of a square, partially of two stories high. The assembly-room, which it is intended to use also as a covered playground in bad weather, measures 54 ft. by 40 ft. The infants' rooms, calculated to accommodate 300 children, are two in number, and measure respectively 25 ft. by 55 ft. and 25 ft. by 19 ft. The junior mixed department, for 360 children, consists of three rooms, each of which measures 34 ft. by 25 ft. The first floor is devoted to the remaining department, and is divided into four class-rooms, each measuring 24 ft. by 25 ft. The cost per head for the whole building is about 6*l.* 14s., the aggregate cost being 10,350*l.*

Falkirk.—The Comely Park School has been formally opened by the Burgh School Board. The school, of which the architect is Mr. W. Black, contains four class-rooms, a cloak-room for the girls and infants, and lavatories, &c., for both sexes. What is called the mixed class-room measures 54 ft. by 22 ft., and is the largest apartment. Next in size is the infant school, the dimensions of which are 40 ft. by 20 ft., and there are also two other smaller class-rooms measuring each 18 ft. square. The following firms have been engaged in the erection of the school:—Messrs. Young & Beatie, builders, Bo'ness and Alloa; A. & J. Main, joiners, Falkirk; John Lamb, slater, Falkirk; John Davie, plasterer, Falkirk; D. Draper, plumber, Falkirk; and John Graham, painter, Falkirk.

STAINED GLASS.

Northampton.—A new stained glass window has been placed immediately over the doorway at the west end of St. Sepulchre's Church, Northampton, by Messrs. W. & H. Colledge, in remembrance of their deceased parents. The subjects are,—in the left light, Ezra and Nehemiah in the Temple discoursing on the law to a number of persons; and in the right light, Jesus Christ in the Temple proclaiming the Gospel. The work was entrusted to Messrs. Hardman & Co., of Birmingham, and was carried out under the supervision of Messrs. E. F. Law & Sons, architects.

Teddington.—Six stained-glass memorial windows have just been placed in the church of SS. Peter and Paul, Teddington, Middlesex, four in the south and two in the north aisle. The windows are single-light ones, and contain, respectively, the figures of St. Peter, St. Andrew, St. James, St. John, St. Paul, and St. Jude. The work has been carried out by Messrs. Powell, Brothers, of Leeds, whose agents in London are Messrs. Chubb & Son, of St. Paul's Churchyard.

West Haddon.—A two-light window has been placed at the eastern end of the north aisle, in remembrance of members of the Slye family, viz., to Mr. Thomas Walter Slye, surgeon; to his son, Mr. Charles John Slye, the late churchwarden; and to their wives. The subject depicted on the dexter side is an incident of our Lord visiting the sick. The group portrayed on the sinister side illustrates the parable of the Good Samaritan. This window was executed by Messrs. James Ballantine & Son, Edinburgh.

Books Received.

L'Émulation: a Monthly Publication of the Central Society of Architecture, Belgium. J. Davis, 201, Old Kent-road.

THE first part of this English edition of "L'Émulation" is devoted to the illustration of the "Front of the Belgian Compartiment," at the late Paris Exhibition, which it does in a very artistic and excellent manner. If the work be continued in the same style, it ought to obtain a good circulation in this country, the price being moderate. The plates, of large size, are executed in photo-lithography. The name of the building, which we have quoted, is not the only portion of the letter-press that suggests that a better knowledge of English might be looked for in the editor.

VARIORUM.

"Fuel, its Combustion and Economy" (Weale's Rudimentary Series, Lockwood), consists of abridgments of two treatises already published in the Series, with extensive additions on recent practice in the combustion and economy of coal, by the editor, D. Kinnear Clark, C.E. It is a very valuable book, at a purely nominal price.——It is proposed to publish (provided a sufficient list of subscribers can be obtained), "The Inventories of the Furniture and Ornaments, &c., in the Berkshire Churches in 1553, transcribed from the original Records, and edited, with Introduction and Notes, by Mr. Walter Money, F.S.A." The chief interest in such returns is, of course, archæological; and for this reason it is proposed to add such notes as may be thought requisite to the explanation of several of the terms used. A brief Introduction, explaining the nature of the Commission under which the returns were compiled, will also be prefixed.

Miscellanea.

Railway Warehouse Assessment.—A few days ago at the Assessment Sessions, Guildhall, Westminster, was heard the case of the London and North-Western Railway Company, appellants, Parish of St. Leonard, Shoreditch, respondents. Mr. Staveley Hill, M.P., Q.C., and Mr. Page, instructed by Mr. Roberts, for the appellants; and Mr. Grantham, M.P., Q.C., and Mr. Castle, instructed by Messrs. Mills, Lockyer, & Mills, for the respondents. The premises assessed was a very large warehouse in Eldon-street, part of the Broad-street goods station, consisting of two basements and five stories above, ground level connected by rails and bridges with the main line, together with hydraulic machinery for hoists, cranes, capstans, &c., and about 45,000 ft. of land acquired for the purpose. The premises had been assessed by Messrs. Castle & Son, the vestry's valuers, as 7,590*l.* rateable value, to which the company objected, and required the rateable value to be reduced to 5,000*l.* It appeared from the "case," as stated by the respondents, that the assessment committee had offered (without prejudice) to reduce the amount to 10 per cent. to avoid the costs of appeal; but it was not accepted, and the case was fully contested. For the appellants, Mr. Clifton and Mr. F. Vigers were called. They valued the building as a warehouse, at 63s. per 100 ft. of floor-space per annum, including machinery, and at 6d. per foot for land. They stated that the building was somewhat extravagantly built, and might have cost more, but that 6½d. per foot cubical contents would be a fair price. Mr. Castle, the valuer, said he estimated the cost of the building at 8d. per cubic foot, the appliances at the moderate sum of 10,000*l.*, making an outlay of 106,000*l.*, which at five per cent. gave 5,300*l.*, and the value of land he had taken at 1s. per foot, which he thought was really less than its value, and this brought the amount up to the respondents' figures. Other evidence having been given the court dismissed the appeal with costs.—*Metropolitan.*

"A Penny for your Thoughts."—An American newspaper mentions, with something like condemnation, that a lawyer out there had entered in his bill against a client, "To waking up in the night and thinking about your case, 5 dollars." We should not be sorry if people were better paid for *thinking*, whether in the night or the day, than they sometimes are.

Royal Literary Fund.—The C have been increasing their income arranging their investments. At th general meeting, on the 12th, the Earl in the chair, the treasurer's report st the permanent fund on the 1st of Janu consisted of 33,200*l.* Consols. Of 27,000*l.* were sold in May last, and re as follows:—10,000*l.* in the debenture the Lands Securities Company, Lim seven years, at 4½ per cent.; 7,500 four per cent. debenture stock of the L and Yorkshire Railway Company; 7,5 four per cent. debenture stock of t Eastern Railway Company. The cos purchases was 26,130*l.* 3s. 6d. The sum from the sale of 27,000*l.* Consols was 26 being a difference of 108*l.* 18s. 6d., w paid out of the general income,—amo fact, to an investment of that sum o income. The effect of the transfer of may be thus stated:—Income from purchased, 1,025*l.*; dividend on Co 810*l.*; making an increase of incom The sum now standing in Consols w producing an annual dividend of 1 stock of the Newton property co 8,167*l.* 15s. 10d. in the Three per Cents producing an annual dividend of 24 The Newton Estate at Whitechapel duced in rents during the year, le 5s. 4d., the sum of 284*l.* 14s. 8d. year thirty-five grants had been mad ing in the aggregate to 1,740*l.* receipts for the year amounted to 3 the disbursements to 2,466*l.*, leaving in hand of 603*l.* The annual dinner May 7th; the Lord Chancellor will p

Roman Remains at Lincoln.— excavations now going on in Lincoln f purposes, many relics of ancient L been brought to light, but none, greater interest to antiquaries t covery made last week, and de the *Lincoln Chronicle*. Whilst drain-pipes in the Bail, near Newpor workmen uncovered some column ba brick slabs, about 2 ft. square, an shaped at the edges. These parallel with others, of stone, fo Allis, builder, in May of last yea which much discussion arose at the rows of columns stand 26 ft. 9 in other, and this, it is believed, was t the Roman road at that point. brick columns the workmen came pieces of stone, which, on being take found to be missing portions of found last year. They, and three columns, have been taken out and by the Corporation to Mr. Allis, f tion in his museum. On the 13t workmen were continuing the excav where the columns were found whe into a cavity, which appears to be tunnel or subway. It is 4 ft. 6 i and 2 ft. 4 in. wide. The floor an stone slabs, the sides of masonry rently runs midway between the row but explorations are being made where it leads to. In the cutting being driven in Exchequer-gate la fresco-paintings, Roman pavemen interesting relics are being turne which it may be hoped will be pres

Another London Theatre de Fire.—A fire broke out at a qu o'clock on Sunday evening in the Theatre, Whitechapel. The flame discovered, and probably originated of the building where scenery was short time the entire building w and was totally destroyed, togethe tiod of the adjoining premises. The been closed for two weeks. C reports that two buildings, one o used as a theatre, about 130 ft. l the other used as the dressing-roo 60 ft. by 20 ft., were burnt out and The fire seems to have extended premises in the rear, No. 17, Fie occupied by Messrs. Hodge & S finers. The four upper floors of th and stores were burned out, and and the two lower floors considera In the manufactory, which is a br floors, about 60 ft. by 50 ft., the of the three upper stories were Eight dwelling-houses were also damaged by the fire.

...o the Hot-Water Apparatus.—An ...as held by the City Coroner at St. Bar...'s Hospital last week, on the body of ...ned Frazer, aged 15, of Alderminster... ...mondsey, who met with his death at ...bury-hill Chapel, Highbury. The evi... ...the chapel-keeper, Mr. Gambling, went ...hat the chapel was heated by a patent ... apparatus, consisting of a coil of pipes ...h water running round the inside of the ... and heated by a furnace situated in a ...s at the rear of the chapel. On Satur... ...he furnace was lighted at four o'clock, ...e o'clock Frazer, who was employed ...tness, went into the stoke-hole. While ... explosion occurred, and he was much ... He was removed to the hospital, and ...Monday. In reply to the coroner, the ...aid the apparatus had been in use for ...rs, and had not been cleaned out. ...s no water or steam gauge, and the ...vision for the waste steam was an ...ipe, by which the steam was con... Fresh water was sometimes supplied ...ies by unscrewing a brass cap. The ...having shown that the accident had ...through the bursting of one of the pipes ...unexplainable cause, the jury returned ...of "Accidental death."

Central Association of Master ... of London.—The committee of this ...n have just presented their annual ... the members. It congratulates the ...n on the successful termination of the ...trike last spring, when the union, ... it did not withdraw its demands, ...s members, under certain conditions, ...to their work. The committee regret ...oyers still hold aloof from the society, ...rge their friends to use their efforts ...new members. The London Associa... joined the National Association of ...ilders of Great Britain, and have ...on a form of contract to be used ...t the country. A proposal to reduce ... wages had, for pecuniary reasons, ...drawn, as it was not thought advisable ...into another conflict with the union. ...mittee have been compelled to cut ...nses, and in future Mr. Henshaw will ... the double duties of collector and ... The report is accompanied by a ...aling for subscriptions from builders, ...embers of the association or not.

...ol Architectural Society.—The ...eeting for the present session of this ...s held on Wednesday evening, at the ...titution, Colquitt-street, the president ...y Summers) in the chair. After some ...siness, Mr. Montgomery exhibited a ...an which he had prepared of the ...-hill Workhouse, and explained that ...covered was nine acres. Mr. Joseph ...erved that the dimensions gave an ...opulation of 300 to the acre, and ...t the mortality was very low indeed ... workhouse. Mr. Montgomery said ...ation of the workhouse for the last ...averaged 2,500. The Chairman asked ...workhouse stood as compared with ...her unions. Mr. Montgomery replied ...s the largest in area in the kingdom, ...looked upon as a model workhouse. ...w suggested that Mr. Montgomery ...ng the whole subject of the work... ...lings before a future meeting of the ...Mr. J. M. Hay then gave an explana... ...e proposed restoration of Skirlaugh ...ustrated by drawings, after which a ... took place on a paper on "Sanitary ..." which was read at a former meeting ...eph Boult.

...n Engineers and Draughtsmen.—...n Association of Foremen Engineers ...htsmen held their annual dinner in ...reet Hotel on Saturday last; Mr. ...er, C.E., in the chair. Mr. Sullivan, ...onding for the House of Commons, ...House was a very difficult place to ...but, fortunately, they had in the pre... ... of that House, Sir Stafford North... ...man engineer of the highest honour, ...very member was proud. The con...ween the House of Commons and the ...ngineering did not end there. They ...at House many "eccentrics,"—he ...entric politicians,—also many "oscil... ...nd "rotary" politicians, and when ... round they badly felt the want of ...s."

The Electric Light.—Mr. Balmanno Squire, Senior Surgeon to the British Hospital for Diseases of the Skin, delivered a lecture at the Royal United Service Institution last week on the adaptation of the electric light to military and naval surgical practice. The contrivance he exhibited consisted of a remarkably small light and portable hand-lantern, containing in a tube projecting from the back of it (which tube served also as a handle for the lantern) a Jablochkoff candle. By means of a screw contrivance fitted to the tube the burning end of the electric candle could be advanced forward into the lantern as the candle gradually burnt back. This, with two connecting screws for attaching the electric wires, formed the whole of the apparatus. The force required to generate the light he placed at 1½-horse power.

Forging an Architect's Signature.—At the Bow-street Police Court, on the 14th inst., a young man, named Alex. E. Sutherland, late clerk to Mr. Rowland Plumbe, architect, Fitzroy-square, was charged with forging a cheque for 30*l.* on the Tottenham-court-road branch of the City Bank. It was proved that the cheque was paid to the prisoner by a clerk in the bank, who knew him to be in the employ of Mr. Plumbe, and thought the signature, although slightly different, was that of the prosecutor, Mr. Plumbe. A further charge was preferred against the prisoner of having broken into the office of Mr. Plumbe, and stolen some shoes, collars, &c. The prisoner was remanded.

Tewkesbury Abbey.—The restoration of this noble specimen of Mediæval architecture has been in progress during the past few years, and is now approaching completion. A meeting convened by a National Committee appointed in March, 1877, is announced to be held in the Library at Lambeth Palace on Friday afternoon, the 28th inst. The object of the meeting will be to call attention to the progress and present position and restoration of the abbey, and to present a report of the work accomplished since the meeting held at Lambeth in March, 1877. Mr. J. Oldrid Scott, who is continuing the restoration commenced by his distinguished father, the late Sir Gilbert Scott, will also read a paper.

The Electric Light at the Royal Albert Hall.—His Majesty the King of the Belgians, attended by General Lynedoch Gardiner, visited the Royal Albert Hall on Monday, and witnessed the lighting of this vast building by electricity. His Majesty was received by the Electric Lighting Committee, consisting of Mr. E. Bowring, C.B., Professor Tyndall, Mr. Warren de la Rue, Mr. George Godwin, Dr. Mouat, and Dr. Siemens. Before leaving the building his Majesty had an opportunity of comparing the gas illumination with the electric lighting, and then inspected the machinery used for producing the light, the details of which were explained by Dr. Siemens.

The Artisans', Labourers', and General Dwellings Company, Limited.—Since the unfortunate circumstances which led to the collapse of the late directorate of this company, there has been a feeling that the management of the company would be strengthened by electing to the board of directors one or more gentlemen who, in addition to other qualifications, should have a practical knowledge of building construction and matters connected therewith. The result of this has been the nomination of Mr. Mark H. Judge, surveyor. At a meeting of the board on Tuesday last, Mr. Judge was unanimously elected to fill a vacancy made by the retirement of Mr. John Pearce.

Borough Surveyor, Derby.—At a special meeting of the Derby Town Council, acting as the Sanitary Authority, Alderman Longdon proposed, in accordance with the recommendation of the Parliamentary Committee, that the salary of the borough surveyor (Mr. Clement Dunscombe) be raised from 500*l.* to 550*l.*, the additional amount to be applied in payment for the keep of the horse used by that officer. In spite of the fact that, by the recent extension of the borough boundaries, the public roadways under the control and care of the surveyor have been increased by nearly 50 per cent., the motion was negatived by 23 to 22.

Old Oak Carvings.—Persons wanting old carved wood work will find an advertisement in our columns worth their attention. The carvings therein mentioned have a story, but we have not space now to tell it in.

Sunday Art Exhibitions.—The president and officers of the "Sunday Society" say:—"Owing to the kindness of Sir Coutts Lindsay, the proprietor and director of the Grosvenor Gallery, we have the satisfaction of announcing that the winter exhibition of drawings by the old masters will be opened under the auspices of the 'Sunday Society' on the two following Sundays:—On Sunday, March 23rd, the Gallery will be opened free to the members of the 'Sunday Society'; and on March 30th, to the public by tickets, which will be issued to those applying by letter, and sending a stamped and addressed envelope to the honorary secretary, 19, Charing-cross."

Royal Italian Opera.—Mr. Gye has issued a strong programme, and will commence operations on Tuesday, April 8. We cordially wish him success in a difficult undertaking. Madame Patti will give her aid; and it is the intention to produce two, at least, of the following works:—Massenet's Grand Opera, "Il Re di Lahore"; Herold's Opera, "Le Pré aux Clercs"; the Marquis d'Ivry's Opera, "Les Amants de Verone"; and Paladilhe's Opera, "Suzanne."

Arundel Castle.—We hear that some considerable alterations and extensions are to be made at Arundel Castle. The contracts taken are (according to the *Brighton Herald*) for between 20,000*l.* and 30,000*l.*, and some 200 or 300 workmen will be shortly set to work. It is understood that three years will be occupied in the works.

Death of Broadhead.—It is stated that the once notorious William Broadhead, formerly secretary of the Sawgrinders' Union at Sheffield, and the instigator of most of the trade-union outrages which were perpetrated there some thirteen or fourteen years ago, has just died from softening of the brain.

Freeing the Thames Bridges.—It is announced that the Albert and Battersea Bridges, and also Chelsea Bridge, will be thrown open to the public, free of toll, in about six weeks from the present date. The sum agreed to be paid for the Albert and Battersea Bridges by the Metropolitan Board of Works is 170,000*l.*

Honour to a French Workman.—It is stated that a workman named Adrien Maquet has just been made an officer of the Academy. His trade is that of a locksmith. He is said to be the greatest authority on heraldry in France, and he has written several books on historical subjects.

Royal Architectural Museum.—At a meeting of the Council, held on Wednesday, the 19th inst., Mr. Joseph Clarke resigned the office of hon. secretary. His resignation was accepted, and Mr. John P. Seddon was elected to the vacant office. Mr. Walter C. Cocks was elected Treasurer.

TENDERS

For alterations and additions to Nos. 287 and 289, Old-street, St. Luke's, for Messrs. Edwin Fox & Bousfield. Quantities not supplied:—

Tully	£1,596 0 0
Smith	1,500 0 0
S. & G. L. Mann	1,500 0 0
Julian & Co.	1,450 0 0
Frost & Co.	1,386 0 0
Roberts	1,380 0 0
Grover	1,347 0 0
Staines & Son	1,293 0 0
Crabb	1,250 0 0
Maxwell Bros.	1,142 0 0

For finishing villa residences at Anerley. Messrs Winsor & Hancock, architects. Quantities not supplied:—

Hayworth	£858 0 0
T. & G. Inwood	805 0 0
Holt	650 5 0
S. & G. L. Mann	637 0 0
Wootton	580 7 0

For the erection of the Hutchinson Memorial Schools, Checkley, Staffordshire. Mr. Arthur Ingleton, architect. Quantities supplied:—

Rowley & Lynex (too late)	£1,330 0 0
Inskip	1,232 0 0
Bradbury	1,250 0 0
Gallimore	1,177 0 0
Colie	1,100 0 0
Alcock & Yates (accepted with modifications)	1,100 0 0

For new sewers in Southampton-row, New Compton-street, Dyott-street, and Smart's-buildings, for the Board of Works for the St Giles's District. Mr. G. Wallace, surveyor. Quantities by Mr. James Schofield:—

Batch & Acock	£2,032 0 0
Hoare & Son	1,709 0 0
Mowlem & Co.	1,700 0 0
Crockett	1,600 0 0
Keeble	1,325 0 0
Neave & Son	1,295 0 0
Illingback (accepted)	1,266 0 0

For infants' school, Cliffe-at-Hoo National Schools. Mr. Geo. Ruck, architect. Quantities supplied:—

Stephenson	£935 0 0
Bridge	925 0 0
Naylar	820 0 0
Gates	813 0 0
Callcard & Son (accepted)	800 0 0

For alterations at the Lord Palmerston Hotel, Kilburn, for Mr. G. Shield. Mr. Edward Brown, architect:—

Anley	£947 0 0
Kiddle	941 0 0
Marr	928 0 0
Gann (accepted)	775 0 0
Pewterer's Work.	
Warne	£104 0 0
Edwards (accepted)	96 10 0

For alterations at the Malvern Works, Grove-lane, Camberwell. Mr. Edward Brown, architect:—

Downs	£638 0 0
Royal	493 0 0
Salt	439 0 0
Edgley (accepted)	435 0 0

For house at Earlswood, Redhill, for Mr. Apps (less bricks, ironmongery, and excavation):—

Childs	£230 0 0
Worsfold	211 0 0
Baguley	208 0 0
Apted Bros. (accepted)	194 0 0

For works in connexion with alterations to water-courses and tanks on the Sewage Farm, Swindon. Mr. William Drew, surveyor:—

	No. 1.	No. 2.
S. W. Haines'	£775 0 0	£775 0 0
Wiltshire (accepted)	575 0 0	605 0 0
Caudle	575 0 0	604 5 0
C. R. Haines	495 0 0	—

For the erection of a tobacco factory in rear of No. 27, Mansell-street, Whitechapel, for Messrs. B. Morris & Sons. Mr. John Hudson, architect:—

Asbby & Horner	£4,313 0 0
Read & Son	4,200 0 0
Sparks	3,920 0 0
Sargeant	3,780 0 0
Jacobs	3,770 0 0
Outhwaite & Son	3,661 0 0
Goddard & Massey	3,599 0 0
Green & King	3,550 0 0
Wootton	3,479 0 0
Bangs & Co.	3,370 0 0
Little	3,333 0 0

For the erection of public offices, &c., at Kensal New Town, for the Vestry of Chelsea. Mr. G. H. Stayton, architect. Quantities supplied by Mr. H. P. Foster:—

Bull	£1,811 0 0
Raymes	1,797 0 0
Wall Bros.	1,760 0 0
Keefe	1,723 0 0
Braid & Co.	1,700 0 0
Cowland Bros.	1,682 0 0
Beale	1,635 0 0
Brass (accepted)	1,394 0 0

For sewerage at Harlow, Essex, for the Epping Guardians. Mr. Lewis Angell, engineer:—

Gunn	£4,361 0 0
Neave & Sons	3,243 0 0
Lewis	2,959 0 0
Ford & Norris	2,920 0 0
Sheat	2,868 0 0
Bell	2,819 0 0
Taylor	2,816 0 0
Harvey	2,760 0 0
Rowley	2,753 0 0
Jackson	2,750 0 0
F. & F. Wood	2,732 0 0
Hill Bros.	2,604 0 0
Hoar & Son	2,573 0 0
Organ	2,497 0 0
Potter	2,494 0 0
Gregar	2,469 0 0
Rowland Bros.	2,400 0 0
Marney	2,399 0 0
Stiff	2,235 0 0
Field	2,188 0 0

For additions to Nos. 4 and 5, Little Windmill-street, for Mr. Williams. Mr. D. C. Nicholls, architect:

Laurence	£1,312 0 0
Conder	1,225 0 0
Nightingale	1,193 0 0
Langmead & Way	1,111 0 0
Bywaters	1,088 0 0

For pulling down and rebuilding No. 247, Upper-street, Islington. Mr. R. Parkinson, architect:—
Ward (accepted).

For building the superstructure of Nos. 19, 21, and 23, Ludgate-hill, for Mr. Charles Samuel. Messrs. N. S. Joseph & Pearson, architects. Quantities supplied by Mr. S. B. Wilson:—

Colls & Son	£12,877 0 0
Merritt & Ashby	11,970 0 0
Adamson & Son	11,650 0 0
Scrivener & Co.	11,630 0 0
Browne & Robinson	11,533 0 0
Rider & Son	11,368 0 0
Williams & Son	11,321 0 0
Langmead & Way	11,277 0 0
Brass	10,994 0 0
Braid & Co.	10,986 0 0
Conder	10,647 0 0
Pritchard (accepted)	10,537 0 0

For the erection of stable building and store-room in rear of 29, High-street, Notting-hill, for Mr. A. Brewer:—

Adamson & Sons	£428 0 0
Clarke & Mannooch	413 0 0
Temple & Forster	387 0 0
Hobson	376 0 0
Gritten (accepted)	370 0 0

For park fencing, entrance-gates, &c., at Haling Park, Croydon, for Mr. J. Watney. Mr. H. J. Newton, architect:—

Lamble (accepted)	£350 0 0

The contracts for building three new houses in Lowther-street, Penrith, for Mr. Hugh Campbell, have been let to local tradesmen. Messrs. Hetherington & Oliver, architects.

NOTICE.

THEATRES IN JAPAN.

"THE BUILDER" *of April 5 will contain an Illustrated Account of* THEATRES IN JAPAN, *by* JOSIAH CONDER, *Professor of Architecture in the College of Tokio, including* A FAC-SIMILE IN COLOURS *of a View of the Interior of a Theatre, by a Native Artist.*

Orders for this Special Number should be sent early, through any Newsvendor, or direct to the Publisher.

TO CORRESPONDENTS.

J. F. L.—Messrs. G.—H. H.—J. C.—P. W.—K.—W. & P.—W. D. S. G.—Dr. M.—G. R.—S. N.—T. L. D.—Col. H.—B. L.—W. H. & Son—C. D.—E. H. S.—B. S.—C. G.—E. O.—W. R. B.—C. E. B.—L. N. G. W.—J. & P.—M. H. J.—W. G.—T. B. V.—L. & W.—E. S. H. L. A.—H. J. N.—C. B. C.—T. H. C.—C. C.—T. A. G. (question has already been fully replied to).—E. P. (next week).—H. J. N. (we will send list).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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The Builder.

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e Appreciation of English Enthusiasm. Greek Architecture.

PROFESSOR Adolf Michaelis, of the now German University of Strasburg, has recently contributed an account of the Society of Dilettanti to *Zeitschrift für bildende Kunst*, which ...sable as a tribute very liberally vouch- ...from that side for the services of ...d to architecture and other arts. It ...s, moreover, many particulars very in- ...usly collected and skilfully combined, ...might be novel and interesting enough ... world at large here, in the midst of ...the Society still flourishes. It is not ...ral that some curiosity should be felt, in ...es where Governments undertake every- ...respecting a purely private and unpro- ...l society, now well beyond the first ... of its second century, which has made ...k that justifies the terms in which the ...raph comes to conclusion.

...en we look back at the long series of ... folios which partly are due to the ini- ...of the Society, and partly to its assistance ...couragement, we can scarcely over-esti- ...he services of this private society. The ...dge of Greek architecture especially has ...y been promoted by it, but had its very ...tion laid, in the first instance, by the ...ian and Ionian Antiquities,' which brought ...nd the absolute sway of Roman architec- ...n both theory and practice; moreover, ...st subtle refinements of Greek construc- ...ve been first appreciated by the labours ...itects of our own century, who acted on ...t of this society." The writer goes on,— ... of the chief characteristics of the ... nation come before us here in combina- ...energetic," &c., compliments which it is ...ppropriate for us to acknowledge grace- ...han to parade. Within the last week, at ...e of the library of the late Baron Heath, ...er member of the Society, some copies of ...lications brought prices which vindicate ...rofessor's enthusiasm. Thus runs the ... of the sale at Christie's:—"Dilettanti ...y: 'Specimens of Ancient Sculpture, ...5,' 13*l.*; ditto, 'Antiquities of Ionia,' ..., 1797-1840, 9*l.* 10*s.*; Penrose's 'Prin- ...of Athenian Architecture,' 1851, 7*l.* 15*s.*" ...he notice which we are considering, Pro- ...Michaelis has made good use of the know- ledge which he obtained a few years since by personal visits to all the private collections of sculpture in England. Most of these were formed by the earliest members of the Society, or by their contemporaries; and the second chapter, on the "Dilettanti as Collectors," comprises a detailed history of the progress and fluctuations of taste in art, and also of the fashions of taste, which is highly instructive. Along with the instruction we may attend to some notes of warning. What permanent mischief may ensue when the revolutions of fashion are not watched,—checked they can scarcely be, by intelligence, is shown by one unfortunate example. Lord Guilford, who was a Dilettante, formed a collection of Greek sculpture of much interest at the beginning of the century; he died in 1827, and whither the collection went in its dispersion or removal is known to no man. Most unfortunately, one of the very prime documents for the history of sculpture and elucidation of archaic mythology,—the Corinthian *puteal*, with a procession of divinities,—seems gone for ever. Such a survey as the Professor carried out among private collections has not only the good result of informing us what treasures exist in the country, but it is to be hoped will put the authorities who control our National Museums on the alert, to take care on like occasions that they are not lost sight of, or, better than all, that they are secured from further wandering, and safely housed as property of the nation.

The traceless dispersion of Lord Guilford's collection is further to be lamented, as it very probably comprised some of the objects which were obtained by the excavations of Vely Pasha at Argos. That one of the inscriptions which were then discovered was in Lord Guilford's possession is on record; and it is probable that, in accordance with the prevalent taste of the period and his own, he purchased along with it some of those marbles by which it is known that the Pasha realised a good sum. To have identified and localised some of these would have been part compensation for the loss of all but the general particulars of his "find" of a treasure, which was clearly of the same nature as that of Dr. Schliemann on the Acropolis of Mycenæ.

Among the abortive plans of the Society,—where much seed is sown and much flourishes, some of necessity must fail,—is noticed a scheme, which it propounded in 1761, for the formation of a comprehensive gallery of casts from the antique, "in order that the Society, in accordance with its original purposes, might contribute to the cultivation of a public taste for art." Allusion is made to such realisations of such a plan, as the "glass palace" of Sydenham and South Kensington; but much more remains to be done, and upon a revised plan, before London can boast of setting before her holiday-makers and students objects which combine more influence upon taste with instruction and attractiveness, than a gorilla or a hippopotamus.

In the *Edinburgh Review* for 1857 there is a certain account of the Society, which is ascribed to the always graceful pen of Lord Houghton; but more minute particulars have been derived from a memoir which was written by a late secretary, Mr. W. R. Hamilton, but only circulated among the members.

Horace Walpole announced the establishment of the Society to his friend, Sir Horace Mann, at Florence, with characteristic sarcasm:—"A new club," he says, "has lately been established here, called the 'Dilettanti.' The nominal qualification consists in having been in Italy; The real, in getting drunk there. The two leaders are Lord Middlesex and Sir Francis Dashwood, who all the while they were in Italy were seldom sober." The habits of the time may readily have suggested the easy sneer. Walpole, nevertheless, was a true dilettante; the most estimable direction of his taste was towards Gothic architecture, though he had a far less adequate appreciation of its spirit than the founders of the Society,—the Townleys, Payne Knights, Englefields, and Hamiltons,—had of the works of Greek and Roman art, to which they turned in preference. Otherwise the somewhat small predilection of Walpole for curios and rarities for their own sake, made him the very type of a dilettante in the disparaging sense which such overdone estimation *rerum mediocriter utilium*, has connected with the title.

Dr. Michaelis duly records the early agitation of the Society for the establishment of an Opera and an Academy of Arts, and then pursues the story of their missions to Greece and Asia Minor, of Pars and Bedford, and Chandler and Sir William Gell, the publications of their travels, inscriptions, drawings, and the costly publications of engravings of ancient sculpture and bronzes. The two large pictures by Sir Joshua Reynolds of early members of the Society are well known by recent exhibition; they are among his very finest works, and certainly his most masterly groups; they embody the very spirit of the founders of the institution, as exhibiting a combination of refined sentiment for the arts with thorough enjoyment of genial companionship.

The publication of what Dr. Michaelis justly styles "the classical" work of Mr. Penrose in 1851 is the last of which the Society is stated to have undertaken the sole charge, completing a total expenditure in furtherance of art of over 30,000*l.* It is well known, however, that a further publication of monuments of Greek architecture is at present in progress,—and, indeed, very far advanced. Some of the Society's excavations on which it is founded have been visited by the French excavators of the Temple at Miletus, and as Dr. Michaelis observes, they have a little prematurely incorporated the acquisitions of others in their publication. This,

however, has, after all, been done with the incompleteness that might be expected under such conditions, and is not likely to supersede the interest of what is forthcoming in more legitimate form.

The Professor refers to the appendix to Mr. Cockerell's restorations of Bassæ and Ægina as treating of the proportional system of ancient temples,—a problem, he says, "about the solution of which many have exercised themselves without, however, any result that as yet is satisfactory." The best epithet he can afford for it, therefore, is "*scharfsinnige*"; but even this is much when it comes from beyond sea, and may fairly invite recurrence to the topic. The interest which has recently been recalled to theories of Greek design by Mr. Pennethorne's sumptuous and laborious work may remind architects that it is high time that the subject were fully and candidly dealt with; and for the proof of such treatment of it to be forthcoming, in something approaching to a common understanding. There are certainly abundant materials in possession in accurate measurements of fine works,—of the Parthenon especially,—and the questions, Can the problem be solved, or is it hopeless?—If the problem can be solved, what is the solution that can be safely, and confidently, and usefully accepted?—should come on for decision at once, and not be dismissed until satisfactory decisions are arrived at.

Agreement may be safely assumed upon some preliminary points which in times gone by were wont to be held as fair matters of controversy. It has become clear that the finest Greek buildings were not set out upon the system of equal squares, which has been supposed by considerable authorities to answer all requirements for Gothic plans. The equilateral triangle, again, has had its opportunity, but hopelessly failed to retain an adherent by even a flattering plausibility. The Greek foot is known to the veriest fraction, but never measures more than one considerable dimension,—the breadth of a top front step, or the full length of a naos. After this we may apply it to other dimensions, considerable or of details, and assume the liberty of dividing it alternately decimally and duodecimally, but only to experience constant failure;—strange contrast to what we find to be the case when we apply our own foot-rule to a modern building, from its largest outlines to its most subordinate details and ultimate finishings and fittings. Furthermore, the Vitruvian canons based upon the modulus have been fairly tested, but we are yet to learn that any competent authority has been satisfied that it was given to the Roman architect to transmit the true theory or even the mere practical maxims of the genius of Greece.

The problem doubtless presents itself under a double aspect; we have to discover, if we can,—a matter of archæological interest in the first place,—what was the system of which the ancient designers availed themselves, when some systematic guidance could not be dispensed with, for adopting one dimension rather than another. This is an inquiry for those who are willing to assume that a system they must have had, and who so far decline argument with others who believe that excellence could be obtained at hap-hazard by hardy reliance upon simple "scowl of brow." It is sufficient to say now that no recognition can be allowed to any system as that employed by the ancients, which does not bring out accurate results and determinations that are independent of casings, humourings, and arbitrary and uncomfortable remainders. If licence is to be admitted in these respects, we may have any number of solutions of the problem that we please with equal claim and no claim at all.

After all, however, we are not bound to accept the system, even of a Greek man of exalted genius, simply upon his authority, and without demonstration that it is appropriate, sufficient, reasonable. Such can any system only be in virtue of being susceptible of varied application in harmony with varying conditions of the architectural problem, which never are exactly the same in two cases. Be it granted, we may say, that such or such was the system that the Greek worked upon, it is still a fair challenge for us to show reason good how far we are bound to admit that this was the right system. Objectors may be ready enough to show cause that right such a system could not be,—that, as propounded, it involves essential fallacies and defects, and that therefore it could not be that which was employed to evolve such marvellous results. The retort, however, on the other hand, would doubtless be as ready, that when we take into account the marvel of the beauty which was realised, a system which can be proved to have been employed in its production must be a true and a good system. Even so, however, it still remains for us to concern ourselves with eliciting, as best we may, what were the essential principles underlying it which caused it to be true and good. Standing independently between the two controversialists, our advice to an investigator would be, to attack the problem of architectural proportion from either side in turn,—to studiously consider what should seem the rational requirements for the application of proportion to design upon broad and general principles, and then, whenever he gets hold of a plausible analogy to examine how far it has appeared to affect an executed design such as that of the Parthenon, which is an admitted example of admirable effect in all the respects which proportion can in any way influence.

Thus far have we been carried from the memoir of Dr. Adolf Michaelis; but, in truth, the architectural publications of the Dilettanti Society, for which he expresses such appreciation, comprise all the documents which are required in evidence for the decision of this subject of so high scientific and blended artistic interest. It is much to be desired that the nation which collected the materials should show itself equal to making the best use of them. Germany at present seems satisfied with the "Tektonik" of Boetticher as exhausting all that is most important respecting the development of Greek architecture. So long as that prepossession remains, we may safely be assured that no advance and no help will come from that side. The interval is our own; let us hope that between the industry and sagacity of investigators, and the candour of their critics,—which is the most effective of all encouragements,—our own will be the credit of the successful issue.

THE CRISTOFLE PLATING WORKS.

The precious metals being rare, says a sententious French writer, money and ornament speedily absorb them; but, in all forms, they retain an unalterable value. And it is this quality which distinguishes them from other materials, even more brilliant in appearance than themselves. Red copper, perfectly scoured, is more splendid than gold, and steel, at its highest polish, more superb than silver. But both steel and copper may rust or blacken, and be disfigured and worthless for ever, by the action of the elements; but for gold and silver there is, secularly speaking, no decay. We have already spoken of gilding and of silver-plating, but the gold-work of the famous Cristofle factory calls for a special notice. It commenced with simple gilding upon wood, leather, cardboard, and paper, and went on, through long and elaborate processes of electro-metallurgy, until the founders of the works begin to bethink themselves of the paths laid out by their celebrated predecessors, and to believe that the Cellinis might have their representatives yet in modern days. Much experience, no doubt, was gained from the records of the voltaic battery, and the innumerable experiments arising from it; yet the Cristofle enterprise carries this industry above all former heights. The firm paid, for apparent violations of patent, millions (in francs) here, and millions there; it fought through long legal battles for rights and patents; it gained medals from exhibitions beyond counting; but it never succeeded in disproving the initiatory rights of the English inventors. So far, then, the Cristofle factory must be regarded as a successful adaptation, and no more,—flourishing upon expired English patents, but deserving of all possible credit on account of the spirit with which it has developed the ideas of their originators. The importance of this industry may be suggested by a simple parallel. Supposing the Cristofle works to have been executed in solid metal, they must have withdrawn two hundred millions sterling from the national currency; as it is, they have utilised, year by year, about seven millions in value of the precious metals only. This, however, is a remark merely by the way. We have nothing to do, after all, with the economy of the subject,—simply with its mechanical facts. But, to begin with, let it be understood that we have to consider a process which annually covers, upon gold and silver, a superficies equal to many thousand square acres, as they are measured upon this earth,—many thou acres, in fact, of superficial silver and The first necessity, of course, is to get rust; then to do away with oil or grea whatever form or to whatever extent it adhere; next, to produce a perfectly m surface; lastly, to determine upon the dif methods to be adopted, with regard to bronze or its kindred compounds; for, no have different metals or compounds treated in different ways, but their temperaments, as it were, have to be consi Thus bronze, in its several stages, must garded as a number of distinct substanc so with brasswork, through all its stages the perfection at which it can be improv no gold or silver plating whatever. Ass however, that the essential processes m gone through, after the rust has been got there is a sort of earth or turf furnace, th which the metal, in the highest state of is passed; then its collection and perc beneath the blows of a hammer, which the whole of the broken fragments into a afterwards the formation of another c rust of black copper, dispelled by a sulphuric acid, diluted with water; an after a series of chemical baths, the m prepared for the Rosicrucian legerdemair Messrs. Cristofle avow that they rare out from their works a set of solid, or eve solid, gold or silver. When they profes it, it is of course done, but the demand great for this kind of luxury "in the though, as we are assured, the saving is than might generally be imagined betw substantial and the imitated work of latter more meritorious, often, than the for they require the most minute watc temperature in the furnace, of weigh coming out from it, of calculations as to true and what is meretricious material, of and brightenings from almost invisible calculable quantities. It would be imp without an almost inexplicable,—by fig descriptions,—account of processes, or artistic illustrations of the works, t before the reader's eye, the stage at wh work takes practical shape in the sight nary intelligence. The gold, or silver, been solved into a state resembling porcelain biscuit, capable of any polish that may be desired. The moulds ar The metal may be plunged into them, an into any forms, whether of statues, table centres, chimney ornaments, clo or those thousand-and-one shapes i "gummed gilt" holds a position. Ev however, the prime work of the Co Cristofle has not been brought end. It has to be scrubbed by brushes, revolving at the rate of fi dred turns a minute, and wetted wit laginous water; every particle has to o in its turn, and be accurately touched; part of the work is carefully followed by handed girls, experienced at their task steel instruments make up, as a rule, fc ever is deficient in the large machinery. girls, it may be noted, are selected work with the utmost care, so delic elaborate are the tasks imposed upo though their earnings rarely average half a crown or three shillings a day. incapable, in fact, of performing th required from men,—of hammering do and silver surfaces into the forms which required by the artist, as his models and in the rough; of beating heavy mas hollow patterns, between metal and par of distributing a mass of metal in the which gives a result [of luxury. The Cristofle, however, understand their b and employ men, women, and girls acc Their art is now chiefly directed to th duction, through gilding and silvering p of fine-art objects, wrought by the c decorated furniture and imitative statua especially of all such objects of art, bea splendour as might properly be repres masses of solid silver or gold. They em this end, an alloy of a combination p their own, or, rather, two combinatio composed of copper and zinc, though in proportions, the first used, so to speak foundation forms, the second in the ou auxiliary decorations; these latter bei or less, sculptured with tools of ste originals, however, in each instance, modelled in moulds of plaster or of wax, through, afterwards, repetition moulds

ucibles of fire-brick or clay; and, even ese tests have been gone through, the rdeal is to come,—the working out of the by the engraver, or by his slaves, who ink a pattern in steel, or else in galvano-. At this stage, the process, whatever rinciple adopted, becomes extremely ring. It sets steam-hammers at work; endless bands revolving; it draws and patterns upon otherwise insensate sur- it treats gold and silver as though they gauze and thread, and stamps and them into the imitations of Middle-age ry. The alloy engaged, even where plating does not come into question, is of iar kind, according to what is actually as the Cristofle tariff,—copper, zinc, kel,—the last being valued as giving to ire compound a more perfect whiteness greater durability. It may afford some the industry thus kept going, to say relve furnaces are constantly at work; thousand hundred-weight of the nile metal" are brought under the ammer every day; that miles upon f the glistening surfaces are prepared the space of every twenty-four hours,— is a silent, as it is an unrelaxing in- —and that, in an ordinary way, the n of MM. Cristofle can turn you out, most brilliant uses of Parisian dinner- family plate at the rate of a dish-cover ve,—sufficient, assuredly to conceal the many cooks. But the dish-cover, when s out of the machine, is a flat piece of it has to be tortured into an oval, or or other shape; yet, leaving that ve are brought face to face with the s of this gigantic manufactory for one 300,000 dish-covers, 35,000 dessert- 50,000 coffee-spoons, and 90,000 dessert- and, as the statement confesses, "a ubric of little goldsmiths' work" for sins, sauce-boats, fruit services, and so Well, the Cristofle establishment em- bout 1,500 hands,—nearly all skilled,— s about six millions of francs a year es and wages, not a single tenpence of e may rest assured, is thrown away. , too, it has brought within the scope of ations the application of aluminium, ith copper, to objects of art, and the of the experiments in this direction has ore than satisfying to those by whom e originated. There has been a long between the French and the English pect to gold, bronze, electro-plate, and ced work, relatively to the art industry, ndustrial art, now common objects of to both nations; and it must be matter on each side, whichever puts a foot in advance, that the true principle shall lead; so that we welcome these reports Cristofle factories, whether of gold r in their purity, or in their mellowed ons to the necessities and customs of , as pointing to prizes within reach, and th winning when won.

RCHITECTURAL FOLIAGE.*

URED foliage when well and success- rafted upon architecture never fails to nhance its richness and elegance. This accordance with all the most perfect ients of architecture, as seen in the best ich have been handed down to us from st ages, whether they are the remains the Egyptians, the Greeks, the Goths, hers. This, probably, will be conceded ut question, and, although I have read re on two former occasions upon the bject, architectural foliage being an t and an interesting one, I need, I am ke no further apology for again bring- ubject before you.

unately, foliage is not unfrequently or ornamental purposes in the worst manner; but when well designed, and upon correct principles, not overlaying tecture itself, there can be no doubt of improving the character of those which it may be added. There are, many cases where it is often injudi- cluded, and there has been, in times tendency to substitute for it plain work. In numerous instances, I am aware that there is a fatal obstacle to the introduction of foliated ornamentation, because of its expense and costliness; but we not unfrequently see very elaborate attempts at decoration by the adoption of intricate moulded work, costing evidently large sums of money, which add but little to the beauty of the building. There are other cases, however, which are still more serious, where carving and sculpture of the highest class are added in the most profuse manner, but where the money and labour are entirely thrown away, because such decoration is applied upon an improper or false principle.

In all early forms of art we find plain surfaces invariably used for the development of painting or sculpture. In the Egyptian and the Assyrian, walls were made eloquent by hieroglyphics and sculpture embracing animal and vegetable forms. In the Indian, Persian, Moresque, and the Arabian, we observe that the same principle was adopted, and that the buildings and other works of these nations were literally covered with elegant combinations of foliated form, and plain moulded work is scarcely to be found. Yet all these elaborate enrichments were not added to or upon the works, but were taken out of them, and, therefore, they did not destroy their breadth or character.

It is in Greek architecture that we first see a development of plain surface, where, although friezes and pediments were enriched with matchless sculpture, still, architraves, cornices, and walls were left plain and bare, or were enriched only with plain moulded forms. The Greeks, however, appear soon to have disliked the appearance of many of their plain surfaces, and supplied the deficiency by painting. The Erechtheum was, I believe, the first temple erected in Athens where the mouldings and friezes were enriched by foliated sculpture. This, coming, as it probably did, a few years after the completion of the Parthenon, looks very much as if it may have caused a sort of dissatisfaction with the appearance of the latter temple, on account of its comparative plainness, and thus may have arisen a wish to correct this by the addition of painted decoration. They then covered their plain architraves with the meander, their unsculptured mouldings with the anthemion and other ornaments, and the lacunaria of their ceilings with the star or arrangements of foliated forms. Having, as we all know, done so much, I have no doubt that they also enlivened their walls with scenes from Grecian history, although no remains of such paintings may be found at the present day.

The Romans carried out the enrichment of their mouldings with sculpture to a greater extent than the Greeks, and they also enriched their friezes with many fine arrangements of foliage associated with animal form. But besides these, they enriched many of their plain surfaces with sculptured foliage, as in the architraves of their entablatures, as well as the coronas and soffits of their cornices. Showing also their increased partiality for foliage, they greatly developed and perfected the Corinthian capital; but not only that, they added foliage to the Ionic capital, producing what has been called the Composite, and so considerably enhancing its beauty as an enriched capital. They panelled, too, some of their pilasters with grand and magnificent foliated scrollwork. Unfortunately, however, with the exception of these last, this decoration must have been placed at too great an elevation to have been properly seen. It was left, however, to the modern Englishman to carry out these antique styles devoid of *all* enrichment or sculpture, except long lines of bare moulded form. He is the only artist who deliberately sits down and wastes his time over the contours of quirks and ogees, and by the aid of the plasterer's mould runs his entablatures, and borders all his windows and doors with his surprising combinations of mouldings. His plain surfaces are relieved only by scratching upon them lines to indicate colossal blocks of stones. Happily this phase of architecture is now nearly extinct.

I would, however, call your attention more particularly to the improper application of decorative sculpture. We have been told by one whose authority upon such points cannot be too highly valued, the late Mr. Owen Jones, as well as by others, and I suppose we all acknowledge it to be true, "that construction should be decorated, and that decoration should never be purposely constructed." Yet we constantly see buildings erected where the so-called decorations are added to or applied upon the architecture, as if the very opposite were the rule Buildings, in many instances, have become overloaded by applied ornament, instead of its being formed naturally out of the construction. Festoons and swags of gigantic size are pinned up to the surface of the walls by pateras or lions' heads, and tied there by impossible ribbons; while little window pediments are broken in the centre in order that their cornices may be piled up with immense loads of sculpture or foliage. In many modern French ceilings festoons of *papier mâché* are frequently introduced, actually hanging away from the ceiling, looped up by their extremities. Surely, if enrichment is a portion of architecture, and an integral part of it, no greater violation could be imagined than thus to separate or hang it up, as if ready to fall upon the spectator's head. Unfortunately there is a precedent found in antique architecture for these applied forms. The Corinthian capital is not a composition which grows out of and forms a part of the column itself, like the grand old Egyptian capitals; but all the parts are applied or added outside the bell, which is the actual capital,—a circumstance which, to say the least of it, has greatly aided the labours of the modern plaster-caster, but it is not composed upon such principles as should be the rule in architectural ornamentation.

It will be considered, no doubt, very fastidious, and even presumptuous, upon my part thus to condemn a form of capital which has received the support of so many centuries. I am not, however, the first to point this out; but the object is not so much to find fault with the Corinthian capital, which doubtless will still continue to be admired, and be most faithfully copied for many generations to come, but to endeavour to point out the defect which, more or less, runs through Greek and Roman architecture; and although it may not be a very prominent fault in antique examples, yet it has given rise to most unfortunate results in modern times.

No period in modern English architecture is more justly noted for foliated carving than that belonging to the school of Sir Christopher Wren, at the head of which stood Grinling Gibbons. For skill in workmanship, dexterity of manipulation, and close imitation of nature, this period stands perhaps higher than any previous or later one. It is, however, extremely unfortunate that so much of this remarkably beautiful carving should be afterwards applied and added to the construction which it is intended to enrich. Ornament, to be true, must be subservient to the purpose and to the architectural forms of the work itself. The features themselves should be enriched, and as a general rule ornament should be taken out of the material,—sunk below the surface and not laid upon it. A work may be literally covered with ornament which will immeasurably aid the beauty of the architecture when used in its legitimate place, as in the walls of the Alhambra; or, to take a more humble but not less striking example, in the elaborately carved but simple form of an Indian sandal-wood box,—it is enriched without anything being added to it, or altering its primitive form or construction.

The great effect of modern ornamentation is that it is so often represented as if it had weight in itself, and that it was absolutely necessary to hang it up, or that it should stand upon its own base, as in many of the otherwise very beautiful Italian arabesque pilasters.

The festoon, as a means of ornamenting a work, has been used in French and Italian Renaissance more than any other form, but it is essentially a bad one, and it is at the same time one of the most objectionable forms of constructed ornament. From its very nature it is added to the thing ornamented, and it is formed of an artificially-constructed collection of miscellaneous flowers and fruit. Unfortunately, it appears to have been coming into fashion again of late. Its origin, there cannot be a doubt, was derived from the Roman altars, which were decorated in the earliest times with the actual heads of the animals which were sacrificed. These were placed at the angles of the altar, and festoons of flowers were looped up from the horns and tied with ribbons. These were afterwards carved upon the altars in stone or marble, and from them the same decoration was soon transferred to the friezes of the temples. It therefore became a precedent for architectural decoration, and has been used ever since in every conceivable position. In festooned bands round buildings; under windows and over windows; over doorways; over arches and between arches;

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* James K. Colling, Fellow. Read at the meeting of the Institute of British Architects, March 24th, as mentioned.

between capitals or attached columns or pilasters; hung from eye to eye of voluted capitals and consoles, as well as on ceilings and on mosaic floors,—in fact, there is scarcely any position in which the festoon has not been used. Again, festoons are not only made up of all manner of flowers and fruit, strung together without any cohesion of parts, but of nearly everything that can be imagined, such as musical instruments, books, dead birds, shell-fish, and a multitude of other objects, as well as the ever-indispensable ribbon.

Grinling Gibbons appears never to have been able to get on without festoons, ribbons, and drops or pendants in his work. The example of a panel from St. Paul's Cathedral is a good specimen of this. It is executed in the usual manner that he adopted for nearly all his most important works, that is, it is carved in lime-tree and planted upon an oak panel. The composition is rich and bold, but somewhat confused, and at first sight the manner in which it is composed cannot be clearly distinguished. In the centre, as we perceive, there are a pair of cross trumpets tied together by a ribbon. Then there are in the upper part interlacing scrolls of a conventional type peculiar to Gibbons,—for which, in my opinion, he deserves more credit than for any other part of his work,—but to which I will refer presently. Out of the upper part of the scroll (I am now explaining one half of the panel) there drops a swag or festoon of small flowers, either periwinkles or primroses, which runs to the upper angle of the panel, and from which, hung to a single flower, drops perpendicularly a bunch of trilobed leaves, forming the end of the design. But besides this, there is a larger and bolder swag, which is in much higher relief than any other part, extending from the knot of the ribbon at the junction of the trumpets, sweeping to the bottom of the panel, and going right up to the extreme angle again, from which the smaller festoon and drop hang. This is repeated in the other half of the design, all, except the scrolls, being supposed to be hung up by artificial means. A portion hangs from the scrolls, but how they and the angle flowers are supported does not appear.

The peculiarity of the scrolls is that, instead of the leafage forming a sheath, as in nearly all classical foliage, it grows out of the stem itself, or arises from the other side of the stem, as in the examples from St. Mary Abchurch. The leafage is from nature, taken evidently from the hawthorn, and in some cases from the celery-leaved crowfoot. In richer work, as at St. Paul's, the leaves are double,—that is, one lapping over the other. A defect in these latter scrolls is that they grow in two directions,—that is, out at both ends, which might have been easily avoided. Some of the best and richest of Gibbons's scroll-work of this kind, of great excellence and beauty, is to be found in some richly ornamented and pierced oakdoors in the library of Trinity College, Cambridge. I have not, however, any sketches of them.

The fruit and flowers in the festoons are all accurately and very beautifully copied from nature, consisting of peonies, anemones, crocuses, primroses, tulips, peaches, peas, and other fruits. All are separated and disconnected, except occasionally, by some faintly carved lines or strings at the back. No part is growing, but is in "still life," and each is separately fastened in its place by means of screws, nails, and glue; and where the fruit or flowers are in very high relief, they are not worked out of one solid piece of lime-tree, but are formed of different layers of wood, about 2 in. thick, placed one upon another. Fig. 1 shows the plane surface for the reception of the next layer of flowers. There is no undercutting, properly so called, as the whole is backed off behind, and shaped previously to its being planted on the ground, which gives the work as much relief as if it consisted of actual flowers. This is not the case with the oak scroll-work which I have mentioned as that from St. Mary Abchurch, and that of the library of Trinity College, Cambridge, which is all carved out of the solid.

It will be perceived that the panel to which I have referred is made up in two different styles —the natural in the festoons, and the conventional as seen in the scrolls. Now this manner of mixing up the natural and conventional is common to most of the foliated work of the Renaissance period. Natural ivy, vine, oak, and other leaves, as well as fruit, are introduced occasionally among foliage which may be described as purely architectural, and in such an incongruous manner that they never properly



FIG. 1.

amalgamate with the other portions of the composition. Gibbons went in boldly for nature in his own style, and whenever he adopted the natural he made the conventional quite subservient. But in the French and Italian, the natural is usually introduced as if it were only an accessory. There were some exceptions, as in the border round Ghiberti's doors, which was entirely natural; but as a rule nature was introduced but timidly. There are many examples, however, even among Roman work, where natural foliage was thoughtfully and most artistically followed and worked out, as in the example from the stem of a fountain, in white marble, found near Tivoli, but now in the British Museum. A spiral line is formed round the shaft or column by a serpent, and a branch of ivy grows up from below, filling up the spaces between the coils of the serpent in a very graceful manner. The natural flow of the leaves, with their long foot-stalks, and the bunches of berries, are most faithfully and artistically rendered. Even the little buds in the axils of the leaves are introduced, showing with what minute attention they observed nature. The leaves, also, are plain and undivided, as they invariably are in nature, when found near the flower.

There are numerous other instances in Roman work where nature has thus been studiously followed; more particularly in carvings from the vine, oak, and ivy. Now what I want to elucidate by this is, that as there have been artists, even in ancient times, who have made a close and successful application of nature to art by entirely throwing over the conventional treatment of their time, that we, in the present day, should, like the ancient Roman who sculptured this beautiful stem of a fountain, throw aside all architectural precedents for foliage, except the principles upon which they worked, and boldly make our applications directly from nature. But instead of doing so, we, like many of the Renaissance workers, who also strove to re-introduce nature, are so bound by conventional rule, that we are not likely, from this timid mode of proceeding, to succeed but in a partial degree, and by adopting two different manners we must fail in harmonising them.

But artists and carvers are told by architects, and one hears it continually held up as law, that foliage for architectural purposes must be highly conventionalised, that it must not be too natural, and so on. I was in a church the other day, which had been lately restored, and I remarked to the clergyman, "Why, what commonplace designs all your new poppy-heads are." "Oh, yes," he replied, "our architect prefers them,

the carver wanted to
some of them differe
the architect woul
allow him to do a
would insist upon hi
ing the old ones."
manner, which is o
common a case, v
constantly trying to
citate the ornam
former ages. This p
never lead to any goo
and will bring v
nothing but disappoi
For whether we e
design in the style
Greek, or the Ro
in Gothic (for insta
in the manner of t
beautiful foliage of th
English period),
much we may admi
works, they are all
the past, and we n
by any mode of co
adaptation make i
plicable to the ni
century. There is
fore, a paramount n
for again having
recourse to natura
main element of i
tiful for architectura
The best posit
foliage upon a bui
in friezes, moulding
courses, panels, and
Indeed, it is in pa
we find the greatest
ment for foliage
panels, I include
and all ornamental
panels. In all cas
I could, I would

most important sculptured decoratio
down as possible in a building,
throw away work by placing it
to be properly seen. Not that I wo
the upper parts plain, but I would
ornament of a much more simple cha
arranged to suit the respective height
are many instances where beautiful
been thrown away in this manner.
example of this is the position of the Pa
frieze in the Parthenon. In the first
must have been in a very bad light,
the angle at which it had to be viewe
steep and acute as to have made it a
sibility ever to see it properly. Simi
were made in Mediæval buildings.
it is impossible to see the sculpture of
Choir as it should be seen from thi
although one is enabled to get a bette
it by ascending into the triforium.
when there, you still look up and find
elaboration of the work continues as i
so that when the eye reaches the bot
groining you discover that they are ju
cately wrought and as highly finishe
parts below which are close upon th
the eye.

In designing foliage we have chiefly t
to study,—form, and light and shade.
the first thing we have to decide u
leading or setting-out lines of the co
And whether these consist of the s
the branched, the radiating, or any ot
they must intersect and divide the sp
filled in the same manner that the
veins de the surface of a reticulated
portion must be left unprovided for,
must harmonise with the bounding
architectural lines of the work itself
should be laid out upon a geomet
somewhat regular and symmetrical
we can but partially obtain any assi
this purpose from nature. But there
general ideas that we can gather, su
scroll lines we see in tendrils and
plants, the various modes of branc
reticulation of leaves, and the ra
flowers. Architectural foliage should
natural growth, and not be formed wit
fruit, and leaves picked and separated.
In the Greek antefixal ornaments the
the plant is plainly set forth; first in
leaves issuing from the ground, and th
flower-stems growing out of them, com
ised by spirals and crowned with t
In the early Gothic, as in the exam
Stone Church, the scroll form grows

at the back, and the different branches ut leaves in a natural manner until the urface is covered. Crooked forms, such ind in nature, must be altered to the al or angular, or a combination of both. ald remember also that upright lines t life, hanging or drooping lines decay h.

g decided upon the leading lines of our ne next process is to clothe them with lowers, and fruit. Here it is that we ng to our aid that variety and beauty of h which nature supplies us so bounti- as a general rule, all well-marked and ut lobed leaves are most applicable to such as the irregular-lobed leaves of nthus, thistle, hawthorn, oak, and the hemum; radiating leaves, as the horse , cinque-foil, vine, and maple; or those ve separate leaflets, as the trefoil, rose, acacia. Perfectly plain leaves, such as box, laurel, and olive, are also very where simplicity and breadth of form ired; or the more complicated can be to their first simple form. Nature pro- this manner herself, as will be seen by al outline of the rose-leaf, the leaflets of ain the form of the heart-shaped leaf. lings-in upon the more simple forms other leaves follow the same rule. In the *Maranta*, nature has herself painted of more complicated leaves upon the .

mostly assume, more or less, the forms ometrical figures,—the *Laurestinus* that ica. The *Cineraria Maritima* is of the neral form, but is cut into deeply- lobes, of the same type as the oak. ound leaves still retain the general the more simple ones. The dock has a n oval form, which is found again in ly crenate-lobed leaf of the greater . The heart-form is seen in the black d violet, and again in the leaflets of . The main ribs of the leaf of the ony assume very beautiful flowing ving a strong resemblance to the lines eek-honeysuckle. In the violet, the ribs different, and branch from the midrib, the bryony they flow gracefully from f the leaf where it joins the foot-stalk. d ivy approaches very closely to the d mallow leaves are of the same ontour. The water avens, or *Herba* , from which the Early English said to be taken, gives a very simple The clover gives a very perfect trefoil, y three heart-shaped leaflets. The point of the leaf of the sow-thistle triangle, which is seen again in the ves of the ivy. The ivy assumes three rms during its growth: the triangle, or lozenge, and at length, in its full nt, the pentagon. The terminal the cow-parsnip approaches closely to al square. The five-pointed form is ned by separate leaflets, as in the wer leaf and the cinque-foil. Fig. 2

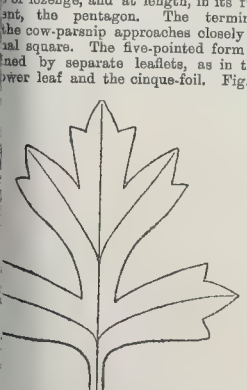


Fig. 2.

the hawthorn leaf, divided principally lobes, with other minor divisions; legant state.

re two modes of treating leaf-form. of retaining the natural contour as y find it, more especially in older in the maple and vine, which start off rupt angle or curve from the leaf- he other mode is that as seen some- oung leaves, as in the hawthorn, where the leaf flows tangentially and smoothly out of the foot-stalk. Most of the conventionalised architectural foliage is in this manner, as in the Early English (Fig. 3). This difference in the

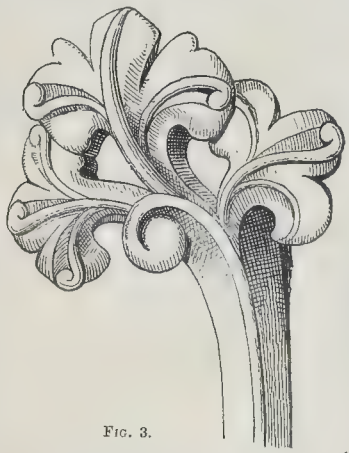


Fig. 3.

form of leaves involves a different treatment in the composition of foliage for architectural purposes.

It is not at all necessary to follow natural leaves literally,—they may be simplified; modified to make them more symmetrical, or altered to fill any particular form; their outlines may be changed by adopting various cuttings, or differently formed lobes. Fig. 4 is the type of the Greek acanthus.

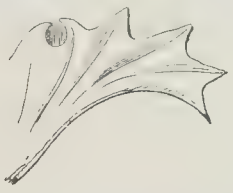


Fig. 4.

As I have already shown, Nature works upon certain broad principles, and sets out all her forms upon a plain and simple geometrical foundation. What is done with leaves may be also done with flowers, or leaves may be substituted for petals. Variety of form may also be obtained by the introduction of insects, birds, animals, and the human figure, which frequently give additional interest to the composition, with the happiest result.

The light and shade of foliage is a matter of vast importance, and one that is seldom sufficiently considered. We can obtain also but partial assistance in this study from Nature. Carvers usually overdo the shadows on the surface of leaves. If they are engaged upon Gothic work, they will tumble the surface about like a sea in a storm, after the manner of the later Gothic carving, until all beauty of outline is lost. If it is a Classic leaf they are working upon, they will groove and hollow it up until the whole surface is full of lines. In my working drawings I always indicate the modelling of the leaves, which I usually keep very simple, but it is very seldom that I can get the carver to adhere to the simplicity I aim at. When carving is placed upon a ground, as in a panel, the treatment of that ground in high relief is of the utmost importance. In low relief the carving depends more upon outline, and not so much upon light and shade, because such works are usually placed near the eye; but in high relief the case is very different: then the ground should be treated like the background of a picture, and the darkest and most intense tones be produced by it; the highest and most brilliant lights should be obtained by the convex surfaces of the foliage, and the hollows be trusted to for the half-tints. With this scale of light and shade between the darkest shadow of the ground and the brightest lights on the foliage the artist has to work much in the same manner as a painter would if he were painting in monochrome. It is, therefore, important how these are balanced and distributed. It is evident that if the shadows on the leaves are made too broad and deep, or too numerous, they must reduce the amount of light, and the value of the shadows on the ground be destroyed because they amalgamate with those on the surface.

The conventional treatment of architectural foliage depends more upon the skilful management of the light and shade than upon almost anything else. In adapting Nature, the forms of the leafage may be followed very closely, but its geometrical distribution and the treatment of the light and shade are the principal means of transforming it into conventionalised architectural ornament.

The amount of undercutting is another point which requires great consideration. Some carvers take an infinity of trouble, and laboriously undercut every part; but this is a mistake. Some portions do not require to be undercut at all, but should be made to unite and melt away into the ground itself, in order to soften the edges of some of the deepest tones, and to lose the outline of minor parts, so as to raise the value and sharpness of others. By this mode of partial undercutting, also, we see that the work is actually a part of the panel, and not laid in, as is still too common in wood-carving. Where the work, however, is much raised from the ground, it should invariably be undercut, so as to avoid thick, clumsy edges to the leaves.

We obtain many valuable hints for shadowing from the backs of natural leaves, as they are usually more convex than the fronts. The dried horse-chestnut leaf gives a very excellent suggestion for the raising the centre of the leaf surrounded by a hollow, which is often of great use in practice. Indeed, it is remarkably similar to some of the moulding of the leafage in Gothic carving. The artist also requires to study the general balance of his light and shade, so that one is not too important for the other. As a general rule, he usually errs by creating too much shade. He should remember that, in this country, we require strong contrasts, and if the work is internal, such as in a roof or groined ceiling, he can hardly make his light and shade too strong.

The nature of the material in which the enrichments are executed is another matter requiring thought. It is evident that a dull, heavy sandstone needs a very different treatment to a bright white crystalline marble, and deal has to be handled differently from oak, and box, again, differently from either. I have found that square block carving has looked remarkably well in rough, coarse-grained sandstone, and has the advantage of never getting clogged up with soot, as we so often find is the case in our large cities, and it always looks well when placed at a considerable height.

For great heights very little surface carving is necessary, and foliage will frequently look all the better for being left perfectly square and flat, so as to give, according to the distance, the utmost value to the difference between the light and shade. What is crude and unfinished when near the eye will appear bright, sharp, and sparkling when placed at the height for which a due calculation has been made for the effect intended to be produced. This is a matter of very great importance, but it is not sufficiently, and sometimes not at all, thought of. Immense labour may be often saved by properly considering this point when designing or carving ornament to be placed at a considerable elevation. One way in which the due amount of carving or intricacy of parts can be studied for various heights is this. Let the carver take his position on the ground in a position from which the enrichment can be best seen, after having set up a model at the height at which it is to be placed. Let him then with a pencil, stretched at arm's length, mark off upon it the size of the enrichment as seen from that point. If he puts this size upon paper, and begins to sketch in all the parts of his ornament as he intends carving it, he will soon perceive what to omit. If the height be considerable he will find that he cannot draw in all the work, and that he can improve the sketch by omitting half, or, perhaps, three parts of it. What is necessary in the sketch will be a guide for what is necessary in the carving.

If, for instance, we take a portion of a parsley leaf, which in nature, as you all know, is a par-

ticularly complicated one, and we determine with this to fill a small triangular panel for a position near the level of the eye. We first of all decide upon the geometrical lines upon which it is to be set out, as I have before now explained. In this case, these are simply the three lines branching from the centre to the angles of the triangle. We then proceed to follow the natural leaf in its number of divisions; but as we want to secure a greater amount of light on the surface than is possible upon the natural leaf, we give it a broader character, and adapt the outline to the form of the space to be filled, as far as we may consider necessary for the effect we desire to produce. The three leaflets we make branch from a central flower, instead of flowing from a thin foot-stalk. The flower of the parsley grows in clusters or branches, consisting of a large number of florets, but each individual floret is very small and insignificant in itself. This mode of flowering is therefore represented by a central cluster of florets; although they are here necessarily reduced to seven, instead of showing a large and indefinite number, yet the principle is the same as in the natural example. This bunch of florets is made of a globular form, so as to form the principal light, and the centre of each leaflet is hollowed into a slight concave surface to produce the half-tints, from the boundary of which the lobes flow towards their extremities with a gradual hollow curve. There is a very slight channelling of the lobes from their mid-ribs as well, but only sufficient to give a softened tone to the shades. The greatest amount and the deepest shadow is obtained from the ground, which should be of a deep convex section, so as to place the enrichment in a kind of basin.

If further simplicity be necessary for the panel from its being placed at a greater height from the eye, the leaf may be reduced in the number of its divisions, and the ribs omitted altogether, yet retaining the principle of the parsley leaf, and the light and shade may be kept the same as before. If it be necessary to carry the reduction of parts still further, to suit a yet greater elevation, it may be again simplified, while retaining the same kind of light and shade. All three examples are equally taken from the parsley, and each strictly adheres to the natural law of simplification, as shown us by Nature herself. In fact, the leaves will be found of these more simple forms if the parsley is minutely examined while the leaves are in their young state. If Nature simplifies her forms in this way we cannot be wrong in following her.

The principles upon which leaves are divided in nature are continually being intermingled, although the power of Nature is so great that each individual plant retains its own characteristic form. Not so in art. After a considerable amount of practice, and study of Nature, you will draw your leaves without immediate reference to Nature: they will be in accordance with her laws, but one form will intermingle with another, until you will scarcely know yourself for what leaf you intend it. That, however, need not distress you, as your object is not to copy Nature, but to work upon Nature's laws. Thus, your simple lilac leaf may become ternate, as in the hepatica; doubly ternate, as in the creeping crowfoot; triply ternate, as in the celery; until, when you desire it, you arrive at the intricacy of the parsley, which is still upon the triple principle of division. Nature carries out the principle even upon the same plant,—as in the ivy,—where the leaves next the flower are perfectly plain and undivided, the young leaves upon the leaf-stems are ternate, which further develope in the older leaves into a pentagonal form. The pentagonal principle is again carried on, from the ivy, through the maple, which has subdivided lobes, the vine and hop serrated, the cinque-foil, where it becomes five distinct leaflets, and to the horse-chestnut, in which it arrives at seven leaflets. So that by adopting the principle you need not necessarily follow any particular or individual leaf. This was the mode the Greeks pursued with the acanthus leaf. They did not follow the leaf literally, but embraced the principle which runs through the thistle, the holly, and other sharp-lobed leaves.

One point more I must notice before concluding, and that is the foreshortening of finials and other objects when placed at a height on a building, and the necessity of proportioning them so that they appear to the eye of the desired height when in their elevated positions. Many sculptors, I am aware, do make proper allowance for this when executing statues to be placed on the parapets and pediments of lofty buildings, but it is seldom attended to for minor objects. Some of the early French finials are very ably proportioned in this respect, and I have an example in which a due allowance has been made for foreshortening, in a finial from the interior of the lady-chapel at Ely. It is from the upper canopies, where it is placed at a considerable height. It is greatly elongated beyond the ordinary proportion, and the berries above the lower range of leaves are raised, and stand clear above them; although the modelling of the leaves is rather in excess, the ribs upon the surfaces are omitted. This elongation is not only observable in the finial, but also in the canopy itself, which is of a much more lofty proportion than any of those which are nearer the level of the eye.

In the finials to the canopies of an oak screen I have endeavoured to carry out the same principle, by arranging their height in accordance with the position they have to occupy. I have also opened them, so as to catch the light through the foliage, that they may not appear heavy. Where you have no ground, and the work is pierced, these piercings have to be considered as much as if the work was upon a ground, except that these openings are light, and the ground is dark. The light and shade of the carving must be in due proportion to the piercings.

Having now glanced rapidly at the inconsistent and improper mode of applying foliage to architecture, by overlaying it upon the work; to the literal copying of Nature in a purposeless way, by collecting a variety of flowers and different kinds of fruit, and putting them together in an indiscriminate manner, as in festoons and pendants; I have proceeded to show, to the best of my ability, that there are ample opportunities for introducing foliage into architecture, and that there are abundant materials for the purpose of the artist in Nature, which have never yet been in any great degree exhausted,—that the source is a vast and boundless one, containing a never-ending variety of beautiful form. Nature, however, is so prolific, and, if I may use the expression, so wayward in her manner, that a mere glimpse at a few leaves or flowers, or a mere picking up of a natural form here and there, is worse than useless. It is the principles that we have to search for, and these are hidden under every variety of form and manner. We can no more detect her secrets by a mere casual examination of her outside form, than a burglar can reach the contents of a strong room by merely examining the outward form of a lock. There is only one way, and that is to sit down patiently to draw one form after another, until we at length arrive at a complete scale of all Nature's variety of form,—of her regularity and irregularity,—of her geometrical uniformity, and of her apparent utter want of plan or design in her manner of growth. We see that throughout all her works she never by any chance imitates herself,—for no two leaves, even upon the same branch, were ever yet found precisely alike,—and yet the same forms are continually running throughout nature, until we may almost imagine that Nature does nothing more than reproduce herself, and the casual observer can see but little variety in all her forms.

It will be discovered also that whether we examine natural forms in this country, or whether we obtain them from the most distant quarters of the earth, we can see nothing new, nothing fresh; from whatever country we obtain them, we find that Nature is still at work upon her old forms,—at one time on a gigantic scale, at another upon a microscopic one, but when we search below the surface, we arrive at certain art principles upon which Nature works, and which alone are of any worth to the true artist. I believe that there is more truth in the words that the poet wrote, than he himself knew, when he said:—

> "All nature is but art, unknown to thee;
> All chance, direction which thou canst not see
> All discord, harmony not understood;
> All partial evil, universal good."

[Of the discussion which followed the reading of the paper we publish a report on another page.]

Excavations are being made among the ruins of the ancient city of Tirnova, and they are yielding interesting results. Part of an old chapel has been exposed; its frescoes, which were comparatively uninjured, are said to belong to the tenth century.

JAPANESE DRAMATIC ART IN EU

Nor least interesting among the many
effects of this nineteenth century has b
revolutionary manner in which the wh
tory, politics, art, and literature of Japa
within the last generation, so freely ad
after centuries of tranquillity, the moder
ence of European civilisation. In excha
which advantages we Westerns have a
availed ourselves, to the delight of the Ja
of the whole field of archaic art whic
few years since was confounded in the m
the many with perhaps the older work
Chinese. Thanks, however, to the floo
formation poured upon us within the l
years by the works of travellers of all
(the last of which works, by a lady,
life in Japan," seems to have been insuf
praised), we now know probably as
can be known concerning the Japanese,
knowledge comes to us together with
tainty of the sad fact that European civ
is already working its influence for evi
art of the nation.

At a time when so many of the pro
Japanese industry are familiar to th
throughout Europe and America,—we
to say, thanks to the universal exhib
the last few years, and the energy
Japanese,—a new native importation
us from the Empire of the Rising Sun.

In inverted sequence, a Europeanised
drama has for some time past been im
expected by the Parisian artistic worl
fully, however, as this piece has been
it is alone in its novelty, we cannot
fessing, that it can vie with the ger
grace, and beauty of the troupes of
dressed Japanese conjurors and acrob
within the last few years, have been th
to eclipse the time-honoured marvels
generations, we have been accustomed
in our hippodromes.

Be this as it may, within a short
Théâtre de la Gaieté at Paris has me
genuinely artistic and literary succ
Japanese drama by a Japanese autho
those many Europeanised gentlemen w
see on the Boulevards or in Regent-st
produced with the most scrupulous ca
learn from the *République Française*, t
costume and scenery.*

Mdlle. Marie Dumas, whose taste
are well known to the theatrical wo
having brought before the Parisia
the Greek, Roman, English, Russian
Italian, Spanish, and Danish drama,
made known to the European world
resting and archaic drama of Ja
prepare the public for an exhibition c
a character, Mdlle. Dumas some w
called in the aid of the well-known
M. Philippe Burty, who for more th
years has studied with care the
industry, and literature of the Empi
Rising Sun. The lecture he then
and which evidently interested th
prepared the way to the proper und
of the Japanese dramatic art, so diffe
rules from our Western art.

The Japanese theatres, according to
are built specially with a view to m
customs. The spectators arrive on t
at sunrise and seat themselves in the
here they sit, eat, drink, chat, and sm
representation lasts till the evening
sumed the following day, and in s
even the day after. It is not d
imagine that a dramatic entertainm
under such conditions can scarcely
rapid actions,—such analyses or
character as we are accustomed
Plautus, in Calderon, Molière, or Sha

To the general outline of some
incident which has almost always fo
vengeance of murder or some insult,
a number of scenes which are more c
nected with the plot, but which, taken
form in themselves complete tables
of Shakspeare's plays can alone b
as giving an idea of this process, tho
much shorter scenes.

In addition to this national dram
men and young boys dressed as w
are others exclusively occupied b
others, again, where the actors only

* "Tamato," a drama by Masana Maida, a
national Japanese legend.

e words are read by another person, ording to the part, changes his voice, many cases, is very remarkable.

e stage, to which there are two en- n planking which traverses the two sides nse, a singular blending of realism and nality is to be seen. The scenes are with extreme rapidity, and by means ple but ingenious mechanism; while s preserve their relative attitudes for inutes, lighted by a servant who walks m with a torch fixed at the end of a cane. Or, again, the death agonies of o has committed suicide, last often for r of an hour without a groan or a ing neglected, while at his side another ady dead and cold, having died to the on of his audience, rises to his legs and ains the side-scenes, strikingly remind- f the amusing Tilbury Fort scene in ic."

course of his lecture M. Burty gave the f a characteristic Japanese Vaudeville police officer arrests three men who, to the laws, he finds playing at cards en street. They beg him not to take re the justice; he relents, for Japanese n are human, and eventually plays with ers. At first he gains, always the old n finally loses everything,—his money, his hat, his coat, down to his official he governor, who happens to pass on f inspection, finds the subordinate in plight, and instantly orders him to el himself, a sentence he immediately to carry out with a minuteness and hich call down on him thunders of

w for some idea of the native drama ato," which, be it remembered, is a n, and interpreted, not by Japanese fortunately, but by Parisian actors. rtain rises on the interior of a tea- A charming child dances a stately while a companion marks time on a t sings. Some Samurais are drinking, e same time arrange the detail of a e the spies of the prince who has dis- the rebels of their homes, narrowly hem. Tossiho, the chief of the con- feigns drunkenness, and is carried off se. His friends are at first deceived se; they visit him by night to obtain formation. He receives them, and in r beyond a tragedian of the Coburg n its best days, his friends inform the hour of vengeance has at last Masana, one of the conspirators, is to carry to a distant city the signal

sana delays on his road in the arms of wife, and in the embrace of his The fatal hour has struck, and he has is mission. The other conspirators be- to be at his destination. They go to the his mother to bring her news of the they learn that her son is still there; him with abuse, at which Masana is ot of killing himself, when his mother hand. "Save the honour of the she cries; "it is I who ought d stabbing herself to the heart, she

ece, so simple in its action, yet so n its details, without ever verging on of declamation, produced no little the audience, many of whom laughed as they rarely do in our modern plays. *en scène* was as brilliant as a page of e numerous Japanese picture-books ve been so much admired. The cos- de of the most sumptuous and lightest alled all the beauty and grace of the ese society.

he interpretation of this novel piece by rie Damas and the company under her ent, it seems to have met with general n, the costumes especially evoking ation of the public; in fact, if we are competent critics in regard to this ese drama, never since the days when mounted his "Acis and Galatea" care, assisted as he was by Stanfield rts, or Charles Kean produced his ries of historical plays, has the stage tified with costumes so rich, acces- costly, and *mise en scène* so closely ng reality. The piece, in fact, promises n popularity the Parisian realistic the "Assommoir," which we hear the manager in the course of the first month the large sum of 183,000 francs, and which we know is shortly to appear both in New York and London.*

PRINSEP'S "INDIA."

UNDER the rather high-sounding title of "Imperial India," Mr. Val. Prinsep has made an amusing and very readable book† out of the record of his experiences during his recent visit to India to collect materials for a large picture commemorative of the formal assumption of the Imperial title in India by our sovereign. In despite of the title, the book is not meant very seriously, and any one who takes it up to get "useful information" will be (shall we say agreeably?) disappointed. This, from a certain point of view, is of course nothing against the book. The author was not writing a history of India, nor a critical review of Indian society, but lively accounts of the places and people he saw during a tour made under circumstances very advantageous for introducing him to experiences out of the way of most casual visitors to India. His object being chiefly to paint rajahs who were present on the occasion commemorated, of course he saw a good deal of the native potentates in private, and describes their appearance, manners, habits, and surroundings with great frankness and particularity; and we have no doubt the book has fulfilled its purpose of amusing many people considerably, including its author. We might, perhaps, have wished for a little more of the impressions of nature and art which one would have expected would have forced themselves even upon a "be-rajahed" artist; but perhaps Mr. Prinsep regards that as "shop"; and as to that he was at liberty, no doubt, to please himself, and to mention what did interest him rather than what he or others thought ought to interest him. We fear, however, that good taste must pronounce the author to be, in print at all events, somewhat too much of a "rattle" even for this not very serious rôle; not only is he, as Lamb said of some one, "f-f-f-ull of f-f-f-un," but we fear, in his contempt for the dull sobrieties of bookmaking, he has run into the other extreme of something approaching slang. It is not considered, for instance, very "good form" to speak, even in conversation, of persons of eminent position in society as "swells"; but to print such a phrase over and over again as the general classifying term for the native dignitaries of the country, and that in a book likely to circulate in India, seems very bad taste. There are some other expressions in the book which would do well enough, perhaps, in a talk in the smoking-room; but when a man puts things into print, even with no desire beyond amusing, he would do well to take to heart one of the maxims of Polonius—

"Be thou familiar, but by no means vulgar."

What is rather amusing, certainly, is that Mr. Prinsep seems, if we are to judge from his own account, to have treated rajahs much in the same style in which he writes of them, and to have made himself at home with them everywhere. The long connexion of his family with India, of course, enabled him the better to do this, or to find out how to do it. He regards the rajahs as made for his picture: at the same time, he is very bitter against them for their want of punctuality in regard to their appointments for sittings, or their excess of punctuality in leaving, which comes to nearly the same thing. The Viceroy imagined, apparently, that if Mr. Prinsep was at the ceremony he could, with that opportunity and with short sittings during the ensuing week, when most of those concerned would still be in the neighbourhood, get all he required for his picture before the visitors had dispersed. We should have expected Lord Lytton to have had clearer ideas as to the work necessary for a big picture; it is needless to say that did not satisfy Mr. Prinsep. There was, therefore, nothing for it but, as he puts it, "to track the sajah to his lair," and there seize and paint him; and this succession of unpunctual rajahs in hot presence-chambers seems to have (not unnaturally) tried the artist's temper a good deal. His pleasure in the contemplation of the building and gardens of the Taj Mahal apparently derived its keenest edge from its contrast with the circumstances of his daily work. "The smell of roses instead of betel-nuts and frowzy rajahs; the wild shrieks of the kite, the cooing of doves instead of the noise of tom-toms, or the gurgle of hubble-bubbles. Nature, in fact, and Art. Ah me! in a day or two I must 'rajahfy' again." This comes nearest to being pathetic of any passages that we have noticed in the book. It is interesting to note that while the author was painting in the gardens, he noticed that hundreds of our soldiers tramped in to see "one of the wonders of the world," as one of them called it. One man, pointing to some scaffolding put up for repairs round one of the minarets, said, "It reminds me, Bill, of Lichfield Cathedral: they was always a-doing some repairs to that, I remember." The author's American friend said he should like to have it in New York to show, at fifty cents a head. Such are the various ways in which one object affects different minds.

Some other particulars about other buildings at Agra have architectural or artistic interest. One room in the palace was decorated with ornamental flowers painted on marble. But "the hand of the English engineer has been here." One corner of the room was repainted at the time of the Prince of Wales's visit, to show H.R.H. what it was like when new. "Ye gods, what a sight!—The most tinselly gold, the crudest reds and yellows, the coarsest possible work. If this is what it was when it was new, let us have no more like it; let us, at least, have what is picturesque and beautiful to delight the eye as long as there remains the trace of a pattern. Let us keep up the building, and keep out the rain. But for Heaven's sake, O ye higher powers who direct such matters, spare us the decorations of the unartistic and the wild imaginings of the engineer, which are not only horrible in themselves, but replace the beautiful traces of former art." Truly, we sympathise with Mr. Prinsep here. An engineer in such a building,—an English engineer, at all events,—is a more fearful wild-fowl than a lion among the ladies. Touching upon another palace in Agra fort, the author says it has been restored much better, the restoration being merely that of masonry detail: "to restore a building stone for stone, when there is a pattern to go by, is much easier than to restore a decoration, for colour is more subtle than stone." So it is, perhaps, but it does not seem to have occurred to Mr. Prinsep that the eye of the architect might possibly find just as much to blame in the masonic restoration as the eye of the painter found in the painted restoration. Painters always think architecture is such easy work! At the palace of Akbar "the ruins are superb. Red sandstone, almost as good as marble, is the material universally employed, and not a bit of wood for floor, rafter, or roof, have I found. This red sandstone takes a wonderful finish, and seems very easy to work. Court after court, pavilion after pavilion, have I seen, all wonderfully wrought over with ingenious and elaborate patterns, and all as fresh and sharp in detail as the day they were done; only here and there it has been found necessary to build a prop to support the great weight of all this stone on the roof." At the Taj-Mahal the author saw the water run into the great tanks (which had recently been left empty on account of leakage) as a special courtesy to himself on the part of the gentleman who looks after the garden. "The long reflection of the white marble much improves the magic of the effect," as one can well imagine. The gardens are particularly well managed. "There are two rose gardens and lawns quite English, with good turf"; and a tree is shown which is believed to have been flourishing (a cotton tree) before the Taj was built.

Their highnesses of India seem to have found sitting for their portraits a great bore, even with the prospect of immortality in Mr. Prinsep's picture. One of them said it was worse than the hardest day's *pooja* (*i.e.*, says the author, "praying") he had ever done, and added half good humouredly that "he got nothing for it." The capability of understanding the process seems to have been very variously developed. Some sitters who were taken in profile could not by any argument be made to understand why they should be painted with only one eye, and seem to have half thought there was a covert insult intended. Others were very liberal in their praise, when the first stages of the study were got over: "I did not think I should like it

* In our next, as already announced, we shall publish a description of a theatre in Japan, with plans and views, both internal and external.

† Imperial India: an Artist's Journals. Illustrated by numerous Sketches taken at the Courts of the principal Chiefs in India. By Val. C. Prinsep. London: Chapman & Hall.

at first, but now I like it only too well," was the expression in one case. The ladies seem to have been the most agreeable to deal with (where are they not?). H. H. Jumna Bae, the Maharanee regent of Baroda, had only her sweetest smiles for the artist, accompanied by the expression of a willingness to sit as long as he liked. The author has shown his appreciation by painting her picture in words, as well as by the engraving in the book. She was a tall slender woman, still very pretty (the Maharanee is about twenty-five, it is understood; which is middle-age, we suppose, for an Indian lady). "She had on a dark blue muslin *sarree*, through which one could distinctly see her olive brown skin. Indeed, to the waist she was virtually naked, except that across her breasts she wore a rather coquettish red and gold embroidered staylette. Her hands and feet are unusually beautiful, even in this land of lovely extremities. Both are arranged with the greatest care; every nail is carefully marked, where the flesh ceases to adhere, with a semicircle of henna; and on each great toe she has two rings, and one on each little toe. Unlike the other women I have seen in India, her eyes are untouched with black; she wears no nose-ring; only in the centre of her forehead there is a beauty mark, a kind of tattoo, of delicate blue, and on her cheek and chin a single spot of the same colour; and her jewelry, though handsome, is not garish or vulgar." The lady thus sympathetically described is shown in the engraving seated with knees up on a chair, her feet resting on its front edge, the disposal of the voluminous drapery rendering the attitude far more dignified and graceful than one could have supposed possible. As depicted here, she is certainly a very pleasing-looking woman, and looks a thorough lady in spite of her attitude. Her little daughter, of five years old, Tara Bae, is, if the sketch of her on page 325 is faithful, as sweet-looking a little maiden as could anywhere be found.

It is interesting to have the opinion of an English painter on a "nautch." The author is anxious to disabuse his English readers of the idea that there is anything improper about the entertainment. We surmise that there are nautches and nautches; certainly the one he describes and illustrates seems to have been a very pretty entertainment, and as harmless as anything well could have been. One hundred women danced round in a stately measure in a garden by torchlight, the light glittering all the time on bangles, armlets, and anklets. Every now and then the great drum in the centre gave a boom, when the women all threw up their arms together; and in the middle of all this, the moon rose behind the dark masses of trees in the garden. We can easily imagine that the author was, as he observes, "never more *fetched*." He says he should like to make a picture of it. We very much hope he will, and have no doubt we shall also be "fetched."

The various portraits of the artist's sitters, chiefly rajahs, which embellish the book, are, as one would expect in an artist's book, admirably engraved, and exceedingly interesting from the picturesqueness of the costumes and the admirable rendering of personal character and manner. A very pretty one also is the portrait of "Begoo, a Kashmerian nautch-girl," whom some of us have already noted on the walls of the last Royal Academy exhibition.

AN APPEAL.

ARCHITECTS' BENEVOLENT SOCIETY.

Sir,—In consequence of Mr. Mocatta's (the chairman) remarks at the recent general meeting of the Society (see *Builder*, March 15th, 1879, page 293), urging the necessity of increasing the amount of the invested capital on account of our frequently being unable to deal with all the distressing cases coming before the Council in a way adequate to the needs and deserts of the applicants, I have had a letter from one who is serving on our Council, and who knows the good work done there, offering to make a donation to the Society of 100*l.*, if fourteen other gentlemen can be found to do the like within three months, so as to raise our funded stock to 5,00 *l.*

May I ask the favour of your giving this fact publicity in the columns of your paper?

J. Goldicutt Turner, Hon. Sec.

Albert Hall.—In order to meet the wishes of H.R.H. the Prince of Wales, who has been pleased to signify his intention of being present, the date of the lecture on the electric light, and exhibition of electric lighting apparatus, has been changed from Thursday, 1st May, to Wednesday, the 7th May.

A GLANCE AT ST. PAUL'S AND ITS GARDEN.

So much is doing in and about the great cathedral church of St. Paul,—additions and alterations, if not restorations, both materially and ornamentally, that it may be of some interest to glance for a moment into the past of it, at its early beginnings, and first building. We have good means of doing this, both from knowledge of the great church itself, and from the notes about it in the *Parentalia*, or memoirs of Wren when surveyor-general of the royal buildings. These memoirs were compiled by his son, Christopher, from a large number of original papers and records. It may be noted, in passing, that this *Parentalia* contains not only the records of Wren's life and doings, but only is a family history, and has in it memorials of Matthew Wren, bishop of Ely, Christopher Wren, dean of Windsor, as well as of the great architect himself; also collections of records and original papers, and affords an interesting insight into the times in which he lived and worked, and into the surroundings and motives of those who lived and worked with him. Our present purpose is to note a few things concerning the building and designing of St. Paul's, and to perhaps hint at what Wren would have done had he himself completed his work, or had he, in this our day, so different from his own, had the same work to do. The "garden" now in course of forming round the great church must needs call public attention to it and to its specialities.

It is curious to note in the first place how very little Wren thought of the old Gothic cathedral, for when making an accurate survey of the old church, "even to inches," he takes note of the "inaccuracies" of the Gothic builders, and was astonished to find how negligent they had been. They seemed to have been Normans. Everything, almost, seems to have been done wrong, and he fails to note what would appear to have been but too evident, the infinite inventiveness of the Gothic builders, and the strange aspect of the whole building, especially as surrounded as it then was, by the quaint streets and narrow ways of the antique town. They were never true, he remarks, in their levels, and the building was found to consist in great part of old materials, which the founder, Mauritius, Bishop of London, "had procured from William I., out of the ruins of the Palatine Tower." The great pillars were without any "graceful manner," and the thick walls were "without judgment." Cornices they could not have, for want of larger stones. Altogether, Wren could not be said to have found anything in or about the old Gothic cathedral to go by or to inspire him, nor did he learn anything by the study of it. All this careful survey and planning was made in 1666, some months before the Great Fire, which provided Wren with his so many opportunities.

There is much, very much more, to be noted here, in this, Wren's first survey of St. Paul's, and in his efforts to patch up the old cathedral, but we can hardly note them all, curious as they are. All his careful work, so far, was needless, consequent on the Great Fire, which necessitated the building a new cathedral altogether. What is here more to the present purpose is the laying out of the new streets and ways round and about St. Paul's more in harmony with it and the style of architecture it was to be built in, and better fitted to the times in which Wren himself lived and worked.

We must not dwell on the first difficulty, viz., as to funds,—"shortness of funds,"—which compelled the Commissioners, in their directions to Wren, to order him to "contrive a fabrick of moderate bulk, but of good proportion, a convenient quire, with vestibule and porticos, and with a dome conspicuous above the houses." A long body, with aisles, was thought impertinent. But even this did not please all, for it was not thought stately enough, many contending that for the honour of the nation and the city of London, such a church ought not to be exceeded in magnificence by any church in Europe! Hence it was that Wren merely for "discourse sake," and to satisfy the world, "drew more sketches" larger and more beautiful and more conformable to the best style of the Greek and Roman architectures. But even these did not satisfy, and Wren then at last, and to begin, turned his thoughts to the cathedral form, as it was termed, but so rectified as to reconcile as nearly as possible the Gothic to "a better manner of architecture," with a cupola, and above that, instead of a lantern, a lofty spire. It was to have two large porticos. Thus was the work of the new Cathedral of S at last determined on, his Majesty King approving all that was proposed. We r the result, imperfect though it be, of w then so carefully thought out, and executed.

But our more immediate object her make note of the proposed laying-out streets and ways immediately round an St. Paul's, and to call a moment's atte the planning and architectural characte spot on which the cathedral stands. It is to note how different all this now is fr which it would have been had Wren, tect, had his own way, and completed h The old line of streets and ways wou totally disappeared, and no vestige of age London, or recollection of it, ceu been. But as things are now, at the moment, the ground is thickly built u the narrow and even picturesque street, noster-row,—is, indeed, a bit of old Lon

Now, this is all very curious when to consider it, for Wren, with his Gr Roman proclivities, and his dislike of was compelled to work, more or less, in way. His cathedral stands on a Goth and the very iron railings round and —which, by the way, are very admir signed and wrought, and have quite tectural character, — are, as it w boundary lines of a Gothic structure, so on plan, and even awkward, are the l make round the building, not following of the walls of it, and now ending as t the west front, or their line, rather, by the low marble posts or pedesta hardly seem to form a part of the ger of the churchyard in which the stands. How far the garden will hel remains to be seen. A difficult prob can be no doubt, and one which m puzzled the architect himself. Had W pleted his work in his own way he wou less, have formed round his cathedral regularly-drawn boundary line, enclo haps, a small Campo Santo, that m priate and impressive of cathedral yard inclosures.

Wren's cathedral, in his own da satisfy *all*, and nought that even he would or could have done so. Now difficulties are certainly not less than were, though they are different in Paul's has undergone not a few altera tractions, and additions, some of t little surprising. The whole interior was but a few years ago painted, thr times in good oil colour, thus dest natural colour and impressiveness an ness of the interior, as we thought, since happily been all of it careful away, and it is in the future conte "decorate," or adorn, if that be a b the whole interior. To help this it is now and then, as occasion offers, a m glass window is added. These add are, as a matter of course, if not i necessity, the productions of some of of glass-painters and church-decor would ask,—will such windows ever, in the distant future, be the prod painter? Michelangelo was a pain painted with his own strong arm an vaulted roof of the Sistine. Raffa painter, and he drew and painted t frescoes so familiar to Academy Correggio was a painter, and all kn did. Indeed, what would the worl without these evidences of the pow and hand of these men, and such a to speak at present of more archaic doings and efforts, humbler may be, true and wonderful, from the days o down to the present hour. We have far enough for it. More than one offers itself to us here, but, forbe difficulty details, we can but imagin effect of one of the aisles of St. P be, supposing nought decorative we the fair face of the stonework b time and nature to colour anew ea glass-filled windows alone were p say not how,—by a painter, the s being veritable work, as the sam canvas would be if to be exhibited Academy Show on a first Mond Is work such as this possible in th and if not, why not? How much be done yet, or rather begun, i Cathedral, both interiorly and exteri

essons would such work read, not alone
ts and workmen, but to the public, who
ly, as things now are, at results?

MYCENÆ.

o period have the buried treasures of
y been brought to light in greater
nce than has been the case within the
r years. While the eighteenth century
he cities of Pompeii and Herculaneum
heir ashes, and restored them once more
ight of day, the nineteenth century has
vered the great cities of Assyria, and has
a flood of light on ancient Greek and
history. Among the most striking addi-
nich archæological research has made to
wledge of the ancient classical nations of
the results already achieved, and the
now in process of achievement under the
e of Dr. Schliemann, at Ilium and at
, or under his fellow countrymen who
aring at Olympia, will ever hold a most
nt place.

oting the explorations at Mycenæ, Pro-
Adler recently delivered in Berlin an
containing some interesting remarks.
enæ, he observed, we found a rare
of architectural remains which are
ly associated with certain mythical
In ancient Thebes, conflagrations
rthquakes had destroyed the monu-
of its ancient civilisation. Of Ortho-
here is nothing left beyond a dozen blocks
e, the last remains of the so-called
treasury. But the fate of Mycenæ
more fortunate. Of its great antiquity
eader of Greek history was aware.
was already old at the period when we
nt anything of ancient Greece. In the
Pausanias there was nothing beyond
Mycenæ. Fortunately, the ruins and
of its ancient glory had not been dis-
by later generations. How long these
had stood before they fell into ruins we
now. There we still found the strong
circling and supporting the two en-
to the royal stronghold, one of which
was the well-known "Lion Gate."
spot we were confronted by prodigious
f Cyclopean masonry, here standing in
ines and rows, there isolated and single.
hey were wanting it was possible never-
till to distinguish the foundations, their
being generally indicated by a very
growth of grass. In Mycenæ all the
f the ancient Achæan architecture are
ted. But for every relic still left, we
nigma to solve.
was no difficulty in understanding the
eauties presented at this spot. From
de of sovereigns, from this acropolis, we
lown upon the charming landscape of
In the remote distance we perceived the
ch was for the most part tranquil. On
h to the right lay Mylæ, with its copious
while on the left was Nauplia. Further
ched mountain after mountain, each
the other in beauty. It was, however,
nghold itself which had most interest
awakening in us, as it did, splendid
s of the time of the Argives, and of
e of Perseus, from which dominion passed
hands of the descendants of Pelops.
ndour endured but for a short period.
gamemnon came the Doric immigration,
enæ became a lifeless city. Down to the
ntury it preserved its independence. A
me after this it began to enjoy its long
ound slumber, its sleep of death.
ugh within the past century the
felt in these places by classical
gists, and the frequency with which
re visited, began to increase, it was
me before any progress was made
investigation. It was only the spade
ld render effectual assistance here. Dr.
ann took up the task of showing that
Hellenic heroes mentioned in the poems
er, were not mere poetical fictions, but
l characters; and this he did by exca-
the various localities mentioned by
He commenced with Ithaca, but
any very satisfactory results. Then he
Troy, and there discovered those
which he has denominated the treasure
n.

raged by this success, he now turned
the ardour of his nature to Mycenæ,
August, 1876, he began to execute his plan of excavating every place which Pausanias had seen, including the house of Atreus, of Agamemnon, and of Cassandra. He then thought it his duty to seek for the tombs outside Mycenæ. After a preliminary *reconnaissance* in 1874, the fact was made out that the greatest depth of rubbish, a depth of 8 mètres, was in a part of the so-called treasury. After a short time Dr. Schliemann's exertions were crowned with the most splendid success. Within the suspected limits he found several tombstones, and at last he discovered five rocky basins, while a sixth was turned up after his departure. The delight so widely felt at this success found expression in numerous telegrams, and was thoroughly well founded. An abundance of gold articles, weapons, and ornaments were brought to light; and although they were often badly preserved, and did not answer to our ideas of the goldsmiths' art in ancient times, they, nevertheless, formed a discovery of the very first order of importance.

In these objects Dr. Schliemann considered that he had acquired not merely a number of treasures of antiquity in general, but he was persuaded he had found the treasure of Agamemnon in particular. Dr. Schliemann broke off his work here too early. Fortunately, however, Dr. Davis, who had been appointed by the Greek Government as Dr. Schliemann's colleague, remained behind and continued the excavations, which led him to the discovery of the sixth tomb. The chief question we have now to decide is this,—Are the tombs Dr. Schliemann has found really the tombs of the house of Atreus or not? This can only receive a reply when we have carried out a thorough analytical examination of the ancient architectural remains themselves.

Mycenæ consists of two fortified hills, with an upper castle and a lower castle, united by the saddle of the two hills. That which is usually regarded as Agamemnon's grave is a vaulted cupola of monumental strictness of design, the construction of which is in a high degree surprising, and which, in point of massive grandeur, can only be compared to the structures raised by the Pharaohs. The building rises up in the form of thirty-two circles, one placed upon another. In the doors we see supporting-beams of enormous weight. One block alone is calculated to weigh 2,200 cwt., which is three times heavier than any stone which has ever been used in any building in Berlin.

The approach is through a passage, 36 mètres long and 6 mètres broad, walled up on both sides. The entrance itself is formed by a gate flanked by two columns and adorned with a wreathed cornice. One peculiar phenomenon is that the shafts of the columns grow broader upwards. The entire architectonic arrangement and the internal bronze decoration point without any doubt to Carian models. The second vault is destitute of the precious decorations such as are found in the first; but the exterior is similar. Both structures make so imposing an impression on the beholder that they announce the power of the ruling race which built them more eloquently than could be effected either by song or story.

What, then, we must now ask, was the object of these Greek structures? They were treasure-houses, says one party. A second party affirms that they were tombs. Others see in them fountain-houses, and others again round temples. Up to the present time there have been eleven of these globular structures found in various localities in Greece,—a proof that they form a distinct phase in Greek architecture. As regards the theories put forth respecting their purpose we may without hesitation reject the two last above mentioned. Everything, too, is against their having been treasure-houses.

In fact, there is no longer any doubt that in these structures we have to do with mausoleums, with the tombs of princes. Every trait tells us that this was the exclusive programme of the architect,—the dark vault, the noble approach, and the hillock in front of it. This is the well-known type of the tombs of princes. On close examination, however, we discover good ground to ascribe the two kinds of tombs to two different epochs. It may be assumed that the one is a completer and more developed form of the other. The column at the "Lion Gate" symbolises the ruling house, the lions being its guardians, so that the ornamentation may be taken to mean—"The king's tomb stands under the protection of the gods." The lions in relief, the Lion Gate, and the vault belong to one and the same epoch. Taken in connexion with old Greek story we may draw the conclusion that the first of the two buildings belonged to the first dynasty, and the more developed structure to the second dynasty of sovereigns. The first tomb may be that of Atreus, the second that of Agamemnon.*

Of greater importance, however, than the settlement of this question is the fact that out of the bosom of the Hellenic soil proofs have come to light, showing that centuries of Greek history preceded the rise of the Ionic and Doric orders of architecture. The architectural art of Mycenæ had its original home in Asia Minor, but it was unable to maintain its ground against the Doric. The bold attempt at the cupola with square blocks of stone masonry was preceded by earlier attempts in brick. But this latter kind of building was at home in Sardis, in Western Asia Minor; and it seems very probable that the art of building in brick was brought over thence to Mycenæ, and was subsequently superseded in the latter locality by stone masonry. Another point about these art-treasures unearthed by Dr. Schliemann is that they all agree in bearing a certain Egyptian character, and point to a time when the west and east coast were under Carian dominion.

From this brief glance at the monuments and times here referred to, it is clear that a part of the older Greek civilisation has been preserved for us, and we may confidently assert that archæological and architectural science has yet much to learn from the western portions of Asia Minor, as well as from Greece itself.

THE ELECTRIC LIGHT ON THE HOLBORN VIADUCT.

THE announcement of the fact that the City Commissioners of Sewers have resolved not to continue the electric lighting of the Holborn Viaduct will not be very much of a surprise to those of our readers who may have carried out for themselves the train of thought suggested in our recent articles on the cost of light, and on the fallacy of expecting to obtain a costless power (*Builder*, Nos. 1,873, 1,875). The broad facts that work means cost, and that when work has already been partly done by the subtle chemistry of nature, and by the slow operation of cosmical forces for many thousands of years, it is usually cheaper to take advantage of the result than to attempt to begin at the beginning for ourselves, have always seemed to us calculated to modify the expectations entertained by some persons of the financial results of the very elegant inventions of MM. Gramme, Jablochkoff, and a large circle of able and deserving inventors. Do what we will, we come back to coal as the source of our motive power. And hitherto it has proved more advantageous to apply directly the luminiferous properties of natural minerals to the production of light than to apply their calorific, that is to say their motor, properties in the production of light in a less direct mode than by the simple process of combustion. We are bound to add, however, that the cost, as set forth by Mr. Haywood, has certainly much surprised us in the face of some considerable experiments which are being made under our own eyes, and concerning which there will be more to say hereafter.

The sum of the facts reported by Mr. Haywood, on which the Commissioners of Sewers have come to their decision, is briefly as follows. Sixteen electric lights were lighted, for sixty-four nights, from sunset to midnight, giving an average of seven hours per night. The cost was 5*d.* per night, which comes to a little over 10*d.* per light per hour. These lights replaced eighty-four gas-lamps, some of which were lighted after midnight. The cost of the gas-lamps per hour was but little over one farthing each. The cost of electric lighting for a year, at these rates, would be 3,072*l.*, and that of gaslighting, for the same time, 419*l.*, making the cost of the former seven times and a half that of the latter. Mr. Haywood, however, estimates the illuminating power of the electric source of light at about seven times that of gas. But the question of the number of the centres or distinct *foci* of illumination, here comes in; and it is one of essential, and indeed of controlling, importance. The efficiency of the electric light increases,—that is to say, its relative cost decreases,—in proportion to the intensity of the focal points. Indeed, it is said by some writers on the subject that the in-

* It will be understood that we are simply reporting Dr. Adler

crease in the illuminative power is in proportion to the square of the work done in producing it; so that one lamp of 100 carcel power would emit as much light as 100 lamps of ten carcel power each. Whether this be a correct estimate or not, we have in the present instance the fact, that the foci of illumination supplied by the street lamps are very nearly six times as numerous as those of the electric lamps. Taking this, for the sake of round numbers, to be the exact proportion, each street-lamp has to illuminate only one-sixth of the area lighted by each electric lamp. The light given, at the extreme edge of its illuminated area, by the former, would thus be thirty-six times more, as compared to the light actually produced, than that shed by the electric light, at its extreme limit of area. Thus to produce an equable illumination, in the portions of area most distant from the lamps, a sevenfold intensity would be only one-fifth of that required. And this is speaking of the utilised light, apart from any loss by opal globes or by repeated reflections. This photometric disadvantage of few points of light does not, of course, apply to such cases as lighthouse beams, where the intensity cannot be too great. But for domestic use, and for street-lighting, the human eye needs protection against too great intensity. No means have been hitherto discovered of producing the electric light in quantity rather than in tension. If that could be done, as is the case in other branches of electric science, the conditions of the problem would be altogether altered. But it is feared that a certain electric tension, and a certain minimum intensity of light, are conditions of the production of the light at all. The force required to produce it is great, and it is, we apprehend, a force of high tension. When the Gramme machines are first made to revolve, they do so with perfect ease; and it would seem as if the slightest motive power would suffice to keep them in very rapid revolution. But the moment the light appears, a strong pull is felt in the machine, quite equal to that caused by throwing the strap moving a system of machinery from the loose on to the fixed pulley of a steam-engine shaft. The work done,—not, as it is improperly stated, even by scientific men, in converting motion into electricity,—but in extracting, by mechanical agency, an intense dose of electricity from the electrosphere of the earth, is very great, and is measurable in horse-powers proportioned to the intensity of each focus of light.

It will be a worthy task for the Institution of Civil Engineers to invite definite communications as to the application of the electric light to lighthouse illumination. The greatest range attained by any lighthouse in the world may be taken at thirty-six miles, corresponding to an elevation of the focal plane above the sea of about 1,000 ft. At that distance, we apprehend that the differences in visibility between an electric light of 100 carcel power and the best arrangement of Argand lamps yet adopted, would be greatly in favour of the former. On the other hand, a spare set of oil-lamps would always have to be kept ready in case of any mishap to the electric apparatus. Then the question would have to be decided by practical experts, how far there would be accommodation in a sea tower, such as we have recently described, for the steam engine, Gramme machines, and stores of coal requisite for the production of the light; and how far the constant tremor caused by the action of the steam engine might affect either the masonry of the tower, or the delicate machinery of the lantern. On lighthouses fixed on shore these considerations would probably be of little weight; but for the sea towers, which we regard as lighthouses *par excellence*, they are of very great moment.

We shall hope to have the means of comparing the results of the experiments made by the Metropolitan Board of Works with those now concluded by the City Commissioners of Sewers. Fairplay is being given to the new invention; and, indeed, Mr. Haywood's report seems to show that desire for its success in which all scientific men must sympathise. We hope that in any of those discussions on the subject which may be expected to follow the publication of the result of these experiments, the point that we have just raised as to quantity and tension of electricity may receive due attention. The question of the distribution of the light, and the proportion between quantity of light at given points and area to be illuminated, is a purely geometrical one, as to which there can be no difference of opinion among educated men,—educated, that is to say, in the rudiments of geometry. But the question of intensity of light, or the radiant *foci*, and of the tension of the electric current required to produce such light, as compared with the quantity of such current, is one that we have not hitherto seen treated with the lucidity that its importance demands. In the difference between tension and quantity lies one of the main essential differences between the study of mechanics, as ordinarily understood, and that of what we may venture to term electro-mechanics.

It may be hoped that useful statistics will be forthcoming at the lecture on the electric light and exhibition of apparatus, fixed to take place at the Albert Hall on the 7th of May.

EMPLOYERS' LIABILITY.

Two kinds of difficulty attend the execution of any change in existing laws. One is inherent. It is a difficulty too often overlooked by legislators, in which case it is pretty sure to avenge itself upon litigants. This difficulty arises from the enormous mass of statute and of judge-made law now existing, and from the unexpected mode in which a change introduced in order to effect one object may be found to effect some other very different object. This danger is inseparable from the construction of laws by assemblies of men. It is generally so far appreciated in this country that few new Acts of Parliament are considered by a lawyer to be quite intelligible until some trial has led to the delivery from the Bench of a judicial decision on the subject, fixing the purport, limits, and effect of the new law, under the pretext of declaring the mind of the legislators.

The second kind of difficulty arises from the spirit of party, or from the wish to alter a law in accordance with one, or with another, set of political opinions. We will term the first the legislative difficulty; the second the constitutional, or political, difficulty. It is obvious that, with our present system of legislation, the effect of the latter dispute is very greatly to enhance the former source of confusion, if not to render wise legislation on a much-debated point impossible.

The case of employers' liability is one that very fully illustrates the above remarks. The subject in itself is one involving broad and important questions of public policy, as well as, at times, instances of private hardship. It should be borne in mind that our existing industries have grown to their actual vigorous maturity under the law which it is now sought to change. That the operation of this law has occasionally involved great hardship, not to say injustice, is freely admitted; but the question for decision is how far public policy and private hardship are inseparable, or how far it may be possible to provide against the latter, without running counter to the former. That the public welfare is to be the first thing to consult is the ruling principle of our law, and the negative of such a principle means revolution. It means this according to the same rule on which it was once said, "All protection means robbing somebody else." However far we may be disposed to admit the justice of that fortunate apophthegm, every private interest is subservient and secondary to the public interest, in the same way that the constituent parts are inferior to the whole. There may be a conflict of private interests: there often is. That course which is most beneficial to the greatest number of the more important private interests is that which is most in accordance with the public welfare.

The Attorney-General's Bill to amend the law of liability of employers for injuries sustained by the servants in their employ is at least an attempt to deal with the legislative difficulty of this case. It is felt, and we think justly felt, that in cases where, owing to negligence or parsimony of a large employer of labour, injury is sustained by any of those in his employ, it should be no bar to the recovery of damages that the immediate agent, who inflicted the injury, was a fellow servant. But the principle here is clear. It must be in some way the act of the principal, or an act for which he is morally responsible, as being that of his trusted representative, which was in fault, in order to justify any claim on the principal for redress. Thus in such a case as the use of a rope for hauling miners up a shaft after such rope had become frayed or worn, or the application to the shaft, in the first instance, of an unsound rope, or a rope of too small size, there is a degree of fairness in the tention that the principal should be resp ble for the damage caused by the breaka the rope; and that the fact that the en driver, or the man who fitted the rope, fellow-servant with the miners injured b fracture should not be a bar to a claim o part of the latter for compensation. But engineman were intoxicated, not being a p liable to the imputation of want of sobriet if the banksman dropped a block of coal o miners ascending the shaft, there could b equity or justice in making the principal re sible for the damage ensuing. This, we is the true solution of the knot of the quest the guilty participation of the principal cause of the accident,—using the term "gr in a wide sense, so as to include any negl the best precautions ordinarily taken in m cases, and the making the trusted represen of the principal bind the principal in liabil

No doubt there would be great difficulty framing a new law as to do justice to all p But we think the principle which we hav tured to suggest is the only one. And we that this is what is intended as the basis Attorney-General's Bill.

The Parliamentary Committee of the Unions Congress, however, have taken a rent view of the case. They have decide the Bill of the Government is not satisf and they have resolved "that no me dealing with the law of employers for i sustained by their workmen would be ac as a satisfactory solution of the questior it admitted, as a ground of defence in any brought for recovery of damages in res bodily injury or loss of life, that the per whose neglect the injury or loss of li alleged to have been caused was wor common employment with the person s or injured."

The country owes a debt of gratitud above-named committee for having so di formulated the grounds on which they, a their power and influence may reach, l solved to insist. That ground is unmis No less unmistakable is the fact that t tical difficulty thus added to the legal di of the case tends towards one of two res would either make legislation impos the continuance of great industries im For it would place the employer at the not only of every combination of his w but of every ill-disposed, revengeful, o nant workman. Reverting to the case mentioned of the fall of a heavy object shaft to the injury of men in the shaf of that kind are not without precede have even heard,—and that not in vague only,—of cases where the object thro the shaft was a man. In such a cas action were brought against the owne mine, the resolution of the committe debar him from his first ground of defer is it difficult to see that, if a princip made responsible for the acts of all his s the responsibility would be so great t but reckless and improvident persons found to undertake it.

The precise terms of the resolution, are such as to contain within themsel elements of their own condemnation. T unions committee will tell us that t attempting only the removal of an art law-made obstacle to justice. Let with them that this a good principle. do they propose to effect this? By int an entirely new artificial and law-made in another direction. On what g natural right can it be pretended that B, fellow servants of C, are working and A kills B, B's representatives have for compensation from C? A was the A is the responsible party. To hold C in liable is not a matter of common justic or would be, only the result of arbitr ridiculously unjust law. Show, as before, that negligence on the part o contributed to the misdeed of A, an fairly be held liable as a contributor to chief,—the degree of his contributi matter of evidence. But the first p bring to book is A. It may be said t no means of paying, and that C has is merely to say, "We will take the mon ever we can find it, if not in one man in that of another." Any proceeding th spring from natural justice (or, we spe correction from the legal profession, fro law) must begin with A. His ability or

costs has nothing to do with the question legal responsibility.

will not charge the trade unions, either y or by insinuation, with an attempt by wind to damage so far the position of all employers of labour as to lead to the ient of capitalists from industrial occupa- to the benefit, may be, of co-operative tions. But it must not be forgotten that, vents in America, this has been distinctly ated as one of the great objects for which rking men are to combine. And we must at, whatever be the aim or intent of the ttee, some such result would follow if this ion could take effect in a corresponding of the law.

we wish to point out clearly, and lly to our industrial readers, that two s do not make a right. The committee to strike out from our statute-book a al ground of defence. At the same time, r to be fair and just, they must strike out rresponding technical ground of action. latter must be decided on one of two oles, — either natural right or public

As to the latter we have spoken, we have further admitted that for ake of public policy it may be le to make the employer of labour sible to those in his employment in a r which is stretching his true natural sibility. But it will not do to hold with unds and to run with the hare. Even arful scarecrow, the capitalist, is not to de a mere banker for all in his employ,— eposits being not theirs, but his own. person by whose neglect the injury or loss was alleged to have been caused" is the to whom the killed or injured fellow- an or his representatives have in the first ce to apply for compensation. If this can throw the blame, or any portion of another, that is his look out. That is the al state of the law. The question of on employment comes after. It is an ial question. It is not free from difficulty; here is, as we have intimated, a sound ple involved, the declaration of which reduce all difficulties to those of adminis- detail. The resolution which we have ntirely ignores the primary facts of the and could have no practical result if l out but to cause the withdrawal of d capital from industry.

THE THAMES BRIDGES AGAIN.

unexpected revival of the high-level e for a bridge over the Thames near the r, by the resolution of the Metropolitan of Works to proceed in their application arliamentary sanction, in opposition to the mendation of their own Works Committee, of the features of the past week. It is ess necessary for us here to repeat our r observations on the subject, for the n that the gist of the greater part of them en very fairly represented by the *Standard* leading article on the 24th inst. The ition that exists between the requirements e east and west water traffic, and the n and South land traffic; the question of ightening the strain on London Bridge by rovision of another crossing; the inutility e measure, in any case, without an enor- outlay in a corresponding widening of approaches; and the difficulty which the t to a sufficiently lofty height above the would oppose to the use of the proposed e for heavy traffic, are fully referred to by our mporary. To this have to be added the facts the experience of the two tunnels already under the Thames, and the direction of ain lines of traffic towards the west on both s of the river, are not encouraging as to tility of a new crossing at the proposed . To this may again be added the hypo- cal character of the estimates for so novel ucture as a steel arch of the magnitude osed, together with adequate approaches; latter probably forming the most serious ents of the cost. The *Standard* adds the tion of the military authorities to the com- l of the Tower which would be given by a structure. This objection is not disposed y the remark that there are already lofty ings overlooking that post. In the case of great military emergency such buildings d be either occupied or destroyed. It would ifferent in the case of such a structure as a bridge, the hostile occupation of which would render the Tower perfectly untenable.

On the other hand, attention cannot be too often directed to the evidence which we have more than once cited from Sir John Rennie himself, the engineer of London Bridge, which shows that to throw great additional weight on the foundations would be almost certain destruction to the bridge itself; and that, from the nature of the spot on which, against his own desire, the engineer was compelled by the City authorities to build the bridge, any extension of the foundations is a matter of practical impossibility. It may be a good thing to have these matters thoroughly thrashed out before a Parliamentary Committee. But it is more than questionable how far, in the present state of public feeling and public business, adequate attention can be commanded for the investigation. We should like to see some adequate statement as to traffic, such as we have before shown to be necessary, brought before the public, and especially before the ratepayers, before the latter are involved in a costly Parliamentary contest. And, in any case, we must call attention to the fact that London Bridge is unrepresented. Its natural Conservators, the City authorities, seem bent on improving it out of existence. Parliament has hitherto stood in the way. But Parliament may hesitate continuously to oppose the City, unless the real facts as to the foundation of London Bridge are made publicly known. Is it too much to suggest that the Royal Institute of British Architects and the Institution of Civil Engineers are two bodies deeply interested in the maintenance of one of the noblest monuments, and most useful public works of the metropolis, and that an expression of opinion on the part of either or both of these bodies might prove the turning-point as to the salvation or destruction of the bridge?

OUR MINERAL OUTPUT.

LARGELY dependent as Britain is for her commercial greatness on her mineral treasures, one of the most interesting of the statistical works annually issued should be the official "Mineral Statistics," which tell, tardily, the extent to which those mineral treasures are drawn upon. Our knowledge is brought down by the recent publication to last year, and it will be of interest to glance at the latest issue. Our coal is by far the most valuable of our produce, and we draw on it to a larger extent and value than all the others combined. It appears that last year the coal production of Britain was 134,610,763 tons, and this was drawn from 3,770 collieries. From the great coalfield of the north the output for the year was rather less than in its predecessor, the total now being 31,210,400 tons, of which South Durham furnishes by far the larger proportion. In the north-west we have Cumberland, with a production of 1,515,783 tons, whilst three collieries in Westmoreland yield 1,791 tons. Cheshire has an output of 645,500 tons; Lancashire, from its northern and eastern portions, yields 8,735,055 tons, and from the west, 8,886,476 tons. Yorkshire is becoming one of our largest contributors to the coal production of the country, yielding last year from the West Riding 15,952,400 tons, and from the North Riding 8,150 tons only. Derbyshire draws 6,975,550 tons; Nottinghamshire, 3,895,750 tons; Warwickshire, 930,850 tons; and Leicestershire, 1,149,590 tons. Staffordshire yields from the north 4,149,975, and the southern district (including part of Worcestershire), 9,841,191 tons. Shropshire contributes 927,580 tons; and Gloucestershire, 1,194,726 tons; whilst Somerset and Devon yield together only 666,500 tons. Monmouthshire has an output of 4 350,785; and, coming to North Wales, we find that its total is 2,479,580 tons,—Denbighshire contributing more than half, and Flintshire the bulk of the remainder. South Wales is enlarging its output materially, Glamorganshire alone now raising 11,889,600, whilst Carmarthen, and others with small output, bring the total for that part of the Principality to 12,634,335 tons. Scotland yields 18,320,074 tons, its western district giving towards that 6,867,701 tons from 222 collieries, and the eastern the larger aggregate and proportionate remainder from 305 collieries. The 51 coal-pits in Ireland yield 138,722 tons, and thus the total output of the kingdom is formed. Generally, it may be said that the tendency in the coal trade has been to increase the production of the collieries on the average, and the reports of the mine inspectors show that there is a larger average output for each collier employed, so that to this extent there is increased economy of production in recent years.

Turning now to the production of ironstone, we find that the amount raised in the United Kingdom was 16,692,802 tons. Cleveland continues to be the largest producer, both in quantity and value. Her production last year is given as 6,284,545 tons; Northamptonshire has 1,049,806 tons; Cumberland has an output of 1,351,441 tons; and from the mines in the Furness district there were produced 993,012 tons. These, with Lincolnshire with 508,749 tons, are the only large producers of iron from mines not under the Coal-mines Regulation Act. There are, however, produced from Wiltshire 79,176 tons; from Somersetshire, 51,927 tons; Gloucestershire, 92,974 tons; South Wales and Monmouthshire, 77,320 tons; whilst some smaller contributions bring up the total to 10,768,075 tons; and with the iron ore from mines worked under the Coal-mines Regulation Act, 5,921,727 tons, the total production of Great Britain is formed. The value of the last class of ore is much in excess of the other, and the total of all kinds is 6,746,668*l.* To this, however, there is added a comparatively small amount of iron ore imported, and thus there is smelted in the United Kingdom over 18,250,000 tons. This, at 541 blast furnaces, was converted with 15,342,445 tons of coal into 6,608,664 tons of pig-iron,—4,888,991 tons being produced in England, 982,000 tons in Scotland, and the remainder in Wales. Of tin ore, it may be said that 14,142 tons were produced in the year from Cornwall and Devon, the value being stated as 572,763*l.* Of copper ore, 73,141 tons were produced, the value being returned at 282,270*l.*; and of lead ore, chiefly from the Northern district, and from Wales, Yorkshire, and Shropshire, 80,850 tons, of the value of 1,123,952*l.* Zinc ore is returned as worth 86,151*l.*, and the extent of the production as 24,405 tons. This comprises the chief of our minerals, and it is evident to what a large extent we draw upon the stores that have been so long laid up for our use.

There are, however, a few other figures given in the official returns, which may be briefly quoted. Of iron pyrites, the production was 43,948 tons, and the estimated value 28,225*l.*; of arsenic 3,809 tons, value 30,420*l.*; whilst of manganese, which is yearly becoming more and more valuable for its use in connexion with the steel manufacture, we only produced 3,038 tons, value 7,958*l.* The gold is returned as worth 18*l.* only; the silver ore, 927*l.*; and the uranium ore, 11*l.* The clays included in the list are chiefly got in the south and south-west of England; the tonnage for the year was 2,961,155 tons, and the value 592,231*l.* Salt, chiefly from Cheshire, was produced to the extent of 2,735,001 tons, and to the value of 1,504,250*l.* There were a few other kinds of minerals produced, which bring up the total value for the kingdom, including all those stated, to the handsome total of 58,398,071*l.*,—a sum which, however, is about 300,000*l.* below the estimated value of the produce for the previous year. The falling-off does not so much arise from diminished value of the minerals as from diminished quantities of one or two classes. In coprolites and phosphatic nodules the declension is most marked, there being a fall of about 400,000*l.* in the value; and it is to this that the manure manufacturers trace their very much greater dependence upon foreign supplies.

It is evident that we are drawing generally in increased quantities upon our resources of minerals, and it is satisfactory to notice that with this there is an increased use of the power thus obtained. In our coal supply, this is especially the case, for there is not only an increased economy in the household use of coal, but in the iron manufacture and in the raising of steam power, there is now a very great economy in the use, and whilst this is the case, the enlarged production is not wholly to be regretted. It is true that there is still very great waste in the use of fuel, and that especially in its use for steam purposes there is a need for very great economy, for only a very small proportion of the theoretical power in coal is used now, and hence, whilst this is the case, the increased output cannot be regarded as satisfactory. The fact is well known that much of our industrial prosperity, not to say supremacy, depends upon our mineral resources, and that the husbanding of these is needful,—that is to say, not the reduction of the output, but the

obtaining of the greatest amount of power from the quantity used. The valuable returns which have furnished the figures above quoted assist in directing public attention yearly to this subject, and by showing the extent to which we draw upon our reserves of stored power, and by indicating, in some slight measure, a little of the uses to which they are put, they give data by which some idea of the uses and the waste is obtained from year to year.

THE OLDEST THING IN LONDON.

DURING this last chill carnival, perhaps the most oppressive and dismal ever known in Venice, while the forced festivities crowded the Piazza of San Marco, the Piazzetto, and the Molo, in spite of the east wind whirling round in gentle eddies the pumpkin-seeds, the spent harmless weapons of the season's revelries, it was impossible not to be impressed by the consideration of the number of gay *fêtes*, the gorgeous ceremonies, and cruel executions, the two antique and famous columns of the Piazzetta, during their comparatively short stay in Venice of 600 years, have, season by season, looked down upon,—antique among innumerable relics dragged from countries whose history is coeval with the events of Scripture; and in addition to the impression made by this reflection, it was equally impossible not to feel how, far more carefully and deliberately than we Londoners with Cleopatra's Needle, the Venetians of twenty generations since considered the important matter of the setting-up of these Syrian monuments.

The dissatisfaction at the position and treatment of the so-called Cleopatra's Needle may fairly be said to be universal,—"mislaid," as the President of the Royal Academy not long since observed, "on the parapet of the Thames Embankment," and, "placed in such a manner as to defy and set aside all the eternal fitnesses of things æsthetic,—adorning nothing, emphasising nothing, and by nothing emphasised,—placed, as it were, parenthetically between two highways, perhaps the finest of their kind in the world, but neither of them leading up to it, but rather hurrying past it."

When we consider how long, and with what respect antiquaries have regarded the London Stone, a venerable relic at the time of the Conquest, and near which lived the first mayor London ever had; itself the centre of that superb system of military Roman roads remains of which still awaken the interest of archæologists; when we consider the antiquity of this hoary shapeless relic, or the interest and equally venerable character of the Coronation stone,—the Irish relic dragged to Scone, and thence to Westminster Abbey, more than five centuries ago, and roundly declared, according to monkish authority, to be the same stone which served Jacob as his pillow; when we consider the extraordinary interest that antiquaries attach to the tri-linguistic Rosetta stone, discovered in Egypt at the end of the last century by Boussard, and giving the key to the mysterious language of the Egyptian inscriptions,—reflecting that that stone was fashioned only a century and a half or so before the Christian era; when we compare the age of these famous stones, which we treasure, with that of the Obelisk only so lately set up in London, and which shows us its legible surface more than 3,000 years of age, something more than ordinary respect is due to Cleopatra's Needle as the oldest of things even in London.

In the presence of such a monument, the thick veil of mystery and distant tradition seems torn away which separates us from the comparatively early days when the Phœnicians traded with the Cassiterides, and London was but a small hamlet, before the arrival of the Romans, when the wild boar and the bear, the wild ox and the wolf, prowled through the woods of Hampstead. In the presence of the obelisks which stand on the banks of the Tiber, even the Classic myths of the early kings of the Eternal City and all the history of Rome's ruins seem but mere dreams; all the mysterious origins of Byzantium shrivel as a scroll when we remember that these imperishable monuments, as they stood in all their glory, untouched in the land where they were erected, were recalled in one of the most awe-inspiring of the traditions of that forty years' long travel of the Israelites through the desert, the column of fire, the pillar of cloud. And doubtless the fugitives, as they followed the guidance of this mysterious beacon, must have recalled its strange resemblance to the antique obelisks they had left in the land of their bond-stricken fathers.

It cannot but be a matter of regret to every one to see the evident haste with which so important a relic as Cleopatra's Needle was set up, and the extraordinary want of artistic consideration given to its pedestal; and an additional grief it cannot fail to have been to all true archæologists, that for any purpose whatsoever the monolith should have been mutilated.

Why should not the precedent established in Venice six hundred years ago have been carried out, and the broken or irregular portions of the base of the obelisk have been made regular, if that was desirable, with some stone as nearly resembling the Syenite as possible? By this means additional height might have been given to the monument. It is not too late even now to do this, so far as what is left is concerned, and thus the unsightly rounded base of the monolith may be made to cease to give rise, with any justification, to "a jeer, a sneer, or a fear."

Venetia.

THE WESTMINSTER TOBACCO-BOX.

AMONG the curiosities of the ancient city of Westminster must certainly be reckoned its tobacco-box, well known locally, but little known generally.

It is an interesting relic of the days of Queen Anne, and, according to "A Brief Account," by Mr. T. C. Noble, recently published, has now being rescued from comparative seclusion, and become for the time celebrated in more ways than one, having been exhibited before the Queen and Royal Family and the Society of Antiquaries.

Mr. Noble gives us in a few pages a singular history. It appears that a Mr. Henry Monck, a past overseer of St. Margaret's, Westminster (1713), purchased at Horsefair a small oval-shaped box, which he used to take with him to a tavern, where he met his brethren of "The Past Overseers' Society," and there he evidently proved himself a "jolly good fellow" by supplying his friends with tobacco out of the friendly box. The society seems to have been a convivial club, which was founded early in the last century, and numbered between fifty and sixty, and to them Mr. Monck gave the trifle for their joint use, a fact duly recorded by his friends by a *silver* rim affixed to it in 1720. From that date until the present year successive overseers have each added a silver plate, and as each plate has required space to fix it on, so the box had to be supplemented by others being built around it, until the present year sees no less than seven cases or boxes, being the original and six outer ones,—the former being 4½ in. long and 3¾ in. wide, ¾ in. inside depth, and 13¼ in. round, while the seventh, octagon in shape, is 5 ft. round and 3 ft. high; the original box weighing some 10 oz.; the last nearly 50 lb.; and the whole about a hundredweight!

The first plate (omitting locals) represents on the inside of the original lid a bust of the Duke of Cumberland surrounded with trophies emblematical of the Battle of Culloden, on the 16th of April, 1746, said to have been designed by William Hogarth. The last three plates represent the Proclamation of the Queen as Empress of India, the erection of the Cleopatra Needle on the Thames Embankment, and the Loss of the *Princess Alice* steamship. Between 1746 and 1878 each year is duly recorded on plates, some of which are very well engraved, among which may be mentioned the Trial of Admiral Keppel, 1779; the Battle of the Nile; the Proclamation of Peace, 1802; the Volunteers in Westminster Abbey, 1802; the Battle of Waterloo, 1815; the Trial of Queen Caroline; the Exhibition of 1851; and a number of well-engraved portraits. Two engraved plates represent two interesting events in connexion with the box,—the delivering of it from the past overseer to his successor, and the Lord Chancellor decreeing the restoration of the box to the society after the celebrated trial of 1796, about which Mr. Noble gives an interesting note. It appears also that in 1785 the box narrowly escaped being lost through a burglary at the house of the then overseer. Had it been stolen, it would have, without doubt, found its way to the melting-pot.

After its restoration, it was ordered that it should be kept in future "in the iron chest of the dark vestry of St. Margaret's Church," but how long this good resolve was acted upon we know not. Among the present condit which the overseer holds it are that produced at each annual meeting; original box shall contain at least thr tobacco; that if the tobacco is not fo the overseer is to be fined six bottle and that if the box is not forthcoming additional ornament on it the fine 200 guineas.

As the present Church of St. Marg minster, is under the process of resto Noble has written the account of this box in aid of the funds. The book is g with a large Photograph of the Box published by Mr. John Archbutt, street, Westminster, at the sum of the profits are to be devoted to a we wish the publication a good sale.

We may mention that William C first English printer, was buried in garet's Church exactly 400 years ago.

THE GRAND HOTEL, CHARING

THIS building, which has rece described at some length in this jou on the occasion of the visit of the Ar Association, and also in the report read before the same body by Mr. F. one of the architects, occupies a posit to none in London. It stands on p site of Northumberland House, belong Metropolitan Board of Works, who million to the Duke of Northumberla proportion of the ground forming th The area on which the hotel stands nearly 20,000 superficial feet.

The ground-floor, facing Charing the Avenue, is designed for a series shops, having an average area of 4 with spacious basements and van Owing to the fall of the ground to south, so great an altitude is given t the shops that handsome mezzani will easily be obtained.

On the ground-floor of the hotel are th *buffet*, with grill-room under, the gra dining-room, and spacious seconda rooms; the smoking-room, with bil under; large serving-rooms; the prin case; and an elaborately-finished en and vestibule.

On the first-floor are a large drawin ladies, a general library, and five suite and bed rooms, with necessary co attached. The remainder of this flo whole of the five floors above are d between 200 and 300 rooms, having g area of 300 ft.

At the Northumberland-street en building is the kitchen department, space on the first, second, third, a floors. On the top-floor a large unoc has been reserved for the erection of should such an important addition t blishment be considered advisable.

The character of the elevations determined by the peculiarities of the curved sweep between Charing-cros Avenue has added to the difficulty of p architectural combination, and the ne a sevenfold division of stories prev bold or massive treatment; while the ground-rent forbad the sacrifice of an the area in recesses which would very desirable, and by which the mo the front would have been avoided.

The Italian style was chosen as of least difficulty in producing a s result, and the high Mansard roofs fi composition will take off the hor which would otherwise be too conspic

The work in the foundations, and ground-line, was executed by Mr. E the contractors for the superstruc Messrs. Merritt & Ashby, of London are under engagement to complete th by the end of the present year. The are Messrs. F. & H. Francis and Saunders. The clerk of the works, architects, is Mr. G. Holloway, and M is the builders' general foreman.

Work for Russian Surveyors: announced that no furnished apartm henceforth be had at St. Petersbu plans, showing the situation of the r the doors of entrance, have been p handed to the police. This measure is to facilitate arrests.



THE GRAND HOTEL, CH



& H. Francis and Mr. J. E. Saunders, Architects.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

e eighth ordinary general meeting of this ute for the present session was held on ay evening last at Conduit-street, Mr. s Barry, president, in the chair. The dance was very small.

following gentlemen were balloted for declared to be duly elected, viz.:—As : Mr. William Oakley (Associate), of s-street, St. James's; and as *Associates*: . J. Martin, Darlington; Mr. S. R. J. South Lambeth; Mr. F. E. F. Bailey, ll; and Mr. A. H. Kersey, Moorgate-

r Gropius, Government architect, Berlin, lected by acclamation an Honorary and ponding Member.

Secretary, Mr. William H. White, nced several donations of books, including nole of Captain Shaw's works on "Fire s," "Fires in Theatres," &c. In moving of thanks to the various donors, the ent referred to the extreme value to the ion of Captain Shaw's works.

Colling then read his paper on "Architec- Foliage," which we print on other pages, r with some illustrations.

he discussion which followed,

Hadfield, of Sheffield, moved a vote of to Mr. Colling, who, as was well known, thorough master of his subject. With deal of what had been said in the paper r. Hadfield) agreed most cordially, h he was not able to enter into the at length. He thought that Mr. 's labours and researches were bearing the improvement which was visible in ctural carved work generally in this r.

ssor Kerr, in seconding the vote of , said Mr. Colling's study of foliage had r many years known to them, and his on the subject had been universally ed. It was a subject, however, which it ficult to discuss, because it was one which extremely difficult to reduce to anything losophy. Mr. Colling had given numerous es, and had exhibited his powers of in- tion very remarkably; but he had not ed, and probably he would not like to , that he had reduced his system of in- tion to anything like its laws. He had d them to Nature, and there he left them. t seemed to him (the Professor) that were one or two considerations upon without in the slightest degree attempt- contradict Mr. Colling, he might dwell. int was that of the scale of natural pro- which were to be imitated. It seemed to e speaker) that, granting the proposition ture was to supply us with materials for ament, we must accept, as part of the tion, the scale of the natural products ve were to imitate. For instance, if we parsley-leaf, or the leaves of the horse- t, the dock, the thistle, or even the y trefoil clover, we were scarcely at to reduce or enlarge all of them to one cause, according to Mr. Colling, we proceed on the assumption that Nature fect in her design, and the scale of the was obviously part of it. At the same p thought Mr. Colling had very clearly ut that in all natural foliage the same e of form might be seen at work, though rent scales, so that, recognising another e laid down by Mr. Colling, viz., the y of conventionalising according to tances, it would be interesting if he say how it was possible to get over iculty of reproducing natural products erent scales to those possessed by nature. Again, if we were to imitate n stone, how would it be possible to copy leaves to a nicety in such a material? ot seem to be a fact that those forms ature had dictated to us in the tissues of ves of plants were inappropriate for ction in such a material as stone? It course, possible to get over this difficulty rial by conventionalising. Then he came osition that in architectural, or rather turesque foliage,—*i.e.*, foliage which was ely part of the architecture, but of the of it,—conventionalism was an essential. se, when carving in boxwood or ivory, tter of delicate and dainty ornament for of *vertu*, it was allowable to cony nature tly as possible; but when carving, on a piece of architecture, foliage which should be of the essence of that architecture, conventionalism was indispensable. The Greeks, who would be admitted to be masters of artistic conception and execution in every way, universally conventionalised their foliage; and although when we came to look at Mediæval carvings,—admitting, as we were bound to do, the exquisite nicety of the work, especially that of the thirteenth century,—we saw a much more naturalistic impulse than that which prevailed in Greek work, yet even the Mediæval carvers had to resort to conventionalism. Their work was much more naturalistic in design than the work of the Greeks, although much more conventionalised than the mere naturalistic foliage of the present day would be. Probably no one would now hesitate to condemn the festoons and swags of the corrupt period of the Renaissance, although at the present moment, in what was called the "Queen Anne" style, not only were those who were masters of that style (if any men were) compelled to use extremely foolish swags and festoons, but they were compelled to develope them in red brick,—a marvellous instance of what the human mind could be brought to do when once it laid hold of a vicious principle. Mr. Colling, however, had gone on much higher ground than anything of that kind, and had suggested, where he had not actually laid down, principles of art as applied to architectural carving which showed how ridiculous it was to carve in red brick. One point upon which Mr. Colling might be asked to say a word was the introduction of the principle of architecturesque carving into terra cotta. Now, as Mr. Colling was probably well aware, there were two principles upon which terra cotta might be used. One was the principle whereby the terra cotta was taken from the mould, burnt in the kiln, and used as it was moulded; the other was the principle upon which the terra cotta was sophisticated, trimmed, modified, improved, undercut, or otherwise manipulated after it had come from the mould. Those two principles or methods of treatment were suggestive of a decided artistic difference,—a difference which would be found to prevail in the use of ornament of the same kind in other materials, such as plaster, for instance, where, he apprehended, the cast ornament should differ in character and treatment from that which was modelled with the tool. In conclusion, the Professor thanked Mr. Colling for his paper, which was one of great practical and artistic value, and, therefore, ought to be much esteemed.

The President, in putting the vote of thanks to the meeting, said that Mr. Colling's paper had introduced to the members a very interesting architectural detail, but, after all, only a subordinate one in the work that the architect had to do. The first consideration of architects should be not so much directed to the superficial decoration of their compositions as to their proportion and contour. If these were unsatisfactory, no amount of ingenuity in carving, whether realistic or conventional, would make compensation. He thought Mr. Colling had spoken rather depreciatingly of mouldings; but he (the Chairman) for one had always been taught that refinement in the profiles of mouldings was a distinguishing feature in the works of every architect of taste. He was disposed to attach a great deal more importance to the study of mouldings than to any amount of carving. He ventured, *pace* Professor Kerr and Mr. Colling, to make some little apology for the much-abused festoon, which, though it certainly did not represent growing flowers, as in the case of capitals, yet it represented flowers plucked and fastened together in festoons, as used for the decoration of buildings on festive occasions. It was far from his desire to unduly decry the taste which had been developed of late years for naturalistic carving; but he was bound to say that he knew of some cases in which that taste had been allowed to run wild to an extent which had entirely disguised the architectural forms.

The vote of thanks having been carried,

Mr. Colling, in reply, said that Professor Kerr had not correctly represented his views as to scale. His (Mr. Colling's) principle was to take anything he chose from natural foliage, and reduce it or enlarge it in carving to any scale desired. Why should he not do so, due regard being paid, of course, to the position which the carved work would occupy? In nature the leaves of a particular plant or tree were not all of one size. Nor did he advocate or practise the copying of any natural forms in foliage to a nicety. Taking a few leaves of one particular tree, they would all be found to differ more or less from each other, although each possessed the general characteristics common to all of them. Therefore there was ample room for variety of treatment and for individuality of work on the part of the carver. He, of course, had not intended to disparage mouldings; but he *would* say that there was too often a disposition on the part of architects to give themselves up entirely to mouldings. We had seen the Doric order carried out a great number of times in England, but, as in the case of the main entrance to Euston Station, almost invariably without a vestige of sculpture. *That* was going to the opposite extremity to that deprecated by the President. He objected to carved festoons because such features were originally artificial and extraneous ornaments. Architectural decoration, it appeared to him, should form a part of the architecture,—which a festoon never could do. As to carved foliage being allowed to run wild, it was one of the objects of his paper to show how to curb it and keep it within proper limits. He did not advocate a distinctly naturalistic treatment of carving to the exclusion of conventionalism, for every carver would conventionalise in his own way.

The proceedings closed with the announcement that the next meeting would take place on the 21st proximo.

NEW BUILDING FOR THE SOCIETY FOR THE PROMOTION OF CHRISTIAN KNOWLEDGE.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last the Architectural Association, by permission of the architect, Mr. John Gibson, visited the large and important building now in course of completion in Northumberland-avenue, Charing-cross, for the Society for the Promotion of Christian Knowledge. The visitors were received by Mr. Alfred Meeson, the clerk of the works, and Mr. W. Hankins, the representative of Messrs. W. Cubitt & Co., of Gray's-inn-road, who have the building in hand. Those gentlemen very courteously conducted the visitors over the building, and gave what explanations were necessary. With a forethought which is as commendable as it is rare on these occasions, the numerous and very complete plans, sections, elevations, and detail drawings were already laid out on tables in a large and well-lighted apartment when the visitors arrived. The building, which is Italian in style, has a frontage of between 50 ft. and 60 ft. to Northumberland-avenue, and a return frontage of 150 ft. to Great Scotland-yard. The average depth of the building is about 60 ft. The building is faced with Portland stone, and has a quadrant at the junction of the Avenue and Scotland-yard. The height of the building at this corner, from the pavement level, is 62 ft. to the top of the cornice, and 73 ft. to the apex of the roof; but as there is a fall in Scotland-yard, the building is several feet higher at the end nearest to Whitehall. The building contains basement, ground floor, and five floors above, and, to meet the requirements of the Building Act as to limit of cubical capacity, is divided into three nearly equal-sized blocks by two party-walls, communication from block to block being obtained on each floor by means of doorways fitted with double iron doors. Each block has its own staircase and rising gas and water mains. Concrete has been put in to a depth of 40 ft. in some places, and there is a bed of that material 6 ft. thick under the whole area of the building, covered with a layer of Seyssel asphalte. The basement includes large strong-rooms and a boiler-room,—the boilers being for the heating apparatus which is to be provided in addition to open fireplaces. The rest of the basement is appropriated to a large wholesale packing-room, together with warehouses for "sheet stock,"—*i.e.*, printed but unbound works. The ground-floor contains, at the Northumberland Avenue end of the building, a large and well-lighted retail shop, directly approached through a large doorway at the corner of Scotland-yard. This shop is 53 ft. long, 38 ft. wide, and 20 ft. high from floor to ceiling, and will be provided with bookcases on the ground level and with others in a gallery running round two sides of the shop. Access will be obtained from this shop to the principal staircase, which latter will also be approached by the principal private entrance in Scotland-yard, so that access may

be had to the board-room on the first floor without the necessity of passing through the shop. The ground-floor also contains the space allotted to the Grants Department, together with manager's rooms, warehouses, and store-rooms. Carts and vans will draw into and out of the building through two gateways approached from Scotland-yard, and the floor will be so arranged as to be on a level with the tail-boards of the vehicles. In this part of the building there will be lifts running from the basement to the top floor. The first floor contains, partly over the retail shop, the Board-room, 53 ft. long, 22 ft. wide, and 14 ft. high from floor to ceiling; secretary's room; committee-rooms; editors' rooms; accountants' and clerks' offices; warehouse for bound books, &c. The second floor includes a suite of apartments for the housekeeper or for a resident official, the rest of the floor being appropriated as a warehouse for bound books. The third, fourth, and fifth floors will be almost entirely used for warehousing sheet stock and light bound books. Internally, the building presents nothing particular in constructive features. The principal staircase is in Cliff Wood stone, and of the other two staircases, one will be of teak, and the other of iron. There are no fireproof floors whatever, and in those parts of the building used for warehouse and storage purposes, the wooden joists will not be concealed by lath and plaster. The building consists merely of the external and party-walls, interspaced with a network of iron columns and girders on each floor. The whole of these columns and girders have been made by Messrs. Cubitt & Co., the builders, at their works in the Gray's-inn-road. The building is well advanced, and will be completed in June; and probably the Society will migrate from Lincoln's Inn-fields in August.

MEDIÆVAL PARIS.*

On the summit of the hill on the south side of the city, Clovis, the first king of the Franks, on his conversion to Christianity, founded a basilica dedicated to the Apostles SS. Peter and Paul. Clotilda completed it, and Clovis was here interred. Like St. Germain des Près, it received its name from a similar cause. St. Géneviève, the patron saint of Paris, was here interred, and from the miracles done at her tomb in the ninth century, the building received her name instead of its former one. But less fortunate than St. Germain, the church has entirely disappeared. The Rue Clovis passes over the exact site of the church, but the tower which was on the south side has escaped destruction. In the second court of the École des Beaux Arts are preserved the capitals of the columns of the nave. The church stood in the immediate proximity of the parish of St. Étienne de Mont. It possessed a nave with aisles (no transepts), and an apsidal choir with radiating chapels, the most eastern being square. It was almost entirely rebuilt in the thirteenth century; but the capitals of the nave, before referred to, are evidently earlier. The nave and aisles seem to have been covered with one roof, as, from a view given in the "Itinéraire," showing the west end in connexion with St. Étienne, the gable is divided by buttresses into three compartments; the lower stage has three doorways, the centre being much loftier than the side ones, with a wheel-window over, and narrow lancets over the side doors; then a horizontal string running right across; and above, two lancets with a wheel above, flanked by two small lancets not central with those over the side doors. Of the abbey buildings large portions still exist, worked into the modern Lycée. The three courts still exist; the chapter-house and refectory are comparatively perfect. The church was proposed to have been removed in the time of Louis XV., when the enormous new church of St. Géneviève was built a little to the west of the old, which is sometimes called the Pantheon, but was not finally destroyed until 1804 to 1807. The very beautiful effigy of Clovis, which was the work of the twelfth century, has been removed to St. Denis.

The shrine of St. Géneviève, the most sumptuous in Paris, and often carried in procession round Paris to avert any threatened misfortune (and of which M. Viollet-le-Duc gives a view in the "Mobilier"), was melted and broken up in 1793, but did not realise much for the Revolutionary cash-box.

* Read before the Architectural Association, on the 14th inst., by Mr. G. H. Birch, A.R.I.B.A. (see p. 317, *ante*).

Of the Abbey of St. Victor, close to the Halle aux Vins, no vestige now remains. It had been rebuilt in the time of François I., and must have exceded in size and magnificence the Church of St. Eustache, which it probably resembled. Its stained-glass windows were the most splendid in Paris, and its treasury rivalled St. Denis in richness. Here were preserved the hair shirt, combs, gloves, and coif of St. Thomas à Becket. In a very fine bird's-eye view of Paris, preserved in the British Museum, and for the time when made singularly accurate, this noble abbey, with its spires, forms a very striking object in the south-east quarter of the left bank of the Seine.

The Grey Friars, or, as they are called in France, the Cordelières, had a monastery on the south side of the Rue Pascal, outside the walls. The church has been demolished, but there are remains of the buildings in the modern hospital.

The abbey of St. Anthony has entirely disappeared, but has given its name to that quarter of Paris known as the Faubourg St. Antoine.

The best preserved of all these monastic institutions is that of the Priory of St. Martin-in-the-Fields, originally outside the walls, but afterwards included in the new extension of the City by Charles V. It is certainly well worth a visit from all students in architecture. The church and monastic buildings are now the Museum of Arts and Trades. The refectory is used as a library, and the nave, partitioned off the choir, was full of agricultural and other machines when I last saw it in October. The nave is without aisles, is very wide, and has an arched timber roof, the windows being very high up in the walls. The choir is earlier, of a solemn Romanesque character, apsidal, having seven bays, with ambulatory and radiating chapels. This part of the church is not in the best of repair, and it is rather difficult to gain admittance, the building being used as store-sheds. The easternmost chapel is of a very unusual plan, reminding one something of the ace of clubs. The chief glory is the noble refectory, now used as a library; it is divided down the centre by a range of very slender columns, and has in its north wall a pulpit like that at Beaulieu, in Hampshire. The proportions of this building are singularly beautiful. Like the nave of the adjoining church, it has been so plentifully bedizened with colour that a great portion of its architectural interest has gone. Most of the priory buildings remain, but they have been so built in and altered, that it is difficult to recognise them. The cloisters here were the most beautiful in Paris, but these, with the lady-chapel, chapter-house, and archive tower, had been rebuilt by the monks at the end of the seventeenth century. It was founded by Henry I. in 1060, in honour of St. Martin; and Philippe, his son, completed it and placed it under the Government of the great Abbey of Cluny, to whom it was affiliated. The refectory and the lady-chapel are said to have been designed by Pierre de Montereuil.

Notre Dame des Champs was a very ancient priory church, which had belonged to the Benedictines from the eighth century, but was ceded by them to the Carmelites in 1604. It was a spacious church of the twelfth century, and under it extended a vast crypt. It was outside the walls, in the Rue d'Enfer, and was utterly destroyed at the Revolution. The Order of Mount Carmel have since returned to the site, and fixed their abode. In the year 1710, after thirty-six years of what was really one life-long penance, died within these walls Sister Louise de la Misericorde, once known as Madame la Duchesse de la Vallière, mistress of Louis XIV.

During the thirteenth and fourteenth centuries a large number of convents were built. In all countries the orders of the Dominicans, Carthusians, Franciscans, Celestines, Jacobines, Augustines, and Capucines were at the height of their popularity; and here in Paris, as elsewhere, it was considered to be the "correct thing" to be buried in their churches. Time will not allow me to describe their various convents, as so much yet remains to describe of the churches and buildings of the Middle Ages which still exist. But I must not pass over the convent of the Jacobins, on the south side, between the gates of St. Michael and St. James. Their church was built for them by St. Louis, and, like most of the churches of this order, consisted of two parallel naves. There was one peculiarity connected with this convent: the refectory and "parloir" projected through the city wall, and formed externally, as see the fosse, a square embattled tower. M these churches of the various orders w ceedingly rich in tombs of the noble and trious dead. Many of the effigies hav preserved, and taken to St. Denis. The quite a school of art of French sculptur the twelfth to the eighteenth centuries.

Two religious orders, both of which p very important part in the history of and were represented in Paris by their chief houses, deserve some notice. I al the Knights Templars and the Knig St. John of Jerusalem. The former had splendid preceptory, rivalling the Châtea Louvre in its military aspect of crenellat and towers, and its immense central donjon. Outside the first walls of became so formidable in a military aspe it was included in the subsequent wall Charles V. After the suppression of th attended as it was by such dreadful a and cruelties to the unfortunate knigh buildings passed into the possession knights of St. John of Jerusalem, as in Their church was, of course, like all the belonging to this order, circular as to t with a long choir. The Temple in Par the slight sketch given by M. Viollet-le- not equal in beauty to our London although it might have been larger. the keep of the Temple that the d Louis XVI., Marie Antoinette, Madam beth, sister to the King, Madame Ro King's daughter, Duchess d'Angoulême young Dauphin, went through that lo which only terminated in the death o one, the Princess. The keep was des 1805, and the last portions of this onc edifice were removed in 1853. T mandery of St. John of Jerusalem wa opposite side of the city, and was not i beauty to that of the Templars. Thei called St. John Lateran, was close to de Cluny. It was but very recently last remains of those buildings were Its barn, in two divisions, divided by and beautifully vaulted, was removed The tower of the Grand Commander of was in a very perfect state until then, effort was made to save it, but without Some fragments have been preserv Musée de Cluny.

Parish Churches.—In that small s prised in the Island of the City, not the cathedral, a monastery of the B nor La Sainte Chapelle, there were no seventeen churches, all of which hav appeared, only leaving very rare trac cases behind. The Ile de Cité was th populated, the streets were exceeding and the very bridges were thronged w —even in the Middle Ages immensely inhabited by many families,—a cha of Paris to this day. Gone are the c St. Denis du Pas, St. Denis de L St. Christopher, St. Géneviève des A Pierre aux Bœufs, St. Landre, St. Symphorien, St. Pierre des Arcis, St. Michael, St. Jean de Rond, St. Barthèlemy, St. Germain le Vieux, leine, and I believe quite recently, left of the churches of the Barn Eloy and St. Marine. The cath La Sainte Chapelle are the on religious edifices left on the island le Rond occupied a very similar relation to the cathedral as the Chu Gregory did to Old St. Paul's, or a garet's, Westminster, does to the A nearly touched the north-west tower. churches had been rebuilt in the t thirteenth centuries. Surrounde modern buildings of the Hôtel Dieu beautiful twelfth-century church of le Pauvre, difficult now of access, a as the private chapel of the hospit pains should be spared by the lover. architecture to see this little gem. has been made before to the frequ change of dedication in Paris. The to whom this church is dedicated wa the Martyr, but towards the end of century another St. Julian, the Confes of Mans, called, from his wonderful Julian the Poor, was substituted. now of six bays, was almost rebu and was then shorn of two bays end to enlarge the courtyard. A ch supported on clustered columns, div the choir, which is entirely, with its

fth century. It is apsidal in plan, with ges of windows in the apse, the lower ouided, with clustered shafts, and the ainly splayed. The first portion of the of two bays, with sexpartite vaulting in r. In the clearstory is a coupled lancet with internal columns and arches. The of the cylindrical columns supporting ays, and the carving throughout, are of masculine and vigorous type, similar ioter to the choir of St. Germain des l Notre Dame. I noticed in the Inter- Exhibition a project for rebuilding the it was supposed to be formerly. One a wholesome dread of "restoration," rstood by our neighbours across the that one would prefer the process together dispensed with in this case. large parish church is close by,— rin's. These ancient churches of which exist to this day, are all in style. Their chief glory is the old glass which exists in most of them. point deserving of attention in them all clever planning. No site was too difficult irregular. St. Severin's was almost rebuilt during the fifteenth and six- enturies. The three last bays of the the west end are earlier, as is the lower the tower, which is at the north-west When the church of St. Pierre-aux- as destroyed, one of the doorways was here, and now serves as the west door. is about the first half of the thirteenth

The plan consists of a nave and the same internal height (externally of the choir is higher), double aisles, external range of chapels. Attempts ade to give a Classic character to the nd columns in the reign of Henry IV. ulted throughout. The stained glass very fine, and deserves close attention. to the eastern façade of the Louvre is e church, formerly collegiate, of rmain l'Auxerrois, not named after main of Paris, but St. Germain of It formerly held first rank after the l, and was most richly endowed. The consisted of a dean, a chanter, thirteen and eleven chaplains, or, as we should n, minor canons. In 1744 the chapter ted to that of Notre Dame, and the has since been parochial. In plan it is n, but the transepts do not project the double range of aisles. It is 240 feet in length by 120 ft. wide. The s only four bays, the choir the same, n in the apse. The tower at the south- gle is the earliest part of the fabric; ows the central portion of the west door, remainder dates from the fifteenth and n centuries; but, as at St. Severin's, s were made to alter its pointed arches tered columns to the fashionable style seventeenth century. There formerly in this church a very beautiful choir- r rood-loft, designed by Pierre Lescot red by Jean Goujon. It was destroyed , and some of the fragments are pre- n the Louvre. There is some exquisite s in the rose-windows and clearstory of the transepts. The modern glass, nearly all the lower windows, is of st description. M. Lassus was the archi- ployed in the general restoration which rch has undergone. The signal for the assacre of St. Barthomew was given e belfry of the church. It existed in 6, for it was pillaged and burnt by the s. It was then called St. Germain-le- SS. Leu and Giles, in the Rue St. Denis, er old church of the same style,—Late yant. St. Nicholas des Champs, close riory of St. Martin, is curious from the of styles, and is singularly imposing s immense size and height. It is of l plan, without transepts. St. Laurent's lar again. The famous architect, e, remodelled the church in the ng fashion of his time, but the key- of the vault are worthy of atten- St. Merry's, in the south-east district, be visited; for, although very late in it having been rebuilt in 1520, and in 1640), it still is in the Gothic style. arge cruciform church, having a nave of 's, a choir of three bays, and seven bays pse. There are two aisles on the south the nave, only one on the north, but les have chapels. Two architects of the of Stodtz, in the reign of Louis XV., beautified it in the style of that age. Here the stained glass is very fine, but sadly fragmentary. A portion of one window has been removed to make good another. St. Gervais, so conspicuous an object looking eastward towards the Ile de Cité and the Hôtel de Ville, is an imposing structure, from its height and size; but I am afraid of wearying you with descriptions so similar in character. St. Médard's is principally remarkable for its continuous mouldings and curiously-carved key-stones. The churchyard was the scene of one of those extraordinary religious fallacies similar to that of the Shakers of our days. A sect, called Convulsionists, performed most extraordinary antics about the tomb of a deacon named Paris. Such was the scandal, that the cemetery was closed, giving rise to that witty epigram,—

"De par le Roy
Défense à Dieu
De faire des miracles
En ce lieu."

I have left the churches of St. Eustache and St. Étienne de Mont for the last; for these two churches are certainly the most beautiful of all the parish churches just described. In St. Eustache the old Pointed style has died out, but has imparted in a most remarkable manner its characteristics of plan, arrangement, vaulting, &c., on a building which is really Classic in detail. In St. Étienne the Pointed style still prevails as far as the arches, which rest on cylindrical piers, the mouldings dying into them. The axes of the nave and choir here are not parallel. Between the nave and choir is a wonderful architectural *tour de force*, in the shape of a *jubé*, or rood-loft, with winding staircases, and the stained glass is the finest in Paris. Both here and at St. Eustache there is a curious arrangement of clearstoried aisles, worthy of study by those who have to build town churches. St. Eustache's is the largest church in Paris after the cathedral, and is certainly very beautiful. I know of no interior which can surpass it in dignity. Debased and bad as the detail may be, yet the effect is dignified in the extreme. It is an interior which one can never forget; while all the other Late Pointed churches fade out of memory from their similarity to each other. This interior is the only one which, to my mind, leaves a lasting impression. Some ancient mural paintings of the Renaissance have been discovered in one of the chapels. The west front is still incomplete. Passing along the Rue de Rivoli towards the city, the tower of St. Jacques de la Boucherie forms a very prominent object. Isolated as it is now in the centre of a square, it was once in the very densest neighbourhood. The church to which this magnificent tower was attached has entirely disappeared. The plan was very irregular. It had been rebuilt in the time of François I., having been completed in 1522; and was destroyed in 1797, the tower being preserved for a shot tower, though the image of St. James, which terminated one of the pinnacles, was precipitated to the ground. The tower was purchased by the City for 250,000 francs, and carefully restored, and forms as striking an object in modern Paris as it did in Mediæval Paris. Behind the Hôtel de Ville formerly stood a very large and fine church,—St. Jean en Grève; it had two fine western towers, one surmounted by a spire. The extension of the Hôtel de Ville now occupies this site. Of the church of the Holy Innocents and its famous cemetery nothing now remains. It was on the west side of the Rue St. Denis. There are a number of old views of this fearful cemetery. Surrounded by a sort of cloister, in the centre was a pulpit something like Paul's Cross, and several stone crosses marking separate places of sepulture for communities. The upper parts of the cloisters in the roofs were used for charnel-houses, and the old prints show these literally packed with bones and skulls, of which a very liberal supply lay scattered about in the enclosure. It had its *fosse commune*, in which coffins were stacked, only separated by a sprinkling of soil. On the walls of the cloister was painted the "Dance of Death," and over the portal of the church the legend of the three dead and the three living. This cemetery of the Church of the Holy Innocents must have been a perfect Golgotha; yet the surrounding arcades, all damp and humid as they were, were filled with the stalls of linendrapers, dressmakers, print-sellers, and public scribes. Claude le Petit, in some verses called "Paris Ridicule," gives a graphic description of these horrible charnel-houses. The Church of St. Paul, near the Bastille, has entirely disappeared. The Hôtel de St. Paul, a very beautiful palace of enormous extent, was close by, and the church was very much embellished and enlarged by the successive sovereigns who were necessarily parishioners. The font in which Charles V. and Charles VI. were baptised has been preserved. Two very illustrious persons were here interred,—Jean Nicot, the first introducer of tobacco, to whom I am sure the thanks of posterity are due; and Rabelais. The Church of St Honoré has left a name only behind; and on the left bank of the river the churches of St. André des Arcs, St. Benoit, St. Côme, St. Étienne des Grès, and St. Marcel have all gone. In closing this account of the parish churches, it is impossible to avoid a comparison between them and our London churches. The enormous size of these Parisian examples strikes one with astonishment, but it must be remembered that Mediæval Paris was much more densely populated; a greater number of people lived in a given area. Each house teemed with life from "cave" to "grenier," from cellar to loft. Separate dwellings for each family have always been the rule in London. Another feature is the enormous quantity of old stained glass still left in the churches. Paris never felt the fury of the iconoclasts as some other parts of France; indeed, it was the excesses committed elsewhere by the Huguenots which exasperated the Parisians to wreak that fearful vengeance of St. Bartholomew. The period of havoc and destruction was the end of the eighteenth century, and, considering the fearful excesses of those mobs, bent upon eradicating every *souvenir* which would remind them of the past, it is surprising that Paris should still contain so much.

The ancient Hôtel de Ville occupied the same position as the present building; the centre portion of the west façade was then represented by three gables with traceried windows, flanked by two turrets with spires and vanes, and was supported on the ground floor by stone pillars. It was more generally known as the House of the Pillars than as the Hôtel de Ville. A very quaint view is preserved of this building, with the whole place in which it is situated, called the Place de la Grêve,—in the centre of which the last dread sentence of the law was carried out,—and such sentences were pretty frequent in those days.

The situation of the ancient palace on the Ile de Cité has already been referred to. It only remains to describe the palace, a great deal of which still exists, although masked by modern buildings of the principal law-courts of France. The chief gem of this palace was the chapel, happily still existing, and known as La Sainte Chapelle, from the extreme sanctity of the relics purchased from Baldwin, emperor of Constantinople, by St. Louis, and here preserved. The principal of these relics are the Crown of Thorns and portions of the true Cross. The chapel is of two stories, and the undercroft or crypt, like that of St. Stephen's, at Westminster, is level with the ground, not beneath it. The chapel is apsidal in plan, without aisles. There are, first, four compartments, each filled with superb four-light traceried windows, and boldly-projecting buttresses; and then an apse divided into seven compartments, with two-light windows, vaulted throughout in each story, and externally surmounted by a high-pitch leaden roof, with a central flèche of carved oak and lead work. This is but a meagre description, but doubtless the building is so well known that it would be superfluous to add more. If one desired an example of perfection in our special art of architecture in the Middle Ages we should find it here, for in this building the subtle beauties of proportion, scientific skill in construction, harmony of parts, and splendour in decoration, are as distinct witnesses of that perfection in those days as the Parthenon is of the perfection attained in the days of Pericles and Phidias.

Facing the quay at the corner of the Rue de la Barillerie is the ancient clock-tower, and continuing westward from that are several old walls and towers, especially that known as the Conciergerie, where Marie Antoinette was imprisoned prior to her death. The immense hall called the Salle des Pas Perdus, lately burnt by the Communists, was formed within the ancient walls of the great hall. Unlike Westminster, to which it bore some resemblance in other respects, it was divided by a range of columns down the centre. At one end, corresponding to the dais, was the table of white marble, where

the king formerly dined, surrounded with the great vassals of the crown; and at the other end was an altar, erected by that most miserable of monarchs, Louis XI. The palace covered a very large extent of ground, and in the façade facing the Rue de la Barillerie was the parish church of St. Michael of the Palace. Close adjoining to the Sainte Chapelle was another beautiful little building, destroyed in the fire of 1610; it served as sacristies and muniment-rooms.

Of the Palace of St. Paul nothing remains; and of the many splendid palaces or hotels of the nobility, only the Hôtel de Cluny, a portion of the Hôtel de Sens, and a fine square tower belonging to the Hôtel de Bourgoyne. One of the finest of these, the Hôtel de la Trémouille, has only disappeared within these few years. The Mairie of the Fourth Arrondisement occupies a portion of an hôtel formerly belonging to the captain of the watch.

During the Middle Ages, the colleges of Paris formed a very important quarter. They have now, with the exception of the Sorbonne, nearly all gone; but a few remain, diverted to other uses. Had it not been for the fearful feuds which rent Paris in pieces during the fifteenth and sixteenth centuries, they would all have been in as active a state as those of Oxford and Cambridge to this day. Religious differences also contributed to their decadence. The colleges were always on the side of the liberties of the Gallican Church against ultramontane encroachment, and when the Court and clergy openly espoused the cause of the latter, the strife was too unequal. Dante studied here. The names of the most famous of these colleges were those of the Sorbonne, Narbonne, Bayeux, Séez, Harcourt, Bernardins, which latter had a particularly fine church, founded by Stephen of Lexington, an Englishman. A portion of the buildings exist, used as a fire-brigade station. The college of Cluny had been designed by Pierre de Montereuil, and would have vied with the finest at Oxford or Cambridge; traces remain, and some tombs are in the Musée de Cluny. The college of Beauvais preserves its chapel, a very beautiful model for a college chapel, now desecrated. There were many others of less renown.

In the Hôtel de Cluny, that most perfectly preserved of all these ancient buildings, the eye rests on Roman, Gaulish, Merovingian, and Carlovingian relics, discovered from time to time. Antiquities of Norman and Early Mediæval times are strewn around. Every age has left its mark behind, and the student in architecture and ecclesiology has no difficult task in tracing the progressive history of Paris from age to age, perhaps with regret for that which is lost, not by the decay of time, but by the violence of those paroxysms of fanatical fury which have so often disfigured the face of fair Lutetia.

In the discussion which followed,

Mr. R. Phené Spiers proposed a vote of thanks to Mr. Birch for his paper. The Mediæval antiquities of Paris were unfortunately few and far between, and generally hidden away in such a manner as to escape the notice of the casual visitor, and even of those who resided there for some years. Comparing Paris with a French provincial town, such as Bourges, there were very few ancient remains; while in Bourges, for instance, the proportion of old to new buildings would be (say) one to twenty, in Paris the proportion would be probably one to 2,000. He (Mr. Spiers) was not aware that any portion of the Salle des Pas Perdus destroyed during the Commune dated further back than the seventeenth century.

Mr. Birch said the walls were older.

Mr. Spiers said that, if so, they must have been encased. Even those who had been long resident in, and were tolerably familiar with, Paris, would occasionally, in passing along the new boulevards which had been pierced through the city, get glimpses of old buildings the existence of which they had never suspected,—not, as a rule, Mediæval buildings, but buildings 200 or 300 years old, and affording valuable and interesting examples of the old domestic architecture of Paris. Mr. Birch had very properly called the attention of students to the points of most interest and value to them in the buildings which he had described. For instance, in the Church of St. Eustache, the student might learn valuable lessons in proportion, although the detail was certainly not of the best. In the Church of St. Etienne du Mont, the Renaissance carving was well worthy of attention. He cordially agreed with all that had been said by Mr. Birch as to the value of the Cluny Museum, part of which, the Palais des Thermes, was of Roman date, and very faithfully showed the arrangement of Roman baths such as those of Caracalla. A visitor to the Museum could become acquainted with the whole of the details and furniture of Gothic houses from the fifteenth century onwards. In fact, the Museum contained a large variety of objects of the greatest possible value to the architectural student.

Mr. Gilbert R. Redgrave, in seconding the vote of thanks, said that Mr. Birch's paper would be of great value to students when they next visited Paris, inasmuch as it contained a mass of architectural information not to be found in "Murray." One fact with reference to the old buildings of Paris, and French towns generally, which deserved attention, was the careful way in which the authorities looked after them. It was true that these old buildings often had to be removed to make way for modern improvements,—Paris, for instance, as every one knew, had been perfectly riddled with new streets, entailing the removal of many historical buildings; but in every such case careful drawings were made, and some of the most interesting examples were preserved in museums and elsewhere.

Mr. Elkington, in supporting the motion, said it was satisfactory to find that so much of old Paris still remained, in spite of revolutions and modern improvements.

Mr. Hampden W. Pratt said that it appeared from Mr. Birch's paper that the majority of the old buildings remaining in Paris were ecclesiastical, the only exceptions being the Cluny Museum, the Hôtel de Ville, and one or two others. The churches seemed to be very debased in style. As to some of the Late churches which had been pointed out, it was very difficult to realise that they were old buildings at all, owing to the way in which they had been concealed by colour. It was greatly to be regretted that such a beautiful building as the Sainte Chapelle should have suffered so fearfully as it had from that cause. The colour on the walls and that of the stained glass did not harmonise at all; and the building seemed to be kept more like a "show-place" than anything else. It was lamentable to find that so many of the churches which once existed on the Ile de Cité had passed away. The destruction of churches which had taken place in this, the centre of Paris, was far greater than had taken place in London. We had more churches of archæological interest in London (notwithstanding the Great Fire) than existed in Paris.

The President, in putting the vote of thanks to the meeting, said that the Association was particularly indebted to Mr. Birch for his paper, not only on account of the interesting information it contained, but because Mr. Birch had, on an emergency, come forward with it a fortnight earlier than he had promised.

The motion having been carried,

Mr. Birch briefly replied, expressing his indebtedness to Mr. Atkins, Mr. Jones, and others, for the assistance they had rendered him in preparing plans, &c., in illustration of the paper.*

ON FOREIGN COMPETITION.

FOREMEN ENGINEERS AND DRAUGHTSMEN.

At the twenty-sixth anniversary festival of the London Association of Foremen Engineers and Draughtsmen, Mr. Richard Christopher Napier, C.E., presided.

In reply to a toast proposed by Mr. Joseph Newton, the president of the Association, "Engineering Employers in Town and Country,"

Mr. W. H. Bailey, C.E., of Salford, responded. He said that he could not forget what Manchester engineers owed to London. Accuracy, precision, and fine finish in our machinery had been inherited from Maudslay and other old London engineers, for scarcely a well-known name in Lancashire could be named without our being convinced of the fact. Hick, of Bolton, Sir Joseph Whitworth, that grand old image-breaker Richard Roberts, and many others, had received their first apprenticement to sincerity and fidelity, which are the proper terms for accuracy, and which, above all, he claimed to be the most remarkable features of Manchester-made machines at the present day. These recollections inspired him with confidence, for as Mr. John Bailey, his father, had been c identified for years with the many inve of old Richard Roberts, he claimed, with pride of ancestral dignity and blood, to London and rejoice where grew the family He had never before addressed so influ an audience, representing so many imp interests. He ventured to say a few wo the present commercial depression. S speakers had alluded to it; and many mi this country,—that is to say, minds wor title,—are turned in that direction. The a more profound unanimity of purpose in thoughts than in anything which had en the attention of man for many long yea was proper that we should, with all hu with all care, and with a proper sel spirit, inquire into the causes of our w prosperity. It might do us some good t with a melancholy spirit, but that to him matter of doubt; but we have been gro and debasing ourselves. We have lain d the gutter and requested to be kicked; w the foreigner at our meetings, through the in the senate, and at the street corner we were being beaten; that the imperial of Englishmen to be considered the ma turers and merchants of the world was ing; that our glory was departing fro This was advertising ourselves in a improper manner, for we clearly t foreigners to go to the United States, any other foreign country for goods, b they could be bought cheaper and bette than here. It was stupidity so profound became almost grotesque if it were not painful side of the subject, and that w it was untrue, its only result being to ag the disorder. All sorts and manners e not engaged in trade, ventured an o members of Parliament and prelates ha advice which should be accepted at its just as coals from a particular pit have a but so much has been said about United competition, a few words may be useful. we exported from England of manufactu to the value of 19,000,000*l.* sterling. The Au exports for the same period came to 1,0 The exports of machinery, such as agric mowing, sewing, and other machines country, came to 7,600,000*l.*, those America came to 1,500,000*l.* Some t all the sewing-machines used in Europe in the whole world, were made in the States; they sold at high prices, but du past few years the trade in sewing-mach the United States manufacturers had decreased in this country. It is as wel that for a long time the machine that w retail in New York at 8*l.* was sold reta shops of Liverpool at 6*l.*, both machine made at one works in America. This le on price was the result of English comp At last the competition became unbeara what did the chief sewing-machine mak They acted like wise men, and built fact Glasgow, in Coventry, in Manchester, a here to employ Englishmen, for that only way they knew of to meet the English competition. Howe established so did Singer, and others have followed. ture to make this assertion, that in t and shoe manufacturing districts of E Bristol, Northampton, Stafford, and at L the machines made by Englishmen, and English prices, are the only machines being bought. A great deal had been sa American padlocks. They were not as an English lock; they were no better and it was simply American ingenuity d in getting our papers here to advert wares without payment. When our wo were so full, four years ago, that engine and machines could not be got for love o foreign nations began to compete; Bailey said he sent to Boston and Phil even for lathes and chucks, and slide-re at what cost? At fully 30 per cent. m they can be purchased in this country. of American make were being sold so ago at 20s. and 25s. each, but that has for you can get them now at 15s. and each; and if any one will order a d will have 25 per cent. discount, and 2½ for cash in a month, and these are hea better made than the flimsy things f other side of the water. About ou manufactures much has been said. we put together all the Americans send add up all things made from fibre; a with weft or warp; everything havin

* In first part of Mr. Birch's paper, printed in the *Builder* last week, for "Porte Borigs" (p. 318, middle column), *read* Porte Rouge.

al and latitudinal meshes, everything with
s, composed of either animal or vegetable
h,—all those things, from a yard of calico
loor-mat,—add them all together, and a
n-mill can be found where I come from
lford, that produces more in value than
nited States export in the year. So
for competition in that direction. Then
turn to our iron manufacturers, who
t be accused of lethargy; but they can be
d of having a disinclination to deal in
unces of iron, they can be accused of a
to do their business in a wholesale manner;
hen they have been busy on fixed patterns
ave felt disinclined to alter their rolls and
methods of manufacture for an order even
e whole iron in a town-hall, or for all the
s of an exchange; and even when trade
d, certain patterns, produced to special
ions, may be had cheaper from one place
another; and very often in these little
those who keep the worst set of books
he order, and execute and pay for the
ial in the bankruptcy courts. We have
of Belgian competition; we have heard
lers for girders being executed at 1s. a
low ours; but what about the balance-
of those firms who have so acted? On
anchester Exchange printed calicoes have
offered at low prices, and of a quality,
, and colour that, according to Ruskinite
would only please those men whose in-
were sanguinary, and whose tastes were
undeveloped or deformed; these were
d at low rates by American bankers, but
r supplies could not be got at the same
, for reasons which will be seen. There
the monotony of uniformity in a pawnshop
may be found in a Manchester soft goods
ouse. This country is the birthplace of
. Man can think only when the body has
There never was rest until Englishmen
d it by placing in bondage the great black
the steam-engine. Thus has the mind
ed the body, and thus, if we are sincere,
we benefit still further the whole human
—

, I doubt not, through the ages one increasing
urpose runs,
d the thoughts of men are widen'd by the
rogress of the suns."

s at the present moment so revolutionising
on manufacture that shortly steel will be
r here than iron in any other part of the
We have to disestablish. Now I must
Mr. Bailey) pronounce for disestablish-
By that is meant the destruction of the
ey, that monument of profligacy and
nce, the chimney that wastes 90 per cent.
coal; the chimney that soots our archi-
e; the ugly pile that makes sallow and
he faces of our women and children, and
s the fair face of nature. This must be
d of, and heat and energy must be used on
ific principles. This can only be done by
g all things by first principles; the heat
be used direct, and boiler-makers be done
with. He then, in a vivid manner, de-
d the electric light, and, amid roars of
ter, said it was a clumsy waste of energy,
nly one step in advance of the poor troglo-
of the old stone age, who got a light by
n with a wooden drill and a stone. In
usion, the speaker said of the foremen
eers that he knew of no force or process
would be such a definite mental measure
t of the gradual advancement of a foreman
nager. Neither accident of birth, nor the
nce of friends or relations, nor the value of
looks, would do any good in climbing the
ts that lead to the chieftainship of an
eering workshop; only the knowing ones,—
h was the origin of our ancient kings' title,—
those whose genius and industry, and
ty and sincerity, were marked by strong
of individuality, ever attained the honour-
distinction which many in that great
nce possessed.

Shakspeare Portrait.—A portrait, said
e of Shakspeare, has been discovered at
ey. It has been insured for 5,000*l.*, and
been packed and shipped for England.
over, it is said to be the missing portrait,
has upon it Jun, Jan, or Jon, 1611. We
seen a photo from the portrait, which
its a bright and intellectual look. It must
good preservation. The picture will, how-
have to run the gauntlet of criticism on its
al.—W. C. T.

BYE-LAWS UNDER THE METROPOLITAN BUILDING ACTS.

As our readers know, the Metropolitan Board of Works is empowered, by the Metropolis Management and Building Acts Amendment Act, 1878 (41 & 42 Vict., ch. 32, sec. 16), to make certain bye-laws as to the sites, foundations, materials, and modes of construction of buildings in the metropolis, "for securing stability, the prevention of fires, and for purposes of health." The statute provides that such bye-laws, or any amendment or repeal thereof, shall be advertised once at least in each of two consecutive weeks, in two or more newspapers circulating in the metropolis, and that any person affected by any such proposed bye-law may forward notice of his objection, which shall be taken into consideration before the bye-laws are confirmed. In the *Times* of the 28th of January the Metropolitan Board of Works advertised the bye-laws which they have made under the Act, and gave notice that at the expiration of two months they would apply to the Home Secretary to confirm such bye-laws. So tardily as to be "almost in time to be too late," a number of builders, principally carrying on business in the suburbs, have discovered that, as they allege, their interests and those of the public will suffer by the confirmation of the bye-laws, as such confirmation will give to them all the force of the provisions of the Building Acts. Accordingly, a public meeting of builders, to consider the "oppressiveness" of the proposed bye-laws, was held at the Guildhall Tavern, Gresham-street, on Tuesday evening last, the number of persons present being from 120 to 150.

Mr. Morgan Howard, Q.C., was called upon to preside, although, as a "non-combatant," he judiciously refrained from entering into the technicalities of the subject, confining his remarks to the expression of his opinion that if it could be clearly shown that any of the bye-laws framed by the Metropolitan Board of Works were unnecessarily or unduly exacting, and likely to prejudicially affect the interests of builders and the public, the Home Secretary would not sanction them. Indeed, he was of opinion that the Board, as the representatives of the public, were only concerned to promote the public welfare, and that if any reasonable objections could be urged against any of the bye-laws, they would probably withdraw or modify their proposals.

Mr. J. Goodman moved the first resolution, as follows:—

"That this meeting is of opinion that several of the bye-laws proposed by the Metropolitan Board of Works are unnecessarily stringent and oppressive, and if strictly enforced would seriously add to the cost of all buildings, and thereby increase the rents, especially of those houses occupied by the middle and working classes."

He observed that he had not met with one practical man, whether architect, surveyor, or builder, who had not condemned the proposed bye-laws as impracticable in their working and oppressive in their bearing. A great deal had been said,—unkindly, unwisely, and injudiciously said,—more especially by local journals, with regard to what were termed "jerry" builders; and he was very grieved indeed to see that so respectable a paper as the *Builder* should have lowered itself by using that word.* Now, he disliked "jerry" building as much as any man. He abominated a bad building as he abominated a bad sovereign. To many of the proposed bye-laws no opposition would be offered; but there were others which, if sanctioned, would render large tracts of land around London utterly valueless for building purposes. For instance, the first bye-law provided that if land had been raised by shooting upon it road-slop or refuse of any kind, such land should not be used for building until the whole of such rubbish, slop, or refuse, had been removed. They looked upon that as a very great hardship,—although perhaps not one of them might be interested in land of that description. Why, many building sites around London could never have been built upon at all unless they had been raised by such means! The second clause of the first bye-law provided that the site of every house or building should be covered with a layer of concrete 6 in. thick. He contended that such a stipulation was most arbitrary. It might be all very well to enforce such a provision on an unhealthy site, but there was neither common-sense nor wisdom in making it compulsory to use a layer of concrete when building, for instance, upon a good hard bed of gravel,—which, for all practical purposes, obviated the necessity of concrete in such a position. The third section of the same bye-law provided that the footings of the walls of every house or building should be laid on a bed of concrete not less than 1 ft. thick, and projecting 6 in. on each side of the lowest course of the footings. That, again, was a most unnecessary and oppressive stipulation. The fourth section of the second bye-law stipulated that "the mortar to be used must be composed of good lime and clean sharp sand which shall have been properly washed." Why, he ventured to say that no one in that meeting, although many of them had had upwards of thirty years' experience, had ever known of washed sand being used for making mortar in building ordinary houses. That bye-law evinced a want of thought and an absence of practical knowledge that would be a disgrace to a bricklayer's boy. Excellent mortar could be made of burnt ballast and brick rubbish in lieu of sand; but the magistrates, owing to their want of practical knowledge, were entirely led by district surveyors, or perhaps by Dr. Johnson's Dictionary, in deciding what was or was not, mortar. There would have been some sense in enacting that the mortar used in building, of whatever materials it might be made, should be of a certain minimum strength. The same bye-law contained the laughable provision that the external walls of every house "shall be built of good square, hard, sound, and well-burnt bricks," and it went on to say that "malms" might be used for arches. The effect of that would be that never more could a malm front be built. Another provision, quite as absurd, was that hard, square stocks, well burnt, shall be used for all foundations. Now, if it were possible for a brickmaker to make all bricks perfectly bright and square, such a stipulation would be all very well; but why, in the name of all that was practical, were imperfectly-squared bricks, no matter how hard and well-burnt they might be, no matter how well adapted to resist pressure and to preclude damp from rising,—to be prohibited from being used in foundations? Where were all the irregular shaped bricks to go? The fifth section of the second bye-law seemed to have been framed chiefly in the interest of Portland cement manufacturers. He would not enter into the details of those modifications of the bye-laws which were essential to the well being of the trade and to the public interests, as they would be duly considered by the committee to be appointed by the meeting, and would be laid before the Home Secretary. He strongly denounced the fourth bye-law, which provides that in every case in which proceedings may have been taken by the district surveyor to prevent the evasion of any of the bye-laws, a fee of 10s. shall be paid to the district surveyor. That was a most retrograde movement, and reduced the district surveyor to the position of an informer. He also condemned the fifth bye-law, as to the deposit by builders with district surveyors of the plans of every building or addition they put up. Such a provision was most vexatious. Hundreds and thousands of houses had been erected by practical men without any plans on paper. The practical man knew what he wanted, and carried his plans in his eye. Another bye-law proposed that "there shall be paid to the district surveyor, in respect to his supervision of every concrete building, a fee one-half more in amount than the fee to which he would be entitled under the Building Act for new buildings or additions." Why? Was such a stipulation intended to discourage the use of concrete? Did it involve more trouble and labour to inspect a concrete wall than one of brick? In conclusion, Mr. Goodman said they were there to oppose these bye-laws because they were impracticable and inexpedient, and because, while adding greatly to the cost of houses, they constituted a perfectly unwarranted interference with free trade and liberty in building.

Mr. F. Sutton, in seconding the resolution, provoked some laughter by confessing that he was so young and inexperienced a member of the trade that he never, until the other evening, heard of the term "jerry" builder. He opposed the bye-laws which had been framed by the Metropolitan Board in the interests of the public as well as in the interests of the building trade. Such regulations would add from 15 per cent.

* The word has been used in the *Builder* in the sense in which Mr. Goodman and subsequent speakers used it,—to denote bad or "scamped" building, whether as to materials or construction. We take occasion to say that during the latter part of last year we devoted considerable space to the discussion of these bye-laws, so that the builders who are now moving might have known long ago what was proposed.

to 20 per cent. to the cost of houses for the poorer and lower middle classes. They as a trade were willing to do all that was reasonable to conduce to the public health and safety, but would oppose all unnecessary restrictions and trammels, which could only have the effect, seeing that wages were 20 per cent. higher in London than in the country, of driving investors away from building operations in London. Upon increased cost of building in London increased rent and rating would follow, and how were the great mass of the people to meet such increased expenditure?

Mr. Hyde supported the resolution, which was carried unanimously.

Mr. J. Higham proposed the second resolution,—

"That in the opinion of this meeting no further restrictions should be placed on buildings, either by Parliament or by any local authority, than are necessary for the protection of health and the public safety."

He denounced the bye-laws as "paternal" legislation and espionage, and suggested that they would be all very well if they were permissive instead of compulsory. But, even if it could be shown that such regulations were for the public welfare, why confine them to London?

Mr. W. P. Goulding seconded the resolution, and said that the proposed bye-laws seemed to be a cross between the Weights and Measures Act and the Adulteration Act.

The resolution was carried unanimously.

Mr. J. Williams moved the third resolution,—

"That a Committee, consisting of Messrs. J. Goodman, F. Sutton, E. Yates, J. Williams, W. P. Goulding, S. J. Jerrard, S. Sansom, E. P. Nunn, C. Hunt, W. Garside, W. Hudson, and E. Wills, be appointed (with power to add to their number), to represent to the Home Secretary the opinions of this meeting, and to urge upon him the importance of not sanctioning the proposed bye-laws unless such modifications be made therein as may be suggested by the Committee."

He said that, speaking as a brickmaker as well as a builder, if "grizzles" were not saleable (because not usable under the bye-laws) the price of "stocks" would be something like 60s. per thousand.

Mr. E. Yates seconded the resolution, and urged that the trade ought not to be fettered by such bye-laws as those proposed. The question was far more one for the public than for the builders, for the bye-laws would add greatly to the cost of house-building, and consequently rentals would be increased. To the builder it did not much matter what materials he put into his houses so long as he got his money for them. He knew there was a prevailing idea that speculating builders made a lot of money by building bad houses, but such an idea was fallacious, for what class of tradesmen appeared in the Bankruptcy Court in such numbers as the builders of "jerry" houses did? The fact was, the builder who provided a good article was, as a rule, more prosperous than the man who "scamped" his work. He had no doubt that the Metropolitan Board of Works had framed these bye-laws with the best intentions, but they did not understand what they were doing. Their stipulations would have the effect of increasing the cost of six and eight roomed houses from 15 per cent. to 20 per cent.; and to pay the increased rental which would result, the children would have to go shoeless, and the cupboard would be without bread and cheese. In fact, the tendency of the bye-laws would be to half-starve a man and his family in order to allow them to live in a well-built house. He contended that the cheap houses so much in demand satisfied the public.

Mr. Higham having announced that a communication had already been made to the Home Secretary, asking him to withhold confirmation of the bye-laws until the committee had represented to him their case against them, the resolution was carried unanimously.

Mr. J. Goodman proposed the fourth resolution:—

"That an association be now formed, to be called the 'Suburban Builders' Association,' to protect the trade against oppressive legislation, and to take up all cases on behalf of the members of the Association where the official surveyors endeavour to act oppressively in the enforcement of existing laws. Subscriptions to be not less than 10s. per annum (firms, 1*l.* 1*s.*); and that the committee appointed in the former resolution be the first committee to organise the Association."

He said that such a society as that contemplated in the resolution was *the* thing that had long been wanted amongst builders. While they were willing to comply with all reasonable requirements of the law, they must be united in their determination to resist all arbitrary and high-handed interference with them by district surveyors and others. At the same time, the builder who refused to conform to just and proper requirements in building would be tabooed by the society.

Mr. W. Garside seconded the resolution, which was enthusiastically carried.

In acknowledgment of the customary vote of thanks, the chairman promised to use his influence in obtaining due consideration of the objections urged against the bye-laws; and a large number of those present having enrolled their names as members of the new society, the meeting terminated.

STATE OF SYDNEY.

THE *Sydney Morning Herald*, with reference to a letter we printed some little time ago, says, "We find, occasionally, that disparaging and unfair remarks concerning us are permitted to appear in respectable English journals, and that the defects of the colony are ostentatiously displayed. We can, no doubt, live down the former, and the remedy for the latter is to remove them, seeing that they afford so much scope for unfavourable criticism;" and then wisely adds,—"We ought to do this as far as possible before we receive from all parts of the world visitors who will flock to the International Exhibition." The *Herald* continues:—"A few months ago a writer in the *Builder* gave a description of Sydney from a professional point of view. He speaks of the place as the queen of English cities, and remarks that, on landing at the Circular Quay a person is in the midst of some of the noblest architecture in the empire. He comments on the distance from the harbour to the railway terminus, and upon the 'atrocious streets,' and almost everything connected with building he condemns in unmeasured terms, such as might be expected only from a man who had accepted a losing contract. The roads of the city are certainly very rough and very dirty, but it is not true that 'they are made of sandstone.' The city pavements, he says, are flagged 'with the same disintegrating stone.' This is true to a large extent, and it is also true that they are exceedingly irregular. All these things, however, may be remedied with little delay. The roads may be put into fair order and kept decently clean; and, so far as the footpaths are concerned, the city council will deserve severe condemnation unless they see that the principal pavements are put in perfect repair. Many persons imagine that the reason why the footpaths in the principal streets are defective is to be attributed to the impecuniosity of the city council. This is not so. In many cases the badness of the pavements represents only neglect of duty."

"Referring generally to the building trades, the writer in the *Builder* says that in this respect 'the conceit of the Sydneyite' is particularly noticeable,—that the good example set by London is derided,—that the Sydney people 'go their own way about building, and make a sorry mess of it.' Here is a mixture of truth and error, and we fancy that visitors to our International Exhibition will be more inclined to admire than to discredit the building capabilities of a people who have been able to rear the elegant and substantial business and public edifices which meet the eye, and the suburban dwellings which give evidence of taste and refinement." . . . . "It must be admitted, however, that we are sadly in want of a Building Act, and we imagine that the irregularity of Sydney architecture is one of the things which will forcibly impress our visitors. They will wonder how it is that we can permit the existence of anomalies such as may be witnessed on every hand. Time will not admit of an immediate rectification of this matter, but it is one of those things which ought to command the attention of the Legislature without unnecessary delay." . . . .

"There is one point upon which we cannot join issue with the writer; we must admit that our sanitary arrangements are 'shamefully bad' and far inferior to those prescribed by Moses. For many years past, though, the necessity for municipal and sanitary reforms has been fully admitted here. We have always been going to do the work required, but it is not actually commenced. Articles like that to which we have referred may answer useful purpose if they stimulate us to proper action."

This is the right spirit in which to receive such observations as those of our correspondent, who, according to the *Herald*, is not so very far wrong after all. We ask the people of Sydney to believe that we fully appreciate and ad the remarkable progress made by the col and that in admitting or making commen any apparent shortcomings, we are but tinuing the course we pursue in the mo country, with the same anxious desire n damage and annoy, but to aid and improve

SANITARY WORK IN ITALY.

Now that Rome is no longer a sour political discord and civil war, but has a become once more the capital of Italy, we anticipate with some confidence the realisation of reforms that will have a pra influence on the well-being of the Romans t selves. Something must be done to inc the salubrity of the Eternal City, and rend more worthy of taking its rank among great capitals of Europe which are the se legislative, scientific, and artistic pro Should the capital of Italy long remain su to malaria and endemic diseases, arising imperfect administration, defeated politi who regret the ancient *régime* will not f derive arguments against the triumph of I principles from the continued prevalence o ventible disease. Hence many Italians manifested a strong desire to participate sanitary progress achieved by the nations of Europe. No sooner had th great French sanitary associations been fo than a number of Italians joined the ment, and displayed a considerable enthu The Société Française d'Hygiène, an Société de Médecine Publique et d'Hygièn fessionnelle, both boast of a large numb Italians in their long lists of members. F when the second International Congre Hygiene met in Paris, the Italians, profitin our own unreadiness, seized the opportun securing for Italy the honour of acting a at the next Congress. Of course we are that the condition of Italian towns, a sanitary point of view, is absolutely la able; but, we note also, and with pleasure symptoms of awakening, which give promise of at least partial improvements. the Condotti doctors of Italy, though the received no special instruction in r relating to hygiene, are, through the age their National Association, making la efforts, first to raise their social position acquisition of necessary knowledge; sec to render real service in the sanitary admi tion of their respective municipalities however, the efforts of these medical are not supported by new and more st sanitary legislation, the results will b mesgre. Again, the eminent physician held a Medical Congress at Turin, in th 1876, devoted a considerable portion o time, under the presidency of Dr. Tosc Rome, to the discussion of practical qu relating to the preservation of public —the drainage of cities and the pollu water-courses holding prominent place these subjects. The Congress, before p adopted the following resolution, which what exemplifies the feeling of the memb "The section of Public Medicine, while nising that the bad repute of the clim Rome is not based on a thorough knowle the facts of the case, nevertheless urge the Government and Municipalities the ne of studying carefully the hygienic positi special features of the various districts kingdom. To all these authorities ap the right and the duty of initiating wise re of preparing intelligently the required st of clearing away all that can occasion and compromise the public health."

As a more permanent effort, we must al the formation of an Italian Society of H Dr. G. Pini, of Milan, is one of its most activ bers, and from him we learn that the has been divided into eight sections, each taking to study more particularly a specia of the general subject. The first sec devoted to general and experimental hy the second discusses all laws relating preservation of public health; the third, or domestic hygiene; the fourth embra wide question of the spread of disea demics, &c.; the fifth studies the measures calculated to cure existing d the sixth section is busy with the care o hood, the sanitary condition of school seventh investigates the effects of various crafts, professions, on the health of the wo

nally, the eighth section collects sanitary ics, and topographical and medical evi- concerning the health of nations. From numeration of the duties of these various as it will be seen that the Italian Society giene has adopted a broad and well-con- programme. If the studies so admirably d out can be carried to a practical issue, ay anticipate many beneficent results. unately, in Italy, perhaps more than else- there are two almost insurmountable les in the way. The first and most diffi- o overcome is the fatal ignorance and rence of the masses, the second the lack ls to defray the cost of sanitary improve-

temporaneously with these meetings and demonstrations, we have a marked in- in the number of works published bear- rectly or indirectly on sanitary matters. from such periodicals as Professor Paolo gazza's newspaper entitled *Il Medico di* ve might mention Dr. Ferretti's "Medical raphy of the Province of Florence," the of Dr. Brugnoli (of Bologna) on the r epidemics from 1872 to 1876; the ations of Dottori Ramello e Brambilla Turin) on "Communal Administra- and the Vaccination Question"; then aralli (of Florence) has a work on the ate of the Trentino," and there are many books too numerous to mention. The *rafia della Citta di Roma* is, however, the nportant of all these works. It is published the general direction of the Italian Sta- l Bureau, and is the collective work of among the most competent specialists of eninsula. This volume gives us some of what has been done and attempted eptember, 1870, and explains the excep- difficulties which must be overcome before shall be free from endemic malaria. In *nografia* we find this question treated by variety of authors. Signor F. Giordano hapter on the topographical and physical ons of Rome and the Campana. Con- ions relating to malaria are also embodied treatises on the agriculture and pasture of the province of Rome; these again in Signors E. Rey and G. Sormani's ations on the causes of death. When Mantovani summarises the geological on of this celebrated country, when Signor occhi studies the course of the Tiber, and G. San-Ferrari resumes the results of rological observations, one and all supply ant data to those who are bent on re- g the sanitary condition of Rome and the gna.

the very outset, we notice, however, a d effort to prove that Rome is not an thy city. Signor Baccelli urges that are only certain quarters of the town should be avoided, and that only during nths of June, July, August, and September. loubt these assertions, we are told to look children brought up in Rome, any of are so perfect from a physical point of that they constantly serve as artists' . This is a most fallacious argument, larly as the death-rate of Rome varies 35 to 36 per 1,000. We have in London thy quarters where the death-rate has stimated at 52 per 1,000; yet the death- f the metropolis, as a whole, may be put roughly at 22 per 1,000. All that can be s that Rome would probably become a y town if there were money enough to plish the great sanitary works which are lly recognised as indispensable. The of the Tiber must be elevated; the s that create damp must be captured at ource and diverted into canals that will e of them harmlessly. These works are re necessary as the population of Rome is tly destined to increase at a rapid rate. In here were 248,000 inhabitants; the follow- ar the number was estimated at 256,000, exceeded 262,000 in 1876. If this rate of ssion continues, two generations will suffice e the population to 1,000,000. There are early 1,000,000 inhabitants in Berlin, but ctual capital of the German Empire ly possessed a population of 180,000 at ginning of the century.

atever may be said in favour of the l, it is impossible to deny the unhealthi- f the surrounding country. Most wisely roperly, the first care of the Government, the capture of Rome in 1870, was to issue mission of inquiry as to the best means of redeeming the outlying rural districts. The reports of these commissioners served as the basis of a project for the irrigation, &c., of the province; and another project, due to Parliamentary initiative, was adopted by the Senate on the 18th of May last, but has not yet been approved by the Chamber of Deputies. It is proposed to dry up the marsh land, and remove the stagnant waters of Ostia, Maccarese, Tatari, Stracciappe, and the low valleys of Almone, Pantano, and Baccono. A series of canals will be constructed to take the waters at their sources, and distribute them according to the requirements of agriculture, preventing thus the stagnation so injurious to health. The expense, it is suggested, should be borne, half by the State, a quarter by the province, and a quarter by each commune. The land-owners will be called upon to contribute in proportion as their property will have increased in value, and this contribution wil go to reduce the general taxation. But a great portion of this land belongs to aristocratic families who have neither men nor money to cultivate it properly, and it is therefore suggested that the landowners who cannot work their land in an effective manner should be compelled to sell, at a moderate rate, small plots to farmers who are able and willing to work hard on the soil.

EXCAVATIONS AT DALE ABBEY.

At a recent meeting of the Burton-on-Trent Natural History and Archæological Society, Mr. J. C. Cox, author of "Notes on the Churches of Derbyshire," gave an account of the recent excavations at Dale Abbey. Mr. Cox prefaced his remarks by a brief outline of the history of the foundation of the abbey. Serlo de Grenden, lord of the manor, about 1160 founded a monastery of Austin Canons on the site of an ancient oratory. He also persuaded his godmother to build a church, undoubted traces of which had been found in the recent excavations. But after the church was built the canons took to idle habits and cultivated a liking for the royal deer, which led to their removal. Six canons from the abbey of Tupholme, in Lincolnshire, were then invited to Dale, and the abbey was thus brought under the rule of the Præmonstratensian Order. They remained there for about seven years, but the funds for their support being limited, their prior took to coining false money, and the abbot of Tupholme thereupon recalled them. The abbey was next occupied by five canons from Welbeck, also a Præmonstratensian House, but, after a stay of five years, during which they met with nothing save misfortunes, they returned to their Nottinghamshire home. These various failures to establish a monastery were taken very much to heart by William de Grendon, brother of Serlo de Grendon, who, with his relatives, made another attempt by endowing the monastery with the whole of the manor of Stanley, and nine canons of Newhouse, the chief establishment of the Præmonstratensian Order, were persuaded about the beginning of the thirteenth century to take up their residence at Dale. They built a large and substantial church, and in the recent excavations sufficient evidence had been found that it was a cruciform church with a central tower. From that time to the Dissolution those canons and their successors remained there, and did a good work in their day and generation. By means of a large plan, Mr. Cox then described with great minuteness the result of the efforts of the Derbyshire Archæological Society to unearth the remains of the Abbey. Up to six months ago he said there was nothing to be seen but the lofty arch of the east window standing in the middle of a large grass field. About 5 ft. of earth was removed, and they then came to the foundations of the chancel or choir, two aisles or chapels on the south side, a chapel on the north side, the central tower, the chapter-house, and the north and south transepts. The nave and north aisle had yet to be excavated, but over that portion were cottages and an orchard, so that the work would be a very expensive one. The finding by Mr. St. John Hope of a plan of the abbey drawn by Dr. Stukeley in 1730 led the society to undertake the excavations, and he (Mr. Cox) thought they had been amply repaid by the exceptionally interesting nature of the discoveries. For instance, they had found the high altar, with the exception of the topstone, just as it was used by the monks for 300 years, and they had also found remains of a number of monuments, effigies, brasses, bosses, mouldings, an immense slab of Purbeck marble, and a particularly rich and varied series of encaustic tiles of over fifty patterns.

THE EARL OF CARNARVON ON GREEK ART.

On Saturday last Lord Carnarvon distributed the prizes to the successful students of the Science and Art Classes at Newbury. In the course of the address which he subsequently delivered, he said that nowhere, he thought, was it possible for his hearers to find higher models or be led into a higher field of study than by looking into the history of the ancient school of Greek art. He would remind them of three great rules, so to speak, which were familiar to Greek artists of old, and which even an English audience devoted to modern science and art might perhaps do well to lay to heart. First, that the highest and chief law was the production of beauty. It was so strongly felt by the Greek mind that in many of their actual studies and Utopias they laid down the principle that no sights of deformity or unseemliness were to be exhibited to their population. For instance, when it was necessary to represent pain in sculpture or painting, the Greek artist endeavoured, as far as he could, to veil the sight in its offensive form. When death was introduced, it was rarely introduced in the manifest and rather coarse form with which we in these days were familiar with it. It was generally symbolic. It was sometimes represented by a serpent creeping out of a jar, sometimes by a broken column, and sometimes by the figure of a man departing on a journey. That was the first law which, as he took it, ruled the mind of the Greek artist. The second law, no doubt, was one worthy of inculcating upon a modern audience. It was that the combination of that which was beautiful and that which was useful was perfectly practicable and possible. The great Latin philosopher Cicero devoted a chapter in one of his most famous books to this subject. He not only laid down this rule in the broadest terms, but he instanced it and illustrated it first of all from nature. He pointed to the tree, with its stem, boughs, and leaves, and argued how in each of these cases the purpose of utility and the charm of beauty were absolutely united. He took, again, the case of a ship, with its masts and spars, as well as the perfect symmetry of her lines, and deduced from it that same combination of beauty and utility. He (Lord Carnarvon) was afraid that, had Cicero lived in our day, he would hardly have drawn the same conclusion from our ironclads and turret-ships, for, however serviceable they might be in war, for upholding the dignity and honour of the country, they could hardly be said to conduce to the purpose of the lines of beauty. The third rule, and not the least important to his mind, was this,—that in art as in other studies they could not attempt to dispense with the necessity of study and laborious work. This was true in all times. It was recognised by the ancients, and it had been enunciated over and over again by the greatest of moderns. The education of the ancient Greek sculptor was one of a most laborious and painstaking kind. He was required to study geometry; there were mathematical canons laid down for him, and scientific treatises that he was required to master, and he (Lord Carnarvon) apprehended that he was obliged to work as hard as a pupil in the hardest scientific class that could be found in any country in Europe. There was but one thing more in that study of science and art which they had to set before them. He prayed them to remember that besides the mechanical act of drawing, painting, and modelling in which they were engaged, there was another branch well worthy of attention, and that was the history of art itself. No history could, he thought, be more varied or more interesting. There had been times, countries, and races in which art had been the simple, unconscious expression of feeling. There had been other countries, again, and times and races, where it had been, he would not say untrue, but at the same time a very conscious expression. Again, there had been times when it was so closely interwoven with feelings of religion, that they might say that it had almost grown out of religion. There were other periods, when it was allied to the opposite of religion. Those who devoted themselves to this subject, those who worshipped and studied art, and those who stood at her altars, in however lowly and humble capacity, should remember what the

fountain was from which it sprang, and what the object was it set before them, to endeavour and strive to the utmost, whatever their gift might be, great or small, mighty or mean, so as to employ that gift as to be worthy of the spirit of that cause in which they were labouring.

THE NEW RIVER COMPANY'S WORKS AND THE PROPOSED PURCHASE OF THE WATER COMPANIES.

AT a large sale of shares in the New River Company, which took place at the Auction Mart last week, allusion was made in the particulars, issued in pamphlet form, to the Company's new works, now in progress, and also to the subject of the proposed purchase of the Metropolitan Water Companies generally. In reference to the New River Company's additional works, at present in course of execution, it was stated that the company were progressing with the sinking of a well at Turnford, and that, to provide for the increasing demands of their district, the company had made several important additions to their contributory works, so as to effect a separation of the different levels of the service into convenient zones, and to add to the power and manner of communication by which their different stations are enabled to assist one another. The new works at Hornsey include five filter-beds, of a joint area of five acres and a third, and one of these is already completed. Four powerful engines, which have been in course of construction, are likewise completed. A high-service reservoir at Crouch-hill, capable of holding 12 million gallons of water, with about thirteen miles of large mains, as lines of communication between the filter-beds, and for connexion with existing pipes, are also in course of construction.

As regards the proposed purchase of the various Metropolitan Companies by the Board of Works it was observed that such purchase, which a short time ago seemed imminent, was no longer one of the pressing topics of the day, but it would likely occupy the attention of the public for many years to come, as it had done for many years past; but when the time arrived for the transfer of these undertakings a very liberal basis of payment would have to be adopted. The New River Company would assuredly be dealt with on an exceptional principle, because by its acquisition alone the needs of all London could be met in the desired way. The capitalisation of the bounding income of the New River Company would probably recoup the proprietors on the full amount of their investments, and still leave them in the enjoyment of their landed and house property.

It may be added that the total proceeds of the sale, which comprised forty-six lots, consisting of 95th and 190th parts of King's and Adventurers' shares, and twenty 100*l.* new shares, realised 29,400*l.*, the 95th and 190th parts of the King's and Adventurers' shares being sold for 945*l.* and 475*l.* each respectively, and the 100*l.* new shares for 325*l.* each.

THE NEW SADLER'S WELLS THEATRE.

A LARGE body of workmen are at present actively employed in the rebuilding of Sadler's Wells Theatre, preparatory to its opening by Mrs. Bateman, the new lessee, who, by an announcement in front of the building, states that the opening will take place at Easter, but although the new structure is in an advanced state towards completion it is improbable that it will be finished until about Whitsuntide. Notwithstanding that this historic dramatic edifice was only recently internally reconstructed, the new lessee determined upon the rearrangement of the whole of the theatre, both externally and internally, and this is now being carried out from designs furnished by Mr. Phipps, architect. The whole of the interior of the building, including the inner walls and other structural portions, has been removed, as well as parts of the main outer walls, and the whole is undergoing reconstruction, embracing new and increased approaches and staircases to the different parts of the house, with improved means of entrance and exit to meet the present requirements of the Lord Chamberlain, as well as the powers now possessed by the Metropolitan Board of Works, under the Metropolitan Buildings Amendment Act of last session. That portion of the structure at the east end, forming the stage, machinery, and scenery section of the building has been entirely re-erected, admitting of the stage being much enlarged as compared with that in the old building, the whole of a former open area or courtyard at the extreme east end having now been taken in. It is carried up to a height of about 70 ft., giving ample space above the proscenium for working the machinery connected with the scenes, whilst a deep basement under the stage will be provided with similar apparatus. As regards the auditorium part of the theatre, the capacity of the new building will considerably exceed that of its predecessor. The old roof will be removed, and the building raised in height to the extent of about 15 ft., admitting of the construction of additional tiers, the new theatre having two galleries. The interior fittings and decorations are intended to be elegant and artistic, whilst externally the new building will present a greatly improved architectural appearance.

Mr. Nightingale, of the Albert Works, Lambeth, is the contractor for the new building.

VALUE OF LEASEHOLD PROPERTY IN THE STRAND.

LAST week, at the Auction Mart, Tokenhouse-yard, Messrs. Glasier & Sons offered for sale the leasehold business and residential premises at the corner of the Strand and Villiers-street, by direction of Mr. James Attenborough, the lessee. The property was described as one of the most choice and exceptionally good sites for commercial purposes in the metropolis, containing five lofty floors above the street-level, in addition to dry and well-ventilated basements, the superficial area of the whole being nearly 1,200 ft., exclusive of the portions under the public footways. The premises were stated to be held by Mr. Attenborough for a term of forty-three years from Dec. 25, 1856, at the nominal rent of 204*l.* per annum, in consideration of the expenditure by him of a large sum in alterations and improvements, and were now moderately estimated to be worth 1,000*l.* per annum. Twenty-one years and a half of the term were unexpired at Christmas, 1878. In introducing the property, the auctioneer stated that Mr. Attenborough had expended upwards of 7,000*l.* in entirely rebuilding the premises. He observed that, should the purchaser not require the premises to carry on business himself, the property could easily be let, either separately or as a whole, for considerably more than 1,000*l.* a year. The first offer made was 6,500*l.*, and no advance upon 8,900*l.* being offered, the property was withdrawn at 9,000*l.*, the auctioneer observing that it had not reached its value by a considerable sum.

INTENTIONS AT THE INSTITUTE OF ARCHITECTS.

THE Council have nominated the following Fellows as suitable for the offices of president, vice-presidents, secretaries, and other members of council, during the official year commencing May 5th, 1879, and terminating on the first Monday in May, 1880:—*

President.—John Whichcord, F.S.A., Senior Vice-President.

Vice-Presidents.—Thomas Hayter Lewis, F.S.A., Vice-President; Edward Middleton Barry, R.A., Past Vice-President; Horace Jones, Past Vice-President.

*Members of Council.**—Anderson, John Macvicar; Blomfield, Arthur William, M.A.; Brandon, David, F.S.A., Past Vice-President; Brooks, James; Cates, Arthur; Christian, Ewan, Past Vice-President; Clarke, Joseph, F.S.A., Past Vice-President; Currey, Henry, Past Vice-President; Drew, Thomas, R.H.A. (Dublin); Gibson, John, Past Vice-President; Hansard, Octavius; Hansom, Charles Francis (Bristol); Honeyman, John (Glasgow); l'Anson, Edward, F.G.S., Past Vice-President; Knowles, James Thomas; Pearson, John Loughborough, A.R.A., F.S.A.; Porter, Frederick William; St. Aubyn, James Pearse; Vulliamy, George, Past Vice-President; Waterhouse, Alfred, A.R.A., Past Vice-President; Worthington, Thomas (Manchester).

Honorary Secretary.—Thomas Henry Wyatt, F.S.A., Hon. Secretary and Past President.

Secretary.—William Henry White, Secretary.

The paper to be read on the 21st of April, by Sir James Watson, is entitled "Improvements in Glasgow and the City Improvement Acts: Origin of the Artisans' Dwellings Act." The discussion of the paper will follow immediately after the reading. Though the paper practically refers almost exclusively to Glasgow, it opens grave public questions relating to the provisions of the Artisans' and Labourers' Dwellings Act, 1875, and the Artisans' Dwellings Act (1868) Extension Bill now before Parliament, as well as to the Metropolitan Street Improvements Act, 1877.

With a view to better following the working of these and cognate Acts, the Council have made application to the Metropolitan Board of Works to be favoured with copies of all plans and schemes relating to projected Artisans' Dwellings deposited by that Board in the House of Commons.

* Fifteen names to be returned.

THE INSTITUTION OF CIVIL ENGINEERS.

WE are asked to state that the Council of this Institution have arranged a second series of supplemental meetings, for the reading and discussion of papers by students, which are to take place on the following Friday evenings at seven o'clock:—

March 28.—"An Account of some of the East London Waterworks Company's Extensions." By G. L. Taylor. Mr. Rawlinson, C.B., Member of Council, will preside.

April 4.—"The Tidal Wave in the River Humber." By A. C. Hurtzig, Mr. Abernethy, Vice-President, will preside.

April 18.—"The Construction of Locomotive Engines." By R. H. Read. Mr. Berkley, Member of Council, will preside.

April 25.—"The Comparative Merits of the Different Systems of Permanent Way." By Richard M. Parsons. Mr. Brunlees, Vice-President, will preside.

May 2.—"Gas Purification." By T. N. Kirkham. Mr. Poole, Member of Council, will preside.

RIGHTS OF ADJOINING OWNERS.

BRYANT *v.* LEFEVRE AND OTHERS.

THIS case was before the Court of Appeal on the 22nd inst. It was an appeal by the defendants from a judgment of Lord Coleridge, the appeal having been heard on the 10th December before the Lords Justices Brett, and Cotton.

The action was by the owner of a house against the owner of an adjoining house for raising his roof so as to overhang the plaintiff's house and prevent the free passage of smoke, and so to make his chimneys to smoke, &c. The plaintiff proved that his house had been for more than thirty years free from such obstruction, and that the defendant by raising the roof of his house, which was as old as the plaintiff's, had caused such obstruction, and the jury found there was a nuisance.

Lord Justice Bramwell now delivered the judgment of the Court in favour of the defendant, the appellant's ground that the plaintiff had not established such an exclusive right as was necessary in order to sustain his action, nor had he established a case of nuisance. No such right could, they said, be gained merely by actual enjoyment for twenty years. There was no analogy between such a claim as this and a twenty years' claim of light, which was in itself anomalous, but was always limited to particular apertures or windows; whereas the present claim could only be barred by building high walls all round. There was no evidence of a nuisance. The plaintiff's remedy was to build higher.

Lord Justice Cotton delivered a judgment to the effect (concurring, however, in the reasons given by Lord Justice Bramwell), being of opinion that there had been no interference with any legal right of the plaintiff.

Judgment, therefore, for the defendant on the appeal.

THE LAW OF LANDLORD AND TENANT ON HOUSE REPAIRS.

IMPORTANT CASE.

A CASE of considerable importance, affecting the owners and occupiers of houses, was tried at the Wandsworth County Court last week. Mr. Antoine Castelberg brought an action against Mr. Kenyon to recover two sums of 9*l.* 19s. 6d. and 34*l.* 10s. respectively, under the following circumstances:—The plaintiff let to the defendant, for a house belonging to the defendant, for seven years, subject to a covenant on the part of the tenant to keep the premises in as good condition of repair as they might be on his taking possession, reasonable use and wear only excepted. The work in respect of which 9*l.* 19s. was paid by the plaintiff in repairing and cleansing water-closet and repairing drains was done in pursuance of notices from the surveyor of the Local Board under the Metropolis Local Management Acts, and the Nuisance Removal Acts; and the work in respect of which the 34*l.* 10s. was paid, viz., connecting drains with the main sewer, and laying on water from the main of the water company, was done in pursuance of an order made up against the plaintiff by the magistrate at the Wandsworth Police-court, under the Nuisances Removal Acts of 1855. The plaintiff had made application to the defendant to execute the works in question, but the defendant had always refused to do so, with such request, and disclaimed all liability in respect of the matter, the result being that

); under compulsion from the local autho- ad executed them at his own cost, and ntended that he was entitled to recover ount paid, having been compelled to e outlay.

ne part of the defendant the facts were nted, but it was contended that as there express covenant by the defendant to beyond those mentioned in a letter to in the agreement, no such covenant s implied.

Deputy-Judge (Mr. John Scott) in his decision, said that in the absence of ress covenant on the part of the defen- repair, none could be implied. There o covenant on his part to repair generally, aintiff was without remedy for the nt's failure to do that which he had not ted to do. The 9*l.* 19*s.* 6*d.* was paid b ntiff for repairs voluntarily done by him, s in consequence of any proceeding gainst him by the sanitary authority; to the 34*l.* 10*s.*, it was paid by the , not to the use or at the request of the nt, or in discharge of a duty cast upon ndant, but for work done by the plain- bedience to an order made upon him as . Judgment was given for the defen- ith costs; but the Court of Queen's on Wednesday last, granted a rule *nisi* side the judgment, and enter it for the .

enant should have taken proper advice ordering the work to be done.

ORARY BUILDINGS UNDER THE ETROPOLITAN BUILDING ACT.

lbeth, Mr. Timewell, late proprietor of Clapham tkating Rink, appeared in answer to a summons by the Metropolitan Board of Works, charging non-compliance with a notice given as to its con- Mr. Beattie, assistant-solicitor to the Board, in support of the summons; Mr. Macrae Moir, defended. The defendant had obtained a licence Board for the building, for two years, as an building. The licence not having been renewed, ll called upon him either to make the building in ie with the report of Mr. Parsons, the district or to pull it down.

acrae Moir submitted that the Court had no juris- nd that whatever order was made as to the place, s a public building, the defendant, who had parted nterest to a Mr. Clench, and was likewise a bank- ld not comply with it.

eattie pointed out a number of sections in the itan Building Act, and the point arose whether cence to build for two years the powers of the re reserved and to be exercised as in respect of a in the course of erection.

dison eventually dismissed the summons. He ould not see his way to make the order required oard, as he could not say after a licence had been and the place completed, that it was in the course on. He would grant a case if asked to do so.

eattie said the question was one of importance, would submit the matter to the Board.

"ART FOR ART."

I—Will you allow me space in your columns ew remarks on two letters which have d there, signed "Art for Good," in he writer accuses Mr. T. H. Hall Caine tradicting himself in his lecture on i, delivered in Liverpool, Jan. 28th. I le willing to believe that "Art for Good" erably free from malice" (though the that requires insisting on by its pos- s at least open to question), and suppose s accusation arises from want of com- ion of the lecturer's meaning; and my tion is strengthened when I find he can land art insisted on for "pleasure's or "religion's sake," or "country's but "art for art's sake is sheer non- e that is, he can understand the artist g for a reward, whether given by reli- patriotism, or pleasure, but the labour lds itself up wholly to the glorifying of ot with no thought of self to darken or that "Selbst-tödtung" which is the e glory of the highest natures, that is nonsense!" To the Puritan, Raffaelle's Madonna seems a materialised impiety, s most prayerful masses a torrent of s sound, drowning the God they glorify; wonder, then, "Art for Good" fails to he meaning of the passage he calls con- ory, since in that passage the "sheer e" of art for art is clearly enunciated. t your nature be pure, and then away lf-consciousness, for only when the artist s self-consciousness can art fully attain until then she is only artistic religion, sm, or pleasure. Such seems to me the ignification of the lecturer's words, and when "Art for Good" indulges in the *reductio ad absurdum* argument he convicts himself; for not only does he endeavour to wrest the meaning of the word "accident" from the sense in which it is used by the lecturer, but he apparently forgets the great stress Mr. Caine lays on the *character* of the artist's nature:—"The artist has never at any time divorced his moral nature from his artistic instinct, and cannot. The ethical significance may have been always the accident of his work, but it has been always the essence of his nature." And his exhortation to artists to look closely that the personal nature, which, without purpose of their own, permeates their work, is such as will bear fruits of good meaning" it would be difficult to speak more plainly, and I imagine even "Art for Good" could scarcely class murder as among the "fruits of good meaning!" "Art for Good" says,—"Whenever writers are rash enough to leave the highway of common sense for the byeways of rhapsody, they are sure to follow these misleadings into the slough of inconsistency and error." And I would retort, whenever writers intent on proving their cause pick out a few phrases at random from a passage, they are sure to misapprehend, and probably parody, its meaning, as "Art for Good" has done in this case. I think, too, there is great need to pause for a reply when he asks, with that air of proprietorship in the Deity his school seems so fond of assuming, "Does the Almighty abandon himself unconsciously to his work?" I have not, with all reverence be it spoken, penetrated so far into the secrets of God as to be able to answer, as those writers on "The Strategy of Providence" and "Mechanism of the Universe" could, no doubt, glibly do; but having some slight acquaintance with art and man, I fully believe no great work of the one was ever produced by the other while self-consciousness filled his mind and excluded that consciousness of art which is the true inspiration to achievement in her realms. I cordially agree with "Art for Good's" last remark,—"Sophistry is but a weak lance at best," &c., and would beg him for the future to try to understand before condemning.

"Pray look better, sir," quoth Sancho: "those things yonder are not giants, but windmills."

EVELYN PYNE.

SIR GILBERT SCOTT'S LECTURES.

SIR,—My attention has been directed to the review in your last issue, wherein you refer to a sketch of St. Front at Perigueux, vol. ii., p. 272, as not agreeing with the section, and "shown with Romanesque or semi-Gothic clustered piers, and with a perspective of more domes than could be seen from any point of the interior." This sketch is really the well-known church at Angoulême, and the inaccuracy has arisen from an error in the press sheets, the titles of three of these small views having been transposed (pp. 272—276); they should read:—Fig. 445, Angoulême; fig. 448, Notre Dame du Pont, Clermont; and fig. 450, St. Front, at Perigueux.

The plan of the Abbey Church at Bury St. Edmund's, you state, "omits the important point of the deflection of the axis of the choir from that of the nave." The engravings in the "Archæologia," vol. iii., p. 311, do not show any deflection, neither does the "Journal of the Archæological Association," vol. xxi., p. 40, from which the plan in question appears to be taken.

The illustrations are produced, not by photo-lithography, as stated, and deplored, but by zinco-typography. Had the former method been employed it would have been impossible to have printed the illustrations with the text.

W. SAML. WEATHERLEY.

LONDON SCHOOL BOARD PAYMENTS.

SIR,—Will you kindly allow me to point out, through the medium of your columns, that the action of the London School Board in suspending the payments due to builders is not only an inconvenience to the builders concerned, but will result in an increase of expense to the ratepayers. Because, the suspension of payments amounts to a breach of contract with the builders, who will very naturally and properly expect to be repaid for the loss of interest on money due, for the loss consequent on stoppage of works, and for any increase in market prices of materials.

H. C. BEVIS.

BLOOM ON TILES.

SIR,—Our hall tiles, "Craven, Dunnill, & Co.'s," are always covered with a white matter; it sweeps up like snow, and the tiles are covered again soon after. Tiles in churches are often so. What is the cause? Will any reader suggest a remedy? I asked the builder what would remove grease spots or stains from the tiles. He could not tell me; so it is useless to ask him a remedy for the other difficulty.

L.

BELLS.

Raunds.—The peal of bells at Raunds Church was rung for the first time on the 10th inst., after being put in good and safe ringing order by Messrs. Taylor & Sons, of Loughborough. The two large bells had been re-cast, and the whole peal re-hung.

Llandaff.—A Llandaff correspondent informs us that only seven of the peal of eight bells now being placed in the north-west tower of the cathedral are new ones, the eighth, or tenor (weighing nearly 23 cwt.), having been in constant use for many years.

Books.

The Twelve Egyptian Obelisks in Rome: their History explained by Translations of the Inscriptions upon them. Edited by JOHN HENRY PARKER, C.B. Second Edition, revised and enlarged, 8vo. Oxford, 1879.

THE Nestor of archæologists, and historian of the antiquities of Rome, has now published a second edition of his monograph on the obelisks in Rome. We were compelled to point out a few inaccuracies in speaking of the previous edition, but this did not prevent us from strongly commending it as a whole. The general subject of these monumental erections has much occupied the public attention in England for the last two years, since Mr. Erasmus Wilson and Mr. John Dixon, C.E., first undertook the transport of the Cleopatra Needle from the sandy beach of Alexandria, where it had lain half embedded and trodden upon by passers by for many hundreds of years, and conveyed it to the banks of the Thames. Thus, what had hitherto been only imperfectly thought of by the generality of our population, and known only by books, is now palpably before our eyes, and Mr. Parker's volume developes the history of the twelve at Rome, transported thither from Egypt by the munificence of its emperors to adorn its Circi, Mausoles, and other principal monuments. They were thus constantly under the eyes of the people, and reminded them of the extent of their conquests and power, and of the greatness of their rulers.

Our author begins with a brief summary of the history of these obelisks. The earliest dates from the twenty-first century before the Christian era, recalling the time of many of the patriarchs as Abraham, Jacob, Lot, Melchisedec, and the destruction of Sodom and Gomorrah. The latest has upon it the cartouches of Apries or Pharaoh Hophra, who reigned from B.C. 588 to 569, and to whom, in his second year, the Jews fled for protection, in spite of the warnings of the prophet Jeremiah, carrying with them the prophet himself by force. The popes, emulating the example of the Roman emperors, set up the obelisks in their present positions, Sixtus Quintus being the first, in A.D. 1585, and followed by his successors, Innocent X., Alexander VII., Clement XI., and by Pius VI. as late as 1792. The one on the Pincian, erected in honour of Antinous, the favourite of Hadrian and Sabina, was put up in 1822 by Pius VII.

Dr. Birch translates the hieroglyphics on the Lateran obelisk, originally set up by Thothmes III., and completed by Ramses II., who, with rare modesty, did not arrogate to himself the honours due to his predecessor. Originally, the hieroglyphs on obelisks were cut in one central vertical line, but frequently, succeeding rulers added others on each side of the central line, thus forming three lines of incisions. They were very barren of information, and were confined to the record of the names and personal attributes of the special king, mixed up with maxims and blessings of the gods, the central line being more deeply incised than the later ones. Mr. Parker then gives *in extenso* the paper on obelisks read before the Institute of British Architects, with the illustrations, and which treats of their purpose, pro-

portions, and position. An engraving represents the Pylon, or huge gateway of an Egyptian temple, with the avenue of sphinxes, colossal statues, standards, and obelisks, the effect of which must have been very imposing, enhanced as was this frontispiece to the forecourt by the embellishment of large incised battle-pieces, and decorated with brilliant pigments. The Egyptian temples cover a vast area; court succeeds to court encircled with porticos; there are large halls and chambers shaded from the burning light; the columns are often gigantic in dimension, with capitals of various form, and with the shafts profusely embellished with coloured forms. Their sculpture, however, is stiff, angular, and square, without grace or movement, and the bodies are mostly terminated by the heads of monkeys, cats, rams, owls, and other animals. Their paintings are generally devoid of artistic composition, a mere flat combination of objects, imposing, however, by their size or the solemn mode of treatment as for sacred subjects. The whole of their pictorial or sculptural art is a conventional treatment of form and colour, whereas their architecture is simple, majestic, and sublime. The Nile, the great highway of Egypt, afforded the opportunity of conveying the monolithic obelisks, on huge vessels or rafts, from the quarries of Syene for hundreds of miles down to Memphis, Heliopolis, and other towns of Lower Egypt, where they were ultimately set up before their temples. At Memphis, once the capital of the province, and consequently embellished by finest monuments, as we may judge from the Pyramids and subterranean tombs still seen at Mithra-Naney, the modern village which now occupies a small portion of the area once covered by the antique town, one granite fragment alone still exists in a ditch. It is some 30 ft. long, part of a gigantic figure.

Mr. Parker's work also contains a valuable paper communicated to the "Museum of Classical Antiquities," by the accomplished Egyptologist, Dr. Birch, of the British Museum. It enters largely into the peculiarities of obelisks, and the hieroglyphics by which they are covered and illustrated are learnedly described. It is to be regretted that these memorials of remote ages contain very little information of an historical, a political, or an architectural nature, but are full of religious references to the gods, and adulatory recitals of the titles, virtues, and power of the prince by whom the pyramid was set up. At the end of this essay is the engraving of a remarkable and unique scarabæus discovered by Dr. Birch in the British Museum collection, containing the representation of an obelisk showing Thothmes III., the king, one of whose obelisks we have now on the Thames Embankment, represented in the character of the god Harmachis. The scarabæus is a steatite, covered with a bluish green glaze, and about ¾ in. long, pierced for setting as a ring. The hieroglyphs are in two compartments, having a sphinx in the upper one: in the lower is the obelisk with the king in a royal garment worshipping the obelisk.

At the end of the volume are eight views of obelisks, copied from photographs, which represent these monoliths with their surroundings. The author has had ten copies only struck off in a quarto form, for presentation, with the actual photographs of the plates, and some others not contained in the smaller editions. The history and description here given of the twelve Roman obelisks, the admiration and wonder of the visitor to the Eternal City, will increase the pleasure with which they will be viewed.

Early Drawings and Illuminations: an Introduction to the Study of Illustrated Manuscripts, with a Dictionary of Subjects in the British Museum. By WALTER DE GRAY BIRCH, F.R.S.L., &c., and HENRY JENNER. London: S. Bagster. 1879.

THE real value of this book, the product of two of the senior assistants in the MS. Department of the British Museum, lies in the catalogue given of manuscripts or illuminations which illustrate special subjects, and which are grouped according to the subjects they illustrate, and the press number in the Museum Library given. Thus, if we want to find specimens of ornamental borders, we look under the head of "Borders," and find a list of the press marks of manuscripts classified according to date and country (for "Borders" is a very large item), and so we go on to illustrations of Bridges, of Buildings, of Carriages, and so on through the alphabet of subjects to be found in the great world of illuminated manuscript lore. The value of such a catalogue to students wishing to look up a special subject is too obvious to need comment: the wonder is that such a publication has not appeared before now, and we hope we may take this book as one of the signs that there is a stirring among the dry bones in the British Museum, and that there is going to be some more decided recognition on the part of those who take charge of its treasures that their real object is to be made useful, and not to be merely kept uninjured on shelves. When a man does know what he wants at the British Museum, there will be all courtesy and attention in providing him with it; but it really has seemed to us that the authorities were desirous to keep people from finding out what there was there, for fear, we suppose, things should be too often and too much asked for. In the print-room, for example, the superstition is still kept up that not a word is to be told any visitor that may indicate to him what there is that will help him or interest him. If he knows or guesses that such and such a thing is there, and asks boldly for it, it is produced; but if he asks, for instance, what drawings of the Italian school are there, he will get no information, he will merely be told to name what he wants to see. If he asks for a catalogue, there is no such thing. A catalogue of the prints was published some time since independently of the authorities, at a considerable price; and we presume the volume before us does the same thing, on the same kind of footing, for a portion of the MS. room. But what a strange thing it is that a collection, the only value of which is for reference, should be kept *perdu* in this way, and not the slightest official attempt made to inform any one as to what is and is not there.

The book is illustrated by photographs of some of the most interesting of the illuminated pictures in the collection; these are an addition to the book which takes it a little out of the catalogue groove, and will be valued by many; but this feature in the volume might have received a little more care and consideration; there is a numbered index of the plates, but the plates are not numbered, are in a different order from the index numbers, and some which are named are not given, and others given which are not named. It is curious that gentlemen capable of giving such toil and attention to the making up of the catalogue should have refrained from giving the small amount of ordinary attention which would have sufficed to avoid such mistakes as these. The comments on some of the drawings are odd, and attach far too much artistic importance and value to them; their value is almost wholly archæological. In commenting on the plate of "Alexander and the Elephants," it is observed that the elephants "do not very much resemble the animal *as at present known*"; as if the type of elephant might have changed since the fifteenth century from a long-necked animal, with a cloven hoof, to the elephant of the present day. That would be evolution of species with a vengeance. Nevertheless students should be much obliged to Mr. De Gray Birch.

The Etched Work of Rembrandt: a Monograph. By FRANCIS SEYMOUR HADEN, F.R.C.S. Macmillan & Co. 1879.

THIS is a reprint, in a very neat form, of the essay which Mr. Haden originally wrote as a preface to the Catalogue of the Exhibition of Rembrandt Etchings, at the Burlington Fine Arts Club. We commented upon the exhibition and upon the preface to the catalogue at some length at the time, noticing some of the new and, as it seemed to us, very probable and reasonable suggestions which Mr. Haden made in regard to the question of the authenticity of some of the etchings and the part which Rembrandt's pupils probably took in finishing or reproducing works of this kind. The remarks on page 9 as to the utter triviality of attaching special value to a few impressions taken before some final correction had been made or a date added, and then calling these "first states" and "second states" (whereas they are, says Mr. Haden, merely "trial proofs"), are very seasonable as well as sensible. The man who hunts up impressions before date or with an incorrect line not taken out, and gives double price for them, is the very person who should *not* be called, as he generally is, a "connoisseur," as he is the person who does not know, if one may judge by his proceedings, in what the highest value of an original work of art consists.

An appendix to the essay is concerne the author's case against a gentleman, Middleton, who has been writing about brandt, and who, Mr. Haden avers, has plundered his ideas, and re-issued them very similar language, claiming them as original thoughts. We cannot express a tive opinion, of course, on an *ex parte* sta but it certainly appears as if Mr. Had good reason to complain.

VARIORUM.

THE first number of Mr. Edmund new venture, *Time*, gives promise of success. Shakspeare is made to add title *Time*,—

"And Life,—
. . . . . Time's Fool,"

and the articles in the budget show the is correct. The variety is remarkab cluding social essays, biography, poet commencement of a novel by two strong shorter stories, complete in themselves, important chapter on Art-Education in which ought to bear fruit. Mr. Ya issued the best first number we have many a day.

Miscellanea.

Condition of Galata.—The editor *Constantinople Messenger*, adopting one old headings, "Fever Dens and Plague gives a striking picture of the miserab dition of some of the streets of P Galata. He continues:—"But this is not any one have business at the Custom-h pass through any of the side lanes t from the tramway route to the waters the accumulations of filth he has to e are simply abominable. If streams of occasionally flow down the larger stree at least serve to carry off some of t obnoxious elements of the vile compos thus cleanse the localities after a fashi these lanes are never washed, even wi They stink after the heaviest rains. E and alley is a veritable den of fever however, is not the worst that Galata Cross the tramway route, and go thr district, filling up the angle betwee Step-street, in the midst of which is International Post-office,—it is like jum of the frying-pan into the fire. This d crowded with habitations of the wo racter, and swarming with inhabitant lowest class. The accumulations of m physical filth are appalling. No serious are made to purge it of the one, or to sw the other. So thick are the heaps of above the rough stone pavement in som that an Irish peasant would raise a cap of potatoes in front of his street do happened to find himself sojourning fo season in the locality. Here we have fe in abundance, and the whole district co a chronic plague-spot, in which pest being perpetually generated, to s intervals over the whole city."

Destruction of Monuments, Church.—A well-known antiquary prop demns some recent proceedings. He Among the ancient sacred monuments from their places in Strood Church is incised slab of the highest interest, bei thirteenth century, and resembling in character one of the celebrated Cobham engraved and described by Mr. Walle slab, I am informed, has been engr Gough, and it is also noticed, I belie *Gentleman's Magazine* (old series). E bably, the desecrators who destroyed or lowered it into the vault relied on the which attends all, high as well as lo they can no longer distribute ric patronage. But it is not so with oth ments buried in the vault, which ar assured, connected with families ye The general belief is that a church i security for monuments of the dead. is more delusive. Nothing stands in th "improvement," which is often me whim of a vicar or rector.

The Royal Society.—The list of ca for election into the Royal Society b printed. They are fifty-three in num for the most part already highly disting

h Archæological Association.—The sting was held on Wednesday, the 19th en it was announced that the Council pted the invitation of the Mayor and ion of Great Yarmouth to hold the of the year at that town. Visits paid to Burgh, Caistor, Blickling Hall, , and other places of interest in the closing at Norwich. Mr. Loftus Brock, xhibited a German glass apostle cup, al relics of old London, from recent ns, including a silver bottle, which had ed in a lathe in its fabrication. Mr. ay described similar excavations in ck, and produced a large collection of rticles found in them. The Rev. S. M. reported the discovery of remark- nan remains which have just been so light by the new drainage works at Seven brick bases or pedestals were ctly opposite the building discovered , and supposed to be the prætorium. ired to conjecture that they were for pon them the sacred standards of the artered in the city. They were 4 ft. 6 in. 2 ft. broad, and have been demolished. sselated pavement has been found near iequer-gate, and elsewhere traces of the ewers of large size and capacity have with. The first paper was on "Ancient ," by Mr. A. Syer-Cuming. After re- statements made that these articles ecent date, he adduced evidence to show were well known to the Romans. The examples, however, in this country and rope appear to have been of leather, at material being shown. It was in unty Cork so late as 1820. A large of examples of brass dating from 1500 ibited. They were mostly found in and some of the seventeenth century criptions. Several ladies who were roduced other examples of high work- and finish. The second paper was by Prebendary Scarth, F.S.A., descriptive man sepulchral inscription recently Bath, where several remarkable dis- have been made in course of the work.

on Trade.—Messrs. Shaw & Thom- ir "Iron Trade Circular," say,—"The ns with undoubtedly better prospects ater degree of confidence than we have me years. Capitalists could not invest property than iron at present prices, all be much surprised if prices are not higher before the close of the year. —The annual production is now tons, and the total stocks at present d, Middlesbrough, Staffordshire, and not exceed 1,200,000 tons, or about half months' reserve—a comparative h any moderate increase of demand kly sweep away. But even this stock reater than it really is. In ordinary f at least of this quantity would be in of merchants, founders, and dealers, at present utterly bare of stock, and from hand to mouth, many having to deliver even what they have not t. The price of Middlesbrough No. 3, ched 32s. 6d. per ton, has advanced to ton free on board. Scotch pig-iron which fell to 42s. 6d. have advanced d. per ton f.o.b. Glasgow. *Bessemer* s.—About 130,000 tons have been con- or since the beginning of the year. opened at 5*l.* 10s. per ton, receded to ton, and has since advanced to 5*l.* Bessemer steel rails were sold in 1873 22*l.* per ton."

ing Grounds.—At a meeting of the Engineering Society on Wednesday, inst., the president, Mr. Morgan E. in the chair, a paper was read by Mr. ncanson on "Storing Water," which h the construction of large storage . The author commenced by stating ples on which the yield and capacity oirs are determined, showing the most d proportions between the two factors; on to consider the actual construction oirs, the usual practice of hydraulic being fully described. Special reference to the Yarrow reservoir belonging to ool Corporation; and the paper con- pointing out the necessity for some scheme for utilising the mountain or ricts of England and Wales for the towns. A discussion followed.

Too much Horseflesh.—According to an American paper, Professor T. P. Wilson has found out why civilisation is a failure. It is because there is too much horseflesh. In the course of a lecture delivered in Cincinnati, he remarked that the cities of America had reached their last milestone of progress. There has not been, he added, a practical improvement in those cities for twenty-five years. Not that they are not growing larger, but that there has not been an advance in the benefits and pleasures of city life. The way we make our cities now is to take some horses and build houses around them. Our cities are geometrically right, but æsthetically wrong. Why are our cities built straight? So that the horse may have a place. The use of the horse in all our large cities is a blunder. By a better power we can move people for three-fifths less than we pay now, and in less than half the time. What the Professor gravely purposes to do is to take away the horses, pave the cities with asphalte or gravel, cover the streets with green grass, ornament them with shade trees and flowers, have cars running on steel rails, do all the work of transportation with a new motive power in one-half the time and for one-fifth of the money, consume all the smoke, and render American cities the gardens of the world!

The Master Builders' Association.—With reference to the summary of the report of the Central Association of Master Builders of London, which we published, we are informed that the passage:—"A proposal to reduce the men's wages had for pecuniary reasons been withdrawn, as it was not thought advisable to enter into another conflict with the union," is not correct. The following are literal transcripts from the report:—"They [the committee] would congratulate the Association on the successful termination of the 'masons' strike' last spring; when the 'masons' union,' although it did not withdraw its demands, allowed its members under certain conditions to return to their work. As the shops had been filled with men brought by this Association from other localities, this permission came a little too late." "It is matter of congratulation to the committee that the Association is now entirely free from debt."

The Proposed New Building Regulations for Glasgow.—The Glasgow Town Council held an extraordinary meeting on the 21st inst. to consider the proposed new building regulations for the city. It was intimated by the clerk that the Home Secretary had transmitted the report of the Sheriff Clerk, who stated that while he was of opinion that the general scope of the proposed order was good, and the principles it embodied were sound, he could not recommend its adoption without important changes in detail, and without adequate provision for compensation. The Lord Provost remarked that there were now only two courses open to them,—either to amend the order on the lines indicated, or to withdraw it altogether. It was resolved that the matter should be remitted to the Health Committee for consideration and report.

Liverpool Exhibition.—According to the Report of the Fine Arts Committee upon the eighth Autumn Exhibition of Pictures in Liverpool, the works exhibited numbered 1,062. Of this number 970 were on sale, and 236 were sold for sums amounting to 7,340*l.* 7s.; included in this amount being the purchase of Mr. H. Herkomer's "Eventide," bought from the artist's easel. Included in the sales also are three works purchased by the Corporation for the permanent collection, viz.:—"And when did you last see your Father?" by W. F. Yeames, A.R.A.; "A War Despatch at the Hotel de Ville," by A. C. Gow, and "Gathering Bait," by J. Aumonier. The admissions by payment have been nearly 6,000 in excess of last year.

Cost of Roads.—The surveyor to the Vestry of Chelsea, in a recent report, says,—"The first cost, maintenance, and cleansing of wood for a period of fifteen years would amount to 31s. 3d. per yard, whereas the maintenance and cleansing of macadam for a similar period would be 42s. 6d. per yard at least. It is, therefore, apparent that a very considerable money saving would be effected during that period by the substitution of wood pavement, independently of the advantages obtained by the superiority of a silent pavement, and the absence of frequent repairs, so annoying in the case of business premises where a macadam road exists."

Edinburgh.—At a meeting held the other day of the Edinburgh and Leith Master Builders' Association the question of wages was discussed, and it was resolved that such of the employers as could get men to work for 6d. per hour should pay this rate of wages; while in those cases where hands could not be had at that figure, the present standard of 7d. per hour should be given.——At a general meeting of the Edinburgh and Leith Master Plumbers' Association, held on the 19th inst., it was unanimously resolved to reduce the wages of the operatives 1d. per hour, to take effect from the 31st inst.

Needful Notice.—The Local Government Board have called the attention of the Wilton Local Board to the imminent danger to which the health of the inhabitants of the district is exposed by the existing arrangements of water-closets being supplied from drinking-water pipes, and they have urged the Wilton Board to avert the danger, by requiring that every water-closet shall receive its water-supply through a cistern or service-box. Notice has accordingly been given to the inhabitants. The Local Board and their surveyor (Mr. Bothams) offer any information that may be needed.

Fires.—A telegram from Akyab states that on Saturday the native town was destroyed by fire. The damage is estimated at half a million sterling.—Early on Wednesday morning Clumber House, the seat of the Duke of Newcastle, four miles from Worksop, was for the most part destroyed by fire. A great many valuable pictures have been destroyed. The whole of the centre of the house is gutted, only the bare walls are standing, and at present it is impossible to estimate the damage. The origin of the fire is not known.

Artistic Furniture.—Messrs. Orme & Sons, of Manchester, are offering 120*l.* in five premiums for designs of billiard-tables, &c. They add,—"Competitors not gaining a prize may allow their drawings to remain with Messrs. Orme & Sons permanently, who agree to pay 2½ per cent. on all tables made from such design, within three years of the date of award." The judges are Mr. W. J. Muckley, of the Manchester School of Art; Mr. E. Salomons, architect; and Mr. James Lamb, cabinetmaker.

Obituary.—The death on the 21st inst., at No. 23, Charlotte-street, Portland-place, is announced of Mr. W. Valentine Bartholomew, aged 80 years, flower-painter in ordinary to her Majesty. For many years his drawings of flowers were an attraction at the Society of Painters in Water Colours, of which he was a member. He was a brother of Mr. Alfred Bartholomew, the architect.

Stoke-upon-Trent Sewerage.—The first premium of 150*l.* offered by the Stoke-on-Trent Council for the best scheme of dealing with the town sewage has been awarded to the scheme jointly submitted by Major-General Scott and Mr. Gilbert R. Redgrave, of Ealing; and the second award of 100*l.* to Messrs. Bailey Denton, Son, & North, of London. The scheme adopted comprises irrigation, downward filtration and subsidence, and chemical treatment.

The Society of British Artists.—The Society of British Artists have secured permanently their old galleries in Suffolk-street, where their exhibitions will be held in future. Their exhibition for the current year will be opened to the public on Monday, the 31st inst. Mr. Edward Freeman has been elected to the keepership of this Society.

TENDERS

For rebuilding shops and offices in Cheapside, London. Messrs. Ford & Hesketh, architects:—

Smith & Co.	£33,342	0	0
Fish	33,141	0	0
Brass	32,277	0	0
Scrivener & Co.	31,476	0	0
Adamson & Son	31,378	0	0
Condor	31,130	0	0
Browne & Robinson	31,001	0	0
Ashby Bros.	30,792	0	0
Patrick & Son	29,434	0	0
Shaw	29,296	0	0
Lawrance (accepted)	28,435	0	0

For alterations at Pynes, Exeter, the seat of the Right Hon. Sir S. H. Northcote, bart. Mr. James Jerman, architect:—

Scadding	£490	0	0
Dennis, short, & Milford	487	12	0
Stephens & Son	437	0	0
Blake	436	0	0
Reynolds	435	0	0
Gibbard (accepted)	395	0	0

For alterations at 199, Hackney-road, for Mr. J. Thurston. Mr. W. W. Clark, architect:—

Parrish (accepted)	£247	10	0

For counter and cabinet fittings, at the Chelsea Pensioners, Queen's-road, Chelsea, for Mr. Brown. Mr. H. J. Newton, architect:—

Godden (accepted)	£255	0	0

Lamps and Gasfittings.

Hodge & Co. (accepted.)

For stabling and lofts in rear of Corporation-buildings, Farringdon-road, for Mr. Gerard. Mr. F. Adam Smith, architect:—

Bamford	£405	0	0
Clark Bros.	390	0	0
Beale	385	0	0
Royal	377	0	0
Sharman	318	0	0

For cemetery chapels and lodge, Dudley, exclusive of boundary-walls and laying out grounds. Mr. Ernest Long, architect. Quantities supplied by the architect:—

Wood & Son	£1,700	0	0
Thompson	1,520	0	0
Buxton	1,400	0	0
Walkerdine	1,395	0	0
Fryer	1,360	0	0
Hall	1,350	0	0
Walker (accepted)	1,291	0	0

For eight houses in Vincent-square, Westminster, for Mr. J. Franks:—

Hatfield & Son	£8,450	0	0 !
Kirk & Randall	7,148	0	0
Williams & Sons	7,059	0	0
Merritt & Ashby	6,646	0	0
Aitchison & Walker	6,544	0	0
Pickersgill Bros.	6,475	0	0
Patman & Fotheringham	6,475	0	0
Green & King (accepted)	6,344	0	0 !

For alterations and additions, erection of ovens, &c., at No. 117, Gower-street, for Mr. M. Silver. Mr. W. S. Witherington, architect:—

First Set of Tenders.

Devereux	£2,985	0	0
Whiteley	2,674	0	0
Hayworth	2,242	0	0

Second Set, for same Work.

Staines	2,476	0	0
Priestley	2,110	0	0
Taylor & Parfitt	1,999	10	0
Palmer	1,995	0	0

For forming roads, drainage, &c., on the Hither-green Estate, Lewisham, for Professor Attfield. Mr. Charles Young, surveyor. Quantities not supplied:—

Corne	£1,083	0	0
Champion	1,050	0	0
Woodhams Bros.	931	0	0
Wilmot & Co.	906	0	0
Warne	870	0	0
Merrett	825	0	0
Inpacke	702	5	9
H. Woodhams	690	0	0
Budd	680	10	0

For rebuilding 8 & 9, Ivy-lane, Newgate-street. Mr. W. Wimble, architect:—

Gillett	£5,103	0	0
Hoare & Son	4,444	0	0
Scrivener	4,430	0	0
Ramsay	4,398	0	0
Brass	4,343	0	0
Falkner	4,195	0	0
W. & F. Croaker	4,076	0	0
Lawrance	3,876	0	0
Mortar	3,783	0	0

For the reinstatement of Roy's Wharf, Stepney, for the Commercial Union Fire Insurance Company. Messrs. Davis & Emanuel, architects. Quantities supplied by Mr. H. P. Foster:—

Brass	£2,530	0	0
Grover (accepted)	1,984	0	0

For the erection of proposed new offices, for the Guardians of the Portsea Island Union, Portsmouth. Mr. C. M. Houghton, architect. Quantities supplied by Mr. H. P. Foster:—

Quick	£5,575	0	0
Roberts	5,550	0	0
Burbidge	5,529	0	0
Damon	5,153	0	0
Hide Bros. & Cook	4,985	0	0
Hayter	4,415	10	0
Evans Bros.	4,400	0	0
Earwicker	4,300	0	0
Lewis (accepted)	4,110	0	0
White	4,050	0	0

For new wing, alterations, &c., to Homefield, Merton, Surrey, for Mr. R. Harland. Mr. Alfred Jowers, architect. Quantities by Mr. John M. Gritten:—

Carter & Son	£2,397	0	0
Conder	2,291	0	0
Longmire & Burge	2,238	0	0
Amer	1,990	0	0

For repairing nine houses at Wickham-street, Hoxton, for Mr. Mace:—

Taylor & Parfitt (accepted)	£139	0	0

For erecting two cottages, with laundry adjoining, rain, water and sewage tanks, drained into brook, at Woodfield, near Harfield. Mr. T. Taylor Smith, architect. Quantities supplied by Mr. W. H. Pipe:—

Fairhead	£798	0	0
Ginn	737	0	0
Ireson	675	0	0
Bentley	638	0	0

For building detached villa in Margery Park-road, Forest-gate, for Capt. P. Thompson. Mr. J. F. Wesley, architect:—

Tillett	£1,144	0	0
Walker	1,125	0	0
Holland	1,118	0	0
Harris & Wardrop	1,098	0	0
Linn	1,050	0	0
Palmer & Son	1,040	0	0
Houghton	995	0	0

For alterations to shop in Bow-road, for Mr. G. Emery. Mr. J. F. Wesley, architect:—

Hearle & Son	£937	0	0
Wood	913	0	0
Palmer & Son	891	0	0
Curtis	879	0	0
Harris & Wardrop	846	0	0
Atherton & Latta	840	0	0
Holland	839	0	0
Johnson	817	0	0

For alterations to the Eagle and Child public-house, Forest-gate, Essex, for Mr. J. Jones. Mr. J. F. Wesley, architect:—

Poulson	£747	0	0
Palmer & Son	740	0	0
Harris & Wardrop	735	0	0
Holland	722	0	0
Walker	663	0	0
Taylor & Parfitt	649	0	0

For three houses, Victoria-road, Blackheath. Mr. Horace T. Bonner, architect:—

Penny	£4,105	0	0
Gerrard	3,977	0	0
Staines	3,884	0	0
Burman	3,780	0	0
Higgs	3,732	0	0
Kirk	3,725	0	0
McCowan	3,363	0	0

For the construction of new road and line of sewers on the Earlsfield Estate, Waudsworth Common, for Mr. H. Davis. Mr. T. J. Lynes, surveyor:—

Nowell & Robson	£7,700	0	0
Neave & Sons	6,348	0	0
Clark	5,997	3	4
Hampton	5,586	18	0
Aviss	5,498	0	0
J. Neal	5,283	0	0
R. & G. Neal (accepted)	5,266	0	0

For the completion of Catholic Church, St. Marychurch, Torquay, for Mr. W. J. P. Chatto. Messrs. J. A. Hansom & Son, Architects. Quantities by Mr. Henry Smith

Eddles (accepted)	£10,133	10	0

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J. J.—J. G.—Fair Play.—K. W. & P.—Mr. F.—H. F.—H. P. F.—H. F. B.—C. Y.—J. M. H. G.—W. A.—W. & F. C.—S. M. S.—J. F. W.—W. H. R.—T. & P.—W. & Co.—R. F.—G. H. B.—T. B. V.—H. H.—C. L.—E. P.—J. S.—H. V.—F. & A.—D. X.—T. C. N.—G. F.—E. C.—M. W.—W. S. W.—O. M. S.—W. S. W.—T. R.—O. & Sons.—T. & A.—G. & F.—A. H. B. (it is necessary that list of names and amounts should be sent if insertion be desired).—J. W. B. (unreasonable).—H. H. (cheque has been forwarded).—P. L. (apply to the clerk, Goldsmiths' Hall, E.C.)—Sixteen Years' Subscriber (must look to his books).—G. M. (next week).

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1887. SATURDAY, APRIL 5 1879.

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The Night Lights of Old London.

GAS.

ALTHOUGH the primitive days of lighting London practically expired with the introduction of gas, — when, threescore and ten years ago, the first application was made to Parliament to sanction its use as a new illuminator thoroughfares of the metropolis,—yet it e borne in mind that the "new light" ally known a century earlier, and only science to help to make the wonderful y useful. How science had to combat blic opinion we shall presently tell, and it seen that even in the vaunted days when III. was king, there was as much preju-he minds of the human race against gas as re is likely to be against the electric light. t to be wondered at? seeing that it has ighteen hundred years to bring into e most of our inventive faculties, and e vast majority of all our discoveries, and ns have been brought into practical use he last threescore and ten years of the an era!

ave already shown that the night lights London consisted successively of candle nd oil, and that the streets continued minated down to the commencement of sent century.* There are some of our old enough to remember the dim oil which shed its mocking light across ath as they trudged home during the e of those days when railways, steam-as, and telegraph were unknown to the of London. And although many friends ll to mind the commencement of gas-t, there are many incidents connected e new illuminator's early days which will w even to the best informed in such .

discovery of gas, like many other dis-s, arose by mere accident, and not by a f experiments. Miners had known of the nability arising from coal gases long the days of the Royal Society, but it had ccurred to them to utilise it. Such a s not attempted until the dawn of the century. The earliest account of the ry is to be found in the "Philosophical ctions" for the year 1667, and is quaintly "A description of a Well and Earth in hire taking fire by a Candle approached Imparted by Thomas Shirley, esq., an Eye Witness." The writer tells us he was returning to his house at Wigan in February, 1659, when he was informed that the water in a spring in Mr. Hawkley's grounds, about a mile from the town, on the Warrington and Chester road, was burning like oil. Whereupon he and half a dozen friends proceeded to the spot, and applying a burning candle, the water gave forth a flame at a particular spot, but not in the ditch which ran from the spring. Neither did the water burn when taken up in a dishful, although "the water at the burning place did boyle and heave like water in a pot upon the fire, though my hand put into it perceived it not so much as warm." This led Mr. Shirley to look minutely into circumstances. "The boyling I conceived to proceed from the irruption of some bituminous or sulphureous fumes, considering this place was not above thirty or forty yards distant from the mouth of a *coal-pit* there. And indeed Wigan, Ashton, and the whole country for many miles compass is underlaid with coal. Then applying my hand to the surface of the burning place of the water, I found a strong breath, as it were a wind to bear against my hand." Whereupon, says he, "I caused a dam to be made, and thereby hindering the removal of fresh water to the burning place, I caused that which was already there to be drained away; and then applying the burning candle to the surface of the dry earth at the same point where the water burned before, *the fumes took fire and burnt very bright and vigorous.*"

Although this discovery was deemed of sufficient importance to occupy a place in the Royal Society Transactions, nothing further was printed until 1733,—that is, sixty-six years afterwards, —when Sir James Lowther, having occasion to sink a pit for draining one of his principal collieries, near Whitehaven, we are told that "a vast quantity of damp corrupted air, which bubbled through a quantity of water spread over a part of the pit, and made a great hissing noise, at which the workmen being somewhat surprised held a candle towards it, and it immediately took fire upon the surface of the water and burned very fiercely." Of course, the workmen were considerably alarmed, clearing themselves at once from the pit, "having first extinguished the flame by beating it with their hats." After farther details, the writer states that this damp air being put into a bladder and tied close was carried away, and after some days was "pressed gently through a small pipe into the flame of a candle, took fire, and burned at the end of the pipe as long as the bladder was gently pressed to feed the flame, and when taken from the candle, after so lighted, continued burning till there was no more air left in the bladder to supply the flame."

Here, then, we see the principle of the present gas light explained in a few words,—and this was nearly a century and a half ago. But before 1691, the Rev. Dr. Clayton, the Dean of Kildare, had written to the Hon. Robert Boyle a letter, in which he calls gas "the spirit of coal." The manuscript is preserved in the Sloane collection, but was printed in the Philosophical Transactions in 1739. Dr. Clayton enters fully into the method of compressing the inflammable air into bladders from a reservoir, and then pricking a hole in the bladder with a pin, and putting a lighted candle to the opening, which "at once took fire, and continued burning until all the spirit was compressed out of the bladder." And yet it was only occasionally that men of science woke up to test the peculiarities of "the bubbling flame" and "spirit of coal." In fact, it was not until 1792, a century and a quarter after the publication of Shirley's discovery, that the importance of gas was demonstrated, as a means of lighting, by none other than William Murdoch, at the out-of-the-way end of England,—Redruth, in Cornwall. After numerous experiments, he lighted up his residence and office, not forgetting a portable bladder, by which he lighted himself and his carriage as he passed along the Cornish roads. Long after he left the district, amusing tales were told of the Redruth magician and his wonderful light, and the consternation of the natives may be easily imagined, but cannot be described. Removing to Birmingham, Murdoch tells us he constructed, at Messrs. Boulton & Watts's factory, at Soho, "an apparatus upon a larger scale, which, during many successive nights, was applied to the lighting of their principal buildings," by which, he adds, "I may, without presuming too much, claim both the first idea of applying and the first actual application of the gas to economical purposes." This was in 1798, at or before which date he had proposed to Mr. Watt to get a patent, but the actual wisdom of which proposal Mr. Watt did not agree with. Any way, the experiments at Soho cost the firm more than 4,000*l.*, and in March, 1802, at the celebration of the Peace of Amiens, the Soho factory made a general illumination by means of a rod, 40 ft. long, and a burner at each end, which was, in fact, the first public exhibition of gas. Mr. Clegg tells us "The operation was simply effected by fixing a retort in the fireplace of the house below, and then conducting the gas issuing from thence into a copper vase. This was the only gas used on that occasion, the rest of the manufactory being illuminated by the usual small glass oil-lamps, and not with the gas, as has been erroneously stated." As the elder Clegg assisted at this exhibition we suppose he is entitled to speak to the facts.

A year later farther improvements took place at the factory; but it was not till 1805 that anything was done to make gas applicable for indoor purposes. In the same year that Dr. Henry was lecturing upon chemistry and expounding the use of the newly-discovered light, the cotton-mills of Messrs. Phillips & Lee, near Manchester, were lighted up with 1,000 burners. There was, it seems, a bitter rivalry between Murdoch and his pupil Clegg; for the former was experimenting at Phillips & Lee's factory, while the latter was at that of Mr. Lodge. It appears to have been a neck-to-neck race

* See p. 305, *ante*.

and at last, writes Mr. Clegg, "the cotton-mill of Mr. Henry Lodge, at Sowerby Bridge, near Halifax, was lighted with gas a few nights before that of Messrs. Phillips & Lee," the men working overtime, in order to bring about the first lighting up. With this evidence of the practical utility of the new light it is not to be wondered at that London refused to remain much longer in the dark.

It would appear that, by a letter dated Paris, November 8, 1801, addressed to the Soho Factory, a Frenchman, M. Le Bon, "had lighted up his house and gardens with the gas obtained from wood and coal, and had it in contemplation to light up the city of Paris." From him one Frederick Albert Winsor, a German, is said to have derived important ideas, and which to a great extent he carried out in the vacant premises of Mr. M'Kenzie, in Green-street, Grosvenor-square, although, it must be said, Winsor appears to have been deficient in practical mechanical knowledge. However, through many difficulties, he at last succeeded in bringing about very important changes, resulting in his obtaining a patent dated the 18th of May, 1804, in which, describing him as "of Cheapside, London, merchant," he is allowed to exercise and use his invention called "An improved oven, stove, or apparatus for the purpose of extracting inflammable air, oil, pitch, tar, and acids from and reducing into coke and charcoal all kinds of fuel, which is also applicable to various other useful purposes," and by means of which "the inflammable gas or air, being purified from that carbon so pernicious to respiration and dwellings, may be led and conducted in a cold state through tubes of silk, paper, earth, wood, or metal to any distance in houses, rooms, gardens, places, parks, and streets, to produce light and heat." This patent he supplemented by others in 1807, 1809, and 1843, the latter being for special kinds of burners, and describes himself as of Lincoln's-inn-fields, barrister-at-law.

The patent dated Westminster, 7th February, 1809, is of a somewhat remarkable character, for while it fully describes the nature of the invention, there is quite a little history given of the progress made in gas-lighting to that date. Mr. Winsor is described as of Pall-mall, Middlesex, esquire, and the patent is for

certain improvements upon my former patent oven, stove, or apparatus for carbonising all sorts of raw fuel and combustibles, and reducing them into superior fuel of coke and charcoal, as well as for extracting and saving during the same process the oil-tar, pyroligneous vegetable acid and ammoniacal coal liquors, and for extracting and refining all the inflammable air or gas, so as to deprive it of all disagreeable odour during combustion, and rendering the gas itself salutary for human respiration when properly diluted with atmospheric air and various methods of applying the above several products to useful purposes."

His specification tells us:—"The gas-light apparatus consists of two principal parts, the one to carbonise coals, &c., and extract the smoke by heat, and the other part serves to cool, decompose, and refine the smoke. Both vessels must be made air-tight to obtain a perfect analysis of coal or other fuel and combustibles." And he remarks that philosophers have hitherto tried but failed to analyse fuel on a large scale because of the expense and difficulty. "Since my first patent in 1804," continues he, "and my publicly recommending the introduction of coke and gas lights by numerous advertisements, enlarged iron retorts and huge gasometers have been and are now made use of in some manufacturing towns" and, adds he, his present invention is so entirely different to everything yet attempted, that in proof thereof he gives an interesting series of references to all the printed accounts of previous gas-light exhibitions. After detailing his invention in full, he continues, "The gas may be used in ornamental, movable, and flexible branches, issuing from the condensing pedestals, such as has been shown in a great variety at the Lyceum in 1804, in Green-street in 1805, and in Pall-mall since 1806, to the present time. In Green-street, by means of two small stoves placed on each side of the kitchen fire made with coke and one separate condenser, the gas was conducted into the parlour and second-floor above it."

This exhibition at the Lyceum Theatre, Strand,* naturally caused a large amount of excitement, for Winsor not only lectured on the merits of gas, but gave practical evidence of its usefulness, notwithstanding many unfortunate circumstances, such as being connected with assistants not always ready to help him, and the impure nature of the gas itself, the smell of which caused a dislike among the audience, however much they appreciated the light. Even at that time the actual saving in the cost of the old and new system was detailed, for while the old oil-lamp lighting at Phillips & Lee's factory cost 2,000*l.* a year, the new gas light,—and a better light too,—had only cost 600*l.*! Then, again, to show how opinions differed, while the most enlightened chemist of his day, Humphrey Davy, declared that the adoption of gas in the metropolis would cause a terrible explosion, the insurance companies, on the other hand, considered Phillips & Lee's factory so much safer by its use than when candles were employed that they did not object to the system.

It was in 1805 that Winsor started by circular his project for "The National Light and Heat Company," which offered "a mine of wealth in Britain, and would add to the despair of our foes their devices for our ruin." "Two houses are now fitting up as a standard for a general introduction of gaslights now clarified to their utmost brilliance. The 5*l.* deposit will suffice for realising the plan in London and its environs, and all further sums wanting will prove but a *small deduction* from *speedy profits*. The *official experiments* as the basis of my *greatly undervalued estimates* will be repeated to any number of subscribers." He supplemented this circular by several others in 1806 and 1807, in one of which he maintains that his company is of more solid a character than any other, for "it exceeds in benefits the water companies by gaining four valuable products from the destruction of a great nuisance,—that of smoke." He says that three years before, 10,000*l.* were subscribed by one hundred subscribers to form a coke company, "because many of those gentlemen were fully persuaded that my coke being introduced would alone make their fortunes." And, although the nominal sum of 50,000*l.*, in 5*l.* shares, was mentioned for the company's capital, and hints thrown out that over 500*l.* a year could be easily earned by each shareholder, it took much patience and perseverance to make the world believe that the scheme was not a bubble.

However, it was in the year 1807 that London street folk were made to realise the actual progress in gas-lighting, and whatever may have been Winsor's defects in a practical chemical knowledge, he certainly was not defective in perseverance. In that year was exhibited the *first* London street-lighting, and that was in Pall-mall. The new company, which had its offices at Nos. 97 and 98 in that thoroughfare, lighted up one side of the street on the 28th of January, and on the king's birthday, June 4th, both sides. In the evidence given before a Parliamentary committee, it was stated that the length of gas-pipe in Pall-mall was 1,700 ft. in the south side; that the new gaslight was equal to eighteen of the old lamps; that two chaldrons of coal would keep 800 of Winsor's burners a-light for eleven hours; and that adapting a house in the street for a stove would cost 500*l.* The first outdoor experiment had been by conveying a pipe to the top of the house from which issued a single flame, but the novelty of which naturally drew vast crowds. Winsor then proposed to light the whole parish of St. James's, Westminster, for 26,516*l.* This would include 65,500 ft. of iron piping, six stoves in various parts of the parish, with two men and a boy at each. There were 2,200 street-lamps in the parish, each costing 25*s.* per annum. They would be placed 70 ft. apart, the old lamps being from 30 ft. to 40 ft. But with all the dazzling advantages held forth, and six months' elaborate experiments, the public declined to be so sanguine of the success, and as a result, after a loss of something like 10,000*l.*, the National Light and Heat Company came to an untimely end.

From Pall Mall the spirit of illumination extended itself to a less aristocratic thoroughfare, Golden-lane, where, on the 16th of August, 1807, the brewery, and part of Whitecross and Beech streets was lighted up. But although every means was tried to get a favourable reception for the gas, everything failed until 1809, when the Chartered Gaslight and Coke Company, with a capital of 200,000*l.*, applied to Parliament for an Act of Incorporation "for procuring coke, oil, tar, pitch, ammonial liquor, essential oil, and inflammable air from coal, and for other purposes." Of course great opposition met the application from Murdoch, Watt, and others, and a failure of the first attempt was the consequence. But in the following yea company applied again, when special con being incorporated, which stipulated th streets of London, Westminster, and Sout should be lighted cheaper by gas than wi the Bill was passed, and a charter direc be granted within three years. The com however, found out that they had mad calculations, for laying down pipes in minster alone was found to entail an expe 150,000*l.*, while experiments and purcha wharf at Cannon-row would cost at least 4 more. Yet, nothing daunted, they perse and immediately after they obtained the t one years' charter, which is dated the April, 1812, the company purchased si Peter-street, Westminster, Brick-lane, fields, and Curtain-road, Shoreditch, a about making gas in earnest.

It would be impossible for us to all the extrordinary events in con with the introduction of gas into the str London, but we think a few facts lon forgotten may, at this point of our narrat introduced. We think it will interest r our readers to read one of the advertis issued by the company immediately afte first failure to get a charter in 1809. *Thousand Pounds.*—Wanted, Two or Partners, in a most capital and im concern, being the sole establishment kind in Europe, that will bring in from to 20,000*l.* per annum, and more than that sum in a few years. This will be by an exclusive patent during fourteen and is expected afterwards to be farther by Act of Parliament. Each Partn advance 5,000*l.* The concern is so respectable that the first nobleman m honourably hold a share in the face world, it being a public and private b the human race, as well as of very national advantage. Every communica be fairly and candidly given to Principa who may apply by letters (post-paid SMITTMAN, Esqre., and left at 18 Holborn." Even at the present d persons are aware that this interestin tisement related to the first London C pany. That there were some Londone to take advantage of the new light, and the means of advertising themselves, i by several shopkeepers introducing the their shops and using brackets of an a form. The company having laid the from Curtain-road to the City, celebr event by a dinner at the New Londo and gaily decorated the place for the Then, again, a Mr. Gregory, of Norton lighted his shop and house by means o and fanciful devices, among which were in the act of smoking, holding in hi lizard with lighted gas issuing from it a glass Chinese vase, with starli glass chandelier, and two images on th piece of his sitting-room, which naturall in 1813 as much excitement as did t tion of the new electric light at Messrs Shoreditch establishment in 1878. individual to take up gas-lighting in it days was Mr. Ackermann, at No. 101 who in 1812, with Mr. Clegg's assista it in his library, warehouse, printing-o dwelling, by which he saved at leas year. It was during its first exhibit that a lady of title called upon him a a large sum for the lamp, desiring t home in her carriage, not thinking process of producing the flame actu And Messrs. Lloyd, thimble-makers, street, Southwark, used the gas for purposes about the same time. It ma stated that the success of Mr. Clegg lighting up Ackermann's premises caus be engaged by the Chartered Compan neer at their works. "At this time," "the company was nearly on the poin lution, ... lighting a town with still thought a visionary scheme. Sir H Davy considered the idea so ridiculou asked if it were intended to take th St. Paul's for a gasometer? To which replied that he hoped to see the gasometers would not be much less. now (1841) made 100 ft. diameter deep!" What would our famous D said had he lived to our time t gasometer of the Imperial Compan parish of St. Pancras, which is 618 ft.

Like all new things, as it is a p have them condemned before being

* History seems to repeat itself: the electric light, in its new form, was first popularly shown at the Gaiety Theatre.

it was with gas. The company tried overcome prejudices, fitting up houses is free of expense, and instructing Mr. make a particular burner to overcome ruples of the insurance offices. When were being laid down in the passages House of Commons, the architect sug- hat there should be at least 5 in. space them and the walls, under the belief pipes got red hot! while, because manu- did not seem inclined to make welded musket-barrels attached to each other ed! Added to which the company's hich had cost 10*l.*, would not sell for a series of unfortunate mishaps at the d not improve matters by a long way. things and many more made the pro- gas-lighting in London, during the first s, a very slow one indeed.

e the City itself at the date of which we ile things were beginning to assume a equally progressive, there were several in the manufacture of gas perhaps of nterest. Among the ingenious inhabi- Fleet-street was a William Knight, the suggestion of Mr. Frederick of Ludgate-hill, erected an apparatus urpose of making the new light. It readily imagined that the process was greeble one to the neighbourhood, and ntly in May, 1813, he was indicted for ance. Those now living may not be hat these experiments were carried on ar of 183, Fleet-street, Fetter-lane, and nt generation will no doubt smile when the presentments of the St. Dunstan's f the 21st December, 1813, which Mr. oble has extracted from the original and obligingly communicated to us, h is now printed for the first time :—

to upon their oath present William Sturt, of eet-street, in the said parish of St. Dunstan-in- n the said Ward of Farringdon Without, in the r continuing by the space of three months now nd until the day of the date of this presentment, of gaslight, and making and causing to be made e fires of coal and other things for the purpose and upon the premises situate as aforesaid, and nd fires, and also with divers materials, liquids, ations, making and causing to be made, sending emitting thereout divers great quantities of ensive, and stinking smoke, smells, and vapours, hereof the air there during all the time afore- nd yet is, filled and impregnated with divers ll offensive stinks, and smells and vapours, and -houses near the same were and are thereby od become unhealthful, unwholesome, and un- to his Majesty's subjects residing therein, and repassing in and near the same. And is a ance in the said parish of St. Dunstan-in-the- which said nuisance so continued by the said Sturt as aforesaid, one William Knight, the occupier of the said premises, was indicted at of the Peace holden in and for the said City s, and which said indictment stands adjourned."

and Sparrow had already taken steps to the gas-lighting in the City, and the pitched upon for their works was classic ground, — Whitefriars. Mr. his "Memorials of Temple Bar, with ount of Fleet-street," describes fully rical character of the district. Here monastery of the Carmelite Monks, or e Friars, founded so long ago as A.D. d here was the "Alsatia" rendered y Sir Walter Scott. Here in the good s the nobility and gentry did not scorn nd here, upon the very site of the sub- gasworks, stood the celebrated theatres efriars, Dorset Gardens, and Salisbury- he last of the playhouses disappearing

Then the ground was occupied by the er Company for offices, who in turn sold ars. Sparrow & Co., subsequently known City of London Gas Light and Coke ," who, armed with the necessary ommenced here their extensive works urpose of lighting the City.

ristmas morning, 1814, the first public in the City between Temple Bar and end of Cheapside, and Newgate-street n Bars, with all adjacent thoroughfares, gurated, and on the 26th of the following the gas was introduced into the houses s. A public print of the time tells us, chinery and apparatus are most com- nd philosophically arranged. . . . . A light, combined with a steadiness of hich was never before acquired. But works had not been in existence very ore Sparrow & Knight were indicted isance, the old indictment being still their head. They pleaded that they ll making experiments at great cost, ey trusted would prevent further com- nd the cause stood over until January, 1816, upon the understanding that in the mean time all should be satisfactorily arranged,—and the result was that nothing further was heard of it."

After an existence as a private firm for some three years, "An Act for better Lighting the Streets and Houses of the Metropolis with Gas" was passed the 23rd of May, 1817, which incorporated Frederick Sparrow, Henry Sparrow, James Lynn, Timothy Tyrrell, and sixteen others, as "The City of London Gaslight and Coke Company" for a term of forty-six years, giving them power to raise a capital of 200,000*l.*, in 100*l.* shares, within five years, and "to make inflammable air or gas, and also coke, oil, pitch, tar, asphaltum, ammoniacal liquor, and any other products to be obtained from the manufacture of such air or gas, and to sell and dispose of the same respectively in such manner as they shall think proper."

Retracing our steps a few years, we must again quote Mr. Clegg's description of the early days of the *first* gas company—the Chartered. In 1813, his father commenced the works at Peter-street, Westminster. The ground on which they were erected was a swamp nearly on a level with the Thames, and formerly overflowed by the river. It was, therefore, impossible to sink for a tank; an iron one was too expensive; hence the production of Clegg's revolving gasometer, also too expensive for general use. Government inspected the work, and Sir Joseph Banks and others recommended that no gasometer should contain more than 6,000 cubic feet of gas! And it was a great evidence of their supposed judgment when, a few months later, an explosion took place here, shattering the windows in the neighbourhood, and severely injuring Mr. Clegg.

"On the 31st of December, 1813," writes our informant, "Westminster Bridge was lighted with gas. It soon became an object of attraction, and, while the novelty lasted, was a fashionable promenade. The lamplighters were much startled by the new system, and refused to act, and Mr. Clegg had himself to light the lamps for a few nights." On the 1st of April following, the old oil-lamps were removed from St. Margaret's parish, and gas burned for the first time, this being the *first parish* to apply to the company for a contract. Hundreds followed the lamplighter with his torch, and when Mr. Grafton's hand-lantern was invented, it was thought to be another stride in the right direction. Then, later, came the man with box of matches and ladder, and now the only instrument which the lamplighter uses is the "magnetic" wizard-looking wand. Of course, the old oil-lamp contractors complained loudly against the innovation. At one meeting between them and the parish, one of the guardians told them their oil-lamps gave no light. This was, to all intents and purposes, correct; but the contractor had his reply ready. His contract stipulated they were to be kept lighted from sunset to sunrise; but the body of light required was not contracted for! Strong prejudices long continued, and among the earliest battles between the chartered company and the parishes was the right and the power of erecting the lamp-posts. When the allied sovereigns visited England in June, 1814, the gas devices at the illumination were very brilliant. The Chinese pagoda, erected by order of the Government over the canal in St. James's Park, and lighted up with 10,000 gas-jets, was a brilliant sight, and luckily a "private" lighting-up showed royalty its beauty; but, on the night of the general illumination, Sir William Congreve having, against advice, let off some fireworks near it, accidentally set fire to the wooden erection, which burnt the whole to the water's edge. It was very unfortunate for the gas company, who had not the largest number of friends, for a report soon spread that it was all through the dangerous gas. At the banquet on lord mayor's day, in the following year, the Guildhall was first lighted. "The profuse delicacies of the table, the waving of feathers and sparkling jewels of the ladies, the mild splendour of the gas, shedding a brightness clear as summer noon, but undazzling and soft as moonlight,—altogether formed a magnificent combination worthy the inauguration of the presiding citizen of the day." Those who have been eye-witnesses of the lighting up of this fine hall, with its thousands of gas-jets and its long celebrated "Copeland" star in more modern times, will fully believe the City made a step in reform over sixty years ago in substituting gas for the primitive wax candles and oil.

With respect to the general lighting up of public buildings, the poet, Thomas Moore, went with Lord and Lady Lansdowne, on May 6th, 1822, to see St. Paul's Cathedral lighted, and seven theatres were also illuminated the same year, the last to adopt gas being the Haymarket, in April, 1853, the original proprietor by his lease stipulating that only oil lamps should be used. The first church-clock lighted with gas was that of St. Giles-in-the-Fields, 23rd of April, 1827, and its inventor received the silver medal of the Society of Arts. The second church-clock illuminated was that of St. Bride's, Fleet-street; the third, Whitechapel; and the fourth, Islington. We have been told that Shoreditch Church was one of the earliest, if not the first, lighted up in the interior,—it being for a long time thought it would be a profane innovation to allow gas within sacred precincts. As we have already stated, the last outdoor place to adopt gas was Grosvenor-square, and that was just forty years ago.

In 1815, by patent, dated December 9th, Samuel Clegg, the Chartered Company's engineer, brought out his "Improved Gas Apparatus,"—the *first* gas-meter. The "dry" gas-meter was patented in 1834. At the time of Clegg's retirement from the Gas Company, in 1817, their three stations produced 300,000 cubic feet of gas, using twenty-five chaldrons of coal daily; the City Gas Works used three chaldrons, and by computation the whole produced gas for 76,500 Argand lamps, each lamp equal to six candles. In 1819, Messrs. Taylor & Martineau erected an apparatus at Apothecaries' Hall for making oil gas, and in May, 1821, the Whitechapel and Bow Works adopted the invention, as did also Covent Garden Theatre, Whitbread's brewery, and the Argyll-rooms.

Early in 1822 a Royal Commission was issued to inquire into the subject of gas-lighting, and it may be interesting to our readers to have a summary of the facts produced in evidence. There were three companies supplying London. The Chartered, who had fifteen gasometers at Peter-street, twelve at Brick-lane, and six at Curtain-road; total, thirty-three. The City had eight at Whitefriars. The South London (afterwards the Phœnix) had six at Bankside. The total number of the gasometers was, therefore, forty-seven; total contents, 917,940 cubic feet of gas; to make which, 33,158 chaldrons of coal were carbonised, producing 41,447 chaldrons of coke. There were 22,819 bushels of lime used annually in purifying, and the mains (or pipes) covered 210 miles of ground! The Chartered Company supplied 8,749 public lights and 21,886 private ones; the City, 2,413 and 5,423; the Bankside, 1,000 and 3,038. The Chartered supplied 8,586 houses and 172 public buildings, including seven theatres. The extent of ground covered by the three companies ranged from Brompton to Islington, Kingsland-road, Whitechapel, Dockhead, Camberwell-gate, and Marshgate, Lambeth. The South London Company which commenced operations in 1816 in a retort-house at Bankside, subsequently (says Mr. Z. Colburn) occupied by Messrs. Rennie as a boiler shop, was incorporated as the Phœnix in 1824, and afterwards extending their works to Greenwich and Vauxhall. The Imperial was the next company, established in June, 1821, who erected works at St. Pancras, Hackney-road, and Fulham. Then followed in due order of time the Ratcliff, 1823; the Independent, at Haggerstone, 1825; the Equitable, at Pimlico, 1830; the South Metropolitan, in the Kent-road, 1834; the Commercial, at Stepney, 1840; the Surrey Consumers, at Rotherhithe; the Western, at Kensal Green, 1849; and the Great Central, at Bow Common, in 1850-1,—in all thirteen companies owning nineteen works, all of which, except two, were, a dozen years ago, within four miles of Charing-cross. It was estimated in 1861 that they carbonised 882,770 tons of coal annually, making over eight thousand millions cubic feet of gas, which was sold (except one eighth lost by leakage) for 1,411,788*l.* The total capital employed amounted to 5,602,900*l.*; the profit from which, exclusive of interest paid, was stated to be 410,697*l.* At the end of 1874 the gas rental was 2,606,818*l.*, and the thirteen companies supplied gas to 54,109 lamps, running over 2,500 miles of streets, each light equalling a dozen candles. Half a century previously there were 12,000 public lights which cost 15*s.* per 1,000 feet of gas, or nearly four times as much. And another half a century earlier London was compelled to be satisfied with 4,000 lamps,—or something like fifteen times less number than those employed in lighting the London Metropolitan streets in this present year of 1879.

In the year 1827 a great commotion occurred in the City of London, through the report that the Corporation were about giving their contract for lighting to a new company. The Independent and British Companies offered to supply gas 25 to 30 per cent. less than the other company, and give a purer gas. The same principle appears to have actuated the Chartered in 1833, in St. James's, Westminster, who, when opposed by the Equitable, dropped their price 25 per cent. In 1847 the General Gas Act was passed, and in December, 1849, the Great Central Company prayed the Court of Sewers to be allowed to supply the City, which being allowed by deed signed on February 12th, an Act was passed on July 3rd, 1851, upon this condition, that the Company was only to supply the City (the district about their works at Bow being lighted by the Commercial), and never charge more than 4s. per 1,000 ft. There was a wild excitement in the City during the time the new company was battling for the favour, and squibs were flying about in all directions. One of these is before us, and its title reads as promising as its text,—"City of London Gas Bubble! The Reign of Cant and Humbug exemplified in the Career of Jeremy Diddler, late M.P. for Kennington, the Gas Philanthropist, with the Life of Hangus Scum, of Scotia, &c. By the Greatest Writer of the Age."

We have now brought our subject down to modern times. The latter history of gas is well known to our readers, and gas legislation is no new thing in the acts and deeds of our Parliament houses. But, perhaps, of all the doings in connexion with the companies, the great amalgamation by the Chartered Company in 1869 with other companies was the most wonderful. The late Chartered, now known as the Gaslight and Coke Company's works, at Barking Creek, must be considerably the largest in the world. The first pile for them was driven on the 19th of November, in that year, by Mr. S. Adams Beck, the governor, from whom the new home of the London gas manufacture has been named Beckton. We have been told that 250,000 cubic yards of earth were excavated; about 90,000 cubic yards of concrete were filled in, and 40,000 cubic yards of clay puddle. There were 25,000,000 of bricks used, 50,000 cubic feet of stone, 60,000 cubic feet of timber, and 40,000 tons of iron,—the total cost being about three-quarters of a million of money. The total ground area is 150 acres, with 1,500 ft. of river frontage. There are 1,080 retorts, consuming 1,000 tons of coal per day, producing 10,000,000 cubic feet of gas. The pipes, 4 ft. in diameter, are carried from Barking to Westminster underground, a distance of 11¼ miles; and in order to reach the works, which are in the marshes, a road was constructed, 60 ft. wide and about three miles long, to connect the old town with the new. Thus in a few words we have shown that while the company was the first, so it is now the greatest. The old gasworks at Curtain-road, St. Luke's, and Whitefriars have disappeared,—the Corporation of London purchased the latter site for 170,000*l*.,—and their disappearance has not been a grief to the neighbourhood. We should not object to all the other companies' works being removed into the marshes. And yet, seventy years ago, who would have dreamt that the much-abused gas would have obtained uch a hold of the people of London in the latter half of the nineteenth century as it has done? Dr. Johnson was a prophet when he said,—"One of these days the streets of London will be lighted by smoke." What will they be lighted with a hundred,—nay, a score,—of years hence?

THE NORMAL COST OF SCHOOL BUILDINGS CONSIDERED AS AN ARCHITECTURAL INQUIRY.

A correspondent writes to us to ask how far the constitution of the Royal Institute of British Architects would enable that body to exercise an influence on such questions as that now so unsatisfactorily pending between the London School Board and the Local Government Board,—questions that are so seriously connected with the welfare of the building trade. Of course, it is not for a moment intimated that that body, any more than any other architectural referee, can have any opinion to offer as to points on the legal status of which the Attorney and Solicitor General have advised in opposition to one another. All that can be said as to that is, that the greater part of our recent legislation appears to be as vague and contradictory as are the respective rights of the Civil and Ecclesiastical Courts. But under the questions of law, of form, or of procedure, lies a very important architectural question. The body which has been created in order to provide for the education of London has incurred large expenses, and is prepared,—or it may be more correct to say, is desirous,—to incur more, on a basis of cost per scholar which the Local Government Board considers to be wasteful and extravagant. The question is not one of light moment, or one which, supposing it to be settled up to the present year, will not recur. It is one which must be expected to make its appearance, if not annually, at least every four or five years, as long as London maintains its present rate of increase.

The total population of the district of the London School Board, at Midsummer, 1878, was estimated at 3,577,304. The estimated number of children contained in the total, if the ratio in London be the same as the average ratio for England and Wales, was 734,900, between five and fourteen years of age, and 183,600 between three and five years of age; in all, 918,500. Out of this estimated total, 287,616 children attended Board Schools in 1878, of whom 178,173 were under, and 109,543 were over, ten years of age. Taking together all elementary schools, public and private, other than those of the Board, the total very closely approached that of the Board Schools, — being 287,112, — thus yielding a gross aggregate of 574,728 children educated out of a presumed number of 918,500. But in the difference are, no doubt, to be included all the more tenderly-cared-for children of the more comfortable classes, between the ages of three and eight or ten years of age. Nor does it at all appear, from the statistics collected by the Board, how many children under the age of fourteen are educated in schools that are not described as "elementary." The present school accommodation is said to be adequate for 472,921 children. The Board estimate the actual deficiency of accommodation at this moment at 123,296 places, towards the providing of which they desire to provide at once 37,604 places.

These figures, if somewhat vague, are large enough to show the great architectural importance of the question of school provision. If we take the number of children actually educated in the Board schools (which is, perhaps, the only thoroughly reliable figure out of the whole series) as the basis of our calculation, and consider the population of London as continuing its recent rate of increase, and doubling in forty years, provision will have to be made annually for room for 7,000 additional children. It is thus clear that the question of the outside cost per place that should be allowed for building new schools is one of very considerable importance. In addition to all that has been done, and is doing, we must look forward to the steady annual outlay of something like 70,000*l*. in new schools, merely to prevent the children of the classes which now frequent the Board schools from suffering from want of accommodation. And this is entirely independent of the question whether 1,230,000*l*. or more is not at this moment required to make up the accommodation now actually needed. If this be so, as the School Board intimates, the 70,000*l*. per annum of future building outlay will be raised to above 100,000*l*. per annum.

This being the case, it is clear that the question of allowable cost per head is one of very great public importance. It is, in the first instance, an architectural question; from a second, but no less important, point of view, it is a ratepayer's question. Accusations of extravagance, we regret to observe, are somewhat freely bandied about. It would be more to the point if the disputants would provide such figures as would enable public writers or professional authorities to speak distinctly on the subject. The Education Department state, in the letter of Mr. Patrick Cumin, of March 25th, that the estimates submitted to them by the School Board for the buildings (which appear to have been put in hand contrary to the warning given by themselves) were not approved. We cite this, not as bearing on the questions which lie outside our line of inquiry, but as a proof that the superior authority regards the School Board as too costly in its plans. On the other hand, the Board of Works for the Westminster District have held a special meeting "for the purpose of considering the extravagant administration of the London School Board," and have carried a re
implying the adoption of that charg
very same number of the journal that
the above facts contains also the admi
the Finance Committee of the Schoo
that hitherto cheques for the purchase
have not been paid to the vendors
agents, but made out to the order of the
of the Board. This is, to say the least
very loose way of doing business. A fe
further down comes a debate as to
incurred by the Industrial Schools Co
in fitting out the *Shaftesbury* training
and a resolution complaining that
liabilities had been incurred by the co
without the previous sanction of the Bo

Now all this is very unfitted to
public confidence. If we may be all
opinion, the vice lies not so much in
of zeal or of good intentions on the pa
School Board, or of any of the conflictin
rities, as in the attempt to settle pra
questions by amateur judges. We k
there is a very strong feeling, on the
individual architects, as well as of
against anything that may tend in an
limit their free personal responsibili
interfere between them and their clien
when the public is a client. But we
those interested whether the dignity
ence of every architect, as a membe
profession, would not be enhanced, raf
diminished, by his giving a hearty
that kind of corporate action which, if
time, would have been enough en
prevent such costly disputes as those
we have referred?

On the occasion of the introduction
feature into our public institutions, in
large amount of building of a me
character, how much contest would
avoided by the prescription, in the first
of normal professional regulations. T
case of schools, the elements of cubi
be allotted per scholar, and of the
scholar at which, on certain condition
but not ornate building, that space
provided, ought in the first instance to
mined. As to this, the cost of land,
is an element out of the power of the
to control. But, on the other hand,
ought to a certain extent to control
bution of the building. When th
extremely costly, as in central pa
metropolis, a greater expenditure on fo
and in the thickness of the walls, m
true economy, as enabling the archite
in vertical measurement some of th
which he has to pay so highly per ya
Thus regarded, the keeping down
the building being a *sine quâ n*
economic balance between the heigh
ares of a school might be struck.
now offering an opinion as to the p
to be allowed per sitting. That is pr
point on which we think that full p
discussion is desirable. What we a
as far as possible, to see carried out i
discussion should be conducted to a
issue, and that such issue, stampe
authority of the general assent of the
should be held to be decisive as to su
as that now in dispute between
Board and the Local Government B
the propriety of the estimates adop
least recommended, by the former.

We have taken, in our preceding c
the price of 10*l*. per sitting as the
of an elementary school, not from a
prejudge the case, but as affording
mate mode of stating it. We think
correct in saying, however, that this
which the Local Government Bo
should not be exceeded. That may,
(without further information) be a
It is one as to which the Local G
Board can only form a second-ha
that is to say, that they must adop
in the opinion of their own adviser
On the contrary, the School Board m
equal confidence in their own adviser
be of opinion, in the same second-ha
that 12*l*. or 15*l*. per scholar is a pr
ance. What we see then is, two unp
and, as far as the point of issue is
amateur, bodies, who are really figh
public cost, the battle of two advis
sets of advisers, who are not brou
foreground. This, we think, is as unfo
those advisers as it is for the board
for the public. In providing half

a difference in normal allowance of a
er sitting means half a million of public
more or less wasted. This is not a
to decide in the dark. It is one on
ost architects of a certain experience
ave something to say. Possibly they
ot all say the same thing. If so, that
ve that the case is one of those rare
s in which it is true that in the multi-
counsellors there is safety. It is
le that an open discussion, among
of such a point as the proper cost of a
o be built with public money for
ry scholars of the humbler classes in
should fail to arrive at a very definite
The least that it could do would be to
certain classes of building, as to archi-
finish and ornament, for which a
rice per cubic foot should be paid.
no means assert that such should be
in all parts of London. While we
hat a frugal simplicity is called for in
dings, it is quite possible that a certain
to the architectural character of the
may be desirable, and may raise the
ore costly neighbourhoods. That, how-
ne of the points as to which consulta-
equired. It would be a very happy
r our metropolitan architecture if a
hich is very discreditable somewhere,
ome persons, whoever they may prove
ould lead to a greater unity among pro-
men; a greater deference paid by each
of the learned profession to the profes-
hich he is a member; and, above all,
reprobation of the dangerous fallacy
a matter of taste, or a point of inso-
iculty to decide, whether free schools
e built at 10*l.* or at 15*l.* per head, or
the largest sum that can be squeezed
e public pocket should be made to pro-
he accommodation of 400,000, 500,000,
0 children. Something like the latter
appears, as far as facts are accessible,
point now at issue.

t be obvious with how much more
the professional adviser of such a
he School Board would be clothed if
able to refer to accepted professional
in any other case. "It is the opinion
rofession," he would be able to say,
put on record, that for the pur-
elementary schools a simple design,
t resembling that erected at such a
sually adequate, and that buildings on
e and principle may be erected at so
r seat. On the other hand, when cir-
es call for something of a more orna-
nature, let me call your attention to
of buildings represented by so and so.
of that style is about so much per seat.
ecide on the degree of ornamentation,
to the locality, for the buildings now
sideration, I will prepare the designs
dance with your decision." The posi-
he architect, in such a case, would be
ble. The decision of the Board would
ed to a definite issue, as to which each
might be called upon to give a reason
te. The question whether the accom-
of the children of the poor should be
r otherwise would not be settled by a
or by the fact that Mr. A. was an
for Palladian and Mr. B. for Cinque-
hitecture. If a Board wished to pay
spective they would have to do so with
s open. We apprehend that a manifest
and that not at all involving what is
r unseemly, would be the result of this
f putting the right saddle on the right

be added that, as far as any Board of
sional men is concerned, the only safe-
at they can have as to keeping within
e cost is first to prescribe the expendi-
then to entrust to competent archi-
design and execution of buildings on
ite basis. To receive plans and esti-
all very well; but it is a proceeding
s the experience of all public works
s anything but certain as a mode of
g expenditure. Even if actual con-
e entered into, the question of extras
ays be an open one, and one as to the
nt of which, without injustice either to
itself or to the builder, a body of em-
an only be sure that they are not likely
unexpected expense, by adopting, in the
ance, such rules as we have above indi-
In a word, when buildings of great cost
nitude are to be erected, at the public expense, it is by fitting the design to the money to be laid out, and not by selecting a picturesque or otherwise meritorious design, and endeavouring to execute it at a given estimate, that the true objects of utility and economy can alone be with certitude attained.

OUR ANCIENT MONUMENTAL CHAPELS.

The case now pending as to the ownership of the Fitzalan Chapel, attached to, or forming part of, the parish church of Arundel, is one of no slight moment as regards the protection of many of our most interesting ecclesiastical monuments. As to the individual case, pending its decision, we must of course say nothing that might be thought likely to intimate, or to affect, the course on which legal acumen will finally decide. But though differences of a religious nature have in this case precipitated a conflict, it will be well that the state of the law should be made clear with reference to all similar claims. Some of the most interesting architectural relics in England are either tombs in churches, or mortuary chapels, in or attached to churches of different grades, whether parochial, collegiate, or cathedral. We may instance the beautiful chapel of the Countess of Richmond, to the north of the chancel of Christchurch abbey church, but under the roof of the chancel, as to which there has been some recent question. Another very interesting chapel is that of the Bedford family, attached to, and opening into, the parish church of Chenies, Bucks, but quite independent as a building. This chapel is rich in monuments, reaching back to the time of Queen Elizabeth, and indeed, as regards some effigies, to the Crusades. The care of the excellent rector, Lord Wriothesley Russell, which has repaired and beautified the church, has only continued the family tradition of the reverent custody of the chapel. But no question could arise in this case as to the use of this consecrated building for parochial purposes. A like remark may be made as to the mortuary chapel of the More family (now fallen to the spindle, and represented by the More-Molineux family), at Guildford. In the building of the new church of St. Nicholas, to which this chapel is attached, a pierced screen, with the openings fitted with plate glass, allows the interior of the More Chapel to form a part of the visible interior of the church, without in any way opening the private freehold of the More-Molineuxes for parochial usage. A singular effect has at times been produced by this introduction of a novel material in ecclesiastical architecture, plate glass. In certain states of the atmosphere, probably when dew forms on the back of the thick plates in the more chilly atmosphere of the chapel, the lights of the chancel, and the surplices of the choir, are reflected on the chapel screen; and a ghostly service in the More mausoleum appears to accompany the vespers of the church. As the choir leaves the chancel, the whole chapel becomes alive with a multitude of departing forms.

Again, we may cite the Darrel Chapel attached to Ramsbury Church, but not under the roof of the nave, as to which we are happy to have been told that some remarks in our columns some years ago have led to the removal of at least the most prominent marks of neglect and disrespect to which we formerly alluded.

In all these cases there has been, in the first instance, the same motive, although that motive has been carried out in two somewhat different modes. The motive was to secure the repose of the remains of the founders or benefactors of churches or chantries beneath the consecrated roof, with a view, in most cases, to the performance of religious services for the souls of the departed. Whether we take an external chapel, as the Darrel Chapel, or an internal one, of which we have well-known examples at Westminster, the building was a chantry, with its own altar, piscina, and often priest, attached. The rules of the Church of Rome are not adverse to the erection of different altars under the same common roof, or to the contemporaneous performance of mass at the several altars.

With the change in the rite introduced at the Reformation, the separate services of all these mortuary chapels came to a close. The intentions of the founders of those which were built in, or as prolongations or extensions of, cathedral or parochial churches were, however, so far respected that such chapels have since that time been maintained as parts of the edifice of the church. Certain family rights may have still been reserved, as in the case of those of the Dukes of Northumberland in the Percy chapel in Westminster Abbey. But while the Percies claim the right of sepulture, the chapel forms an integral part of the abbey. It is under the guardianship of the Dean; and if required for any portion of the ordinary service of the church is at his disposal as much as any other part of the sacred edifice. And this is only one out of several chapels, in this abbey alone, including the Chapel of St. Edward.

Here, then, seems, to be a good reason for the opinion that no exclusive proprietary right can be held to exist in ancient chapels which have become portions of parochial or cathedral churches by the long prescriptive usage of opening into them in such a manner that one service may be common to the chapel and the rest of the church. Protection has been accorded, in times when protection was needed, to buildings of this nature which are so attached, while others of no less antiquity and beauty were, in many instances, ruthlessly swept away. The rite of the Reformed Church has preserved the chantry tombs of ancient benefactors. On the other hand, that retributive respect is due to the site which should forbid the attempt to show it the disrespect of attempting a fresh severance of the chantry chapels from the churches, now that there is no especial danger attaching to their isolated existence. Such, we take it, is the verdict of true reverence, and the opinion of true taste. We shall look with interest to see whether such is also declared, in the case of what has long served as the chancel of Arundel parish church, to be the law of England.

In all these and the like questions, public policy declares that property has its duties as well as its rights. It has taken long and persevering effort on the part of Sir J. Lubbock and his friends to interpose some slight check (as to which he has our heartiest goodwill) on the ruthless barbarism which has, within the last century, swept from the ground so much of priceless value, including monumental relics at Avebury. It cannot be admitted,—even if it prove to be law it is not right,—that any individual or family should have the power, not only to use, but to destroy (or to ensure the destroyal by neglect of) what are, in fact, national monuments. The sanction of hoary antiquity should be respected even by those who do not regard the consecration of the church. When this is not the case, the nation should make its voice heard. If it be made, as it has been made by direct legislation, a crime to destroy testamentary papers, how much more may the law be called on to forbid the wanton, or the heedless, destruction of the yet more precious testaments wrought in stone and tabernacle work by our ancestors? Nor can it be denied that the attempt to withdraw from the use of the public service of the Church chapels and chantries which, in fact (whatever be the case in law), have long formed portions of the sacred structure, is a proceeding somewhat akin to the destruction of ancient monuments.

We would put it to the Duke of Norfolk that it is doing an ill service to his own fame, not to say to his own faith, to oppose to the good work of erecting the cathedral of St. Philip the not good work of attempting the disfigurement of an ancient church, venerated by his ancestors, and of which the existing rite is followed, not only by the majority of his countrymen, but by a noble branch of his own house.

Coal Shipping Machinery.—Mr. Graham Smith, C.E., of Westminster-chambers, has recently invented and patented an apparatus for shipping coal which appears to have much to recommend it. An ordinary coal-train as it arrives on the quay is composed of every description of wagon, and the coal-hoists as at present constructed cannot deal with these without a considerable amount of sorting and arrangement of trucks on the quays. This involves labour, and the maintaining and working of many points, sidings, and turntables. Mr. Smith's apparatus dispenses with these, and is understood to be capable of discharging an ordinary coal-train as it arrives on the quay. He simply brings a line of rails parallel with the coping line through his machine, and places a turntable on the rising and falling platform. Consequently, it does not matter at which end the wagon tips, or in what position it is run on to the machine.

A COLLECTION OF REPORTED DECISIONS RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Our columns frequently contain reports of litigation arising out of building contracts, and we are frequently asked for information upon points in which some legal decision is involved We therefore considered that it would be of use, or at any rate of interest, to our readers, if they could possess a short epitome of the decisions which have been reported since the year 1756 concerning architects, surveyors, and builders. There are, of course, numerous cases to be found involving principles affecting these classes of persons in which architects and builders are not actually concerned. With some exceptions, which are much to the point, such decisions are not included in this collection. It thus almost entirely contains only cases in which architects, surveyors, or builders have been immediately concerned.

Mr. E. S. Roscoe, barrister-at-law, has undertaken to execute this work for us, and to add a few short notes explanatory of some of the decisions.

CERTIFICATES.

When it is stipulated in a contract between a builder and a house-owner that payment shall be made after the architect has certified that the works are properly completed, it is a condition precedent to the establishment of a claim by the builder against the house-owner that such certificate has been given by the architect.—Morgan *v.* Birnie, 9 Bingham, 672 (1833).

[Confirmed in 1850 by Milner *v.* Field, 3 Exch., 829; 20 L. J., Ex., 68, in which it is stated that even if the certificate is withheld by fraud, the builder cannot recover against the house-owner if he pleads the fact that a certificate has not been given, but that the builder has his remedy by an action for damages; but this is not in accordance with Batterbury *v.* Vyse, 2 H. & C., 42; 32 L. J., Ex., 177.]

The architect may certify by word of mouth, unless the contract between the builder and house-owner expressly stipulates that the certificate shall be in writing.—Roberts *v.* Watkins 14 C. B., N. S., 592; 32 L. J., C. P., 291 (1863),

A certificate that the work has been done in a satisfactory manner means a document or expression which states this fact, directly or indirectly; and a letter from the architect, merely enclosing a builder's account checked by him, is not a certificate.—Morgan *v.* Birnie, 9 Bing., 672 (1833).

An architect's certificate is valid without reference being made in it to the amount that may be due to the builder [unless there be any special provision in the contract that the amount due shall be stated in the certificate].—Pashby *v.* The Mayor and Corporation of Birmingham, 3 C. B., 2 (1856).

When it is stipulated in the contract between the employer and contractor that a written order must be given for extra work, and no such written order is given; yet, if the architect at the end of the engagement makes a certificate allowing such extra work, it is conclusive and final, unless his conduct has been fraudulent.—Goodyear *v.* Mayor of Weymouth, 35 L. J., C. P., 12 (1865).

Certificates given during the progress of the work in order that interim payments by way of advances may be made to the contractor by the employer are not final, but are merely statements of the weight, &c., and contract price of materials on the ground; and the payments made under these certificates are altogether provisional, and subject to readjustment at the end of the contract.—Tharsis Sulphur Co. *v.* McElroy, 3 App. Cas., 1040 (1878).

[This and the preceding case when read together seem to contain in a short form the effect of certificates in regard to written orders for extra work. Compare also Lamprell *v.* The Billericay Union, 18 L. J., Ex., 283 (1849).]

When a builder brings an action against the house-owner for sums due in respect of work done, and the architect has certified for a sum less than that which is claimed, the house-owner must plead the fact of such certificate having been given in an action at law, and not seek an injunction to restrain the continuation of the action in the Chancery Division of the High Court of Justice.—De Worms *v.* Mellier, 16 L. R., Eq., 554 (1873).

When an architect fraudulently, and in collusion with the house-owner, withholds a certificate that the builder has executed his work in a satisfactory manner, such builder, if the architect has made the contract with him as agent for the houseowner, can sue the architect for damages.—Ludbrooke *v.* Barrett, 46 L. J., C. P. D., 798 (1877); 36 L. T., N. S., 616.

[The principle of this judgment would seem to be applicable to a case where the houseowner, and not the architect, had made the contract with the builder if fraud could be proved against the architect. See next case.]

The builder may under similar circumstances sue the architect, even if the contract were entered into with the house-owner and not with the architect.—Per Coleridge, C. J., Stevenson *v.* Watson, W. N., March 22, 1879, p. 52.

The builder may bring an action against the house-owner for the sums due to him for work done, though the architect has not given a certificate, if such certificate has been withheld by the fraud of the architect, in consequence of collusion with the house-owner and by his procurement.—Batterbury *v.* Vyse, 2 Hurl. & C., 42 (1863); 32 L. J., Ex., 177.

[Cf. Scott *v.* The Corporation of Liverpool, 1 Giff., 216, where, since no collusion or corruption was proved, the suit by the contractor against the corporation was dismissed; and Bliss *v.* Smith, 34 Beav., 408. The principal decision is further confirmed by a dictum of Erle, C.J., in Goodyear *v.* The Mayor, Aldermen, and Burgesses of Weymouth, 35 L. J., C. P., 12.]

When the conduct of the architect has not been discreet, impartial, and fair, in giving certificates, so that the builder is a loser thereby, the latter may bring an action against the house-owner for his charges.—Pawley *v.* Turnbull, 3 Giff., 70 (1861).

[The following was the form of the decree in this case:—"It appearing from the evidence that the defendant Hay (*the architect*) acted improperly and unfairly in the exercise of the powers conferred upon him by the contract in the pleadings mentioned, declare that the plaintiff is entitled to recover from the defendant Turnbull (*the house-owner*) the full amount of 2,590*l.*, the contract price, and the sum of 190*l.* for extra work."

It will be observed that in this case certificates had been given, but that they were not fairly made; in the previous case of Batterbury *v.* Vyse the certificates had been withheld altogether.

It is scarcely necessary to observe that if similar conduct in the architect had been proved which was injurious to the house-owner, and the architect had given certificates which showed more money due to or work done by the builder than was in fact the case, the house-owner, on the principle underlying these decisions, would be able to bring an action against the architect for any losses sustained thereby. It is also to be noticed that the case of Pawley *v.* Turnbull, *supra*, is not very easily reconciled with that of Clark *v.* Watson, 18 C. B., N. S., 278; 34 L. J., C. P., 148 (1865), which was an action by a contractor against his employer for the amount of his charges, and it was averred that the work had been properly done, but that the surveyor "had wrongfully and improperly neglected and refused" to certify. The Court held the allegations were not sufficient to entitle the plaintiff to succeed. It would appear, however, that the Court did not consider the word "wrongfully" equivalent to "fraudulently." But in Pawley *v.* Turnbull there was nothing actually fraudulent, that is, deceitful, but merely the grossest unfairness towards the builder of an open character, a plain violation of duty; considering, however, that the rules of Equity are now to prevail in all the courts,—the doctrine of Pawley *v.* Turnbull,—which was decided by the Court of Chancery, would seem to be the governing principle rather than the narrower rules Common Law.]

When an architect carelessly and negl performs the work required to give a cer so that the builder does not receive all properly due to him, he cannot bring a against the architect if no fraud is all Stevenson *v.* Watson, Weekly Notes, Ma 1879.

[It is believed that this case will go be Court of Appeal, so that the above is a definition of the law, subject to the dec the Court of Appeal.]

THE RIGHT OF WATER COMPANI STOP THE SUPPLY OF WATE

There is, probably, no doubt that t certain number of years, the m and most of the large towns in Engl manage their water supply through the cipal representatives. This, as many readers are aware, is already the case i to Birmingham and Liverpool and so towns, and it is obviously the right that the municipalities should contro portant a branch of town work as the water for domestic and public purpo saying this it is not to be assumed necessarily approve the Bill promoted by the Metropolitan Board of Works, b our minds, apart from other object Metropolitan Board of Works has enough to occupy it without taking burdens on its shoulders, nor is it a rea sentative body, subject to the direct the public in the same way as the body of a great provincial town such pool. While, therefore, we in London inhabitants of other towns are still upon water companies for our supply water we use, it is of importance pass without notice any decision conne the relative rights of water companie public in connexion with the supply especially for domestic purposes.

Quite recently a decision of some i has been given by the Common Pleas of the High Court of Justice upon thi in the two cases (tried together) of th Waterworks Company, appellants, *v.* respondent, and the Same *v.* Corbric case at present is only briefly noted in t but the main point of the decision apparent, and we should add that bot really identical. By section 74 of works Clauses Act, 1847, 10 & 11 Vic is enacted that "if any person sup water by the undertakers (that is, company), or liable, as herein or in Act provided, to pay the water-rate, pay such water-rate at any of the sa payment thereof, the undertakers company) may stop the water fro into the premises in respect of w rate is payable, by cutting off th such premises, or by such means dertakers shall think fit, and ma the rate due from such person if 20*l.*, with the expenses of cutting off and costs of recovering the rate, i manner as any damages, for the which no special provision is made, able by this or the special Act; or if due amount to 20*l.* or upwards the may recover the same, with the e cutting off the water, by action in a competent jurisdiction." Now, in re section we may say that we questio this principle of allowing a company water from premises at all is right o It must be borne in mind that it is power to intrust to a company supply with one of the necessaries of life, a be remarked that by stopping the water the health of a whole hous even of a neighbourhood, may b Further than this, it is not as if paid for water according to the a sumed, as gas is paid for by the m Thus a poor man may say tha he is strictly economical with his that, in fact, a company are cutting supply, because he cannot pay a great deal more water than he ac It may be answered to this that if not or cannot pay for an artic consumes by using, the supplier of is in no way bound to give him

paid for that which he has already con-
. But it is obvious that water does not
on the same basis as other articles of
se. It is in effect a natural element open
use of all mankind, and which, by the
cies of modern civilisation, must in town
plied by some artificial means and by
hird parties. A woman in a country
may go to the village pump a dozen
n the day, and she pays nothing for the
but the same person in a town is mulcted
year in a certain sum before she can
what her country sister obtains without
And it is not in principle the actual water
ich the companies make a charge, it is
cost of bringing the water to the house-
s door with a certain margin of profit
uch work as an industrial undertaking.
hould it be forgotten that water com-
have full power to obtain the payment
r rates by proper legal process, and we
it is impolitic to place such arbitrary
in the hands of companies whose officials
ely to use them often without discrimi-
as the case which we are now discussing

these observations we will now proceed.
occupiers of the two houses in question
ilarly to those who were the litigant parties
present case had failed to pay their rates,
nsequently, under the 74th section, which
e already set out, the company cut off the
supply. Then the new tenants (the
s in this case) very naturally did not see
tice of paying the arrears of rates not
m them, and claimed, upon tendering the
which would become due from them, to
e water again supplied to their houses.
owever, the company refused to do, and
on the new tenants summoned the com-
before the stipendiary magistrate of
d for penalties for neglecting to supply
to their houses after the rates in respect
new supply had been tendered. The
of the tenants arise out of section 43 of
already mentioned, and so far as it is
al to this point it runs as follows:—"If
dertakers (the company) neglect or refuse
ish to any owner or occupier entitled
his or the special Act to receive a supply
r during any part of the time for which
es for such supply have been paid or
d they shall be liable to a penalty of
d shall also forfeit to the Town Commis-
and to every person having paid or
d the rate, the sum of 40s. for every day
which such refusal or neglect shall con-
fter notice in writing shall have been
o the undertakers (the company) of the
f supply." The magistrate decided in
of the persons whom we have called the
cupiers, and against his decision the com-
ppealed. Now, we said in commenting
propriety and justice of allowing water
ies to cut off the supply, that it was a
iable to be misused, and we venture to
hat this is a real example of an abuse of
raordinary powers vested in the water
ies in this respect. It is really wholly
because A has not paid his water-rates,
who succeeds him in his tenancy shall have
r until he has paid the debts of A, a total
r to him. There is no likeness between
ccession and that, say, of a son succeeding
estate of his father. There a just legal
le compels him to pay the debts of his
, for the man, says the legal maxim, who
s the benefits must also bear the con-
nt burdens. It would really be a waste
to argue this point further, it is so
ly clear. When, however, the case
efore the Common Pleas Division, the
decided that there was no power in the
works Clauses Act by which the company
e compelled to put on the supply again,
ey therefore reversed the decision of the
rate. It is added, however, in the report
case, which, as we have said, is yet only
note, that "the Court, however, ex-
an opinion that the appellants (the
ompany) had no right to withhold the
of water until the arrears of rates had
aid." By this, we presume the Court
hat if the supply had not been cut off
at it could not be stopped as against a
ccupier, if he did not pay up the
due from his predecessors; because
company had no right to keep
ply stopped in respect of the arrears due
he last occupier, the decision of the
rate was right. In regard to the correct-
ness of this decision, regarded from a legal point of view, we do not propose to say anything. But it is obviously a hardship that one occupier of a house should be compelled to pay the debts of his predecessor, who may thus snap his fingers at his creditors. Nothing, in fact, could be more obviously unjust. But the point is one worthy of consideration by those who are concerned with houses, as is also the whole principle of stopping the supply of water in case of the non-payment of water-rates.

THE ESTABLISHMENT OF A NATIONAL THEATRE.

It cannot fail, we feel sure, to have surprised a very large number of the persons who in the present day take a genuine interest in the popularisation of the arts, that there should exist more than one opinion regarding the necessity for the establishment of a National Theatre in England, similar to that which France has for so many generations enjoyed, and which is so well known to the world as the "Théâtre Français."

In the public expression of these views, few opinions for and against the project are more entitled to our esteem and attention on such a subject than those* of Mr. Planché, a name endeared to the whole artistic world by old associations. More than half a century since, Mr. Planché was positively the first Englishman who gave to the world in a tangible and consecutive form the correct authorities from which stage-managers could place on their boards the historical characters immortalised by Shakspeare, in costumes such as inquiry shows us were worn by the men of the days represented. And who that has passed more than middle age cannot recall the early classical plays of Mr. Planché, which afforded a thorough enjoyment to the most critical, and which could not fail, were they now revived, to please the correctly fastidious. Such an authority, therefore, as Mr. Planché should be listened to even in the merest point of detail, and in carrying out the project of the establishment of a National Theatre, the name of J. R. Planché should stand by acclamation at the head.

Still, may we not be allowed to differ in respect to the opinion that Mr. Planché and others have expressed, that the first great difficulty connected with such an institution it would not be easy to overcome?

To attempt at once to obtain Parliamentary interest and a grant for such a purpose would be, indeed, a difficulty at the present time almost insurmountable; but how many enterprises have been carried to a point approaching perfection long before it has been deemed necessary to secure the protection or the aid of the State?

The Royal Academy of Arts, although strictly instituted under royal patronage, with the understanding in its early years that the State would supply its pecuniary wants, has never received any assistance beyond the use of galleries free; and from its very first year of inauguration, more than a century since, has been completely self-supporting. In the society of those days a few earnest men, like all of us, it is true, with different views, and one or two discontented members, formed an association amongst themselves, which has arrived at a position which, in spite of repeated opposition and some shortcomings, yearly increases in importance.

There can be no reason why a dramatic society with aims the most ambitious, should require, in its early days of formation, any very large funds to soon place it on a proper level, a level which, with success, could be easily raised; in fact, any very large amount at the outset of such a society would most probably be fatal to its prosperity. The results that throughout ages have been arrived at from small beginnings are scientifically and morally proverbial; and surely, if a society like that of the "Arundel," or several other similar associations, commencing by a few subscribers of a guinea each, have contrived to supply not only their members, but the world at large, with such numerous reproductions of noted works, why should not a dramatic society, commencing with small but adequate means, hope some day, by proper management of its affairs, by judicious conduct in council and committee, by strict economy and watchfulness in all matters of detail, by the avoidance of erroneously calculated large gains, and by a sincere desire for the promotion of the best art, hope in time to arrive at a condition which might place an English theatre on an altitude as high as that at which the Théâtre Français arrived in its best day? And let those who have but little idea of how high the altitude must have been visit, as often as they are able, the performances of the company of the Théâtre Français that London society is about to enjoy during the next coming months.

The simplest, at the same time the most severe, reproach that any competent French critic brings against our stage, and against all our art, is, to use their own untranslateable expression,—one that we in the present day of desire for preserving ought certainly to appreciate,—our want of a *conservatoire*. Now, if by carrying out in some way the proposition for a national theatre, we can arrive, no matter in what time, at something like what is understood by a *conservatoire*, the gain to the future would be incalculable.

At the same time, it must be fatal to such an undertaking, as it is fatal to all art, that the first thought should be,—"Is the thing likely to be a commercial success?" Of course, if a national theatre is to be projected with the idea that it is at any time to realise the enormous gains that we are told certain dramatic performances occasionally secure, that would be entering into competition with the business of the dramatic world, which of late years has been so much mixed up with other interests that it is almost impossible to scientifically separate the component parts.

One point it would be important for the society always to bear in mind, that however humbly it might commence, it should look forward to a future as much as possible resembling the famous Théâtre Français, with the ends and aims of which all those interested in theatrical matters must be perfectly acquainted.

But as such a project, to work easily, undoubtedly requires the command of a large capital, the society could only hope in the first place to try how far there exists a sufficient proportion of the English public who desire to see day by day, and night by night, the realisation on the stage of the best dramatic works.

The first performance of a society commencing in this way might take place in some small theatre hired for the occasion; the press alone, after the first performance, would furnish a mass of information and a statement of opinion that would be invaluable, giving the project at once a popularity that could not fail to secure it in the first place the necessary pecuniary means of subsistence.

If the already existing provisional committee could form into a society sufficiently strong, how perfectly delightful might not even its beginnings become, the members all impressed with this idea, at least, that a theatrical library (that at the French theatre is famous) is an essential; that absolute correctness in every matter of historical and social detail in the scenery and the costume should be observed in the production and performance of every play; that those actors only should be required to take any share in the society who are fully impressed with the conviction that by work, by practice, and by study alone, is any good art to be acquired; that absolute obedience to the managerial portion of the undertaking is necessary; and that ability may be shown as easily in the minor parts as in the principal characters. With such an understanding and accord between the members and those they engage to assist them, the possibility of any unseemly disagreement which some critics, with reason, bring forward as a fatal objection to such an undertaking, would be reduced to a minimum.

In connexion with the society should also be established a dramatic school, or *conservatoire*, on principles resembling the French *conservatoire*. Schools of this nature exist in every country on the Continent. The want of them leads to such erratic and unforeseen results in England on the professional ranks. From this school, after an examination for entrance and a succeeding period of technical dramatic instruction, the actors and actresses might be drafted off on to the stage to fill those parts for which their special talent and study may have fitted them. Competent traditionalists in dramatic matters are to be found in every country, and by the foundation of such a *conservatoire* it would be strange if a somewhat higher standard of dramatic taste than now exists would not be fostered.

* See *Builder*, p. 302, *ante*.

The complaint has with reason been made, that in the present day our rising actors and actresses neglect the older and more Classic plays and their delightful traditions for the fascinations and apparent ease of the modern dressy comedy.

Should the society in the course of a few years be able to point to even one actor or actress of genius who had been fostered by their training, it would be no small matter of pride, while on their own boards the society could (as in the Théâtre Français) invariably ensure a first-rate company, with from time to time a genius with an enormous ability for work.

As a minor detail, but one which merits attention in studying to bring before the public some explanation of the plan of the National Theatre, we would venture to submit that the precedent established long ago, and strictly adhered to by the French Theatre, might at first be followed, in the absence of an orchestra. That for the performance of the really artistic drama equally artistic music is necessary is evident; but the expense of such an orchestra, as all professional persons know well, is not small, and the sum which would thus have been appropriated might be more usefully devoted to the careful production of the pieces.*

With the proposal that the scheme of the National Theatre should be commenced on a small scale, and therefore more easily rendered perfect in its details, and then, judging by the reception if the plan meets with public approbation; with the further suggestion of the establishment, in connexion with the society, of a dramatic *conservatoire* on correct principles, it is more than possible that the existing opposition to the scheme will be considerably lessened, and in course of time that England will be able to boast the possession of a National Theatre, powerful only for elevation and delight.

* By the absence of the orchestra several lines of stalls are also gained, an advantage which more than one theatre in London has been quick to understand.

DERBY.

The great emporium of the Midlands unites the dignity of age with the vigour of youth: its history is ancient and honourable, and its growth has not ceased, but taking advantage of its position it has become the heart, if not the brain, of a vast and rich district. It is the Issachar of towns, which has seen that the land is pleasant, and has bowed its "shoulder to bear and become a servant unto tribute." Its past has benefited greatly from the great railway system with whose fortunes its own are so largely interwoven, and with whose prosperous present it has also prospered. Into the troublous past it is needless to peer. Derby is now, emphatically, an industrial town, and there is no need to revert to the legends of church building at the time of the Conquest, to the schools founded in the reign of the second Henry, nor to the brawls of generations resolved long ago into their elemental dust. Since the days when the silk manufacture was planted there, and the original silk-mill began to exert its influence on the commerce of the district and even of the country; from those wherein porcelain manufacture was introduced, the "white biscuit" of the town first known, and the trade of the town began to widen and broaden, the future of Derby has been one of almost uninterrupted growth,—not only in bulk, but in all the essentials of towns, and in some which are deemed accompaniments, but should be none the less necessaries.

Let us look at Derby as it was a little more than forty years ago, and then contrast it with what it is at the present time, and we shall see not only the extent but also the nature of the growth. In 1833 Derby flourished, but in a miniature method to what it now does, for the facilities of traffic and travel were of the olden type. Silk in various shapes formed one of its chief manufactures, porcelain, spar, and marble industries were then of comparatively greater importance than they now are; rolling-mills, tin-plate mills, bleaching-grounds, cooperies, and corn-mills were then of subsidiary importance, and the extensive railway works were not. The form of government was the "mayor, nine aldermen, fourteen brethren, and fourteen capital burgesses"; the court-leet lingered, and the court of requests was still in existence. There were five parishes, and two then new and "very ornamental" chapels of ease, whilst eight or nine shades of dissent were represented in the town, having their "local habitations." The rich collection of paintings and sculpture given by Mr. Strutt was then lodged in St. Peter's-street; the Mechanics' Institute was young, and the population of the borough, including parts of parishes which overlapped its boundaries, was then only 29,708. Coaches and carriers formed the means of conveyance, but the vans of the Pickfords and Wheatcrofts found Derby a convenient centre, and these firms had located themselves there, and were carriers by water also. Turning again to trade, we find the bankers, even the known and esteemed, were the Irongate-located firm of Crompton & Newton, the Derby & Derbyshire Co., Evans & Samuel, and Samuel Smith & Co. Hosiery and similar manufacturers were found there in plenty, with lace, thread, and tape makers; clogs were made, marble shaped, ten silk manufacturers had their factories there, and there was the usual gathering of miscellaneous trades. Its institutions, its charities, and its appearance were of the olden types; and though there had been a steady progress, it was slow, and it by no means foreshadowed either what the town would become, or what was the institution it would nurse into commanding proportions. Unquestionably, the prime mover in the changes which, in forty years, have come over Derby has been the system of railways of which it is the centre; for they have not only permitted the growth of many of the old industries, but they have been also the prolific parents of more. Thus the population has grown until at the last census it was 49,810; and there had been considerable growth in its iron industries, and to some considerable extent in those of its silk, cotton, and porcelain manufacturers. Its county takes high rank amongst those producing certain classes of iron ores, and includes the Butterley and other famous iron-works; it has 274 collieries, with an output of 7,000,000 tons of coal; its hundred lead mines yield 5,000 tons of lead ore yearly; and from the traffic these yield its traversing railways largely benefit. When by the formation of a little line of railway intended to join some of the mineral districts of the Midland counties, thirty-seven years ago, the foundation of the Midland Railway was laid, there was little thought of its future extent, and as little of the effect upon Derby. That small nucleus has given place to a company in the front rank of the world's carrying systems,—to one in which 65,207,000*l.* is invested; which has the princely revenue of 6,500,000*l.* yearly; which pays about 2,000,000*l.* yearly in salaries and wages; whose system stretches over 1,500 miles, and whose shareholders number more than 25,000. Its chief offices are at Derby, and there are its vast locomotive and carriage shops, and its stores; whilst impinging on the city, paper-mills, foundries, and works of so many kinds are all more or less contributed to by and contributory to the vast Midland. Lead and tin are melted and worked, soap, silk, cotton, porcelain, and spar are amongst the varied industries, with a dozen others on which Derby depends. Nor is this growth and industrial greatness unrepresented by additions to the architectural and other attractions of the town. Its churches, Anglican and Roman Catholic, include some the proportions of which are magnificent; and among its chapels, its schools, marts, and other public buildings, there are some good architectural specimens. Its new recreation-ground and the beautiful Arboretum furnish lungs such as many larger towns might envy. And these are only the outcome of the vast amount of life and sentiment stimulated by a score of societies, and contributed to by more than one or two munificent benefactors, whose wealth has been increased by the growth of the industries of the town, and who have given it back green fields and splendid erections in return. Looking on Derby, whilst the spires of All Saints' and St. Alkmund's, the embattled tower of St. Peter's, the tower of the Town-hall, and the circular shot-tower, rise from the mass of buildings and works, there is more than one green oasis in the aggregation of erections, and the streak of the Derwent running near the rail is seen out into the woods and parks that stretch out Belper-wards.

The industrial future of Derby should be a bright one; for its situation gives it a command of some trades; and the varying nature of its industries subjects it less to the fluctuations of trade than are towns dependent upon one class of industries. On the other hand, its rate of progress is not marked by the bounds t towns planted in the midst of great min centres sometimes make; it has shown a ste rate of progress, accelerated, indeed, since Midland days, and that rate bids fair to tinue. Unquestionably, the town is to a l extent bound up with the future of the g railway of which it is the headquarters; since that railway acquired practical com tion by the formation, first, of its costly ex sion to London, and then of its great rou the North, its prospect has been an assured and yearly its calls upon its locomotive carriage works, and its other contributory in tries, are greater, so that a larger expend of material and of labour is needful, and a centres there is an ever-expanding deman work. On that, on the facilities for industr position and its water privileges give it, ar the fame and skill it enjoys and has acqu the industries of Derby rest securely, an them it may be safely anticipated that the a steady growth in prospect for the future the honourable past of the town.

THE FRENCH GALLERY, PALL MA

The twenty-seventh annual Exhibitio Mr. Wallis's Gallery, which opened this is not a remarkable one as exhibitions go only one of the four centre pieces is highest class of excellence. This, how Muller's picture of the "Market Place, C (70), lent by the Austrian Government, i worth the attention of those who have no it, as one of the most uncompromisingly representations of every-day Eastern lif we have ever seen, and remarkable at the time for the fact that there is no hardne paintiness, no obtrusion of technical merely for its own sake or to show the pa cleverness of manipulation. The style is and massive, the study of character, both race and the individual, fully successful aims. The painting represents a large and group of dusky persons of the lower orde gregated outside (apparently) the walls city, talking, bargaining, and recommendin wares. It is curious to compare this with the general run of representations noble Arab (for these people are, if not Arabs, at least of the same race and which give us a melodramatic handsome tain style of man with wonderfully polish richly tinted skin, with this depiction of a painter who has, at all events, nothing dramatic about his work. Not that the as shown in this picture, is contempt repelling; but he is most distinctly not and hardly picturesque, except in a ve dued sense; and the colour is a somewhat or dusty brown, instead of that glowing hue with which painters delight themse often. One or two small naked childr very large heads, very large stomachs, a weak legs, contribute additionally to mo enthusiasm for this type of mankind artist has succeeded in producing a grou is effective in composition and at the sa apparently unforced and unstudied; a re rather than a picture. The painting o heavy walls and towers, with the baki light upon them, is very fine; it is sel sees a picture so thoroughly solid in exe

The only other of the central works t is the well-meant but not satisfactory by M. Gysis, "Napoleon Gefangen!" representing Napoleon, but a group o people in a queer narrow street, receiv calling out to each other the great ne do not clearly make out the whereabou country) of the scene; it looks rather than German: either supposition would the story that is told. The moment is interesting one for the painter, but hardly feel that he has made the most does not impress us with any reality.

After Muller's picture, the chief in the collection lies in a good many sm which are not prominently placed; if w Spring's rather larger work, "Catechis which certainly might have had a cer tion in place of some others that see honoured; it is a work remarkable humour, and very fine in execution. the small *genre* works, those of Sei pre-eminent. This artist, starting ori the line of E. Frere, and certainly u inspiration of that charming painter of may be airly said to have surpassed h

ents from the Fair" (15), and "A Sad " (23), are perfect as renderings of nature, half humorous in the first-named —unconsciously humorous, that is, for the actors are as serious as possible in the otion of their weighty concerns; in the where a little girl is comforted by a y bigger boy for the fall and breakage of lk-jug, there is a real pathos and tender- nite removed from the mere sentimental. e's feeling for colour is fine, too,—much o than is the case with some of the recent s of peasant life. Frere himself is not, s, quite at his best in his little picture of Young Artist," pretty as it is. Among of child and peasant life, we have one naus, "Spring Blossoms" (44), which is note, not only for the characteristic figure child gathering flowers in the long grass, e pleasant fact of finding a picture by le artist with some landscape and light ghtness in it, in place of the substratum of eutral tone, on which most of his figures en displayed. Even his "Spring," how- not a very bright or vivid Spring from glish painter's point of view. The more aspect of peasant life are exemplified in reton's "La Glaneuse" (150), a single f a sturdy but melancholy-looking young coming laden from the corn-fields, and in a work by Sadee, who owes his inspiration to perhaps too palpably. The latter painter esented by one work, not at his best. s no large battle picture, but a consider- mber of those small military episode gs of which there are so often good ns to be found in this gallery, and in French artists especially succeed in so ely realising the actual facts of combat tary situation, as in Sell's small work, Attack" (159), where the soldiers are down prone on their stomachs in the ow to fire from under cover of a wayside and in Medard's "Preparing for an " (55), showing a pioneer party trench- cross a bare road, and pulling down qually bare-looking trees, to assist defence; it cannot be to prevent their g cover, for their trunks are as bare rly as thin as whip-stocks. There is one ier, a little figure that would be remark- der any other name than that of its ut as a Meissonier it passes as average. ndscapes, by Windmaier and others, have them, especially some of Heffner, which utiful, though slight; "Evening" (49) ly little thing, in the highest style of pe art, so far as feeling and treatment cerned. Bockmann's small representa- "A Market-day in Hungary" (64), is those works (somewhat rare) which at press us with their truth and reality in uting the scene and people which it es; and another little work by Pasini, ing the Gazelle" (73), is at once ludicrous ost touching; the little antelope bounding he road, followed by two horsemen in a llop, a dog as mad on one side, and a ushing at the prey with outstretched on the other side: the gazelle stands a ance.

are some brilliantly (or gaudily) painted ubjects that are sure to be looked at, but belong to a very *clinquant* style of art, not interest us. We should, however, with appreciation the very pretty, more retty, "German Lady of the Eighteenth ," by Kaulbach (11). This artist has several small-size heads under this the present is life-size, very rich in colour, ugh presenting no intellectual interest, inly a very charming object, and a fine execution in painting.

OCIETY OF BRITISH ARTISTS.

society has gone back to its old rooms in place, having probably found the Conduit- ooms a mistake. The public, for some will not find out these rooms. The is very persevering under a good many f discouraging results; and we are glad hat the effort which has evidently been o re-open the Suffolk-street exhibition good show is not unsuccessful. The ex- is a very much better one, even in ion to the larger number of works exhi- than the more limited one in Conduit- ast year. Of course, some of the good are the contributions of outsiders; on the other hand, one of the worst of the smaller things we noticed bears the name of an R.A., and in that connexion is almost incredible. Among the members' contributions is a beautiful work by Mr. J. W. B. Knight, "Manorbeer Castle, near Tenby" (43), a not very large painting, containing some of the highest qualities of landscape art: the old castle stands out grandly in the middle distance, which is broadly painted and full of atmosphere; the smoke from chimneys near streaming upward in parallel columns is a little incident that helps to give the character of the day; the foreground, a stream and water-plants, is carefully studied, as also the gulls that fly about near the foreground and are sharply relieved against the landscape. Other works by this artist are all good. Mr. Clint's "Calm Evening" (79) recalls another generation of landscape-painters, who had also their ways of painting, and their receipts for effect; very good in their day, but a trifle *passée* now; still, one regards a work of this kind with an affectionate lingering of the memory over old days. We do not remember, at this moment, much about Mr. E. Ellis or his former work here, or is he a new member? Anyhow, he is an acquisition in this year's exhibition; all his landscapes have power, and a broad, artist-like style; "On the Yorkshire Coast" and "A Forage Party" in particular. The latter (119) is a bit of English country landscape refreshing in its light and air and truth of tone; it is true that it suggests an imitation of the manner of another painter, but it is a very good manner. The same artist has a large and rather rough, but very powerful study in the water-colour room, "After Sunset in North Wales." Among figure subjects we must be allowed, for a moment, to pass over the members and give the first mention to a distinguished outsider, Sir J. Gilbert, whose painting of Corporal Trim making the first suggestion to his master of the mimic fortifications (30) is an admirable piece of delicate humour, so far at least as regards Uncle Toby, whose face as he just begins to take in the glorious idea of the Corporal shows a kind of infinite hope and expectation which is delightful. Trim does not quite satisfy us, but every one will have his own notion of the immortal corporal, no doubt. The picture is an admirable piece of colour as well as of character. Sir John is always surprising us by exhibiting a new turn of talent, and we are quite obliged to him for showing so satisfactorily that he can do something besides the class of picture from which he made his reputation, but which he has surpassed now by works of much greater interest and value. We fear there is not much to be said for the figure pictures as a rule, but there are some good things. Mr. Gadsby's "Tired Out" (261), is a very charming painting of a little girl who has fallen asleep on the floor; pretty in attitude and expression, and fine in colour. Mr. Caffieri's drawing-room interior called the "Music Lesson" (13) cannot be passed over, but it is not pleasing. The colours are harsh, the young ladies (still worse) are vulgar; the old music-teacher at the piano is the most successful figure, or rather head, for his figure is not seen. Mr. Gordon has taken a great deal of trouble to interest us in the young man who is asking "an anxious question," or, rather, *the* anxious question, of a pretty young woman in long mittens, and not unsuccessfully; there is a good deal of feeling quietly and unobtrusively expressed in the countenance of both figures; but why the ghastly colour, or want of colour, over the whole? The two people look as if they had no blood beneath their skin at all. A small painting, by Mr. F. H. Potter, "Twilight" (299), is very successful in realising its intention; there is a figure of a young woman in dark dress, standing by a low fire, with nearly her back turned to the spectator, chimney-piece and ornaments dimly seen in the dusk; there is something very suggestive in this. In the south-west room, Mr. Burr's life-size study of a worthy agricultural "From Norfolk" (530) should be looked at, as also Mr. Tom Griffiths's "Sunset on the Moors" (531), Mr. Stuart Lloyd's "The Abbey Trees" (473), and Mr. W. H. Bartlett's "A Bavarian School Board Commissioner" (461), a painting which must be intended as a lesson to the London School Board, whose inspectors have been much anathematised for their lack of the *suaviter in modo*. The Bavarian Commissioner is a gentle-looking "sister" in long cloak and hood, by whom it would be a privilege to be interviewed. Miss B. Meyer's very clever little painting of "My Neighbours in Rome," should not be overlooked. Another work by Mr. Burr, "Words of Comfort" (125), though somewhat smearily painted, has good qualities in feeling and character. Mr. Morgan's very clever picture of boys tugging against each other under the title "English and French" (153), we seem to have seen before, possibly in a water-colour form; and Mr. Faed's little painting, "Rest" (69), a charming little thing beautifully finished, is, if we remember rightly, a small replica of a picture that has been in the Royal Academy.

There are a great many very good bits of "still life," that favourite and most useful means of study on the part of young artists; among them one by Miss Jessica Hayllar, dealing with the unpromising subject of bread, cheese, and a glass of beer, is remarkably successful. Among the water-colours we were particularly struck by two works by a lady, whose name is new to us, Miss Ada Bell, "Departing Day" and "The Incendiary" (565, 686); these, though small works, are really very grand in style; the former especially, and show a quite unusual force and originality of manner. There are some nice bits of terra cotta. Mr. M'Clean's bust, called "A Study from Life" (782), presents an admirable likeness of a lady whose face has been long a familiar one in what may be called intellectual London; there is another, bust also under the same title and by the same artist; and an ideal head by Mr. Mullins is named "The Lady in Comus," and has a sweetness and purity of expression sufficiently in keeping with the title.

OFFERED PRIZES, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Particulars and conditions for the guidance of competitors for the prizes offered by the Royal Institute of British Architects for session 1879-80 have been issued, and may be had of the Secretary, price 3d., or by post 4d. The prizes offered are:—

(1). The Pugin Travelling Studentship: value 40*l.*
(2). The Soane Medallion and the sum of 50*l.*
(3). The Tite prize: value 30*l.*
(4). The Grissell (Gold) Medal.
(5). The Institute (Silver) Medal and Five Guineas.
(6). The Institute (Silver) Medal and Ten Guineas.

THE JUBILEE HALL FOR BRUSSELS.

The fiftieth anniversary of the existence of Belgium as an independent kingdom will be celebrated with much magnificence next year, and already arrangements are being made in preparation for the event. Among these it has been resolved to erect a grand Jubilee Hall in Brussels, where the crowning festival, including a grand banquet and other entertainments, will naturally be held. The Minister of Public Works, on the 25th ult., brought in a money Bill, demanding a sum of 1,800,000 francs, or 72,000*l.*, for the purpose of erecting the hall in question, and the Lower Chamber voted the grant by a majority of forty-six against eighteen. After the jubilee it is intended to employ the building as a National Museum of Art, and to deposit therein a collection of products of art industry belonging to the Government, and arranged somewhat in imitation of the South Kensington Museum.

The German Athenæum.—In the rooms of this Institution, 51, Mortimer-street, Portland-place, which seeks to provide for the Germans in London much intellectual gratification, has been lately exposed a large and powerful picture by Mr. Hubert Herkomer, titled "Light, Life, and Melody." It represents a number of peasants of the Tyrol drinking beer, and enjoying themselves under the verandah of an inn, while one in the centre plays on the zither, the country being seen without. It is executed in water-colours, with all the force and richness of an oil-painting. The high lights are all produced with the penknife, and the execution is at present to some extent coarse and incomplete, but it is unquestionably delightful, and a work of genius. It will probably be exhibited at the Grosvenor Gallery.

THEATRES IN JAPAN.

BY JOSIAH CONDER,

Professor of Architecture to the Imperial College of Engineering, Tokio, Japan.

Few Japanese buildings have a more frail and temporary appearance than the theatres, possessing no architectural pretensions, and, devoid even of the picturesquely curved and over-sailing roofs which give an elegance of outline to most of their other large buildings. Their general appearance is that of a broad squat-looking building of wooden construction, with a wide central roof of flat pitch, a clearstory, and lower lean-to roofs at the sides. The large roof has generally a low continuous lantern running along the top to admit air and light. The walls are constructed of a framing of vertical and horizontal timbers filled in with lathing, clay, and plaster, having weather-boarding nailed upon the outside. The windows are oblong openings, with wooden bars placed either vertically or horizontally, closed, in bad weather only, by sliding shutters, having paper lights, which are placed towards the inside of the reveals.

A gay appearance is given to the otherwise insignificant façade by means of large placards heavily framed, which are hung in profusion in front, and decorated with large representations of scenes from the play, in bright harmonious colours. Some of these posters extend from the ground to the eaves; and, in addition, there are often a number of bright flags on poles fixed in the pathway. The theatres of a Japanese town are generally placed together in the same district; and about them are several large tea-houses (hotels), whence it is usual to procure one's ticket and make all arrangements for seats and refreshments.

With the Japanese, as with the ancient Greeks, the performance of a play is the matter of a whole day, the theatre opening at about six in the morning and closing at dusk. This is broken by frequent and tedious intervals between the acts, when the audience adjourn to the tea-houses, or take their meals in the theatre. The building is entered from the end facing the stage, through a sort of central hall, containing racks for depositing umbrellas, clogs, and generally serving the purpose of a cloak-room. On either side of this entrance are rooms, some of which are devoted to the manager and his officers, and others to the actors. The actors have rooms at both ends of the theatre. There are also private entrances in the front communicating with some of these rooms.

Between the entrance, with its adjoining rooms, and the auditorium, or main body of the building, is a passage, running from side to side, leading to the staircases and side passages. Direct admission is gained into the pit, across the main passage, by two doorways, between which is a row of small compartments, closed in towards the entrance, but opening on to the theatre, looking towards the stage. These rooms are some of them occupied by dealers in programmes or provisions, and others by police, who attend to preserve order.

The pit holds by far the greater part of the audience; for the raised and supported seats at the sides and end, which correspond to European box-seats, are comparatively few in number. The pit-seats consist of a great number of low, box-like divisions, placed upon a floor sloping slightly upwards from the stage end. The incline is scarcely perceptible. The divisions are about 4 ft. square, and are intended each for the seating of five people, squatting upon the mat-covered floor.

There are two passages through these seats from entrance to stage, one on either side, and these are sometimes used in passing from seat to seat; but access is obtained to any part of the pit by walking along the low divisions between each compartment, the edges being made flat for the purpose. Sometimes, in addition to this simple mode of communication, there are one or two cross passages of a plank's width; these, as well as the principal side passages being always at the level of the top of the seat divisions, and consequently on the same level as the stage, and of the shoulders of the audience seated in the pit.

The main passages referred to are also used by the actors during the performance, who often approach the stage from the front of the theatre where they have several dressing-rooms. Sometimes an actor will stop to speak or act in this passage in the midst of his audience, addressing his fellow actors on the stage across the people. The passage on one's left hand as one faces the stage is called the main passage. It is wider than that on the opposite side, and more used. There is also a corresponding underground passage beneath it, and a trap-door to admit of sudden appearances and disappearances. This lower passage communicates with a wide space below the stage, where are appliances for hoisting connected with several trap-doors in the floor of the stage. A magician or ghost can thus disappear quickly from the stage, and appear amidst the audience; or, what often happens, a hero or victim slain upon the stage will rise in a transformed, ghostly apparition in the passage, illumined by a coloured light.

Some very pleasing scenic effects are obtained by the use of the upper passages; sometimes a gaily-dressed procession, or an armed suite of attendants, approach the stage in a long line, with all the slow ceremonial and etiquette which belong to the customs of old Japan. At other times an exit will be made imposing by a large train of followers; a farewell parting will be lengthened out by lingerings and looking back; or, may be, some favourite low comedian will give full play to his comic strut, action, or grimace, as he makes his entrance or his exit across the long passage. This peculiarity has seemed worth dwelling upon, as, by reason of it, certain representations can be obtained which decidedly improve the effect of the play, and which are more or less impossible in European theatres, where approaches must be sudden, and a slow arrival or far-off action can be suggested only by distant sounds behind the stage from invisible supernumeraries, or by exaggerated expressions of expectation or alarm on the part of the actors upon the stage. To assist this conventionality, and to carry out still further the idea of the all-pervading nature of the scene in a Japanese theatre, strips of painted canvas, continuing the stage scenery, are often hung to the fronts of the upper boxes and galleries running all round the theatre.

An example of this may be given by reference to a portion of a favourite play, in which is represented the embarkation of a prince from his own castle town.

When the scene opens, a boat lies in the foreground, the floor of the stage being covered with painted canvas, representing a sandy beach in front and water touching the prow of the boat, and extending behind to the back of the stage. The prince and his suite having entered the boat, it is moved by means of the turn-table of the stage, and at the same time the canvas representing the water is drawn forward, the sandy beach disappears, and the whole stage represents sea. Then, gradually along the sides of the upper boxes strips of canvas painted as water are drawn by cords, until at length on the further gallery-front facing the stage is seen the representation of the distant shore and castle town. This forms a fitting and expressive accompaniment to a long farewell soliloquy from the boat, the prince addressing his native home which he is leaving behind him. Thus a vivid reality is given to a change in the scene of action. The idea which it seems to suggest to the audience is, that they have in reality followed their hero to his next abode, leaving with him the last scene behind; and not that he has left them in the forsaken town to be transported mysteriously to the next scene of action. The two or three outermost rows of pit compartments slope considerably upwards on either side and at the back. Outside these seats are more spacious compartments running all round the theatre in a single row. These are the lower box seats, and at their front are occasional wooden posts supporting the floor of the upper tier above them. They are closed in, and entered by doors at the back. Some height above this upper tier of boxes, and just beneath the long low clearstory-windows, is a light and narrow gallery supported from the wall on brackets.

This gallery appears to be used only for attending to the windows, being approached by a ladder staircase, and being too frail to support a number of people. At the back of the boxes on either side are the two outer passages for communication with these box-seats, and corresponding passages above for the upper seats. One of the lower passages has a central screen dividing it longitudinally into two, the portion nearer the outside being used by those actors who wish to pass unnoticed from end to end of the theatre. The back portion of the pit opposite to the stage is covered by an upper gallery, on a level with the upper boxes, w extends back over the hall and rooms roun entrance. At the two extremities of this g are several small rooms for stores, and a s oratory, with a shrine, where it is usual fo proprietors and actors to supplicate su from some deity.

The appearance of the whole inside of theatre is extremely plain, and devoid of or ornament. The large tie-beams of the of heavy unsquared timber, are generally v below a rough boarded ceiling. In some the boarding is placed below the tie-beams is slightly ornamented with thin ribs. The timbers of the roof contrast greatly with frail posts and filling-in which form the w support. The fronts of the upper seats an gallery front have sometimes a moulded rail, with moulded or carved supports, b other respects the interior has few embe ments, except in the scenery and hangin the stage.

Considerable room is taken up by the which occupies nearly the whole of the f end of the building. In addition, there few actors' dressing-rooms, bath-rooms small staircases leading to the principal above. These upper rooms are larger occupy a portion of the space which be given to the stage for the purpose of movi scenery and working the turntables. principal actors have separate dressing-roo a hair-dresser, and quite a number of attend there is a larger room common to inferior These rooms at the back of the stage some cases arranged in three low stories.

The staircases of approach from one fl an other consist of two strings with treac no risers or handrail, placed to a steep slo

The height of the stage opening is 16 ft. from the stage floor, which is about below the eye of those seated in the front pit. The platform of the stage, which inclination, comes well forward beyon curtain opening, forming a wide passa front communicating with the passages t the pit. The stage is provided with one concentric turn tables coming out to the and by the revolution of these the sc sometimes quickly changed. The front will hide the scene behind, which is prepa readiness, and then the whole is moved r

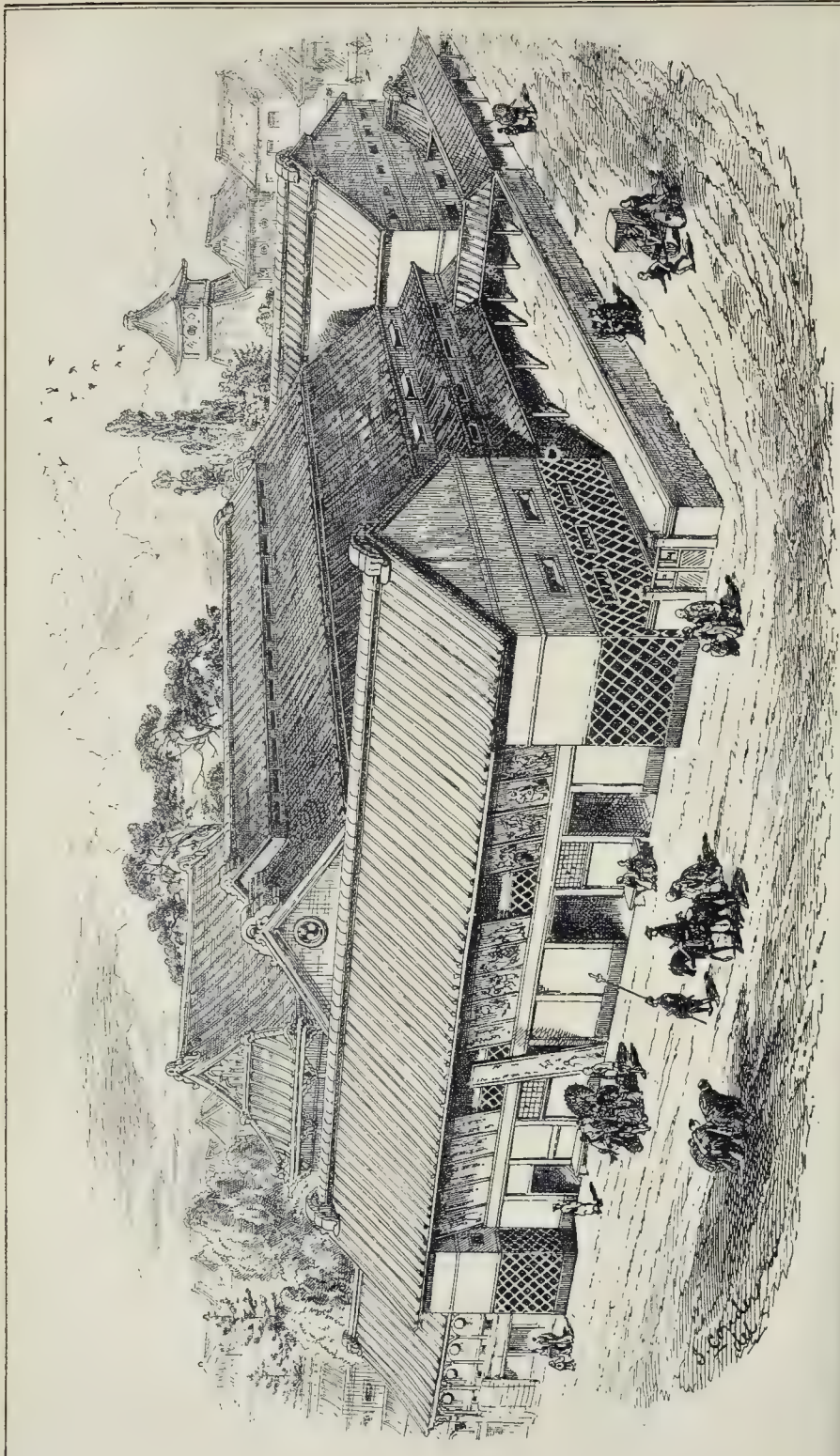
The representation of an interior scen the stage as we should make it, namely b verting the whole stage into a single r means of side and back scenes, is ne tempted, and is scarcely necessary on a of the facility of representing exteri interior together. A Japanese house h rooms, is often only of one story, and is thrown entirely open in the front.

Even in the cold weather it is quite c to see the whole front of a house throw open by removing or sliding back th paper slides (*shojis*), of which nearly the front consists. In stormy weather, eith blinds are hung outside of the paper sl else the whole is closed in by wooden s called *amados* (rain shutters) placed keeping out light and air, a small qua light being admitted from some sm windows, or by a small portion in front n quite shut in.

In palaces or the residences of men o the rooms are grouped together and th surrounded on all four sides by a wide passage reached by a flight of woode from the grounds. This passage is so double the outer and narrower portion, h balustrade corresponding to the handrai steps, and the inner portions bounded b filled in above with plaster, and suppor eaves of the roof. The spaces betwe posts are often entirely open, but they filled in with *shojis* and *amados*.

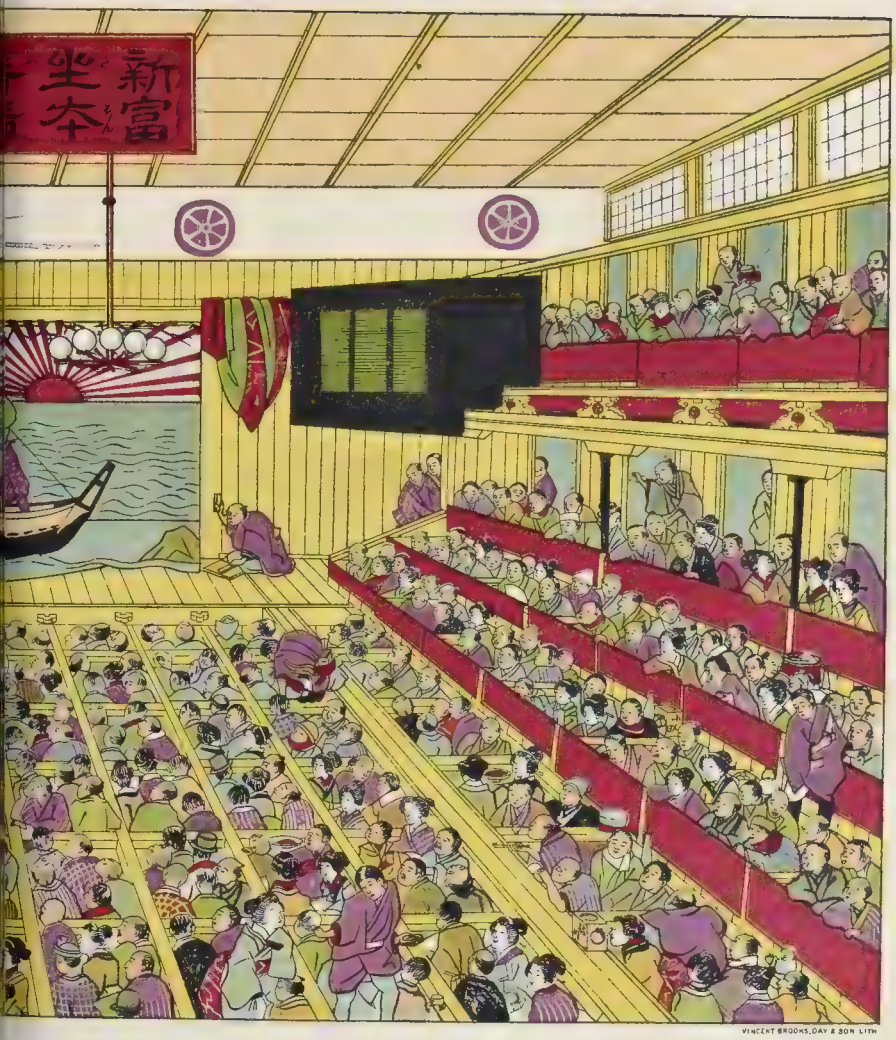
The internal posts of the passage form walls of the rooms can also be filled i open according to the weather, so that summer's day the whole interior can be open, presenting a vista of matted roo groups of posts.

It is such a view as this that is given audience in a theatre. The whole fron of a house is represented on the sta ground to ceiling line, by means of wooden construction somewhat smaller than an actual building. The front thro will present to view the interior rooms the acting takes place, prolonged so into the semblance of a vista of ro means of painted scenes at the back.



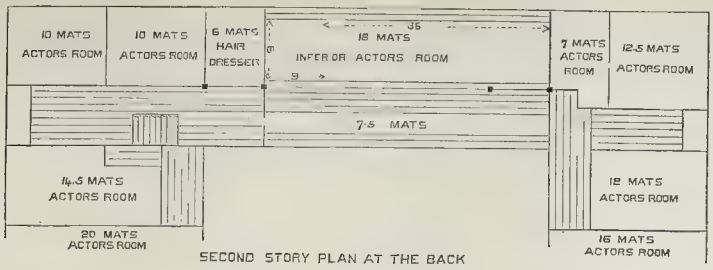


INTERIOR OF A JAPAN

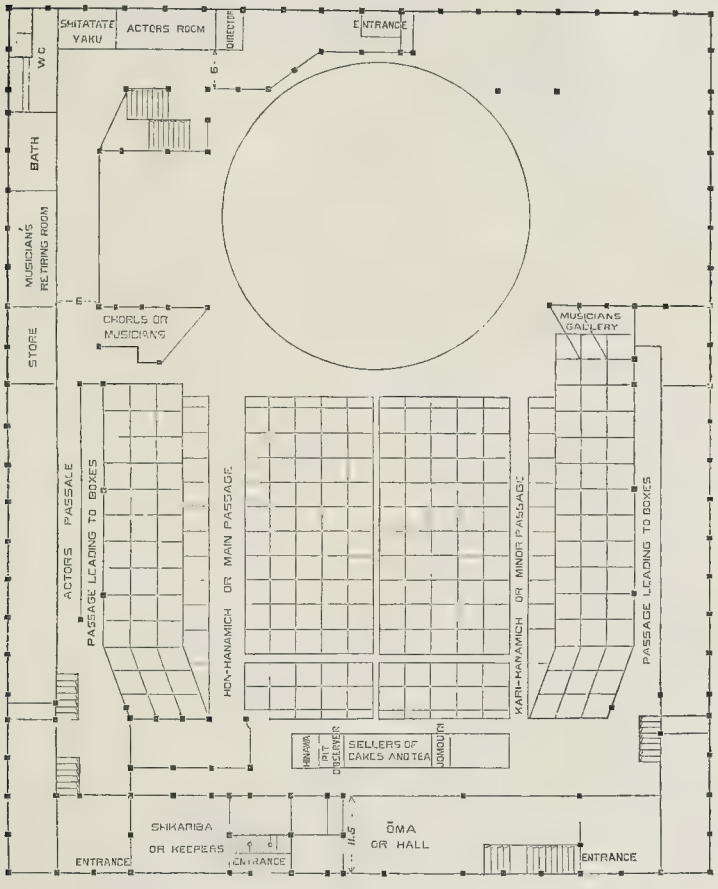


VINCENT BROOKS, DAY & SON LITH

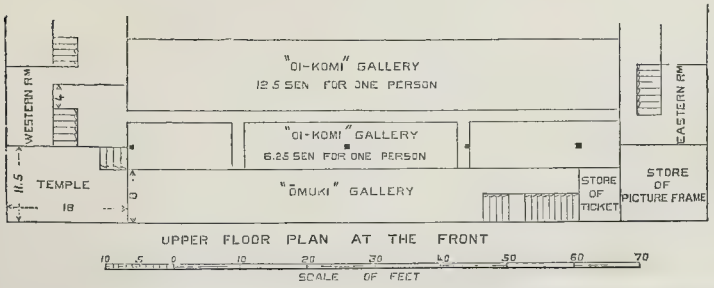
NG THE PERFORMANCES.



SECOND STORY PLAN AT THE BACK



GROUND PLAN



UPPER FLOOR PLAN AT THE FRONT

SCALE OF FEET

SHINTOMIZA THEATRE, TOKIO.—*Drawn by* M. Ohara, *Student*; Josiah Conder, *direxit.*

The perspective of such painted scenes is mostly correct, erring rather in being too sudden. The turntables upon which such constructions are placed enables them to be quickly moved to the back by a half revolution, revealing the next scene, which will have been meanwhile prepared behind it. On the front part of the stage, side-scenes, shrubs, or flowers will be placed to form a foreground. The stage-curtain, generally having some simple conventional device in colour upon it, is drawn forward by attendants at the close of the scene.

At the left-hand side of the stage is a space for the orchestra, who play drums, flutes, and stringed instruments, and who partly explain the acting, and comment upon it, after the manner of the Greek chorus.

In addition to this orchestra there is a little gallery on the right-hand side of the stage, some 10 ft. from the ground, in which two musicians are seated, who accompany the performance. One of these men plays a stringed instrument (*samisen*), and the other accompanies the music at intervals with singing and intoned exclamations. They are sometimes visible to the audience, and sometimes screened by cane blinds, through which they can see without being seen; for it is necessary for them to watch the movement of actors upon the stage.

An ordinary theatre has no proper provision for artificial lighting, for the performance generally takes place only during the daytime, when the place is lighted by side and end windows just below the eaves.

In case of a play being prolonged till after dark, a miserably inefficient light is obtained by a row of candles placed in front of the stage; besides which a candle fixed to a rod is carried about by an attendant, and held in front of the particular actor who is speaking, in order better to illuminate him.

Another peculiarity is the presence on the stage of sundry boys dressed in black, with loose black caps, indicating that they are to be supposed invisible. They crouch about behind the actors to remove from the stage anything that is to be dispensed with, or to place a low seat or support under an actor who has to take up a position for any length of time. Most of the plays enacted are taken from Japanese history, and a visit to the theatre is now the best opportunity of realising the customs, habits, etiquette, and costumes of ancient times.

It is said that the representations may be relied upon as correct. With the profession of an actor, as with other professions in this country, the business has hitherto been hereditary, and instruction has been personally given or handed down in manuscript. This accounts to a great extent for the want of really good and exhaustive treatises upon the dramatic and other arts, in which the people have shown at times remarkable skill. The dramatic art of Japan may be said to hold the same comparison with our modern European drama, as Mediæval decorative painting does with the highly naturalistic picture of to-day. The story is told forcibly; the action of body and of feature is what we should call exaggerated; the impression of sorrow or despair is aided by weird doleful music, and by the sympathetic wailing of the chorus; and sometimes acute feminine grief is pictured by a dance in which the hands are wrung and the body writhes in painful action, accompanied by sobs and snatches of wild song.

There are dances expressive of grace and beauty, of humour, or of grief; unnatural perhaps, but unmistakably highly effective in drawing the sympathy of the spectators and conventionally assisting the effect of the play. So forcible is the effect produced that a foreigner, unable to follow much that is said, will find himself worked into sad or pleasurable excitement fully in sympathy with the action of the play.

The accompanying plan and rough perspective sketch represents a theatre lately built in Tokio, in which the old style of construction has been somewhat improved upon. The plan is similar to the ordinary form, such as has been described, though somewhat larger in size.

It will be seen that the principal rooms for actors are upon the upper floor behind the stage, and they are figured according to the number of mats,—the ordinary way of describing the size of a room in Japan. The mats measure about 3 ft. by 6 ft.

The boarded passages between the rooms are shown by fine parallel lines indicating floor-board joints. It will be observed that a large open space is reserved for the stage, and that the space allotted to the orchestra is very small. The left-hand side passage is divided down the centre by a screen, in order, as already mentioned, to provide private communication for the actors from end to end of the theatre. The "*hon hana michi*," or main passage, through the pit seats has an underground passage below it.

The walls are constructed of wooden quartering filled in and covered on both sides with plaster. Portions of the external walls are, in addition, covered with large black tiles, laid flat with a bold cement roll at the joints, giving these parts a chequered appearance. The external woodwork is lacquered, and the roofs are ornamented with a heavy ornamental ridge and terra cotta finials. The windows are filled in with glass. Iron is used to a small extent on the inside, both as ties in the roof and also in the form of iron posts to support the galleries.

One of the greatest improvements is the introduction of gas into the building. Foot-lights and top lights are fixed to the stage, and two large chandeliers hang from the ceiling over the centre of the theatre, as shown in the interior view.

This enables the proprietors to give night performances, which hitherto have been next to impossible. This theatre is intended to accommodate about 2,000 Japanese.

TECHNICAL TRAINING IN BELGIUM: THE SCHOOLS OF ST. LUKE AT GHENT.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, on Friday, the 28th ult., Mr. H. L. Florence, president, in the chair,

Mr. W. H. James Weale read the following paper on "The Schools of St. Luke at Ghent":

My acquaintance with Belgium extends back to 1849. At that time there was no public interest whatever in architectural matters. Whenever any new building was erected, or any old one restored, the local papers uniformly lavished the most extravagant praise on the authors of the work. The only point that occasionally excited remarks of a different nature was the cost of these works. I think I am right in saying that from 1849 until 1858 the only criticism of Belgian architecture that had appeared in the country was contained in two pamphlets by an English architect, then resident in Bruges, Mr. Thomas Harper King, with whose "Study Book of Mediæval Architecture" many of you are doubtless acquainted; these related more especially to the new Church of St. Mary Magdalene at Bruges, the plans of which were considerably modified in consequence. In his translation, or rather adaptation, of Pugin's "Contrasts," to which he made considerable additions, were some very just remarks on modern Belgian work, but at the time of publication these excited little attention.

In 1858 I commenced the publication of a series of critical articles on the restoration of public buildings of the country. These drew some attention, and when, in 1860, the Royal Commission of Monuments was reorganised, I, though a foreigner who had but recently settled in the country, was named a member of the Provincial Committee of West Flanders. Hoping to awaken public attention to the real nature of the so-called restorations, I seized the opportunity of the first general meeting of the Royal Commission at Brussels in 1861 to read a memoir on the Restoration of the Public Monuments of the country. This memoir raised a regular storm, not only in the architectural world, but in several of the leading journals, and for several weeks I carried on a paper war with some half a dozen opponents. Of the seventy-two members of the Commission, two only, like myself members of provincial committees, thoroughly espoused the line I had taken up, whilst about a dozen more gave me their more or less partial support. The Central Commission of Brussels and the entire body of Government architects became, of course, my bitter opponents. The two members who were with me were the Baron John Bethune, of Ghent, and M. Jules Helbig, of Liège. The former of these two gentlemen, years before, had one day, whilst copying the well-known picture of the "Elevation of the Cross," by Van Dyck, in the Church of our Lady at Courtray, been accosted by Welby Pugin. The young Bethune became his cicerone in the church and town, listened, at first, with some astonishment to the English architect's remarks and criticisms, the point of which awoke a sympathetic echo in his mind, and between the two there sprang up an intimate friend
which led to M. Bethune's taking up th
of devoting his life to art. He came o
this country, studied glass-painting and
work with the Hardmans, and furniture
architecture with Pugin. He became the
of Belgium, and has for many years no
designed and carried out a number of buil
ecclesiastical and domestic, but has des
and directed the execution of a vast n
of articles of furniture, in stone, wood
metal, and himself designed and execu
large amount of stained glass. There is no
architect in Europe whose work resembles P
so much as his. My other adherent, M. H
is an artist, who, after studying painting
Düsseldorf Academy, has gradually taken
and more to study the Mediæval painting
Low Countries, and to imitate with gr
success the style of the best artists
fourteenth century.

For three people, who met once a ye
carry on a struggle with a powerful bod
the Central Commission, and at the same
to contend with local opposition with any
chance of success, was out of the questio
last we determined to try and form a s
composed exclusively of Mediævalists, a
September, 1863, we founded the Gu
St. Thomas and St. Luke, for the stu
Christian art and the propagation of its
ciples. This guild meets every year in
town either in Belgium or one of the neigh
ing countries. The sessions last a week.
mornings are devoted to the examination
monuments and works of art of the localit
neighbourhood, the evenings to reading pape
discussions, partly on the buildings and c
examined in the morning, and partly on
particular art question proposed at the pr
meeting. It was by members of the
that the great Loan Exhibition of Ecclesi
Art was got up and carried out at Mech
1864, and which, owing to its taking pl
connexion with the Catholic Congress, did
than anything to propagate a taste for Med
art among both clergy and laity, the o
logical arrangement of the specimens of
vessels and furniture there exhibited
been adopted with the especial view of sh
the superiority of Mediæval art.

The smaller loan exhibition of Brug
1867, was also got up by the Guild, an
and the annual meetings in different
brought recruits to our cause. Our view
gained ground; but those of our numbe
were architects or designers had the gr
difficulty in getting their ideas carrie
Designs put into other hands were mode
and classicised in their execution, and
that this would continue to be the case a
as art-workmen received their education
academies, all carried on according t
Government system.

In 1864 one of our guild members, wh
brother of the Society of St. Vincent of
took an active part in the direction of a p
age for young workmen, found two boy
very much wished to learn drawing. Th
struck him that he might introduce this
of instruction with good result; and
obtained the assent of the committee, h
menced a drawing-class, for which he
prepared the models. Other boys soon
it, and the class increased little by little.
members of the guild who resided in
were naturally interested in the work, a
moted it, some by pecuniary aid, othe
taking part in teaching. In 1869 the
which had greatly increased, was remove
the patronage, and constituted a separate
but still under the auspices of the Soc
St. Vincent of Paul. The regular direct
the class, henceforward known as the
of St. Luke, was confided to the Broth
Christian Doctrine, and in 1870, when
opened, in rooms of its own, 110 pupils
admitted. In 1871 the rooms were enla
library and a collection both of casts an
quities commenced, whilst, in addition
class teaching, a course of lectures on sym
was given. In 1872 the average num
pupils attending the classes held every e
had increased to 160, and the attendanc
special class, held on Sundays, for those
occupation hindered them from frequenti
evening school, to 70. A series of lectu
construction were given this year by M.
Verhaegen, who, after having passed
amination as civil engineer before the G
ment jury with the highest distinction

the profession of architect. In 1875 ings now occupied by the school were ed. They are of red brick, in the Domestic style of the fifteenth century, deigned by pupils of the school. The s adorned with a simple polychromatic m. They were opened in 1876, in ar ;the evening attendance rose to 200, Sunday attendance to 100. The art s received a very valuable addition in of a large collection of drawings of of Mediæval furniture bequeathed to ol by one of its earliest founders ds, M. Florimond van den Poele, de- the Convent of Vive, near Bruges, and nor-house of Schelderode, whose special r designing metalwork had led us to reat things from him, when his useful s closed by death, at the age of forty- 1877 the new buildings were enlarged. now in the evening school 350 boys, e Sunday class 120.

3 a School of St. Luke was commenced erp by M. Belpaire, engineer; M. Hen- pupil of Leys, and the author of the fine the "Stations of the Cross" in the l and in the Church of St. Joseph at ; M. Baeckelmans, architect of several le churches; M. van Ryswyck, gold- l metal-worker,—all members of our ut this school is not under the care of ers of Christian Doctrine.

r school was established at Tournay s management of brothers trained at ded by two members of our guild,— sclée and M. Cloquet, and a fourth at

that before the close of the present fth will be in working order at Liège. have much liked to have been able to e you specimens of the pupils' work ch year of the course, which occupies rs. This, however, was not possible, ve here the set of models,—fifty in which form the first or elementary The method adopted differs from that used in Belgium. The objects are in line on a black ground, easily seen at e, and intended to be reproduced on a black-board,—a better system for s than that of drawing on white paper. t is to form the eye of the pupil as nd as easily as possible by enabling e at once the defects in his work, so may himself try and improve his copy waiting for the master to correct it.

asses in the school at Ghent are now ; they include architectural drawing struction, ornamental drawing and figure drawing and painting, the com- rse in each class extending over seven s I have before said, the regular daily is confided to the Brothers of Christian who are aided by members of the general supervisor and director being ent, M. John Bethune.

wish to call attention to another in- carried on in a similar spirit, but the im of which is to form art-workmen. mile from the town of Ghent, on the Courtray, in a small village named gge, is an orphanage for boys, built wed by a wealthy cotton-manufacturer , M. Joseph de Hemptinne. It is a drangular brick building, erected from ns of M. John Bethune, with an elegant ious chapel, the chancel of which is corated. The fittings and furniture ut the entire establishment are in the l Flemish style. Economy has been tudied, and everything, with the one of the altar and chancel of the chapel, ely simple, but far more solid than the run of fittings in institutions of this t, owing to the careful attention given detail, the general effect is extremely d even casual observers, after having rough the buildings, come away im- with the grandeur of the general effect. anage contains over 300 boys, almost f ordinary labourers. It is under the of Brothers of Christian Doctrine. The n is, of course, thoroughly religious, t all in accordance with popular current he present day. Those boys who show no for art are, in addition to reading, cyphering, and elementary geography, ardening, tailoring, shoemaking, or some anual labour. But all those who show osition, and the proportion is large, are o become art-workmen. At the age of from twelve to fourteen very many of them are able to draw from Nature, and show an amount of feeling that is quite remarkable at so early an age. Instead of engaging skilled masters to teach the boys, which would have been expensive, and probably have led to no satisfactory result, a far better system was adopted. Two brothers, of the name of Blanchaert, one a stone carver, the other a carpenter and wood carver, were indemnified by M. de Hemptinne for removing their workshops from Heusden to the immediate proximity of the orphanage. Blanchaert, the stone-carver, is a well-informed but quaintly simple peasant. Thanks to my late regretted friend, Sir John Sutton, Blanchaert in his younger days travelled over great part of Europe studying the choicest specimens of Mediæval sculpture. He was one of the first to join our guild. In his workshop are now some fifty boys and young men engaged in carving statues, reredoses, pulpits, fonts, &c. In his brother's workshop are some fifty more, who make every description of furniture, from the simplest stool to the most elaborately-carved credence or cabinet. The plan pursued has turned out advantageously to all concerned. The masters, who formerly could not depend on the regular attendance of their men,—on Mondays, for instance,—and were affected by strikes, can count on regular attendance on every working day, whilst to the boys the advantage of working for a long number of years under the same direction is immense. In other ways, too, they derive special benefit. The wages they earn are paid to the institution, a certain sum being deducted for their keep, as also a percentage for buying off those who may have the misfortune to be drawn as conscripts for the army; the remainder accumulates, and is given to them on leaving the orphanage when they are grown up.

There is also a workshop of decorative painting under the direction of M. Ad. Bressers. A foundry for works in brass and other metals has now been at work three years. Here lecterns, tabernacle doors, candlesticks, and other articles in latten, are turned out in all respects equal to old work. A bookbinder's shop has also been established, and a smith's forge for works in wrought iron is in contemplation. The whole colony leaves a decidedly favourable impression on the mind of the visitor, carrying him back in thought to the life and manners of the good old times of the Middle Ages.

These schools have been started and carried on by men who believe that exclusivism,—that is to say, the exclusive study of Christian models,—is the only way to arrive at a regeneration of art. And so Classical and Renaissance, or, as we prefer to call them, Pagan and Paganised Christian art, are rigidly excluded. Not only that, but in the schools the attention of the pupils is exclusively directed to Christian art of the north-western part of the Continent.

All ancient art was the natural outcome of the people, and by an attentive study and analysis of its characteristics we can arrive at a clear idea of their religion, morals, and manners. Indian and Egyptian, Greek and Roman art, are all alike in this respect. When Christianity permeated and changed society, there gradually grew up a new art which went on developing itself in a regular and logical manner, until its progress was arrested by the so-called Renaissance. These schools aim at reviving the traditions of Christian art, and for this reason exclude all that is antagonistic. For although in classical models there is doubtless much grandeur and a great deal of beauty, yet even in the best Greek art you will seek in vain for a single type of the two fundamental virtues of regenerated Christian society,—Humility and Chastity. Where faith and morals are wanting there can be no hope of ever attaining the degree of perfection which our ancestors reached in the Middle Ages, far less of surpassing them; for art, according to the definition of the great St. Thomas Aquinas, is nought else but the manifestation of beauty, and beauty is the splendour of the glory of God revealed in His creatures. Christian artists should be guided by this teaching, which explains the antagonism between the two schools, the Christian school which draws men towards the supernatural, towards their Creator; and the realistic school which drags them down towards creatures. The one seeks for beauty in Nature, and tries to reproduce its works with the greatest perfection; the other rises higher, and, looking to the source of eternal beauty, tries to derive some rays of glory from it.

To become Christian artists we must commence by being thoroughly Christian. In the carrying out of this first principle lies the secret of the vigour, strength, and influence of the schools of St. Luke. Many eyes are now fixed and many hopes founded on them, which, I feel sure, will not be disappointed. I began by saying that, twenty years ago, Belgium was, in art matters, behind England in every respect. I will end by saying that, in one respect at least, she is now ahead, in having schools founded on true principles.

TEWKESBURY ABBEY RESTORATION.

In view of the re-opening of Tewkesbury Abbey in September next, a public meeting was held in the library of Lambeth Palace on Friday afternoon, March 28, with the object of calling attention to the progress and present position of the restoration of the abbey, and to present a report of the work accomplished since the meeting held at Lambeth in March, 1877.

The chair was taken by the Right Hon. Sir Michael Hicks-Beach, Secretary of State for the Colonies, who, in opening the proceedings, said that the restoration of Tewkesbury Abbey was a work which should specially commend itself to the country at large. Parish churches of an ordinary kind, if they needed restoration, could be restored, as a rule, by the contributions of those who were locally interested, as they were not generally, either in character or size, buildings beyond the power of the parish and the neighbourhood to deal with. Our cathedrals, on the other hand, known as they were, far and wide, as national monuments, were yet felt to be in a peculiar sense the property of the county or diocese in which they were situate. The case of Tewkesbury Abbey Church, however, was dissimilar to either of the cases to which he had referred. While it was to a great extent beyond the needs of the town of Tewkesbury, it did not command such wide interest, except, perhaps, historically, as a cathedral, and in effecting its restoration it was necessary to appeal to the country at large. He did not wish to be misunderstood in using the word "restoration." He was one of those who were conservative in such matters. The venerable building should, in the first place, be kept in good repair; in the second place, any disfigurements which had been imposed upon it should be removed; at the same time, it should be the object of the restorers not so much to carry out their own fancies as to reverently restore what they found. That, as he took it, was the right view of restoration, and it was to be greatly regretted, he thought, that that view had been departed from in some so-called "restorations" throughout England. In the present restoration of Tewkesbury Abbey, however, he believed that no fault of the kind was likely to be found. He believed that the work was safe in the hands of those with whom it was placed: that their desire was to act in the spirit he had described, and to hand down the building to future ages in a proper and satisfactory condition as a monument of the piety and skill of our ancestors.

The vice-chairman of the Restoration Committee, the Rev. Hemming Robeson, vicar of Tewkesbury, presented a report showing what had been done.

Earl Beauchamp moved the first resolution,—

"That this meeting, having heard the report of the Restoration Committee, detailing the works which have been carried out during the past two years, desires to express its entire satisfaction with the progress which has been made, and cordially invites the co-operation and aid of all who are interested in a work of such great and national importance as the careful and judicious restoration of the largest existing abbey church in this county."

Lord Sudeley seconded the resolution, which was carried unanimously.

Mr. J. Reginald Yorke, M.P., moved:—

"That the names of the following gentlemen be added to the National Committee, and that a London Sub-committee, for the purpose of collecting the funds required for the completion of the works, be formed, to consist of,—

(*Names to be added to National Committee*):—Rev. Canon Barry, Mr. Thomas Blashill, Mr. A. W. Blomfield, Mr. H. C. Coote, Mr. Edmund B. Ferrey, Mr. J. F. France, F.S.A., Mr. S. W. Kershaw, M.A., Mr. B. A. Paice, Mr. R. B. Prosser, Mr. J. P. Seddon, and Mr. W. White, F.S.A.

(*London Sub-committee*):—The Bishop of Gloucester and Bristol, Earl Beauchamp, Lord Sudeley, Sir Michael Hicks-Beach, Sir Edmund Lechmere, Mr. Beresford-Hope, Mr. J. T. Agg-Gardner, M.P., Mr. W. E. Price, M.P., Mr. J. Reginald Yorke, M.P., Mr. F. Ouvry, Rev. Canon Barry, Mr. Thos. Blashill, Mr. A. W. Blomfield, Mr.

H. C. Cotte, Mr. E. B. Ferrey, Mr. J. F. France, Mr. S. W. Kershaw, M.A., Mr. B. A. Paice, Mr. R. B. Prosser, Mr. J. P. Seddon, and Mr. W. White."

This resolution, having been seconded by the Rev. J. H. Blunt, F.S.A., was also carried.

Mr. J. Oldrid Scott then read a paper, which we print.

TEWKESBURY ABBEY.*

I CANNOT proceed without first expressing my high sense of the privilege I feel it to be connected with the restoration of such a glorious building as the Abbey of Tewkesbury. It is, indeed, a spirit-stirring work, and my best acknowledgments are due to the committee for the confidence they have placed in me. It is my earnest intention to pursue the course laid down so clearly by my father during the years he was engaged on the work, acting, to the best of my ability, in the same spirit of true conservatism by which he was always inspired, and which, in this case, is happily shared in to the fullest extent by the committee themselves.

The abbey is built mainly in two styles of architecture,—Norman, of a very plain kind, and a beautiful variety of Middle Decorated. The Norman abbey was founded early in the twelfth century, and consisted of a long nave with aisles, transepts united by a grand central tower, and a choir also with aisles, terminating in an apse, surrounded by an ambulatory, from which, no doubt, projected chapels, as they did also from the eastern walls of the transepts.

The two chief characteristics externally (both of which still remain) must have been the grand central tower, richly arcaded, and surmounted, as it then was, by a wooden spire; and, what must have given, as it does now, especial individuality, the remarkable western front, the central part of which is occupied by one vast arch extending from the ground to the roof, recessed in seven bold orders. This was, no doubt originally filled in with a number of Norman windows, but of these we have now no record. This feature is still the one which distinguishes Tewkesbury Abbey from all others, and the most casual observer cannot fail to be struck with its peculiarity and boldness. Its present appearance is much injured by the loss of the gable which rose above it till the seventeenth century, when all the high roofs were unhappily swept away, to the great loss of the building. Internally, the building, which was in these early days exceedingly plain, had a curious feature, which it possessed in common with Gloucester and Pershore, of remarkably tall columns and arches in the nave, contrasting with very low ones in the choir.

The building continued as its Norman founders left it for some 200 years, when, early in the fourteenth century an astonishing change took place.

In the nave, this was confined to the insertion of tracery windows throughout, and the substitution of stone groining for the flat or coved wooden ceiling, the same being done in the transepts; but in the choir a far greater alteration was effected. The ambulatory was first taken down, and rebuilt somewhat further out, and from it were projected the most beautiful series of chapels to be found in this country, except, indeed, at Westminster. All of these now remain, with the exception of the lady-chapel, which was on a far larger scale than the others, and which, from the precious fragment of its west end still existing, must have been a building of extreme beauty. The date of these works must have been early in the century. Immediately afterwards the whole of the choir was pulled down, the Norman columns only being left, and rebuilt in the richest variety of the prevailing style. A lofty clear-story was erected, consisting of seven noble windows of the finest design, which are still filled with their original stained glass. The groining, too, was of the most elaborate description, and the whole of this part of the building, within and without, is of almost unequalled elegance and picturesque beauty. The new walls were of the same height as the old ones; but the roof was arranged slightly lower than before, so as to allow of the addition of the beautiful parapet, which is now unhappily almost ready to crumble away. At this time, and subsequently, the eastern part of the building was further enriched by a magnificent series of chantry chapels and monuments. The spectator is bewildered with their number and variety. These alone are sufficient to place Tewkesbury in the very first rank among our great churches in point of historical interest.

Two more peculiarities relating to the interior, which distinguish Tewkesbury as it has come down to us, remain to be mentioned. The marked contrast between the noble simplicity of the nave and the exceeding richness of the eastern portions is the first. This is very striking, and the skill with which the two are brought into harmony by groining of a somewhat similar character being continued throughout the whole length is worthy of especial observation. The other feature to which I allude is one which has always struck me most forcibly. It is the very unusual proportions of the interior. No building of this nature with which I am acquainted gives such a remarkable impression of breadth and expanse. This is, no doubt due to the height being in such a small ratio to the width. But it is the *breadth* of the building which strikes the observer, and certainly not its want of elevation.

Although the abbey belongs, as I have observed, mainly to two periods only, yet the shortest notice would be imperfect if nothing were said of the exquisite work belonging to the thirteenth century adjoining the north transept. There was, at first, a Norman apsidal chapel here, which was rebuilt in the thirteenth and again in the fourteenth century; but just beyond this, in an unusual position, namely, at the extreme north east angle of the transept, there still remains a most beautiful little building, dating from the commencement of the Early English period, though with subsequent alterations. This can be shown to have formed the chancel of the small church, the nave of which ran across the north front of the transept. It has been conjectured, with much probability, that it was erected to form a lady chapel, for the use of the parishioners. The design of its nave can still be traced with some accuracy, and it must have been a feature almost unique, and of the greatest beauty. Should its restoration ever become possible, it would be, indeed, a charming addition to the abbey, and one, I cannot doubt, of great utility.

Having now said as much as seems to be required about the abbey itself, I will proceed to describe the works we have in hand, and those which are proposed, taking them in the order adopted in the report of the committee.

The whole of the nave has been cleared of the modern plaster and whitewash which disfigured it, and all defects in the stonework have been made good. This refers to the interior. What is of special interest here, is the treatment of the vaulted ceiling; but as this is spoken of in detail by Mr. Gambier Parry, I will touch on it very briefly. The bosses of the groining when first uncovered showed signs, though not very distinctly, of their ancient decoration, and it was at the time determined to restore them. The result, however, was unsuccessful, and the treatment was stopped after two bays had been so dealt with. The carving of the bosses throughout this roof is of the highest value and interest, the subjects of the central range consisting of scenes from the life of our Lord, while the two side rows are occupied with angels bearing censers, or playing upon musical instruments. Nothing can exceed the artistic feeling displayed in these sculptured bosses; but, from their being in most cases hardly more than sketches, it quickly appeared that any treatment of them in full colour tended only to obscure their design, and to emphasise their incompleteness. So much was this felt, that for a considerable time it was the opinion of Mr. Gambier Parry, who had given the matter much consideration, as it was my own, that it would be best to attempt no decoration whatever. The greater part of the ceiling was, therefore, left plain; but the effect from below was by no means satisfactory, and at length Mr. Parry proposed a method of treatment which he has now carried out in a portion of the groining. I have seen this within the last few days, and for my own part I desire to express my great admiration for the skill and judgment shown. Such is, also, the unanimous opinion of the committee, and it has been decided that the treatment shall be continued throughout the whole of the nave.

The floors of the transepts, ambulatories, and chapels have been made thoroughly good in all respects.

The Decorated chapel, east of the north transept, is in course of careful reparation, the cost of which is being borne by the Provincial Grand Lodge of the Freemasons of Glo[uces]hire. There are also some pressing [re]pairs being carried out in the Early English [chapel] to the north of this, to which I have [alluded], but not to the extent of anything like c[omplete] restoration.

The next item mentioned in the rep[ort] comprehensive one. It alludes to the ch[oir] and screens, the font, pulpit, &c. Of the [choir] stalls, a sufficient number remain to c[over] the back row on both sides of the new [arrange]ment. In addition to these, considera[ble] tions of the stall backs, or screens wh[ich] above them, are also in existence. T[hese] interesting works of the fourteenth c[entury] and were probably executed just after t[he] pletion of the choir. It has been dec[ided] restore the stalls to their original [position] beneath the tower, and to erect abo[ve] these ancient screens. Unfortunately, [not] sufficient length of the latter remains [on] north side, and this alone has been ord[ered] the committee, the funds not being s[ufficient] for the new screen required on the sou[th] Eventually it will, of course, be neces[sary] add the second row of seats for the ch[oir] as well as book-rests, but at present this [is] the arrangement must be temporary, t[he] expenditure needed for the complete re-[arrange]ment of the choir amounting to betwe[en] and 800l., of which the committee are o[nly] to undertake a very small portion at pr[esent].

As regards the *choir screen*, variou[s] posals have been made, but the only [one] prepared have been for a low enclosure [of] metal character. A wooden model [of] most recent design has been made so [that] effect may be well considered. It is, I [think], my own opinion that this church shou[ld] tually possess a high choir-screen, of we[ll] design, but sufficiently elaborate to acc[ord] the ancient fittings. I sincerely hope [it] may some day be possible.

We come now to the font, of which [a] ing is exhibited. It at present cons[ists] base and shaft of Decorated date, ca[rved] bowl of very mean appearance, probably ing to the eighteenth century. A new [font] been designed, agreeing in style with th[e] part. It will be in Purbeck or som[e] marble. The font, thus completed, [is] surmounted by a lofty wooden cover [of] nacle work, the design of which h[as] founded on an ancient fragment of fo[ur]teenth century woodwork remaining in th[e] Great pains have been taken over th[is] which is now being carried out by Mr[.] the contractor for the Restoration work[s] glad to say that this font canopy h[as] forth a rivalry in generosity, two donor[s] been willing to bear its cost.

With respect to the pulpit, I have or[dered] that one is very much needed, and [it] essential that it should be as far as [is] worthy of this grand building.

The report next refers to the repe[ating] the seven windows of the choir clea[r]-well as the restoration, should it be[come] desirable, of the sedilia and the choir c[lere]chapels. As regards these chapels, it a[ppears] me that it would be, on the whole, t[he] course to leave them without anything [but] plete restoration. Some slight rep[airs] actually required and should be un[dertaken] but nothing beyond this appears to me [to] The case of the sedilia is different, th[ey] a necessary part of the furnitnre of th[e] Happily, the greater portion remain[s] design is most noble and characteris[tic] think it would be well to complete th[e] restoration of the clearstory window[s] forms a part of the external reparat[ion] stonework. Happily, in proportion t[o] of the building, not very much wor[k] nature is necessary, nor do I conside[r] be wise to do more than is absolutel[y] One work connected with this should [be] tioned; namely, the roof of the sout[h] the nave, which is in a very bad state [of] and needs retiling, as well as other rep[airs].

The last item mentioned is the rere[dos]. resolution has been come to by the c[ommittee] on this subject, nor has it been form[ally] sidered by them. After one of my [visits] Tewkesbury, I prepared a sketch-desig[n] purpose, but entirely upon my own m[otion]. a drawing founded on this is in the r[oom]. object, however, has been mainly [to] opinions on this subject. I cannot he[lp] that, considering how the choir is fla[nked] noble series of chapels and towering m[asses]

* By Mr. J. Oldrid Scott, read at the Lambeth Palace Meeting, as already mentioned.

fever look complete until its eastern
y is occupied by a reredos as dignified
them, though it would indeed be vain
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those eminent personages with whom
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other points need alluding to. The
ch is now being carefully repaired, and
finished, and I am glad to say that the
ptuous iron gates which have stood in
with it for the last 150 years will be
though their level will be lowered
ground. Some further expenditure
ecessary here in the provision of new
t this has not yet been decided upon.
or of the nave has now been entirely
to its ancient level with a very good
he step which we discovered to have
he position of the ancient rood-screen
parated the conventual from the parish
ing restored.

, a few words require to be said about
. The position finally decided on for
ed in the report, is beneath the north
the central tower, above the screen
the back of the stalls,—a drawing of
nexion with them is shown. The fine
will be strictly preserved,—a very
lition being made to its lower part to
to its new position. It is of great
l beauty, and, from its details, must be
e earliest in the country.

hen is an account,—I fear a very dull
the works either in hand or contem-
All are of importance, and indeed, of
ecessity, but the means at the disposal
ommittee compel them at present to
a considerable proportion of them. It
y to be hoped that the publicity now
ven to this good work may lead to
al help being received.

STUDY OF ECCLESIOLOGY.

L'S ECCLESIOLOGICAL SOCIETY.

augural meeting of this Society was
uesday evening last, in the Chapter-
t. Paul's Churchyard. There was a
ndance. The chair was taken by the
). Shuttleworth, M.A., chairman of the
who said that it was a "hopeful" omen
Society had been able to induce Mr.
l-Hope, who was a leading member of
Ecclesiological Society, to give the
t lecture; another "hopeful" omen
t the initials of the Society were
These two favourable omens would,
ed, counterbalance the somewhat un-
le circumstance that the date of the
meeting of the Society was obliged to
for the First of April.

ereford Hope then proceeded to give
ss on "The Study of Ecclesiology."
ved that as an old labourer in the work
t Ecclesiological Society, he felt it to be
honour to be invited to take part in
what he hoped and believed would
be a vigorous young offshoot from the
ree. It was just forty years ago,
few days, that two undergraduates
oon their college tutor at Cambridge,
e idea which had struck them of found-
ciety for the study of Gothic architec-
church art. The tutor, kindly sympa-
all things, accepted his pupils' sugges-
mpered, no doubt, with a timely
that the pursuit of such studies was
best way to obtain good places in the
ty triposes. That warning was not
e heeded, and the consequence was
re were martyrs to ecclesiological study
Cambridge triposes of those days. Of
undergraduates referred to, one,—John
Neale,—had now departed this life, the
he Rev. Benjamin Webb, vicar of All
Margaret-street,—was happily still
to us. They were joined in their
se by such men as Paley, the great
t, and the late Archdeacon Freeman, of
In course of time the Society relin-
its first and somewhat incongruous
The Cambridge Camden Society," and
"The Ecclesiological Society," and
less restrictive title it was enabled to enlist the co-operation of many distinguished Oxford men, among whom was the late Sir Stephen Glynne. Now, the members of the St. Paul's Ecclesiological Society should ask themselves what they proposed to do. Did they propose to visit a certain number of churches, unintelligently, though, perhaps, agreeably? He was sure they did not, and that he spoke for them all when he said that their purpose was to take up in earnest the study of the science of ecclesiology, and maintain and develop it. Now, what was the science of ecclesiology? It was the science of worship, carried out in all its material developments. Ecclesiology was ceremonialism, and a good deal besides. It embraced within its scope the buildings which were erected for worship, and all the accessories and adjuncts pertaining to such buildings, as well as the service of worship itself. It was the vehicle whereby many arts were made subservient to one great end, and the greatness of the end demanded the employment of the highest art, whether in architecture, painting, sculpture, or decoration. The science of ecclesiology, too, included one of the most recondite branches of archæology, viz., liturgiology. It also included the study of church music, bymnody, organs, &c. He was very glad to be informed that, at the outset, it was proposed by the council of the Society to commence by directing the attention of the members to the architectural aspects of the great programme which they had before them. Other branches of study would follow in due course. But great caution would have to be exercised in so controlling the current of study as not to let those who were devoted to one particular branch of it unduly monopolise the proceedings of the Society. One section of members, perhaps, would be music-mad, another section vestment-mad, another preachment-mad. Each branch of the study of ecclesiology, each phase of it, had its place in the great whole, and should be kept in due subordination thereto. Mr. Hope then proceeded to refer to the great progress which had been made in ecclesiology during the last forty years, and compared the past with the present condition of the parish churches of the country. With the view of showing what was the condition of things when he was a lad, he quoted from his work on "Worship in the Church of England" his quaint description of Dorking parish church as it then was, utterly unfitted, as he contended, for the orderly, reverent, and effective conduct of divine worship. Dorking Church as it was, was but a typical instance of the then condition of hundreds and thousands of churches all over the country. And not only outwardly and visibly in the condition of our churches themselves was to be found this improved appreciation of ecclesiology, but it was to be met with in society, even at the most casual gathering. In fact, a new atmosphere seemed to surround clergy and laity of all parties, and an intelligent appreciation of architecture and church art was becoming common. Reverting more immediately to the work which the Society had set itself to do, Mr. Hope advised the members to direct their studies with the view of realising to themselves what was the perfect type of a church as a whole. In visiting churches, the great temptation to members of such societies as the one he was addressing was to run about after detail,—to canvass this brass, criticise that tomb, admire that window, or criticise that other window. That sort of thing was all very well as far as it went, but those who did it missed their point. What members of such societies should do when they visited churches, should be to "inventory," as it were, everything that they saw, and, according to their respective notions, sum up the whole, with the view of seeing how far the various parts made an ideal whole. The Camden Society used to provide its members with printed outline schemes, to be filled in with the particulars of plan, construction, arrangement, details, decoration, &c., of all churches they visited, and the members made it almost a point of honour never to visit an out-of-the-way church without filling up one of those outline schemes, and docketing it in the archives of the society. The observation and precision called forth in the filling up of such papers afforded very good practice to the members of the society, and another result of such a custom was to accumulate a large amount of useful particulars, calculated to be of service in the absence or destruction of all other records. In this connexion, he recommended to the attention of members the duodecimo "Handbook of English Ecclesiology," by Neale,—a work which was now, perhaps, out of print, although a few copies might possibly be found at Masters's or elsewhere. That little work was published by the old society, and gave a sort of inventory of an English church in its various forms. Another thing he would earnestly advise students of ecclesiology to do was to visit as much as possible, and compare one with another, churches old and churches new,—for, happily, it was no longer invariably the case that it was only possible to visit new churches with the view of learning what to avoid. Among many new churches worthy to be visited for such purposes of comparison might be named Mr. Butterfield's All Saints, Margaret-street, Mr. Pearson's new church in Red Lion-square, Holborn, and the same architect's St. Augustine's, Kilburn. In the City itself, one of the most interesting old buildings which the members could visit was the Church of Austin Friars, the nave (the only remaining portion of the building) of which was so ably restored some years ago by Mr. Lightly, a talented young architect who was prematurely cut off by death. It was a very fine specimen of fourteenth-century Gothic, and had served as the model for two very notable churches,—Pugin's St. George's Cathedral, Southwark, and Carpenter's Church of St. Mary Magdalene, Munster-square. St. Saviour's or St. Mary Overie, Southwark; the conventual Church of St. Helen, Bishopsgate; St. Katherine Cree; St. Michael's, Cornhill; Wren's only Gothic Church, St. Mary Aldermary; St. Peter's, Cornhill; St. Giles's, Cripplegate; and many other churches, would afford material for study by the members of the Society in London itself, to say nothing of Westminster Abbey and St. Paul's Cathedral. In the neighbourhood of London were St. Alban's, Waltham Abbey, Windsor, and other places affording material for study. The lecturer next referred to the marked development within recent years of ecclesiology in all parts of the United Kingdom, as witnessed by Sir G. G. Scott's new cathedral of St. Mary, Edinburgh; Mr. Burges's Cathedral of St. Finn Barr, Cork; and the movement now widely spreading in Ireland amongst the clergy for providing chancels and similar adjuncts where they did not exist. In conclusion, Mr. Hope exhorted his hearers not to attempt to compare the incomparable, and pointed out how any attempt to compare St. Paul's in London with St. Peter's at Rome would be unfair to both those fanes. They were both in the Italian style, it was true, and each had a dome in the middle; but there the comparison must end. He suggested that the Society might do well to encourage the making of sketches of the buildings visited by its members, the best of such sketches to be preserved,—possibly to prove of very great value at some future period.

Major Heales proposed a vote of thanks to Mr. Hope, who might be called the Nestor of ecclesiology.

Mr. G. H. Birch seconded the motion, and said it was the intention of the Society to take up the study of ecclesiology *ab initio*, and to study a church as a whole before going into details.

The motion having been carried by acclamation,

Mr. Bereford-Hope responded.

Mr. J. P. Seddon, in moving a vote of thanks to the chairman, said that although he must agree that there had been a great advance in church art during the last forty years, and although the aim of the present day in such work was no doubt far higher than it used to be, much remained to be done, for, unfortunately, even now the standard of art employed in church decoration was an exceedingly low one. Such work ought to be more generally entrusted to architects and artists rather than to tradesmen and tailors.

Mr. Bumpus seconded the motion, and the proceeding came to a close.

Sadler's Wells Theatre.—With reference to the notice of Sadler's Wells Theatre in our last issue, we are asked to say "the contractor is Mr. E. Nightingale, but not the firm, at Albert Works, Lambeth." The staircases, corridors, and upper floors, are to be fireproof on an improved principle, and are being constructed in cement concrete, as a separate contract, by Messrs. Charles Drake & Company.

ELECTRIC LIGHT IN LIGHTHOUSES.

THE INSTITUTION OF CIVIL ENGINEERS.

At the meeting on the 25th of March, the paper read was on "The Electric Light applied to Lighthouse Illumination," by Mr. J. N. Douglass, C.E.

In 1857 experiments were tried at Blackwall with the electric light, produced by the first magneto-electric machine of Holmes; and on the 8th of December, 1858, the electric light, obtained by Holmes's second machine and a "Duboscq" lamp, was shown on the sea for the first time from the South Foreland High Lighthouse.

On the 1st of February, 1862, the Trinity House exhibited the electric light permanently at Dungeness Lighthouse, by Holmes's magneto-electric machines and lamps. The works for the production of the light were described, and the first cost and maintenance given. The intensity of the electric luminary was about twelve times and a half that of the oil luminary. The cost per unit of light per hour was 0·1165d. for the oil, and 0·1294d. for the electric light. Frequent falling off of the latter light occurred, and the oil light had occasionally to be substituted. Shortly afterwards, the French Lighthouse authorities established the electric light at Cape La Hêve, with the magneto-electric machines of the Alliance Company of Paris. The Souter Point Lighthouse was lighted by electricity in January, 1871. The light was adapted to a dioptric apparatus of the third order. A lower light from the same luminary as the upper one was adopted here for the first time. The optical apparatus for both lights was designed by Mr. James T. Chance, M.A., Assoc. Inst. C.E. A "Holmes" fog trumpet apparatus was also worked from the same engines as the electric apparatus. The total cost of the works was 18,000*l*. The cost of the electric luminary per candle per hour was 0·056d., being rather less than half of the cost per unit at Dungeness. The maximum intensity of the beam from this apparatus was about 700,000 candles. The Trinity House next established the electric light at the South Foreland High and Low Lighthouses, in January, 1872. The apparatus for the production of the light consisted of two steam-engines of 20 effective horse-power, four Holmes's improved magneto-electric machines and lamps, and two dioptric apparatuses of the third order for fixed white light. The cost of the additional works for these lights was 14,800*l*. The intensity of the full power beam from the High Lighthouse was about twenty times that of the old first order dioptric oil light. The relative cost per unit of light was as 100 oil to 30·6 electric. In 1873 the Trinity House adopted, for the Lizard Lighthouses, Siemens's dynamo-electric machine and lamp, and a siren fog signal. These were driven by three of Brown's caloric engines, each of 10 effective horse-power. The cost of the additional works for these lights was 14,936*l*., and the annual maintenance, including interest on first cost, amounted to 2,365*l*. 6s. 4d., against 1,016*l*. 7s. 11d. for the oil lights. The intensity of the full-power beam of each light was about 330,000 candles, being 211½ times the intensity of the oil light. The relative cost per unit of light was 100 oil to 14·04 electric. The successive improvements in the electric machines, and in the means of driving them, had reduced the cost of the electric light at the Lizard to one-ninth of that at Dungeness, and the quantity of light produced at the Lizard per pound of coke consumed was increased twenty times.

The continued growth seaward of the shingle point at Dungeness led to the removal, in 1876, of the original electric light apparatus, and the substitution of a low flashing oil light and siren fog signal for both lighthouses.

The author gave statements, showing the comparative focussing compactness of the light-house luminaries, which had been referred to, for utilising in optical apparatus, viz., the lights produced by oil, coal gas, and electricity. The focussing superiority of the electric luminary, compared with the best of these, was as 616 to 1. Statements were given of the comparative average cost and annual maintenance of a single lighthouse (shore station) in this country, with colza oil, mineral oil, coal gas, and electricity, as the illuminating agents, both with and without a first-class 20-horse-power siren fog signal. For a maximum degree of light equal to the single or combined intensity of the luminaries of the Lizard, the cost of the more perfect electric luminary per unit of light provided was about $\frac{1}{13}$ and $\frac{1}{25}$ respectively of that of coal gas, and about $\frac{1}{65}$ and $\frac{1}{35}$ respectively of that of mineral oil, at their maximum intensities. With higher intensities of the electric luminary, the cost per unit would be more in its favour, no further addition to the working staff being necessary.

From experiments, it might be assumed that, with the atmosphere so impaired for the transmission of light, the oil luminary, at its maximum intensity, would be fairly visible at the fog signal range of two miles; the electric luminary at its double Lizard intensity of 16,500 candles, would be visible at about four miles. Further, that on more frequent occasions, when the oil luminary would be visible at about eight miles and a half, the electric light would be visible at the full range of seventeen miles.

THE "SUBURBAN BUILDERS" AND THE NEW BUILDING BYE LAWS.

Sir,—As it is a public duty to prevent misconception or deception from being successful, even for a short time, I hope you will allow me to put a few brief queries to those whom it may concern. The prime promoters and supporters of the so-called "Suburban Builders' Association," if honestly acting, cannot be wronged by the following interrogatories, which they are at liberty to answer if they care to do so; but, whether or not, it may be found that the queries here put embody their own answers. The silence that will be observed in some quarters respecting these queries will be considered ominous, and that the handwriting on the wall spells—*Jacta est alea* "Jerry."

QUERIES.

Is it true that the meeting at the Guildhall Tavern, as reported in the *Builder* and other papers, had its rise in a certain district of East London, and was got up in the interest of well-known speculative builders, long engaged in peculiar methods of building, both in Middlesex and Surrey, but principally in the east and north-east districts?

Is it true that the principal promoters and prime movers in this panic movement are large parish and rubbish contractors, owners of huge "shoots," which some of them are at present letting to "jerry" builders to operate upon?

Is it true that one or more of them have purchased monster "shoot" areas in parishes situated in the boroughs of Hackney and the Tower Hamlets, and that one of these large areas is now nearly built over, and that building operations are at this moment being speedily pushed forward on the other?

Is it true that while one of these "shoot" areas was being levelled up with more rubbish lately, another portion was levelled down, because it contained a substratum of sand? And was not this sand carted away and sold, and fresh rubbish substituted for the previously solid ground?

Is it true that on this shoot-ground a large number of houses of the "run-up" kind was erected during the late year, and have not some of the builders thereon been cautioned several times by the district surveyor for open infringement of the Building Act, and more particularly in regard to foundations and wretched mortar?

Is it true, as already reported in the *Builder*, that the Poplar District Board of Works have lately been instrumental in successfully putting a stop to the erection of a new colony of buildings intended to be erected on another rubbish-shoot in the same locality, and are not a number of canal barges at present engaged in bringing dredged river stuff for the purpose of levelling up portions of the same shoot?

Is it true that some of the members of this so-called "Suburban Builders' Association" know the facts exceedingly well, and that one or more of them have endeavoured to procure the condemned ground for the purpose of parcelling it out in lots to speculators?

Is it true that several of those who attended the Guildhall Tavern meeting are interested otherwise in east and north-east London districts in speculative building, as small brickmakers, as well as builders, and that the bricks they make are used mostly on their own grounds, and by their friends engaged in the same class of buildings?

Is it true that respectable builders in London would not use the class of bricks in question, and that the makers and "jerry" builders are those principally interested in the land, the shoots, and the parish dust and rubbish contracts, by which those building plague-spots are created?

Is it true that available low land or shooting-ground is becoming yearly more difficult to procure within a reasonable distance of the City to suit dust-contractors; and, to meet this want, is it not the practice of rubbish contractors and small brickmakers to purchase a piece of cheap land to excavate for brickmaking; next, to use it for a short time; and finally, to let it for building, the original purchaser in some cases acting as the brickmaker and the builder, and sometimes even as the solicitor?

Is it true that some of the promoters and supporters of this new and desperate venture (though they have wisely kept their names in the background) are members of vestries, district boards, and guardian boards, as well as being energetic "jerry" builders; and if so, does it not show that such local representation is a most grievous and lamentable calamity?

Is it true that the Metropolitan Board of Works, through its district surveyors, are, to a great extent, fully aware of the practices of suburban builders of the lowest class, and is it not right and proper that it should be further informed in the interest of the unsuspecting many, of the ways and means, and motives of several of these "injured innocents" who are now protesting too much at the eleventh hour, and have not come before the public with clean hands?

Is it true that "scamped" building implies bad building in workmanship and materials? And how many of those suburban builders who met a few days ago are prepared to permit an examination of one or more of their houses in a certain locality, by a member of the Royal In British Architects, to be named, with the fur dition that the report should be published in t press, along with the names of the builders?

Is it true that the above queries are generally s to suburban speculative buildings on all side metropolis? And if so, are they likely to be ans the parties indicted by any other than a general

Lastly, is it not true that men who sell and hav years adulterated goods, have been obtaining mo false pretences? And if so, can "jerry" builder are engaged in a less dishonest employment?

A

SANITARY STATISTICS: LIVERP

LIVERPOOL ARCHITECTURAL SOCIET

At a meeting of this Society on the L the president, Mr. Henry Sumners, r the discussion upon Mr. Joseph Boult's read at the last meeting, entitled "S Nescience." He said Mr. Boult had n very startling statement that the death 1841 and 1878 was the same, and furth overcrowding did not necessarily tend t creased death-rate; he should very muc have some light thrown upon these state

Dr. Drysdale (visitor) said that Mr. paper was a very valuable one, but h doubtless excuse his saying that he ha with a paradoxical statement, that th rate was still as high as in 1841. That the fact; and, besides, Mr. Boult w doubt, admit that if nothing had been the way of sanitary reform since 1 death-rate would now be something fi contemplate. In fact, Mr. Boult had ledged, with admiration, the great effor had been made by the town of Liverpo cause of sanitary reform. In truth, t been so great that we were rather apt that there was nothing more to be done get impatient of the subject; so it ne startling assertion of Mr. Boult to attention to the fact that there rema so much to be done. Mr. Boult w correct as to the fallacious nature of the computations upon which the death-r calculated. Likewise in his position word over-crowding covered a multi fallacies, and in particular that it was synonymous with density of popula acre. In the question of health depe building, all the accessory causes o must be set aside. If people were h palaces built in a perfect paradise, a situation was concerned, and at the s deprived of sufficient food and cloth would die just as much as in hovels. put away all talk about poverty, intemperance, as mere "bunkum" in t the present question. The late Mr. Ne an excellent authority,—laid it down more than 200 persons should be allow on one acre, and certainly by securing go a long way to prevent the more gla of over-crowding. But to carry out s is not enough, and Mr. Newlands w been the last man to stop there, t builders to do as they liked while keep the letter of a hard-and-fast line like it is, we see great tracts of ground l covered with long lines of dull, uni streets of small houses of low elevati by needy and scamping builders, within the above law as to density of p per acre, and neglect other essentials The authorities should require the b blocks of houses on complete sanitary p by competent and responsible archit as the Ashfield-street blocks of Messr those of the Industrial Dwellings Co London. These blocks being built l to gain space and pure air by eleva a much denser population for the gro stand on than the above limit of Mr. 1 while at the same time they are as h the houses of the rich. The surp might be kept open as gardens, boul play-grounds, to the great advanta inhabitants of these blocks, as well beauty and amenity of the town in ge

Mr. Montgomery, in the course of a elaborate statement said,—As to th question, I quite concur with Mr. B the uselessness of the tabular stat areas, population, and number of p acre in twenty-three cities and borou United Kingdom, issued by the autho Registrar-General, for the purpose of c as to density of population or death-r said statement is not only useless, bu misleading. For example, Dublin is have an area of 10,050 acres, with a

,666, or 31·3 persons per acre; it is that the municipal boundaries are taken he towns except London and Dublin, but it ly a mistake to include within the city of a large area of more than 6,000 acres of an district outside the municipal boundary, populated as compared with the city, for irpose of comparison with Liverpool, w, or Manchester, which are stated with ice to their municipal boundaries.

lowest density of population in Liverpool ·5 persons per acre in Castle-street and ter's Wards, and the highest was 180·5 re in Everton Ward; while in the city of the lowest was 40 per acre in North nd Usher's Quay Wards, and the highest per acre in Royal Exchange Ward, the e for the whole city being 68·6 per acre, rasted with 103·3 in Liverpool.

rting to the Registrar-General's tabular lent of areas and population, take the Norwich, which comprises 7,472 acres, nicipal boundary being somewhat circular ly 4 miles diameter, the portion built on nly about an average of 1½ mile square, 1,500 acres, while all the remainder, 6,000 acres, will be open, rural, horti- l, and suburban land sparsely populated. at possible use, then, is it to say that h has an average population of 11·4 per it is really about 56 per acre on the ed portion.

lso as to Leeds, the extended boundary of is 7½ miles from east to west, and the from north to south, its average length eadth being about 6 by 5½ miles, about re miles, having an area of 21,572 acres, h the proportion of land built on, closely ickly inhabited, is only about 2½ miles or about 4,000 acres, and with a popula- 311,860, less 31,860 for the rural districts, erage per acre would be 70, instead of in the Registrar-General's statement. A examination of most of the towns quoted show the utter absurdity of comparing n such a manner with Liverpool, where close of 1868, out of 5,210 acres, only were unbuilt on, and at the end of 1878 will be only about 750 acres not built on.

ing from this subject to Mr. Boult's ent, "That the death-rate for the whole borough in the present day may be d as not less than 35 per 1,000, and re the sanitary condition of the borough, all the expenditure and improvements have been made, is identical with that of ish in 1842, before the Health Act was od or any of the improvements effected, hen Dr. Duncan gave the death-rate in the as 1 in 28·75, or 35 per 1,000." I think it e regretted Mr. Boult did not consult the ead reports of the medical officer, Dr. , before he wrote that paragraph.

the courtesy of Dr. Taylor I have been ed with his report for 1877, and some in reference to the yet unpublished of 1878. In the report for 1877, page 5, ated that the death-rate of the borough 8·4 per 1,000, and the average of the ing ten years was 29·3 per 1,000. The in the parish were 7,022, and in the out- ips 6,832, and these figures, calculated estimated population, would give 33·3 per for the parish and 21 per 1,000 for the wnships; and a reference to the tabular ent which I have given for Liverpool will the death-rate in the several wards for and 1878, by which it appears that on, although having 180 persons to the had only a death-rate of 20 per 1,000; the low-lying districts in Scotland, Vaux- t. Paul's, and Exchange Wards, although densely populated, had death-rates vary- om 32·8 in 1877 to 46 6 in 1878. Everton, ubt, owes its salubrity to its favourable ion on sandstone, on the crest and slopes ill, having by its gradients facilities for apid removal of surface and other im- es, and most of its streets running from to east, and enjoying the advantages of g and purifying breezes, when the atmo- e is heavy and sluggish and filled with of disease in the Vauxhall-road and Mary- districts, where the people exist on wet foundations, or, still worse, on artificial ations of waste chemical and decomposing l and vegetable rubbish, and where fresh culates slowly. At page 4 of Dr. Taylor's t is a tabular statement which shows that twelve years from 1866 to 1877 inclusive, eaths from diarrhœa had diminished from 1,145 in 1866 to 605 in 1877, and those from fever had dropped from 1,523 in 1866 to 382 in 1877, circumstances which seem to indicate in a very remarkable manner that the sanitary operations carried on during that period had been of a very beneficial character.

Besides over-crowding, dirt, bad food, bad clothing, exposure, and intemperance there are other causes of a climatic character which affect the death rate. Low temperatnre in winter, deficient rainfall, and sultry weather in summer contribute largely, along with the other circumstances mentioned, to swell the death rate, especially in the low-lying districts where the houses are crowded on the land, and the people crowded in the houses.

Mr. Boult (quoting from the reports of Drs. Parkes and Sanderson, in 1871), says the death-rate in Rodney-street was 10·71 per 1,000, and in Sawney Pope-street 55·86, or, relatively, say 11 and 56 per 1,000. Sawney Pope-street is one of six selected streets, namely, — Lace-street, Adlington-street, Henry Edward-street, Bispham-street, Addison-street, and Sawney Pope-street, to which special reference was made by the doctors in their report. Taking the district from the centre of Lace-street to the centre of Sawney Pope-street, and from the centre of Standish-street and Marybone to the centre of Fontenoy-street, its area, including the streets in it and half those adjoining, is about 29,700 square yards, or 5½ acres, on which there are 538 houses (including a few public-houses), the population of which was said to be about 5,000 persons in S. and P.'s report. This would give 840 persons to the acre (S. and P. said about 1,000) and 55 square yards for each house, and taking 7 persons to the house it would be 8 square yards for each person, which was the same as found by the late Mr. Newlands, in 1863, in the Vauxhall-road and Hornby-street district, where, on an area of 13,720 square feet, or 1,525 square yards, there were 190 persons, or 605 to the acre (see Mr. Newland's Report of 1869, page 21).

Now, taking a block of Rodney-street between Mount-street and Leece and Hardman streets, its area, including Rodney-street and half those adjacent, is 26,700 square yards, or 5½ acres; on it there are forty-eight houses and twelve stables.

Rodney-street contains 88 houses, and in 1871 the population was 607, which gives an average of rather less than 7 per house, which, for the 48 houses in the block I have taken, would be 336 persons, and for the 12 stables take 36 horses, or 372 living beings on the 5½ acres, equal to 83 per acre; and taking the 48 houses and 12 stables on the 26,700 square yards, we get an average of 445 square yards for each building, or, rejecting the stables we have 556 square yards for each house and its appurtenances, as contrasted with 55 yards for each house in Sawney Pope-street district; and reckoning persons and horses at 372 to 48 houses, or 8 beings per house, we have 70 square yards for each living being in Rodney-street, as against 8 yards for each person in Sawney Pope-street.

If we suppose the houses to be crowded on the land, and the people crowded in the houses in Rodney-street in the same proportion (nearly ten times) as in Sawney Pope-street district, we would have the death-rate rapidly rising from 11 per 1,000 to probably three times that amount, notwithstanding the advantages of situation and foundation or subsoil. The overcrowding of houses on the land, and people in the houses, seems to me, therefore, to be a most important factor in producing a dirty, unhealthy condition of the people and their homes, especially in the low-lying districts, and when aggravated by other disease-producing causes, a high death-rate must be the result.

On looking at the Ordnance map of Liverpool, surveyed from 1845 to 1848, and published in 1850, we notice very large open spaces of uncovered land, especially on the north, east, and south sides, and when we look at the map of 1879, nearly all covered with buildings, we see at once how much has been done to over-crowd the land, and we can imagine in what a vitiated and dangerous atmosphere we would have to live and breathe if it were not counteracted by the large and beneficial sanitary works which have been in progress for thirty years. I find from the borough engineer's reports that there were 59,647 new houses erected in the borough from 1841 to 1878 inclusive, and that from 1872 to 1878 inclusive, there were taken down 2,115 houses. The papers containing the numbers pulled down previously to 1872 have been mislaid, but as the houses on the sites of the railway stations, &c., and portions of the docks were pulled down since 1841, it may be assumed that from 1841 to 1871 at least 8,000 may have been removed for all purposes, or over 10,000 from 1841 to 1878, leaving 49,000 or upwards, of additional houses since the time referred to in Dr. Duncan's report, as mentioned by Mr. Boult. In 1841, there were 45,385 houses, and a population of 286,487; in 1879, there are probably twice as many houses, and almost twice the population on the same area, and it is manifest that but for the immense sanitary works of various sorts, — drainage, sewerage, paving, water supply, court improvements, examination and cleansing, examination and closing of unhealthy cellars, &c.,—it would be difficult to live at all in some of the less favoured parts of the town.

From all I have stated I think it is very evident, indeed it may be considered as an axiom, that the sanitary works of the past thirty years have greatly contributed to improve the health of the borough, and to diminish the death-rate, and when Mr. Boult considers that instead of 35 per 1,000 being the normal death-rate of the borough, and 3·5 per 1,000 higher than in 1839-41, the death-rate in 1877 was only 26·4 per 1,000, and for the previous ten years only 29·3 per 1,000, and when he reflects on the facts stated as to the areas and population of the districts referred to he will be inclined to greatly modify his statement on page 75, "that all the sanitary efforts during the past thirty-six years have been misdirected," and he will admit that what may not be over-crowding in Everton at 180 per acre, or in the Ashfield and St. Martin's Cottages at 550 to 650 per acre, becomes very great overcrowding in Sawney Pope-street and similar districts at 840 to 1,000 per acre, and that such overcrowding, although not the sole cause of increased mortality, is yet a very powerful factor with others in causing it; if we can diminish overcrowding, we will diminish one cause of a great deal of home and personal dirt and impurity.

Mr. E. Nugent said he had written to the Registrar-General, and had obtained the death-rates in the three large towns, Liverpool, Manchester, and Glasgow, for the eleven years, 1868 to 1878 inclusive. They were as follow:—

DEATH-RATE PER THOUSAND OF POPULATION.

Years.	Liverpool.	Manchester.	Glasgow.
1868	30·4	33·6	30·7
1869	30·4	30·7	34·0
1870	33·0	29·9	29·6
1871	35·2	31·3	32·9
1872	27·2	28·7	28·4
1873	25·9	30·1	29·1
1874	32·1	30·5	31·1
1875	27·5	30·0	28·6
1876	27·6	29·2	25·3
1877	26·5	27·4	24·8
1878	29·4	27·9	24·9
Average	29 56	29·94	29·04

On page 70 of Mr. Boult's paper, the death-rate for rural districts is stated to be 18 per 1,000, and for urban districts 26. From the Registrar-General's reports he found that from 1847 to 1876 inclusive, the death-rate in the rural districts of England and Wales was 19·8 per 1,000, and for 1876 only 18·6; in urban districts 24·8, and for 1876 22 8, whilst in 1847 it was 29, and in 1849 30 per 1,000.

The President thought it would be well to give the discussion a more practical turn. He had to complain of the way in which in days gone by the Corporation had deliberately allowed night-soil to be deposited on land which was afterwards built upon without its having been removed; as the greater portion of such land in Liverpool was clay land, the rain, after soaking through the night-soil, could not possibly get away, and in hot weather was bound to produce a result most detrimental to the health. He was building a church at Kirkdale, upon the site of which he had found cart-loads of tinned meats, cabbage-stalks, &c, and in the immediate proximity a row of houses had been built, the foundations being built in a trench scratched out in this deposit of night-soil. He shuddered to contemplate the result during the first summer weather we had; if such things were allowed, we should have a high death-rate, regardless of medical officers of health, registrar-generals, or any one else.

Mr. Nugent, continuing his remarks, said that some years since Alderman Bennett had called attention to a large district at the east end of

the town, where houses were being erected on similar deposits to those alluded to by the President. He himself remembered seeing Windsor-street, at the south end, some years back, entirely formed of night-soil deposits 5 ft. to 6 ft. deep, and this overlay a clay formation, the land having been excavated for brickmaking purposes. This was in 1871 or 1872. In 1874 the street was paved; in 1877 the water-pipes were laid down in it; and in September, 1878, one of these burst, owing to a subsidence in the road, caused, he imagined, by the decay of vegetable matter among the night-soil, of which it was composed. The result was, the road and side-walk sank considerably, and the walls of two houses were undermined and cracked from top to bottom. Mr. Boult's paper embraced many social and national questions. He had expressed a desire to see good houses built for the working classes at a rental of 1s. 6d. per week. He thought this would be best achieved by building the houses higher. Queen Anne's Buildings, in London, though built for a better class, were eleven stories high. Why should houses for the labouring classes not be so built? Mr. Boult had also referred to the windows of bedrooms being as a rule only opened at the lower part; they should not, however, be opened at the top only, but the correct plan was to open them both top and bottom, and thus secure a thorough circulation of air.

The discussion was adjourned till April 2nd.

BLOOM ON TILES.

Sir,—"L." complains that a white matter covers the face of the tiles in his hall. This is probably caused by the vitriol in the cement beneath rising up through the floor. It will continue to do so so long as any of the chemical remains therein. Let the settlements be brushed off wherever they appear, and have patience. In those parts of England where red brick is used for ground-floor rooms, in lieu of the usual stone or boards, many thrifty housewives scrub their floors, once a week or so, with stale milk, and it is surprising how bright this application makes the bricks look. "L." may take a hint therefrom, and wash the tiles occasionally with milk. The application will be found advantageous.

Harry Hems.

Sir,—We observe in your last publication a etter signed "L.," in which the writer states hat his hall tiles (Craven, Dunnill, & Co.'s) are always covered with a white matter which sweeps up like snow, and that the tiles are covered again soon after. This white substance is an efflorescence of lime that arises from the nature of material in which they have been laid.

The foundation for tiles should be cement concrete brought to a level surface by a coating of not less than a quarter of an inch in thickness of pure Roman or Portland cement, and on the foundation so prepared, when sufficiently dry and hard, the proper material for laying tiles is the best Portland cement, mixed with good clean sharp sand: then this white deposit disappears after a few cleanings.

It often is the case that builders, from inexperience, or a notion of mistaken economy, lay tiles in lime, and then the efflorescence described will certainly arise.

We know no remedy but taking up the tiles and relaying them with the proper material.

Grease spots may be removed by a brush with soft soap and warm water. Most other stains may be cleaned by the application of a diluted solution of muriatic acid and water, rubbed on with pumice stone, taking care to wash off the acid quickly, or it will decompose the cement on which the tiles are laid.

Craven, Dunnill, & Co. (Limited).

The National Coffee Public-Houses Society.—We would willingly aid the committee of this society in calling attention to the movement now taking place for establishing coffee public-houses, the time having arrived for carrying it forward in a large and comprehensive manner. What has been done proves, as the committee say, beyond question that they are not only self-supporting, but a great commercial success, thus doing away with the idea that charitable assistance is needed. It has been determined to form a society with adequate capital, and under the control of a board of management that will command universal confidence. Capt. W. Hugh Phipps is the honorary secretary.

BACKING UP THE EDDYSTONE LIGHT-HOUSE.

The following has been addressed to the Institution of Mechanical Engineers, London. The writer, who dates from Nelson, New Zealand, requests us to publish it.

In "Chambers's Journal," of May 31, 1878, the fourth paragraph in the article "The Month, Science, and Art," reads thus:—"The Institution of Mechanical Engineers have published their usual yearly list of subjects on which they would be glad to have papers for reading at their meetings, &c." The fifth is as follows:—"One of the subjects is improvements in the Light-house, by which we are reminded that a new lighthouse at Eddystone is talked of. The present structure was built by Smeaton in 1756-59, and ever since, as long before, as indicated by name, the sea has been wearing away the rock on which it stands, and now threatens to undermine the foundations. The tower would be built on an adjacent rock, with, as we may believe, all the best improvements in construction and lighting."

When I read the foregoing paragraphs, I was a great deal surprised that such a wearing away should have been permitted to go on for so long without attempts being made to stop it and preserve such an immensely beneficial structure from certain destruction, which, if permitted, would cause so large a loss of life and property before a new one could be constructed that I shudder to think of it. When I know your Institution, and many other kindred ones, contains so many clever and ingenious engineers and scientific men of repute, I wonder some should not have hit upon a method of stopping the wearing away of that rock; yet the thing is very simple, and when once done will thoroughly resist any power of the sea under any circumstances for ever. If it was not a matter of such immense importance to the maritime service, not only of English, but of all other nations, I would not have ventured to intrude.

The innumerable experiments that I have made with coal tar, in order to utilise it and find out its combinations with other materials, to make what is known to the scientific men as asphalte, show the following proportions are the best, coal tar ten gallons, sifted slack lime one peck, the tar and lime to be mixed together first in all cases. If gravel or rubble is saturated with the above mixture,—the former in all cases to be thoroughly dry,—I call that asphalte concrete; if fine sand is mixed with it that I call asphalte mortar. I think all the members of your Institution know well that the above material is perfectly impervious to the water; therefore, if let down into the water, it soon becomes a solid mass, resisting all the power of water as well as atmosphere. Any wall built with good stone and asphalte mortar is, without doubt, an everlasting wall. I have arrived at the above conclusions after many experiments and immense labour, both physical and mental. Therefore I am perfectly satisfied that if asphalte concrete is let down on the western, south-western, and southern side of the rock on which the Eddystone Lighthouse now stands, to such distance as may be deemed necessary, it will assuredly stop the wearing away of the rock, and if the present tower is good, or not damaged much, I would respectfully recommend the adoption of the above plan, instead of building a new tower on the adjacent rock, which I know personally is not well suited for the purpose, besides entailing an enormous expense. If the asphalte concrete plan is adopted it must be borne in mind that the greater the quantity of tar is used in saturating the gravel, the more it spreads out at the bottom, and *vice versâ*, but it has the advantage that it becomes all the more solid and cohesive to resist the attacks of the waves and time. And, if the preservation of the rock and the present tower is decided on, I would recommend that an additional strength be given to the tower, by surrounding the lower part with masonry oversailing towards the top. The stones should not be large, but of good quality, and well jointed on the outside face, and well bedded in asphalte mortar. The object of it is twofold; the one to strengthen the tower, the second to save the force of the waves against the structure, and prevent the wash-up to the upper part of the tower and the lantern. If the stone of the tower above the proposed addition should show looseness,—I mean, if the cement has been vitiated by the combined destructive agencies, the atmosphere and water (which is alwa the case in course of time),—I would advi decayed mortar to be scooped out about then the joints well filled with fine as mortar, using little more lime than the mixture.

I have found the above-named asphalt crete the best and cheapest for stoppir encroachment of a river on its banks: thus the bank to about 45 degrees, then cover asphalte-concrete from 6 in. to 1 ft., rather wetter for the bottom. If it is th that the bank is likely to be undermined, trench as deep as can be for the water, u gravel and well saturated for the botto likewise if the water is deep alongside bank.

The same material can be used for many public works, such as culverts, abutmen piers of bridges, facing them with stone angles of abutments, and at the end piers lay boulder stones out of the stream coarse asphalte mortar, and with co inside from 1 ft. to 2 ft. in thickness, acc to the height of the work. Arched bridg be built with the same, by making a frame for arches and the sides, using the b boulders for the arch, the small end down Let the frame remain till it rots away asphalte will have hardened to bear any and will last for ever.

I maintain that all the work that is don the asphalte concrete and mortar will be everlasting, as no water nor atmosphere any circumstances has any destroying upon it, of which any of your scientific m can satisfy themselves by experiments.

Erick

WATERLOO BRIDGE.

Sir,—As the workmen are at the road the bridge again, would it not be as well it laid so as to incline to the centre, so t slush should run there instead of the sid present? A slight incline would effe Would not the wooden blocks be bett the soft earth as at present in the which is ground up, and runs to either s the deep gutters, and splashes the pass The footways are very narrow for the in traffic, which at present is quite twenty what it was when the toll was in existen bridge will prove a constant expense u more solid roadway is made. The granite is dangerous, as the vehicles thro on the footway if they happen to run soft ground on to the granite blocks t each side of the roadway. Several person knowledge have been struck by them, it would have proved less expensive in have relaid the footway with another m

The granite, although now re-chipp wear quite smooth in less than five ye will be as dangerous as before. Some that it lasted many years before, b there was no traffic compared to now future. It was dangerous for many years the company's time.

If anything can possibly be done to the refuse of the road in wet weathe being thrown on the foot-passengers, I your paper will earn the thanks of th thousands who are compelled to hurry o bridge daily.

W. T

A Circus on Fire.—On the 25th i alarming and destructive fire broke Keith's Circus, in Princess-street, Derby exact site where Harris's Music Hall sha same fate in 1873. The circus had o been completed. Monday evening th opening night, when the house was almost to suffocation. Everything pa successfully; the place was closed, turned off, and all appeared to be left in an old man, named William White, bein charge of the building as night wa Nothing was noticed until about a q five o'clock on Tuesday morning, when t building was observed to be enveloped i of flames. About a quarter to six o'c roof of the place, which had by this tim become gutted, fell with a tremendou and this seemed to act almost as an extin for the flames were soon subdued. W firemen could get about the ruins an they discovered the skeletons of no fe twenty-one horses and ponies, donkey, t and several monkeys, and the charred of the unfortunate watchman, William

ALBERT INSTITUTE, WINDSOR.

foundation-stone of this long-postponed
g was laid on the 28th ult., under good
. It may be remembered that the land
ught and paid for many years ago, the
it being 600*l.*, and beyond that there
balance left in hand. The subsequent
ptions have raised the fund to 2,400*l.*
ntract for the new building has been
after open tender, by Mr. Woodbridge,
idenhead, for 4,400*l.*, for which sum,
ng the lighting and warming arrange-
the building is to be completed. The
g will have to be furnished, which will
a further cost, of which we are not at
in possession of any estimate. From
ures we have given, it will be seen that
ork of the committee has been by no
completed. They still rely upon the
spirit of the inhabitants of Windsor.
building has a frontage of about 70 ft.
s Sheet-street, and consists of three
comprising a great hall for public en-
ments (with *artistes'* rooms in connexion
ith), lectures, &c.; a library, reading-
and ladies' reading-room; a museum, art
ence class-rooms, committee-room, care-
quarters; stores and warming-chamber
basement, and the customary accessories,
lavatories, cloak-rooms, &c. The main
e is in the centre of the façade, the
g-room being on the right hand, and the
and ladies' reading-room on the left;
iately in front of the visitor, the great
entered by two ample doorways, between
it is proposed to place a bust of her
y the Queen. The great hall is 66 ft.
3 ft. wide, and 25 ft. high, and will ac-
date 500 seats, exclusive of the gallery
ne entrances. In connexion with the
e to the platform (which is removable
occasion of a ball or as may be
le) are the *artistes'* dressing and
g rooms. The building has been so
upon the site that the hall will be lighted
h sides by rows of windows, whilst at
will be illumined by three large sun-
s in the crown of semi-elliptical ceiling.
erior of the hall has not been decora-
reated with architectural features for
sons,—the first being that the funds at
mmand of the committee would not at
warrant such treatment on a satisfac-
le; and the second being that it is hoped
plete the interior of the hall, at least, by
m of chromatic decoration, in conjunc-
ith the fast-becoming famous Windsor
y, which would be more effective than any
architectural accessories, and for which
rfaces offer the necessary opportunities.
rming and ventilation of the hall, its
os, the provision of ample means of
&c., have all been the subjects of atten-
From the central vestibule a wide stone
se leads to the art and science class-
on the first floor; these are separated by
seum, which occupies the centre of the
g. Of the upper floor it need only be
at it provides for a resident caretaker,
mprises rooms for recreation, for com-
meetings, and for such other purposes
s and circumstances may suggest. The
al front is designed in the style of the
th century of English Gothic architecture.
ing executed in red brick, with dressings
armly-tinted freestone, and will be em-
ed with carving sparingly introduced. In
ntre of the *premier étage*, and on a
al in a richly-carved and canopied niche,
ue of the Prince Consort is intended to
, appropriately, the place of honour
chitects are Mr. H. F. Bacon and Mr. E.
Bell, of London.
may mention that Mr. Henry, the director
Windsor Tapestry Works, has given as
tribution to the work the decoration of
lies' reading-room, and a fine subject in
y for the hall; and Mrs. Richardson-
er has given a life-size marble statue of
ince Consort, to be executed in Rome,
ly for the building.

Livingstone's Statue in Glasgow.—nze colossal statue, by Mossman, of Dr. stone, has been erected on the west side ge-square, Glasgow. The statue, a very ne, represents Dr. Livingstone with a n one hand and a cap in the other. This hirteenth statue in George-square.

WEST OF ENGLAND LABOURERS AND THEIR HOMES.

SIR,—Your readers will probably remember some sketches of the wretched farm labourers' hovels of West Chinnock in the *Builder* of December 7th, 1872, through a visit paid by your correspondent, in company with myself, at the commencement of that winter. I have just visited the spot where those two cottages stood. Of course they have been pulled down, and equally of course no others have been put in their place. It is easy enough to cause landowners to destroy bad dwellings, but very difficult to induce them to repair old cottages or erect new ones. I think at that time I stated they belonged to Lord Portman. This was indignantly denied, but it came out that they belonged to Lord Ilchester. That they could not deny the wretchedness of the hovels is proved by the fact that they razed them to the ground. Some neighbouring dwellings have been patched up with new thatch, but cottages are, generally speaking, in a wretched condition in that neighbourhood to-day. I wish you could see the state of the dwellings surrounding the two churches of West and Middle Chinnock,—churches only a few yards apart,—whether they belong to Lord Portman or Lord Ilchester I know not; but what the clergy and their families think of such habitations is still more in the clouds of mystery; hovels where families huddle in one room,—ay, in one bed,—without a water-closet among the whole of them. There are holes in the ground truly, and posts with cross bars artfully contrived to answer the purpose,—and these in sight of the very church-doors. You see, sir, you cannot catch these landowners very well; they chop and change this kind of property so. Many will say, "Oh! these are squatter cottages." Yes, many of them were, and how have they been taken from the squatters? You are aware, sir, that for centuries past the nobility and gentry have been annexing, conveying, taking in, and possessing themselves of the people's common lands. Church property, especially that of the old Roman church, of course, has been served in the same way, so that not only the squatter, who has exercised his legal right of building him a homestead on the common, but batches of small peasant proprietors have been disestablished in *this* way. The steward sends on a man with two shillings to the cottager's wife, telling her that she may keep one if she will give the other to a man who will call for it. The man who receives the shilling gives a receipt for it to the woman in the name of the neighbouring landowner, and by this many a "peppercorn" rent has often been proved, and property of this humble description has come into the hands of first one and then the other nobleman, as they generally let this kind of property, or sell a lease of it to a neighbouring landowner, and this constitutes a title in after years. Thus it is that estates have grown to such enormous proportions. There are roads, ten or fifteen miles in extent in a straight line through the Ilchester and Portman estates—high roads that are so narrow through taking in the green road-side patches, that wagons cannot pass one another, but have to wait at the cross-roads or a gate side in order to pass. So hungry after real estate are our landowners, that not a patch of village green, or a single specimen of independent cottage property will remain in the country after a few more years. Then the police-gamekeepers have so much power placed in their hands, that if any of the labouring classes are found on common lands, even to old women gathering dried sticks, they are prosecuted under the game laws.

The Rev. Mr. Newell, of Chiselborough, in his letter to the Yeovil sanitary authorities, commented upon by you, takes care not to mention the name of his noble patron in connexion with the cottages of which he complains, and the consequent depression of the people. Depression! Why I saw last week, in Mr. Newell's parishes (for he is a pluralist), people more degraded than the Zulus or the Kaffirs. Some of the Rev. Mr. Newell's parishioners are *cretins*, arising, perhaps, from the fact that the cottages are unsupplied with drinking-water, there being no supply. I observed a pump, that would have been the sole supply of several cottages but for a running brook of surface-drainage water. I do not know to what qualm of conscience on the part of the rev. gentleman to attribute his application to the Yeovil Board. He had for some time opposed any and every attempt of mine or other friend of the Union to alter this state of things, and was probably not aware of the publicity that would attend his application. The united livings of Chiselborough and West Chinnock were worth, in 1830, from 1,100*l.* to 1,200*l.* per annum; and though the population of the villages has been terribly decimated, we do not generally find the parsons take any harm. I notice, whenever we go to hold farm-labourers' meetings the clergy of the State Church get up counter attractions. I have known the farmers and parsons to give the men a supper, to keep them away; but they have eaten up their suppers, and, instead of staying to drink, they have come to the meeting in a body. It is not to be wondered at that they are interested in any attempts to better their condition, when a woman assured me last week in public that her husband could only earn 8*s.* per week at farm labour, with which to maintain seven children, his only perquisite being drink during extra work. This is much about the price now from Sherborne to Taunton, and on to Dartmoor. I notice that the noble landowner of Chinnock has put up a very fine public-house there, whether to entice the labourers to spend their evenings from home I know not. Canon Girdlestone said that in consequence of the wretched dwellings the English labourer spent his evenings in a pot-house, and was buried in a pauper's grave.

Sir, there can, I think, be no doubt in the minds of thinking men, whether they agree with me on the whole or not, that the decay of our peasantry is a very serious fact. Mr. Commissioner Boyle has stated in his Blue Book that the population of the rural West had decreased one-third in twenty years! In a time when our export trade is being menaced, and all branches of industry seem paralysed, it is a terrible thing to think of, that those who cultivate our land and fight our battles are absolutely dying out. Meanwhile the land is not producing a third of the food it is capable of doing, and the savings of the country are rapidly going abroad. In the neighbourhood I have mentioned there is the greatest difficulty on the part of the labouring man to obtain a small allotment of land. When he *does* get it, he has to pay five or six times as much as the farmer. Then he is turned out of it at the caprice of the steward when he has got his land made into garden-ground. At Chiselborough lately nearly all the small farmers were turned out in order to make up a large farm. The pretended reason was that the chief farmer had a wheatstack burnt down, and that the only way to find out the culprit was to evict all the inhabitants. I have heard of the Spanish Inquisition and the thumb-screws in the Tower of London, but I was not aware that this kind of torture was practised in the last quarter of the nineteenth century. If I had not caused a great exposure of all this, Chiselborough would have been almost empty of inhabitants by this time, and I never heard that the Rev. Mr. Newell or any other clergyman remonstrated. But the best of it was, that no incendiary act was committed, as the cause of the fire was pronounced by practical men to be spontaneous combustion, owing to dampness and green weeds amongst the wheat.

But I must not weary your readers with further details of the misery of the people and the tyranny of their oppressors in our rural districts. We shall hold our grand annual demonstration in the Frying-pan, Ham Hill, Yeovil, Somersetshire, within sight of Chiselborough, on Whit-Monday, June 2nd next, when some very ugly facts will be openly stated before the 20,000 persons who will congregate there, if the weather will allow them.

GEORGE MITCHELL,
"One from the Plough."

P.S.—Since writing the above, I have had the following statement made to me by a young man of Chinnock, who is working in London, and doing well.

"My father's house is at East Chinnock, and is called Rot's (Rat's) Castle. It contains one room below, paved with broken stones. You can look between the flooring boards of the two little bed-rooms which form the ceiling,—that is to say, there is no ceiling, but only the floor-boards whitewashed. The windows are about one foot square. In wet winters the water comes half way up the legs of the chairs. In summer there is a perfect pest of fleas. There are two tiny bed-rooms above, separated by a thin partition, very shaky and rickety, and

there is not room above or below for an ordinary man to stand upright in. The thatch forms the sole covering of the house; not a trace of ceiling or plaster. There are holes in the thatch that let in the daylight and the rain. The doors are unprovided with any fastening. There is no grate, but only a hearth for burning sticks and turf. A close, earthy, unhealthy smell is always perceivable in this dwelling. There is no W.C., —a hedge hard by forming the only arrangement for decency for men, women, and children. There is a hole dug in the ground from which the drinking-water has to be obtained, or there is a small stream of surface drainage near. The farm upon which the occupant works is rented from Lord Portman by a chairman of the Yeovil Board of Guardians. Wages vary: lately 8s. to 9s. per week. 1s. 3d. to pay for cottage. Scarce any garden. Nothing extra in harvest unless by piece-work. Education such that scarce any adults can read or write, the Church Catechism being almost the sole education of the place."

WAGES AND WHEAT.

Sir,—A high rate of wages and general prosperity are by no means incompatible with a low price for corn, or any of the other necessaries of life. On the contrary, it should be one of the main results of our inventive genius and industry that food should be so plentiful that none, even the poorest, might want. To show that this is so by example, I will quote a letter just received, written in New Zealand since Christmas, which reports wheat selling there as low as 4s. per bushel, and quarters of lamb, weighing about 8 lb. each, ticketed in the butchers' shops at 2s. 6d. each, and labour of all kinds everywhere in demand at high prices. Farm labourers are wanted at 10s. per day of eight hours; pick and shovel men, 9s. per day; bricklayers and joiners, 15s. per day, and so on. Women's labour in the same proportion. Dairy girls, 35*l*. to 40*l*. per year; hotel girls, 40*l*. to 52*l*.; and experienced servants, 30*l*. to 60*l*. per year. Charwomen get 4s. per day and their food. And imported goods are not much enhanced in value by import duty, which is 10 per cent. *ad valorem* on most goods. The reason there is at the present moment so much poverty and misery in this country, which abounds in wealth, is that the wealth is so unevenly distributed. The laws favour the acquisition of wealth by the comparatively few at the expense of the many; hence we find, as the records of the Probate Court testify, that some persons inherit and accumulate wealth which they cannot use, to the detriment of the many, who are reduced to want.

A word as to systematic under-employment of machinery. I have already, by your favour, pointed out that our mills might be kept running longer hours without increasing the working time of the operatives, by working shifts, say two of eight hours each per day, the first from six a.m. to two p.m., and the second from two p.m. to ten p.m. The Factory Acts will have to be altered to permit of this, and no great hardship would accrue to the operatives. The same might easily apply to mines. But can you sell the increased product?

We have a report from Low Moor of machinery working there in the production of textile fabrics, which wants no human supervision, and so works all day and night too.

E. Grimes.

ART FOR ART.

Sir,—The question under discussion is not one of "goody-goody," but of common-sense and of logic. In the report, in these pages, of the lecture referred to, I found it stated in one portion of it, if I recollect rightly, that the artist should be self-conscious, and in another that he should not. This appears to me to be slightly contradictory. Art talk, however, has become so paradoxical of late that such opposite statements may not be commonly regarded as inconsistent. So much for what is called my "accusation."

The leading points of my opponents' creed are few, and may be summed in the following brief sentences:—"It is more god-like not to know, than to know what you are about"; "Religion, and morality at their best are instincts"; "Self-knowledge, so highly extolled by the sages, would be a mistake"; "Instinct and not reason should be our guide." All that I can say upon this latter tenet of my adversaries is, that if instinct were a better guide than reason we might expect the beasts of the field to be more religious than men,—horses to kick over their traces on Sundays, and to whip men in everything, literature and fine-art included.

But what shall we say for the logic and consistency of your last Saturday's champion of Art for Art, and of unconscious in preference to conscious morality, when he writes thus:—"*See*," says he, "that your nature be pure"! *See!* why that is self-consciousness at once. That *seeing* implies the looking to your nature, the possession of that self-knowledge which knows whether that be conformed either to good or evil. I at least can give a reason instead of an instinct for the faith that is in me. But have I not already said enough?

Art for Good.

KITCHEN BOILER EXPLOSIONS.

Sir,—No answer having appeared to my inquiry in your impression of January 18th last, asking for a valve to a kitchen boiler, which, not requiring lifting and attention, would be a real security in the case of overpressure coming on gradually, rather than a delusion, I enclose an account of an attempt to meet the want communicated to me by Mr. Farey, of the firm of Donkin & Co., with permission to send it to you.

His plan is to construct a weak place in the boiler where it may burst harmlessly.

He describes the boiler, to which he attached the apparatus, as made of Lowmoor iron $\frac{3}{8}$ in. thick, and welded, and as having a calculated bursting strain of 3,600 lb. per square inch. Allowing for defective welding, &c., it would, in his opinion, bear safely a pressure of 500 lb., while the lowest estimate of many practical men is 360 lb. In an ordinary house in which the bath is in the first story, and the boiler in the basement, the pressure on the boiler is 15 lb. per square inch. If then a weak place is constructed, which will yield with a pressure of 150 lb., the boiler will be sure to burst here, before it does elsewhere, and will not burst here unless the pressure is ten times greater than the boiler has ordinarily to bear. The weak place is constructed by attaching a ⊤ to the return pipe about 12 in. from the boiler, and connecting it with a vessel placed under the floor (or anywhere near the boiler where it may burst safely). The vessel is formed of 3 in. lead pipe, having an indent worked down in a lathe all round it to the thickness of $\frac{3}{64}$ in., and having the end closed with lead worked dome-shaped. This vessel, Mr. Farey finds by repeated trials, will burst with a pressure of 150 lb.

There is, of course, no difficulty in constructing a chamber under the floor where the end of the vessel may blow off, and the steam escape harmlessly, while, as to the deterioration of the boiler through neglect or otherwise, Mr. Farey considers it would leak long before it would burst with a pressure of 150 lb.

Even with this vessel (I may add) Mr. Farey thinks a bath boiler, of the kind described, "a dangerous contrivance," though more so without it.

Horace Field.

MYCENÆ MEASUREMENTS.

Sir,—In the account given in your last week's publication concerning Dr. Schliemann's recent discoveries at Mycenæ, the entrance passage to the tomb of Agamemnon is stated to be six mètres broad (19·685 ft.), and 36 mètres long (118·113 ft.). These admeasurements evidently correspond with thirteen Primitive or Egyptian cubits of 18·216 in. (19·734 ft.) and 78 of the same cubits (118·404 ft.), thus showing that this measure was in general use at that early age; the other cubits being the offspring of the great Pyramid were exclusively Egyptian, and it is unlikely, therefore, that any connexion will be found to exist between them and the architectural remains of ancient Greece.

W. Haydn.

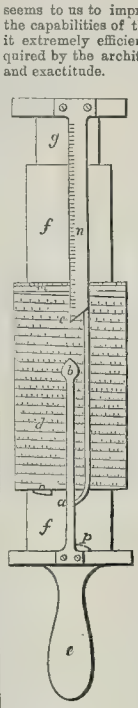
LADDERS' SLIPPING.

Sir,—It seems to me that a very simple plan to prevent the many accidents arising from the slipping of ladders would be to make the lower end of the ladder of a suitable form to receive a short steadying plank in the direction of the ladder's width, on edge. This, when once adjusted and secured, would make slipping sideways almost an impossibility.

R. Inwards.

SPIRAL SLIDE RULE.

Professor Geo. Fuller, C.E., of Q College, Belfast, has invented a new fo slide-rule for arithmetical calculations, seems to us to improve and extend so g the capabilities of that instrument, as to it extremely efficient for the calculatio quired by the architect, both as regards f and exactitude.



Scale, 3 in. to a foot.

The rule consists cylinder (*d*) that c moved up and dow and turned round, a (*f*), which is held handle (*e*). Upon cylinder is wound in a a single logarithmic Fixed to the handle index (*b*). Two oth dices (*c*) and (*a*), whc tance apart is the length of the co spiral, are fixed cylinder (*g*). This c slides in (*f*) like a te tube, and thus enab operator to place th dices in any require tion relative to (*d*) stops (*o*) and (*p*) fixed that when th brought in contact, dex (*b*) points to th mencement of the sc and (*m*) are two sca one on the piece c the movable indic other on the cylinde

In the ordinary fo rules are either stra circular, and faci handling has pre confined the forr about 2 ft. in leng the latter to about diameter. These the logarithmic length of from 1 ft. and consequently th ber of divisions on very limited. It wil by the expedient ad winding the scale in a helix round a cy is very much enlarged, in fact so much it is 41 ft. 8 in. in length, and thus allo divisions upon it without any crowdin marks. Results can thus be easily o that is by those who have mastered tha ment, to $\frac{1}{10000}$ part of the whole, an mation which is amply sufficient for a tectural calculations.

Another point which seems to very facilitate calculations by this rule is reading of the scale is by means of ind not by a second scale, as in the usual rule. Those who have worked with th will have often been troubled with the d of reading or placing a number that tween two marks on one scale against falls between two marks on the other.

By means of a scale marked on the index, and one on the cylinder ab logarithmic scale, any power or roc number is easily obtained; so that various operations of arithmetic can formed by means of the rule.

On the fixed cylinder of the rule are tables, thought most useful. One set gives the equivalent decimal fractio various fractional English weights and m These will very greatly aid the takin quantities both of weight and measure.

The rule is manufactured by Mr. St Great Turnstile.

A Good Example.—A little event nexion with the production of our number of the 22nd ult. is deserving of showing as it does that the old-fashione of mutual respect between employ employed of the old school has not Messrs. Wyman & Sons, the printers wh we have been long connected, took th tunity of acknowledging the many y vices of two of their *employés*, Mr. W. and Mr. Bate, the chief of the compos and the "reader" respectively of the by presenting to each of them a handso with a suitable inscription, as a token o

FITZALAN CHAPEL, ARUNDEL.

IE DUKE OF NORFOLK *v.* ARBUTHNOT.

ase, which involves questions of con- archæological and architectural and upon which we have commented ier page, was tried in the Common ision of the Supreme Court of Judica- bre Lord Chief Justice Coleridge (with- ry) last week. The arguments and occupied several days. The action, form is one of trespass, is, in fact, to try the right of ownership to the Chapel, which forms the east end of nt and well-known parish church of las, Arundel.

aintiff, relying mainly on an extensive his family for 400 years, asserts that ding is his absolute private property; Rev. George Arbuthnot, the defendant, that the building is part of the great f the parish church, and that he has a refore, to have free access to it, both nd as parishioner. On the part of the some very interesting ancient docu- ave been produced in evidence with of supporting his case, that the s a private chapel. On the other is contended for the defendant that name of Fitzalan Chapel, under e duke describes the building, has no ence, the contention being that it is part llegiate church, which was founded in of Richard II., and the greatest stress the aspect of the church and building hich, considered architecturally, and nto consideration the position of the ulpit, the high altar, and the traces of tainly once was the rood-loft in the re inconsistent, it is alleged, with any n one distinct building. The duke, on hand, points to the iron gateway, ith the fabric itself, which from the shut out the church from the chapel, hich his ancestors have always kept and he contends that the documents the case bear out his contention by hat the Fitzalan Chapel was part of a hich was built by his ancestor and to the Holy Trinity, while the church ated to St. Nicholas, whose name it to bear to this day.

the witnesses called for the defendant William Butterfield, the well-known who said he had prepared plans of the s it was at three different periods,— the Dissolution, and before and since at restorations. Taking the ground- as the plan of an ordinary cruciform with a longer chancel than usual in a urch. There was nothing in the church d which architecturally suggested that lan Chapel was anything else but the The iron screen or grille was very un- English churches, and this was a very kind of screen. The gates were of un- lth, and the screen was unusually open, ness being carried down to the ground. re remains of a rood-loft at the front of ng between the chapel and the church. s positive proof of a rood-loft. There ains of a pulpit, coëval with the pier, uth transept. The pulpit was in a lace, supposing it was a single church. in the south transept would have no with this pulpit. The altar must n one of several others. The chief ld always be seen from the pulpit. ed from his examination that the nave cel must be taken together as part of building. The lady-chapel was of the e as the chancel. The structure be- he lady-chapel and the chancel was of it, at one period.

r witness on the same side was Mr. Holmes, solicitor, and town clerk of who said he was a native of Arundel, solicitor of the Duke of Norfolk. He ted churchwarden in 1854, and had so ever since. The iron screen was e same as now, within his recollection. nings and bolt were on the parish side; ole on the chancel side. It was always ith a padlock and chain. He remem- old wooden framing. The fastenings irely under the control of the church.

Whether the gates were open or ended on the time of the year. They en in summer, and folded right ainst the arches. He had opened nself a great many times. He had been to the old organ-loft, but he did not recollect an opening in the woodwork. The windows in the south transept had been repaired in his time by the parish. The Duke of Norfolk had never paid for any repairs to the transept. There was a wooden partition separating the north aisle from the lady-day chapel. Above there was an opening of lattice-work, 6 ft. square, above the door. The lattice-work was enclosed within doors, which were shut or open as the churchwardens directed. In 1852 the whole was blocked up.

Lord Coleridge has taken time to consider his judgment.

ARCHITECTS' ACTIONS.

CARR *v.* HARRISON.

THIS case was heard at the Sheffield County Court, on March 26th, before Mr. T. Ellison, judge. It was an action brought by Mr. Martin Carr, Change-alley, architect, against Dr. Geo. Harrison, St. James's-row, to recover 42*l.* for work done. The plaintiff's case was that he drew up plans and specifications for two dwelling-houses at Ranmoor, Sheffield, by the defendant's instructions. When tenders were sent in for the buildings, the cost was considerably more than the defendant anticipated; he abandoned his purpose, and subsequently sold the land.

The defendant first intended to build a detached dwelling to reside in, for which the plaintiff made him preliminary sketches, and gave an approximate estimate. This plan was abandoned, and another plan made for two semi-detached houses, when another estimate was given, but the plans were rejected on account of cost. The plaintiff then prepared sketches of less expensive houses, but were not accepted by the defendant, as he considered something better should be built. A final set of plans were made, and approved, and instructions given to prepare specifications and quantities, and advertise for tenders. The lowest tender was 1,200*l.*, on which the claim was based, 2½ per cent. being charged for plans and specifications, and 1 per cent. for quantities.

For the defence, it was submitted that 5*l.*, which had been paid to the plaintiff, was sufficient compensation, the cost of the buildings being several hundred pounds more than the defendant intended to pay.

The building rules of the estate were produced to prove that the price of a pair of houses on that particular part should be of the value of 3,00*l.*

His Honour, in summing up, said that as he (the judge) understood it, all such rules fixed a minimum price only. The defendant, who was a retired gentleman, wished to include a greenhouse in addition to a good library, &c., and could not expect to have these things provided for the amount stated in the defence.

Judgment for the plaintiff for the sum claimed, with costs. Mr. Harold Thomas, instructed by Mr. Samuel Allen, was for the plaintiff; and Mr. Gatty, instructed by Messrs. Smith, Hinde, Smith, & Co., defended.

CURRAN *v.* PEACOCK.

THIS was a claim, brought in the Warrington County Court, by Mr. Robert Curran, architect and surveyor, carrying on business at Warrington, against Mr. Ralph Peacock, brickmaker, for twelve guineas for preparing plans, &c.

For the plaintiff it was stated that a Mr. Manley saw Mr. Curran, and instructed him to prepare some plans for some cottages on some land, for the purchase of which he was then negotiating. Mr. Manley ultimately had some conversation with Mr. Peacock, the present defendant, the result of which was that he called upon the plaintiff, accompanied by Mr. Peacock, and told him that he had relinquished his right to the land, and had handed it over to the defendant, Mr. Peacock, who would pay him (plaintiff) for preparing the plans. Mr. Peacock assented. Mr. Curran completed the plans. He subsequently did other work in connexion with them, and submitted them to the Corporation for approval. Mr. Peacock called upon Mr. Curran afterwards, and the plans were modified in some particulars. They were ultimately approved by the Corporation, which fact was made known to the defendant by the plaintiff. The defendant had never denied his liability until recently, when he appeared to throw the debt on the shoulders of Mr. Manley.

For the defence, Mr. William Manley, builder, said he thought of taking the land at first. He ordered Mr. Curran to make the plans.

Judgment for the defendant, with costs.

YORK HOUSE WATER-GATE.

AT the last meeting of the Metropolitan Board of Works a report was presented by the Works and General Purposes Committee, recommending that the opening up of Buckingham-street, Strand, to the ornamental garden of the Victoria Embankment should be carried out by the raising and opening of the York-buildings Water-gate, and the committee were empowered to take the necessary steps to carry this recommendation into effect.

This will involve the virtual destruction of the gate as a work of art, and will obliterate an interesting landmark in the history of London. In its present condition York Gate serves to indicate the site of one of the ancient palaces that once adorned the Strand, as well as marking the former extent of the river before the construction of the Embankment.

The London of the Restoration has almost disappeared, and there are but few relics remaining of what London was after the Great Fire. In York Gate we have one of these relics, and it seems incredible that anybody, and especially a body entrusted with the municipal government of the metropolis, should propose to disturb this curious, and in fact unique, structure, to deliberately falsify local history by putting it to a purpose for which it was never intended, and to render that which is now venerable ridiculous.

The gate is in nobody's way, and the plea of public convenience, which sealed the fate of Temple Bar, cannot be urged in the present instance. It is to be hoped that the Board may be induced to reconsider their determination, and will not spend the public money on a scheme which will benefit nobody, and will grieve every artist, antiquary, and topographer.

LONDONER.

PARTY-WALLS.

RILEY *v.* INGOLDBY.

IN this case, before the Master of Rolls' Chief Clerk, the question was decided on Friday, the 21st, as to who was entitled to receive the value for the outer half of party-walls. The decision was as follows,—Where the mortgagor grants the land demised to him and the messuage thereon, and the outer party-wall is built as to half only on the land demised, the mortgagor as builder is entitled to take the amount which the builder of the adjoining property would have to pay in respect to the half party-walls.

WILLIAM RILEY.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

IN connexion with this Institution a dinner was held at the Guildhall Tavern on Wednesday evening last. Mr. Thomas F. Rider occupied the chair, and was supported by about a hundred gentlemen.

In proposing the toast of the evening, "Success and Prosperity to the Builders' Clerks' Benevolent Institution," the chairman traced the history of the Institution from its origin some thirteen years since. He went on to say that the basis of the Institution was threefold,—Firstly, builders' clerks not above the age of fifty-five years, who had been for not less than five years occupying that position, were eligible for pensions of 25*l.* a year, and 20*l.* a year to widows. On this ground alone he thought a subscription would be found a thoroughly good investment of money. Then the Institution had given 500 guineas for two presentations to orphan schools, and two orphans of builders' clerks had been elected to the benefits thereof. A third and most important feature was the granting of temporary relief. To enable a man to overcome some pressing difficulty, and to bridge over an emergency, was help of the best kind, and he believed no feature of the Institution had been more advantageous than this. The cases which had been assisted had been carefully inquired into, and none but the members of the committee knew of the temporary difficulties of the applicants for relief. Why was it, then, that the Institution did not receive better support from the class sought to be benefited? In the "London Directory" might be found the names of some 1,400 builders and others of cognate trades in business in the metropolis. Assuming that at least half of them employed a single clerk, the Institution ought to look for aid to some 700 builders' clerks, whereas it was actually supported by some fifty subscribers in that body. If any builder's clerk saw anything in the Institution to object to, or anything in the management to complain of, for that might be improved, let him call on the committee at 27, Farringdon-street, E.C., and they would undertake either to convince him that he was mistaken, or to admit their own error, and endeavour to correct it. The committee did not desire the Institution to be a begging charity, but self-supported by those most concerned in its welfare, while he felt at the same time that it was well deserving of support by the builders themselves, and of a place among the charities of the metropolis of the world.

The toast was drunk with enthusiasm.

Mr. Howard Colls proposed the health of the "Architects and Surveyors," for whom Mr. Franklin replied.

Mr. Thomas Stirling proposed "The Employers," on whose behalf, and also in the name of the Past Presidents, Mr. Plucknett responded.

The Secretary, Mr. H. J. Wheatley, read a list of donations promised in the room, which, headed by the chairman with twenty guineas, amounted to 144*l.* 17*s.*, besides some subscriptions,—an announcement received with cheers.

Other toasts followed.

STAINED GLASS.

Edinburgh.—Some months ago (says the *Scotsman*) the Society of High Constables of Edinburgh resolved to assist in the scheme for the decoration of the restored choir of St. Giles's Cathedral, by filling in one of the windows of the clearstory with stained glass. The window selected was the easternmost on the north side of the clearstory, and on the 14th inst. the glass was placed in position. The design embraces two shields—one in each light,—representing the arms of the city of Edinburgh and the royal standard of Scotland. Both shields are supported by crossed Constables' batons, while beneath are also batons and the insignia of the Society. The window was designed and made by Mr. D. Small, Leith-walk, Edinburgh.

Collyhurst.—A stained-glass window has been erected in St. James's Church, Collyhurst, to the memory of the Rev. Edward Roper, a native of Manchester, who was for seventeen years a missionary on the West Coast of Africa. The subject is the "Baptism of the Eunuch." The window is by Messrs. Magee & Co.

Winchester.—The daughters of the late Dr. Mayo have placed a memorial window in the north aisle of the cathedral, to the memory of their father and brother, who followed the same profession. The glass is from the firm of Clayton & Bell. The window has six lights, and in these are placed, in the upper three, St. Swithin, bishop; St. James the Great, the partner of St. Peter; and William of Wykeham, bishop.

CHURCH-BUILDING NEWS.

Shedfield.—The new parish church of Shedfield, Hants, is now complete, save the erection of the tower and spire and some of the internal fittings. The foundation-stone was laid so long ago as May, 1875. The architects are Messrs. Colson & Son, of Winchester, and the work has been carried out, under their superintendence, by Messrs. Knight & Son, builders, of High-street, Wickham. The building is in the Decorated style, and consists of a nave, south aisle, chancel, and south transept. Local stone is used for the walling, whilst the dressings are of Bath stone. Within, coloured bricks are used considerably, with Bath stone for dressings. An arcade of four bays divides the nave from the south aisle, and on the north side is an arcade and five similar bays, the most westerly one being that opposite to the lower part of the tower and porch. The pulpit is of Caen stone, octagonal in shape, and standing upon a central shaft of the same material, and six outer columns of polished green marble. The pulpit is erected in memory of Samuel Wilberforce, late Bishop of the Diocese, and of Thomas Fosbery, M.A., one of his chaplains. The chancel arch springs from clustered shafts with carved capitals, and these and the rest of the carved work have been carried out by Mr. Harry Hems. The internal fittings will be of pitch-pine, but these are not yet complete. The roofs are of timber, open, and unvarnished. The nave roof rests upon vaulting shafts, supported by carved stone corbels. The clerk of works during the main portion of the work was Mr. H. A. Amey.

Seaforth.—The Church of St. Thomas, Seaforth, has been re-opened, after renovation and alterations under the direction of Mr. J. F. Doyle, architect, Liverpool. The whole of the old-fashioned box-pews have been removed, and replaced by open pitch-pine seats, giving accommodation for 100 more persons. The former gallery, which extended round the edifice and ran out towards the centre, has been done away with, and a new gallery erected and placed back a distance of 8 ft. The cost of the works, which have been carried out by Messrs. Holme & Nicol, of Liverpool, amounts to something like 2,000*l.*

Carlton.—On the 13th ult., the parish church of Carlton-in-Cleveland was re-opened, after restoration. In fact, the old building has been almost entirely demolished. The new edifice which (according to the *York Herald*) is constructed from designs prepared by the vicar (the Rev. G. Sanger), is in the form of a cross, and composed of freestone, from quarries in the neighbourhood. There are north and south transepts, each about 14 ft. square. In the south transept, the vestry and choir accommodation is situated. From the centre of the building rises a wooden bell-turret. Accommodation is provided for nearly 250 persons. The work has cost about 800*l.*

New Shoreham.—It is stated it is shortly intended to utilise Mr. Edwardes's gift of 300*l.* to this church (which he made nearly twelve months ago), by carrying out his desire of seeing the windows along the south aisle made of similar style to those along the north aisle, which were carried out in 1876, together with the general restoration of the fabric, under the direction of Mr. Arthur Loader, architect, Brighton.

Upleadon.—The ancient church of Upleadon, lying about eight miles from Gloucester, between Newent and Hartpury, was re-opened on the 6th ult., after restoration. Its peculiar tower, some 80 ft. high, of timber and brick-work running in black and white vertical lines, with bluntly-pointed roof of slate, stands up a conspicuous landmark for many miles of widely undulating country around. The nave and chancel of the church are built of stone, with stone tile roofing. The building having become greatly dilapidated, particularly the tower, steps were taken last year to raise a fund to carry out the necessary repairs, and to put the structure into a fit state for the celebration of divine worship. Mr. Ewan Christian, architect, was consulted, and the necessary plans, &c., were prepared, and contracts amounting to about 500*l.* were entered into by Mr. Fowles, builder, of Hartpury, Mr. Dick, of Derby, being clerk of the works. In September last the church was closed and the work commenced. The work includes a new chancel arch, and a re-construction of one side of the timbered tower, which contains two bells. The floor has been laid with red tiles, and substantial new seats, of dark deal and varnished, have been fitted on a raised timber flooring.

PROVINCIAL NEWS.

Exeter.—The new Rougemont Hotel is now completed, and only remains to be furnished. It was commenced two years ago on the site of the old city prison, and overlooks the Queen-street station. The building, which has been erected by a joint stock company, is of brick, with white Beer and Bath stone dressings. The floor of the large central hall of the hotel is of encaustic tile, supplied by Messrs. Craven, Dunnell, & Co. The hall is 60 ft. long, 20 ft. wide, and about 30 ft. in height, running up to the level of the second floor. It is supported to the level of the first floor by Doric columns, and above these the support is continued by Corinthian columns. A corridor runs around the central hall on the first floor. The coffee-room is situated in the wing that juts out into Queen-street. Its length is 60 ft., width 30 ft., and height 19 ft. Four Doric columns carry the box girders which form the panelled ceiling. The approach to the first floor is by means of a grand staircase 6 ft. wide. At the head of the staircase the window is to be filled by Mr. Drake, of Exeter, with a stained-glass representation of the royal visit to Exeter, when the King gave the name of Rougement to the Castle. The kitchen is among the twenty-five compartments in the basement, and here two large ranges have been fixed by Messrs. Garton & King, and the same firm is also about to fit up the laundry and its extensive steam drying-room. It is intended to erect stables at the back, and also a large room for balls and concerts. The building was designed by Mr. C. E. Ware, A.I.C.E., of Exeter, the quantities being taken out by Mr. Charles Gould, of London. The building has been constructed by Mr. James Matcham, of Plymouth, with Mr. Hallet as foreman, and Mr. William Gill has been the clerk of the works. The plumbing, electric bell apparatus, and gas fitting is the work of Mr. E. Whipple, Plymouth; the glazing has been executed by Cashmore, Bristol; the lifts supplied and fixed by Waygood & Co., Leeds; the kitchen and laundry fittings by Garton & King, Exeter; the paper-hangings by Bradley & Sons, Exeter; and the locksmiths' work has been done by Mr. S. Pearse, Exeter. The hotel is to be opened for business by May-day. The cost of the building has been about 21,000*l.*, and the furnishing will cost another 5,000*l.* or 6,000*l.*

Bristol.—Bengough's Almshouses, Horfield-road, Bristol, in the rear of Colston's houses, St. Michael's-hill, have been co They were endowed by Alderman Be who died in 1818. The buildings are Queen Anne style, and have been desi Messrs. Foster & Wood. The central bl pair of wings form three sides of a qua the fourth side being a low boundary wa road. The material employed is bric freestone dressings, mullioned window eaves, and a roof of red tiles. The faça central pediment inscribed with the n date of foundation, while the arms of A Bengough are inserted just below. Th have their own porches, and an inde entrance is provided for every pair of s the ground floor, with a staircase from trance to the corresponding suites abo ground floor and first floor are divided well-aired and lighted suites of three living-room, bedroom, and scullery. tract has been substantially carried Messrs. Forse & Ashley, for about 5,5(E. Sheppard executed the carving, and Parker & Bush laid out the lawn.— clock, chimes, and bells of the Bristol C School, have just been completed. They h manufactured by Messrs. Gillett, Blan of Croydon. The clock strikes the ho a bell of 8 cwt. 0 qrs. 26 lb., and chimes quarters on four other bells—the same Westminster palace and St. Mary's, bridge, the time being shown upon copper dials, with gilt figures and min black ground, fitted in a drum on cast-i mental brackets projecting from the fr tower. The chime part of the cloc structed on Gillett & Bland's new princ movable steel pins; so that the chim adjusted or altered at any time with th facility. The bells have a total 27 cwt. 2 qrs. 13 lb.

The total cost of the clock, chimes, has been over 400*l.*

VARIORUM.

"The Extravaganzas of J. R. Plan (Somerset Herald). Testimonial editi are very glad to hear that it is pr publish immediately, in five volume plete edition of that portion of Mr. Dramatic Works with which his reput dramatic author is more particularly we mean the Extravaganzas which a cases out of print, whilst one or tw have never been published. Mr. Pl undertaken to revise and correct eac the press, and to contribute prefator ginal notes, which will comprise muc tion respecting the many celebrated connected with the representations form an interesting record of the London theatres, their managers and for a period extending over sixty y editing of the Extravaganzas has trusted to Mr. T. F. Dillon Croker, Mr. Stephen Tucker (Rouge Croix entire profits will be presented to t author. It will be, in fact, a Testimon ——"The Ogam inscribed Monume Gaedhil," in the British Islands, b Richard Rolt Brash, F.S.A. Scot., edi Geo. M. Atkinson, is about to be pu Messrs. Geo. Bell & Sons. We agre writer that,—"The antiquaries and of Great Britain should feel as deepl in this subject as those of Ireland, be remembered that twenty-three Og tions, identical with the Irish exa been discovered in England and twelve in Scotland."——Here is a from the *Leisure Hour* as to Pa Blue-Books:—"Mr. John Walter, recent debate, said that a vast sum annually upon the printing of unnece books, some of which, two or thre thickness, and costing hundreds of print, contained nothing but a mass of tabular matter. It was certain that 30,000*l.* might be saved under this every year, without any detriment vice of the country. Of the thousa books annually printed, by far the is sold, unread, as waste paper. give as an example of many. A occupies apartments in the house during the season. A week or tw end of the session various circulars from dealers offering to buy waste p are handed to the butler, who sells

The amount is large enough to be an ample fee from the Scotch M.P. to ler for his service. A few of the s send the volumes to public libraries er places where they may be useful to stituents, but the majority of members eir servants to dispose of them as waste

Miscellanea.

ings from Shakspeare.—For years, edore Martin (and Helen Faucit before chief favourite at Glasgow; and she eived there great ovations. All this artin remembered when distress fell any of the inhabitants, ruined by the k failure, and kindly offered to give a from Shakspeare in aid of the fund r their relief. The offer was, of course, accepted, and was carried out on the in the Queen's Rooms, before a large and audience. It was an immense success. gow press describe the event in glowing —"With a perfect knowledge of the d a voice of incomparable range and rs. Martin, without help from stage , read her selections from 'Romeo and and the 'Merchant of Venice' with a style that was marvellous in its effects. rtin has in her nature more of the on and witchery of the poetic spirit y artist we have known; and, con- , her melodious breathings of the love tween the lovers in the finest love-play world were perfect poetry set to the perfect utterance. Mrs. Martin read Casket Scene and the Trial Scene from rchant of Venice,' and both were ieces. In both the artist showed again, before, that she has perfect mastery subtlest winds of feeling as over the gusts of passion." The result of the luding the esteemed lady's own sub- , was to add 500*l.* to the relief fund.

s, Easy and Uneasy.—Consider for a what is needed in a common chair that uit its purpose. It should be strong o be sat upon without need of any ation on the part of the sitter, and yet be so light as to admit of being easily Now, in most drawing-rooms, a heavy who, probably, most desires to seat r herself,—has to pick and choose in scape a catastrophe. It will not do to first seat that offers, and even if it or a perch, the sitter must be careful n back. Lightness has been so studied chairs, that only the slimmest ladies them. They do not suit even a thin o has a trick of lounging. They are sts, but not for honest flesh and blood. s absurdly unscientific? A very little ength in construction would add but tibly to their weight, and relieve every ast from apprehension when he desires sted. They might be just as handy, afe. Then look at chair-backs. Fashion es some upright, and sacrifices comfort sical demand of taste. Backs are in- to be leaned against, but who can lean spine is at right angles to his thighs? elbows, too. They are meant to rest he sitter, and should thus be at least flat, htly channelled. The arm of the chair the converse of that of the man. If nd, his arm perpetually slips off when rest it; and yet there are chair-elbows e not only slippery and narrow, but ded on the surface. The most fashion- r at present rather discards the padded which catches the elbow and prevents ding off. Perhaps a broad, flat-padded the arm of the chair best fulfils its steadily supporting that of the sitter. ision of chairs with spring-seats is, nistake. They are not only exception- ing, but they convey the idea that your being welcome to sit down, you continually pushed off. When you self on one you are conscious of having me opposition. The only thing to be eir favour is that when you want to ave a shove up. The ideal chair,—the est,—should have as little padding as but accommodate itself to the human at wants to be rested; and I have often why some enterprising and scientific maker has not produced a more ana- rticle.—*Leisure Hour.*

Society of Biblical Archæology.—On Tuesday night last a meeting of this society was held its rooms, 9, Conduit-street, the President, Dr. Samuel Birch, of the British Museum, in the chair. The secretary, Mr. Harry Rylands, read a paper by Professor Lushington, on "The Historical Inscriptions of Seti I. in the Temple at Karnak." These inscriptions and sculptures record the victories of Seti Meneptah, or, as he is most commonly called, Seti I., who, on coming to the throne, assumed the name of Ramenma, otherwise read Menmara, although, according to the sacred syntax, the name of the sun-god Ra was wont to be written first. He reigned fifty-one years, beginning about B.C. 1455, in Professor Lushington's opinion. These hieroglyphical annals are to be found, along with many valuable records, in the great temple of Ammon Ra, at Thebes. This magnificent sanctuary is more ancient than any other Theban building, dating from the earliest Pharaohs of the great Twelfth Dynasty, between which and the Nineteenth, to which Seti I. belonged, many centuries intervened. As the sacred metropolis of the Theban kings, they had already vied with each other in ornamenting it with fresh architectural glories, sculptures statues, and obelisks. Seti I. conceived the idea of nearly doubling its size, and began to build the Great Ha l, with its hundred columns, and to enrich it inside and outside with innumerable sculptures. He did not live to complete this *chef d'œuvre* of Egyptian art, but it was completed by his son, Ramses II., styled the great, the Sesostris of the classical historians. Owing to the destruction of the upper portion of the walls many of the historical bas-reliefs are lost; but there still remains a copious chronicle of Seti's victories, beginning on the northern side, and relating to the Pharaoh's conquests in the earliest years of his reign. They give representations of lakes, fortified towns in a state of siege, and all the various incidents and scenes of the battle-field. Rivers are characteristically delineated, the Nile being indicated by its crocodiles and peculiar fishes, while a bridge serves as a communication with the opposite bank, showing that the Nile was already bridged at that early period.

Harvey Tercentenary Memorial.—The models for the statue of Harvey which it is proposed to place at Folkestone have been on view in the picture-gallery of the South Kensington Museum. The models were three in number, distinguished by the letters A, B, and C. It is intended that the statue shall be of bronze and the pedestal of granite. Model A represents Harvey in gown and cap as a doctor of medicine of the University of Cambridge. He is looking down at a heart lying upon a table; in his right hand is a pencil, and his left hand holds a note-book, in which he seems to be about to write. The figure in B is upright, the head erect, and the right hand placed on the breast, as if to feel the pulsations of the heart. In the left hand is the heart of some creature. The doctor's gown is worn, but in C it is thrown aside upon a table. In this last model a dead deer is placed on the ground, as it were, behind the figure. The anatomist is looking downward at a heart in his left hand, and in the right is a dissecting-knife. It has been decided that the commission for the statue shall be intrusted to Mr. A. Bruce Joy, who is the designer of the model marked B. Mr. C. B. Birch, the author of one of the other designs, has given more consideration to the pedestal than is apparent in the selected design.

City of London School Competition.—Notwithstanding the exacting nature of the demands made upon competitors by the conditions of this competition (commented upon in the *Builder* for March 1st, p. 226, *ante*), we learn on authority that no fewer than fifty-three architects have sent in designs, several individual competitors having each submitted two, and even three, alternative designs! We have been unable to ascertain when the designs will be on view, or whether the committee will seek he aid of a professional referee.

A New Synagogue.—The new West-end Synagogue in St. Petersburg-place, Bayswater, illustrated by us recently, was consecrated on Saturday by the Rev. A. L. Green, minister of the Central Synagogue. This makes the tenth temple of the United Synagogue. It has been erected at a cost of 21,000*l.* The interior is still unfinished. It affords seats for 800 persons The marble mosaic pavement here was laid by Messrs. Burke & Co., of Newman-street.

The Royal Horticultural Society.—It is understood that the "1851 Commissioners" have determined to take possession of the Gardens at South Kensington: in fact, that they have formally demanded it and have been refused. The law courts will probably be appealed to to settle the precise legal position of the two bodies. The future appropriation of the land is unsettled.

Our Manufacturers.—The mainspring of a successful manufactory is a chief who knows every process of the trades carried on, the *rationale* of all that has to be done, and who has a thorough knowledge of mechanical laws, and that amount of combined mental and manual dexterity which but few possess. We cannot expect the present generation of manufacturers to learn all that is necessary. Formerly a lad was put to work, and, if he was not taught scientific principles, he at least became a competent workman before he became a master. But now this is all changed. Lads do not enter the shops and work at the machine or the bench; they come in leisurely as "young gentlemen," and take a little light amusement at office work, and then blossom forth into masters,—of what? Not of the trades their workpeople carry on. If they had a thorough training in mechanics, and were made competent draughtsmen, there would be some hope of them. But they are not so trained: in fact, they know nothing that is of any practical use, and are really entirely dependent on their workpeople, instead of being what every manufacturer should be, the master craftsman of his factory. It may be said that there are large capitalists who own successful manufacturing concerns, although they have no technical skill. This is true, but such men are owners, not masters: the real masters are the managers, and such men do frequently possess the requisite skill, and are in fact chosen because they have it.—*Martineau and Smith's Hardware Trade Journal.*

TENDERS

For new schools for 360 infants in Laygate-lane, for the South Shields School Board. Quantities by Mr. C. Connel. Messrs. Oliver & Leeson, architects:—

Scott & Son	£4,103	10	0
Inglis & Reah	4,089	0	0
Pringle	3,832	12	5
Bruce	3,889	0	5
Smith	3,886	8	4
Nichol	3,855	7	10
Shotten, Bros.	3,839	9	4
Mackey	3,827	0	0
A. & P. Marshall	3,819	13	0
Atkinson & Co.	3,782	8	0
Simpson	3,686	3	5
Heppel	3,676	14	7
Armstrong	3,642	2	0
Harwood	3,600	0	0
Robson & Tremble	3,596	16	0
Richardson & Co.	3,591	13	1
Kennedy & Son	3,582	15	3
Middlemiss, Bros.	3,567	0	0
Elliot	3,530	0	0
Atkin & Co.	3,522	17	9
Robson	3,500	15	4½
Town, Bros. (too late)	3,492	18	0
Harvey	3,490	8	4
Holliday & Christie	3,463	18	3
Shell	3,462	1	2
Grisdale	3,451	0	0
H. Atkinson	3,450	0	0
Miller	3,420	9	4
Suddards	3,410	7	0
N. & R. Reed	3,399	1	1
Hirst & White	3,259	0	0
Thompson	3,253	5	0
Allison	3,250	13	9

For stabling, cart-shed, smithy, workshop, and dwelling-house, at Hammersmith, for the Fulham Board of Works:—

Lucas & Son	£6,630	0	0
Julian & Co.	6,570	0	0
Dickenson	6,490	0	0
Wagner	6,250	0	0
Braid & Co.	6,180	0	0
Mears	6,100	0	0
Beal	5,988	0	0
O'Keeffe	5,955	0	0
Raymes	5,890	0	0
Hatton & Co.	5,846	0	0
Scott	5,663	0	0
Newton & Trigge	5,350	0	0
Aitchison & Walker*	5,225	0	0

* Accepted conditionally.

For premises in the London-road, Croydon, for Mr. C. S. Bowman. Messrs. Rutley & Blackwell, architects. No quantities supplied:—

Smith & Son	£2,919	0	0
Saker	2,870	0	0
Taylor	2,809	0	0
Colls	2,750	0	0
Legg	2,662	0	0
Hobbs*	2,600	0	0
Smart	1,835	0	0

* Accepted with modifications.

For three villa residences in Thurlow-road, Dulwich, for Mr. Rich. Mr. James Miller, architect:—

Higgs	£2,977	0	0
Hatton & Co.	2,958	0	0
Mould	2,830	0	0

For alterations in the erection and completion of new billiard room at the Marquess Tavern, Canonbury, for Mr. Tullet. Mr. James Miller, architect. Quantities supplied:—

Bridgeman	£550	0	0
Taylor	499	0	0
Hansell	472	0	0
Colt	465	0	0
Hatton & Co.	456	0	0
Bishop	417	0	0
Hobern	395	0	0

For schools, German Church, Hooper-square, Leman-street, E. Messrs. T. & W. Stone, architects:—

Hunt	£1,120	0	0
Adcock	1,000	0	0
Wagner	950	0	0
Forest	944	0	0
Palmer	873	0	0
Johnson (accepted)	863	0	0

For St. Boniface (R. C.) School, Whitechapel. Mr. John Young, jun., architect:—

Brass	£1,873	0	0
Conder	1,815	0	0
Morter	1,743	0	0
Bangs	1,695	0	0
Ashby & Horner	1,550	0	0
Lawrance	1,519	0	0

For alterations of St. James's-road and bridge over Bricklayers' Arms Branch at Mercers' crossing, for the South-Eastern Railway:—

Hatton & Co.	£13,540	0	0

For six houses, Walthamstow. Mr. John Young, jun., architect:—

Hunt	£3,848	0	0
Ellis	3,465	0	0
Abraham	3,400	0	0
Outhwaite	3,320	0	0
Lawrance	3,150	0	0
Palmer	3,076	0	0

For new roads and sewers at Walthamstow. Mr. Bambridge, surveyor:—

Bloomfield	£1,300	0	0
Pizzey (accepted)*	1,135	0	0

* With another road added, extra, £575.

For new roads and sewers at Ealing:—

Nowell & Co.	£7,998	0	0
Killingback	7,800	0	0
Jackson	7,800	0	0
Pizzey (accepted)	7,699	0	0
Crockett (withdrawn)	6,731	0	0

For the erection of four pairs of semi-detached residences at West-road, Eastdown Park, Lewisham. Mr. Wm. C. Banks, architect. Quantities not supplied:—

Gorrum	£3,726	0	0
Eaton	3,430	0	0
Staines & Son	3,472	0	0
Sharpe & Everard	3,245	0	0

For works at the Imbecile Asylum, Darenth, Kent, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects:—

Rain-water reservoir (150,000 gallons), sewage-screening tank, &c.:—
Braid & Co. (accepted) £1,142 4 9

Drainage work as per schedule of prices:—
Braid & Co. (accepted).

For alterations to laundry at the Infirmary, Marloes-road, Kensington, for the Guardians. Messrs. A. & C. Harston, architects:—

Clements & Co.	£667	0	0
Fraser, Bros.	594	0	0
Benham (accepted)	430	0	0

For factory at Hatton-garden, for Messrs. H. & E. Watts. Quantities supplied by architect. Mr. G. A. Burn, architect:—

Browne & Robinson	£3,688	0	0
Thomas & Butland	3,628	0	0
Marks	3,488	0	0
Bamford	3,246	0	0
Heyworth	3,245	0	0
Pritchard	3,136	0	0
Cook	3,100	0	0
Scrivener & Co.	2,841	0	0

For new Convent and Chapel, De Bon-Secours, Cork. Mr. D. J. Coakley, architect:—

Delaney (accepted)	£8,000	0	0

For house at Highfields, Leicester, for Mr. S. Faire. Mr. E. Burgess, architect. Quantities by Mr. W. Thorni-croft:—

Hutchinson & Son	£1,035	0	0
Major	1,031	8	6

For the erection of stable and entrance-porch to a house in Ellison-road, Streatham, for Mr. C. Howard. Mr. R. Cruwys, architect:—

Mundy	£198	0	0
Evans	195	0	0
Holland	151	5	0
Holcombe	140	0	0
Simons	135	0	0
Gatfield*	116	0	0

* Accepted, with modifications.

For alterations and reparations to Oulton Cottage, No. 1, Streatham-place, Brixton-hill, for Mr. E. Janes, sen. Mr. R. Cruwys, architect:—

Mason, Gillman, & Smart*	£150	0	0

* Accepted.

For additions to 217, Regent-street, for Messrs. B. W. Knight & Co. Mr. Edward Clark, architect:—

Mitchell & Gibbon	£615	0	0
Tarrant & Sons	595	0	0
Green	593	0	0
Oxford	585	0	0
Manley	564	0	0
Bywaters, Bros.	548	0	0

For the extension of the Hall-by-the-Sea, Margate, for Mr. George Sauger. Mr. Edward Clark, architect:—

Bushell	£4,200	0	0
Green	4,173	0	0
Parsmor & Son	3,988	0	0
Holla	3,976	0	0
Deane	3,643	0	0
Adcock	3,586	0	0

For erecting two houses in Church-road, Cliftonville, Brighton, for Messrs. H. & L. Young. Mr. Benj. Nunn, architect. Quantities supplied:—

Lockyer	£5,440	0	0
Cheesman	5,350	0	0
Parsons	5,185	0	0
Chappell	4,980	0	0
Barnes	4,880	0	0
Dean	4,800	0	0
Ockenden	3,973	0	0
Nuroombe (accepted)	3,350	0	0

For the erection and completion of a residence and stabling at Esher, Surrey, for Mr. J. Frewen. Mr. Geo. Sherrin, architect. Quantities supplied by Mr. C. Blomfield:—

Dove, Bros.	£3,670	0	0
Oldridge	3,558	0	0
Sargeant	3,554	0	0
Rider & Son	3,503	0	0
Grover	3,138	0	0
Hall & Sons (accepted)	3,090	0	0

For building four houses and shops at Shern Hall-street, Walthamstow. Mr. Black, architect. Quantities by Messrs. Whitmore & Kennard:—

Boyd & Co.	£2,690	0	0
Huff	2,648	0	0
Sayer	2,569	0	0
Costen	2,472	0	0
Jones	2,464	0	0
Lane	2,420	0	0
Linfield	2,387	0	0
Nibblet	2,198	0	0
Burt	2,197	0	0

For making up roadways (roadwork only) of Herries-street, Lancefield-street, Mozart-street, Beethoven-street, and Dart-street, Kensal New Town, for the Vestry of Chelsea. Mr. G. H. Stayton, surveyor to the Vestry:—

Hayden, jun.	£3,990	0	0
Boyer	3,850	0	0
Brass	3,795	0	0
Nowell & Robson	3,760	0	0
Neave	3,630	0	0
George	3,475	0	0
Baxter	3,420	0	0
Stockwell (accepted)	3,245	0	0

For alterations, repairs, and decorative work at No. 26, West Smithfield, for Mr. Charles Bown. Mr. F. B. Hayes, architect:—

Wilson	£355	0	0
Adamson & Sons	349	0	0
Chamberlen, Bros.	348	0	0
Lidstone & Son (accepted)	329	13	0

For constructing sewer alongside the Gres Railway to Edmonton, for the owners of the Park Estate, Enfield. Mr. T. Tayler Smith, Quantities prepared by Mr. William H. Pipe:—

Docwra	£685		

Duffield Cemetery.—In list of tenders in l *Builder* (p. 358), for "cemetery chapels a Dudley," (Mr. Ernest Long, architect), *read*

TO CORRESPONDENTS.

A. B.—D. & W.—J. H.—P. G.—M.—G. M.—M. G.— W. H. P.—J. L. P.—H. C. B.—E. C.—G. S.—J. A.—T. F. R. H.—E. H. S—J. F.—A. C. B.—R. & S.—W. W.— C. D. & Co—C. & L.—H. H.—J. P.—R. C—H. S. & Son.—W. A.—W.—A. Z. (as).—H. E (not quite correct).

All statements of facts, lists of tenders, &c. must be a by the name and address of the sender, not nec publication.

We are compelled to decline printing out-door addresses.

NOTE.—The responsibility of signed articles, and pa public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISER

GOOD FRIDAY.

"THE BUILDER," for the week APRIL 12th, will be published on TH MORNING, 10th instant. Advertise insertion in that Number must therefore Office before **THREE p.m.** *on WED the 9th.*

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BY THE ADOPTION OF THIS METHOD THE USE OF SOLDER IS ENTIRELY DISPENSED WITH, AND CONSEQ THE DANGER INCURRED BY THE USE OF FIRE-POTS IS AVOIDED.
THE COST IS LESSENED AND THE DURABILITY INCREASED. ESTIMATES FOR ZINC DORMERS, FLATS, a
FITZROY WORKS, 356 TO 369, EUSTON ROAD, LON
ALSO AT DEPTFORD, LIVERPOOL, GLASGOW, and CYPRUS.

The Builder.

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Sanitary Warnings from High Places.

IN the destructive course of the cholera through India, it was remarked by some observers that the pestilence seemed to come from below. Not only were the inmates of houses at the foot of a hill attacked sooner than those towards the summit, but the fowls and other small animals, naturally abiding on the surface of the ground, sickened and died some days before dangerous symptoms broke out in the human inhabitants. If this statement be thoroughly reliable, it is of no little value, both as affording a warning, and as indicating in what direction the sanitary engineer should look in his precautions against ger intimated. Exhalation, in one word, l events, one sign or cause of danger, in id epidemic diseases, and the remedy mischievous exhalation is, not only e, but proper regulation of the entire *régime*. Baking ground, in some cases, ved even more sickly than swamps.

not, however, from the lower levels, hysically or socially regarded, that the rious warnings to provide against future f now come. The remark which has han once been made in our columns of e in which that subtle and dangerous which now takes the form of diphtheria, v that of enteric or typhoid fever, chooses ims among the very flower of society, ived fresh illustration. In the past few fatal blows have been struck in two ouses, in that of the Prince Royal of and in that of the Duc de Montpensier. alarm thus caused is intensified by the tion how many of those who could so ill ed have been carried off within the last rs, from the palace and from the castle, isease which we profess to believe is ible by the engineer.

o be hoped that the true lesson will be rom these repeated appearances of what t regard as malarious diseases in the f luxury. It would not be unworthy of iety of Arts to direct a special investiga- the subject. If we venture on a few it is rather as indicating the line of that the public welfare seems to , than as at all anticipating the result nquiry of which the need has become gent.

isposition to attacks of this nature may prove to be either personal or local. It is not clear, but it may be suspected, that there is some element at work, in the present state of civilisation, which renders the more gently nurtured, or more highly cultured, members of society specially unfitted to resist malarious influences. Connected with this must be borne in mind the manner in which the external atmosphere is more and more kept out from our houses. Doors and windows close better, draughts are more carefully excluded, than of old. Appliances are introduced for artificially warming the passages and vestibules, the natural function of which places is to afford a graduated transition from the warm atmosphere of a chamber to the external temperature. Clothing is much more complex than was formerly the case. In the time of our grandfathers a man was called a puppy if he wore an overcoat. What would those hardy gentlemen have said to the "Ulsters" of the present day? or the sealskin jackets and coats? Human habit is so much modified by circumstances, that the adoption of all these safeguards against an occasional chill may have a direct tendency to lower the resisting power of the constitution. And there are well-known facts that square with this view. Such is the influence on the constitution of the prolonged heat of tropical or sub-tropical countries. Even in Italy, where the thermometer rarely rises above 96° Fahr. in the middle of the summer, this effect is more perceptible. Those who can fly to mountain heights or cool spots invariably do so for about six weeks in the summer; those who cannot do so (we now speak of foreigners resident in Italy), disregard the first hot season, and laugh to see the natives slowly slinking from shade to shade, and never moving without an umbrella,—truly so called, when used not against rain, but against sun. The second season, however, becomes more serious. The third still more so; and a succession of summers, even as far north as Naples, is a very severe trial to an Englishman or a German. The body seems to dry up, the hair to become like hay, and old age to advance with untimely speed. No one who has had experience of the matter will deny that this is the general rule. The inference is not unnatural that the greater comfort, as we regard it, at all events the more sustained heat, which we are steadily giving to our abodes, is really tending to lower our constitutional power of resistance, not only to the great tonic, cold, but to those influences against which that tonic has the prime function of strengthening the frame.

When we note, further, that it is so often in the palace and the noble mansion that the outburst of the fatal malady occurs, this view of the case is yet further supported. The first point, therefore, for the inquiry of the scientific physician is, how far do greater habits of luxury, avoidance of cold, late hours, gas, carriage exercise in lieu of walking or of riding, and luxury of food, sap and undermine the vigour of the individual, and thus, in an increasing ratio, the vigour of the race? And if this prove to be the case, is there no Lycurgus to be found to raise the cry of "Health before ease and luxury"?

The second point regards the sanitary condition of our houses themselves. This is a different thing from the effect of luxury on the frame. It may be possible, or at all events conceivable, for a great house to be so built, and so tended, that a given temperature, let us say 66° Fahrenheit, may be constantly maintained through vestibules, corridors, staircases, and rooms; and at the same time that the ventilation shall be such as to change the air with sufficient rapidity, and to prevent the entrance of any poisonous gas. But in our variable climate the cost of the provisions for this purpose would be great, and the necessity for constant supervision would demand attendants of a high degree of education to be detailed for this special service. As it is, warmth is too frequently secured at the cost of pure air. The products of the combustion of gas, and the minute quantities of gas (where this mode of lighting is allowed in sitting or sleeping room) that escape unburnt, either from the pipes, the fittings, or the burners, are constantly vitiating the atmosphere of the house. Our own experience is that plants will never thrive in a room in which gas is burnt. If such be the effect on the vegetable tissue, what must be the case with the more delicate tissue of the lungs? We know houses where sore throat is frequent, almost constant, during the winter, and from which we believe that it might be banished by cutting off the gas, and having the windows regularly opened in all weathers.

Then there is the great danger attendant on the water-closet system. We are not about to propose any Utopian remedy. We do not deny that in this system we have, all things considered, the best yet discovered for the removal of the *débris* of organic change from large cities. But it will not do to shut our eyes to the fact that the system is attended with great danger. The slightest irregularity,—stoppage, leakage, frost, want of water, too much water, incurs the risk of turning a fatal exhalation of sewer gas into the house. Sometimes this arises from external causes alone, quite beyond the control of the residents. An irruption of gas may occur in offensive quantities. This, horrid as it is, is far less dangerous than a more subtle and gradual escape. Sometimes it is the very effort to ventilate the sewer that provides a stream of fatal gas to dribble down an unused chimney, or to lurk under the eaves of the attic stories. Sometimes, and that more especially in large hotels, it is sheer neglect. We know one instance in one of these buildings, which it would not be proper to particularise, of this nature. A child, heir and hope of his family, was staying with his parents at this place for a day or two. The mother discovered the neglected state of one of the closets, to which the child had been taken, and the family left the house forthwith. It was too late; the seeds of the malady had been sown, and

diphtheria very soon carried off the only hope of his parents. We speak of one instance within our immediate circle of acquaintances, and within a very few months. How many deaths are due to the like cause? How many, for that matter, to this identical source of mischief?

In referring to this we may, it is true, be reverting to advice formerly given in our own pages. The story of sewer-gas poisoning is not new. But it is none the less important to bring the subject before our readers in its proper connexion. We are attempting to account for a very threatening phenomenon. It is one that has for some time been denounced, but that seems to be increasing in virulence, from year to year. The evil must be either essential, or accidental. It must spring either from the increased power of mischief, or from the decreased power of resistance. In our opinion it is due to the combined influences of both causes. Habits of luxury, or, if we may even not go so far as that, habits of delicacy, are, we fear, impairing the constitutions, especially of the richer classes. The provision for those habits is affecting the salubrity of our dwellings. That both these influences are to some extent, at work, we think is, undeniable. Is it not high time that the matter should be looked in the face?

With regard to the question of house ventilation, the scheme has recently been put forward of a large and lofty chimney, connected with a block of houses, which by its draught should sweep and purify the entire block. There is something very fascinating in this idea, especially to those who are practically aware of how well chemical works can be kept pure by a lofty chimney. It may be well to look, for a few minutes, at the leading facts that would determine the size and number of such chimneys. We lately gave a brief account of the highest chimney in the world, one of 468 ft. high, at the Port Dundas works, Glasgow. The circular area of the tube of this chimney, at the top, is under 88 square feet. This chimney was built with a taper, the propriety of which is questionable, as, in order to utilise the larger part of the diameter a higher velocity is requisite through the narrower part of the chimney, while the disposition of the air will be to lose velocity as it cools. But, taking the 88 ft. of area, and allowing a velocity of 33 ft. per second (which is equal to 22½ miles per hour, or that of a stiff gale) to be attained, 118,800 cubic feet of air would pass through the aperture per minute. As a check on that calculation we take from Mr. D. K. Clark's valuable "Manual of Rules, Tables, and Data for Mechanical Engineers" (p. 927), the maximum quantity of air discharged per minute by a Guibal fan, working at Staveley Colliery, of 30 ft. diameter and 10 ft wide, which is 110,005 cubic feet per minute. To attain the speed of 33 ft. per second, a pressure of 15·5 lb. per square foot must be maintained. The quantity of atmospheric air required for the consumption of one ton of coal, of average quality, is 313,600 cubic feet; so that a chimney of the area indicated, provided such a draught could be maintained, would effect the consumption of a ton of coals in a little under three minutes, or 22 tons of coal per hour. Taking eighteen hours out of the twenty-four for the combustion, we obtain close upon 400 tons per day, or 146,000 tons of coal per annum. If we allow a ton of coal per unit of the population per annum, this would require from twenty-four to thirty such chimneys for the whole of London.

But when we come to look at the question of ventilation, for the purpose of respiration, it will at once be seen how inefficient this powerful draught would be to discharge the functions of our present wasteful and inconvenient chimneys. According to Mr. Bailey Denton, in his first lecture on sanitary engineering (p. 2), 23,000 cubic feet of ordinary air are required per individual per twenty-four hours in order to keep the vitiation of the air below 1 per 1,000, at which point impurity becomes perceptible to the nose. Allowing only eighteen hours to be spent within doors, either in bedrooms, houses, or offices, we shall find that the 824 million cubic feet passing through the hypothetical chimney in that time would only provide for the ventilation requisite for a little over 47,000 human beings. Three times as much ventilating power, therefore, is required for keeping the chambers of a house pure, as is requisite for maintaining combustion of coal at the allowance of one ton per inhabitant per annum. And no provision is made for the products of combustion of gas or other artificial lights.

We need not add together the two quantities; as the partially vitiated air would to a great extent serve for combustion. But all things considered, it would seem that a chimney possessing as high a power of draught as we have named, would be requisite for at least from every 33,000 to 40,000 of population, supposing the whole of the ventilating arrangements to be brought under proper control by its means. As to the details of these arrangements, we cannot at present find space for discussion. But it may be mentioned that from 400 ft. to 740 ft. per minute is the rate of ventilation which is effected in mines; the upcast pit having the former rate of draught, and the velocity in the several channels varying inversely as their areas. The point where the above considerations practically bear on our present subject is this. The removal of air from a house that is requisite to ensure a due ventilation for sanitary purposes is so much more considerable than the removal which is due to, and effected by, the combustion of the amount of fuel proportioned to the number of inhabitants in the dwelling, that special attention should be directed to the subject in all large houses. Chiefly is this the case in those houses, whether large or small, in which it is the object of the housekeeper to maintain a high, or a moderate but invariable, temperature, through all parts of the house, in the winter season. This can only be done, with safety, by warming the air as it enters; and the question is, whether either this or any other mode of keeping up the temperature of the vestibules and corridors is not a direct invitation to disease. We suggest that it is so, in two modes. First, that the resisting power of the frame is lowered by the maintenance of an invariable temperature. While persons remain within the house, the aëration of the blood and the animal vigour will be abated; and on going out the cold will be more keenly felt, and very possibly more injuriously felt, than if the passages had been cool. The other, and entirely independent, question, is that of the risk that there is in all highly-warmed houses of slighting the proper ventilation. The carbonic acid exhaled from the lungs is, of course, so much direct poison, unless removed. To this have to be added all other sources of impurity, products of combustion, gas resulting from the course of the organic functions, emanations from the pet birds or other animals, and, most dangerous of all, infiltration of sewer gas. A wholesome thorough draught is the only safeguard against this domestic malaria; and very few are the instances in which this is to be ensured without the utmost regularity and care as to freely-opened windows. Those who know what Belgian, German, and even French hotels are in this respect, will be likely to form the opinion that palaces and noble mansions may be made, and very frequently are made, far less safe and salubrious, especially for the young, than were the rude and draughty nooks in the halls and castles of our ancestors, or than our very modest cottages in the present day.

The New Patent Bill.—Messrs. W. P. Thompson & Co., patent solicitors, point out a few grave defects in detail which, uncorrected, may nullify all its advantages of longer duration of patents and of lessened stamp duties in provisional protection. It enacts that every invention shall be published *in extenso* before a patent is granted. The inventor has, therefore, to part with his secret before he knows whether he will be protected beyond the preliminary twelve months, and with a very great chance indeed of getting no patent at all. Any person after reading the specification can oppose a patent, and has the option of opposing before either the law officer, as at present, or before the Lord Chancellor, involving the applicant for letters patent, in the latter case, in the estimated expense of from 150*l.* to 1,000*l.* or more, only a very small portion of which cost (even if he gain the case) will the inventor be repaid in taxed costs. It will consequently lie in the power of a capitalist, with opposing interest, to stop a poor man from obtaining a patent altogether. The 50*l.* stamp at the end of the third year is retained as heretofore. In order to obviate the chance of dog-in-the-manger patents, of which there are and have been extremely few, and these of very little importance or inconvenience, the Bill obliges patentees to grant licences on such terms as the Lord Chancellor for the time being may consider fair. This involves worse evils than the one it is designed to rectify.

OLD LONDON AT SOUTH KENSINGTO

We gave, some time ago, a few remarks the plans of old London which form a part, only a small part, of the remarkable collec of illustrations belonging to Mr. Crace, which were then just arranged in the galle on the Queen's Gate side of the Exhibit rooms at Kensington. The collection has for some time been open to the public, fre charge, but seems for some reason to attracted very little notice, considering remarkable and unusual interest.

The collection comprises more than 3 maps, engravings, and drawings, the map the number of 367, being placed together separate room, and the others very system cally arranged on the walls and on scree one of the larger galleries, commencing general views of Loadon, after which the trations relating to special localities or build are grouped together. The views comm with three fac-similes from illuminated M two from copies of Matthew Paris in the Br Museum and at Cambridge (1236), and from a MS. in the British Museum, dated The first two are little more than symbo representations, the first furnishing an illu tion of the great importance then attache the Tower, of which a rude kind of sket given with the title, in old French, "Le Ch de Toure, l'Encree e la Clef de la riche Is Engleter." There is also a rude illustrati "La Iglise de Sct. Pol." The third dra framed with these, gives a most interes view of the Tower, evidently intended faithful pictorial representation of it at period, and probably in the main an acc one, allowing for archaisms of perspe Beyond it is seen London Bridge, and the of the tide through the arches in a ser "rapids," for so many centuries a cha ristic of Thames scenery, is carefully s in the view. No. 372 is a drawing o usual interest and artistic merit; it is a by Whittock of the well-known dr by Antonio Van den Wyngaerde, about now in the Bodleian Library. This gives a of London taken from the Surrey side o river, and extending from Whitehall to G wich, where the palace built by Henry and called Placentia, makes the prom object. This view was obviously int as an accurate representation, and the f its being made by a Dutch draughtsm strong presumption of its truthfulness, so th may here see very precisely the appearan London in the middle of the sixteenth cen the picturesque effect of London Bridge the gradual extension of the city in the minster direction. St. Paul's is shown wit spire; most of the views of the cathedral l the fire are subsequent to the demolition c spire by lightning, and show the tower The drawing of this large panorama, 10 length, is superior to that of a good many subsequent views, some of which are fearfu wonderful. Among the eccentricities o part of the collection are some views of L attached to equestrian portraits of James Charles I., the City being seen under the of the horse as a distant background. next in point of interest is a large panc view by Hollar in 1647, and there is, f on, a pretty large French panoramic published by Jallot, of Paris, in 1678, in the architectural characteristics of the cipal buildings are given in a most am style, and the roofs which cap the four turrets of the Tower keep are represented kind of Oriental bulbous domes, a m of showing them which seems to been accepted as correct, and imitate several subsequent illustrators. The gatew the bridge on the Surrey side is repres with quite a forest of pikes, bearing tra heads, on its roof. We next have a of drawings representing "London on Fir English artists, and "London im Brand Dutch artists, who (as we noticed in spe of the plans before) seem to have taken interest in the catastrophe and to have great wish to have a hand in replanning city. These drawings show the celeb catastrophe from various points in a striking manner, and in some cases seem the result of careful observation on the others are doubtless more or less imagi The majority are panoramic; one exhibits south prospect of London as it lay in ruins that dreadful fire in 1666," a view from S

ırk showing the distant effect of the heaps of rnt buildings: among the more detailed views a very interesting and truthful-looking one graved in 1811 from a picture of the period the fire; and one very theatrical view by De utherbourg of the burning city seen under one the arches of London Bridge; this is obviously nere piece of scenic invention. Among the ws published shortly after the fire is one (423) ich has a special interest, not alluded to in catalogue, in the fact that the distant view St. Paul's, though very small in scale and dly sketched, obviously represents Wren's first ign for the central feature, with a much ter cupola and high spire-like lantern. As view is of the date of 1670, only four years er the fire, the design of the cathedral must course have been obtained from Wren, or m his drawings through other hands. The portance attached to the new churches is ious from such views as those numbered and 438, dated respectively 1720 and 1732, which the spires and towers of the new rches are shown on an absurdly exaggerated le in relation to the whole.

Under the heading, "General Views—1740 to 0," we find a very fine view on a large scale 0), bearing the following title, "A long w of London and Westminster, taken from Scheve's Sugar-house, opposite to York use, from Mr. Watson's Summer-house, osite to Somerset House, from Mr. Everard's mmer-house, opposite St. Bride's Church, and n St. Mary Overy's Church, Southwark." date is 1749; the engraving is a fine one in t of effect, besides giving the impression of g carefully and correctly executed. A view reverse way, showing the southern bank 3), and dated 1807, appears to be taken from thumberland House Garden, a part of which is the foreground. There are in this part the collection two very good water-colour s, one representing London from West- ter Bridge to the Adelphi, and the other n St. Paul's to the Custom House (450-1), n in 1837 by Col. Yates, whose name ars several times in the exhibition, and seems to have been a very accomplished painstaking topographical artist.

e now come to "Views on the Thames," esenting special points more in detail. ng the set headed "Millbank," is a view Warley (458), "From Millbank, near the eferry-road, looking towards Lambeth ce," dated 1816, and which is valuable as ring the origin of the names which are still erved in streets and lanes, the aspect of h is now so completely out of keeping with old names. We have here an old timber standing in open waste ground adjoining dy lane, little more than a cart-track. The numbered 475, date 1841, is taken from nearly the same place, and shows Millbank walled wharf. The Westminster Palace ings are only of moderate interest, but included under the head of "Westminster ge" are of much excellence and value. The in the list (494) is dated 1751, and bears haracteristic title "An Exact Prospect of magnificent Stone Bridge at Westminster, a View of the Abbey, Lambeth Palace, other Buildings, &c., up the River Thames." next is a drawing by Canaletti, showing e Centre Arch of Westminster Bridge when ling." Among a good many others which ave not space to mention, there is one of date of 1819 (514), a drawing marked as by fall, engraved by Hewell, which gives a rkably good view of the old red-roofed se which formerly stood where the present minster Palace now stands. Next comes a ehall series, headed by an engraving by ur, representing "Palatium Regis prope inum, vulgo Whitehall," followed by a s representing various designs for fire- s on the river at Whitehall, which would to have been at one time a recog- way of doing honour to the sovereign. of these (534) was the design of Sir m Thornhill, and is thus described with a of quaint loyalty,—"The exact draught e firework that was performed on the River es, July 7th, 1713, being the thanksgiving for the peace obtained by the best of ns." A York-gate series follows, containing very good drawings, among others a view ork-gate from Buckingham-terrace, just on vest hand of the foot of Buckingham- e; a pretty drawing, showing quite a rural side walk with an avenue of trees, and ren and nursemaids promenading: date 1784. "The Tower of York Buildings Waterworks, showing the Construction," is the subject of another print; the feature in question being the large timber tower which appears in so many old views in this part of London, almost on the site of the Charing-cross Station. "A View of London, taken on the Thames near York Stairs" (546), shows the Adelphi and Somerset House as the latter appeared before the construction of Waterloo Bridge. This latter forms the subject of several illustations, the first one being a coloured print showing the scene at the opening of the bridge in 1817, on the 18th of June, taken "from the top of Holyland's Hotel, Salisbury Wharf," and which shows that there was an effort to make the ceremony worthy of the event which the name of the structure commemorated.

Old and new Somerset House are respectively illustrated by a considerable number of drawings and engravings, among which Paul Sandby's fine water-colour drawing of old Somerset House (589) is one of the best, and one of the most interesting is a view of the inner court of old Somerset House, at the time it was being taken down (593); this is dated 1776, and shows part of the new building as it now is, with the old one in course of demolition. Among the new Somerset House illustrations is a fine water-colour drawing by Thos. Malton (1796), giving a good idea of the aspect of the building from the river before the existence of Waterloo Bridge. We pass a few illustrations not of special interest of the Temple, and come to a considerable number connected with Blackfriars Bridge; the first of which is a very fine engraving by Piranesi, from a drawing by "Robert Mylne, architect," showing one of the arches in course of construction, with a careful representation of the centering; and there are several other illustrations of the construction of the bridge, as well as of this and Southwark Bridge treated from the picturesque point of view. A view of Nelson's funeral procession by water from Greenwich to Whitehall is a very interesting reminiscence of a great national ceremony, though a bad and incorrect drawing as far as topography and buildings are concerned. The drawings illustrating old and new London Bridge are of great value and interest, the more so, of course, on account of the ancient and intimate connexion of this bridge with the history of the city. The old bridge, with its masses of houses overhanging the water, was the pride of the Londoner of the period. We have first a view drawn in Elizabeth's time, but not published till 1624; this gives a very complete idea of the bridge as it then was, and a little relic of household ways among its inhabitants, as a bucket at the end of a cord is let down from one of the top windows to draw up water from the river, which then was, we may suppose, water, and not sewage. It may be noted that in nearly all these old views the name of the river is engraved upon its surface, usually in Latin; in this case the draughtsman has been even more precise, lettering it "Tame-Isis Fluvius, vulgo Temms." The next engraving gives elevations (rather than views) of the east and west sides of the bridge, in 1710, with an historical account of the various London bridges, and a couplet claiming for it the honour of being the greatest wonder of the world. "A View of London Bridge before the late Alterations" (651), from a picture by Samuel Scott in 1757, is a capital spirited engraving, with much freshness and life in the treatment of the water. The alterations referred to consisted in removing the houses and making a wide arch in the centre for the accommodation of the river traffic. While this was being carried out in 1758, a temporary wooden bridgeway was erected over the part that was undergoing alteration, which it seems took fire and was burned completely. We have next the drawings of old London Bridge without the houses; the engraving 655 shows that after they were removed the cutwater piers, which in the old views are carried the full height of the bridge and form the base for the houses, were taken down nearly to high-water level, and a new balustrade and cantilever cornice in Classic style were placed at the road level. In this engraving the wide centre arch, formed by the removal of one of the piers, is shown; but there is another point of considerable interest in this illustration, as regards the history of the bridge. The slightly projecting piers which are left where the cutwater piers formerly were, are ornamented with Gothic tracery, two panels and a mullion, with a quatrefoil in the head; they are badly drawn and do not give a good representation of Gothic work, but it is impossible to suppose that those who altered the bridge in 1758, and added the cantilever cornice, would at the same time have thought of making a Gothic architectural decoration between the arches in keeping with their character. And the only alternative seems to be that this was the original aspect of the Mediæval bridge when first built, and that the cutwaters were carried up subsequently in order to support the houses afterwards built on the bridge, and when they were removed, the old design was again uncovered and perhaps more or less repaired and reinstated. Two excellent water-colour drawings by Major Yates (the same artist whose name we see as Colonel Yates elsewhere) show the old bridge, as further altered by the widening of other arches in order to relieve the navigation till the new bridge was built; these are dated 1827 and 1830, and a drawing by W. Knight, 1827, shows this work in process in a more engineering and less picturesque type of drawing. Of the same date and by the same draughtsman is a fine drawing of the first arch of the new bridge in process of erection; there are also various drawings showing the process of the demolition of old London Bridge; and a good many illustrations of the new one, showing its construction, the ceremony of opening it (which seems to have been a sort of "field of the cloth of gold" over again), and views of it from various points. These three sets of illustrations form together a most interesting group of constructive and pictorial records of three of the phases of our metropolitan bridge: what will be its next phase? "A question to be asked."

We can only mention here a set of views of the Tower, which are but of partial interest, because the real history of the Tower had virtually closed before the period of illustration set in; views of Billingsgate, and the Custom House, and of St. Katherine's Docks, with sketches of some of the queer, tumble-down old houses which were disestablished to make way for the docks. We may just allude to the illustrations, so interesting to the historian of manners, of the two frost fairs held on the Thames in 1683 and 1814; the frost in the latter year having been a part of the great visitation of cold which had a year or two before destroyed the French army; in reference to this, one booth or tent in one of the drawings bears the sign, "The City of Moscow," while another exhibits the comprehensive motto, at once patriotic and businesslike, "Wellington for ever,—good Ale." We have more to say in regard to particular buildings, some altered and some gone, of which so many are illustrated in the collection.

ART CLUBS.

It is quite certain that the increasing interest in art will cause art clubs slowly to multiply, and we look forward to the time when every provincial town of any size will, like Liverpool, possess its art club. Such clubs are more likely to multiply in the provinces than in London, for they serve two different purposes, to unite those who are interested in art, and to fill a social gap which does not exist at all in London, where the ordinary social clubs are so numerous. That, from every point of view, the increase of these clubs is very desirable there can, we think, be no question at all, for, regarded from the very lowest point of view, what can be more praiseworthy than that men should unite to discuss artistic matters, or even only to eat their dinners amidst a conversation on painting and sculpture rather than upon the most likely horse to win the Derby, or who was the greatest belle at the last assembly ball? Perhaps the idea of a score of gentlemen in a provincial town, seated round a club table discussing with their viands art for art's sake, or the latest work of Mr. Burne Jones, is somewhat an ideal picture, not very likely to be realised; but there can be no doubt, considering the matter seriously, that when the majority of or all the company have one object, at any rate, in which they take a common interest, that object is most likely, if not to be the basis of, yet strongly to tinge their thoughts and conversation. Put a dozen lawyers, or a dozen clergymen, or a dozen men with strong political interests, round a table, and the great mass of conversation will be upon legal, clerical, or political subjects. Put a dozen lovers of art together, and though they may have pitched battles over current theories, yet art will after all be the

staple dish of the intellectual entertainment. But it is worth while to consider briefly what it is that should give art clubs their *raison d'être*. The first principle which it seems to us should be borne in mind by those who may have to do with art clubs is that they should be perfectly catholic in their aims and system. There should be no narrowness in their composition, and all crotchets should be put down with a strong hand. That is to say, they should consist not only of amateurs who may be able to handle a brush themselves, to the exclusion of picture collectors simply, but of artists, of persons who gather together pictures, and of those who take a true interest in art, even if they cannot actually use the pencil themselves, or if they have not incomes which will allow them to indulge in the purchase of works of art. There is a good deal of danger indeed that this class, which often has in it most thorough lovers of art, may be excluded by a combination of the technical and the collecting elements. And an art club, to justify its name, at any rate, in provincial towns, should contain every class of person animated with an enthusiasm for art. It follows, therefore, to deduce one practical consequence from this argument, that the subscription should be always as moderate as possible.

But when we say that art clubs should embrace all who are interested in art, it should be borne in mind that painters and sculptors are not the only exponents of art. Thus art clubs should take care to encourage architecture and architects, and if they do this, we conceive that they will be fulfilling functions of the utmost possible utility. It is too much the case that in provincial towns some people do not consider architects as belonging to the great fellowship of artists; they fancy that, like Mr. Pecksniff, they are persons who, chiefly by the hands of clerks, copy certain designs, which they keep in their drawers ready for display when they are asked for plans, and whose occupation is wholly mechanical. It is too true, we are afraid, that the facts are not always such as to correct this impression. But be that as it may, nothing can be more beneficial, both for architects and the public, or amateurs in other subjects, than that architects should take their place in any provincial art club that exists, so long as they come up to the other requirements of the club. Art, of course, also contains art of a dramatic kind, but we are afraid that in its manner of fulfilment dramatic art does not at the present day join hands sufficiently with the arts of painting, sculpture, and architecture as always to give lovers of the stage a right to join with ordinary lovers of art, in its narrower sense, in a common social union. When the art club is established on a wide basis, it is obvious that in some places it may be apt to degenerate into a social fellowship simply, to the neglect of the severer forms in which an art club should develop itself; or, on the other hand, in other places it may lose those social traits which are both pleasant and attractive, and become too much of a merely artistic society whose members become no more than organisers of art exhibitions or lectures. For there can be no doubt that the intelligent discussion of artistic subjects, the comparing of notes of tours in search of the picturesque, and the hundred and one points which may glance out under the pleasant glow of social intercourse, may largely disseminate an intelligent love of art. For nothing is more suggestive than the discussion of points with a man equally interested in the main object of the conversation, but who regards it from a different standpoint, and in half an hour's conversation with a man who has given himself up to some particular phase of art, more may be learnt than in poring for a whole day over a volume of criticism from the accomplished pen of some artistic critic. But, again, to be sociable is not everything; for an art club should seek to disseminate the knowledge of art, and to exercise a controlling influence over artistic matters which may come upon the *tapis* within the range of its membership. Thus, it should be the organiser of exhibitions; it should seek to cultivate local talent; it should collect a first-class library, embracing all sides of the literature of art; and it should act, if possible, as the Mentor of local bodies who may have been willing or unwilling to solve some artistic problem. The Liverpool Art Club has, in this matter of exhibitions, shown a judgment worthy of all praise, and to be followed by other art clubs when they come into existence; for it is really only by local exhibitions, and local exhibitions not of a promiscuous and essentially popular kind, but directed with knowledge and critical acumen, that provincial populations can ever really be properly educated in art matters as they should be. It is unnecessary on this point to say more. But, again, as we all know, it is often difficult for a young and rising artist to obtain that popular appreciation without which he may starve. Thus, it is at once possible and right that local art clubs should do what they can to encourage and to assist rising talent,—as again, by occasionally having small exhibitions for local artists alone, and by many other means which we cannot go into here. Then, as regards art libraries, how many men in a provincial town before going for a holiday on the Continent, or after returning from it, would be glad to consult works connected with artistic matters. Such a book as Mrs. Heaton's "Life of Albrecht Dürer," for example,—and we merely take this as the first which comes into our mind,—should be read by any one who has the most skin-deep love of art who may be about to visit the grand old tower of Nuremberg.

> "Here where art was still religion, with a simple reverent heart,
> Lived and laboured Albrecht Dürer, the Evangelist of art."

But how many in a provincial town can obtain such a book unless they possess a thorough library of artistic literature, and who expects to find books of reference in artistic matters at the circulating library which dispenses the intellectual food to the inhabitants of the city? Of course, in towns such as Birmingham and Manchester, a free library to some extent answers this latter object. But it is a very different matter to possess books of artistic worth in common with a number of other persons as partly one's own property, ready for reference at any moment, to going to a large library, even so admirable a one as is to be found in many large English towns. Therefore, it comes to this,—that there is clearly room for art clubs to exercise a most useful influence, social and artistic, in the larger provincial towns in England in those ways which we have pointed out, and also in the obvious way of assisting public bodies in fulfilling some of their duties. If, for example, a statue is to be erected to some deceased worthy of public or local fame, and an art club exists in the city in question, it should be consulted as to the choice of site or of the sculptor, either directly or by means of some of its leading members. This, again, is a point into which we cannot enter at length; but, again, it is one which is obviously in favour of the growth of art clubs in the provinces. That they will increase we have no doubt at all, and therefore it is to be hoped that they will be founded on a broad basis, and will keep plainly in view their artistic and social aims. There are many towns in England now quite ripe for these societies.

THE SLATE QUARRIES OF ANGERS.

These are among the most ancient slate quarries in Europe, and still their yield is incessant, and appears to be illimitable. But the legends associated with them are of no practical interest at the present day, and it is not until the beginning of the fifteenth century that they emerge into history. They were then celebrated for supplying a material which beautified the roofs of nearly all the more important public edifices in France, and gave a tone, indeed, to the national architecture. The space spread over by these works is of enormous extent, and the difficulty of reaching the "blue rock," where fresh openings have to be made is in proportion, huge superincumbent masses of materials possessing no value whatever in commerce having to be removed. The excavation thus opened is, in parts, nearly 1,000 ft. deep, with ascents and descents by means of "giants' staircases" hewn in the walls, as well as by scaffoldings, which notwithstanding their solidity, seem frail, in consequence of their height. The first process, upon opening a quarry, is the erection of a wedge-shaped wall, very thick, whence a descent slopes down, by regular stages, until a point is reached where it must become perpendicular. Between the wall and this point is thrown out a timber framework, at the outer extremity of which is the apparatus for hoisting, regulated, of course, in these days, by steam power. In these stupendous scaffoldings, any other material than wood is rarely employed,—lightness and flexibility, combined with strength, being the objects aimed at; and experience has proved, in this instance, that heavy ironw masonry, press perilously upon the only f tions that can be found. Even the mac is placed as far as possible from the m the pit, as it may be termed, so that a deal of the labour seems to be almost matically done, by pulleys working over sometimes not less than 30 ft. in diameta set of engines faces another, east and w about a hundred yards' distance, and, of both must be employed, for a long time, great cost, before the slate itself is re The next process is to blast, east and w either end of the quarry, a ditch, three yards deep, supplemented by others, of capacity, running north and south. Whe have been finished off by the pick-axe, remains a vast block to be attacked, fro sides. Horizontal holes are pierced in thi vertical holes at their extremities, and after mass is dislodged by means of gunp Such is the nature of this most useful ro such the skill of the artificers engaged notwithstanding the incessant explosi record of ten years shows only one man and six wounded, in consequence of them blocks thus detached are now dealt w hand, with heavy hammers and hard-p spikes, and one by one, with mar rapidity, the slabs or "flakes" fal wards, in regular heaps, until a su number have been accumulated for f away by the tumbrils which have replac primitive hods. Arrived at a particula they are loaded into large oblong box drawn up by cranes to their second desti —a small but solid platform, moving o These processes, of course, are varied instead of working in "the open," the e men have to excavate their way throug terranean passages and chambers, consta in fact, one stage or floor of quarri another. The hardness of the substance the danger of these underground workin from the same cause, floodings are ex rare. In this latter class of work, ope are commenced by sinking shafts, mod broad and deep, and, from these, carry ward four corridors, answering to the fi above, at right angles with each other same processes are repeated, but the qu of gunpowder used are lessened, les "faults" in the superincumbent mass render it possible for an explosion to down. It is a happy circumstance co with a slate quarry that it is darkene such terrors as those which belong to t mine; the galleries are illuminated by g every quarryman, working underground, an uncovered light in his hat. There are over, no mephitic or suffocating exhala any kind.

In excavating these subterranean q the plan is to hew out parallel, but series, of square chambers, with a brea rock between them, nearly equal to tha is hewn or blasted away. In a diagram fore, they present the appearance of staircases, reared one over another, all p symmetrical and uniform in size. Thi ever, is a peculiarity of the works at It is to be remarked that the excavat ployed below constitute a separate and s class from those employed above, or in t of day. They require, for any one an of entering their body, a considerable nu with the payment of a fee. A candidate been accepted, appears before his comrades, with sundry fragments of f with string about his legs, and there i with a generous consumption of white w which the proprietors pay. Formerly exactions were mischievously multiplied, the young apprentice was fined, so to sp every grand occasion of life, from t appearance of a beard upon his chin celebration of his marriage. Ultimat enters one of the "societies," consisting c twenty men each, which deal in the da duce of their hands with the representat the company above. A distribution of however, takes place, as a rule, only six months, and the earnings, throughc year, may be said to average rather le 2s. 6d. per day. Such classes of labou are not recognised as genuine quarrym only as their assistants, receive daily w the extent of nearly 2s., though ther distinct difference between their summ their winter earnings. They used called "hodmen," but, as already sug

part of their toil is now performed means of machinery. Nevertheless, it und impossible, for purposes of traction, dispense with horses altogether, and a iderable proportion of the tumbrils are vn by powerful Anjou horses, driven by lren clad in goatskin and wearing enormous nern hats. Arrived at the summit, the slate ks are piled under shelter of slanting straw-es, thick and strong, where the "splitter" in all seasons, almost completely exposed ne weather. He first divides the block, next plits the masses thus separated, into rough s; his tools are a heavy steel chisel, and a wooden mallet; the dexterity required is of seeing, instantly, where the slab will easily separate, and also that of judging her the quality is such as will yield large aces—which are proportionately paid for—nly the smaller kinds, for ordinary use. r implements and other processes, of se, are brought to bear, but their recapitu-n would necessitate details of too minute nicality. The "great Angevine slate" is rded by many as the finest in the world, in comparison with the Welsh and nish; yet these are mere traditionary actions, and it is to be noted as some-remarkable, that the only engine-wrought s brought from Angers are of a quality d, on the spot, "English"; it is one which yield to neither the slater's edging-tool o his plane. Counted, measured, examined o quality, the slates are stacked in nsands,"—a thousand and forty to each,—despatched to the market for the roofing of building whatsoever throughout France, a farm-house to a town-hall, and two red millions of "leaves" a year are computed produced by the great quarries of Angers. eet the ever-increasing demand, a manu-ry of metallic rope has been established in eighbourhood, while it is in prospect, for ture, to erect steam saw-mills to supersede ne, at any rate, of the processes, handwork, ially in the production of billiard-slabs, of , with all their appliances, the famous s of St. Leonard, close to the quarries, can forth, in perfection, no more than three a

In France, slate takes the place of marble any respects; the flooring of baths and s, numerous architectural forms, clock-, garden-seats, and tables, caskets, mangers, so forth; and it is now proposed to e it in the shape of railway-sleepers, while e reconstruction of the Palace of the s it has been largely introduced.

THE ADORNMENT OF CITIES.

s worthy of note that in two such active ntres as Paris and London, two artists minent as Mr. E. M. Barry and M. Viollet-o should be attracting the attention of rtistic public by the expression of their onsidered views. It is a coincidence of n not a little noticeable that almost at me time Mr. Barry was remarking on the ragement afforded to the arts in the le Ages by the popular power, and stating atural it was "that democratic commu-, ruling by and for the people, should ss with satisfaction the employment of funds for purposes which aim at giving re to the greatest number," and referring large sum spent by the French on their get des Beaux Arts," M. Viollet-le-Duc, valuable report, had drawn the public tion to the necessity for a more strict yment of a portion of this budget in the ion of giving the greatest "pleasure to the st number."

ticularly on the adornment of our cities chitecture, by statuary, by monuments ing local history and traditions, M. Viollet- expresses warmly his opinion, an opinion should be studied as closely by English ipal bodies as by those of France.

an artist whose competence is well known M. Viollet-le-Duc in his report has carried e mission committed to him for considera-ith an independence and a broadness of which have justly met with universal ation; should, indeed, the suggestions of minent architect be carried out, a complete ition in the system of municipal fine art inistration cannot fail to take place, and the new president of the Special Fine Committee, M. Castagnary (an art critic has long been connected with the *Siècle*), there is every possibility of M. Viollet-le-Duc being energetically supported.

As equally impressed as Mr. Barry as to the increased and increasing power of the people over their own affairs which all modern history records (a sentiment which from the walls of the Academy sounds strange), M. Viollet-le-Duc establishes, by a series of plausible and undeniable arguments, that only a jury or commission, elected by the ratepayers, should have a right to pronounce in the choice of those works of art, and the artists to carry them out, intended for the embellishment of the capital; such a commission would, in M. Viollet-le-Duc's opinion, have a more authentic and regular authority than the commission, chosen by a majority of the members of the Institute, of a number of personages whose preferences and exclusive bias are too well known.

A point of no especial interest to English readers, but which cannot fail to rouse some excited discussion in France, was the reference of M. Viollet-le-Duc to the delicate point of the colossal statue of the Republic about to be erected on the Place du Château d'Eau, for which monument M. Viollet-le-Duc does not hesitate to claim that the figure should be in possession of all its attributes: conspicuous among these, the cap of Liberty,—an emblem which M. Viollet-le-Duc claims, with much show of reason, is no more soiled by historical associations than are the crown or the cross, under guise of which such cruel massacres and martyrdom have been enacted.

To analyse exhaustively the contents of M. Viollet-le-Duc's remarkable report would be to enter with him into the earliest manifestations of art under all its forms in Paris,—a city which, according to his words, still awaits an art which may be considered popular: ever since the Renaissance the fine-arts have become aristocratic, and seem to have only sought patronage and favour from those in power, the rich, and the ennobled.

M. Viollet-le-Duc would further demand special attention to be given to the lamentable "nudity of the squares and public promenades of Paris," against which he eloquently protests in the name of the interests of local history, rich in suggestive ideas and biographical traditions of personages "whose memory it is the duty of the present and the future to venerate."

The vestry-halls and schools, in the opinion of M. Viollet-le-Duc, suggest themselves naturally as edifices eminently suited for decoration,—not alone in the interest of public pleasure, but of popular instruction. "Each parish (and this is not one of the least attractions that a city offers) possesses its peculiar physiognomy owing to the industries of which it forms the centre, or by the nature of its inhabitants or its history. Are there not a thousand interesting and instructive incidents in each, suitable to furnish suggestions to the artists employed by the municipality to adorn their city?

In every town each neighbourhood is able to contribute its quota of historical and biographical memories, its traditions of honourable struggles and victories to make up the history of the nation; in the public walks might be reproduced the more striking incidents, while what would form a more interesting addition than that the vestibules and staircases of the municipal buildings should be adorned with portraits and with views of disappearing monuments and edifices of the parish or the neighbourhood?

Somewhat in opposition to the opinion expressed not long since by the new P.R.A. in unison with Mr. Charles Barry, M. Viollet-le-Duc thinks that the artistic works executed for the municipality should be submitted to competition, the only principle which it appears to him should be carried out in commissions of importance.

It is a pity that this report, to the instructive nature of which, and its warm and eloquent language, we have done but small justice, should engender bad feeling. With some it will raise a smile, with others a tone of irony; but one or other (we speak of France) it cannot fail to do in a society where, as a leading French journal not long since remarked, "academic tutelage is the supreme consecration of talent and glory.

Should, however, the Paris municipality allow itself to follow the directions of so able a leader as M. Viollet-le-Duc, it will before long rejoice at the successful results of his initiative.

Soon, to quote the words of the eminent artist, it will have gathered round it a pleiad of independent artists, whose work will prove that it has acted wisely in abandoning old official traditions, and in disposing of the resources at its command on its own responsibility.

It is scarcely at such a period of crisis as that through which we in England are passing that our public can be expected to approach in the proper state of mind the discussion of the embellishment of our cities, but that a proper understanding should exist on the matter is as necessary in England as in France.

Among all our heavy rates and taxes, we have never been called upon to contribute as largely for the adornment of London as our neighbours the French, for Paris; indeed, there, provincial tax-payers have more than once complained of the injustice of their having to supply the metropolis with funds to lay out in adornments which they can never hope to see. The world has, however, now learnt that not only has great taste been exercised, but that shrewd business tact has been shown by the French in the employment of their well-gathered capital.

When M. Viollet-le-Duc complains of the nudity of the squares and public walks of Paris, what, we should like to know, would that eminent critic have to say with regard to London, where statues and other memorials of famous inhabitants, — what a list any one neighbourhood of London could furnish! —are rarely, if ever, erected, except by special and public subscriptions.

Among the many valuable remarks made by Mr. Barry, in the third of his interesting Royal Academy lectures of this year, one at least cannot be too often repeated,—When a public feeling for art is weak, the wealth of a nation is diverted rather to selfish gratification than to the public gain. . . . . With us, artistic taste has been more a matter of individual education and culture in the case of the few, while it has been neglected as an element of national prosperity. It has not been so elsewhere. Art has been cultivated by our neighbours, the French, not only from inborn taste, but also from calculated policy. We are now complaining of foreign rivalry of trade, and calling out for technical education. Perhaps it may at length dawn upon some of our rulers that an educated national taste may even be a matter of commercial importance.

May not those who stand a little higher than "the British workman" take to heart the words of Prince Leopold, who has so eloquently emphasised the importance of more thought in the work than we all do? And is not Mr. *Punch's* serious squeak too true?—

> "Many a gift,—
> Intelligence, taste, temperance, and thrift,
> Deftness, adaptability,—is found
> Riper on foreign than on English ground."

The British workman may at least take to heart the advice,—

> "Stint bounce and beer; face the new time's new ends,
> And look abroad for lessons and for friends."

NORTHERN GLASS MANUFACTURE.

One of the oldest industries of the North of England is that of the glass manufacture; and, excepting the mineral and chemical trades, it is one of the most extensive. With the early history of the trade, the North is intimately connected and honourably associated, and with its development it is as much so, for ordinary glass for window purposes traces its rise back to the monasteries on the rivers Wear and Tyne; and Bede, the ecclesiastical historian, states that a contemporary of his, the Abbot Benedict, sent for "artists beyond the seas to glaze the monastery at Wearmouth." At Shields, at Sunderland, and at Newcastle-upon-Tyne, the manufacture took root, and flourished. In South Shields the excise returns showed that down to the period of the continuance of the excise duty there was a larger manufacture of plate glass than in any other town in the kingdom; Sunderland is the birthplace of rolled plate-glass, and the same town claimed to make one-fourth of the sheet-glass produced in the country; and the manufacture of flint glass, of stained glass, and of glass bottles is very large in the district between the rivers Tyne and Tees. But it is in recent days that the glass manufacture has known its greatest changes, and it is to these days that we may more generally address ourselves.

Glancing first at the glass bottle trade in the North, it may be said that it dates back for

nearly two centuries on the Tyne, and that the neighbourhood of that river was deemed especially adapted to the manufacture, fuel being very cheap, and a fluvial deposit long used in the manufacture abounding. More simple materials were substituted, and the industry spread, and now, not only on the Tyne and the Wear, but in Stockton and Hartlepool, bottle-houses have been commenced. In 1862, there were in the North no fewer than 47 bottle-houses, and their produce yearly was about 4,230,000 dozen bottles; there was an extension of the producing capacity in successive years, and in 1873 there were fifty-three houses in full work, employing about 2,000 persons, and having an output of nearly 12,000,000 dozens of bottles yearly. Since that date the trade has known dulness, which has been so generic in the North, and now it is estimated that house after house has been closed, until little more than one-half of those in operation five years ago are now at work, whilst the number of workmen and the production are shorn in similar proportion. The demand has fallen off, both at home and abroad,—the consumption of certain kinds of wine and bottled beer having apparently declined; but there is reason to suppose that the lowest limit has been nearly reached, and that there will be, as a consequence, an early accession of activity into this branch of the glass manufacture of the North. On the Tees and at Hartlepool, where this is the chief branch of the glass manufacture, the effect has been felt with some severity, but with the stoppage of the increase of stocks in hand, it is to be hoped that there is the dawn of a better day for the localities. At the same time, it is to be noticed that not only has there been a closing of a few of the bottle houses, but there has also been to some considerable extent an accumulation of stocks which will need time and better demand to clear out.

In regard to flint-glass, the manufacture in the North is first ascribed to Sir Robert Mansell, who established works for its production in Newcastle about 1616; but the manufacture has declined from its ancient importance, and the production on the Tyne and the Wear, when last assessed by a competent authority, was put at about ten million pounds weight yearly, and the wholesale value was stated at 200,000*l*. Both this and the allied industry of sheet-glass (the latter of which was introduced as a manufacture into this country by Mr. Chance and Mr. Hartley, of Sunderland) have not progressed at the same rate as some other branches of the industry. The sheet-glass manufactories in the North are few in number, but the extent of the manufacture of one or two of them is great, the production of two some years ago being estimated at 50,000*l*. yearly in value.

In regard to plate-glass, the district has attained some eminence, "blown plate-glass" having been made for at least two centuries in South Shields, whilst rolled plate-glass was first produced at the works of Messrs. Hartley, at Sunderland, where it attains its greatest dimensions as a manufacture. Of other kinds of glass made in the North, the stained only need be named, the manufactory of Mr. Wailes, in Newcastle, having attained eminence. Passing from these rough gleanings of fact from many sources, it may be said that there has been in the past a very considerable amount of evil results in the glass manufacture from the combinations of workmen, one branch of the industry having been practically driven from one of its centres by the efforts of the unions; but at the present time the glass trade as a whole is suffering more from the effects of the commercial depression than from any other cause. In some parts of the North there is an almost absolute cessation of building operations, and this very naturally affects, to a large extent, glass manufacture. There are other allied causes of depression; and failing to find a demand for bottles, for instance, the manufacturers made largely for stock, and as demand has continued to fall stocks have risen, until it is found that a temporarily-restricted production is inevitable. This, then, is the present position of the glass manufacture in the North, in common with many other Northern industries. It is evident that there must be a patient waiting for a recovery from the present prostration of the trade, but with this there should be no doubt as to the future of this special industry in the North. It has at its doors unlimited quantities of many of the raw materials, and its vast seaboard and navigable rivers give to it facility not only for cheaply obtaining full supplies of other materials, but also of placing the product on the great highway of commerce without cost. Its historic fame in the manufacture is of use to it, and the skill of its manufacturers gives to it great advantage. Moreover, the area of the consumption of glass in the North is widening, and though it has to compete with foreign manufacturers, there can be no doubt that, with a united effort on the part of the employers and those they employ, the trade might enter into a fresh lease of prosperous trade. This is one of the chief requirements of the glass manufacture, for the reverse has been one of the greatest checks to the prosperity of the trade in the past. With unlimited facilities of manufacture, with a wide field for distribution of the manufactured article, there should not be the possibility which prevails of successful foreign competition. That this is known is a fact too patent to the trade, and to overcome it there is needed less of the friction which is given too often by the unions, the results of which are seen in the closed "houses" and smokeless cones on some of our northern rivers. The cost of production must be brought down to the lowest possible limit, and new markets will be found if with the lower prices resultant there is also an attempt to improve the product. The bagpiper of Bujalance, according to Longfellow's "Student," asked a "maravedi for playing, and ten for leaving off," and in like manner the effects of the disastrous policy so long pursued in the glass trade linger long after the policy itself may be altered. But, with greater unity of effort, the future may show better results than the present.

TREASURES OF THE HERALDS' COLLEGE.

The building in Doctors'-commons which serves as a home for the heralds who form the College of Arms, has been so often described that we need not repeat its details here. But a few notes on its chief contents may not be out of place.

First and foremost, Garter King of Arms and the colleagues who form his "Chapter," are in possession of one of the noblest genealogical and heraldic libraries in the kingdom; it is rich in foreign as well as in English genealogy and armoury.

In the Record-room are some 500 volumes of the heralds' "Visitations," dating from 1528 to 1687; records of all national Royal ceremonies, funeral certificates, Royal warrants and those of the Earl-Marshals, licences for changes of names, grants of arms, old rolls of arms, records of founders' kin, &c. Then there are the "Talbot Papers" and the "Arundel Manuscripts"; besides innumerable monumental inscriptions, and wills; all being documents of authority received in every court of law as evidence, from the earliest times down to the present day.

The College is also rich in manuscripts ancient and modern. Among those of earlier date may be specified a pedigree of the Saxon kings from Adam, enriched with pen-and-ink illustrations (*temp.* Henry VIII.); a volume in the handwriting of "the learned Camden," who was created Clarencieux in 1597; and some most valuable materials in MS. for the history of the College of Arms, by John Anstis, an eminent English antiquary, who was created Garter King of Arms in 1718. He had been presented by Queen Anne, four years previously, with a reversionary patent of the place of "Garter," but having fallen under the suspicion of Government in the first Parliament of George I., as being a favourer of the exiled family, he was imprisoned at the very time that the office fell vacant by the death of the venerable Sir Henry St. George, and Anstis obtained the post only after a long and bold struggle. The pedigrees of such noble, though untitled, families as have their arms and descents recorded here, are kept in a long series of volumes wholly manuscript, in which are duly entered, year by year, the births, alliances, and other changes which occur in the course of nature to modify them, and to render them of value for any legal purposes that may arise, and in which such documentary evidence can be made available. Here, too, the visitor who is fortunate enough to possess an "open sesame" in the personal acquaintance of some leading member of the College, may see in the gallery over the library the veritable sword and dagger which belonged to the unfortunate James IV. of Scotland, who fell fighting on the Flodden. The sword-hilt has been en and still shows traces of gilding; wh dagger, the hilt of which is similarly is still, to all appearance, a strong and able weapon. The length of the blade 15 in. Another interesting relic preser is the plain turquoise ring which, tradit the French Queen sent to James, beg to ride a foray in England. Res "Marmion" will not have forgotten th of this lady's ring, how,—

> "... The fair Queen of France
> Sent him a turquoise ring and glove,
> And charged him, as her knight and lov
> For her to break a lance," &c.

These objects are valued heirlooms of t of Howard, whose "bend argent," as Mr. tells us, "received the honourable augm of the Scottish lion, in testimony of the displayed by the gallant soldier wh manded the English forces on that me occasion."

Among the pictorial treasures of the are authentic portaits of Sir William and Sir Gilbert Dethick, both of who the office of Garter; Sir John Vanbr architect, "Clarencieux"; Sir John "Norroy"; the Earl of Arundel (who be to the College the Arundel MSS.); Cecil, Lord Burleigh; Henry Chitting (Herald"); John Charles Brooke (" Herald"), who left a valuable collection for the use of the College, and who was to death in a crowd at the Haymarket in 1794; Hawker ("Clarencieux"); J Earl of Shrewsbury, in his tabard; S Bigland ("Garter"); Peter Le ("Norroy"); John Warburton ("Som and Ralph Sheldon, who bequeathed College about 500 folio volumes, known "Vincent MSS."

The Warwick Roll, a series of figures earls of Warwick from the Conquest to of Richard III., executed at the clos fifteenth century, by Rouse, a celebra quary of Warwick; a Tournament Rol time of Henry VIII.; and a Book of E ment, executed for Prince Arthur, th of Henry VIII., who died young, are s seen here. This last-mentioned work have been compiled in order to teach th of heraldry to the young prince.

Like all other "Colleges," the socie which we now write holds its regular "C or meetings of its members, at which important business that is submitted opinion of the College is formally tra Its proceedings are secret and confiden its president is in theory the Earl Mar practically Garter King, who has a cas on any question brought under the notic "Chapter" when the votes of the mem evenly balanced.

Here are discussed and settled all app for changes of family names and the ass of new ones; all grants of new arms cants, and also "the correction of arms ensigns of arms, usurped or borne unju

Like those of the Houses of Parliame the time of Cave and Johnson, its pro are unreported, so that any eloquen within these sacred walls is lost, *caret sacro*; and we, to whom the privileg specting the art-treasures and handiwor "gentle craft" of our heralds has been a should indeed be ashamed to repay their and attention by betraying the "secre prison-house."

It only remains to add that the fancifu assumed by the various heralds have e all their reason and meaning. "Gar instance, is so called from being the ch in connexion with the Most Noble Orde Garter; and, for the dignity of that was made a sovereign within the Office over all the other officers, subject to th of England, by the name of "Garter, Arms of England." The other Kings are "Norroy" and "Clarencieux," the so called from "North Roy" or Kin Northern Provinces, and the latter a Duke of Clarence, third son of King Ed in commemoration of whose birth the instituted.

The six Heralds are named res "Somerset," "Chester," "Windsor," mond," "Lancaster," and "York singular as it may seem, they have n connexion with the districts from wh take their titles. There have been at

riods other heralds, whose titles are now laid ide.

The other officers of the College of Arms are e Pursuivants, four in number; these are signated "Rouge Dragon," "Portcullis," Blue Mantle," and "Rouge Croix." The name of Rouge Dragon," as we learn from Chambers's Encyclopædia," is taken from the supposed sign of Cadwaladyr, the last king of the itons, ancestor of Henry VII. The red dragon as also sometimes used by Henry VII. as a pporter. "Portcullis" is so named from a dge of the same monarch. "Blue Mantle," stituted by either Edward III. or Henry V., so styled "in allusion to the blue robes of the der of the Garter, or, perhaps, to the colour the arms of France." The title of "Rouge oix" is derived from the red cross of St. orge, the patron saint of England. The last-med pursuivant is generally considered to ar the most ancient of the official titles con-ected with the College.

In former times, one Herald, or "King of ms," had jurisdiction in all heraldic matters in North (as hinted above), and another in those the south of the Trent,—"Norroy" taking cog-ance of the former, and "Clarencieux" of the ter; but this distinction is no longer observed. arly 200 years have passed away since the ralds made their last "perlustrations" of the vinces, and held their courts, and summoned fenders and other offenders before them. A w returns, however, as Mr. Noble informs us his "History of the College of Arms," were de as late as 1704. It may not be possible, der the altered circumstances of modern iety, to revive their dormant powers,—for y have never been abolished by any Act of rliament,—but it is certain that the investi-e of Garter and his brethren with some of "royal" authority of ancient time would ult in the suppression and extinction of pre-ders, whether to English baronies or to French rquisates: and in that case the tradesmen the West End and charming and well-lowed widows would be less open to the artful postures of "Lord de B——," of "Monsieur Baron C——," and of "Monsieur le Duc de ——," men whose most appropriate title is hevalier d'Industrie."

E. W.

A DRIVE IN VENETIA.

ANOTHER link between our own royal family one of the oldest names of European ility, has, within a few days revived the erest of all good subjects in the ancient ditions of the Hohenzollerns; while her jesty, in visiting Northern Italy, will pass few April days of quiet, snatched from the ctions of her position, on, for her, doubly sic soil, the home of her ancestors, the ne of the long contests which have rendered names of the Guelphs and Ghibellines toric.

More than one famous "castled crag," in the rse of her Majesty's drives, so different to se at Balmoral, at Osborne, or at Windsor, tell the tale of those struggles of the dark is whose principal actors Dante has immortal-d, and with whose fortunes her Majesty is so mately connected.

But not so very far away from the shady res of Lago Maggiore, in a corner of Venetia tling under the last towering heights of the s, hidden away from the ruthless gaze of the inary tourist, lies an ancient castle, which, uld her Majesty, as report has it, reach hice, it would afford her no little pleasure to t.

Overlooking the great plain of the Trevisan k, and in the distance the towers of the ride of the Adriatic," this picturesque castle, venerable Castello St. Salvatore, is still occu-d by the descendants of the Collalto family, ch, at the time of our Conquest, built their ress on these southern slopes of the Alps; a ily of some relationship with her Majesty, as dynasty of the Hohenzollerns which reigns r the German Empire, and the family of the Saltos, spring from the same Longobard k and still bear the same arms, a scutcheon rtered black and white.

During these lovely spring days, when her jesty reaches Venetia, no more delightful ex-sion, nor at the same time one less hackneyed, uld be found than a drive to the Castello alto, for few even among the Italians ever w this beautiful, untouched corner of the vince. From all time one of the enjoyments of the Venetian nobility has been a trip to *terra firma*, and a change from the easy action of the gondola to the rumble of a coach along the roads that lead from the coast to the larger towns inland. The rich Venetian patricians, chiefly in the seventeenth and in the last century, charmed with the mild climate, the smiling nature of the country-side, and the running streams of the neighbourhood of Treviso, had each there his villa, and clustering in the plain that slopes from the mountains to the lagoons, even now, deserted as are almost all of these charming summer residences, with their verandahs, their *spalliere*, their *pergole*, their fountains, and their statues, the plain still presents much the appearance of a vast suburb of some great city.

And chiefly towards the end of the last century it was to these pleasant villas, on the Piave and the Brenta, that the Venetians rowed across the calm lagoons, and passing from the "grand canal," with all its wealth of palaces, cut through the familiar "canareggio" of the gondoliers and passed the beautiful church of Sta. Maria dell' Orto, near the Franciscan convent, with its dear old-fashioned garden, which, only slightly changed, serves as the "Orto Botanico" of Venice, and so out on to the lagoons, by the canal, to Mestre, marked by dark clusters of piles; passing many a barge laden with produce, or the ferry with its loads, which now hurry along the railroad. And then, once landed, "jumbling," as Beckford described it a century ago, "over craggy pavements," to their villas on the "terraglio," which in the autumn was all ablaze with the fashion of Venetian "society."

And now the same road may be taken along the "terraglio," between grand villas and gardens, peopled with statues, past the famous villa which in the early days of this century was occupied by Byron's friend, the witty Isabella Albrizzi, who used to hold here her literary and artistic court; through the quiet village of Mogliano, and past the villa Alla Vida, on which, now many years ago, Lady Seymour, the Marchioness of Hertford, has left the impress of her English tastes; and many another pleasant country-house, and so into Treviso, with merely a glance at the painted façades of the deserted old palaces, the cool *portici*, the imposing church of S. Nicolo, the old Duomo, and the Campanile, and out of the beautiful city gate of S. Tommaso, and the long line of Fra Giocondo's fortifications, with the clear blue water of the moat, and so on to the hard chalk road to Udine. Again, past villas and gardens, and under cool plantain trees, with the snow-covered mountains in the distance not so far off, and out to the left the dark purplish brown of the forest covered Montello, through Spresiano, and by the old wooden bridge across the blue, shallow Piave, in its broad torrent bed, at this season almost dried up; and there, at last, rising in the middle-ground, relieving on the blue Alps, the Colle di S. Salvatore, and on its peak the castle of the Collalto family; past an old deserted convent, with an antique ruined church and belfry, and inside the garden-wall a group of dark, aged, hoary cypresses, and stretching out before one the whole panorama of the Venetian Alps, with, on their slopes, many a quiet town and village, Asolo and Montebelluno, Conegliano, and its old castle, and, far away, Udine, and up among the gorges Belluno and the entrance to the Cadore country.

And now begins the only up-hill pull in all the journey; no serious matter, and before five minutes are past the traveller is rewarded with a view of the whole Trevisan plain stretching for miles and miles to west and south and east. An important situation, chosen with the usual skill of the old builders, commanding a view of all the approaches for leagues and leagues around. A chapel is passed, in every part of which are quartered the black and white escutcheons of the family on the sixteenth-century altars, with their quaint stamped leather, on the tombstones, and above the door; and now at last we are on the terrace, with its glorious view, after passing along a wall in whose shade bloom at this season thousands of untouched violets scenting fragrantly the air, in innocent mockery of the crenellated and machicolated battlements which tower above them.

A peep in through the huge gateway shows us in the distance, beyond the long line of out-houses, the studied results of the peaceful gardener's art, the cut arbutus on the inner terrace of the inhabited portion of the castle; a town it almost seems, with its clustering houses, one of which has even a frescoed façade; and there still exist the antique drawbridge guarded by two grim stone lions standing as sentinels at the entrance of the antique court-yard which bears on its face the traces of all the numerous architectural styles which succeeded each other from the early military days of the dark ages down to the decadence of the rococo; the old terrace on which even now the stately *châtelaine* appears, and receives her visitors, as was the wont of her courtly ancestors in centuries gone by; the external staircase with its graceful colonnettes, the quaint bronze handles to the doors, the pointed windows, and the arches, speaking of one age, the broad steps with their entrance to the deserted wing, not unlike our own Haddon Hall, telling us of a later period; and still earlier the stout walls covered thickly with bushy ivy; but most interesting of all, the ancient chapel whose interior is one blaze of fresco work, whose walls in part glow with the work of no mean pupils of Giotto; but even more lovely and more interesting, the handiwork of a *maestro* himself, Pordenone.

That these works should have remained unknown, or so insufficiently appreciated, even if known, seems astonishing, when Padua for generations past has been so famous. It was with no little truth that, nearly half a century since, the antiquary Crico remarked of these same works of Pordenone that they were gems that merited being set in gold. They have never even been photographed, and the diligence of the Arundel Society seems not yet to have promised their reproduction for their appreciative subscribers.

In one wing of the old castle, now disused by the family, the spacious staircases and halls which tell of times gone by are hung with the family portraits of the ancestral heroes, and, as in all such collections, not a few warlike champions of a period when painting was still in its second infancy, and yet portraits alone distinguishable from the rest, by a somewhat greater *bizarreris* of costume and armour; such series as we have all seen in Holyrood and many another ancestral palace. Rusty locks are turned, and huge shutters thrown back and silent halls traversed, and there is the armoury apparently resplendent in specimens of the Italian armourer's artistic skill; if so inch-thick with rust and neglect, and sadly open to the suspicion of the whole having been vamped up to satisfy the pride of some seventeenth-century Collalto, it is only too true that, as one is told apologetically, the best pieces have been taken by the owners to their own more comfortable portion of the castle.

Peeps from windows here and there show the distant views or the battered towers and fortifications close at hand. Romantic neglect and deathly liveliness hang over the apartments once so brilliantly occupied, and which seem absolutely to require the starched costumes and manners of the past to fill them. The castle, circled with its stout walls, and purposely cut off from intercourse with humanity, is an anomaly which, now that our advanced civilisation has seen the advantages of association, it seems scarcely possible to revive.

The purplish blue of the mountains deepening each moment as the sun wanes, tells of the decline of the day; another glance at the old ivy walls, the old courtyard, the draw-bridge, and the battlements, and a roll down the steep hill brings us to the level of the plain below, and soon the old castle stands out with its slender tower relieving in the orange blaze of the setting sun on the dark background of the mountains, throwing, were that possible, an additional romance round the picturesque home of so many poetic traditions. Still, as the visitor trots away, the castle keeps in sight, and with it the beautiful neighbouring town of Conegliano, Cima's birthplace; and far away to the left the little village of Asolo clustering round its castle on the slopes of the Venetian Alps.

A rumble across the wooden bridge of the Piave, and a trot on the good hard roads, and soon the lights of Treviso appear in the evening haze. The officers of the *dazio* must be asleep at the old Porta S. Tommaso, as they fail to rush out, the city seems deserted, a rattle through the streets and past the *portici*, and out on the shady "terraglio"; another glimpse at the snugly-hidden villas, and soon in the distance the lagoons come again in sight,—a change from the rumble of the roads to the rolling of the gondola; a glance at the grand old Friulian mountains, towering far out on the left, their highest peaks lighted up with the last rays of the golden sunset, the low water in the lagoons

crisped with the evening breeze, at this season still chilly; a few belated gulls fluttering down among the reeds of the marshy ground; a light religiously kept burning in the tiny Madonna's tabernacle in the midst of the lagoon; and then Venice again in sight, and the sombre trees of the Orto Botanico; darkness and quiet in the canals, a gliding light or so from some gondola lantern; in the antique palaces scarcely a window lighted, with the exception of the princely public reading-room of the Palazzo Querini.

It is a contrast that no other part of the world but Venetia can afford,—such a transition from the stately deserted old palaces of the Venetian nobles floating, as it were, on the ocean, to the Mediæval fortress situated far away up in the blue Venetian mountains, and still occupied by descendants of its original founders, relations of the royal Hohenzollern family.

NEWSPAPERS UNDER THE ROMANS.

Not long after the foundation of Rome, probably under Numa, the high-priest was enjoined to write the chronicle which it was his duty to keep upon metal tablets, and to exhibit them publicly, so as to enable every one to inform himself regularly, perhaps once a week, of all that had lately happened. Not only recent events were made public in this manner, orders of the government were also posted up; and we thus have in these *Annales Maximi* perhaps the first outlines of a newspaper, an official newspaper too, and in the *Pontifex Maximus* the prototype of all journalists.

The original form remained unchanged for perhaps four or five centuries, until the compilation of this newspaper, which among newspapers has, it may be said, up to the present time, had the greatest longevity, came to an end with the high-priest editor, P. Mucius, and was replaced by a daily paper, the *Acta Populi Romani Diurna*, to which under Cæsar the *Acta Senatus* were added.

The Roman public were now informed daily of all that happened from day to day, especially of the important discussions and resolutions of the Senate, and thus we see Rome actually at the beginning of our era in the possession of two eminently political newspapers. The passion of debate, the discussions on the welfare of people and state, were thus brought right into the street, and were there continued perhaps with more liveliness than in the midst of the executive and legislative body.

Notwithstanding this vehicle of publicity, which, however, by no means can be looked upon as a free organ, as it was subjected to a certain supervision, or "censure," as we now call it, the old republican constitution was unable to maintain itself permanently. The fundamental base of the Roman state, which was directed against the most sacred rights of man and against the fountain-head of all lasting existence and well-being, against work and the rights of property, rendered the existence of a free constitution impossible. A state which recognises towards other states only one law,—that of force,—must finally itself be struck by this withering agent and shaken in its very foundations. Rome, which gave laws to the whole world, no longer was permitted to legislate for itself. It governed no longer; it was governed. A Roman, not Rome, was the master.

We need feel therefore no surprise when, with the advent of the empire, we witness a change in the institution of newspapers. The amalgamation of the two newspapers into an official gazette may be only an exterior sign, but it is not devoid of significance; for, with the abolition of the *Acta Senatus*, the necessity of supplying information from the Senate was dispensed with. This body, although it existed only in form, and had become a nursery of servility, was yet adapted to keep alive in the people the memory of other, freer times; and this knowledge of sapping the consciousness of its power in the people was henceforth the secret aim of the Roman official gazette. Fully recognising the great influence of the "press," the emperors cultivated it most assiduously, laid great importance on its publication, and took care to disseminate it; for copies of the official gazette were sent to all the provinces, so that we may safely say that the first newspaper read in Great Britain was a Roman one. In Rome itself the news published daily was diffused very quickly. Every bookseller employed people who took copies and made extracts; these were then sent to subscribers in the city and the provinces, copies being besides exhibited in the booksellers' shops. But many private persons also employed copyists, and thus we may easily picture to ourselves how in the hall where the *tabulæ dealbatæ*—the wooden tablets coated with gypsum upon which the official gazette appeared—were exhibited there ebbed and flowed a life very similar to that we may now witness on special occasions before the publishing offices of evening papers, or at the more important railway bookstalls, when the public are impatiently awaiting their issue. Probably in the times we are speaking of there may have been in the front row the copyists, eager to take possession of the stone seats and tables; behind them was the crowd, consisting of the poorer classes of the population, and as soon as the tablets were exhibited, one may have voluntarily undertaken the office of reader, and announced with a loud voice the news, of which there was never a scarcity. There was no want of "war" news; the battles and captures of fortified places were given in detail; gladiatorial fights, strange phenomena, popular festivities found description; municipal notices, law intelligence, births and deaths, marriages and divorces, as well as adoptions, formed standing heads, by the side of much sought after choice tit-bits of anecdotes and stories. But the greater portion of the official gazette was filled with court news, celebrations, and ceremonies; the journeys of the emperor were also given in detail; everything in his favour was placed in prominent places, and everything done to concentrate the interest of the people upon this one point in particular. So many subjects of conversation were supplied to the people by this manifold character of the contents, and the many little stories and tales, and their thoughts so successfully diverted from important affairs of state towards trivial matters by the announcement and accounts of popular fêtes, that everybody submitted to this seeming existence of the Senate, and was satisfied with the meagre announcements, always submitted to the most severe censorship, of debates and resolutions of the Senate. Unfortunately, no copy of the official gazette has been preserved to us; we are able to gather its contents as described above only from the quotations of contemporary authors, who not unfrequently referred to those gazettes, and incorporated extracts from them with their writings. From the latter it appears that advertising also was an established institution at that early time; for the official gazette published not only public auctions and building contracts, but also private announcements of births, deaths, weddings, &c., which were inserted probably only for payment.

Thus we notice the appearance in Rome nearly two thousand years ago of a newspaper which agrees in its essential particulars with our present journals. None of the requirements and characteristics of a newspaper were wanting; it published regularly information of every description. The modern system of newspapers which took its rise in the middle ages in Germany can be looked upon only as an after-invention, which became all the easier as the invention of printing, together with the curiosity, or, if we prefer it, the desire for knowledge of humanity, led by itself to the quick and cheap multiplication by this method of more important events.

Newspapers declined with the decadence of Rome, and they were and remained buried under the heap of ruins into which the repeated irruptions of the "barbarians" changed the city.

A slight reflection of them, however, continued to shine for some time at the court of Byzantium, where the flatteries of courtiers were deposited in the *Breviaria Principum* and the *Registra Scribarum*. This last flutter of the spirit of newspapers was extinguished in that frightful epoch in Europe which for centuries saturated the soil of all countries with gore, spread everywhere the horrors of war and murder, of desolation and destruction, and drove all people from their native land. When finally the storm flood had returned to a bed where life flowed more smoothly, the troubadours became the carriers of news, as formerly in grey antiquity, and crossed the countries until the time when through the black art of Gutenberg and Caxton they found their occupation gone.

In a lecture delivered quite lately, Professor Morley, of University College, London, advanced the opinion that "there was no such thing as a newspaper in ancient times, the first germ of those productions having been planted i Middle Ages." If the Professor only loo the form in which newspapers now appe is right; but readers of our article, whic in type before the lecturer spoke on the su will agree with us that newspapers did ex one shape long before the time fixed up the lecturer. The words of Professor M presuming him to be correctly reported, "the newspaper owed its rise to a custom prevailed in Venice in the sixteenth cent reading aloud in a public place a manu sheet of news of general interest, prepar the authorities, the sum paid by such as to hear the reading of this document bein gazzetta, a fractional coin then current, has, from this association, given its na the *Gazette*,"—might lead some to the concl that he was unacquainted with the custo the Romans, a supposition, however, whic be summarily dismissed.

THE CIVIL ENGINEERS' DINNER

That clause in the modern code of manners which prohibits what is called " ing shop " at the dinner-table, has sprung the very natural desire to set up a firm b against boredom. To those who have en the company of very eminent men inde eminent as wholly to disregard the re question, the value of the regulation is apparent. Years ago there was one of men,—not only conventionally but really nent,—whose constant introduction of th subject on which he knew more than a world beside (which happened to be Egy mummies) made his presence at the d table a matter of absolute terror to his f guests. But while fully admitting, with rising men at our universities, that the ma introduces "shop" at dinner ought "sconced," there are certain limits to the Thus, at great civic banquets, when the h of her Majesty's Ministers is proposed, th pany would be grievously disappointed Premier were to give a speech referring delights of rural life, and the Chancellor Exchequer were to follow with a disquisiti butterflies. And so at the annual dinne body of men who have, or are supposed to so much of the future, not of this countr but of the world, in their hands, as the In tion of Civil Engineers, we cannot but thin it would be either straining a point of etiq or making a very serious blunder, to discu position of the monument on Fish-street-h the fact that the Thames continues t through London, without any reference, ho general, to the advance of the year, or age, in the great warfare of physical s against practical barbarism, and even subject of the most urgent physical wants day.

The allusions, for they were little mo some of the speakers to the great featu the science of the day were happy. Stanley's expression of a hope that the civ military branches of the profession may g in hand was one of these. The remembra the French work in the Crimean war w fresh in the memory of some of our reade this part of the subject the primary les be borne in mind is the madness,—we ca no word short of it,—of entering on any and complicated work, whether it be the struction of a tunnel or the conduct of paign, without, as a first preliminary, pro the means of telegraphic communication.

Mr. W. H. Smith's reply for the Navy characterised by the tact and practical sense of which the right honourable gent so frequently gives proof. His reference appointment of a civil assessor on the mittee of Inquiry into the explosion on the *Thunderer* was naturally well receiv the company. It was, of course, not nec to say that, instead of one question having settled, two have been opened, by that rep to which attention is now anew being dir Sir M. Hicks-Beach referred to the Cape graph Line as shortly to be completed, and necessity of economy in public works i colonies. It was no more than the trut the right hon. gentleman declared when h cluded with the remark that, though histor young as compared with the Church, ther or the Army and Navy, the profession o civil engineer "will, in respect of work knowledge and general accomplishments, pete favourably with many of them," and

is to the skill and industry of her engineers at Great Britain owes much of the welfare of 'reself and her colonies.

The thoughts and words of Mr. Roebuck were the House of Commons rather than of his sts. Mr. Lowe, having on former occasions e may have thought) said enough as to the ture of the engineer, took the opportunity of ying a sharp word as to the literature of the ookstalls, in behalf of which Mr. A. Trollope ok up the cudgels. Mr. Chas. Barry took a posi- on of which the importance should not be over- oked, in urging that the æsthetic side of public orks cannot be neglected without public loss d injury. The veteran Professor Owen spoke the organic engineering of the vertebrated ngdom of animals, a subject which owes so uch illustration to his own labours. On the hole the chairman was well supported. It is, course, important on such occasions to avoid y questions that might divide opinion. Still, ere are some points, such, for instance, as the e of mail communication with India, the con- vancy of our river valleys, and the advance be made in steam communications other than se of the railway (whether by the tramway the traction-engine) to which we should have pected to have some mention made. The one eat point to bear in mind is that, though a at, the profession of the engineer is as yet a ant in the cradle.

THE ECCLESIOLOGICAL CRAZE AGAIN.

Many of our readers, of course, remember all but the almost insane passion for and devotion everything in the shape of Mediæval church niture and arrangement which not unnaturally king human nature for what it is) accom- nied the artistic revival of Mediæval architec- e in our younger days. The doings of the mden (subsequently the Ecclesiological) iety, their righteous indignation over the st trivial departures from rubrical direction historical precedent, were the butt of some he few writers of that period who were too ependent to be carried away with the stream; ile the unhappy church architect, on the her hand, was too often the butt of the clesiological Society, and could not depart m the orthodox form of moulding for the iod he was imitating, or put a piscina in the ong place, without the chance of the inter- ence of an amateur clerical dogmatist, and of ng held up to ridicule at the next meeting of society. Some of the architects snapped ir fingers at this and laughed in their turn; ne, as we well know, felt irritated to the last gree at this ecclesiological espionage and self- stituted paternal government. There was doubt a point of view from which such a tematised overseeing might be considered iseworthy, or, at least, defensible. If it s once to be admitted that the one thing dful in architecture was to reproduce ctly a certain style of architecture and niture belonging to a certain century, n perhaps the establishment of a society to k after this, from pure enthusiasm, might be rded as an unselfish association for the blic good, and the mutual banding together of dents in order the more thoroughly to investi- e and reproduce the style of a thing that s exclusively admired, might be considered as y a proper zeal, in the spirit of the healthy xim, "whatever is worth doing, is worth ng well," even if it be only Mediæval nicry. For a good many years past, how- r, there has certainly been a growing convic- n in the minds of educated men that this kind thing was not worth doing, and the import- e of the Ecclesiological Society had gradually d out,—*stabit nominis umbra*,—even in the s of lovers of Mediæval architecture, who an gradually to see that it was the architec- e that was admirable, as a matter of style design, rather than the Mediævalism;* and, ept with a few old stagers belonging to the generation rather than the present, it was itly understood recently that ecclesiology a matter of very secondary interest, and nothing necessarily to do with architecture. now actually appears as if we were to have the whole of this folly revived. Our last number brought into conjunction a report of a paper read at the Architectural Association by Mr. Weale, on the school of St. Luke at Ghent, and that of the first meeting of a new Ecclesiological Society formed under the auspices of some of the clergy of St. Paul's Cathedral. At the latter meeting an address was given by Mr. Beresford-Hope, who, as all our readers know, was one of the leading members of the old society. It would be far from our wish to say anything otherwise than cordial in regard to an old friend of the architectural profession like Mr. Hope, but we must say that we do not think he is acting the part of a true friend to the younger generation of architects and amateurs in advising them deliberately to take up again a form of study which has proved barren of anything but mere Mediæval imitation, once for the time the fashion, but now rapidly ceasing to be so. Indeed, we are pretty certain that Mr. Hope is looking at the present through the spectacles of the past when he draws a picture of the improved appreciation of ecclesiology at present, proof of which is to be met with, he avers, in society, "even at the most casual gathering." That Mr. Hope should think so is, perhaps, not unnatural, when we consider that persons who take a lively interest in a subject, and have been much occupied about it, are sure to meet frequently, whether "casually" or otherwise, just as the amateur of blue china in *Punch*, when he was invited by the duke who had a similar mania, found the rest of the company consisted entirely of his "blue"-collecting friends. And, of course, the many who are aware of Mr. Hope's deservedly prominent position as an ecclesiologist will be not unlikely to wish to get his ideas, when they have the pleasure of meeting him, on a subject with which his name has been so much connected. We can hardly suppose, therefore, that Mr. Hope's idea as to the greatly increased interest in the subject in general society is likely to have been based on a quite fair test. We can only say that our own experience would lead us to a very different conclusion, and we have met with no reason for supposing that there is any revival of interest in the subject except among a certain set of people closely connected by position or predilection with what we may, we suppose, call the Ritualistic party; for it is to all intents and purposes a party, and with very strong party views and prejudices.

Passing from that question, what is it really which Mr. Hope and the St. Paul's Ecclesiological Society want? As far as we can make out from the report of their meeting, they want deliberately to begin over again a phase of dilettantism which has been gone through already, which has done any good which it could do, and which, in the view of most thoughtful people, is a thing already entirely out of date. The Ecclesiological Society as originally started was, perhaps we might say, an inevitable outcome of the times, and it did this good (amid a great deal of nonsense) that it directed attention to a neglected field of archæology, and it improved church architecture for the time, so far as this, that even mere imitations of Mediæval churches were better than the bald ugliness of the places of worship of the early part of this century. But this work has been done; its value at best was only temporary, and what we are now looking for is the rational study of church architecture in regard to the future, not the past. It is really utterly absurd to begin over again all this solemn farce of visiting churches, note-book in hand, and tabulating all their characteristics in order to arrive at the ideal of a perfect church. If the Ritualist or Mediæval party represented Society, and were likely permanently to do so, it would be another thing; very possibly they think that they do, but they are quite mistaken; society at large will not be governed by their crotchets, and does not want their imitation Mediæval churches, of which there are already far too many in the country, representing an enormous amount of money wasted on unreal archæological playthings. What sensible people want now is to see the modern architect able to produce a fine and impressive building suitable to the special requirements of his own day; and there is no reason whatever why churches are to be excluded from this category,—why a man is to make any other class of building as good as he can according to the best modern theories and experience, but when he comes to build a church he is to be told that he has nothing to do but reproduce as accurately as possible a former type which arose under conditions perfectly different from those which affect architecture, and which should affect church planning, in the present day.

The suggestions which arise out of the paper of Mr. Weale, above referred to, involve an even more dire mistake. We have here the account of a deliberately formed society to make a collection of modern workmen into a collection of Mediæval monks (see page 377, *ante*). A set of youths are put under the direction of some people who are called "brothers of Christian doctrine," are instructed in Mediæval art, and (apparently) in that alone, sent about Europe to copy Mediæval detail, brought back to work at Mediæval decoration; so that, in Mr. Weale's words, "the whole colony leaves a decidedly favourable impression on the mind of the visitor, carrying him back in thought to the life and manners of the good old times of the Middle Ages." As a climax, we read in the next sentence that the exclusive study of Christian models being considered the only way to arrive at a regeneration of art, all Renaissance or "Pagan" art is rigidly excluded

Are we never to be rid of this nonsense? Here is a man, apparently possessed of ordinary mental faculties, actually recording the "favourable impression" produced by seeing a whole set of people living a sham life, and pretending to be Mediæval artists; and then, of course, comes that eternal cant phrase about the "good old times," which some people never seem tired of parroting, as if it were a sort of charm. And then, better than all, we actually read, in the succeeding sentence, that "all ancient art was the natural outcome of the people." And so, by way of getting an art which is a natural outcome of the people, an artificial system is set going to bring them all into a state of mind and habit totally unnatural to them,—a complete masquerade, by way of putting them in the condition to produce genuine art! To see these notions seriously urged again, to see again the old fallacy about art being impossible without faith and morals (*i.e.*, the particular faith and morals of a particular period) again displayed, after the warning already given by the utter collapse of the pietistic schools of Overbeck and others, is enough to make one despair. It is useless to expect that the architectural profession can take the place in public estimation, in the estimation of the intellectual public, which it might and ought to take, as long as those who profess it accept such mere dreaming as this in place of the practical part of architecture in modern life. Societies and professional men who band themselves together in cliques to carry out and encourage each other in these fantasies may be very well pleased with themselves, but if they took any trouble to find out what Society in the wider sense thinks of them, their eyes would perhaps be opened. It is no doubt in a great measure owing to the prevalence of all this moonshine that modern architecture appears to so many people a thing not worth either respect or attention. In spite of the ugliness of most of their structures, the engineers are thought highly of by most of the strongest-minded men of the day, because they are giving their abilities to the work of their own time, and are doing what people really want to have done. The architectural profession is happily not without its representatives of the same type, but they have to pay the penalty for the more demonstrative people who exhibit architecture to the public as a mere thing of faded fancies and pretences, and in so doing go far to make the whole subject of architecture "a scorn and derision to them that are round about."

Health of the Toxteth District.—According to the annual report of Mr. Hall, the surveyor, it would appear that this district for several years has been making considerable progress in buildings, especially of the better class, and the year which has just ended shows that this satisfactory state of things has been fully maintained. The total number of plans submitted during the year was 320, as compared with 199 in the previous year. The surveyor in his report also dwells with satisfaction on the continued good health of the district. On this point he says,—"Whilst the death-rate in the borough of Liverpool has been very high, and the death-rate in some of the most healthy and favourite places in the kingdom has increased during the past year, the death-rate in this district has been very low, for there were but seventy-nine deaths during the whole of the year, being under ten per 1,000.

*There was, for instance, no more enthusiastic student lover of Gothic architecture to be found anywhere in at Britain than the late Mr. Edmund Sharpe, but he ays strongly and consistently repudiated the idea that as in any special sense a clerical study, or a property the clergy rather than of the laity. The architects y, he thought, the people who understood the subject, the clergy.

VARNISHING DAY AT THE ROYAL ACADEMY.

The gentlemen who very little more than a century since framed the laws that have successfully regulated the affairs of the Royal Academy but little dreamt of the accumulated blame and censure that have been, year after year since 1768, heaped upon the governing body of our great artistic institution. Nothing could be much more unreasonable than to entertain for a moment the belief that the early members of the R.A., any more than the present existing professors, could have any peculiarly selfish aim, or desire, to injure any one, or could indulge in any more than the ordinary amount of prudential desire for their own protection, although it may be admitted that their method of dealing with non-members of their society has been at times, perhaps, confined within too narrow a circle to fulfil entirely our idea of human perfection; certainly, each succeeding government of the Royal Academy, since the early days when good King George reigned, and when Sir Joshua Reynolds occupied the same chair* now filled by Sir Frederick Leighton, has manifested but little disposition to make any change in the laws in any way relating to their affairs, and especially to those laws which regulate the annual exhibition.

For many years after the foundation of the Royal Academy, it was considered by "outsiders" an enormous injustice that, during the month between the time of "sending in" the pictures and the artistically historical first Monday in May, the Royal Academicians and the Associates should alone have the privilege of "touching" and of "re-touching," of "glazing" and of "scumbling," of "heightening" and "subduing," of washing and of varnishing, and whatnot, to the supposed tremendous advantage of the Royal Academic works, and to the imagined fatal effect by contrast to the surrounding works by "outsiders."

We, however, rather suspect that if the experienced painters that the Royal Academy has created within the last hundred years could be consulted on the question of varnishing and retouching at the Royal Academy, few would be found to encourage the belief that it was a safe thing to retouch, ever so deftly, or to make any very serious alteration in a picture, hanging on the walls of the Royal Academy, during any of the busy days and hours between, say the 5th or 6th of April, and the last days of that month.

Still there can be no doubt that it was an advantage to the painter to be admitted, for ever so short a time, in those shiny days, to varnish or "oil out" the often-elaborated, if not sufficiently-considered picture, and it must be owned that we have certainly seen pictures at the Royal Academy that appeared at least to require some additional use of the brush, and that brush the familiar duster.

After a prolonged wail of complaint from outsiders at the injustice of the Academic period of retouching, a slight concession was made by admitting a limited number of non-members on their application to the proper authorities, who courteously granted permission to them to "retouch" or varnish their pictures if they thought proper; and at a later period a limited number of circulars were distributed, the presentation of which admitted the painter "on one day before the opening of the exhibition" for the purpose of seeing his own work.

At the present day, and for a few years past, artists whose works have been placed on the walls of the Royal Academy, are informed by advertisement that they can, if they please, "inspect" their works on the Wednesday previous to the opening of the exhibition; the Academicians and the Associates receiving by post a large card affording them the same interesting information.

At the varnishing-day, outsiders do not meet many of "the forty," not a few of whom we suspect find it anything but an agreeable *réunion;* for what between the ill-concealed chagrin of those painters whose works have been badly placed, and the very spare minority whose pictures are "on the line," and the large number of unhappy painters who, having one picture placed, are in the habit of declaring that their best work has been rejected, and so on, the poor hangers, at least on this day, are sadly tried; but really, to do them justice, they have generally made such excellent use of their years of academic training up to this point of supremacy, that they rarely seem at a loss for the cool tone of indifference, a kind word of sympathy to the injured, or for the ready, graceful congratulations to the successful painters, suitable to the occasion.

And, after all, perhaps, the painter on the varnishing-day, whose work has been well hung, and who experiences the peculiar elevation that a picture "on the line" creates, is the artist most to be condoled with; for if he be well instructed, he is certain to be disgusted with the appearance of his own work, and just as certain will the hopes that are raised above the pleasant level of his picture be followed by a feeling of depression.

On the whole, the artists at the Royal Academy on the varnishing-day conceal their elation or mortification as well as most of us on trying occasions, and congratulations in the room are frequent and hearty, whenever the work of a familiar brother painter is conspicuous for its merits.

The last generation of artists who year by year made their appearance at the Royal Academy on varnishing-day, were not a little remarkable for that peculiarly artistic aspect which consists in an assumed indifference to the generally received notions regarding "get-up," and especially, it has been remarked, could an artist be known by the length of his hair and the unusual breadth of his hat-brim, in addition to which a generally sad appearance of dustiness, not to say seediness, which in a measure warranted, in a commercial country like ours, the ill-sounding designation "poor artist" whenever the prosperous classes had occasion to speak of workers who know or ought to know, that life is short, art long, experience fallacious, and judgment difficult.

Now-a-days the "poor artist" not only brushes up his canvasses with especial care, but the rest of his "shoddy," and in appearance is as bright and shining on varnishing-day and in his own studio as the best of his buyers; and on looking over the addresses of the wielders of the brush or chisel in the last pages of the Royal Academy catalogue, it is found they no longer linger about Newman and Charlotte streets, as they did in the beloved days when Mr. Pendennis tried to be an artist, but have contrived to find quarters quaint and costly, and truly in pleasant places, both in London and its neighbourhood; and varnishing-day at the R.A., instead of representing, as of old, a preparatory day for cleaning up, say 1,000, pictures, of, at an average, 30*l.* apiece, now represents the business-like totalling up and looking after a collection of saleable property, valued, we should think, at something not far under a quarter of a million, 70,000*l.* or 80,000*l.* of which may be fairly calculated to go year by year into Kensington alone, to repay the "poor artists" who shed so golden a glory upon that favoured suburb.

* A Chippendale chair, by the way.

"A PORTFOLIO OF ANCIENT ENGRAVINGS."

In the absolute correctness of the above title we have many misgivings; it is copied textually from the announcement of the contents of *Fraser's,* from that inviting list of the magazines which appears so regularly at the commencement of each month. But the promise of an article on "A Portfolio of Ancient Engravings" holds forth a treat more than usually novel in the careful pages of *Fraser's.*

What these so-called "ancient" engravings may be, we have before reading the article conjectured upon. Residing almost in the cradle of the engraver's art, at no great distance from Venice, and in a city where the Dominican Francesco Colonna, the friend of Aldus, passed so many years of his interesting life; within a few miles of Feltre, the birthplace of Panfilo Castaldi, whom the Milanese typographers have claimed as the instructor of the metal-worker Faust, of Mayence; in the fatherland of Maso Finiguerra, the possible discovery of a number of "ancient" engravings, it may be imagined, is somewhat interesting.*

Can they be impressions from the ornamentation of some pre-historic Celts, or the cherished bone implements of the Cave-dwellers? Are they the impressions from some Cambodian or Sanskrit temple or some Assyrian or Eg monument, from some Cypriote tor Grecian or Roman vase, from some one few mystic Etruscan mirrors which we tr in our British Museum, or from some monument or Scandinavian relic of the ages? The word "ancient" rouses n interest; we have no necessity to t Hallam to learn that ancient history end the fall of the Roman Empire, or abo fifth century. Can these engravings be such an epoch? Shrewd suspicions are by the mention of the "portfolio." Are impressions on papyrus or on vellum, some of that superb paper which we some of the fourteenth-century MSS., and so closely imitates parchment?

That the French, where we should s *old,* might use the word *ancien,* the I *antico,* is certain, and here probably is to the puzzle. May it not be possible th are to hear about a portfolio of *early* engra to use a term more correctly applied to none of which are known to have been pr previously to the latest years of the Ages?

But even as early engravings, it can bulky portfolio, unless, of course, some superbly-illustrated books of the end fifteenth century have been broken up.

The historical precedence of engravin be accorded to the woodblock. Some since, the oldest woodcut of known date St. Christopher of 1423; soon after anoth was found with the date 1418, one of th sures of the Bibliothèque Royale of Br but more recently Henri Delaborde disc and described in the *Gazette des Beaux* a woodcut of 1406. But all three prin absolutely wanting in any artistic qu they are purely objects of archæo interest.

Three nations dispute the merit of the tion of engraving,—Italy, Germany, and ders; but none have a better artistic than Italy in the "Coronation of the V the plate of which, engraved by Masc guerra in 1452, is treasured in the U Florence, and the only existing proof forms one of the most precious gems of th Library; as do the sulphur prints, by th master, of our British Museum, which are together with the so-called "Benvenuto Cup" and Albert Dürer's unique "Death Virgin."

It is no difficult matter to imagine th taking an important place in the portfoli works of such artists as Giovanni Dei, o grino da Cesena, whose monogram is one best known among the few *niellatari;* Francia of Bologna, the merit of whose drew the attention of Raimondi and th ration of Raffaelle; perhaps some work Marc Antonio himself, though so few works, as a *niellista,* are known away fro or the precious collection at Genoa, of th Durazzo.

Certainly the portfolio must contain works by the early masters of Florenc predestined city which, after having pr the noblest works of the painter and arch art in the Middle Ages, was to prece other Italian cities in the art of the engr which it was the cradle; as if the tw arts, called upon to aid each other in per friendship, were to see the light under th benign sky.

Certainly there must be in the portfoli specimen of the first engravings on met duced in Italy, and which may be found "Monte Santo di Dio" of 1477, and in a edition of "Dante" of 1481, the drawi which, we have Vasari's authority, we nished by Sandro Botticelli, who assist engraver, Baccio Baldini, to whose ex hand Bartsch has attributed not a fe prints, some lovingly fac-similed in Ottley's "History of Engraving." The dignity of the Prophets and the Sibyls, at the time of their publication met wi an enthusiastic welcome, is doubtless sented, as also some works by Antoni juolo, the contemporary of Maso Finiguer who, metal-worker and *niellista* like him, such surprising ability, not alone as an en but as a painter. Does the portfolio even one of the only three prints know by him, the Hercules, the Centaurs, "Struggle of the Ten Nude Figures"?

* Since this was written, the article named in the advertisement, which set our correspondent in a foreign country thinking, has appeared; we are disposed, however, to believe that his suggestive inquiries will not be found uninteresting.

* March 1, 1869.

Will the portfolio yield some print by Filippo ppi, only so recently proved to have handled burin? or by that beautiful, graceful artist, betta, of whom in his lengthy chapter on the brentine engravers, Vasari, strangely enough, kes no mention, and who, one of the oldest the engravers of the school, may be con- ered the last of the early (not "ancient") sters?

Or may we come upon some specimen of the rk of those Italian artists who left Italy for court of Francis I. and Henry II., under guidance of Leonardo da Vinci and Andrea Sarto, and who, accompanied by a crowd of gravers, founded the School of Fontainebleau, important in the history of art, and from ose works and from the engravings those ists brought with them from Italy, Jean ujon and Germain Pilon may have drawn so ny of their graceful conceptions?

Or shall we light upon some works of that t of professional engravers in Italy, the duan, Andrea Mantegna, the few rare copies whose unfinished "Triumph of Julius Cæsar," the Christ, and the Descent into Purgatory, among the precious treasures of the great lections of Europe?

Shall we see some rare early Venetian gravings from the masters inspired by Man- na? Let us hope to see described some rk by that little-known engraver, Gerolamo ocetto, the friend of Gian Bellini, and whose e works can scarcely be seen out of Paris; ere the national collection treasures a "Judith d Holofernes," and a "Bacchus" of amazing auty.

As a portfolio it will be incomplete if it s not contain at least one specimen of strangely characteristic work of the learned ulio Campagnola, in whose rare etchings we successively the influence of Albert Dürer, Giorgione, of Gian Bellini, and Mantegna, l who was the first engraver to adopt the *tteggiatura*, or the *criblé* method. Nor ould there be wanting, rare as they are, some ecimen (perhaps a proof of the "Sacrifice of raham") by Benedetto Montagna.

May not the contents of this portfolio show ose who believe that Leonardo da Vinci never odled either the burin or the etching-needle have been in error? Or may we not find some ge barbarously torn out from a copy of that st precious of volumes, the work on Santa ronica, printed at Milan in 1518, and three the illustrations of which are believed to have en drawn by Leonardo's follower, Luino?

Shall we, if the portfolio is, as it should be, ided into the various schools, among the rks by the Bolognese school find some work Raibolini, known as *Il Francia*, and of whom, a *niellista*, we have already spoken? or shall find described some work by Francia's pil, Marc' Antonio Raimondi, who eventually came the founder of the Roman school of gravers, and who, under Raffaelle's directions, oduced so many of that master's drawings, ich, thanks to the *autotype*, the world at large now able to enjoy. Marc'Antonio alone repro- ced drawings, and never, directly, a picture Raffaelle,—a fact to be noticed, as his works, prived of pictorial effect, have seemed to many be wanting in tone.

Shall we, again, among the works of the more thern artists from the Low Countries, come on any "ancient engravings"? Some illus- tion from one of the four editions of the nous *Speculum Humanæ*, or the "Poor Man's ble," or the many works adorned with wood- ts produced in the Low Countries, at Amster- m or at Antwerp, during the fifteenth century, der the influence of the Florentine art of the rt of the Dukes of Burgundy? Is there a rk by Jacob Cornelisz or Johann Walter lsen? or of that rare engraver on metal who ars no other name than the "Engraver of the ar 1480," and whose works may be seen at e Amsterdam Museum?

Do we find described any of Lucas Van lyden's beautiful works, so carefully considered their perspective and drawing? Do we have attention drawn to the value of his en- vings in the history of costume and architec- re? Do we have described the series of the ggars and peasants which inaugurated that inite series of such subjects which in later ars Teniers, Ostade, and Dusart were wont to int so characteristically? Have we here any rks of Dirck Van Staren, for instance, the Luke in his painting-room; or of Alaert nas, the copyist of Lucas Van Leyden, Hans ham, Aldegrever, and Dürer?

Can it be possible that this portfolio contains any German engraving produced prior to 1460, for if so, it may indeed be termed "ancient." Perhaps we have some work of Pfister of the middle of the fifteenth century, and of whom M. Leon Laborde has told so much. Naturally we have described a number of German engravings of a later date, for in no country more than in Germany was the engraver's art practised at this time,—interesting works, even if far from beautiful.

Certainly we have Michael Wohlgemuth represented by some of his superb works, the Apocalypse, or the Life of the Virgin, and with him Lucas Cranach, the well-known friend of Luther, Melancthon, and Frederick the Wise; of course we see the works executed under the art-loving Emperor Maximilian; Hans Burgmair's well-known "Triumph," and his friend, Hans Chauflein's *Theuerdack*, or some of the rare copies of the saints of the imperial family; perhaps more than one work by that crowd of engravers of Maximilian's court whose names have only so lately been determined?

Have we any work of Dürer's pupil, Hans Baldung Grün, the Swede, of whom Jackson, in his "Treatise on Wood Engraving," tells us that he kept by him all his life a lock of hair of his master Dürer?

Have we some work of Ulric Vaechtlein, Grün's contemporary, or of that list of German engravers, too long to describe, Jost Amman, Heinrich Aldegrever, Albert Altdorfer, Hans Sebald Beham, whose beautiful works collectors have so long prized? Holbein, of course, with his interpreter, Hans Lutzelburger, takes an important place?

So much for the early German wood-engravers, many of whom are better known as engravers on metal. Do we find described some rare print by the master of 1466, or of more than one other anonymous and modest artist of that "ancient" period? Martin Schongauer, of course, is represented by more than one of his well-known prints, and with him, Albert Glockenton, and Israel Van Mecken, whose works are so quaint and valuable as records of costume, as also those of Mair, while Dürer and the little masters, of course, are amply described?

And what "ancient engravings" of English origin can this portfolio contain earlier than the late Caxton Exhibition showed the world? Caxton, we are afraid, is our only "ancient" master, and of his works we cannot know too much.

With regard to French engravings, the portfolio cannot show anything more "ancient" than the rude block prints, playing-cards, and such-like, which possess more an antiquarian than an artistic interest. Perhaps we have some page torn from the rare publications of Antoine Verard printed by Dupré at the end of the fifteenth century, or the "Dance of Death" of the same publisher, of 1485, or the works of Simon Vostre of the same period; of Philippe Pigouchet, Kerver, Gilles, Hardouin, Eustache, Godart, or Regnault, whose works preceded and led the way to the Italian influence of the sixteenth-century Renaissance, of which, as sculptors, Jean Goujon and Germain Pilon; as architects, Jean Bullant, Philibert Delorme, and Pierre Lescot; as painters, Jean Cousin and Clouet (or Janet),—formed such noble interpreters, and afforded such excellent examples to the engravers. Among these it is to be hoped that the portfolio contains a specimen by "Petit Bernard" whose works met at the time with such vogue. Without numerous specimens of the beautiful art of the ornamentalist in the headings and tailpieces, and title-pages of the books of this period, the portfolio is wanting in a branch of the engraver's art that has at all times produced beautiful results; such works as the "Figures de l'Apocalipse" (Paris: Etienne Groulleau, 1547), and the translation of Francesco Colonna's "Dream of Poliphile" (Paris, 1546), in which are reproduced, and adapted to the French tastes, the exquisite woodcuts of the original work published at Venice by the Aldi in 1499.

The productions of the wood-engraver's art in France later than this become numerous, and can no longer be said to be "ancient." Among the engravers on metal it is possible to find not a few rare prints,—the Madonna with Christ, by Bernard Milnet, for example, and Breidenbach's interesting work on the Holy Pilgrimage to Jerusalem, published at Lyons in 1488, in which we see reproduced in copper-plate the wood-cuts published two years previously at Mayence. Nor should there be wanting a specimen of the work of Natale Garnier, copyist, as he is, of his German contemporaries.

Doubtless, there is fully described some work by Jean Duvet, of Langres, one of the earliest of French engravers on metal, perhaps the Martyrdom of St. Sebastian, or the Loves of Henry II.; or some work of Claude Corneille or Jean de Gourmont from Lyons, where, in the sixteenth century, flourished such a noble school of wood-engraving. Should the portfolio yield a print by Jean Cousin, it contains, indeed, an interesting collection, for in the few works by this archaic painter, we find all the elegance and noble expression, the truth and elevated sentiment, which breathe in the superb and sadly mutilated statue of Admiral Chabot, by the same artist, which forms so great a treasure of the Louvre Renaissance Court.

Into the fascinating field of French art and engraving in the sixteenth century our limited space will not permit us to enter. After having passed over as rapidly as so interesting a subject would permit the productions of the early engravers of Italy, Flanders, Germany, and France, we find ourselves fairly out of the "ancient" period of the history of engraving.

M.

IMPROVEMENTS IN HEAVY GUNS.

Few names have the authority, on matters relating to Ordnance, of that of Colonel Sir W. Palliser. It is with some satisfaction that we find that distinguished officer expressing, in a letter to the *Times* on the 2nd inst., the same opinion on the cause of the explosion on board the *Thunderer* that we expressed in these columns on the occurrence of that disaster. Notwithstanding the care of the committee, and the reported unanimity of their conclusion, it has all along been to us, as it has been to Sir W. Palliser, simply inconceivable that the loading arrangements of the 38-ton gun should have been so defective as not to indicate the position of a projectile in its barrel by the distance of 5 ft., the space occupied by the charge.

Our object, however, is not to argue or to weigh probabilities; we have a question to ask, and it strikes us as somewhat incredible that no one should have yet proposed it. And we have a word to say as to that revolution in the construction of heavy ordnance which, according to certain newly-converted enthusiasts, will ensue from the fracture of the Armstrong gun.

The question is this. The charge of a 38-ton gun is not only a very bulky, but also a very costly affair. Five-and-twenty pounds sterling, we believe, is the least that each discharge costs. Even if this be an exaggeration, can it be the case that projectiles of such weight and individual value are simply pitched into the hold of a vessel like so many hundredweights of coal, more or less, and fired away as the captain may direct, without note or register? If so, we pay less attention to the arms on which our national safety depends than we do to penny-pieces in the revenue accounts. But if, as we would fain take for granted, a register be kept of the receipt and of the expenditure of warlike stores of this great value, why has not the simple process been adopted of counting the projectiles now on board, and comparing the number with that of the discharges? If there can be the possibility of making a mistake as to a monster charge of this kind, it is obvious that the gunnery accounts must be in an eminently unsatisfactory condition. A debtor and creditor account ought to be kept. If it is not, we beg to ask, on the part of the public, why it is not? If it is, we ask, whether there is an uncounted shot missing? The reply ought to be easy.

With regard to the constructive question, we are not about, with a former zealous advocate of the coiled gun, to wheel round and declare that ingenious mode of fabric to be against the principles of mechanism. Neither, on the other hand, are we disposed to admit that, having been once adopted in the service, this method must be taken as unquestioned and unquestionable. Two points of great importance yet await,—in our view,—decision. The one is, is it possible that the hydraulic loading apparatus can be such as to allow the men who use it to be ignorant of the position of the shot they put in a gun by as much as 5 ft.? If that be the case, the sooner the loading apparatus is turned overboard the better. The second is, arriving as best we may at the estimate of the force that rent the gun asunder, would a steel gun have been rent by such a force? We are making rapid strides in the manufacture of steel,—far

more so than in that of ordnance. The iron age of the world is on the wane. Iron is almost played out, or only to be valued (as Telford valued rivers as feeders of canals) as the material for making steel. We have various kinds of mild steel now procurable at half the price per ton that we have known paid for iron rails, if not for less. We have yet to hear the last word of Sir Joseph Whitworth's method of casting steel under pressure. The interest of the House of Commons, on Wednesday, the 2nd of April, was vividly excited by the samples of Cleveland steel adroitly sent for their information. While we would deprecate any hasty action or any interested cry against the massive and costly weapons of which we now lament the first very alarming failure, we must remember that the case of Steel *versus* Iron, if hitherto unsettled, will be brought into Court again, and that the question of the future is not likely to be, "Shall we make iron guns or steel guns?" but, "What steel should be used for our heavy ordnance?"

In this state of inquiry, it will be with much satisfaction that men interested in mechanics will hear of the appointment of a new committee on heavy guns, to consist of two naval officers, one Royal Engineer, three Royal Artillery officers, and one officer of the Indian Artillery; with the indispensable proviso that none of these officers shall have any personal or pecuniary interest in the manufacture of ordnance. The question whether a better gun can be obtained is one as to which we are promised that a most searching examination will be made. Of course, the question of material will be one of the very first to attack. The statement of Lord Sudeley to the effect that a new 6-in. 4-ton gun has a greater penetrative power than an old 9-ton gun (old by ten years), and a new 11-ton gun more power than an old 35-ton gun; and that, while the projectile from an old 18-ton gun would pierce the sides of the *Hercules* at 500 yards, one from the new 11-ton gun would produce the same effect at 2,000 yards' distance, is extremely suggestive. It points to the fact that the penetrative power of a shot, and its battering power, or the total force of its impact, are two different things. It is the former, it seems to us, that is the chief requisite for naval ordnance. The question of breech-loading ordnance, to which the coiled gun system was opposed, will also come before the committee. When we find that a person possessed of the official knowledge of the Duke of Somerset "two years ago thought that the guns of the navy were models of construction,"—an opinion which his grace does not say that he has yet modified,—it is evident that very much good work may be expected from a committee of men "possessing the broadest views, and special competence to form and express an opinion." The reports, we are glad to observe, will be made direct to the Admiralty and to the War Office, and inventors whose inventions are under consideration will be communicated with by the committee.

A PAPER DOME FOR AN OBSERVATORY.

An astronomical observatory has been erected for the Rensselaer Polytechnic Institute, U.S. In maturing the plans and supervising the erection of the building, says Professor Greene in the "American Journal of Science and Arts," I have introduced an improved method of constructing revolving domes, a brief account of which may not be without interest.

While making the preliminary inquiries, I ascertained that a dome of the dimensions required, constructed in any of the methods in common use, would weigh from nine to ten tons, and require the aid of cumbersome machinery to revolve it. It therefore occurred to me to obviate this objection by making the frame-work of wood, of the greatest lightness consistent with the requisite strength, and covering it with paper of a quality similar to that used in the manufacture of paper boats; the principal advantages in the use of these materials being that they admit of great perfection of form and finish, and give extreme lightness, strength, and stiffness in the structure, —prime qualities in a movable dome. A contract was accordingly made with Messrs. E. Waters & Sons, of this city, the well-known builders of paper boats, for the construction of the dome, and they have carried out the undertaking with great skill and success.

The dome is a hemisphere with an outside diameter of 29 ft. The frame-work consists primarily of a circular sill which forms the base, and two semicircular-arch girders set parallel to each other, 4 ft. apart in the clear, and spanning the entire dome. These are firmly attached to the sill and kept in a vertical position by means of knee-braces. The sill and girders are of seasoned pine, the former being 8½ in. wide by 3½ in. thick, and the latter each 4½ in. by 3 in.

The paper covering of the dome is made in sixteen equal sections, such that when set up side by side, their bases on the sill, and their extremities meeting at the top, they form a complete hemispherical surface. The frame-work of each section consists of three vertical ribs of pine, each 3½ in. in width, and ¾ in. thick, one at each side, and one midway between, and meeting at the apex. The paper was stretched over this framework as follows:—A wooden model of full size being made of that portion of the dome included within one of the sections, with a surface truly spherical, the framework of a section was placed in its proper position on the model, so that its outer edges formed part of the same spherical surface, and covered with shellac where it was to be in contact with the paper. The sheet of paper cut in the proper form was then laid on the model while moist, the edges turned down over the side ribs, and the whole placed in a hot chamber and left until thoroughly dry. In this way the several sections were dried in succession over the same model. The paper used is of a very superior quality, manufactured especially for the purpose by Messrs. Crane, Brothers, of Westfield, Mass. Its thickness after drying is about one-sixth of an inch, and it has a structure as compact as that of the hardest wood, which it greatly excels in strength, toughness, and freedom from any liability to fracture.

After being thoroughly painted, the several sections were ready to be set up side by side on the sill, and connected together by bolting through the adjacent ribs. The space between the arch girders being left uncovered on one side from the sill to a distance of 2 ft. beyond the zenith, the upper ends of the sections required to be cut off and accurately fitted to the girders. The joints between the sections were made weather-proof by inserting a double thickness of heavy cotton saturated with white-lead paint. The adjacent side ribs were then bolted firmly together through the paper and cloth, the lower ends attached to the sill by angle irons, the upper ends bolted to the girders, and the lower edge of the paper turned under the sill, and securely nailed. The joints were afterwards painted over on the outside. As the entire surface exposed is free from nail-holes or other abrasions in the paper, the structure promises, with an occasional coat of paint, to last for many years, and to form an effective and serviceable roof.

The 4-ft. opening between the arch girders is covered by a shutter, which is also of paper stretched over a wooden frame. With the exception of about 2 ft. at the lower extremity, this shutter is in a single piece. Attached to its sides are a series of iron rollers, which run on a railway track of band iron laid down on the girders, by which means the shutter can be moved to the opposite side of the dome. The wooden sides of the shutter have iron flanges attached to their lower edges, which project under the railway tracks, making the whole weather-proof. The shutter is opened and closed by means of a windlass and wire rope.

The weight of the dome and its appurtenances is about 4,000 lb. It is supported on six 8-in. balls, which roll between grooved iron tracks, and can be easily revolved by a moderate pressure applied directly, without the aid of machinery.

ARTISANS' DWELLINGS.

At the weekly meeting of the Metropolitan Board of Works on the 4th inst., a report was submitted by the works and general purposes committee, reporting, with reference to the letter from the Home Office transmitting a copy of a letter from Sir Sydney Waterlow, and an altered form of tender for sites for artisans' dwellings under the Metropolitan Street Improvements Acts, 1872, that, in the opinion of the committee, it would be desirable to insert a proviso that the Superintending Architect may extend the time for completion of buildings in cases of strikes, lock-outs, or unfavourable weather, but that they consider it inexpedient to assent to the remainder of the proposed alterations; and recommending that the Home Office be informed accordingly.

Mr. E. Dresser-Rogers, in moving the adoption of the report, remarked that on mon one occasion, at the request of the desiring to tender for this land for the p of artisans' dwellings, the Board had their conditions, and had met the partic most liberal spirit. Again representation made by this particular company, and th mittee having gone into the matter once recommended some further concessions. I quite sure the Board had an earnest de give every possible facility for the erec improved dwellings for the artisan classe at the same time he thought the rate ought to know that the cost of these dw would come out of their own pockets to large extent. The conditions were so prej to the interests of the public that a very portion of the cost must necessarily fall the rates. The Board, however, was di to help on the matter in every way as possible. The motion was carried.

THE NEW NATIONAL THEATRE COPENHAGEN.

The erection of a new National Thea Copenhagen at one time was a question e great interest amongst the inhabitants Northern capital. However, its solution satisfactorily effected, as our readers w able to judge by the illustration we give issue of the handsome building provide designs for which were supplied by the tects Vilhelm Dahlerup and Ove Petersen.

The edifice, the appearance of which represented by our illustration, may be d into three parts,—the theatre proper, the block, and the part of the building cont shops and warehouses. The theatre itse three principal entrances in the great turned towards Kongens Nytorv (King's-s through which the portico is reached, whe ticket office is placed. From the portic doors open into the vestibule proper, wh broad staircase leads up to the boxes. corridors connect the vestibule with the which enclose in a semicircle the auditor the theatre.

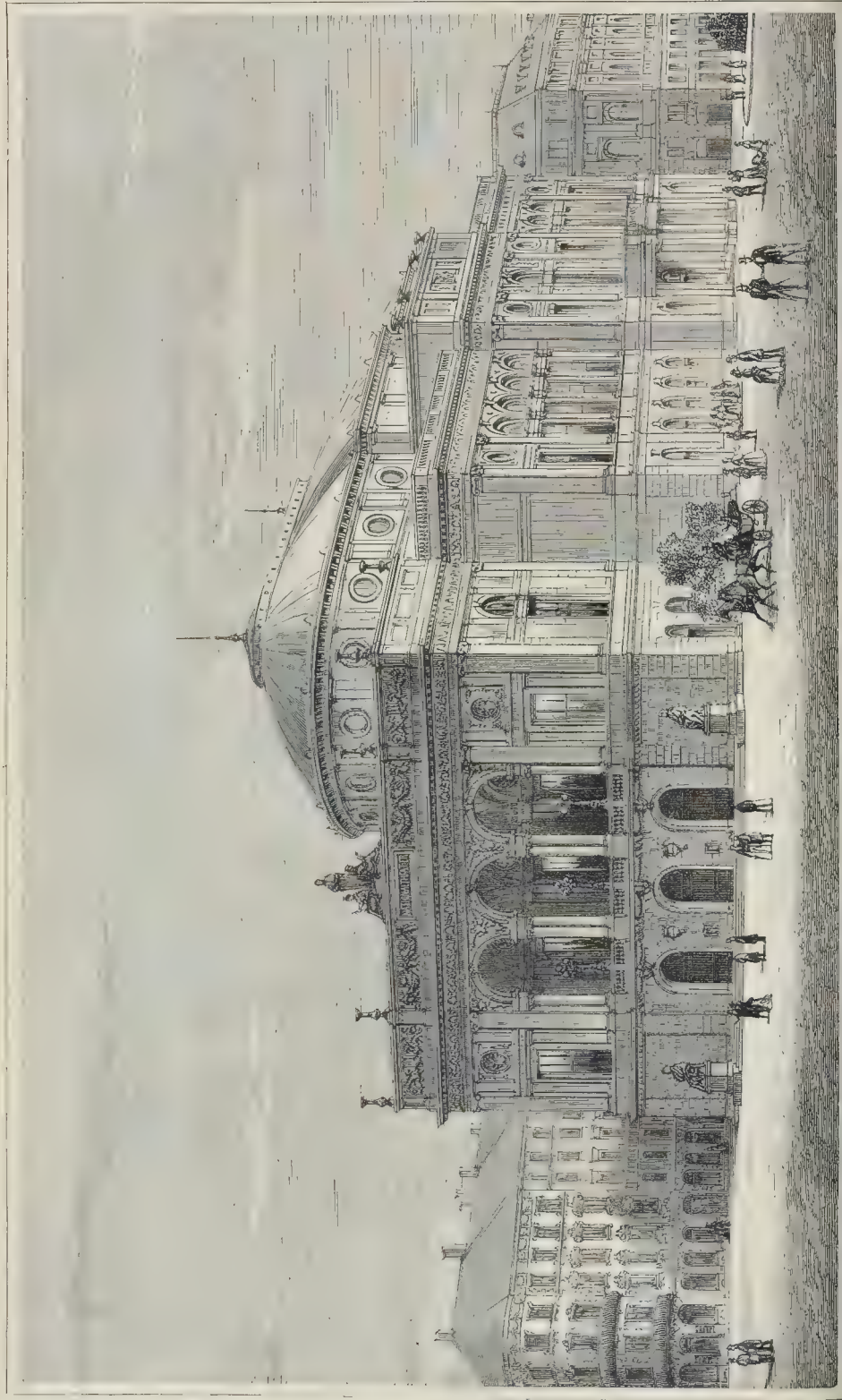
In the centre portion of the lateral fl there are covered approaches for carr staircases leading from the vestibule to th and second tiers, and from the side t towards Tordenskjold-street a separate case to the royal box. A great staircase from the *foyer* already mentioned to the s floors, in such a manner that the first and tiers have a common staircase, while the tier and the gallery have two staircases and special exits to Tordenskjold-stree towards the Hôtel du Nord. Cloak-room provided in all the *foyers*, as well as refresh places on the several floors. Sitting acco dation is provided for about 1,700 persons.

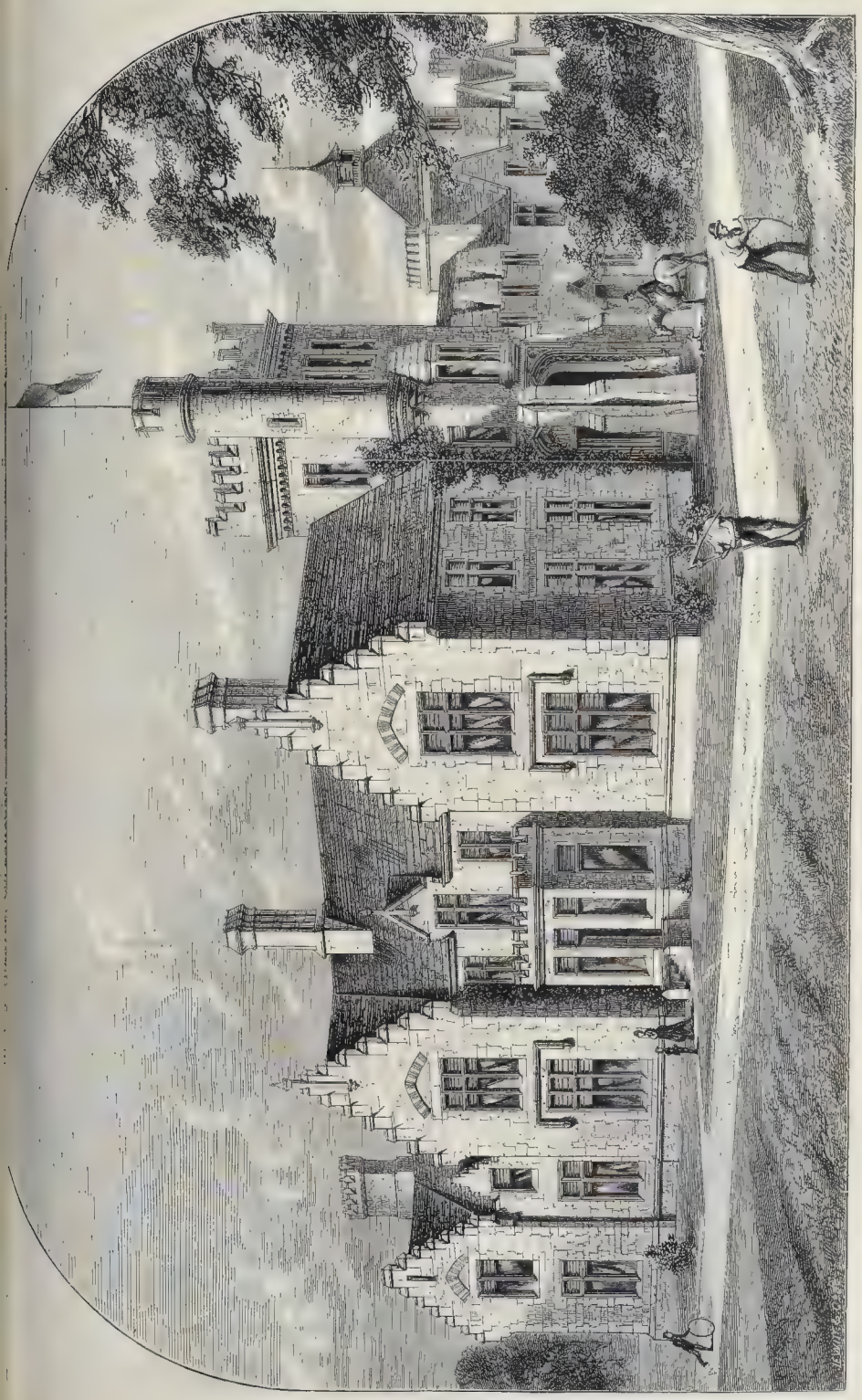
The stage is 80 ft. wide, and is supplie every arrangement for promptly suppr fires. Round it are grouped, in the w floors, dressing-rooms for actors and s with rooms for singing and dancing cl Behind the stage are *foyers*.

The intermediate building is placed at Heiberg-street, in such a manner that a drive for carriages and two smaller pas lead from the Hôtel du Nord to Tordens street. In that part of the building we als dressing-rooms and spacious corridors con ing the property-rooms with the stage.

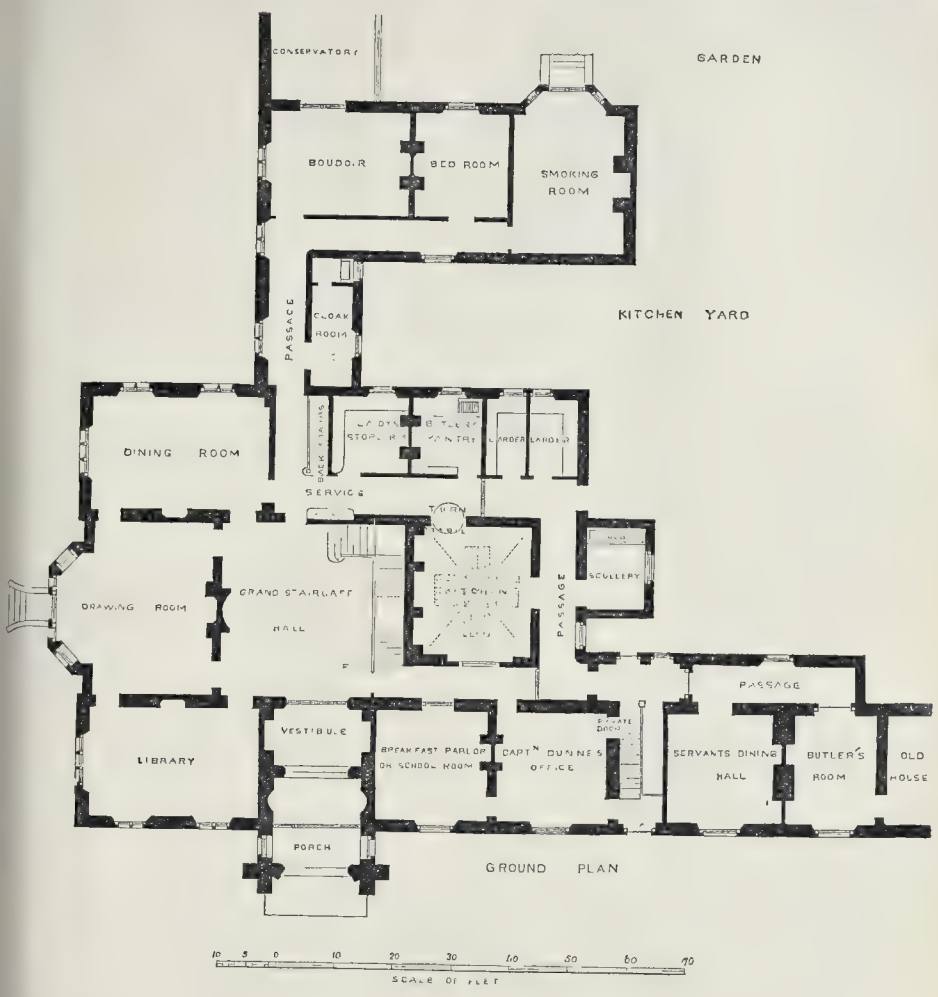
The part of the buildings appropriated cipally for warehouses contains on the gr floor shops facing towards Tordenskjold-s and the Hôtel du Nord. In the mezzanine are placed the offices of the theatrical ma ment. A concert-room with entrance-h also provided in this part of the building the remining stories there are, besides pai rooms and carpenters' shop adjoining, ward rooms and tailors' shop. The warehouse l ings abut immediately against a neighbou crowded with buildings.

Value of Land.—Property in Cro known as the Friends' School Estate, was by Messrs. Podmore & Martin at the Ma the 2nd inst., in two lots. Lot 2, 3a. 1r. of freehold building land, near East Cro Station and the High-street, sold for 13, Lot 1, while including school buildings cov an area of more than 14,000 superficial and a number of dwelling-houses and s brought 14,050*l*.





BRITTAS: QUEEN'S COUNTY, IRELAND.—Messrs. Millar & Symes, Architects.



BRITTAS: QUEEN'S COUNTY, IRELAND.—*Plan of Ground Floor.*

ITTAS: QUEEN'S COUNTY, IRELAND.

e mansion known as Brittas, shown by the panying illustration, is being erected for heirs of the late Captain Dunne, and is ted in the Queen's County, Ireland, in the o of a large old well-wooded demesne, com- ling an extensive and beautiful view of the unding country.

e new house replaces a one-storied thatched ing, which, in its day, was very picturesque, for ages had been the residence of the e family.

e new building is faced with punched , having cut-stone dressings. The ground contains the usual suite of rooms for a of its kind, all the rooms being large and

The hall and stairs are lighted from the as is also the kitchen, which is only one to allow of ventilation. The upper floor ins about fifteen bedrooms.

present contract has been undertaken by lorris, of Sligo, for about 7,700*l*. Messrs. & Symes, of Dublin, are the architects.

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ciety of Arts.—Mr. H. B. Wheatley to the Royal Society) has been appointed post of Assistant Secretary of the Society ts.

ETRUSCAN TOMBS.

In connexion with a paper on an Etruscan tomb found at Palestrina by Signor Barbarini in 1876, read before the British Archæological Association, by Mr. Thomas Morgan, F.S.A., on the 2nd inst.,

Dr. Phené, after drawing attention to the fact that the tomb, though Etruscan, was, like several others which he enumerated, in the ancient country of Latium and not in Etruria, illustrated by drawings made by him on the spot plans of ancient Etruscan cities, and elevations of different examples of construction in them, as well as the different classes of tombs, viz., those cut into the sides of natural hills, and subsequently intentionally concealed; those carved externally, on the face of vertical cuttings on hill-sides, and which were made decorative features of the various districts in which they are, whole valleys having their sides so sculptured in the artificial face of natural hills of rocks, and which assimilate to those at Telmessus, in the south of Asia Minor,—these, he pointed out, abound in the neighbourhood of Castel d'Asso, Norchia, Bieda, &c., in the districts between Viterbo and Civita Vecchia; and finally the artificial tumuli or mounds of enormous dimensions, surrounded in Etruscan examples, with a wall of masonry, with doors around leading to chambers and passages, but which also like the splendid examples at Argylla, Cœre, or Cervetri, between Rome and Civita Vecchia, had concealed chambers like those in the pyramids of Egypt, and the mounds at Sardis, in Lydia, while the façades and architectural decorations of the valley tombs were entirely deceptive, the doors having no means of opening, and the entrance being effected by small and often concealed apertures beneath them or at the side of a chamber. After exhibiting drawings of the frescos and devices in the different tombs, Dr. Phené showed, also by drawings made on the spot, the similarity between the latter constructions and some in Lydia, near Smyrna, so that the façade decoration and the tumulus both had their counterparts in Asia Minor, which lay between the far East and Italy, and each of which had again their counterparts in the topes and sculptured rocks of India.

The first class appeared the most ancient of those of Etruria, viz., the carved and concealed chamber in the natural hill, generally a round one, which was probably adopted by the Pelasgic Colonies from Greece, prior to the occupation by the Pelasgic Lydians. All the three classes of tombs abounded in serpent emblems of a very marked character, and many facts, not, he believed hitherto considered, led him to think

that the disputed points about the Pelasgi and Etrurians might be reconciled without abandoning any of the traditions as to the immigration of the Lydians. The latter, coming from the south-east, would naturally bear across by the island so well known to the Phœnicians to the Tyrrhene Sea, where, coasting along, the ancient port and town of Tarquinii, to which the Tuscans traditionally refer the origin of their polity and civilisation, would soon be reached. On the other hand, the earlier Pelasgi from Greece would probably seek a shorter course. There was evidence that the Etruscans had passed through, and indeed, in some cases, occupied and built, cities in the more eastern and southern parts of Italy. Their presence in Tusculum and Palestrina or Præneste in Latium was an example, and Bologna, the ancient Felsina, was, according to tradition, built by them as one of the twelve cities. East of the Apennines, the well-known Roman roads, Via Appia, Via Latina, Via Valeria, and the Via Flaminia, appear to have been all formed, in part, at least, on old Etruscan ways. In the Via Appia the only serpentine portion, which was one of the characteristics of the old Etruscan roads, is that adjacent to the well-known tombs, called after the Horatii and Curatii, which tombs are undoubtedly Etruscan. The access to Western Italy from the Adriatic, by way of Foggia and Campobasso, is almost free from mountainous passes, and the voyager in early days would hardly lose sight of land, if, sailing from the western part of Greece by the Ionian Islands, he sought the east coast of Italy, as we moderns now do, or as the Romans did when they formed the enormous Via Appia terminating in Brindisi.

In that part of the Morea to which he referred was a very remarkable place, little known even to the ancients, and which was probably the ancient settlement from which the people of Messenia originated. Pausanias gives a doubtful account of its origin. He says it was built in the third age after Pelasgus. The city is called Phigalia, and was said to have been built by Phigalus, whom the superstitious represented as having sprung from the ground. In any case its antiquity was immense, and its secluded position kept it very little known, even to the earlier Greeks. In this strange place seem to be found just those links in the evidence which are wanting in the monuments of Egypt and Lydia. The Etruscan mounds often inclosed high towers. These were both square and round, and Phigalia, the place alluded to, stands alone as having these forms of towers placed together in ancient times. In the south-east part of Italy a somewhat similar round tower is in every garden of importance to this day. In the very centre of what appeared to him the most sacred spot of Phigalia, where there is a construction of masonry in the form of a vast serpent (drawings from the spot being exhibited) is a round tower similar to that of the Etruscan circular tumulus next to the two bearing the names of the Horatii and Curatii, and adjoining the ancient piece of road before mentioned, while natural tumuli, similar in appearance to the artificial Etruscan ones, appear, as the drawings illustrated, to have been highly respected at Phigalia.

Dr. Phené stated that, next in importance as containing these ancient tombs, after the localities he had referred to in Etruria, was the district formed by the triangle of the towns of Orvieto, Perugia, and Chiusi, drawings from all of which were exhibited.

SOME CAUSES OF THE PRESENT DEPRESSION OF TRADE.

In the course of a paper on this subject, read by Mr. B. Francis Cobb, at the Society of Arts, on the 2nd inst., Mr. Andrew Cassell in the chair, the author said,—

Reference has been made to workmen going on strike, and while the subject of strikes is one which is more fitted for an entire paper than for such brief notice as time will permit of in this; yet it is obviously so important a factor that it would be improper not to mention it as one of the causes of the present depression of trade. The action of a strike is to resolve itself into the most absolute waste that can be connected with commerce and commercial enterprise. Among the actions within the control of men, only war can be more wasteful in its effects. It is so everywhere, although it is only of recent years that the United States has undergone this baneful experience. Speaking of the great railway strike there, Mr. Plunkett, Secretary of Legation at Washington, reports that the centres of the strike were West Virginia, Pennsylvania, and Maryland; they extended thence to Ohio, Indiana, Illinois, Michigan, Iowa, and Missouri, north to New York, last to New Jersey. On the twelve larger lines the loss is put down at five millions and a half sterling for property destroyed, cattle and other live stock killed, for none of which the companies can claim on the State or County Governments. But the governments will have to pay as large a sum for loss of property by riots arising out of the strikes. During the three weeks, from July 16th to August 5th, 1877, the cost to the country directly is reckoned at 13,000,000*l.* sterling in positive loss in property and business.

One of the most evil effects engendered by strikes is the ill-blood and bad feeling which remains, even after work has been resumed; and when strikes are from the direct action of trade unions, as they generally are in this country, the difficulty is only laid by for a time, to be resumed on the first available opportunity. The arbitrary action of many of these trade unions, and the submissive manner in which their orders are received and obeyed, is one of the most surprising things of the present time. A man gives up his liberty, and places himself unreservedly at the disposal of irresponsible despots, whose first act is to reduce him to the level of the meanest and least valuable artisan of his class. The union shipwrights who caulk ships' decks at Palmer's shipbuilding yards at Jarrow are a good instance. The union men recently struck against a man named Burdon, who by dilligence managed to distance his fellow workmen in the amount of caulking he did in a day, and was remonstrated with by them. As he refused to shorten the length of his work, the men took umbrage, held a meeting, and the union passed a resolution that he should not be allowed to work at the trade for three years. As the masters, however, would not discharge the man Burdon, the men were ordered out on strike.

Another instance of the arbitrary rule of the unions was in the case of a builder building some houses in the suburbs of London, on the clay, where he had reason to fear the effects of damp. He invented a very ingenious large hollow brick, and commenced building his houses with them. It soon occurred to the workmen that they were building these houses very quickly, and they reported the matter to the union, who sent special officers to investigate, on whose report orders were sent not to use any more of those bricks. With great difficulty, and by paying fees to the union and extra wages, the builder at length obtained permission to complete the house nearly finished.

It is well, when we can, to see ourselves as others see us. The correspondent of a New York monthly publication writes from this country as follows:—"There can be no doubt that the original and principal cause of the depression in all the branches of industry in England is directly traceable to the arbitrary regulations of trade unions, which have acquired a much more perfect system of organisation here than anywhere else." He traces their development in recent years, and states the general results, and adds, "a yet more serious cause serves to enhance the cost of production, and is one result of the arbitrary regulations of the trade unions. I refer to a system of virtually handicapping labour by a rule which does not allow a unionist to work with a will. However much skill he may possess, or however willing he may be to work rapidly, he is forbidden to accomplish more than an average amount of work in the usual time, because it might derogate from the interest of his less skilful or less willing brother unionist. The same regulation exists in all trades where it is at all practicable." The writer further expresses his opinion that "the English seem to be in such a perfect state of lethargy that they cannot or will not realise that their manufacturing monopoly is fast vanishing from them, and that the nation which is acquiring it shows a very fair prospect of retaining it."

Of course we may say that this last is an American way of putting it for publication in a New York journal, but there is the fact that the Americans are manufacturing goods which they previously purchased in this country, they are boarding the unionistic terrorism of Sheffield on its own ground, and they have entered the lists as our competitors in almost every foreign market in the world.

The Mayor of Sheffield, in a speech made in the middle of last month, stated that in opinion the distress of that town was owing great measure to the trade unions of She It was within his knowledge that a very contract had been offered to an extensive of manufacturers. The firm had taken similar contracts previously, and on those contracts they had lost money. the third was offered them they called workmen together and told them that if would accept 10 per cent. reduction the would take the contract, which would giv employment to the men for twenty weeks. workmen considered the matter, and, after discussion, agreed to do the work; bu leaders of the union now stepped in, an tinctly told them they were not to acce 10 per cent. reduction. The consequenc that the order is now being executed in Be and the working classes in Sheffield are su to that extent.

Machines for the manufacture of cr springs were sent over to this country, bu tabooed by the union, with the result th machines were sent back to Belgium carriage-springs are now being made wit there, and imported into this country. known also that "grinders" who had been w longer than the trade unions thought go on the following day found that their to been removed, because of the action ta the men in working longer hours than th permitted. It was a matter of very regret to the Mayor of Sheffield, to f trade unions doing so very much to prev expansion of the trade of Sheffield.

At a meeting of the Cleveland Instit Civil Engineers, held last December, Head, one of the leading manufactu Middlesbrough, moved and supported excellent speech the following resolution.

1. "That whilst recognising the im bearing which the Imperial policy of ment must ever have upon trade, this m of opinion that the present depression is due to the operation of natural laws would have produced similar effects w the political conditions."

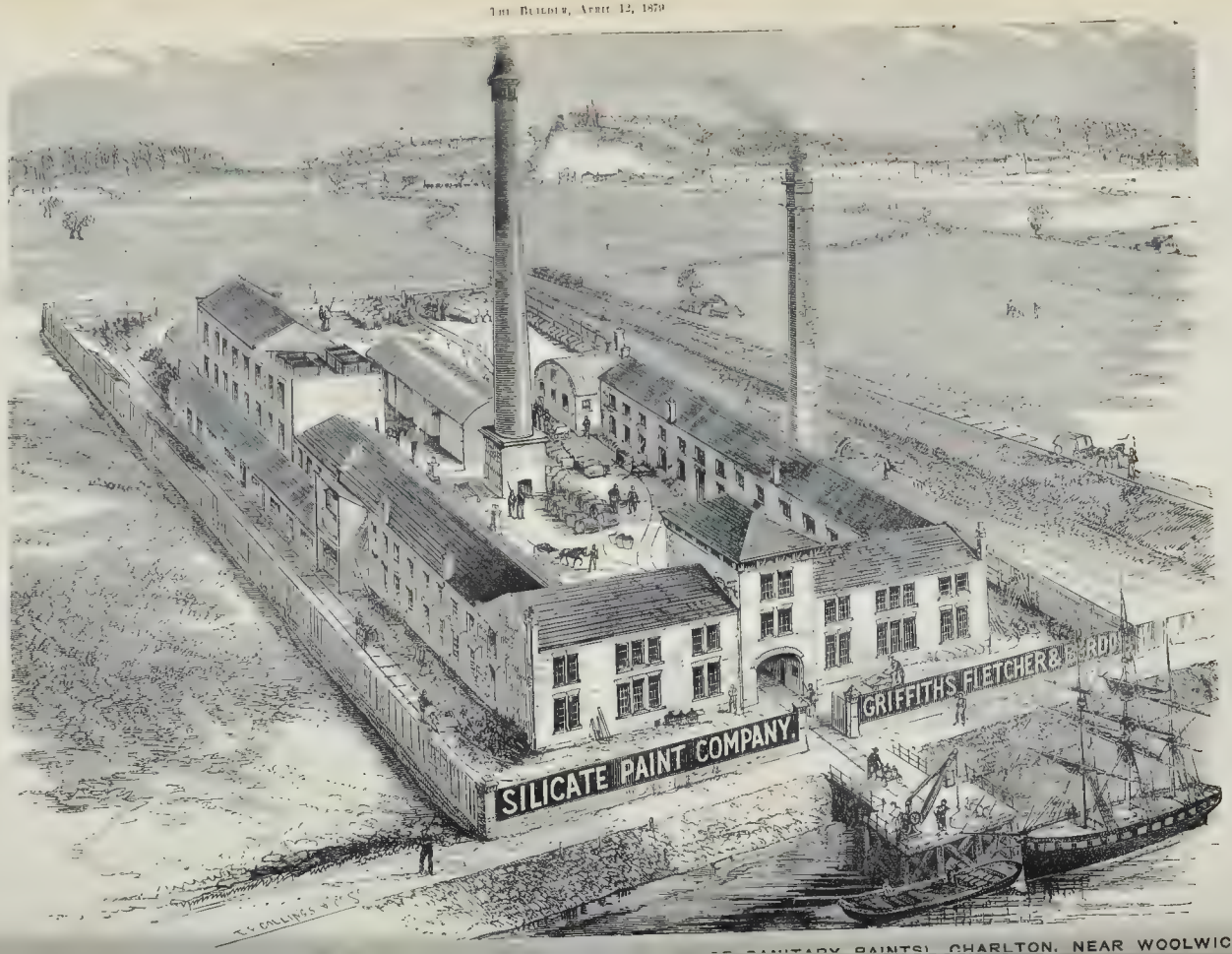
2. "That, considering the preval extravagance and thriftlessness amo ducers of all grades in 1870 and the f years, and the enormous waste of tim took place through strikes and restri unions, it is not surprising that the commercial enterprise should have beco nigh extinct."

3. "That the only wise course for p —whether employers or employed— adopt is to cease craving for highe and to unite in cutting down cost of pr and adapting ideas and habits to the state of things."

4. "That the nine-hours movement, nominally a success, was in reality, first, a great economic failure; that is, to the true interests of the workmen th That the present scarcity of emplo largely due to its operation, and that it be abolished without delay."

I wish to draw your attention to the tions, although the third may be forei subject of this paper—which, I mu you, deals only with causes, not c time will not permit of any comme them to-night.

Wakefield Borough Surveyor.—Pagan, C.E., who for more than four has occupied the position of borough under the Wakefield Corporation w end of the present month, retire from tion, in order to undertake higher, thou duties, in widely different scenes an stances, he having been selected by th Office, out of a number of candidat post of Colonial Surveyor and He Public Works Department in the Col Gold Coast. The salary attached to 800*l.* per annum, along with free pas free quarters are provided. As there need for the office to be filled, Mr. probably leave England in the ea May. It may be mentioned that office here has witnessed the inaug completion of many works, which, themselves, have been of great im the aggregate, such as the paving the extension of the main drainage s others.



SANITARY PAINTS, CHARLTON, NEAR WOOLWICH.—[Advt.]

E NEW WORKS OF THE SILICATE 'AINT COMPANY AT CHARLTON.

Monday last the new and extensive works d by the Silicate Paint Company at Charlton 'inaugurated" by a visit of inspection paid m by a number of gentlemen representing of the sanitary and scientific associations, ıer with many representatives of the press. ew works, which are situate on the Kentish of the Thames, just above Woolwich, have erected at a cost of 25,000*l.*, from the and under the superintendence of Mr. t Turner, architect. They may be roughly bed as forming three sides of a parallelo- partially enclosing a quadrangular space, centre of which are a tall chimney-shaft number of furnaces for calcining the ial produced. The works cover nearly an of ground, and although they are capable ning out 50 tons of "Griffiths's patent " and 50 tons of silicate and enamel per week, the premises will, it is ht, have to be enlarged before very long, to the rapid increase in the demand e company's productions,—a fact which volumes for their excellence. Space ierved for the contemplated extension premises. The works are replete with ıewest and most approved machinery inding and mixing the zinc white and the s coloured pigments, and the visitors spent very instructive hours in going through rious departments. One room is devoted production of the company's well-known ceedingly valuable "petrifying liquid," for ing damp and moisture from walls. This ation is made with silica, gums, &c.; and far end of the room were seen the huge here the ingredients are mixed and stirred am power. Nearer at hand are some disc ng-mills, where the preparation, which iw the appearance of a thick paste, is l and rendered more pliable. It is mixed ater or oil, and can afterwards be diluted, purchaser's pleasure, with either oil or or both together, and is then used as a non-poisonous distemper. This liquid en used in the School Board schools, and rreat number of hospitals, workhouses, firmaries. The eastern wing of the manu- y contains a great number of granite unners and other grinding and mixing Separate shoots, descending from the above, supply the ingredients to each In this upper apartment, which was uently visited, are some curious revolving s for mixing the powdered colours; and, this has been accomplished, they are l into the shoots, together with the requi- mount of oil, so that the machines below nstantly and regularly fed. In the upper are also a number of large, but somewhat w, drying-trays, 30 ft. long, heated by whereby the moisture remaining in the ial they contain, is evaporated. To return room below, it will be found that the powder, as it falls into the mixer, and it has had time to combine with the occasions a slight fine dust, which ally permeates the air, settles on the s of the workmen, and would most in- y injure them if it contained lead. This hough its constant inhalation is not to be d, is in itself, according to remarks made . Bartlett at the subsequent *déjeûner*, as ous as flour-dust. In this room, also, by de of huge stone-crushers and a new of granite roller-mills, may be seen a ate of the small hand-mill with which reat industry was started. Beyond, but n the same wing of the building, is the ne-room, with one of Clayton's large and ful horizontal engines; while in a neigh- g compartment are three large Cornish s. The production of "Griffiths's Patent ," which is manufactured by the Silicate Company for Messrs. Griffiths, Fletcher, rdoe, commences on the roof of the y. On all sides are enormous lead-lined fully exposed to the air, and resting e firm iron and concrete roof. Indeed, hole of this part of the building had to be ucted on purpose with these materials, s to support the enormous weight raw material, much of which, in the of stacks of old roofing zinc, was stacked for conversion into paint. Sulphuric acid, is used in large quantities for dissolving nc, is double the weight of water. This and also muriatic acid are blown by an air-pump from below into the tanks through vulcanite pipes. The solution thus obtained is conveyed to another series of tanks in the room below, where the iron and other impurities are taken from it by a process which is a chemical secret. These impurities form a sort of "cake" at the bottom of the tanks. This has to be removed at stated intervals, when it is placed in a peculiar kind of press, which is used for extracting whatever zinc may be remaining. In a side room there are some enormous iron vats, in which chemical compounds are boiled by the action of steam; and then, descending to the next floor, troughs suspended from the ceiling, convey the zinc liquor into another series of tanks. The period has now arrived when the liquid zinc must be re-converted into a solid substance; and, for this purpose, it is mixed with a preparation containing sulphur, &c., and a precipitate results. Descending to the ground-floor, the precipitate is collected into large wells, whence it is pumped by steam-power into filter-presses. The pressure in these machines is 30 lb. to the square inch; and, after a little of this treatment, the cakes of solid "White" are removed. It now possesses something like the body with which the paint is made, but the process is far from finished. The cakes of the zinc precipitate must be burnt to nearly a white heat in furnaces erected in the centre of the yard, and then thrown, while hot, into cold water. Thus a hard, white, and innocuous substance is obtained; but it has to be rendered manipulable. For this purpose it is first placed into wash-pans, where it is stirred and levigated until no impurities remain. The powder, after this, is consolidated once more by being passed through another series of presses, where the water is squeezed out. From these last, or finishing presses, the cakes of white pigment are conveyed to a large drying-room, where they are exposed on iron racks capable of holding seventy tons of the pigment, which has now become the celebrated "Griffiths's Patent White." It need only be mixed with oil to be ready for use, and we have a non-poisonous paint of the purest white, possessing far greater body than the lead paints which, on sanitary grounds alone, it ought to supplant. "Griffiths's White," unlike white-lead paint, never becomes transparent, but always retains its opacity; it will not yield to the action of noxious gases or of sulphuretted hydrogen; it will not blister, even when heated in a furnace, and therefore will stand any climate, and is consequently specially adapted for the painting of ships, iron structures, walls of hospitals, houses, &c. On the opposite side of the furnace and the yard, a fireproof and separate building, made of iron and concrete, may be visited. In this workshop the "enamel paints" are manufactured. For this a copper was originally employed that held three gallons; now the coppers hold 100 gallons, and are constantly in use. We cannot detail the progress of this manufacture, as it is a secret process; but we understand that the enamel paints are made by an adroit combination and skilful manipulation of silica and extremely hard gums. The west wing of the building is divided into various rooms for packing and storing the paint, but there is also one room where the colours, all of them non-poisonous, are made. They comprise, among other shades, some emerald-tinted greens, free from arsenic. The drying-room, which is close at hand, can hold twenty tons of colour. In this part of the building there is also a chemical laboratory, where experiments and improvements are constantly attempted and samples analysed by the company's chemists. The varnish-room is kept at an even temperature by steam-warming pipes that run round the fifteen five-hundred-gallon vats. Tramways run in all directions to facilitate the conveyance of these goods from the various parts of the building and along the pier jutting out into the river from the northern frontage of the premises. Goods can thus readily be shipped for foreign countries, or taken by barges to the Company's London wharf (Dowgate Wharf). The railway station is also close at hand; and, on the whole, it is doubtful if a better site could have been chosen. The contractors for the erection of the premises were Messrs. Vernon & Erving.

The visitors were courteously conducted over the premises by Mr. Griffiths, assisted by Mr. Lucas (the company's chemist), and Mr. Knight (the foreman of the works), from all of whom the visitors received much information as to the details of the processes of the manufacture of the company's products. Mr. Griffiths, after exhibiting some of the paints manufactured by the company, amongst others the "Silicate," in its various shades and colours, and also some beautiful enamel paints that have the appearance and gloss, and almost the hardness, of porcelain, showed the visitors a series of experiments with his latest production, "Griffiths's Patent White," or Sulphide of Zinc Paint. After explaining that there were five cardinal points to be observed in a really valuable paint,—its covering power or "body," its opacity, its whiteness, its power to retain that whiteness in the presence of gases, and its durability,—the great covering power of this paint, in contrast with pure carbonate of lead, was clearly shown on four boards painted black, and of equal size, each measuring 46 square feet. Exact weights of pure carbonate of lead and of three different qualities of the "Patent White" were weighed out and oil added. A decorator then applied them to the boards with the following results:—

	Covering Power.
The White Lead and oil actually used weighing	9 oz.=100 per cent.
Griffiths's Patent White, marked A, actually used weighing.....	5½ oz.=180 ,,
Griffiths's Patent White, marked B, actually used weighing.....	5 oz.=189 ,,
Griffiths's Patent White, marked C, actually used weighing.....	4½ oz.=236 ,,

The opacity of the lead was manifestly inferior to any of the other three samples. The colour of the boards when covered with Griffiths's paint was of the purest white, the one covered with white-lead looking quite yellow by its side. Then came the question of its permanence of colour, and this was clearly shown by Mr. Griffiths in some further experiments. Boards painted with lead and the "Patent White" were subjected to the action of sulphuretted hydrogen gas, which quickly turned the lead a dark brown or coffee colour, but the "Patent White" was unaffected in the least. The durability of the pigment to resist heat was as fully demonstrated by two pieces of iron being coated with lead and the new white, and then put into a red-hot furnace for a few minutes. The lead entirely disappeared, but "Griffiths's Patent White" came out from this severe test perfect in colour and in substance.

At the *déjeûner* which followed the inspection of the premises,

Mr. Griffiths, the senior partner, presided.

Mr. Chaloner (editor of *Iron*) and Dr. H. C. Bartlett, F.C.S., spoke, from practical experience, in the highest terms of the excellence of the products of the company, as also did a gentleman from the Royal Arsenal, at Woolwich, where these paints are being at present used; and

Mr. Griffiths, responding to a toast given in his honour, said:—I have to thank you on behalf of myself and partners for the honour you have conferred upon us by a visit to our works, and I take it as a proof that you recognise the efforts we are making in the cause of sanitary science. No doubt many of you are aware that this company does not allow poisons of any description to enter into the composition of its paints, and therefore the tenant need have no fear as to the health of his family when the Spring painting begins. The working painter will not be absorbing an accumulative poison into his system, which will undermine his own health and that of his little ones, nor will the men engaged in the manufacture of these pigments shorten their lives as is the sad case in works where lead pigments are produced. I lately heard of one manufacturer in the North of England who confessed that he lost either a man or a woman every week from his works through lead-poisoning. When I first introduced non-poisonous paints, some ten years ago, I had to fight a hard battle against the most deep-rooted prejudice. Nothing but lead would suit the trade or the consumer. The general public were, apparently, of the same way of thinking; but, still I persevered, even against the wishes of my partners at that time, and fought the battle step by step; but it was a hard and, I can assure you, a very expensive struggle. I found my greatest friends were those persons who advocated sanitary reform, and but for them I might have been beaten; still, I persevered, the Press advocating the adoption of my paints from a humanitarian and public health point of view. The beginning of this manufacture was very small. We commenced in a room in Liverpool, with one small hand-mill. After the paints had been thoroughly tested by a few practical men, we took large works in Seel-

street. The goods seemed to grow in favour, thanks to some hard pushing for their introduction, not but what there were plenty of faults in the manufacture of paints made from a new substance like silica, which took time and study to remedy. Another engine and boiler had to be added to these works, and soon afterwards we had to treat with our right-hand neighbour for a part of his premises. This addition, however, proved insufficient, and we had to take supplimentary works close by for the manufacture of the "enamel paints," which I had just before introduced. Seeing the evil results from the manufacture and use of lead paints, I had directed my attention to producing a white that should take the place of lead, and in 1870 and 1871 I commenced experimenting to find some substance that had as much covering power or body as carbonate of lead, and that should be as white, but of a more durable nature, and that could take the place of the poisonous substance used daily in our houses, our churches, our factories, and our ships. I soon after brought out what is now known as "Griffiths's Patent White." It is a zinc, but not an oxide,—it is an oxi-sulphide of that metal,—and has over 100 per cent. more covering properties than either lead or oxide of zinc; the colour is of the purest white, and that colour cannot be attacked by gases, even sulphuretted hydrogen will not affect it; and, above all, it is non-poisonous. As soon as I introduced my new white we found the premises in Seel-street too small, and we had to negotiate with our left-hand neighbour, and eventually took the whole of his block. The business continued to grow, especially the export trade, and we saw there was nothing for it but to build works of our own, and here we are! We have spent close upon 25,000*l.* on these premises in which we are assembled, and we anticipate before long to be compelled to extend still more, as the foreign as well as our own Government are taking to our productions. Amongst other orders we have a contract now for the supply for twelve months of the Imperial Navy of Germany. When the plant for the production of Griffiths's patent white is finished we shall be the largest producers of white pigment in the kingdom: our "output" will be 50 tons per week of this sanitary paint alone, and we shall, I hope, in like proportion help to mitigate those dreadful results arising from lead poisoning reported daily in our Government dockyards and in our hospitals. The French Government during the Exhibition called an International Health Congress, at which about eighteen nationalities were represented; and one of the greatest questions brought forward during that congress by the representatives of the French Government, Messrs. Gabler and Napias, was "how to diminish the dangers incurred by workmen where white-lead and other poisonous substances are employed." They little anticipated at the time that not only could the evils be diminished, but entirely obviated, by a far superior substance; and when Professor Lutchaunig and Dr. Phipson rose and read their papers upon my invention it was hailed with the greatest delight, and caused quite a sensation of relief and pleasure. I had a letter a few days ago from the president of the jury of the International Exhibition informing me that the French Government are sending over a gentleman to inquire into the manufacture of this substance; but, close to Paris, one of my partners has erected works for its production, and in a very short time he will be able to supply "La Belle France" with all she may require. I am now about to retire from active business and from the Company, having seen it well and firmly established, and having had a good many years' very hard work, but I leave behind me good and energetic partners who I know will do everything in their power to extend the sale of non-poisonous paints, and promote the cause of sanitation.*

Cornish Serpentine.—Amidst the prevailing distress in Cornwall it is pleasant to hear that there is one district which has a chance of maintaining its prosperity. The Lizard Serpentine Quarries, which have been closed for two years,—thus depriving the architect of the use of a beautiful polished material,—have lately been re-opened by a practical marble mason in London, and are now in full work.

* We allow the Silicate Paint Co. to insert a pictorial illustration of their new works here described.

BUILDINGS AND THEIR RELATION TO SOUND.

At a meeting of the Musical Association, which was held last Monday evening at their rooms in Harley-street, W., Mr. Cecil C. Saunders read a paper "On the Construction of Buildings in Relation to Sound."

Mr. Saunders said,—The difficulties which beset architects in meeting the requirements demanded of them has always had a tendency to increase rather than diminish with the growth of civilisation. A strong building, which should be impregnable to the attacks of an enemy, or a durable building, which should serve as a monument to the owner's greatness, was once all that was required. Soon, however, the æsthetic feeling began to assert itself, and the beauty of design took an equal, if not a superior, place to the strength and solidity of the structure. After that the additional convenience of light and air had to be considered; buildings were wanted possessing all the durability, space, and magnificence or beauty, as the case might be, and, at the same time, care had to be taken that the health and comfort of those using them were preserved. And now, in regard to a large section of edifices, comprising churches, chapels, lecture-rooms, concert-halls, theatres, and the like, the necessity has arisen for providing hearing accommodation of the best character to the largest number, and, of course, at the least cost. I do not mean that this subject has only of late attracted the attention of those engaged in building; for we know from archæological researches, at least, some of the means that were adopted by ancient nations, but with the growing appreciation of and the desire to hear good music has come in a great measure the modern importance of the subject. Mr. T. Roger Smith, in his work upon the "Acoustics of Public Buildings," says:—"In all branches of architectural practice, but in none so much as in that branch now under consideration, rules and principles never did, never will, and never can, supersede the necessity for intelligence, judgment, tact, experience, and something of intuitive perception in their application. The most successful architects will tell you that their judgment of the probable acoustic effect of this or that arrangement is as much or more the result of a sort of instinct,—a kind of internal perception of what will do or what will not do, as it is of the application of a code of laws or a set of rules." After a sentence such as this, you will readily understand the timidity with which I shall approach anything like a complete reduction of ascertained facts to rules for guidance; but, at the same time, I am not without hope that I may bring some facts before you in such a way as to make them of practical use and service.

The construction of buildings of the class for enabling large numbers of persons at once to hear vocal and instrumental music to the best advantage may be considered under six primary heads or divisions, which, however, can scarcely be treated of entirely separately, inasmuch as they are very intimately associated. They are, —size, shape, proportion, situation of the singer or orchestra, materials employed, and the bearing of all these upon the kind of music to be performed. It is desirous to keep the last in mind during the whole of our investigations. It is obvious, for instance, that a concert-hall might be built in the best possible way, but of such large dimensions that parts of a pianoforte solo would be inaudible to some of the listeners; or, on the other hand, we might fill a room so full, so to speak, of sound as to destroy all pleasure which the audience might have experienced from less. And, then again, there is a great charm in the long continued reverberation to be heard in Westminster Abbey and other buildings of somewhat similar construction. It is difficult to find a building equally well adapted for the hearing by a large number of both slow music and rapid; or, at all events, of both loud and soft. It will be obvious that the size of a concert-room depends more upon the amount of disposable funds than anything else, and it is equally obvious that a small room will not be so liable to acoustical defects as a large one. It should be remembered that every listener must have from five to six square feet in area, and as music should be good, and good music should be heard in comfort, six square feet is not at all too much to give to each seat,—*i.e.*, including passages between one part and another. This will give an area of 6,000 square feet for 1,000 auditors, or 30,000 square feet for 5,000, which, I think, is almost the gr number that can reasonably be expected t good music well. While size depends so upon the consideration of money, the sh a concert-hall is too frequently subserv that of the plot of ground on which it is placed; and here it is that the architect make use of all his ingenuity and the fertility of his resources, in order to obt largest amount of accommodation upon t at his disposal. But, if the fates are unpropitious, the usual shape for a conce is a rather long rectangle; if for a larg ence, galleries are introduced at the en perhaps at the sides, the orchestra placed opposite the end gallery. Nov form, although for a moderate-sized c room it has its advantages, for a larg has serious drawbacks. If it be very large number of the audience are great a distance from the performers th waves of sound, interrupted as they heads and bonnets, do not reach the m tant listeners in anything like their crispness and force. If, on the other ha room is very broad, there is a tendency t as the sound which travels direct to the from the orchestra comes to him also fr side walls by a more circuitous route, gi not an obvious echo, an undefinedness at of decision throughout. This, of course not be the same in all parts of the hal height of the room has also to be con bearing, as it does, directly upon its ac properties, and the height can only be s torily considered in reference to the co the ceiling. What is called a wagon ceiling, *i.e.*, one formed upon a segme circle, might be most distressing to the si if he be placed in the centre from w circle is described he will receive an echo force, which will probably be sufficient vent his exercising his power to the e which he would otherwise have made u As far as I have been able to judge, a room has great disadvantages, part when associated with a high and vaulte In the Chapter-house of Westminster, an octagon, with sides of about 24 ft groined roof, the echo, when the room i repeats itself so perfectly and quic it becomes a prolonged reverberation much so that by singing in moderat succession three or even four notes in the whole chord resounds for a con time. One of the most successful p hearing that I know of, which approa circular shape, is Surrey Chapel, in th friars-road. This has sixteen equal sid gallery all round, and, I believe, was accommodate 1,400 persons. It has wi round it, both above and below the gal roof over the centre portion is hemi with a small lantern at the apex. Th is almost free from echo, but it requires ful voice to fill it.

Great height in a concert-room appe disadvantageous to the hearers, excep a singer feels in a lofty room at such tage as to sing better, or, at all eve more comfort than in a low one. suggest that, having due regard to p perfect ventilation, a concert-room shou higher than is necessary, and, althou are remarkably good concert-halls, w circular ceilings, yet, as a rule, this not appear to be so successful as a fla Writing upon concert-rooms, Mr. H. Statham says:—"As a general ru cannot be really enjoyed in rooms above limit of size, certainly not music delicacy of execution and expression. be doubted whether it is possible to en than 2,000 persons at the outside t orchestral symphony with full enjoy realisation of the intended effect." due respect for Mr. Statham, I feel v inclined to combat his suggestion, a that I have little doubt but that 5,0 in a properly-constructed building, orchestral symphony with full enjoy appreciation of the most delicate p regard to the advantages resulting fro of large concert-halls over that of sm to put the matter upon wider Christian grounds, the humanising i music would be experienced by more in direct proportion to the opportun them of hearing it. In considering concert-rooms, the first question tha "How far the sound designed to be

" By far the greater portion of sound, peak, goes upwards into the air, and but l part is directed towards the hearing A resonant wall or sound reflector, placed ere within the limits of the voice, will he effect of re-enforcing the sound be- it and the speaker or beyond him to some

As to the extraordinary modifying e upon the intensity of sound which is ed by light, this I confess myself unable unt for or to explain. Perhaps when the e force of light is better understood than ent, we shall be able to obtain a scientific for the remarkable fact that I have just

height at which a ceiling should be depends upon the necessity for venti- nd other matters, but, as far as acoustics cerned, I would say a ceiling should be as practicable if the aim be to carry ar in a horizontal direction. Every foot itional height lessens the horizontal e to which the sound can be carried, and iently the number of possible hearers. ld, however, be remembered that the ions between the length, breadth, and of a room have some influence upon its advantages. I am strongly tempted to at in a very large hall the proportions comparative unimportance; and, indeed, e very good concert-rooms the propor- f which are anything but simple; and ally of two rooms of exactly the same ons one is successful and the other the

The position of the performers on the a is one which ought to engage our n, as, although little regard is bestowed usually, a great deal of the possible ulness of a concert-hall is attributable Let us fall back upon a square room unded corners, and, in defiance of pre- ed notions of symmetry, let us put the a in one corner. We will suppose chestra to be capable of seating rformers. Of course, the orchestra nust rise tier above tier up into e of the building. An organ is a very lmost indispensable, adjunct; therefore, ave an organ by all means. But, let ter part of the body of the organ be the orchestra, with say the choir organ ible above, so as to permit the ceiling is low as possible, in order that the tenors and bassos may be diffused per- ver the whole building. Light for the and chorus should be obtained from rner or electric light in the extreme the ceiling, so shaded as to be of the ervice to the performers, but unseen by ence. The light would be thrown from the chorus and orchestra, so as to give he best possible advantage from it. ion would also be gained by the same and by perforations in the ceiling, ribs, nice. By placing the orchestra in the the building, we obviate the difficulties se from its position, either at the end of all, or in the centre of the side of a wide ery few of the auditors could receive a ound, *i.e.*, a direct and an echoed sound, l be the case if the orchestra were put entre of one side of the room; and the distance between the listeners and per- is materially lessened. The auditorium 5,000 persons) may have a circular ment, so as to give every one a direct d therefore a better hearing, of the per-

The circles should be described from near the centre of the orchestra, and ls of the seats should be so arranged as ose sit'ing in the rear should have culty in seeing and hearing over ls of those in front, the seats in the angle opposite to the organ being s high as the top of the orchestra. It adily seen how, under this arrangement, d travelling along, or rather being re- at a very obtuse angle by the ceiling, h those hearers who are at the greatest as clearly as it will those nearer to the ers. As to the materials of the hall, re is necessary in their choice. Regard- do, the ceiling as the greatest means of ffusion and conduction, I would certainly nd wood, the boards being carefully rately tongued and grooved together, so h bay should be one large sounding- Plastering, in the ordinary sense, is the ssible ceiling, and, in fact, is one of the rfect non-conductors of sound used in

An alternative to the use of wood is offered in zinc, which would be nearly as cheap, and perhaps more efficacious even than wood. The ceiling might be divided by circular and radial beams, perforated for ventilation, and reconciling the eye to the somewhat novel distribution of parts in the hall. With regard to the walls and their covering, those immediately at the back of the orchestra should be lined with whatever will give the greatest possible reflection to sound. I believe glass to be as good for this purpose as anything commonly used. I have been surprised at the power possessed by looking-glasses of reflecting sound. Large plates of looking-glasses on the walls adjoining the orchestra would increase the effect as well as the consciousness of power of the performers. The glasses, however, should not be bedded in flannel, as is usual, but allowed to vibrate with every note, reflecting it with the same accuracy as they would a beam of light. With regard to the remainder of the walls, I would recommend boarding or cement. Good Portland is hard and elastic, and although cement can hardly be said to be resonant, it affords a highly reflecting surface for sound. Stone would be better, but its great cost is almost prohibitive.

If solo or quartet performances are contemplated in this model hall, a movable screen behind the players or singers might be arranged, so as to reinforce the sound in its forward direction, and enable the whole audience to enjoy fully the musical treat to be thus offered them. This screen should be of two thicknesses of wood upon quartering, so as to be capable of the greatest possible resonance, and a sounding-board at the top, inclined slightly upwards, would materially assist in the forward direction of the softer and more delicate sound. Many halls are spoilt by excess of reverberation or by echo, *e.g.*, St. George's Hall, Liverpool. A large room when empty always echoes, and the best way of avoiding echo is by a good programme and low prices; but if there is a probability of a sparse audience, part of the hall only should be used, heavy curtains being suspended, wherever necessary, from hooks in the ceiling prepared for the purpose. The lighting of the concert-room is a subject of great importance, and the sources of light should be many in the auditorium, and as near the audience as practicable. Electric lighting is yet in its infancy, but the time may soon come when numerous small carbon points, hanging by almost invisible wires, shall take the place of the present cumbrous gasfittings to which we have to look for light.

"THE PROSPECTS OF A NATIONAL THEATRE."

Under this heading the Theatrical Editor of the *Sunday Times* has made another good effort in favour of a scheme we have much at heart. We reprint some portions of his remarks:—"It is certain that the number of converts to the views of those who advocate a subventioned theatre increases in augmenting ratio, and that some men of importance are yearly added to the cohort that has long fought the battle of an enlightened and an educated stage. At no time since the beginning of the agitation, and, indeed, since a period much earlier—for we are not boasting in saying we were among the first, if not the first, openly to recommend a scheme of the kind—have we ceased to keep the matter before the public, and we have watched the growth of an agitation which Government will before long feel itself bound to respect. One by one leading journals have spoken favourably of the idea. The daily journals have consented to speak patronisingly of those who have worked in its behalf, and more distinctly literary and artistic journals like the *Athenæum* and the *Builder*,—the latter, under the direction of its editor, Mr. G. Godwin, working with special zeal,—have kept the matter prominently before the public."

"Not long since, in a volume by an influential member of the Conservative party, Mr. Baillie Cochrane, the expediency of establishing an institution like the Comédie Française was shown. Private enterprise is interested in the pursuit, and we have more than one scheme before us which aims at obtaining from private liberality what Government is too timid to grant. Mr. Walter Raleigh has published at his own expense a 'Scheme for the Establishment of a National Theatre (somewhat similar to the Comédie Française) by the Formation of a National Dramatic Institute from amongst real and influential patrons of the Dramatic Art and Literature, and eminent Artist(e)s earning their living thereby." In a recent number of the *Builder*, meanwhile, Mr. Planché, the Somerset Herald, one of the most indefatigable workers in this line, has given the world the particulars of a scheme not wholly dissimilar, which must carry all the weight that its author's talent and experience justify in assigning it. We would gladly give Mr. Planché's scheme all possible publicity. The entire reading public of England, however, may see it in the important journal in which it appeared. We should be glad, too, to assist in any way in giving all assistance to the scheme if ever an effort is made to put it into operation. It is not, however, all we want, nor all we think we shall get. We must, of course, be thankful for a sum like 20,000*l.*, which Mr. Planché puts down as adequate for the commencement of an experiment, but only because when once a sum like this is obtained we are sure to obtain more. Still our great faith is in the ultimate success of an appeal to Government if only the agitation is maintained. Payment for an educated stage cannot, of course, be urged upon Government as an urgent necessity, and wider and more enlightened views than are common in high quarters, are necessary before it can be regarded as a thing of high importance. Such, however, it is. It may, meanwhile, be maintained that no movement which has once found such supporters as this of which we speak has ever failed ultimately to commend itself to the general public, and so to come upon Government in the end as a command."

THE STRENGTH OF DIFFERENT THICKNESSES OF MORTAR JOINTS.

In No. 31 of "Professional Papers on Indian Engineering," edited by Major A. M. Brandreth, R.E., particulars are given of some experiments made at Narora, Lower Ganges Canal, on the strength of different thicknesses of mortar joints, by Lieut. E. W. Creswell, R.E.

The different thicknesses of mortar joints to be tested were $\frac{1}{16}$ in., $\frac{1}{8}$ in., $\frac{1}{4}$ in., $\frac{1}{2}$ in., $\frac{3}{4}$ in. A level site close to the weir sluices was selected (as the blocks of brickwork were afterwards to be put into the talus of that work), and five rows of brickwork bars built, 15 ft. × 2 ft. 6 in. × 2 ft. 6 in., each row containing ten bars, and numbered A to E. Mortar joints in row A were all $\frac{1}{16}$ in., in row B $\frac{1}{8}$ in., and so on, in order mentioned above, row E being $\frac{3}{4}$ in. The foundations for these bars were made 1 ft. deep. The centre 10-ft. portion of the foundations being of bricks laid in mud, the end 2 ft. 6 in. portions of bricks laid in mortar, a thin layer of mud was spread over the whole surface of the top of foundation, so that there might be no adhesion whatever between the superstructure and the foundations.

The bricks were sand-moulded kiln-burnt, were carefully gauged and sorted, so that each bar might be built with the required joint, and still the total dimensions of bar as directed be attained. The mortar used was two parts steam ground coal-burnt kankar lime to one part sand, mixed with water in a country bullock "chakki." The joints in every direction were carefully kept of the required thickness, and English bond was employed. The bars were all completed in August, 1877.

In May and June, 1878, the brickwork of the central 10-ft. portion of the foundation was removed, and the bars were simply supported at both ends by the 2 ft. 6 in. pillars. In order to break the bars two stone slabs 2 ft. 6 in. × 6 in. × 6 in. were placed 1 ft. apart on the top of the brickwork and equidistant from the centre of the bar. Across these 2-ft. rails were laid, and over these other rails, till the load caused the bar to break across. The line of rupture varied, but was always somewhere between the slabs of stone. It was observed that the average breaking-weight required was greatest in the row C, or of bars with $\frac{1}{4}$-in. joint; this average diminished slightly for the $\frac{1}{8}$ in., and was less again for the $\frac{1}{16}$-in. joint. The thick joints $\frac{1}{2}$-in. and $\frac{3}{4}$-in. gave very poor results, the average breaking-weight being about two-thirds of that for the $\frac{1}{4}$-in. joint. The bar that gave the highest result was No. 4 B of the $\frac{1}{4}$-in. joint. The general result appears to be that $\frac{1}{4}$-in. joint makes the strongest work, and should be employed in preference to the finer joints.

We may add to the foregoing that if a longer period of time had been allowed to elapse before the trial, the $\frac{1}{2}$-in. and $\frac{3}{4}$-in. joints might possibly have given better results.

THE BRONZE PANELS AT CARPENTERS' HALL.

The prizes offered by the Carpenters' Company have been awarded. The sunk panels, proposed to be filled with bronze castings, are in the north front of their new hall (a view of which appeared in our last volume) at the corner of London-wall and Throgmorton-avenue. Rusticated piers support the large Corinthian columns which go round the upper part of the building. The panels are on the faces of these piers, the field of the panel being 2 ft. 4 in. and the height over 13 ft., depth 8 in. Heads of Wykeham, Michelangelo, Inigo Jones, and Wren occupy keystones of the lower windows, and supply the only figure sculpture on the façade at present. The problem was left wholly to the designers; the only suggestion being that the lower parts of the panels, which start at about 6 ft. above the pavement, should be kept plain, so as not to tempt boys to damage them.

The first prize has been gained by Messrs. Cox & Sons, who submitted two designs. The selected one begins at the top with the arms of the company; then has compasses, square, rule, hammer, &c.; below these is a figure-panel with a workman adjusting a plane, and another fixing a panel; a small medallion of Wren is interposed before the branching foliage at the bottom is reached. Much modification in the design will be necessary in execution, in order to suit the large scale of the rusticated piers and of the stone mouldings. The drawing is clever, and the design is fitted for casting in bronze.

The second prize has been gained by Mr. Matthew Coulson. His designs are of considerable vigour, and shown by able drawings in brown colour, with cast shadows in grey. The semicircular top of the panel is filled with a large human mask,—perhaps rather out of place, as there are portrait-heads just above. Then come mitre-boxes, centre-bits, compasses, chisels, and other tools, strung together on drapery hanging from the chin of the mask. The frequent occurrence of objects in high relief, in front of objects in high relief, the ledges for lodgment of water, and generally the difficulties of turning the design into bronze, are probably not so noticeable in a drawing as they would be when modelling was begun. The use of bronze in a London building in this way is probably a first experiment, and something will be learnt when it is made,—the stone architecture can hardly be left untouched elsewhere, when these pieces of dark metal have been cut into the basement piers. This was not, however, the problem submitted to the designers in the competition; they had to design panels for the basement of a building massive to heaviness in its detail, to give a treatment bold and rigid,—thoroughly metallic; showing also distinct consideration of the lines and character of the architecture. It would be too much to say that all the competitors failed; it is enough to note that the successful ones have not wholly succeeded.

METROPOLITAN BUILDINGS.

On Monday a large deputation of the Metropolitan and Suburban Builders' Association, headed by Sir James Lawrence, M.P., and Mr. Octavius E. Coope, M.P., had an interview with Mr. Cross (with whom was Mr. Lushington), at the Home Office, Whitehall, to present a memorial, praying the Home Secretary not to approve the bye-laws passed by the Metropolitan Board of Works for carrying out the Metropolis Management and Building Acts Amendment Act, 1878, on the ground that the bye-laws were vexatious to the building trade, and would prevent in the future the erection of artisans' dwellings.

The deputation, it was said, did not represent the large builders, but the men who by their brains had made their own way. Sir James Lawrence declared that some of the bye-laws made by the Metropolitan Board to govern the erection of buildings were impracticable, and it would be impossible to carry them out. He objected to the rules that concrete was to be used in all cases under walls, and that the filling up of holes under houses to be built was to be with "hard brick rubbish, or other similar material." He also objected to the provision that "good square, sound, and well-burnt bricks" should be used for the internal walls as well as for the external walls, and to the regulations for the composition of the mortar,—"good lime and clean, sharp sand, which has been properly washed, or grit, in the proportion of one of lime to three of sand or grit;" and he regarded the rules as placing unnecessary restrictions upon builders. He also criticised the powers given to the district surveyors under the rules. Mr. Coope said he held that it was important that houses for the working classes should not only be constructed with a due regard to the necessities of health, but that they should be cheap, in order that rents should be kept down. He knew that in some parts of London houses had been so built that it was impossible they could be healthy dwellings; but he thought that consideration should be given to the point that while care was taken to guard against such erections, there should not be rules to prevent the erection of cheap houses for the poorer classes.

Mr. Goulding declared that if the bye-laws were enforced the increase in the cost of brickwork would be 15 per cent. on its present price. As it was, the trade had to compete severely with foreign importations of building materials, and these laws would make that competition keener still. Especially was that so as regarded the use of sand in making up mortar. They would greatly limit the supply of 20*l.* a-year houses. He complained of the large powers the laws vested in the district surveyors, and particularly asked that section 2 might be altered to meet that complaint. At present, if the surveyor found fault with the site on which a house was to be built, he was entitled to an extra fee for doing so; and such laws only held out an inducement to the surveyors to find fault with work whether there was occasion for it or not. He urged, also, that magistrates should not be fettered as the laws proposed in regard to the infliction of minimum fines, but that the matter should be left to his absolute control as to whether he would fine or not. He asked Mr. Cross to use his influence in the matter, and return the bye-laws to the Metropolitan Board of Works.

The Home Secretary answered,—All I can say is, of course the Metropolitan Board of Works, in the exercise of their discretion, have prepared these bye-laws for my consideration, which under their statutes and powers they have a right to do, for the purpose of securing the safety and the health of the people under the Act in question. Whether the objections you raise to any of those bye-laws show that they are too stringent for those purposes for which we have given the Board powers is the question which we will give our consideration to. More than that at present we cannot say.

The deputation then retired.

BYRON'S STATUE AND THE ST. GEORGE'S (HANOVER SQUARE) VESTRY.

The name and genius of Byron were rather freely handled at the last meeting of the St. George's Vestry in connexion with the statue proposed to be erected to the memory of the poet. The Committee of the Works of the Vestry had recommended that an application from the Earl of Rosslyn for permission to put the national memorial statue of Byron on the spot now occupied by "Pierrepoint's Refuge" at the top of St. James's-street, be complied with, and Mr. Walker, in moving the adoption of the report, said that there had been some opposition manifested on theological grounds, and also because the statue would narrow the roadway. He considered, however, that it would be an ornament to the parish. The motion having been seconded, a long and rather acrimonious discussion followed on the matter, in the course which several speakers opposed the proposal.

Mr. Johnson said inhabitants of the neighbourhood complained that the statue would obstruct the traffic. The base would be of marble, and was a present of the Greek Government.

Amongst the speakers in opposition was Mr. Morris, who said he thought it would be a decided block, and he objected to a refuge erected by a philanthropist being replaced by a statue of a misanthropist, and thought the best place for it would be the middle of Seven Dials.

Earl Powis supported the motion, contending that the question of theology should not be imported into the discussion.

The motion was eventually lost, twenty voting for it, and thirty-three against it. Consequently, as matters stand at present, another site will have to be found for the statue.

We have no hesitation in saying that we quite agree with the majority, on the singl sufficient ground that there is not room statue at the place named, and that it there be a most injurious obstruction. T in Piccadilly previously named for it, ta a small portion of the Green Park, wou much better place for it.

OBITUARY.

Miss Eliza Meteyard, author of the "Wedgwood," and other works, died residence in Stanley-place, South Lamb the 4th inst., aged 63. She was the d of Mr. Meteyard, a surgeon practising at S bury. Her first work, "Struggles for was published in 1845, and was followed by a prize essay on "Juvenile Depravity. published in succession several stories, a tributed a leading article to the first nu *Douglas Jerrold's Newspaper*, and himself appended to that article the si of "Silverpen," under which *nom de plu* Meteyard contributed extensively to metropolitan newspapers and magazin addition to her charming stories enforc domestic virtues, she also wrote on ext burials at a time when public cemeteri few and far between, and took her plac ranks of sanitary reformers when sanitary was less fashionable than it is at the pres But Miss Meteyard's *magnum opus* doubtedly her "Life of Josiah Wedgw which she embodied the results of many y telligent and painstaking research, carrie an absorbing enthusiasm for all that re the great potter. The "Life of Wedgwo succeeded in 1871 by "A Group of Engli in which the story of the younger We and their friends was told; and in peared the "Wedgwood Handbook." other works, illustrated, describing We choicest productions, have also employ Meteyard's pen, and her death has int a new edition of the "Life," from whi was expected, and to the completion of looked forward with zest for the repo was to follow. Her literary labou recognised by Mr. Gladstone, upon who she was awarded a pension of 60*l.*, afterwards increased, in response t influential memorial, by the present Go to 100*l.* per annum. Dean Stanley al at her disposal the cottage in which resided for the last two years.

A fortnight before Miss Meteyard's death we received a letter from her a formation as to the Literary Fund for who had fallen into trouble, and adding will have seen, I dare say, the announc the death of my valued old friend Howitt. The Howitts formed an int of my life for many years, and there sorry that the first link in the chain His wife, should I survive her, I much. You and I are younger, still begin to recognise that our generation away; not regretfully, however. done our work to the best of our ab need not regret to give up to newer newer time those causes for which laboured."

Mr. R. G. Hatfield.—The death of Hatfield, architect, of the United announced. The following minute adop trustees of the American Institute of will serve to show the estimation in Hatfield was held:—"The Board of assembled for the first time since desires to express in a public manne of regret at the loss which, through of its chairman, R. G. Hatfield, esq., the the architectural profession of this the public have sustained. To Mr. untiring interest in the conduct of of the Institute, a large measure of and influence was due, and his honourable practice of architecture small weight in establishing the pos the profession now enjoys. The trustees gratefully calls to mind th all Mr. Hatfield's intercourse with it have been marked with uniform co that his temperate counsel and consid won from them an unqualified r respect."

Sir Anthony Panizzi, formerly and years principal librarian at the Briti died at his residence, 31, Bloomsbury Tuesday afternoon, in his 82nd year.

CITY OF LONDON SCHOOL.

is,—I trust you will do your best to in-
ce the Committee in favour of a public
bition of the drawings, &c., both before and
the selection, in accordance with the Insti-
suggestions. Few of us know what our
gonists have done,—we should much like to
r,—and do not see any good reason why we
ld not have that small enjoyment as a
rd (perhaps the sole reward) for our labours.
ne supposes there is going to be any unfair
ng, so that argument need not be urged.
rust you will be able to notice our work
e the selection is made. Press notices are
nfallible, but they are very consoling to
petitors. A kindly acute critic used to the
, looks keenly at everything, and says
he must say, and gives as much satisfac-
as any one can hope to give who has
ed opinions, and knows how to make them
to other people. I say nothing lengthy
t modest merit, and the word of appre-
n in season,—those interesting fields have
worked over a little too zealously. Modest
is hardly likely to have covered so large
mount of double elephant in the time
red; but even middle-aged men of business
o see their virtues noticed in print by some
whose words are weighted with knowledge.
the appointment of a professional referee,
haracter of the building seems absolutely
mand it. There are so many cardinal
s. The position of the great hall and
evel of its floor, for instance, have no doubt
mined the arrangement of many designs,
perly, should have ruled them all. Settling
ways into this hall and out of it is one of
most important problems recently set to
tects for solution. A large portion of the
le-class schools yet to be built will be
ed by the decision in this case. Then the
ruction of a special type of class-room, and
petition twenty times, and the introduction
rtain places of special differences; the
om of placing the main entrance rightly,
reference to the interior, it being the single
nce to the whole building; the influence of
djoining buildings, of their altitude and
; the overlooking windows on the east
lary of the site; the use of the subway
anding-stage; the drainage as affecting the
levels;—these, and a host, indeed, of
ical difficulties as well, need to be appre-
d clearly. It seems unreasonable to expect
ne, except a professional person, to grasp
think of all at once, in the way that is
sary in order to decide which will be the
building for the purpose when executed on
te.

rhaps a word of apology ought to be put in
after your judicious warning and protest,
shing madly into this contest, and spend-
nergy and money without stint upon it.
money calculation, every word you have
is sober truth, and the folly of our pro-
n in not rendering such things impossible,
lemn compact among ourselves, is some-
dreadful to think of. But the desire
ke part in such a contest is a little too
g to be resisted by the aid of sound sense
good advice. To deal with a problem
ling so many problems,—to have the hope
uencing many decisions in the future in the
of secondary education,—this sort of thing
ury in its way, and, apparently, must be
ly paid for, or dispensed with altogether.
t a reformer may arise who will secure
luxury to architects at a reasonable price
earnest wish of

A Competitor
In the City of London School Competition.

yal Institution.—The Friday evening
er last week was Mr. Crookes, F.R.S, the
or of the radiometer, and a large and
nt audience assembled to hear him. Mr.
es laid before them a remarkable series of
iments in a remarkably perfect way,
g mainly to the passage of the electric
t through a vacuum equal to about a
nth of an atmosphere, and showing the
t to which the current is amenable to a
et applied outside the vessel. The ex-
ents, results of long investigations, are
he less interesting because the lecturer
ompelled to admit at the close that the
cal applications of the facts established
ot at present obvious. These are usually
ork of succeeding labourers.

PROPOSED EXPERIMENTS ON COWLS.

The sub-committee appointed to test the cowls exhibited at Leamington made a report, it will be remembered, which called forth many opposing statements, as well in our pages as elsewhere. It is proposed to extend the inquiry to other appliances for ventilation besides those already submitted to trial, and by permission of the Royal Society the experiments will be carried out at the Royal Observatory, Kew.

The council of the Sanitary Institute have passed a resolution appointing Capt. Douglas Galton, C.B.; Mr. Rogers Field, B.A.; and Mr. W. Eassie, C.E., as a committee to undertake such investigation with a view to the publication of the detailed results. The expense of the contemplated inquiry will be considerable, and it is sought to raise the requisite fund by special subscription among those interested in the thorough investigation of the subject. Subscribers of a guinea and upwards will be entitled to receive a copy of the details of the experiments when published. About 170*l.* are already subscribed.

Our chief object in mentioning this intention is to suggest that persons interested in the investigation who have any useful suggestions to make on the subject should communicate with the committee so as to assist in obtaining a satisfactory and useful investigation. It will scarcely be claimed that the "Sanitary Institute of Great Britain," so called, has the confidence of any large section of the public, but the gentlemen named for the present inquiry are competent and reliable persons, and it is very desirable that the investigation they are about to make should be conducted in the way most likely to obtain valuable results.

COMPETITIONS.

Ipswich Corn Exchange.—The corporation of Ipswich having offered a premium of fifty guineas for the best set of plans for the rearrangement of the Public Hall, so as to enable it to be used as a Corn Exchange, seven architects responded, and from the plans sent in the committee selected the set bearing the motto, "Tria Juncta in Uno," and the town council has resolved that the premium be awarded to that design. It was found, on breaking open the envelope accompanying the design, that the successful competitor is Mr. Horace Cheston, of Great Winchester-buildings, London. By this plan it is proposed to lengthen the present hall to the southward, making it 150 ft. in length, so as to secure an area of 7,550 superficial feet. This would necessitate the removal of the present saloon, and also the acquirement of a triangular strip of land adjacent. At the back of the stage, at the south end of the enlarged hall, is provided a "crush"-room, with cloak-room, &c., and above it a saloon similar to that now existing. The other competitors were Mr. William Eade, Ipswich (motto, "Utility and Economy"); Mr. Brightwen Binyon, Ipswich ("Bona Fides"); Messrs. Wright & Wright, Ipswich ("Postulata"); Mr. Henry Luff, Ipswich ("Economy"); Mr. Henry Elliott, London ("Excelsior"); and Messrs. Scott, Gibby, & Barnard, London ("Grosvenor").

Ipswich Museum, Free Library, and School of Science and Art Buildings.—The Museum Committee of the Town Council have decided to invite architects to send in competitive designs for their proposed new buildings. The Museum, in one or more rooms, is to have an approximate area of 4,400 square feet. The free library is to consist of library with 1,000 square feet area, a reading-room of equal size, and a committee-room of 450 square feet area. The School of Science is to have a laboratory of 550 feet area, stores of 125 ft., class-room 800 ft., with master's preparation-room adjoining, 225 ft. The School of Art is to consist of elementary class-room 600 ft., advanced class-room 750 ft., and painting-room 500 ft., communicating and divided by curtains, ladies' and gentlemen's cloak-rooms, each 100 ft., rooms for models, casts, &c., 300 ft., and master's room 180 ft. The principal elevation is to be toward High-street. The estimate of the cost is not to exceed 7,000*l.* For the best design a premium of 50*l.* is offered, to merge in the commission if the author be employed to carry out the work; for the second best design a premium of 25*l.* is offered.

Blundell's School, Tiverton.—The Governors, at a recent meeting, selected the plan submitted by Messrs. Hayward & Son, Exeter, for the erection of new buildings at Horsdon, subject to the condition that the work could be executed within the sum specified,—11,000*l.*

Kenilworth Sewerage Works.—The Local Board of Health of Kenilworth have awarded to Mr. G. A. Lundie, C.E., Cardiff, the first premium of 50*l.* for his scheme for the sewering of the town. The works are estimated to cost about 5,000*l.*, and the sewage is proposed to be dealt with on eight acres of land by intermittent downward filtration. The Local Board advertised for plans, and there were twenty competitors.

THE "JERRY" BUILDER.

"Hit him hard!" "Why not?" may be remarked. "He has no friends. Is he not a 'speculating' or 'jerry' builder? Does he not use mud for mortar, build on ashes, make bad drains, employ 'hedge carpenters' and 'baa-lamb sashmakers,' put on locks that will not act, use 'veaumonteague' and other villanous dodges for hiding inferior work? Does he not get shown up in *Fun* and other comic papers? Is he not the terror of district surveyors, the despair of local Boards, and his very name a bye-word and reproach? Does he not——" "Stop, my friend; not quite so fast. I grant you my friend the 'jerry' builder is the cause of much discomfort and disappointment both to occupiers and purchasers of houses, but whilst he has probably made some lunatics, a few suicides, and hurried numbers to untimely graves, by fevers caught through defective drains, or colds from terrific draughts, he is at times as much sinned against as sinning, having been educated up to his present depraved condition by those in the background who should know better. Besides, think of those he has benefited, of the scheming landowners he has made happy, who can, as they recline in easy chairs, in well-appointed mansions (not erected by 'Fielders,' but built in the best manner), with calm delight mentally view the terrace of houses, the 'attractive villas,' now standing where before a waste howling wilderness only existed, and which, at high ground-rents, will, badly built as they are, last quite long enough for *their* purpose." Yes, this is the reason why so much speculative rubbish is "run up." Too much encouragement is given for the covering of land, in many cases with houses scarcely subject to a surveyor's certificate for the lease. The sites not unfrequently carefully prepared for years as a rubbish-shoot for the crop of houses to afterwards spring forth.

No conscientious surveyor will, of course, lend his aid to further such schemes, and I remember with pleasure that many years since I was associated with a gentleman who resigned his appointment because his client, in an unreasonable haste to cover his estate, would pass inferior work against his surveyor's advice. Would this example were taken to heart by those who are "their own surveyors": the result would be most satisfactory, and much bad building would be prevented. Then, look at the system of advances made to sometimes really worthy industrious men, who, having a little capital, are coached along for a time, and finally squeezed dry by wealthy proprietors of the soil; often resulting in the victim dying broken-hearted at seeing his savings and years of labour expended in vain; or, should he get over the disappointment, who can wonder at his becoming a "jerry" builder of the worst type, and doing to others as he has been done by?

Those of your readers who are practical men will at a glance realise the truth of the above remarks, and any effort made to get at the root of the evil will much please

One who would put the Saddle on the Right Horse.

Mr. J. H. Parker, C.B., of the Ashmolean Museum, Oxford, has received from his Excellency the Italian Minister, General Menabrea, the gratifying announcement that his Majesty the King of Italy had appointed him Cavaliere of the Order of SS. Maurice and Lazarus, in recognition of his ingenious and learned researches in recovering the true history and topography of ancient Rome, from its ruins and old Roman traditions, instead of following some recent extravagances of other archæologists, which denied the existence even of the Kings of Rome.

NEW SUBURBAN BUILDINGS AT WANDSWORTH.

About 100 acres of land at Wandsworth, situated between Wandsworth Prison and Garrett-lane, is immediately to be laid out for the erection of villa residences. This land was recently purchased for the purpose by Mr. Robert Davis, of Earlsfield House, Wandsworth Common, and the preliminary step of draining the estate and laying out the roads is just about to be taken, the making of the principal road,—which is to be called Earlsfield-road,—and drainage works in connexion having been contracted for by Messrs. R. & G. Neal, of Wandsworth, for the sum of 5,266*l.* The designs and plans for laying out the estate have been prepared by Mr. T. G. Lynes, architect, and according to these designs the buildings to be erected will be confined to residences of the villa class, the estimated cost of which is about 1,000*l.* They are all to have frontages of about 40 ft., with grounds in the rear, extending to a depth of some 200 ft., each house standing within grounds about a quarter of an acre in extent. When completed, we understand that the estate will contain about 300 of the residences indicated above.

SALE OF A BUILDING ESTATE.

One of the largest sales of building land within the metropolitan area which has for some time past been held, took place at the Auction Mart last week, when Messrs. Baker & Sons offered upwards of 100 acres of land at Willesden, comprising the freehold estate of the late Mr. Richard Taylor, and which was described in the particulars as being situated within a few minutes' walk of Willesden Junction and the Harrow-road station of the Midland Railway, with extensive frontages, and ripe for development for building. The property was divided into eight lots, the first lot consisting of a freehold cottage, together with two acres and two roods of land, and which was sold for 1,610*l.* The second lot, consisting of a large and commodious farmhouse, together with twenty-seven acres of land, realised 10,990*l.* Lot three, containing three roods of building land, was sold for 950*l.* The next lot, containing an area of a little more than six acres, opposite to the Harrow-road station of the Midland Railway, and which, the particulars stated, could be at once profitably utilised for building, realised 3,480*l.* Lot five, immediately adjoining the last-named lot, and containing eleven acres, said to be ready for immediate building operations, was sold for 5,500*l.* Lots six and seven, containing respectively twenty-four acres and twenty-six acres of meadow land, were bought in, the one lot at 6,600*l.* and the other for 7,000*l.* The last lot, which was a small one, containing little more than half an acre of meadow land, was sold for 300*l.* The aggregate area of the lots sold was about forty-eight acres, and the proceeds, 22,830*l.*

"SUPERFLUOUS LAND."

THE METROPOLITAN DISTRICT RAILWAY COMPANY AND COST.

This was a summons (in the Chancery Division) under the Vendors and Purchasers Act, raising a curious question of railway law upon the sale of the surface of land contiguous to Hammersmith Station, over the railway, for the purpose of building, and subject to certain restrictions. The property was sold as superfluous land, and the question at issue was whether the vertical slices over the railway were superfluous land within the meaning of the Lands Clauses Consolidation Act, the only Act under which the company was authorised to sell. It may be remembered that a short time since the converse case was argued before the Master of the Rolls, -namely, whether a railway company could part with a right of way under arches over which the line was built, and his lordship refused to interfere in favour of a person who claimed such right under a guarantee from the company.

Mr. Glasse, Q.C., and Mr. Strickland appeared for the purchaser, who disputed the power of the company to make a title; Mr. Pearson, Q.C., and Mr. Samuel Roberts for the company.

His Lordship held "superfluous land" meant land which carried with the ownership of it the right to the soil to the middle of the earth, and all rights of property to the sky above. However convenient it was that the arch over the railway should be built over, no title could be made.

THE ADVERTISEMENT HOARDINGS AND THE LIMEHOUSE VESTRY.

It incidentally transpired at the last meeting of the Limehouse Vestry that the Vestry intend to discountenance advertisement hoardings in the building of their new vestry-hall, which has just been commenced.

Mr. Whitford, the senior overseer, said the overseers and churchwardens were strong in their objections to hoardings of this character, and to the unfair evasion of their assessment, and although they could have got a good sum by letting the hoarding around the site of the new vestry-hall, they would not set a bad example, and therefore refused the offer. The question of assessing these advertisement hoardings in the parish was also discussed, in the course of which it was stated that with regard to the proceedings which had been taken the overseers found there was a difficulty, and that a similar question had been tried in another parish, and the decision of the Court of Queen's Bench was adverse.

Mr. Potto said the question was an important one, for many of the best sites in London were disfigured by these unsightly hoardings, which were let for large sums, and were a great source of profit to the owners.

The Chairman said the Metropolitan Board of Works had appreciated the difficulty, and had sought powers to rate hoardings under their new Buildings Act Amendment Bill.

UNDER THE METROPOLITAN BUILDING ACT.

A summons against the Junior United Service Club, taken out by the Metropolitan Board of Works, was heard the other day at Marlborough-street Police Court.

Mr. Napier appeared on behalf of the Board, and stated that the summons was taken out against the trustees of the Club for having erected a wrought-iron ventilating shaft from the kitchen to the roof of the building, a height of about 40 ft., and for having fixed the same against the walls in an insecure manner, so as to cause it to be a dangerous structure under the Act.

Mr. Griffiths appeared on the part of the Club, and admitted that no notice had been given to the district surveyor, nor had special application been made as required by law.

Mr. Kerr, the district surveyor, deposed that the structure was of a dangerous nature.

Some technical matters having been discussed by the magistrate and the professional gentlemen,

Mr. Newton, at the conclusion, suggested that, as the defendants had not complied with the law and were liable for penalties, the matter shou'd stand adjourned for a fortnight to give time for the necessary precautions to be carried out.

The suggestion was agreed to by all parties concerned.

MASTERS AND MEN.

Chester.—On Saturday last several hundred men employed by the Chester Hydraulic Engineering Company went out on strike. The men recently submitted to a reduction of 2s. a week from those receiving over 30s., and 1s. from those receiving 20s. and under 30s.; but last week notice was given by the managing partner of the firm of an intention to introduce rules which the men consider obnoxious, particularly in the matter of piecework. Failing to obtain a modification, the men gave a week's notice, on the expiration of which they stopped work *en masse*.

Dowlais.—A reduction in wages to the extent of 7½ to 10 per cent. has been made at Dowlais Ironworks. It will affect nearly 2,000 men.

Ashton.—The strike of bricklayers and stonemasons in Ashton and the neighbourhood is practically at an end, the masters having filled up nearly all the vacant places with workmen from other districts at the reduced wages.

Employers and Trade Unions.—The annual meeting of the London Trades' Council was held on the 5th inst., at the Rose Tavern, Old Bailey, when the yearly report of the council was read by the secretary, Mr. George Shipton. It set forth that depression in many branches of industry had been intensified and continued throughout the past year; that it was scarcely to be expected that workmen, while wanting bread for their families, could maintain the subscriptions to their societies, and it was no matter for surprise, therefore, that the number of members in the association should be less than was the case twelve months ago. It was probable that some unions, through the exceptional call upon their funds, had had great difficul keeping together. Yet, notwithstanding obstacles, they had connected with the c at the close of the year fifty-five societies, three distinct trades, and 16,576 members metropolitan districts. With regard t pression in our industries, statements in instances had been greatly exaggerated, a ing employers an excuse for lowering the of workpeople and to clamour for an exte of the hours of toil. This had been do those employers whose business it was had an increasing and exceptional demanc who had been able to obtain almost fancy for their work. In plenty of cases withi council's knowledge many employers lond their demand for a reduction of wages immensely reduced rates for the raw ma but had not reduced one jot their pric manufactured articles. In fact, many emp were making as great, and in some ins larger profits than in times of general pros The effort to lower wages had over an again been shown to be unwarrantable, a reasons for doing so were without the least fo tion. It was, therefore, the imperative d the industrial population to draw more and firmly together for mutual protecti the prospect of labour was gloomy i After re-electing Mr. Shipton as secreta the ensuing year, the meeting unanir passed a resolution expressing sympath the engineers now on strike "in resisti employers' imposition of an unjust and un sary reduction of wages," and trustec London trade societies would join the and assist to form an effectual protection interests of labour.

CLOCKS AND BELLS.

Earl Stonham.—The bells in the tower Stonham Church have recently been reh Messrs. George Day & Son, church bellh Eye, Suffolk.

Maidstone.—A clock and bell have ju placed in the tower of St. Philip's Maidstone. They are the productions of Gillett, Bland, & Co., of the Steam Clock and Bell Foundry, Croydon. The clock the hours upon a bell of 8 cwt. 2 qr. 17 shows the time upon three 5 ft. 6 in. iron dials, the figures and minutes bei The clock is so constructed that chimes added at any future time.

VARIORUM.

"The Grammar of Lithography" (W Sons) is a practical guide for the ar printer in commercial and artistic lith and chromo-lithography, photo-lithogra lithographic printing. It is the work o petent practical man, Mr. W. D. Richm the information given may be depended connexion with this work we may ment there are some points wherein lith possesses distinct advantages over lithography for the purposes of the arch draughtsman. If drawings be ma transfer tracing-paper, as described in VII., they may be transferred with a re much inferior to drawings direct up The draughtsman may be his own litho and instead of elaborating his perspect Whatman paper, may do it upon the lith tracing-paper without waiting for the bri light, so necessary for the photo-lith process. For some work he may dr ordinary stout glazed writing-paper w graphic ink, and have it transferred to zinc, according to the nature of the w In the new "Hand-book of the Bible," be published by Messrs. Longmans, the chronological, and metrological parts of will be from the pen of Mr. Conder, w tributions to the *Edinburgh Review*, *Magazine*, and the *University Magazine* jects connected with Talmudic and literature are well known to students matters. The topography, and account ners and customs, are written by Lieut R.E., the author of "Tent Work in P Complete tables of the measures and of Syria will be given in the work, and the tural relics of the country will be descr The April number of the *Nineteenth* remarkable, the writer of every arti eminent. Mr. Tennyson's poem, what be the opinion of it as compared w

by the same hand, will sell several edi- of the number. Mrs. E. I. Barrington es the question, "Is a great School of sible in the present Day?" and obligingly s to the opinion that it is.——The *Lancet*, g of the sanitary state of St. Petersburg, —"At a recent meeting of the munici- of St. Peterburg, the question of cleans- city was under consideration. From the lings of the meeting, it would appear e large sums devoted annually to such of cleansing as were executed, were spent wholly upon the streets and open places, he maintenance, in fact, of a neat and appearance of the city, and not upon entials of the removal of domestic filth. as the latter form of cleansing was d, it had to be done at the cost of the olders. As a consequence, very much of cious matters inevitably formed in in- l places found a way into the canals of , canals from which ice is collected for servation of provisions, and for using with ; the wharfs, moreover, were, in effect, rivies, from which the filth also got e into the canals. Now, it happens that derable proportion of the population of y has no other water-supply than what ed from these canals, which are, in fact, containing, moreover, as it would appear, at strong sewage. The augmentation of s and mortality in the city at the gh of spring has arrested the attention of peror, and it is assigned to the anxiety as been displayed by the municipality the streets of snow."

Miscellanea.

tmen's Perquisites: "Tots."—The Collins *v.* The Vestry of Paddington, the Queen's Bench Division, before the hief Justice and Mr. Justice Mellor, on inst., and which may be known hereafter 'dustman's case," raised a rather nice n as to what is included in dustmen's ts to carry away ashes, dirt, refuse, and . The case had arisen in this way:— intiff had entered into a contract with stry to take all the dust, ashes, and which should be collected and removed m, within the parish for a year, which ld to him for the sum of 6d. a cartload, y contracted with him that they would expense deliver and deposit the breeze, on a brickfield of his at Shepherd's-bush. stry collected the contents of the dust- d it was the duty of their men to take tents of the dustbins out of the bins, put nto carts sent by the Vestry, and then em to the brickfield. The contents of tbins consist chiefly of cinders and ashes sweepings of the houses; but they also a number of articles of more or less hrown away by the occupiers of the or their servants. The dust-heap accu- d in the brickfield would, at some time or e sifted, in order to separate the cinder, and ashes, which are used in brick- . In the course of this process the in question, which in the business are as "tots," are separated, and those of ne kind being collected together are , and upon a large contract like the are of considerable value. The articles a very miscellaneous kind; but among t valuable are broken white glass, bones, of iron, lead, and other metals, and andles. Throughout the period covered contract the dustmen employed by the in collecting the contents of the bins ore or less in the habit of picking over ents of the bins, of abstracting portions ore valuable articles, of putting them ks of their own, and of selling the so abstracted for their own benefit. The or at the close of the year, having paid ry 300*l.*, brought an action to recover e Vestry a sum of 1,500*l.*, the alleged these "tots" during the same period, being that they were withheld from the dustmen of the Vestry, and that the were responsible to him for the value. stry denied any such liability, and the ave judgment in their favour.

emale Surveyor of Roads.—In the e Division of the East Riding of York- magistrates have appointed Mrs. Ann as surveyor of roads for the parish of rindalyth, on the Wolds.

The Building Trade in Edinburgh, according to the *Edinburgh Property Review*, continues in a very depressed state. "With the exception of the New Medical School, St. Mary's Cathedral, and a few other and much smaller buildings, little work is going on, and the consequence is that large numbers of men are going about idle. The mason-work at the Infirmary being nearly finished, and the erection of several tenements having been abruptly stopped for want of funds to complete them,—the banks and investment companies declining at present to make any further advances,—the immediate prospect, after a long and exceptionally severe winter, is one of the gloomiest. Stone-dressing machinery being in use at the larger works, there is not, even at the best, so great a demand for manual labour as formerly. The men are, in many cases, suffering great hardship; and an endeavour is being made to induce the executive of their trade society to vote 2,000*l.* or 3,000*l.* for the purpose of sending a thousand of them to the colonies, with the view of bettering their condition, and at the same time relieving the market of so much surplus labour. The wages of those in employment range from 6d. to 7d. an hour; but we are informed that many good workmen, to secure employment, are offering themselves under these rates. It is hoped that, with better weather, matters may soon assume a more favourable aspect."

Proposed Smithfield Flower Market.—At a meeting of the Court of Common Council, held at the Guildhall, the Lord Mayor presiding, Mr. Isaacs, chairman of the Markets Committee, stated that the ground-plans of the new fruit, flower, and vegetable market at Smithfield were ready, and those for the superstructure would be ready shortly. Mr. Lusher presented a petition from the inhabitants of the ward of Farringdon Within, asking the Court to take such immediate steps as might be necessary to carry out the provisions of the Holborn Valley Improvement Act, and to take the necessary steps for the erection of dwellings and lodging-houses for the poorer classes upon some portion of the vacant sites belonging to the Corporation. Mr. Bedford, in supporting a resolution to refer the petition to the Improvement Committee, urged that the Corporation had not erected a sufficient number of dwellings. The dwellings they now had accommodated 1,000 persons, who paid 4 per cent. on the outlay incurred in the erection of the houses, while the Corporation borrowed the money at 3½ per cent. There was, therefore, no expense to the Corporation in the matter. That was a great contrast to the proceedings in connexion with the Golden-lane scheme under the Artisans' and Labourers' Dwellings Act, where the cost to the ratepayers of removing the present houses and erecting others would average 200*l.* per head for every man, woman, and child accommodated. The motion was carried.

The Ideal Dwelling House.—The last but one of the Mayfair Drawing-room series of lectures was delivered by Mr. Ernest Turner, architect, on the 3rd inst. in the presence of H.R.H. the Princess Mary of Cambridge and a fashionable audience. The lecturer gave examples, illustrated by diagrams, of sanitary defects too commonly found. Methods of excluding sewer air from dwelling-houses without recourse to expensive patents were described. After calling attention to statistics proving the importance of the subject, and its bearing upon the well-being of the community, practical suggestions were made with regard to the improvement of the drainage, water supply, warming and lighting of existing houses. A simple method of preventing water from freezing in cisterns, by means of a branch from the expansion pipe of the hot-water cistern, was shown. The dangers to health arising from dust-bins were alluded to, and the system of collecting dust in London was condemned. The National Health Society propose organising a series of lectures to working plumbers. Suggestions should be sent to the Secretary, 44, Berners-street.

Sanitary Appliances.—The annual meeting of the British Medical Association will be held this year in the Queen's College, Cork. We understand the new plant-houses have been set apart for an exhibition of sanitary appliances and inventions of a hygienic or engineering interest, the management of which is in the hands of a special sub-committee, with Mr. W. H. Shaw, B.E., and Mr. Arthur Hill, architect, honorary secretaries.

Statue to William Tyndale.—A committee has been formed for the erection of the memorial statue to William Tyndale on the Thames Embankment in London, where a site has been granted by the Metropolitan Board of Works. The committee for this memorial proposes to raise the money in all parts of the British Isles. The total expenses will be from 3,000*l.* to 4,000*l.* As it is wished to spread the interest of the scheme over as wide an area as possible, contributions of any amount will be welcomed. The bankers are Messrs. Glyn, Mills, Currie, & Co.

M. Viollet le Duc has submitted to the Municipality of Paris a scheme for securing uniform time, which is likely to be adopted. Twelve centres will be established at mairies and churches, from which branch wires will be carried to fourteen other public buildings. The twelve centres will be connected with a clock at the Observatory. The cost of installation is estimated at 80,000 francs, and the management will be intrusted to the Telegraph Department, the annual expense being 7,500 francs.

The Holloway College, Egham.—Tenders are being prepared for Mr. Holloway's new college for ladies, to be built at Egham. The design is by Mr. W. H. Crossland, and the quantities have been taken off by Mr. C. Batstone, and are unusually elaborate, extending to nearly 1,700 pages, of which some 200 pages are explanatory sketches. The bills of quantities have been lithographed by Messrs. Sprague & Co. The competition is confined to twelve selected firms.

Church Building.—On Saturday last the first stone of a chancel for St. Swithin's Church, Lincoln, was laid by Mr. N. Clayton, of the firm of Clayton & Shuttleworth. The chancel will cost 2,500*l.*, of which Messrs. Clayton & Shuttleworth contribute 1,400*l.*

The Brighton Spring Exhibition of modern pictures in water-colours was opened to the public on Thursday, April 10th. It consists of 597 drawings.

TENDERS

For kennels, stables, &c., for the North Warwickshire Hunt:—

Lissaman	£6,750	0	0
Stephenson	6,561	0	0
Jones & Son	6,360	0	0
Evnon	5,700	0	0
Selby	5,650	0	0
Jones & Co.	5,450	0	0
Matherby	5,425	0	0
Lovatt	5,275	0	0
Barlow	5,210	0	0
Rowley & Lynex	5,100	0	0
Cresswell & Harrison	5,108	0	0
Smith	5,031	0	0
Robbins	4,987	0	0
Worwood	4,943	0	0
Bowen	4,867	0	0
Dawson & Bradwey	4,832	0	0
G. J. & J. Fox	4,816	16	9
Mills	4,694	0	0
Robinson	4,740	0	0
Trow & Sons	4,655	0	0
Widdowson	4,520	0	0
Foxon & Son	4,519	0	0
Bromage	4,433	0	0
Hartley	4,333	0	0
Cooper	3,995	0	0
E. Smith	3,959	0	0
Gascoyne (accepted)	3,863	0	0

Accepted for Wesleyan minister's residence, Knottingley. Mr. William Watson, architect:—

Walker, Bros. (excavating, brick, and stone)	£330	18	0
Spears & Appleyard (carpenter and joiner)	215	0	0
Johnson (plumbing, glazing, iron, &c.)	80	0	0
Driver (plastering)	57	0	0
Pycock & Son (slating)	49	18	0
Naylor (painting)	17	10	0

For alterations to shop premises at Goole, for Mr. R. J. Wake. Mr. William Watson, architect:—

Tasker	£175	0	0
Gyles	165	0	0
Hunter (accepted)	151	18	5

For the erection of new schools, North End-road, Fulham, to accommodate 600 children, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. T. Thornton Green:—

Marsland	£5,770	0	0
Higgs & Hill	5,569	0	0
Shepherd	5,550	0	0
Jerrard	5,541	0	0
Thompson	5,377	0	0
Aitchison & Walker	5,232	0	0
Brass	5,178	0	0
Hook & Oldrey	5,177	0	0
Hobson	5,158	0	0
Wall	5,110	0	0
Tongue (accepted)	5,006	0	0

For the erection of a detached house, West-road, Eastdown Park, Lewisham. Mr. W. C. Banks, architect. Quantities supplied:—

Sharpe & Everard	£596	0	0

For the erection of new business premises, in Blagrave-street, Reading, for Mr. E. G. Oakshott. Messrs. Brown & Albury, architects :—

Strong Brothers	£3,008 0 0
Simonds	2,993 0 0
Higgs	2,885 0 0
Sheppard	2,968 0 0
Searle	2,953 0 0
Filewood (accepted)	2,794 0 0

For rebuilding 35, Bucklersbury, for Mr. W. Conolly. Mr. Robert P. Notley, architect. Quantities by Messrs. Linsdell & Giffard :—

Messom	£7,896 0 0
Greenwood	7,449 0 0
Falkner	7,257 0 0
Hart	7,008 0 0
Adamson & Sons	6,990 0 0
Scrivener & Co.	6,849 0 0
Browne & Robinson	6,834 0 0
Merrit & Ashby	6,798 0 0
Rudkin	6,798 0 0
Higgs & Hill	6,790 0 0
Perry & Co.	6,757 0 0
Brass	6,684 0 0
Prebble	6,373 0 0
Bangs & Co.	6,324 0 0

For sinking well, &c., at the New Infirmary, Notting-hill, for the Parish of St. Marylebone. Messrs. H. Saxon Snell & Son, architects :—

Eastell & Son	£4,128 0 0 !
Pontifex & Wood	4,013 0 0
Tilley	1,638 18 0 !

For supplying and fixing pumps for ditto :—

Pontifex & Wood	£761 5 0
Lambert & Sons	715 0 0
Turner & Co.	670 0 0
May Bros.	655 0 0
Stone & Co.	640 0 0
Scott & Son	600 0 0
Dale	538 0 0
Benham & Sons	494 15 0
Tilley	459 17 6
Potter & Sons	425 0 0

For the erection of new schools, at Somerford-street, Bethnal-green, to accommodate 1,600 children, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. T. Thornton Green :

Boyce (accepted)	£14,395 0 0

For the erection of a house and shop at Brentford, for Dr. J. Duncan. Mr. Edward Maynard, architect. Quantities supplied :—

Carless	£873 0 0
Beauchamp	850 0 0
Sweet & Loder	839 0 0
Brunsden (accepted)	825 0 0

For semi-detached residences, St. James's Estate, Hereford, for Mr. J. B. Evans. Mr. E. H. Lingen Barker, architect :

Coleman Bros.	£988 0 0
Bowers	970 0 0
Edwards	905 0 0
Welsh	893 0 0
Balcombe	870 0 0
Rawlerry	835 0 0
Pearson	830 0 0
Sandford	815 0 0
Giles (accepted)	760 0 0

For the erection of Wesleyan Chapel, Hounslow. Mr. James Weir, architect. Quantities by Mr. C. G. Mayland :—

Dove Bros.	£2,575 0 0
Sawyer	2,444 0 0
Rider & Son	2,423 0 0
Nye	2,413 0 0
Manley	2,397 0 0
Hiscock	2,298 0 0
Hobson	2,287 0 0
Todd	2,128 0 0

For alterations and additions to Stanway Church, near Colchester, Essex :—

Poole & Sons	£3,290 0 0 !
Thompson	2,492 0 0
Grimwood & Son	2,079 0 0
Grimes	1,987 9 5
Saunders & Son	1,895 0 0
Dobson	1,393 0 0 !

For repairs to sewer outlet, Shirley, Southampton. Mr. James Lemon, C.E. :—

Bull	£368 0 0
Batten	339 15 0
Simms	337 0 0

For new road, Westwood Park Estate, Southampton, for Mr. W. Winn. Mr. James Lemon, C.E. Quantities by Mr. G. A. Smith :—

Sibsey & Co.	£1,443 0 0
Bull & Sons	1,375 0 0
Crook	1,243 0 0
Batten (accepted)	1,225 0 0

For rebuilding 9 and 10, Goldsmith-street, E.C. Messrs. Ford & Hesketh, architects :—

Perry	£3,993 0 0
Merritt & Ashby	3,965 0 0
Lawrence	3,798 0 0
Brass	3,788 0 0
Boyce	3,759 0 0
Mark	3,700 0 0
Morter	3,500 0 0
Scrivener	3,361 0 0
Crabb	3,320 0 0
Browne & Robinson	3,291 0 0
Conder (accepted)	3,119 0 0

For wine-vaults, &c., Junior Army and Navy Club. Mr. A. Beltenaugh, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Sprake & Foreman	£1,452 0 0
Colls & Son	1,321 0 0
Green & King (accepted)	1,315 0 0

For three small houses on the Guildford Park Estate, Guildford, for Mr. John Spencer. Mr. Henry Peak, architect :—

Tribe	£1,007 0 0
W. Swayne	784 10 0
Mason	718 0 0
Strudwick	713 0 0
T. Swayne (accepted)	710 0 0

For pair of small villas, St. John's, near Woking Station, Surrey, for Mr. Joseph Martyr. Mr. Henry Peak, architect :—

Clark	£870 12 6
Whitburn	777 0 0
Butt	594 10 0
Harms	550 0 0
Harris (accepted)	547 0 0

Houses and Shops at Walthamstow.—The architect of the houses and shops at Shern Hall-street, Walthamstow, for which tenders were published in last week's *Builder*, is Mr. Robert Blackmore, *not* "Black."

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Architects in Ancient Egypt.

A NEW chapter is in course of addition to the history of architecture. The honourable desire, on the part of the architect, to live in his works, and to hand down to remote posterity his name as that of the designer and executor of noble monuments, is not a thing of yesterday. Ancient history gives us examples of mode in which early artists sought, some- s openly, sometimes by a masonic craft, ernalise their names. It is true that we r more of the sculptors than of the archi- of Greece; but the probability is that ias, Pæonius, and other great temple ners were also consulted as to the struc- But the formal commemoration of the itect as a great public officer, the declara- of his high official dignity, the long-derived gree of his family, these are new additions he records of the art. And of them the nt scholars who are giving voice to the silent hieroglyphics and hieratic writings gypt are now providing us with details as esting as they are unexpected.

that obscure age of antiquity (in the lan- e of its great interpreter, Brugsch) when ymmetrical building of the pyramids, and well-constructed rooms of the sepulchral nbers demanded a high intelligence and a al hand, the office of architect was the occu- n of the noblest men at the king's court. aoh's architects (the Mur-Ket), who were n of the number of the king's sons and grand- were held in high honour; and the favour e king at times gave them wives from the ghters of the royal house. At no period of ry was the connexion between the king and builder so intimate as in ancient Egypt. first care, not only of a new sovereign, but ery head of a noble house, on coming to his erty, was to build himself a safe and durable e in which to pass that long slumber of years, at the end of which he expected that mal would return to his carefully-mummified r. The long vexed puzzle of the pyramids sposed of by Herr Brugsch in a very simple hod. He says that the construction of these mous masses of masonry were long an in- ble puzzle, even to experts; but that recent overies have enabled the Egyptian scholar trip off the shell, and to arrive at the kernel. ording to their annual usages and customs, Egyptians, while they dwelt in health and vigour, in the light of Ra, the Sun God, were ever mindful to turn their thoughts towards the abode to which He hastened at sunset, to return with the morning beam, and to which they themselves were bound, for a longer night, to be followed by a brighter morning. Not only was the tomb prepared for the rest and preservation of the body, which was held to be as necessary to the enjoyment of the future life, as its support and comfort were essential to the prolongation of actual existence, but the Egyptians held (according to this writer), that the soul was in some manner bound to the buried body, though it was at liberty to leave the grave during the day-time in any form it chose. If this be correctly rendered, it is a curious inversion of our own doctrine as to ghosts, with whom the night is regarded as the period of freedom.

It was a natural consequence of this belief that a grave should be sunk deep in the rock, and that a chapel, or sacrificial chamber, or even a series of apartments, should be erected over it; often richly adorned with painting and with sculpture, as becoming an eternal dwelling, not destitute of elements of pleasure and joy.

In the tombs of the nobles the hand of the artist was often arrested by the death of him for whom the work was destined. Sometimes we find sketches in red chalk on the bare walls, which the painter has not been called on to fill up with his bright and varied colours. Frequently whole or half works, or unfinished portions of an otherwise complete picture, bear witness to the sudden arrest of the work by the death of the owner. But the enormous series of inscriptions required to show honour to a sovereign was so great, that it was needful to take great care to avoid interruption to the artist. Therefore, as soon as a Pharaoh mounted the throne, he gave commission to his architect to plan his tomb, and to quarry the stones to be employed in its erection. The kernel of the future edifice, to use the picturesque language of the German *savan*, was raised on the limestone soil of the desert, in the form of a small pyramid built in steps, of which the well-constructed and highly-finished interior formed the eternal dwelling for the king. In this his granite sarcophagus was laid, ready open, on the rock-cut floor. If this great building was completed before the Pharaoh for whom it was destined was called on to occupy it, a second covering was added, stone by stone, to the outside of the nucleus building. This complete, a third was added, or, if time allowed, a fourth. Thus the longer was the reign of the king the greater was the mass of his never-resting tomb. At last, when no further extension was thus required, a casing of hard stone, polished like glass, was fitted accurately to the steps of the pyramid, and covered the vast mass of the king's sepulchre, presenting a gigantic triangle on each of its faces.

We give this theory for what it may be worth, not offering any opinion of our own on the subject. It is not a new one; we have met with it before; but it is adopted by a man to whom the temples and tombs of Egypt are more familiar than are the churches of London to the ordinary Londoner. More than seventy of such pyramids, we are told, once rose on the margin of the desert, each telling of a king, of whom it was the tomb and the memorial. Had not a great number of these buildings been destroyed to the very foundations, and had the name of the builders been accurately preserved, it would have been easy, the German writer says, to have shown by calculation the natural relation existing between the size of the pyramid, and the length of the reign of the sovereign whom it entombed. This theory is one which, supposing it will bear investigation as a structural matter (which it cannot be impossible to test), offers a ready and intelligible explanation of the varying bulks of these unique structures. By way of test, we may observe that the length of the reign of Souphis, or Cheops, to whom the Great Pyramid is attributed, is given in Manetho's list of kings at sixty-three years. His successor, Souphis II., to whom what is called the pyramid of Cephrenes is allotted, is credited with a sixty-six years' reign; and Mycerinus, or Mencheres, who is third in the series, has also a reign attributed to him of sixty-three years. These dates, however, require verification. When we come to monarchs of whose dates we have certain knowledge the well-cut temple tombs seem to have replaced the pyramids as sepulchres. On the famous Turin papyrus the sixty-three years' reign of Mencheres sinks to twenty-four, and the same length is given to it on the table of Abydos. But Souphis is no less mulcted of his period, being reduced to twenty-one years on the table of Abydos, and to seventeen on that of Saccarah. It is supposed that the sole reign of a king may be indicated by the longer term, and his joint reign with his predecessor or his successor, or with both (a common Egyptian custom), by the latter. In that case while the briefer period would be most important to the chronologist, the longer term would be that of chief interest to the architect. The dimensions of the pyramids in question, as measured by Colonel Vyse, are 450·75 ft. in height by 746 ft. in width at base, for the first; 447·5 ft. by 690·75 ft. for the second; and 203 ft. by 352·88 ft. for the third. But even here, comparison is perplexed by the assertion that, 1,000 years after the date of the Pharaoh Menkara the Pious, or Mencheres, Queen Nitocris took possession of his pyramid (which is called in the texts HIR, or the high one), and "doubled the dimensions of the monument," placing her own sarcophagus, carved in blue basalt, in a chamber above that of the king, and covering the whole structure with polished granite. Herr Brugsch says that according to the investigations of M. Perring,

the engineer, it certainly appears that the third pyramid has been reconstructed and increased. He has not stopped to explain how far its dimensions, as above quoted, on that theory, are consistent with the indication of time to be afforded by its size.

In the twenty-ninth and thirtieth years of the King Darius I. of Persia, the last scion of a line of twenty-two architects has perpetuated his name, Khnum-ab-ra, in different places on the cliffs of the Valley of Hammam-at, as well as in the quarries of Silsilis. It will, perhaps, hardly interest our readers to be told the twenty-one unpronounceable Egyptian names of his ancestors, which ascend, through the reigns of the twenty-sixth and five preceding dynasties, to Bok-em-Khunsu, chief burgomaster, about B.C. 1200 Of these, three are designated as "Architect of Upper and Lower Egypt." Nine add the title of "Commander" to that of "Architect"; five add that of "chief burgomaster"; and one is prophet and high priest of Amon, king of the Gods. The Editor of the English translation of "The History of Egypt under the Pharaohs" is hardly a proficient in genealogical study, for he makes the grandfather of Bok-en-Khunsu to have been Imhotep, who lived in the time of the third dynasty, or 1566 years before Rameses III., the first king of the twentieth dynasty. There is no doubt some meaning concealed under this inexplicable statement, but we fail to find it pointed out. Possibly distant though lineal descent is only intended; but the vertical lines are drawn as is the case when the sequence is from father to son. But if we turn back to the chapter which treats of the royal court, under the earliest dynasties, we find that the names of nine royal architects have survived the destroying hand of time, and are still preserved. The first of these is Heka, architect of the Pharaoh Senofern, who was the eighth king of the third dynasty, according to Manetho, and who is the twenty-fifth king of Egypt mentioned on the monuments. This date is approximately given as B.C. 3766, or 5,645 years ago,—a very respectable period of time for the preservation of a high professional reputation. Among his successors are Sem-nofer, married to a king's granddaughter, named Amon Zefes; Khufuhotep, husband of the king's daughter, Hontues; Merab, a king's child, son of the Pharaoh Khufu, otherwise Souphis, the builder of the Great Pyramid, who, therefore, lived about 3500 B.C.; Pirson, husband of Khenshut, of the blood royal; Ti, a man of low extraction, but married to the lady, Nofer Hotep, from the woman's house of the king; and Hapu and Meri-ra-ankh, under the Pharaohs Teta and Pepi, of the sixth dynasty; the last of whom is as recent as B.C. 3233, or only 5,112 years ago!

To these *magni nominis umbræ* should be added that of Semnut, the son of Ramses and Ha-nofer, the friend and the architect of one of the most famous personages in Egyptian history, the woman-king, Ma-ka-ra, otherwise known as Hatasont. First associated with her brother and husband, Thothmes II., then reigning for many years alone, and finally associating with herself her younger brother, Thothmes III., this great princess completed, on a magnificent scale, the noble stage-temple of Der-el-bakri. The buildings "are some of the most tasteful, most complete, and brilliant creations which ever left the hands of the Egyptian artists. They are specimens of the matchless splendour of Egyptian art history, whether we consider the treatment of the stone, as to form and proportion, or the rich-coloured decoration. Even in their ruin,—a melancholy heap of works destroyed and thrown together,—these remains exert a powerful charm, even on the experienced son of the new time."

The walls of the Temple of Der-el-bakri are covered with pictorial representations of the chief courts of the queen's reign, including her famous expedition to India, and the return of ambassadors from the Holy Land of Punt, laden with golden rings, ivory, precious balsams, odoriferous woods, living plants of the incense-tree (planted, like orange-trees in our greenhouses, in tubs), nut-woods, resins, ebony, objects in ivory inlaid with gold, paint for the eyes, leopard skins, greyhounds, long-tailed monkeys, and dog-headed apes. The festive decoration of the temple itself to the tutelary deities Amon and the heavenly Hathor, of whom the royal brother and sister, lords of Egypt, were accounted to be the earthly representatives, is also delineated on these storied walls.

It is gratifying to hear that after the death of her great architect, Queen Hatasont raised a stone memorial "as a mark of gratitude" to his name. He is represented in black granite, in an attitude of repose, and on his right shoulder is the significant inscription "Nen kem em an apiu," or, "There were not found written his ancestors." In the inscription Semnut is represented as thus speaking, in the first person: "I was a distinguished man, who loved him" (that is, the queen, who affected the masculine title) "and who gained for himself the admiration of the lord of the country. He made me great in the country; he named me as the chief steward of his house, and as the governor of the whole country. So have I become the first of the first, and the clerk of the works of all the clerks of the works." The inscription ends with the words, "I have lived under the Lord of the Country, the King Ma-ka-ra. May he live for ever." The works of Semnut have outlived queen, dynasty, and nation, but these ruins yet tell of the fame of the great architect who was the contemporary of Moses.

A peculiar interest to the architect of the present day attaches to these solemn echoes from the darkness of the past. Our own imaginations may be more profoundly affected by the shadowy arches of Westminster or of St. Ouen, or by "the vast and wondrous dome, to which Diana's marvel is a cell: Christ's mighty shrine above his martyr's tomb," than they are by the vast pylones, the tapering obelisks, and the painted intaglii of the Egyptian temples. But apart from the question of taste, which is a question of race, and of time, there can be no doubt of the far higher claim of the latter on the wonder, as well as on the admiration of the world. Here are the works of this man, who very likely may have steadied the infant steps of Moses as he tottered over the marble pavements of his royal adoptive mother, Queen Hatasont, yet more full of a vivid life than are some of our own ecclesiastical buildings,—not to speak of others,—reared within the present century! These great architects built for an earthly eternity. Earthquakes have shown themselves jealous of the well-balanced durability of their work. The hatred and the cupidity of man have been more destructive than earthquakes. The sweeping sand of the desert has been powerless to injure the delicate ornamentation of Semnut,—rather has it acted as a friendly veil to protect his work from obscure desecration. During the whole long term of the Egyptian Monarchy, which, from the close of the 27th Dynasty, that of the Persian kings, stretches back over a period of 4,050 years, there have been two points of culminating grandeur. These were the reign of Ramses Miamun, B.C. 1407 to 1341; and the reigns of Thothmes II., Queen Makara, and Thothmes III., of which the divisions are not exactly known, but which extend from about B.C. 1617 to B.C. 1516. Of the latter monarch, who covered Egypt, from Tanis in the Delta to Ibsambul in Nubia, with temples of a splendour that seemed to be the work of enchantment, we know the name of one of the architects. This was Amen-men-ant, the "architect and chief of the policemen," who superintended the restoration of the splendid temple of Ptah, in Memphis, and the building of the great propylon to that temple, called Merin-ma. A pictured family group, now in the collection of antiquities at Naples, preserves the names of twenty of the members of this family, including chief priests of Amon, of Ptah, and of Khem, of Montha, of Hermonthis, and of Heliopolis, as well as Hora, architect and chief priest of Anhur of Thinis or This; and his brother, Amen-men-ant himself, "Leader of the Mazai, chief architect, and leader of foreign people." The dignity of his family is great. It was connected with the royal family of Ethiopia. But of the numerous works of Rameses there must have been many architects. No professional name is as yet connected with Ibsambul; of which Herr Brugsch thus enthusiastically speaks: "There, in Nubia, on a solitary wall of rock, far removed from the dwellings of men, in hoary antiquity, a temple was hewn to the great gods of the land of Egypt, Amon of Thebes, Ptah of Memphis, Hormakhu of Heliopolis, and, as a fourth united with these, the new god Ramessu-Miamun,—hewn as if by enchantment, for this is the proper word: so bold, so powerful, so exceeding all human measure, as if giants had turned the bare rocks into a living work of art. Standing before this work, achieved by the hands of man, the thoughtful child of our modern age first feels the greatness of antiquity in its all powerful might. It was not clever calculation, profit, nor ability, but the most elevated feeling of gratitude to God, that caused such a work to be executed; a work worthy of and fit for the immortal, inconceivable, almighty Deity whom the ancients dedicated it in high veneration for the Everlasting and Incomprehensible.

The name of the place, now expressed in tongue of the Arabs, is Abu Simbel, that is 'father of the sickle!' None of the sitting figures, which stand out from the wall of rock like giant forms of the olden time, and, with disdainful smile upon their lips, look down upon the pigmy race at their feet, carry any emblem in the hand which can in the least degree be compared to a sickle. More correct, because there is a foundation for it, is the designation Ibsambul, for it has a direct relation to the ancient name Psampolis, which in old Greek times travellers gave to this wonderful place, that is, the City of Psam. This last designation, indeed, came from the old Egyptian name of the place, Pimasis or Pimas, Pimsa, from which the Greeks formed the more euphonious name or Psampolis.

We must refrain from entering the temple, admire the wall pictures in the freshest colours, and to see here the Khita, there the Libyans, here the Negroes, there the Phœnicians, fallen beneath the sword of Ramessu the God. One must deny ourselves the pleasure of wandering through the halls of the gods, and reading the inscriptions on the walls and pillars, and on the enormous memorial tablets. After long wanderings, we step out of the darkness of the prince's cave back into the bright light of day, and our thoughts turned within, confounded, almost overpowered by the indescribable impression of our own insignificance. We have experienced, in the gigantic tomb of a race long passed away, some portion of that nameless feeling which moved our forefathers of old in their innermost being at the sight of the gigantic hideous of all dwellings made for the gods, the wonderful rock temples of Ibsambul."

The name of the architect of Ibsambul unknown. That of the architect of the Rameseum of Heliopolis is recorded in two inscriptions on the quarry to the north of the so-called Pyramid of Gizeh. Of these, one runs,—"The architect of the city of Pira (the sun)." The other,—"The architect of the beautiful temple of Ramessu Miamun, in the great temple of the Ancient One (a surname of the Sun-god Ra), Mai, a son of the architect Bok-en-Khunsu of Thebes." Below, in like manner, the sculptor from the life, Pan-er," has immortalised himself. Great names, these, thus standing forth from the darkness of the long-buried past. But till the name of the architect of Ibsambul shall be recovered we must rank as first of "royal fellowship of death" the architect Makara, the woman king, Semnut, "whose ancestors were not recorded in writing."

OLD LONDON AT SOUTH KENSINGTON

The interest of the collection of illustrations of old London, referred to in our last number (p. 390, *ante*), grows with what it feeds on, more we study it the more we are impressed with its extraordinary value to all who are interested in the history of London. Even in regard to those items of the collection of which copies are accessible elsewhere in libraries and museums, it is no ordinary advantage to have so many of them placed in convenient juxtaposition, and of course many people who could easily see them here will not be likely to see them in any places more difficult of access, which is the more reason for making the most of such an opportunity.

We cannot pretend, in fact, to go half through even the most interesting of these portfolios of records, and the collection must be seen and studied as a whole to be appreciated. We will make a few more notes on some of the subjects illustrated. We broke off our last remark with a reference to some records of the frost fairs on the Thames, and find the same subject cropping up among the set of illustrations of Hyde Park, where there is a lithograph showing the "Drive" of Mr. Henry Hunt, jun., in driving a vis-à-vis and four horses over the Serpentine for a wager on January 17, 1826; a kind of bravado apparently current in fashion in the early part of the century. Not that this is a matter of special interest, but only occurred to us as a parallel to the old frost illustrations; and in general the Kensington Palace and Hyde Park sets in the collection

so interesting as many of the rest. One of dby's half-satirical illustrations of the camp Hyde Park in 1826 is to be found, but there a good many of this subject by him, if we take not, which in general convey the idea the encampment hardly conduced to the order ecorum of the neighbourhood. What are of e interest are the Kensington, Knightsbridge, Piccadilly set of drawings. Here we can trace gradual transmutation of the country road the great town thoroughfare, the gradual ppearance of one after another relic of the ner state, now long ago forgotten. We see old half-way house between Kensington and don (837) as it stood in 1811 (and till quite nt times), and the old entrance into Hyde k from Kensington as it existed in the same , flanked by a red-tiled shed which had pro- y been there before the gateway was made. se and other bits of the same period and hbourhood are illustrated in small water- rs by C. Bigot, which are admirable from rtistic point of view, topographically careful ll appearance), and displaying great truth ne and local colour. Drawings by the same l in the "Knightsbridge" set are equally esting; also some bearing the name of H. Shepherd, showing the old Rose and n Inn at Knightsbridge, the Turnpike at e Park Corner, and the old houses in St. rge's-place near, one of which was the ence of Liston. The drawings by Shep- , mostly made from twenty to thirty years are among the gems of the collection.* e are a great many of them, some of which hall have occasion to mention, and they are ct specimens of the art of water-colour ing applied to architectural and topo- hical illustration, and worth attention on account alone. They exhibit the tones and re of various materials with great truth, without the slightest hardness or over- . Included amongst the Knightsbridge ings is one of old St. George's Hospital, it appeared in the fields at the corner of venor-place," the centre part having been nally Lord Lanesborough's house, with the s added to enlarge it as a hospital in . Next to this we notice Tattersall's Yard 796, with Sir J. Ladd driving four horses d it,—"a coach-and-four," in fact,—appa- y as a test of proficiency in Jehu-ism. old Hyde Park turnpike receives further tration among the "Hyde Park Corner" and the progress from rusticity to classicism riously set forth here: there is first the entrance into Hyde Park in 1756, with en's Apple-stall" at the gate, and a ll inn known as the "Hercules Pillars," a ence apparently to its position at the t of London; next comes the old turnpike- , a completely country-road-looking turn- removed from the end of Clarges-street in (marking the gradual extension of Picca- westward as a street), and Apsley House t appeared in 1786; then a view in 1792 s the turnpike as rebuilt from a design by Holland, in somewhat more formal but still unpretending style; there are two or three s of this, one showing a curiosity of the s, "Collier's Southampton Coach on eight els," an experiment which the horses can ly have enjoyed. Then we have "The entrance into Hyde Park, from Piccadilly, urton, architect; Shepherd, del.," under date , and four years later a view of the same ing also "New Apsley House," the com- ed form of the mansion which a French or so happily described as "No. 1, London." woodcuts near this represent the fixing of unfortunate equestrian statue opposite to house; and as we look at the representation he huge horse and rider dragged along the amid a crowd of people, with the tel-escope, pointing theatrically over their heads, we l another French commentary, that of the ral officer who gazed at the statue for some and then ejaculated, "Nous sommes és!"

mong the bits from the Piccadilly neighbour- we pick out two beautiful little drawings, Shepherd, of the North and South Fronts of onshire House, as altered by Mr. Burton -3); also the south front of Burlington se, by Buckler (930); and two stages in the ory of another familiar spot are shown in pherd's two drawings of the view of Sir mas Clarge's house, as it appeared before Sackville-street was built, and a view in that same street, described as "the longest street in London without a turning." Sackville-street has been cut very short since then; it formerly ran right up to Oxford-street in a straight line, very nearly parallel with and close to the present line of Regent-street. Of course, Shepherd's water-colours in this case are copies of old views. St. James's Palace and the Mall are illustrated by many interesting drawings. Among the Pall-mall drawings is one of the Duke of Schomberg's house on the south side of Pall-mall (996), which amusingly reminds one of the changes of fashion in architecture. It was removed only in 1852, and was a model specimen of the class of red brick house which has now become the rage; had this mansion only been left a few years longer, it would have become an architectural classic; but its fate was sealed too soon, and it was removed as an "old building."

The older stage of Carlton House, connected as the name is with ideas of luxury and display, shows a building curiously at variance with our associations; a staid square prim block of red brickwork, with regularly-spaced windows, suggesting to the modern mind an almshouse. This is the 1790 house, the actual carcass of what afterwards became the well-known princely mansion, having been cased with stone in 1794, by Sir Robert Taylor (who certainly made a dull thing enough of it), and then colonnaded subsequently under Holland. The precursor of all these various Carlton Houses is also, however, illustrated in a water-colour drawing of 1734, showing the house as it was when in the occupation of "Frederick, Prince of Wales," the father of George III, an irregular and rather picturesque group of buildings surrounding a court-yard. The close relation between the character of buildings and of the time and society they belong to could hardly be better illustrated than in this collection of Carlton House drawings.

What is this old brick warehouse, so carefully and lovingly coloured in a drawing of Shepherd's (1023)? That, gentle reader, is no less a place than Almack's, once the chosen meeting-place of the beauty and fashion of London, the desired haven into which entry was only to be obtained by the most select of the select; here it is, a bare brick wall with large round-arched windows with neither impost nor architrave,—so they built ball-rooms in 1765, when this was built; and which you still may see in King-street, St. James's; and after all it might be urged with some show of reason that ball-room architecture is essentially an internal architecture. More interesting to the architect, though hardly more beautiful, is the small water-colour of Vanbrugh's old opera-house built in 1705 (1028), a street front with three doorways, and three oval blank windows in the attic, all built in brick in the most ponderous rusticated style. The views of the old and the present Haymarket Theatres are to be found in this portion of the exhibition; the old theatre, renewed in 1821 (under Nash), stood next door, up the street, to the present one, and was not removed till the new one was built; it had a low-columned portico, which seems to have given the hint or suggestion for the present one.

The illustrations of St. James's Park, and the buildings on its eastern side are legion, and it is very curious to follow the changes in the buildings in these various views, at the same time that one may observe that they keep very much upon the same lines of laying out, and are so still in great measure,—those south of the Horse Guards, at all events. There are several drawings by Canaletti, who illustrated this part of London largely; one showing the Horse Guards before the addition of the cupola, and one after. A large bird's-eye view of the Park and Westminster gives a very good idea of the general laying out of the district about 1720; among other things we see Queen-square (the Grosvenor-square of its day, and so introduced in a recent play at one of our theatres), with the wall that separated it from Park-street and closed up the end of the square, and the statue of good Queen Anne as a centre ornament in the middle of the wall. The wall subsequently gave way to a railing, and the Queen Anne statue was placed against one of the houses on the south side, and finally this railing was removed and the whole levelled through, not so long since, and given the collective name of Queen Anne's Gate. In this view is seen also the rotunda of the old cockpit on the south side of Birdcage-walk, the recollection of which is still preserved in the "Cockpit-stairs," which give access from Birdcage-walk to Little Queen-street at this point.

A curious little chapter in the history of what may, in a certain sense, be called architectural design is illustrated in a set of drawings of firework exhibitions in or near St. James's Park. These are views of the "magnificent structure erected by special order for the celebration of the general peace of 1748," though the actual display does not seem to have come off till April in the following year, and was attended with a disaster then; for part of the frail structure took fire, and two arches of it had to be pulled down in the midst of the firework exhibition, in order to save the rest. This is the subject of a separate illustration, accompanied by very sarcastic comments, and entitled, "A Whim for Posterity to Laugh at." It is singular (or, perhaps, it is not, considering the nature of such constructions) that the only other great firework exhibition of the kind in this park had a similar drawback. This was in 1814, when a "Temple of Concord" was erected (a trifle too soon), and a Chinese bridge and pagoda were placed across the canal in St. James's Park, also for an effect of illumination. In this case also the temple took fire, an incident which is again the subject of a separate illustration. We must pass over a number of drawings of Buckingham House and Palace, and come to the illustrations of Pimlico and the Ranelagh. Every one is familiar with references to the Ranelagh in English stories, satires and plays of the last century; few know where it was, or what it was like. They may learn all about it here. It was a great covered rotunda or "amphitheatrical building," erected about 1748 at Pimlico, and was the same kind of thing to the London world that the "Pump-room" was to Bath; socially, that is to say, for there were no "waters" to drink. It was probably, however, less select than the Pump-room. It must have been really a capital place to idle away time in in bad weather. It formed a circle about 130 ft. diameter in the internal floor space, the *loges* with which it was surrounded forming a ring of building about 20 ft. in thickness round the central area. The roof was partially carried by a central pier, after the manner of Westminster Chapter-house. One of the interior views shows the "company at breakfast," so that one may conclude it was possible to spend all the day in the Ranelagh if one felt socially inclined. In the neighbourhood were tolerably extensive gardens, canals, and "Jenny Whim's bridge," a very picturesque timber structure; there was also the Spring Garden (not to be confounded with "Spring Gardens") with a circular lawn and a fountain in the midst, and a thatched rustic tea-booth on one side. Really we doubt if there is anything so good as Ranelagh at present; but it outlived its repute, and was all swept away. Tothill fields and Millbank neighbourhood have received considerable historical notice in our columns; the rapidity of the changes in this part of London is forcibly shown in the sketches here, compared with their dates; the "new Millbank Penitentiary" was erected in 1815 in the midst of fields. The Tothill-street sketches should be valuable just now, for the south side of the street will not be left much longer; the aquarium engulphed the north side some time since. To the view of St. John the Evangelist, Westminster (No. 1,222), is appended a kind of apology for the design, with a suggestion that a settlement in the foundations had prevented the completion of the building as origically intended; the drawing is by Coney, and the suggestion, we presume, is also his, but ground for it is not obvious. Westminster Abbey is illustrated by two curious views from the hand of Hollar; hard, frigid perspectives, frightfully incorrect in detail (regarded as representations of Gothic work), and standing on nothing,—that is to say, there is no shadow and no *terra firma* under the building, merely blank paper. There is no reason to think, however, that they are not complete as the artist intended them. These, of course, show the Abbey without the towers: the latter are first shown in a view of Maurer, dated 1742, and which also shows the present imitation Gothic treatment of the lowest stories of the towers, with very slightly recessed trefoil arches; previously to this the lowest story is plain masonry. This therefore was, we must conclude, another bit of Wren's futile attempts at Gothic detail, though we suspect few persons have credited him with it. The next drawing to this is a curiosity in its way; it is a print representing a geometrical elevation of the

*Some of these are, of course, copies of older illustrations or engravings, or restorations of the sites shown by other data.

west front of the Abbey, "drawn from actual measurement, by C. Middleton," dated 1802; it is a very careful delineation, for a time when measured drawings of old buildings certainly were not very often made. Among the "Old Sanctuary, &c.," set are two water-colour drawings, by Shepherd, representing "Judge Jeffreys's House in Duke-street," now known as Delahay-street; one of the views looks into the street, and the other into the Park, but the titles have been transposed. This house, now the property of a well-known engineer, is one of the finest and most interesting houses of the period in London, and has, we were glad to hear, been specially exempted from the decree for clearing the ground north of Great George-street for new public offices.

We find ourselves near the end of our space, with enough subjects left to remark upon to fill a number of the *Builder:* we must just notice in the briefest manner some of the subjects further illustrated. The history of Whitehall is very fully given. It will surprise many to see what the Scotland Yard Guard-house was like at so modern a date as 1824,—a mere kind of rustic tavern. The entrance to Scotland Yard from Whitehall at the same date is shown in a drawing by T. Chawner, who also made what he was pleased to call an "improved" entrance, which, like a good many improved things, contrasts unfavourably with what it supplanted. The views of Charing-cross and the Strand vary very much in the ideas they give as to the width of the old Strand; some representing it as very wide, others as very narrow, all as very picturesque. An old timber house pulled down in 1725 (No. 1438) is quite exceptional in this respect, and well worth taking an idea from. The old Olympic Theatre is the subject of several illustrations, and it is quite surprising again to see how rustic an erection, as we should now call it, was considered suitable for a London theatre in the beginning of the present century (1805 is the date). It is a low building, mostly timber, and really reminding one very much of the exterior of that Japanese Theatre which we illustrated a week or two back. In connexion with Covent Garden, which is illustrated by many views, in all which St. Paul's in that square (Clarissa Harlowe's church) is a prominent object, we are reminded that this church was the rallying point for the Westminster elections; in fact, one view shows the candidates as addressing the mob from a platform in the portico of the church and immediately behind the colonnade. A large and very interesting print (No. 1574) shows the Westminster election of 1796; in this case the hustings are erected in front of the church, and in the centre of them stands Charles James Fox, "fat and well-liking," addressing a crowd of electors: many of the personages in this are portraits. The two prints of a previous Covent Garden Theatre when new (1809) and of the burning of the same in 1856, are amusing as showing the vagaries of architectural illustration; in the latter the Doric columns of the portico have attained a proportion of some twelve diameters in height,—it was time they should be burned before growing alarmingly higher. But we must break off, leaving with no more than a word of mention the numerous illustrations of the Tower, the Bank, the Guild Hall, the Mansion House, the old commercial establishments of London, the old Halls of the Trade Guilds, some of them still as represented here, others long since rebuilt in a more sumptuous manner,—and almost numberless other matters of architectural and historical interest to be found in this unique collection.

One is a little set reflecting, after going through it, on the essential difference between old London and new in the matter of architectural variety and picturesque interest. A good deal of this is association, no doubt; but one cannot help thinking, after all allowance has been made for that, how very few of the buildings recently erected will be likely, when it comes to their turn to figure as parts of what will then be "Old London," to have the same degree of either picturesque or historical interest as many of these. In regard to streets, for example, we have contracted such a habit of building new streets in a formal manner, like so many castings from the same mould put down in a row, that it is impossible to imagine any one finding any interest in their representation in future. Some of these new streets and roads are almost worse than the Harley-street and Gower-street type, because more pretentious; the shortcomings of their style might pass with a house or two, but becomes intolerable when multiplied for half a mile. In the way of large separate buildings we are not so destitute; and we can imagine Westminster Palace and the National History Museum and the Albert Hall making a very good figure, when our descendants collect their old prints and sketches, and exhibit the further course of London development down to,—say the twenty-third century.

THE STRIKE OF THE DURHAM COAL-MINERS.

THAT "There is some soul of goodness in things evil" is a reflection which the greatest writer in English literature put into the mouth of his most carefully-drawn hero, as uttered in the almost unhoped for victory of Agincourt. It is a reflection from which a man of brave and constant temperament may not unfrequently derive fresh courage. Few years in modern history have produced, in the first quarter of their revolution, so much to test the courage, or to try the temper of Englishmen, as has already been the case in 1879. And for the great evil now involving the county of Durham in gloom and distress, the hope that it may develop this "soul of goodness" is almost the only one that we can see ground to entertain.

On the 6th of April the intelligence was telegraphed from Durham that a general strike of colliers had been averted by the acceptance, by about 10,000 men, of the reductions made by their employers in the rate of wages, which amounted to 10 per cent. for surface, and 15 per cent. for underground, labour. Two-thirds of the pitmen, however, had decided to strike rather than go to work at the reduced rates, and ninety pits were thus thrown out of work. There are about 300 collieries in the Durham coalfield, and the Durham Miners' Association numbers between 40,000 and 45,000 members. The association had proposed the reference of the question to arbitration, but to this the masters would not agree. A ballot was then taken on the subject by the association, and on Saturday afternoon it was found that two-thirds of the votes were in favour of a strike. On Saturday mass meetings were held by the men in various parts of the country, and on Sunday the expectation seemed to prevail that the acceptance of the masters' terms by a third of the collieries would lead to the general resumption of work. But in the course of Monday, the 7th of April, it transpired that more than 6,000 of the 10,000 men who on the Saturday had voted against the strike had come over to the side of the majority; so that only about 4,000 of the miners who had received notice were then at work, those on strike being nearly 25,000. Many of the men employed on the ironworks are also thrown out of work by the strike of the colliers.

Another mass meeting was held on the afternoon of the 7th. It was then stated that, between 1871 and 1874, the rate of the wages of the miners had increased by 50 per cent., but that reductions subsequent to 1874 had amounted to 4½ per cent., so that the reductions now proposed would place the men in a worse position than they held before 1871.

On the 8th it was telegraphed from Durham that the number of the men on strike had increased to 30,000; and that fears of disturbance of the peace were very generally felt. On the 12th the number had increased to 35,000. The correspondent of the *Standard* supplies some details as to the condition of the Miners' Association, which show that any general and prolonged strike must occasion very great distress. During the years 1875, 1876, and 1877 the income of this great body steadily declined, while the demands upon it, on the contrary, as steadily increased. In 1877 the income stood at 33,290*l.*, while the expenditure within the year had been 60,513*l.*, or 27,223*l.* more than the income. The income for the first nine months of 1874 was 35,414*l.* For the first nine months of 1878 it was only 19,214*l.*, or 16,211*l.* less. But the expenditure, which during the former period had been 18,623*l.*, had risen for the second period to 39,554*l.*, showing an increase of 20,929*l.* The deficiency was made up by drawing upon the deposits. At this rate, it is pointed out by Mr. Crawford, the miner's general secretary, that the available resources will soon be exhausted. To pay the bare strike allowance contemplated by the rules of the association, of 10*s.* per week, will require some 15,000*l.* per week. The money now in hand not stated, but it is obvious, from the abo figures, that no efficient support for a strike the magnitude now threatened can for a mom be anticipated.

There can, we fear, be little doubt that occasion is one of great gravity. On either s we find statements made, of contradict nature, the exactitude of which it is difficult verify. Mr. Wharton, chairman of Quar Sessions in the county of Durham, at a rec electoral meeting thus expressed himself: "Trade unionism had done more to bring ab the present condition of England than anyth else that he knew of. Instead of a u of separate classes, there should be a com union between masters and men. Trade un ism, as at present conducted, was a great bitter curse to England, more especially at present time, and the action of the unionists the past ten or twelve years had done mor bring about the present depressed conditio things than anything else. Durham pit were a set of hardworking and good sor fellows, but he was bound to confess that were more easily persuaded and led astray any other class in the community, and he sorry that they had been now so easily astray by their so-called friends and guid On the other hand, we find the speakers mass meeting held on Good Friday declare the men were working at 1*s.* 6*d.* per day; they are at starvation point; and that a re tion of 15 per cent. is one which they nei can nor will stand,—as "they had rather st in idleness than work and starve."

Now, an utterance like this, whether co or not, does not look like the result of a politic effort on the part of wire-pullers. men cordially speak their own feelings. much is that the case that when the minera arranged the meeting in question had pu seconded a resolution in favour of arbitra a miner in the crowd proposed that they sh go in for "no arbitration and no reduction," that the chairman declared this amendma be carried.

One thing we think is undeniable, and th that the action of trade unions, whethe good or for evil, has been over-estimated its efficacy. Unionism may, perhaps, h a rise of wages when prices are rising. I not materially prevent a reduction when are falling. The one great feature of the not in England only, but over the world, i decline of consumption, the inability c consumer to pay for what he formerly sumed. If we find English orders got Germany or to Belgium, there is ground for the statement that they are there by our strikes. But if we find Ge and Belgian productions falling off as mu English production is, it is clear that our s cannot account for 1 this. Let us tak item in illustration. In the years 1870, and 1872, the United States constr altogether 19,398 miles of railway, average of 6,266 miles per annum. In 1876, and 1877 they constructed in all miles of railway, or about one-third former length. No doubt, much of the required for these lines was made in Am But the total American make of pig-iron, in the first year averaged 2,244,000 averaged 2,225,000 tons in the three last years. It is therefore clear that a very rial decline in the demand for English iro thus for English coal, must have occurred 1871 to 1877. Wherever we look we s same kind of action, and we are driven conclusion that famine and pestilence in di parts of the earth, and more especial diversion of the labour of four or five m of the pick of the working classes fro culture of the soil to the destructive in of war, have exerted a more potent effec even the most embittered disputes b man and master. That such disputes agg the evil we do not doubt. But that t chaining of the demon of war by co nominally Christian, during the last of a century, has done more to check t sumption, and thus the production, of th of human industry than any other ca a suggestion that we should like to se debated.

Fire.—On the 10th inst. a destructi occurred at the saw-mills of Messrs. Glover & Co., Ormside-street, Old Kent-r

ICOURAGEMENT OF MOSAIC WORK IN ARCHITECTURE.

Will there be a revival of the mosaic art in time? And, if so, what direction will it e? There are those who believe that, practally, the "mosaicist" has for ever been superded by the mural painter; but there are ers who insist that his work belongs, in lity, to architecture, and should constitute a t of it. Illustrations from the churches of ily, Florence, and Venice,—especially those m St. Miniato and St. Mark,—show, certainly, light in which the Italians of the ripest dern age regarded this sort of "painting in ne"; but it has never been established, from ir writings, whether they looked upon it as ering, like blocks of marble or stone, into the ual composition of the structure, or only as a face encrustation of beauty, scarcely less erficial than the colouring of a fresco. The systems of ornamentation were, no doubt, val, albeit that the painter generally looked n upon the worker in mosaic as one who otised a semi-barbarous art. His disdain, of rse, was retorted, since the artist in those ning and solid materials believed that, while labours of his rivals must perish, in the lapse ime, those of his own hands might endure, eparatively speaking, for ever. It cannot be ied that of the mosaics and the pictures ch remain to us from the thirteenth century, former exhibit fewer signs of decay, if, ed, any signs of decay at all, in the absolute e of the term. Those of the twelfth century, act, remain in some instances in undiminished ity, side by side with the other architectural tations of glass, enamel, vitreous artificial bles, tiles, and bricks, emanating from that lowing and inventive period; but the subces then known as pastes, mastics, and so h, gilded or not, have for the most part abled away, though the plasterer's work at Alhambra survives almost intact, except in w examples, scattered through the South of ce. But, if we look for the antiquity of art, as architecturally applied, it disappears distance far beyond all extant monuments elics—as in the pavements of the Palace of ier, though a few fragments are supposed to been dug up from amid the buried magnince of Alexander the Great. But it should nce be remembered that forged mosaics, fabulous antiquities assigned to them, are ng the commonest impostures in the osity-markets of Europe. It is unquestion-, however, that the recent excavations on site of Hadrian's villa, at Rome, brought to some perfect specimens, and that, after transfer of the empire to an Eastern capital, aic largely took the place of marble he enrichment of Byzantium. It was e that a fresh splendour was conferred upon art by the introduction of those flashing en grounds of which the Arabs, centuries , made such superb use in the decoration eir unparalled Andalusian palace. Thence art passed into Sicily, whence it emigrated, once more re-appeared in the Italian penin- The Moors, indeed, who made almost y art their own, adopted this one with ht, and left trophies of it, not in Spain , but in Turkey, India, and even Asia r; they never abandoned it, indeed, until ntire genius of their race collapsed, while hristian artist was rapidly giving it up in ur of fresco and painting. But its solid rds remain in St. John Lateran and St. rence-beyond-the-Walls at Rome; in that mparable tomb in the great Cathedral of les, at Monreale, and Martorana, and St. a Arco-Coeli. Here we have a distinction rent between the purely decorative and the tantial architectural purpose with which art is employed, between pavements of lated porphyry, serpentine, white, and d marbles, and variegated splendours of , disposed in dazzling contrast, like the inations on the borders of a Missal, or ted windows on an opaque background.

rdinary colours, it was very early recognised, d never be employed for the decoration of ments; there were none in existence that d withstand the tread of feet; it was necesherefore, to ornament the floor, whether alace or temple, with materials not less ring than the stone or marble frames in h they were set, and glass or vitrified , capable of taking and retaining any tint, rally supplied the want, though singular avagances were often indulged in, as when the Romans trod on the resplendent heads of their own heroes, and no difference was made whether the mosaic was designed to ornament a floor or a ceiling. But there will be rudenesses in art, even amidst its highest luxuries; and it is certain that the Christian inheritors of this ideal work rarely misapplied it in a similar sense. They resorted to it, in fact, as a substitute for painting, as a relief from stucco, as the earliest of the Roman basilicas testify. Nevertheless, that they applied it to architectural uses also is shown by the pavements in the ancient monastic churches of St. Cecilia, in the Trastevere, the Chapel of St. Zenon, and some still older abbatial edifices in which the ground, when newly wrought, must have glowed with gold, shining through a surface of many-coloured glass. In the choir of St. Clement's, the floor was of red and green porphyry, interlaced with gem-like traceries, made of minute pieces, infinitely variegated, the materials being imported from Africa, though, unless an exceptionally brilliant use was made of light, it is difficult to imagine the meaning of a corrusecating pavement in a crypt. Gradually, the decoration of the floor grows up the walls, and in that which is now known as the Mosque of St. Sophia, broad spaces are covered with beautifully varied marbles, not, however, embedded in the masonry, but encrusted upon it. Yet by many the appellation Mosaic was refused to these heavy architectural elaborations, and given only to the mimic pictures in stained glass, long ago destroyed, that shone on the gates of bronze. Indeed, there was a long controversy as to the strict significance of the term. A wider interpretation of it was, no doubt, allowed when the Latin architects commenced applying this species of decoration to the exteriors of their edifices. The sacred figures which the Pagans grouped in sculpture in front of their churches the Christians mosaicked on the façades of their churches, though these are, perhaps, better described as tesselations of granite, chalcedony, and marble. But, in the noble porch of St. Lawrence-beyond-the-Walls, at Rome, exquisite mosaics in enamel were inseparably blended with the wrought stone of the arches and columns, and indubitably took their place in the architecture proper of the edifice. This, no doubt, was a rare example, but by no means unique. In the fifth and sixth centuries, indeed, the art is spoken of as indispensable to ecclesiastical structures, and not merely were the floorings of the nave and choir thus, so to speak, jewelled, but we are told of "white marble tables, ranged away from the altar, and supported on pilasters, enriched with mouldings and mosaic. Pierced screens of marble, too, were erected, with knots at the tops of the arches, "made fanciful by bits of curiously coloured glass." The principle here asserted was acknowledged a few centuries later, when "mosaics" came within the section "Architecture," in the English International Exhibition of 1862. M. Bailé, moreover, in 1865, declared that for the future every public structure reared in France should be enriched by the mosaic art, which had long lain obscure, but which only needed encouragement to prosper again, as a beautifying power in the hand of the architect not less than in palmiest days among the Orientals and the Romans. Of course, there are opponents of this view,—authorities who dread lest any such revival should introduce a taste for frivolous and fantastic ornament; but it is not likely that, from the point of view now suggested, it would ever spread widely in England, for mosaic is essentially amongst the art-luxuries of clear, bright, and dry climates. The most conspicuous modern use of them that has been made is in the hall and lobbies of the new Opéra Comique at Paris; but there the flooring is composed of square tiles in terra-cotta, covered with a mosaic, the material of which is wood, articulated in exceedingly small pieces, and vividly coloured. These multitudinous pieces, besides being dovetailed where it was possible, are held together, as an experiment, by a sort of gum-lacquer; but the work can hardly claim recognition as one of art in any degree.

Where we really find mosaic entering into architecture is in the churches and the newly-disinterred racecourse of Constantinople, the square of Don Pedro at Lisbon, the high altar of St. Martin d'Ainay at Lyons, the Kaabah of Mecca, the Cathedral of the Sicilian Monreale, St. Paul's at Nîmes, the ancient abbeys of Ostia, the pavements of Pompeii, the chapels of Palermo, Otricoli, and Preneste, the remains of a Roman villa lately discovered at Salzburg, and of a Roman fountain at Toulouse; the altars of St. Denis, the Abbey of Treport, and the Cathedral of Ravello. At Ani, in Southern Italy, a beautiful arch was found, fallen, the interior surface of which was completely lined with mosaic composed of delicately-tinted fragments of lava, laid on a basis of lead,—a material, by the way, which has often entered largely into the composition of the artificial kinds, and is believed, when judiciously mingled, to have greatly enriched their colour. Nowhere, however, perhaps, has the "mosaicist" carried his work to such a pitch of perfection as in the old examples at St. Mark's, Venice. He has used little glass, but marble, agate, jasper, aventurine, and malachite, since imitated, all the world over, by the potter, tile-worker, and compounder of paste, but never approached for fineness or beauty. Still, glass has always been an element in the Venetian mosaics of the more delicate varieties, and it was a boast among the craftsmen of the old Republic that they could dye it of 10,000 different colours, and lay their hands upon each or any of these so soon as the idea of it was presented to their minds. The artificers who are constantly employed at the Vatican pretend that they have inherited in these matters the Venetian secrets; but it is questionable whether they are not lost to the modern Venetians themselves. It is abundantly proved, however, that this process has been employed at different epochs, not merely as a subsidiary art, but as necessary to the plans of architects, where their work has been of the more florid and emblazoned type; and, indeed, it is scarcely possible to imagine, in a warm and transparent Italian climate, anything more exquisite than this addition of colour to form, of perpetual prismatic lights in contrast with the opaque monotony of white marble or grey stone,—glimpses as of jewelled recesses, high altars shining with no meretricious gewgaws, but built up from the first and designed to last in real and typical beauty, and surfaces broken by interspersed grounds of gold glittering through enamel, and walls, as well as windows, reflecting colour. M. Husson goes beyond this. He affirms that, in future, all public edifices should be more or less polychrome in aspect, and he would produce this result less by the use of paint than by that of mosaic; he would insist upon this more particularly in regard to ecclesiastical fabrics; he would not merely floor; he would line them with artistic decoration, applied, if not in masses, at any rate in borders, as in the baptistery of Florence, and at San-Miniato. These Italian types are divisible into three; the pavements of the Roman basilicas divided, after the fashion of the sixteenth and seventeenth centuries, into vast compartments, very rich, broad, and magnificent; the "encrusted" pavements, or walls, of Tuscany and Lombardy, more brilliant and varied, but less imposing; and the floors of terra-cotta tiles, glistening with lines and circles of enamel, such as rarely met with out of the Neapolitan territories. The Florentine floor resembles nothing so much as a sumptuous carpet, upon which has been woven an ever-varying pattern of inconceivably luxurious colours. At San-Miniato this tapestry in stone or enamel extends from the highest step of the altar to the lowest step in the doorway, but the figures are more geometric in the Florentine than in the Roman examples. The precision of the work, and the hardness of the material, in the best preserved parts, have been the subject of admiration for ages, and, wherever the architect had a chance, he brightened the ascending pile with a touch of similar exuberance. The domes of Sienna and Lucca are also marvellous illustrations of mosaic in its architectural form, these not being simple patterns of ornament, but pictures in a series, representing the Christian Legend, especially as foreshadowed in the histories of the Old Testament. To a similar use, with an equally splendid result, has mosaic been put in the famous dome of Orvieto, where it assumes, however, somewhat of an Oriental character, through the intensity of its richness, surpassed only by the work, seven centuries old, in the Lombard Carthusian monastery of Pavia, the names of many among whose artists have not been brought down to our days by fame. These latter sometimes bear a considerable resemblance, in the disposition of their mosaic floor, wall, and columnar decoration, to the ancient Abbey of Cluny, at Autun, and to the Abbey of St. Front, at Perigueux. Indeed, there are fragmentary repetitions of them throughout the old provinces of Poitou and

Auvergne. Their ornaments, however, are, as a rule, of highly-glazed pottery, the surface of which seems transparent. Whether or not, therefore, we are to witness a revival, in the true sense of the term, of this wonderful art, so favoured in all times, it has certainly had a history as variegated as itself, and being one of those arts which easily associate themselves with many others, its connexion with architecture was a natural one.

A RUN THROUGH ANDALUSIA.

The journey from Madrid to Cordova cannot be undertaken, at least for the first time, without experiencing a certain degree of emotion. At last, and after many days' patient sojourn in dusty, uncomfortable railway carriages, the traveller is promised a glimpse at the most fertile and the most romantic region of Spain. But in this, as in many other circumstances, the fast must precede the feast. The denuded province of La Mancha must be crossed, and all the genius of Cervantes cannot reconcile us to the tawny, arid wilderness, the monotonous steppes, that separate Madrid from the garden of Spain. Nevertheless, as there is no reason to remain in this province, a few hours' outlook upon its scorched land and rocks may well be endured. Nor need the interest of the journey depend solely on reminiscences of Don Quixote. At Vadollano station trains loaded with merchandise and a certain unusual bustle remind us that this is the junction for the celebrated mines of Linares, which, from the time of Hannibal to the present day, have retained their renown for the copper and lead they contain. The oldest mine belongs to the Government, and is, consequently, the worst administered; but those mines which are managed by Englishmen, notably "La Tortilla," directed by Mr. Thomas Sopwith, C.E., are compact and economically worked.

After passing this junction, the traveller may begin to look out for the Andujar station, where the curious porous clay drinking-vessels called *alcarrazas* or *jarras* are made. These are composed of a peculiar clay found in this neighbourhood, and which has the property of keeping water cool even in the hottest days of summer. They are at once original, artistic, useful, and, above all, wonderfully cheap. Some specimens may be seen at South Kensington, but they are nevertheless very unfamiliar to English eyes, and would make suitable presents as mementos of a journey in Spain. This, we may add, is a fact which should be noted. The difficulty of buying a typical present in Spain must have beset many travellers. The shopkeepers are often absolutely offended if a stranger asks for some Spanish article. "We only deal in goods imported direct from London or Paris," is the proud reply. Far from being flattered by our demand for some specimens of Spanish industry, several tradesmen expressed their indignation at our supposing they would have the bad taste to keep anything Spanish in their warehouses. Even the few objects sold that were of undoubted Spanish make, bore a spurious French or English mark. There is, of course, the Spanish lace, which is very dear, and not as good as either French or Belgian lace; and the Spanish wrap or huge scarf is also very characteristic, but could not possibly be worn in England, though, if the shape were a little altered, it would make an excellent and original table-cover. Mantillas can naturally be obtained all over Spain, ranging in price from 1s. 3d. to more than 100*l*. One of our travelling acquaintances was particularly anxious to sell us some Spanish mantillas, which, he assured us, were most artistic and exceptionally cheap; for, as he explained, he was the local agent of a Nottingham manufacturer! Under these circumstances, we venture to repeat that the traveller should not fail to secure some specimens of the *alcarrazas* sold at Andujar; he will not have many other opportunities of purchasing a typical present to bring home from Spain.

Andujar has also the advantage of being situated beyond the *despoblado* steppes of La Mancha. It is built on the banks of the Guadalquiver, and surrounded by the luxuriant vegetation of Andalusia. Of this vegetation the aloe and the cactus are the most remarkable. The little aloe which we are accustomed to see in England, generally growing indoors, with a leaf measuring a few inches in length, constitutes the formidable hedges which encompass the farms of Andalusia. Its leaves have here grown into giant sword-blades, measuring 8 ft., 9 ft., and even 10 ft. in length. The stem that bears the flower aloft is often 20 ft. and 30 ft. high, and forms very useful and straight timber. The stately dignity of this plant affords a strange contrast to the erratic, clumsy, almost absurd appearance of the cactus, which also makes, not only an excellent hedge, but, by its abundant production of prickly pears, supplies a wholesome staple food.

An hour or two more, and the train slowly approaches Alcolea, and a splendid view may be obtained of the historical bridge where General Prim defeated the troops sent out to meet him by Queen Isabella in 1868. Our Spanish fellow travellers respectfully raised their hats as they passed the battle-field where the reign of this obnoxious sovereign was brought to an end. After the station of Alcolea is passed, we can look back at the distant peaks of the Sierra Morena, while, in front, on an isolated and conical hill, stands the Moorish castle of Almodovar, where Pedro the Cruel hid his treasure. The difficulty of building this formidable castle at such a height, and on such a seat, is self-evident, and its threatening aspect, its historical and gloomy antecedents, convey a most romantic impression to the imagination. At last the large station of Cordova is reached; a rickety coach conveys us to the Pases del Gran Capitan, and we find ourselves comfortably installed at a modern hotel in the ancient city which the Carthaginians called the "Gem of the South." To read the remarkable history of this town would lead the visitor to anticipate much that cannot be realised. We might look forward to the contemplation of rich Roman and Moorish remains, improved and preserved by the advent of Christian civilisation. Unfortunately there has been more nominal Christianity than real civilisation. The Goth and the Vandal have left their stamp here as elsewhere in Spain, obliterating and destroying the precious monuments that testified to the superiority of their predecessors. The Moors, who, under Abderahman, gained possession of Cordova in 756, set an example which the Christians failed to follow. They caused the Roman aqueducts to be restored, they repaired and maintained in good order the Roman bridge, and this excellent work was not checked by the reflection that they differed in creed and in manners from the form of civilisation that had preceded them. The Christians, on the other hand, could do nothing better than cover with whitewash the art-works of the Moors, and allow the practical engineering of the Romans to fall into ruin. The contemplation of Cordova in its present condition should be a source of the bitterest humiliation to any refined and cultivated Spaniard. What has become of the 300 mosques, the 900 aromatic baths, the 600 inns, the luxurious private dwellings, and the million intelligent inhabitants who for generations thronged to the city of Cordova when it was governed by the Moors? Where are the schools of philosophy, mathematics, physic, medicine, and astronomy, and the library, consisting of 600,000 volumes, which Abderahman founded? There remain a few inhabitants who in numbers only equal five per cent. of the former population, many of whom cannot even read, while nearly all are totally ignorant of the natural sciences. To the learning of the Moors centuries of Christian fanaticism and ignorance have fallen as a blight upon this once wealthy, prosperous town, and reduced it to its present state of inanition and decay. In England many old towns have sunk, but only to make room for neighbouring cities which responded better to the modern exigencies of commerce. If York is no longer the capital of Northern England, Leeds, Liverpool,—the great Yorkshire and Lancashire manufacturing cities,—compensate a hundred-fold this gradual extinction of a few Mediæval cities. In Andalusia we find, however, no such compensating change at work. On all sides there are traces of former greatness, but there is little promise of modern progress. The country has not stood absolutely still; but the improvements are so trivial when compared with the achievements of neighbouring nations, that we can hardly take them into account. It is, indeed, surprising that a people surrounded by the vestiges of a great civilisation to stimulate their ambition have attempted so little, and depended for their few achievements on the aid of foreign enterprise and capital. Here in Andalusia the peasant and small farmer are still content to use the rude plough which can be found sculptured on Egyptian monuments thousands of years old!

All these complaints must not, however, l the reader to infer that Cordova is not wort visit. In spite of wars, of Spaniards, Vandalism, ignorance, and prejudice, there noble remains still extant to testify that Moors have a distinct claim to be ranked am those who at one time led in the vanguar civilisation. The town, indeed, retains African appearance, which is more marked t any other place in Andalusia. Its little nar lanes, which are used in the stead of stre devoid often of pavement, and with no room a causeway, lead past Moorish houses that totally unlike European dwellings. It woul difficult to imagine anything more interes than a ramble through these shady little str where two mules would find it a matter of culty to pass abreast. The whitewash ren it no easy matter to distinguish between th and the modern houses, but the great maj are of the Moorish type, with only a few, in some cases, no windows giving on to street. Through the trellis-work of the iron gate, however, which is the substitute street-door, we can obtain a glimpse of the open-air court, with its cool colonnade all r and its fountain sparkling amidst flowers i centre. Here and there arabesque work s itself even through the whitewash; occasionally, and by the side of the artistic though half-obliterated remains of description, there is a gaudy daub of m paint, so offensive in style, so barbaro execution, that it is impossible to believ inhabitants possess the smallest power o cernment between what is grotesque and c and what is refined and beautiful. anomalies are a perfect revolution, an innate want of taste they illustrate affo painful contrast when compared with the sense of artistic perception we have be the habit of admiring as one of the characteristics of the French people. might be spent agreeably in the stree Cordova seeking for half-concealed bi arabesque work, for remains of Moorish tecture, but the search would involv discovery of so much barbarism, so much less destruction, that many persons wou to preserve that equanimity of temper nec to perfect enjoyment.

In spite of its Moorish appearance, Co is not only a Christian city, but boasts t enjoys the special protection of the Arch Raphael. A column formed of grey g with a Corinthian capital of gilt bronze aloft the figure of the Archangel Raphael though somewhat diminutive in size, is sented in a very aggressive attitude as sword in hand, to defend the city. This ment is altogether peculiar; its sub-baseme rockwork, on which may be discerned a tree, a horse, a lion, and the most eccentr monster. Above, and supporting the g column, is a small tower of rose-coloured g while hanging in front is the scroll wi inscription informing the faithful tha Archangel descended in person and to oath that henceforth the city should en special protection. From this poin Guadalquiver is easily reached and cros means of the old Roman bridge. This structure is crumbling away, and the walls that form an enbankment to the either side of the bridge are also yield the effects of time. On the little ledge, be these walls and the water of the riv describable and repulsive town-refuse i tered, contaminating the air and the wat destroying the beneficent effects of the o the other. Not to look too closely int matters, we hastened to the other side river so as to contemplate the town position where distance might lend enchantment to the view, and in this, a we were not altogether disappointed. Guadalquiver is, of course, a snare illusion. Thr banks are of mud and the muddy. In width the river is insignifica does not convey the impression of for majesty which distinguishes so many watercourses. But, rising above its e ment, the time-honoured walls of the Moorish mosque instantly attract the while, in the foreground, in the very bed river, the remains of the Moorish wat show how well the Moors knew what make of the surrounding natural adva Above the earthy coloured line of the cru city wall, series of houses built on the ground form straight lines of irrepro

ite, divided by the peculiar brownish grey tiles Andalusia. Now and then, an alcove or shel- ed colonnade gives a shade, a dot of black, this glittering scene, for the whole town is ited by the vivid rays of the sun, while far he background the mountains join a sky of purest blue. The square Moorish look-out ers surmount the comparatively straight s of houses, and here and there the stately m-tree waves its graceful branches over the ace and roof. But these trees, which were orted into Spain by Abderahman, are not so otiful at Cordova, though they were first nted here by the Amir himself, and one of greatest delights was to watch their growth. Nearer at hand, and forming a gateway to the dge, there is a Doric arch, built by Herrera, the site of the old Moorish gate. The evos are said to be by Torrigiano. The ps of cattle, the droves of pigs, the strange- cing peasants and cattle-drivers who daily s under this gate, are most picturesque, ugh somewhat dirty when examined at close rters. The bridge is consequently not only best place for a general view, but for a er study of the life and bustle, such as it is, he town. We can here gaze at the Catholic nedral rising from the very centre of the homedan mosque, and trace the outline of Giralda against the blue sky, detect through opening of the street rising from the bridge, slim Churriqueresque column raised in our of St. Michael, close to the large block uildings where the Inquisition held its courts extinguish what life and independence of it still remained in this unfortunate country.

GERMAN ARTISTS IN ROME.

A RIVAL TO THE VILLA MEDICI.

N these busy days of April, when London Paris are both already looking forward expectation to the opening of their great season, and the works for the Royal Academy the *Salon*, which have been so painfully ared during the last long murky winter, are g skilfully arranged by the hangers, the ian artistic public has again had its atten- drawn to the promise of a like annual ibition in their capital; but, judging by the timents expressed, and the delays that ensue, artistic influence of Milan, which has now ong and so justly been considered the moral ital of Italy, can be traced in quiet but ermined opposition to the artistic efforts of political capital.

ix years ago the project of building a palace erve as an annual art exhibition was dis- ed; and in 1874 the first competition for architectural plans was held in the hall of Historic Collegio Romano of days gone by, Liceo Ennio Quirino Visconti of now "united y." For reasons which it would take too ch space to enumerate, the difficulties in the ice of the approved plan occupied the jury nth after month, till finally, after an amusing by no means too creditable delay, the nsel of the Fine Arts was called in to give decision on the controversy; but again dis- eement producing further difficulties, the nister of Fine Arts, in the dilemma not long e decreed the promised award of eight usand francs to the Roman architect Piacen- ,* a choice which the artistic world of the ital has highly approved. But the long ssey of the Palace of the Fine Arts is not by any means over. More than once it has n announced that the first stone would shortly aid, but the day has not yet been definitely d; worse still, the project has found in vernment circles many serious obstacles on part of those who fear a too great centralisa- of the arts. The Government has been nced to advance only a very small sum for project, and if the municipality of Rome does make up the deficiency, there is more a possibility that some time must elapse re Rome has a palace for its annual fine-art ibition.

ut if the Municipality supplies all the funds, palace, built at the expense of the Roman ple, will be entirely Roman, and in this nner the chief object of the original proposal, palace destined for an annual exhibition of lian art, as, for instance, in France and land for French and English art, the *Salon* the Royal Academy,—would, it can easily een, be unfulfilled.

reproduction of whose plan was published in the *trazione Italiana* for March 30th.

While, therefore, we may safely entertain serious doubts as to the likelihood of Rome yet having an annual art exhibition, a far more feasible proposal reaches us from Germany in the expressed desire that the German artists, who have held for so long a period an eminent position in Rome, may have,—as the French for more than two centuries have had, first at the Palazzo di Nevers and now at the beautiful Villa Medici,—a permanent "art-home" in the Eternal City.

The proposal has met from all the friends of German art, with warm approval; the necessity for the German students, of the establishment of such a home, is now making itself felt every day; the extraordinary influence on the artistic mind which a sojourn in Rome seems so invariably to effect, it is foreseen, will be even more strongly accentuated by the institution of this "home." The increased expense of living, the want of painting-rooms,—or, as we call them, "studios,"—which strangely enough is felt, of all cities in the world, in Rome; the difficulties thrown in the way of a proper intercourse between the artist and the public, the obstacles in the exhibition of the works produced, together with the depression from which German artists, in common with their brethren of the rest of the world, are now suffering, speak warmly in favour of the proposition above referred to.

To aid the artists as far as lies within their power, the German Government has taken up the project, which will shortly be laid before the Reichstag.

It is intended that the future home of the German artists in Rome shall serve as a pleasant meeting-place, not alone for the profession, but for strangers. In addition, a certain number of studios will be established for the especial use of German painters, sculptors, and architects, while, as in the French Academy, professional instruction will be afforded, and an exhibition-room set aside.

The project having reached this advanced stage, the German artists, in looking about for the site of their future "art home," have, with no small amount of that shrewd common-sense which characterises their nation, suggested the quaint and historic old Casa Zuccaro, familiar to all Roman visitors, and so delightfully situated on the Pincio, in the very heart of the artistic neighbourhood of the capital,—a house whose traditions are intimately connected with more than one famous name in the history of art, Italian, German, and English, and in which we ourselves are especially interested, having resided three winters within its walls.

The house which, within a short time, to our our own knowledge, had remained actually in possession of a lineal descendant of the original owner, Federigo Zuccaro, has been lately, after so many centuries of regular succession from father to son, put into the market for sale.* Old Federigo Zuccaro, as all readers of Walpole's "Anecdotes," will remember, amassed his fortune as a painter in England in the distant time of "good Queen Bess," and far more than one charming portrait of the beauties of those days we must thank him. How he came to leave his own happy country and come to our shores to live *con quelle bestie di Inglesi*, as Torreggiano had already not very politely termed us, according to Benvenuto Cellini, readers may learn from the ever-interesting pages of Walpole's "Anecdotes."

When Zuccaro returned to Italy and to his old employment in Rome, "he built a house for himself on the Monte di Trinità, adorned with four portals, and painted on the outside in fresco by his own hand," while the interior was also, as can still be seen, beautified by the facile brush of the painter. And a noble house it was that the knowing old Italian built,—a house that still stands,—one of the justly-esteemed sights of Rome, and the *sala* of the *piano nobile* of which we well remember hearing the late Mr. Frederick Cockerell citing as one of the most beautifully-proportioned rooms in Rome, that city of palaces and princely residences.

And here, in this delightful home, old Zuccaro founded his academy of painting, the expense of which eventually weighed so heavily upon him, and here in the Tempietta, as the house is still sometimes called, Claude in later days lived; indeed, to many people the house has always been interesting merely as "Claude's" house. Salvator Rosa has additionally hallowed the spot by his presence for many years in a portion of the Tempietta. The whole neighbourhood, in fact, teems with artistic traditions.

In the quiet old Via Sistina, opposite the Tempietta, the entrance portal to which almost bangs over the whole of Rome beneath, lived that most interesting of all the early Royal Academicians, Angelica Kauffmann, before Napoleon seized the pope's city. Immediately below the house in the Piazza Mignanelli resided for many winters the late President of the Royal Academy, Sir Charles Eastlake, whose rooms have been occupied for the last half-century, and are still in the possession of that favourite painter of Italian subjects, Mr. Penry Williams.

But the Casa Zuccaro bears traces of its artistic occupants of even a more recent period of art than that of Claude and Salvator Rosa, the frescoes of the Life of Joseph, which at the time that the German Consul-General Bartholdy occupied the Tempietta, he employed his fervent young countrymen, Overbeck, Voit, Schadow, and Cornelius, to paint in one of the upper rooms of the house.

Since those days, the Casa Zuccaro has always been one of the most favourite residences of the numerous strangers visiting Rome for the delightful winter season. It was in the rooms decorated by Cornelius and his young friends that the distinguished American writer on art, Mr. Charles Perkins, some years ago established, entirely at his own expense, a small school of art, unfortunately exclusively for Americans, he having been himself discourteously refused permission to study in the small English Academy, on the ground that its bye-laws allowed only *two* Americans to study at the same moment, these two admissions having already been granted to his countrymen. Mr. Perkins, it will be remembered, is the author of that almost exhaustive history of Italian sculpture, which obtained for him the distinguished honour of being appointed corresponding member of the French Institute.*

In later years, Sir Coutts Lindsay occupied the same rooms, indeed, a very little inquiry would show how many enthusiasts in art, since the days when Zuccaro built his pleasant home on the Monte di Trinità, have dwelt therein.

It is this interesting house that the German artists in Rome have proposed to occupy as their "art home." The price that has been asked is some 12,000*l.*, while another 4,000*l.* or 5,000*l.* will be ample for the arrangement of the number of "studios" and a few necessary repairs. "The opportunity," remarked not long since the German *Illustrirte Zeitung*, "we hope will not be lost, to place such a treasure under the management of the German Government, and thus ensure for German art in Rome a comfortable and suitable academy.

Were it not for the depressed state of commercial affairs in our own country at this moment, this is the time for England to arrange to have her academy in Rome settled in a somewhat more creditable establishment than that it has now occupied since the days when the Duchess of Devonshire and Sir Thomas Lawrence first endowed it.

Or why should not the Royal Academy (whose actual president has passed so many instructive and happy hours within the dusky walls of the English Academy in Rome) be petitioned to invest in this manner a small portion of the accumulated funds at their disposal?

France has had, ever since the seventeenth century, her Academy in Rome (for many years there has also been a French Academy in Athens), why should not England, who has now proved to the world how high an artistic position she holds, have also in Rome a worthy counterpart to the beautiful Villa Medici, where a not a few of the famous painters, sculptors, and architects whom France has produced have spent so many happy, profitable hours.

* This lineal descendant was a lady, whose husband, for tradition's sake, assumed the name of his wife, Zuccari, and so the receipts for the by no means minute monthly rents, regularly sent in to the lodgers, were signed.

* It was in the Casa Zuccaro that lived for many years Gibson's friend, Dr. Deakin, the author of the "Flora of the Colosseum,"—a work familiar to all botanists, and not a few English residents in Rome will remember his kind services, and the excellence of his character.

Important Triangulation.—One of the greatest trigonometric works that have ever been undertaken is the union of the Spanish and Algerian Surveys. The Spanish engineers are stationed in the Sierra Nevada and upon Mt. Tetica; the French at Fillaoussen, near Nemours, and at Ben Sabra, near Oran. The latter are under the orders of Commander Perier, of the Bureau of Longitudes.—*Der Techniker.*

THE VILLA CLARA AT BAVENO.

WHILE within the last few weeks our English journals have been amusing not a small portion of the English-speaking public of the two hemispheres with minute accounts of the marriage of the Duke of Connaught, the departure of the Queen for Italy seems chiefly to have drawn attention to the admirably constitutional nature of our form of government, which at such a moment of excitement as the present allows of the absence of the sovereign. But in Italy much interest has been taken in the visit of the Queen of England, and the newspapers have daily reported, graphically, all the movements of her Majesty, in spite of the strict privacy desired. A Milan paper of high standing has given our Queen, in, for a wonder, correctly-spelt English, a "Welcome Victoria," a "name," continues the article, "familiar and popular with the whole world, as the model of a constitutional queen, as the model of a wife, as the model of a mother."

From one of the many excellent Milan newspapers, the *Pungolo*, we extract some particulars with regard to the Queen's stay at the Villa Clara, which we feel sure will not be uninteresting to some of our readers.

Needless to describe the already known particulars of her Majesty's arrival, and the admirable (on however small a scale they may appear when read in detail) preparations made for her reception in the postal arrangements, the telegraph, and the police. On this latter force, by the way, no little trouble has been thrown by the fear of a possibly unmanageable invasion of that scourge of the *forestieri* in Italy, the beggars; especially as her Majesty had made known that, in addition to wishing the entire absence of any demonstration, that absolute quiet must be secured, and, above all, that she was not to be pestered by the usual crowd of beggars and mendicants who infest Italy. This last wish was certainly humiliating for the Italians, but was justified by the annoyance endured by the Empress of Russia, to whom, when in 1868 she visited Lake Como, no less than 700 petitions were presented, without taking into account the legion of the blind, the cripples, and the destitute who literally besieged her every time she went out for a walk or drive.

As for the Villa Clara, which was prepared for the reception of her Majesty, it is by this time well known to the English public; its beautiful position on the slope of the Monterone, where the Lago Maggiore forms a kind of gulf, stretching out before Baveno; far away, on the opposite shore, rising majestically, Monte Ferro; on the bosom of the lake, are the cedars and the cypresses, the lemon and the orange trees, the magnolias and the laurels, of the beautiful Borromean Islands, in which genial Jean Jacques Rousseau could not make up his mind, so great a lover of nature was he, to lay the scene of that most delightful of the eighteenth century romances, the "Nouvelle Heloise," for he knew the history of the islands and how they had once been bare rocks, transformed by art into paradises of greenery. Every one who has visited Lago Maggiore knows the lovely position of Baveno, and the indescribable beauty of the scenery.

And here it is that the Villa Clara rises, a princely *bourgeois* dwelling, with its adjoining buildings (not least among these the church), extending like an amphitheatre to right and left.

Commenced some thirty years ago, or thereabouts, the Villa Clara, under the direction of Mr. Charles Henfrey, the well-known engineer, has been built and rebuilt several times, its owner never having expressed himself contented with its effect; indeed, tradition in the neighbourhood whispers how something considerably more than 100,000*l.* sterling has been laid out on the villa. It can be easily imagined, as in all such cases, the result,—an architectural whole, the epoch of which it would be hard to specify. The villa is, in fact, on a first glance, a colossal painted red-brick Swiss châlet.

In addition to the Villa Clara was taken the adjacent Villa Durazzo, for her Majesty's suite, while the Hôtel Belle Vue received a few distinguished visitors.

It has been said that it is the first time the Queen has visited Italy. This is scarcely the case. As long ago as 1829, when her Majesty, then the Princess Victoria, was only ten years old, she was at Baveno. "I have spoken," wrote a correspondent to the *Pungolo* some days since, "with an old lady in the village who still remembers the young princess, and who told me that she was a brisk, lively little girl, full of vivacity, with magnificent blonde hair falling over her shoulders." The old lady also remembers how even then the young princess was looked upon as the successor to William IV. "The Princess Victoria was lodged in those days at the Albergo della Posta, and occupied room No. 12, where sleeps now the present proprietor of the house (no longer an hotel), Dr. Adami."

Another retrospective particular connected with her Majesty and Baveno. Eight years after the time which we have above referred to, in 1837, the Princess Victoria had already been crowned Queen of England. The young queen had soon to be married, and as the choice was no unimportant one, a grand *fête* was held at London, as some few still among us will remember, and to this *fête* were invited all those princes who aspired to the hand of the young queen of England. Two of these princes, Prince Albert of Saxe-Coburg and a Prince of Hesse-Darmstadt, on their pleasant way to our hospitable shores, rested at Baveno; both put up at the same Albergo della Posta, to which we have already referred, occupying respectively—a particular for the precise historian of the future—rooms 36 and 48.

The two rival princes stayed some days at Baveno, unable, as happens to so many strangers, to leave its beautiful scenery, and when in the course of their walks the princes met, they courteously exchanged salutations.

Everybody knows which of the two was preferred, for the memory of the good Prince Albert, and his active interest in the welfare of his adopted country will remain fixed in the hearts of Englishmen for many a generation to come.

Verona.

THE LAND LAWS OF BURMAH.

THOSE of our readers who may be interested in the various systems of land legislation and tenant right which are in vogue in various parts of the world, may be pleased to compare the system which exists in the west of Asia, which we have already described in these columns, with one which exists in the south-east of Asia,—that is, in the kingdom of Burmah.

In the geographical and geological character of the land of Babylonia, and that of Burmah, there are many similarities; both are the growth of alluvial accumulation from the rivers which flow through them. The Irrawaddy, with its immense body of water, equal to if not greater than that of the Ganges, carries down with it an immense quantity of alluvial sediment, which as it nears its mouth, is deposited in the form of long low islands. Like the rivers of Western Asia, in the rain season it rises to a height of 50 ft. above its average summer level, covering an immense extent of the country on either bank, and depositing a deep covering of rich alluvial sediment. The result of the annual inundation in Burmah is a similar system of landmarks to those in vogue in both Babylonia and Egypt. The greater part of the land under cultivation in native Burmah is devoted to the growth of rice, which is richly watered both by the main artery, the Irrawaddy, and by the tributary streams from the slopes of the Arracan range of hills. The result of this thorough water subdivision is exactly similar to the canal system adopted in the Tigro-Euphrates valley. Stone landmarks and the irrigation canals were the boundaries selected to mark each individual estate.

The Buddhist creed being the State religion of the land of the Lord of Many Elephants, the pious devotees of this creed, as in India and the Celestial Empire, seek to show their devotion to the "oft-incarnate saint" by bequeathing to his temples some legacy or gift.

The selections of these devotees of the land of Burmah appear to range between two forms of offering; one we may consider extremely sensible, and tending not only to the eternal welfare of the donor, but also to the good of the nation; the second is by no means so meritorious from a secular point of view. The first form of religious bequest is the donation of the land to the priests of some temple for the purpose of growing crops of rice for the religious bodies and the poor dependent on them. This form of devotion, which was often practised, had a beneficial effect on the land, and gave great encouragement to agriculture, at the same time benefiting the priests and poor.

A similar system, equally productive of good, existed in the construction and endowment of tanks or reservoirs in India; the donation of lands in a highly-cultivated state by the kings of Babylon to the priests of certain temples; and the lavish donation of cattle, poultry, and land property by the Pharaohs.

But the second religious mania or form of expression of devotion is the building of a pagoda. The Burmese, like the Mahommedans, have the habit of neglecting to carry out the repairs which weather and time may render necessary in these edifices, and so the Irrawaddy may be said to be lined, at short intervals, by pagodas in various stages of glorious freshness or crumbling decay. In connexion with the last donation, Lieut.-Colonel Phayre, who was the leader of an embassy to the King of Burmah in 1855, has furnished some interesting matter in the translation of a land grant inscription, which he found in the ruins of Pugán, on the Irrawaddy. This inscription is inscribed on stone, and written in the native Burmese, a very vernacular dialect, having only a few Pali words of a technical nature inserted.

The inscription records the extreme reverence of the donor for the "three treasures," Buddha,—"Buddha himself," "his law," and his ministers. In the fulness of his heart he bestows on the priests, the agents of Buddha and his law, a plot of "fifty measures of land." This grant the pious devotee has made in order that "pure milk and honey" may be available.

In addition to the land, which was probably at that time of transfer in a state of cultivation, the inscription informs us that the pious Buddhist gave also all the agricultural implements necessary for the tillage of the said land, and appended to the grant is the following inventory:—

"Digging-spades, 50"; "broad spades, for storing the rice-grain, which resemble spades in use in the corn warehouses; planks,"—these are used to preserve the sides rills or ridges which regulate the irrigation the fields; "50 ploughs,"—these are probably the rough wooden ploughs; "sickles, 110," for cutting the rice-stalks; and lastly, "50 eight rakes," for the formation of the ridges and distribution of the grain. The summary of the gift in the inscription states, "That is in all 410 objects, including the 50 measures of land, an item."

Like the land-donors of Western Asia, the pious devotee of the Golden Buddha attaches to his inscription the following litany of blessings and curses on the heads of those who assist or oppose his good work.

(Regarding) "This my good work, the men who have assisted me,—

May they remain a hundred years.

But of this my good work,

The loose destructive men, who make sport with it,

May the earth swallow them up.

May the thunder-bolts strike them.

May the clergy and laity avoid them.

May tigers devour them.

May crocodiles eat them.

May they be destroyed to-day.

May their blood harden and become corrupt.

May calamity, enmity, and evil overtake them.

May all their projects come to nought.

May they die with giddiness (sun-stroke).

May they have a disgusting stench in the body with much disease.

May evil follow them day and night."

We are at a loss to know whether to award the palm for scorching invective to the religious devotee of Buddah or Bel, to the inhabitants of Eastern or Western Asia, but it is certain that there is a curious similarity between the systems, the only divergence is in the local instrument of punishment. The crocodiles and tigers of Burmah are but the "hyenas and lions" of the Babylonian legend. In the Michaux stone the same curse of disease and putrefaction is invoked on the head of the injurer of the tablet. "The death by giddiness" or sunstroke finds its equivalent in the leprosy which would visit the sin of a Babylonian trespasser.

Of course this Burmese grant cannot compare in the point of antiquity with the terra-cotta title-deeds of the Courts of Babylon, its date being, according to the learned translator, 1189, or about three hundred years after the foundation of Pugán. In its turn Pugán has seen many other Burmese cities, been the capital of the empire, and was so from its foundation to the end of the thirteenth century, but in 1284 A.D. it was destroyed by the Chinese.

g of Burmah had slain, probably in one of
ie fits of drunken indignation of which we
ie just had so shocking an example, an
assador sent to him by the Emperor of
na. To fortify the city against the invading
nese host who came to avenge the insult the
g pulled down, so the annals of the city say,
rly 6,000 temples. But, as the invaders
roached, his courage decreased, and he fled,
ndoning the city, which was occupied and
ced by the Chinese. In February, 1826, the
ish troops, under Sir Archibald Campbell,
e encamped here.
his inscription which we have noticed here is
resting, in furnishing another example of
extreme reverence which is attached to the
mark or deed of gift among all nations,
will bear comparison with the elaborate
uments from Babylonia and Egypt.

COLLECTION OF REPORTED CASES LATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.

BY E. S. ROSCOE, BARRISTER-AT-LAW.*

COMPLETION OF WORKS.

Time of Completion.

HEN it is agreed between a builder and his loyer that the work shall be completed by ecified date, and that if it is not so com- ed a sum shall be paid by the builder to the loyer in respect of every day which elapses r the specified time, until completion, and the loyer orders extra work to be done, so that specified time is exceeded; such order for ne does not put an end to the stipulation, but entitles the builder to have an allowance e in respect of the days necessarily occupied e execution of the additional work.—Legge arlock, 12 Q. B., 1015 (1848).

ompare this case with that of Jones *v.* ohn's College, Oxford.]

HEN a builder contracts to complete a certain by a specified time, and also alterations and ions subject to the original conditions, and the periods for completing the alterations xtras shall not exceed the period first named, bound to complete the work by the time ified; and even if this is an impossibility he is e for the penalties agreed on or other damages nsequence of such non-completion by the fixed on.—Jones *v.* St. John's College, Oxford, R., Q. B., 115; 40 L. J., Q. B., 80 (1870).

his case exemplifies the way in which lers sometimes for the purpose of business into stipulations which may turn out ly one-sided; and it further shows that this happens the law will not help them, use, to quote from Mr. Justice Hannen's ment, "if a man does in direct terms enter a contract to perform an impossibility ject to a penalty, he will not be excused use it is an impossibility."]

HERE there is an agreement by a contractor mplete work by a specified date, and subse- tly another agreement to do extra work in a reasonable time, and such extra work mixed up with the original work that the r can only be completed at the same time he former, this waives the original condition prevents the employer from suing for any lties consequent on the non-completion of work by the time originally fixed.—Thorn- *v.* Neats, 8 C. B., N. S., 831 (1860).

f this and the two preceding cases be taken gether, they seem to show clearly enough what law is; the agreement in this case is a ceable precedent.]

Substantial Completion.

HEN work under a building (or other) con- t has been substantially completed (that is, me small portions of the work are unfinished), builder is entitled to receive payment.— ks *v.* Godwin, 3 Bing., N. C., 732 (1837).

his principle may be qualified by the fact there is a term in the contract which forms ndition precedent to payment, such as the ng of a certificate by an architect. See ro *v.* Butt, 8 E. & B., 739.]

Prevention of Completion.

HEN a builder undertakes to complete a work given time, and such completion within such given time is prevented by some act of the employer, the builder is not liable for any damage in consequence of such non-completion.—Holme *v.* Guppy, 3 M. & W., 387 (1838).

A BUILDER or contractor may bring an action against his employer for preventing the completion of the work, and thereby causing him damage, and it is no defence to such an action to say that the non-exercise of due diligence on the part of the contractor "was not, in the opinion and according to the determination of the architect, caused or occasioned by the acts of the employer or his architect."—Roberts *v.* Bury Improvement Commissioners, 5 L. R., C. P., 310; 39 L. J., C. P., 129 (1870).

[The meaning of this decision may be made clearer by the following statement. By the terms of the contract the architect may, for various reasons specified in the contract, give further time, or the employer may put an end to the contract, if, according to the opinion of the architect, the contractor does not exercise due diligence, and make due progress. The employer does put an end to the contract, and the contractor brings an action for being prevented from completing the contract. To this the employer pleads that in the opinion of the architect the contractor did not make proper progress. To this the contractor replies that the alleged fact of his not making proper progress was caused by the default of the employer and his architect in supplying plans and drawings and in setting out land, &c.; to which again the employer rejoins that, according to the opinion of the architect, there was no default on his part. To say this is beyond the scope of the architect's authority, and is a question to be tried as a matter of fact. His authority extends, subject to the provisions in the contract, to giving an opinion that the contractor is not proceeding with due diligence, but, as in law a man cannot take advantage of any non-fulfilment of a condition the performance of which has been hindered by himself, it is perfectly allowable for the contractor to rely upon the fact, subject to proof, that the non-fulfilment had been caused by the act of the employer or his servant. And compare dicta of Lord Campbell, in Munro *v.* Butt, 8 E. & B., 739.]

WHEN a person contracts to do an entire work for a specific sum, he can recover nothing until the work is completed, or unless it can be shown that it was the fault of the employer that the work was incomplete, or unless there is something to justify the conclusion that the parties have entered into a fresh contract.—Appleby *v.* Myers, 2 L. R., C. P., 651; 36 L. J., C. P., 331 (1867).

[This case shows the principle of several of the above cases.]

SCARBOROUGH.

WHERE the "sea-wind sang, shrill, chill, with flakes of foam," as is *Morte d'Arthur*, on the wild north-eastern coast is one of the best-known of our health-resorts,—Scarborough. It has given up almost the only claim that it had to position as an industrial centre, and it is more and more a bathing-place and a summer resort. Dating back as a borough to the distant days of Henry II., having in its old castle the ruins that tell of the antiquity of the town and the iniquity of some who ruled it, and possessing in its fine old parish church, and in other of its buildings, proofs of its age, Scarborough has of recent years grown not because it has attracted great industries to itself, or because it has become a great railway centre, but chiefly on account of its position, its natural and acquired attractions, and its gaiety in its season. It is true that its disposal of some of its charms is a meretricious one; but to adopt a fitting simile, all is fish that comes to the net of this sea-enriched town, and it has no ground to complain of the result of its efforts to please.

Forty years ago Scarborough was rather more than a bathing-place. A veracious chronicler who visited it could enumerate 168 vessels as belonging to it; could tell of the, even then, few cargoes of Baltic and American timber that were annually imported; could point to shipbuilding and the manufacture of cloth as amongst the chief industries, and could refer to the "few coal-mines and the many quarries" that were then worked in the immediate vicinity. Even the fine bridge to the "Spaw" was boasted of, with the grand reservoir that had been formed, to give a "copious supply of water to the town"; a railway was projected, to join the Leeds and Selby one; a slipway was also contemplated, with warehouses, bonding-yards, and others of the essentials of ports. The government of the town was in the olden style,—bailiffs, coroners, chamberlains, recorders, and common-councilmen, forming the corporate body and courts of session, and manorial courts were held. At that date, the partly-ruined parish church, the then new Christ Church, and five places of worship for Dissenters, comprised the ecclesiastical structures; and the only other notable building was that of the museum. Even then Scarborough was noted as the residence of no small number of the nobility and gentry, schools were many; there were a couple of boat-builders, one shipbuilding firm, and three or four sailmakers; half-a-dozen circulating libraries furnished mental food for visitors and townspeople; sixty or seventy lodging-houses were enumerated, and professors were almost as plentiful as shipowners. Travel and traffic were served by five coaches running regularly, and an extra one during the summer; there were about a dozen carriers; three vessels sailed to London, and one each to Hull and Newcastle, and these formed the means of conveyance of the town. The population of the parish was about 8,760, and its rate of increase was barely 130 in the decade. It had handsome and spacious streets, beautiful terraces, its springs were known and its waters famed, and as the years passed on, and means of ingress and egress were afforded to the town it began to grow, to cast off in a large degree its double character, and to become simply a health-resort.

Scarborough figures still in the list of ports of the kingdom, but the number of entries and sailings yearly are from six to nine, and the tonnage is about 1,200 annually; 183 vessels are still registered as owned by it. It launches occasionally little wooden vessels of some 50 tons, and it is still, to some extent, a good fishing station. It owns 214 boats, registered under the Sea Fisheries Act, requiring over 1,100 men and boys to work them; it has 820 regular, and about 200 occasional fishermen; but practically these industries are stationary. The coal-pits are disused, and the quarries are of less importance; and it may be said that Scarborough does not maintain its position as a purely industrial town, nor, indeed, could it have been expected, seeing that it has become more and more a servant of pleasure and pleasure-seekers. Its population had advanced to 24,259 at the last census, and summer largely swells those numbers. With the growth in numbers, there is a fully equal growth in the essentials of town life,—in organisations, religious, philanthropic, educational, and corporate. Long ago its corporation became a real representation of the people; and in recent years it has added a body for the oversight of the education of its youth, whilst the older organisations for allied purposes have grown in influence, if not in numbers. Its churches and chapels are equal to those amongst the most ornate of towns of similar size in its broad county; and they are kept in countenance by literary and other institutions' homes; whilst the erections for the use and the gratification of the pleasure-seekers—from the oldest bath to the aquarium, are all that could be looked for. The stately streets of two score years ago have been added to, the Spa has been beautified; some of the hotels—notably the Grand—are amongst the most massive and imposing of those of hotel-loving towns; and from the dominant castle, or from some of the terraces, the views are most magnificent. Scarborough has cultivated its attractions, and spread them out to its visitors in regal style. It subsists on its beauties and on its sea breezes; and therefore it has the keenest desire to improve itself and to attract to itself from a wider range those for whose pleasure it so largely lives. Although it offers, it does not give itself up to, *dolce far niente*; on the contrary, there are life and activity in it; to it pleasure is business, and round the jolly dame its populace throngs to sell, to bargain, to let.

Other health resorts have sprung into fame, and exclusive Saltburn at one time threatened to inflict no small danger on Scarborough,—joined to the apprehension that the sanitary state of the latter was not what it should be. These apprehensions have vanished, and Scarborough flourishes whilst Saltburn advances. It is true that Scarborough is slightly lacking in public spirit, or the link in the coast line between it and Whitby would have long ago been completed, and a new route would have

* See p. 384, *ante*.

enefited both these towns. In the present day to stand still is to retrograde in the list of towns; and though Scarborough has not stood still in developing the natural beauties of her situation, she is laggard in the race, in neglecting to add continuously to the facilities for reaching the "Queen of the North." Within a comparatively short distance are a score of populous inland towns who furnish, it is true, streams of visitors to the seaside; but that number might be many times multiplied with proper facilities for travel and proper attention to the growth of these. With an unlimited capacity for contributing to the health and to the enjoyment of no small portion of the population, our health-resorts should be more than the places of recreation for the comparative few; and they should be made ready of access, and able to contribute to the enjoyment of the many; but there is much to be done before these things of beauty are "joys for ever,"—known and appreciated by the "common people."

COLLIERS' COUNTY.

No part of the kingdom more fully proves that Burke's "age of bargaining" has come, and none more fully shows the change from the past to the present, than does the border-land between England and Scotland. Not only was that border-land the region of the ballad-writers, but it was also that of the events they depicted, —of the raids and the reivers, the harryings and the huntings, the battles and the betrayals of old. It is peopled in memory by the heroes and heroines of old, the streams run as they ran of old,—often blood-tinted; there are the long moors and high hills in the prospect, but the animation in it is small; life centres in the little dales, and the farmsteads have the surroundings which fit them for mimic sieges; and now and again there is in the landscape the dull red streak of fire. In addition to men of mortal frame, there are "wee men," fairies, and ghosts; and instead of a world of reality, we are in one of romance, in which each familiar object "doth suffer a sea change." The tokens of the presence of the nineteenth century fade away; and though some of its marvellous powers are wanting, the endurance of the men and women make partial amends for that loss, whilst over all the land the glamour of fancy is thrown. The whole of the Border counties, indeed, might have light thrown upon their past from the ballads that survive, telling in quaint and pleasing strains the customs, the modes of life, and the passions of their olden inhabitants. From Carlisle to Berwick, and from Rookhope to Dumfries, we are, in fact, in the home of the ballad-singer, and his is one, and not the least pleasing of its histories. In no part of that historic border-land have we more varying scenery, or a greater contrast marked between the past and the present than in Northumberland.

Though shorn of the proportions it once had, the "county north of the Humber" comprises its 1,800 square miles,—sufficient to prove that the popular idea that it is one immense coal-pit is ill-founded. It is true that coal-mining is, as it has been for generations, the prominent industry, but beyond it Northumberland possesses extensive manufactures; its claims to historical remembrance are great, and often unique; and its services to modern civilisation have been many. It is the home of the locomotive, the practical birthplace of railways, and of screw steam colliers; its rivers are commercial streams widely known; its factories for engines and guns are world-renowned; even its local songs have enduring fame; and what philologist or musician is ignorant of its dialect and "burr," or has not brought up the memories of the Tyne to the lilt of "Weel may the reel row?" Yearly the great Northern coalfield turns out its six million tons of coal, and this fact, and the allied one that the Tyne is now our chief exporting river, has induced the prevalent belief that coal dominates over Northumberland; but, as we may see, it has a varied aspect, as well as changing and extensive industries.

Take a map of Northumberland and mark on it the limits of the coalfield; a wedge-shaped tract from Warkworth to Tynemouth, and two isolated patches at Scremerston and Plashetts, cover only a small portion of the county, beyond which there is a region legendary, historic, agricultural. Travelling westward by Tyneside, we have a glimpse of one of the phases of life the great northern county shows,—that of places from whence their former importance has departed,—villages known in Roman days, and decaying towns, such as Corbridge; evidences in cold mills and and dismantled furnaces of the passing away of later industries; and over all, in fertile fields and long rolls of pasture-land, signs of the domination of agriculture, with, at unfrequent intervals, the interruption of the newer dwellings to show where the wealth of the eastern towns builds its nests. Turning north-east, we traverse the scene of many a raid; the map is scored by the track of a few rivers, but the great roads are few and direct, and not till a large tract of country is passed does any considerable town present itself. Central Northumberland, indeed, is as yet undeveloped. There are rolling moors, bleak and dead in winter, but blooming in the summer months in all the hues that flowers, ferns, heather, and gorse, can give them; dales such as those through which "Jock o' the Side" rode; hills that are dwarfed to mere rising ground in comparison with the "cold Cheviots" of the north; and ancient farmsteads and hamlets dotted here and there in gaunt greyness. Morpeth is sheltered in its vale, unchanged by generations, except by its contiguous collieries; Rothbury is struggling into repute as a health-resort; and Alnwick recalls the memories of the Percys,—of "Hotspur and his gentle Kate."

Still northward, and the coast is wilder, the inland scenery bleaker, until Bamborough, from its headland, looks over where "glooms the dark broad sea," or Wooler is frowned down upon by the Cheviots, or as of yore, day dawns on Norham's castled steep." In the wild scenery of the borderland, Chillingham projects its cattle; Yetholm keeps its remnants of the Gipsies' Faas; Humbledon tells meekly of the defeat of the Douglas; and Berwick is big with antiquity and stories of struggles. A sturdy race dwells along the windings of the Tweed and by the declivities of the Cheviots; but their nature partakes of that of their winters,—frosty but kindly. In the north, the great herds of sheep and cattle gather; the fertilising rivers,—Tyne, Coquet, and others,—sweep down the dales, through the woods, and make the equivalent to sunshine in a shady place,—fertility amongst the bleakness of the moors and the barrenness of the hills.

But the special characteristic of Northumberland and of its populace is to be seen in its south-eastern part,—amongst its coal mines, and in and around the scenes that mark the course of the Tyne. The coal measures of Northumberland have been long worked, and the signs of that protracted working are visible in the pits, in the disused workings whose shafts are still crowned with disused engine-houses, and occasionally with the old-fashioned "gin" long ago substituted; and in the scarred aspect of the country, the green fields being marked with huge pit-heaps, unsightly rows of colliers' cottages, and other visible proofs of the domination of coal. The metropolis of this northern pitland is the town called by its natives "canny Newcastle," and there are few sights more picturesque than it shows at night, though in the day the smoke that arises from a hundred factories spreads murkily over its dull roofs. Looking down from the grand bridge, the course of the river is marked by the waving line of lamps, by the lights in the vessels, the glow from many a riverside factory; and, haply, by the blast-flame from some distant furnace, rising pale and blue into the gloom. For miles down the river there is a rugged range of scattered houses, of chemical works, rolling-mills, glass factories, and warehouses; whilst the turbid stream is pressed by the keels of many a vessel, keel, and boat. That stream has become historic, for it flows by the scene of many an industrial problem successfully solved; it passes by the works, still carried largely on, where the Stephensons built their first engines, by the great ordnance works, chemical works,—the largest of their kind in the world,—and through a long line of glass and earthenware works, shipyards, potteries, engine works, mills, and furnaces, docks of great magnitude, and collieries noted as that of Wallsend, whose fame endures long after its coals have been worked out. Add to this picture that great proof of engineering skill, the high-level bridge; the two great towns on the two banks of the river, with their architectural beauties; and some idea may be formed of the peculiarities of Tyneside scenes. Grainger and his successors have changed the appearance of the old town; Sandgate, the Wapping of Newcastle, and the locality of the "Keel Row," is chang whilst the Side is losing its old character; the dwindling of the keelmen, the growth the towns, and the importation of people f other parts, are so changing the populace, it is only when a boat musters its myriadi Tyneside, and the well-known "burr" float the air, that the ancient peculiarities of people are brought to mind. These are som the prominent points of Northumberland, tamed down into a commercial county from wildness of its past. The fair white-wir peacemaker has flown over the land, and sw away the lawlessness of the North, givin its stead a peaceful, staid population, ten sheep and cattle, and rolled down a little of quaintness of the South, substituting a mercial keenness which has given their dis a proud pre-eminence in Northern commerc

SIR ANTONIO PANIZZI AND THE BRITISH MUSEUM READING-ROO

It is very difficult to get rid of an erron belief. If a wrong statement be once prin succeeding writers copy it, and it lives on, of other statements which have been mad set it right. This is exemplified in the graphical notices of the late eminent libr of the British Museum, Sir Antonio Pa elicited by his lamented death; and where amount of credit has been given to hi respect of the Reading-room there, to whic must venture to say he is not entitled. the *Times*, in a leading article (April 9th), applauding, justly, Panizzi's efforts to mak library more accessible to students, sa "And the Reading-room itself, which enabled admittance to be granted to so students, and is not the least of the wond this metropolis, was due to his inventive g As long as this reading-room remains no ment can be necessary to preserve the fa Panizzi; and if in the lapse of time this hospitable hall of study should be abandon would certainly remain the type of all si edifices." And again, in a biographical in the same issue,—"On the subject of logues, both alphabetical and analytical, o plan and design of the Reading-room bears his name, and which will long st monument of his constructive genius, P had to carry things somewhat with the hand." He is here credited, it will be with both the design and construction apartment, but in truth he had nothing with either. The original proposition was by our esteemed and accomplished frien late Professor Hosking, and we published hi in 1850.* He had submitted it to the Tr in 1849, saying with it,—"My project build in the middle of the quadrangular enclosed by the present main buildings Museum, in the manner shown in the a panying plan, a modified copy of the Par at Rome,—that is to say, of the cupola-c Rotunda known by that name,—as near full size as possible consistently with the the area and the height of the present build

The design actually carried out throug persistence of Sir Antonio, then Mr. P was made by the late Mr. Sydney Smirk is illustrated by plan and view in our for 1855.† In after years we received from Smirke on more than one occasion plaining of the absurd attribution of the to Panizzi.

Both our old friends have passed away, would seem to be the duty of those who the truth to claim for them what is theirs

* See *Builder*, vol. viii., p. 295.
† See pp. 133, 138, 139.

The Cochin and Travancore Railw

In the *Builder* for January 25th last, p. 1 mentioned that the scheme for making th way, in connexion with the extension of Harbour, had been revived. The last mai from India brings news that arrangemen in progress for the formation of a compa carrying out the work. The line will be four miles long, and will form a junctio the Madras Railway at Shoranore. The proposed is through Mooloocary, Wattakan Trichoor, Oorangum, Chundamungalum, Eyampuly, Narakel, and Cochin. Mr. Hudson, formerly attached to the eng staff of the Great Northern Railway, Cross, is the engineer of the proposed li

)MAN ANTIQUITIES AT LYDNEY PARK, GLOUCESTERSHIRE.

The account of the remains at Lydney Park, ently published,* is an interesting addition the printed records already existing of the rks left by the early occupants of this country. ien the Roman constructions in Lydney Park re first regularly explored (at the beginning his century), the Right Hon. C. Bathurst, er taking accurate plans and drawings of the eral rooms as they successively came to light, nposed a detailed description, in two parts, he villa and the temple. His work displays oh knowledge of ancient history and anti- ties, is well arranged, and written in a good le; but it has been considered as carried out too great a length, and too discursive, for purpose of the present publication. Others 'e therefore worked upon it, and the whole been edited by Mr. C. W. King, who has ded some theories which greatly increase the erest attaching to these remains.

The Roman station in Lydney Park is situated ut a mile and a half from the river Severn, the western side, about nine miles above its fluence with the Wye, and about twenty es below Gloucester. It is probable that the erflowed nearer to Lydney, in former times, by least half a mile, for a large tract of alluvial und is known to have been formed by depo- ition from the river within the last 150 years, d tradition reports that the water once came within a short distance of the church at dney.

The position which the Romans here occupied s a very commanding one, and communica- n might be held from thence by signals with fortresses which they are known to have d on the opposite side of the river, such as se at Painswick, Selsley-hill, and elsewhere.

The Romans appear to have occupied the mits of two hills now comprised within the k at Lydney. The larger of these, usually ed the Camp-hill, has an area of 850 ft. by ft.; the smaller is nearly circular, and not ve sixty yards across.

The larger fortified area, where the principal ains have been found, is of an oblong shape, surface having a gentle slope upwards from th-west to north-east. The buildings were ed chiefly at the lower or south-east end the inclosed space. The outer wall is very qual in size, and irregular in position, so not completely to surround any part of the ldings. The remaining part of the area, ept on the west side, where the declivity is y steep, is bounded by a mound, formed arently only of earth and such stones as ght be mixed with it. On the north, where ridge of the hill is prolonged, there was a p fosse, with some indication of a second und.

This hill was long known popularly by the ne of the Dwarfs' Hill, from the notion that buildings were the work of fairies, always posed to be a diminutive people. When the ate was purchased by Mr. Benj. Bathurst in 3, all this part was overgrown with bushes; there were walls remaining about 3 ft. ve the ground, particularly in a part called Dwarfs' Chapel: where this was situated not now known. Many large coins and other iquities were then found; and the mother of s. T. Bathurst was fond of scratching on the face and employing little girls to pick up r ancient articles she met with, many of ich she is said to have sent to a friend in ndon. At that time, about 1770, the walls re not half so high as in the time of Mr. B. hurst.

No regular investigation of these remains was r made until the year 1805, when some holes ving been dug for the purpose of planting es, which brought to light the foundations of walls, it was resolved by the late Right Hon. Bathurst, who then owned the property, to tinue the excavations, in order to trace out direction of these walls, and the form of the lding to which they belonged. This work s carried on for several years, one workman y being usually employed upon it. Every ll was measured as it was brought to light, d laid down on paper; and every pavement s carefully copied, until the whole range of ldings had been discovered.

It would appear from the extent of the buildings, the elegance of some of the pavements, the hypocausts, and the painted stucco with which the walls were adorned, that if this spot was first occupied as a military station, it gradually became the settled residence of a number of persons who gathered around the dwelling of the proconsul, or other officer of high rank.

The series of coins found here, extending from Augustus to Arcadius, would lead to the conclusion that this station was occupied during the whole period of the Roman dominion in Britain, while the large number of them would seem to show that the place must have been vacated in haste; and the marks of fire, with pieces of melted lead found among the ruins, make it probable that the whole was suddenly destroyed, and never again occupied by the inhabitants of the country.

The buildings extended, nearly in the direction of north and south, entirely across the hill, the extreme walls on either side standing on the edge of the declivity. The whole breadth in this direction was 300 ft.; the utmost length across, nearly east and west, was 315 ft.

The hypocausts found were merely to warm the various apartments; there are no indications of baths. This, says Mr. King, in another part of the book, was the usual method for warming houses of the better class in cold climates, for the Romans were not acquainted with the use of fireplaces having chimneys; the focus of poorer dwellings being simply a fire made in the middle of a room with a hole in the roof above for the escape of smoke. Julian, in his "Misopogon," tells a curious story that well illustrates the custom. Residing in Paris during a very severe winter, he would never allow his bedchamber to be warmed, "although this could have been done by means of fire under the floor, as the houses in that region are generally constructed." But the frost growing still harder, he was forced to submit; but fearing lest heating the flues suddenly should bring the damp out of the walls, he ordered a brazier of live coals to be carried in, and narrowly escaped suffocation from the fumes.

One of the buildings exposed is supposed to be the remains of a temple, the extreme length of which is 93 ft., the breadth 76 ft. The remains of such buildings in Britain have not been very frequently found, though altars inscribed with the names of various deities are not unusual. Yet it appears to have been a part of the policy of the Romans, when establishing their authority over the British tribes, to promote the erection of these, as well as other public buildings. We are told by Tacitus, says Mr. Bathurst, from whose account we are condensing these particulars, that Agricola took great pains to encourage the building of temples, public rooms, and private dwellings, in order to civilise the natives, and deter them from their warlike propensities. It is believed that this building was a temple, from the circumstance of three inscriptions having been found within it, two of which are on bronze plates, the third on lead. These are evidently votive tablets, and were probably suspended, or nailed to the wall, in some part of the building.

It is remarkable that in each of the tablets now under consideration the name of the god is spelled differently. The execution of one of them, however, seems superior to the others, besides that the writer of it has a *prænomen*, and may, therefore, be supposed to have been of higher rank and better education than the others. So that, taking his reading as the most correct, it is concluded by the writer that this temple was dedicated to a god named Nodon or Nodons.

The tablet of lead bears a curious inscription, which may be thus translated:—"To the god Nodens. Silvianus has lost a ring. He has given the half part to Nodens. Allow health to none amongst (those) who bear the name of Senicianus until he brings (it) even to the temple of Nodens."

The question naturally arises, whether such a deity as Nodons or Nodens was ever heard of in Roman mythology, and this is discussed at some length. Was he, it is asked, a British divinity, adopted by the Romans, as they sometimes were in the habit of doing in regard to the gods of the countries they conquered? Examples of this may be seen in the inscriptions on Roman altars found in Cumberland.

Another conjecture identifies Nodon with Æsculapius, the god who presided over the medical art, and whom the Romans borrowed from the Greeks.

On the dedicatory inscription, which is of peculiar interest to us, worked in the tesselated pavement of the Temple, the copies hitherto published are supposed to be very incorrect in the first and last portions. They give for the opening four letters no more than D. or D. A., and read the concluding letters as INTERAMNATE. But now, with the aid of the accurate drawing made at the time of its discovery, some additional forms can be with certainty restored, and the whole, Mr. King thinks, may be read as follows:—

"DEO MAXIMO ITERUM FLAVIVS
SENILIS PRÆCES RELIGIONIS
EX STIPIBVS POSSVIT
OPITULANTE VICTORINO INTER-
PRETE LATINE."

"To the greatest God, for the second time, Flavius Senilis, Head of the Religion, has erected this, from voluntary contributions, the Director of the works being Victorinus, interpreter for the Latin tongue."

Mr. King proceeds to justify this interpretation, the most important facts of which are now proposed for the first time; but we cannot attempt to follow him, but confine ourselves to his observations on "the director of the works," Victorinus, a fresh name to be added to the list of ancient architects known to us.

"Victorinus," possessing neither *nomen* nor *prænomen*, says Mr. King, was necessarily a plebeian, though at the same time freeborn. The name, Victorinus, being very popular in Gaul, we may, without giving too much scope to fancy, suppose him to have been an architect or engineer who had come over in the train of Agricola with the view of pushing his fortune in the fine field just opened to ingenious people, by the newly kindled taste of his barbarian cousins for the arts of peace. Agricola himself was educated at the University of Massilia, and ever retained a high respect for the system of mental culture there pursued.

"This brings me to the most difficult part of my undertaking,—in what manner the lost letters following INTER are to be restored. 'Interamnate' has been adopted in previous publications; but a careful examination of the coloured plate, and a comparison of the imperfect characters with those well preserved in the rest of the inscription, will convince every one accustomed to such work that the concluding letters are TINE, and cannot by any ingenuity be tortured into ATE.

It is, however, to be taken for granted that the concluding words had described the *profession* of Victorinus; to follow the precedent we have in the case of his employer, designated above as 'Præses Religionis.' On these grounds I boldly propose to read 'Interprete Latinè,' 'Interpreter for the Latin tongue'; a form of expression justified by the common usage of 'loqui Latinè,' 'interpretari Latinè.' Fanciful as this explanation may at first appear, it is based upon strong and, to my mind, convincing arguments."

The interpreter, *ὑποφήτης*, was an officer attached to every Grecian Oracle; where, indeed, his services were absolutely indispensable to enable the consultor to profit by the divine counsel communicated in the disjointed ravings of the Pythia, in an unknown tongue, or in dreams and visions of the night. The most remarkable, as well as most ancient, notice of this institution is to be found in the "Iliad," where Homer addresses Jupiter as "Pelasgian, sovereign of wintry Dodona; around dwell thy *interpreters* the Selli, with feet unwashed, and having the bare earth for bed." The scholiast adds that their office was to explain the responses of the god, and that they were the highest order of priests belonging to the place.

Victorinus, Mr. King thinks, was clearly a man that could turn his hand to anything; like Juvenal's half-starved Greek, he was, as circumstances demanded,—

"Augur, schœnobates, geometres, pictor, aliptes,"

and shone in every capacity.

To his taste and skill the numerous tesselated floors of the villa, with their graceful and varied patterns, bear ample testimony, and lead us to form a high opinion of the temple that rose up under his direction (although nought of its architectural features now survives), pillars and entablature having (as the absence of even their fragments proves) been constructed of oak.

Such a universal genius was the very man the times called for; and we cannot doubt that he "worked the oracle" to the greater glory of the prophetic powers of ancient Nodens, to the edification of all comers to his shrine; and, above all, to the increased profit of his patron, who may very well have been one of those Britons whom Agricola had in his mind when he said their natural abilities were superior to those resulting from education in the Gauls,—of whom Cæsar himself has commended the ingenuity

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* Roman Antiquities at Lydney Park, Gloucestershire. ng a Posthumous Work of the Rev. William Ililey hurst, M.A. With Notes by C. W. King, M.A., ow of Trinity College, Cambridge. London: Long- ns, Green, & Co. 1879.

and aptitude for imitating the works of more civilised people.

Before dismissing this inscription (the most important of its kind ever discovered for the remarkable facts in our early history which may with good reason be deduced from its terms), Mr. King calls particular attention to the support of his theory as to its date which the *lettering* itself affords. Many of the characters slope considerably from left to right, which is a peculiarity of early Latin writing, but is never found in inscriptions of later date than the first century of the empire; from which time downwards all the straight lines are perfectly vertical. The general character of the writing in this dedication may be compared with that preserved to us in the announcements scribbled upon the house-walls of Pompeii, and goes far to indicate the same period. And a similar conclusion may be drawn from the coins scattered over the site of the Temple.

We have said enough to justify our assertion of the interesting nature of the volume, and need only add that it includes plans, and illustrations of the pavements and of many of the other objects found.

UNCLAIMED PRIZES AND THE TROCADÉRO.

The 21st of April is the date fixed for the adjudication of the works relating to the establishment of a park on the Trocadéro. The project for the partial though permanent preservation of this portion of last year's Great Exhibition comprises the re-opening of a public road across the slope or hill known as the Trocadéro. The palace, which crowns the summit, will remain the property of the State, as the Muncipal Council decided, at a recent sitting, that the city could not undertake the maintenance of this public building. The gardens are to be preserved, as also the aquarium, and the cost of this and the necessary alterations is estimated at 14,880*l*. The gardens and aquarium, however, belong to the town, as it is only the palace itself which has been given up to the State. Considerable difficulty is experienced in dealing with the gardens, as they are still encumbered by all manner of plants, trees, and shrubs which belong to the National Lottery, and have not yet been removed by the winners. There are also two hot-houses, which not only contain innumerable flowers won by ticket-holders, but are themselves prizes as yet unclaimed by the winners. Fortunately, a very ingenious scheme has been suggested and adopted to escape the present difficulty. A trustee has been appointed who will proceed to sell all the prizes that have not been claimed, and will keep the money they may fetch at the disposal of the owners of the winning tickets, should any of these latter at last make up their minds to claim their rights. The probabilities are that many are not yet aware that they have won anything. The flowers that are likely to spoil will be sold at once, while the others will be kept for three months more, which is the legal delay allowed to the holders of tickets. Perhaps some winners are purposely waiting, as they know that good care is taken of the plants, and that they are consequently increasing in value!

THE COST OF THE PARIS HOSPITALS.

Contracts have been concluded for the maintenance in proper repair, during the three years comprised between the dates of April 1st, 1879, and March 31st, 1882, of all the buildings belonging to the "Assistance Publique" of Paris. These are divided into five sections or districts, and comprise eighteen hospitals, thirteen asylums or homes, and a number of offices for the distribution of alms, of assistance to the wounded, bake-houses, cellars, and stores for the making and warehousing of bread, wine, medicines, &c. distributed to the poor by the State. The cost for the maintenance of all these establishments in good repair during the forthcoming three years is estimated at 124,400*l*.

It must be borne in mind while taking these figures into consideration, that the system of out-door relief finds universal favour in Paris. There is no such thing as a workhouse. Hospitals and asylums for the insane, incurable cases, and chronic diseases abound, but the idea of imprisoning an able-bodied pauper, and breaking up his home, is altogether foreign to the French conception of charity and of economy in the matter of pauperism. Hence the heavy cost of building and maintaining such establishments as our English workhouses is avoided; and considering the thrifty habits and the sense of dignity that characterise the French working classes, the free distribution of out-door relief does not tend to increase pauperism. All over Paris, hospitals relieve the sick; no letters of recommendation are required, no certificate as to respectability or good character is demanded; it suffices that the applicant should be poor and suffering, and the arms of charity are opened. In each arrondissement there is a Bureau d'Assistance Publique, where out-door relief is given, and a regular system organised for providing medical assistance, nurses, medicines, &c. to those who do not go to the hospital. Such is, in a few words, the Paris poor-law system, and such the cost of maintaining in repair the buildings where it is put into force.

CO-OPERATIVE STORES, RADCLIFFE.

The new stores are now completed and opened in all branches, and they afford a striking instance of the beneficial power of combination of working men in achieving desirable social results.

The building is, in reality, an addition to the original stores, which occupied three shops, now amalgamated in the general arrangement. The whole area of the ground-floor is occupied by shops devoted to the grocery, flour, butchery, drapery, shoemaking, clogging, furnishing, confectionery, and tailoring trades, and to entrances to the upper stories, and to cart-entrance and hoist.

The grocery trade is the chief business of the society, and to this department a large shop has been devoted, 64 ft. by 30 ft., with two rows of counters down the sides, and a row of seats for the convenience of customers in the centre. In most of the shops the fittings have been especially designed to suit the needs of the trade, and the idea of economy of labour in distribution has been present in every arrangement.

The secretary's office and board-room, each 30 ft. by 22 ft., are upon the first floor. As the approach to these rooms is four times in the year subject to a great crush of shareholders going to receive their dividends, a commodious entrance and staircase have been provided, and upon these occasions the crowd of approaching and departing persons is divided by iron standards and cords into a long *queue*, which oftentimes extends the length of the two passages and staircase, even to the street door.

The library, news-room, and conversation-room are always marked features in co-operative premises, and have in this instance received especial care. The news-room is a well-lighted room, 52 ft. by 25 ft., with a panelled pitch-pine ceiling, furnished in pitch-pine with newspaper-stands, tables, seats, writing-desk, reference library, &c., all especially designed for the room. The library and conversation-room are arranged in convenient juxtaposition, the whole forming a comfortable place of resort. The remainder of this floor is occupied by store-rooms for the grocer, and show-rooms for the draper's shop. This latter apartment is furnished in black and gold.

An important feature in the general arrangement is the provision made for the general public in the matters of assembly-rooms, club and tea-rooms, &c. The large assembly-room is 110 ft. long, 44 ft. wide, with platform and orchestra capable of accommodating 240 performers. There are three large retiring-rooms to accommodate performers at this end of the room, and two large anterooms, one on each side of the general entrance of the other end. The main staircase is of stone, 6 ft. wide, leading directly down to the street, with an extensive vestibule, or landing at the top, and ample lavatory accommodation on the lower landings.

At the head of the secretary's stairs, and adjacent to the platform entrance to the large room, is the small assembly-room, 43 ft. by 25 ft., with open pitch-pine roof and lavatories and anteroom communicating directly with it. This room is found to be exceedingly useful for educational purposes, such as science and art and other advanced evening classes. It is also let for small evening parties, but its especial use is the accommodation of workmen's benefit clubs, for which it is admirably adapted.

The exterior design does not call for much comment; it is a neat brick building with stone dressings. Decoration wherever introduc composed of combinations of ordinary bricks.

The work has been executed by local tractors at a total cost of nearly 15,000*l*., the plans and under the superintendent Messrs. Maxwell & Tuke, of Bury.

FRISKNEY CHURCH, NEAR BOSTO LINCOLNSHIRE.

Friskney Church is being restored, an tween the nave arches and on the clear have been found several figures painted dently of ancient date. They have had thr four coats of whitewash, each of which l be removed with a great deal of care. Rev. H. J. Cheales, the vicar, writes thus:

"The discovery of these relics of a ecclesiastical art, after long burial be thick coats of whitewash, is in the hi degree interesting. Here the pious four or five centuries ago, dedicated week week his untiring effort and sanctified tal the adornment of his beautiful church, and rich and graceful must have been the effe these spandrels of colour continued along lofty wall from east to west of the entire story, the figures grouped between each noble arches of the nave, and all surmount a long canopy level with the brackets nave roof.

Upon a ground of flesh-colour tint th lines are drawn in narrow crimson, the fe much dignity and sweetness, though w quaint simplicity of character. The loc hair are usually mingled with auburn, some cases are indicated by curves of a blue grey. A rich brown and green se indicate some specially ornamented robes, t usually the crimson line alone is employe is difficult as yet to arrive at an idea *general* design, but one group is very c marked, a Madonna crowned by Angel each spandrel are figures, the heads enc by a nimbus, some with curious vestments group, with horses' heads in the backgrou very curious.

The vicar will be exceedingly obliged formation or suggestions from any one e enced in restoring old mural paintings, an more so by skilled help in the tedious and cult process of removing the many coa whitewash without injury to the inter subjects which lie hidden beneath them."

THE REBUILDING OF CHEAPSI

Amongst the improvements in our streets are constantly taking place in different parts City, there are none more observable or st than those which have for some time pas going forward in Cheapside and the Po extending almost the entire length of this thoroughfare, from St. Paul's on the west Mansion House on the east. It may, i not inaptly be said that almost the wh this great artery is in course of reconstru A fortnight ago, continuously along a r nine houses and shops on the south side, distance east of St. Paul's, was to be se ominous announcement, "Expiration of Premises coming down"; and now a hor has been erected, and the work of dem commenced. Amongst the occupants of premises were Messrs. Collard & Collard well-known pianoforte manufacturers. rebuilding the premises will all have imp frontages, stone being substituted for t brick elevations which have disapp Immediately to the west of these, a loft building, with an ornamental stone front almost completed. Passing along on the side, more particularly in the Poultry, has been widened, the thoroughfare pr one unbroken line of new buildings, th block between the corner of Old Jewry Ironmonger-lane, being at present in cou erection.

Ramsgate Improvements Competiti We understand that Mr. James Abernethy V. P. of the Institution of Civil Engineer been appointed by the Ramsgate Town missioners to adjudicate the premiums competitive designs sent in for the pr Ramsgate Improvements, involving a new connecting the East and West Cliffs.



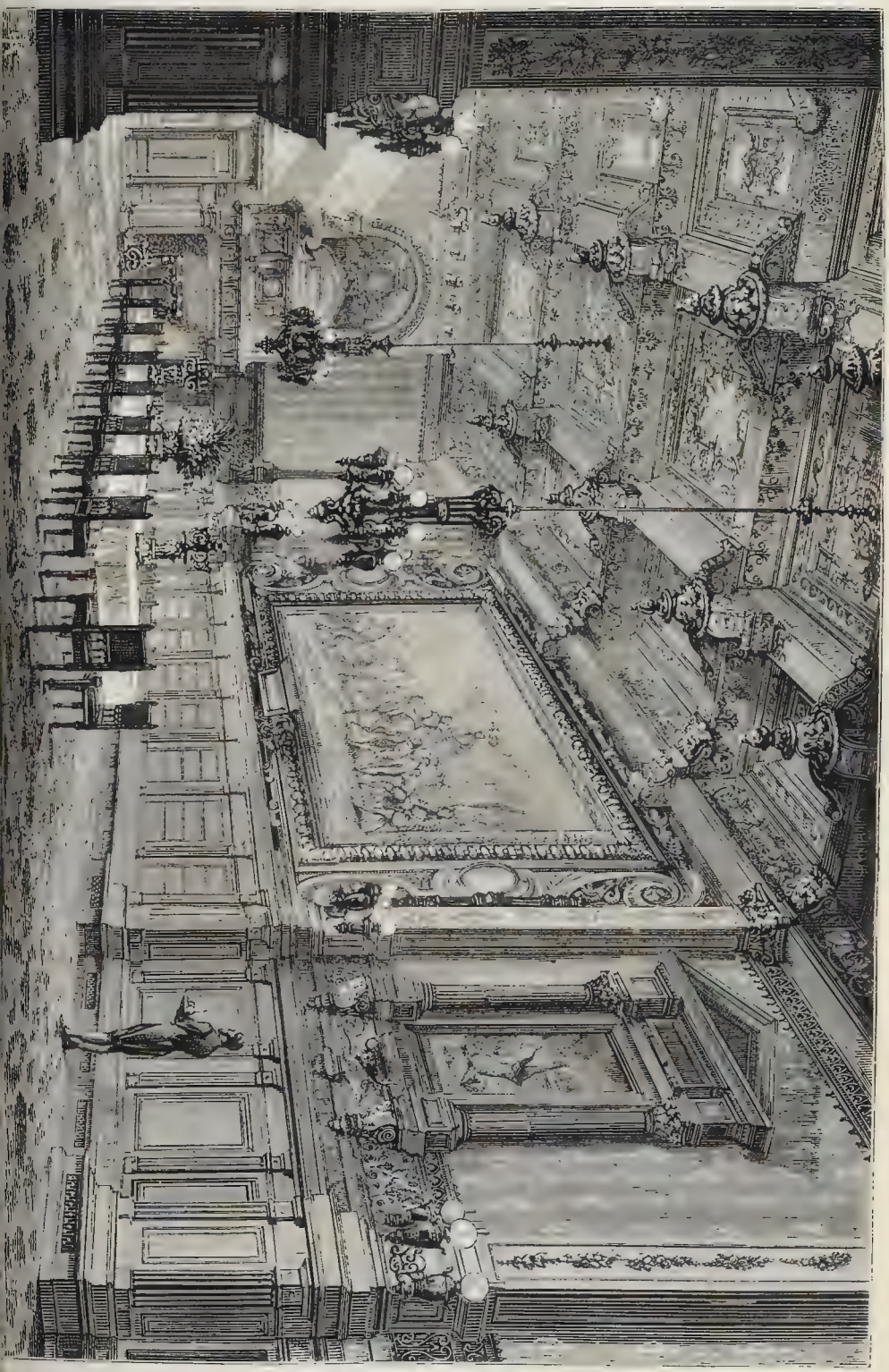
VESTIBULE OF THE FRENCH INTERNATIONAL CLUB.

THE FRENCH INTERNATIONAL CLUB.

The old clubs of Paris (few in number) are likely to receive some check to their prosperity by the appearance of a new comer, "The French International." Though opened but a few months since, its success has been unprecedented, thanks to the energy and experience of its founder and director, M. Dupressoir. Here, strangers from all parts of the world are hospitably entertained, and will find the best and most agreeable society, enjoying, it is asserted, at the same time, the ease, comfort, and luxury of their own homes. The building is situated in the centre of "the gay city," on the Boulevard des Capucines, close to the Opera, on a site formerly occupied by the "Lyons Credit Company." The work of transformation was confided to M. Sauffroy, who has proved his capacity on more than one occasion to cope with difficulties, and in this instance he has produced a *chef d'œuvre*.

The vestibule of the club is of polished oak, with a staircase in the Henry II. style, which conducts to the first story; here there are saloons and billiard-rooms in the Moorish style, which, from their peculiarity, form a striking contrast to the grand reception-saloons in Louis XVI. style. These latter occupy the of the façade, where there is a balcony siderable length.

On the second story the rooms are distr in a similar manner as on the first, and d principally to recreation. When showing tor over the club, M. Dupressoir reserv crowning surprise for the last, in conducti to the salle-à-manger, situated in one wings of the building. Here the archite "worked wonders," adopting the Renai style for decoration; and though he ha lavish of his material, nothing distresses t but all is exceedingly harmonious and effe



fine Gobelin tapestry (seventeenth century) rs a gigantic panel in a richly-sculptured e. A monumental chimneypiece at the end e *salle* reminds one of the palaces of Fon- bleau and Blois and a few other ancestral eaux which have been respected by time—revolution.

n honorary committee, composed of gentle- belonging to the upper classes of society, ully watch the interests and respectability e club. Under their auspices musical *fêtes* rganised, and other amusements of an intel- al and refined nature are provided for the bers of the French International Club.

TEMPLE BAR.

,—As you have been good enough to ion my name in connexion with Temple and to print the extract I sent you from nquest Book of St. Dunstan's in the West ng to the presentment of one of the early on experimenters "in the art and mystery" s manufacture, I venture to send you the ring description of an interesting medallion the Corporation has just had cast from d lead which covered the roof of the now lished City Gate.

e medallion is circular in shape, 12 in. in nference, by nearly an inch deep, incased strong bronze frame, and weighs a trifle lb. Under a thick plate glass covering h a finely executed profile of the Western or d side of Temple Bar, the gates of which are ented closed. Beneath is inscribed "Sir ren, Archt," with the City arms, and ames of the artists who have had to do the production of the medallion,—I. & I. Mabey, sculp.," "Foot and Fecit." The whole is surrounded with ption: "Temple Bar: erected 1672, de- ed 1878; this effigy of it was struck he lead formerly on the roof;" with mono- of the present City architect, Mr. Horace

The medallion having been executed orders from the City Lands Committee, ue of a resolution passed by the Court of on Council, it is pleasant to find that ave made this work of art a really useful a paper-weight, which I can testify, a copy before me in that capacity; and honour of being the recipient of this, to ubly interesting souvenir, I am indebted kindness of the Corporation through the an of their Committee, Mr. George

Your readers may see the medallion the other Corporation medals, in a glass the Guildhall Library.

history of the rise, progress, and fall of Bar has already been chronicled in the , but I may, perhaps, be allowed to give mary of its last days. At a Court of n Council, held the 15th of November, y virtue of a reference to committee by urt on the 27th of September, it was d to pull down the Bar forthwith, with eption of the abutments, and on the 21st sements invited "applications from public and other persons for the immediate l" of the building; tenders to be sent in 12th of December. Before this day , however, viz. on the 29th of November, defatigable citizen, Mr. J. T. Bedford, name is also so closely associated with servation of Epping Forest, obtained in urt of Common Council a noble victory: vention of the sale of the materials; and ution was passed that the Corporation hould take down the Bar, number the about 1,000), and place them temporarily ntil such time as the abutments could oved, and a decision come to where to the gateway. The near completion of Bank buildings of Messrs. Child & Co., Law Courts will enable this resolution rried into effect very shortly.

nesday, December 11, the first scaffolding up on the Strand side, and by the end month the process of numbering was ed. On the 2nd of January, 1878, the ne was lowered from the top cornice of t front, and by the 10th, all the masonry the level of the top of the present abut- was removed. The next day all the of the centre arch, together with the ing, were cleared, and on Sunday, the 13th, ic of vehicles, which had been tempo- opped, was resumed. The following day e paviours at work making good the , which was widened on the north side.

These few notes may prove an interesting addition to such of your readers as may possess a copy of my "Memorials of Temple Bar," published ten years ago, and of which I hope, one of these days, to supply an enlarged edition.

T. C. Noble.

ON ETCHING.

At the Royal Institution, three lectures upon etching have recently been given by Mr. Seymour Haden, F.R.C.S. The course was divided into the history, the practice, and the printing of etchings. In entering upon the subject, on which Mr. Seymour Haden's reputation as an etcher gives him the highest authority to speak, the lecturer said that his desire was the advancement of art, and to share with others the pleasure which the accidental opening of a sealed book, so to speak, enabled him to enjoy, to restore something that had been lost, to put right something that had gone wrong for 200 years, and to explain what needed explanation. An excellent notice of the lectures will be found in the *Times* of the 12th inst. We take from it the portion relating to the practical part of etching, which Mr. Haden illustrated by diagrams showing the difference between the engraved line and the etched line, the one as produced by the triangular cutting edge of the tool called a burin, which removes a portion of the metal at each stroke, the other as effected by the corrosive action of a chemical agent upon the line laid bare by the drawing of the point on the resin-coated plate. A third process employed by the etcher is that called "dry point," which is intermediate between the engraving proper and the etching by a chemical "mordant," and this consists in incising, roughening, and otherwise disturbing the surface of the plate by a sharp style, but without removing any portion of its substance. The first of these methods was used by the early engravers, Schäen, Dürer, Marc Antonio, L. V. Leyden, &c. It was slow, laborious, inartistic, and devoid of temperamental qualities, and not suitable for invention, as it consisted in the mechanical movement of the instrument against the plate and the plate against the instrument. This Mr. Haden demonstrated by showing on the plate how the engraver works, by moving it on a hard leather pad with the left hand while using the burin. The etching by use of a biting-in agent is done in two ways: 1. By the use of nitrous acid, the plate being placed in a bath and removed so as to watch the action and stop it by varnish where it has bitten sufficiently, returning it to the bath afterwards till the biting is complete. This he, therefore, distinguished as "the interrupted method." 2. By using a biting-in agent, composed of chlorate of potass and hydrochloric acid, in the proportions by weight of from three to four of chl. pot., 20; hyd. chlor. and water, 76 parts. This he terms "the continuous method," because it allows the drawing on the varnished plate to be done on the plate while in the bath. It has this advantage, that by commencing with the foreground objects and proceeding next to the middle distance, and last to the distance and sky, the parts first drawn are more bitten in than those in the successive planes of the subject, and thus a gradation of values and aërial perspective is obtained by the chemical action of the mordant. Mr. Haden showed this process by every step upon a zinc plate, etching the drawing before the audience in little more than a quarter of an hour, and then handing it to his assistant to clean off, so that the work might be seen. The plate was afterwards printed from, and the impression shown at the next lecture. The drawing upon the plate is in each method made in lines and touches of equal thickness; any corrections which are thought necessary may be made before subjecting the plate to the "biting-in" of the interrupted method, by stopping out with the varnish of "Brunswick black"; excess of biting is prevented by the same means, and enforcement of lines is obtained by the direct application of the undiluted mordants, or by protecting the free surface of the plate with fresh varnish, carefully leaving the parts which require more biting, and then submitting it to the action of the mordant a second time. The "biting" is of great importance,—it is the painting of the picture; as its conception is the-art manifestation of the poet side of the etcher's character, so on it depends colour and effect, and the art manifestation of the painter side. Some etchers have one without the other, and the union of the two is rare. Samuel Palmer has both, Meryon also, Whistler one side only, Herkomer and Hook both these faculties in fair degree. There is also great individuality in the "biting-in." Turner's "bitings" of the *Liber* are remarkable for force and mastery, as we see in some plates drawn by him, but not "bitten in" by him, such as "The Farmyard," and some neither drawn nor bitten by Turner, such as the "Grande Chartreuse." Mr. Haden prefers the continuous method, and among other reasons that it is free from the ebullition which the action of the nitrous acid produces, and which interferes with the view of the work, and is not liable to atmospheric and electrical interference, which sometimes prevents and renders uncertain the nitrous acid mordant. The great difference in form and properties between the line or *sulcus* of engraved plates and those etched by the dry point or the mordant was explained by the diagrams, showing the result of Mr. Haden's long and accurate investigation. The incision of the burin being wedge-shaped, with the narrow point down, could only contain less and less ink as the surface of the plate was worn down in the process of rubbing adopted. It was thus that copper-plate impressions grew pale and lost richness, a defect which was met by the employment of steel, admitting of thousands of impressions of equal strength. Thus as much as 45,000*l.* worth of impressions had been taken from one plate. The cavity eaten out by the mordant in the etched plate was entirely opposed to that of the engraved plate; the diagram showed it to be hollowed out and larger below than at the opening at the surface, as if a slit were made in the top of a tunnel. This is caused, Mr. Haden had discovered, by the mordant continuing its action on the sides of the cavity but not on the surface protected by the varnish. Thus the containing power of the *sulcus* was greater, and the colour depending on this shape and volume rich, strong, and positive, with accent and freedom. But its durability was small, as the eaves, so to speak, of the cavity wore away, and then the mouth became more open and the line consequently thick, coarse, and blotchy,—the plate, in fact, being destroyed. Hence, perhaps, a hundred impressions was about the limit of endurance for an etched plate. The durability of dry-point plates was extremely small; the *sulcus* was shallow and delicate, the raised edges giving the rich "burr" soon breaking away, and the impressions becoming gray, all the beautiful richness like the pile of velvet, peculiar to such work, vanishing rapidly and inevitably with repeated printing. Several very beautiful examples of dry-point by Mr. Haden, with others, were exhibited on the screen. The dry-point method, Mr. Haden remarked, was adopted by Rembrandt wholly during the third period of his career, when his strength and surety of hand enabled him to do away with the tediousness of the "biting-in" process. Had he known of the continuous process now followed he would presumably have adopted that. The printing of etchings, Mr. Haden remarked, required the printer to be an artist of his craft; few were gifted with the delicacy of hand and touch which belonged to the organisation of an etching printer. The steel-plate printer might attempt to print from an etched plate, but he was sure to fail, as his method of rubbing the ink into and off the steel-plate was fatal to the etching. In concluding the course, the lecturer, in forcible terms, pointed out how the profession of art was only too closely allied now with trade combinations, and that it would never regain its independence and self-respect which have been lost while thus shackled and intimidated. It was true its gains were out of all proportion to those of the learned professions. When he heard of 2,000 guineas for a portrait, 3,000 for a landscape, he rubbed his eyes and asked himself if he ought not to be getting 4,000 guineas for curing a fever, 10,000 for a pleurisy, and 50,000 for saving a life! It was said that, abnormal as this seemed, it would still go on; but he was told that the high-pressure of the last fifteen years can no longer be kept up,—that the inevitable reaction is setting in, the bubble, inflated to bursting, wants but a touch to be gone. He wished that these words could supply that touch, and that the days of art for art's sake could come back to us again.

Torquay Fever Hospital.—The Local Board have invited Mr. Ernest Turner, of London, to visit the town and advise upon the best scheme for the proposed fever hospital.



NEW ROMAN CATHOLIC CHURCH, STUTTGART.—Oberbaurath J. von Egle, Architect.

NEW ROMAN CATHOLIC CHURCH, STUTTGART.

erection of a new Roman Catholic church ttgart became necessary when, in conse- s of the great addition to the population, mber of Catholics residing in the capital f Würtemberg had increased in such a as to render the existing church inade- The church in the Untere Königsstrasse ed sitting accommodation for but 900 s out of a congregation of 12,000.

old Catholic church, as it is still to be a the Königsstrasse, stood formerly in the le, the residential quarter created by Charles, and was moved to exclusively tant Stuttgart, in 1808, by order of King ick. The want of a Catholic church had litself felt also there after the duchy of mberg had been made an electorate, and gain into an independent kingdom. The ry added by Napoleon I. contained a tion for the greater part Romanists.

means for the construction of the new s have taken some considerable time to . The building committee, having at last berally assisted by gifts from the royal , the state, and the town, was enabled to operations in 1871, the time of erecting uilding being calculated at four years. ans were designed by the court architect, aurath J. von Egle. They received the rize at the German Art Exhibition held at in 1876.

church, as the illustration shows, is cruci- It is divided into nave and two aisles. ngth of the church is 180 ft. clear; the of the nave is 64 ft.; and the greatest of the transept, 105 ft. The site selected ted of the church standing free on all The style is the Geometric. The building al chosen was Keuper sandstone, of a most white; the carving is in grey sand- This has produced a blending of colour ely pleasing to the eye.

eaking of the architecture of Stuttgart mer article, we remarked how extremely e city was in church steeples until but ears ago. This fact made the profile of n appear all the flatter as the picture rrounded by a rich frame of well-wooded The new church, by its two equal-sized s, was the first to effect some change to ysiognomy of the town, which was all re striking as the two towers in question t in colour, in contrast with the surround- of houses. The illustration reproduces the ter of the principal front of the church. ide entrances correspond to the three al portals of the nave and aisles. The , like the centre one, have covered s; that of the nave projects as a vesti- The gallery, placed in the gable of the etween the lanterns of the two towers, good effect. The steeples are each 210 ft. at the intersection of the nave and ot rises a *flèche*. The church is full of wenty-five windows being placed in the nave, and aisles. The largest are the incipal windows of the transept and the over the organ. These three are lly attractive by their delicate tracery. w of light is tempered by the stained- indows. The groined vaulting displays both the colour and joints of the brick- sed. The vaults are, besides, adorned coes.

WOOD PAVING FOR CHELSEA.

paving of the King's-road with wood has source of much discussion at the Chelsea , and even now, though the question may sidered settled, there is discontent. Last considerable well-founded demurring took efore the report of the committee on the , was adopted. That committee had appointed—"with power to act"—to he details of the scheme, and "to make rangements for the supply of blocks as ink most expedient, at a price not exceed- 7s. 6d. per 1,000 blocks delivered under act deed." The committee construed ower to act" into a permission for them r into a contract involving an expendi- 4,000*l.* or 5,000*l.* without submitting the to open competition. Although the accepted is precisely similar in amount maximum fixed by the Board, some mem- hink that before definitely accepting a involving so large an outlay they should have invited tenders in the usual way, instead of selecting three favoured firms. It is even asserted that a responsible firm is ready to supply the blocks at a much lower price. The estimated outlay for the paving is 16,625*l.*, with a further sum of 975*l.* for alterations in air-gratings and gullies. The surveyor is to receive as extra remuneration 2d. per yard superficial.

IMPORTANT TO BUILDERS.

For some time past a very loud cry has been raised in the neighbourhood of Tottenham and Edmonton respecting the character of the materials used in the erection of houses; and so rapidly has this spread, that the Tottenham Local Board of Health have begun to take active measures against those infringing their bye-laws. The effect of this activity and zeal for the health of the parish may be gathered from the following case, which was heard lately at the Edmonton Police-court on Monday last, and has created considerable interest amongst builders generally:—

Arthur Jukes, of 13, Buckingham-road, Wood-green, was summoned at the instance of the Tottenham Local Board of Health, for that he, on the 10th ult., did begin to erect certain new buildings, to wit, four dwelling-houses, situate in Tewkesbury-road, Seven Sisters'-road, the foundations of which did not rest upon solid ground, or upon concrete, or upon some other solid substructure, as required by Bye-law 104 of the Local Board.

Mr. Crowne (clerk to the Local Board) appeared in support of the summons, and briefly stated the facts of the case, before calling the surveyor to prove the offence. He also read the bye-law relating to the offence, which provides that the walls of all new buildings shall rest upon solid ground or concrete, or some solid substructure. In the defendant's case, certain materials had been used for the foundations which, out of courtesy, they might call concrete, but to which the term could not be applied seriously. Tewkesbury-road was one of the new roads on the right-hand side of Seven Sisters'-road, and nearly opposite the Woodberry Hotel.

Mr. De Pape, surveyor to the Local Board, was then called and produced samples of materials used by the defendant, and which consisted of earth, stones, and improperly-burnt clay. These were being mixed and thrown into the trenches, which were only 6 in. deep instead of 12 in., and the bricks were at once laid without any time whatever being allowed for the material to settle. It was impossible, however, to make concrete from such rubbish, which, at its full value, was not worth 5s. per cubic yard, while approved concrete would cost about 10s. 6d. per cubic yard, so that, roughly calculating the difference, defendant saved about 4*l.* 10s. on each house by the use of improper materials for foundations. The defendant asked if the material in use would not make good concrete if properly "screened"; but the surveyor said it was impossible to screen such material as that produced.

Mr. Crowne said it was only necessary to point out that if foundations of houses were to be of such material, it was utterly impossible for houses themselves to stand any time. The penalty for the offence was 5*l.*, and in the event of its being continued any time after due notice being given, a further penalty of 40s. per day. On the 20th of March (the day following the samples being taken), notice was sent to the defendant, warning him against a continued use of the improper material, but since then the buildings had been proceeded with. The Board had no wish to show a harsh spirit towards the defendant, as he had not previously offended, and therefore it was thought that one summons would suffice for the four houses, and be the means of checking a repetition of the offence complained of.

Defendant said that some time after Mr. De Pape left the premises a city surveyor, who was acting for the purchaser of the four houses, visited the place, and upon being told of Mr. De Pape's proceedings, said the concrete was good enough, and that he would accept it. Where he (defendant) came from (Barrow-in-Furness, Lancashire) builders were not in the habit of using concrete, they built simply upon the rocky foundations; he had built over 1,000 houses, and never was in conflict with a local Board before, and his present offence was certainly committed in ignorance.

The Chairman.—Have you taken out this concrete?

Defendant.—I have not.

The Chairman.—Is it your intention to do so for these four houses?

Well, it will simply ruin me if I have to pull down these houses, as they are built up to the bedroom windows.

Mr. Doe.—You talk about ruining yourself if you have to pull the houses down; but what about ruining the purchaser?

Defendant.—When a man buys houses he is supposed to do so with his eyes open, and if he is ruined that is his business. With respect to the value of good concrete, however, the real difference between the approved and the produced material was so little that it would be madness to put the bad material in; in fact, it would not cost 10*l.* to use good material for the four houses.

Mr. Goff (magistrate's clerk) explained to the Bench that the offence would have to be regarded as continuing so long as the houses shall remain on the foundations complained of.

Mr. Howard asked if there was a clause in any Act by which defendant could be compelled to pull down these houses; but Mr. Crowne said that matter would have to be considered.

The Chairman said the case had been clearly proved, and there was the less excuse, inasmuch as, according to defendant's own showing, the difference between sufficiently good concrete and the bad material was trifling. At the present time a large number of houses were being built in the neighbourhood, and it was essentially necessary that they should be built upon stable foundations, and not upon material called concrete, but which was so indifferent that it was scarcely fit to build a pigstye upon. Defendant was given due notice of the offence, and yet he continued to use the condemned material, and proceeded with the buildings; the Bench would therefore impose the full penalty of 5*l.* for the infringement of the bye-law, and 40s. per day for ten days for the continuing offence, which would make the total penalty 25*l.*, together with costs. He might say the Bench were determined as far as they could to put an end to such houses as those just complained of, and which in a very short time must become unfit for human habitation. Builders, however, were now aware of the law, and if they persisted in running the risk of using bad materials they must, of course, bear the consequences. If there should be any further complaints he should advise Mr. Crowne to take out a summons for each house, so that if a person were building twenty houses, and an offence against the bye-laws were proved, the penalty of 5*l.* per house and 4*l.* per day would certainly be enforced.

The money was subsequently paid.

THE LIABILITY FOR WORKS EXECUTED UNDER THE PUBLIC HEALTH ACT, 1875.

It is very seldom that a new statute appears among the Acts of Parliament touching rights of property without coming in some way or other under the notice of the Courts of Justice. In fact, it is rather desirable than not that such Acts, if there is any doubt about their provisions, should as soon as possible be criticised from the Bench; for this often prevents a large number of disputes, much vexation, and abortive and expensive litigation which the public never have the chance of noticing.

Therefore, when the case of The Swindon Board of Health *v.* Hinton was quite recently decided by the Queen's Bench Division, it was satisfactory to find a point of some doubt in relation to the Public Health Act, 1875 (38 & 39 Vict., c. 55), cleared up, so that both sanitary authorities and house-owners will, so far as the scope of this decision goes, be no longer in doubt in regard, on the one hand, to their rights, and, on the other, to their liabilities. So far as the facts of this case go, the matter lies in a nutshell; but it will, first of all, be well to give the material parts of the 150th section of the Public Health Act showing what is the power of urban sanitary authorities in certain events. The section runs as follows:—

"Where any street within any urban district, or the carriageway, footway, or any other part of such street is not sewered, levelled, paved, metalled, flagged, channelled, and made good, to the satisfaction of the urban authority, such authority may, by notice addressed to the respective owners or occupiers of the premises fronting, adjoining, or abutting, on such parts as may require to be sewered, &c., require them to sewer, &c., within a time to be specified on such notice. If such notice is not complied with, the urban authority may, if they think fit, execute the works mentioned or referred to therein, and may receive in a summary manner the expenses incurred by them in so doing from the owner in default, according to the frontage of their respective premises, &c."

This, then, being the law as laid dawn by the recent Act of Parliament, the facts were that a person named Hinton had been required to pave a portion of a footway at Swindon opposite three houses which were his property. This he refused to do, and the Board of Health, in pursuance of their powers under the above section, had the work done by their own men. But before the completion of this work Hinton had transferred the houses in question to another person of the name of Deacon. But under the 250th section of this same Act the Board are empowered to recover the expense of work done by them, in pursuance of the 57th section from the owner of the premises. This section, so far as it is material to the decision of this question, is but short. "Where any local authority have incurred expenses for the repayment whereof the owner of the premises for and in respect of which the same are incurred is made liable under this Act, such expenses may be recovered, together with interest, &c., from any person who is the owner of such premises when the works are completed for which such expenses have been incurred." Hinton very naturally refused when called upon to pay to do so, saying that Deacon was the owner in default, so far as payment for the expenses was concerned. The magistrates, however, agreed with the view of the Board of Health, and made an order upon Hinton to pay the required sum. He appealed to the Sessions, where the magistrates' decision was reversed, and thereupon the question came before the Queen's Bench Division, who also decided that Hinton was not liable. And, indeed, it seems obvious that this decision is in accordance, as the Lord Chief Justice said, with common sense and justice, and is clearly right from a legal point of view. Because the words of the 257th section are, to our minds, perfectly plain and clear; "the owner of such premises"

when the works are completed "seems to us about as obvious a collocation of words as it is possible to find. The very fact that the words "when completed" are inserted clearly removes all ambiguity, and has in itself a distinction which would not have existed if merely the words "the owner" had been found in the Act. And, of course, too, it is clear that the person who gets any benefit,—if benefit there be,—from the new sewering, flagging, or other works, is the person in occupation at the time of the completion of the work. Moreover, any hardship in the shape of unexpected demands on the new owner's purse need not exist, because before taking a house in respect of which such a liability as arose in this case will be incurred, the new owner can make private arrangements with the original owner that he, and not the new owner, is to pay for these works; in fact, he requires, if he wills, it to be indemnified. If he does not do this, it is only fair and reasonable that he should pay the amount demanded by the Urban Sanitary Authority of the district.

At any rate, this decision puts an end to any doubt which may have hitherto existed in regard to the liability of an old and new owner, and considering how often builders and others are disposing of houses near which public works of this class are being executed, it is well that a true knowledge of the law on this point should exist in the public mind.

OPENING OF THE NEW LAW COURTS.

THE east wing of the new Law Courts having been completed, it will be opened for business on Monday next, the first day of Easter term, when the masters, registrars, and other officers of the Chancery division will take formal possession of the apartments in this portion of the building. During the last fortnight a large number of joiners, carpenters, and others have been busily engaged in fitting up the several offices, which, from their large number, is a work of considerable magnitude, and in order to ensure their completion for occupation on Monday next, relays of workmen have been employed both day and night, including the holiday week. At present the law offices of the Chancery department are scattered in Chancery-lane, and the neighbourhood, which has hitherto been felt as a great inconvenience, but after Monday they will be concentrated under one roof in the new building, the principal approach being through the gateway under the tower in the Strand. Within the last few days the ornamental Gothic arcade between Bell-yard and the western boundary of the east wing has been fully exposed to view, and the removal of the unsightly remaining north buttress of old Temple Bar is now all that is required to complete the Strand eastern elevation of the Courts. Its non-removal is said to be owing to some differences or misunderstanding between the Corporation and the Metropolitan Board of Works.

LECTURE ON ELECTRIC LIGHTING.

WITH the view of elucidating the leading practical and scientific points in connexion with the system of electric lighting as compared with other means and methods of producing artificial light, the Council of the Royal Albert Hall have arranged for the delivery of an illustrative lecture on the general subject, associated with concurrent exhibitions of the various schemes of electric lighting, the mechanical adaptation of the different magneto- and dynamo-electric processes, together with gas-motor engines adapted for driving such machines, on the evening of Wednesday, the 7th of May next, and that the exhibition shall remain open until the end of the week. The Council of the Society of Telegraph Engineers have appointed a working committee to co-operate with the Council of the Albert Hall in organising the exhibition; and the undertaking is sanctioned by the direct personal interest of his Royal Highness the Prince of Wales, president of the Albert Hall Corporation, who has signified his intention of being present.

The inaugural lecture will be delivered by Mr. W. H. Preece, M. Inst. C.E., electrician to her Majesty's Post-office.

Success may be predicted for the exhibition by the assent of the representatives of most of the electric light systems to be represented at it,—such as the Siemens, Gramme, Lontin, Wilde, Jablochkoff, Rapieff, Wallace-Farmer, and others.

In order to render the exhibition as complete as possible, and historically illustrative of the entire subject of electric lighting, the Council of the Albert Hall request the co-operation of all those who are in possession of objects, whether of past or of present interest, in direct connexion with the subject, and they invite them to communicate thereon with the manager of the hall.

RAINE'S ASYLUM AND SCHOOL.

PROPOSED SALE OF THE BUILDINGS AND FREEHOLD.

THE Guardians of St. George's-in-the-East contemplate the enlargement of the workhouse in Charles-street, Old Gravel-lane, and with the view of carrying out this object they have been in communication with the trustees of Raine's Charities for the purchase of the buildings belonging to the charity adjoining the workhouse.

At the last meeting of the guardians a communication was read from Mr. Taylor, clerk to the trustees of the charities, stating that at a meeting of the governors a resolution had been passed to the effect that the trustees were willing, subject to the approval of the Charity Commissioners, to accept the sum of 6,000*l.* for the freehold of the asylum and school belonging to the charity. The guardians have agreed to consider the offer at a special meeting.

We understand that in the event of the offer being accepted, and the property being sold to the guardians, the trustees of Raine's Charities are desirous of purchasing land in the country for the erection of a new asylum and schools, the district in which the schools are at present situated being so densely populated, and surrounded by dock and other works of a similar character.

THE NORTHUMBERLAND COUNTY ARCHITECT.

AT the Northumberland Easter Quarter Sessions, the Moot Hall Committee reported that there had been seventy-three applicants for the post of county architect, and they recommended the appointment to be made from the following three gentlemen:—Mr. John Cresswell, architect to the Corporation of Manchester; Mr. Robert J. Johnson, Newcastle; and Mr. Thomas Oliver, Newcastle. The salary is 250*l.* a year, together with all actual travelling expenses, and a commission of 5 per cent. on the first estimated cost of all new buildings. All county buildings will be placed under the architect's charge, and he is to personally inspect and report upon them, and is to reside in Newcastle. Mr. Cresswell was almost unanimously appointed.

CONTEMPORANEOUS ART.

IN the lecture on "Contemporaneous Art, as illustrated by the Great Paris Exposition of 1878," which Mr. Forbes-Robertson delivered before the Society for the Encouragement of the Fine Arts in their Rooms in Conduit-street, he summed up British art-characteristics in this wise,—"Modesty, in the main, as to the choice of subject, the familiar being preferred to the far, but in either case with a quiet reserve of force which State encouragement might call into active play; and a sense of colour which, with like opportunity for development, might become grand. In the portraiture of Nature, whether literal or idealised, British artists have always commanded respect, and within such limits as they work they are not to be beaten by any country." After citing John Brett's method of treating the sea, on the one hand, and Hamilton Macallum's on the other, the lecturer alleged that no French artist had as yet attained to a like perfection, either in the one method of handling or in the other, although emulation of both had been frequently attempted. As masters of brush work and colour, he pointed to John Everett Millais and John Pettie; and as a designer and one skilled in all Academic knowledge, and filled with a Classic imagination, chastened and yet sublimed by modern thought, and with a solemn sense of the exceeding preciousness and sanctity of art, he named the President of the Royal Academy. He regarded Gregory and Herkomer as foremost among the coming young men, and thought the British Fine Art Section surpassed the expectations of every one. "Let us declare our unmixed satisfaction," said the lecturer, "that Meissonier and other eminent French artists should have expressed delight wit exhibition, and that the Paris *Figaro* should described the British Art Section as 'an and a charm.'"

In like manner, Mr. Forbes-Robertson des and differentiated the various art-schools, Boston, U.S., to St. Petersburg, finding in all palpable evidences of French infl "Some six or eight years ago," he said, "closed the art-schools which had flourish long at Warsaw, and told the Polish st if they wished to study art they must c St. Petersburg. Students, however, w Polish or Russian, did not find at St. Pete what they wanted, and accordingly they to Paris, where they did." Siemiradsk painter of the "Living Torches of Nero undoubtedly Western in his method, alt Oriental enough in his choice of subjects Veretschagin, another of their great pa it is well known, was a pupil of Gerome. in the modern Spanish revival creat Fortuny, and in the Munich school hitherto so peculiarly German, Mr. R Robertson saw, at least in several of its se evidences unmistakable of the univer gard in which the masters of Gallic a held. America he compared with Italy much as the æsthetic instinct of the sought for expression more in plastic t pictorial art. American, like Russian, were keenly assimilative, and some of t art-criticism in the English tongue ha penned by Americans.

Mr. Forbes-Robertson closed a freq applauded and very successful lecture vivid description of Becker's grand pic Rizpah scaring away the birds of prey fr bodies of the "seven men of the sons whom David had delivered into the hand Gibeonites, who hanged them on the hil the Lord," and concluded in these w "Gallic art embraced within itself all r and all schools, whether familiar or classic or romantic, large or little; and as to a home and a shrine, flock eag pilgrims from every land. There is n able thing in the heavens above or in t beneath, in the imagination of man or storied incidents of his race, which Fre not essayed, and essaying has not s She is the true inheritrix of the art t and art glories of the Renaissance."

"ART FOR ART."

SIR,—If "Art-for-Good" will refer report in your columns of Mr. Caine's l he will find that he does *not* "recollect when he accuses the lecturer of saying place, "that the artist should be self-c and in another that he should not." T really used were these:—"We cann bring ourselves to believe that either artistic self-consciousness can inspire t work, or even so much as nestle at the r We know that men have consciously great work for the praise of achievem for the expression of religious feeling cling to the belief that the noblest and been done when the artist has forgotten pose and yielded himself up with *abandon* mood. . . . . Nevertheless, all art is es self-conscious." And allow me to su "Art-for-Good," that artists will see contradictory in this passage, and will difficulty in comprehending the d between the artist's consciousness nature is pure, and his consciousnes ethical aim in his work, which latte "moral or artistic self-consciousness, w inspire no true art-work." The n deliberately subordinates his art to a purpose, in that moment ceases to be and becomes a mere preacher,—doi perhaps, in his own small way, but the good of the written text, instead of th less good of the unwritten flower. artist must reproduce what he sees, not thinks he ought to see: once let t consciousness, that feeling of what ou take possession of him, and his art is the words of Ruskin, on that supreme art speare, "to do any good or get any go common sense of good, was not to be permitted range of work. He must without anger, utterly without purpose for him, the founding of institutions, th ing of doctrines, or the repression Neither he, nor the sun, did on any

ey rose together, receive charge from aker concerning such things. They were them to shine on the evil and the good; behold unoffendedly all that was upon ch, to burn unappalled upon the spears of and undisdaining upon the reeds of the The artist must be perfectly uncon- f good, or evil, as affecting his art, and ne can he reach her sublimest heights, aving behind the darkened circles of ent and pain, stand once more, with nd Dante, "quindi uscimmo a riveder le Logic and common sense are valuable s, but bad masters; since, as Hegel dly says, "the heart, the emotional part s spiritual nature, is recognised as that an and ought to come into possession of h." And "Art-for-Good," following what ives to be their light, misses both them truth beyond them; one part of which, only, it is their function to unveil. As finition of our creed, I can only say the are quite new to *me*, and I believe known nor recognised by any one, save r-Good" himself, whose imagination in e leaves poor common sense far behind, out of sight altogether! I shall leave uction from what he imagines to be our nchallenged; my object being to vindi- doctrine of art for art, as enunciated by ne, from a mistaken charge of contra- not to discuss reason *versus* instinct; ay conclude with the saddened words of has devoted his life to art and art s, "Every day convinces me more and at no warnings can preserve from mis- nding those who have no desire to nd."

EVELYN PYNE.

WEYMOUTH DRAINAGE.

Some years ago the Local Board of finding that Weymouth, to hold her a first-rate watering-place, must essed of good drainage, decided to the services of Mr. Hawksley, the , but, after having obtained his and probable cost of draining Wey- hey rejected him and employed Sir de, who was not a sanitary engineer, caused a dam to be placed across our r, and turned the sewage into the har- ere it remains until the tide flows in, and carried up over the dam into the back- nd also into other people's property, causing great nuisances to accumulate. al Board, after spending upwards of on this scheme of drainage, are called the Local Government Board to remove ge from the harbour, and, in fact, re- the system of drainage here, which, in ability, will call for the spending of 30,000*l.*

cal Board was warned that they were ong, yet they persisted in spending the rs' money on a scheme which they ould not answer; and now, having the sewage into private timber-pounds to other people, they have issued es against the parties, to try and hem to remove the sewage from their ounds. Some of the members of the ard,—namely, Messrs. Robens, Lundie, ledge,—are also magistrates for the and are the plaintiffs in the action, have determined to sit and try and eir own case. Is there an instance of cription on record, where plaintiffs have ried their own cases? Q.

RATION OF WEYMOUTH *v.* BETTS & CO.

e was resumed on the 9th, before the magis- nely Messrs. Abbott, Raggett, Talbot, Drew, id Milledge (the two latter being members of Board, and persisting, as plaintiffs, they were in sitting and adjudicating upon the case). siderable quantity of evidence had been given, t the plaintiffs were the cause of the sewage he timber-pounds, and the solicitors having the bench, the magistrates retired, and, after a leration, could not agree upon a decison, and no court and stated that the majority, viz., albot, Robens, and Milledge, were of opinion nuisance is on the premises, the defendants be abate it, and each party pay their own costs. n Mr. Drew stated that he and his brother Mr. Raggett, were of opinion that, as the plain- contributed to the nuisance, they be prohibited me from allowing sewage to flow into the back- the dam.

gett said,—Gentlemen, I have known the pounds , and had it not been for the conduct of ers there would not be any nuisance existing

Howard, solicitor, for the defendants, then asked for a case, but they refused, and he gave notice of appeal, and then read the law showing that persons interested in a case could not sit and adjudicate upon it.

THE LONDON SCHOOL BOARD AND COST OF SCHOOL BUILDINGS.

In a recent issue you refer to the question of the cost of the school buildings of the London School Board, and suggest that it might not be impossible for some of the architectural profession to decide what should be the average cost of such buildings.

Permit me, Sir, to remind you that, apart from the mere expression of professional opinion, there are some practical data at our disposal which should show conclusively at what cost the London Board Schools can be built. I enclose a list of some twenty-four schools erected for the London School Board from the designs and under the superintendence of what I may term "Outside Architects," as distinguished from the permanent architect of the Board. The cost of these schools is taken from the Board's printed statements, and includes in all cases the architect's commission. These buildings all provide exactly the same superficial area per child as the schools now being erected; they are all substantially built and well finished, and, in point of architectural treatment, will, I think, compare favourably with the more recent buildings. These schools provide accommodation for 26,358 children at a cost of 209,245*l.*, or 7*l.* 18s. 9d. per child. As the work was executed during the prosperous years of 1872 and 1873, it cannot be pleaded that prices were lower than now.

It should be borne in mind that this is the average cost of a large number of schools, covering consequently many exceptional circumstances, arising as to foundations, &c.; so that, for the purposes of comparison, these schools are put upon the same terms as those now being erected for the Board.

As the architect of one of the largest of the schools thus erected, I trust that you will find space for this communication, showing what has been done, and, in my judgment, what may be done in the future. As you very clearly point out, the annual increase in the number of children to be provided for renders it inevitable that the building of additional schools will be necessary every year, and that, therefore, it is of the utmost importance that some reasonably definite standard of cost should be ascertained.

It is almost needless to remind you that the schools now being built for the London School Board, together with those erected during the last three or four years, have averaged in cost over 11*l.* per child, and that the cost is still increasing, in many schools amounting to as much as 12*l.* and 13*l.* per head.

THOS. W. ALDWINCKLE.

SIR,—Some valuable information upon this subject was given, during a brief period, under your heading of "Tenders."

The *Builder*'s tenders were divided into "cost of buildings, residences, fence-walls, and laying out playgrounds," &c. The cost of the sites was added, and the number of children provided for, and thus the price per head was readily tabulated. If it had been continued it would have been most useful in such a discussion as you have proposed. Would it be too much to ask some of those whose practice in this kind of work has been extensive, to give, in a form which you might suggest, their experience of the cost of such buildings and works, both under School Boards and under the Voluntary system? QUERY.

THE CAUSES OF DISEASE.

SIR,—We owe a deep obligation to the *Builder* for its persistent advocacy of sanitary legislation. But for the *Builder*, we might have gone on in the old drowsy style for another century. And I trust when the entire body politic shall have rubbed its eyes into wide-awakeness, that it will not forget to give honour where honour is due.

Still, sir, you are fully aware, as your leader in last week's issue shows, that there yet remains much room for investigation in these matters. The health of stable-keepers, of sewer explorers, the exemption of the inhabitants of the Ghetto, during the awful visitation of cholera in Rome, prove that we have not yet grasped the evil by the throat. In my opinion the causes of epidemics lie more in the mistreatment and misconduct of human life than in all the external mischiefs put together.

An old and very outspoken portrait-painter, who had been a visitor at the great houses in the early part of this century, told me, that he was once staying at an archbishop's. His Grace and Mrs. —— were constantly complaining of dyspepsia. My friend somewhat disturbed by these frequent complaints, and perhaps, too, somewhat irritated by the dyspeptic symptoms which were beginning to manifest themselves in himself, could at last hear these complaints no longer without remonstrance, and exclaimed, "The cause is simply this, we eat too much!" The Archbishop, leaning over towards Mrs. ——, said, "Do you hear what Mr. —— says? He says we eat too much, and upon my word I believe him to be quite right." My friend, receiving this encouragement, continued, "There is, to begin with, the breakfast, with all kinds of viands, cakes, &c.; then there is the abundant luncheon, offering a variety to tempt the appetite; and then, to crown all, there is the late dinner, with its numerous dishes, its delicacies, its fruits, and its choice wines. Can any one be moderate in either case under the weight of temptation? What is the consequence? the digestive organs are daily overtaxed; the mischief from this cause accumulates; the whole system is at last thrown out of gear and corrupted. There is nothing for it but a timely self-denying ordinance, or disease and premature death. The fact is, that people of great means "live to the top" every day. Consequently there is no reserve force, for this is all consumed in endeavouring to surmount the weight of difficulties daily presented to it. And when the morbid reaction, the low vitality comes, where can the physician find resources? Ordinary stimulants are of no avail, the system has been satiated with them.

If people would live more simply, establish sumptuary laws to abate the temptations of their tables, and only live to "the top" now and then, we should have very little illness. Epidemics would be easily and quickly stamped out, for there would be little predisposition, and remedies would prove of greater efficacy. Privation is also a cause of disease, as are also the irregularities and excesses of the less well-to-do. Hippocrates knew the great secret of health, even in the ancient days, when he said "*cibi, potus, somni, omnia moderata sint.*"

W. CAVE THOMAS.

FROM CHISELBOROUGH.

SIR,—Mr. George Mitchell, in a long letter which you recently published, makes frequent mention of my name. Allow me a little space to clear up a few of his mistakes. He calls me a pluralist. He may call me what he likes, but that will not make me one. The two villages of Chiselborough and West Chinnock form but one benefice, and have done so from time immemorial. He states that the value of the living was in 1830 from 1,100*l.* to 1,200*l.* per annum. The rent-charge (as he or any one else might easily know) was commuted at 407*l.* 1s. 8d., and there are beside glebe rents yielding 105*l.* I give the gross, without deducting rates, outgoings, or payments for clerical assistance.

He claims that my zeal for sanitary improvements and better cottages is suspiciously recent, and objects that I did not bring up Lord Ilchester's name in reference to the condition of some cottages not belonging to him. Why should I? I wish Lord Ilchester and every other owner, whether titled or not, would look carefully to the condition of their cottage property, and I have been urging this in more ways than Mr. Mitchell knows of for many a long year. Indeed, Mr. Mitchell ought to do me the justice to remember that years ago, in answer to a private letter of his, I urged him to take up the condition of cottage property generally in the rural districts as the most pressing of labourers' questions.

The cottages owned by labourers (whether originally squatters or not) are our worst, and so they are elsewhere. Surely it would be a fine thing if Mr. Mitchell and his friends would buy them up and rebuild them, and so shame the noble landlords, whom I do not wish to shield if they do not do their duty; but who are not to be blamed for the condition of what does not belong to them. One word more. About a year since the straw from a wheat stack (belonging to the principal farmer in this parish) which had been thrashed out in the previous week, was burnt, and as the fire was dying down, a fearful blaze was seen about a mile off, and it was found that a fine double hay-rick on the same farm was burning. We are asked to believe, "on the authority of practical men" (names not given), that these fires (they took place in March, mind you) were caused "by spontaneous com-

bustion, owing to dampness and green weeds." Well, we may be "cretins," and "more degraded than Zulus or Kaffirs," in fact, fools generally; but really (even if cooked up in the frying-pan by George Mitchell himself), we cannot quite swallow that.

C. Frederick Newell.

Rectory, Chiselborough.

"THE ECCLESIOLOGICAL CRAZE AGAIN."

Sir,—Will you permit me to say a few words in reference to an article in your last issue, entitled "The Ecclesiological Craze Again"? I think the St. Paul's Ecclesiological Society has rather a different object from the society first started under the name of "Cambridge Camden." It is to be regretted that its aim should have been so misunderstood, and although the writer of your article considers ecclesiology is "a form of study which has proved barren of anything but mere Mediæval imitation," such a statement ought not to pass unchallenged. Any "educated" man, if he will take the trouble to examine a few of the noteworthy churches recently built in London (independently of those in the provinces) will certainly not find them copies of Mediæval buildings, but that they are adapted to the wants of the times, and display considerable originality of treatment. I would point to such examples as St. John's, Red Lion-square; St. Augustine's, Kilburn; St. Mary Magdalene's, Paddington; or St. Columba's, Kingsland. Will any one pretend to say that one of these works could be in the least mistaken for a Mediæval building, though happily conceived in the true Mediæval *spirit?* May that spirit never die! I scarcely know what the writer means by "Society," a body composed of heterogeneous religious denominations (and denominations of no religion whatever). If this is "Society," its recommendation of the proper kind of church to build is of little value. The members of the Church of England, who honestly hold to the strength of their convictions,—in fact, all within her pale, whether "Ritualists, High, Low, or Broad Church," know what their requirements are. As for caring what "Society, in the wider sense," thinks of such matters, that is not of the slightest importance. Ecclesiologists can hold their own, and pursue the even tenour of their way, leaving "Society" to exercise sway in its legitimate sphere.

Surely, instead of ridiculing the idea of young men engaged in the City desiring to know something about ecclesiology, such a laudable wish should be commended. The clergy of St. Paul's, who have so exerted themselves to make the cathedral services really useful and adapted to the masses, have gone further in good work, and encouraged the prosecution of a study which is surely likely to elevate the character. I am convinced that no idea is further from the minds of the promoters of the St. Paul's Ecclesiological Society than to foster an undiscriminating admiration of all Mediæval work, as it is their intention to also study modern churches.

Edmund B. Ferrey.

Sir,—I read in your impression of the 12th of April last an article headed "The Ecclesiological Craze Again," which is both amusingly and cleverly written, but which is made the peg on which to hang certain erroneous statements as to the objects and views of the St. Paul's Ecclesiological Society, and by bracketing it with Ritualism and Mr. W. James Weale's own particular views on ecclesiastical art, thereby giving a totally wrong impression to your numerous readers, of whom for the last nineteen years I have been one. I trust, with that fairness which has always characterised your pages, that you will kindly insert the following statement as to its real objects and aims. The St. Paul's Ecclesiological Society is started with the intention and object of the *non-professional* study of ecclesiology in all its branches, and for occasional Saturday afternoon visits to museums, churches, &c., under professional guidance. Mediævalism will not be the one object of its attention, as assumed by the writer of the article. The comprehensive study of ecclesiology, embracing the history of all the arts connected with Christianity for nineteen centuries, is surely a sufficiently wide and liberal basis to acquit the Society of any intention of devoting itself to the exclusive study of one particular phase of art. Lastly, the only point of resemblance to the old Ecclesiological Society is the accident of the name; in no other way can this new society be even remotely connected with the old, and that there may be no misconception on this point, and to allay all unnecessary alarm in the mind of the writer of the article in question, I enclose the list of vice-presidents and officers.

One of the Committee.

RE PRIZE WATER-TAPS.

Sir,—Will some correspondent kindly inform me, through your columns, what award has been made by the Vienna Municipality in regard to the open competition for the best tap for preventing water-waste in houses?

J. T. R.

THE SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.

Sir,—As there seems to be an impression growing up in the minds of the public that the above Society is actuated by feelings of disregard for the structural preservation of ancient buildings, and as such an impression is likely to seriously interfere with the important objects which they have in view, I have been requested by the Committee of the Society to ask you to insert their most emphatic denial of any such sentiment on their part. The urging on the public of the necessity of doing structural repairs to ancient buildings in time to prevent decay, and keep out wind and weather, is one of the primary objects of the Society, and they have on several occasions had to deplore, in the cases of ancient buildings brought under their notice, that money which ought to have been expended on the structural repairs has been worse than wasted in utterly destroying the beauty and historical value of the interiors.

On behalf of the Committee,

William Morris, Hon. Sec.

NEW LIGHTS OF OLD LONDON.

Sir,—You recently gave us a retrospect of the "Light of other days,"—the next generation will smile when they read of the present dark age.

A few nights ago I fell pondering on the electric lights on the Victoria Embankment. I thought how easily electric lights could be suspended over the centre of the Thames at any desired height. What a boon to commerce, especially below bridge, where every tide and hour is of vast importance! The light refracted on the river would be reflected, and thus illume afar.

No engineering difficulties need be apprehended.

R. T.

KITCHEN BOILER EXPLOSIONS.

Sir,—We are quite astonished at Mr. Horace Field's letter in the *Builder*. We have for many years used occasionally a safety-valve provided with a disc of thin copper, firmly screwed and cemented, which would break and allow steam to escape long before there could be an explosion occasioning danger to life or limb. Such a safety-valve discharges the steam up the chimney where the copper is burst.

Allow us to say that we consider dangerous explosions to be invariably due to the injudicious use of stop-cocks by inexperienced engineers, and which, by some accident, are left closed when they ought to be open. We are not prepared to say that explosions through the stopping of pipes by frost, or by the deposit of mineral matter, are really impossible, but we think, on *à priori* grounds, that it must be so. We have had no opportunity of personally investigating any case, as the explosions appear to have been almost confined to the county of Lancashire.

Fredk. Edwards & Sons.

STEAM BOILER EXPLOSIONS.

The last report of the National Boiler Insurance Company says that "since this company was established in July, 1864, up to the end of the past year, no fewer than 789 explosions have been reported, by which 954 persons were killed and 1,590 injured. No boiler insured with this company exploded in 1878, and no life has been lost by explosion of any boiler inspected or insured by us for about nine years past." This being the case the company are certainly justified in adding,—"This result is a most gratifying contrast to the sad disasters above recorded, and also most encouraging, as it proves that our service has been of great value to those who have availed themselves of it."

That the loss of life and destruction of property entailed by boiler explosions are entirely preventible by the adoption of proper precautions and supervision is also proved by the experience of the Manchester Steam Users' Association. Mr. Hugh Mason, the president, writes:—"The experience of the Association, which extends over the last twenty-five years, shows that steam-boiler explosions are not accidental,—that they do not arise from any mysterious cause that has not as yet been ascertained; that they are not unavoidable; but that they may be prevented in the majority of cases, if not in all, by competent periodical inspection. The members of the Manchester Steam Users' Association, who adopt that simple precaution, enjoy immunity from explosion year after year. Not a single person has ever been killed, nor has a single person ever been injured by any boiler guaranteed by the Association while, beyond its ranks, to go back no further than the last ten years, 619 have been killed and 1,018 injured, m whom were outside the works at whi explosions occurred, and had no control wh over the boilers, and no voice in their m ment, but were compelled, through no f their own, to live near to or pass by bad structed or old worn-out boilers, whic owners had no right to use." Mr. Mason that it would be for the public good the Legislature to interfere and enfor adoption of periodical inspection, and enact that an investigation should be m every boiler explosion, whether fatal or some court independent of the coroner more competent to deal with the sc questions connected with steam-boiler sions. "While legislation is delayed, li being lost. In the year 1878, forty-five were killed and seventy-two others injur steam-boiler explosions, and this notwiths the general depression of trade which h diminished the number of boilers in w no doubt diminished the number of exp The average of the last ten years is 62 and 102 cases of personal injury per ann

THE HUNSTANTON CONVALESC HOME.

The new and permanent building institution (which was established in 18 grateful memorial of the Prince of W covery from his long and well-nigh fata was opened on Easter Monday by th and Princess. The building, which forty beds, has been erected at a cost o of which the Earl of Leicester, who Lieutenant of the county and presider institution, has given the fourth part. the Early-English domestic style, and built by Mr. Southgate from the desig Hutchinson, of Huntingdon, Mr. Colma latter place, acting as clerk of the wo material is the warm, rich carr-stone, Le Strange estate at Snettisham, of w houses at Hunstanton are generally bu in this case relieved with white and r and Ketton stone. There are three ga dormer windows in the high-pitched sl but the main floors are only two in n the first floor and that on the grou day rooms and the beds for cripples a the dormitories are above. One wing i to men and the other to women. In t is the dining-room, which trends out t and forms the connecting link between or main building and the range of kitc offices at the back, parallel to the front Thus the ground-plan of the house rese letter H. The main building is 1 length, 42 ft. in depth, and 44 ft. hi rooms in the main building are named towns which have contributed the furni towns of March, in Cambridgeshir borough, and Bedford gave the furnit sleeping-rooms. The oak dining-t birchen chairs of the common dining-r provided by Hunstanton. Mr. Mason, ford, presented the kitchen fittings, Home has profited by many other gift The forty beds, for instance, were answer to a special appeal by forty the several places mentioned.

Old Hunstanton and the adjoinin village of St. Edmund's seem to ha hands to do honour to the occasion. the latter place that the new Home i The mildness of its climate has gi stanton a rapid access of fortune sinc way made it accessible. Twenty there were two houses at St. Edmund cottage of a journeyman bricklayer, an inn, to which pilgrimages were admire the sea, and to spy out "Bosto as the beautiful and lofty tower Church is locally called. It is seen Edmunds, twenty-one miles away a Wash, just to the northward of the light traced on the broad estuary by t sun. The journeyman bricklayer *Times*) has now built fifty villa resid the Convalescent Home; St. Edm become Hunstanton, and the village vicarage stands has retired into co obscurity under the name of Old H There are nearly 300 houses and 1,00 in the new sea-side resort. It was year by 120,000 people, has a monst pier, a newspaper, a cliff company,

terworks, and is agitating for a Local

The freshness of all this prosperity is
ed by the name of the newspaper, which
d the *Hunstanton Telephone;* but, St.
d's has, nevertheless, a very interesting
ique record in the past.

GLASS GAUGES OF BOILERS.

: SCHEBESTA, of Vienna, has patented an
ement in the glass gauges of boilers
s as ingenious as it is practical. In a
which the inventor recently delivered at
the disadvantages of the old gauges
ointed out. At present, in the case of
losion of the gauge, the stoker is exposed
ere scalding or to other injury from the
s of glass flying about. Even the pre-
of surrounding the gauge by wirework
ot act as a protection in case of accident,
uld the gauge explode, it is quite im-
to approach the boiler for the purpose
ing off the cocks without running great
t frequently happens that, in the effort
it off by means of some instrument close
, the head of a cock is knocked off, when
ler will empty itself even below the
f the fire-box.

his according to the inventor, has been
, by his contrivance, which consists in
rtion of a safety-valve in the lower head
glass gange through which the water

In the safety-valve, a ball lies loose,
in consequence of the pressure of the
pon the water from above and its own
remains still as long as the gauge is
The water will pass quietly over it, and
uction of the channel cannot take place,
e repeated blowing out of the pipe by
which every conscientious boiler attendant
to several times in the course of the
rder to convince himself of the efficient
f the glass gauge, every particle of dirt
emoved.

i a glass gauge provided with a safety-
urst, the pressure of the steam from
eases at the moment of bursting, the
pts from below on the indolent state of
, presses the latter against the upper
of the valve, and so closes it. All
hus ceases, as no water can escape; the
t quietly turns off the cocks, and re-
he broken glass by a new one, without
ting the work of the boiler.

BRIDGE AND UPPER SWINFORD NEW CEMETERY.

new cemetery has been consecrated by
op of Worcester. The area is 11 acres
abouts, a little over 4 acres and 3 roods
been allotted for consecration. The
have been laid out and the buildings
t by Mr. Smalman Smith, architect to
rd, the previous designs sent in compe-
lving been set aside. The chapels are
m in plan, the consecrated portion being
ast, and the unconsecrated portion on
, of a central tower with entrance and
rtals. There are two vestries and a
The spire is 100 ft. in height, and is
with English oak cleft shingles. A
of the interior is lined with brown and
one. The chapels, lodge, and enclosure
ve been built with brown stone, the gift
. Amphlett, of Clent, and 6,452 tons of
erial have been used. Bath and Grinsell
one are used for the dressings and
ings. The exposed roof timbers and
are of pitch-pine, varnished; cathedral
used for the windows, and Marr's tiles
oors. Provision has been made for one
ell. Only a portion of the carving has
ne. The style of architecture is that of
metric period. Mr. S. Guest is the con-
or the chapels and lodge, and the stone
in the work has been provided by the
There are 9,000 grave spaces in the
y. The Board have borrowed 7,500*l.* to
cost of the cemetery; of which the
ost 1,123*l.*, and the tenant's interest in
The contract for the two chapels and
mounted to 2,500*l.*

cky Stonemason.—It is stated that
e will of the late Mr. Hatton, of Man-
John Hatton, a stonemason in the em-
t of Messrs. J. Collins & Son, Warrington,
to possession of about 80,000*l.*

FUTURE BOROUGH SURVEYORS.

BARROW-IN-FURNESS is making a practical effort to raise the future standerd of borough surveyors. This rising town has, no doubt owing to its rapid growth, felt the importance of the Borough Surveyor's duties. The Town Council have decided to adopt the following regulations with reference to its articled pupils in the Borough Surveyor's department:—1st. That the Corporation receive a premium of 50*l.* with each pupil. 2nd. That the pupil serve four years without any salary. 3rd. That the premium of 50*l.* be dispensed with if the pupil has passed, or undertakes to pass, the Matriculation Examination of the London University within one year from the date of being articled. We are quite disposed to believe that the above examination is a most excellent preliminary educational test for pupils entering engineers', architects', or borough surveyors' offices.

"ROUS MEMORIAL" BUILDINGS.

MR. FREDK. W. ROPER submitted his designs for these buildings to H.R.H. the Prince of Wales and the Committee, on the 7th inst., when the drawings were approved, and the works ordered to be begun,—the tender of Messrs. Bates, of Stevenage (5,253*l.*), being accepted. The buildings will occupy a square acre of land, the gift of Sir R. Wallace, at the junction of the Rutland and the Station roads, Newmarket; and will consist of a hospital for ten patients, with two blocks of almshouses, each to accommodate five aged persons, planned to form three sides of a quadrangle, in the centre of which will be placed a statue of Admiral Rous.

THE SHAFTESBURY PARK ESTATE, BATTERSEA.

FRANKENBERG *v.* THE ARTISANS', LABOURERS', AND GENERAL DWELLINGS CO.

THIS case has been before the Court of Queen's Bench, and is of some interest, bearing as it does on the extensive frauds committed upon the defendant company by its late secretary and chairman of directors, Swindlehurst and Baxter Langley. The plaintiff claimed a large sum of money for goods sold and delivered to the company. The defendants admitted that the goods were supplied, but stated that they were not ordered by the proper officers, that the prices were unfair and unreasonable, and that the contracts were entered into in fraud and collusion, and the defendants sought to recover back the money so overpaid.

Mr. Kemp said that the plaintiff in the case was a foreigner, but had carried on business as a dealer in oils, paint, and glass for many years in this country, and lately he had dealt in ironmongery. He brought this action to recover from the defendants 3,000*l.* and upwards for goods supplied by him to the defendants. It appeared that in 1867 the Artisans', Labourers', and General Dwellings Company was established, and they first commenced operations by purchasing the Shaftesbury Park Estate, Wandsworth, which at the time belonged to a gentleman named Spence. The plaintiff had had business transactions with Spence, and through that gentleman he became aware of the fact that the houses were about to be erected, and afterwards he became acquainted with a person named Swindlehurst, who, it appeared, was at that time manager, secretary, and a director of the new company, and who had the general control and supervision of the erection of the houses on that estate, the purchase of the goods, and everything connected with the objects of the company. He first entered into a contract with a person named Parsons, but it not being carried out to the satisfaction of Swindlehurst, Parsons was got rid of, and the company commenced building on their own account, Swindlehurst superintending the building, and making contracts with a variety of persons to complete the buildings, and amongst others with the plaintiff, for oils, glass, and paint. Swindlehurst complained about this time of the high prices for ironmongery supplied by the contractor, and said that he could not get the articles supplied as he wanted them. A man named Mash superintended the plaintiff's oil and glass business, and, being acquainted with the ironmongery trade also, he suggested that he should obtain the prices of ironmongery required by the defendant, and that the plaintiff should tender for supplying them. When the plaintiff had obtained the quotations, he submitted his prices for the supply of the goods to Swindlehurst. Some negotiations took place between the parties, which resulted in goods being ordered and supplied and paid for, the accounts being settled on the first Monday in the month, after they had been examined and checked by a person in the employ of the company. In 1875 the defendants purchased the Queen's Park Estate in the Harrow-road, and in that year the plaintiff applied to be allowed to supply the goods required in the erection of 500 houses' at first decided to be built. In 1876 the company was dissatisfied with the plumbing work that was being done in these houses by contract, and that becoming known to the plaintiff, he sent in a contract for doing the plumbing work for 1,000 houses at 4*l.* 10*s.* per house, but the samples sent in for that price Swindlehurst did not consider sufficiently good, and the consequence was that a second tender was sent in, and accepted, at 4*l.* 17*s.* 6*d.* per house. The plaintiff also supplied the paint, oils, and glass for these houses. The oils, paint, and glass were supplied at the market prices, and so was the ironmongery, except a few articles that might be picked out as being high.

Mr. Justice Field said that he had carefully attended to the learned counsel's statement, and he had also carefully examined the statement of defence. Looking to the enormous number of articles that had to be inquired into as to the reasonableness of the charges, he did not consider it a fit case for a jury to try, and, therefore, he should exercise his power, and order it to be referred.

Mr. Kemp said at some stage of the case the accounts would have to be investigated. There would have been no difficulty in referring it if the defendants had not made a charge of fraud against the plaintiff.

Mr. Russell, Q.C., said the defendants were anxious to have the opinion of a jury on the points in dispute. They were agreed that if the case should become a question of price only, it would have to be referred. His case was that, if 200 instances were taken of the principal articles supplied, he could show that the plaintiff had put a profit on them, on the manufacturer's charges, varying from 95 to 500 per cent.

Mr. Kemp replied that might be so, but if they took the general average of all the articles supplied, there was only a net profit of 15 per cent.

Mr. Justice Field said that it was impossible for a jury to try the case, and, therefore, he made an order under the 57th order of the Judicature rules that the case should be referred to the official referee, with liberty to apply to him (the learned judge) at chambers.

The case was then referred, the learned judge certifying for a special jury.

A STRIKE DEMONSTRATION IN HYDE PARK.

ON Saturday last the members of the various metropolitan trade organisations marched in strong force to Hyde Park. The demonstration was nominally intended as a manifestation in favour of those of the London engineers who have now for two months been on strike against a proposal to reduce their wages; but was directed in the main to a general confederation of all the organisations of the labouring and artisan classes, in defence, as it was termed, of "the rights of labour." Besides representatives of the engineers, there were present members of the Bookbinders' Society, the Labourers' League, the London Pattern-makers, the Amalgamated Tailors, the Ironfounders, the Boilermakers, the Operative Masons, the Southwark Radical Club, the Westminster Democratic Association, and the Riggers.

Mr. Burnett, of the Amalgamated Engineers, who was elected to the chair, said that, considering the weather and the comparatively small area of the operative engineers' quarrel with their employers, the large numbers assembled was proof of the widespread interest that the artisan classes of London were taking in the matter of this trade dispute. It might be thought that the demonstration was about a small matter,—that it concerned only 1,000 men and their families; but it must be remembered that these men, now resisting the unjust demands of their employers, were resisting reductions of wages which were aimed at 7,000 or 8,000 men; for if the 1,000 men, whose employers desired two months ago to enforce a reduction of wages, had submitted to their employers' demands, the 7,000 or 8,000 would through the operations of a small body of employers, have been reduced to the same level. The amount of reduction was only 2*s.* 6*d.* or 3*s.* per man per week; but if the 1,000 men had not resisted, the reduction would have become general. Hence, those who were in work should feel themselves in duty bound to subscribe a part of their earnings to support those who were out.

Mr. Evans, of the Amalgamated Society of Railway Servants, moved a resolution to the effect that, in the opinion of that meeting of the industrial community of London, the action taken by a section of the iron trade employers in associating to enforce a reduction of 7½ per cent. from the wages of the workmen was quite unjustifiable; and while the meeting tendered their heartfelt sympathy to those resisting this oppressive action, they pledged themselves, by means of their organisations and individually, to give such material assistance as should enable those on strike to bring the struggle to a successful issue.

Mr. Henry Broadhurst, of the Operative Masons, and secretary of the Trade Unions Congress, moved a resolution to the effect that, taking into consideration the great power of the employers of labour, both from their capital and organisations, it is necessary, in the interests of labour, to federate the organisations of labour, and that funds should be formed, to which every workman, society or non-society, should be induced to contribute, so as to enable the working-classes to resist unjust action on the part of the employers. The speaker urged that, from the

number of "labour disputes" arising in all parts of the country, it was evident a wide-spread organisation of employers existed. These organisations of employers were directed by men of great intelligence, and they could only be successfully combated by the federation of the employed. Such a federation would include the whole of the skilled industrial classes of the country.

Both resolutions were carried unanimously.

COMPETITIONS.

Castleisland Roman Catholic Church.—Out of seven designs sent in for the Castleisland new Catholic Church, that of Mr. D. J. Coakley has been selected. The proposed new building will cost 8,000*l.*, and will consist of nave, aisles, transept, chancel, and two side chapels, with vestries and music-choir communicating with the existing convent. A tower and spire is to be placed at the south-west corner of the building, and is to be 150 ft. high. The style of the building is in the Early Geometric Gothic. The nave arcade will be supported on polished Aberdeen red granite columns, with Bath stone carved caps; the exterior is to be built of lime-stone.

Ipswich Post-office.—The designs sent in by twenty-two architects in competition for the premium of fifty guineas offered by the Corporation for the best elevations of the new Post-office to be erected on the site of the present Corn Exchange, are now on exhibition in the Council-chamber at the Town-hall. According to the *Suffolk Chronicle* (which journal, in a supplement published on Tuesday last, gives a detailed notice of the designs), the task the competing architects had before them was almost entirely confined to the provision of elevations, for the Post-office committee of the Corporation had, in conjunction with the Post-office authorities, fixed upon the plans of each of the floors so far as the Post-office portion of the building is concerned, and the plans were also given of the public offices at the back, but some little latitude was permitted to the architects in respect of these. The conditions set out that the public entrance to the Post-office is to be from the Cornhill; this entrance will lead into the public office, which is to occupy about two-thirds of the Cornhill front,—from the King-street corner to beyond the entrance; to the east of this is the post-master's room. Through the public office, and lighted by windows from the King-street side of the building, and by a well sky-light, is the sorting-office. Upon the first-floor is to be accommodation for the telegraph department and the letter carriers' sorting-office, and in the basement store-rooms, battery-room, letter-carriers' kitchen, and various offices. The "public offices," at the south or old Herb-market end of the block of buildings, are to consist of three stories, with a basement, in which are to be separate cellars, &c., for each story. The first-floor it is proposed to let to the School Board for offices, and it is thought that one of the other sets of offices may be occupied by the Surveyor of Taxes, and the other by the Borough Surveyor. Another condition is that the cost is not to exceed 6,000*l.*, a condition which has been disregarded by some of the competitors. It was absolutely laid down that the style of the Post-office must be Classic, in harmony with the Town-hall. It is understood that the Post-office Committee have made up their minds as to the design which they will recommend to the Town Council for the premium, but they have not at present reported, and a suggestion has been thrown out by one of the competing architects, who says, "Should the Corporation seek the assistance of a well-known architect in selecting a design it will be a source of satisfaction to the competitors." To this the *Chronicle* adds that it would also be a source of satisfaction to the public.

Rebuilding in Paris.—According to the French newspapers, the Government have under consideration a proposal from M. Garnier, the architect of the Opera-house, for rebuilding the Conservatoire so as to accommodate twice the number of pupils. The new scheme embraces a theatre with 1,500 seats, and lecture-rooms. M. Garnier estimates the cost of fulfilling his wishes at 8,000,000 francs. French Governments are not so afraid of spending money in buildings and monuments as ours are.

WATER SUPPLY.

North Shields. — The North Shield Rural Sanitary Authority propose to provide a system of water-supply for the neighbourhood of Cowpen. Mr. Dinning is the engineer. The outlay proposed is only 200*l.*, but Mr. Arnold Taylor, one of the Local Government Board inspectors, has recommended that the works be carried out on a more extended scale, with larger pipes, &c.

Newcastle-on-Tyne.—The *Newcastle Courant*, commenting on the article which recently appeared in the *Builder* (p. 364), as to the right of water companies to stop the supply of water, says: "We do not so much object to having the supply cut off because we do not pay. What we object to is a water company not furnishing a supply, and then, when it is able, threatening to cut it off unless the water withheld be paid for, as not unfrequently happened in Newcastle lately."

Langwathby.—The Penrith Union Rural Sanitary Authority have just completed works of water supply for the village of Langwathby. The supply is from a spring of water at Moor Breast, a mile and a quarter from the village. The number of inhabitants supplied is about 300, and the total length of mains is 3,500 yards. There is a small reservoir at the head, and in the mains are sluice, air, and wash-out valves. In the village there are several fire hydrants, in connexion with which leather hose, stand, and jet-pipes have been furnished, so that Langwathby possesses excellent means for extinguishing fires, as well as having a complete and ample water supply. Nearly all the proprietors of houses have already had the water laid into their premises, so that there is no need for adopting the objectionable expedient of public taps. Messrs. Watson, Gin, & Co., of Glasgow, were contractors for the supply of cast-iron pipes; Messrs. Hamilton, Woods, & Co., of Salford, for the valves and hydrants; and Mr. J. Jackson, of Penrith, plumber, for the execution of the works. Mr. Watson, of Penrith, engineer to the Sanitary Authority, designed and superintended the works. The total cost was 568*l.*

SANITARY SHORTCOMINGS.

Clontarf.—The "horrible spectacle" presented by Killester Graveyard, near Clontarf, is described in the *Freeman's Journal*. The graveyard, it seems, was closed in February, 1877, against further interments, but it does not appear that any other burial-ground has been provided. Notwithstanding threatened penalties, human remains have been clandestinely interred, or, rather, deposited on the surface of the ground. "The whole place," says the *Freeman*, "is strewn with the fragments of decaying mortality." Coffins lie, in many instances, *on* the ground, rather than *in* it. "All over the damp brown earth and amongst the tall weeds are scattered fragments of mouldering coffins and discoloured bones. Bits of broken tombstones and battered coffin-plates are littered about in all directions. Some of the coffins are a few inches above the surface, others lie level with the ground. The lids, in many cases, have been wrenched off with apparent violence,—how it is needless to inquire,—and the open coffins are so many little bits of festering corruption. The dead seem to have been thrown into the place almost as carelessly as rubbish is tossed upon a dust-heap." What have the sanitary authorities been about?

DRAINAGE AND SEWERAGE.

Redditch. — The dead-lock in which the drainage question here has been involved since 1877, when the scheme of Messrs. Gotto & Beesley was adopted, at an estimated cost of 9,000*l.*, led to an official inquiry by an officer of the Local Government Board, which was held on the 4th inst. The members of the Local Board did not appear, but were represented by their clerk, Mr. H. C. Browning, who admitted, on behalf of the Board, that they were defaulters, so far as they had not carried out the scheme of Messrs. Gotto & Beesley. The reason of the delay was that the money asked for to carry out the scheme was insufficient; in fact, the amount required would be much nearer 12,000*l.* than 8,000*l.*, the sum granted. Tenders for the work were received by the late Board, and the lowest tender that could be received was 10,000*l.*, while the highest was 16,000*l.*; also, that the schedule of quantities exceeded Messrs. & Beesley's estimates to the extent of 1,

Evesham.—At a special meeting o Evesham Rural Sanitary Authority, h the 7th inst., the plans of Mr. Pritchard for the drainage for the village of Harv which has suffered severely from an e of diphtheria, were submitted, and ord be sent to the Local Government Bo approval.

Withington.—It is expected that th visional order empowering the Withingto Board to carry out their drainage sche shortly come before Parliament. An with regard to the proposal was held Government inspector, and, though some tion to the scheme was offered in the di Chorlton-cum-Hardy, a favourable report matter has been received from the Local ment Board. The Local Board believe they are allowed to carry out their sch contemplated it will cost 20,000*l.* less tha the alternate scheme of joining in th of the Manchester Corporation. The propose to intercept the sewage at a give in the township, and construct a drain which it can flow by gravitation on a land of 70 acres at Chorlton Ees, at C cum-Hardy, where it is proposed to utili the irrigation process.

BIRMINGHAM.

New Aquarium and Assembly-rooms Lower Grounds.—These buildings were opened on Good Friday. Some partic them were published in the *Builder* so back. Over the Aquarium are a large rant, picture gallery, &c. The Assembl adjoins the Aquarium, and is 220 ft. l 87 ft. wide. The buildings have been from the designs of Mr. Thomas Nade tect, Birmingham. The Assembly-r been built by Mr. Bloor, and the A which is not yet finished, has been entr Mr. J. Garlick. Mr. Thomas Parkes street, has supplied the gas and h apparatus; Messrs. Boswell, Son, & Clement-street, the brackets and fitting electric light; and Messrs. Duvallon Oozells-street, the engines and boile decorations have been carried out by Mi Five Ways. It is expected that the A which will be under the managemen Lloyd (formerly of the Crystal Palace) opened at Whitsuntide.

Small Heath Park. — The park Heath, presented to the town by Mis was formally opened by the Mayor o inst. In extent it is a little over 4 the land gently undulating, and contain fine oak and other trees. On a slight in the centre has been erected a refr room of polished pine. A large artif has been provided for boating, &c. Th plied with water from a well, which posed to further utilise as a source of some swimming-baths. The park is si a large densely-populated, and increa trict, and one furthest from the other the town. It has a frontage to the road of 350 yards, and is bounded o by the Wordsworth-road. The buildi been erected by Mr. J. Dowse, of Victo Small Heath; the carriage drives a have been prepared by Messrs. Carrall of Icknield Port-road; and the fencing supplied by Mr. John Elwell, of S street. The total cost of laying out has been about 10,000*l.* Mr. A. Ro had the supervision of the work.

The Cost of the New Council Ho Birmingham Town Council having ma cation to the Local Government Boa Section 303 of the Public Health Act partially repeal, alter, or amend, by p order, "The Birmingham Improve 1851," so as to enable the Corporation and re-borrow the sum of 150,000*l.* for the cost of the erection and complet new Council House, and of paying off contracted with this object, Mr. C. Ne one of the Local Government Board i attended on the 10th inst. to hold into the subject-matter of the said ap Mr. R. Chamberlain stated that the Co already spent approximately 100,00 had been expended on the building and and it was estimated that before the were completed 150,000*l.* would be

sent the Council were borrowing the 0*l.* under sanction of the Lords Com- ners of the Treasury under the Municipal ges Act, and it was stipulated that the ould be repaid in thirty years. If the were to borrow the 150,000*l.* in the same ere would be an annual charge of interest four per cent., or 6,000*l.*, and a sinking one-thirteenth of the amount, which be 5,000*l.* This would make the total for the buildings 11,000*l.*; whereas, on her hand, if the Council obtained the n which they sought, and borrowed under visional order of the Local Government they would have to pay the interest of and an annual sinking-fund of 22 per which would amount to only 330*l.*, and discharge the total cost in seventy-five Mr. S. Tooks, who attended to oppose blication, said he understood nine years when the erection of the buildings was discussion, that the total cost would not 75,000*l.*, and he had been somewhat at double the sum being required. ly the Council had had additions to make original plans in consequence of the ion of the water and gas departments, 0,000*l.* was a far larger amount than easonably to be spent upon the buildings.

MANCHESTER MATTERS.

et Accommodation.—The new building s being constructed as an extension of olesale fishmarket at Shudehill is almost ed, and will be ready for occupation in three months. This building is similar to the existing wholesale market, and is d on one side by a number of shops. The market at Campfield is now being en- by iron girders, and the work of con- n will be completed in a few weeks. f has been placed on the upper market, flagging, &c., still requires to be done. nticipated that this market will be com- n about months. No arrangements of a character have yet been made, but it is id (says the *Manchester Courier*) that the n Deansgate fronting the Upper Camp- rket will shortly be removed, and that place will be erected an arcade, a portion n will, it is believed, be devoted to the s of a free lending library.

er Park for Salford.—Another public park rd is rapidly approaching completion. It ed in the densely-populated district of and when it is finished the inhabitants rd will have a choice of four parks in o spend a leisure hour. The park is id out from the plans and under the n of Mr. Moore, the chief gardener of k. It is expected that by the middle he Park will be ready for opening.

sion of King-street.—The corporation of ster are about to effect a much-desired ment in King-street, by the removal of property at the top of the incline, so as the thoroughfare through to Charlotte- With this object the old cloth ware- Messrs. John Munn & Co. has recently lled down. Other property has been for the same purpose, and in a short new street will be formed.

ACCIDENTS.

e 3rd inst. the front of some premises were being rebuilt and enlarged in -street, Landport, fell in with a loud arrying with it a large portion of the the adjoining houses. Two apprentices ourneyman, named G. Colestream, be- o Bristol, were buried in the ruins. The were soon extricated, and without sustained serious injury, but it took couple of hours before the man could ed. He was much bruised and cut, and ayed to the hospital in a critical con- The accident occurred through adding the building without taking down the , the increased weight causing the old bulge inwards.

4th inst. an accident occurred at the Sewerage Works, caused by the snap- beam. Four men were thrown to the a distance of nearly 40 ft. One of them skull fractured, and the others are in a us state.

night ago a serious accident hap- the Silloth Dock. Through the giving way of the wall on the west side of the entrance to the dock, one of the dock-gates fell, and the water, which at the time was standing about 24 ft. deep in the dock, rushed out with great force, carrying away about 20 yards of the west pierhead, which, having been stripped of the protecting masonry, offered but little resistance to the current. The west gate, in its fall, knocked the east gate out of its proper position; but it is still standing, in a dilapidated state, and the wall on the east side of the entrance appears also to be in a somewhat critical position. The large blocks of masonry of which the west wall was composed having fallen into the entrance to the dock, a complete stop has been placed upon navigation, and about twenty vessels are blocked in. The cause of the accident has not yet been definitely ascertained, but the general surmise is that the sill of the dock, owing to some gradually increasing defect, had burst up, and the water thus gaining access to the foundation of the wall got behind it and bulged it in. It is believed that it will cost between 20,000*l.* and 30,000*l.* to repair the damage.

SURVEYORSHIP ITEMS.

Accrington.—Mr. F. Stocks has been appointed assistant surveyor to the Corporation and Urban Sanitary Authority of Accrington.

East Ham.—Mr. J. Coleman has been appointed surveyor to the East Ham Local Board and Urban Sanitary Authority.

Maidenhead.—At a meeting of the Maidenhead Town Council, on the 4th inst., an application from the surveyor, Mr. Ingram, for an increase of salary to 175*l.* was discussed. The general feeling was that the services of the surveyor should be retained, but that the application was premature. It was resolved to give 150*l.* to the end of Mr. Ingram's first year of engagement, and then consider the matter again.

Wakefield — On the motion of Alderman Goldthorp, seconded by Councillor Lupton, the resignation of Mr. Pagan, borough surveyor, was accepted, and Mr. J. G. Healing was unanimously appointed surveyor, at 150*l.* per annum.

CATHEDRAL ORGANS.

Gloucester.—It is stated that it has been decided to postpone the consideration of any large scheme for the reconstruction of Gloucester Cathedral organ, on account of the depressed state of trade throughout the country, and the consequent improbability of being able at the present time to raise the funds which will be necessarily required for such a purpose.

Hereford.—In December last the precentor, succentor, and organist recommended to the Dean and Chapter of Hereford some additions and improvements in the cathedral organ, to cost about 700*l.* Mr. H. Willis, organ-builder, was requested to make a close examination of the organ, and to report thereon. He estimated 1,300*l.* for a total reconstruction of the instrument, with certain important additions which could not be made except on a re-disposition of its several parts. The dean and chapter have accordingly increased their subscription from 100*l.* to 250*l.*, and the dean will also give 100*l.* The subscription-list amounts to 1,280*l.* 19*s.* 6*d.*

Books.

A Descriptive Catalogue of the Glass Vessels in the South Kensington Museum; with an Introductory Notice. By ALEXANDER NESBITT, F.S.A. Chapman & Hall. 1878.

THIS is another of the sumptuous catalogues of the South Kensington Museum, and serves to remind us not only how beautiful and interesting are the specimens of ornamental glasswork in that collection, but how poor and uninteresting, artistically speaking, is the greater part of the glass made and used by us in the present day in Europe. The establishments of Salviati at Venice, and of Powell at Whitefriars, are examples of revived taste and talent in this beautiful manufacture, but they are exceptional, and so is the use of their products except with those who professedly cultivate artistic character in their houses and utensils, or with those wealthy few who buy everything that has any specialty to recommend it. For the rest, money is spent on glass largely, and a great deal of high finish expended on it, but with no result for the most part but to produce what is handsome in a common-place kind of way. Two of the greatest sources of beauty in glass manufacture, the capability of the material to receive and incorporate with itself colouring matter with rich and lustrous effect, and its ductility under the hand when in course of manipulation, are almost left out of sight in a large proportion of the glass which is in daily use among modern civilised people. Something may be said, no doubt, for the beautiful purity of effect of first-class colourless glass, which is what nothing else can imitate or replace; but then neither can anything else replace the rich semi-transparency of coloured glass, except only the most costly precious stones, and in neglecting it a great source of daily pleasure to the eye (not to say the mind even), is thrown aside. This is, however, a venial fault,—a fault of omission only, in comparison with the preponderating prevalence of the system of treating this really ductile material (for so to the manufacturer it is), as if it were a hard substance only capable of being rigidly treated by cutting and engraving; passing over its tractable stage, and only attacking it in its intractable and rigid state. Consequently, our modern glass-shops, instead of being stores of rich colour and beautiful spontaneously-inspired form, present a glitter of stiff formal objects, in certain set types, and with little that can be called real design in them. We do not say but that there has been an improvement of late years upon old types in the matter of table glass, and a good deal may be seen which is not vulgar or offensive to good taste; but we do not seem to get further than that; we rarely meet in ordinary shops with anything that is of artistic value in idea or execution, or that has the stamp of originality, or conveys the idea that the artificer enjoyed making it, or which pleases and stimulates the fancy. Yet there was a time when nations we are accustomed to consider less civilised than we now are, could give a life and interest to their smallest glass utensils, simply because they were made according to a natural and individual taste, and the thing was an art and not a trade. We must, of course, allow something for the influence of association in judging of old things; yet, after deducting all that we can have a right to deduct on that account, look at those three pieces of Egyptian glass illustrated in the coloured plate facing page 2 of Mr. Nesbitt's catalogue: have we any chance of finding anything in our own shops so characteristic and rich in colour and design as these? And yet the elements of the ornamental treatment are simple enough; there is nothing very costly or elaborate about them. But they were made when glass was treated in the natural manner, when every piece bore the impress of the workman's sensitive and shaping hand. As in so many other manufactures, we have lost the artistic element in proportion as we have elaborated mechanical means of execution and finishing. This is the lesson to be deduced even from the study of the few selected examples chromo-lithographed in this catalogue. It loses none of its force when we contemplate the collection as a whole in the cases at South Kensington. The prevalence of a feeling for colour, and of a free and infinitely varied fancy on the part of the makers in regard to form and character, forcibly contrasts with the trade-like spirit illustrated in our modern manufacture.

The introductory essay to the catalogue is a very comprehensive and well-written one, neither too long nor charged with fine words and enthusiasm (which cannot be said of some of the Kensington catalogues). There are some interesting details in regard to the first employment of artists from Murano in England, who seem to have puzzled the natives here considerably. A letter is also quoted from one Armigill Waade, dated from "Belsys," to Sir William Cecil, in 1565, concerning the wants and difficulties of a Netherlands glass artist, one Cornelius de Lannoy. "The man," says Waade, "no doubt ys at great charges; he thought he might have had his provisyons in England as in other places, but that will not be. All our glasse makers cannot facyon him one glasse, tho' he stood by them to teach them. So as he ys now forced to send to Andwarp and into Hassia for new provisyons of glasses,* his old being spent. The potters cannot make him one pot to content him." Some of us have as much

* By the "provisyons" seems to be meant a supply of glasses for decorating, which was probably Lannoy's specialty.

difficulty in getting pleased now, and perhaps with as much reason. When we think to have our "provisions of glasses" in England such as we wish, we find, too truly, "that will not be," except to a very limited extent.

VARIORUM.

Mr. Charles Roach Smith continues the publication of his "Collectanea Antiqua," with surprising persistency and usefulness. Part II. of the seventh volume of this work, the second title of which explains its scope,—"Ancient Remains, illustrative of the Habits, Customs, and History of Past Ages,"—has just now been issued.* In the present part Mr. Roach Smith continues at some length, and with many illustrations, his account of "British Oppida and Roman Castra." The part also includes a very interesting notice of the great find of coins and altars at Procolitia, on the line of the Roman wall, by Mr. Clayton. The number of coins secured is 13,487, but as many were stolen the full number found cannot be computed at fewer than 15,000! Mr. Roach Smith agrees with those who think that they were placed here for concealment through a sudden alarm or panic, and were not, as some have imagined, votive offerings deposited from time to time over a long series of years. Many of them are beautiful works of art.——Under the title "Condition of Malta" (G. Kelly & Co.), Mr. S. Plimsoll, M.P., gives a frightful picture of the homes of a large proportion of the working-classes there, in cellars, or, more properly, caves, one under another, excavated in the soft sandstone rock under the houses. The condition of these foul dens, into which no daylight penetrates, is frightful. As a matter of course, the death-rate is as high as these cellars are low. This has been known for years, yet nothing has been done to stop the waste of life.——Mr. S. C. Hall is about to publish "A Memory of Thomas Moore," with whom he was acquainted so long ago as the year 1821. The centenary of the poet is to be commemorated in Dublin on the 28th of May. With reference to this celebration some interesting papers by Mr. C. Clinton Hoey have been reprinted from the *Irish Builder* (Dublin: Peter Roe), under the title "Moore's 'Juvenilia': our National Poet and his Schoolmaster." The pamphlet includes Associations of Aungier-street, Dublin, in which Moore was born.

Miscellanea.

The Affairs of the Artisans', Labourers', and General Dwellings Company, which, for the past two years, have been in a transitional state, seem to be again beginning to engage attention. The *Commercial World* says, "During the first ten years of its business career the company paid dividends at the rate of 5 and 6 per cent. per annum on paid-up capital. Last year the dividend was 2 per cent. only, and on Friday we find a dividend of 4 per cent. was declared. This dividend, the chairman told the meeting, had been fairly earned, and we do not doubt the fact. But, as during the past two years very little,—indeed, we might say comparatively next to nothing,—has been done by the company in building operations, whereby alone in former years its present rental income was created, it follows that the revenue, out of which the dividend of 4 per cent. is now to be paid, is derived from the rents of houses built almost entirely on the company's estates prior to the past two years. This fact cannot be gainsaid. It cannot even be obscured, much less put out of sight. We might go further and say, that if the building activity which characterised the first ten years of the company's career, and which, it should be borne in mind, was pursued under great financial difficulties during the first three or four years, had been continued during the past two years,—in lieu of the dormant attitude which has been maintained, as if the aim was to show that the whole scheme was a mistake,—by this time Queen's Park would have been completed, and, meanwhile, a dividend of 5 per cent. could have been paid to the shareholders with the same ease as in former years." It is to be hoped, however, not under the same circumstances. It is to be desired that the directors are looking more sharply into accounts than they did formerly.

* It is obtainable through the author, whose address is St[illegible] near Rochester, Kent; as are also some of the back volumes.

Preparing Macadam for Roads.—At a recent meeting of the Society of Engineers, a paper was read by Mr. Charles E. Hall, on "Modern Machinery for Preparing Macadam for Roads." The author described the various machines in use in some of the leading quarries and other works in the United Kingdom. The machines were illustrated by diagrams, and in describing them the author commenced with the original Blake Stone-Breaker, which was introduced into this country in 1862, and he followed the successive developments down to the present year. The author confined himself to those machines which had been practically successful, and which, he said, include Blake's improved, Archer's original, Ord and Maddison's, Smith and Roberts's, Maddersou's, Marsden's, Smith and Roberts's, Maddersou's, Marsden's, Archer's latest, Hope's, and Hall's "Multiple Action" machines. The points of excellence and difference were explained by the author, who defined the requirements of a machine necessary for the production of perfectly cubical machine-broken stone for road purposes. Particular attention was called to the importance of dealing with stone in large quantities by an improved disposition of the various machines, in order to secure a better form of metal, with less waste than is usual under the ordinary working conditions, and reference was made to those works where the plan had been more or less closely followed. The development of various expedients for cubing the stone was noticed, and the results (so far as they could be arrived at) given of the working of each. The author stated that he was unable to fix definitely the cost of producing macadam by machinery, which should be true in all cases, as circumstances tended very greatly to modify it. He found from authentic sources that the cost ranged from 25 per cent. to 100 per cent. in favour of machine-broken as against hand-broken macadam.

Rooms over Stables.—At an inquest held by Dr. Hardwicke concerning the death of Emily Susan Hulbert, 18, Susan Hulbert, mother of the deceased, said that she occupied rooms over stables at 16, Colville-mews, Bayswater, which belongs to Mr. Bacon, a cab proprietor, and in whose employ her husband was for some time. About a month ago the deceased complained of bad smells from the stables, and was taken with pains in her arms, followed by eruptions. She was admitted to St. Mary's Hospital, and stayed there till her death, on Wednesday, the 9th inst. An infant child died just before the deceased went into the hospital from farcy and glanders, and she believed that the deceased died of the same complaint. She had occupied two rooms and a loft for about eight months with her husband and four children. The staircase leading to their rooms was in the stables, and near the stairs the horses were fed and watered. Several horses had been taken away from the stables to be killed, and three had been killed out in the yard. Dr. A. S. Brown, of St. Mary's Hospital, said that death was caused by blood poisoning arising from farcy and glanders. Dr. Thomas J. Dudfield, medical officer of health for Kensington parish, said the place was in a very bad condition, and that when the stable-door was shut all the foul air must go up into the rooms occupied by the family. No notices had been given either to the Privy Council, the Metropolitan Board of Works, or the police, as required by the Contagious Diseases Act. The Coroner said it seemed to him that there had been great neglect somewhere. The inquest was adjourned for the production of further evidence. Some years ago we gave many instances of illness and death resulting from living over stables. The *Mews* of death is a bad addition to be made by modern times to the ancient Nine!

Royal Italian Opera.—Signor Nouvelli who made his *début* in Flotow's *Marta* last week, showed himself to be a very agreeable singer and useful addition to the company. He has a good presence, acts naturally, and, in spite of great nervousness on the first occasion, satisfied the house. Mdlle. Thalberg obtained an *encore* in the Italian version of "The Last Rose of Summer," but was less successful in the "Spinning Wheel" quartet. Graziani's *Plunket* is too well known for its excellence to need mention. Mdlle. Schon and Signor Vidal, two other new vocalists who made their first appearance in the *Huguenots* on Tuesday evening, proved themselves excellent singers. Mdlle. Cepeda was an admirable *Valentina*, and Signor Gayarre sang well the music assigned to *Raoul*.

Compensation Case. — At the S[illegible] Court, Red Lion-square, on the 20th u[lt.], case of Seyforth *v.* The School Board for [London] was heard. In this Mr. Seyforth, of [Clapham], sought an award of 501*l.* 12*s.* as compe[nsation] for injury sustained by being deprived [of] houses, Nos. 84 and 86, Park-walk, [Chelsea], held on lease, thirteen years and a half o[f] are unexpired. Mr. W. B. Rodgers, of t[he firm] of Rodgers & Chapman, surveyors, &c., [for the claimant], thought an outlay of 90*l.* on the two [houses] would bring them up to the value of [the] year each. He considered that the rem[ainder] worth on the 6 per cent. tables nine yea[rs' pur]chase, to which should be added the usua[l] cent. for compulsory sale. The valuel[ess] fixtures he had assessed at 41*l.* 19*s.* M[r. W.] Driver, surveyor, &c., thought 100*l.* wou[ld have] to be spent to put the houses in ordinary [repair] able order. On both houses he conside[red the] claimant's prospective rent, over and [above] what he was called upon to pay under h[is lease] was equal to 45*l.* a year. He estima[ted the] total compensation due to the claim[ant at] 478*l.* 10*s.* Mr. Henry Richards, surve[yor,] thought the two houses would let for 50 [guineas] each, and that the claimant was ent[itled to] compensation amounting to 516*l.* On b[ehalf of] the School Board, Mr. F. T. Galsworthy, [of the] firm of Chinnock, Galsworthy, & Chinn[ock] called. The houses, if put in a good [state], thought would let at 45*l.* a year each p[roperty]; they stood, were not worth more than [40*l.*] a year. That gave a profit rental of 20[*l.*] for the two houses, or, roughly, 200[*l.*] value of the under-lessee's interest. [Mr.] Eilcart, surveyor and land agent, agr[eed with] the previous witness. For the purpose [of] compensation, he had given the claim[ant] improved rental of the houses for [nine] years, which, at nine years' purchase, w[ould] Mr. S. Walker, of St. Stephen's-c[hambers,] Telegraph-street, thought the house[s were] only 40*l.* a year each. Taking the t[otal] rental of 20*l.* a year at nine years' [purchase] and adding 10 per cent. for forced sale[, gave] a total of 200*l.*; including the fixtures, [the] estimate was 246*l.* In the result, [the] awarded the claimant a sum of 288*l.* *politan.*

Sheffield School of Art.—The an[nual] *versaione* of the Sheffield School of [Art], which we have always felt interested, [took] place on the 23rd inst., when the prize[s were] distributed. The Sheffield School h[as] stood high amongst the schools of art [in] Britain, and none have beaten it as re[gards] ultimate success of old students, of w[hom] bers have gone forth and made a name [for] selves. The late Alfred Stevens, the [sculptor] of the Wellington Memorial in S[t. Paul's] Cathedral, was closely associated wi[th] its earliest commencement; and the lat[e] Skyes was successively a pupil an[d] master thereat, remaining there [until] appointment at South Kensington. [The] cessors of that artist at the Museu[m] Reuben Townroe and James Gam[ble] Sheffield School of Art men; so, too, a[re] Innocent & Brown,—skilful architec[ts] score or more of School Board sch[ools] most pleasing architectural features [in] Sheffield. Hugh Stannus, the deco[rator] Harry Hems, the carver, are both o[f] George Theaker, head master of t[he] wood Institute, Burslem; Pigott, th[e] Glassby, the sculptor; and many oth[ers] ably known hail from the same so[urce]. exhibition of the works of past as well [as] students will take place at the *conver[sa]*

Salters' Hall, Droitwich.—[The] erected by Mr. J. Corbett, M.P., was [opened] the 15th inst. The building is adjac[ent to] Raven Hotel, to harmonise with wh[ich] been built in the half-timbered style [of] Wood & Sons, of Worcester, from desi[gns by] H. Fagg. The construction is of bri[ck] and rough-cast. The St. Andrew-st[one] tion has a projecting *flèche* to acco[mmo]date bell in connexion with a clock whic[h is] posed to insert. The hall internally [is] long by 60 ft. broad, and is calcula[ted to] 1,500 persons. The height is 19 ft [from] to roof-plate, and 35 ft. to the apex o[f the] building. The roof, open to the tim[bers], three spans,—two of 16 ft. each and [one] The hall has galleries on three sides. [The] bett arms appear over the platform [and] of the Salters' Company in the l[arge] window.

...tion against Fire in Music Halls. ...Surrey Sessions, Newington-causeway, ...bers of the Committee for Finance ...ral Purposes reported that the regula... ...wn up by the Metropolitan Board of ... a protection against fire at music ...ing too stringent and expensive, they ...ed others more simple and inexpensive, ...mmended the Court to adopt the fol...—"All doors and barriers to open ...; all gangways, passages, and stair... ...tended for the exit of the audience to ...entirely free from chairs or any other ...ions, whether permanent or temporary. ...le supply of water with proper appli... ...r extinguishing fire to be provided on ...mises. All fixed and ordinary gas... ...to be furnished with efficient guards. ...e metal gas-pipes to be used. An ...inspection to be made by the county ... No structural alteration to be made ...the sanction, in writing, of the Justices ...Petty Sessional Division in which the ...is situated, in Petty Sessions assembled. ... of the regulations to be sent to all ...keeping music or dancing halls, and the ... be supplied to every person applying ...w licence. A certificate from the Metro... ...Board of Works to be produced as ..." The Committee likewise proposed ...n county surveyor should inspect all ...d dancing-rooms outside the metropolis ... by the Court, report as to the struc... ...erations, and examine all places to be ...as to their efficiency. The report was

...thard Tunnel.—A serious difficulty ...urred between the St. Gothard Tunnel ...Company and the contractor, M. Favre. ...pany wished to mortgage all the works ...ne and those of the tunnel. M. Favre ... to this because it imperilled his ... The company then changed the ...of operations. The contractor, being ...complete the work at a fixed date, had ... the materials for the entire lining of ...el. The company determined to line ...nel only at intervals of from 4 to 70 ...with gaps of equal extent. The mate... ...ady prepared become, therefore, par... ...eless; the security of the navvies and ...unnel is seriously endangered, for the ... the soil renders a continuous lining as ...y as ever, and the contractor can no ...ake use of his boring-machines, for the ... of the tunnel will vary according to ...it is to be lined or not. The company ...ely, it is alleged, placed obstacles in the ...ur's way, with a systematic attempt to ...en throw up the work, so as to enable ...pany to take possession of the tunnel ...ade it in the mortgage promised to the ...s from whom they obtained an advance ...3,000,000*l.* By order of M. Favre ... the workmen lately employed in the ...tunnel were discharged. Great excite... ...vails on the subject at Berne.

...vations and Foundations in Sand. – ... has published an interesting note upon ...at harbour improvements at Dunkerque ...velines. There are ten sluices for con... ...the fresh and salt waters of the districts, ...ns purposes of maritime and domestic ..., as well as for the wants of the military ...nd for defensive operations in time of ...he sluices are built in a soil which is ...ade up of pure sand, of flour-like fine... ...hing to a depth of 15 or 20 mètres (16·4 ...ards) below the lowest tidal levels. The ...ere all executed by the help of coffer... ...preference to dredging, and the pre... ... were so thorough that it was always ...work in dry sand even at the lowest ...n levels. The total cost was less than ...at it would have been by the whole ...f dredging, and the saving of time was ... the same ratio.—*Ann. des Ponts et ...*

...s Conference.—A conference of dele... ...om trades councils and societies not ... with councils was held in Manchester ..., to consider a proposal put forth by ...chester and Salford Council for the ... of an alliance of councils for the ...f the trade interests, for giving advice ...tance in cases of disputes, and as a ...ans of communication between different ...ieties. The conference resolved that ...sirable to form such an alliance, and ... will submit propositions to their ...l societies.

An Electric Light Moderator. — An arrangement for regulating the power of the electric light for scenic effects, the joint invention of Mr. T. W. Grieve, the scenic artist, and Mr J. J. Poole, has been patented by the former under the name of the "Electric Light Medium." The final trial of the medium took place on the 10th inst., at the works of Messrs. Siemens Brothers, at Charlton. The light as first exhibited was shown from a clear glass lantern, with a band of ground glass some 3 in. deep round the centre, which prevents the glare from the incandescence of the carbon points meeting the naked eye. It gave out a pure white light of great brilliancy, equal to an average of 6,000 candles. Upon a signal the lantern was instantly covered over and enclosed underneath by a close-fitting shade of deep red-coloured glass, which reduced the power of the light by at least three-fourths of its intensity. This shade was as quickly removed, and the lantern again enveloped by a green-coloured shade, causing a fine moonlight effect to pervade the whole of the building. The two shades were afterwards simultaneously lowered, giving sufficiently darkening effect to meet the requirements of any scenic arrangement. Amongst the advantages that would attend the use of the electric light in large public buildings, and theatres especially, the oppressive heat and foul air generated by gas would be avoided, and there would be no injury to the decorations.

The Roman Remains at Lincoln.—Amongst the finds to which we have recently alluded, a Roman *milliarium*, or milestone, has been discovered in the progress of the drainage works in the Bail of the city of Lincoln. It is a tall, square pillar, with chamfered angles, 7 ft. 4 in. high by 1 ft. 4 in. across. The inscription, which is rudely scratched, rather than incised, on the face of the stone, contains the names of Marcus Victorinus Piavvonius, one of the thirty-seven tyrants of Trebellius Pollio, who, having previously been colleague to Postremus, is reckoned as the third of the military usurpers who in succession assumed the government of Gaul during the rebellion against Gallienus, the imbecile son of Valerian, after his fall in the Persian campaign, A.D. 260. Victorinus was assassinated A.D. 268, after a reign of a little more than a year. The date of this recent *trouvaille*, says the Rev. E. Venables, may therefore be safely placed in that of the preceding year. Perfect Roman milestones are of such great rarity in England that considerable interest attaches to this discovery, increased by the fact that only one other inscription is at present known in England bearing the name of Victorinus. This was found near Neath, in Glamorgan.

Paul's Cross. — It will be remembered that Mr. F. C. Penrose, in the course of a paper recently read before the Royal Institute of British Architects, referred to the probability of discovering some indication of the site of what was once known as "Paul's Cross." An opportunity for search was offered by the works recently commenced for laying out and improving the churchyard, and we are glad to say that, early in the present month, at the precise spot indicated by Mr. Penrose, and at a depth of 6 ft., the workmen came upon the platform upon which the superstructure originally stood. It was known to be octagonal in form, and the foundation now laid bare exactly corresponds to this form, as correctly as the site corresponds with the drawings and descriptions still extant.

Sewage Utilisation at Wrexham. — Mr. Isaac Shone, C.E., mayor of Wrexham, recently invited a number of engineers and others interested in the solution of the sewage problem to Hafod-y-Wern Farm, Wrexham, to witness his patent "Pneumatic Sewage Ejector" in action. Advantage was taken of an overflow opening in the main sewer, and the raw sewage was conducted direct to the ejector, which lifts the sewage to an adjoining field over 40 ft. above. The air-compressor engine is placed about a third of a mile from the ejector, with the view of showing that distance makes no difference. Mr. Shone will continue his experiments for about three months.

The Birmingham Free Libraries Fire.—The surveyors appointed by the Free Libraries Committee, Messrs. Martin & Chamberlain, and the assessors, Messrs. Thomas Naden & Sons, representing the Lancashire and the Yorkshire Insurance Companies, have completed their investigations, and the total amount of the damage sustained is valued at 20,063*l.* 5s.

A Caution to Carpenters.—At the Surrey Sessions, on the 9th inst., a carpenter was convicted of stealing some pieces of wood belonging to Messrs. Cook, contractors, who employ some 300 men. The prisoner said, when the wood was found in his basket, that the pieces were only "odds and ends." Mr. Hardman, the chairman of the Bench, told the jury that they had had the courage to find the prisoner guilty of stealing some trifling articles, and he was glad of it, as he hoped that other workingmen would abstain from taking such articles. Where some hundred men were employed, it became a serious matter to employers. He sentenced the prisoner to one week's hard labour.

The English Timber Trade.—According to the *Timber Trades Journal* the present state of the home timber market is far from satisfactory. Those who sold early in the season had to submit to considerable sacrifices, and many of the lots were "bought in" in order to try them again later on. The trade is even now more depressed than it was then, and prices are not likely to advance this season. In some of the southern counties the timber which was cut and sold two years ago is not yet cleared out of the plantations. This is clearly locking up capital in a ruinous manner, as there is not only a charge of interest annually accumulating, but the timber itself is depreciating in value from exposure to the changes of a variable climate.

Large Contract for Steel Rails.—The Highland Railway Company have just entered into a contract for 5,000 tons of steel rails. The price is 4*l.* 7s. 6d. per ton at the makers' works. Competition for the contract was very keen, and the successful offerers are the West Cumberland Steel and Iron Company, Workington. Herr Krupp, of Essen, was among the competitors for the contract, and his offer, after stipulating to deliver the rails free of charge or freight in this country, was within 2s. per ton of that which has been accepted by the company. The price of steel rails five years ago was from 16*l.* to 18*l.* per ton.

The Tees.—At a meeting of the Tees Conservancy Commissioners, on the 7th inst., at Stockton, Mr. Isaac Wilson, M.P., chairman, announced that the Public Works Loan Commissioners had agreed to grant the Tees Conservancy an immediate loan of 30,000*l.* for their breakwater on the mortgage of their revenues, at 4 per cent. The Public Works Loan Commissioners had also resolved with respect to the Tees Conservancy's application for a further loan of 50,000*l.* for dredging, to send down Mr. Rendel, C.E., to ascertain whether dredging was necessary to make the Tees a harbour of refuge and shelter.

Sunderland Stonemasons. — A general meeting of the operative stonemasons of Sunderland has been held to consider a proposed reduction of wages. It was agreed that the wages be 8d. per hour for banker hands, and 8½d. for setters. By this 43 remain at work, and eight are stated to have come out on strike.

The Missing MS. from Gloucester Cathedral.—Abbot Froucester's MS. Chronicle, which was subtracted more than fifty years ago from the library of the cathedral, has been discovered in the possession of a bookseller at Berlin. The Dean and Chapter have recovered this valuable work at a large cost.

The Flint Glass Trade.—The wages dispute in the Midland districts has been amicably adjusted by a compromise. The masters gave notice for a 15 per cent. reduction, and the men offered to submit to a reduction of 7½ per cent., to which the masters have now agreed.

TENDERS

For new lecture-hall and class-rooms, Church-street, Reading, for the Society of Friends. Messrs. Brown & Albury, architects :—

Barnicoat	£1,786 0 0
Collier	1,779 15 0
Wicks	1,777 0 0
Higgs	1,760 0 0
Filewood	1,749 0 0
Sheppard	1,749 0 0
Searle	1,725 0 0
Simonds (accepted)	1,652 0 0

For the erection of two houses and shops at Harlington, Middlesex, for Mr. B. B. Philp :—

Kearley	£627 0 0
A. & B. Hanson	505 0 0
Keen & Sons	424 11 0

For the rebuilding of the Opera Tavern and shop adjoining, Catherine-street, W.C., for Messrs. Scotts & Sayer. Mr. Treacher, architect :—

Beals	£5,278 0 0
Wheeler	5,100 0 0
Bartley	5,045 0 0
Perritt	4,953 0 0
Kirk	4,919 0 0
Gill	4,862 0 0

For new workhouse, Christchurch, Hants. Messrs. Burton & Creeke, architects:—

Light Bros.	£20,337	0	0
Howell & Son	19,602	0	0
Davis	19,551	0	0
Martin, Wells, & Co.	19,100	0	0
Dyer	18,696	0	0
Brett	16,214	0	0
Huey	16,167	0	0
Jones & Son	16,133	0	0
Crook	15,994	0	0
Bull & Son	15,877	0	0
Hoare Bros. & Walden	15,618	0	0
Jenkins & Son	14,987	0	0
Lawson & Stanley	13,997	0	0
George	13,930	0	0
Blashford (accepted)	11,955	0	0

For the erection of warehouses, White Horse-yard, Holborn, for Messrs. Saunders & Son. Messrs. Cadogan & Dunk, architects. Quantities supplied:—

	Alternative estimate.
Mark	£3,997 ..... £ —
Shurmur	3,942 3,949
Carter	3,897 3,862
Morland & Nixon	3,834 3,795
Jacobs	3,810 3,810
Macey & Son	3,749 4,015
Hatchman	3,591 3,634
Langmead & Way	3,485 3,435

For drainage works at Morton, in the district of Chester-field Union, Derbyshire, for the Rural Sanitary Authority. Messrs. Hollinson & Son, engineers:—

Clubley & Stringfellow	£714	0	0
Spencer	700	0	0
Taylor	640	14	7
Wheeldon	633	18	6
Tomlinson Bros.	610	0	0
Oxley	600	0	0
Cropper	595	0	0
Wingad, Wem, & Rogers	592	0	0
Goodyeare & Co.	574	7	4
Stevenson	559	0	0
Holmes	528	0	0
Roe & Phillips	517	18	0
S. & J. Hudson (accepted)	490	0	0

For sewers, St. George's, Gloucestershire. Mr. Wm. Dawson, surveyor:

Contract No. 1.

Bell	£1,749	0	0
Osborne	1,717	3	11
Haynes	1,706	14	6
Krauss	1,546	14	3
Mereweather	1,545	13	6
Rumble	1,426	6	0
Monks (accepted)	1,317	14	8
Gillam & Brittan	1,313	2	0
Jones	1,214	15	0
Gaskell	1,189	16	6

Contract No. 2.

Haynes	£693	0	0
Bell	541	0	0
Mereweather	517	10	0
Osborne	506	0	0
Gaskell	471	14	0
Rumble	448	10	0
Krauss	419	10	0
Monks (accepted)	379	10	0
Gillam & Brittan	379	10	0
Jones	346	10	0

Contract No. 3.

Haynes	£367	10	0
Kirby & Hickory	308	14	0
Osborne	308	14	0
Mereweather	301	7	0
Bell	300	0	0
Rumble	264	13	0
Monks	242	11	0
Jones	237	12	0
Krauss	203	19	0
Gaskell	203	5	8
Gillam & Brittan (accepted)	176	8	0

Contract No. 4.

Haynes	£697	0	0
Gaskell	450	7	6
Kirby & Hickory	421	15	0
Bell	409	0	0
Mereweather	407	16	3
Osborne	393	5	10
Rumble	382	15	0
Krauss	291	8	9
Jones	261	17	0
Gillam & Brittan (accepted)	258	0	0
Monks	213	18	9

For the erection of artisans' dwellings, York-road, N., for the Combined Estates Company, Limited. Mr. E. J. Paine and Mr. A. Bradley Rooke, joint architects. Quantities supplied:—

Temple & Forster	£4,048	0	0
Greenwood	3,798	0	0
Dove Bros.	3,775	0	0
Patman & Fotheringham	3,694	0	0
Williams & Son	3,635	0	0
Hobson	3,587	0	0
Goodman	3,573	0	0
Kirk & Randall	3,462	0	0
Grover	3,422	0	0

For alterations, additions, and repairs, to Nos. 27, 29, 31, and 33, Yeoman's-row, Brompton-road. Mr. Alfred Wright, architect:—

Stoner	£667	0	0
Phelps & Rice	647	0	0
Cade & Thompson	610	10	0

For the erection of house in Station-road, Tring, for Mr. J. G. Williams. Mr. W. Huckvale, architect:—

Shaw	£3,350	0	0
Honour	3,097	0	0
Cooper	2,998	10	0
Fincher & Smith (accepted)	2,724	15	0

For re-building Nos. 119, 120, and 120a, Oxford-street. Mr. C. F. Hayward, architect. Quantities by Mr. S. J. Thacker:—

Bywaters	£10,387	0	0
Boyce	10,153	0	0
Brown	9,899	0	0
Clemence	9,280	0	0
Brass	8,899	0	0
Langmead & Way	8,700	0	0

For the erection of new purifying houses, for the West Ham Gas Company. Mr. E. H. Thorman, engineer. Quantities by Messrs. Frankland & Andrews:—

Crabb	£3,390	0	0
Perry & Co.	2,649	0	0
Julian & Co.	2,640	0	0
Bangs & Co.	2,593	0	0
Cox	2,583	0	0
F. & F. J. Wood (accepted)	2,563	0	0

For building four houses and shops at Peckham-rye Mr. George Edwards, architect. Quantities by Mr. H. Lovegrove:—

Buckland	£3,200	0	0
Lilstone	3,070	0	0
Greenwood	3,063	0	0
Tyreman	2,995	0	0
Stevenson	2,925	0	0
Martin & Wells	2,850	0	0
Nibbet	2,830	0	0
Luniold	2,755	0	0
Smith	2,689	0	0
Slowman	2,605	6	0
Shapley	2,590	0	0
Wilkins	2,573	0	0
Fisher	2,490	0	0
Cullum (accepted)	2,375	0	0

For the Rous Memorial, Newmarket. Mr. Fred. W. Roper, architect. Quantities by Mr. Thomas Ladds:—

	Hospital.	Almshouses.	Total, including Boundary-walls and Drainage.
Kirk & Randall	£1,361 0	£1,939 0	£6,049 0 0
Hook & Oldrey	3,421 0	1,853 0	5,975 0 0
Thoday & Son	3,373 0	1,801 0	5,885 4 6
Tooley	3,200 0	1,700 0	5,564 0 0
Saint & Son	3,036 0	1,704 0	5,398 0 0
J. & G. M. Bates	2,949 4	1,844 8	5,233 3 3
Potter	2,925 0	1,614 0	5,170 0 0

For additions to No. 8, New Burlington-street:—

Bywaters	£425	0	0
Priestley	357	0	0

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No. 90, Cannon-street, E.C. [Ad

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"The Home of Sennacherib."



THE traveller who has wandered from the tourist-trodden paths of the East, and resolved to pass the rubicon of the Euphrates, leaving behind him the guide-and-dragoman-haunted shrines of Syria, may truly be said to have entered into wonder-land. On the west bank of the Euphrates, with the last sight of ...us of Mabug, the traveller leaves behind the old associations of ruined cities. No ...will lines of graceful columns and ranges ...lated battlements, richly clothed in their ...om with creepers and fringed with the ...-blossomed oleander, stimulate his ima... to day-dreams of restoration. Never... right and left of him, as he wanders ...he fertile plain of Upper Mesopotamia, he ...s around him the graves of buried cities,—...which, thirty centuries ago, were rich in ...and herds, and whose kings were vassals ...courts of Assyria. On either bank of the ...igris, as his raft is whirled round and ...by the eddies and rapids of that stream, ...t see rising from the plain the dome-... mound and circling rampart of sandy ...ich mark the ruins of some ancient town ... When at last his swift-borne raft is ... by the boat-bridge which crosses the ... opposite the busy town of Mosul, the ...er will see spread out before him in all ...grandeur the ruins of ancient Nineveh:—

> ... circle o'er whose desert ring
> ...e shapeless mounds their darkening shadows fling,
> ...t desolation—far as eye can see
> ...lorn and lifeless—once was Nineveh."

...ere as he stands on the flat roofs of the ...e of the busy Moslem city, with all its ...nd turmoil of bazaar and street, he can ...ead out before him, in weird desolation, ...t remains to tell of ancient Nineveh. ...t, in the mind's eye, how plainly, even ...ark and shapeless mounds, can he trace ...an of that great city. Here, along its ...n line of ramparts, once laved in the ...f the sacred Trigris, but now deserted by ...cle stream, he can see rising, abrupt but ...y, the mounds which mark the sepulchres ... halls of Nimrod. The northern and ..., oval in shape and pointed inwards, ...s the city, marks the site of the great ...is of Nineveh,—a lofty terraced mound, ...rowned by the stately palaces and temples ...ons of Sargon. Here was the home of Sen...ib, the lion-hearted king, which, on the ...astern end of the mound, cast the shadow ...rraces and colonnades in the clear stream of the Tigris. At the north-eastern extremity, forming, as it were, a northern wing, rose the still more rich palace of the heroic warrior-king, Sardanapalas, now to be recognised in the warlike grandson of Sennacherib, the great Assur-bani-pal (B.C. 668).

Too long has this warrior been the toy of poets and tool of fiction-workers. His history, as writ in the hard stones of his palace, and on the imperishable clay, prove him to have been no effeminate flower-clad monarch. Hardy and fearless in his wars against Egypt, Babylon, and the rude mountaineers of Elam, he may, in the hours of his well-earned peace, have lapsed into the dream of luxury-lulled repose; but the records of law and justice, of state decree, and royal call to arms, which he has left us in the annals of his palace, show that there was needed no Salimenes to call him from the arms of Grecian slave to rule his people right. Rebellion met with its stern antidote in the iron bands of warriors, headed by no intriguing deputy, but led on to victory by himself, their lord and king. Such was the monarch whose palace has furnished the rich treasures which now decorate the British Museum, and it was that palace which in all its majesty crowned the summit of the Koyunjik mound. On the north may be seen the line of ramparts which are broken here and there by irregular projections, which mark where once had been the watch-towers overlooking the fertile plain. One large opening in this chain of mounds, flanked by small eminences rising above the line of ramparts, indicates the site occupied by the great city gate, the "Arc de Triomphe" of Nineveh.

The *enceinte* of Nineveh is divided into two portions by the stream of the Khosr-su, which flows through the enclosure, washing all the south-east side of the Koyunjik mound.

In the southern portion of the city the line of the western wall is broken by the smaller mound called the Nebby Yunus or Tomb of Jonah, which marks the sites of palaces and temples erected by Sennacherib and his successors. Toward the east, in regular lines, the traveller will see the ruins of the strong, fortified walls and ramparts, ditches and outpost towers, which formed the strength of Nineveh, fitly styled by her chroniclers the "Supreme Fortress," "The Mighty City beloved by Istar, Queen of Battles." The rich carved columns and shady colonnades, the circled steps of Roman amphitheatres, and the dark caverned depths of early Christian catacombs, may have furnished the traveller with hours and hours of pleasant dreams. Time after time he may have enacted, in his mind's eye, the scene which made these buildings the wonders of a bygone age. But now, as he gazes on these relics of a far more ancient home, and sees before him the *débris* of twenty centuries, with a wholly different aspect to all the former *tableaux* of decay, his dreams are different, and there comes over him a feeling of strange awe and wonderment as he stands before this silent City of the Dead. Arab tradition, and scant fragments from sacred and secular writers, have hallowed this spot, and thus his memory carries him back to the wild legends of Ninus and Semiramis, and perhaps of the conquering Sennacherib, who swept with his iron hosts the land of the faithful Hezekiah.

Half a century ago the traveller in these regions gazed on this mound, with no greater stimulant to his thought than the scant notices of Scripture, and the wild fabrications of Ctesias and other classic fiction writers; and he, like his Arab brother, had nothing to guide him.

> "Beyond tradition's oral tale,
> Or gleams of truth like waving sunlights pale,
> The Arab knows not, though around him rise
> The sepulchres of earth's first monarchies."

But the very spirit of wonder and fascination which had inspired so many with a desire to tear back the veil of dust and *débris*, and lay bare the treasures hidden, at last found a true disciple in Sir Austen Layard, to whom all the world of arts and science owes the "resurrection of Nineveh," and it was he who at last broke the spell of centuries of slumber which had wrapped its greatness and its glory.

No longer need the archæologist or historian depend on the contradictory stories of such writers as Ctesias, Herodotus, and Diodorus Siculus. Let him who would read the story of Nineveh, and know its streets and palaces, its kings and people, turn to the annals which for centuries have lain deeply buried beneath these tumuli, and which now form the guide-books to the city and its suburbs. Of all the lands which have been the seats of early empires, and from which have spread in regular lines colonies, and settlements, bearing civilisation and culture to the world around, none more clearly indicates in its topography, its growth and history. By the sequence of cities which the traveller will find as he starts on his journey down the rivers of Mesopotamia, he may almost be said to be passing step by step through a long range of centuries. Starting with the tetrapolis of Nimrod, in the delta of the rivers, we find city following city in regular order. Erech (Warka), Ur (Mughier), Akkad, Calneh (Niphur), and Babylon, each succeeded one another in regular sequence as the metropolis of the southern empire. In time the "stay-at-home" primitive population of Babylonia, the Turanian Akkadians, like the Chinese, whom they resemble in so many points, became blended with another race, the roving Semite, the forefather of the Bedouin, and commerce became the incentive to spread out towards the fertile lands of the "setting sun." Assur (Kileh Shergat), Calah (Nimrud), Nineveh (Koyunjik), became caravan stations along the banks of the water-way, the Tigris, the "river of fertility." Gradually in regular sequence, as in the southern land, these newly-founded colonies became the metropoli of the early, middle, and late Assyrian empires.

From very early periods, however, Nineveh was celebrated for its temple dedicated to Istar, or Ashtaroth, the Assyrian Venus, which from time to time had been richly endowed by the early kings of Assyria, especially those who had passed through it on their way to conquer the fertile regions of Syria.

Although one of the leading cities of the empire Nineveh does not come into prominence unt

the middle empire (B.C. 885—700), when it shared with Calah the seat of government.

During the reign of Assurnazirpal and his son Shalmanesar III. (B.C. 850), the contemporary of Jehu, Nineveh often was the royal residence, especially during the long series of wars against Syrian tribes, when, from its northern position, and its suitable situation for the collection of troops, it became more useful as a military centre. Still, however, the southern city remained as the capital *de facto*, and the seat of the administration of government.

It was not until the end of the middle empire that Nineveh began to assume the prominence, which it ever afterwards retained, as the queen city of Western Asia.

Sargon, the father of Sennacherib, had been chief military commander of the weak and short-reigned monarch, Shalmanesar IV. (B.C. 725), the last ruler of the middle Assyrian empire. Sargon, the *tartan*, was a member of one of the aristocratic houses of Assyria, and seems to have possessed the entire control of the army, which, in "the days when might was right," enabled him to step firmly to the throne. This accession or usurpation of the Assyrian throne took place in B.C. 721, marking the foundation of the grandest line of Assyrian kings, and the commencement of the Augustan age of the empire. His character as a military despot only held back the rebellion of his people by the gilded cup of victory which he kept ever to their lips, and his partly Babylonian origin caused him to live away from Nineveh and the other large cities of the empire, and to build a residence for himself. He, therefore, chose to erect for himself a palace at a distance of about twenty miles north-east of Nineveh, on the site of an out-post called *Dur Sargina*, or "Fort Sargon." Here, with the spoil of his numerous campaigns, the king built for himself a royal abode "bright as the sun of Heaven," and from it at various times he paid state or religious visits to Nineveh, Calah, or Babylon.

It was from the ruins of the suburban palace of Dur-Sargina, the site of which is marked by the Arab village of Khor-Sabad, that M. Botta obtained the splendid series of sculptures which now form the treasures of the Louvre in Paris. The palace town of Dur-Sargina appears never to have been the official capital of the Assyrian empire, although in B.C. 688 it supplied its eponym as one of the chief cities in routine to be archon of Nineveh. Calah appears to have still retained its character of the official capital.

On the death of Sargon, in B.C. 705, Sennacherib, his eldest son, came to the throne, assuming the reins of government at a grand coronation festival, held on the 12th day of the month Ab (July 16th), B.C. 705. Sennacherib, who had taken an active part in the affairs of state previously to his accession, came to the throne with a determination to make Nineveh the capital of the empire, and to restore it to all its grandeur and render it worthy of its title of "the Great Fortress, the beloved city of Istar, within which are all the sanctuaries of the gods and goddesses." Situated as Nineveh was, on the Tigris, the main artery of Assyria, this able general saw that it was better adapted to be the centre of the extensive military operations which he had to carry out. To render the city worthy to be the capital and abode of royalty, Sennacherib determined to restore its temples and palaces from the decay into which they had fallen. The state of neglect and ruination which reigned at Nineveh had rendered it totally unfit to be the royal abode, and in his inscriptions Sennacherib very clearly describes the state in which he found it.

"The river Tebilti, a rapid stream, which in its course the ground within the city had cut away.

The palace mounds were burnt and scorched with the sun.

For a long time storms on the palace had come and by a great flood in its foundations openings were made, and its platform broken up."

The river Tebilti (Flowing), which had undermined the palace mound by its force, and flooded all the lower part of the town, was an artificial canal which entered the city enclosure at the north-eastern extremity, being fed from the upper waters of the Khosr-su. This stream ran along the southern and eastern sides of the great palace mound, and when its embankments became neglected, and its streams flooded by the winter rains, it speedily washed away much of the foundation-courses of the terraces and embankment. The western face at the same time had suffered from the violence of the river Tigris so that the lower courses of the mound must have been much undermined.

The moisture absorbed by the foundation-course had caused cracks and fissures, and probably landslips, to occur in the great platform, which rendered it unsafe. There is somewhat of a pathetic tone in the words in which the builder king describes the neglect and disregard with which his ancestors had treated the palaces and temples of this great city.

"Those of ancient time, the kings who had gone before me, my predecessors in the dominion of Assyria and the guidance of the offspring of Bede.

And through an unbroken series of years in its wide entry, the tribute of the kings of the four quarters they received within it.

Not one among them of the interior of this palace as an abode of dominion the smallness knew, and his heart did not desire to repair the circuit of the city or widen the streets.

To excavating the river and the planting of trees his heart was not drawn or his attention raised."

But as the pious king speaks of the divine command which he had received as to the work of rebuilding Nineveh, we see in what a sacred light he regards the restoration of the Holy City.

"To me, Sennacherib, king of Assyria, to the doing of this work by the will of the gods, my attention was directed and my mind brought."

The weak state of the empire, wrecked by rebellion without and sedition within, had so impoverished the kings that they had not the rich spoil and myriad captives to lavish on this work of restoration. Tiglath Pilieser II. (B.C. 742), the last wealthy monarch of the Middle Empire, had poured out all or the greater part of his wealth upon the southern city of Calah, where he had built a rich palace for himself. He appears, from records found on the spot, to have done some little towards the beautifying of Nineveh, especially the Temple of Istar. But with Sennacherib, who had just come into the rich legacy of his father's conquests, it was very different. The spoils of Egypt, Syria, and Armenia, the wealth of Babylonian priests and nobles, and the treasures of the princes of Elam, with many thousand captives whom his father had transplanted to Assyrian provinces, were all awaiting his royal decree to commence the work of his heart, and the desire of the gods. The decree had gone forth that Nineveh should be rebuilt, and throughout all the land was busy preparation.

The captive tribes of Chaldeans and Arameans, the hardy Minni from the shores of Lake Van, with the border tribes of Asia Minor, were marshalled by the stern task-masters, and drove by drove flocked into Nineveh. From the wooded slopes of Lebanon and Amanus the royal foresters sent down the blocks of rich polished cedar. The strong pine, the cypress, and the light, but pliant, palm were laid under contribution for the royal abode. From the quarries of the Zagros, and the steeper Armenian hills, came the marble and alabaster, while from the regions round the city came the gypsum which formed the chief material for decoration.

When we examine the documents from which the full details of these great works of the builder king are gathered, we notice a very curious fact. The barrel-cylinder, usually known as the Bellino cylinder, now in the British Museum, which contains so full an account of the restoration of the palace, is, on an examination, found to be dated in the "month Sebat [September], in the eponym of Nabu-irba, prefect of Arbela." This officer we know from the canon of archons of Nineveh, presided over the city in the year B.C. 702, or the third year of Sennacherib's reign. This cylinder was found in the foundation course of the palace, and it is therefore evident that if the stupendous works here recorded were completed in the third year of the king's reign, they must have been commenced some time previously to his accession. It is, however, much more probable that the detailed account of the works here given, which agrees in all the chief points with the Taylor cylinder, written in B.C. 691, or ten years later, was in reality a specification of the works to be carried out. This cylinder contains events recorded in the Bavian rock text, which was compiled in B.C. 691, or later, and which relates to the extensive series of waterworks constructed by Sennacherib for the benefit of the people of Nineveh. From the numerous small tablets from Nineveh, Calah, and Babylon, which relate to the repairs and additions to royal and sacred edifices, and which comprise measurements, reports, specifications of materials used, and orders for material, it is evident there was attached to the royal household very important official staff under the ch works.

The details of the royal works which come to hand in the copious inscriptions Sennacherib, are all the more interesting b they happen to be accompanied by one large whole-plate illustrations, drawn by who saw the works in process of being out. The sculptured slabs which now the south side of the Koyunjik gallery British Museum, form a series of large plates which very clearly illustrate the which, in the year B.C. 701 and following were in progress on the site of Nineveh. we see most vividly depicted the scene was daily presented to the spectator who the works. Within the enclosure are to t the workmen and bands of captive slaves, in unbroken line, hour after hour, to ra lofty mounds on which were erected th palaces. The river is alive with small the boats, constructed of skins and twigs ing to and fro the workmen. Alongsi temporary quay is moored a vessel, ha half-barge, on which is placed a por block of stone, which has been floated from some adjacent quarry, and which i ing to be submitted to the hands of th sculptor, to be moulded into one of thos wearied warders" of the royal porta another sculpture we see one of those protectors of the royal paths being dra the united strength of great bands of c into its position on the mound. In the tions the royal architect thus specifi wondrous statues:—

> "Doors of Liyari wood, plated with shining br
> I fastened and hung in their gates;
> From white alabaster, which was seen in the
> of Balada, winged bulls and great lions I m
> On the right and left I placed them."

In another text the king calls them "gu of the royal paths," and it is evident th were regarded as divinities, for the n both lions and bulls have the prefix of attached to them.

The splendid bronze-covered gates whi been discovered by Mr. Rassam at Balaw enable us to form an idea of the splendid which gave entrance to the royal dwelli before which the nations of the Easter poured out their tribute and offerings. brazen-plated doors, which were to be f Assyria as early as the ninth century be Christian era, were evidently the origin brazen-plated walls of Grecian edifices. almost contemporaneous with these braze of Sennacherib's palace we have the chambered treasury of the Sikyoni Olympia, which is described by Pausan the bronze temple of Athene Chalkio Sparta, in which it is evident that the tion was by plates of bronze attached stone walls. In the heroic epic of Ho have bright copper walls of the palaces noos and Menelaos; and in the treas Atreus, at Mycenæ, there have been fou brazen nails which held the plates dec the walls.

In the specification of his works give Bellino cylinder, the royal architect stat carefully that "of the written records name 160 *tipki* of the surface of its i wrote, and beneath its foundation I future time." This evidently refers to t sculptured slabs bearing illustrations wars and brief inscriptions, and also to t or cylinder which was placed in the fou course. In another passage in this sam der these foundation records are most acc described. "The ancient cylinders, w which from old times with writing w pressed, its lines were ruled, its enclosu was fixed." The king speaks most tially of these ancient foundation record he discovered and which he replaced wi care. It is perhaps to a similar rever his records by his successors that we preservation of these cylinders, which so much of the story of buried Nineveh.

The address to his successors, which fo prologue to this incription, is very intere

"That palace, from its foundation to I built and perfected.

Inscriptions, the writing of my name, in it.

In after days, among the kings, n whom Assur and Istar

the government of the country and people proclaim his name.
nen the palace becomes old and decays may atter prince its decay repair.
e inscriptions written in my name may he
altar may he raise, sacrifices may he offer,
place may he restore it.
sur and Istar his prayers shall hear.
e destroyer of my writing and my name
y Assur, the great lord father, of all the as an enemy oppose him.
eptre and throne may he take from him, nay he destroy his life."
is address, which was the standard legal nation to these foundation records, is, per- one of the oldest examples of the conser- n of the law in its phraseology. In the tablet from Kileh Shergat, which contains escription of Samsi Rimon II. (B.C. 1300), hich is written in the old archaic or black type of Assyria, we find the same formula only mere local variations. In the cylinders oyal texts of all the Assyrian kings, from the of Tiglath Pileser I. (B.C. 1120), until the of the last feeble kings, the sons of Assur- al, who died struggling for the throne, nd this formula. In some examples the ngs or cursings are largely increased, and nteresting for their poetic nature. In a now in the British Museum, which was vered by Mr. Rassam, in his expedition of 3, we have the following interpolation :— ho this tablet shall see, and curses upon ll utter, Istar, the Lady of War and s, his weapons shall she break, shall injure nd spoil him.
who this tablet shall see, and shall take the faces he shall clean, and victims he lay before it, and then to its place shall e it; Assur the great lord, his prayers shall ar to, and in the battle of the kings in ace of the onset [of battle] the courage heart he shall find for him."
custom of offering victims before the tablets of his ancestors here recorded by cherib calls to mind the worship of the among the Classics and the offerings to ral tablets in the Celestial Empire.
these beautiful words, poetic in their al language, and containing much of the of the Hebrew psalmist, the royal er of Nineveh and its palaces bequeaths and their treasures to his descendants. beautiful to note the simplicity of the gy of this final bequest of the king. ur and Istar shall hear his prayers," ur, the great lord, father of all the gods," punish his neglect. Assur, the national rch, the deification of the nation, the *par excellence*, shall hear his prayer, if he r his father's records; but if pride and nce shall so fill his heart as to seek to ot and destroy the annals of his prede- e, then that same Assur, both abstract material, as the nation, shall avenge the thus given to its heroic kings. Istar, the r, the queen of love, shall favour his suit many a fair-faced bride. In war, she, as queen of battle," as the Bellona, and Victrix, shall shower upon him the crowns tory. Inspired by her favour, and con- with her support, he shall have courage oldness to attack all opponents. But rich precious in her love, so was she the "war's queen," stern and unrelenting in her ance. With broken weapons, smitten and spoiled of all his rich treasures, he stand forth as one who respected not the s who begot him.
w grand was the legacy which the hero- bequeathed to those who should rule the of Assur. The commencement of his saw Nineveh a ruined and almost desolate Its palaces were wrecked and weather- its streets and squares neglected, and the trolled floods had swamped its lower town. ow what a change has the builder king ht about in his beloved city. From the of the rapid Tigris, now banked and lled between broad quays, there rise in y grandeur the broad-terraced mounds, on tower high to heaven the palace homes king of nations:—

se eaves with gold, whose walls with vermeil blazed :
, aisles on aisles in lustrous long array,
opal domes that flash'd a blending ray :
e fringed palms for ever waved a shade
gay deck'd roof and checquer'd colonnade ;
e sheeny fountains danced, there hung on high
terraced garden's leafy tracery,
many a dreamy paradise between
'd mid the glare, calm isles of dewy green."

Nor had the father of his people neglected the wants of those he ruled. From the slopes of the Zagros he had drawn the sweet waters, and by skilfully-contrived canals he had brought them down to Nineveh. Along its banks were lines of verdant trees, and all the fair plain, now rich in culture, was divided among the sons of Nineveh.

"Oh, gorgeous vision! when this sunlit plain,
Rippled in golden seas of ripening grain."

The period of depression which had preceded the accession of the Sargonide dynasty, had caused the agricultural portion of the Assyrian population to neglect the works of irrigation which once fertilised the plains of Nineveh. The canal banks were broken and washed away, the channels were blocked with drifted sand and *débris*, the whole land thirsted, and the rains from heaven failed to supply the necessary quantity.

In the rock inscription at the village of Bavian, about twenty miles from Nineveh, the King Sennacherib tells us of the great works which he carried out in the construction of the "Royal Waterworks and Irrigation Company" of Nineveh. The king speaks of the works which he had completed, or was completing, in Nineveh:—

"At that time, of Nineveh the site I enlarged, the tower and outer rampart, which in former times did not exist, anew I caused to be made and erected skilfully.

The conduits which were without streaming waters.

And the princes and men [of Nineveh] for drinking-water did not know, and to the rains of heaven were turned their eyes."

The Assyrian king, aided probably by an extensive staff of civil engineers and Babylonian canal builders, set about the important task of regulating the water supply of Nineveh.

Amid the cool and shady glens of the Tiayari range, the western branch of the Zagros, the king found the rich flowing streams from which to cool the thirst of Nineveh. The site where stood the small town and temples which surrounded the great reservoir of Nineveh is now marked by the village of Bavian. This spot was explored by Sir Austen Layard, who found there the remains of the buildings, temples, and reservoirs which had marked the site of the royal waterworks. There was every indication that the various streams which had flowed from the rocky slopes had been carefully collected and stored in reservoirs or basins. The lower one of these basins had a fountain from which the water issued into a larger reservoir, the decoration of which is very interesting. From the centre of an oval the water pours out in a regular stream into a neatly-cut basin, which, overflowing, the water falls into the main reservoir. On either side of this orifice are two rampant lions, and one cannot help contrasting the whole arrangement of this group with the rampant lions on the Lion-gate at Mycenæ. There is the same lank drawing of the figure, and a somewhat close resemblance to the dog in the work which led archæologists to note the Assyrian feature of the work at Mycenæ.* The sculptures and bas-reliefs at Bavian show very clearly that, like all the canals, rivers, and lakes of the land of rivers, these works were dedicated to the Assyrian Neptune,—the god Hea. The chief bas-relief represents the great Isdubar or Nimrod, the *protégé* of Hea, slaying the lion, and he is attended by his boon companion, the satyr *Hea bani*. "Hea created" the Pan, or river god of Assyrian mythology.

From this fertile spot, which was possibly a favourite summer retreat of the Assyrian king, by a series of skilfully-constructed canals the waters were conducted to Nineveh.

The king utilised the natural bed of the Khosr river to a considerable extent, at last conveying the waters into the moat and ditches of Nineveh by a short junction canal.

"(*a.*) Eighteen canals I caused to be dug, to the midst of the Khusur (Khosr-su) I directed their channels.

(*b.*) To the interior of Nineveh a canal I excavated, their waters I caused to descend within it. 'The fountain of Sennacherib' I called its name.

I brought the mass of waters from the land of Taz [the fountain]."

Right and left of this main artery of irrigation the king constructed tributary canals, bearing fertilising streams over all the plain which was now rich in cultivation.

"Beautiful plantations like Hamanu (Amanus), which were all choice and select trees.

Trees, the glory of mountains and plains, within its grounds in rows I planted.

As regards the planting of trees in the fields in the neighbourhood above the city of Sapitan.

To the sons of Nineveh in divisions I divided and entrusted to them."

Within the city enclosure, now drained and cleansed by the captive labourers, were the broad streets and palaces, the market squares, and on the west side the Palais Royale, with its stately towers and terraces, and its broad and richly-cultivated gardens and parks. In an inscription discovered by Mr. Layard on the Koyunjik mound, there is one passage which has strangely escaped the notice of Assyriologists, in which we gain an insight into the topographical arrangement of Nineveh. The king, in speaking of the park or paradisus which he made in Nineveh, states,—

"At any future time of the inhabitants of this city, who ever his house being old shall destroy and anew shall build, if the foundations of his house into the walks of the king run, the top of his house into the dust they shall throw."

The contract tablets, examples of which we furnished in our article on Babylonian land-laws, showed the accuracy with which house or landed property was specified and regulated. The examples there quoted proved the houses to have been arranged in streets or groups, and with land about them. It is evident that like Mosul and Baghdad, Nineveh had within its *enceinte* the gardens and parks of the nobles of Assur, and was not one mass of clustering houses, or stone-paved squares. Breaking the northern rampart, and forming the outlet to the fertile plains along the Tigris bank, was the royal gate of Nineveh,—a double gate, flanked both towards the city and the plain by gigantic human-headed bulls, 19 ft. in height. Within it were the broad and roomy chambers of guard, and above towered the "ziggurat," or watch-tower, which overlooked the plain. Upon the broad flags which pave its surface, may yet be seen the marks of the chariot-wheels which once hurried through its portals, bearing the conqueror home.

Through this wide entrance have passed strange crowds of men. Captive and conqueror, suppliant king, and strange-featured and stranger-tongued ambassadors, have passed this entrance to Nineveh. Beneath its arches have passed the tribute-bearers of Tyre and Zidon, and the humble embassy of the Hebrew monarch Hezekiah. Through it have entered the triumph trains of the conqueror of Egypt and Ethiopia and the "sea-bound" Cyprus. The messengers of the Lydian Gyges, with their strange presents, and speaking a language which "none of my people knew," thus entered to the presence of the conquering Assur-bani-pal.

Yet, amid all its grandeur and power, there was in the "home of Sennacherib" a solid omen of the coming doom of Nineveh. That triple line of ramparts, more than two miles in length, those lofty watch-towers and the deep moat which formed the eastern barriers of Nineveh, prophesied by their presence the quarter whence would come the doom of Nineveh.

That powerful combination of the enemies of Assur, the Babylonians, Elamites, and the Persians, Medes, and Parthians, whom Sennacherib so terribly defeated in the historic battle of Haluli (B.C. 691), were but the advance-guard of the great horde which, seventy years after, made Nineveh a heap of ruins.

Those men whom he so cruelly defeated at Haluli, who saw the terrible vengeance he worked on sacred Babylon, were but the ancestors of that rebel horde who, in the year B.C. 626, swept down on Nineveh and wreaked a terrible vengeance on the queenly city, rendering it a heap of ruins from which she never rose.

"The world grew old,
And still that city slept, unsought, unknown, untold."

* Layard, "Nineveh and Babylon," p. 215.

The Cross of the Legion of Honour: Paris Exhibition.—The French Ambassador, the Comte de Montebello, writes: "I have been instructed by my Government to make it known to several tradesmen in this country, upon whom the decoration of the Légion d'Honneur was conferred on the occasion of the last Universal Exhibition, that this distinction is merely honorary, and should not, at any rate, be used as a means of publicity or a recommendation for their trade."

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ART IN THE SCHOOL AND ART IN THE HOME.

The members of the peerage who are accustomed to receive and accept invitations to preside at anniversaries of useful as well as ornamental institutions are not numerous. The same names catch the eye over and over again; even of these it may be that some may not uncharitably be believed to respond from zeal that is largely compounded of pure good nature, combined with not unjustified confidence in popularity. Certainly on some occasions it is not very easy at first to find the middle term of this syllogistic combination of popular interest and aristocratical distinction. Still there are cases, happily, in which men from our highest ranks give good proof that those ranks are not destitute, in our own day, of worthy successors of the high culture and liberal genius of noblemen of days gone by, before an exaggerated head of game was threatening to become universally the be-all and the end-all of aristocratic ambition, so far as it may not be engrossed by the solid allurements of party position and influence and power. It was said of the Duke of Wellington, in his later days, that he could not bring himself to believe that an officer who had risen to the appropriate rank was not necessarily equal to all its most special duties, provided only he was also highly connected. The official leaders of some of our public bodies no doubt seem to have a still more assured conviction that a title will be found to furnish a complete set of intellectual and artistic graces and accomplishments, and fully efficient power of exposition. They open their Peerage a little at random, on the principle of the *sortes Virgilianæ*, and take what fortune gives. On the whole, however, we advance in discrimination. The Architects' Institute has for some time dispensed with the Corinthian capital that was once held indispensable; the Royal Society seems to stand in awe of being reminded of a former president Royal Highness, who betrayed how little scientific knowledge on his part had brought the crowd together, when, referring to the heat of the rooms at Somerset House, he addressed the Arctic navigator,—"A change this, Sir Edward; more like the South Pole than the North!" Nevertheless, there can be no doubt that, if worthy representatives of political power and high political principle, or of those associations which cling to the descendants of distinguished ancestry, can only prove that they contain genuine sympathy for the arts and sciences, the pure or the applied, and also have attained to meritorious distinction in them, or even to a faculty of eloquent expatiation upon their distinctive characteristics and advantages, then social benefit is by no means trivial that accrues from the courteous recognition of fellowship with those whose qualifications may be more purely special. Somewhere among these considerations is to be found the explanation that the name of Lord Carnarvon seems to take its place gracefully at the head of a notice of a gathering that in itself has but little relation to the burning subjects with which he has dealt in high offices of state. The Antiquaries have not unfrequently to thank him for a lucid summing-up of the bearings of arguments in a diversified and complicated discussion; and when we read the announcement that his name has been added to the list of the translators of "The Agamemnon of Æschylus," a title is established for his being respectfully listened to in his observations upon Greek art, and its relation to the art of our times.

Unconsciously and unintentionally these remarks have fallen into a tone of liberal and candid allowance, which sometimes warns us to prepare for a revulsion to depreciation and disparagement. But any apprehensions that may have been excited,—we will not suppose the possibility of an anticipation of pleasure at such a rhetorical back-stroke,—may be dismissed. The observations which his lordship addressed to the students of the science and art schools at Newbury, in distributing their prizes, seem to us very much to the purpose, and worthy of being even further insisted upon; or, if that is not necessary, they are still so far stimulant of collateral illustrations as to make it natural to refer to them as furnishing a text.

Let us leave aside, then, the topics of the principles of art study which were very justly enforced by the example of the Greeks, and pursue in preference the train of thought suggested by some sentences which referred to the uses of artistic accomplishments when they could be supposed to be mastered. And even of these we will leave aside the very important mercantile aspect,—albeit the mercantile value that cultivated talent can confer upon materials comparatively valueless is important enough in other countries, and might be so in ours, to touch the soul of a Chancellor of the Exchequer "steeped to the lips in money-bags and ledger." Let us dwell for a moment on the functions of art in the home,—of art as it may be a joy and possession for those who are not, and have no intention or desire, and indeed have not the capacity to be professional artists, or even to employ what secondary artistic faculty they may acquire in connexion with their special vocations, manufacturing or otherwise. Indeed, as art schools extend and become more and more frequented, a word of warning may well be called for. To many of the students the discovery of what results they can achieve after diligently adhering to a well-guided system of training will come as an astonishing and, it may be, an intoxicating revelation. It is really quite intelligible if they mistake such success as a proof of the possession of genuine talent, which would be rash enough, or of genius itself, which were absurd. It is quite certain that immature talent is frequently chargeable with productions that it is difficult indeed to recognise as exhibiting a germ of talent, and that only the most perspicacious of critics perceive is just set upon a level with work that is the acme of labourers who will never get a step beyond. How easily may these sanguine labourers themselves be deceived when even the independent critic wisely hesitates and is silent.

The self-knowledge of such conscientious but ungifted workers may too frequently,—does unhappily too frequently,—come too late to save them from launching on careers of disappointment. True it is that a worker in art who is destined to very high success has frequently to endure the grief of most varied and continued failures, before he discovers in what direction his true and strong power lies. But what is not the dreary desert that is traversed by one whose certain destiny it is to make certain, even to himself at last, that he is without any originating power at all. So it is that one of the chief problems of life is set us to resolve at the very commencement. Happy is he who at an early age can know his true artistic or non-artistic self. Friends here can give but little guidance, and critics, who, if not unfriendly, are under no obligation to be friends, can give none at all. The student has to rely upon something like a faculty of divination that his self-confidence is born of a living, if yet undeveloped, force within. It is an observation of Adam Smith's, in his book on the "Moral Sentiments,"—a book which has wisdom in every page, if we only discount the fallacy of the main argument,—that fathers are often wrong in interpreting the self-confidence of sons to youthful self-conceit; it is often due, he says, to the genuine sentiment of a force which is destined to declare itself effectually in time. But what a task of self-examination is proposed for a student who has to hold the balance in his own case between the chances of vanity combined with vigorous resolution in one scale, and lofty aspirations, allied only to "trembling hope," in the other. All the advice that can be usefully given is,—for the student to apply with plodding resolution, on the one hand; on the other, to vary the direction of such application by occasional but swift transitions,—to follow forth with resolution every hint that seems to give the new light of a pregnant novelty; and, finally, to take accurate and resolute note whether faculty as well as facility manifestly developes,—and not to blanch at facing the fact when it becomes too clear that both are but moving round and round a tether.

But when artistic power at last declares itself as of such a character that it can never sustain itself in the thin air where the more highly endowed career with safety and with grace,—when no mercantile application of it is within reach, any more than any access to the proper artistic professions,—what may be, what may not be, then, its contribution to the value of life? Surely very much in many ways, and for many various habits and conditions of living. Let us take an example of a very usual musical experience. Music gives great pleasure to many who never could produce a note that could be called truly musical either with their voices or with an instrument,—nay, not with one of those instruments which, like a flageolet or an accordion, seem invented to provide musical notes that shall be capable of being evoked by n mechanical action. Some delicacy of m lation proves necessary even with these, a congenitally incompetent has to fall back comfort which is well worth having, t least he derives pleasure from the harm which others can produce. He may be sh sometimes to find that he is not instantly of lapses in time at which others flinch in ful sensitiveness; but at least, the bett music is the more he enjoys it; others find out why. This, in truth, is the condit great numbers, and to these great pleasur be ministered by domestic performances part of those who are musicians up to a c point, though considerably below the sta that would qualify them for artists. Why the flute, why is not the fiddle, more freq heard in humble houses? Music is fitted e for solitary and for social enjoyment. combined performance is practicable it h advantage of furthering the courtesies of l enhancing motives for mutual good manner good feeling. This was a chief advantage the typical "great moralist," Johnson, nised in cards. But to cards as a popular of amusement there are just objections. games of chance are amusements fo merely besotted or idiotic, and the other games into which skill enters together chance, have temptations of their own whi world is becoming every day more ali There are signs abroad that whist, so lo acknowledged king of games, can scarcel be saved unless some even recognised which are to the disadvantage of the le ficient are authoritatively proscribed. T fact, however, that a stake is naturally re to give zest to the amusement, removes any title to compete with truly liberal a the occupation of liberal leisure.

Another art which has a reserve of del and refining interest is that of reading The art of reading prose with disciplined is rare indeed, but there is no reason should be. Like the other arts, it n acquired by application, study, and th guidance obtainable. The strengthening voice, and the attainment of full comman resources, are preliminary requirements. the ancients there was a class of professe undertook to do for the speaking voic others effected for the strength and act the limbs. As a class they were by no charlatans; and it is a pity that they sho have as skilful and experienced succes our own time, available for many mo ever intend to exert their voice,—at the in the pulpit, or in public assemblies. poetry well makes a much greater dema natural and cultivated powers than the to read very competently well even impassioned prose. Great delicacy of int is required for the force of metre to indicated, and yet not insisted upon wi slavish observance as to obscure the gram distribution of clauses and the higher rhy movements of feeling and energy. A gre of the finest poetry, of course, demands reader an unusual intelligence, and a gr can only be delivered effectively after study and acquired familiarity with it hand. Even such a noble poem as Bro "Cleon" would be apt to be largely ligible if read without such preliminary tion; whereas when read aloud wi emphasis and expression it is lucidity. Still, in the case of poetry as of music, th many who naturally can make light of w difficulties all but insuperable to multit others,—and the society need not numerous that should include more th It would be no trivial addition to the b bellishments of life,—of what is ordin too generally is common-place, life,—fo of rest and recovery to be frequently en and as if by matter of course, with a an act of Shakspeare, a book of Pope's "I an episode from "Paradise Lost," or a one of the band of our contemporary poets are delights that the cheapness of lit now makes accessible to all who have wisdom to improve their opportunities.

And now the materials of art are al cheap as the resources of literature. every inducement for large numbers to them as materials of fine art in the tru of independence of any purpose to tar to use in the strictly economical sense. Art were personified, perhaps she wou reason to flush with indignation at findi

constantly recommended to favour on the hat, her proper title notwithstanding, she a reality useful art. Those who are bound cumstances as well as by the bent of their ments to the service of some properly art are precisely those who will fly for , for enjoyment, for reward that has no r ulterior design, to the cultivation, such may be, of one branch of fine art or ar. The art of sketching is one which no ndings make impossible. There is not a w in London that does not open upon some or allow sight of some effects that might e powers of the best painter to do justice nd that may fairly exercise those of erest beginner. If this may seem too to say, draughtsmanship can always find nts within doors, or introduce them. Greatly welcomed are those improvements in s copying processes, which reproduce so beauty at so trivial a cost; but even those ppreciate these most, may feel pleasure n seeing on their walls performances of own,—mementos of scenes visited at als, of places of former residence, of s endeared by domestic associations. is the drawing that would hopelessly sue mission into any public exhibition whatand hopelessly would be offered for sale ere, that nevertheless contains merit h to deserve preservation even by those re indifferent to its origin, while it may tly treasured by those to whom it is a link association of years. Surely there is no why the present opportunities for learnc elements of drawing and painting should s so far improved,—that drawing and colour painting at least, should be among ized relaxations of the workers whose active hours are employed in very conl labours, but whose anxieties end as the of daily labour come to an end.

e is another most advantageous field for the yment of art in the home by those who can se a certain amount of artistic faculty, with no more pretence to be professional than a pianist who charms a domestic spires to be a central attraction at popular ts on any day of the week. Very large e returns of comfort and pleasure deriva- the investment of good taste and spare n the adornment of ordinary living-rooms. s, wall-papers, dados, doors, and mantel- are the ground and the background of the relation to daily existence partakes le of the importance that a painter ises in the background of his picture. tionally fortunate, or more probably, unately insensitive, are they who have not onscious of a serious reduction of comcy ascribable to the mere tone of colour side lodgings or dignified hotels. Here hischievousness is but moderate, because emporary; and the offensiveness may be d from before we have been wearied into ng, and hardened into disregarding it and ing it. It is otherwise in a home; yet any dull and dreary apartments might be ned, how many that are veritable chamf all horrible chromatic discord, might be nised, if the instructions of schools of ould truly develope a love of beauty and e of harmony. Paper-hanging and colouring are arts quite as easily mastered as n ornamental accomplishments that do lly and ill what machinery is always cheaply and much better. The power of realising a magician's dream in a suite of with ever fresh surprises is the privilege Alma-Tadema; but the late Mr. Bonomi n example of how very simple might be the and the expedients that, with good taste to could superinduce vivacity and elegance very plain and moderate preparation. It may that when good taste is postulated we are g the whole artistic question; we are taking nted as forthcoming the very condition of the possibility is most precarious. For ere is no help. In one respect, no doubt, y be said that inasmuch as all our suggesroceed on the too-readily-granted assumphat there is a vast expanse of bad taste eveloped spontaneously, that if not super- can scarcely be aggravated, the danger in ase is unimportant. But, of course, it is understood from what has been premised is for good taste of considerable, though ecisely of merchantable, value that a field ercise is being indicated. The subject is d abstractedly, theoretically, speculabut it may be frankly said that no more is suggested than has been witnessed in practice and approved by most welcome and gratifying success,—the transformation of what had been playfully known as a "den" into a bright and cheerful haunt. Flowers slightly but gracefully thrown upon panels; mouldings defined by a few painted lines of varied breadth; the colour of the walls that was under command happily adjusted to relieve the fixed condition of the carpet; ruthless suppression of the more valuable but inharmonious material of a sofa-cover; ambitious carving of the mirror-frame relegated to absolute seclusion: little more than this and the work was done. The very progress of such a work is a discipline and an experience of the highest value; for, even when considerable taste and manipulative skill are employed, failures will occur,—improvements will recommend themselves. We know not whether such a true domestication of art in a number of homes within the circle of the influence of an art school will not be a still higher triumph for it than standing even very high indeed in the list of recipients of gold and silver and bronze medals and honourable mentions.

THE TRUE SCALE FOR MINERS' WAGES.

Both parties to the great contest in Durham admit a certain deference to the public opinion of the country. It can hardly be otherwise. Were no such admissions made, the fact could hardly be doubted. On the other hand, there is a danger that the acknowledgment may be proposed as a payment, and that the desire to avoid public reprobation may be stronger than the real intention to take any counsel from bystanders.

The men are said, by one report, to be discouraged at the general unanimity of the press against them. As far as those regrettable instances of violence, which are as natural attendants on a great labour conflict as sharks are on the course of a ship with illness on board, are concerned, there is no doubt of this unanimity, and that not in the press only, but in the public sense and in the public will. Beyond this, we think that the most general outcome of the sense of the press has been the expression of wonder at the time selected for the strike, owing to the apparent absence of such promise of support as alone would give it a chance of success. This may or may not be so. In our own remarks we have not expressed any opinion as to what we may call the politics of the contest, for the good reason that we have not before us that full and complete information on which alone anything like a judicial decision can with any propriety be based.

Under these circumstances, we suggest that the party which, in its own intelligent consciousness, feels most clearly that it is in the right, would do well to make an open and candid appeal to the great assize of public opinion; and that not by coloured statements, or one-sided views, however honest. We do not want to hear any more opinions, either from the Coal Owners' Association or from the Miners' Association. In point of fact, abstraction being made of all colouring or clothing, the two parties have joined an issue which it is quite possible to decide, if the evidence is brought into court. And we take leave to point out the manner in which this can be done, so as to carry full conviction, at least, to persons like ourselves, who know something of work and something of wages.

We ask either party, and especially the party most conscious of right rather than of might, to publish three simple documents, on which the public and the press may form their own conclusions. Let any Durham colliery, that is not disturbed by exceptional causes, be taken as a specimen. Let a month's pay-sheet of that colliery,—say, for instance, that for March in each of the years 1867, 1873, and 1879,—be published. Added to the pay-sheet should be a statement of the quantities of coal raised in the month, and the average market price. The importance of the former item, as bearing on the question, may be estimated from the fact that in 1867 each miner on the average won 315 tons of coal in the year. In 1873 he won only 273 tons; in 1874 only 249 tons. What he won in 1879 we are not aware.

Per-centages are all very well for those who understand them. But it is clear that very different ideas are held of what they mean. By the plan we propose, every one accustomed to the elementary rules of arithmetic will be able to make out for himself what were the average earnings of the whole colliery population, and what the detailed averages of the underground and surface labour, in the years we have named, and also what return the colliers gave for their pay. One bit of positive evidence of this nature will be worth whole libraries of speeches; and if the information is refused, the public will draw their own conclusions from that simple fact.

It may be said that the miners have no copy of pay-sheets. In that case we ask, what information of the kind can be obtained from the records of co-operative associations? Again, the masters may say that they do not wish to give the details of their several works. It is not necessary that the mines should be pointed out by name. All that the public will require are definite and reliable facts, on which to base their own judgment. If the scientific press is to act as a jury, it should be enabled to come to a conclusion on evidence, apart from the pleading of counsel on either side. If in each year we have indicated we had the total payments in labour in a selected colliery; the total number of hours' work of men, above and underground; the total number of hours for which the engines were at work; the tonnage of coal raised; and the average selling price; we should probably have all that is necessary. The detailed pay-sheet would be the most convincing document; but the abstract, if signed by a name or names that afforded a pledge for accuracy and good faith would, no doubt, answer the purpose. The importance of this contribution to the public knowledge of the matter will be obvious from a little reflection.

From 1871 to 1874, the miners admit, wages rose from 100 to 150. In the same three years the yield of our collieries fell from 318 to 249 tons per man employed, or very nearly 22 per cent. The difference to the coal-owner, therefore, in his expenditure, was not 50 but 72 per 100. Nor does this represent the whole of his loss. If, at the same time, the number of hours for which the engines are at work were diminished, say, for example, from 60 to 54 hours per week, a further loss, amounting to 10 per cent. on the returns of the plant and fixed capital of the collieries, was incurred. Thus, instead of the outlay of the master being increased by only the 50 per cent. nominal increase of wages, it was increased in those three years by at least 72 per cent., owing to the diminution of the production per man at the higher wages; and if short time was added (which we rather think will prove to be the case), the cost to the master was doubled, or nearly so, during the inflation of those years.

The diminution in the output per man was steady, year after year, from 1867, when it was 315 tons, to 1874, when it was 249 tons. In 1875 it had risen to 253 tons; and this is the last year for which we have the figures. It is clear that the diminution of wages from 150 to 105½, and then to 90½, will not put the proprietors of our collieries in as good a position as they were in in 1871, if the output of coal per man is only 78 instead of 100, and the time for which the machinery is at work is reduced from 60 to 54, that is from 100 to 90. The men will be paid, no doubt, 9½ per cent. less than was the case in 1871. But they will be earning for the masters 32 per cent. less,—supposing the selling price to be the same. But the price for coal at the pit-mouth, which has reached the maximum of 15s. 6d. per ton, is now quoted at 4s. 7d. per ton.

This *brief précis* of the admitted facts is enough to show how idle it is to beat about the bush, and for one party to complain of the other, while the real knot of the question is unsolved. In our opinion a very short day's work is the proper thing for mining work. But this is only economically possible by the shift system. We have before shown that if three shifts succeed one another, so as to keep the engine and machinery always at work, the best economic results are attained for all parties. Next in advantage is a double shift, working for sixteen hours in all. But if the time be shortened, the work per man reduced, and shift work not employed, it simply becomes a question of the market price of coal, how soon it is better permanently to abandon a colliery.

We shall be most happy to insert any corrections of the above, furnished by either party, on the one condition that they are put into definite form, so as to be capable of numeric valuation, in the mode above sketched out.

A MINISTRY OF HEALTH.

It is an open question whether there should be, forming part of the Government of the country, a Ministry of Health. Dr. Richardson pleads earnestly before the public that there should be such a ministry.* Whether it ought to be established or not depends upon what it could do, and what the people legitimately desire. If it can and will fulfil the proper needs of the people, it is clearly desirable that it should be established. Let us first see what Dr Richardson says upon the subject. The addresses are nine in number, viz., a Ministry of Health; a Homily Clerico-Medical; Learning and Health; Vitality, individual and national; Registration of Disease; William Harvey; the World of Physic; and Ether-drinking. He says that the basis of a ministry of health is already laid in the office of the Registrar-General.

It is by a modification of, and additions to, this department, as it now exists, that the new official and governmental institution should be established. The department should be no longer for mere registration, but should include all that relates to health. In addition to the duty of collecting the registrations of births, deaths, and marriages, it is proposed that the ministry of health should collect the registration of disease throughout the kingdom. A complete system of registration would be established, not only for the diseases which affect human kind, but the diseases affecting animals and plants in every locality. It would include also the meteorological returns, the coroners' returns, the work now carried on by the Local Government Board, and, in addition, it would collect the leading facts of the reports of the medical officers of the kingdom, into a form which would serve as a permanent history of the results of sanitary progress. There would be brought under the same direction the adulteration reports, factory supervision, prison and police supervision, and supervision of public works. The Council, it is proposed, should have for its members, in addition to the Minister of Health, a statistician, a physician, a factory surgeon or physician, a chemist, a veterinarian, and a sanitary architect and engineer.

It is stated that there is a necessarily close relationship between the functions of the clergyman and the medical man. In making his first inquiry into this relationship, Dr. Richardson asks where are the relationships the closest? When should they be of accord in practical labour? Where can they join to do work together in the same spirit without interfering with special functions? On what ground do they still remain both priests and physicians? If we could see this land of union, we should see, indeed, a land of promise for the world.

In the combined study of the inter-relationships of clerical and medical functions in things which relate to both physical and mental health, they stand, says Dr. Richardson, on common ground, for it is their combined function to check physical and mental evils at their roots. Their common labours concentrate in the study of all deranged conditions of mind and of body, of sins and diseases in past and present generations. The clerical and medical functions interrelate when they are directed to the suppression of all vices which bring in their train physical disease. The minister of religion cannot convey his meaning to the mind of a man whose senses are unfitted for the reception of the pure, the beautiful, and the holy. On the subject of education, Dr. Richardson speaks very strongly against the modern system of forcing children to learn what they naturally cannot comprehend, making of them mere machines of knowledge at the best; never of wisdom; too often of such flimsy knowledge even that they had been in after-life better without it, seeing what injury is done to their physical, and also mental, health, in acquiring it. It is his business, he says, to declare that at this time health and education are not going hand in hand; that the whole head is sick, and the whole heart is faint. To see the errors that prevail, and not to speak, were to be silent upon errors which would lead a nation into trained feebleness, which would lead to new generations springing out of that feebleness, and to the propagation of a community incapable of illumination by any greatnesses of the past. The writer's argument is that the present modes of education for the younger population, and for the older, are not compatible with healthy life; and that education, therefore, is not producing the mental product that is required for the steady and powerful progress of the nation.

The influences modifying vitality divide into three classes; first, there is a class which is largely uncontrollable, as it includes the great accidents of nature; secondly, there is a class of influences which is largely controllable, but which produces as yet also a calculable mortality. These influences are of the nature of floating poisons which pass from man to man, and even from the inferior animal to man. They are already to some extent brought under the governance of science, and the author believes they will be ultimately suppressed "by the vigilant learning and art of a profession which will never rest until it has shielded the world from these attacks on its vitality."

Then there is a class of influences which spring from individual causes of error, and which of all others are most potent for evil. They depend upon errors in the individual life which, multiplied by imitation and training, become the self-inflicted wounds of the nations. These, after all, it is said, are the chief sources of reduction of vitality to its present low status. In their presence the art of the physician is powerless. Dr. Richardson considers that cremation is simply impossible, as a general principle, at this imperfect stage of civilisation, although in cases where persons might desire it for themselves it might be permitted, under an exceedingly wise legislative supervision. Improvements in the manner of burial are what he recommends, quoting the remarks of Mr. P. H. Holland, that dry open soils are the best, and that dense clay soils are in all respects undesirable.

In recognising the necessity for the registration of all diseases, our author would yet confine the registration, at present, to epidemic diseases. "When we look round at the progress which has been made towards the perfect comprehension of these disorders, we see no system as yet developed or developing that promises anything like a successful attainment of objects as beneficent as they are great. The majority of observers, indifferent as to the causes of disease, are content to rest their exertions on the remedial department of their art,—in curing those conditions which ought never to have been permitted."

It is well that physicians have come to see what we in the *Builder* and orally have said for the last quarter of a century,—that for the health of the people we want more than medicine; we want the prevention of that generally low state of health which disqualifies men for doing a good day's work without distress; for enjoying their meals, their pleasures, their night's rest; and, in short, their life as a whole. Who has not observed the makeshift way in which men do their work,—say in the building trades?—how they shuffle over it, and seem to have no pride or pleasure in it, in progress or when done. The disqualification we mean is caused in many instances by over-drinking; but besides that, another cause is the wretched homes in which the working population live; the unclean water which alone they can procure; the bad air they breathe; and, as a consequence of all these, the miserable condition of everything around them at home. We are not of those who would hold out to working men delusive hopes of being taken care of. Rather we have continually held that without their own honest endeavours, industry, and sobriety, all legislation on their behalf must fail, but we recognise their right to have such laws enacted as shall ensure the possibility of living healthily in the community of men.

Whether justice is done them in that respect we do not ask of any one, for we know it is not. Nevertheless, we say to working men, have patience, abide your time and live soberly, without anger, and then you may hope to see the day when you can live cleanly and healthily.

That some men will not live healthily though they have room enough for health; have good water and plenty of it for every purpose of health; and have good air all day and all night, is so; but for those who would, if they could, live healthily, it is necessary that these things be provided; and they cannot be provided by individuals. Those who speak from mere impulse might say of a working man living in a town and receiving good wages,—why does he not, as the first thing to do upon receiving good wages, improve his house? We must go a long way back to find the reason why he does not. He has probably been brought up in immor and learnt his vices young; his father an forefathers, as well as himself, have lived u no proper authority while they were yo freedom has naturally degenerated into lic and the idea has become inborn in the p that no authority is to be tolerated. might be proper to the occasion if we prepared to admit that we are degeneratin wisdom, and that the faculty of hope is de ing from us, along with faith and charity.

* A Ministry of Health and other Addresses. By Benjamin Ward Richardson, M.D., F.R.S. London. Chatto & Windus. 1879.

IMPROVEMENTS IN GLASGOW, AND CITY IMPROVEMENT ACTS.

ORIGIN OF THE ARTISANS' DWELLINGS ACT*

It will be generally admitted that if we w seek to elevate the great mass of our indus population in our large cities throughout kingdom, we must endeavour to provide with comfortable dwellings. If the hor the working man be cheerless, dark, and wholesome, the result will naturally be to him to the use of intoxicating liquors, an often to the public house. A strong feelin this has long existed in Scotland, and wit view of furthering it, movements have made both in Edinburgh and Glasgow, espe so in the latter, and the movements, alt somewhat retarded by the two often injud conduct of the workmen themselves, with strikes and trade unions, have been att as I hope to show, with beneficial re Every stranger who visits Scotland mu struck with the difference existing betwee dwellings of the humbler classes in Scotl compared with those in England. In En they generally reside in self-contained buildings, whereas in Scotland they r entirely live in large stone tenements di into separate flats, with more than one on each flat. But a still more striking co consists in the fact that a large number in narrow lanes or closes in the older p the principal towns in Scotland, and alt many of these lanes have been removed; are still a considerable number inhabited i class of the population. The old style of ing was to erect large stone tenements fa the street, with gardens behind, but as p tion increased large blocks of houses ca be built on the site of these garden stretching back as far as from 200 t 280 ft. Dividing these high tenements narrow passages, or closes of from 3 ft. t wide. This system of building long pre throughout the large towns of Scotland.

In a work published in 1736 giving a of Glasgow, the author, Mr. McUre, enumerating the eleven streets which the stituted the entire town, compares it to with teeth on each side, the streets formi centre or wood of the comb, and the te each side representing the narrow la closes. Maps published in 1776 and 1806 that in the part of the city then built (an the population amounted only to about thousand) this system then prevailed looking into this one is tempted to inquir could be the reason which induced parties ground was comparatively cheap, to re such a style of building. In all probab was resorted to for protection durin troublous times which so long existed i land, when families lived in masses to themselves from the raids of hostile clans oppression of the feudal barons. The history of Glasgow is interesting. Origin was a bishopric founded by David I. in who built a magnificent cathedral, and endowed it. Houses gradually clustered it; a university was founded in 1450, w population amounted to 1,500. As pop increased ground rose in value, and b taking advantage of the old system, and without any Building Act to prevent them up almost every inch of available ground centre of the city. The houses in thes and lanes were long occupied by resp people, but gradually deteriorated, se ticularly so from and after 1847, by an i population from the rural districts of I bringing with them habits which, howe nocuous among the open bogs of Irelan quite unsuited to the densely crowded pa large city. This class took possession closes, and greatly increased the overcro

* By Sir James Watson. Read before th Institute of British Architects, on Monday eve as elsewhere mentioned.

me of these closes from 600 to 800 people
to be huddled together.

1866, when the Improvement Act passed, lensity of the population in some parts of ity amounted in some cases to 600, and in s to about 1,000 per acre. The state of s may easily be conceived under such cir-tances. The houses in these closes were rally old, dark, and ill-ventilated, without ient breathing space, and without family mmodation, there being only one ash-pit, to each close,—sometimes even for two s; and when fever or small-pox broke ont, results were appalling. The moral effect iced was not less disastrous. Many of the nal classes took up their abode in them, ng away the more respectable. Scenes of and disorder, assault and robbery with ce, were of frequent occurrence, and in al cases murders were committed.

ch was the state of Glasgow when the ration, instigated by Mr. Blackie, then Provost of the city, and Mr. Carrick, the rchitect, formed the design of applying rliament for power to purchase and pull whole blocks of these buildings, to sweep these narrow closes, to open streets gh the most densely-populated portions of ity, and to see that in lieu of these old and shed houses, buildings should be erected, vacant spaces arranged for, so as suitably ovide for the growing wants of the city. s were made, with the necessary books of ance for the streets to be re-formed and ings to be taken down, and to every house ued notices were given, and an Act of ament applied for. The area of overbuilt id thus scheduled extended to eighty-eight , being nearly the whole of the old town n in the map of 1800. The plans showed ormation of forty-five new streets or en-d thoroughfares. Powers were sought pend 1,250,000*l.* on the purchase of these, o take down, rebuild, or sell, in conformity the plans of the new streets or enlarged oughfares. Powers were also sought to w money on security of the buildings, and pose a tax on the rental of the city (to be by occupiers) of 6d. per pound for five , and 3d. per pound for ten years. The passed almost without opposition in the n of 1866. Immediately thereafter a ittee was appointed, over which I presided he following six years. A tax of 6d. per l was imposed for the first year, and a credit for 45,000*l.* was arranged for until ax was collected and money borrowed on ity of the trust. A judicious person (Mr.) was appointed to negotiate for the pur-of property privately, and as most of the ings were old and dilapidated, and the rs willing to dispose of them, the committee eded in securing a considerable amount of rty at very moderate rates. By the end e first year they found themselves in pos-n of property to the extent of 50,512*l.*, ed at from ten to fourteen years' purchase wellings, and eighteen to twenty years' ase for shops. By this time loans began me in freely at four per cent. The 6d. tax, had raised a great amount of dissatisfac-and grumbling, was reduced to 4d. for the d year, at which it continued for four . The purchasing went on, and by the end e second year a large amount of property een secured. Such owners of property as willing to deal at moderate prices had property purchased, while those whose nds were exorbitant were left over. A rule laid down that no great improvement d be begun in any one place which would nce the value of the adjacent property, the whole buildings required for such im-ment were purchased, and the adherence s rule has tended much to the success of nterprise. For the first two years nothing er was attempted than putting the dwell-nto a fair state of repair, and opening up of the long closes by the removal of a n of the back buildings, so as to secure ient breathing space, and playground for hildren. The pressure of the 6d., and wards of the 4d., tax, without the neces-changes being seen, gave rise to a regular de against the committee. We were repre-d as ruining the city, and told that the r our operations were stopped the better. ur quarterly meeting, however, we were ed to explain everything, and the good of the public ultimately prevailed. The edings of the committee were narrowly watched by builders, and when they understood that large clearances were about to be made, and remembered how little had been done for years in the erection of workmen's houses, they immediately commenced operations. The rage for building workmen's houses went on from year to year, whole streets of new houses sprang up, until the supply exceeded the demand. The committee, at first fearing that sufficient house accommodation might not be found for the displaced population, purchased two large lots of building ground in the vicinity, costing, including sewering and laying out of streets and squares, 80,661*l.*, to give off to builders for erecting workmen's houses at moderate rates. The plan succeeded, and resulted in a profit of 15,000*l.*

In about two years after the passing of the Act, commenced the demolition of some of the old and dilapidated buildings which had been purchased, such tenements as were dens of fever and disease, and haunts of the criminal classes, being taken down at once. This demolition process, however, required to be gradual, as it was necessary to prove to the sheriff before ejecting more than 500 persons of the labouring class that an equal amount of house accommodation suitable for such class existed or had been otherwise provided. In this, however, there was no difficulty, as the erection by private enterprise of the new went on much faster than the demolition of the old. The clearance thus effected by the committee, aided as it was by certain railway operations requiring similar treatment, had soon a marked effect on the health of the inhabitants, and particularly on that of the children, whereby the mortality, particularly of the latter, was considerably lessened.

For the first four years the attention of the committee was chiefly occupied with the purchase of property and removals already alluded to. The rest of the property was put into a sufficient state of repair and let so as to secure a proper income. By 1870 the property secured amounted in value to 735,000*l.*, and the money expended to 764,063*l.*, and in 1871, 931,231*l.* In 1871 the Act was extended five years, and in the same year the chief constable reports as follows:—"Through the operations of the City Improvement and the Union Railway, the city has been cleared of the foulest dens of profligacy and crime, and their occupants scattered among a population breathing a purer atmosphere, thereby affording facilities to the police for bringing the vicious to justice more easily and certainly than when the whole formed a concentrated and combined colony of ruffianism."* Fears were at one time entertained that the dispersion of the low class to other parts of the city might contaminate those places, but these fears were found to be groundless. On the contrary, our sanitary inspectors have repeatedly reported that the condition of the displaced population has been improved, and that although paying higher rates for better houses in other districts, they are satisfied of the advantages of the change.

About this period, 1871, the improvements began to be carried out by the sale of the ground with its buildings in order to carry out the plans laid down by the city architect. Care was taken not to put much in the market at one time, and the prices exceeded their expectations. In all cases the ground has been disposed of by public sale. The result of the committee's proceedings to the present time may be enumerated as follows:—

	Property Bought and Paid for.	Ground Sold.
In 1872 ...	£985,159 ...	£124,307
„ 1873 ...	1,087,365 ...	180,762
„ 1874 ...	1,241,353 ...	513,112
„ 1875 ...	1,315,008 ...	565,136
„ 1876 ...	1,431,593 ...	774,091
„ 1877 ...	1,487,362 ...	883,634
„ 1878 ...	1,538,971 ...	921,538

The property has been all acquired by private negotiation with the exception of three jury trials. The result of the operations has been to reconstruct large portions of the city. Wide and handsome streets with spacious shops and dwellings have in many cases taken the place of narrow streets, and lanes of old and dilapidated buildings. Narrow closes, whence the criminal classes were wont to issue nightly in quest of prey, are now all but unknown, and respectable dwellings and warehouse premises have taken their place. Fever dens have been removed, and by aid of the Sanitary Committee the death-rate in these districts has been greatly reduced. The death-rate, which was on an average 29 in 1,000 in 1866, was reduced to 25 per 1,000 in 1876, a saving of life in a population of 500,000 equal to 2,000 annually. Last year the average was 26 per 1,000, notwithstanding the unusually severe weather during the last months of the year. There are still, however, portions of the city requiring reconstruction, which are being attended to by the Commissioners.

It is difficult to give an adequate idea of the change produced in the various parts of the city by these operations. It is proper to mention that ground in the centre of the city was found to be too high in price to allow of the erection of workmen's houses. The buildings, therefore, which were erected there on the site of those pulled down, have consisted chiefly of shops and warehouses, along with dwellings for the middle classes. Those built for the working class have been erected at some distance from the centre of the city, where the sites were less costly.

The following letter, which I have received from Mr. White, our assistant master of works, will explain the average specimen of the class of workmen's houses lately erected:—

"24th March, 1879.

Sir James Watson, St. Vincent-street.

Dear Sir,—I send herewith two tracings. Plate 8 is the plan of building erected by the magistrates and council in Warwick-street, which is 60 ft. in width. It consists of four flats, each flat having two separate dwellings of two apartments and scullery. The arrangement is one of the best that exists; the apartments are large, the ceilings of good height, viz., 10 ft., and the height of the building 45 ft. 6 in. The free space requisite is three-fourths of this height; actually it is much greater, as the plan shows.

Plate 9 is the plan of building erected in Dalmarnock-road, a street of 50 ft. in width. The ground flat is occupied by two shops, each of which has at the back an apartment which may be used as a dwelling. The three upper flats have three separate family dwellings on each flat, two of them having two apartments, and the centre one one apartment. The single apartment I do not approve of, my opinion being that there should be no separate dwelling of only one apartment. The height of the building is 45 ft., the ground flat having a height of 12 ft., the others of 10 ft. The free space necessary, in accordance with the Police Act, is three-fourths of the height.

Notwithstanding the great care taken by the Court in examining plans to see that the arrangements for dwelling-houses are as complete as possible, in some instances it is rendered unavailing on account of houses, consisting of three and four or more apartments, and which, when the plans passed the court, were shown as and intended to be occupied as one dwelling, being converted into single apartments. If the proprietors were bound to make application to the Court, it would not allow such alterations without sufficient means of ventilation being provided.

I am, your obedient Servant,

John White."

It may be proper here to mention that, by a clause in the Glasgow Police Act, obtained in 1866, no building in which there are sleeping apartments is permitted to be erected, unless there be a free space in front of the window equal to at least three-fourths of the height of the wall in which it is placed. In streets formed since the passing of the Act, the width of the street must be equal to the height of the building. Where there are no sleeping apartments, it is in the discretion of the Court to allow the building to be higher than the width of the street by one-fourth. In the old streets, however, formed previously to the passing of the Act, there is no such restriction as the width of the street regulating the height of the building. The consequence is that large tenements in which there are no sleeping apartments have been erected in several of our narrow streets, thereby excluding to a large extent the sunshine, air, and light of heaven.

The restriction as to the free space in front of and behind all buildings in which there are sleeping apartments, amounts on an average to about 30 ft. of open ground. As far as the space in front of the building is concerned, it is well adhered to; but as regards the space behind, the Act is frequently evaded by parties who are proprietors on both sides of a square erecting tenements with a space of 30 ft. between the buildings in place of 60 ft., which would be required if the buildings belonged to different parties. Thus the 30 ft. is made to do double duty. This is felt to be particularly objectionable as regards what are called hollow squares, where, as they are closed on all sides, there is a total want of air circulation.

A very salutary regulation was introduced into the Police Act, requiring all apartments to be of such a size as to admit a certain amount of cubic feet of open space. The words of the Act

* Between the years 1867 and 1873 there is a diminution in the total cases of crime annually reported of 3,030. Total cases reported to the police in 1867, 10,889; in 1873, 7,869,—difference, 3,030; and this in face of an increase of population of 67,453. Since then the numbers have fluctuated, but any increase is slight taking into account the increase in population.

are as follow, showing the difference in regard to houses built previously to the passing of the Act, and those built subsequently :—

"If such dwelling-house consists of one apartment, and was used as a separate dwelling previous to the passing of the Act, unless it contains at least 700 cubic feet of space, or, if it was not so used, unless it contains at least 900 cubic feet of space.

If such dwelling consists of only two apartments, and was used as separate dwelling previous to the passing of the Act, unless it contains at least 1,200 cubic feet of space, or, if it was not so used, unless it contains at least 1,500 cubic feet of space.

If such dwelling consists of only three apartments, and was used as a separate dwelling previous to the passing of the Act, unless it contains at least 1,800 cubic feet of space, or, if it was not so used, unless it contains at least 20,000 cubic feet of space."

This is exclusive of closets, presses and recesses not exceeding 4 ft. in depth, and not having a separate window therein.

By a subsequent clause powers are given to persons appointed by the Board of Police from time to time to enter any dwelling-house which consists of not more than three apartments, for the purpose of measuring, in cubic feet, the space contained therein, and to mark, on or over the outside of the door of any such dwelling-house (if the cubic contents thereof do not exceed 2,000 ft.), or to affix thereto a ticket, on which are marked, in such position and style as the Board see fit, the number of such cubic feet, and the number of persons exceeding the age of eight years, who, without a breach of the provision after mentioned may sleep therein. This provision is, that when apartments are used for sleeping in by a greater number of persons than in the proportion of one person of the age of eight years or upwards for every 300 feet of space, or of one person of an age less than eight years for every 150 cubic feet of space contained therein, every person so using, or offering to be used, shall be liable to a penalty not exceeding 5s. a day during which it is so used.

For the enforcing of these regulations, a staff of sanitary inspectors is constantly employed; and, from the tickets placed on the doors, they are able to report all cases in which the requirements of the Act have not been complied with. The owners of the houses found offending are summoned before the police magistrate; are at first admonished and warned; and, if again found offending, a fine not exceeding 10s., or five days' imprisonment, is imposed.

The overcrowding which existed previously to the passing of this Act may be learned from the fact that, of 58,003 houses visited in 1866, the year the Act passed, no less than 4,948 were found overcrowded; and such at that time was the scarcity of workmen's houses, that the police were unable to carry out their regulations with effect. The number summoned that year, therefore, only included those of a very aggravated nature,—viz., 953. In 1847, the superintendent of police reported in regard to the numbers living in lodging-houses of a low class, that were he strictly to enforce the Lodging-House Regulations, he would turn out 6,000 persons nightly to the streets. Since the Improvement Act came into operation, however, with the erection of whole streets of houses for the working classes, it will be seen by the following figures how greatly and gradually this overcrowding has decreased, although from the nature of the population it will always to a certain extent exist.

From 1871, the cases brought before the Police-court for overcrowding, after the magistrates began strictly to enforce the regulations, were :—

1871	3,143	1875	1,623
1872	1,741	1876	1,446
1873	1,162	1877	1,247
1874	1,540	1878	1,141

Thus, in 1878, a year of great poverty and want of employment, the cases were not much more than a third of what they were in 1871. So much, I think, for the effect of the Improvement Act on overcrowding.

The Dean of Guild Court, to which everything connected with the erection and superintendence of buildings and formation of streets is referred, consists of the Dean of Guild as president of the Guildry or Merchantmen, along with three master-tradesmen sent by the Trades House, three merchants from the Merchants' House, the Master of Works for the City, the Fiscal or Public Prosecutor, and a legal Assessor. No building can be erected until the plans are submitted, examined, and sanctioned by this Court; and all alterations affecting the exterior of any building must also, before being executed, pass this Court. A supervision is kept over all buildings in course of erection, and when buildings become dangerous they are required by the Court either to be rendered safe or taken down. The decision of the Court can only be appealed to the Court of Session; and such is the care taken in these decisions, that very few are ever appealed. This Court has proved of the greatest service to the community.

It is evident that no lasting benefit can be derived from Improvement Acts, unless care be taken by sufficient building regulations to prevent the recurrence of such evils as these Acts are intended to remedy. In vain need we spend money to lessen the density of the population, if builders are to be allowed to place erections on every available inch of ground; and in vain do we seek to improve the health and comfort and morality of the people unless we secure for them a free circulation of light and air. The effect arising from the want of such regulations is shown by the present state of the City of New York, in which it is stated that 500,000 people—nearly half the population of the city—are crushed into a density about double that of the most thickly-populated districts of London. It is calculated that in that same city of New York there are 125,000 children under five years of age, only one in ten of which reach the age of maturity, and where nearly all the criminals that infest the city have now congregated.

We come now to inquire at what cost this has been effected. In a careful estimate made up by me with the aid of Mr. Morrison, now the intelligent and able chairman of the committee, and Mr. Nicol, the City accountant, we made out the whole cost of these improvements at 31st May, 1877, to amount to 178,462*l.*, arising from waste rents, interest of ground for a time unbuilt before being sold, Parliamentary expenses, and expense of management. The result was made up as follows, viz. :—

Ground sold and on hand as valued	£1,647,332
Ground sold and paid for	1,612,504
Difference.....	£34,828

So that these pay for themselves. There have been,—

Taxes raised	£283,462	
Taxes to be raised at 2d. per pound.....	80,000	
		£363,462
Deduct price of a public park.....	40,000	
Ground thrown into streets and open spaces, valued at	100,000	
Paving streets and construction of sewers	65,000	
		205,000
Loss		£158,462
Contingencies ...		20,000
The whole charge to the city.....		£178,462

On consulting with our city architect as to the operations of the Trust since this estimate was made up, I find he considers that the present state of the Trust, if estimated, at present will still come very near what I have stated.

The last point to which I would allude is the manner in which the displaced population has been provided for. It has been shown by the chairman, Mr. Morrison, that during the first ten years after passing the Act, say until the middle of the year 1877,—

The population displaced was		28,965
Add natural increase of population requiring accommodation, say 9,000 annually for ten years		90,000
		118,965
To meet this there have been provided within the municipality.....	202,302	
Outside the municipality and within half-a-mile radius of the city, accommodation for at least.....	100,000	
		302,302
		183,337

Showing that the supply is in excess of the demand by nearly 200,000. While this provided for all who were able to pay a moderate rent, it entailed considerable hardship on a class belonging to a lower stratum who lived in small houses and rented at 2*l.* 10*s.* to 3*l.* per annum: such as widows with young children, old and infirm persons earning small wages, hawkers and single women, having the old Scotch independent spirit that they would rather starve than go into a workhouse. Accommodation has been found for these, viz. :—

First.—By a number of tradesmen vacating their old and removing into the newly-

houses.

Secondly.—By converting large dwellin the older parts of the city into single and de apartments.

Thirdly.—By the erection of model lod houses, where parties unable to keep a l are provided with lodging, including fire, gas cooking utensils, at 3½d. per night, or 1s per week,—Sunday gratis,—thus enabling to live with more security and in a better s sphere than in their old domiciles. A there has been no case of infectious disease

There are now five of these houses belo to the Trust, and two more in course of erec Cost of the whole estimated at 80,000*l.* are all well frequented, and are self-suppo

The proceedings I have described attr the notice of Mr. Cross, the Home Secre who requested information as to details. afterwards visited the scene of these opera and as the result brought in and passe Artisans' Dwellings Bill, which promis taken advantage of to be of great value large cities. It is deeply to be regretted, ever, that so very few of them have as yet so, although in many the reforms to w have alluded are loudly called for. It is me to individualise these, but they mu known to many of the members of this Ins The first that stands out prominently, as by Mr. McCullagh Torrens in an able arti "Macmillan's Magazine" for this month, City of London. In this article, after al to the frightful state of several distric points out with great force the necess restoring the Act of 1868 for the pulling d old houses, &c., to what it was as passed Commons, whereby power was to be gi municipal authorities to compensate the for the fair value under the Land Clause and to build workmen's dwellings with borrowed at 4 per cent., charging it for upon the rates. This, however, should means supersede the putting in force Artisans' Dwellings Act. Much is bein to educate the people, but I can co nothing more likely to frustrate such ex than to have large masses driven into wr dens and hovels from which an *émeute* ir of bad trade or political disaffection mi attended with serious consequences.*

INSTITUTE OF PAINTERS IN WA COLOURS.

WE have been a little disappointed t year or two with the works of Mr. Linto tributed to this exhibition, as compare what we had become accustomed to fr hand. There was always the same fine and broad style; but some of his recent have wanted the intellectual interest whi so exceptionally characterised many of t previous years. Any one regarding his tw ings in the present exhibition, which open week, will admit that he has fully compe us this year. One of these represents the first adventures of Gil Blas, when cajoled into giving a supper to an im adventurer at the inn, much in the san of way that the vicar was taken in Ephraim Jenkinson's admiration of his The humour of the scene is perfectly giv the one side the expectant guest a bowing low, partly in mock homage, p hide his irresistible inclination to laugh. a regular bravo, of the style now survivi on the stage, in red cloak, and girt with rapier. Gil Blas, seated at table, faci spectator, listens open-mouthed, with his holding the knife and fork upright, res the table wide apart, as if he had be pelled to pause in the very act of at his meal. His face is expressive of be ment and a certain degree of alarm. hardly yet begun to swallow the extr compliments of the other seriously. behind him stands the landlord, w hand over his mouth, to choke h laughter. The figures completely re the humour of Le Sage; and not lightful in its way is the painting of lection of miscellaneous objects in t ground, among which a large brass k predominant: there is possibly too mu picturesque litter, even for a Spanish ta

* The Number of the Transactions of the Inst taining this paper includes a large number of illu and can be obtained at small cost.

period. The other work is tragic in its aim: entitled "False" (138), and includes two res only,—a very disagreeable-looking man red velvet costume, who is leaving con-ptuously a woman who is seated on left, her head bowed in her hands in the est despair. The figure of the woman is of the finest and most pathetic things we seen for a long time; there is expression in the dress, which falls in grand sculp-esque lines and masses. As mere pieces of ting, these two works are of the highest , but what makes their value is, that after ave given all appreciation to the manipula-we still find the highest interest of the is beyond all that, and lies in its intel-al force and feeling. It is a curious com-t on the prosaic and realistic character of lish art at present, that we should have to tion this superiority of intellect over mere ution as exceptional; but so it is. Perhaps a still more curious phenomenon to find ed on the line on the same wall such a work Jehu on his way to Jezreel." At this rate, oitions can hardly be supposed to have much ational influence in teaching a benighted io what is or is not high art.

ne of the most ambitious contributions is C. Green's "Bartholomew Fair" (132), a ly-finished work crowded with small figures, aying great variety of character, the best p of the whole being that of the thimble-rig and his victim. The scene is in front of a booths, two of them theatrical, whose panies are just parading themselves in front re the commencement of the performance. e two groups of "poor players" in the ground are among the cleverest parts of work, especially the troupe who are dressed *Hamlet*. The painting (for it is hardly a r-colour drawing in the true sense) is more ing in detail than as a whole; the general t is rather hard and spotty, and there is a of light and atmosphere; everything has sacrificed to minuteness and multiplicity detail. Mr. Towneley Green's small work, e Reckoning" (47), has higher qualities, gh meaning much less; in fact, the tive" of the picture is one that has been ed threadbare; the artist has so chosen his d as to afford him scope for a great deal of colour in the costumes of the party, and nceeded in contrasting very well the mere ness manner of the young woman who waits he amount with the easy enjoyment of the g gallants who form the company. There so some minutely delicate painting of detail e table accessories. Altogether this is a ughly pleasing work, slight as its aim be. Miss Mary L. Gow strikes a higher in her "Vittoria Colonna" (152), an in-tion caught, we should say, from Mr. on; there is want of intelligible motive or ent in it, however, so much so as almost to e one think it was painted merely as a y, and named afterwards. Mr. Carrick's e-subjects all have good qualities, but are qual to what he has done. Mrs. Elizabeth ray sends again some very clever Eastern e sketches; and Lady Lindsay, of Bal-es, a pleasing head, entitled "A Wintry ning."

landscape Mr. Aumonier and Mr. Orrock pre-eminent. "Southwold, Suffolk" (21), he former artist, is a noble work, worthy of of the best names in that French school of scape art to which it is so much allied in ng. Mr. Orrock sends a good many drawings r and more ambitious than he has usually ributed; he perhaps a little too much ats an effect of wet and mistiness which he made his own, but there is an eminently door and open-air impression produced by works, which are full of real wind and rain, make one wish for a waterproof. Mr. Hine is, ourse, not to be overlooked, but he has ly been at his best in this exhibition; the tumn Evening on the South Downs" (27) is e work, less carefully executed than is usual the artist. Mr. Collier, whose landscapes been among the chief attractions of the itute for some years past, has also been less essful than usual in his large work "Wide ures" (38), chiefly, it seems to us, through ying a little too far the broad and free style handling which he had made such successes before. Breadth may be carried too far; ike to be able (at the proper distance, of se), at all events, to see what each blot of ir is meant to convey, which we do not seem to see in this work, though it would pass as a very fine and free sketch. Mr. Syer's works are in his best way; he is as broad (or rough) as Mr. Collier, but he chooses subjects which can be fully portrayed in this manner. Mr. Hargitt's "The Tay from Kinnoul Hill" (129) belongs in comparison to a rather matter-of-fact school of art, but the treatment of the river winding over the middle distance is fine, full of light and transparency, and giving a great idea of extent. Mr. Wimperis, another admirable artist, seems again inclined to "rough it" a little too much in such a drawing as "On the Glaslyn" (141). There is a rather large proportion of architectural subjects, some very brilliant, hard, and highly finished, as architectural representations very complete, but that is not what we look for so much in a general water-colour exhibition. Among smaller works of architectural interest we may notice Mr. Hargitt's "Ruins of Sardis" (161), Mr. L. J. Wood's "Rothenburg on the Tauber" (163), and Mr. Hine's little drawing of "Hove Church, near Brighton, before Restoration" (137), which the Society for the Protection of Ancient Buildings should purchase.

These and a few other works make the exhibition, which as far as its best works go is a very interesting one; but these are embedded in a mass of mere "drawing-master's" work which it is painful to contemplate, and which seems to become more pronounced and more vulgar every year. If the Society could weed out about half (not to say two-thirds) of their regular contributors, they would have much finer exhibitions,—"fit, though few." But we suppose walls must be covered.

THE RECENT EXCAVATIONS AT THE COLOSSEUM.

From day to day our acquaintance with the still unfathomed mysteries of life in classic Rome progresses.

For some years past we have been constantly receiving notices from Rome of new investigations, which invariably lead to interesting results. Such, indeed, have been the discoveries made within the last generation that the poet of the future (who still seems to rest in embryo) will find in the Eternal City for the exercise of his imagination a very different Rome from that which inspired Goethe and Byron in years gone by, when the classic capital still lay half buried, and when its treasures, if suspected, still rested, covered by the *débris* of ages.

Of all the monuments of the classic days of Rome, certainly the most familiar to the world, through innumerable pictured representations, and literary and antiquarian descriptions, may be said to be the Colosseum; yet, strange to say, it has remained almost the last of the Roman remains to attract the active research of the archæologists. Till only a few years ago the grand old ruin stood just as the neglect of the early Christian and the Dark Ages, together with the spoliation of the Mediæval barons, had left it, save for those portions of restoration which a few popes had somewhat ostentatiously ordered; the whole rendered additionally beautiful by a rich covering of almost untouched vegetation, so special in its character that a charming and exhanstive work, the "Flora of the Colosseum,"—a work that should be, if it is not, known to all botanists,—was written some years ago by the once favourite English practitioner at Rome, Dr. Deakin.

Once again the attentions of archæologists have been bestowed on the Colosseum, and now, somewhat cruelly perhaps, we find how generation after generation of the strangers who have visited Rome since the great days of the classic revival down to within a few years have lavished their fancy on a building, with the original conditions and arrangements of which they believed they were completely acquainted, but of which in reality they were woefully ignorant.

Through what vicissitudes the Flavian Amphitheatre passed, after having served for the struggles of the gladiators and of wild beasts, and the naumachiæ so dear to the Romans, till the year 523 after the Christian era; after having been, in the ferocious days of the Middle Ages, the stronghold of the Frangipani and the Annibaldi; after having been the scene of many a tournament of gallant and plumed knights at the period of the first Renaissance; after having served as a stone-quarry for several centuries, and produced to the world, among many other children, three lovely daughters,—the Palazzo di Venezia that of the Cancelleria, and the Farnese, which, grandiose as they are, seem but pigmies in comparison with their parent; after Leo X. placed so stout a prohibition on this Vandalism; after having been almost sanctified by that pontiff in memory of the martyrs of the Christian faith, who redeemed with their blood the dust of the arena, first termed "the Colosseum" in the eighth century by our own English chronicler, the Venerable Bede; after having seen Viæ Cruces innumerable, popular committees, pontifical Zouaves, and Italian lancers bivouacked beneath its picturesque arcades; after having fed for centuries the romantic imagination of the poets and writers of every civilised country of the world; how, after so many adventures and vicissitudes this huge monument of Roman splendour has become, until quite recently, an almost undisturbed pond, the home of the frogs, is no difficult story to tell, for it has been so, since the close of 1875 and the commencement of 1876, when a series of excavations, to verify and investigate the construction of the foundations and the underground works of the edifice, was first determined on. Archæologists have not a little of that mania of the child which wishes to know what is in its toy-drum or bran-stuffed doll. Were an antique Roman to come to life by chance, as young and as handsome as if 1,850 years had passed over him in a flash, the archæologists (have we not Edgar Poe's word for it in the case of his thrilling story of the mummy?) would not be content merely with examining him exteriorily, but would certainly wish to pull him to pieces, to see how he was made inside.

This said, be it remembered, with all due respect to so important a science as that of the antiquary,—especially also with all the respect due to that portion of the profession who have shewn such an interest in the classic topography of Rome, a study which has now given rise to a regular course of lectures at the University of Rome, delivered by Professor Rodolfo Lanciani, a highly-esteemed contributor to the *Bolletino Archæologico Municipale*,—the fact still remains that since the date to which we have already made reference not a little difficulty has arisen in the progress of the excavations, which have had, to the eyes of the profane at least, but one, and that by no means a satisfactory, result,—of seeing the whole floor of the Colosseum upset, and those portions excavated filled with water and peopled with noisy frogs, a result of evidently little service to science, which has already made these much-abused reptiles a subject of prolonged research.

In some manner or other this unexpected inconvenience had to be obviated. To get rid of the water by means of pumping-machines was impossible, as the more the water was pumped out the more it entered, a result which pointed evidently to the existence of underground communications between the amphitheatre and the Tiber. Many documents tended to prove this belief; the only difficulty lay in the discovery of their position. It has been in search of these subterranean canals that the engineer Narducci has passed three years, and expended no less than 12,000*l.* to 14,000*l.* sterling.

On the morning of the 3rd of March last, in the presence of the Minister Coppino, the Senator Fiorelli, the director-general of the excavations, Professor Rodolfo Lanciani, the topographer of classic Rome, and Duke Leopold Torlonia, the waters of the Colosseum were admitted by a small canal from the basin, into the antique and now renovated sewer, and so into the new drain-pipe which runs from the Arch of Titus to the Tiber, a distance of 1,192 linear mètres, or some 1,300 yards.

In the little house of the neighbouring *Orto Botanico*,—so called because it is a garden and not an *orto*, and, in addition, possesses no character that is particularly botanical,—were exhibited on the [same morning a number of plans, elevations, and sections, executed with the utmost care by the engineer Narducci, and especially important from an archæological point of view. In excavating over a large space several yards beneath the existing surface of this part of the city, which was the centre of classic Rome, Signor Narducci has made a number of discoveries worthy the attention of all students interested in the history and life of the city when it was literally the capital of the world.

From these investigations, and from the relation of them made by Signor Narducci himself, we gain the following interesting facts:—

That as far back as the time of Tarquinius

Priscus there existed leaden conduits for the supply of drinking-water to the city. This was some 600 years before the Christian era, and strikingly proves the accuracy of those classic authorities who tell us how this monarch (the fifth of the kings of Rome) "laid,"—we cannot do better than quote the always valuable words of Lemprière,—"the foundations of the Capitol, and to the industry and to the public spirit of whom the Romans were indebted for their aqueducts and subterraneous sewers, which supplied the city with fresh and wholesome water, and removed all filth and ordure, which in a great capital too often breed pestilence and disease."

From the investigations made, it appears that from the epoch of the kings there existed in Rome a regular system of drains for the off-flow of the sewage and water, while,—strange contrast in this year of grace 1879,—modern Rome possesses no system whatever of drains, an inconvenience of the existence of which the eyes as well as the nose too often testify.

Further, we now learn that the system of *cloacæ* in the time of the kings was injured and interrupted by later constructions, often carried out at the caprice of the emperors, so that the water collecting in this low-lying portion of the city, and especially in the Colosseum, rendered the spot unhealthy till the days of Nero in the early years of the Christian era.

It is also proved now that the streets of the city were at the time of the kings, say 600 years before Christ, at a level nearly 30 ft. below the existing surface; also that the road along which passed the uncovered conduit was cut when the Circus Maximus and the Cloaca Maxima were constructed, commenced 599 B.C., and terminated eighty years after.

As for the off-flow of the Flavian Amphitheatre, it was arranged by a series of drains communicating with each other and entering those *cloacæ* or sewers destined to collect and carry away the water from the subterraneous parts of the amphitheatre, in the direction of the major axis of which they were placed.

The new works have, as it may be imagined, led to considerable outlay, but their importance is not alone archæological, but hygienic. The neighbourhood of the Colosseum, although no longer a marsh as in days gone by, has had the reputation of not being too healthy. The waters which stagnated there until a few days ago could scarcely be expected to produce beneficent exhalations. But now there is no longer any fear, and the chief cause of the unhealthiness got rid of, the effects will cease.

It is to be hoped, also, that the attention of the engineers will be turned to the levelling and rectification of the floor of the arena, so that, in the silence of the starlight nights, young romantic couples or musing poets may ramble over the old building as in times gone by, without danger of suddenly finding themselves at the bottom of some of the deep and now uncovered drains, and thus being unwittingly called upon to verify personally the solidity and durability of the construction of eighteen hundred years ago.

With the Colosseum thoroughly investigated, and many of those numerous points of doubt which have long disturbed the minds of the antiquary and the inquiring classical scholar cleared up, it will require even less than in the past the imaginative mind of the poet to picture those terrible scenes in describing which Chateaubriand and Byron, among many other writers, have so moved our compassion. The Colosseum then, indeed, will be (what it in reality was not when the well-known line was penned),—

"A noble wreck in ruinous perfection."

Dublin.—On the 12th inst. the Duchess of Marlborough formally unveiled the Balfe memorial window in the southern aisle of St. Patrick's Cathedral, Dublin. The movement to erect the window was set on foot a few months ago to remove the reproach to Ireland that, although the composer had been dead more than seven years, there did not then exist in Dublin any monument whatever to testify to the world that Balfe was born in Ireland. In the Balfe memorial window the main portion is a figure of Erin placing a wreath of laurel on the head of Balfe. The left hand rests upon an ancient Irish harp. Beneath is a lyre. The window bears an inscription, testifying to its erection in memory of Balfe, by Robert P. Stewart Knight, Mus. Doc. The work has been executed by Messrs. Ballantine, of Edinburgh.

ANCIENT LOCKS AND KEYS.

Whether locks and keys ranked among the productions of Tubal Cain, "the inspired artificer in brass and iron," is not recorded in the annals of metallurgical antiquities; but it is an undoubted fact that the construction of these articles occupied some of the early disciples of the renowned metal-worker. In the Old Testament references to locks are numerous, particularly in the chapters relating to the rebuilding of Jerusalem by the prophet Nehemiah. The description of Solomon's Temple (1 Kings vi.) mentions "folding doors," which require locks of a special character, and which were doubtless made by "Hiram out of Tyre," who, we read, "was cunning to work all works in brass." In Solomon's Song reference is made to "the handles of the lock," and there are other allusions in various parts of the Sacred writings either to locks or keys, notably in Judges iii. and Isaiah xxii.

Some of the earliest classical writers favour us with more or less descriptive references. Aratus, for example, compares the constellation Cassiopeia to a key, the stars to the North composing "the curved part," and those to the South the "handle." The poet Ariston, in his "Anthologia," applies to a key a Greek epithet signifying "one that is much bent." Callimachus, in his "Hymn to Ceres," conveys the idea that the keys of that time were of giant size compared with those in modern use. Representing the goddess in the assumed form of Nicippe, he sings of her priestess carrying a key *superhumalem*, or "fit to be borne on the shoulder." One can hardly imagine, however, that the key used by the fair Penelope to open her wardrobe was of such huge dimensions. Homer (Odyssey, xxi.) tells us that was "a brass key, very crooked, and tipped with ivory." The passage is thus rendered by Pope: –

> "A brazen key she held, the handle turn'd,
> With steel and polish'd ivory adorn'd;
> The bolt, obedient to the silken string,
> Forsakes the staple as she pulls the ring;
> The wards respondent to the key turn round,
> The bars fly back, the flying valves resound;
> Loud as a bull makes hill and valley ring,
> So roar'd the lock when it released the spring."

If it be really true that Penelope's lock was so very noisy,—the first rude conception of the modern *alarum* lock,—the members of her household would doubtless have desired her visits to her wardrobe to be "few and far between."

The Egyptian lock, of which rude representations are found chiselled among the *bassi relievi* at Karnak and the Herculaneum, is at the least 4,000 years old. Its construction is simple, and it affords little or no security. Its principal feature consists of three pins, which being pushed into an equal number of cavities in the bolt hold it fast. A key on the outside releases the pins, which are of various lengths, to which, of course, the key is made to correspond. Egyptian locks were first introduced into Britain by the ancient Phœnician merchants, who traded in Cornish ores, and some specimens of these locks are to be found in Cornwall and Devon at the present day. It was doubtless this description of lock which is so frequently alluded to in the early English ballads and metrical romances, under the term "Thrilled upon the pin." The expression occurs in the poem "Glasgerion," the hero of which was a Celtic bard mentioned by Chaucer. Bishop Percy, in a foot-note to the poem, says "that thrilled upon the pin," "twirled the pin," and "tirled at the pin," seems to refer to "the turning round the button on the outside of a door, by which the latch rises, still used in cottages."

Locks and keys were manufactured in England before the time of Alfred. As early as the twelfth century English locks were elaborately ornamented, and this artistic feature of the locksmith's craft became more conspicuous from the fourteenth to the end of the sixteenth centuries. The handles of keys especially became greatly elaborated, being so entirely composed of scrolls and ornaments that they bore some resemblance to network. In the seventeenth century a cross was usually inserted in the keybow, a very common ornament at that period. Doubtless the English locksmiths of the time were stimulated by the example set them by their fellow-craftsmen on the Continent. The late Elihu Burritt says, "In the Middle Ages locks and keys exercised and disciplined the finest mechanical skill and artistic taste of various ingenious communities. They were not only elaborated for security, but for ornament, and nothing made in these modern days can approach these unique productions. Indeed artist in iron, steel, and brass set to work the lock and key for a city gate, cathedr- palace door, to connect the memory of his with the edifice for ever, or as a Raffaelle sit down to a 'Madonna' which should at the reverent admiration of ages to come. specimen of this Mediæval workmanship is before us, in the shape of a *serrure de tabern* manufactured in Gaul. The escutcheon rounding the keyhole is surmounted by a r sentation of Our Saviour, and on either sid figures of guardian angels. The surface o lock is elaborately engraved, the edges lined with beads and scrolls.

The Chinese lock, dating almost from days of Confucius, has "sliders or tumb- and was originally made of wood. It w fact, a crude embodiment of the principl known in connexion with the "lever h which affords the highest and best for security.

Another lock of antiquity worthy of n the "letter lock," or combination padlock. lock is so constructed that the letters o alphabet may, by pre-arrangement, be rec to spell a certain word, or number of before it can be opened. Although appa complex, the security in this lock is in r very small, and the invention has long regarded as more curious than useful. Dutch invention, and is several centuries This lock is alluded to by some of the early in the seventeenth century, about time they were probably introduced into E for securing the despatch-boxes of court co In Beaumont & Fletcher's play of "The Gentleman" (A.D. 1615), we find this cou

> "A cap-case for your linen and your plate,
> With a strange lock that opens with A M E

And the poet Carew, in 1620, writes,—

> "As doth a lock
> That goes with letters, for till every one be kn
> The lock's as fast as if you had found none."

Among what may be called the "curi of industry," locks and keys are very represented. It is related of Mark Sca smith who flourished in Elizabeth's tim he constructed a lock "consisting of pieces of iron, steel, and brass, all of with a pipe-key, weighed only two gra gold." The inventive Marquis of Wo designed a lock in which a steel ban secreted, and so adjusted as to spring o catch the hand of any one introducing a the right key, "as," to quote his lordsh trap catches a fox." The construction o with secret ways of opening was a fa occupation of some of the Continental during the Middle Ages. One sample of articles was known as the "Apostle Lock elaborate affair, having in raised meta figures of the apostles, and connected w hand of one of them was a secret spring, being pressed, caused the bolts of the loc back.

As illustrating the extreme in the dim of locks, we may mention that at Willen the greatest English centre of the trade, locks are made out of two threepenny-bit the leading firm there made for a fort Malta some years ago locks over 5 ft. in and weighing nearly half a hundred each! Leglocks and handcuffs are st happily in request; but the demand for "iron bridles" and "ducking-stools, necessary for the chastisement of scold we are glad to learn, quite died out, and be hoped that the world is steadily, if progressing towards the time when, like fellow's model village of "Acadia," it m said of the whole human family that,—

> "Neither locks had they to their doors nor bars
> windows;
> But their dwellings were open as day and the
> their owners."

The Public Works Loans Bill.—The Clerk of Birmingham is calling the atte other municipalities to the provisions new Public Works Loans Bill, which affe public bodies having occasion to borrow It proposes to limit the amount of loan single borrower to 100,000*l.* in one year, alter the mode of repayment by term annuity to a repayment of instalmen interest annually, which will raise the payments very considerably at the com ment of the period.

A CELEBRATED PRINTING-OFFICE.

About three years ago the city authorities of ntwerp acquired by purchase the printing-office Christophe Plantin, the eminent printer of the eenth century, the sum paid down for the acquisition, priceless from an antiquary's nt of view, being 48,000*l*. The undoubted ae of the property was pointed out at the e; but we are now supplied for the first e with authentic and full details respecting by a work of M. Léon Degeorge on the tory of this world-famed printing-office and collections contained within its walls.

The house itself as it now stands is a large, dsome, square building dating from the eenth century, the façade of which was bored in 1761. It comprises a private resi- ce, the type-foundry, the printing-office, ding-rooms, library, archives, and a number ffices, carefully preserved in the same state they were in during the time Plantin rished. When entering through the vaulted eway, the square extending round a large rtyard strikes the visitor with a happy effect. re are niches between the windows, in which busts of celebrated printers are placed, most hem encircled by the wreaths of the vine ch Plantin is reported to have planted with own hands 300 years ago.

he oil-paintings are as numerous as they are nable, and, with the exception of six, are por- its either of members of the family or of emi- nt persons in connexion with the latter or with business. No fewer than eighteen are ributed to Rubens, who was a frequent visitor Plantin's house. In the archives of the se are still preserved the various receipts signed for the sums paid for the pictures.

most remarkable of the portraits are those Christophe Plantin, his wife, his daughter tine, his son-in-law Moretus, of Ortelius, us Lipsius, and of Arias Montanus, the -known editor of the large polyglot Bible, ted for the King of Spain, and still known he name of the Polyglot Antwerp Bible. re are seventeen other portraits, of which aps that of Balthasar Moretus,—one of the of Vandyck,—is doubtlessly the most able. Most of the pictures are by Pombus, some are quite excellent.

he engravings are very numerous, very tiful, and for the greater part also very . There are many large portefeuilles full opper-plate engravings by Rubens, Teniers, dyck, and Jordaens; and others, again, are l with the works of Cris de Passis, de Gallé, lers, and other engravers, all *avant la* e, and the most careful impressions. There esides, a precious collection of original ches of old masters, nearly 400, of which en are by Rubens, and attested by his ature. The jewel of the collection, however, ause of its great rarity, is represented by ngravings by Peter Boel, entitled "Diversi lli," and all in the most perfect state of ervation. Next to mention is "La Petite ion," by Albrecht Dürer, in fifteen plates, aved by Van Leyden, and, finally, sixty raits of the Dukes of Brabant and the nts of Flanders.

he library contains 10,000 volumes, among ch are a great many curiosities, first being tin's chief work, the large polyglot Bible, ed by Montanus, of which there are three imens in this collection, one being printed vellum. The work comprises eight large volumes, and is printed in Greek, Latin, rew, Chaldaic, and Syriac. The casting of ype and the correcting of the proofs kept people steadily at work for four years, and ompositors had to undergo a sort of training t themselves for this kind of work. The l expenses of printing were estimated by tin at 40,000 crowns. Among the delights ibliographers are also numbered the Pfister e, from the year 1459; a "Sacrum Brevia- ," from the printing-press of Theod. tens, of Louvain, and a vellum "Cicero" 66) from the press of Johann Fust, as as numerous *editiones principes* of the ics, besides other curiosities, a great ber of books, pamphlets, and placards, ng which some are unique, illustrative of history of Belgium.

manuscripts there exist about 200, some hem exceedingly valuable. In most collec- s of manuscripts, writings of the fourteenth ury are very scarce; but here we find them he twelfth, tenth, and even ninth centuries. ngst those of the fifteenth century the most striking work is an illuminated Bible of the richest execution. Its date is 1402, and it is a rare treasure. As is to be expected, from the fact that Plantin published principally works of classic literature, the majority of manuscripts are those of Latin and Greek authors. Their writings were of extreme value for the collation of the text and the correction of doubtful or contested readings. This section of the "Maison Plantin" by itself is a real treasure-house.

In the archives are preserved all the account-books of the firm from its establishment down to the balance-sheets of most modern date. From 1566 everything referring to buying or selling is entered regularly from day to day. Here we find the large memorandum-books, the bonds of Rubens, all the orders for payment of Philip of Spain, as well as remarks respecting business connexions. The books kept of wages paid by the establishment form the surest index of the rates of wages paid for printing in the sixteenth, seventeenth, and eighteenth centuries, and for three centuries tell us exactly the weekly pay of "clickers," compositors, wood and copper engravers, bookbinders, &c. But of the greatest interest in these archives are the "letter-books," in which the correspondence of the house has been preserved. The number of remarkable autographs is very large indeed, and all the letters are arranged chronologically. Here we find autographs of sovereigns, eminent statesmen, philosophers, historians, and artists, by the side of the most celebrated printers of England, France, Germany, Italy, and Spain. But few of those letters have yet been published, and many among them would throw a striking light on the literary world of the sixteenth and seventeenth centuries. We have also in this collection royal diplomas, inventories, testaments, genealogies, reports on business journeys and family matters; the pearl among such documents being Plantin's autobiography, in which he has sketched the hopes and fears, the disappointments and successes of fifteen eventful years. One of the above letters contains an interesting fact from the life of Plantin. The King of France sent him a patent, appointing him the "King's Printer,"—an appointment as lucrative as honourable; but Plantin, acting upon the advice of the Spanish ambassador, declined the distinction, and was satisfied with being the "Architypographus" of Philip II. of Spain. The Duke of Savoy and Piedmont also sought the services of Plantin, invited him to Turin, and offered to purchase his whole establishment at a price fixed by Plantin himself, adding besides a bonus of 1,000 gold crowns. Beyond this handsome offer he promised to found new and large printing-offices at Turin, the direction of which was to be entirely entrusted to Plantin, *carte blanche* being accorded to the latter for the expenses incurred. But nothing could entice Plantin from Antwerp, and he declined also this advantageous proposal.

A few words should be added respecting the valuable collection of Sèvres, Chinese, and Japanese porcelain in the Plantin Museum. There are, amongst other rarities, six cups of "porcelaine verte de Chine," for which a connoisseur of Moretus offered, a few years ago, 15,000 francs, without securing them. The collections of coins and minerals are no less valuable.

But the printing-office itself is no less interesting. There are still racks full of type cast several centuries ago in the foundry close by. The "divisorium" [an implement unknown to the English printer, the latter being contented with dashing down his "copy" on a dirty "case"; hence the unclean state in which only too generally "copy" is returned to the author] still carries "copy" in the position most convenient for the compositor, and every requisite lies and stands ready to hand, so that the visitor is under the impression that he has dropped in during "dinner-time," and that active life will soon flow again in the rooms he is inspecting. As in the region of "cases,"—the composing-rooms,—matters are the same in the press-room; it looks as if work was to commence at once, although of the seventeen presses which Dr. Thou observed in 1576 only five are left. Two date from the sixteenth century, but only one is in working order, and used for the purposes of the museum.

And what do these cupboards contain? Within them are preserved about 15,000 woodcuts, illustrative of the history of three centuries of the art of wood-engraving. There are "blossoming initials," as the Dutch called letters decorated with flowers, of all dimensions, a number of head and tail pieces, vignettes, imprints, and what the French call "culs de lampes." There are beautiful illuminated initials, no doubt intended for a missal, which have not been used at all, while many very good drawings on wood wait for the graver. But not only are there wood-blocks here; there are about 8,000 copper-plates, carefully preserved, among them illustrations and handsome title-sheets of bygone times. In an especially beautifully carved cupboard are preserved the punches, matrices, and forms which were the cause of Plantin's fame. Many of them are from the hands of Guillaume Le Blé and Claude Garamond. By the side of all these curiosities we find several tons of new type, never used, with the dust of several centuries upon them!

The city of Antwerp has thus acquired a treasure which no visitor to the town should fail to inspect, and which forms a better monument than bronze or iron to the simple but intellectual work of a family of printers.

ASSYRIAN STATUETTES.

When the first instalments of the sculptured slabs from the palaces of the Assyrian kings arrived at the British Museum, it was noticed with regret by many students of sculpture that the examples were almost entirely of the bas-relief class, and this want has never been removed by subsequent explorers. The few examples of statuary which have reached us are of so inferior a kind as to fall far behind the reliefs in their workmanship. The Babylonian statue of Venus in the Assyrian vestibule is rude, stiff, and totally unworthy of the predecessors of the sculptors of Nineveh. The statues of Nebo erected by Rimmon-nirari, in B.C. 890, in Calah, have no art treatment whatever, and show a knowledge of the nude far behind the bas-reliefs of the same period. The statue of his son, Assur-nazir-pal, B.C. 886, is small and stiff, and the drapery exhibits arrangement of a kind unworthy of art. The face and head are treated, however, in a most minute and realistic style, similar to that exhibited in the *reliefs*. Seeing the want of some treatment of the Assyrian figures in the round of a higher class than that above mentioned, Mr. Hayes, an attendant at the British Museum, who has attained some celebrity as an amateur modeller, determined to take some of the principal characters portrayed in the slabs from Nineveh, and while adhering closely to the facial expression and adornment of the figure, he would treat them in the round. The result of this experiment has been a series of three very excellent statuettes, which now represent for the first time the figures of Sennacherib (B.C. 705) and his warlike grandson, Assur-bani-pal, the Sardanapalus of the Greeks (B.C. 664). To this pair he has added a statue of the Queen of Assur-bani-pal. This latter is modelled from the bas-relief in the Assyrian basement-room, wherein the queen is represented as banqueting with the king in the palace garden at Nineveh. The queen is clad in a long robe, richly braided and embroidered, while in her hand she holds, as if drinking to her lord, a shallow cup, much resembling the beautiful silver cups discovered by Gen. Di Cesnola in Cyprus. The features are most accurately produced, and from them we gain a strong idea that the queen of the warrior king was not an Assyrian, but of Eastern European or Cyprian birth. The arms seem a little short. The statue of Sennacherib shows him clad in his royal robes, with the triple tiara of his princely office on his head, and the sacred bow of Istar in his hands; his face and attitude give a very pious but warlike son of Sargon (B.C. 721). The statue of Assur-bani-pal is modelled from one of the finest portraits of that monarch, namely, that in which he is engaged in that "pastime of kings," the lion-hunt. The king wears a close-fitting tunic, bound round the waist by a broad band, but cut away at a short distance above the knees, so that his legs, clothed in leather greaves, are free from drapery to impede his action. No helmet covers his head, but a plain broad band or diadem binds his flowing hair, and we see before us, as he stands grasping his sword, a very true likeness of the "Hero King." The same artist has also produced some other *fac-similes* of a winged and human-headed bull, as well as one of the beautiful bronze lion weights. Those who are anxious to have some adequate idea of these kings, who once ruled the myriad tribes of

Assur, will find these most interesting works of art, and by no means unjust to the canons of Assyrian art.

A number of these statues have now been produced from the original clay models in porcelain of a very fine colour, and the set can be obtained from Mr. A. Jarvis, 43, Willis-road, N.W.

LYME REGIS.

The towns of the south coast perhaps contrast more with one another than those of any other part of England; for most of these belong to two classes, each in direct contrast one with the other. For they consist of small towns, once influential, nay even powerful, seaports, but which are now mere collections of houses, small towns little better than villages; and, on the other hand, they are towns the production of modern requirements, fashionable watering-places, whose area increases yearly, and whose population may be counted often by thousands. Such, for example, are Winchelsea and Brighton, Pevensey and Eastbourne. Let any one visit these four places and he will witness the seaports of the Middle Ages in comparative decay, the watering-places of the nineteenth century rapidly increasing, but each in its own manner characteristic of certain historical and social phases in the history of this country,—each in a certain sense historical foot-prints on the sands of time.

Noticeable among the historical towns of the south coast is Lyme Regis. It was enfranchised by Edward I., and it could aid the ambitious and warlike schemes of himself and his successors by supplying craft for the transport of his armies to France, and it sent ships to the siege of Calais. In the reign of Henry VIII. it was considered of sufficient importance to have granted to it the privilege of holding fairs and a market; and during the Parliamentary and Royalist struggles it sustained, in 1644, a siege of seven weeks from the troops of Prince Maurice, and was only relieved by the timely arrival of the Earl of Essex, all of which, in greater detail, can be read in Hutchins's "History and Antiquities of the County of Dorset"; and when we think how Birmingham was entered without a struggle by the Royalist troops, and of the value of time to the contending armies, it requires but very little imagination to think of Lyme as a seaport of importance. Indeed, before this period, Leland, travelling through England in the reign of Henry VIII., had described Lyme in the third volume of his "Itinerary" in quaint and suggestive words. "Lime," he says, "is a praty market town, set in the rootes of an high rockky hille down to the hard shore. This town has good shippes, and usith fishing and merchauntice." Since those days Lyme has lost its "good shippes" and its "fishing and merchauntice," though Leland's striking description of its situation remains strictly true. It lies, as he says, at the very roots of the hills; there is no level piece for it to be built on, and some of its houses are on the lowest spurs of the hills, some on the hard shore below the proper hills themselves. On the north-west, on the slopes which face the south and the long line of rolling headlands which end with the distant and half-visible Bill of Portland, a few houses of modern character have from time to time been built, but it needs no stretch of imagination, so little has time changed it, to picture it as a seaport of the sixteenth century.

The whistle of the locomotive engine does not reach it from the valley of the Axe, and there is no reasonable probability that the railway will for years traverse the five miles of hill and vale between Axminster and Lyme. Nobody wants it, and it would only transfer a dead seaport redolent of the historical past into a second-class watering-place. For we are quite sure that Lyme has charms for those who prefer peace and picturesqueness to noise and the blankness of long esplanades, and it is no small advantage to find a place where the local pride of its inhabitants is satisfied by the luxury of an historical breakwater, and does not desire to endow it with the largest aquarium or the longest iron pier within fifty miles. At one time, indeed, in the last century, it was somewhat frequented as a watering-place by persons of rank,—thus Lord Chatham frequently visited it for the sake of his health. But Lyme in its Cobb possesses a work not without interest from an historical point of view as illustrative of Mediæval ideas of harbours and breakwaters. For the Cobb was built as early as the reign of Edward III., if not before, and was almost completely destroyed in that of Richard II.; its last restoration was in 1825-6, when 232 ft. of the pier and 447 ft. of the parapet were rebuilt. Starting straight out from the hard shore it gradually circles round towards the east, terminating in that direction. Thus vessels within it are protected from south and south-westerly winds by its encircling shelter, and the bay being sheltered from the north and east by the high lands which bend round to form the east side of the great west bay, ships are thus safe from all kinds of weather. But at the present day it can only contain a few coasting vessels and fishing smacks, so that, as we have said, its interest is now mainly historical. For there were days when it was considered a great harbour, and when within the protecting folds of the Cobb ships which were to sally out to the siege of Calais were collected, and vessels which brought the Duke of Monmouth and his companions lay within its grey shelter. It was undoubtedly planned with skill, considering the requirements of Mediæval times, for it stood the best of all tests, it fulfilled the purpose for which it was built, and within its artificial shelter the sailor was as secure as within the land-locked coves of Lulworth or Salcombe. We could point to more ambitious modern structures of our own age in this branch of marine architecture which are put to shame by this piece of Mediæval work, which in its time was eminently useful. Compare the usefulness in its own day of Lyme Cobb with the uselessness in our day of the breakwater at Port Erin in the Isle of Man, and the Mediæval engineer must receive due recognition for his comparative skill.

Architecturally in other respects there is nothing whatever in Lyme. The church is noticeable internally, indeed, because it has some good glass in its windows, and because it is one of the most appalling sights, from the sheep-pen-like pews, the galleries planted across the windows, and the uncared for roof, which can well be conceived. The public officials of Lyme, too, seem to trust that visitors will also take care of themselves. They have what by courtesy is called the Parade,—a gravel walk by the side of the sea much more charming than parades as usually known,—but though it is some little height above the shore, it is unprotected by any railings, so that a child or a drunken man will no doubt sooner or later break his neck by falling over it. Half way to Charmouth, too, a landslip has fallen, thus leaving a space of thirty yards of the high road with a precipice of some height within a foot of the metalled surface of the road. But with admirable forethought, a person ere he approaches this decidedly unsafe place,—to use a mild word,—is aware of a competitor with one of the telegraph-posts, and after straining his neck to see what can be on the top, he reads,—"By order of the Commissioners. This road is dangerous." When some driver with a shying horse is precipitated over this little precipice, no doubt his lamenting relatives will feel gratified by knowing that on a top of a high pole the local authorities had announced that the road was dangerous. Some might think it would have been well to have purchased another pole, and, instead of erecting them in the air, have placed them by way of a barrier where the road was unsafe. But this, perhaps, would savour too much of modern enterprise. Thus we think there are many to whom Lyme will well repay a visit. Let us conclude with a telling description by a classical English writer, Miss Austen,—a description which those who recollect how much of her story of "Persuasion" passes at Lyme will remember:—"There is nothing to admire in the buildings themselves; the remarkable situation of the town, the principal street almost hurrying into the water; the walk to the Cobb, skirting the pleasant little bay; the Cobb itself, its old wonders and new improvements, with the very beautiful line of cliffs stretching out to the east of the town, are what the strangers will seek; and a very strange stranger it must be who does not see charms in the immediate environs of Lyme to make him wish to know it better. The scenes in its neighbourhood, Charmouth, with its high grounds and extensive sweep of country, and still more its sweet retired bay, backed by dark cliffs, where fragments of low rock among the sands make it the happiest place for watching the flow of the tide, for sitting in unwearied contemplation; the woody varieties of the cheerful village of Uplyme, and, above all, Pinney, with its green chasms between romantic rocks."

Miss Austen touches on places in the n bourhood of Lyme. We may add to her l mentioning Sir Henry Peek's new buildin Rousdon, a couple of miles or so on the E road, placed on a plateau, with wide views the English Channel. For any one interes the Old English style of architecture the is worth a visit: the houses and outbuil the lodges, the home-farm, and the g buildings, all quite close to one another, f very complete *tout ensemble*.

A CHRISTIAN "ACROPOLIS:" ERFU GERMANY.

The "Acropolis," or high place of the c ancient times was not only the citadel, bu the site of the chief temple; thus, at Ro find the loftiest hill crowned by the s Temple of Jupiter Capitolinus, and calle "Ara Cœli," or Altar of Heaven.* At A the Acropolis contained several templ which the Parthenon and Erechtheum we most celebrated. Mount Zion was crown the Temple of Jehovah, and various passa Scripture serve to show us that the dedi of high places to religious purposes was n heathen superstition, but one of the e instincts of piety implanted in the heart o and one which has for its authority and ex the practice of the Author of our religion self. This being so, it is not remarkab Christians during earlier times, and in the Ages, so frequently erected churches up highest hill of the city, which was ge surrounded by walls of defence: thus we at Durham a complete example of a Chr acropolis, whilst, in Ireland, the "R Cashel" offers another example. Cl Le Puy, Beziers, and Carcassone, in Franc Sion, in Switzerland, are also excellent ples. To name those that occur in Italy occupy more space than we have at o posal. Those, however, who know Rom can call to mind the striking situations Pietro in Montorio and St. Onofrio.

Examples of the Christian acropolis a very numerous in Germany. At Feisi Bavaria, a great rock rises from near the of the town, crowned with the cathedral, k palace, and four churches. At Naumbe somewhat similar eminence. Limburg Lahn is also a beautiful example; but p the most striking example of a Christia polis in the whole of Germany is the gr called the Marienburg at Erfürt. This n markable natural platform is about 60 f completely isolated on every side, an rounded by a perfectly level plane, whic rates it from the rest of the town. Ab yards to the north is another somewhat eminence called the Petersburg; ther great similarity between these two hills centre of the town of Erfürt, and the Ca and Palatine hills of Rome. Both the Pete and the Marienburg are crowned with chu but as the former has been converted modern citadel, the towers and spires formerly adorned the church of St. Pete its summit have been destroyed, thou church itself still exists. The Marienbu been more fortunate, and retains its magn crown of spires. The most important b upon the Marienburg is the cathedral remarkably interesting church consists of and very lofty choir (1349—1354), shor septs, a nave and aisles, covered by one mous roof. Between the transepts a choir two bays of a former church exist, by lofty Romanesque towers, which octagonal at about half the height. A third crowned with an octagon lantern, is bui the bays. There is a magnificent tri porch opening into the north transept, and sive cloisters, with a large apsidal chapel c out of the eastern walk. Upon enteri cathedral by the west doorway, the view appointing, the nave is rather poor fi century work, and has neither great l nor admirable proportions to make up poverty of the detail. The plan of this of the building is extremely ugly. Thi are each double the width of the nave and of the same height. The square vaulting is taken from the width of the and when applied to the nave it forms

* Other sites have been suggested for this te that of the Ara Cœli seems the most probable. It is by some that the temple of "Jupiter Feretrius" the "Ara Cœli."


H.W.Brewer 1879


A. BERRY.

long compartments running with the axis
e nave. We do not recollect to have met
this treatment in any other vaulted church;
effect is certainly most unpleasing. The
epts are better architecture than the nave,
ook well on account of the row of handsome
s on their eastern sides; two of these altars
from the fourteenth century, and one of
has been illustrated in this journal; the
ays of the old Romanesque nave, which
ow and very narrow, connect the transepts
the choir, which is entered through a rather
and narrow arch, fitted with a remarkably
iful screen of wrought-iron dating from
fteenth century. The first glimpse of the
seen through this screen is truly magnifi-
it is excessively lofty, and lighted with
b Decorated windows filled with most
nt fourteenth-century glass in a perfect
of preservation. Below the side windows
anopied stalls, which, although partly
rn, retain enough of ancient work and
ng to make them interesting. Beyond the
on the north side is a splendid credence,
a reredos covered with paintings said to
Van Eyck. The high altar and reredos
oor Renaissance productions; but in front
e altar is a very fine triple candlestick,
g from the earlier part of the twelfth cen-

s church contains several interesting monu-
s, some of which consist of stone effigies
thops carved in low relief, with the mitres,
, and croziers let in in bronze; there is also
y beautiful little monumental tablet of
e, by Peter Vischer. The font and stone
tery, and canopy above it, are of a singular
, resembling slightly the English Jacobean
One of the most remarkable features of
athedral is the magnificent porch to the
transept; this very beautiful structure is
n an equilateral triangle, and is externally
tories in height. The lower story is
d by double doorways; and the upper
four-light windows; the whole is crowned
ipire of lead.
cloisters are good examples of German
d of the latter part of the thirteenth
y. The east wall is double, and has a
chapel opening out of it. There are two
, one above the other, under the choir.
l at an angle of 45 degrees to the north
cathedral is the Church of St. Severus,
nced in the year 1278, but the greater
not erected until the fifteenth century.
ave has four aisles, and the choir externally
a group of three towers, with an apse
ting from the centre one. It is a remark-
interesting building, containing some
ingly good furniture.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

ATION OF THE ARTISANS' DWELLINGS ACT.

the ordinary meeting of this Institute,
Monday evening last, Mr. Charles Barry,
ent, in the chair, the following members
alloted for and declared to be duly
d, viz.:—As *Fellow:* Mr. William Henry
of Bristol. As *Associates:* Mr. Spencer
n Grant, London; Mr. Walter Wheeler,
n; Mr. Robert Clamp, Hull; and Mr.
Steane, Coventry. As *Honorary Asso-*
Sir F. P. Cunliffe Owen; Mr. H. S.
R.A.; Mr. E. J. Poynter, R.A.; and the
Hon. R. A. Cross, M.P., Secretary of State
Home Department.
Secretary, Mr. William H. White, read
etters received from public bodies rela-
the subject of Sir James Watson's paper.
etropolitan Board of Works, in answer to
r from the Institute asking the Board to
t them with sets of plans of the Board's
es under the Artisans' Dwellings Act,
o say that they had pleasure in comply-
h the request, and in sending, in addi-
e deposited plans of the proposed Tower
; plans of building sites to be let by the
with conditions of letting; and a map of
etropolis showing the areas condemned
the Artisans' Dwellings Act. A letter
he Corporation of the City of London was
ad, stating that Mr. William Haywood,
gineer to the Commissioners of Sewers,
repared plans showing the areas con-
d under two important schemes within
ty boundaries, and which the Commission
ready in hand, other schemes being under
eration. The Local Government Board wrote, enclosing a report of Messrs. Ratcliffe and Mr. P. Gordon Smith on "back-to-back" houses, but expressing regret at their inability to have copies made of the plans referred to in the report.

Mr. George Vulliamy, Superintending Architect to the Metropolitan Board of Works, said that the Board had given instructions to him to send to the Institute all plans of their improvements, whether "local" or "metropolitan," and of schemes under the Artisans' Dwellings Act; also plans of building sites to be let by the Board, together with the conditions of letting,—which latter, he thought, were very good.

Sir James Watson then read a paper entitled "Improvements in Glasgow, and the City Improvement Acts: Origin of the Artisans' Dwellings Act." Of this paper we print the substance on other pages.

In the discussion which followed,

The President observed that it seemed to him that the most important part of the question with which Sir James Watson had dealt was contained in the latter part of his paper, and had reference to the dwellings of the very poor. Sir James's paper showed how to solve the great problem of diminishing overcrowding by demolishing insufficient, dilapidated, and unhealthy buildings, and replacing them by dwellings which the poor could afford to pay for, and which were healthier and better. In London, the great difficulty was how to house the very poor; indeed, the difficulty was insuperable, and could not be overcome by companies such as that over which Sir Sydney Waterlow presided, inasmuch as the provision of adequate and healthy dwellings for the very poor, at the low rents which they were able to pay, was not commercially remunerative. Experience had shown that there was no difficulty in housing the artisan classes at remunerative though cheap rates. The various companies and societies which were doing this were doing a great work, and they ought to receive every possible encouragement at the hands of public bodies and local authorities. For instance, companies such as that over which Sir Sydney Waterlow presided ought to be helped by the Metropolitan Board of Works in the acquisition of sites at a cheap rate, in consideration of the advantages which their operations conferred upon the community. Indeed, it would probably be found to be a paying policy in the long run to give away the sites for such buildings, in order that the poor might be properly housed. Again, the gas and water companies should remember that they had social duties to perform, and that they ought not to charge for gas and water supplied to large blocks of model buildings on anything like the same scale as that which was applied to ordinary houses. If some such ameliorative principles as these could be laid down, he thought Mr. Cross's Artisans' Dwellings Act would have some chance of that speedy success which was essential to meet the wants of the poor of the metropolis; and he believed that the public at large would feel the benefit of these seeming sacrifices in the saving of the spread of disease, crime, poverty, and wretchedness which was otherwise inevitable, as had been shown by Sir James Watson. In conclusion, the chairman called upon Mr. M'Cullagh Torrens, M.P., who had, in the current number of *Macmillan's Magazine*, shown how the Act of 1868 could, with certain modifications, be made a much more successful and useful measure than it had hitherto been.

Mr. McCullagh Torrens, M.P., said that although no doubt the public bodies referred to, and the companies and societies similar to those over which Sir Sydney Waterlow presided, could do and had done something in the matter, their efforts must continue to be utterly inadequate to meet the necessities of the case. What was wanted was the ready and effective assistance of Parliament. Sir Thomas Chambers and Mr. Goldney were now co-operating with him in asking Parliament to reconsider the question this session, and to amend the Act of 1868 with which his (Mr. Torrens's) name was identified, although it was not passed in the shape in which he introduced it, inasmuch as it was altered in its passage through Parliament, until its effect was to destroy without rebuilding; in other words, it allowed local authorities to use the pick-axe, but withheld the trowel. The result, after a lapse of eleven years, was that acres upon acres of ground (sites of former unhealthy dwellings which had been cleared under the Act), were now lying vacant, and that in the most thickly-built localities. The very fact that this was the case was a great scandal, and he would leave it to every one, whatever his political and social leanings might be, to judge what must be the terrible effect upon the minds of the men, women, and children who, more densely packed in their miserable rooms than before the operation of the Act, could look daily and hourly upon the waste ground created by law,—ground which formerly afforded roof-age and shelter of some sort, however bad. He ventured to appeal to the Home Secretary, to whose keeping were confided the safety and good order of the metropolis, to go and visit, either in person or by his inspectors, the more-than-ever overcrowded tenements in the neighbourhoods where there were vacant sites formerly occupied by unhealthy dwellings, and he would there see where the seeds of anarchy, disorder, and unbelief,—everything which we had to apprehend in the future,—were being sown. It behoved all interested in this question to use their utmost influence in urging Parliament not to let another session pass without doing something towards providing an effective remedy for this state of things. The Bill which he, in conjunction with Sir Thomas Chambers and Mr. Goldney, had introduced into the House of Commons was intended to supply the defects and omissions of the Act of 1868. They, however, were not wedded to words, and if the Bill could be improved and made more effective so much the better. But whatever was done must be done without delay, for masses of the people were, through the supineness of Parliament, living in a state of horrible and miserable aggregation, as he should show the House of Commons on the 7th of May. The efforts which had been made by Sir Sydney Waterlow's company and Lord Shaftesbury's association were very commendable, and agencies of that kind could do much where the local authorities were willing to co-operate; but what was wanted to cope with the evil was to impose upon local authorities the duty to systematically remove all unhealthy and hopelessly dilapidated dwellings, and to facilitate their replacement by habitable tenements. He was of opinion that this duty would be better performed by the various local vestries and district boards than by a central body such as the Metropolitan Board of Works, and therefore the Bill now before Parliament would, in that matter, proceed upon the lines of the Act of 1868, the principal alteration being, that whereas the Act of 1868 only gave power to demolish unhealthy dwellings, the Bill of 1879 proposed to impose the duty of facilitating the erection of new dwellings to take their place. Mr. Cross's "Artisans' Dwellings Act, 1875," though an admirable and very well-intentioned measure, could not, after an experience of four years, be said to have effectually met the requirements of the case. It was one of the cruellest pieces of hypocrisy imaginable to sanction the removal by wholesale of the dwellings of the poor for railway and street improvements, or to compel the removal of unhealthy dwellings on sanitary grounds, and then to say that the working-man "went out of town" to live. The only effect of such wholesale demolitions was to aggravate the evil of overcrowding, for to large masses of the working population it was vitally essential that they should live within easy distance of the factories and shops in which they were employed.

Sir Sydney Waterlow, M.P., said that he had learnt a great deal from Sir James Watson's interesting paper. He and others in London had been working in endeavouring to solve this question for almost as many years as Sir James Watson had been studying the question in Glasgow, but in London they could not claim to have attained success to the extent to which it had been achieved in Glasgow. He quite endorsed all that had been said by Mr. Torrens as to the dreadful desolation and waste going on in and around the homes of the poor through ineffectual legislation. In fact, it would seem as though progress in this direction in London had almost come to a dead-lock. Many years ago he appealed to the Court of Common Council to try to do something with the waste spaces cleared some forty years ago under the Clerkenwell Improvement Act, but without success; and some of the ground was still lying idle, though situate in the very heart of London. Had the land been given away, or sold at a very cheap rate, for the erection of blocks of workmen's dwellings, the ground-rent which would have accrued during all those years, and the improvement in the rateable value of the property which

would have resulted from its being covered with buildings, would have amounted to more money than was ever likely to be got for the land now. Under the Metropolitan Streets Improvement Act of 1872, eleven sites were set apart to be occupied by dwellings for the working classes in replacement of those taken down in the carrying out of the street improvements. Seven years had elapsed, but only three of the eleven sites so set apart for the erection of artisans' dwellings had been let. The buildings on two of the sites were in occupation, and those on the third site would shortly be tenanted. It would be asked, "Why have not the other sites been utilised?" The Metropolitan Board of Works had put them up to let time after time, and had spent a great deal of money in advertising and giving every possible publicity to the fact that the sites were to be let for the erection of workmen's dwellings, but they had not been able to obtain the price they wanted for the land,—simply because they thought fit to make that price such as to be prohibitive of the profitable erection of workmen's dwellings as a matter of commercial enterprise. But during the time that land had been to let, the Improved Industrial Dwellings Company had been able to secure from private owners sites suitable for the erection of workmen's dwellings at prices less than those asked by the Metropolitan Board for land in the same vicinity. Of course he was well aware of the fact that the Board had a public duty to perform in the interest of the ratepayers, but he contended that the course taken by the Board in reference to this matter was detrimental to the ratepayers' interests. The improvement of the assessment consequent upon the erection of large blocks of model dwelling-houses in place of the dilapidated property removed would be worth more than the whole price put upon the land. But the Metropolitan Board of Works was an aggregation of the representatives of metropolitan vestries and district boards of works, and the representatives were apt to take a very narrow view of these large questions. It would be of no use to tell the representatives of Kensington, for instance, that they ought to vote for a motion authorising the letting of sites in the possession of the Board in Bethnal-green at a rate low enough to admit of the profitable erection of artisans' dwellings, on the ground that the rateable value of the last-named parish would be increased by some thousands of pounds. Sir James Watson had stated that the land cleared in Glasgow under the operation of the Improvement Trusts was obtainable for the erection of workmen's dwellings and lodging-houses at 30s. a yard, and that 40s. was the highest price that could be afforded for land for such a purpose in Glasgow. But such prices were only about the minimum of those paid in London. The Improved Industrial Dwellings Company had offered to the Metropolitan Board twice as much money for land,—much more than was asked by private owners,—but had been informed that the prices offered were not considered sufficient. Sir James Watson had shown that in Glasgow they could not afford to pay more than 3s. 4d. a foot,—equivalent, at twenty-five years' purchase, to a rental of 1½d. per foot per annum,—but the Improved Industrial Dwellings Company had paid at the rate of 3d. per foot; for in some cases, where the whole area of the site obtained could be built over to the desired height without interference with the rights of adjoining owners to the enjoyment of ancient lights, &c., it would pay to give that price for land on which to erect blocks of artisans' dwellings. Sir James Watson had stated that in Glasgow they proceeded on the principle that the demolition should be very gradual, and that, in fact, the erection of the new and improved buildings proceeded faster than the demolition of the old buildings. It was greatly to be desired that we could bring about such a state of things in London, and he thought that if Parliament would withhold the power of demolition until there was some evidence of reconstruction it would be doing a good work. Overcrowding had only been intensified by the operation of the Artisans' Dwellings Act. Another point in Sir James Watson's paper was well worthy the attention of Mr. Vulliamy and the Metropolitan Board of Works, and that was, that the ground cleared in Glasgow was disposed of by public auction. Now that was the very thing for which people in London were asking. It should be put up to auction three times if the Board thought it necessary, and then it should go for what it would fetch,—which would be its market value for the particular purpose of building artisans' dwellings. There were at present eleven sites at the disposal of the Board for the erection of artisans' dwellings. How long would it be before those sites were covered with cheerful, well-ventilated houses for workmen and their families? The Board should be compelled by Parliament to let the land at its market value as sites for blocks of workmen's dwellings. Instead of it being enacted that the Board "may" let the land, it should be enacted that they "shall" let it. Of late years the word "may" had been used far too frequently in Acts of Parliament. He quite endorsed what had been said as to the question of water supply to large blocks of model dwellings. At present the water companies had by far too much their own way, and their conduct was arbitrary in the extreme. Sir James Watson and the municipality of Glasgow were to be congratulated upon the success which they had achieved, and he (Sir Sydney) hoped that London would in the course of a few years be able to boast of a corresponding amount of success. But the success that had been achieved already had been to a great extent owing to facilities for borrowing money at a cheap rate, and he was therefore sorry to say that by the Public Works Loans Bill, now before Parliament, insuperable difficulties were raised to the borrowing of money by imposing terms of repayment which for the first twelve or fourteen years would absorb more than the 5 per cent. which the money was capable of earning when invested in artisans' dwellings. If the Bill referred to became law, it would, unless the Labouring Classes' Dwellings Act of 1866 were exempted from its operation, put a stop to the beneficent work in which his company and kindred societies were engaged for the provision of cheap and healthy dwellings for workmen as a matter of commercial enterprise.

Mr. George Vulliamy, Superintending Architect to the Metropolitan Board of Works, said that the Board was as anxious as Sir Sydney Waterlow or anybody else could be to see the vacant sites in question covered with dwellings for the working classes. It was not for him, as an officer of the Board, to question its policy, but he might mention that he had recommended that the sites should be put up to auction, as he believed that would be the best course to pursue. The schemes submitted to the Board under Mr. Cross's Act] were originally twenty-two in number, now reduced to seventeen. The proceedings in connexion with these schemes were in various stages of progress, and the only clearance of old buildings yet made was on one-half of the area included in what was known as the Whitechapel and Limehouse Scheme.

Mr. Horace Jones, the City Architect, said that the Corporation of the City of London had erected two blocks of dwellings for artisans, viz., Corporation Buildings, in Farringdon-road, and Viaduct Buildings, off Charterhouse-street. The Corporation had not been so fortunate as Sir Sydney Waterlow's Company, for the first-named block of buildings only paid 4¼ per cent., and the other block barely 4 per cent. In the latter case, it was true, the tenements were largely occupied by married policemen belonging to the City Police Force, from whom the Corporation did not exact quite so much rent as would be readily paid for the same accommodation by other tenants. The land for both these blocks of buildings cost about 6d. per foot per annum,—a price which would not admit of a fair return on investments in this class of buildings.

At this point the discussion was adjourned until Tuesday evening, when there was a very small attendance.

The President again occupied the chair, and in re-opening the proceedings referred to the extraordinary delay and half-heartedness which seemed to characterise the proceedings of the Metropolitan Board of Works in carrying out the provisions of Mr. Cross's Act. Sir James Watson, in his paper, had said that it did not pay to erect lodging-houses for the very poor in Glasgow on land which cost more than 30s. per yard, or 3s. 4d. per foot, which, divided by twenty-five years' purchase, would give about 1½d. per foot per annum. The Glasgow people seemed to have satisfactorily solved the problem of providing lodgings which, while within the reach of the very poor, gave a remunerative return on the outlay. This was a most pressing question in London, and any further information which Sir James Watson could give would no doubt be of great use in that connexion. It would l resting to know what was the cost of maintenance in proportion to the gross received from such buildings in Glasgo what was the per-centage of "empties" occupied apartments per year; how the q of damages done by tenants was deali what was the mode of supervision, and it and whether the floors were fireproo should also like to know what was th space allotted to each individual inmat in regard to the tenement dwellings of o or three apartments, how overcrowdir prevented. In the various blocks of dwellings in London great care was at the outset that only the proper nu persons should be permitted to occupy s ing; but what was to be done when the increased, and when the children gr towards adolescence? Was the family turned out on that account? Such seemed to be very hard, and yet th crowding of the dwelling by allowing inhabited by a greater number of perso it could healthily accommodate was per great an evil.

Sir James Watson said he would r some of the questions put to him. He t that it was considered by the buil Glasgow that it would not pay to erec buildings as he had described in his unless they could procure ground at 3 yard; but then he ought to say th looked for a return of 6½ or 7 per ce was unable to give the particulars aske to cost of maintenance, &c., inasmuch Improvement Trust sold the sites cle builders, who erected the blocks of d as their own speculations, and manage themselves, so that they alone could g cost of maintenance, supervision, &c. T were not fireproof. Overcrowding of te was prevented in Glasgow by a staff of ins who were empowered by the Glasgow P to enter any house in which there w more than three apartments between t of eleven o'clock at night and three morning, and persons offending by their tenements to be overcrowded w moned before the magistrates and fined. however, it was found that the overc was due to the natural increase of the very great leniency was shown, and t were only rigidly enforced when the o caused the overcrowding by taking in The model lodging-houses such as he scribed for single men and women tremely well. He was connected association which established three houses, two for men and one for wome of these lodging-houses accommoda inmates, and the charge was 3d. per 1s. 6d. per week, including the provision and towels and cooking utensils, and th a reading-room. Latterly the charge 3½d. per night, or 1s. 9d. per week. A of a period of thirty years they had bee pay to the persons who contributed t 5 per cent. per annum for the whole of riod, and to hand over to the Royal I a sum of 16,000l., those who found th agreeing at the outset not to take dividend than 5 per cent. For the fi or four years, however, no dividend wa the time. He had not the slightest do such model lodging-houses as he had d in his paper would pay very well in th polis if placed in suitable localities, and managed.

Mr. Honeyman, of Glasgow, said it w borne in mind that the Corporation of had not itself engaged in the erection of model dwellings for families, but on provision of model lodging-houses for si and women. [Sir James Watson, in ans suggestion made by the president, here he should be happy to send to the institu information he could as to the cost of erec maintenance of these lodging-houses in G Mr. Honeyman, continuing, said he sho to restrict himself to the somewhat un task of fault-finding, although the which he did so would not be misun by Sir James Watson, nor, he hoped, by else. But, first of all, he should like to a pleasing circumstance in connexion improvements which had been carri Glasgow. When the Improvement obtained, and the areas decided upon, t Council asked five or six Glasgow archi whom he had the honour to be one) to g

professional opinion as to the way in
h the selected areas could be dealt with
he best advantage in the laying-out of
ts and the erection of new buildings
ifferent kinds. Each architect received
honorarium for his trouble. He men-
d this because he thought it afforded
xample which might worthily be followed
her corporations and public bodies. One
which he took occasion to speak of pub-
in 1866, when the Act was obtained, was
one of the greatest advantages which
t be effected under the operation of the
would be missed altogether if it were not
d out in such a manner as to insure that
siderable part of the areas dealt with
d continue to be occupied by the very
t. He thought that object had not been
d. The policy of the Glasgow Improve-
Trustees had been rather to disperse the
ation to newer and better localities, and,
urse, a great deal could be said for such a
, although he considered it to be a great
ke. The working population of a great
like Glasgow should be concentrated as
as possible in the neighbourhood of the
in which they were engaged, as their
sal to a distance involved great hardships.
s a mistake to suppose that density of
ation was necessarily an evil. It was, of
e, palpable to any one who had seen the
closes" of Glasgow, with their huge
ents erected on each side of a narrow
having a width of from 4 ft. to 7 ft.,
ut the slightest regard to sanitary con-
ces in any way whatever, that in such
the density of population would be accom-
d by an exceedingly high death-rate. But
h large buildings were properly planned
onstructed, the experience of Glasgow and
on had shown conclusively that a larger
ation might be housed in such buildings
given area, without detriment to health,
had previously overcrowded the slums
were displaced by the new buildings.
hairman had suggested that the water
ies should partially remit their charges in
that cheap dwellings might be provided
e poor at a remunerative rate; but he
Honeyman) thought that commercial com-
could hardly be expected to do that.
where, as in Glasgow, the gas and water
was in the hands of the Corporation, he
t that such blocks of dwellings might
be supplied at a reduced cost. He did
ink, however, that it was advisable for
ations to build houses for the working-
s with rates which they levied from the
unity, if they could possibly gain their
by any other means. He agreed with
airman in thinking that public bodies
s the Metropolitan Board of Works might
ably be expected to facilitate the erection
olesome dwellings for workmen by grant-
nd at reduced rates, and by holding out
inducements. But if they did not see
way to give direct encouragement in the
on indicated, municipalities and other
could, at least, withhold the discourage-
caused by the imposition of unnecessary
tions upon building. For instance, in
w, every room was obliged to be not
an 10 ft. high. Probably Sir Sydney
low's Company would not have suc-
had such a rule obtained in London. On
ole, he did not think that the difficulty had
en solved. The model lodging-houses of
w, excellent as they were, did not provide
gs for families of the poorer class. As to
t of the Glasgow buildings, his impression
at it was about 6d. per foot cube. It had
d to him, on hearing the remarks of Sir
Waterlow, that if the buildings erected
Improved Industrial Dwellings Com-
ould be made to pay a dividend of 5 per
n face of the fact that in London land
om 3*l.* to 5*l.* per yard, as against 30s. in
w, there must be some lesson which
n was able to teach Glasgow, unless the
gs put up in London cost a great deal less
t. per foot.

Chairman said he was enabled to give
t per foot cube of the sixteen blocks of
gs erected by Sir Sydney Waterlow's
y between the years 1865 and 1874.
eapest block was built for 5d. per foot
and the most expensive one cost 8¼d.
ces of the sixteen blocks per cube foot
s follow:—6¾d., 6¾d., 6¼d., 6¼d., 6¼d.,
¼d., 7¾d., 8¼d., 6¾d., 7d., 6d., 6¼d., 5d.,
and 7¾d.,—the average price being 7d.
per foot cube. The Victoria Dwellings at Battersea, for which he (the chairman) had been concerned as architect, cost 7¼d. per foot,—without the provision of a separate water-closet to each tenement. The tenements varied in the number of the rooms they contained. They were mostly two, three, and four-roomed tenements, but there were some single-roomed tenements, each of which was fitted with cooking-range and sink. There was a water-closet in common to the occupants of every four tenements. He knew that objections were urged against this plan, but to provide a separate water-closet to each tenement would be, he thought, a refinement of delicacy, and it would certainly add materially to the first cost and to the cost of supervision and maintenance.

Mr. Smith said that in some of the blocks of artisans' dwellings which had been erected in many of the provincial towns, especially in the North, it was customary to locate the water-closets in nests or clusters in separate blocks between the living-rooms, and he believed that when properly managed nothing could be more satisfactory. He was under the impression that there was some more recent statute under which, if the land acquired under the Artisans' Dwellings Act were not appropriated for the purpose of erecting workmen's dwellings within a period of three years after it had been cleared, it could be appropriated to the erection of other buildings.

The Chairman read a letter which he had received from Mr. Wyatt Papworth, stating that he understood there was some such subsequent Act or clause. "It has been, I hope ill-naturedly suggested" (continued the Chairman) "that the ground is offered, or pretended to be offered, at a forbidding price, so as to keep it vacant for three years, when this clause will become operative, and, in other words, the purpose of the original Act will be entirely defeated."

Mr. George Jennings, then, on the invitation of the chairman, proceeded to describe one or two of his specialities applicable to blocks of model dwellings. He first of all called attention to his well-known patent sink, which is made of galvanised iron, somewhat deeper than the ordinary stone sink. By a very ingenious yet simple arrangement, the sink is convertible at will into a trough for washing clothes, vegetables, plates, and dishes; and it will also serve as a bath for the baby, and as a lavatory for an adult. This sink has been, and is being, largely used, and is fitted up in the Victoria Dwellings at Battersea Park, where we hear that it is much appreciated. Mr. Jennings also called attention to a very ingenious water-waste preventer, automatic in its action, and entirely obviating the use of the small cisterns,—frequently out of order,—which are generally known by that name. The third contrivance to which Mr. Jennings drew attention was a new form of trapless water-closet.

Mr. Mark H. Judge expressed the opinion that the failure to make progress in carrying out the provisions of the Artisans' Dwellings Act and similar statutes was due to the absence of anything like a proper system of municipal government for the metropolis. Glasgow had shown what good local government could do.

Mr. Charles Fowler said he had been surprised to hear Mr. Torrens express the opinion that the various local vestries and district boards could be best entrusted with the duty of carrying out the provisions of his Act. He (Mr. Fowler) should have thought that such a work could only be safely entrusted to a central body. He thought that it was abundantly proved that artisans' dwellings could be profitably erected, and stated that a speculative builder, in a district of London with which he (Mr. Fowler) was well acquainted, had found it worth his while to give as much as 7d. per foot per annum for ground, upon which he had erected some fairly-well built and planned dwellings.

After a few remarks from the Chairman,

Sir James Watson, in replying on the whole discussion, admitted that the subject was surrounded by very great difficulties. He thought that Mr. Torrens's Act, even as he proposed to amend it, would be imperfect in so far as he entrusted its administration to the small local authorities. Possibly the difficulty might be solved for London by the creation of a body of Improvement Commissioners, drawn partly from the Office of Works, partly from the Metropolitan Board, and partly from the vestries.

A vote of thanks was tendered to Sir James for his valuable paper.

WAGES AND STRIKES.

The strike of the Durham miners draws attention markedly to the wages of the miners and to the manner in which wages have been for some time regulated. There has been very considerable discussion as to the exact wage earned by the miners in Durham; but it seems clear that at pits where the county average has been earned, and where the full amount of time has been made, the average daily wage earned is a fraction over 5s., and remembering the state of trade and the low price of coal,—a price almost without parallel,—this must be said to be at least a fair average wage. In Durham the difficulty has not so much been the lowness of the rate of wage; but the fact that with that rate of wage there has been a want of the working of full time. Hence, although the average wage is fair, and probably above that of the generality of our coal-producing districts, the actual earnings of the miners have not in all cases been commensurate. Indeed, the amount of the actual earnings of the miner has largely depended upon the class of coal turned out, the demand for coal for coking purposes being constant and not very much diminished, whilst there has been of recent years a very great declension in the demand for manufacturing coal. On the other hand, the demand for household coal has been steady, and there is slow but constant growth in the demand for gas coal; but in both these there has been for some time an over-production, production that is in excess of a diminished demand, because in the time of prosperity in the coal trade there were many collieries opened out. Hence prices are rather forced down for these kinds of coal, and the owners of household collieries have of late especially felt the dulness of trade and the very low prices that have ruled.

As one instance of the low prices that rule for coal, it may be said that whilst one of the chief of the gas companies of the North paid about 11s. per ton for coal used in the year 1875, in the following year the price of coal had fallen to 9s. 5d. In 1877 it was 8s., and last year the average was 7s. 4d. per ton for gas coal delivered, so that from prices comparatively low there has been a very considerable declension. It may be added, too, that whilst the average price of the whole of the coal raised by the associated coalowners in Durham was, in 1873, close upon 16s. per ton, it fell to 10s. 2d. in 1874; to 6s. 6d. in 1875, and to 4s. 8d. at the present time,—the average, including coal of all classes, raised and sold at the pit mouth. It is long since coal fell to prices so low, and therefore it was inevitable that there should be with it a very considerable reduction in wages of the miners producing coal thus lowered in price. Wages in Durham have been for two years stationary, because of the operation of a minimum clause in the sliding scale. When that arrangement was entered into coal-owners and miners generally were of that opinion that coal had reached its lowest level, and hence the addition of the minimum clause to the arrangement. Prices, however, fell; and hence employers, when the time for the renewal of the sliding scale approached, expressed the opinion that a necessary preliminary to that renewal would be a rearrangement of the datum line of that scale. It is on the amount of the fall, which is inevitable, that the Durham strike has arisen.; the employers claiming a reduction of 20 per cent., and the miners offering 7½ per cent. Previously to the establishment of the sliding scale, disputes in relation to wages in Durham were referred for some years invariably to arbitration; and whilst both coalowners and miners affirm their willingness to submit their claim in whole or part to arbitration, there is still a difference between the two,—the miners contending that the whole question should be referred to the arbitrament of an umpire, whilst the coalowners are willing to accept a reduction of 10 per cent., and to refer the remainder of the claim to arbitration; but it is evident that in whatever method the dispute may be settled it must ensue in a partial reduction of wages.

Durham produces nearly half a million tons of coal weekly; and hence the strike has produced a very considerable effect already. A very large proportion of the coal raised in Durham is consumed for purposes of metallurgy,—the consumption of coke being especially large both for the Cleveland blast-furnaces and for those at Barrow-in-Furness and in Lincolnshire. Thus dependent upon the supply of coke from Durham, the blast-furnaces were early affected, and through them the iron-mines of Cleveland

and the limestone quarries of Weardale,—the great industries of the North being naturally interdependent. For a time supplies of coal and coke were drawn to some extent from the few collieries working, supplemented from stocks in hand, but these resources were naturally limited, and "slack-blast" and "damping-down" were inevitably resorted to by the owners of some blast-furnaces.

One of the peculiar features of the Durham coal trade is the position of the unassociated coalowners. They were not bound by the sliding-scale arrangement, and taking advantage of the state of the labour market they obtained reductions in the amounts paid for labour to a considerable extent. And when the associated coalowners gave notice of a reduction, no notice was given by those outside the association, so that their workmen continued working after the general suspension of labour at the associated collieries; but when the workmen's strike became a patent fact the workmen at the collieries not in the association very generally gave in their notices to leave, and worked them out. It is evident that these unassociated collieries form a source of weakness to the united action of the employers, for they take advantage of the associated action, and also of whatever the state of the market allows. It is, therefore, a problem by no means easy to solve, how in an industry like that of the Durham coal trade wages should be regulated. The old barbarous method of strikes is of all the most costly; and the panacea of arbitration so often urged is slow in action, and not economically brought about. The most feasible suggestion is that of a sliding-scale free and unfettered in its operation, for the working of coal is an industry in which the value of the labour is not so much affected by extraneous matters as in some other trades. The price of coal at the pit-bank is easily ascertainable; and there is not that change in the value of the product of a given colliery that there is in the product, for instance, of some of the ironworks, where it has been once or twice attempted to introduce a sliding-scale. Such a method of wage regulation by the fluctuations in the price of the product of the labour is as nearly costless as possible; it is tolerably rapid in its execution, and it has the further advantage of being generally free from abnormally rapid action. But whether by this, or by any other means, there will unquestionably be a greater need now than ever for the devising of some means of prevention of, the trade wars such as that which has so materially affected the North.

S.

NEW BUILDINGS IN ST. MARY AXE.

Two large blocks of new buildings of a mercantile character are about to be erected in the neighbourhood of St. Mary Axe, in the City, where several piles of warehouses and offices have recently been built, clearing away a considerable extent of old buildings, and altogether changing and improving the architectural character of this part of the City. Preparatory to commencing the additional new buildings about to be erected in the locality, Messrs. Horne, Eversfield, & Co. have this week had two extensive sales of building materials, in order to clear the sites. The first sale consisted of the materials of a number of houses, shops, warehouses, and other premises in St. Mary Axe proper, upon the site of which new buildings are about to be erected from the designs of Mr. George Low, architect, Basinghall-street. The second sale consisted of the materials of a block of warehouses in Bury-street, St. Mary Axe, the site to be replaced by a block of new buildings, for which Messrs. Hammack & Lambert, of Bishopsgate-street, are the architects. Both sales were numerously attended by purchasers of this description of building materials.

Employers and their Servants.—At the "Law Amendment Society," 1, Adam-street, on Monday evening next, the 28th inst., a paper will be read by Mr. Joseph Brown, Q.C., "On the Bills before Parliament for extending the Liability of Public Companies and other Employers for Injuries to their Servants, arising from Accidents, viz.,—1. The Attorney-General's Bill; 2. Mr. Macdonald's Bill; 3. Earl de la Warr's Bill; 4. Mr. Thomas Brassey's Bill." A discussion will follow the reading of the paper. Mr. Thos. Brassey, M.P., will preside.

STONE *v.* TERRA COTTA.

At the twelfth annual convention of the American Institute of Architects, a discussion ensued as to the advisability or otherwise of using terra cotta, some notice of which we obtain from the report in the *American Architect*:—

Mr. Stone, referring to a passage in a paper recently read, which spoke of the smallness of the pieces of terra cotta as a reason why stone was preferable, said that he had lately used terra cotta in large pieces for window-caps, and in other places, and found the work, in some cases 6 ft. or 7 ft. long, well and uniformly burnt, straight and free from distortion, and of great strength. He could not see why burnt clay should not replace stone, especially in fire-proof construction, for which it was particularly adapted. Where used in connexion with brick, either perfect similarity or striking contrast of colour could be obtained at pleasure, and it would seem that the modelling of the clay by the artist's hand before burning was as artistic and effective a process as the laborious carving of stone. He thought that the recent fashion of carving brickwork, after laying in the wall, was a step in the wrong direction, and that it was more logical to model the clay in its plastic state, before burning, into the forms required.

Mr. Littell agreed with Mr. Stone in regard to the carving of brickwork after laying. As to terra cotta, he had not himself seen any which was so agreeable to his eye in texture or colour as stone. As in sculpture a plaster cast was less pleasing than the marble original, although the form was the same, so with terra cotta, which resembled plaster in some ways, as compared with stone in architecture. Another point was that to the eye, at least, the impression given by terra cotta was that of weakness in comparison with stone, and he thought it necessary that a material should not only be strong, but look so.

Mr. Post remarked that the durability of terra cotta was shown by its remaining intact in the Roman walls after the walls themselves had crumbled away several inches. He thought part of the bad effect which the use of brick had on the design was due to the inability of the designer to master his material. There was no inherent reason why a design executed in terra cotta should not be as effective, and it would certainly be as durable, as one carried out in stone,—much more so than one in sandstone. He had always brought himself with reluctance to the execution of an important building, which ought to last for ages, in sandstone, which was certain soon to begin to decay, and might perish even within his own lifetime. As to the difference in beauty between the clay and the marble in sculpture, he thought in practice that the clay models prepared to carve from were generally superior to the stone copy. Probably most architects had seen clay models which, as they left the hands of the artist, were very fine, but were entirely spoiled in the reproduction in marble, in spite of the beauty of the material. He was by no means an advocate of the substitution of terra cotta for stone, but thought each was good in its proper place.

Mr. Robertson pointed out that the advantage of carving on brickwork over terra-cotta ornamentation of the same kind was that the carving of the brickwork was done in place, and could be controlled with regard to the effect which it was intended to have from the place where it would be seen, while a terra-cotta panel or ornament must be modelled and burnt separately, and to some extent in ignorance of what its effect would be in place, and it was quite possible that the result would be disappointing when the work was set and it was too late to alter it.

Mr. Loring asked how Mr. Robertson would alter a moulding cut on the brickwork, if he was not satisfied with it; or whether, if it could not be altered, there was any way of insuring that the carving would be free from mistakes?

Mr. Robertson said that mistakes could not be avoided absolutely, but that the chance of obtaining a good effect was better when the designer could study the execution on the spot, than where the material must be wrought elsewhere and brought to its place.

Mr. Loring asked if it would not do to have the soft material modelled in place.

Mr. Robertson thought that would be an advantage, if practicable.

Mr. Loring considered it perfectly practicable, and that there was no more difficulty in modelling the clay in the place it was to occupy in carving stone in place, with the advantage that a mistake in stone sculpture could not be rectified, while the clay could be added to, changed at pleasure, and fixed by burning when the desired effect had been obtained.

Mr. Post thought it would be much more advantageous to have the clay modelled from the drawing by a skilful artist, and then burnt than to entrust the execution to a journeyman carver. He felt safer with a man held to strict conformity with the drawings by section, and careful indication, than in sending a rough man, perhaps skilful or perhaps not, to execute the work in place according to his own notions. He thought it would be difficult to carve the work so that the joints would not in the course of years be washed out in a trying climate.

Mr. Stone asked what expedient was resorted to in carving brick to overcome the difficulty arising from the porous or cellular structure which most bricks exhibited when broken. Mr. Robertson explained that special bricks were made for carving, which were homogeneous in texture throughout.

The President wished to say a word in addition to the remarks that had been made in the course of the discussion on the difficulty of getting good carving in stone or marble. He thought that entirely practicable to get as good sculpture and architectural decoration as ever was executed. In the public buildings in Philadelphia the sculptured parts were first modelled in clay by skilful artists, and carefully corrected in plaster before handing them over to the workmen for execution. The model was photographed, and the workmen followed it exactly. The sculpture for the Capitol at Washington was modelled by Mr. Crawford, and the design was so carefully followed that the finished sculpture could not be distinguished from the model. He thought there was a tendency to ignore the part of the workman in the carrying out of a design. They had men who could do as good and intelligent work as the artisans of any age, and they should be sought out and their position recognised.

Mr. Walter continued with some remarks about the best kind of building stones for structures intended to be permanent. In his opinion, the true marble was not fit for building, nothing but granite and dolomite, or magnesian limestone, could be depended upon. Architects employed sandstones and marble without sufficient study of their qualities. Marble was quickly acted upon by the acids in the air, particularly by the sulphurous acid arising from burning coal. In the Mint at Philadelphia it was necessary to take out the marble facings and replace them with granite. No stone would effervesce with acids should be used in a building, nor any which, like sandstone, crumbled away with the weather. Dolomite, unlike the ordinary marble, was unaffected by acids. A drop of muriatic acid on a piece of marble would run through it, while on dolomite it would remain like water. The crushing strength of dolomite he had found by experiments to be more than three times as great as that of marble. It was dolomite that was used in the public buildings at Washington and in those of Philadelphia.

Mr. Loring remarked that terra-cotta, or burnt clay, offered a material which could not be affected by acids, and whose crushing strength exceeded that of any stone under favourable circumstances.

A Versatile Vicar.—The Rev. [illegible] Sanger, vicar of Carlton-in-Cleveland, [illegible] said to be an able preacher, has (according to a North Country paper) issued a circular to his parishioners, in which he says,—

"I feel sorry for the necessity of a letter to vindicate my conduct in rebuilding the parish church, which was in a dangerous state after last August gales that service could no longer be safely conducted under its roof. If I have undertaken upon myself the rebuilding, the burden would have fallen upon the parish. You must all be aware that I have worked as few clergymen ever yet worked to rebuild a church. I worked as a bookbinder, to get the money; in two years: obtained the subscriptions, writing [illegible] 2,000 letters; designed the building, acted as clerk of works and contractor, carved all the wood and stone, worked with the men employed, and I ought to have strength to complete the work in peace, not be publicly thanked for the benefit I have conferred upon the parish by building a church which, for elegance, is second to none in the locality."

We do not know the circumstances which called forth this "vindication"; but the writer would seem to be a remarkably energetic man, and perhaps, somewhat over-sanguine as to his ability as an architect.

THE BELGIAN JUBILEE HALL.

Thursday, the 17th inst., the tenders for erection of the hall in which the fiftieth ersary of Belgian Independence is to be rated, and which is to be preserved for the oses of a national museum of art industry, opened in the presence of the commis- rs and the contractors who had sent in offers. It was found that the highest r was 1,921,500 francs, the lowest 1,392,000 s, while the Government estimate for the amounted to 1,555,000 francs. The an- ement as to which was accepted has yet made. The commissioners to conduct all ess connected with this national celebration appointed the previous week by royal e, and include the burgomasters of Brus- Antwerp, Ghent, and Liège, the Belgian issioner at the Vienna and Paris Exhibi- and several other persons.

PLETION OF THE NEW HIGHGATE INFIRMARY.

e new infirmary at Highgate, which has built for the purposes of the Holborn , and a view and description of which ared in the *Builder* a short time ago, is mpleted, and is intended to be formally d in the course of a week or two. The ng, which has taken more than two years ct, is the largest and most costly of its in the metropolis, the outlay upon it been about 80,000*l.* At a recent meet- the Board the building committee re- that Messrs. Snell & Son, the architects, ceived notice from Messrs. Mowlem & Burt, ntractors, that the building would be given by them in less than a month, and the pects recommended that no time should in taking possession. It was added that nal order had been given to the contrac- not to proceed with the colouring or the ng of the walls, as in this weather it be quite useless to do anything of the until the arrangements were made for the ation of the building. At the present the building committee are engaged in ting the necessary officers preparatory to ening of the establishment, and at the g above referred to it was resolved that r be written to the Local Government asking for the sanction of the Board to ary proposed to be given by the guardians engineer, and on that being received that ne be lost in taking steps to elect an er.

ART AND ITS MOTIVE.

—It would be of little use contending riters whose notions are so confused, and sense of inconsistency is so dull as the tes of "art for art," if it were not for the public, who might be led astray, and inking it was learned and authoritative rse. When a correspondent can quote such sage, as "Evelyn Pyne" does in last *Builder*, and maintain its consistency, no ent is likely to be of any avail. For the ience of the readers of the *Builder*, how- I will put the two passages which yn Pyne" maintains are consistent side by Here they are:—"We cannot easily bring ves to believe that either moral or artistic nsciousness can inspire true art-work;" rtheless, all art is essentially self-con- " These contradictions occur within the pf ten lines. Can any one after this affirm was unjust in twitting Mr. Caine with istency?

elyn Pyne" may be unable to recognise the of this clique when divested of their flouncy attire, but there they stand in t letter, with all this trumpery torn from acks, and without even a verbal apron to se them. Can a writer who sums up the duty of the artist in that of "painting ue sees" be considered at all qualified for g upon art topics? The photographic is "Evelyn Pyne's" artistic ideal, it is the slightest degree self-conscious, and ren- ithfully what it sees! Did Raffaelle paint ne saw in his "Dispute," or in his "Heli- ," or in his Cartoons? Did Michelangelo what he saw in his "Last Judgment"? or idias carve what he saw in the famous s of Jupiter and Minerva? Why, sir, such trine as that of "Evelyn Pyne" would subject any one who held it to the suspicion that he was unacquainted with the A B C of art.

If any artist may be conscious of his own virtue, surely it cannot be a sin to be conscious of his picture's virtue. If a painter had no conscious moral purpose in his work, it is difficult to see how he would deserve any credit if his picture should fortunately turn out to have one. A picture, according to the art-for-art folk, may have a moral purpose, only the artist must not know it, and nobody must whisper it to him, or his work will no longer be a work of art. This puts me in mind of the Irishman with a string to the hind leg of his pig, who begged no one would whisper that he was going to Cork as the pig thought he was going to Dublin. But if a work of art may have a moral purpose, and yet be a work of art, as my opponents have not yet gone quite so far as to deny, surely it would redound more to the credit of the artist if that purpose were by design, and not by a fluke. "Evelyn Pyne's" co-urgers of art for art lay much stress on genius being divine, but to the workings of the Divine, conscious purpose has always been attributed,—and "He saw that it was good."

Good heavens! are we in this year of grace 1879 to be told that the highest art is to be the offspring of uncontemplated, unwilled purpose, of blind chance, of yielding to a mood! What has the world come to that such nonsense can be tolerated,—even pass current with a few? This kind of talk is really the "goody-goody" of the art-for-art gossips. It would seem like some doctrine of the Nirvana, in which life is to swoon through existence destitute of all manly energy and purpose. Art for Good.

*** Here the correspondence, so far as the lecture in question is concerned, may end. The main point, however, is still open for independent discussion.

CHISELBOROUGH-CUM-CHINNOCK.

Sir,—The Rev. C. F. Newell, rector of the above parishes, says he may be a "cretin," but that he most certainly is not a pluralist. I never said that he was a cretin, although I mentioned the existence of interesting specimens of those unfortunate people in his district. If, however, a clergyman has the charge of two distinct villages with two churches I believe I am right in calling him a pluralist. . . . . .

Now for the noble landowners between whom Chiselborough and Chinnock are squeezed as between the jaws of a vice. When the old correspondence took place in the *Builder*, Mr. Newell said it was not Lord Portman's estate upon which the cottages complained of were situated. Now, he says it is not Lord Ilchester who is to blame. I see that the Earl of Egremont is patron of the living of Chiselborough and West Chinnock,—perhaps he ought to share a little of the blame. Anyhow, Mr. Newell evidently thinks his parishes have nothing to hope from three great earls, for he says it would be a fine thing if I and my friends would buy up and rebuild these miserable cottages. I dare say the reverend gentleman is well aware that improvements and any kind of enterprise for the well-being of the people have to come from citizen-traders as a rule, and not from members of the House of Lords. But I should like to know who has property for sale in these villages. Not the labourers, I am sure. The labourers have been despoiled of their little possessions by every kind of paltry dodge. Not only was there the giving of 2*s.* to have 1*s.* returned in order to prove a peppercorn rent, but many others, such as sending a whitewasher or a thatcher to do a few shillings' worth of work, and taking 1*s.* per year as payment. I tried to purchase a house in my own native village (Montacute) not long ago, but I found that money would not buy it. The place had been bespoken by the landowner's agent solely because there should be no new proprietor allowed in the village. The story of the spontaneous combustion of a large double hayrick is quite as good as that such a stack was fired from the outside. I should think that rick must have been rather heavily insured, and that perhaps the bad times had something to do with it. But, does the rector of Chiselborough and West Chinnock mean to say that, because a hayrick caught fire one night, the whole parish of Chiselborough was justly put under sentence of eviction, the most convenient part of which sentence, I will be bound to say, has been carried out? And it scarcely tallies with what Mr. Newell implies, namely, that the cottages are in the hands of small proprietors, that such notices could have been given. They must have proceeded from one of the noble landowners. I had some of the most piteous letters from the poor inhabitants of Chiselborough, begging and praying for my interference. Why did they not go to Mr. Newell? I suppose they knew that he was too deep in with the landowners. They applied to me as an old neighbour. I applied to Archdeacon Denison, as a man of some authority with the clergy, to stir up his clerical brethren against this cruelty; but he wrote that, much as he sympathised with the people, he was getting too old to be mixed up with such affairs.

George Mitchell,
"One from the Plough."

ST. PAUL'S CATHEDRAL.

Sir,—The condition of the monuments in this "noble pile" is not creditable. Covered with dust and dirt, it would be very difficult for any ordinary observer to say of what material they are composed; and this has been the sole condition they have been in for a long time past.

And I would respectfully ask the Dean and Chapter, through the medium of the *Builder*, when the restoration of the Queen Anne statue, with the figures surrounding it, in front of the most majestic elevation the world ever saw, is to be attempted? The condition of this group is perfectly disgraceful to the cathedral authority and the City of London.

Go to Westminster Abbey. How striking the contrast. The marble monuments are kept in the most beautiful order, free from dust and dirt, and a perfect credit to Dean Stanley and the Chapter.

As to St. Paul's, the frequent pulling down and fixing up keeps the noble edifice in a constant state of transition, and promises fair for a permanent chaos. R. Payne.

TEDDINGTON CEMETERY.

The above has now been completed, and the Church of England part was consecrated on the 9th of April by the Bishop of London. The whole site is a plot nine acres in extent, five acres and a half of which have been laid out for present requirements, divided about equally into consecrated and unconsecrated portions by a path 18 ft. wide, and with this exception there is not another straight path, all being laid out in easy curves, and thus departing from the gridiron arrangement usually seen.

The chapels are of fourteenth-century Gothic, identical in design, and connected by a covered carriage-way over the central path, and spanning which is a bold entrance-arch flanked by towers (in which are the vestries), and surmounted by octagon lanterns and crocketed spires. The chapels are each 30 ft. by 20 ft. internal dimensions, lined with white bricks and relief-stamped tiles by Minton. Seats are arranged stall-wise, and are, with the open roofs, all of deal, stained and varnished. The reading-desks are of pitch pine, by Hammer, from the architect's design.

A mortuary is provided fitted with slate shelving and conveniences for "*post-mortems*." At the entrance is a lodge containing office and living-rooms, toolhouse, &c.

The front railing is by Handyside & Co.

The material used for the walling is Bargate ragstone, from Godalming, and Box-ground Bath-stone for dressings.

The contractors were Messrs. Harris & Bonell, of Teddington, and the whole has been carried out from the designs and under the superintendence of Mr. T. Goodchild, architect, Adelphi, London.

ARCHÆOLOGICAL SOCIETIES.

British Archæological Association.—This Association having accepted the invitation of the Mayor and Corporation of Yarmouth to hold their annual Congress in that town, in August, the Town Council has appointed a committee to make arrangements for receiving the Association.

Royal Archæological Institute.—At the last meeting of the Taunton Town Council, the General Purposes Committee was appointed to co-operate with the Somersetshire Archæological Association and other bodies in making arrangements for the reception of the members of the Archæological Institute, who will hold their annual congress in Taunton in August.

TRAMWAYS.

SOCIETY OF ENGINEERS.

AT a meeting of the Society of Engineers, held April 21st, in the Society's Hall, Victoria-street, Westminster, Mr. Joseph Bernays, vice-president, in the chair, a paper was read by Mr. J. L. Haddan, on "The Essentials which should govern the Construction and Working of Tramways." The author observed that when tramways were first introduced, they were a great advance upon the ordinary roads, but that the modern improvement of roadways had, in the present day, led almost to a reversal of the relative positions of road and tramway. In America, the tramways were superior to the roads, because the latter were sacrificed to the former. The tram-rail there, moreover, was available for the moderate ordinary traffic, whilst the speed of the tram service was about 20 per cent. greater than in this country and on the Continent. Mr. Haddan alluded to the general tendency to employ wood in roadways, and he described a system of construction by which a road could be made with a perfectly flat surface, and yet be well drained, and which should have the tramway incorporated with it. The tram-rails, he said, would be of wood, and the roadway would be kept surfaced with grit, so that the wood would not form the actual wearing surface. This system of tram and roadway, the author observed, would be homogeneous, and would combine the best possible road for ordinary vehicles, with a perfect tramway for special carriages at less cost than the present method of construction. The author condemned the indiscriminate introduction of railway and omnibus principles into the construction and working of tramways, and described his proposed arrangement for meeting the requirements of a tramway service. This consists of a locomotive engine to be worked by steam and air, the steam being used for compressing, during the journey, its own supply of air as well as that which supplies the continuous motive power for propelling the cars. By reversing, the same driving mechanism acts as a continuous brake, and the same system is so arranged that the driver constantly feels the pull of the train upon a regulator handle. The withdrawal of his hand from this handle is to instantly cause the steam power to block the train. Thus the brake mechanism would always be in action, instead of lying dormant, as in ordinary continuous brakes. The author, in conclusion, stated what, in his opinion, were the technical, physical, and administrative requirements of mechanical traction on tramways generally.

FACTORY AND WORKSHOP INSPECTION.

MR. ALEXANDER REDGRAVE, C.B., has issued his first report as her Majesty's chief inspector of factories and workshops for the United Kingdom. It states that, pending the discussions upon the Bill for consolidating the Factory and Workshop Acts, and until the coming into operation on the 1st of January last of the new regulations embodied in the Act of 1878, much of the time of the department was taken up in preparing for the new departure. No period could have been more favourable for adjusting incongruities and modifying systems, inasmuch as the state of employment has been universally such that but few inducements exist either for prolonging the legal hours of work or for employing children or young persons below the proper age. The return of prosecutions may show an apparently long list of persons who have been summoned; but when it is considered that every trade or occupation in which manual labour is exercised is, with some few exceptions, under restrictions more or less numerous, and that during a period of depression the utmost efforts are made to produce as cheaply as possible, and the occasional inducement to "complete an order under contract" is very powerful, the list will, in reality, not be so heavy. The total sum imposed by way of fines amounted to 508*l.* 12*s.* 2*d.* The work of factory inspection has become more and more varied and complicated year by year. Inspection, commencing in 1833, was directed to overcoming opposition, which necessitated the extensively enforcing the observance of the law by fines. The duties of the inspector were severe and harassing. Employers strenuously opposed reduced hours of work; parents claimed the labour of their children, seeking by every contrivance to evade the necessity of school attendance, and to pass their children off as older than they really were. The absence of any civil registration of births, moreover, rendered proof of age unsatisfactory, and there were constant difficulties arising in this respect which were not easily remedied. The general acceptance of the factory regulations has greatly lightened the work of the inspectors in some respects during recent years. The definitions of the Act of 1878 alter the effects of the Act of 1867, as many establishments which were non-textile factories under that Act are now workshops, and establishments which were workshops are now non-textile factories. The enactments of the new law, arranged as they are methodically and carefully, embrace matters which had no place in the earlier Acts. The hard-and-fast line is now an undulating and elastic one, drawn to satisfy the absolute necessities and customs of different trades in different parts of the kingdom. The time of beginning and ending daily work, which is almost indigenous in the cotton districts, would be impossible in other places. The lime-washing, so necessary in a bakehouse or in a textile factory, would be useless at a blast-furnace or iron-mill. The regular and unvarying hours of work in a cotton-mill, where the rapidly revolving machinery draws upon the unremitting attention of the operative from week's end to week's end, would not admit of an extension of hours to meet sudden emergencies, as in the case of occupations in which the operatives have to meet regular slack seasons, when short hours and frequently less than half-time prevail. There are five superintending inspectors, the work of whose several districts has been arranged so as to equalise as much as possible the work of each inspector, taking into account the density or scattered position of factories, the means of access by railway, the time that would be occupied in travelling, &c.

ALL HALLOWS TEMPORARY CHURCH, SOUTHWARK.

FROM the designs of Mr. C. N. McIntyre North a temporary church has been built in Orange-street, Southwark, which is certainly meritorious. The building is framed and bolted together, so that it can be taken down and re-erected at trifling cost. Outside it is very plain, with a three-light window at the west end, and a small bell-cote projecting from the face. The roof is formed of boarding, in squares, screwed to the purlins, then covered with felting, and slated. The roof is all in one plane, except at the apsidal end. The transepts (forming recesses for the harmonium and vestry) are very small, owing to the necessity of keeping within certain limits prescribed by the plan of the permanent church. The church is furnished with chairs, and will seat about 280 people, exclusive of the choir. The church is warmed by three of George's Calorigens, which answer very well. The vestry is warmed by a gas-stove, and has lavatory, &c., adjoining. The walls are of brick; the lights have deal chamfered frames, with oak cills, and are glazed with lead glazing. The heads and cills are of York stone. The boarding of the roof is sized; the remaining woodwork is stained and varnished.

Mr. Baguley was the builder; Messrs. Benham & Froude supplied the gasfittings and book-desk; Messrs. Millar did the gasfitting, Mr. Evans the wrought-iron dog-grate, &c. The corona was the gift of the architect; with this exception the cost of the whole, including fittings, has been only 694*l.*

The Gorleston Breakwaters.—Some years ago the sea made such encroachments upon Gorleston beach and cliffs that the construction of breakwaters was determined upon, such being designed for the double purpose of preventing any further scouring of the land, and to protect a portion of the South Pier. The work was done, but for some time (says the *Norfolk Chronicle*) it has been known that the object for which these structures were made has not been attained. Still beach and cliff continue to be swept away by the heavy seas which easterly gales roll into the South Ham; and continually, as soundings prove, does the depth of water increase in this vicinity. Temporary repairs are necessary, but it is suggested whether it would not be better at once to take into consideration some large scheme, which, though expensive at the outset, would be more lasting and more effective.

PARLIAMENTARY JOTTINGS.

Royal Parks.—In the House of Common the 17th inst., on the motion for going i Committee of Supply, Mr. Dillwyn rose move,—

"That in the opinion of this House any royal or p park or pleasure-ground which is unremunerativ reason of its being used for purposes of recreation or ment, should be placed under the control of the Commissioner of Works, and the amount required maintenance included in the annual estimates for and pleasure-grounds, instead of (as in the case of Wi Great Park) being placed under the Revenue Depar of Woods and Forests."

The parks, he observed, ought to be so man as to be made productive, and he hoped next year her Majesty's Government would their way to carry his suggestion into effe Sir H. Selwin-Ibbetson, in reply, said that a time of the settlement of the Crown lan the reign of George IV., provision was for passing all the surplus revenues t Exchequer after the payment of expenses. by a later Act (14 and 15 Vict.) a certain ber of the parks were passed from the co of the Woods and Forests to that of the Bo Works. No such provision, however, was with regard to Windsor Park, the reason that Windsor Park was looked upon to a c extent as a part of the royal residence. A large portion of the expense was really inc in the interest of the public. He referr the expenditure that was necessary for th tection of the park. Under the good ma ment of the Woods and Forests the revenu increased so as to be far in excess of th List, and had, in fact, amounted to mor 410,000*l.* The change advocated by th member might possibly reduce the cost what, but it would be at the expense interests, not of the Crown, but of the pu

Maintenance of Royal Palaces and Buildings.—In Committee of Supply, 18th inst., on the vote to complete the 35,540*l.* for maintenance and repair of Palaces, Sir G. Balfour said that the having made a bargain with the Crown, of course adhere to it; but it could denied that the palaces of Hampton Holyrood, and others were used, not fo residences, but for different purposes. not grudge any rewards which might b to the families of those who had done ser the State, but they might be rewarde better way than by apartments in the Palaces. They would be more benefite money grant. When distinguished st came to this country we ought to have for their reception, but now the only pla had to go to was an hotel. St. James' sington, and Hampton Court Palaces o be available for receiving them.—Mr. in reply, said he would take the case of H Court Palace. That palace contained three or forty-four residences or separat ments, yet the cost of all those residen only 850*l.* a year. If the views of t member were carried out, and lodgings w vided elsewhere for these ladies, it w necessary to spend 5,000*l.* or 6,000*l.* a Mr. E. Jenkins said that Hampton Court was not kept in a proper state for palace.—The vote was then agreed to also a sum to complete the vote of 2,2 Marlborough House.——The vote to c the sum of 113,561*l.* for Royal Par Pleasure Gardens was agreed to.——T of 26,930*l.* to complete the sum requ the maintenance of the buildings of the of Parliament, was agreed to, an ame to reduce the vote by 1,750*l.*, the s down for the oil-lamps used in the b having been defeated, though nobody to know anything about the lam which so respectable a sum was allotted ever, Mr. Gerard Noel, the First sioner of Works, promised to look matter.——Votes to complete the 117,255*l.* for the maintenance and re public buildings, 15,885*l.* for the furn public buildings, 184,334*l.* for the Reve partment buildings in Great Brita 46,750*l.* for County Court building agreed to.——On the vote to complete of 22,018*l.* for the Metropolitan Poli buildings, Mr. Whitwell asked why thi should not fall upon the local rates.— Selwin-Ibbetson reminded the hon. that the metropolitan police-courts wer a local character like police-courts elsewh belonged, so to speak, to the country at la their receipts, which amounted to some

r, were paid into the Imperial Exchequer. The vote for completing the sum of 8,203*l.* heriff Court-houses in Scotland was agreed —On the vote for completing the sum of 100*l.* for the new Courts of Justice, Mr. G. said that the Law Courts were divided wo parts, and that the eastern wing was finished and ready to be occupied. In er to further questions, Mr. Noel explained the west wing ought, according to the of the agreement, to be finished in the 1880. It was, however, at the present impossible to say whether it would be leted then or not. Many circumstances risen to retard the work, the chief ones the strike movement and the frost. He ot himself look forward to the completion building until the year 1881. It was true he original estimate for the construction e building was 750,000*l.*, but a second ate of 826,000*l.* was subsequently made, did not think that the latter sum would eeded. The vote was agreed to, as was he vote to complete the sum of 133,500*l.* a Surveys of the United Kingdom.——On ote to complete the sum of 20,786*l.* for ience and Art Department buildings, Mr. el stated that the cost of the enlargement ketch by Sir F. Leighton, P.R.A., for the of the library at the South Kensington um would be altogether 3,000*l.*, of which 00*l.* would have to be paid this year, in urse of which the sketch would be com- . In reply to further questions, Sir H. n-Ibbetson stated that the picture was an rical illustration of war, and that it would ll worthy the fame of the artist. The as agreed to.——A vote to complete the f 4,719*l.* for the British Museum buildings greed to.——On the vote to complete the of 47,476*l.* for the Natural History m, Mr. E. Jenkins objected to the growth expense connected with this building, oved that the vote be reduced by 5,000*l.* ommittee divided, when there appeared, reduction of the vote, 10; against, 57; ty against, 47. The vote was agreed —The vote to complete the sum of *l.* for the University buildings, Edin- was agreed to. On the vote to com- the sum of 17,062*l.* for harbours, &c., the Board of Trade, Sir G. Balfour to know what would be the cost of repair- damage done to Dover pier by storms.— G. Talbot explained that considerable e was done to the works at Dover harbour to a storm of exceptional violence which ed on the 1st of January, 1872. The there were proceeded with gradually, and oney required for them was laid out as it anted. — Mr. Whitwell wished to know or the large additional expenditure about incurred for Holyhead harbour was in- for making good special damage or was ated by the decay of the works.—Mr. J. oot said that a breach made in Holyhead r by a heavy storm during the late winter be repaired. The vote was then agreed were also votes to complete the sum of 5*l.* for rates on Government property in Britain and Ireland, and to complete the f 10,000*l.* for the Metropolitan Fire e.——The vote to complete the sum of for lighthouses abroad was agreed to. the vote to complete the sum of 23,216*l.* plomatic and consular buildings, Sir J. aid complained that no suitable building en provided for the accommodation of our ador at Berlin, and of the excessive cost ambassador's palace at Constantinople.— Noel explained that an attempt to pur- suitable residence for our ambassador at had fallen through two years ago in con- e of the excessive price asked. The s of maintaining the Palace at Con- ople was the same as last year.—Mr. s said that the palace at Constantinople most expensive property abroad belong- the British Crown. The cost of the nance and repairs of this new building 50*l.*, exclusive of a salary of 450*l.* per paid to the superintendent of works.— rard Noel said that the superintendent to salary attention had been called had been ined at Constantinople because the works d the presence of a first-class man. The however, were now complete, and the ntendent was about to be withdrawn, but ld still be retained upon the establish- f the Office of Works, although at a d salary. The vote was then agreed to. ——On the 21st inst., on the vote for the Local Government Board, Sir A. Lusk called attention to the unsatisfactory character of the metropolitan water supply, and appealed to the President of the Local Government Board to direct his attention to the matter.—Mr. Sclater-Booth disclaimed being responsible for the public health of London. The Public Health Act did not extend to London. Its administration was conducted by district Boards, under the Metropolis Management Act, with which he had nothing to do. Indeed, there was so much jealousy of the Government action with regard to the public health of London that when he proposed to place the district Boards under the Public Health Act, members representing metropolitan constituencies obstructed the passing of the measure. The water supplied to the west end of London, and indeed all water coming from the Thames, was more or less unsatisfactory; but he believed the statements on that subject had been exaggerated; nine-tenths of the scandalous cases of polluted water originated in the filthy state of the cisterns; and, upon the whole, London was not badly supplied with water. Under the slow but gradual and real operation of the Thames Conservancy Act, the supply was now purer than it had been. The sewage of Oxford and Reading and other towns had from time to time been diverted and purified, and none of it now flowed into the Thames. ——On the vote to complete the sum of 63,665*l.* for the Mint, Sir A. Lusk expressed the hope that steps would be taken to erect the new Mint on the Victoria Embankment with as little delay as possible.—Sir H. Selwin-Ibbetson, in reply, said that the Treasury had been in continued communication with the Corporation of London for the purpose of acquiring a new site for that establishment, and he could only say that if the hon. baronet would use his influence to advance the negotiations now going on with that object, they would probably see the desired change sooner than it otherwise would occur.

SEWAGE IRRIGATION.

Croydon.—At the last meeting of the Beckenham Local Board, Mr. Pascall moved:—

"That in the opinion of this Board, owing to the prevalent nuisances arising from the Norwood sewage farm, situate in this parish, immediate action should be taken to procure the removal of this nuisance."

He stated that the farm covered an area of 66 acres, and received the sewage of about one-fourth of the entire population of Croydon, and this mass of sullage was poured into the parish of Beckenham, though they had no power to control its management, or to compel the use of proper precautions to prevent it becoming, as it had become, a gigantic nuisance to the whole neighbourhood. The motion was carried.

Edinburgh.—The Works Committee of the City Parochial Board, accompanied by Mr. John Macrae, C.E., on the 18th ult. visited the grounds adjacent to Craiglockhart Poorhouse in reference to a proposal, which has been under consideration, that the sewage of the house should be turned to account for purposes of irrigation. As the result of the inspection which was made, the engineer, we are told, expressed the opinion that there was more than enough of suitable ground to use up all the available sewage; and the matter was left in his hands, with instructions to report as to the practical bearings and the probable financial results of the scheme.

DRAINAGE AND SEWERAGE WORKS.

Darenth Valley.—At a meeting of the Darenth Valley Main Sewerage Board on the 8th inst., a letter was read from the Local Government Board sanctioning the borrowing of a sum of 53,000*l.* for works of sewerage. Mr. Hennell is the engineer.

West Kent.—The Local Government Board, under the provisions of the 243rd section of the Public Health Act, 1875, and the 25th section of the West Kent Main Sewerage Act, 1877, have recommended the Public Works Loan Commissioners to advance the West Kent Main Sewerage Board a loan of 40,000*l.* The tunnelling is making rapid progress. Mr. Petworth has been appointed an inspector of works, at a salary of 2*l.* 10*s.* per week. Messrs. Neave & Son are the contractors.

The Tower High-level Bridge Bill has passed the second reading.

THE NEW BUNHILL BURIAL GROUND, ISLINGTON.

The attempt to sell the piece of freehold ground situated between Church-street, Essex-road, and Islington-green, and known as the New Bunhill Burial-ground, has caused a considerable amount of agitation amongst some portions of the public residing in the locality, and not for the first time. The object in endeavouring to dispose of the land was that it should be used for building purposes, and to this proposal objection was made on sanitary grounds. The land, which occupies an area of nearly an acre in extent, was for some years used for interments, but closed for this purpose in common with many other burial-grounds within the metropolis when the establishment of suburban cemeteries became general. The property was submitted for sale at the Auction Mart on Friday, the 18th instant, by Messrs. Baker & Sons, when exception was taken as to the legality of selling the land, on the ground that the graves in it had been specially purchased, and belonged to the representatives of those buried there; but in answer to this it was stated that the ground was private property, and that interments took place in it subject to the removal of the remains whenever the land might be converted to other purposes. In reply to the objection that the subsoil was not suitable for building upon, it was stated that buildings had already been erected on certain portions of the land, and that good foundations were possible. The particulars stated that the site was especially suitable for the erection of model dwellings, workshops, stables, or other business purposes. It also transpired that the present owners are a Model Dwellings Company, and that the sale was by direction of the first mortgagee. On the land being offered, 1,000*l.* was the first bid, and 1,740*l.* being the highest sum offered the property was bought in.

UNINHABITABLE HOUSES IN HOLBORN.

The Holborn Board of Works have resolved to deal in a summary manner with a number of dwellings in that district which are not fit to live in. A short time ago Mr. Isaacs, the surveyor to the Board, presented a report to the effect that certain properties in the district should be dealt with under the provisions of the Artisans' Dwellings Act of 1868. These properties included a number of houses in Baldwin's-gardens and Dorrington-street, which the surveyor stated were unfit for human habitation, and ought to be demolished. The report also stated that there were other houses in Dorrington-street, Fullwood's-rents, and Feathers-court, which were likewise in a condition dangerous to health, but he considered that they could be rendered fit for human habitation by the execution of certain repairs, which he specified in detail. At their last meeting, the Board considered this report, and also a letter which had been received from Messrs. Vigers, surveyors, stating, on behalf of the freeholder of the houses in Dorrington-street, that he was prepared to clear the site if the Board would assist him in getting rid of the tenants. On the surveyor to the Board being appealed to with reference to this letter, he said the course he would recommend the Board to adopt was to order the immediate demolition of No. 1, and No. 2 would most assuredly follow. After some discussion, the Board passed a resolution for the immediate demolition of the houses in Baldwin's-gardens and Fullwood's-rents, and also decided to act upon the surveyor's suggestion with reference to the houses in Dorrington-street. As to the houses in Feathers-court, the Board agreed to allow the lessee two months in which to execute the necessary repairs.

Victoria (Philosophical) Institute.—At a meeting of this Society, held on Monday evening, a paper was read by Mr. Robt. Brown, jun., F.S.A., on "The Religion of Zoroaster considered in connexion with Archaic Monotheism." Mr. Brown reviewed the principal features in the system of Zoroaster, and the connexion and parallelism between the early beliefs of Iranian and Aryan Indian. Noticing the original unity of religious conception amongst the Aryan Family of Mankind, he deduced from the above and other considerations various arguments in favour of the existence of a primitive monotheism.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

The ninth meeting of the Session was held on the 16th inst. Mr. Syer Cuming, F.S.A. Scot., in the chair.

Mr. G. Wright, F.S.A., detailed the progress of the arrangements for holding the Congress at Great Yarmouth, and read the programme of places to be visited. Mr. J. Brent, F.S.A., described a cup of Castor ware which had been recently found at the Pan Rock, Whitstable, a site which has hitherto only yielded Samian ware, affording evidence that this remarkable spot was a storing-place for the Roman pottery, and not a manufactory. He exhibited also several bronze celts from Canterbury, &c. In the discussion which followed with respect to the prehistoric character of some of the articles, the Chairman referred to the numerous prehistoric relics found near London-wall. Mr. Myers, F.S.A., exhibited a large collection of terra-cotta objects collected by him in Asia Minor and Africa, including a photograph of a remarkable aqueduct at Algiers, of early Arabic date, recently destroyed to make way for gas-works. He was followed by the Rev. Mr. Maynard, who produced an interesting series of very early articles from Cyprus, among which were some of Egyptian date and style. Mr. Loftus Brock, F.S.A., exhibited a fragment of Gothic tracery-work in stone, blackened by smoke, probably the result of the Great Fire of 1666. It was found in some recent excavations at London-wall.

The first paper was by the chairman, and had for its subject the seasonable one of "Easter Eggs." After referring to the derivation of the name "Easter" from the Teuton goddess, who was represented with eggs on her head, he traced the uses of eggs by many early peoples and races. In Christian times the Copts suspended them from the roofs of their churches. They were found in terra cotta in Etruscan tombs. In England they were supposed to preserve the owners from mischief. In early times there was abundance of evidence that they were worshipped by the Celts, and a remarkable custom still extant in Brittany was dwelt upon. Several examples of much interest were exhibited; one with the emblems of Astarte and of Christ; another of iron, of Russian origin, with representation of the Ascension; and a third of Kentish origin, which had been decorated gaily in colours.

The second paper was by Mr. C. W. Dymond, C.E., who described with great minuteness the present condition of the Hurlens in Cornwall, and the two other supporting circles, — there being three in all. The paper was illustrated by an elaborate plan, which will appear in the "Journal," showing the position of all the stones which now exist, and their relation to each other.

FIRE BRIGADES AT HOME AND ABROAD.

In the course of a long and interesting account of the Manchester Fire Brigade organisation, the local *Courier* compares the English fire-extinguishing systems and those at present adopted by other nations. The Parisian Fire Brigade consists of nearly 1,500 men, and annually costs about 1,150,000 f. It is conducted upon military principles. In Germany the brigades are semi-military, and some are organised, as they were once in England, from men in the building trades. The Russian and Turkish brigades are conducted on a military basis. Recently the Constantinople brigade was re-organised by an Austrian, and a much better state of things now exists. In China the brigades take flags and coloured lanterns to fires, and are accompanied by bands of music. As in Turkey, the engines, which weigh only about a hundredweight, are carried on the shoulders of four firemen. The Japanese have taken a strange though an effectual course to prevent fires. Every one in whose house a fire originates, accidental or otherwise, is decapitated, and it is stated that fires are seldom heard of in Japan. The brigades of America are very expert. Their telegraphic arrangements are novel, and remarkably complete. Posts are fixed in various parts of the cities, in which there is a telegraph instrument, and it is only necessary to touch a knob, when notice is given to the nearest fire-station that the block of buildings opposite the post is on fire. At the fire-station the men are dressed and the horses harnessed, always ready, with the engine in the yard. We are told that the telegraph instrument when set to work opens the stable-door and lets loose the horses, which fall in on each side of the engine! The men run out of their quarters, attach the horses to the engine, and are on their road to the fire in from fifteen to twenty seconds. This cannot be equalled in Great Britain with the existing arrangements. The quickest time in which the Manchester Fire Brigade can do the same thing is fifty-four seconds, but in this time the horses are harnessed and led from the stables.

The following is the cost of the principal fire brigades of the world:—Boston (U.S.), 97,000*l.*; Cincinnati, 54,000*l.*; Chicago, 95,000*l.*; New York, 249,000*l.*; Paris, London, 80,000*l.*; Philadelphia, 96,000*l.*; St. Louis, 100,000*l.*; San Francisco, 52,000*l.*; Manchester, 58,000*l.*; Liverpool (a portion), 4,000*l.*; Brussels, 6,000*l.*; 7,000*l.*

SANITARY SHORTCOMINGS.

"Dairy Farms" near Glasgow.—Dr. J. B. Russell, Medical Officer of Glasgow, in an appendix to a recent report to the Health Committee of the Police Board, gives an account of a visit he made to the farm of Barraston, in the parish of Baldernock, to investigate a case of enteric fever. No evidence, he states, was got that milk was sent to Glasgow from the farm, but on the 21th ult. he sent the Food Inspector to investigate on the spot. The inspector's report disclosed a state of matters at this farm as bad as could well be conceived. On the 2nd inst. Dr. Russell received information which led him to visit Barraston. Describing what he saw and ascertained, he says:—

"A convenience is being fitted up against the gable of the end cottage in the row, at the foot of the bed, and close to the fireplace, the heat of which will greatly facilitate the transpiration of effluvia into the cottage. There is no paving or surface drainage about the farmyard. The position of the maure-pit, which originally was close to the gable of the house, had been altered also, but the pit, not having been levelled up with earth, was full of foul liquid. The house contains four small apartments, the flooring of which was either stone and bricks or earth. There were six inmates. On the left of the entrance the girl now ill of enteric fever lay; to the right was the kitchen, in the middle of which stood the 'lappering-tub,' containing some twenty gallons of milk, covered with a loose lid, placed there to facilitate fermentation with the heat. Looking to the back were also two apartments,—that to the left being the milk-house, in which was a bed in nightly use, while that to the right opened off the kitchen. The mother was the only female adult, and consequently nurse, housekeeper, and dairymaid all in one. The cows were seven in number, but only one was in milk. Although there is water everywhere about these houses there is not a drop to drink. It is impregnated with iron, and otherwise unpalatable; consequently all the water is brought from a distance of 250 to 300 yards from a considerably higher level."

Dr. Russell further states, that

"On the roadside, in a dry and airy situation, there is a row of probably ten houses whose inhabitants derive their water from the same source. I found in each of three of these houses a case of enteric fever, ranging from three weeks to one week ill, and all of the most decided type."

A state of things more eminently calculated to spread disease could not be conceived. We see that the tenants have been "warned" that no milk from the "farm" must be sent to Glasgow,—and it is to be hoped that none of it will be sent elsewhere under the existing condition of the premises.

New Buildings at Gravesend.—At the Gravesend Petty Sessions, the other day, a builder, named Dennis, was summoned for non-compliance with the requirements of the by-laws in reference to the erection of some new houses in Prospect-fields. Mr. John Gould, the borough surveyor, deposed to the causes of complaint chiefly having reference to the drainage, ventilation, and the situation of the dustbin, which was inside the building, and immediately under the cistern. The inhabitants of these houses would have but a poor "prospect" of enjoying good health.

The Report of the Council of the Royal Institute of Architects, to be read at the annual meeting on Monday, the 5th of May, will show that "the ordinary income of the Institute for the year 1878, including arrears and excluding subscriptions paid in advance, amounted to 2,201*l.* 3s. 11d.; while the expenditure, including the outstanding accounts (352*l.* 18s. 3d.) for the year 1878, amounted to 1,837*l.* 15s. 4d. Thus the ordinary income for the year has exceeded the ordinary expenditure to the amount of 363*l.* 8s. 7d., and the state of the receipts about the beginning of the official year 1878-9 encouraged the Council to devote a sum of 500*l.* to the purchase of 3 per cent. Consols as an addition to the invested capital of the Institute."

MASTERS AND MEN.

Birmingham. — The Birmingham Tr Council have drawn up a series of sugges for the establishment of a federation of Trades' Councils of the Midland Counties. of the suggested principles upon which federation is proposed to be based is that tration shall be attempted by all the bra of the federation before resorting to a stri lock-out.

Staffordshire.—The strike in the Staffordshire horse-nail trade against a proposed reducti 3d. per day terminated on Monday, afte weeks' duration, by the masters agreei withdraw the notice and pay the old ra wages,—viz., 3s. 3d.

Glasgow.—The Operative Bricklayers' As tion for Scotland, including the Glasgow Paisley districts, have agreed, two m before the time, in consequence of the state of trade, that their wages should b duced 1d. per hour, so that the wages w 7d. from the present time up till the 1st of next year.

Edinburgh.—The committee appointed master joiners of Edinburgh and Leith met with reference to the proposal of the men to submit to arbitration the question proposed reduction of their wages, have stated, resolved to adhere to the reso passed at their general meeting,—*i.e.*, to the wages to 6½d. per hour.

Dover.—The master builders of Dover, stone, Canterbury, Deal, and Walmer, formed an association for the mutual prot of the masters to meet the combinati workmen against their employers. M was elected president of the associatio Mr. W. J. Adcock, secretary; and a com of twelve was also appointed.

The Durham Colliers.—In the ballot ta Saturday last among the Durham miners against the adoption of the masters' prop to close the strike, 222 votes were gi favour of the masters' terms and 21,089 —showing the immense majority of against the proposed terms.

NEW RAILWAY STATIONS.

Manchester.—The new Central Statio chester, is making progress towards com The site covers an area of 10 acres, a 5 acres more will be taken up by the app and necessary works between the entr the station and Deansgate. The thoro forming the boundaries of the station pr Windmill-street, Lower Mosley-street, street, and Great Bridgewater-street. T entrance will be in Windmill-street end, th being set back from the street line som The frontage to Windmill-street will b 250 ft. in length, and the length of the covered by the roof will be upwards o The substructure consists of fifteen a 30 ft. span each, which may probably be in the future as a goods depôt. The be in a single span of 210 ft. It is e that the station will be ready for use be close of the year.——The works in co with the extension of the London-road undertaken by the London and North- Railway, commenced a year ago, w hoped, be completed about Christmas result the station will be extended by tion equal to about two-thirds of its area. A fence wall, 10 ft. high, bou station on the north side of the new str tinuing Fairfield-street in a direct line t opposite Granby-row, in London-road. as possible this new street will be throw and then Birmingham-street will be thing of the past, for it will be covere station buildings. A great deal of l and other property has been demolished purposes of the extension. The st effaced are Swarbrick-street, Ashto Chadwick-street, Holbrook-street, Ti part of Worsley-street, and part of Bo street. The courts similarly dealt wi Ousey's-court, Chadwick's-court, and court. Messrs. Robert Neill & Sons contractors for carrying out the works.

Queensbury.—Another step towards t pletion of the Halifax and Thornton Rail been taken by the opening of a te station at Hole Bottom, for the benef inhabitants of Queensbury. The struc wood. The signals and points have be

y Messrs. Saxby & Farmer. The whole has been done by the workmen of the any, under the superintendence of Mr. of the engineering staff of the Great tern Railway Company.

THEATRES.

don.—The Garrick Theatre in Goodman's- will shortly be re-opened, after recon- ion and decoration. The theatre claims descent from the house in which Garrick his first appearance on the London stage. icissitudes of the theatres which have on this spot were recounted in the *Builder* 76 (vol. xxxiv., p. 1239), when a view and ical account of Garrick's villa at Hampton riven.——There is some talk of erecting theatre in the Strand for Mr. Toole, on e of Exeter Hall, which it is proposed to sh. Negotiations which are stated to have n progress for the acquisition of that very tageous site (which is bounded by streets ee of its four sides) are reported to have mpeded chiefly by the onerous condition nolishing and rebuilding the adjacent ,—a large new hotel being (according to *ily News*) part of the scheme. Exeter as built just half a century ago from the s of Mr. Dering. In the *Builder* for 1850 iii., p. 583) we gave an illustrated account alterations which were made in the roof, the direction of Mr. S. W. Daukes, archi- ith the view of improving the Hall as a room. Mr. Hollingshead estimates the num- London theatres at fifty; but of these some atres only by courtesy. The increase in nber of London theatres of late is remark- the Court Theatre, the Criterion, the , the Elephant and Castle, the Folly, the , the Globe, the Opéra Comique, the he Queen's, the Vaudeville, the Aquarium alled the "Imperial"), and the Royal heatre, Holborn, have all been built the last twelve years. The Queen's, r, has now passed out of the list, been purchased by the Clergy Co- ve Stores Association. We have already ed the formation of a company for g a new theatre in Leicester-square, to d the "Alcazar." Mr. Edward L. Paraire rchitect of this proposed theatre, and has d instructions to clear the site.

ow.—It is reported that arrangements st been made for the erection of a new in Glasgow, at the north-east corner of hall-street and Renfield-street, by the Halls Company (Limited), at a cost of 0,000*l.* The theatre is intended to ac- date some 2,000 persons. The façade to hall-street will be in what is called the o-Italian" style.

MARKET BUILDINGS.

orden.—Mr. John Fielden, of Dobroyd chairman of the Local Board, has laid the stone of a new covered market at Todmor- e site of the structure is on the old market It will be 123 ft. long, and 81 ft. 6 in. one end, and 76 ft. 6 in. at the other. have three entrances, and Yorkshire ill be used in its erection. The plans en prepared by Mr. Rodley, the Board's r, who will superintend the carrying out work. The market will have eighteen shops on three sides, and the vacant ll be taken up by stalls; the height of lding to the spring of the roof will be The cost is estimated at 3,500*l.*

n.—The contract for the works in con- with the South City Markets project n taken by Mr. Thorpe, of Leeds. With ironment of shops and warehouses, the will cover the whole central block l by Exchequer-street on the north, reet on the south, Great George's-street west, and Drury-lane on the east. The arket-hall will occupy the central portion ite. It will have an area of 5,360 super- rds, and will be surrounded internally four shops. The front elevation of the be in Great George's-street, and will be n length, and four stories high.

ngham.—The Bridge Committee of the tion of Nottingham last week visited . Croft, for the purpose of inspecting the mises which have been built under their and let on lease to the Nottingham kin, and Fat Market Company, Limited. The new premises are situated in close proximity to the Sanitary Wharf, and in the neighbourhood of what will be, it is expected, some day or other, the Cattle-market. The offices on the lower floor include rooms for the secretary, clerks, &c.; and on the floor above are the sale and board room, the whole being fitted with hot-water arrangements and other appliances, furnished by Messrs. Clifford & Sons. The ground occupied by the building is 40 yards square, and externally the structure is in the Gothic style, freely treated, the Whitwick Colliery Company's terra-cotta bricks being used for ornamental work. In the interior the aim of the architect, Mr. S. Dutton Walker, has been to provide in the best possible way for the business to be carried on. The works have been carried out by Messrs. Lees Bros.

HALLS.

Harborne.—A company has been formed for the purpose of erecting a Masonic hall at Harborne. They propose to start with a capital of 5,000*l.*, in 25*l.* shares.

Southampton.—The corner-stone of the new Masonic hall in course of erection in Albion-place, Southampton, has been laid. The hall is to be in the Italian style, freely treated. The principal elevation faces Albion-place, and is 50 ft. in length; the side elevations, facing the Forest View roadway, extend about 73 ft. There will be an ante-room or Chapter-room, 26 ft. 4 in. by 18 ft. 9 in., with a height of 11 ft., its bay-windows overlooking the Western Shore. The lodge-room will be 45 ft. by 30 ft. and 18 ft. high, and will be lighted by two lanterns from the roof. There will be a banqueting-room, facing Albion-terrace, 38 ft. 6 in. by 25 ft., also 18 ft. high, together with a kitchen, washhouse, pantry, and serving-passage. On the one-pair floor, over the ante-room, will be four rooms, and other accommodation for the lodge-keeper. The material used is to be white brick in all the exposed parts, with dressings partly in moulded brick, and of stone to the architraves and pediments. The roofs will be slated and tile-capped. The architect is Mr. J. G. Poole, and the builder Mr. S. Stevens.

WATER SUPPLY.

Tamworth.—The Tamworth Rural and Urban Sanitary Authorities have accepted the tender of Mr. Joseph Bennett, of Northampton, amounting to 977*l.* 2*s.* 7*d.*, for sinking the pumping-shaft and erecting the pumping-station at Hopwas. Mr. Henry Marten, C.E., of Wolverhampton, is the engineer in charge of the operations. Mr. Samuel Spruce, C.E., a member of the Rural Authority, was thanked for his assistance in maturing the scheme of water-supply.

Burnley.—In a tube-well which Messrs. Le Grand & Sutcliff, of London, are just completing, at Messrs. Brown & Astley's brewery, Nelson, near Burnley, they have tapped an artesian spring, at 155 ft. deep. The spring is stated to rise to the height of 37 ft. above the surface, and as it is increasing in strength daily, it is expected it will shortly flow over into the tank of the brewery, which is 41 ft. above the surface.

THE LARGEST STONE IN ENGLAND.

PROBABLY the largest detached stone in England is to be seen on the north side of the Yorkshire hills, about eight miles south of Whitby, and about one mile from the sea-coast. I found, on measurement, this square block of solid freestone to contain 350 cubic yards. It fell last summer from the adjoining high cliff. There are others of immense size, but this is the largest.

JOHN KIPLING.

WOOD ROOFS.

SIR,—Will any reader kindly inform me the following:—After having ascertained the strains on the various parts of a roof-truss, how am I to get the scantlings of the various parts in a wooden roof to bear the strains? I should like a reliable formula.

NIL DESPERANDUM.

The Artists' Volunteer Corps.—The 38th Middlesex Rifle Volunteers will give an "Assault of Arms" on (this) Saturday evening, at St. George's Hall, Langham-place.

KENILWORTH SEWERAGE COMPETITION.

SIR,—In reply to the advertissment which appeared in your columns some months ago, in which the Kenilworth Local Board offered two premiums for schemes for sewering and disposal of the sewage of their district, I see by a local paper that a committee of five members of the Board examined about twenty sets of plans sent in, and have awarded the premiums. I have nothing to say as to the merits or demerits of the selected schemes; but I should like to know from you or your numerous readers whether it is customary for Boards to make awards in such cases without the assistance of a professional man, as was done in this case. I am also informed that the plans have been kept from view, both of ratepayers and competitors. Is this right, or a general rule? If men having no knowledge of the subject are to be the judges in these affairs, I hope and trust that the day is not far distant when no engineer will enter any competition.

AN OLD SUBSCRIBER.

WEYMOUTH DRAINAGE.

SIR,—I have observed a letter in the *Builder* of the 19th inst., signed "Q.," in which certain statements are made with reference to the drainage of Weymouth, which, if uncontradicted, are calculated to create wrong impressions.

Without entering upon the merits of the legal proceedings to which "Q." refers, I should like to be allowed to correct a few of the errors into which he has fallen, probably in ignorance of the facts, and with no desire to misrepresent the true condition of affairs.

I may mention that in the year 1871 Sir John Coode, who, as engineer to Portland breakwater, had an intimate personal acquaintance with Weymouth, was asked by the Local Board to report to them upon the best means of disposing of the sewage of the borough. This he did, and recommended that all cesspools should be abolished and filled up, and that the sewage should be conveyed to one spot, which he indicated, through a series of intercepting sewers, and there pumped and utilised in irrigating land at a suitable distance from the town. These proposals were sanctioned by the Board, but it was afterwards found impracticable to obtain land upon reasonable terms for the formation of a sewage farm, and a precipitation process was put forward in lieu of it. In each case, be it observed, the sewage was to have been entirely excluded from the harbour and breakwater. In the mean time the contracts were let for the sewers, and the pipes laid upon the basis sketched in Sir John Coode's original report. At this date several systems of precipitation and other modes of treating town sewage were being experimentally tried by different municipal authorities, and as the Weymouth Board were unwilling to embark in these costly trials, or to believe in the El Dorado held out by numerous patentees, they decided to wait, at all events for a time, until some plan had been devised by which the manurial properties in the sewage could be satisfactorily utilised upon the most advantageous terms, it being then considered that some desideratum of the kind was within the bounds of possibility. As the sewage had to be discharged somewhere until a decision had been arrived at with regard to its ultimate disposal, it was determined by the Board to allow it to run into the harbour, through which there is a strong current, due to tidal action. This course, which was admittedly a temporary expedient, has been in operation up to this time, the local authorities being satisfied with the results; and although there may be some difference of opinion as to the wisdom of allowing this outlet for the sewage to be perpetuated indefinitely, there can be no question as to the general soundness of the course which the Board adopted, seeing that they are now in a position to couple up the outfalls of their sewers, and to concentrate and pump, either for conveying to sea or for precipitation, as may be decided upon for the *permanent* disposal of the sewage.

It is not a fact, therefore, that the system of drainage which has been adopted, or any material portion of that system, will have to be rearranged should the Board determine to withdraw the sewage from the harbour, seeing that what has been done will form so many links in the complete system, and will be fully utilised.

It will be apparent from the above that the exclusion of the sewage from the harbour has been regarded from the first as being the proper *permanent* course to adopt, although a considerable annual saving to the ratepayers is effected as long as the present means of discharge are maintained, which obviate the necessity for heavy pumping charges as well as the outlay required for the construction and maintenance

of further works. The cost of the drainage system already executed has been less than 10,000*l.*, and not 30,000*l.*, as stated in the letter which appeared in your issue of the 19th inst. A further sum of about 13,000*l.* was expended in the construction of a dam across the back-water, with the object of submerging the mud banks, but this cannot be considered as forming a part of the drainage scheme.

I gather from the medical returns that the health of the town was never so satisfactory as it has been since the new sewers have been laid.

RADIPOLE.

CHURCH-BUILDING NEWS.

Holyhead.—The parish church of Holyhead (St. Cybi's) was reopened on the 4th inst., after restoration, which, it is stated, is mainly due to the efforts of the Hon. W. O. Stanley, who offered to contribute 3,000*l.*, on condition that a sum of 2,000*l.* would be raised to meet it, thus making a total of 5,000*l.*, which was the estimate given by the late Sir Gilbert Scott as the amount required to complete the restoration. It was, however, found that the old oak roof had to be entirely renewed, which would entail an additional expense of 1,000*l.* The Hon. W. O. Stanley very generously added a further donation of 1,000*l.* to that already made, and nearly 2,000*l.* were subscribed from other sources.

Worcester.—St. Helen's Church, Worcester, is being restored. The whole of the south aisle wall has been pulled down, the stone being found in an extremely decayed state. It is to be entirely renewed, as also will be the north and south aisle roofs. The nave and chancel-roof are to be stripped and restored with oak boarding. The flooring will be relaid with encaustic tiles, the old monumental stones remaining in their original places. New seats are also to be provided when funds permit. The old tower arch is to be opened and the vestry space added to the body of the church. A new vestry will be provided at the east end of the building. The contractor is Mr. Thomas Collins, Tewkesbury, and the architect Mr. Aston Webb, London.

Norwich.—The committee for restoring St. Peter's Mancroft Church, Norwich, have resolved to consult Mr. Street as to the extent of restoration necessary, and as to what portions of the fabric require immediate attention.

Buckland.—The vicar and churchwardens of Buckland, near Dover, appeal for funds for the restoration and enlargement of the parish church. The church is partly Norman, and partly Decorated; and Mr. Butterfield has undertaken the work of enlargement, which is estimated to cost 3,500*l.*

Aston.—Lord Leigh has consented to lay the foundation-stone of the extension of the nave and aisles of Aston parish church, Birmingham. The committee who have undertaken the enlargement and restoration of the church propose to carry out the work in sections. The first section comprises the extension of the nave and aisles, and necessitates the preparation of the ground north and south of the chancel, as well as the removal of the chancel itself, which will, however, be re-erected at the east end of the south aisle, forming a south aisle to the new chancel. This first section of the work when completed will give about 500 additional sittings. No attempt will be made to renovate the mural monuments, which will be carefully removed and replaced on the walls of the old chancel when that is re-erected. The other monuments and tombs at present inside the chancel will be packed in separate boxes and removed to a place of security during the progress of the work, and will eventually be replaced in the old chancel. The oldest and most interesting of these monuments, viz., the stone figures of the Arden family, of the time, it is thought, of Richard I., and those of the Erdingtons, of the reign of Henry VI., have been removed from the positions which they originally occupied in the north and south aisles respectively.

A Church Struck by Lightning.—During the afternoon of the 15th inst. the tower of Henlow parish church, Bedfordshire, was struck by lightning. The electric fluid passed down the interior of the tower, rending and tearing it; then took its course through the body of the church, cutting up the woodwork of the seats into splinters, and made its exit through a window in the east end, which it knocked about sadly.

SCHOOL BUILDING NEWS.

Salford.—On Easter Monday Mr. Oliver Heywood laid the foundation-stone of new day and Sunday schools in connexion with St. Stephen's Parish Church, Salford. The new buildings will be in the Gothic style, of brick, with stone dressings. There will be two floors. On the lower will be a girls' schoolroom, 60 ft. long and 30 ft. wide; and on the upper a room of similar dimensions for boys. Each will have two class-rooms and a separate entrance. The architect is Mr. H. Lord, of Manchester, and Mr. W. Brown, of Salford, is the builder.

Maidstone.—A stone building, intended to be used as a Sunday-school and parish-room, is in course of erection on the north side of St. Peter's Church, Maidstone. The plans were prepared by Mr. Hubert Bensted, architect, and the contract has been taken by Messrs. Clements & Wallis, builders, at 578*l.*

Armagh.—The new Mall National School, Armagh, adjoins the Presbyterian Church, and has been erected from plans prepared by Mr. Fullerton, architect.

VARIORUM.

THE "Manual for Overseers, Assistant Overseers, Collectors of Poor-rates, and Vestry Clerks," by Hugh Owen, jun., Barrister-at-Law (Knight & Co.), has taken its place as a valuable handbook for all these officers. We have only to mention, therefore, on the present occasion that a new edition (the fourth) has been issued. In the appendix, forms of parish books and accounts are given.——The *Family Magazine* points to a new employment for women:—"Another field for amateur artists opens in the new fashion of painting bands for trimming dresses of rich materials. This is an American 'notion,' and one which finds favour in Paris. I have seen most successful results, the flowers represented being painted with the truest regard to Nature. A magnificent specimen consisted of a cream satin dress, trimmed with cream velvet bands portraying brilliant humming-birds, painted by hand. Black satin bands painted with butterflies also formed another beautiful trimming; in fact, it is impossible to foretell how far this hand-painting may be carried in embellishing ladies' dresses. It is no longer possible to say that *this* is fashion, and *that* is not fashion; for almost everything is fashion that can be gracefully or picturesquely adapted to the time or the occasion."—— In a sketch of the rise of the steam-engine in the April number of "Great Industries of Great Britain," the writer says,—"And now occurred that incident which nobody who describes the steam-engine ever fails to relate, of the boy who immortalised himself by laziness. His duty was to turn the cock which let the steam in at the bottom of the cylinder, and the one which let the cold water in at the top, each at its proper nick of time, or otherwise the engine would dash itself to pieces. It occurred to him to make the valves open and shut themselves by tying their handles with lengths of string to the moving beam overhead, so that he might play while the engine worked. Thus was invented the *scoggan*, from the North-country verb to *scog* or sulk; and the name of Humphrey Potter went down to posterity with those of Newcomen and Watt." It is surely unjust, however, to say Potter immortalised himself "by laziness." It was ready wit and ingenuity that enabled him to do what he did, though desire to escape a monotonous drudgery set him thinking how it was to be done.——We take from the current number of "Our Own Country," a reminder of Burghley House:—"The old, ball-room, or second billiard-room, is our next stage in the journey over Burghley House. The walls and ceilings are painted by Laguerre, who divides with Verrio the questionable glory of having covered vast expanses of ceiling and wall in this mansion with attitudinising gods, goddesses, demi-gods, nymphs, and heroes. They sprawl, as Walpole says, all over 'those public surfaces on which the eye never rests long enough to criticise, and where one would be sorry to place the works of a better master.' This is truly one sort of excuse for art of the conventionally meretricious order. In the brown drawing-room we find more of the beautiful limewood carvings of birds, flowers, and fruit, by Gibbons, over the chimneypiece. Some excellent pictures are in this room: a higly curious example of Hugo van der Goes, the 'Life of St. Augustine,' in divisious, being one of the most notable central compartment of this work repr the installation of Augustine as Archbis Africa. A China dish, with a view of Bu and the date, 1745, painted thereon, is the objects in this room. Next is the bla yellow bedchamber, hung with tapestry containing a state-bed of great age. He the Gibbons carving recurs; and the ch with its adjacent dressing-rooms, co pictures decidedly worth notice. Anothe room, nearly square and of good size, is nated 'Queen Elizabeth's Chamber.' doubted, however, whether the maiden ever visited Burghley, albeit there is a in the chapel also called after her, and spots in the park are identified with her The bedroom furniture may have been b from Lord Burghley's house in Stamford, Elizabeth certainly was entertained, as a from a distinct and precise entry in th Treasurer's diary, under the date of Augu 1566. It is further evidenced that a f the house at Burghley,—then the old h prevented Elizabeth from going thither time, and there is no record of her having the place at any other period. It was stay at Theobalds that the queen ma famous speech to her old Minister, sayi his head and her purse could do anythin it was at Theobalds that those royal en ments, which cost Burghley 2,000*l.* and each were given. The tapestry of Elizabeth's Bedroom,' so called at Bu could never have been seen by her, at all since it was made, probably at Mortlake, fifth Earl of Exeter. The subjects are t of Acteon, Bacchus and Ariadne, and A Galatea. Among the pictures Bassano composition, 'The Agony in the Gard decidedly the best."

Miscellanea.

Marylebone.—Dr. Whitmore, in l monthly report, justly complains that bone has no appropriate building in wh coroner's court can be held. "The system of holding inquests at public-h in all respects highly objectionable, a fac very many other parishes in London a conscious of, inasmuch as they have erected buildings especially adapted purpose of holding inquests. Some fe ago this matter was fully gone into Sanitary Committee, and there was a feeling that a building or buildings, p close proximity to each other, which comprise a mortuary-house, a post- house, and a coroner's court-house, oug erected. Indeed, a site,—peculiarly priate,—was selected, but, for reasons need not more particularly refer to, it c be obtained. There are, on an averag 220 inquests held annually in this par that fact alone should suffice to sh necessity of having an appropriate place them in. If St. Marylebone waits b years longer, it will be about the last o metropolitan parishes to do that wh sanitary and other scarcely less i reasons, ought to be done at once."

Pictures in Paris.—The Salon of open on May 12th, nearly two weeks la usual. The jury for the admission of is already at work in the halls abo readers of the *Builder* have alrea informed, there has been a vital chan election of the jury this year. Hithe those artists who had received med allowed to vote. The administration extended the right to vote to all ar have been accepted three times. A MM. Bounat, Bouguereau, Cabanel, Lefebvre, &c., have been re-elected. cannot select more than 1,200 works 10,000 submitted to them. Every fra this year bear a plate indicating the the picture and the name of the art and an illustrated catalogue containin vings of the best works, will be the onl innovations.

Institution of Surveyors.—At meeting to be held on Monday eve 28th of April, a paper will be read Allen Sturge, entitled, "The Disposa Sewage of Paris, with especial referen Sewage Farms of Gennevilliers."

eumatic Excavator.—During the con-ion of the Tay Bridge, considerable diffi- was experienced in sinking the cylinders o piers. At length, Mr. Reeves, one of the ers engaged on that great work, suc- d in devising an excavator on the pneu- principle, by means of which the sand acked up from within the cylinders and rged into hoppers, the cylinders following the displacement of the sand. One of excavators, or sand-pumps, as they are illed, has just been completed for the New Wales Government, and it is to be sent Sydney. The apparatus consists of a f cast-iron cylinders, 4 ft. in diameter, d on a staging and placed in connexion at ops with an air-pump, driven by a small -engine. The connexions are so arranged he air can be exhausted either from one er singly or from both at the same time. ottoms of the cylinders are connected suction-tube 3½ in. in diameter, which own to the sand. Here, again, it is so ged that the cylinders can be worked singly or in combination by means of self- valves. The soil is discharged from each er by a trap-door placed in its front. The and air-pump are carried on the same g, and the whole forms a very compact ement. In operation, the engine being l, the air is exhausted from one cylinder; d and soil rushing up into the vacuum reated soon fill the cylinder, the fact being ed by a tell-tale. The connexion is then between the air-pump and the second r, and that is similarly filled, during time the contents of the first cylinder are rged, and it is ready for the air-pump by e the second cylinder is full, and so the continues alternately until the desired s been attained.

abited House Duty.—An important e of relief has been granted as regards idence of the Inhabited House Duty by vision that where any houses, being one y, shall be divided into, and let in t tenements, and any of such tenements upied solely for the purposes of any trade ness, or of any profession or calling by the occupier seeks livelihood, or profit, cupied, the person chargeable as occupier house shall be at liberty to give notice in at any time during the year of the nent, to the surveyor of taxes for the or place in which the house is situated, the facts, and the Commissioners acting execution of the Acts relating to the in- l house duties shall, upon proof of the their satisfaction, grant relief from the of duty charged in the assessment, so as fine the same to the duty on the value ng to which the house should, in their have been assessed, if it had been a comprising only the tenements other than s are occupied as aforesaid or are un- d. Also that every house or tenement is solely occupied for the purpose of any r business, or of any profession or calling ch the occupier seeks a livelihood or shall be exempted from the duties by the ommissioners upon proof of the facts, emption shall take effect although a or other person may dwell in such house ment for protection.

Northants and Midland Counties ry Association.—At the quarterly g of this Association, on the 12th inst., ylor, of Witney, read a paper on "Our Supplies, Public and Private," dealing he subject from a sanitary inspector's view. An inspector of nuisances should, be armed with a distinct, reliable, and ady acquaintance with the Acts of Par- which afford to him the power of action. uld fully understand and appreciate the ifficulties, and have a knowledge as to rious sources of water-supply, and rks necessary for making those supplies le for domestic use. He should also nderstand what constitutes a sufficient and how to prevent its being wrongly wasted. Having alluded to the power sanitary inspector, if properly exercised, ylor stated that because the law now said n inspector must be appointed, some ground down the remuneration to the bb, and paid the cheques quarterly as a 'black mail," with a tacit understanding e less the officer did for the money the he Board would be pleased.

Black Mildew on St. Paul's.—Professor Leidy, at a late meeting of the Philadelphia Academy of Natural Sciences, remarked that his attention had been directed to an article in an English periodical (*Science Gossip*), in which the blackness on some portions of St. Paul's Cathedral is stated to be due, not to the effect of smoke, but mainly to the growth of a hitherto undescribed lichen, which would appear to flourish only on limestone, and in situations unaffected by the direct rays of the sun. Professor Leidy stated, according to the *Times*, that his attention was called many years ago to a similar black appearance on the brick walls and granite work of houses in narrow shaded streets, especially in the vicinity of Delaware River. Noticing a similar blackness on the bricks above the windows of a brewery, from which there was a constant escape of watery vapour in a more central part of the city, he was led to suspect it was of a vegetable nature. On a microscopical examination, the black mildew in this case proved to be an alga, closely allied to a species which he took to be the well-known *Protococcus viridis*, and which gives a bright green colour to the trunks of trees, to fences, and to walls, mostly on their more shaded and northern sides, everywhere about Philadelphia. Probably it may be the same plant in a different state, but until proved to be the same, it may be distinguished as *P. lugubris*. It consists of minute round or oval cells, isolated or in pairs, or in groups of four, the result of division; or it occurs in short irregular chains of four or more cells up to a dozen, occasionally with a lateral offset of two or more cells. By transmitted light the cells appear of a brownish or olive-brownish hue. In mass and to the unassisted eye the alga appears as an intensely black powder. Can this be the gonidial alga of the undescribed lichen of St. Paul's?

The Valuation Bill.—At a meeting of the Essex Chamber of Agriculture, at Chelmsford, Sir T. Fowell Buxton presiding, Mr. W. Lambton Lewis read a paper on the Valuation Bill, and moved,—"That this Chamber, while approving legislation having for its object the more equitable assessment of property, condemns the clauses in the Valuation of Property Bill which fix the arbitrary basis of rent for the gross value, the extensive powers conferred on the surveyor of taxes, and the cumbrous and expensive mode of final appeal." Mr. J. S. Gardiner seconded the resolution. Captain Delf moved, and the Rev. F. A. S. Faue seconded, the following amendment:—"That this Chamber, while approving legislation having for its object the more equitable assessment of property, disapproves the present Valuation of Property Bill, and more especially those clauses which confer extensive powers on the surveyor of taxes, and the cumbrous and expensive mode of final appeal." The amendment was carried. It was also resolved, on the motion of Mr. Holton, seconded by Mr. Courtauld, M.P.,—"That this meeting entirely disapproves the exemption of so much of the tithe from assessment as a clergyman may pay for the services of a curate, proposed in the 85th clause of the Valuation Bill."

Preaching from Afar.—On Easter Sunday a number of gentlemen interested in the microphone and the telephone assembled in the Telegraph Office of the Victoria Railway Station, Manchester, for the purpose of listening, by means of an apparatus designed by Mr. Louis R. Crossley, to the devotional service and sermon at the Square Congregational Chapel at Halifax, Yorkshire,—thirty-six miles away. Mr. Crossley's apparatus, which is called "The Telephone Transmitter," and is a modification of Professor Hughes's microphone, was fixed low down within the pulpit at Halifax, in order not to excite the curiosity of the congregation. Although such a position for the instrument was not what could have been desired, much of the sermon preached by Dr. Mellor, and the whole of the singing and organ music, were heard very distinctly by the small "congregation" at Manchester.

Cleopatra's Needle.—The "Indestructible Paint Company" are about to apply to Cleopatra's Needle, by order of the Metropolitan Board of Works, a coating of their patent enamel solution. It is to be hoped this is being done under proper advice.

Empties.—According to the *Metropolitan*, empty houses at Brighton at the present time represent a rental of 12,000*l.* per annum, and a dormant capital investment of half a million of money.

Art Students' Home.—A home for lady students attending art classes and schools in London has recently been established in a house in Brunswick-square, under the immediate patronage of her Royal Highness the Duchess of Teck and the presidency of Baroness Burdett-Coutts, with a committee of management. The lady resident will communicate with any one desirous of further information.

Oswestry.—Mr. E. Bremner Smith has resigned the office of borough surveyor, which he has held for twelve years, in consequence of the Town Council requiring him to devote his whole time to the duties of the office. The Council have resolved to appoint another surveyor, at a salary of 150*l.* per annum.

A Proposed Mansion.—Negotiations are in progress for the purchase of land at Sunningdale, in Berkshire, for H.S.H. Count Gleichen, upon which it is proposed to build a new residence from the designs of Mr. D. Brandon, F.S.A.

TENDERS

For Wesleyan Chapel, Plaistow. Mr. S. J. Newman, architect. Quantities supplied by the architect:—

Staines & Son	£3,944 0 0
Tibbit	3,750 0 0
Prout	3,709 0 0
Jones & Co.	3,596 0 0
Chapman	3,482 0 0
Hibble	3,478 0 0
W. & H. Castle	3,475 0 0
Parker & Evans	3,460 0 0
Newton & Triggs	3,400 0 0
North, Brothers	3,390 0 0
Thompson	3,378 0 0
Crisp & Tomlin	3,317 0 0
Shapley	3,295 0 0
Raynes	3,255 0 0
Gregar	3,219 0 0
Johnson & Co.	2,993 0 0
Beale	2,694 0 0
Maley	2,260 0 0

For proposed new class-rooms at the Stratford-grove School. Mr. Joseph Rookwood, architect. Quantities supplied by Mr. F. Palmer:—

Reed	£658 0 0
Abraham	624 0 0
Maddison	595 17 6
North, Brothers	590 0 0
Hoskings, Brothers	543 0 0

For alterations and additions (exclusive of old materials), at No. 1, Royal Parade, Chiselhurst, Kent, for Mrs. Beaumont. Mr. John Farrar, architect:—

Lack	£237 0 0

For alterations and additions at Nos. 15 and 16, Great Charlotte-street, Blackfriars-road, for Mr. W. T. Parkiss. Mr. Edward Clark, architect:—

Lack	£234 0 0

For the formation of roads, &c., on the Ley Spring Park Estate, Leytonstone, Essex. Messrs. Hammack & Lambert, surveyors:—

Hewett	£8,970 0 0
Maxwell	8,500 0 0
Bloomfield	8,450 0 0
Cardus	8,350 0 0
John Jackson	8,275 0 0
Jesse Jackson	8,000 0 0

For the formation of roads and sewers, on the Springfield Park Estate, West Acton. Messrs. Hammack & Lambert, surveyors:—

Cardus (accepted)	£4,721 0 0

For the formation of roads and sewers on an estate near Bruce-grove, Tottenham. Messrs. Hammack & Lambert, surveyors:—

Bloomfield (accepted)	£1,142 0 0

For the formation of roads, &c., at East Dulwich. Messrs. Hammack & Lambert, surveyors:—

Harris (accepted)	£1,588 0 0

For alterations and additions to Grange-mews, Grange-road, Eastbourne, for Mr. Richard Smith. Mr. Amos Crisford, architect:—

Hounsom & Sons	£920 0 0
Stevens (accepted)	659 0 0

For the erection and completion of a roof over roadway between the Central Meat and Poultry Markets, Smithfield, for the Central Markets Sub-committee of the Corporation of the City of London. Mr. Horace Jones, architect:—

Ashby, Brothers	£2,895 0 0
Browne & Robinson	2,780 0 0
Hook & Oldrey	2,671 0 0
Morter	2,478 0 0
Webster	2,330 0 0
Perry & Son	2,239 0 0
Hart	2,217 0 0
Conder	2,217 0 0
Mowlem	2,195 0 0
Ashby & Horner	2,153 0 0
Holland & Hannen	1,980 0 0

For the drainage of Brecon, for the Brecon Urban Sanitary Authority. Mr. Rhys Davies, surveyor:—

Davies	£10,283 0 0
Pickthall & Son	9,843 10 0
Backerstone	9,724 0 0
Batchelor	9,100 0 0
Welch	9,056 0 0
Gun	8,771 3 6
Cowbey & Son	8,689 14 8
Jones & Jebson	8,593 0 0
Thomas & Son	8,500 0 0
Dickson	8,260 0 0
Thomas	8,250 0 0
Dodd	7,700 0 0
Mackay	7,380 0 0

For painting and regilding, &c., the Monument, Fish-street-hill, for the Corporation of the City of London. Mr. Horace Jones, architect. —

Pitman & Cuthbertson	£339 0 0
Hayward	350 0 0
Conder	315 0 0
Macintosh	297 0 0
Taylor & Sons	287 0 0
Smith	279 0 0
Harrison & Wood	274 0 0

For the erection of mast and block workshop, Church-street, Rotherhithe, for Mr. Alexander Chambers. Messrs. L. Thomas & Son, architects:—

Kent	£1,650 0 0
Greenwood	1,555 0 0
Jerrard	1,493 0 0
Almond	1,430 0 0
Salt	1,345 0 0
Bulmer	1,310 0 0

For the erection of a new malting, at Maidenhead, for Mr. W. Nicholson. Mr. George Scamell, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Woodbridge	£5,553 0 0
Morter	5,543 0 0
Cox	5,399 0 0
Silver	5,286 0 0
Brown	4,950 0 0

For Chorlton Union Schools and Homes. Messrs. Maugnall & Littlewood, architects:—

Meadows	£19,189 0 0
Brown	19,022 0 0
Statham & Sons	18,775 0 0
Brown	18,413 0 0
Napier	18,199 0 0
Ward	18,090 0 0
Davies & Maudsley	17,972 0 0
Wilson & Co.	17,770 0 0
Foreman & Todd	17,599 0 0
Southern	17,375 0 0
Neill & Sons	17,376 0 0
Elms & Evans	17,000 0 0
Herd (accepted)	16,924 0 0
Webster	16,590 0 0
Warburton (withdrawn)	15,199 0 0

For a new coffee-house, in Belgrave Gate, Leicester, for the Leicester Coffee-house Company. Mr. E. Burgess, architect. Quantities by Mr. W. Thorncroft:—

Kellett	£3,159 0 0
Hutchinson & Son	3,050 0 0
J. & H. Herbert	2,939 0 0
Brown	2,965 18 0
Major (accepted)	2,943 15 0

For altering and improving premises, Nos. 3 and 4, York-buildings, Hastings, for Messrs. Reeves & Bowerman. Messrs. Cross & Wells, architects. —

Cruttenden	£1,397 0 0
Vidler	1,349 0 0
C. & E. Harman	1,273 0 0
Jenkins	1,260 0 0
Hughes	1,248 0 0
Norris	1,575 15 8

For stabling, &c., and conservatory, at St. Mary's Lodge, West-hill, Hastings, for Mr. S. Stanford. Messrs. Cross & Wells, architects:—

	Stabling.	Conservatory.
Cruttenden	£5 0 0	£615 0
Wood	495 0	597 0
Vidler	449 0	635 0
Rodda	475 0	589 0
Womersley	448 0	—
Taylor, Brothers	399 15	565 10
C. & E. Harman	436 0	527 0
Brown	—	549 5
W. & F. S. Smith	381 6	485 7
Phillips & Co.	—	481 0
Ditch	376 19	490 0

For two new houses and shops, London-street, Reading for Mr. W. J. Palmer. Messrs. Brown & Albury, architects:—

Knapp	£1,379 0 0
Searle	1,370 0 0
Higgs	1,349 12 0
Simonds	1,348 0 0
Pudley	1,337 10 0
Denton (accepted)	1,331 10 0

For small villa, at Castle-hall, for Mr. J. W. Palmer. Mr. W. H. Haynes, architect:—

Dugate	£849 0 0
Baker	849 0 0

For repairs to ship's gridiron, Newport, Mon., for the Newport Harbour Commissioners. Mr. E. A. Lansdowne, architect:—

Marrows	£1,224 13 6
Morse	1,067 19 0
Mills	956 0 0
Thomas & Son	939 0 0
Evans & Son	915 0 0
Jones & Son	897 0 0
Firbank (accepted)	840 2 0
Williams	830 0 0

For alterations, additions, and repairs to the Brixton Orphanage. Mr. Alfred Wright, architect:—

Maxwell, Brothers	£910 0 0
Pack, Brothers	893 0 0
Crabb & Son	835 0 0
Marsland	825 0 0
Phelps & Rice	730 0 0

For detached villa, Cavendish-road, Tooting. Mr. Alfred Wright, architect:—

Priestley	£1,188 0 0
Richardson	978 0 0
Newstead	865 0 0
Phelps & Rice	725 0 0

For second pair of model cottages, Hugon-road, Wandsworth Bridge-road. Mr. Alfred Wright, architect:—

Stoner	£687 0 0

For a new house and offices, at Oak-Lea, Wokingham, Berks (including pulling down of present house), for Mr. Edward Nicholson. Mr. W. Ravenscroft, architect. Quantities by Messrs. Cooper & Son:—

Silver & Son	£6,288 10 0
Higgs	6,296 0 0
Rider & Son	6,048 0 0
Woodroffe & Son	6,011 0 0
Staines & Son	5,830 0 0
Jarrett	5 700 0 0
Filewood *	5,723 0 0

* Accepted, subject to a few reductions.

For a lodge and entrance-gates at Oak Lea, Wokingham, Berks, for Mr. Edward Nicholson. Mr. Ravenscroft, architect. Quantities by Messrs. Cooper & Son:—

Rider & Son	£632 0 0
Higgs	624 0 0
Silver & Son	608 0 0
Jarrett	590 0 0
Woodroffe & Son	571 18 0
Staines & Son	566 0 0
Filewood (accepted)	565 0 0

For repairs and alterations to two houses in the Grove, Blackheath, for the Earl of Ashburnham. Mr. Charles Reilly, architect:—

Heeps	£1,029 0 0
Newman	1,294 0 0
Harrison & Wood	1,244 0 0
Gates	1,240 0 0
Jerrard	1,171 0 0
Wenborn	1,050 0 0

The Highways Committee of the Islington Vestry have accepted the tender of the Val de Travers Asphalte Paving Company, Limited, for paving the footways of Highbury New Park with their compressed rock.

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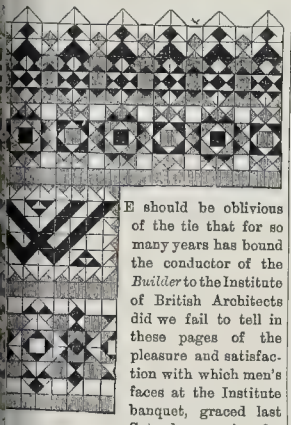
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ition of the Royal Institute of British Architects.



E should be oblivious of the tie that for so many years has bound the conductor of the *Builder* to the Institute of British Architects did we fail to tell in these pages of the pleasure and satisfaction with which men's faces at the Institute banquet, graced last Saturday evening by esence of the Prince of Wales, were ed. Trivial as a compliment from high may seem to over-earnest people, unntal as a public dinner is said to be by devotees of art, we confess unreservedly lief in the utility of festive gatherings t which was made to welcome the Prince uable capacity of Guest and Patron. From rner of this island came members of the on of architects to swell the throng of han 250 members united within the ble walls of the Modern Freemasons. eetings may sometimes mark a recurring or turn of events; the results of slow ation or determined reform are there ed, often more surely than by formal ons within the compass of an evening

Only a generation and a half have ce the "British Architects" formed an e; one of the founders (Professor on) was present on Saturday to return for a graceful allusion personally d to him by the Prince, and warmly up by the members. Nevertheless, a any things have, within that time, ted not only to make an institute, but the character of a profession. Few w will hesitate to admit that, during many years of which we ourselves have ional experience, the state of architecture ountry and of the profession of British ts has gradually risen; in its course has sclosed the unmistakable evidences of ment. We have looked back through and volume at records in the history of itute, at incidents of its corporate life lives of individuals who have given st years to rear and maintain it. Nor, mindful of the past and cognisant of the present, can we doubt that a future awaits it which only the most adverse fortune, both as regards rule and management, can now irretrievably impair.

It has been stated by the Prince of Wales, and the remark was confirmed by the necessarily more certain information of Mr. Charles Barry, that in the year 1834 the Institute of British Architects began life with twenty members. We know that at the first general meeting its council consisted of three vice-presidents, namely Messrs. Robinson, Kay, and Gwilt; of two secretaries, namely Messrs. Donaldson and Goldicutt; and of eight ordinary members, namely, Messrs. Charles Barry, Basevi, Decimus Burton, Fowler, Hardwick, Kendall, Papworth, and Rhodes. The president remained to be elected. The first meeting of the council was held on the 10th of December, 1834, at the Thatched House Tavern, in St. James's-street, and on the 20th of January, 1835, Mr. Secretary Goldicutt reported that he had been to view a large room with two smaller rooms attached, at Covent Garden Chambers. These rooms were taken, and soon afterwards the late Earl de Grey was elected first president. The newly-elected president made efforts to obtain the "patronage" of the Sovereign, but William IV. civilly declined, on the score that such a privilege would establish a precedent which might become disagreeable. Towards midsummer of the same year Mr. George Bailey made a suggestion, that the interests of the profession would be advanced by the union of the "Architectural Society" with the Institute. That junction, however, was not effected until the beginning of 1842. Five years before, by the medium of Lord Melbourne, the Queen consented to become patroness, and the date of the communication was the 8th of August, 1837. Ultimately the late Prince Albert, having become patron, paid a visit to the Institute, and took the chair both at the council and the general meeting, held on the 3rd of April, 1843. Two or three questions which now vex the deliberations of the responsible officers were even in those early days prominent. The question of rooms, or a fitting habitation, was continually mooted; the Institute memorialised Government for permission to occupy premises in Somerset House,—those vacated by the Royal Academy, which had just entered fresh quarters in Trafalgar-square. It need hardly be added that the memorial was politely shelved. In the year 1837 rooms were taken for the Institute at 16, Lower Grosvenor-street, and about the same time the Marquis of Salisbury was made an Honorary Fellow. In 1839 the Institute of Irish Architects, by the mouth of some of its members, proposed to become a branch of the Institute in London. Years after a similar suggestion was made, and at the present moment there are still a few unsentimental professional men in Dublin who believe the early project not only practicable, but to be desired. One other circumstance of those days, which may seem to mark the difference between them and the present time, is not without interest. In 1836 Professor Cockerell, the Royal Academician, wrote to the late Sir Charles Barry, Vice-president of the Institute, expressing a wish to be made an honorary member of the latter, because by the rules of the Royal Academy he was restricted from becoming a professional member of any other society. The offer was accepted, or the wish granted. In the same year two measures of some importance were introduced; the Transactions were ordered to be printed, and the porter—we have it on undoubted authority—was provided with "a neat livery."

Our purpose, however, is not to give a history of the Institute; a sketch of that was drawn by Mr. C. L. Eastlake, and it will be found in one of our previous volumes. Our object is to inquire whence has come over it a change, slight and unimportant as it may be to the outside public, but still a change which, to observant workers and critics within the fold, is indicative of better organisation and increased business? Undoubtedly an able and laborious President has had very much to do in directing the movement for the better that has lately marked the course of the Institute; but even Mr. Charles Barry, with all his earnest energy, could not have succeeded as he has done during the last three years had he not been supported by that majority of the members who, in 1877, carried a necessary and desirable measure, if not of reform, at least of improvement, in the administration of affairs. It will possibly be remembered that ever since the close of Mr. T. H. Wyatt's presidentship, when really practical work was accomplished, a great deal has been said and more thought about the state of the Institute both in a financial and a utilitarian sense. In 1874 a suggestion was mooted, and seriously considered by a few, of raising the subscriptions and entrance-fees of members both in town and country,—a course to which each year of recurring deficit seemed to point. At that time, while the late Sir Gilbert Scott occupied the chair, evil days had to all appearances set in. A special committee was appointed to consider and report on the affairs of the Institute; at the beginning of 1876 three special general meetings were held to receive that report. It was found, however, that the committee originally deputed to inquire into the state of the finances had proceeded to raise questions affecting even the Charter of Incorporation. On the 7th of February, 1876, the general body of members referred the whole subject, together with the report, back to the Council, with a request that the latter should, in accordance with the bye-laws, invite all the past-presidents and past vice-presidents to attend meetings of

Council convened to discuss the matters in question. Thus began the deliberations afterwards known as those of the Committee for the Improvement of the Institute. This committee had only just been formed under the guidance of its chairman, Mr. John Whichcord, when Sir Gilbert Scott having vacated the chair of the Institute, his place was taken by Mr. Charles Barry. Less than a year elapsed. The Improvement Committee reported on the 12th of March, 1877, to a special general meeting,—that is to say, the Improvement Committee submitted to the Institute a set of revised bye-laws, which were considered paragraph by paragraph, till after three sittings those bye-laws, forming the new rules, were amended and approved.

It may be useful to note some of the striking points in the revised rules introduced by the Improvement Committee; in so doing, we may add expression of our belief, —although, as we are bound to remind our readers, there are some which we do not approve, —that in their working they have been attended with beneficial results. First, with regard to the election of members. Under the old rules, the election of any person by ballot was decided by a majority of votes, but after March, 1877, one black ball to four white balls sufficed to exclude; moreover, no election could be declared valid unless ten Fellows voted. Under the old rules, the exclusion of any building-trade element was not only incomplete, but the compromise under which the contractor, the art-manufacturer, or building-tradesman obtained admittance was eminently unsatisfactory; though the inconvenience of the system was rendered comparatively small by the very few persons who availed themselves of the opportunity thus afforded. The class styled "contributing visitors" numbered about a dozen; these gentlemen, admitted on sufferance, were mulcted of an annual subscription, and permitted at times to swell the donation lists of the Institute. But since 1877, instead of a handful of persons daily engaged, often under the orders of professional men, in trades and manufactures connected with architecture, a new class of members has been formed of persons interested in the study of architecture, but neither engaged in professional practice, nor in any branch of building as a trade or business. This class, which in May, 1878, included 70 noblemen and gentlemen, now numbers 106 members.

Less than three years ago the system of subscription to the Institute funds was one of the utmost complication. An ordinary day's journey sufficed to affect the contributions of members. To practise or reside at so many miles from St. Martin's-le-Grand regulated, so to speak, the tariff of subscription. A Fellow who spent a year in profitable employment in Europe, India, or Australia, paid 21s. per annum, instead of the usual 4*l.* 4s. paid by a Fellow practising in London within a radius of ten miles from the General Post Office. Again, Fellows practising outside that radius paid, instead of 4*l.* 4s, only 2*l.* 2s. per annum. A similar diminution was made in the subscriptions of those who were called Country Associates; the town gentlemen of the junior class contributed 2*l.* 2s. per annum, the country gentlemen, 1*l.* 1s. After the revised rules were issued,—after the 31st of December, 1877, the subscriptions of members, in their respective classes, were equalised. Fellows practising in the great provincial capitals were required to pay an annual subscription similar to that paid by their metropolitan colleagues; and Fellows abroad, in India or in the colonies, were charged the same sum. The same thing was carried out with respect to the subscriptions of the Associate class, which now are 2*l.* 2s. per annum throughout the British Empire and in foreign countries. The members of the new class of Hon. Associates contribute a similar sum, and their entrance donations, each amounting to 2*l.* 2s., paid to the library trust-fund, are expended upon the purchase of books, binding, &c. The "declaration" taken by the professional members was revised; it was made more stringent in regard to the difficult problem of "Quantities," though the new portions inserted were less complete than had been originally intended. The class of students and of "temporary students," was abolished, and thereby the Architectural Association was freed from an appearance of competition by the Institute,—a competition which, as far as the number of students and the sort of education went, was less effectual than irritating.

A small but important alteration was made in the mode of nominating the Council. Under the old rules the fifteen ordinary members of Council, that is to say, all the Council except the president, vice-presidents, and secretaries, were permitted to serve for only three years at most. The consequence was that at the beginning of the session 1877-78 more than one-third of the Fellows had been or were "members of Council." The custom seemed to be that every Fellow should sit on the Council, and direct the affairs of the Institute, in what got to be styled "his turn." The result was inevitable. Under such a system a time must have come when the best men, or, rather, men best for the purpose, would not be found at the head of affairs. It had already been whispered that the chance of a seat on the Council, instead of being eagerly accepted, was sometimes offered, over and over again, to member after member, who persistently declined, and at last it was taken as a sort of favour by an obliging practitioner, often astonished at the unexpected demand. The Improvement Committee remedied this state of things, and the mode of procedure was both simple and satisfactory. The out-going Council invited all who had occupied the position of vice-president to take office. Fifteen out of twenty-six consented to do so if elected by the general body. If a few of the seniors,—Decimus Burton, Anthony Salvin, David Mocatta, George Godwin, F. C. Penrose, James Fergusson, and others,—are not now in active office, it is because they voluntarily decided to remain in their former honourable position of past vice-presidents. Those who accepted were, to give their names in the order of their seniority as Fellows:—Benjamin Ferrey, Edward I'Anson, David Brandon, John Whichcord, Ewan Christian, T. H. Lewis, John Gibson, Jos. Clarke, Charles Barry, George Valliamy, Henry Currey, Horace Jones, G. E. Street, E. M. Barry, and Alfred Waterhouse. Thus, though the measures carried by the Improvement Committee, and perfected by the outgoing Council, did not succeed in polling all the heads of the profession, that committee got together a body of men esteemed both without and within the ranks of the British architects; moreover, the revised bye-laws had been intentionally framed, and the intention was approved by the special general meeting which discussed the subject, so as to maintain for several years, if not a permanent Council, at least a permanent majority in the Council.

Nothing could have tended more to future welfare than the course then adopted. It was only in consequence of the reluctance of some of the seniors to descend into the ordinary ranks of the Council that it became necessary to nominate others who had not been vice-presidents, and thus the House-list of 1877-78 was put together. After it was issued other nominations were received. An additional name, that of Mr. Whichcord, proposed by Professor Donaldson and seconded by Mr. T. H. Wyatt, was added to the list of vice-presidents nominated by the outgoing Council,—a nomination which received conspicuous acceptance at the annual meeting. The general body, in gratitude for Mr. Whichcord's services as chairman of special meetings held in 1876, and as chairman of the Improvement Committee of 1877, returned him at the head of the vice-presidents. In other words, he was elected senior vice-president, the seniority of the vice-presidents having been determined by the new rules, under a bye-law now numbered 26. After two years, 1878 and 1879, during which the presidentship of Mr. Charles Barry has continued, the senior vice-president, Mr. Whichcord, succeeds to the chair (that this arrangement will always work well we doubt), and Professor Lewis becomes the senior vice-president. Thus, in the ordinary course of things, only one new vice-president would have been required, but in consequence of the resignation of Mr. Street, it has been necessary to nominate two members of council to the grade of vice-president; and in default of independent nominations having been received, those two gentlemen must hold office. The only thing to be decided on Monday as regards the vice-presidents is the order in which the names of Messrs. Edward Barry and Horace Jones shall stand,—their seniority having to be determined by the number of votes given by the general body of members. There is nothing, however, in the revised bye-laws implying any order of seniority among the fifteen gentlemen who compose the ordinary members of council; strictly speaking, their names in all official papers should be printed in alphabetical order, with the date of election to the Council added. Nor need all the thirteen ordinary members of the ex[t] Council be re-elected. Eight out of the th[ir]teen, if the annual meeting so will, be super[s]ded by Messrs. J. M. Anderson, James Brooks, A[r]thur Cates, Thomas Drew (Dublin), C. F. Ha[r]ris (Bristol), J. T. Knowles, F. W. Porter, and [C]. St. Aubyn. But if the meeting think that [the] thirteen gentlemen who since 1877 have su[c]cessfully, and in a way never before recorded [in] Institute annals, carried out the work o[f] Council,—if the meeting of Monday next [re]cognise that the thirteen are worthy of renewed [co]nfidence, then only two new names are requi[red] to complete the Council for 1879-80.

That the business, in which the present C[ouncil] has been aided by committees, has been thi[s] both large and various may be judged by [the] amination of the notice papers or circulars [sent] out after each sessional meeting; and if w[e] rightly informed all the meetings which hav[e] held during the past twelve months are not recorded. Nor need our statement that the done, independently of the sessional meetin[gs], the reading and discussion of papers, [of] the last two years is more earnest and lat[er] than it ever was before, remain, we venture think, unconfirmed by the hundred and members who sat at the Council-tables the changes of 1877. Those who knew the work of the Council was then and who now, do not hesitate to speak as they [do]. Ten years ago an hour was the conven[ed] period of a Council sitting; they met at o'clock on nights of sessional meetings took place at eight o'clock. But during Wyatt's presidency an hour's deliberation thought insufficient. The Secretary w[as] structed to call the Council meeting for hal[f-past] six. Ultimately, and especially during th[e] when committees for improvement were a[p]two hours were often insufficient; and n[ow] is remembered that two hours of Council m[ean]meant, if duties were to be faithfully ex[ecuted] another two hours of paper and discuss[ion]. life of a member of Council on certain M[ondays] between six and ten, became not only o[ne] but disagreeable. It was so disagreeab[le] not unusually gentlemen ascending to a sessional meeting were met by other gen[tlemen] descending from a Council meeting, hot haste for the home where dinn[er] been "put back" an hour. It is not asto[nishing] therefore, that, unless our memory f[ails] presence of members of Council at a s[essional] meeting used to be rare; we have know[n] after year sessional meetings to occur at[tended] the only portion of the Council pres[ent] sisted of President and Secretaries. Th[is] is not now the case is largely due to [the] proved system and increased facili[ties] deliberation. Since 1877 the Council ha[s] summoned at four in the afternoon, and d[uring] past twelve months it has been usual to [find] President and two or three others [in] places as early as half-past three o'clo[ck]. beginning thus early it has been pos[sible] obtain that refreshment which at su[ch] mortals, however erring, have from tim[e] morial required. With some a cab [to] "Athenæum" or the "Conservative," s[ome] others a hasty run to a neighbouring cho[p] have sustained the needs of nature [im]patient; but even the comparatively [im]found the exercise a little ungenerous happy moment a "dinner club" was c[on]and launched; and now, between half- and eight, the Institute Council retire [to] ordinary human beings to dine. The this club, consisting of past-presidents vice-presidents, and members of the council, is met by annual subscripti[on] individual payments; every item of ture incurred by what is known as th[e] Dinner Club is defrayed, of course, from sources. From time to time the club privilege of entertaining, as a host repre[sen]of the Institute, gentlemen who h[ave] invited to read a paper or attend a m[eeting] Conduit-street; and already colleagu[es] France and America as well as from parts of England have honoured th[e] with their company.

We do not intend to trouble our rea[ders] a repetition of details connected with sent work of the Institute of Architec[ts]; we desire to direct attention to a paragr[aph] the Annual Report submitted to the gen[eral] of members, and which is to be read on which treats of Mr. Charles Barry's l[oss] behalf of the Institute and the profe[ssion] that paragraph fall short, as it doe

ıd fall short, of the facts, it is probably ause the Annual Report of 1879 is not t of an official reporting to the Council, of a whole Council reporting to the eral body of members. Everything we r, and necessarily we hear a great deal about ıe matters, tends to show that the footing l at the present hour by the Institute is ıer than it was barely three years ago. Its tions with some other bodies, larger or more ıential, were then strained, and before then had been frequently threatened. The rse is now the case. If we turn to the ropolitan Board of Works, the Corporation of don, Her Majesty's Office of Works, the al Government Board, or the Home Office, same thing is observable. There is an arent desire on both sides to please and render mutual satisfaction; and though harmony is doubtless partly fostered the many representatives of other bodies societies now enrolled in the ranks of the itute, something more than that was neces- to invoke the sentiment. That something been the work of the President. To him rincipally due the progress to which the ıcil, in the first paragraph of their Report, le. The compliment paid him at Saturday's uet by the Prince of Wales, when proposing toast of "Prosperity to the Institute," was less merited than it was gracious. That er, successful beyond anticipation, was but ner instance of the energetic care that Barry has bestowed on all, even the minor, ness of office; for to him, zealously aided by Hansard, and the secretary, Mr. W. H. e, must be attributed the success that the Chief Justice chose to mark by the phrase princely hospitality." Indeed, many presi- will come and go through years of useful- in store for the Institute of Architects, but we are prophetically convinced, will work er, or merit higher praise, than the inde- able and genial chief whose term of office es on Monday night.

CONDITIONS OF LIFE IN INDIA.

s of interest to the engineer and architect ling to go to India to know what are the ions of life and service in that country. hey are very different to those of Europe ost colonies may be supposed, because h India has no parallel in the history of orld. Starting from one of the Mediter- n ports, the first real contact with Oriental ry and populations occurs in Egypt, the ated delta of which, both as to scenery ne housing and appearance of the people, any features in common with the northern of Hindostan. But the climate of Egypt l compared with India, and can scarcely be uncongenial to the European constitution. ny invalids it is salutary. At Suez, where teamers are exchanged, the passenger is be struck with the peculiar preparations on board his new vessel for a combat some as yet undescried but apparently hostile elements. The white is replaced warthy crew, the few Europeans belong- the ship seem to have lost their ruddy lexion, and assumed a uniform paleness, getables have a withered and stringy look, ne sheep are singularly thin, half dog and oat in aspect. Over the dinner-table hangs brown-holland fringe, suspended from a ing beam to be turned to yet unknown From two to three days after quitting where the sea may at times be too cold to in, the cold northerly wind ceases, and mperature immediately rises above 80° nheit. Owing to the stillness of the land- air, its saturation with moisture, and other obscure causes, which require a close of thermostatics for their solution, the ea is peculiarly stifling for most of the There is not a breath of air if the r is moving with the wind, and the rises from the funnel in a perpendicular . The temperature may not be above nd yet the heat is intensely felt. The um relief procurable is in the saloon with own-holland punkah vigorously pulled. onotony of a tropical voyage on which s only one halting-place between Egypt dia, is extreme.

n affords the earliest glimpse of the old India Company's Sepoy army. The es there are red-coated travesties of the soldier belonging to the Bombay Presidency. As in most places near the sea, the climate of Aden does not strike the new comer as particularly hot, and hiring a donkey he rides and walks over the basaltic tracks of the peninsular fortress interested in what he sees, and unmindful of the glare of the sun. Re-embarking there are several more oppressive days till the coast of India is reached. The ports of call at which the mail steamers first touch are Bombay and Madras; from the latter they go on to Calcutta. There is a considerable difference between the aspects of the three presidency towns. No sooner does the vessel drop anchor in the bay which forms the Bombay Harbour than the still air feels thick, and there is the disagreeable sensation of being surrounded by a warmth of which there is no getting rid. However, the place has from seaward the appearance of an ordinary civilised town; and on landing there are piers, streets, gas, and shops. Looking closer, however, life is at once seen to be pursued under extremely different conditions to those in a European country. It is evident that scarcely any of the white races live in the business town. They leave it in the afternoon for detached residences, stretching for miles along the hill sides which skirt the sea, or for cottages which line the beach behind the town. Then amongst the crowds of people met with there are very few Europeans; scarcely any of these are on foot, and it is at once noticed that the representatives of the pure white races are almost all young or middle-aged men. A mixed miscellaneous white population is nowhere to be seen going freely about. There is nothing in the shape of a colony of Europeans in Bombay. The higher classes of society are connected with the service of Government or the practice of the law, or are members of important European firms; only a very few shopkeepers and tradesmen constitute what may be termed a middle class; and the less well-off Europeans are merely railway mechanics, seamen, and pensioned soldiers. The only permanent residents of a colonial type are the mixed races or the Indo-Europeans, amongst whom those of Portuguese origin are the most numerous. The bulk of the Bombay population are natives of India, of course,—Parsis, Mohammedans, Mahrattas, and various castes of Hindoos, with a few Arabs and other races. There are colleges and schools giving an English education, so that the clerks and attendants in offices and shops are seen at once to be intelligent and well-trained persons for business purposes. But there the ostensible effect of European learning ceases, and the newcomer looks in vain for any common ground on which to base a cordial understanding. The native seems to have no interest apart from the matter in hand. It is soon clear that his mode of life bears no analogy to that of a European, and that what interests the one falls flat on the other. Of course, this very much arises from the fact that, man for man, the natives are very much poorer than the Europeans. If an educated Englishman had to live upon an income of 25*l.* to 50*l.* a year, after having attained the position of a university graduate, as respectable natives usually do, there would be small inducement to cultivate a taste for the works of the old masters, to dress well, to be read in the magazine literature of the day, to possess a keen musical appreciation, to engage in the chase, or in aquatics, or the agitation of political life. Instead of this, the natives' leisure study is first and foremost economy. There is no comfort, according to our ideas, in the ordinary native house. If there were, he could not live within his income. In a Bombay street, though the houses are of several stories high, the appearance is uninviting, cheerless, and it may be added dirty. There is generally no glass in the windows. The walls are grimy and black inside, as if the cooking of the family were done, as it probably is, in the living-rooms. Furniture is dispensed with; even clothing is chiefly for use out of doors, and it is to be questioned if much is worn in the home circle. For even Brahmins and others of the higher castes make a point of wearing a scanty garb, while the labouring classes go about less clad than bathers on the beaches of the English channel. Indeed, a person can, even from the slummiest purlieus of a British seaport, form no picture of the grimy retreats which the Hindoo inhabits. Such a singularly artless mode of life, and negation of all taste and elegance, is perfectly inconceivable to a European, and so different from what civilisation everywhere prompts, that as long as it continues,—and it is to be feared it must last,—complete agreement and sympathy between the races is impossible. The natives, however, are not so much the worse for it as might be supposed. As their residences are not inviting,—and even the darkest and toughest skin is sensible of mosquitos, flies, and insects generally,—the natives are outside in the open air as much as possible. Those who can sleep during the heat of the day, are up most of the night. Festivities, processions, and conclaves, take place then. There is a mildness and deference in manners produced by the very attrition of constantly living in public.

The climate of Bombay is, generally speaking, warm and oppressive throughout the year, but the thermometer is seldom above 85°, and the sun is not nearly so formidable as in places inland. At the opposite Presidency town of Madras, where there is about half the rainfall, the sun is much more powerful, and the heat is during the summer months almost unbearable. The thermometer is 92° so early as the month of March, and there is a bright, unshaded sun most days in the year. Madras is at once seen to be a place having an enormous native population and very little trade. The Europeans are far more scattered than in Bombay, and are found residing, for the most part, in roomy villas covering an immense aggregate area. Going out to dinner may mean a drive of five miles. The whole place is flat, with palms and green trees growing on land divided off into patches by hedges, but whose grass is dried up, yellow, and scanty. There are strong points of similarity in the social structure of both Madras and Bombay. In each there is a Governor appointed from England, with a Council composed of covenanted civil servants, and the Commander-in-Chief of the Presidency Army. Next in importance come the High Court Judges, of whom the presiding judges are appointed from home, under the royal sign manual. The most striking thing about these two towns is that almost the whole European community is, directly or indirectly, supported out of the taxes of the country. The independent merchants and bankers are exceedingly few, and, till lately, even the medicines required by Europeans were provided by Government. Such a thing as a European of private means living, as he would do at Sydney or New York, in the settlement from choice, with a family about him, is quite unknown in these sunny seaports.

In the time of the East India Company, before mail steamers took letters and passengers into the Mediterranean in two or three weeks, most of the Indian officials had come out young with the ambition of overcoming climate and prejudice, and making India a comfortable and civilised colony. They were encouraged in this idea by the singularly responsible positions that they attained at a very early age, and the excellent salaries enjoyed. A stimulus was also afforded by the men of mature genius, who were sent out to fill special offices, like Sir James Mackintosh and Lord Macaulay, in order to accumulate an independence that they could not amass so rapidly in public employment at home. The consequence was that institutions rose in the Presidency towns, recalling by their names at any rate those of British towns. Not only museums, public parks, hospitals, clubs, botanical gardens, libraries, but even universities were founded granting degrees in the faculties of arts. The efforts in behalf of education were strenuous, and urban improvements were well supported. The heads of all departments of Government were massed at the Presidency cities, round the Governor. Consequently the best paid and most influential persons were to be found there, and the tendency was strong to look to a position at the Presidency as the highest form of promotion. Literary men brought out to occupy professional chairs, the leading medical men, the bishop, and a representative body of clergy, all clustered at the Presidency. There was thus a body of experienced, well-paid, and highly-educated official residents, with little to do except the tasks which they chose, or British public opinion incited them, to set themselves. Architecture found in this limited class its sole patrons, and the only buildings in India of any consequence have been erected to supply the wants of the British community at the three Presidencies.

Education has been one of the greatest hobbies of the administrators of India living at the Presidencies. It is singular that none of the colleges started under their auspices were for the education of any members of their own

families. These were carefully sent home to be educated in Great Britain. The want of culture in the natives, and the impossibility of finding any with whom sympathy and association could be possible, appears to have been one of the inducements to impart at any cost a high European education. There must also have been a vague idea that the mere imparting a literary education would lead to professional affluence, as it does in the case of so many Europeans. But sufficient allowance was not made for a number of facts connected with India that have to be taken into account. A handful of educated white men coming to a semibarbarous country, and at once stepping into lucrative and prominent official positions, are apt to regard their education as the sole cause of their ready elevation. But the natives of India see that not merely are offices of this kind very limited in number, but only capable of being constituted and thoroughly well filled by a European race, possessing qualities that their national history almost forbids the expectation of being ever found combined in single individuals. As a practical matter the Indian colleges only train subordinate officials. The graduates of the universities become clerks in the public offices; and the students of the medical classes and in the engineering schools become apothecaries and overseers. There are a few exceptions, but these are chiefly Indo-Europeans, sons of warrant officers and army pensioners, who have reached the upper professional ranks. There are rare instances of some natives of good status who have gone to college with a view of holding high office at the courts of native feudatory princes. But everything that is really worth having in British India has, with trifling exceptions, been reserved for Europeans. Consequently, Indian universities have little to offer, except an empty degree. This unfortunately is of no great value in official life. The only places open to natives in which money can be made are the subordinate collectorships of the Land Revenue, and the managing clerkships of the Civil Courts in the interior of the country. In these, shrewdness and knowledge of native habits and traditional practice are of more use than the philosophy of Plato or the logic of Bacon. In India there are universities, but these are not the passport to the Church, for there is no establishment; to the Army, which is officered from Great Britain; to medical charges, for these are occupied by army surgeons; to engineering, for scarcely one per cent. of the engineers in Government employ are appointed locally.

There are in a country like India no recognised liberal professions supported by the masses of the population. These are all absorbed in Government agency. Except attorneys, the Indian colleges turn out, it may be said, no members of any of the usual learned professions. But the annual examinations give rise to eloquent speeches every year, in which the advantages attending learning of the particular sort imparted are set out in glowing periods. Apart from the incentives to mental cultivation and to scientific research that the collection of the leading minds of the country at the Presidency centres produces, there is little else of a spontaneous nature to call out spare energies.

Eastern residents are very fond of a dreamy pomp. Much time at the different Presidencies is taken up in waiting on the Governor in the case of civil servants, and on the Commander-in-Chief in the case of military men. No opportunity is lost. Some officials, not satisfied with the ordinary means of access to Government House, are gazetted as having the "private *entrée*." There are weekly breakfasts, at which any official can attend, and obtain an interview afterwards. New arrivals have stated places at which to write their names in books kept for the purpose, and a sharp look-out is maintained that these go their round of calls. Military men, who in England dislike uniform when not obliged to wear it, are in India perpetually putting it on. When a great State official departs by train or steamer there is a rush of a uniformed or fully-dressed crowd invited by *Gazette* notice to the wharf or railway. Gentlemen who in their own country have scarcely heard as many guns fired in their lives, have nine or more saluting cannon fired at their arrival or departure. The style of dress officials are to appear in is even prescribed by authority, and a civil servant coming to hear the evening brass band in an equivocal hat or comfortable lounging-coat may be ordered off the scene. In this way there is a high pressure of State importance, always tending to remind the head of a department that he bears, with a high-sounding title, the wand of a real authority. The peculiarity about India is, that these positions are not the result, as in a free country, of the suffrages of an electoral body, the possession of property, or the efforts of self-help; but are due to the operation of seniority, and local recommendations upon fixed classes of officials, whose exact line of employment has been defined for them their examiners into public life. The highest paid offices are almost exclusively set aside by law for members of the covenanted civil service, who were formerly nominated by the East-India Directors and the Board of Control, but are now chosen by open competitive examination at Burlington House. These offices are, roughly speaking, remunerated at twice the rate given to members of other branches of the Indian service. It looks decidedly fair that entrance to the administrative body should only be obtained by free competition. But it is open to doubt if the advancement of a country is not impeded when the right to the positions conferring most affluence is given away absolutely to those who can show themselves cleverest, or rather care to display their cleverness, at the age of one-and-twenty. There is the further question whether the collection of the Indian revenue ought to be rendered the most dignified and lucrative of district employments and the object of ambition to the rising talent of Great Britain and her colonies.

At Calcutta there is a larger commercial body than either at Madras or Bombay. The trade is very much greater and more likely to continue at a tolerably steady level of value. Raw produce is drawn from the entire Ganges valley, which is the most productive region of the Peninsula of India, and the thickest-peopled. The town is situated on a tidal river, and being close to the tropical line has in some respects a much better climate than the other Presidency cities. Formerly, when the Governor-General resided continuously at Calcutta, the State maintained at the minor Presidencies was repeated on a much larger scale, as the Calcutta officials were of the very highest grades. But of late the Government of India have moved every year to the hill station of Simla, in the Punjab, for about six months, and there is, therefore, little show made by the members of the Supreme Government. Calcutta is for half the year quite contented with the provincial gatherings at the residence of the Lieutenant-Governor of Bengal. British institutions, however, abound at Calcutta, where in name, at all events, there are all the public establishments of a refined and civilised community. The same conditions and civilised community. The same conditions prevail as have been made the subject of remark with regard to Madras and Bombay. The pure white race have little participation in the various educational establishments, their sources of ambition and advancement lie elsewhere, and the colleges and universities are still seen to be engaged in the training of clerks and subordinate agents. It is only at one of these three presidency towns that anything approaching an ordinary English life can be led, and where alone a mixed society can be encountered. Officials, certainly, predominate, and, except the European merchants, nearly everybody is supported by the taxes; but there are the bankers, the staff of the guaranteed railways, and the independent clergy, to take the opposite side of a question, and give scope for the play of argument on official measures. The heat is, after the expense of living, almost the only objection to the Presidency towns. Residents dress as they would in a European capital, and if they make very much believe amuse themselves in a similar manner. They can drive to their work, and be always back in time for dinner. Provisions are plentiful, and of fair quality; there are excellent shops, and everything can be got. But newly-arrived architects and engineers can seldom stay any time at these agreeable centres. They are for heads of departments, and there is active employment in them for few of the younger members of the services. It is besides thought salutary to give the junior officials an insight into the genuine aspects of Indian life by sending them at once into the interior, where the circumstances attending residence are very different from those at the Presidency towns. The university man parts from the stir and mental activity there observable with some regret, but as yet unaware of the nature of the rest of India, and the structure of its social and official organisation. The effect of be kept at the Presidency towns in the early te of service is not seldom to inspire an intellig reluctance to leave it, and a species of conter for everything relating to the wide territory side city limits. In the case of the archit some dismay at the prospect of a change is ceivable, because there are no other Is Europeanised cities in which there is a po bility of his time being filled up in the prac of his craft. Indeed, an architect of s notoriety who took up an appointment ten rarily under one of the Indian Governm was asked to enter the service. But upon Government being unable to guarantee tha should not be employed in care of the pu roads, he felt obliged to decline the offer, return as an architect to practise in Europe.

THE REMAINS OF A FAMOUS ORAC

Never, it may be said, since the early da the Renaissance, when were unearthed so ma the extraordinary treasures that had lain hi away from the light, and thus saved from ferocious barbarity of the Dark Ages, such extensive discoveries of antiquity and historic days been made as within the last years.

Without having exercised an influenc immediately appreciable on our existenc that of the Classic revival of 400 years ag has been left to the nineteenth century to reason for astonishment at the results obta by the patient researches of its scientific antiquarian sons. It has been reserved t present generation to learn, in the mid archæological investigations carried out end to end of the globe, from South Americ Mexico to Assyria, India, and New Zealand startling facts proved to us by geologists while our very grandfathers considered tha imperfect knowledge of Greece and Rome acquired in their youth at school and c told them the secrets of existence as far as was necessary or even possible in the h of the world (a defect which even still great extent, exists in our educational sys we are only now, a result invariably accom ing the acquirement of knowledge, learnin little we know of the history of our plane

What would our ancestors have said hac known, as we now do, that by calculat must have taken at least some nine milli years to form a coal-basin like that of N umberland; that all the forests at present ing over England reduced to coal would sur produce a stratum only some 6 in. in thick or, if told on the trustworthy authority John Lubbock, that, calculating the dimi of a cliff by atmospheric action at 1 in. 1 century, the denudation of the Weald, twenty-two miles in breadth, would r 150,000,000 years? According to Bis number of experiments made on blocks of in a state of fusion show that no less 350,000,000 years have been necessary to r the earth to its present temperature. geologists, who have calculated the time sary for the building up of the terrestrial have arrived at a lapse of some 600,000, 700,000,000 years.

It has been said that few persons ha conception of the significance of a billio here, even in the consideration of millions figures are calculated to awake feelings of thing more than surprise, the more so w consider what calculable time is, in com with the abyss of past existence which vestigations of science have as yet been to fathom.

The discoveries relative to epochs c porary with human life even are diffic ordinary comprehension. Objects bear mistakably the work of man's hand ha found under the mud of the Nile, and, by the thickness of the deposit, they a antiquity of at least 72,000 years. A tion of the same nature made from stala covering, in the first place, Roman rem pottery, and at a much lower depth, worked by the hand of man, and implements, mingled with the *débris* animals of the antediluvian days, enab

* To be continued.

† Mr. Henry Bessemer some while since, in a the *Times*, in a most simple manner brought t cance of a billion home to the understanding reader by explaining how a billion sheets of superimposed upon each other, and compresse compact mass, would reach an altitude of 47,348

r England, the presence of man contem-
y with the elephant and the rhinoceros,
eriod 264,000 years ago,—a modest figure,
ver, compared with Darwin's calculation,
fixes the appearance of man on the globe
60,000,000 years ago.

possession of such startling facts, the
ologists have not allowed themselves for a
nt to be discouraged in their labours;
, the nations of the world seem striving
iseworthy emulation to outvie each other
r researches.

ent and sadly disturbed as is her modern
, Greece has not been behind the other
an countries in the ranks of archæolo-
investigation, and within the last few
he discoveries of Dr. Schliemann, among
thers, have delighted the archæological
iasts.*

n recent news received from Athens, it
appear that the Grecian Government
desirous to commence, in spite of its
l difficulties, a number of useful public
and within a few weeks past we learn
e correspondent of the *Journal des Débats*
nong these projects a proposal has been
forward to drain the historic Lake
in that once most fertile of Grecian
s, Bœotia, which now forms a portion
lia; by the accomplishment of which
the dangerous malaria there existing
destroyed, and an opening given for
ve agriculture. The work, it would
m all accounts, is not of extreme diffi-
ll that is necessary being the cutting of
l through a mountain of no great height
vel of the bed of the lake, and thus
a canal to the sea. The want of
, the French correspondent very truly
might be supplied, as was the case
is XIV. built Versailles, by the soldiers,
reece are conscripts, and therefore, for
part, of agricultural origin.

istorical Bœotian lake, which has been
d to the *impluvium* of an old Roman
shut in by a circle of mountains, the
which are familiar to the world, and
the most famous are Parnassus and
the home of the Muses, Cithera and
rnes, all of whose tributaries it re-
he classic engineers, we know, had cut
of subterranean canals; and Strabo,
spoken at length of Lake Copais, tells
rthquakes had changed its shape. The
rimeter of the lake is some nineteen

where in the days of antiquity existed
ch and flourishing city, such as Orcho-
the historic Platæ, now stand only a
able villages, the inhabitants of which
thinned by the attacks of fever. The
h grow on the shores of the lake were
days a great source of wealth for the
as they enjoyed the reputation of
most melodious musical instruments
the whole of Greece,—instruments
et notes were applauded in the games
of the Graces at Orchomenes, at the
f Love at Thespis, and those of the
ibethra.

large and now deserted district that
n Government propose to utilise, and
, we feel sure, of every one will be in
so praiseworthy an effort, which will
also supply not a few archæological

years past archæologists have been
with their accustomed ardour the
of Greece. Athens, Tanagra, the
Troy, Olympia, Mycenæ, Ephesus,
e Samothracian islands, Cyprus,
many other portions of that once
y, have been explored by students,
the true zeal of the historic archæ-
among these searchers the French
hens has contributed no small share
k.

rches bestowed upon the prophetic
of ancient Greece have, among
een the least interesting, for there
very base of antique life, and the
f its social laws. At Delphi, in the

researches of MM. Foucart and Wischer, few or no remains of that once famous and wealthy oracle were found;* on the ruin-covered island of Delos, M. Lebegue was rewarded with the discovery of the interesting remains of the sanctuary of Apollo,—a number of rude stone slabs roughly joined, which formed the temple in which were practised the rites of the oracle. This primitive structure, which, in the solitude of a deserted island, still stands almost as it came from the inexperienced hands of its architect 3,000 years ago, is a striking proof of the religious and simple faith of those distant days. It was in this cave, which the most primitive effort of human industry had so rudely put together, that the faith of those early ages had recognised the signs of oracular inspiration, and the belief in this power remained till the last days of paganism, for the Emperor Julian, in the phetic advice of Apollo at Delos.

Even if it is far from the classic island of Delos, in the Ægean Sea, from the craggy and historic slopes of snow-clad Mount Parnassus, reflected in the Lake Copais so soon to disappear, and nestling under this poetic home of the tuneful Nine, the famous oracle of Delphi at its feet, it is no great transition to travel in imagination to that other famous oracle of ancient Greece, Dodona, which has recently been the scene of a number of more than ordinarily interesting archæological discoveries, a valuable and exhaustive account of which appeared not long since in the *Revue des Deux Mondes*.

From the novelty and the archæological value of the discoveries made, we have considered that it may not be uninteresting to many of our readers to lay before them some explanatory extracts from M. Jules Girard's admirable article, more especially as in the retrospective Exhibition of the Trocadéro at Paris last year, no little interest was aroused by some of the relics and inscriptions which had come from the first excavations made.

In traversing the high road from Thessaly to Epirus, that which in an opposite direction was followed by Julius Cæsar, and after him by Pompey, before the famous fight at Pharsalia, and, many a century before those two heroes, by the antique populations who spread over the Thessalian plain, the road is certainly one of the most beautiful that can be imagined, from the remarkable contrasts its scenery affords. In threading upwards the sources of the Peneus, the oaks and planes, the forests of beeches and of pines, at the last turn of the road, you are pointed out, far above, the rocks among which lies the interesting monastery of Meteores.†

Still traversing the rich valley of the beautiful and romantic Peneus, with the majestic peaks of Ossa and of Olympus, which mark the site of the poet-sung and lovely vale of Tempë, across the gorge of Mezzovo the whole scene suddenly changes; rough and rocky slopes present themselves, the region which was the antique Thesprotia, the centre of the august and sombre religion which presided over the birth of Greece. It was here that were said to be n antique legends the fabled infernal regions, and there existed the Achernian marsh, the bitter Acheron and the "grieving" Cocytus, and Aornas under its Latin name of Avernus, where Orpheus evoked the dead; the whole wild scene whence the poet of the Iliad, it is believed, drew inspirations for his grand description of hell. There lies in gloom the savage valley of Souli,—Kako Souli,—and opposite it, through a *klisoura* or narrow rocky cleft, rolls a torrent, crashing between the rocks of Souli, the classic Acheron of the poets.

It is near the lake of Janina that was situated the sanctuary of Dodona, the oldest of all the sanctuaries of Greece, founded by the Pelasgians anterior to the development of polytheism, and no less venerated by the brilliant races who succeeded them. "Great Dodonian Zeus, who live afar, and reign on the cold Dodona," such is, at a decisive moment of the Iliad, the invocation of Achilles to Jupiter.

Dodona was for the Greeks the first spot where their religion assumed a definite form. A detached branch of the great Pelasgian migration, which directed itself towards Italy, settled here, and seems to have conceived the idea, strongly influenced by the nature of the scenery, of a god of nature and of men, a god of the air and of storms, who moved by his mysterious power the bowels of the earth and animated the waters which, from a cleft in the side of the mountain, gush out in different directions and form the great rivers. It is in this region of Mezzovo that rise the Achelous, the largest of Greek rivers, the Arachtus, and the Peneus.

The sanctuary of Dodona has only recently been discovered by M. Carapanos. The ruins of the sanctuary have generally been sought for near the lake of Janina; tradition placed them at Astritza. About twenty years or so since, M. Gaultier de Claubry, a member of the École Française of Athens, led by an exploration in Epirus to the important ruins near Taracovista, the capital of Molossia, was independent enough to regard these ruins rather as those of the sanctuary of Dodona. M. de Claubry is proved now to have been correct in his surmise, but the opinion of the young traveller passed unnoticed save in a *mémoire* sent to the "Académie des Inscriptions."

In the second edition (that of 1873) of Dr. Isambert's "Itinéraire d'Orient," a description of these ruins is to be found, a proof of the value of that work. M. Carapanos now brings to the support of his discoveries a mass of unanswerable proofs. He has explored the ruins of Taracovista, and brought forward a number of inscriptions relating to the oracle of Zeus Naïos and Dione, the great divinities of Dodona.

It was here, in a damp cold valley, that was situated the temple. The towering mountain on the slope of which lie the ruins is the Tomaros. A small enclosure, with towers which rise from 6 ft. to 10 ft. above the ground, marks the site of the ancient necropolis. The large theatre, in such excellent preservation that the seats still remain, we know did not serve for the festivals of the kings of Epirus, but, as inscriptions prove, for the celebration of the Naian games in honour of Zeus Naïos and Dione. Finally, the walls which descend the slope from the hill by the side of the theatre mark the sacred enclosure, inside which rose the different religious buildings, among them the temple of Jupiter, the ruins of which lie mingled with those of a Christian church, which succeeded it in the early years of our era. This enclosure has been carefully explored, and it is from the excavations there made that came the objects exhibited at Paris last year,—an interesting collection of superb antique bronzes, statuettes, sacrificial utensils, figures of animals and human heads, a wealth of ornamental design which shows us the extraordinary artistic resources of their fashioners. In several of these objects the artistic beauty is great, in spite of their small dimensions; great in style, from the evidence of a thorough knowledge of nature and the model taken, and from the firmness and freedom of execution displayed. It was a happy privilege enjoyed by these unknown artists, that of finding, to guide the cunning of their skilful hands, firmly established traditions, and an hereditary sense of ornament which their predecessors had moulded and perfected in borrowing from the East. Happy the condition of antique existence, which offered to them, ready to their hands, an inexhaustible source of inspiration in a noble mythology, graceful and spiritual, capable of inspiring the noblest ideals, and yet leaving free to the artistic imagination a wide field of fancy. They have created and left to us for all time rich specimens of bronze work, from which our sculptor's art, whatever may be its own distinctive merits, has derived the greater part of its power.

We must refer those who are more than ordinarily interested in such researches to the plates given by M. Carapanos, in which will be found the reproduction of all these bronzes, with explanations added by more than one competent authority in such matters. In the same pages are also to be found a number of inscriptions, of great classic and archæological interest. Some of these are public documents, others private, relating to property preserved in the Temple, according to the custom of the Greeks, who confided to the care of the gods their family or legal documents.* But the most numerous and interesting of these inscriptions are of a religious character. In a series of admirably-written chapters M. Carapanos tells

ve write, we learn from the *Nord Deutsch* ung that fresh accounts have been received ul progress of the excavations which the nment has been carrying on in the ruins of te recently has been completely brought to led portico of the Echo, near which were ead of Hercules, a statue which seems to the attic of the Temple of Zeus; another upa; a beautiful bas-relief in bronze, repre- es as an archer; a bronze bucket; and three of the first Greek epoch.

* "The Cave of the Oracle of Delphi," the title of a paper read before the British Archæological Association, by Dr. Phené, in last March, was noticed in the *Builder* for March 15th.

† For a description of which see the *Revue des Deux Mondes* for November 15th, 1877; and also, if we mistake not, in Curzon's graphic and valuable work, "The Monasteries of the Levant."

* In the same manner,—and doubtless both religions derived the custom from the same source,—the Mahometan mosques are the perfectly safe and trusted repository for the household possessions of any Mussulman who leaves for a time his home.

us the history of Dodona, from the origin of the oracle to the time of the destruction of the Temple, and in addition he collects all that is known of the worship and the process of divination, and step by step all the texts which are connected with the subject are carefully given.

The sanctuary of Dodona represents an age of Greek religion even more antique than that of Delos, and by good fortune a kind fate having handed down to our days classic authorities, we are enabled to know approximately how these prophetic revelations were made. Jupiter had at Dodona for his first priests the antique Selli, whose austere life was submitted to an asceticism which offers a strange contrast to Hellenic customs, but which was peculiarly connected with the sombre characters of so primitive a religion. "The Selli, who sleep on the bare ground, and do not wash their feet," said Homer; "The Selli, inhabitants of the mountains, having for couch the soil," said Sophocles. The women Pleiades, it would appear, had also for their special function, from very great antiquity, the transmission of oracular replies.

As long ago as the days of Herodotus these priests and priestesses had interested the father of history, and in his ardour to pursue the solution of his religious problems he visited Dodona, after his travels in Egypt and Cyrene, and he compares, according to the custom of his theology, the traditions of those distant countries, and arrived at the conclusion that formerly a priestess of the Temple of Jupiter in Egypt, at Thebes, had been transferred to Dodona, where she had founded the worship of a god whom she had honoured in her country. As to the revelations themselves, they are connected especially with the manifold nature of a great god of the air. It was the breath of an invisible deity which agitated the shuddering leaves of the sacred grove of oaks,—the many-tongued oaks, as Sophocles has called them. It is especially of these prophetic trees whose rustling murmur the priestesses interpreted, that the classic authors speak so often. Again, it was the breath of Jupiter which sounded the brazen bowls of the oracle. In later times, this latter mode of divination was modified by the invention of an ingenious apparatus, of which Strabo and other classic writers speak at length, without, however, agreeing perfectly as to the details, but all making mention of a statue with a whip formed of a triple chain of knuckle-bones;* this chain, by the action of the wind, struck the brazen vessels, and jostled them one against another, and from these discordant tones the priestesses drew their oracular decrees. So long did these brazen vases resound that a Greek proverb compares an inveterate talker to the vessels of Dodona.

It was, therefore, we see, from the prophetic tremblings of the leaves of the sacred oaks, and the jangle of the brazen vases, that the divine voice was heard, which the Selli and the Pleiades interpreted to the people. There existed also another mode of divination, the murmur of the waters, in which, from an analogous conception, was heard the voice of the sovereign fecundator, the god of the damp valley of Tomaros. From the roots of the sacred oaks, if we are to believe a classic authority, sprang a source (which may be identified with the fountain of which both Pliny and Lucretius make mention), whose icy waters, when an extinguished torch was plunged into them, rekindled it. Divination by lots existed also at Dodona. The means of consulation, in fact, were various, as we see in this privileged and sacred spot, the centre where an archaic religion had gathered together the ancestors of the Hellenes, the Greeks, as Aristotle calls them, and where this awe-inspiring worship had initiated them into the first elements of civilised existence.

For centuries the most hallowed of Greece, the oracle of Dodona was consulted from all parts of the Hellenic world, not alone by the various governments, but by private individuals. It is true that the oracle of Delphi, situated on the confines of ancient Greece, which on the north barely passed Mount Parnassus, was even more frequented, richer in votive offerings and artistic monuments, and seems to have been considered the religious centre of the Greek nation.†

But still we see no less evidence of the veneration for Dodona in spite of its remoteness. Apollo himself, according to ancient belief, possessed only the power of announcing the decrees of his father, Jupiter, and in the Homeric hymn he is represented, when scarcely born, as taking possession of the attributes of prophecy, and crying,—"I shall announce by my oracles the infallible decrees of Zeus." It is natural, therefore, that Dodona, whose titular god made known his own wishes, should have a certain supremacy over even the oracle of Delphi. "Consult Dodona and Delphi to know if it is your interest for the present and the future to do what I counsel." Such are the concluding words of the plan of financial and political reform proposed by Xenophon to the Athenians. The two oracles are thus often associated, and so we find them in the writings of Plato and Demosthenes, authors of credit sufficient to prove the value placed on the prophetic sanctuary of Epirus during the flourishing age of historic Greece.

When the loss of her liberty shook all Greece from end to end, Dodona had especially to suffer from the accompanying dissolution of the constituent elements of the primitive society. Destroyed first by the Etolians, pillaged by the Thracian allies of Mithridates, the temple was only rebuilt many years after, probably in the first century of our era, in the reign of Adrian, who showed himself so favourable to the restoration of paganism; but what was thought even worse than material loss, the once-famed oracle of Dodona found the public faith in its decrees almost dead. The Jupitter of Lucian complains to Menippus that his home at Dodona is colder than the laws of Plato or the syllogisms of Chrysippus. It was not, however, a complete desertion, and the oracle was, we know by history, consulted till the fall of paganism. Coins found near the temple appear to prove, to the archæologists conducting the researches, the persistence of the worship of Zeus, Naïas, and Dione, till a late date.

But discoveries have been made, even more interesting and satisfactory, on the nature of the consultations with the oracle, together with the remains of votive offerings; these discoveries of the consultations, memorials of the worship of ancient Greece, have in themselves a special claim to our attention, as to this time their nature has not been thoroughly known. At the Trocadéro retrospective exhibition of last year might have been seen some of these relics, consisting of small plates of lead, bearing epigraphic characters, and from these M. Carapanos and M. Foucart (both skilled students in the art of deciphering inscriptions) have discovered some curious revelations on the simple piety and religious faith of the ancients. These relics consist in the first place of a certain number of demands made by a body of the people of some district. For example, the Carcyrians* ask to which of the gods or heroes to offer sacrifices and prayers to have peace restored to them. One has only to read Thucydides in those passages referring to this period, to see how interesting is such a consultation made at a time of discord. It is, however, difficult, from the injured state of these tablets, to determine their date; the history of Greece is full of the demands made by various people to the oracle of Dodona, but it is difficult to learn if they were referred to the oracle on these leaden tablets.

The consultations of private individuals present an even more striking character, and one absolutely novel both in form and subject. Several petitioners desire that wish common to all ages, of health and fortune; in these there is nothing remarkable, but what is worthy of note is how, after some dream, a petitioner rushes to ask to what god to pray, or on what altar to offer sacrifices.

But even more naïve is the petition of a shepherd who promises to Zeus his gratitude if he succeeds in rearing his sheep. Another,—who takes care to name himself,—asks whether it will be more advantageous for him to choose a property in town or in the country. Agis consults Zeus on the subject of his pillows and blankets, which he has lost or had stolen from him; and what numerous other demands would have been found had time only spared them, it is easy to imagine; but should good fortune still reward the explorers, we should, we are afraid, find after all that in the matter of devout puerilities the moderns have invented but little. In the days of the Romans, we have only to recall the devotion of the contemporari Seneca to see that they were but little enlightened than their Grecian predecessor indeed, more moral. "They murmur to th of the gods, that is, to their statues,—wl guardian allows them to approach,—the shameful prayers, and if any one listens t they say, they are dumb, and what the ashamed of men hearing they do not hesit let the gods know." The selfish illusions piety of every age strikingly resemble other.

It would be curious to know what thei replied to such questions as those of Ag the shepherd. Perhaps further research reveal these secrets; some replies hav found, but, unfortunately, utterly unre Even were the explorers fortunate eno give to the world all the answers, it is probable but that we should only find em in other words, that excellent advice Latin poet counselling the makers of v wish with the health of their bodies the of their mind,—"*ut sit mens sana in corpor*

The interesting nature of the discover the publication of their results by their M. Carapanos, cannot fail to appeal t classical scholar and historic or artistic logist; the religious life of Greece origins as they were fostered and deve their primitive cradle reappear in reality in our midst, after having lai unthought of. In consecrating his t resources to such a task, M. Carapan serves the cause of his once so glorio land.

ROOM FOR ARCHITECTURE AS AS AN ARCHITECTURAL RO

NOTWITHSTANDING that architecture, and sculpture have long been regarde sisters living in friendly relationsh three unmarried ladies have not alwa to each other that amount of affectio these Christian days we have a right from them. The protectors and di the three great arts have rarely co perhaps have rarely made sufficient lighten that natural feeling of riva appears inseparable from the exerc practical uses of beauty.

It is impossible, in looking at an ear beautiful work of architecture, such for example, in crumbling magni Northern Italy, not to be impresse conviction how difficult it become distinctly the delicate line between t the architect and of the sculptor soon the skill of the painter is calle the aid of his invention and colour already all but perfectly thought nious whole of his brother artists, so far has been alone in brick or ston

We should like to see at the Roya instead of one side and one end o room which is now devoted to the architectural work, a hall or space large; and for sculpture the demar is even wider. Indeed, excellent re be found for demanding as muc sculpture and architecture, and the art of the metal-worker, and even and useful art-helpers immediatel with the practical part of buildin devoted to the ornamental art of which appears to be becoming mo a decorative art.

Could ample space be promised Academy, how interesting and tageous it would be to many of us, of hope for the future, if our arc have the opportunity, and were wil it, to show us year by year the e plans on a sufficient scale to be stood, of whatever they are about in hope of being, engaged upon.

The architectural drawings sho diately seen in connexion with the metal-work, and a special catalo devoted to the architectural room, cal details and, in as many cases estimates and other useful pract tion. With such a show as this, th desire such information would so form at least as just an opinion on subjects as they are now on that there are thousands of people w lington House who are in fact interested in architecture than th sister arts.

* The bones used to this day, in all countries, in playing the antique game of "dibs," and which we see pictured in the wall paintings of Herculaneum.

† By the Greeks Delphi was actually considered to be (what the Americans have claimed Boston to be) the "hub of the universe," or more properly speaking, *terræ umbilicus*.

* The inhabitants of the island now called Corfu.

One would like to see the engineer, the architect, the sculptor, and the painter, working together in a friendly spirit, as we know they did in the older days, always consulting each other and those otherwise informed, and thus securing when their work was completed the sympathy and the admiration of those whose opinion is alone worth regard.

If the architect of the present day could ulfil the ideal expressed by Vitruvius, then perhaps might an enormous gain be made to the world of art by the Royal Academy being led by architects instead of by painters; then would we see their walls in the first place architecturally perfect, and their ceilings and their decorative art the work of the painter, as perfectly in harmony as we know it must have been in the time of the Greeks, and as we actually see in the early churches of Italy and even in the decaying remains of a later period on the external walls of houses in many cities of Venetia.

Much sad and unseemly bitterness might also be avoided if carefully-elaborated drawings were early exhibited by the Royal Academy of whatever restorations are contemplated. Many we seen the interesting series of drawings hibited by the French Commission of Historic numents. How interesting would be a milar series of English works, set forth year year.

Again, how interesting and novel an addition ght be made to the annual display of works art by the old masters, by a room devoted architectural drawings by deceased artists. ny of us can recall in the possession of our nds exquisite architectural drawings, original otherwise, the exhibition of which would ow the architectural strength of the genera- that last passed away.

SOCIETY OF PAINTERS IN WATER COLOURS.

E should be disposed to call the ninety- nd exhibition of this society an exceptionally one; certainly, some of its best members unusually well represented. Two new bers have been added to the list who, in respective lines, are likely to do all t to the society. These are Mr. Herbert arshall, and Mrs. Angell. The most im- nt contribution of the former is a highly sful study of a special phase of atmo- ic effect, under the title "Sunrise in Broad uary" (113), and is not less successful as ect architectural and topographical repre- ion; it is certainly not often that we see gs so well treated in combination with must be called landscape, artistically ng, though there is little of nature but y. The other new member, Mrs. Angell, ertainly be a credit to the society even decidedly, though her art deals with a f subject of less intrinsic interest. Mrs. is one of the most admirable painters of e in water colour whom we possess, and contributions to the present exhibition s made an effort to appear in a style of the occasion, with brilliant success. Roses" (299) struck us as a little thick d in the shadows, though the whole is a e piece of colour; but among her other the dead "Blue Bird" (265), the "Cur- (248), and the "Raspberries" (254) uite perfect; indeed, the latter seem eatable; we have seldom seen a more e piece of realisation.

er contributor who seems unusually s year is Mr. Boyce, to whom we are alled upon to give a prominent place ter mainly of buildings, in such a way re not often painted. His two views 'ort Neuve" at Vézelay (43, 31), the de the gate and looking into the town, looking from the town towards the are little masterpieces; in the latter the ss of light on the white building over vay, and the glitter of the distant fields ne, seen through the gateway, are rcible and truthful; the other, the ew, makes in some respects the more picture, at least to the architectural eye, but does not present such a difficult problem: the old stone flanking towers are touched, stone by stone, with a loving hand. Another work of this artist, on one of the screens, "The Church and Cour des Tilleuls, at Crémieu" (291) is again interesting to the architect for the peculiar composition of the said church, in which a square spire and lantern are set lozenge-wise on a tower *semi*-circular in plan,—about as old a whim in building as could well be imagined. While mentioning architectural subjects, we may also draw attention to an interesting and very good little drawing by Mr. H. P. Rivière, giving a view of the Forum at Rome (244), "as excavated up to the present year."

Mr. Tadema contributes two admirable little works: one is entitled "Strigils and Sponges" (241), a scene in a Roman ladies' bath, where the figures are standing in the water and are also splashed over by the pour from a most eccentric-looking fountain, consisting of a sea monster of the dolphin type, which has entangled a man in its folds, head downwards, his feet standing up in the air and forming the finish of the fountain. A bit of mosaic in the foreground is painted as only Mr. Tadema can paint it; the figures hardly strike us as having that unquestionably antique and long-ago aspect which he has sometimes realised in such works. This is better achieved in the opposite drawing, "Wine Lovers" (229), where the two figures are beings quite alien from modern social experiences; a red-tiled roof, seen through a window behind the figures, is a very prominent element in the drawing, the colour harmony of which is very fine and delicate. Mrs. Allingham, who is to be regarded mainly as a figure-painter, is also quite at her best,—in fact, seems to us to have gone farther than she has ever gone yet; for her landscapes, which we certainly did not before regard as her strong point, show a marked advance: there is one in which the subject is almost entirely landscape, the figures being very subordinate, which is charming (55), and in the drawing entitled "The Harvest Moon" (169), in which a figure of a young reaper coming home forms the central interest, the landscape is also very beautiful, both in drawing and colour. As to the figure, we confess to getting a little tired of the "noble rustic" who appears so continually in paintings since Frederick Walker glorified him, and we prefer Mrs. Allingham's less poetic but more real scene, "The Clothes-line" (283), a little work which is admirable in every point,—in the graceful figure of the young woman, the characteristic attitude of the child seated on the grass, and the little studies of geese in retreating perspective.

Mr. Wallis's powerful and characteristic sketch of "A Quartette during the Terror" in the winter exhibition led us to expect great things from his more highly-finished drawing of a somewhat similar incident in this exhibition, "An Operetta" (62), but it is a disappointment: it is characterless, and the figures are eight or nine heads high. His other work, "Antonio receiving the Congratulations of his Friends" (14), is very interesting and very original; the grave, quiet figure of Antonio coming down the steps, and met by a crowd of equally grave personages in long red cloaks, is very effectively contrasted with the group of young gallants who are looking sarcastically after Shylock, one of them, with his hands to his mouth, shouting out some gibe after the Jew. Sir John Gilbert's "Joan of Arc" does not succeed in impressing us more than Joans of Arc in painting generally do: the top of her head, by the way, is singularly flat. Mr. Norman Tayler is hardly so successful as usual, neither is Mr. Tom Lloyd, whose garden scene (156) contains two figures which are a palpable echo of the two prominent figures in Walker's "Almshouses" picture. Mr. Buckman sends a very clever and spirited study of railway navvies at work, with trucks, &c., under the title, "A New Road for the Iron Horse." Mr. J. D. Watson's two studies of women, under the titles "Absence" and "The Last Rose of Summer" (8, 47), are beautiful in colour, though rather vague in sentiment.

In landscape there are some fine things, besides those already mentioned; foremost among which we should place Mr. H. Moore's "Morning Grey" (173), a perfect representation of the incoming tide in the fresh early morning, crawling and creaming over a flat beach in quiet wavelets whose successive sound we seem really to hear, as we also seem to see their motion, as we stand before the drawing. It is with admirable judgment that the artist, in this and one or two similar works that have been exhibited elsewhere, has introduced no figure,—the spectator is himself the figure, and enjoys the scene undisturbed. Mr. A. W. Hunt has a noble work in his view from "Whitby Churchyard" (130), one of those drawings in which we lose all sense of the thing being a work of manipulation, and only feel the spirit of the scene as if we really were looking on it; on the distant lights, the river far below in the twilight, and the melancholy-looking churchyard on the edge of the cliff from which we look. The effect is an unusual one, but it is completely natural and within the power of colours and brushes (in certain hands) to represent. This is exactly what is not the case with Mr. Holman Hunt's strange attempt to give "Moonlight Effect from Berne, overlooking the River Andeck," where there is certainly a remarkable luminosity in the moon and the clouds that are touched by her light, but the river is palpably meandering on the vertical plane of the picture, and not in perspective, and the figures on the terrace in the foreground are, we suppose, meant for a joke,—it is to be hoped so, at any rate. Among other landscapes are one or two very fine ones by Mr. G. A. Fripp, especially "Loebnagar" (124), in which his admirable faculty of giving the perspective and scale of hill country is well illustrated. Mr. Albert Goodwin's "Whortleberry Gatherers" is in his best way, and Mr. Thorne Waite has a noble landscape (177) in a fine broad style a little reminiscent of De Wint in tone and composition, but with quite sufficient individuality. A curious study of sea by Mr. Macbeth, in the "Sardine Fishing-boat," is worth attention (206), for we think that, odd as it looks, it is a true representation of the appearance of the sea under certain conditions. Mr. Naftel, Mr. Dodgson, and other well-known and able men among the older members are well represented, though it is not easy to select anything for special notice in a necessarily brief article.

THE INSTITUTE DINNER.

THE annual dinner of the members of the Royal Institute of British Architects was held on Saturday last at the Freemasons' Tavern, Great Queen-street. Mr. Charles Barry, president, occupied the chair, supported by H.R.H. the Prince of Wales (who became patron of the Institute in 1862, in succession to the late Prince Consort), the Marquis of Hamilton, Lord de L'Isle and Dudley, Lord Houghton, the Lord Chief Justice of England, Sir Frederick Leighton, P.R.A., Mr. Beresford Hope, M.P., and other gentlemen, to the number, in all, of about 260,—many of them from various parts of England, Scotland, and Ireland. As it is a notable event, we give a complete list, alphabetically arranged, of those who were present:—

Guests.—H.R.H. the Prince of Wales, K.G.; the Marquis of Hamilton, M.P.; the Right Hon. Lord De L'Isle and Dudley; the Right Hon. the Lord Chief Justice of England; Rear-Admiral Sir Beauchamp Seymour, K.C.B.; Rear-Admiral Hon. Henry Carr Glyn, C.B.; Lieut.-Gen. Sir Daniel Lysons, K.C.B.; the Right Hon. Sir Seymour Fitzgerald, G.C.S.I.; Sir Coutts Lindsay, bart.; Sir Philip Cunliffe-Owen, K.C.M.G.; Sir Frederick Leighton, P.R.A.; Sir John Gilbert, R.A., president of the Society of Painters in Water Colours; Capt. H. F. Stevenson, R.N., C.B.; Francis Knollys, C.B.; Christopher Sykes, M.P.; W. H. Barlow, V.P. Inst. C.E., F.R.S., representing the president Inst. C.E.; Rev. Canon Venables, M.A.; Charles Hutton Gregory, master of the Turners' Company; Alfred S. Lawson, master of the Skinners' Company; Edward A. Bond, the principal librarian of the British Museum; John B. Monckton, F.S.A., Campbell Douglass, president of the Glasgow Institute of Architects; H. L. Florence, president of the Architectural Association; John Robinson; and Basil Cooper

Members and Officers.—G. Aitchison, F. W. Albury, T. Allen, J. M. Anderson, T. G. Andrews, W. H. Arber, T. S. Archer, R. Armstrong, T. Arnold, Dr. Bacon, J. B. Badock, F. E. Bailey, C. Baker, T. L. Banks, A. R. Barker, Chas. Barry, C. E. Barry, E. M. Barry, J. W. Barry, W. H. Barry, J. W. Beavis, T. Bedding, F. Beeston, A. J. B. Beresford-Hope, A. Bleakley, A. W. Blomfield, E. Boardman, W. A. Boulnois, J. R. Bourne, D. Brandon, H. H. Bridgman, C. W. Brooks, Jas. Brooks, S. Brooks, R. H. Burden, E. H. Burnell, H. H. Burnell, P. H. Calderon, R. H. Carpenter, Arthur Cates, F. Chambers, J. A. Chatwin, Ewan Christian, E. Clare, G. S. Clarke, J. Clarke, T. C. Clarke, C. Clegg, A. Cobbett, W. G. Coldwell, H. H. Collins, C.

E. Cooke, T. Cundy, H. Currey, R. Curwen, H. Curzon, H. A. Dewbishire, H. D. Davis, H. Dawson, L. De Ville, G. Devey, T. L. Donaldson, F. Downing, C. H. Driver, F. R. Eales, J. S. Earle, C. L. Eastlake, R. W. Edis, J. Edmeston, J. S. Edmeston, R. C. Edwards, J. W. Ellisdon, J. Fairley, E. B. Ferrey, B. Fletcher, W. S. Forster, J. Fowler, Capt. Fry, J. Goddard, G. Godwin, C. A. Gould, J. W. Grant, H. A. Gribble, R. Griggs, E. A. Grüning, H. Gundry, C. Hadfield, M. E. Hadfield, O. Hansard, C. F. Hayward, W. G. Harrison, T. Hawksley, C. F. Hayward, A. J. Hipkins, J. Honeyman, Lord Houghton, E. J. Isaac, L. H. Isaacs, H. Jarvis, R. J. Johnson, Horace Jones, E. G. Jones, G. Judge, R. Keirle, R. Kerr, C. King, S. Knight, J. T. Knowles, J. Knowles, T. Lainson, H. J. Lanchester, J. Latley, E. F. Law, C. A. Legg, E. S. Legg, T. H. Lewis, J. E. Liardet, A. K. Mackinnon, G. Maclaran, S. S. Markham, W. Calder Marshall, E. H. Martineau, J. D. Mathews, G. W. Mayhew, W. Millican, T. Mitchell, A. B. Mitford, D. Mocatta, C. Neate, R. Nesbitt, R. Nicholson, A. G. Northover, J. Norton, R. P. Notley, J. Noyes, W. Oakley, F. H. Oldham, H. Oliver, R. A. Pace, W. Pace, H. Parsons, E. J. Payne, J. Peacock, J. L. Pearson, A. Peebles, F. C. Penrose, R. K. Penson, J. S. Phené, C. J. Phipps, A. Porter, F. W. Poynter, T. Porter, F. H. Pownall, Lieut.-Col. Prendergast, T. Prosser, J. L. Randal, F. T. Reade, C. Reilly, T. M. Rickman, Rev. Dr. Robbins, E. C. Robins, F. J. Robinson, E. R. Robson, F. W. Roper, R. R. Rowe, S. Salter, H. C. Saunders, G. Scamell, J. O. Scott, E. Seward, H. N. Sheffield, H. Shenton, H. D. Shepard, C. J. Shoppee, J. Slater, C. Smith, P. G. Smith, S. E. Smith, T. R. Smith, J. G. Smither, R. P. Spiers, J. P. St. Aubyn, J. Stevens, C. Stone, G. E. Street, H. Sumner, W. H. Seme, B. Talbercr, H. G. Tayler, Y. Thomson, W. Thompson, J. Thomson, J. Tolley, J. G. Turner, S. Turner, T. Verity, G. Vulliamy, J. F. Wadmore, H. Walker, Sir R. Wallace, A. Waterhouse, Sir Jas. Watson, T. H. Watson, A. Webb, C. L. Webb, J. D. Webber, T. Weeks, G. H. West, J. Whichcord, A. White, W. White, W. H. White, F. Wigg, J. Williams, R. L. Williams, H. R. Wilson, J. T. Wimperis, H. Winstanley, A. & M. Walters, S. W. & W. H. Wood, W. R. Wood, W. Woollard, T. Worthington, M. Wyatt, T. H. Wyatt, and J. Wynne.

Grace before dinner was said by the Rev. Canon Venables, F.S.A., and after dinner by the Rev. Dr. Robbins. The band of the Grenadier Guards was in attendance, under the direction of Mr. Dan Godfrey.

The President, in proposing "The Health of the Queen," said it was a toast old as the centuries of English history, and yet an ever new one; for, year by year as her Majesty's reign had been prolonged, there had been constantly-recurring evidence of how truly the Queen was the mother of her people. Whenever and wheresoever distress had been among us,—when encouragement under trial had been needed,—when heroic efforts in civil life as well as in military life had stirred our sympathies,—in no case had her Majesty failed to sympathise and help.

The toast having been drunk with the usual honours,

The President said he had now to ask the company to honour a toast of unusual importance,—a double toast, indeed the toast of the evening. He had to ask them to honour their royal guest, the Prince of Wales, as the first representative after her Majesty of the royal family, to whom all Englishmen were so fondly attached, and also as the patron of the Institute of British Architects, of which most of those present were members. He might remark that, as a member of the Royal Family, the Prince of Wales might, if he had been so disposed, have chosen to pass his time in splendid leisure, awaiting the hour when, in God's providence, he might be called on to reign over us, certain of that loyalty which Englishmen had always been prepared to render. His Royal Highness had, however, adopted a very different course, and had chosen to identify himself heartily, and with no stinted personal labour, with all movements which had for their object the advancement of his country, whether in intellectual or material prosperity. He need only allude to the most recent and, perhaps, the most important of the hundred opportunities of the kind he referred to. At the Paris Exposition it was now a matter of pardonable pride for this country, and of congratulations to his Royal Highness, that the united and persistent personal exertions he made not only placed England in the foremost rank as regarded art, science, and commerce, but had much to do in inciting other nations to make the efforts which were needful to ensure the splendid success which was achieved. By deeds like these, by readiness to mix with and assist his future subjects in objects which were all in all to them, without standing upon that dignity which so well became him, but which no one knew so well as he how to throw off, his Royal Highness had gained for himself not only the loyalty, but the love of Englishmen all over the world. If any proof were needed of this it would be found in the fact that when, a few years ago, his Royal Highness was lingering between life and death, a whole nation hung on the hours, nay, even on the minutes as they passed, with breathless anxiety; and when he was restored to them the national joy was as personal as that of a father for his son, or that of a husband for a wife rescued from the grave. The other members of a numerous and truly illustrious royal family all claimed their homage, for one and all of them seemed to be actuated by the high and honourable belief that their high stations were theirs in trust for the benefit socially and materially of all their countrymen. All alike devoted their energies and influence for the benefit of those amongst whom they lived. His Royal Highness the Prince of Wales became patron of the Institute in 1862, in succession to his lamented father; and since that time his Royal Highness had, whenever an opportunity presented itself, evinced his interest in their proceedings, and the gracious willingness with which he came amongst them that night was the crowning proof of that. Although they could not profess to surround him with the exalted social rank to which he was accustomed, they could offer him the homage of all the great societies which existed in England for the cultivation and advancement of art, science, antiquarian research, and practical skill, who were represented in the persons of the Presidents of the Royal Academy, the Water-Colour Painters', the Institution of Civil Engineers, and other kindred societies; and it had already been his happiness to tell his Royal Highness that, as regarded their own profession, representatives were present from all parts of the United Kingdom to show their appreciation of the honour he had done them. He therefore gave them "The Health of H.R.H. the Prince of Wales, Patron of the Royal Institute of British Architects, the Princess of Wales, and the other members of the Royal Family."

The toast was enthusiastically received.

The Prince of Wales (who was received with loud and prolonged cheers) said:—The terms in which your President has been kind enough to give my health, and the way in which you have received it, deserve my most sincere and my most cordial thanks. I can assure you that it is with the greatest pleasure that I am here this evening, and in your midst, not only as your guest, but in the position which I have the high honour to hold as patron of the Royal Institute of British Architects. As has been observed by your President, I acceded to this post after the death of my lamented father, who had held it from the year that I was born, and was, two years after that time, present at a meeting of your Institute, upon which occasion the father of your president, Sir Charles Barry, was present to receive him as vice-president. Your President has made some most flattering remarks about me—far too flattering, I fear. He has alluded especially to the late Paris Exhibition. It affords me great pleasure on this occasion—perhaps the first public occasion since that Exhibition was over that I have met a large assembly of my countrymen—to have the opportunity of expressing my thanks to that very large community which assisted me in those important labours during those two years, and especially during the one that has just passed. I see about me this evening as many as eight gentlemen who were comprised in the Royal Commission, not to speak of many others, some of whom are here this evening, who took different parts in it. It has been admitted that that Exhibition was a success, and if I have been able to do anything to make it so, I owe it to those gentlemen who assisted me in those labours, and to those great commercial, agricultural, and scientific bodies, who spontaneously came forward to exhibit their goods and products, and who, with hardly any exception, responded to the call that was made upon them. The work that I did upon that occasion, gentlemen, was really but slight, and it was one both of love and of peace. Those who worked with me acted always in harmony, and I have to thank them again for having given up so much of their valuable time to go to Paris and assist in making the Exhibition the success which you have kindly said, through the mouth of your President, that it was. I must not forget one who is sitting at this table, to whom, I think, all of us are indebted more than to any other man,—our indefatigable secretary, Sir Philip Owen. With regard to this Institute [illegible] British Architects, I may say that it was th[illegible] unanimous opinion of an international jury th[illegible] our architectural exhibits were better than, [illegible] at any rate, held very high rank amongst, tho[illegible] of other nations. In thanking you for th[illegible] kind way in which you have listened to the fe[illegible] remarks I have made, I must not forget th[illegible] there are still several more toasts, and I sh[illegible] have once more the pleasure of addressing yo[illegible] I will, therefore, now conclude by thanking y[illegible] for the cordial reception you have given m[illegible] Let me thank you also for the way in whi[illegible] you have drunk the health of the Princess [illegible] Wales and the other members of my family.

Mr. John Whichcord, F.S.A., next propos[illegible] "The Army, Navy, and Reserve Forces," coup[illegible] with the names of Lieutenant-General [illegible] Daniel Lysons, K.C.B., Quartermaster-Gene[illegible] and Rear-Admiral the Hon. H. Carr Glyn, w[illegible] briefly responded.

Mr. G. E. Street, R.A., in proposing the n[illegible] toast, "The Fine Arts," said, —In an assem[illegible] like this, in which every one of us, from [illegible] end of the room to the other, is more or [illegible] pledged to the interests of art, the duty of [illegible] posing such a toast as this becomes not [illegible] extremely agreeable, but extremely easy. I[illegible] around me many distinguished painters [illegible] sculptors, and I am quite sure they will ex[illegible] me, as an architect, for assuming that ar[illegible] tecture is the mother of all the arts. But [illegible] necessary that other artists should see why [illegible] that architecture is the mother of the c[illegible] arts. The reason is that architecture not [illegible] supplies a first necessity of man, but it [illegible] itself essentially a public art,—an art w[illegible] belongs to the people, and in which [illegible] passer-by, however poor, has to some e[illegible] the same interest and delight in a beau[illegible] building as the person at whose expens[illegible] work was produced. When we see the [illegible] of the painter and the chisel of the scu[illegible] employed in the decoration of public buil[illegible] we there see them employed in their h[illegible] vocation. In days of old, architecture, pai[illegible] and sculpture went hand-in-hand; inde[illegible] often happened that two or more of thos[illegible] were practised by one man. For ins[illegible] we find that a great painter like [illegible] and a great sculptor like Niccolo Pisano [illegible] also architects in the palmy days of [illegible] which we look back, and which we h[illegible] revive again. In asking you to drink [illegible] health of the President of the Royal Ac[illegible] who has to respond to this toast, I can[illegible] recall some of the incidents of his caree[illegible] first great work, which appeared some fi[illegible] twenty years ago, showed not only his [illegible] a painter, but his instinctive sympath[illegible] and acknowledgment of the many-sided[illegible] art. He furnishes in himself a notable i[illegible] of the excellence that can be attained [illegible] a true artist in several branches of a[illegible] painting on the east wall of an out-of-[illegible] church in the New Forest, and the [illegible] which he is now engaged in the South K[illegible] ton Museum, show his desire as a p[illegible] decorate architectural work; and [illegible] further in contemplation, and we look [illegible] with eagerness, to the work which he [illegible] junction with Mr. Poynter, has under[illegible] the decoration of that noble dome whi[illegible] above this great city. The Exhibitio[illegible] Academy two years ago demonstr[illegible] skilfulness as a sculptor; and when I [illegible] there is no question which concerns s[illegible] in which he is not ready at once not c[illegible] sympathy, but with advice suggeste[illegible] knowledge of the subject, I have sai[illegible] is necessary to secure your most cord[illegible] tion of his name.

Sir Frederick Leighton, who w[illegible] cheered, said:—Mr. President, yo[illegible] Highness, my Lords, and Gentlemen,—[illegible] whose name is connected with the to[illegible] "Fine Arts," and who is called upon [illegible] to it, is placed, it seems to me, in [illegible] which, though it is highly gratifyin[illegible] is at the same time anomalous and p[illegible] for though the first portion of hi[illegible] indeed, thoroughly clear, the second [illegible] in some obscurity. The first part o[illegible] which is clear, is to express the gra[illegible] he owes to the gentleman who has do[illegible] high honour of coupling his name[illegible] toast, and I therefore hasten to perf[illegible] at once beg my old friend and co[illegible] Street, to accept my warmest and [illegible] thanks for the terms in which he w[illegible] to do so,—terms, I fear, far too

I cannot divest myself of a painful con-
nsness that, except in so far as they
it me with a deep desire to serve the cause
rt, they are much in excess of my merits;
I owe the more gratitude to this brilliant
ering for the kindness with which these
ls have been received. Up to this point
ourse was clear; but now it becomes full of
lexity; for, on the one hand, I cannot affect
half of the fine arts a vicarious gratitude
ne compliment paid them on this occasion;
on the other, can I rush into a panegyric
ne works of my contemporaries, strong as
t be the temptation; for here I should be
hing on the province of the proposer of
oast. Fortunately, however, Mr. Street
rnished me with a cue, and I can assure
hat my hopes and sentiments are entirely
rmony with those expressed by Mr. Street.
ne, therefore, with him, simply content
f with the expression of a hope that the
ousness which is gradually awakening
gst us as to the necessity of high aims, and
r union between the sister arts, may spread
crease to the infinite gain and strengthening
e arts. To this end let us all work, and we
art no greater service, but we must do
a sober spirit, without indulging in
h or vain illusions. The tendency of
n times is towards subdivision and
ution of labour. This is the natural
of the widening and deepening of the
f knowledge until, as we now know, one
subject of study often demands, and
er-taxes, the concentrated energy of the
ual student. This tendency has made
nence felt in art, and, up to a certain
ustifiably. The problems of architecture,
aps it would be more correct to say the
ns with which architects have to deal,
more complex than they were, and as
l assuredly never see men in whom all
lge is concentrated, so we shall never
ee the halcyon days in which painters
lfries or sculptors cathedrals,—days in
ou were in doubt whether to call a
an architect or a painter, or a Niccolo
sculptor or an architect. Nevertheless,
st absolute divorce which we see now-
etween the arts is needless, is justified
ing, and is a reproach to us all. In
nd at its inmost sources, art is one. It
soul speaking to us through various
—the same bright gem flashing its fire
many facets. I believe that in propor-
we artists bear this vital truth in our
rill be the dignity and lasting value of
evements, and the influence and autho-
he noble arts you have just toasted.

President, in proposing "The Visitors,"
d the hope that their intercourse with
bers of the Institute might leave im-
on their minds, not only of a pleasant
but such as might induce them, when-
heir several functions they might have
ith architects, to remember that they
anised as a society of gentlemen, not
e hoped, of artistic capacity, but having
first and primary object the promotion
professional tone in their dealings, and
eir society nothing mean or dishonour-
tolerated among their members. He
t this point was especially worthy of
ance in courts of justice, where, occa-
architects as a class were judged of by
ls who were not fair representatives of
sion. He coupled with the toast the
he Lord Chief Justice of England, who
red them with his presence.

rd Chief Justice, in responding, said
s a greater admirer of art than him-
he appreciated architectural art and
ove all, because it not only ministered
nfort and the happiness of mankind,
ociated itself inseparably with all the
hs of our history, and all the great
past times. Every great architectural
hich had arisen in the course of time
rably associated with some particular
l brought back to recollection some
period or event upon which we dwelt
rest, satisfaction, or pride. Where
ind anything greater, or anything that
bled the thoughts of man and taught
to Heaven, than our cathedrals and
chitecture? In Westminster Abbey
e ashes of the great men who had
ay. In connexion with innumerable
ur church buildings we had some great
s or historical recollections which we
g to to the last. That day he had passed along that new building which was to be associated with the great profession to which he had the honour to belong, and looking up at it he was struck with the marvellous beauty of the nascent edifice. It would not be finished in his time; he ventured to think Westminster Hall would last long enough to outlast him, and he should be content that it were said of him that he was the last Chief Justice of England who administered the law in the old place called Westminster Hall. Of that great edifice which was rising now, he said to himself that it would be associated hereafter with the great reign of Queen Victoria and with that great change in the law under which common law and equity ceased to exist as separate branches of the judicature. But with all this, Westminster Hall would still retain its own glorious transcendent associations to all time. In it in olden days was administered that common law which had been the foundation of our liberties. That edifice might be built over, altered or modified; but it would never be effaced from the memory of Englishmen. In that hall had taken place some of the great trials which illustrated and ennobled English history. There treason had met its just doom; there the intended victims of tyranny and judicial turpitude had triumphed over their persecutors; there his great predecessors, in whose shoes he sometimes almost trembled to stand, had administered justice through past ages down to recent times. He said, therefore, that Architecture, which had built up these glorious structures, in which we triumphed, and which formed our exultation and our pride, was a science and an art which could not be too highly appreciated or too much admired. That Institute stood at its head, fostering and encouraging the great and noble profession pursued by its members. It stood upon the confines of art and science, combining both. It was an institute to which every man must look with admiration and honour, and to have been honoured by its princely hospitality was a thing to be remembered for the rest of one's life.

The Prince of Wales,—My Lords and Gentlemen,—The task has been deputed to me to propose the last, though certainly by no means the least, toast of the evening. I only regret that the toast was not left to one who could do more justice to it than I can, and I feel, after the eloquent speech you have just heard, that it would be difficult for me to make one in any measure like it. [I also feel some diffidence in proposing this toast, because I have the honour of being a member of your body; but the first duty of all individuals who belong to great societies like this is that of obedience, and I therefore beg to ask you, and especially the visitors, whose healths have been so cordially drunk, to drink with me "Prosperity to the Royal Institute of British Architects," coupled with the name of your president, Mr. Barry. I thank him for having asked me to this interesting banquet, and I may also tell him what pleasure it has given me to dine under his presidency, which will so shortly be over. I have to give you, gentlemen, the toast of prosperity to your Institute. What greater proof of prosperity could there be than that, when this society was founded, forty years ago, you were only twenty in number, and now you are 750? Those figures speak for themselves. When we look around us to-night, and see gentlemen who have come from all parts of the United Kingdom, it shows at once the interest that is taken in this annual gathering. It must be a source of pleasure to you, and to all of us, to see amongst us one who has been for so many years connected with this Institute as Professor Donaldson. He will not be offended if I allude to him as the veteran architect. He has lived to an advanced age, and I am sure it is the hope of all here present that he may long continue to grace the board at these annual gatherings of the Institute. It would be useless for me to dilate on the position of this society, so much having been said this evening; and if I were to dwell at any length upon the matters connected with the Institute I might be accused of what is vulgarly called "talking shop." I will, therefore, ask you, and those gentlemen especially who are here to-night as visitors, to drink most cordially the toast of "Prosperity to the Institute of British Architects," coupling with it the name of your president, Mr. Barry.

The President, in responding, said that the Institute was now approaching its fiftieth birthday, and he therefore hoped it might be deemed to have attained to "years of discretion." From the little band of twenty members in 1834 they had attained in 1879 to the robust strength of 750 earnest members, and their growth was still going on. During the time past they had many favours to record as granted to them by Royalty. In 1835 they received their charter from William IV. In 1837 her Majesty the Queen became the patroness of the Institute; and in 1841 they were the recipient of the like gracious favour by the late Prince Consort; and the same gracious kindness was extended to them by the Prince of Wales in 1862. While they thanked his Royal Highness for his good wishes for the continued prosperity of the Institute, need he say how largely the realisation of that hope depended on themselves? In thanking the Prince of Wales for coupling his name with this toast, he could not but remember a circumstance, possibly interesting to his Royal Highness, as it was to him, that when his Royal father became their patron in 1841, and in 1843 took the chair at one of their meetings, he was welcomed in the name of the Institute by his (Mr. Barry's) father, then vice-president, and now it was the high privilege of his father's eldest son to welcome the eldest son of the late beloved Prince Consort.

Professor Donaldson, having been loudly called upon, said,—May it please your Royal Highness, Mr. Barry, and Gentlemen, I am overwhelmed by the call of my brother architects. I was not prepared at all for this kind compliment, but I receive it with heartfelt gratitude. We are much indebted to the illustrious architects who have occupied positions in this Institute from the time I had the honour of founding it. But the hopes of the present are centred in the future, and it is for the young architects who are rising up now, distinguished by their studies and by an ardent love of our art, to maintain, as I am sure they will do, the high position which the Institute has attained under the distinguished presidency of our friend Mr. Charles Barry.

A COLLECTION OF REPORTED CASES RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Progress of Works.

WHEN it is provided in a contract that if the works shall not proceed as rapidly and satisfactorily as the employer requires, he shall have power to enter upon and take possession of the works, such a proviso gives an absolute and unqualified power to the employer so to do, according to his own discretion, if he acts in a *bonâ fide* manner.—Stadhard *v.* Lee, 3 Best & Smith, 364; 32 L. J., Q. B., 75 (1863).

[This case would seem to be slightly qualified by Walker *v.* The London and North Western Railway, since in Stadhard *v.* Lee no actual date, so far as the report states, was fixed for the completion of the contract.]

WHEN there is a clause in a contract that if the contractor (or builder) fail to proceed in the execution of the works at the rate of progress required by the engineer (or architect) then that the contract shall be void, and the materials and implements in the possession of the contractor shall be forfeited, &c., the employer can only put such clause in force before the precise date named for the completion of the contract.—Walker *v.* The London and North Western Railway Company, 6 L. R., C. P. D., 518; 46 L. J., C. P. D., 798 (1876).

WHEN there is a clause in a contract that if the engineer or architect does not consider that the works are being executed properly or with due expedition by the contractor he shall give notice to the contractor to alter improper work, and to supply sufficient labour, and to proceed with due expedition (under certain penalties), a *general* notice that the contractor is to supply sufficient materials and labour and to proceed with due expedition, is a valid notice.—Pauling *v.* The Mayor and Aldermen of Dover, 10 Ex., 753; 24 L. J., Ex., 128 (1855).

[It further appears from this case that if the builder is required to do some particular thing, then a *special* notice to that effect, and not a general one, is requisite. But the decision of this second point was not necessary for the

* See pp. 364, 423, *ante*.

judgment in the above case, which was upon the question of the sufficiency of the general notice when general dilatoriness in the work was the subject of complaint.]

Possession, Resumption of, by House-owner.

A house-owner, by taking possession of a building upon which work has been done, or which has been erected by a builder, does not, by so doing, waive the performance of any condition precedent to payment to the builder, nor does such act imply a waiver of a special contract and the substitution of a new and implied agreement.—Munro *v.* Butt, 8 E. & B., 739 (1858).

[This case is noteworthy in view of the immediately preceding decisions. But it is also of general importance. Thus, if a builder leaves a house uncompleted by a specified time, which completion by such time is a condition precedent to payment, and the builder claims payment for the work done on the ground that the owner has taken possession of the premises, or, more strictly speaking, come into occupation of them, his claim is untenable on the principle enunciated in the above decision. This case may profitably be compared with Lucas *v.* Godwin, 3 Bing., N. S., 744.]

Landlord's Building Materials, Plant, &c.

When there is a clause in an agreement between a builder and the owner of the land that all materials brought upon the premises shall be considered as attached to and belonging to the premises, and that no part thereof shall be removed without the consent of the landowner, this gives the landowner an equitable interest in the materials.—Brown *v.* Bateman, 2 L. R., C. P., 272; 36 L. J., C. P., 134 (1867).

[This is an execution creditor of the builder would have no right to take possession of materials upon the land of the builder's employer. It is difficult, however, to reconcile this decision with that in Beeston *v.* Mariott, 3 Giff. 146 (1858), in which the contract stated that as and when any material should be brought upon the site of the works thereupon it should become the absolute property of the employer, and be, and be considered as in, their possession, and that the contractor should have no property therein except the right of using the material for work upon which he was engaged. It was further stipulated that the employer should, on the completion of the contract, give back the unused material and plant to the contractor, and further, that if the work should be taken out of the hands of the contractor, and placed with others who should employ and use the material and plant in question, then that compensation in respect of such material should be given to the old contractor. The Vice-Chancellor considered that the materials could not be taken in execution by a creditor of the employer. The importance of both cases makes the apparent difference noteworthy.]

When there is a clause in a contract that if the contractors become bankrupt the architect may appoint other persons to complete the work, and shall have power to seize and retain all materials, implements, and plant, this gives the employer a right, in case of the bankruptcy of the contractor, to retain possession of the materials, &c., as against the trustee in bankruptcy of the debtor.—*In re* Waugh *ex parte* Dickin, 4 L. R., Ch. D., 524; 46 L. J., Bank., 6 (1876).

[This case touched the construction of Sec. 94 of the Bankruptcy Act, 1869, but it is noticeable in connexion with the preceding cases. This decision should also be compared with that of *In re* Winter *ex parte* Bolland, 47 L. J., Bank., 52 (1878): here the plant, &c., was to be "deemed the property of the commissioners for the time being," and it was held that this only gave the employers (the commissioners) a right of user, and, therefore, that the plant necessarily passed to the contractor's trustee.]

A Dry Coating for Basement Walls.—Take 50 lb. of pitch, 30 lb. resin, 6 lb. of English red, and 12 lb. brick-dust. Boil these ingredients and mix them thoroughly; then add about one-fourth the volume of oil of turpentine, or enough to flow easily, so that a thin coating may be laid on with a whitewash or paint brush. Walls thus coated are proof against dampness.—*Der Techniker.*

TRAMWAYS.

We cannot doubt that in a few years tramways will have yet further increased in number, and it will be a matter of surprise if hereafter the ten years between 1870 and 1880 are not regarded as merely the period of the first development of the tramway movement in this country. In London, at any rate, the omnibus company, which has almost a monopoly of its own kind of traffic, has so little regard for the comfort and convenience of the public, and looks so entirely to the half-yearly dividends of the shareholders, that it is helping on its competitor. The present tramway arrangements, except on very wide roads in the outskirts of the metropolis, are damaging to shopkeepers on the route, and to those who use other vehicles, but that is no reason why hereafter scientific and practical persons may not find means of utilising tramcars in parts of London other than those which may be considered to some extent outskirts. Be that as it may, and approving or disapproving of the system, it is of considerable interest to obtain some insight into the present position of tramways in this country, and we have opportunities of so doing through the medium of a recent Parliamentary paper.

The paper in question is a Return of Street and Road Tramways authorised by Parliament, showing the amount of capital authorised, paid up, and expended; the length of tramway authorised, and the length open for the public conveyance of passengers down to 30th June, 1878, the number of passengers conveyed, the working expenditure, the gross net receipts during the year ending with the above date, with the number of horses and cars in use at that date. Figures in a mass leave at all times but a slight impression on a reader's mind, and therefore all we shall do will be to give those which are the most striking and most suggestive, and we think they show that on the whole the tramway movement has made very considerable progress during the last ten years, but that its area is still capable of wide expansion.

We find, upon perusing the paper in question, that there are—and it must be remembered we speak of nine months ago—fifty-nine undertakings of this kind in the United Kingdom, and with some exceptions, each undertaking corresponds with a separate town or district. Thus at Bristol there are two sets of tramways, the Bristol Corporation Tramway and the Bristol Company's, but as a general and almost universal rule each line is worked by a single undertaking. And when we come to consider the extent of the movement we find that the amount of capital authorised reaches, in round numbers, to six millions and a half, including that authorised by shares and loans, and that more than four millions of this sum has been actually paid up.

And of the several undertakings, we find that, exclusive of the metropolis, Liverpool has a tramway company with the largest capital, for in shares and loans this amounts to 510,000*l.*, and the great Lancashire seaport is followed at a somewhat modest distance by Edinburgh, with a capital of 375,000*l.*

Next coming to last year's work, we are enabled to see the extent, so far as the public are concerned, of this investment of the money of the public, and when we do so we find that during the year ending the 30th of June last, 156,000,000 passengers were carried by the tramways of the United Kingdom. Undoubtedly, persons who drive carriages may complain of the way in which the wheels of their vehicles get wrenched oftentimes in the tramway lines, but it is useless to ignore the fact that these figures show that tramways do meet a public want; and when we consider that not more that fifty places possessed tramways at the date of this return, it is perfectly clear that the movement will yet expand very largely. Because, as long as the great mass of the public support these undertakings, and as long as they pay a fair percentage upon the capital invested, so as to absorb the money of the country, they are quite certain to go on increasing. And when we get steam properly utilised, as after the recent report of the Parliamentary Committee it clearly will be, we cannot for a moment doubt that every year will see an increase in the number of tramways in the United Kingdom. The gross receipts of all the several tramways reached 1,145,000*l.* (in round numbers), the working expenditure came to 868,000*l.* (in round numbers), leaving as net receipts 230,000*l.* Thus we see that the sec
of the conditions to which we have allude
necessary for the further development of
tramway system in this country, namely, a
interest on the capital expended, is here pres
Out of all the undertakings, indeed, in the Un
Kingdom, we find only five worked at a
and when we see places of no very large
such as Great Yarmouth, with gross rec
amounting to 4,055*l.*, having net receipt
1,117*l.*, it is clear that there are yet a num
of towns where tramways are unknown w
will repay the promotion of such undertak
And we should say that, on the whole, the fu
of tramways is brighter, in view of the ut
tion of steam power; for, though engines
to be bought, yet the cost and keep of the h
in use would, on the whole, be larger, we
it, than the cost of engines and fuel. O
30th of June last there were 19,200 hors
use, and averaging each horse to be worth
it is obvious that the cost of keeping some
like 10,000 horses, also keeping up the su
is a very large item in the general workin
penditure of the tramways. Of all the tram
in the United Kingdom, that between Sw
and Oystermouth is the oldest, the Act f
creation having been passed during the re
George III. (44 Geo. III., c. 55); but, wit
single exception, tramways are the grow
these latter years of the present reign,
has been a period of such unbounded scie
and mechanical enterprise.

We have not, as we said at the outset
more than call attention to some of the
figures of the return in question, as to g
the details of several of the undertakings
have been wholly out of the scope of an
not dealing with the merits or faults
particular company, but with the tra
movement as a whole. Undoubtedly, ho
proprietors of tramways in this countr
yet much to learn from their Cont
brethren. Thought must be taken to ada
size of the cars to the streets and traffic
the small one-horse cars in Munich,
very frequently, are much better in c
thoroughfares than the huge and lun
vehicles which are most in use in this c
Signals as to stopping, well-known
divisions of the classes of passengers,
for giving standing as well as sitting acc
dation are all worthy of close considera
the tramways in this country are to fulfi
uttermost the purposes for which the
created.

OUR BLAST FURNACES.

Rich as Britain is in minerals, probl
rich deposits she possesses have been
only partially brought under contributi
the extent to which they are drawn
indicated by the vastness of our smelti
for one of the chief of these. Dispers
Britain there are nearly a thousan
furnaces, and their recent history sho
tolerable fulness two of the tendencie
iron trade,—an increased yield out o
furnaces. In not many of our great ir
has there been the very great improver
development that there has been in the
plant of the country, and in the int
typifies. For years there has been
experimenting going on, both in rega
most economical size of furnaces, the
tions, the form, and the nature of the
used, as well as in the mode of introdu
direction of that which is as the brea
furnaces,—the blast. As the result
experimenting, there has been a ve
change in the furnaces, whilst change
or ore, in the form of the demand,
circumstances, have brought about,
extent, a change in the chief product
ties. It may not be uninteresting t
little in detail the centres in which
furnaces are located, and the extent
they are in use. It is true that t
changes in progress, and that the exact
are in course of change, but the pro
the total remains to a large extent un

Roughly speaking, we produce abou
half million tons of pig-iron annually, n
manufacture about 18,000,000 tons of ir
about 15,000,000 tons of coal, as well
amount of limestone or other flux
England, nearly 1,000,000 tons in Sco
the remainder,—three-quarters of a m
—in Wales. Ireland is in the same c

d to production of pig-iron as it is in the
is chapter in regard to snakes,—"There are
blast furnaces "in Ireland." It may be re-
ed that the mere number of furnaces
d is no guide to the amount of production
e district, but as indicative of what has
or may be the future of these districts
elting, it may be said that South Stafford-
is credited with the possession of the
t number of furnaces in the official list,
umber being 146. Next follows North
hire with 89, Durham with 70, Derbyshire
53, and Lancashire and Cumberland, each
0. The West Riding of Yorkshire has 48,
Staffordshire 35, Shropshire 23, Lincoln-
1, and Northamptonshire 20. Gloucester-
as 9, Wiltshire 7, Northumberland 4, and
hire and Somersetshire each 1, making
otal of the English districts 627.
rth Wales, Denbighshire has 9, and
ire 2; in South Wales, Monmouth-
61; Glamorganshire, 76; and there
ddition 13 undefined anthracite furnaces.
tland, Lanarkshire owns 90; Ayrshire,
lithgowshire, 9; Stirlingshire, 5; Fife-
; and Argyleshire, 1. So that the total
country may be given as 940. But the
ossession of furnaces is no criterion of
out or even of the use; for in the list
e many old and obsolete furnaces, long
d probably never again to be put into
n, as well as others which can only
ofitably in periods when low prices do
. The mere number of furnaces is,
r, subject to the influence of size and
. There are furnaces existent and
of about 50 ft. in height, and others of
hat height, whilst the difference in
nensions is similar, and the difference
otion is even greater.
the use made of this great smelting
may be said that, in Scotland, about
lls of the furnaces are in blast; in Wales
r one third; and in England about one
be the present proportion of operative
Our chief producing district is that
the "Cleveland" district, embracing
orkshire and part of Durham, which,
than a sixth of the British furnaces,
nearly one-third of the pig-iron made
ntry,—and this, although a third of its
ces are at present idle. The vastness
duction may be traced to the cheapness
the facility with which it disposes of
e largeness of its local consumption;
ize, the economical working, and the
of the individual output of the furnaces
mediate causes of the conspicuous
the district. Step by step, for years
has increased its production, whilst
at five years the actual number of
t work has been lessening, but the in-
e,—especially in the cubical capacity,
ater regularity of working, and the
nts in the form of the furnaces, have
an enlarged outfall from fewer fur-
wing abundant stores of material, and
ods of conveyance, the district has
o enlarge its productions, whilst older
he crude iron trade have been obliged
heir output. Thus Northumberland
ly a contributor to the pig-iron pro-
Britain; the ancient iron districts of
and South Staffordshire produce
a million tons only; and the produc-
cestershire is now more than quad-
he comparatively young district of
on.
he changes in the supplies of iron-
el, or of flux, or to that in the form
hat the changes in the positions, com-
of the centres is due, though it is
y contributed to in some cases by
conveyance cheaply. It was to the
f the vast deposits of ironstone in
hat the growth of the district as an
r was at first due; but of late its com-
apness of manufacture and disposal
d it to keep up a large output in the
ralleled depression. Other centres
up for allied causes; but it is
ether in the future the situation of
y not once again assert a greater
the fixing of the position of the
ut. At the present time the demand
more for steel, and as our supply
it for conversion into steel is limited,
upplement it by the importation of
,000 ton of iron annually from
her countries, so that for this im-
nearness alike to the coast and to the fuel supply are important; whilst for the exportation of a part of the crude iron resulting from the smelting of the imported ores, proximity to a seaport is also needful; but as changes occur either in the nature of the demand or in the price, we may find other changes accrue in the extent to which our smelting-plant is put to use, and, so far as can be discerned, the lowest rung in the ladder of depression may now be supposed to be about reached, so that any change will probably be in the direction of improvement. There is not the remotest likelihood of any combination of circumstances sufficient to call our smelting-plant fully into use; but there are indications that the pale lambent flames of the furnace will be more numerous than they have been for years, though the change may not be one in the immediate future.

THE GROSVENOR GALLERY.

This year's collection of works at the Grosvenor impresses us, perhaps, more than the previous exhibitions, as very "weird"; and while, of course, no one can contest the right of every man to do what he likes with his own, we cannot but feel that art is, in the main, better served by a republican system which admits every one on his merits, than by that which, as we are duly reminded in the prefatory notice to the catalogue, admits only on the invitation of the authorities of the Gallery. It would be difficult to conclude, from a study of the works exhibited this year, upon what principle such invitation was extended. Certainly the result is a very curious medley, in which works which seem to fly at the extreme possible achievements of imaginative art are mingled with others of the most prosaic stamp, and of which it may be said that one-third of the collection is very eccentric and one-third decidedly bad. The specimens which suggest this latter part of the category we prefer to pass over rather than to particularise; but they seem more numerous than on previous occasions,—indeed, what some of the exhibitors have been at it would puzzle any one to make out. It may, of course be said that to find an exhibition in which only one-third of the exhibits (roughly speaking) are valueless, is something; only it is difficult to reconcile their presence with a professed exercise of a rigorous selection of exhibitors according to a certain high standard; and the very fact that the exhibition and the several exhibitors professedly aim at so much, brings these shortcomings more strikingly into light.

Of the works which make up the most important part of the exhibition, probably none will attract more attention than Mr. Burne Jones's series illustrating the history of Pygmalion and his statue bride, which has already been a good deal talked about in advance. This consists of four paintings, separately inscribed each with a brief motto, the four, discreetly put together, making a sort of doggrel rhyme (we presume we are not called upon to give it any higher name),—

> "The soul desires,
> The hand refrains,
> The goddess fires,
> The soul attains."

What strikes one at first glance of the series is that the old classic legend is treated in an entirely Gothic spirit. We merely note the fact, not thinking it necessary to complain of a tendency in the treatment of classic legend of which Shakspeare (in "Troilus and Cressida," for instance) furnishes some of the most marked examples. In the first painting no statue is seen, except a group of the three Graces, which may have served as the first inspiration of the sculptor, a melancholy, thin, Mediæval-looking man who stands, deep in thought, gazing where, perhaps, the statue may already be in fact, or, perhaps only in conception; we are left in doubt as to this. In the second the sculptor stands apart from and almost shrinking from his work, to which he may be supposed to have given every touch of refinement that his genius can suggest; he is afraid to mar his work with any further effort. For the statue, it is a sufficiently graceful figure, and the fact that its forward action is too eager and full of movement for sculpture may be accepted as in keeping with the story and its sequel. In the third scene, Venus visits the figure, in the absence of its creator, and breathes into her the breath of life, extending a hand to touch the marble heart; the statue leans forward passionately towards her, and has already lost some of its cold whiteness, and shows a faint flush of life. The figure of Venus, crowned with flowers and enrobed in large-folded but thin drapery, is exquisitely graceful, and is more antique in spirit than any other figure in the series. In the last, the sculptor returns to his house to find the statue become a flesh and blood young woman, who has apparently just risen from an armchair in which she has been resting; a figure with the thin lithe limbs, full lips, protruding chin, and red hair, which seem to make the type of beauty of to-day; one might probably see half a dozen just such young women at any private-view day at a leading exhibition, looking none the worse for the fact of being dressed. It is this realism of treatment which seems to us to mar the poetry of the legend, and makes it look so much like plain fact as to appear quite incongruous one feels as if the young man might at least have lent her a dressing-gown before he began to talk to her. To keep the congruity of the whole, the figure should have been one of the loftiest type of ideal form, such as belongs to the antique rather than the modern age, and the surroundings have been such as to keep us in a doubtful and mythical region, rather than amid curtains and furniture. Nevertheless, we thank the painter for the figure of Venus in the third scene. Of Mr. Jones's other painting of "The Annunciation" we can only say that we cannot understand the motive for painting it.

We must confine ourselves in our present notice to a portion of the works, and will take some of those in the east room, in which the series just alluded to hangs. Among these are some landscapes which have the charm (among others) of bringing us back to this world again. We do not know whether we should quite say this, however, of Mr. Cecil Lawson's powerful but rather vague work, "The Morning After," which, moreover, strikes us somewhat as a reminiscence of Turner, not in his most satisfactory style. We may, however, while speaking of this artist's landscapes, diverge for a moment into the west gallery to mention his other works, and to express our satisfaction at finding that the promise made last year seems fully kept up. The large painting of the hop country in Kent has very fine qualities, especially in the distance, and still finer is a small work, entitled "'Twixt Sun and Moon." In his "Golden Haze" we think the painter discovers, as in the first of his works we mentioned, a tendency towards reproducing effects belonging to a special school of landscape, rather than looking at nature in his own way. But his contributions have all very high ability. To return to the east room, we find Mr. Mark Fisher very well represented by two cattle and landscape scenes in his broad and free but carefully studied style, of which "Spring" is especially fine; and two small, very bright and hard paintings of odd bits of French and Italian architecture, by the Baroness de Rothschild, have much force and reality. Miss Montalba's "Festa de San Antonio, Venice," exhibits this lady's talent on a much larger scale and in a different class of subject from that which she has usually illustrated (if it be, as we presume, the work of Miss Clara Montalba, – the Christian name is not added). This is a procession of priests coming down the broad steps from a bridge of one of the smaller canals; the picture is not striking from anything in effect or tone so much as from its quiet reality and the broad open-air daylight which pervades it. Mr. Morgan's "Motherless" is a small picture that may class with Mr. Fisher's, though in a lighter vein; the "Motherless" ones are a couple of calves which are admirably studied, not excluding due attention to the landscape. Mr. Holman Hunt has sent one of those peculiar experiments in which he delights, and in which he has certainly succeeded this time, so far as the main end is concerned, to paint luminosity. It is the deck of a steamer at night, and the point of the work is the contrast of the steamer lights on deck and the stars above. The latter are wonderful, they seem positively to twinkle. The verse from Tennyson's "In Memoriam," commencing—

> "I hear the noise about thy keel,"

is added as a title to the work; the quotation at once suggests, unfortunately, the limits of its interest and excellence. As a problem in painting it is wonderful, but of the sentiment suggested by Tennyson's poem, from which the verse is taken, there is not a hint.

The end of the east gallery is occupied by Sir Coutts Lindsay's large and very effective painting of "Ariadne," who is, however, not quite so beauti-

ful but that one can understand Theseus growing tired of her. Mr. Forbes Robertson's portrait of Mr. Hermann Vezin is forcible and characteristic. We have more to say in regard to the other contents of the Gallery.

EDINBURGH.

The scramble for lucre in these hard times is becoming exciting. The architectural profession, which in this city used to be characterised by a certain amount of dignified reserve, is now not without a spice of effrontery. Competitors do not now strive so much to excel each other in artistic merit as to undersell each other in regard to the amount of remuneration they will accept. Limited liability companies are formed, and if it be possible to secure a site where the neighbouring property may be deteriorated by new erections, it is seized upon and a ransom demanded. Puffing is resorted to, and the architect of the "proprietors" is trotted out as the genius of the hour, who can perform unheard of wonders, in the production of the maximum of accommodation at the minimum of cost. As an example of this sort of thing we quote from a recently-issued circular:—

"Plans have been prepared by the proprietors' architect, Mr. ——, of a model semi-detached, and of a model continuous villa. These plans embody the results of his large experience in this class of property, and provide all modern improvements and conveniences in a compact and economical way. The accommodation consists of dining-room, drawing room, four bed-rooms, bath-room, kitchen, pantry, napery-closet, coal-cellar, &c. Mr. —— is of opinion that in the case of the semi-detached villas, each house can be put up at present prices for the sum of 750*l.* sterling, and in the case of the continuous villas, each house can be put up for 650*l.* sterling. Such houses will readily let at remunerative rents, and probably will be sold at a profit of from 1 0*l.* to 200*l.* sterling on each house. The external appearance of the proposed villas is picturesque, though simple and inexpensive, and a sketch of the front elevation of the continuous villas is given on the first page. The proprietors of the estate are prepared to supply feuars with copies of the complete plans and measurements of each of those kinds of villas, for a payment of 10*l.* 10*s.* sterling for each stance feued. This will enable feuars to save their outlay for plans and measurements, which usually amount to *six per cent.* on the cost."

Another phase of the same spirit exhibits itself in the destruction of plain, substantial, unpretentious buildings, and the substitution of cheap work of a bizarre description. George-street seemed to be the most unlikely place in which to perform fantastic tricks, yet there will be seen a brand-new wooden elevation of the most motley description. Genuine wood construction, such as is to be seen in Chester, Shrewsbury, and in the Old Town of this city, is picturesque and beautiful, but this erection is the wrong thing in the wrong place.

The restoration of the southern portion of St. Giles's Cathedral is proceeding steadily. The principal part of the work consists of the removal of galleries, staircases, partitions, &c., which were erected at the beginning of this century. The portion now cleared out is spacious, extending from west to east, 221 ft.; besides the south transept, it embraces chapels, both to east and west, overlapping three bays of the chancel and nave respectively.

One of these chapels to the south-east of the transept was founded by Walter Chepman, who, under the auspices of James IV. and Margaret his queen, introduced the art of printing into Scotland in 1507. Chepman died in 1532, and his resting-place was treated with small consideration by the "improvers" of fifty years ago, having been converted into a coal-cellar and receptacle for heating-apparatus. In the chapel itself the remains of an altar tomb were discovered, built up in the thickness of a wall. This was found to be in a sadly damaged condition, a flue having been driven right through it, and portions of the sides having been entirely cut off. It is intended to restore this relic as far as possible to its original condition.

Next to the chancel, and divided from it by three blocked-up arches, which rise to a height equal to those which carry the clearstory, is the Preston Chapel. In the vault of this chapel a leaden coffin was discovered, bearing the name Brigadier Cunyngham, with the date 1697. The Brigadier had probably been an agnate of the Dick Cunynghams of Prestonfield.

The filling-in of the built-up arches is to be removed, and the damage done to the shafted pillars made good. This portion of the building is to be utilised by the congregation, and will afford accommodation for about 150 persons. There are other two chapels to the west, in one of which lies hidden a mural shrine, richly carved with emblems of the Passion.

Great disappointment has been felt at the unsatisfactory result of the exploration of the vaults in this part of the cathedral. Dr. Chambers, chairman of the Restoration Committee, reports as follows on this subject:—

"We know from history that the following distinguished persons were entombed here:—The Regent Murray, 1570; John, fourth Earl of Athole, Lord High Chancellor, 1579; John, fourth Earl of Montrose, Lord High Chancellor, and Viceroy of Scotland on the accession of James VI. to the throne of England, entombed 1608; and his grandson, the great Marquis of Montrose, 1661. As the remains of the marquis had not been found in the Chepman Aisle, they must be either here or nowhere. The bodies of all the persons mentioned are believed to have been entombed in leaden coffins. After some preliminary excavations, the search took place to-day (10th April, 1879) at twelve, noon. Present,—the Lord Provost, the Lord Justice General, Dr. Douglas Maclagan, Mr. Hay, architect, Mr. Lindsay Mackery, Rev. Dr. Lees, and myself. Result very disappointing. Only one vault could be found. It was under the modern monument of the Earl of Murray. It contained three leaden coffins in bad condition. The inscriptions on them seemed to indicate that they were connected with the Stewarts, Earls of Galloway. No discovery was made of the coffins of the Earl of Murray, the Earl of Athole, the Earl of Montrose, or the Marquis of Montrose. Some further examinations will be made, but it is not likely that there will be any resh discovery. In short, it would appear as if the bones of the great marquis had vanished. Probably when the boxfuls of bones are carefully examined by anatomists, there may be found some traces of his mutilated remains; if so the fact will be reported."

The restoration is to be actively carried on at the sole expense of Dr. Chambers, and it is expected to be completed in the course of next summer. Dr. Chambers has also intimated his readiness to undertake the restoration of the nave, provided the congregation of West St. Giles's provide themselves with a place of worship elsewhere. Were the scheme of Dr. Chambers carried out, a very imposing interior would be opened up, unique as to some of its arrangements and effects.

To render the restoration satisfactory, something would require to be done to the exterior, which has been encased with a veneer by those so ignorant of the principles of Gothic architecture as to cause the voussoirs of the arches of the large windows to appear as if they ran horizontally, and to introduce other features quite out of keeping with the style of the building.

In 1853 a sum of 1,000*l.* was bequeathed to the magistrates and council of Edinburgh, by Captain Hugh Reid, to form a fund with which to erect a memorial to Bruce and Wallace in the city. The fund was to accumulate for twenty-five years, and now amounts to about 1,730*l.* It has been suggested that the memorial should take the shape of an ornamental piece of water in Princes-street Gardens, with statues in bronze of the two heroes.

Provision has been made by the late Mr. David Laing, the distinguished antiquary, for the erection of another memorial, one commemorative of the illustrious Scottish historian and poet, George Buchanan. The design has been entrusted to Mr. D. W. Stevenson, sculptor, who has adopted a simple classical style. The monument is square on plan, having a basement with cornice and cope, upon which rests a square block of stone, in one face of which is an oval niche, containing a bronze head of Buchanan, taken from what Mr. Laing considers the most authentic likeness in existence. The upper part of the monument consists of triangular pediments on each face of the square. The site proposed is a conspicuous part of the Greyfriars' Churchyard, which contains a considerable number of interesting and picturesque tombstones.

The museum room in the Scott Monument has been overhauled and ventilated. Several interesting additions have been made to the collection, embracing a bust of Kemp, the architect of the monument, and presented by the sculptor, Mr. John Hutchison, R.S.A.; the old town-drums of the City and Canongate respectively; and ancient examples of arms.

Banff.—Preparations have been commenced for the erection of a new United Presbyterian Church in Banff, from plans prepared by Mr. A. Ross, architect, Inverness. The site of the new church has frontages to Seafield-street and Seafield-lane. The structure will be Gothic in style, and will be composed of freestone and the blue whinstone of the district. There will be accommodation for 250 persons. The cost will be 1,740*l.* The contractors for the erection are,—Mr. Wm. Alexander, Buckie, for mason's work; Mr. Gray, Portsoy, for carpenter's work; Mr. Thomson, Banff, for plumber's work; Mr. Gibson, Banff, for plasterer's work; and Mr. Walker, Banff, for slater's work.

THE NEW IMPERIAL POST OFFI BREMEN.

If those good people of Bremen, now away, who were wont formerly to peram the Domsheide,—a spot planted in fashion with lime and chestnut trees,- return for another stroll, they would finc a little altered in its features. In 1856 some monument was raised in the loca Gustavus Adolphus of Sweden; in t sent decade the character of the pla greatly changed by the intrusion of the sandstone façades of the Künstlerverei (Hall of the Society of Artists) and the S (Assembly-rooms); and, more recently the spring of 1875, a new central post-of been steadily rising, until, in the sum last year, it was divested of its har scaffolding, and a boon was conferred u inhabitants of the town which they h hitherto enjoyed.

The inadequacy of the Bremen Post-o the requirements of the great German e upon the Weser has been remedied. unification of Germany in 1866 came improvements, and one of these was the of the building of which we give an illu It is located on the former site of the school of the city, which has been pulled d rebuilt at some distance in the rear of office. The area covered by the latter 38,000 square feet. The new office, isolated, consists of a principal buildi an inner covered court, and a wing join which the telegraph-office has been The principal building rises in four st lower one of which forms the basement but in the rear, in consequence of slope of the soil, becomes the ground fl its whole length. There also the co tioned, which connects the smaller with the principal one, has its entrance surrounded on all sides by free sp edifice, particularly in its façades fac and west, as well as by its proportions elegance and neatness of its detail imposing effect, which will be enhan the insignificant dwellings opposite of it have been removed. The employed,—dull red bricks, from L Silesia for the constructive parts, Obe sandstone for the decorative portions, sandstone for the base, — contribu little to the good effect. In the cen principal front occurs a lofty gable, a corner of the side façades two oth The set-offs of these five gables suppo obelisks, and griffins, and two colo stone statues representative of postal standing clear. In the two niches of frontal pediment there are two oth and in the niche of the upper pedime post-boy attired as Mercury. The top ment of the pediment is a gilt imperia

If we enter the building under th gable and below the inscription " Ober-Post-Direction," cut in stone, of the richly-carved doors, we step i bule, the round arches of which are by iron columns. On both sides a rooms, next corridors to the right an the entrances to the offices lying t Domsheide, and with stairs leading upper stories. Opposite to the entr doors lead to the *chef d'œuvre* of building, the covered court, a par which, surrounded on all sides by t building, produces a striking effect ornamentation, its two grand staircs sgraffito frieze, designed by the arch which extends along the entabla court, on its shorter side, to the rig the niches for receiving and distribu to the left, to those for post-office newspaper orders. The windows buting the letters are arranged inge smaller and larger iron boxes be them, the front of which consists glass, with number, and a lock, w opened from outside with a key wh the one particular box, so that letters, who fetch them themselv post-office, as is the general custom may do so without let or hindranc sides of the door leading into the Dechanatstrasse from the covered large staircases already mentioned, of dolomite, and which at thei adorned with four candelabra, and vases. These lead to the upstairs





REDOS: ALL SOULS COLLEGE CHAPEL, OXFORD.—As Restored under the Direction of the late Sir G. G. Scott.



THE THREATENED CHURCHES IN THE CITY OF LONDON.

ther various offices are distributed over
und and first stories. The second story
s official residences. Of special beauty
the *salon* of the Postmaster-General,
l with frescoes by Arthur Fitger.
plans for the extensive range of buildings
rawn up by the architect Schwatlo, of
The superintending architect was
ister Hake. The total cost was close
00,000*l.*

OULS COLLEGE CHAPEL REREDOS, OXFORD.

existence of this reredos was unknown
ery recently. During the restoration of
apel roof a scaffold-pole was accidentally,
rtunately, thrust through the lath-and-
screen which covered the face of the wall,
owed tabernacle-work behind. At the
ime the process of scraping the plaster
collar-beam was going on, and Professor
rs, being on the scaffold, watched this
e anxious eye of an archæologist, for a
ground with Middle-Fifteenth century
began to appear, and ultimately were
re the famous words,—"Surgite mortui,
ad judicium." This awakened great in-
and the removal of Sir James Thorn-
cture of the "Apotheosis" of Chichele, and
s oil painting of the *Noli me tangere*, with
ble surroundings, was soon accomplished,
ought to the view of astonished eyes the
ted remains of a beautiful work of archi-
l and sculptural art, as left by ruthless
and after having been hidden for more
wo centuries.
discovery created quite a sensation in the
and throughout the university. The fact
been made known to Earl Bathurst, the
fellow, he at once generously offered to
the cost of its restoration. The services
G. Gilbert Scott were then called in, and
ered into the work with that zeal and
r old examples that so eminently distin-
d him. Sir Gilbert and his clever assist-
r. Medland, used every means to discover
ts of the work, and were successful in
sufficient detail to insure correct restora-
The backing of marble, putlog-holes,
up of niches, &c., gave up their hidden
es. The whole of the projecting canopies
en axed off to a general surface, but the
seems to have had a better feeling than
rectors—perhaps with an eye to its resto-
—and had left attached portions of pinna-
anopies, tracery, groining, and so on, as a
uide in working out the design correctly.
hole had been highly decorated with gold,
ue, vermilion, blue, green, &c., traces of
were found on the details in excellent
vation. Portions of the details, with the
on them, have been cleverly inserted into
ow work, giving the key for a perfect resto-
in colour if thought desirable. Although
were so successful in finding details of the
not a remnant of the figures was dis-
ed, which suggested the idea that they
been formed in silver or some other
l.

e reredos is built in the wall as part of
tructure of the chapel. It was erected by
bishop Chichele in the early part of the
eenth century, and destroyed in 1549. On
ummit of the reredos is a seated figure of
Lord in Glory, supported by attendant
ls, on either side, groups of nude figures
to judgment. The outline of all these
left slightly raised above the surface. Then
ved the twelve apostles, with St. Michael in
centre. Second tier, Dukes,—York, Bed-
Clarence, and Gloucester; Earls,—Shrews-
, Suffolk, and Salisbury; an archer of the
of Henry V., and the four Latin fathers,
on saints of the chapel, and St. John the
ist in the centre. The first or lowest tier
ided Earl Bathurst, the donor, Catherine of
ace, Henry V., Margaret of Anjou, Arch-
op Chichele, the founder of the College,
ry VI., co-founder of the College; Arch-
op Warham, John of Gaunt, Bishop Gold-
, and Cardinal Beaufort. There are eighty-
statuettes representing the principal
ions in the Bible history. The whole of the
res were executed,—save one, which was
lled by Count Gleichen,—by Mr. E. Geflow-
of Camden-road, Camden-town; and the
tical restoration was carried out by Mr.
ry Terry, architectural sculptor, Lambeth-
d.

THE THREATENED CHURCHES IN LONDON.

In connexion with our plea against the threatened wholesale destruction of churches in the City,—public buildings, the handwriting of a past generation, houses of memory,—we threw together, in one prospect, some five-and-twenty years ago, views of all those which had been pointed out for erasement.*

We have been urgently requested by some who, like ourselves, deplore the probable destruction of these interesting edifices, to reproduce the engraving. This we readily do, together with the notes originally accompanying it, and on a future occasion will point out those which have already been pulled down.

No. 1 is St. Mary's-at-Hill, in Thames-street, of ancient foundation, as are all the others. It was injured, not destroyed, by the Great Fire of 1666, and was restored and partly rebuilt by Sir Christopher Wren, between 1672 and 1677.

No. 2.—St. Martin's Outwich, in Bishopsgate-street, rebuilt in 1798 by the late Mr. S. P. Cockerell. It contains some interesting monumental remains, brought from the old church, and churchwardens' accounts from 1508 to 1545.

No. 3.—Allhallows', Lombard-street, rebuilt in 1694, Wren being the architect. It has some very good carvings.

No. 4.—Allhallows' Staining, where Princess (afterwards queen) Elizabeth stopped when she left the Tower. It escaped the Great Fire.

No. 5.—St. Matthew's, Friday-street, rebuilt by Wren in 1685.

No. 6.—St. Helen's, Bishopsgate-street, founded in honour of Helena, the mother of the Emperor Constantine, full of monuments and useful memories. The interior of the church is singularly picturesque and interesting.

No. 7.—St. Swithin's, London-stone, in Cannon-street: was burnt, and was rebuilt by Wren in 1680. Within a modern case against the south end of the church shown in our view, is all that remains of the famous "London stone."

No. 8.—St. Michael's Bassishaw, in Basinghall-street, which being burnt, was rebuilt by Wren in 1679. It contains a tablet to Dr. Thos. Wharton, who distinguished himself by his exertions during the great plague of 1665.

No. 9.—St. Michael's, Paternoster, Thames-street, originally rebuilt by Whittington, who was buried there. Those who erected his monument punned on his name, and inscribed it "*Richardus Albificans Villam.*" After the Fire the present church was built by Wren in 1694; the spire was erected in 1713. There is an altar-piece by Hilton.

No. 10.—St. Mary's, Somerset, Thames-street, which serves also the parish of St. Mary Mounthaw,—formerly called St. Mary *de Monte alto*, or Monthaut. It was rebuilt by Wren in 1695.

No. 11.—St. Margaret's, Pattens, Fenchurch-street, rebuilt (after the fire) in 1687, by Wren. It contains some good carving and a painting on the altar-piece.

No. 12.—St. Catherine's Coleman, in Fenchurch-street, rebuilt 1734.

No. 13.—St. Clement's, Eastcheap, rebuilt by Wren, in 1686. According to the register-books, the parishioners in 1685 gave the architect "one-third of a hogshead of wine."

No. 14.—St. Mildred's, Bread-street, close to the new opening in St. Paul's-churchyard. It was rebuilt by Wren in 1683, and is remarkable for its interior.

No. 15.—St. Anne and Agnes, in Aldersgate-street, formerly called St. Anne-in-the-Willows. The Fire destroyed the old church, and Wren built the present structure in 1680.

No. 16.—St. Edmund's, Lombard-street, destroyed by the Fire and rebuilt by Wren in 1690. In the old church was buried John Shute, who published "The first and chiefe groundes of architecture" soon after 1550. The present building contains some stained glass and "Moses and Aaron," by Etty.

No. 17.—St. Mildred's, Poultry, where originally a tablet said—

"Here Thomas Tusser, clad in earth doth lie,
That sometime made the 'Points of Husbandrie.'"

After the fire the present church was built by Wren in 1676. There is a bust here by Nollekens.

No. 18.—St. Michael's, Wood-street, the asserted burial-place of the head of James IV. of Scotland. The old church was burnt in 1666, and the present erected by Wren in 1675.

No. 19.—St. Mary's, Abchurch, completed by Wren in 1686. The interior is very peculiar and has carvings by Grinling Gibbons of wonderful beauty.

No. 20.—Allhallows, Bread-street, wherein Milton was christened. The present church was built by Wren in 1680.

No. 21.—St. Peter's, Cornhill, traditionally called the first church founded in London. It was rebuilt by Wren after the Fire, and has a carved oak chancel screen.

No. 22.—St. George's, Botolph-lane, finished in 1674 by Wren, in lieu of the old structure, destroyed by the Fire. It contains a memorial of Lord Mayor Beckford.

No. 23.—St. Benet's, Gracechurch-street, as completed by Wren in 1685.

No. 24.—St. Olave's, Jewry, suggesting a long story of a mysterious people. It was rebuilt by Wren in 1676, and is the burial-place of Alderman Boydell.

No. 25.—St. Michael's, Queenhithe, rebuilt by Wren in 1677. A doorway at the west end displays some carvings, probably by Gibbons.

No. 26.—St. Nicholas Cole Abbey, on Fish-street-hill: rebuilt by Wren (after the Fire) in 1677.

No. 27.—St. Peter's Le Poor, Old Broad-street: rebuilt by Jesse Gibson in 1792.

No. 28.—St. Mary's Aldermary, in Bow-lane: built in 1510 by Sir Henry Keble, called

"A famous worthy wight,
Which did this Aldermary Church
Erect and set upright."

The body of the church being destroyed in 1666, was rebuilt by Wren, and is a very curious specimen.

No. 29.—St. Alban's, Wood-street, restored by Wren after the Fire, in the style of the old church. Inigo Jones had rebuilt the church a few years previously. Attached to the pulpit is an hour-glass, that the preacher when he "doth make a sermon, may know how the hour passeth away."

A glance at the spires and towers here brought together suffices to prove, amongst other things, the great fertility of design possessed by Wren,—and these are not the most important of his works. They all differ in a striking degree, and suffice to render the appearance of London when viewed from a distance different from that of any other city in the world.

* Vol. xii., pp. 42, 43. In the same volume, p. 199 and p. 255, will be found two other groups showing the whole of the remaining churches within the City walls.

THE ROYAL ACADEMY.

The 111th exhibition of the Royal Academy of Arts comprises 1,586 works, of which 137 consist of medals, models, and sculpture. It is a very agreeable collection, including, of course, many fine works. As our paper is issued on Friday, we postpone our notices in compliance with the request of the council that no reviews should appear before the private view. The architectural drawings are 116 in number, and will have proper attention in our next issue. The President and Council of the Royal Academy have bought the following pictures out of the exhibition, under the terms of the Chantrey Bequest:—21, "The Waning of the Year," by Ernest Parton; 435, "Their only Harvest," by Colin Hunter; 532, "The Swineherd Gurth, the Son of Beowulf," by C. E. Johnson; and 540, "Toil and Pleasure," by John R. Reid.

THE GREAT NORTHERN RAILWAY COMPANY'S SURPLUS BUILDING LAND.

Last week, at the Auction Mart, Tokenhouse-yard, Messrs. Prickett, Venables, & Co., offered for sale a large area of freehold building land belonging to the Great Northern Railway Company, situated at Stroud's Vale, close to the York-road and King's-cross stations, and adjoining the buildings recently erected by the Victoria Dwellings Association. The second lot, situated close to the other, contained a much larger area,—40,000 superficial feet,—with two frontages, there being several buildings on the site, as in the first lot, which were included in the purchase. The highest sum offered for the first lot was 1,000*l.*, being at the rate of about 3,000*l.* an acre, when the auctioneer observed that it could not be sold at that rate, being worth considerably more for building purposes, situated in such a locality, and that the company had had considerably higher offers for the land, which they had refused. The lot was consequently withdrawn, as also was the second lot, the price offered for it being at the same rate as for the first lot, the auctioneer stating that there were several parties desirous of negotiating for the purchase of the land for building upon.

ART-UNION OF LONDON DISTRIBUTION.

THE annual meeting of the Art-Union of London was held on Tuesday last in the Lyceum Theatre (by the kind permission of Mr. Henry Irving). The chair was taken by the president, the Right Hon. Lord Houghton.

The secretary, Mr. T. S. Watson, then read the report of the Council, the more important parts of which we print:—

The sum subscribed for the year now closed amounts to £12,482 8s.

It is a subject for congratulation that, amidst the continued depression of trade in all parts of the world, and the disastrous failures of various kinds, the amount collected by the Art-Union shows so small a decrease on that of last year.

At such a time, especially, the thanks of the Association are due to those of their coadjutors, in all parts of the world, who, in the teeth of adverse influences, have succeeded in making up considerable lists of subscribers.

The accounts of the year have been audited by Mr. T. J. Geddes, of the Union Bank, and Mr. W. Wright, of Messrs. Arbuthnot & Co., to whom thanks will be forthwith proposed.

The following is a brief summary of the receipts and expenditure; a detailed account will, as usual, be printed in the report:—

Amount of subscriptions		£12,482 8 0
Allotted for prizes	£8,562 10 0	
Set apart towards providing works of art for accumulated payments	735 0 0	
For print of the year, almanack, exhibition, report, &c., and reserve	2,318 4 2	
	9,615 14 2	
Agents' commission and charges, advertisements, printing, postage, rent, &c.	2,865 13 10	
	£12,482 8 0	

The amount to be expended on prizes will be thus allotted:—

1 work at	£200	
2 works at	150	each,
2 ,,	100	,,
6 ,,	75	,,
8 ,,	60	,,
8 ,,	50	,,
12 ,,	45	,,
14 ,,	40	,,
14 ,,	35	,,
14 ,,	30	,,
16 ,,	25	,,
20 ,,	20	,,
23 ,,	15	,,
30 ,,	10	,,

1 Bronze Group, "America."
2 Bronze Statuettes, "The Warrior."
20 China Tazzas.
40 Framed Proofs, "Countess of Bedford."
20 Parian Statuettes, "The Little Boat-builder."
30 Parian Busts of "The late Princess Alice."
100 Portfolios of 24 Plates of Animal Life.

These, with the prizes given to unsuccessful members of ten years' standing, will make the total number of prizes 630.

For the subscribers of the coming year the council commissioned Mr. Lumb Stocks, R.A., to engrave a plate from the picture by Mr. Ward, R.A., of "Dr. Johnson in Lord Chesterfield's ante-room."

On the 16th of January last a painful shock was felt in London, when it became known that Mr. E. M. Ward had suddenly expired at his house in Windsor.

Mr. Ward dying, after forty years of laborious and popular work, is very worthy of remembrance amongst those to whom the possession of positive artistic merits seems more important than the presence of the faults that, not seldom, accompany them. The leading features of Mr. Ward's style and those of the school to which he may be said to have belonged,—the origin of which is to be traced to Wilkie more than any other artist, with a not inconsiderable Hogarthian element,—have, of late, been subjected to the bitter criticism of a school somewhat restricted in its sympathies. The school has been characterised as the smeary and the incomplete,—having a power of suggestion rather than of definition, an avoidance of too much elaboration of detail running into the opposite extreme of mere cloudy general effect,—ignoring all necessity for exact delineation of form and substance. To them may be commended the following words of Sir Joshua Reynolds:—"I can recognise," he says, "no occasion on which I would recommend an undeterminable manner, or vague ideas of any kind, in a completed and finished picture. The notion of leaving anything to the imagination opposes a very fixed and indispensable rule in art,—that everything shall be carefully and distinctly expressed, as if the painter knew, with correctness and precision, the exact form and character of whatever is introduced into the picture. This is what, with us, is called science and learning, which must not be sacrificed and given up for an uncertain and doubtful beauty, which, not naturally belonging to our art, will probably be sought for without success."

Posterity will do Mr. Ward justice. He has left a number of works which his country will not willingly let die. We believe that Mr. Ward would have felt it to be the highest praise he could receive, rather than a reproach, for which it was meant, that he belonged, too simply, to the English school. The school of Fortuny, the Frenchand other eccentric movements, of the last twenty years, left him much as they found him,—a painter of anecdote, a painter of the lighter events of history. He would no more have thought of putting brush to canvas, without having a definite story to tell, than a skilled novellist would write his three volumes without feeling sure of his plot. After less ambitious subjects, Mr. Ward was favourably noticed for his picture of "Dr. Johnson reading Goldsmith's Manuscript of "The Vicar of Wakefield." But the picture which brought the name of the artist prominently before the public, and laid the foundation of his subsequent success,—a success no less universal than it was merited,—was the "Dr. Johnson in the Ante-room of Lord Chesterfield," exhibited at the Royal Academy in 1845. The Lord Chesterfield, of a century ago, was the patron, not only of men of letters, but of all who looked to the affluent and powerful for encouragement. Hence his doors were constantly besieged by suitors of all ranks and conditions. It must have been galling indeed to the great lexicographer to find himself unheeded amidst the motley group waiting to be admitted to the presence of the earl. . . . .

As to the engraver's share in the result—we have the recorded opinion of one of the first artists, and best judges of the day, in these words:—"I really don't think it is too great praise to say that it is as nearly perfect as engraving can be. All the textures are wonderfully rendered, and the character of the heads is exact."

As mentioned in our last report, the Art-Union was represented at the great Paris Exhibition by the reduced copies in bronze of Mr. Bell's "America," from the Albert Memorial, and Mr. Foley's fine statue of "Caractacus." On this occasion England had reason to be proud of the universal testimony borne to the unflagging and vigilant attention which H.R.H. the Prince of Wales devoted to the supervision of the British section, and the thorough grasp and appreciation which he displayed of most of the subjects coming under his notice. . . . . .

It is much to be regretted that the able school of English line-engraving—allowed to be second to none—should, by some misunderstanding or mismanagement, have been almost wholly unrepresented in the Exhibition. The Art-Union, alone, could have contributed a noble collection, representing the present state of English art in this particular, since during the last thirty years there has never been a time at which two at least of its first professors have not been engaged for the society on plates after our greatest native painters. Oldest of all is Hilton's "Crucifixion," the original now being in the Liverpool Town-hall, finely rendered by Mr. Finden; Stanfield's "Tilbury Fort," by J. T. Willmore, and "Castle of Ischia," by Ed. Goodall; "Raising the Maypole" and "Rockoh at the Well" worthily representing the different phases of F. Goodall's genius, engraved by Mr. Sharpe and Mr. W. Holl; "Claude Duval" and "Ramsgate Sands" of Mr. Frith, ably reproduced by Mr. Stocks and Mr. Sharpe; "Joseph and Mary" of Mr. Armytage, brightly interpreted by Mr. Jeens; "The Smile" and "The Frown" of Webster, by Messrs. Sharpe and Taylor; the "Italy" and "Venice" of Turner, by J. T. Willmore; Cooke's "Dutch Trawlers," by Arthur Willmore,—all culminating in the grand plates by Stocks and Sharpe of Wellington and Nelson, after the wall-paintings by Maclise in the Palace of Westminster.

There is a fashion in things of art, as in all other things; and, at the present time, it is the fashion more particularly to extol painters' etchings, in depreciation of the method of burin engraving. It is much to be regretted that any attempt should be made to set up such an antagonism. It would be just as rational to pit oil-painting against water-colour. Each has its own merits, which it would be desirable for the other not to expend its powers in imitating. Because we are wrapt in admiration of the hundred guelder Rembrandt, must we be blind to the charm of Müller's "Madonna de San Sisto" of Raffaelle, or Raphael Morghen's "Last Supper" of Leonardo da Vinci? It is the fashion to talk of an engraving as a mechanical copy of a picture, as contrasted with the original work of a painter's etching. The literal transcript by a schoolboy of an ode of Horace, for a punishment, is a copy. The rendering of the same ode into elegant English verse by a Philip Francis or a Theodore Martin is a translation.

When an engraver sits down before a painting to translate it into a reproduction in black and white, the means he has at his disposal do not more completely differ from those of the painter than the English language does from the Latin. A vast amount of artistic knowledge, refined taste, practised judgment, and manipulative skill is required when the engraver proceeds to determine by what bold sweep of his burin, by what delicate interlacing and cross-lining, he shall characteristically interpret the various textures and substances, as such are expressed by colour in the picture before him; quite as much as in the case of the etcher, who, by his artistically guided point, expresses by means of lines, playful or rigid, adapted to the end in view,—the forms and surfaces of the clouds, trees, buildings, ships, and other objects in the landscape which he proposes to depict.

The new house in the Strand which the Art-Union has had built for itself, out of a fund especially set apart for the purpose since the date of its incorporation, is rapidly approaching completion, and it is expected that the business of the society will be transferred thither in about two months from this time. The interior arrangements for carrying on the work of the society, and the annual exhibition of prizes, as well as for the permanent exhibition of a considerable collection of works of art of various kinds, have engaged the earnest attention of the architect, Mr. Edward Barry, R.A., in consultation with the Council and officers. The Strand elevation, though of no great size, will, it may be hoped, prove an addition to the architectural ornaments of the metropolis.

The large number of valuable copyrights gradually acquired by the Art-Union renders anything relating to the law on the subject important to the interests of the association, and the appearance of the report of the Royal Commission appointed in 1873 to inquire into the state of the laws relating to artistic copyright demands some notice in this report. It is obvious that whether or not actual changes should be made in the principle of copyright in works of art, the present law requires consideration and amelioration. There now exists a copyright in engravings and similar works for a term of twenty-eight years from the date of publication, a protection which originated in 1735, under 8 Geo. II. ch. 13. But when we come to the more important class of paintings and drawings, we find the term of copyright in those works of art is, by a late Act, passed in 1862, the life of the artist and seven years after his death.

For sculpture there is a copyright of fourteen years, and if the artist is living at the end of that period for fourteen years more. The absurdity of such irregularities is quite obvious. It is ridiculous that if two sculptors produce each a work of art in the same month, and one live for fourteen years less one day, and the other live for fourteen years less one day, the family of the former should have copyright for another fourteen years, while the children of the latter will be deprived altogether of their father's right.

In respect of pictures there are important secondary questions which have to be considered, viz., as to the assignment of copyright in the sale of a picture. At present, the author of a picture has the sole right of copying or engraving it, unless it be sold, in which case the painter cannot retain the copyright unless expressly secured to him by an agreement in writing. On the other hand, the right does not belong to the purchaser unless there is an agreement to that effect. In consequence, the copyright of many pictures is now lost, because neither seller nor buyer thinks, or, perhaps, even knows steps requisite to secure protection. If the arti think of the matter, he is, probably, chary of draw purchaser's attention to it, because the latter th aggrieved, and regards himself as a person who defrauded of part of the advantage in the possessio picture which he is paying for. Doubtless, a consi proportion of purchasers would be liable to take fr to feel annoyance at this kind of condition attache purchase, and artists consequently prefer that th right should vanish rather than mention so del matter. The Commissioners, then, arrived at the con that, in the absence of a written agreement to the co the copyright in a picture should belong to the pur or the person for whom it is painted, and follow the ship of the work. Also, they would not allow th to make replicas of his picture after being sold, the consent of the owner. With respect to photo engravings, and similar reproductions, the propert negative or the plates would remain in possession artist for thirty years from the date of publication discussion on many points will, no doubt, arise when recommendations come before the Legislature with to settling the law on the matter, but, assuming copyright in works of art is desirable, it would be to rational that it should be for a fixed term of rather than for a term compounded of the life artists and so many years afterwards. There surel be no doubt as to the date of publication, if the m of the same to the work, whether painting or eng were made an essential condition to the claim of right.

It is urged that the copying of a picture or a statu reality prevented by the ownership of the person wh possess it, and that if all copyright in works of a to be abolished to-morrow, artists would not be one worse; and the Commissioners state that it has been to them that when a picture is now sold, no mene copyright is usually made. This is quite contrary to experience. The copyright of the majority of imp pictures now painted is reserved, and becomes very the subject of a separate bargain, so that, in some the amount received for copyright is actually greater that paid for the picture itself. Whether or not changes result from this Commission, there can be no that it has done good service by pointing out the anom state of the existing law, and suggesting its simplifi We can only hope that a definite Act on the subje now be passed, so that, at any rate, literary and persons will have no difficulty in understanding th position of a creator of works in literature or art. be regretted that the Commission did not compri name of one or more artists of repute, from whom practical and weight have been derived.

We may note that, at an International Congress, subject of artistic copyright held in Paris, a copyrig the term of 100 years was recommended; and it wa posed that the right of reproduction should not neces be involved in the sale or the presentation to the Sa a work in the case of portraits or stat the vendor or any of his family; that the assumption artist's name or mark should be punishable by law that an artistic international society should be form give protection to natives and foreigners alike, ind dently of any commercial treaties.

As a very encouraging evidence of the constantly-increa interest felt by the nation in the development of the a instincts of the people at large is the frequent ad made to the museums and institutions of various having such development as their object. In our report we noticed the important work, then in progre establishing a museum of great size and completenes in the case of the town of Nottingham. This w augurated, with an impressive ceremonial, by the Princ Princess of Wales, on the 2nd of July last. The Prin Wales, in his speech, commended the town of Nottin for having taken the lead in carrying out an object templated by his father, the late Prince Consort, establishments throughout the U Kingdom. The suite of galleries and corridors in Nottingham building is extensive, and the works coll on the opening day were both various and interesti antique lace,—Japanese lacquer-work,—cloisonné enam gold and silver plate and jewelry,—Wedgwood, Turner Adams ware,—and rare objects from the Indian Mus and private collections. . . . . .

The foundation-stone of a permanent gallery, t called the Yorkshire Fine Art and Industrial Exhibi was laid at York on the 22nd of April last year. A manent picture saloon and galleries for temporary ex tions form the chief features. Preston, too, is like posess, very shortly a block of buildings, on a very prehensive scale, containing a free library, a museum, a gallery of art, the cost of which is estimated at 70,0 and will be defrayed by the munificent bequest of Harris, a gentleman well known in the town.

These are only some examples of the steps contin being taken to provide art-culture for the people. former reports, in reference to the gloomy views hel some persons as to the influence of art on manufactur this country, we have had occasion to remark that taste and refined feeling are not plants of rapid gro and in a soil left so long fallow as ours, much time mu allowed, much care and cultivation must be bestowed the tender seedling. The seeing eye and the forming h are not produced in a day; but it cannot be denied much progress has already been made, as shown by works elicited by the invitations of the Painter-stainers, Fan-makers, Turners, and other City guilds, and by British productions in the Paris Exhibition; and we hope that, when once the impulse is given, and the direction found, our progress will be forwards tow excellence, with constantly increasing power of concept and facility of execution.

Lord Houghton then rose to move that report be received and adopted. He said Ladies and Gentlemen, I will now, in a f words, ask you to accept and adopt the rep which has been made to you of the present c dition of this society, accompanied as it is some very interesting remarks on the press condition of art and artistic matters. T report gives you, I think, a very satisfacto financial statement. When you regard t present condition of commerce, of agricultu and of manufactures, I think you will feel th it is a matter of real moral satisfaction that t necessary economy which has been forced up

individuals and so many families has taken the direction of depriving them- the advantages of art. There must en privation, there must have been ; but that privation and that economy n exercised in other directions,—in the of other conveniences and comforts,— higher convenience and the more noble of art have been left still to continue, at will still continue, to give comfort sure to those about us. The report to speak of the Paris Exhibition; and re say that the only thing I have to connexion with the Exhibition was attendance in Paris last year deprived e advantage and pleasure of presiding r annual meeting. My place here was, on that occasion worthily occupied by llent colleague Mr. Godwin, so that I tle reason to regret my absence. At hibition, as your report truly says, artists made a noble presence, and it was tifying to me to see how their superiority received with any amount of jealousy l, but was recognised by the great con- y of art as a matter of deep and world- tisfaction. It was interesting to any to follow the criticisms upon the English f art as represented in the Exhibition; member that there were two words in he French art-critics generally described ciencies, as they considered them, of the school, and those words were "*effet*" *arti-pris*." In trying to see what they n the matter, I came to the conclusion absence of *effet*, or what we should call " in the English school was meant by o designate the absence of those great king and prominent effects of light which nuch more observable in foreign art than ; and there is no doubt that the foreign does incline his attention rather more to ncentration of the strong and important f the picture than is generally done in ntry, where there is more inclination ibute the light among the ordinary inci- f the picture than to concentrate it upon al feature. As to the second criticism, it is due to the inclination of the English to indulge very largely in detail. It is ot no doubt of great interest to the spec- ut at the same time of great labour to tist who surrounds his principal figures very large number of appropriate and ly-painted accessories; and there may ne of our painters who give you the sion of having wasted upon those ories some of the valuable time which might otherwise have given to the more ant parts of their pictures. These were ly adverse criticisms on the English school came under my observation while in and I think they possess some interest nd possibly deserve some notice on the f, English artists. Your report has also ed on the question of artistic copyright, ou will all feel that this is a very difficult ion; it is a difficult question because there ot only two interests to be studied, but interests are, in a certain degree, adverse sts. If a man buys a fine picture, he likes e it continually hanging up in his house,— ps in the very room which he constantly its; and it is no little discomfort to that ser to have his picture taken away from or a considerable time during the process ngraving. One hears very frequently in mateur world of the great annoyance and rrassment imposed upon the purchaser of e work of art by the request of the painter rrender it for a considerable time for aving. I think some arrangement might e to by which there might be almost mmon interest in producing the engraving, which should in some degree compensate he sacrifices of the purchaser in giving up o long a time the pleasure of the possession is picture. The present effect of copyright out special agreement going with the pic- is that the artist, having lost the oppor- y of reproducing the picture, and the pur- ser having no particular inclination and no ticular wish or reason to have it engraved,— effect, no doubt, is that the public is deprived he reproduction of a great number of very resting pictures which would add to the alth of our engravings of works of art. The ention, not only of the artistic world, but of Legislature, will soon be called to this sub- t, and I shall be very glad if I can contribute any way towards its elucidation. I do not know that I have anything else to say to you but to follow up what our report has said with regard to the new home in the Strand which will now belong to this Society. It will be in itself, I think, a very interesting and beautiful building, and it will also be, as it were, a centre common to all subscribers, where they can go for all purposes connected with the business of this society, and enjoy, better than they have perhaps been able hitherto to do, the exposition of its works of art. In the erection of that building every attention has been paid to economy with regard to the disposal of any parts of the building which we may not require for our own purposes, so as in no degree to trench unnecessarily upon the resources of this society. I will, before leaving you to the really important interest of the day, the drawing of the prizes, suggest to those of you who may be fortunate enough to be prize-winners, to be very careful as to your selection of pictures. Remember that if you have the good sense and tact to secure for your prizes such pictures as have real and not merely momentary interest, but a deep- and continuing merit of themselves, you may make as good bargains as did the purchaser, who- ever he was, of "The Order of Release" and "The Rescue," by Mr. Millais, which were pur- chased for a few hundreds, and were sold yesterday for thousands.

Mr. John Hopgood seconded the motion for the adoption of the report, remarking that the fact that the amount subscribed showed so slight a falling-off, notwithstanding the general depression, was a proof that the public generally valued the society and appreciated the work it was doing in promoting the love of art and the interests of artists. He believed that this year, when the society was to take possession of its new home, would mark the commencement of a new era in its existence, for the Art-Union of London would now have not only "a name," but "a local habitation."

The motion having been put to the meeting, was carried unanimously.

Mr. Francis Bennoch, F.S.A., in moving a vote of thanks to the honorary secretaries, Mr. Lewis Pocock, F.S.A., and Mr. Edmund E. An- trobus, F.S.A., for their unwearied efforts in promoting and maintaining the prosperity of the Association, said that although the number of subscribers was not quite so large as was the case last year, it was, nevertheless, very large considering the times in which we lived. The falling-off in the number of subscribers had chiefly arisen among their friends at the Anti- podes. The people of Australia had been passing through a time of deep trial in consequence of a succession of years of great drought, but he believed that when their present anxieties were removed by the return of prosperity and abun- dance, the subscribers to the Art-Union of London would be as numerous, and even more numerous than ever. The success which had been attained was due in no small measure to the services of the honorary secretaries, who day by day and week by week were constantly at the office watching over the interests of the sub- scribers. These gentlemen to a large extent formed a purchasing committee on behalf of absent members who were so fortunate as to draw prizes, and so satisfactorily did they per- form that duty that as far as he (Mr. Bennoch) remembered he had never heard of a single complaint by such absent prize-winners as to the works which had been chosen for them. It was interesting to note that Mr. Pocock was one of two gentlemen then on the stage who were present at the birth of the society, the other gentleman being Mr. Godwin.

Mr. James Hopgood briefly seconded the motion.

Professor Donaldson thought it was only right that the labours of their secretary, Mr. Watson, should be recognised, and he therefore asked that Mr. Watson's name should be included in the resolution. Without in the least dero- gating from what was owing to the honorary secretaries, he would say that every one who was acquainted with the working of the asso- ciation would admit that to the energy and zeal which Mr. Watson brought to bear in the dis- charge of his duties much of the prosperity of the society was due.

This suggestion was agreed to, and the motion, thus amended, was carried *nem. con.*

Mr. Godwin, in moving the next resolution, said:—The resolution I have to move is to the effect of giving thanks to two ladies for work that they are about to perform; but previously I would ask your permission to say just half a dozen words on another point, and to answer an objection which has been raised by an influential section of our subscribers within the last few weeks as to the character of our picture prizes. Some twenty gentlemen engaged in public offices have addressed a letter to the Council suggesting that there should be allotted fewer pictures worth 90*l.*, 100*l.*, and 200*l.*, and more of the value of 30*l.*, 40*l.*, and 50*l.*, with the view, of course, of giving a larger number of prizes, and so of pleasing a larger number of subscribers. Now, I can assure those gentlemen, and I think they will almost take it for granted, that this question has been already well considered, year after year, by your Council. Critics of the Art-Union usually forget one of two things. The Council have to spend the money confided to them in the best possible way for the advancement of art; but they have also to offer such a pro- gramme from year to year as to obtain that money in the first instance. Now, on the one side we have liberal men who say,—and they said it more strongly and more persistently at the commencement of this society than they say it now,—"Take all the money subscribed; buy half-a-dozen very fine pictures by the best artists, and encourage, therefore, the highest sort of art, and then distribute those half-dozen pictures amongst your thousands of subscribers." Had that advice been taken, the result would pro- bably have been that in the following year we should have had no "thousands" to spend in any way. This policy was, to a certain extent, tried some years ago, and entirely failed. On the other hand, while we feel that it is necessary to have a certain number of large prizes, so that able artists may have an object in view,—an induce- ment to apply themselves to the painting of pictures requiring time and thought,—it is also necessary to have a certain number of smaller prizes which will serve to bring on the recruits in art,—for without recruits we should have no veterans,—and at the same time, to bring a considerable number of sub- scribers. Therefore, the Council have always had to steer between these two points, and, to the best of their ability, have endea- voured to meet the wishes and act for the benefit of all. While speaking of critics, I cannot help saying one word as to the way in which the Art- Union of London is occasionally,—in fact, almost constantly,—ignored by a certain school of critics. At a Social Science Congress, not very long ago, a paper was read on the best means of introducing art into the homes of the people. You will scarcely believe it, but it is a positive fact, that neither the reader of the paper nor any one of the speakers pointed out the value in that respect of the Art-Union of London, which, I maintain, has, more than any institution what- ever, and more than any act of the Govern- ment, tended to send works of art into the homes of the people, both here and in the colonies,—in fact, wherever the English lan- guage is spoken; and which is, in itself, the most important piece of machinery in existence for effecting that work. Looking back at what the Art-Union of London has done, it is dis- tressing to find its proceedings ignored. But for the Art-Union of London, the noble art of line-engraving would have positively died out; but we see what great things have lately been produced in it,—notably, by Mr. Lumb Stocks, in "The Meeting of Wellington and Blucher." Then, again, the art of medal die-engraving had totally died out in England, and was relegated to buttons at Birmingham. But the Art-Union has revived that art also, and has produced a splendid series of medals commemorative of British artists. The Art-Union was also the first to produce artistic statuettes in Parian statuary, the first of its works being the repro- duction of Gibson's "Narcissus." For what it has accomplished, the Art-Union of London deserves the fullest recognition. The resolution I have to move is that the thanks of this meet- ing and a copy of the volume of illustrations of "Lara" be given to Miss Caroline Stewart and Miss Norbury, and to the scrutineers and auditors, for their services in connexion with the drawing of the prizes.

The motion was seconded by Mr. Aston Webb, and carried unanimously.

Sir Walter Stirling moved a vote of thanks to Henry Irving, esq., for kindly granting the use of the theatre for the meeting, and to Mr. Loveday, for the arrangements made for the comfort of the audience.

Professor Donaldson, in seconding the motion, expressed regret that Mr. Irving was not present to receive their thanks in person. He referred

to the high appreciation of the Society's work felt on the Continent, and spoke of the way in which lady artists were coming to the front.

The Chairman, in putting the motion, said,—I beg to add my own cordial assent to this motion, and to say that we fully appreciate the interest of being in this theatre by permission of the genius of the place.

The motion was of course carried by acclamation, as was also a vote of thanks to the chairman for presiding.

Lord Houghton, in reply, said,—I thank you much for the expression of your kindness. Perhaps you will allow me to supply an omission which I made in my previous remarks. In the report there was an allusion to a dear friend of mine who is no more,—Mr. Ward, the painter. I should not have liked to leave this chair without saying one word of recognition of that distinguished and delightful artist and of his excellent wife, who have done so much by their works to add to the interest of English political and domestic life. Their fame, I trust, may be continued by their son, who promises to be one of the best artists of our time.

The drawing for the prizes then proceeded, Mr. Bennoch succeeding Lord Houghton in the chair. We give a list of the principal prize-winners:—

200*l.*—Mitchell, A., Ballarat.

A bronze Group, "America."—Walton, J., Torquay.

A bronze Statuette, "The Warrior."—Dawson, W., Robe; Wills, T. P., Portsea.

150*l.*—Samman, E., Wellington, Cal.; Vacher, H., Surbiton.

100*l.*—Bangham, W., Buckingham Palace-road, Orchard, F., Kilburn.

75*l.*—Cole, C., 13, Billiter-square; Greenall, S., Warrington; Hopper, —, Stockton; Leitch, —, Liverpool; Taylor, R., Dalkeith; Waterman, H., Windsor.

60*l.*—Dean, Saml., Newport, Mon.; Devenish, W., Bristol; Hamilton, H., Stockwell-green; Harris, W. H., Windsor; Johnson, W., Southampton; Lambert, J., Sheffield; Thirkell, Mrs. H. W., Hamilton, Victoria; Westwood, R., Canterbury.

50*l.*—Boulnois, S., Gt. Marlborough-street; Giles, W., Melton; Goode, J. J., Clerkenwell-green; Kemp, G., Mayfield; Kirby, E., Birmingham; Mason, G. B., Ealing; Smyth, F. W., Constantinople; Wood, S., Gresham-street.

45*l.*—Drory, Mrs., Berlin; Dutson, T., Birmingham; Gill, R., Manor-road; Jones, W. S., Port Elizabeth; Kleeman, F. J., Adelaide; Miller, D., Biggleswade; Neumann, H. A., Aix-la-Chapelle; Pearson, C. W., Port Elizabeth; Rigge, J., Gawler; Shenton, E., Geraldton; Stuckerschmidt, L., Mare-street; Thurburn, Col., Upper Norwood.

40*l.*—Cherry, —, Bedford; Cousseu, J. F., Casterton, Victoria; Ferguson, W., Moncton, N.B.; Hewitt, T., jun., St. John's-wood; Hutton, W. S., Wolverhampton; Hyde, C., Stalevbridge; Macaulay, F., Clapham; Payne, S., Guilthall; Parsons, R. P., St. Ives; Pearson, J., Stockton, Powell, Dr A. J., Newington-causeway; Purcell, F., Ashton; Twining, H. J., Halifax, N.S.; Wall, W. B., Mounts, S.A.

35*l.*—Barrett, J. Farnham; Beeching, J., Maidstone; Brocking, E. W., Barnet. Broom, Andrew, W. Dulwich; Fitzgibbon, V. B., Cork; Gardner, J., Folkestone; Heuseman, C., Horncastle; Johnson, C. W., Mark-lane; Mawson, M., Customs; Orris, J. A., New York; Osmond, J., Finsbury; Peres, M. J., Jerez; Rodgers, T., Somercoates; Thubron, R. H., Sunderland.

30*l.*—Corbett, T., Camden-road; Giblin, V. W., Sydney; Gie, G., Cape Town; Hodgkiss, E. R., Birmingham; Hine, H., Epping; Lace, F. J., Stone-gap, Leeds; Screaton, —, London, Ontario; Seyler, E. N., Dalston; Tindale, C. S., Barking; Thomas, R. D., Christchurch, N.Z.; Tucker, W. A., Adelaide; Vessey, Mrs., Louth; Wilkinson, J. R., Skipton; Wise, Dr. A., Plumstead.

26*l.*—Beane, E. S., Newton Abbott; Cartman, G. E., Manchester; Conder, A., King Henry's-road, N.W.; Hitchman, J., Fanford; Holderoft, J., Dresden, Longton; Ingall, W. T. F. M., Stock Exchange; Masters, G. C., St. John's, S.E.; Mitchell, Dr. R., Wickham-road, S.E.; Moses, W. E., Yarmouth, N.Z.; Rushall, A., Bishop's Stortford. Spencer, H., Richmond-street, S.E.; Stokes, Jun., Dunmore street, W.; Thompson, K. P., St. Anne's Bay; Vacher, Miss, Surbiton; Vander Byl, A., Cape Town, Wrieden, Mrs., Brecknock-road.

25*l.*—Anderson, A., Aarhuus; Arnslow, —, Coventry. Biggs, W. H., Maddox-street; Bond, R. R., Hampstead-road; Bourn, J., Vale of Health, Hampstead; Bunting, A., W. Hartlepool; Casolany, W., Maldon; Errington, T., Hawkhurst; Haslem, J., Barnsley; Jennings, Miss, Pagnell-street, S.E.; Mackinnon, A. G., Cairo Street; Mitchell, W., Belfast; Morris, J., Christ's Hospital; Hutton, J., Dunedin; Prowse, W., Hornsey Rattee, H. Marcus Stewart, J., Highbury; Webb, E., Leeds. Young, S., Southend.

15*l.*—Adney, B., Crossland Moor, Huddersfield; Barnes, H., Grantham; Barnes, W., Ketsleby, Melton Mowbray; Bellingham, W., Lower Clapton; Bonsor, F. G., Whitehall-place; Chetwood, S., Waltham Abbey; Cox, W., Maidstone; Horne, W. P., Richmond, Yorkshire, Jackson, W. M., Sydney; Johnson, E., Cambridge; Lumley, B., Northallerton; Parker, H., Wandsworth; Pons, Miguel, Barcelona; Pitt, C., 50, St. Martin's-lane; Phillips, J., Bishop's Court, W.C.; Russell, Mrs., Darlington; Shaw, E., Southport; Smith, H. T., Great Marlborough-street; Valentine, S. G., Balarat; Wyles, T., Frindsbury.

10*l.*—Barrett, P., Wakefield; Bond, E., Plymouth; Bottang, R., Carshalton Power, J., Victoria Docks; Brenken, W., Glasgow; Bunn, W., Adelaide; Crabb, W., Lordship-lane, Tottenham; Crawford, Mrs., Brentwood; Grafton, Mrs. L., Westhumberstone; Gundary, D., Cockspur-street; Day, R. J., Victoria-square, Kensington; Goodland, F., Louth; Gotch, B. R., St. Ives, Newington; Gray, W., Cork; Kendrick, W., jun., Dudley; Lavington, C. E., Clifton; Launders, A. O., Fulham; Lock, J. K., Walbrook; Meudey, R. S., Fenchurch-street; Maw, Jas., Stratford, E.; Morris, J. E., Forest-hill; Novis, T. A., Hungerford; Richards, J. M., Gawler; Ritchie, H., Launceston, Tas.; S. G. (per Hopkins, Pall-mall); Shipp, T. P., Granville-place, Blackheath; Smith, T. M., Bleinheim, N.Z.; Spiller, A., Stanhope-street; Vanstan, E., Belfast Victoria; Wardman, H., Holbeck.

A Parian Statuette, "The Little Boatbuilder."—Aberdeen, J. G., Boscobel-gardens; Allan, J. H., Gutnan; Bellavont, W. H., Geelong; Blackburn, J., Hemingfi ld; Coventry, C., Tottenham; Goydin, Dr., Bradford; Greenfield, J., Queen Victoria-street; Harris, Tom, Douglas, Isle of Man; Inderwick, H. J., Princes-street; Jeffrey, G., Tring; Kent, E. J., Curtis; Marshall, W., Stamford; Mill, G., Chigwell; Moore, H., Havering Hill; Oster, A., Bonn; Porter, Jona., Hampstead; Sllo, M., Belfast; Thompsen, A. S., Victoria; Towse, J. W., Fishmongers' Hall; Wilson, Sir N., Hobart Town.

A China Taster.—Armitage, J. T., Glossop; Art-Union of Allberg, Denmark; Close, E., Salisbury-street; Davis, F., Liverpool; Else, U., Matlock Bath; Evans, R. K., Rotherham; Foot, W., Pocklington; Forbes, Mrs. Brompton; James, —, Valparaiso; Kirkham, J., Bury St. Edmunds; Lake, W. B. Dartmouth; Marshall, H., Barcelona; Nicholls, Mrs. J., Upper-street; Prior, —, Linton; Robinson, J., Grimsby; Shearwood, W. L., Cromwell-road; Walsh, G. R., Barton-on-Humber; Webster, R., Kadins; Wooding, R. T., Kennington; Woodside, S., Cincinnati.

A Framed Proof of the Countess of Bedford.—Allingham, Mrs., Milton; Ainslie, Mrs., Walforth; Armelle, J., Gawler; Ayres, C., Red Lion-square; Belson, Capt., R.N., Ramsgate; Blunsden, J., Grimsby; Bradly, H. W., Stoke Newington-road; Brittles, S. J., Tottenham-court-road; Dibbles, R. J., St. John's, N.B.; Dickinson, J., Tiverton; Elibank, Right Hon. Lord, Linfield; Ellerbach, J. P., Liverpool; Forsbach, F., Manheim; Frankell, F., Gawler; Gegan, J., Maidstone; Galder, W., Knaresborough; Goldney, Rev. S., Lichfield; Gotch, H., Coblentz; Hodges, A. N., Lombard-street; Hodges, W. M., Bethnal-green; Holditch, Rev., J.P., Linwood; Humphreys, R. H., Sevenoaks; Jones, C. W., Wavertree; Larkin, Miss S., Hammersmith; Lavington, J. F., Old Bailey; Lee, A. J., Leeds; Matthews, H. S., Taranaki; Maudsley, W. B., Bolton; Mitton, J. J., Uxbridge-road; M'Koy, Prof., Melbourne; Pressall, W., Bedford-row; Redford, T., Sompting; Reed, T. J. Sunderland; Robinson, T. B., Marsden; Stee, W., Gawler; Stubbs, J., Port Elizabeth; Turnbull, J. J., St. John, N.B.; Twennell, R. A., Brentwood; Verey, W., Hackney; Winsor, P., Peckham-rye.

MINERAL WHITES: A MANUFACTURE.

THERE is a great manufacture of mineral whites at Meudon, the property of M. Emile de Girardin, whose name, however, is far better known as that of a journalist and a statesman than as that belonging to the proprietor of these works,—the most extensive of their kind in France. They produce, in immense quantities, imitation alabaster, talc, and, indeed, every elaboration of white substance, the cost of which, artificial, is less than that of the same real. Their processes combine mechanics, chemistry, and electricity, and are remarkable on account of their extreme finish, and, at the same time, variety. The foundation of it all is, no doubt, roughly speaking, chalk, — "British chalk" is the French term,—but of a quality to be rarely found elsewhere in the world,—a thick bank or ridge of it, glittering like marble, plastic as clay, friable as bread-crumbs. Its existence was made known by a simple accident, when a workshop was immediately established on the spot, and operations commenced. A grand discovery had, in fact, been hit upon,—a material immaculately white, perfectly free from scent or taste, and capable of being applied to innumerable uses,—of being mixed with colour, or reduced to almost impalpable dust. The thing, of course, was not one of entirely modern knowledge, though references to it in history are extremely rare; but "Spanish white" was known in the early part of the eighteenth century,—though why it was so called has never been determined,—while, a little later, the village of Ville-Loup, near Troyes, and that of Cavenau, near Orleans, obtained a reputation for producing it, though chiefly in the form of face-powder for females. This was, indeed, its earliest application; but it was destined to a far more extended and multifarious use, and more than a special interest, therefore, attaches to the several stages of its manipulation, in different forms, for different markets. The centre of the raw production is, as need scarcely be said, a quarry,—the Mineral Whites Quarry, Meudon, in the valley of the Seine. The material is brought up from a depth of about 60 ft., on lift-platforms, tilted automatically into tumbrils standing ready at the top, and moving by their own impetus and weight on rails, and pitched in large, rude fragments, on the floor of a "breaking-shed." There an engine, worked by steam-power, and somewhat resembling the Ramsden stone-crusher, smashes it into pieces of about the size of those formerly employed in the macadamising of roads. Thus reduced, they are carried by an Archimedian movement up to a higher floor, and similarly, without the apparent aid of manual skill, distributed in a number of vats, wherein wheels are incessantly whirling. These are called "mills," and are so in a sense; but they rather break than grind; and the work to be done is often considerabl with the plastic putty, as it were, fragments of the hardest granite, that utmost the teeth of the machinery. come the fears and perils of the mann Should a particle of this silex pass ou softened substance, three-fourths of has to be gone over again. Such an however, seldom happens; the trough assiduously raked and searched, plot turned over, from sediment to froth, fi in a minute, to allow much chance elements remaining in them. It is ir ment, indeed, that the principal dang current of pure water is continually o away, while the precious "mineral remain in suspension. It was evident first, that, in order to carry on the unlimited supply of water would be This was, fortunately, at hand. At a 50 ft., near to the springing of the reef itself, a spring was touched which since, in unfailing abundance, ceased Its supply, indeed, was more than su exuberant, since a steam-engine of ei power has to be kept in action, day s to keep the workings clear. But this m does double duty. It clears the sl galleries, if so they may be termed, a same time it carries the product of the the "washing-lake." Reaching this, of liquid, heavily charged with "white loaded with sand, of which it must be rid grain; and to effect this object the "w which must not be too much liquifi would be difficult to dry,—is forced th series of metallic sieves, washed and again, microscopically examined at eve passed over surfaces of varying colours that the slightest shadow of a shade purity may be the more easily detecte then pronounced, perhaps, fit for ado the material of one, at any rate, amon arts. But the sand which has been lef is not entirely worthless. It has gai siderably by the ordeal to which it h exposed. It is now fit to be utilised shape of ornamental brickwork, or of stone, coloured or simple.

The "white" of Meudon, meanwhile on, still being washed and purifie basin to basin, along descending leve an equally gradual process of drying t necessary, partly by means of warmth, partly through free expo the air. From the tanks the "whit floated upon the surfaces of tables, a these the real process of pulverisati separation for distinct purposes begins. is no degree of cold, there is no degree unfamiliar in these chambers of che Four lines of railway, thirty turn-tables, dred wagons are always ready to conve the results, whenever the manufacture plete; yet the whole of the material yie not thus desiccated to the utmost. In proportion an allowance is permitted of one-fourth its weight in water, and this will remain sometimes, after an entire baking in the hottest furnace, with the ance of "fire-wheels," and every other an known to the expert mechanicians of M who possess the repute among their co men of comprehending the science of v tion, as applied to furnaces, better tha other artificers of France. The atmosph fact, has as much to do as either water with the production of these "Mineral Wh which have by this time assumed the described in French chemistry as bi-carb of chalk. It is at this stage, we ar formed, that the manufacturers of seltzer come in largely as purchasers, with what upon the stomachs of the human race gen it might be temerity to guess. Hence the rial is carried up in slabs or tablets, whic once more, by machinery, reduced to filled into sacks, and branded according to general qualities:—"white of white," the useful in the fabrication of "fine-art mort that which is used by picture and p framers; that which gives a false appear to mineral waters, natural or artificial; lastly, that which softens gloves, or is supp to pearl the human skin. The ultimate pe tion, however, has not, even now, been atta The powder has to be prepared in the for cakes, so delicate that a touch will turn t into dust, with the whiteness of which no c whiteness can compare. Two children, m pulating a very small piece of machinery,

along the Archimedean rail between thirty forty thousand of these cakes in a day. are then packed in boxes, for Paris and rest of the Continent, and London; or in , for the uttermost parts of the world. It be seen that, from beginning to end, two inal objects are kept in view, the production absolute white, with which no comparison ossible; and the refining down of the der to the last degree, short of an impossible lpability. In the coarser states, however, substance is valuable as applied to the aing of paste and card-board, the mouldings eiling ornaments, and the framing of ures, upon which it holds the gilt with a city even greater and more enduring than of wood. Some manufacturers, however, rder to cheapen an art material, dispense the washing, and content themselves with the drying and heating processes, but , of course, do not aim at more than rough lts. What with the one and the other, sands upon thousands of boxes of Meudon e are annually sold to tanners, to glass- ers, to paper-stainers, to floor and table- r makers, to waterproof manufacturers, to vers of billiard table-cloths, and both to nufacturers of copper vessels [and those to se industry copper vessels are essential. nce exports twenty thousand boxes a year this material, of which two-thirds go to many, and consumes about as much at e. It is not one which is very ostentatious, yet, if considered, it has a character and mportance of its own.

NEW COLLEGE AT BATH.

On Tuesday, the 22nd of April, the Duke of veland laid the foundation-stone of a new ege for Bath, in the presence of a large mber of the *élite* of the city and neighbour- d, among whom were the Bishop of Bath and lls and Sir Arthur Hayter, one of the members the city. The college is for the education of youth of the city and district, in connexion h the Church of England. The site of the new lding is at Vallore, and it will be connected h Vallore Mansion by a covered colonnade or ister. It will be built of Bath stone. The ign and plans provide for six large class- oms on the ground-floor, together with the retary and clerks' offices, and students' and sters' lavatories. On the first floor, ap- ached by a wide and spacious stone staircase, a large school-room, 33 ft. by 58 ft., with ee smaller class-rooms. As the college reases it is intended that the school-room ont to be erected shall be converted into three her class-rooms, and a large school-room is anned in the rear. In the basement are the nitors' kitchen, bed-rooms, and offices, with llarage. The style of the building is in har- ony with Vallore Mansion, which it adjoins. In e rear there will be racket and fives courts, well as special class-rooms, and laboratories r the study of chemistry and other subjects. large swimming-bath will be attached to the llege, and there will also be a students' nbulatory, 92 ft. in length. A chapel is also be built in connexion with the college, but at does not form a part of the present con- act. The estimated cost of the college is 200*l.*, towards which the Duke of Cleveland as given 1,000*l.*

The joint architects are Messrs. Wilson, Willcox, & Wilson, of Bath; and Mr. James Hine, f Plymouth; and the contractor is Mr. J. Long, f Bath.

A Hertfordshire "Lock-up."—The lock- up at Essendon (according to an extract from he county surveyor's report, published in the *Herts Mercury*) is a wooden structure, containing 200 cubic feet. "The sides are formed of stud- work and boarding, the roof is slated. The structure is raised from the ground by brick- work, and has a boarded floor. The door is strong, but the fastenings are insufficient; there is no feeding-trap. The cell is insecure. There are no closet accommodation, no bed-bench, no daylight, no artificial light, no ventilation, no means of warming, no exercising-yard, and no means of communication with the constable's residence, which is half a mile distant. The cell stands in a private yard, some distance from a public thoroughfare, but, I believe, the County has a right of way to it. The lock-up is situated between a pigstye and a barn. The structure is much dilapidated and the cell is very damp."

MONUMENTAL BRASSES IN GLOUCESTERSHIRE.

The last published part of the "Proceedings of the Society of Antiquaries of London" (vol. vii., No. 5) contains the following notes on the Monumental Brasses of Gloucestershire, by Mr. A. W. Franks, Director:—

"In making our review of the monumental brasses of the various counties of England, we have arrived in alphabetical order at the county of Gloucester.

Though not one of the richest in such remains, there are to be found in it many excellent specimens, and I have the satisfaction of possessing a nearly complete series of rubbings from these memorials, due in some measure to the long residence at Gloucester of my friend, Mr. Haines, whose collection passed into my hands.

In the MS. list there are 110 entries, of which I possess all but three, two of these being merely insignificant inscriptions. Of monumental brasses of the fourteenth century, there are only six specimens in the county, the earliest being that of a lady of the Bradestone family at Winterbourne, the date of which is about 1370. It has been published by Boutell in his Series. Then follows that of Thomas, Lord Berkeley, at Wotton-under-Edge, 1392. The next is a small half-length figure in civilian costume at the Temple Church, Bristol, of the year 1396. We then find the brass of Sir John Cassy at Deerhurst, belonging to the last year of the century, and two monuments to merchants at Cirencester and at Northleach, which, though their inscriptions are lost, may be dated about 1400.

There have, however, been in this county two still earlier brasses of the fourteenth century, both of which have, alas! now disappeared. One of these was at Wotton-under-Edge, and represented Richard de Wotton, rector, kneeling at the foot of a cross. There are but one or two brasses of ecclesiastics of this early date, and it would have been most interesting to have seen the brass itself. It exhibited the peculiarity of having a scroll issuing from the hands of the figure, with an inscription of which every letter was separately inlaid with brass. The other was a still more remarkable memorial and was in memory of Sir John de la Riviere, 1350, at Tormarton. It consists of a floriated cross, within the head of which is the knight holding up a model of the church which he had founded; on the stem of the cross appears to have been a helmet, at the base probably an Agnus Dei, and in the angles shields of arms surmounted by helmets and crests. I have a rubbing of this matrix, which is engraved in Haines, p. cxxiv.

The brasses representing priests are not numerous, and do not exhibit any peculiarities of costume especially worthy of notice. There is a good figure of Robert de Lond in a chasuble, holding a chalice and host, 1461, at St. Peter's, Bristol. Another at Dowdeswell is in a rich cope diapered with *fleurs-de-lis*, and with a royal rose and sun as a morse. The inscription is lost, but the date is probably about 1520.

The figure of a priest, date *circa* 1460, also in a cope, at the Temple Church, Bristol, is only remarkable for being palimpsest—the figure having been cut out of a larger brass of a widow lady of about the same date.

The military series contains two very fine examples: one of these represents Sir Morys Russell and his wife Isabel, dated 1401, and is in the church at Dyrham. The knight is in the usual armour of the period, and has a straight baldrick, to which is attached the sword, with elegant Gothic canopy work on the sheath. His wife has a peculiar head-dress, falling down to the shoulders, on which the ends rest like lumps. The canopy is, unfortunately, mutilated, but incloses in the pediment the arms of Sir Morys Russell. The brass is engraved in Boutell's Series. The next brass is the monument of Thomas, fourth Lord Berkeley, who died in 1417; but from the style of execution was evidently erected in 1392, at the time of the death of his wife Margaret, who was daughter and heir of Gerard Warren, Lord Lisle. This brass is at the church at Wotton-under-Edge. The armour is similar to that of Sir Morys Russell, but, instead of the baldrick, he wears a belt with a long pendant; the sword is unfortunately gone. The head has originally rested upon his heaume. The most remarkable peculiarity is a collar of mermaids, probably a family badge. The wife wears a heart-shaped head-dress richly diapered, and resting on a cushion; at her feet is a lap-dog with a collar of bells. Thomas, fourth Lord Berkeley, was much engaged in the wars with France and Scotland; he was also admiral of the King's fleet, and, when Charles VII. of France sent forces to assist Owen Glendower, he burnt fifteen of their ships, and took fourteen, on board of which was the Seneschal of France and eight officers of note, whom he made prisoners. His only child, Elizabeth, married Richard Beauchamp, Earl of Warwick. The brasses are laid in an altar-tomb, which accounts for their good preservation. The brass at Newland is, unfortunately, much mutilated, and it is not known whom it commemorates. It represents a figure in armour, date about 1445, with a very large beard, and resting his head on a helmet, of which the visor is raised; the legs are unfortunately gone. The lady has a horned head-dress, and the figure is much worn. The most curious object in the brass is the crest, which is on an oblong panel; it exhibits a miner; on his back is a hod, the cord of which is held by his left hand and passes through his girdle; in his right hand he holds a pick, and in his mouth a support for a candle. As Newland is on the verge of the Forest of Dean, we may assume that this is a representation of one of the persons employed in those ancient mines. The marginal inscription, which contained the names of the persons commemorated, is unfortunately mutilated.

We next come to Philip Mede, esq., and his wife, at St. Mary Redcliff, Bristol. He is engraved on a quadrangular plate and in heraldic dress, and has two wives, one in front and one behind. One of these wives appears to have been a person of family, as she wears an heraldic mantle,—the other not. Above the figures is seen an unusual representation, a half-length of the Saviour, issuing out of clouds and surrounded by rays.

The only other military brass to which I will draw your attention is that of John Tame, esq., and his wife, at Fairford. He was the founder of the famous church at Fairford, so well known for its stained-glass windows. The inscription at the feet of the figure is a rhyming one, though not very poetic, and runs as follows:—"For Jesus love pray for me; I may not pray now, pray ye: with a pater noster and an ane: that my paynes released may be." The elegant form of the shields will be observed. This brass has been published several times, among others in the Cambridge Camden Society's illustrations. There is another brass in the same church to Sir Edmund Tame and his wives, which is peculiar for there being a second monument to the same individuals on the wall.

There are several good illustrations in this county of judicial costumes, the finest being that at Deerhurst, of Sir John Cassy, Chief Baron of the Exchequer, under a rich canopy, with figures of saints in the spaces above. The judge wears the coif, and a mantle lined with fur. The head-dress of the lady resembles that of Lady Russell at Dyrham, but she wears a curious gown without any girdle running up to the neck, where it is fastened with buttons. Both she and her husband wear mittens. Her feet rest upon a dog, evidently a favourite, as by its side is written its name, Terri.

Another memorial of the same class is at St. Mary Redcliff, Bristol, being that of Sir John Juyn, Recorder of Bristol, Baron of the Exchequer, and Chief Justice of the King's Bench, who died in 1439. His dress is not unlike that of Sir John Cassy, but the fur is not indicated. In the same church is the brass of John Brook, sergeant-at-law, and justice of assize, in the West of England, for Henry VIII., 1522; and at Cheltenham may be found Sir William Greville, Justice of the Common Pleas, who died in 1513.

At Rodmarton is the brass of John Edward, lord of the manor and a lawyer, who died in 1461.

The most remarkable brasses, however, in the county are, as must naturally be expected, those of the rich wool-merchants, for which this part of England has been so long famous. The earliest is a little brass of 1390, already noticed as in the Temple Church, Bristol.

At Northleach are two large figures, believed to represent a wool-merchant and his wife, of the date 1400. They are engraved in Boutell's series. At Cirencester, of about the same date, is a large figure of a man, believed to be a wine-merchant from his feet resting on a cask. By his side is his wife, and over them a canopy. The whole monument is, however, much mutilated and worn. The finest brass of this class, however, is at Chipping Campden, that of Will. Grevel, citizen of London, 'flos mercatorum

lanar' totius Anglie,' and his wife Marion, of the date 1401. He is represented in a tight-fitting dress with a handsome girdle, from which is suspended his straight sword or anelace. Although his arms, — the well-known Greville coat,—are scattered over the brass, his merchant mark appears in the canopy. From this Greville have issued the well-known family of the Earls of Warwick, his wealth and the estate that he acquired having been the foundation of their honours.

At Northleach is a fine monument of John Fortey, a woolman, 1458. He rests his feet on a sheep and a woolsack; in the margin are some elegant wreaths enclosing his merchant's mark and initials. In the same church are several other memorials of the same kind, though not so remarkable in character, and there are several more at Cirencester, where, however, they have suffered greatly from neglect and decay.

While on the subject of brasses of this class, it may be well to notice those of one or two benefactors to the county. Among these is that of Alderman Cook and his wife, at St. Mary de Crypt, Gloucester, a remarkable brass considering its late date, 1514. He was founder of the school, and it reflects little credit on the authorities that the brasses have been removed from the slab in which they were fixed, which slab has been buried, the plates fastened to a board, and one of the pediments of the canopy has recently disappeared. The central portion of it encloses a figure of St. John the Baptist.

In the chapel of the Trinity almshouses at Bristol are memorials for John Barstaple and his wife Isabella, engraved about 1411. They were founders of the Barstaple almshouses, and the monuments have evidently been erected in the lifetime of the wife; but, though these persons were such benefactors, no one has taken the trouble of filling in the blanks of the brass of Isabella Barstaple, and the canopies have in both cases disappeared.

Another benefactor is commemorated at Cirencester, being Philip Marner, who died in 1587. He is represented in a gown with a pair of shears in one corner, a dog on a cushion at his feet, and holds a knotted staff. The inscription is rhyming, and is as follows:—

> 'In Lent by will a sermon he devised
> And yerely preacher with a noble prised
> Seven nobles he did geve ye poore for to defend
> And 80 to xvi men did lende
> In Cicester, Burford, Abingdon, and Tetburie
> Ever to be to them a stocke yerely.'

In conclusion, I may state that the only brasses in this county of which I have not rubbings are, as far as I am aware, the following:—Cold Ashton, inscr. Thomas Key, c. 1500; Deerhurst, inscr. Edward Guye, 1612; Wormington, Anne Savage, 1605."

MODES OF STUDY.

SHEFFIELD SCHOOL OF ART.

At the *conversazione* in connexion with this school, held on the 23rd ult., Mr. G. E. Street, R.A., delivered an address, in the course of which he said, —I propose this evening to devote myself as much as possible to pointing out to you students what I, an older student, believe to be the right way of using the opportunities which such museums and schools of art afford you for cultivating your artistic intelligence. When you begin to study art, unless Nature has been exceptionally bountiful, as she is only now and then, young student, it is necessary that every one should accept a great deal upon the authority of the teacher. At first sight, the difference between such sublime work as the sculptures of the Parthenon and the commonplace or affected sculpture of the later Romans may not be perceived. But if the student has been made to draw frequently and carefully from the former, it will almost always be found that he will be less disposed than ever to trouble himself about the latter; and the mere habit of drawing well and carefully from the life or from the purest antique sculpture gives a natural sense of the beauty of lines and curves such as cannot be obtained in any other way with equal certainty. And there is this great advantage in such work, that as no line is a repetition of any other, and as no figure seen in the world can ever repeat its lines in any part, the hand and the eye are both being trained at the same time to the most perfect appreciation of form and line, entirely without that mathematical accuracy which produces monotony and is the most certain evidence of poverty of invention and want of artistic feeling that I know. The study of the human form is, then, for the draughtsman, the most important study to which he can devote himself. Among other advantages, it will lead him certainly, if insensibly, to indifference for some qualities which at the present day have great and the most noxious influence throughout the country. Many of you may think that accuracy of workmanship, exactitude to the minutest point of colour, line, and texture, are indispensable in a good article. It is pardonable if you do think so, for the belief is well-nigh universal. But I venture very confidently to tell you that there are varieties within the best works as much as of the very worst, and that just as God makes every man and every animal unlike his brother or the rest of his kind, so the variety which is absolutely incompatible with exact accuracy of execution is really the highest quality which any of man's works can have. You must, therefore, train yourselves to believe that one of the main reasons for insisting on drawing from the life in these schools is, that you may learn to depend upon your hand and your eye for everything that you draw and design; the more you do this the more certainly will your work have some good and precious qualities. There is nothing that has done so much, and is doing so much harm, to the art of design, as the too frequent dependence on mathematical drawing-instruments. If a man wants to design an ornament he brings out his dividers and his bow-pencil. He divides out his ornament with an accuracy which aggravates us, and never trusts to his hand to draw a curve whilst he can get his bow-pencil to do one for him. The result is, that his lines and his divisions being all perfect, the design has a tameness and insipidity which deprive it of all the interest which nature's irregular works invariably have. And here I would caution you against accepting as true the attempts which are again and again made to prove that the best Greek ornament was entirely an affair of the bow-pencil. If you draw admirable curves with your hand it may often be found possible to find a succession of centres which will enable you to draw the whole curve with an instrument; but this is quite a different thing from the attempt to devise the curve with instruments instead of with the hand in the first place. Remember Giotto's round O and the moral which the story teaches. The greatest artist could draw a complete circle without the aid of an instrument, and this perfect power is what you must first of all possess if your hand is ever to do its duty as the obedient servant of the intellect. I could give you any number of examples in illustration of what I have been saying. But these are hardly necessary, and I must ask you to take my word on this point. The extent to which this practice applies is endless. There is a very common mode of designing ornament to which young students are especially prone. They are too often in the habit of designing a portion of an ornament, and then, by the aid of tracing-paper, reversing and repeating the lines already drawn. In this way an eighth of a circle is made to do service for the whole by a repetition which irritates in place of pleasing. Compare it with a good piece of Mediæval workmanship, or of modern Eastern workmanship, and you will find that the virtue of the latter is that the hand has drawn the whole, and that no part is a mere repetition of another. In the one the attempt has been made to make a little labour go as far as possible. In the other the work has been a pleasure to the man who has done it, and his happiness in his work reacts on the man who looks at it in exact proportion to its evident reality. No doubt you have had before your eyes from time to time examples of old Venetian glass, and I am led to refer to it now, as affording an admirable example of the way in which artistic work depends upon the education of the workman. You all know that the aims of the Venetian glass-maker and of the English workman are entirely distinct. The latter conceives that absolute uniformity is the one condition of perfect work, whilst the former never troubled himself to obtain anything of the sort. The old Venetian glass has therefore always excited the greatest admiration, and collectors vie with each other in their eagerness to obtain specimens of it. In spite of this, modern fashions so far prevailed that even in Venice and Murano the old practice died out, and it was owing almost entirely to the exertions of a man of our own time,—Dr. Salviati,—that the old mode of working has been recovered. He set himself to make his workmen think for themselves, and the [illegible] is that I never visited any manufactory [illegible] a tithe of the pleasure with which I visited works at Murano. For there I saw a nu[illegible] of workmen making, often out of their [illegible] heads, and always without any guide or [illegible] before them, the most exquisite glasses, v[illegible] bottles, and vessels of all sorts,—no tw[illegible] them alike,—all probably deficient in accu[illegible] of dimensions and shape, but all of them [illegible] with a life and spirit which can be [illegible] in no other way. What Dr. Salviati has [illegible] able to accomplish at Murano we ought t[illegible] ourselves to accomplish here. He has [illegible] verted his workmen into thinking beings, [illegible] endowed them with a new perception of [illegible] beautiful, and has shown that it is still poss[illegible] to revive in the most real way those dorm[illegible] powers which we are too apt to suppose t[illegible] impossible of revival. Something of the s[illegible] sort of credit is due to potters who, like [illegible] Doulton, have devoted themselves to the re[illegible] of the half-extinct art of the potter, whose w[illegible] when well and tastefully thrown from a w[illegible] is always valuable and interesting. There [illegible] rough earthen pots in your museum which [illegible] become interesting owing to the varied ha[illegible] work of the workmen. The indifference [illegible] exactness which marks such works as t[illegible] is equally admirable when good smith's wor[illegible] to be done; for here if the work is wro[illegible] with a hammer it is really better in every [illegible] that the marks of the tool should be perceive[illegible] than that the work should have the dull n[illegible] ness of cast work. This you can see for y[illegible] selves if you study and draw the German [illegible] work in your museum, which you owe to [illegible] munificence of Alderman Bragge. Let me [illegible] detain you for a brief space only on ano[illegible] equally important subject, that of colour. I [illegible] you may indeed obtain from your masters s[illegible] general information, but to achieve success [illegible] cannot depend on rules, and must again dep[illegible] upon an eye cultivated by careful and const[illegible] study of good examples. It is true, howe[illegible] that in this matter you must have a nat[illegible] instinct or taste for what is good. No rules [illegible] no amount of study will suffice to make some[illegible] good colourists. In my judgment, the grea[illegible] want of our day is a due sense of the valu[illegible] breadth and tone in colour. Mere contrast[illegible] one colour with another are never so satisfact[illegible] as the combination of colours in such a way[illegible] to produce delightful general impressions [illegible] tone on the eye. Nature here is the best r[illegible] tress. There are times when the landsc[illegible] and foliage are full of the most delightful s[illegible] gestions, and at all times it is a safe rule [illegible] observe the way in which colours are co[illegible] bined and gradated in natural objects—such [illegible] flowers and the foliage—if you desire to know h[illegible] to produce the best effects. And let me s[illegible] that in colour and texture, just as well as in o[illegible] line, evenness and accuracy are not virtu[illegible] Look at a piece of really fine old stained gla[illegible] and you will see that no pains have been tak[illegible] to secure evenness of tint in the white or ru[illegible] or green or blue of which it is made up. Lo[illegible] at a really good majolica tile, or at a go[illegible] Eastern carpet or stuff, and you will always fi[illegible] the same rule observed. I shall go on now [illegible] give you a few words of advice on the mode [illegible] study which you must adopt when you lea[illegible] these schools, and have to work or study [illegible] yourselves. Your main object must be, as [illegible] have shown, to make yourselves masters of th[illegible] art of stamping your own individuality up[illegible] your work which has always been the mark [illegible] good workmen. This can, I believe, only [illegible] accomplished by cultivating not only your han[illegible] but by pursuing your studies till you ha[illegible] worked yourself into a state of enthusias[illegible] about them. In all good artists there is som[illegible] thing of the spirit of the fanatic. To the[illegible] their own work is the first thing in importanc[illegible] and their own mode of doing it the one thing t[illegible] be concerned about. Many-sided men are pr[illegible] digies, and not often to be met with; an[illegible] usually it is better not to aim at too man[illegible] accomplishments, but rather to devote yourse[illegible] to the perfecting of one thing at a time, at an[illegible] rate. In our great towns the conditions of lif[illegible] our surroundings, our dress, the very atmo[illegible] sphere itself, are all distasteful and distressin[illegible] to the artistic eye. But all of you can occa[illegible] sionally, I hope, get away from these depressin[illegible] influences; and there is one study which yo[illegible] will not be surprised to find that I think su[illegible] premely important, and which few men hav[illegible] better chances of pursuing than you have i[illegible] Yorkshire. I would have you, then, whenev[illegible]

l it possible, make yourselves acquainted me of the examples of our own ancient architecture, of which the Yorkshire als, abbeys, and churches afford agnificent examples. I would advise ot merely to make the customary and careless visit, but to sit down hem, to study their variations of style ail, to read enough about them to be able ratand them, and finally to go to them ook in hand. No study is more im- or more interesting. And I believe that rate drawing of our own Mediæval orna- on and detail will be found to be as good ng as any that can be suggested. The f art is never so interesting, never so le, as when circumstances allow you to nder the conditions for which it was ly designed. We look at sculptures or s divorced from the buildings they were i to adorn under the gravest disadvan- ud in your case, as with most of us in ntry, it is in architecture alone that you mine the artist's work under the very ns for which he designed it, in purpose, u, and surroundings. And, as I have d already, what I advise you to do is ely to look at old buildings, but to make es masters of something of their history, earn so much about the variations and ment of style in architecture as to be distinguish one from another in a real it is possible for a well-educated man to hin a very few years, at what date any ld English buildings were erected. Try n to do this, and you will be quite ed to find what a different country it is n you move and live. Things which to rant man, or to the man without edu- es, were dull and lifeless, are replete terest to him whose eyes have been to their value. You may say that this avours somewhat of mere antiquarianism. e that it does; but to know anything of you must in these days know something rt of former days, and that is to say you somewhat of an antiquary as well as an When the South Kensington Museum on down a collection of examples of the precious metals, it is important that ald be able to judge with some accuracy e relation which each bears to the other.

INOXIDATION OF IRON AND THE NG OF METALS WITH PLATINUM.

aper on this subject read at the Society Mr. L. M. Stoffel, C.E., said the origin atented processes, about to be described, inoxidation of iron, the enamelling of and the platinum coating of metals, ncidentally, out of the researches in M. Dodé had long been engaged, for the ion of chloride of platinum to the g of glass, in a form that should super- e deleterious mercurial processes in n use.

roblem of the inoxidation of iron, or, in ords, of the permanent preservation of st useful of metals from the attacks of s long occupied attention. The possible on for this purpose of platinum,—a metal ng the qualities of being entirely un- by atmospheric changes,—has not research. Nevertheless, none of the s hitherto made in this direction can be have led to a practical result, or one le to manufacturing purposes. The two f these, namely, those of Professor Barff . Bower, depend upon the production of a ial coating of magnetic oxide; and, how- xcellent in their way, can scarcely be ornamental. When any other colour uish-grey is required, they are inapplic- d the material has to be painted in the y way.

rto, the rendering of metallic objects eable to rust, has been partially accom- by means of electro-plating,—a lengthy, and in many cases inapplicable method. or instance, cannot be electro-silvered an intermediate coating of copper. er, cast-iron articles placed in an acid a preparatory step to being subjected to c action, have their fibre irretrievably rated. The first action of the acids em- in the ordinary galvanic process is y to form a coating of the objectionable r rust upon the surface treated. On this tal to be applied deposits itself. But the layer of oxide beneath the outer covering of metal is never entirely got rid of. It is always liable to affect the outer surface of the object coated, as may be frequently observed in galvanised iron, and in all cases the coating of deposited metal has to be of a sufficient thickness to counteract the spontaneous oxidation primarily due to the acid used in the galvanic process.

It seems to have been reserved for M. Dodé, a French chemist of repute, whose family have for several generations actively devoted themselves to metallurgical research, to perfect and patent processes successfully solving the two-fold problem of the inoxidation of iron and the application of platinum to its surface in a practical and inexpensive manner.

The first process, "inoxidation of iron," consists in coating, either by means of a bath or a brush, any objects in cast or wrought iron (freed from the damp they may contain (with a composition consisting of borate of lead, oxide of copper, and spirits of turpentine. This application soon dries on the surface of the iron, and the objects are then passed through a furnace, which is heated from 500 deg. to 700 deg. Fahr., according to the thickness of the articles under treatment, so as to bring them to a cherry heat when passing through the centre of the furnace. At this point the fusion of the metallic pigment takes place; it enters the pores of the iron, and becomes homogeneously adherent thereto; covering the objects with a dark colour, not liable to change through atmospheric, gaseous, alkaline, or other influences, nor to disintegrate from the surfaces to which it has been applied. When any considerable depth of inoxidation is desired, the object may be immersed in the composition for the time requisite to absorb a sufficient quantity thereof. Corrugated iron may be treated by means of the above-described coating, which supersedes galvanising, is of lesser cost, and is producible in several hues of dark colour. The first process wholly supersedes painting and varnishing, and metallic objects thus treated are rendered impervious to rust, and hence are of much greater durability. The cost of application is computed at an average of ¼d. per superficial square foot.

The second process, "enamelling of metals," consists in a repetition of the coating operation, but with a pigment differing from that above described, and having for its object the production of a smooth polished surface, such as is obtained with thick enamels. This pigment, which is composed of borate of lead, litharge, and essence of lavender, may be applied directly upon metal, and it renders iron also inoxidisable, although not to such a degree of perfection as when preceded by the first process. Its object is to supersede enamels, which it does most advantageously, with respect to cost and durability, while furnishing a smooth and even surface for receiving and effectually protecting the subsequent economical application of platinum or gold to articles thus treated. An extensive variety of coloured enamels may be produced, separately or in combination. The cost of this process is computed at 1d. to 1½d. per square foot superficial.

The third process, "platinum coating of metals," is applicable to both of the inoxidating and the enamelling processes, but with this difference of result:—In the first case the platinum yields the appearance of dull silver, and in the second it resembles this metal so highly burnished as to render any subsequent polishing wholly unnecessary. The dry chloride of platinum dissolved in ether, and held in solution by essential oils, is simply applied by means of a painter's brush or a bath, according to the ornamental effects desired, and by the simple aid of heat sufficient to cause the evaporation of the medium which holds the platinum in solution, a heat not exceeding 350 to 400 deg. Fahr., the platinum becomes incorporated with the inoxidated surfaces. The result is, that a relatively infinitesimal portion of platinum suffices to coat a considerable surface; while this metal, being unaffected by atmospheric variations or by the products of combustion of gas, objects treated by M. Dodé's inventions are rendered unalterable by exposure, or by ordinary wear and tear. The cost of this last process varies from 1d. to 3d. per square foot superficial, according to the thickness of the metallic coating applied. When it is desired to produce a highly brilliant surface, two successive coats of the preparatory enamelling are given, and an increased quantity of the platinum solution is applied. Gold, similarly prepared, may be used in lieu of, or in combination with, platinum, at considerably less cost than when employed for electro or leaf gilding. In the case of platinising or gilding objects of polished metal, the first coating may be entirely dispensed with. No burnishing is required in order to produce a bright surface with this process.

With reference to the various degrees of heat which are essential to the successful application of M. Dodé's process, it is necessary to remark that, as the metal objects subjected to treatment are heated and cooled gradually by special furnace arrangements, and as the maximum duration of exposure to the greatest heat does not exceed five or six minutes, no detrimental effect whatever can possibly ensue.

By M. Dodé's processes, which substitute heat for galvanism, the use of acid is entirely dispensed with, and, there being thus no cause to encourage oxidation, no obstacle is offered to the instantaneous amalgamation of the original surface with the applied metal; a sufficient degree of heat only is required to cause the evaporation of the substances by which the latter are held in solution and fusion. The merit of the discovery lies in the method of preparing and holding the various metallic pigments in solution, and in directly applying them to the objects under treatment, with no other aid than such degrees of heat as do not affect the condition of the metals treated. Compared with electro-plating and galvanising, these processes, by reason of their moderate cost and the facility of their application, present such advantageous features that a large field for operation is thereby opened.

In fact, the field offered in the industrial world for the practical application of M. Dodé's inventions may fairly be described as boundless. There is hardly any limit to the application of the processes save the size of the furnace, and hence they can be applied with equal facility, and by common mechanical means, to a metal paper-weight or a pillar letter-box, to a door-knob or to a park-gate.

By the black or inoxidating process objects are rendered durable, by the enamelling and the platinising processes absolutely beautiful, and at the same time impervious to the effects of outdoor exposure. It is not too far, perhaps, to look forward to the day when galvanised iron roofs and buildings, in their grey unsightliness, will be replaced by sheets of soft glittering metal, pleasantly refreshing rather than dazzling to the eye, when lamp-posts, converted into gleaming pillars of silver, or gold, or bronze, shall reflect the lustre of the flame they support, and when pillar letter-boxes, street orderly bins, and metal corner-posts shall combine the useful with the attractive. Iron railings, too, around public monuments and building, such as the British Museum, instead of requiring continual coats of paint, or having their spikes periodically covered with gold leaf at a great expense, compared with the effect and durability obtained, may be advantageously treated by M. Dodé's invention; for he contends that by the substitution of gold for platinum as the outer coating in his process, he can produce the effect of gilding at one-twentieth of the cost where gold leaf is employed, and obtain at the same time an infinitely greater durability. Here is an opportunity for the City or cathedral authorities to venture upon an experiment which deserves trying. The railings round St. Paul's Cathedral are to be redecorated, simultaneously with the improvement of the churchyard. Instead of adopting the present expensive method of gilding, why not coat them with M. Dodé's composition, at considerable saving in the cost?

Building Extension at Brighton.—Notwithstanding the large number of empty houses reported to exist in Brighton, we learn that a new estate, called the Elm Grove Estate, has recently been projected by Messrs. Stevens & Son and Mr. D. Friend. The estate is situated at the back of the Waterworks Reservoir, between Elm Grove and the Park-road, and has been laid out for the erection of 573 houses, some few of which are already in a state of forwardness. The *Brighton Herald* says:—"Seeing the demand for small properties in Brighton,—a demand likely to be much increased by reason of the Artisans' Dwellings Act being shortly to be put in force by the Town Council in Edward-street, &c.,—the houses on the new estate, when habitable, are not likely to stand empty for any lengthened period."

THE FINANCIAL RESULTS OF THE GLASGOW IMPROVEMENTS.

The statements made by Sir Jas. Watson at the Institute of Architects as to the small cost at which the ground has been cleared is so different from the results of similar proceedings in London that further information on the subject may be desirable. We print, therefore, some observations on the subject made by the Glasgow correspondent of the *Edinburgh Property Review* :—

"At a meeting of the Royal Institute of British Architects, held in London on Monday evening last, a paper was read by Sir James Watson, of Glasgow, on 'Improvements in Glasgow and the City Improvement Act,' which gave rise to considerable discussion. Sir James was the original convener of the City Improvement Trust, and is, consequently, well able to handle the subject in an exhaustive and thorough manner. It is not my intention to discuss in detail the contents of the paper, but I think Sir James is rather premature in stating, as he does, that the whole charge of the improvement scheme to the city will be 178,462*l.*, after absorbing 80,000*l.* of taxes still to be raised. According to his own figures, the trustees, up to the present time, have bought and paid for property amounting to 1,538,971*l.*, of which there has been sold ground realising 921,538*l.*, leaving on hand ground and property costing 617,433*l.*, which is still to be realised. Of this large holding, we know that one-third, 200,000*l.*, is entirely unremunerative at present, and is admittedly not yielding 1d. of revenue. I am sorry to say it consists entirely of vacant ground, purchased at and held for a very high price; and the cost of holding it is alone equal to a tax of at least ¼d. per pound annually on the rental of the city. This is assuming as correct the admission made by Sir James Watson and his assistant convener, Councillor Morrison, that the unremunerative ground amounts to 200,000*l.* only, but other members of the Trust, who are quite as anxious as the conveners to arrive at a just estimate of how matters stand, maintain that the Trust holds unremunerative property amounting to 400,000*l.*, and, if this be so, it will take one-half of the whole annual tax to meet the cost of holding. Owners of City Improvement Trust Bonds should make a note of this, and inquire which of the two estimates, the higher or the lower one, is nearer the mark. The discussion on Sir James Watson's paper, particularly the remarks made by Mr. Honeyman, of Glasgow, brought out very clearly the failure of the trustees to carry out the real business of the Improvement Trust, viz., to provide suitable dwellings for the working-classes within the burgh proper, and which, indeed, I dealt strongly with in my letter of last week. I recommend Mr. Honeyman's remarks to the attentive perusal of your readers.

It seems the Improvement Trustees themselves do not expect to be able to hold their ground at its present high price, and recoup themselves for the cost of holding by the increase likely to be obtained for it; but rather than dispose of the ground now at a rate which would admit of the erection on it of workmen's dwellings, they prefer to hold on and apply very soon for an extension of time and further powers of taxation. This is a very unwise policy, I think, and one which the already over-taxed community in the city should resist. I would give a word of advice to my friends of the Improvement Trust to guide them in the future selling and feuing their ground, which should be carefully considered, especially if prices are not to be lowered. Instead of converting the whole price into a ground-rent, as heretofore, there should be a certain part payment in cash, or grassum, insisted upon, and the remainder turned into a ground annual at five per cent. At present the high ground-rent found on all properties built on Improvement Trust, as well as on other ground, absorbs a large percentage of the value of the actual buildings, and handicaps them in the market. A glaring instance of this is to be found in a property built on a neighbouring site, costing less, however, than the prices of the Trust ground, and which is at present advertised for public sale. On an estimated rental of 1,800*l.*, the ground annual is 555*l.*, or about 31 per cent. of the annual revenue! As a consequence, the upset price is stated at 15,500*l.*—a sum, we should think, far from sufficient to erect the buildings at the high rates recently ruling in wages and materials. Ground annuals on a ratio such as this are entirely out of all proportion, and can never be considered as a first-class investment, nor one readily marketable; while the unfortunate property itself groans for ever under the incubus of such a huge annual burden."

PENGE VESTRY HALL AND OFFICES.

The new vestry-hall and offices erected in the Anerley-road, on land purchased from the North Surrey District Schools, were opened on the 30th of April. Externally the building is faced with white gault bricks and Bath stone, the roofs being slated. On the ground floor of the offices are two rooms for the assistant-overseer and rate-collector, each 16 ft. 9 in. by 15 ft., waiting-room 16 ft. 9 in. by 14 ft. 3 in., lavatories, and water-closet.

On the first floor are two offices for vestry clerk, each 16 ft. 9 in. by 15 ft.; committee-room, 21 ft. 2 in. by 16 ft. 9 in., with an inner room and anteroom. Above the principal entrance is a turret with illuminated clock. The vestry-hall adjoins the office building, being 57 ft. long by 27 ft. wide and 22 ft. high to the collar. It has one entrance internally from the offices, and another externally for the public. The roof is open-timbered, ceiled at the level of the collar beam. The ceiling is of wood, in panels stained and varnished, the moulded portions of principals and cornice being picked out in colour. The walls are finished in trowelled stucco for paint, with moulded work in Keene's cement. There is a movable daïs or platform at one end of the hall, which is intended for public purposes as well as ordinary vestry meetings.

The hall, and also the staircase and corridor, are heated by Gundry's system of warm air. This system, providing for the introduction of fresh warmed air, effectually assists the ventilation.

A separate dwelling with four rooms, for caretaker, adjoins the offices. There are two entrances from the high road, with wrought-iron gates. The gas-fittings, supplied by Messrs. Strode & Co., are from special designs.

Messrs. Geo. Elkington & Son, of Cannon-street, are the architects. Messrs. J. & C. Bowyer, of Upper Norwood, are the builders. The amount of the contract was 4,341*l.*

THE NEW GLASS OF THE GREAT WEST WINDOW OF KING'S COLLEGE CHAPEL, CAMBRIDGE.

Messrs. John R. Clayton & Alfred Bell have just now completed a remarkable work in filling the west window of King's College Chapel with stained glass. The design adopted is in fulfilment of the original plan by which the series of subjects, illustrated in the ancient glass of the chapel, was intended to be completed by a representation of the Last Judgment.

In treating this theme, the design in the new work has been extended over the entire area of the window, which is of nine lights, divided by a transom into two tiers. The general idea has been to set forth the scene of the Judgment as within a vast hall, of semicircular plan, from the centre of which rises, in elaborate architectural design, a canopy which penetrates high into the tracery-openings above the main lights. Without attempting a complete description, we may mention that in the central light of the upper tier is seated the figure of Our Lord on the throne of Judgment. On each side of the principal figure, and within the lateral portions of the great canopy, are groups of angels, jubilant with trumpets, and bearing emblems of the Crucifixion. At the feet of our Lord, two angels support a tablet, upon which is the inscription,—"Sedebit super sedem majestatis suæ." On the right and left, each in three divisions, the lights are occupied by seated figures of apostles and other saints; the background being here in the form of a semicircular colonnade, bearing, above its entablature, architectural features, within which are introduced angels with trumpets, &c.

In the lower tier, the central triplet of lights displays the architectural basement of the great throne. This portion of the design is treated with elaborate niches, containing figures of St. Michael and two other angels,—the one, on the dexter side, bearing a lily and scroll inscribed, "Deus in judicium pro omni errato sive bonum sive malum illud sit"; the other, on the sinister side, holding a flaming sword and a scroll inscribed "Judicabit orbem terræ in æquitate et p in veritate sua." St. Michael, in the ce in full armour. He carries the scales of ment, and rests one hand on a cruc shield. The remaining lights on the lowe are filled with representations of the re of the blessed and the expulsion o lost. A special feature of the design i in the lowermost portion near the centre. appears the figure of the founder, Henry VI. He rises from his grave upward, and bearing in his hands a model chapel itself, together with a scroll, on appear the words "Miserere Domine."

The window is, as many know, one largest in the kingdom. Further than has a special interest in being the only the twenty-five other large windows i chapel which remained without stainec till now. Moreover, it happens that mentary evidence exists that the adopted for the new window, viz., the Judgment," was originally intended as the scheme for the entire chapel.

Messrs. Clayton & Bell have had the w hand for some seven or eight years, which time they have had to obtain specially made to match the ancient tint study the old glass with much labour and taking, so that the new work should perfect harmony and tone with the old-w far as possible. We are by no means of that a close reproduction of old work desirable course, or indeed a natural co follow in existing art. There was, howe this case an exceptional reason why course should be pursued. Becaus new window was made in completion series filling the chapel, and a work of an manner would have been disturbing jurious to the unity of effort so desirable case.

Mr. Armstead's Fountain at this C with statue of the founder, is interesti is rare to see sculpture and architectur bined at the hands of a sculptor, and respect it reminds one of how men wor former days.

BRICKLAYERS' WAGES AND MA BUILDERS.

A case of some importance to build contractors came before the Judge of the ditch County Court a few days ago. A layer, named Sedman, sued Messrs. Ve Ewens, contractors, of London, Chelt and Plymouth, for the sum of 2*l.* 0s. 3d one week's wages. The defendants alleg they had tendered the plaintiff his wag the principal point was whether the was entitled to charge at the rate of hour. He produced the rules of the Brick Society, of which he is a member, from it appeared that the master builders had to pay the men 9d. per hour, and that t to be the scale of payment for the futur the defendants it was contended that the not bound by any resolution adopted by ference of the builders, and that the accustomed to pay their men according efficiency, some being paid only 6¾d. a and others 7d. and 8d. They alleged t plaintiff was only worth 7d. an hour, a declined to pay him anything more. In to the Judge, it was stated, on behalf defendants, that they had made no arran with the plaintiff on entering their emplo and his honour gave judgment for 7d. pe the sum which the defendants had te being a judgment adverse to the plaint practically for the defendants.

Confessional Boxes.—The Chance Chester has just delivered a judgment Consistory Court, in which, while decre faculty for certain structural alteratio improvements in the church of St. Ma Toxteth-park, Liverpool, he says that, same time, under the bishop's direction tain chairs and prayer-desks, screened fr body of the church by a projecting re dently intended to be used for confessi must be moved, as his lordship had direc previous incumbent to do so as long April, 1872. The Chancellor further d that a second communion-table, temp sanctioned by the bishop while certain were being put up, should be removed.

"KENILWORTH SEWERAGE COMPETITION."

,—Your correspondent of Saturday last d a somewhat mild protest concerning the this competition was decided, but I think had been a competitor his condemnation t have been rather stronger.

quite agree with your correspondent that fessional umpire in competitions is always able, because he not only possesses the ific knowledge necessary to determine the ve merits of such designs, but he is also from local influence and crotchets peculiar ateur engineers.

my opinion, the Kenilworth Local Board me misgivings as to their competency to decision in the matter; because the con- of the advertisement stipulated that all s should be sent in under a motto or device, hortly before the plans were sent in a d circular was forwarded to each com- r to the effect that the plans might bear mes and addresses of their authors, thus the Board a chance of fixing upon a *name* would be much safer and less troublesome electing a plan with no other recommenda- an its merits; but, it seems, a strong pro- as raised against this, and another printed r was issued stating that, in consequence competitors objecting, the Board had d to adhere to their original advertisement. last printed circular informs the com- es that "This Board has selected for the premium the plans of Mr. Lundie, of t, and has *accepted his tender*." I was are that the Board expected a *tender* with ans, because professional men are not lly contractors; but had I known it, I could ent in a tender from a respectable con- , who would have borne out the correct- f my *estimate*. In all competitions dis- tment must arise, but I do not think any uld be really discouraged if he knew his had been tested by a competent profes- judge.

at a loss to know why the Local Board d a scheme involving an outlay of 5,000*l*., some of the other plans were estimated exceed 4,000*l*. A Competitor.

RIVER POLLUTION.

Penk.—Complaints are made that the enk is becoming very offensive in the bd district, owing to the contamination of ter by the Wolverhampton sewage, the of which have been traced as far down eam as Stretton Mill. The attention of ver Commissioners is about to be called to bject.

Irwell.—On the 25th ult. Major Tulloch, eld an inquiry on behalf of the Local ment Board, with respect to an applica- y the Barton-upon-Irwell Local Board to 594*l*. for works of sewerage in the district. rveyor of the Board said it was intended r the sewage of the district before it was rged into the Irwell by means of tanks, ans for the erection of which had been ed by Mr. Barnes, C.E., of Manchester, bmitted about two years ago. The clerk hat so soon as Manchester and Salford repared to treat their sewage before sending the Irwell, the Barton Local Board would ence the erection of their tanks. Instead ating their sewage, Salford, which ought ne of the first authorities to be compelled at their sewage, had created new sources let into the river. Nevertheless, if the Government Board compelled them, the n Local Board would comply with their s.

ALTERATIONS IN TOTTENHAM CHURCHYARD.

—By referring to the report of the Totten- Vestry, it will be seen that authority was to the Vicar and Churchwardens to apply faculty to authorise them to make cer- alterations in the churchyard. A plan proposed alterations was shown to the ng, by which it appeared that a new path e made from Church-lane in an oblique ion across the burial-ground by the yew to the porch, and that the one on the north f the chancel is to be widened a short ce. It is also proposed to erect a boundary- n the east with three neat gates.

The cost will be defrayed by subscriptions, and it is promised that in making these alterations there shall be no desecration of the graves, and that all the earth removed during the work shall be kept in the churchyard.

The Vicar stated also that the restoration of the church cost 12,000*l*., the whole of which was paid by subscriptions. As regards the ivy on the tower, the Vicar said he regretted that some portion of it had died through the alterations, but he had had fresh ivy planted, and in a short time the whole of it would be better than before.

The contributor and others are in hope that all fresh subscriptions will be devoted to the alterations and alleged improvements, and that the inhabitants will keep a watch over the gentleman who would not desecrate a churchyard, or hurt a fly or the feelings of any one opposed to his own, also that he will inform us how short a time the ivy mentioned will be growing before it reaches and embraces the summit of the steeple or belfry, because judges differ on this point. Unfortunately for the ivy noticed, it is all nearly or quite dead, and beyond resurrection, through the bad judgment, &c., of somebody or nobody, who is generally the party who causes all kinds of mischief and absurdities.

Lynx Eye.

THE COMING PRESIDENT.

Sir,—In a free state it is a strange and illogical proceeding, as Peter Pindar pithily puts it,—

"To give the intelligent voter a voice,
Yet rob him of even the semblance of choice."

The practical working of the new "settlement of succession" at the Institute (though I am far from saying that it is in the present instance at variance with the law of "natural selection") suggests that the proper heading for the balloting-papers this year would have been,—

"Under Whichcord, Bezonian? Speak or die!"

Yours to command, A "Fellah."

WHAT DOES IT MEAN?

A correspondent sends us the following in the shape of a printed handbill, and thinks it "literary if not artistic." We present it literally:—

"The Kent Art and Archæologie Mission, in unison with 'The Mission of the Earls of Oxford.'

Printed for and published by *John Vere (John Moore), Architect, Heir* and Representave of the late Earl of Oxford.

The First Meeting, 1879, in aid of the above Mission, will be held in the School-room, near Saint Lawrence Church, and close to the Railway Station, Saint Lawrence, on Thursday, April 24th, 1879.

Presided over by John Vere (John Moore), Architect, who will read 'The Rose and the Lilies, and the Cedens of Lebanon,' May, 1877.

The public is respectively invited to attend. A few reserved seats. Doors open at half-past seven o'clock.

Ramsgate: E. Peirce, Printer by Atmospheric Power, *Kent Echo* Machine Works, Meeting-street."

If this be the result of "Atmospheric Power," we trust, at any rate, there will be no "echo."

The meeting, we are informed, was postponed.

STAINED GLASS.

Stow.—Messrs. Wailes & Strang, of Newcastle-on-Tyne, have been commissioned to erect a memorial window in Stow Church, Gloucestershire, to the memory of Quarter-Master Sergeant John Charles Bullock, Natal Carbineers, who was killed at Isandula.

Blofield.—A stained-glass window has just been placed in the east end of the north aisle of Blofield Church. The window is in the style of the Perpendicular period, and contains three life-size figures standing beneath architectural canopies, the centre one representing our Saviour, and those on the right and left Moses and Elias. The window was executed by Messrs. J. & J. King, of Norwich, and was erected by Mr. C. E. Tuck, in memory of his father and mother.

Lichfield.—A stained-glass window in memory of the late Capt. Webster has been added to St. John's Church, Lichfield. The two lights contain the figures of St. John and St. George. The window is the gift of Mrs. Webster, and has been executed by Messrs. Burlison & Grylles.

Smethwick.—A new stained-glass memorial window has just been inserted in the south side of the Old Church, Smethwick, at the cost of Mr. Smith. The subject is "Christ blessing little Children." The window is the work of Mr. Samuel Evans, West Smethwick.

Henley-in-Arden.—A stained-glass window has just been completed at Henley-in-Arden Church. It is a bequest of the late Mr. Daniel Hopkins, in memory of his father. The window is Perpendicular in style, and embraces five lights, the extreme measurements being about 18 ft. in height and 12 ft. in width. In the central compartment is a figure of our Lord bearing the chalice, and in the lateral lights figures of the four Evangelists. The tracery panels are occupied by sacred monograms, with the *Agnus Dei* and the descending dove, angels with harps and other instruments of music. In the apex are figures of the archangels Michael and Gabriel.

CHURCH-BUILDING NEWS.

Berry Pomeroy.—The parish church of St. Mary, Berry Pomeroy, South Devon, has just been re-opened, after restoration. The north transept chapel, containing the monument of the Seymour family, has been carefully cleaned, as also the altar-tomb, which is supposed to contain the remains of Sir Richard Pomeroy, who rebuilt the church in the latter part of the fifteenth century, when the south aisle was added. The notable carved and illuminated screen, which divides the nave from the chancel, has been carefully treated; and the removal of some old pews and a quantity of dirt and varnish has revealed a number of panels on which are paintings of saints and the four doctors of the Western Church. Each face in the painting has been disfigured, it is supposed by the troops of Oliver Cromwell, but the other parts of the figures are in excellent preservation. The nave and aisles have been re-seated, the old high pews being superseded by open seats of pitch-pine, the front and ends corresponding with the tracery of the screen and choir-stalls. Some of the columns, which were from 1 ft. 1 in. to 1 ft. 6 in. out of perpendicular, have been restored to their original positions, and each one has been thoroughly cleaned, the result being that an inscription was discovered on each of the capitals. Eleven new windows, of five lights each, with tracery, have been inserted, and the east window has been lowered to correspond with that at the western end. The floor is laid with Minton's tiles. The new wagon-headed roof is of American pine. The walls have been cleaned, pointed, and coloured. The cost of the restoration is 3,000*l*., and it has been carried out under the superintendence of Mr. Jeffery Michelmore, architect. Mr. Back has been the clerk of the works.

Farnworth.—On Easter Monday, the Bishop of Manchester consecrated the new church dedicated to St. Thomas, at Dixon-green, Farnworth, which has been erected upon a piece of land given by the Bridgewater trustees, at a cost of about 8,000*l*. It is built of Yorkshire stone, in the Early English style, and will accommodate 630 persons. It has been erected from designs prepared by Mr. J. S. Rawson, architect, Manchester.

Kennardington.—The parish church of St. Mary, Kennardington, in the Liberty of Romney Marsh, Kent, has just had its tower partially restored, from the designs and under the superintendence of Mr. John P. Seddon, architect. The present church is a comparatively small one, re-arranged out of the ruins of a much larger one, which was partially destroyed by lightning in 1559. It is proposed to restore the remainder of the church, the present condition of which, and the appearance it will present when restored, have been represented in two pictures prepared by Mr. Seddon. One shows the church in its squalor, with plastered ceiling pierced by the iron stove-pipe, with the rotton deal pews; and the other shows the windows re-opened and re-furnished with tracery, and the interior re-furnished with screen and decorations as proposed.

Ranmoor.—The new church of St. John the Evangelist, Ranmoor, Sheffield, erected by Mr. J. Newton Mappin, was consecrated on the 24th ult. by the Archbishop of York. The church stands on a piece of elevated ground at the entrance to what is known as Ranmoor Park. It is Early Gothic in style, and has a spire 190 ft. in height, springing from the western end. From the Ranmoor-road the spire is 220 ft. above the footpath. The church is 130 ft. long. The church will accommo-

date about 560 persons. The land upon which the church stands is the gift of Mr. J. W. Harrison, who has also contributed the cost of the boundary-walls and the laying out of the grounds. The organ, by Messrs. Brindley & Foster, is the gift of Mr. C. H. Firth. The bells have been presented by Mr. W. Smith, Springfield House. The pulpit has been presented by Mr. J. Y. Cowlishaw. It is of Italian walnut, with bronze enrichments and ornaments, the work of Mr. C. Green. The font, of Ancaster stone, with marble columns, is the gift of Mr. W. H. Brittain (Master Cutler). The total cost of the church and its appointments is about 15,000*l.*

Tinsley.—The Tinsley Memorial Parish Church was opened on the 19th ult. by the Archbishop of York. It stands on the site of the old church, and has been erected by Mrs. W. Overend as a memorial to her first husband, Mr. George Hounsfield. The style is Flowing Decorated. The church consists of chancel, nave, north aisle, organ-chamber, and vestry. The organ has been built by Messrs. Brindley & Foster, of Sheffield. The church, which will accommodate about 400 worshippers, has cost about 5,000*l.*

Gloucester.—On the 22nd of December last the parish church of St. George, Gloucester, was totally destroyed by fire. It had been restored two years previously at a cost of 500*l.* Directly after the conflagration, a committee was formed to arrange for the rebuilding of the church. Mr. P. E. Masey, architect, London, was consulted. He visited the ruins, and prepared plans for the new edifice. These were laid before a vestry meeting, held on the 23rd of January, and were approved. To carry out this work, it is estimated that about 6,000*l.* will be required. The ceremony of laying the "commemoration stone" of the new edifice took place on the 16th ult.

DISSENTING CHURCH BUILDING NEWS.

Baddiley.—A new Wesleyan Chapel has been opened at Baddiley. The building has been erected, at a cost of 700*l.*, from the designs and under the superintendence of Mr. Thomas Dutton, of Brindley, by Mr. Huxley, builder, Malpas. Seats are provided for 132 persons.

Kilburn.—A new Bible Christian Chapel has been opened at Kilburn Park. Accommodation is provided for 500 persons on the floor and in the galleries. The basement provides a school-room about 40 ft. square, also kitchen, with tea-boiler, &c. The whole building is heated with air by Truswell & Holden's apparatus. The total cost has been 2,500*l.* Mr. W. Ranger is the architect, and Mr. John Allen, of Kilburn, the builder.

Cottingham.—A new Wesleyan Chapel has been recently opened at Cottingham, near Hull. Accommodation is provided for about 600 persons. The building is in the Italian style, the material being white bricks, relieved with Bath stone. The framing of the pews, pulpit, gallery front, &c., is done in pitch-pine, and the panels in clean white deal, all varnished. The cost of the building is about 3,000*l.*, and the scheme provides a large school and class-rooms at the back of the chapel, yet to be erected, at a cost of about 1,000*l.* The architect is Mr. W. Ranger, and Mr. Blackburn, of Hull, was the builder.

Bournemouth.—The memorial stone of the new East Cliff Congregational Church, Bournemouth, has been laid. The new building is being erected on the same site as the old school, in the Holdenhurst-road, the freehold of which has been presented to the trustees by Sir G. Meyrick. It will contain in the basement a school-room, 40 ft. by 30 ft., four class-rooms, with staircase to the church and gallery. Including the gallery, sitting accommodation will be provided for 650 worshippers, the pews being of pitch-pine. The interior will be divided into two aisles. The building is to be carried out in white brick, with stone dressings and moulded brick reveals to windows. The tower will be 90 ft. high, and it is intended to be provided with a four-face clock. The cost of the building will be upwards of 4,000*l.* The architects are Messrs. Kemp-Welch & Pinder, and the builder is Mr. R. Pike.

Cleckheaton.—The opening services of a new chapel at Scholes, Cleckheaton, in connexion with the United Methodist Free Church denomination, have been held. The chapel has been erected from plans prepared by Mr. R. F. Rogerson, of Brighouse, and the estimated cost is about 2,000*l.*

Heptonstall.—On the 27th March the Baptist Chapel which has just been completed at Heptonstall Slack, was opened. The chapel is estimated to hold 540 persons, and has been erected from plans prepared by Messrs. Horsfield & Son, architects, Manchester, at a cost of 2,300*l.*

Manchester.—The memorial stones of a new Wesleyan school-chapel in Plymouth-grove, Manchester, were laid on the 5th ult. The site is at the corner of Plymouth-grove and Hyde-grove, and sufficient land has been purchased for the erection of a chapel to accommodate 1,000 worshippers. It is estimated that the chapel will cost 10,000*l.*, and as some time must elapse before such a large sum can be collected, the circuit committee have decided to proceed first with the school-chapel. This building has been designed by Messrs. Hetherington & Oliver, architects, Carlisle, and the contract given to Mr. L. Webster, of Brook-street, Manchester. It will be in the Early Gothic style, and constructed of Yorkshire stone, without any unnecessary ornamentation. Accommodation is to be provided for 350 persons. The cost of the school-chapel, with vestries and keeper's house, will be 3,500*l.*, so that the entire scheme will involve an outlay of 13,500*l.*

Northampton.—The memorial stones of a new Primitive Methodist Church and schools were laid at Northampton on the 1st ult. The buildings will cover a superficial area 128 ft. 6 in. long by 45 ft. wide. The front will be a gabled one, flanked by a tower on each side, with broach spires rising to a height of 74 ft. Between the towers will be the principal entrance. Above will be a large five-light window. Stone is also used for the shafts, the finishing off of the buttresses, and the weatherings, the remainder of the front portion of the building being of red pressed bricks. Along the sides the ordinary brick walls will be relieved by pilasters of white brick. Messrs. James Kerridge & Sons, Wisbech, are the architects, and Mr. Thomas Cosford, Ladies'-lane, Northampton, the builder; the foreman of the works being Mr. Gray. The total cost of the buildings and site will be 5,000*l.*

Bedale.—A new Baptist Chapel has been opened in Bedale. The style is Classic. The material used is stone, from local quarries, relieved with bands of blue Staffordshire brick. The woodwork throughout is of the best red-wood, except bench-ends, which are of pitch-pine, stained and varnished. Sittings are provided for 250 persons, and beneath the chapel is a large school-room. The total cost has been about 1,480*l.* Mr. J. P. Kay, Leeds, is the architect under whose supervision the work has been carried out.

Kingussie.—The new Free Church at Kingussie has been opened. It occupies the site of the old church, and is built of blue whinstone, from plans prepared by Mr. Lawrie, architect, Inverness. The contractors for the different departments were as follows:—Mason's work, Messrs. Mackenzie & Macdonald, Kingussie; carpenters' work, Mr. Laing, Forres; slaters' work, Mr. Catanach, Newtonmore; plaster-work, Mr. Alves, Forres; plumber's work, Mr. Ross, Kingussie; painting, Mr. Chisholm, Kingussie.

SCHOOL BOARD SCHOOLS.

London.—On the 25th ult. a new school at Tanner's Hill, Deptford, was opened by the School Board for London. The school will accommodate 180 boys, 180 girls, and 238 infants, and has cost about 7,900*l.* It has been constructed by Messrs. Wall Bros., of Kentish-town, from plans prepared by Mr. E. R. Robson, the architect to the Board. The total cost for each child accommodated was 17*l.* 19*s.* 4*d.*

Wisbech.—The new Board schools for girls and infants, in Elm-road, Wisbech, have been opened. The style is Early Pointed, the materials of the elevations being white brick and stone. The north-west elevation has a bell-tower terminating with a spire carried by shafts of Mansfield stone with foliated capitals. The school for girls is 54 ft. long and 20 ft. wide, and two class-rooms each 20 ft. and 18 ft. wide, capable of accommodating 200 girls. The school for infants is 39 ft. long and 20 ft. wide, with gallery and class-room, 20 ft. and 18 ft. wide, capable of accommodating 150 infants. The work has been carried out by Mr. I Barrow, builder, from the plans and unde direction of Messrs. Adams & Son, archi Wisbech.

VARIORUM.

The "Memory of Thomas Moore," by Mr Hall, F.S.A., just now published by Virtue is not wholly new, the outline having al appeared in Mr. Hall's delightful "Bo Memories of the Great Men and Women o Age"; but the author has added to it con ably, and includes a photograph from the trait by Shee, which, not very long ago, have cost all that is asked for the book. profit which may accrue from the sale " Memory" is to be added to a fund now raised for placing a memorial window church at Bromham, adjoining Sloperton, where the poet is buried. In this "pam book" Mr. Hall has endeavoured to do j to the memory of Thomas Moore, saying have been personally acquainted with m the great authors of the age: I regard Mo the one of them all who reflects the h credit on the profession of letters—a one of them all who was most perf the several relations of life,—as hus father, son, brother, friend." It is eloqu and, what is more, convincingly writte The answer usually made to the assertion immensity of the sum spent on drink in En is, "Yes; and the sums spent on bread meat are also immense. There are a many of us"; and this fact, of course, ough remembered. The reply, however, cann held good in face of the following figures by Mr. William Hoyle, "a Manchester manufacturer," in his pamphlet, "Over-p tion and the Present Stagnation of T (Simpkin, Marshall, & Co.):—"For the five ending 1862 we spent upon drink 450,00 or 90,000,000*l.* per annum; but for th years ending 1877 we spent 713,000,00 upwards of 142,000,000*l.* annually, being increase of 263,000,000*l.*, or about 56 pe in our drinking, whilst the population ha grown 16 per cent. Comparing the con of our home trade in cotton goods for the period, I find that, whilst for the five ending 1861 we consumed 833,000,000 cotton in the home trade; for the five ending 1877 we only consumed 769,000,0 a falling-off of 64,000,000 lb., or 8 per The case, then, stands thus,—populati creased 16 per cent., drinking increased cent., whilst the cotton trade, instead creasing, has decreased 8 per cent."—*Lancet* says,—"At the last meeting Medical Society, on April 7th, an inter discussion was raised upon the ill effe arsenical wall-papers, after a paper contr by Mr. Jabez Hogg. Amongst the speake Mr. Carr, C.E., who said that bright colou be produced without the aid of arsenic, alt it is employed in many manufactures in its use is not suspected. He considere dangerous articles of this description shor be sold without a licence or notice of the ployment. He cited the occupation of japanning of tea-canisters as highly dang many of those employed in the trade bein obliged to give it up. The colour used in Venetian blinds is arsenical, and when the becomes decayed the particles of colour each time the blinds are moved. He also re to the dangerous ingredients used in some in-door paints. He urged legislative ference in the trades in which these dan colours are used, and felt confident that G ment would interpose in this matter if applie a proper manner. Amongst other speaker Mr. Malcolm Morris and Dr. Brookfield r how they had personally suffered severel arsenical poisoning due to house-paintin eventually, on the suggestion of the first-n gentleman, it was resolved to form a com for the purpose of organising a deputa the Government."

The Sunday Society.—The fourth annual meeting of this society, establis obtain the opening of museums, art-ga libraries, and gardens on Sundays, will be the Great Hall of the Freemasons Tav Saturday, May 17th, when the chair will be by the president, Sir Henry Thompson, M

Miscellanea.

tminster Industrial Exhibition ngs.—The new buildings in course of n in Victoria-street for the Westminster rial Exhibition are progressing. The gs, which are situated on the south side toria-street, have been designed by Mr. Seddon, architect. They consist of a ngle, forming four separate blocks, each n length by 20 ft. in width and 20 ft. in enclosing an inner circle 70 ft. square. ortion of the site will contain a central ft. in height, which will be appropriated eation purposes during the continuance exhibition, a platform being erected for thestral band, which will perform at in- daily. Along the centre of the four of buildings, which are all intended for ors; a table, 6 ft. in length, will run the length of each block, with two similar on either side, 3 ft. in width. Outside adrangle, at each corner, there will be her small buildings, 7 ft. square, forming and approaches to the main exhibition gs. On the extreme west side of the ngle two separate and distinct buildings appropriated to refreshment purposes. ildings consist of timber framing with lumns, the walls and roofs being formed anised iron. They will be lighted from ie roofs and the sides, the side windows illed in with stained glass. The interior rill be decorated. The contractor for the gs is Mr. J. C. Humphreys, Blackman- Borough.

ding Act and the Metropolitan of Works.—At a meeting of the mem. the Metropolitan Board of Works, held 25th ult., the clerk laid before the Board r that had been received from the Home transmitting copy of a memorial from tropolitan and Suburban Builders' Asso-, containing sundry objections to, and tions for, the amendment of the proposed ws under the Metropolis Management and g Acts Amendment Act, 1878, and re- g to be favoured with the Board's obser- on the memorial. Mr. E. Dresser- moved that the letter be referred to the g Act Committee; but an amendment roposed by Mr. Richardson for referring he Works and General Purposes Com- The motion was carried.——At the g of the Metropolitan Board this Friday, nd, a report was brought up from the g Act committee, submitting regulations ed under the 12th section of the Metro- Management and Building Acts Amend- Act, 1878, with respect to new theatres rtain new music-halls for protection from nd recommending that the said regula- be approved by the Board, and that a d dated copy of the same be sealed and t the office of the Board for inspection, as ed by the above-mentioned section of the

ra Metallic Paving.—At a recent meet- the Streets Committee of the borough of ll Town Council, the tender of Mr. Joseph let, of West Bromwich, was accepted for pply of from 56,000 to 60,000 square of his terra-metallic pavings, and it was ked that the committee had given a good f time to this question, and had had a good f experience with Mr. Hamblet's pavings, which they had always been well satisfied. were exceedingly well made, and the nce between his price and the lowest for pavings was more than made up by fference in quality. To prove the wear terra-metallic pavings, several samples taken up out of the main street of the gh, and which had been subjected to a traffic for thirteen years, and it was that they were not the sixteenth of an hinner than originally, and did not betray race of wear.

vated Railways in New York.—The York elevated railways, which have ly been opened, are reported to be ng an enormous traffic, to the very s detriment of the business of the horse- ways with which they come into direct otition. One of these new elevated rail- runs along Sixth Avenue, directly over xth-Avenue horse-railway, one of the direct to Central Park.

Crystal Palace School of Practical Engineering.—On Saturday, the 26th ult., Professor C. H. Pearson, M.A. (member of the Legislative Assembly of Victoria) and a party of friends inspected the several departments of this school on the occasion of announcing the list of certificates awarded by the examiners. Subsequently, Professor Pearson presided at a meeting in the lecture-room, and distributed the prizes and certificates awarded to the successful students. In addressing the assembly, the Chairman stated that he was much struck by the mechanical excellence of the work he had seen in the workshops. He rejoiced to find that the study of engineering was being cultivated so extensively in some of the great schools in England. In the English race they had a race admirably adapted for the engineering profession, for it was a race possessing patient industry, which was the better half of genius. Mr. Thomas Hughes, Q.C. (the chairman of the Crystal Palace Company), on the part of the directors, thanked the gentlemen who undertook the examination of the students. Mr. N. P. Burgh, M.E., said that although the drawings and mechanical details were done very well, there was room for improvement.

The Folkestone Working Men's Club and Institute Company.—A company is formed in Folkestone for the purpose of erecting and furnishing a commodious building, wherein the company intend to establish, and carry on a "Proprietary Working Men's Club." The company has been originated and is being promoted by working men, who have for a long time felt the great need for such an institution in the town, and who consider that the only correct principles upon which one can be founded are those of self-help, combined with commercial enterprise, confidently anticipating that with careful and proper management, and under approved rules and regulations, the undertaking must prove successful and remunerative. Assistance is being sought for out of the town. The architect of the proposed building is Mr. Reginald Pope.

Compensation Case. — Mr. Under-Sheriff Abbott, on the 25th ult., presided over a special jury at the Court-house, Newington-causeway, in the case of Halls & White *v.* The Metropolitan Board of Works, to determine the compensation to be given to surgeons, under peculiar circumstances, besides the leasehold interest of Wilton House, Horselydown, required to make improvements in the neighbourhood of Tooley-street. Mr. Webster, Q.C., and Mr. Edward Clarke were for the claimants, Halls & White, surgeons; Mr. Philbrick, Q.C., and Mr. Biron for the Metropolitan Board of Works. The principal question was the amount of compensation to be given for the business. It was admitted that there were no other premises within half a mile to be obtained; and on the part of the claimants, who had carried on their profession for some twenty years, and had hundreds of patients, and whose net income was about 1,600*l.* a year, it was urged that by the removal the business would be destroyed, and, therefore, two years' profits were to be awarded. On the part of the Board, it was denied that the business would be materially damaged. The Under-Sheriff pointed out to the jury the peculiar nature of the claim. After an absence from the court, the jury awarded 3,648*l.* as compensation.

Electric Lighting. — The Exhibition of Electric Lighting Apparatus, including machines, lamps, &c., to be inaugurated on Wednesday evening next, the 7th inst., in presence of H.R.H. the Prince of Wales, promises to be the most extensive and complete that has yet been made. The introductory lecture will be delivered by Mr. Preece. The collection will remain on view till Saturday next, and on one of the intermediate evenings, illustrations will be given. A series of photometric and dynamometric experiments will be made during the Exhibition of Electric Lighting Machinery, with a view of providing, if possible, a recognised standard of measurement of the electric light.

A Fine Turret Clock has just been fixed in the tower provided for it at Hurst House, Huyton, near Liverpool, for Mr. J. Evans. The clock, which is from the firm of Mr. J. W. Benson, Old Bond-street and Ludgate-hill, chimes at the quarters the Cambridge chimes on four bells, and the hours upon a fifth, which weighs 5 cwt. The dials, four in number, are 6 ft. in diameter.

The Annual Conversazione of the President of the Institution of Civil Engineers has been announced for Monday, the 26th of May. Mr. Bateman, the president, will, by permission of the Lords of the Committee of Council on Education, receive his guests in those Galleries belonging to the South Kensington Museum which contain the varied and extensive collection of engineering and naval models, drawing instruments, and machinery. Mr. Bateman invites the members of the profession and others to supplement that collection by the loan for the occasion in question of any similar suitable objects.

Co-operative Stores *v.* **Small Tradesmen.** A correspondent in the *City Press* of Wednesday in last week says,—"The 'stores,' I see, are not to have it all to themselves. Very naturally, as I pointed out would be the case some months ago, private firms are meeting them upon their own ground. Every one knows that one can hire a four-in-hand or a hearse, or buy a yard of tape or twopennyworth of pins at Whiteley's, but it may be news to some that Shoolbred & Co. sell not only ironmongery, but even sausages. I am not joking, for I have seen some of them. The tendency of the age is to suppress small dealers, and the struggle may, ere long, be not between rival tailors and grocers and the like, but between gigantic all-round establishments where anything and everything may be bought."

Proportion in Education.—On Thursday, the 25th ult., Mr. Cave Thomas gave his more matured views on the above subject, at the Working Men's College, Great Ormond-street. His first lecture on the subject was delivered at the same institution several years since. It is certainly a subject which, in these days of cramming, deserves consideration. The lecturer showed that disproportion was at the root of all mischief and imperfect work; that the pre-eminence of the Greeks inhered in proportion; that the literature and art of ancient Greece were distinguished from those of all other civilisations by this crowning virtue. The lecturer believes that he has recovered the science on which that Grecian pre-eminence was based. The lecture was well attended and well received.

British Museum Lectures.—The last of this course was given on Wednesday by Mr. St. Chad Boscawen, M.A., on "Assyrian Antiquities," giving examples of the language, religion, and customs of Assyria. Dr. Carter Blake then delivered a long address in the Geological Gallery on "Fossils as a Test of Evolution," pointing out the frequent breaks existing in the geological record and the difficulty of finding anything like a connected series of links between the fossil and recent species. The lectures will be continued at Whitsuntide.

Joking the "Builder." — If our correspondents are not always mirthful themselves, they may move mirth in others. Thus, our philosophical contemporary, *Fun*, is led to parley as follows:—"*When the Bloom is all awry.*—Some one has been writing to the *Builder*, complaining of bloom on the tiles in his hall. If he refer to the flooring his annoyance is comprehensible; but if hats be meant, it is contrary to all our preconceived notions, since we are rather disposed to complain that the 'tiles' in the hall lose their bloom a great deal too quickly."

Bangor Cathedral.—The restoration of the nave and the muniment-room is to be commenced this week. The contracts received having exceeded the estimates, it has been found necessary to modify the plans of the late Sir Gilbert Scott.

TENDERS

For the construction of sewerage and outfall works, &c., at East Grinstead, Sussex. Messrs. Smith & Austin, engineers. Quantities supplied:—

Batchelor	£10,659	0	0 !
Dickson	10,000	0	0
Botterill	9,945	0	0
Young & Williams	8,750	0	0
Cowdrey & Sons	8,282	0	0
Bell	7,996	0	0
Punnett & Sons	7,611	0	0
Stiff	7,450	0	0
Weston	7,384	0	0
Dodd & Co.	7,348	0	0
Coker	6,916	17	6
Cardus (accepted)	6,500	0	0 !

For a pair of villa residences, Eastham-grove, Forestgate. Mr. E. C. Stimson, architect:—

Hosking	£1,525	0	0
North, Brothers	1,475	0	0
Good, Brothers	1,411	0	0

For alterations at the Jolly Anglers, No. 227, Kentish-town-road, for Mr. C. W. Walter. Mr. J. E. Furniss, architect:—

Somerville & Hill	£287 0 0
White	284 0 0
Durnsford	240 0 0
Foster	236 0 0
Whitelaw (accepted)	210 0 0

Accepted for rebuilding Elsing Bridge, Norfolk. Mr. R. M. Phipson, architect:—

Blyth	£930 0 0

For building a magistrates' room at Terrington, Norfolk, Mr. R. M. Phipson, architect:—

Farrow	£597 10 0
Daws	589 0 0
Willis	585 0 0
Reeder	561 14 6
Dye & Clark	545 0 0
Sayers	517 0 0
Nelson & Son	497 10 0
Bardell, Brothers (accepted)	490 0 0

For converting the Bridewell at Wymondham, Norfolk, into a police station and magistrates' room. Mr. R. M. Phipson, architect:—

Colman & Semmence	£907 0 0
Cornish & Gaymer	876 17 11
Hawes	875 0 0
Hipperson (accepted)	749 10 0

Accepted for rebuilding Mindford Bridge, Norfolk. Mr. R. M. Phipson, architect:—

Hook	£909 0 0

For a pair of semi-detached houses at Dood's-road, Reigate, for Mr. David Shaw:—

Parsons	£593 10 0
Young	580 0 0
Room	550 0 0
Apted, Brothers (accepted)	534 0 0

For new shop and premises, Broad-street, Reading, for Mr. E. Aumack. Messrs. Brown & Albury, architects:—

Simonds	£1,169 0 0
Pottley	1,145 0 0
Searle	1,116 0 0
Carter	1,089 10 0
Denton	1,069 13 0
East	988 0 0
Margetts (accepted)	950 5 0

For the erection of St. Peter's Church, Yarm-road, Stockton-on-Tees. Mr. A. J. Martin, architect. Quantities supplied:—

Lazenby	£11,354 0 0
Smirk	11,300 0 0
Craggs & Benson	11,250 0 0
Davison	10,943 0 0
Perks, Brothers	10,915 0 0
Dickinson	9,642 0 6
Adamson	9,253 6 0
Yeo	9,114 18 0

For new bank at Sudbury, for Alexanders, Birkbeck, & Co. Mr. B. Binyon, architect:—

Jennings	£2,329 0 0
Wanford	2,721 0 0
Grimwood & Sons (accepted)	2,666 10 0

For manufactory, &c., Bromsgrove-street, Birmingham, for Messrs. J. & O. C. Hawkes. Mr. W. H. Ward, architect. Quantities supplied:—

Charley	£9,400 0 0
Barnsley & Sons	8,888 0 0
Pritchett & Davis	8,730 0 0
Lovatt	8,691 0 0
W. & J. Webb	8,685 0 0
Preece	8,650 0 0
Jeffery & Son	8,625 0 0
Bloore	8,600 0 0
Surman & Son	8,577 0 0
Steel	8,503 0 0
Mathews & Sons	8,494 0 0
Horsley, Brothers	8,333 0 0
Brooks	8,175 0 0
Barker & Son	8,172 0 0
Bennett	8,142 0 0
Davies, Brothers	8,050 0 0
Cresswell & Harrison	8,000 0 0
Smith	7,917 0 0
Robinson	7,877 0 0
Hartley	7,777 0 0
Dawson & Bradney	7,600 0 0
Garlick (accepted)	7,550 0 0

For the erection of workshops, Caledonian-road, for Messrs Child & Hinde. Mr. R. E. Tyler, architect:—

Edgar	£1,350 0 0
Steed	1,205 0 0
Kerry	1,200 0 0
Goodman	1,175 0 0
Carter & Son	1,121 0 0
Philips	994 0 0
Maley	986 0 0
Pickersgill	975 0 0

For works at the Grasshopper, Whitechapel, for Messrs. Watney & Co.:—

Wood, Brothers	£848 0 0
Grimwood & Sons	786 0 0
Taylor	741 0 0
Anley	665 0 0
Heale & Sons	649 0 0
Stone	514 0 0

Accepted for works for an elevated reservoir at the water-works, Dorchester, for the Town Council. Mr. W. Norman, engineer:—

Iron Work.

Bull & Sons	£1,395 0 0

Brickwork, &c.

Bull & Sons	£1,174 0 0

Engine and Pumps.

Coalbrookdale Co.	£1,890 0 0

For the erection of play-shed, upper and lower fives courts, boundary walls, corrugated iron fence, and terrace paving, for the Governors of the Berkhamstead Grammar School. Mr. A. F. Painter, architect:—

	Without Ground Work.	Including Ground Work.
Osborne	£1,016 5 0	—
Monk	921 17 6	—
Fincher & Smith	918 0 0	—
Cook (accepted)	—	922 0 0

For new parsonage house at Copthorne, Sussex, for Lady Lampson. Mr. E. P. Brock, architect:—

Mattock, Brothers (accepted)	£1,649 0 0

For Ridley Hall, Cambridge. Mr. Luck, architect:—

	Stone.	Brick.
Manley	£13,320	£10,900
Glasscock	12,995	10,595
Thompson	11,600	10,455
Brown	10,750	9,350
Higgs & Hill	10,456	9,064
Thoday	10,429	8,889
Bayne	10,283	8,983
Bell	9,890	8,800
Hook & Oldrey	9,724	9,386
Grimwood & Sons	9,595	8,780
Dobson	9,446	8,646
Dove, Brothers	8,995	8,890

For new warehouse for the National Co-operative Society. Messrs. Pennington & Bridgen, architects:—

Keys & Head	£7,999 0 0
Hearne	7,832 0 0
Nightingale	7,683 0 0
Everett	7,640 0 0
Jones	7,565 0 0
Browne & Robinson	7,410 0 0
Grimwood & Sons	7,337 0 0
Ansell	7,313 0 0
Perry & Co.	7,060 0 0
Manley	6,897 0 0
Stephenson	6,699 0 0

For roads and sewers at Streatham Park, Surrey. Messrs. Hards, Vaughan, & Jenkinson, surveyors:—

Killingback	£4,416 0 0
Downs & Co.	4,389 0 0
Pearson	4,277 0 0
Thompson & Son (accepted)	3,880 0 0
Dickinson	3,732 0 0
Mayo (withdrawn)	3,358 0 0
Crook	3,298 0 0
Hancock, jun.	2,437 0 0

For alterations and additions to shop premises, Hertford, for Mr. S. Neale, jun. Messrs. Smith & Austin, architects:—

Richardson, Brothers	£415 0 0
Castle (amended tender, accepted)	230 0 0

For laying additional water-mains at Bengeo, for the Hertford Rural Sanitary Authority. Messrs. Smith & Austin, engineers. Quantities supplied:—

Hudson	£115 0 0
Rayment & Son	105 0 0
Guin (accepted)	93 0 0

For labourers' cottages on the Ponsbourne estate, Mr. J. W. Carlile. Messrs. Smith & Austin, architects:—

Hunt	£782 0 0
Ekins & Son (accepted)	674 0 0

For keeper's cottage:—

Ekins & Son (accepted)	£285 0 0

For laying additional sewers at Hoddesdon, for the Rural Sanitary Authority. Messrs. Smith & Austin, engineers. Quantities supplied:—

Nicholls	£160 13 0
Hunt	160 0 0
Gray	153 0 0
Strachan & Co.	150 0 0
Rowley (accepted)	140 0 0

For building two shops at Leytonstone, for Richards. Mr. J. Forge, architect. Quantities supplied by Mr. A. B. Hudson:—

Cocks	£1,927 0 0
Sayer	1,818 0 0
Hosking	1,627 0 0
Crisp & Tomlin	1,547 0 0
Wood	1,539 0 0
Sheffield & Prebble	1,537 0 0

For building a veterinary forge and shop at High-street, Stratford, for Mr. M. H. Comerford. Mr. H. Ough, architect. Quantities not supplied:—

Clogg	£1,010 0 0
Reed	997 0 0
Hosking	947 0 0
Palmer	945 0 0
Hearle & Son	945 0 0

For commercial school and residence, Oakfield, Croydon, for Mr. Thomas Terrey. Mr. S. Brookes, architect. Quantities by Messrs. R. L. Curtis & Son:—

Mutch	£2,350 0 0
Jarrett	2,290 0 0
Taker	2,289 0 0
Coles	2,257 0 0
Legg	2,249 0 0
Taylor	2,196 0 0

For converting four private houses into shops at Stroad, Norwood Junction, for Mr. Osborne. Brookes, architect:—

A. Ray, accepted.

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The Builder.

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Architecture and General Art in Unity and Sympathy.

THE annual dinner of the Institute of British Architects had the fortune to precede that of the Royal Academy of Arts by a few days, and in consequence, it has been the occasion of the earliest public expression on the subject of the arts by Sir Frederick Leighton since his attainment of the presidentship which places him in the seat of Sir Joshua Reynolds. There was, it may be said, a certain moral fitness in this coincidence. If it can only, with daring inaccuracy, be said that architecture is the mother of the arts, it may at least claim to be the foster-mother, as it receives and gives appropriate place and shelter to the production of the arts, while accepting in return very considerable enhancement to its own influence and dignity. If we look at the matter historically, as this seems most natural to do when unity and filiation are in question, we shall probably find that when several arts have combined to individual distinction, it has been painter or the sculptor who has been an architect also, and not the architect who has lived with applause into the exercise of the art of sculpture and painting. Giotto and Michelangelo were painters who made their mark in architectural design; and we read that the sculptor Phidias had leading control of the decorations on the Parthenon, not that the architect Ictinus has interfered with the great sculptural compositions which gave the last glory to his temple. It would be hasty, however, to propound from this conclusion as to a positive law in this matter; we should have no right to be surprised any day one who had already made himself great name in architecture, were to come forward and surprise and delight us by equal mastery of graphic or plastic design. In like manner we may be disposed to consider, having regard to history and observation, that the more natural process of evolution is for a distinguished painter to wrest the wreath of sculpture from competitors only familiar with modelling tool than chisel, than for sculptors to suddenly make display of marked excellence as either draughtsmen or painters. Whatever may have been the natural pride and predilection of Michelangelo himself, it is very difficult for one who is familiar with the Sistine ceiling not to regard him as a painter first and then a sculptor,—albeit that the sculptor of the "Moses" has a position which has to be estimated rather with reference to proximity to the ancients than the moderns; it would not be easy to point to contemporary sculptor-painters whom we could hold to range with three contemporary painters, at least, who have made more than considerable mark in sculpture. Observations of this nature have an important application that must cover and excuse any seeming invidiousness. If a student of sculpture is wise, he will draw from them the conclusion that considerable attention not merely to draughtsmanship, but to pictorial management of light and shade, and even to harmonies of colouring, will be of effective furtherance in his treatment of his proper materials, whether in the very lowest relief or the boldest combinations in the round. And the architect no less may take the conviction as warmly to heart that however he may aspire and resolve to be an architect in the first place and above all, he will be so with all the more perfection for having gained command and refinement of line, appreciation of complex unity, and power of anticipating the ultimate effect of a completed work when exposed to all "the skyey influences" of shadowed and reflected tints, by exercised study, pencil or brush in hand, of the human form and all the incidents and accidents of its customary surroundings.

Moreover, it is only by a certain degree of practical familiarity with allied arts that the professor of any one can be expected to regard them in his own work with due consideration and perfect sympathy. As the requirements of civilisation develope, the problems of architecture, as Sir Frederick Leighton truly observed, become more complex than they used to be. The proper housing of the arts themselves and works of art becomes an element in the function of the architect, as important as was ever the primitive demand for the privacy and shelter against the weather of the living occupants of his constructions. Not very remote, either in time or space, are apartments that were built for stately picture-galleries, in which the first essay in hanging pictures showed that the light was admitted at an angle which caused it to be so reflected from their surfaces as to render them invisible. What the fortune of sculpture has been in almost every building, even where its introduction was anticipated, it is painful to think; music has, perhaps, fared on the whole more favourably, if not uniformly so; but halls, of which the purpose was frustrated entirely if declamation and oratory were not audible throughout, have in many most important cases required such alteration as to imply that the requirements had either been left out of thought entirely, or that thought had only become bewildered in endeavouring to deal with it. What need, then, to speak of the distress inflicted on librarians who have entered after the labours of the architect have ceased, to find that all recesses have been so arranged that only by ruthlessly interfering with elaborate architectural features, can he lodge shelves of depth and capacity to accommodate a range of quartos? Why venture to repeat the expressions of curators whose impatience has been roused by difficulties unfairly imposed upon them in displaying mere scientific specimens?

Alas! then, what respect can it be expected that architecture will bestow upon the interests of other arts when it threatens to be forgetful of those which it is its own primary business to consult,—what mercy is to be expected for the ministry to the graces of our life, when the first conveniences are insufficiently consulted? Why, indeed, should we turn aside to criticise what comparatively is in the place of rhetorical ornament when fundamental logic is unsound?

So we may sometimes be tempted to exclaim when offended by a conspicuous failure, but let a wise word of Socrates recal us to saner consideration. "What should you say,"—is his inquiry of a depressed collocutor,—"what should you say of a man who has put implicit trust in another, and then it may be in another also, and has found that his confidence has been betrayed, if he should in consequence renounce confidence in all mankind, and convince himself that it were futile to seek thereafter for any who were trustworthy? Should you not say that this was the part of a very narrow-minded person, and of one who knew nothing of the world, or of how to live in it? Why, then, give up the search after truth because one attempt has been baffled?" Quite as little disposed are we to admit that architecture cannot live in unity and sympathy with the other arts, unpleasant as their disagreements with her sometimes are. On the one hand, the complexity growing on the arts enforces subdivision; and, on the other, sympathy between the arts is essential to the perfection of any one.

The relations of sculpture and painting to architecture at present are as contrasted as their primary conditions. Sculpture is the most intimate and immediate ally. Its assistance is proffered and accepted in most pronounced form when statues are introduced in niches, or surmount sky-lines, or support entablatures as caryatides, or when friezes with definite subjects range along considerable extents. Then we have the groups that fill up spandrels on either side of window arches or portals, heads or figures upon keystones, or peeping from circlets. It is hard, indeed, if the architect is to have no voice in the designing and style of projection of these subjects; if his leading lines are to be at the mercy of practitioners who have no mercy upon the professor of another art, and are too forward to renounce allegiance to him and to all his works. Chantrey placed his statue of James Watt in a chapel of Westminster Abbey, with the most unchallengeable judgment as to its favourable reception of light; but it is out of square with all the architecture around, to say nothing of standing a manifestation of how utterly unconscious and unsympathetic the sculptor was with the leading associations of a sacred locality. The window was to him a window admitting light into an area that might be his own studio, or might be the sculpture tribune at the old National

Gallery—"poking hole,—sad poking hole,"—as it was described by his late majesty William IV. So it is that the interest of his effect must determine the architect to do his best to select the best sculptor, or to control the best that it is allowed to him to have as colleague or subordinate. But it is evident that what control he may exercise will only get him into further difficulties, unless he is qualified to appreciate sculpture in itself, and then in its architectonic application.

The remains which have been recovered from the temple of Ephesus exhibit an application of life-size sculpture in high relief at the lower drums of columns, that, as well or ill designed and executed, would make or mar the architectural effect still more decidedly than any such questionable attempts as seem to have occupied the Olympian pediments. The invention of the Corinthian capital, which has had such momentous influence on the subsequent development of architecture, was pretty certainly the invention of a sculptor. And what does not architecture owe to the exhaustless variations of beauty that it has evolved, through many a noble Composite type, and downward through Mediæval shaftlet and pier and colonnette, and in delicate works of the Renaissance, which in refinement and perfection of execution rival the works of the very sculptors who conferred the crowning graces upon the design of the Erechtheum?

Where foliage more or less conventional is concerned, it may be understood that the sculptor may stand apart from the architect, but still the architect must himself be the equivalent of a sculptor,—must have his most special qualifications as architect completed by a certain sculptural accomplishment and endowment in respect of another class of enrichment of his works,—that is, in respect of mouldings. Among the Greeks, as with the artists of the Renaissance, the elaboration and refinement of mouldings kept pace with the progress of sculpture. It was much the same with the Mediævals. So long as the fullest perfection of foliage did not attempt or accomplish much beyond a dogtooth or a ball-flower, there was a distressing poverty about the combinations of arch mouldings, which was superseded, *pari passu*, with the advance of general skill in ornamental carving. The design of an effective gradation of arch mouldings, indeed, makes demand upon the same appreciation of gradated shadows,—the deepened, the cast, and the reflected,—and on the contrasts of smooth and sharpened contours, that are the very alphabet of sculptural management. In Classic architecture of the highest class all profiles, interior and exterior, were studied and finished with as much care as could be bestowed upon a statue; to the diminution, the inclination, and the sloping of a column, a degree of study was devoted to which the setting up of a Gothic compound pier, for all its sectional complexity, was as simple a matter as the building of any boundary brick wall.

The architect must be,—the architect is,—a sculptor when mouldings are to be designed with appropriate force and delicacy and effect; and there is need for him to be so, not only when he aspires to be original in his profiles, but even when he is more humbly, modestly, or idly content to borrow from the precedents of which the world of architectural records has now accumulated such a store. Fine art is not to be borrowed and applied with any success by those who have not the intuitive apprehension and sympathy with fine art. If the matter be but so simple as the transfer,—"convey, the wise it call,"—of a hood-moulding or a mullion, whatever merit they possessed in their original seat may easily vanish on their way to an unworthy misapplication.

And there is an indispensable pictorial element, as well as a sculptural, in fully-developed architectural accomplishment. Of course, this finds its opportunity and exercise chiefly in the selection of materials that are agreeable in colour; and in dealing with those of less original value in this respect, in such manner as to make the best of them. This is an affair quite distinct from any indulgence in applied colour,—in applied paint; it has regard to the original tints of stone or of brickwork, to the agreeable combination of stone and brick, or brick of various colours,—of terra cotta of various tints, with contrasted brick or even stone, and of stone with stone, plain with polished, and so forth. Who that is endowed with any pictorial sense does not hastily withdraw his eyes from a structure where white brick or cream-coloured is seamed with lines of charcoal blackness, or sanguinary vermilion, that as introduced are in harshest discord, and suggestive of nothing else than that a stock of odd materials was to be disposed of somewhere and somehow? Polychrome architecture attempts a serious problem, which, if not justified by conspicuous success, is failure utter and irredeemable; and suggests a comparison not even with anything so comparatively dignified as a rainbow disarranged, but rather with a harlequin costume in tatters.

A word, which might be called a word of warning were it not too late, applies to the use which architecture is naturally tempted to make of the large masses and beautiful colour of polished granites. As these are frequently introduced for shafts of columns, it is impossible not to congratulate the art upon such an opportunity of enrichment. But the art should rise to the occasion. A sensitive eye is offended by the right-lined profile, and longs for the relief of an entasis that would have borne witness to reliance for effect having been cast, not entirely on the brute material, but to tasteful study having also asserted a right to participation The bearing of this remark, however, is sculptural; more allied to pictorial conditions is the objection to the exhibition of masses of uniform colour, however beautiful in itself, that stands alone, that blends neither with the general material of the façade, nor is relieved by subordinate contrasting accompaniments. What the difficulty is may be pretty clear, and we need not make a mystery of it. The introduction of coloured and polished shafts commits the architect to a problem that is, in truth, of too serious a range and charge to be fully carried out; and yet the temptation to the adoption of the material is not to be resisted by him, and, indeed, it may be imposed upon him, whether willingly or not. The incongruity is glaring, but the difficulty no less so. For the bestowal of such splendour on the shafts to be justified, as much, at least, and even more, should be bestowed upon the sculptured capitals and moulded bases. Nothing less than gilding or material of metallic lustre and dignity would be appropriate for the capitals in such association, and the bases should at least be of some different and more sombre-coloured marble. But then there is the frieze; then there are the carved string-courses to be brought into harmony. Evidently the problem is too exacting for resources at command, or if it is not, at every advance towards complexity the peril of catastrophe threatens the timid as likely to be more serious, so the original incongruity is rested in. It is commended for that relative advantage, dear in all arts and studies to the mediocrity, "that either fears its fate too much or its deserts are small," —it is safer. It is the same incongruity that offends when gilding is sparsely distributed about highly decorative iron railings, only to emphasise poverty by the plainness of other parts with equal claim to honour.

Some sensitiveness, then, to the harmonies and discordances of colour is all-important for the architect; but it may be that, in one respect, it were well to utter a caution against a liability to rely over-much on some effects which fairly enough commend themselves to the painter. So multifarious are the resources and accessories that enable a painter to modify a principal subject, that sometimes it appears to matter little, when open-air subjects are in question, what he may choose. It may be said with security that there are very few ugly things, and probably no ugly buildings, that a skilful painter cannot make picturesque. By cunning point of view, by dexterous light and shade, by artful atmospheric effect, and the glamour of incidental colour, he can impart a charm to interiors or to exteriors that no architectural student could contemplate as architectural objects with calm toleration. But it is the business of an architect to make his work architecturally beautiful and satisfactory in itself; to rely upon the incongruity which a painter might make much of, for a true architectural success, were as consistent as to look forward to an ultimate state of ruin which might satisfy the painter still better. We no more want our finished buildings to gain variety by awkwardness and inconsistency, than we desire to be familiar in ordinary life with the moral obliquities that give interest to the comedies of Sheridan or tragedies of Shakspeare. An interesting illustration in a recent *Builder*, furnishes a case in point. A Christian Acropolis,—Erfurt, Germany,—presents, in a scene of very considerable pictorial merit, an architectural group that is decidedly picturesque. The picturesqueness is not slightly assiste the contrast of the Romanesque tower, w flanks an octagon Decorated lantern, and is i posed between a fifteenth-century nave a fourteenth-century choir. But woe is architect who should take what suits a pa so well as a model. A painter, again, rejoice in the arched recesses round the structions of the choir; an architect, awa all contingencies which they imply, and scious of all that they contradict, may from them with repugnance in their pr state, though he may reserve his opinion how far the secret of the effect which produce may not be due to a relation of m not unreducible under stricter manageme due architectural subordination.

THE ROYAL ACADEMY.

THE exhibition of 1879 will probably be nicled in most quartersas a good one, conta a larger proportion of really good works for two or three previous years, some of thei rising men who have not hitherto been p nently known. There is, however, the draw (for it certainly is one to most people) that is no "picture of the year," no pre-emin successful or striking work which forms central point of attraction: and the most liant names in the roll of Academicians o be said to be at their best. The new Pres has sent a number of works, all of them m by his extraordinary finish of style and el tion, but we can hardly say that any o them is a work of the highest interest, su could be named with "The Juggler," or Athlete." The large painting of "Elijah i Wilderness" (188) is so exceedingly cold, nered, and academical that one can only r it as, what in point of fact it presumabl study on a great scale, rather than a intended to convey any new conceptio regard to the character it represents. other works of the president are chiefly st of female heads, or half-lengths under va names, "Biondina," "Catarina," &c.; are all marked by a kind of lazy sen beauty, and all finished up to that almost w smoothness of surface in the flesh whic cannot but think is carrying finish a great too far for the real objects of painting. W reminded by them of the remarks in Hay lectures on painting in regard to the fa nature; how the most beautiful woman's would appear on a very close inspectio have a certain coarseness of texture, be "Nature allows something for distance," if the face were of the finish of wax or when closely viewed, it would be hard deficient in tone at a greater distance. seems to be exactly the defect of Sir Fred Leighton's system of face-painting as developed. The finish is so fine that it bear looking at with the eyes close to canvas,—indeed, it is hardly fully apprec otherwise; but then the consequence is th the usual distance for taking in the ge impression of a painting, these heads look waxy, and lifeless. We hope that next something more equal in interest to the things he has done will be seen from the of the President than any of his contribu of this year can fairly be said to be.

Mr. Poynter's large work, the "Nau and her Maidens," will also, we fear, be fe every one to be a painting which has faile its aim. It is really, in fact, difficult to what point of interest there is in it at all, an can only conclude that the artist has been worked with other responsibilities, and has unable to give the best of his mind and la to this large canvas. It seems a great pity so large a work should have been undertak all, under any circumstances in which the pa could not make it worthy of his reputation, w it certainly is not. Mr. Millais, whose cont tions are always among the first things tha thought of on going to a new exhibition, is like himself than his two gifted brethren mentioned. His portrait of Mr. Gladstone (is in his best style, and very fine in every w the two portraits of ladies which he has sent not equal to one that is in the Grosvenor Gal nor can we regard his landscape this year a very high interest.

All this is disappointing, for those three na are among those we always look to as the to of strength of the exhibition, and the impres which is nevertheless produced, that thi

ly a good year, says much for the successful urs of some of those who have not yet ined to equal fame, as well as of the other nent names in the Academy ranks. Among e latter Mr. Tadema is remarkably good this , although his works are of a class which, in robability, will not interest general visitors ciently to make them much talked about. If artist had the faculty of strongly expressing an feeling or passion it can hardly be doubted he would be *facile princeps* among the ing painters of the day, for as an executant eems to us to be quite unequalled in this try, which (fortunately for us) he has made own; but his paintings want the element of an interest and feeling, without which no ter can gain a hold upon the sympathies he majority even of cultivated people. The est work he has sent this year eminently trates his power and his weakness at once. called "Down to the River" (238), and is rious experiment in perspective and com- ion. We are overlooking the Tiber in the of imperial Rome, in the foreground a an with children descends some steps, and ered a boat by some men whose heads appear below,—the wherrymen of the period,—who to the river and recommend their boats; he extreme right we look almost down upon ead of another lady, who has preceded her anion down the stairs, and the top of whose alone is visible. What more than any- else makes the picture is, however, the did painting of the bridge crossing the , with its niches with bronze statues be- n the arches, its triumphal arch at the er end, and the white front of a temple ring in the sun still further in the distance. yellow calm water, reflecting the bridge, is eautifully painted; as a realisation of one r of the Roman architecture of the part it ally wonderful. A small painting, called ona Festival," is exceedingly amusing , it represents a family ritual, where a is being executed in a ring round a tree, hich offerings are hung, to the accompani- of flutes played by two attendants; one dancers, a big man with his back to us, prung 3 feet from the ground in the ardour worship of the goddess of good things, s evidently about to come down with a k on the flat of both feet. There is some- "human" in this, after all, and it is esting to think that we possibly see here hing very like the way in which such which sound very poetical in history, really performed. Mr. Tadema's other "A Hearty Welcome," contains beau- painting of a Roman garden scene, but again, we feel that the expression of the me is merely subordinate; the picture is ed only to show the treatment of the , and the figures serve to give a name

is a new point of interest in visiting the emy now to notice what has been bought the funds provided by the Chantrey est, and hitherto the trust has been nistered with great judgment in the main, the Academy have carried out what we me to have been one of the main intentions e bequest in making it an opportunity for rring distinction and encouragement, as as more solid reward, upon rising artists seem likely to do honour to the English l. This end seems to have been specially in mind in the selection made from this s exhibition. The pictures purchased are Waning of the Year" (21), by Mr. Ernest n; "Their only Harvest" (435), by Mr. Hunter; "The Swineherd" (532), from nhoe," by Mr. C. E. Johnson; "Toil and ure" (540), by Mr. John E. Reid; and "An Mill" (692), by Mr. Thomas Wade. Mr. er's work is a great advance upon the lent promise made by him in last year's emy exhibition; it is a large painting senting a group of toilers of the sea iously fishing up seaweed into a small which occupies the centre of the work, the object of which is the representation of sea, which is remarkably successful in d to motion, tone, and transparency, with- suggesting the manner of any other sea- er of the day, though the feeling of the perhaps may be said to grow out of that h is characteristic of Mr. Hook's paintings, especially in regard to the figures. The of seaweed already piled in the boat gives rtunities for a very rich combination of r which is an important element in the effect of the whole, and in contrasting with the cold gleam of the water. Mr. Ernest Parton's name we first took note of as attached to a small but very able and original little landscape which was hung unobtrusively in one corner of Gallery I. last year. He now occupies a central place in the same room, with a landscape which is more fitted to attract general attention, and quite worthy of its place, though the last year's smaller work was quite up to it in real merit, and perhaps almost before it in originality. Mr. Johnson's work is a large landscape in a broad Poussinesque style, with Gurth and his herd of swine in the foreground, the animals being admirably studied, though the predominant interest is in the landscape. "Toil and Pleasure" is in some respects a more strikingly clever and yet a less satisfactory work than the others. It represents a group of field labourers, men and women pausing from their work in a turnip-field to watch the members of the hunt getting over or through the hedge of the field, not in a very brilliant manner, as none seemed to have fairly leaped it, but to be dragging their horses through anyhow: the group of rustics are admirably and thoroughly studied, each has his or her own way of looking at the matter and their individual characters are discriminated so carefully and with so much point and humour as to give a remarkably lifelike reality to the group; part of the humour of the painting consists in the inference conveyed in the title, for on the whole one is induced to suppose that the toil lies with the huntsmen and the pleasure with those who are enjoying their discomfiture. The less satisfactory element in the work is the colour and treatment of the landscape, the field which forms the scene of action especially, in which the vegetation is pervaded by a bright unpleasant green, and each separate turnip is painted with an obtrusive minuteness which gives a spotty and garish effect to the whole, and tends to distract the eye from the figures. More reticence in detail would have given a more satisfactory effort to what is nevertheless a brilliant and able painting. Mr. Wade's drawing is among the water-colours, and may be noticed when we come to speak of them; they are of more consequence than usual this year.

We may now take some of the principal works in the galleries consecutively. Mrs. Butler (Miss Elizabeth Thompson) appears in Gallery I. with a work entitled "'Listed for the Connaught Rangers" (20), a tract of Irish bog country, over which come the recruiting sergeant and one or two privates accompanied by the two recruits, whose manner of looking at the matter is well contrasted; one marches defiantly forward with his pipe in mouth and a swaggering air, the other turns back to take a last look at a cottage seen in the distance; the work tells its story completely, and is interesting as being a step out of the range of work by which the artist has hitherto been known, though still closely connected with the military interest. A painting of soldiers' life in full operation effectively balances this, Mr. Seymour Lucas's "Gordon Riots" (25), where a company of infantry are drawn up in the street and the front rank are firing upon a shouting mob whose physique, as far as the figures are made out at all, is too decidedly Irish in character for the locality of the incident represented. We can hardly say the painting interests us very much, though there is admirable work in it; with the exception of the irate figure of the mounted officer, there is a want of real energy and action about it. "A Water-Frolic" (32), by Mr. Hamilton Macallum, a coast scene with boys bathing, is worth note, though it embodies an effect of sunlight on a nearly smooth sea which he has given us rather often. Mr. Calderon's "Summer Breezes" is a very successful and pretty work, as far as the figure is concerned, which is the three-quarter length of a lassie who is nearly blown along the shore by a stiff breeze against which she leans backward as she walks; the action of the figure and the rather embarrassed expression of the face are very real, the sea cannot be said to be so: *non omnes omnia*, sea is not Mr. Calderon's specialty. The work of the highest aim in this gallery is Mr. Fildes's "Return of a Penitent" (63), in which, however, we can hardly feel as much interest as the painter would have us. A girl who has wandered from home and from virtue has returned to her native village, and crouches on the door-step of her home, either afraid or forbidden to enter. The real point of the picture consists in the various expressions and gestures with which her case is commented upon by the village *quidnuncs* in the street; some of the figures are very characteristic in expression, especially the women (whose comments, we may naturally expect, would be the most forcible), but we can hardly say that the picture tells its tale very thoroughly. Mr. H. Moore's "By Stress of Weather driven" (75), is a grand confused representation of a harbour all in foam and commotion from a landward gale; craft knocking about in every direction, and all things in stormy movement. Among smaller things in the room, M. E. Frère's "Grandmama et sa petite Fille" (40), is one of the most charming specimens of his art that we have seen for some time; and Mr. Marks's "Intellect and Instinct" (73), is an excellent bit of humour, not excluding other and more specially artistic qualities.

In Gallery II. we are brought to a halt by a landscape of Mr. A. W. Hunt's, "Leafy June," illustrated by two lines from Andrew Marvell's poem, "The Garden,"—

> "Annihilating all that's made
> To a green thought in a green shade."

The scene is not, however, a garden, but a woodland nook, with a high bank or rock covered with trees, whose colours are reflected in a pond occupying great part of the foreground. The painting is a perfect glitter of bright foliage tones and catching lights, painted with that uncompromising force and vividness in which Mr. Hunt has no rival except, perhaps, Mr. Brett, whose method, however, is so different that no comparison is possible. Mr. Hunt's painting is one of his most successful efforts of the kind, a work quite distinct from what any other living landscape-painter either could or would produce, and one is glad to notice that those concerned in the hanging have at last thought proper, in their wisdom, to give this powerful and original artist such a place as he has a claim to—a claim long pertinaciously ignored at Burlington House. Mr. F. Morgan, one of the younger artists, upon whom to some extent the mantle of F. Walker may be said to have fallen, shows a steady advance in his country landscape with figures, under the title "Midday Rest" (111). Mr. Moore's sea-piece, "Calming Down," may be taken as the companion or sequel to his above-mentioned work in the first room, and Mr. H. W. B. Davis exhibits, in his "Cutting Forage on the French Coast," the usual qualities which we have become accustomed to connect with his landscape and cattle paintings, qualities of an eminently satisfactory and sensible description, though hardly those which characterise what can be called genius. A small work by Mr. Andrew C. Gow, next to this, "A Musical Story by Chopin" (134), has real individuality of subject and treatment; it represents an incident in the childhood of Chopin, when he is said to have astonished his school-fellows and tutors by his *extempore* effusions at the piano: the incident is completely told; the child, perched on the top of a very high stool, plays with an earnest expression of concentration; the most noteworthy of the other figures is that of the master, who, seated in the background and reading, is drawn away from his studies by his surprise, admirably depicted in his countenance, at the performance of his young pupil. Before quitting Gallery II. we may return to notice a coast scene by Mr. W. J. Richards, "Trebarwith Strand, Cornwall" (103), remarkable for the fine painting of the sea in the middle distance. Further remarks we must defer.

Ramsgate New Road Competition.—A meeting of the New Road Committee was held at the Paragon Baths last week to receive Mr. Abernethy's report, and open the envelopes containing the names of the authors of the premiated designs. On reading the report, it was found that Mr. Abernethy had awarded the first premium (200*l.*) to the plan bearing the motto, "The Desideratum"; the second premium (100*l.*) to the plan under the motto "Nec Timeo, nec Spero"; and the third premium (50*l.*) to the design marked "Progrès"; and, upon opening the envelopes accompanying these designs it was found that Mr. A. Cumings, of Hambleton-villa, Pembury-road, Tunbridge, was the author of "The Desideratum"; Mr. George Higgin, 3, Great George-street, Westminster, of "Nec Timeo, nec Spero": and Mr. J. Cardwell Trounson, of 27, Market-place, Penzance, of "Progrès."

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ARCHITECTURE AT THE ROYAL ACADEMY.

The collection of designs in Gallery IX. contains the usual amount of good drawing, but as far as we can see, even less than the usual amount of originality or suggestiveness in regard to modern architectural treatment, and shows a more complete ignoring of plan than we remember for some time. In fact, the exhibition, as a whole, is thoroughly disheartening to all those who demand anything of architecture beyond pretty pictures and reproductions of the detail and the sentiment of the styles of the past. Just here and there are to be found some bits of original and forcible treatment struggling through the trammels of antiquarianism, but even these are few and far between. Most of the drawings one can only speak of at all by adopting their designer's standpoint, and regarding them solely as more or less successful imitations exhibited in more or less highly-finished or effective drawings.

We find hardly any prominent characteristics in regard to aim or achievement to draw us in the first instance towards any special works as predominant in importance, and therefore make what comments suggest themselves in the order of numbering; not, however, necessarily implying that we are exhausting our comments in the present article. Mr. J. J. Stevenson's "Ken Hill, Norfolk" (1,069), is an admirably coloured perspective of a red-brick house, carrying out with marvellous conscientiousness and precision the manner of the eighteenth-century English house, the characteristic incongruity of the period being reproduced even in such practical details as the camber arch with a semicircular hood-mould over it, the expression thus contradicting the construction in the most prominent manner possible. Mr. A. W. Blomfield's "Denton Hall, Grantham" (1,071), is practically a not unpleasing protest against this now fashionable style. It is a perspective with a high sight-line (not quite "a bird's-eye view") of a large and very picturesquely-grouped mansion in Late Gothic style, and though, of course, also imitative, has the merit of reproducing a manner which is perfectly harmonious and consistent with itself in all its details, and may be taken as an example of the fact that Gothic, even for domestic purposes, is not quite worked out yet, and is, at all events, capable of far more suitable and truly architectural expression for such a purpose than the mongrel manner of building which claims to supersede it. It is only a pity that the architect introduced battlements to some parts of the building,—a feature so entirely destitute of meaning in a modern house. Next to these is a powerful and richtoned water-colour drawing of the "Interior of Henry VII.'s Chapel" (1,070) by Mr. Suggate; the detail of the fan-tracery is not quite sufficiently made out, but otherwise it is a very good piece of architectural illustration. The next thing that gives us pause is Mr. E. F. C. Clarke's "Church of St. Mary, Woolwich" (1,082), a design for the new arcade and new belfry, &c. The arcade might be described as Classic Romanesque in type; not quite Classic, but retaining Classic refinement of detail, with "composite" capitals; the columns are mounted on very high octagonal bases, which have a kind of reference to the line of the gallery soffit, up to which, or a little beyond which, they rise; but we should have thought a more direct relation with the design of the gallery might have been realised with better effect. Mr. Eldon Deane's "Design for a Convalescent Hospital on the Sea Coast" (1,088) is a highly picturesque drawing of a building forming three sides of a quadrangle, with big boulders making a foreground on the fourth side; it is Gothic of a somewhat irregular type, and as the special locality is not mentioned, we may presume it is rather a study of effect than a building designed for execution,—a consideration which may excuse the absence of a plan, although without one it is, of course, impossible to say whether the author has any idea as to hospital building or not. There is nothing in the design whatever to specialise it as a hospital. Mr. Waterhouse's "Interior of New Court, Carey-street, Lincoln's Inn" (1,094), seems very successfully considered in relation to the locality; the red brick and terra-cotta buildings are rather Gothic than Classic in detail, though not absolutely so, but the general effect is marked by a horizontality which is suitable to the purpose of the building and to the older buildings of the same type in its neighbourhood; the obliquely placed entrances at the angles are a pleasing feature.* The selected design for the Brompton oratory church, as also Mr. G. G. Scott's competition design for the same (1,099, 1,100), were both noticed in our columns at the time of the competition. Mr. Waterhouse's "New Offices of the Prudential Assurance Company" (1,101) represents that large red building of decidedly Gothic type which has attracted a good deal of attention recently on the north side of Holborn, and was illustrated in our pages not long ago; the drawing hardly indicates adequately the large scale of the building, which is a powerful and effective contribution to our street architecture. Mr. Street's "North-East View of Holmbury St. Mary Church" (1,107) is a pen perspective of a small church in Decorated Gothic style, marked by that solidity and appearance of mass which this architect has a peculiar faculty of imparting to small churches. "Lancing College Chapel" (1,108), by Messrs. R. H. Carpenter and B. Ingelow, is shown in two delicate little water-colour perspectives, representing what appears to be the interior of an early thirteenth-century crypt. Mr. J. O. Scott shows some original treatment in his "Tower of St. Paul's Church, Manchester" (1,112), with a saddle-back roof and a spirelet rising from the centre of the ridge. Mr. Emerson's "Takhtsingji Hospital, Bhoonagar, India" (1,113), is a very good drawing of a building reproducing Indian bracket architecture. If, again, the author had only given a plan, it would have been interesting to see how this style lent itself to hospital building; as it is, we see only a picture of Hindu architecture.

The design for the "Divinity and Literary Schools for the University of Cambridge" (1,117), by Mr. Basil Champneys, is one of the best drawings, and also one of the best pieces of Gothic in the room, and shows a building very well suited in external appearance to its object; the style is a reproduction of late Gothic, but not without original points. Mr. Wyatt's "New Hospital for Consumption at Brompton" (1,120) also looks like a hospital; but in both these cases a plan would have made all the difference in regard to our interest in the drawings. Mr. Chas. Rew's view of the "Market Hall, Mechlin" (1,121), is a large pen-drawing of that peculiarly picturesque structure, very well treated as far as the building is concerned: it is a pity the drawing was not made a little more complete, from an artistic point of view, by a more effective and less mechanical treatment of the foreground. In No. 1,125, we have another hospital design, "North London Consumption Hospital," which it appears to have taken three architects to produce, Messrs. F. W. Tasker, Battersbury, and Huxley: no plan again; the architectural physiognomy, Elizabethan, tending towards Jacobeanism, is pleasing. Mr. Jackson's new interior of Lampeter College Chapel (1,126) is a coloured drawing of a decorative scheme, conceived in good taste and with some originality; it includes the design for the roof, organ-case, and new stalls and canopies: the latter are kept, for the most part, in a rather subdued neutral tint, on which some judiciously-applied gilding comes out with good effect; it may be a question, however, whether the decided colour on the panelled ceiling, contrasted with this subdued tone in the lower part of the design, does not break up the scheme too much. We next notice a charming piece of decorative design by Mr. G. Aitchison, in his best manner,—"Staircase at No. 1, Grosvenor-crescent" (1,128),—the slanting lines of the dados kept dark, relieved only with a few bright lines; the rest of the wall in each story is treated with a foliage design on a warm grey ground, with white flowers; the upper stories a lighter in tone, and simple in scheme; the whole is in admirable taste and keeping; a panel with "decorative heads" (we suppose we must say) on the second story gives nearly the only piece of positive colour. Mr. Edis's "157, New Bond-street" (1,132), is a very effective drawing of a rich and handsome street front, not in very pure taste, but striking, and we might say "showy," which is not out of keeping with shop architecture. The drawing gives a more profusely ornamented effect, perhaps, than is conveyed by the building itself. The interior of the "Dominican Church, Waterford" (1,134), by Messrs. Goldie & Child,† is a highly-coloured and elaborated drawing of a Roman design, presenting some originality in the treatment o roof, the obvious and not unsuccessful atte to assimilate it to a round-arched style wit neglecting the conditions of timber constru Mr. G. S. Fox's "Design for a Drawing-r Ceiling" (1,135) is good in a general way: a coffered ceiling, with panels decorate colour, but he should not have put landscap some of the panels; they are quite out of p Messrs. E. George & Peto send, besides "Cott at Pinner" (1,140), one or two other drawin work of the same type as these, "Hillier's A houses, Guildford" (1,149), being another; t are drawings admirably sketched in brown with very artistic effect, and look absolutel old cottages, so that we really did not know wh whether they were new buildings or sketch old ones. On the almshouses is an inscri saying that they were founded at such a and rebuilt in 1879, by the lord of the m &c., and the aim of the architects seems to make one think that the new house is the original one. Now, Mr. Ernest George is o the cleverest and most really artistic archi of the day, and has done things which com real originality with picturesque and thoro architectural effect: it is a pity for to take up with this mere archæological building style. Mr. W. Scott's "Design Provincial Town-hall," we presume a merely, has fine points, and is an exc drawing. Messrs. Crace's "Portion of C Decoration at Longleat" (1,162) is rich in a but in a style we can hardly admire, thou is, no doubt, in keeping with the house. T sists of heavy scroll-work and gilding, enol panels, in which are Verrio-like figures. John Sulman's little drawing of "Stabli Caterham" (1,165) is one of the most su and sensible things in the collection; it m described as Domestic Gothic, but make affectation of antiquarianism, and looks ex like stable buildings and nothing else. Webster sends an interesting and forcible drawing of "The Great Barn at Harm worth" (1,171), a long building, with timber roof, looking like the nave of a de church. We next notice Mr. Norman S diploma work, a beautifully-executed pen pe tive of "South-west View of Adcote, Shrops (1,177), a Late Gothic Domestic building the windows most picturesquely groupe far more pleasing than the style he has up lately; here, however, as in Mr. Blom house above mentioned, the battlements one as unnecessary and incongruous. W fortunate enough to finish our round with designs which have some originality of ment: the "Founders' Hall," of Mr. Aitc (1,138), it is true, uses the old pilaster orde with certain small but effective deviations the orthodox detail, and the way the win heads are treated between the pilaste effective and suitable. Mr. G. G. Scott done something really original in appearan his "Façade for St. James's Church, Wes land Street" (1,178), with the bells visibly in a range of heavy open arches across front, on either side of the clock turret idea of the design would have been done justice to with a better and more forcible of detail. Mr. Ernest C. Lee's "Bank at chester" (1,182), is also very pictures treated, the upper story oversailing on massive corbels in a very bold manner.

We may have some more observatio make as to some Domestic and other de passed over in the present notice; thoug must confess that there seems little to su any remarks beyond approval or otherw the drawings.

Value of Property.—The *Metropolita* the following items:—The shop and h No. 10, Finsbury-pavement, and the pr residence, No. 17, Moorfields, held from the poration for an unexpired term of fifteen y at a nominal ground-rent of 27*l.* 9*s.*, were on Wednesday by Mr. Statham Hobson, a Mart, for the sum of 3,150*l.* Messrs. M Scobell, & Masterman sold by auction a Mart, the freehold property, No. 25, Bush City, occupying an area of 1,360 ft. at pr let under an old lease, expiring in 1884. property sold for 6,800*l.* Messrs. Newb Harding included in their last sale the residences, Nos. 59 and 60, Gibson-sq Islington, let at 50*l.* a year each, and held term of forty-eight years at a peppe No. 59 sold for 700*l.*, and No. 60 for 710*l.*

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* For view of the exterior of the building see *Builder*, vol. xxxvi., p. 499.

† Illustrated in the *Builder*, vol. xxxvi., p. 381.

THE MOSQUE OF CORDOVA.

our survey of Cordova we took a general
of the town before we ventured to visit
reatest of all attractions, the most noble
records in stone and marble the city has
able to preserve,—that is, the great mosque
We felt it would be a mistake to enter
oe the sacred precincts of the cathedral;
ve ought, on the contrary, to gain, first of
certain knowledge of the surroundings,
quire the local spirit which would enable
ter to appreciate the appropriateness of
reat temple of the Mahommedan faith.
the stroll through the street, the con-
ation of the city from the opposite side of
adalquiver, which we described in our
us article on this subject. Now, however,
ne has arrived when we must no longer
ne this, the most important of all sights.
ow that the mosque was built as a rival
Caaba at Mecca, and that the most
terms were offered to attract the best
ers of Syria and Spain. Abderahman
it that by opening an unequalled mosque,
uld suitably inaugurate his reign, and
a dynasty. According to Condé's history,
neral plan was drawn up by the king him-
nd was so conceived that the mosque
resemble that of Damascus in design,
exceed in size the huge proportions of the
e of Bagdad, and excel all its splendours.
destined to become a place of pilgrimage,
ern Mecca, and to be the greatest temple
mism, with the exception, however, of
which contains the body of the Prophet
f. Indeed, this very relic itself was taxed
tribute to the greatness of the new
, for a bone from Mahomet's arm, and
the original copies of the Koran, were
t to Cordova. Even to this day it is
d among some of the lower classes that
tan pays a tribute to the King of Spain,
no Christian mass or service may be held
portion of the mosque especially dedi-
to the Prophet. These fanatics conse-
y call this chapel the *Zancarron*, which is
of opprobrium, meaning "ass, jawbone,
."

site had been formerly occupied by a
, and the Moors, with a sense of apprecia-
nd care that should have served as an
e to the Spaniards, did not attempt to
this structure till they were certain
uld build something better. When they
ntered Cordova, after the battle of
ete, in 711, they divided the basilica in
owing the Christians to retain one half,
nverting the other into a mosque. In
bderahman paid compensation to the
ns, and pulled the building down to
om for his great work. This was carried
t with such energy that the gigantic
re was completed in twenty-one years.
ile Gautier, among other critics, was
arly impressed by this fact:—"When
ect," says this astute French observer,
a thousand years ago so admirable a
nd one of such colossal proportions, was
d in so short a time by a people who
nce fallen into a state of the most savage
sm, the mind is lost in astonishment, and
to believe the pretended doctrines of
progress which are generally received at
sent day; we even feel inclined to adopt
nion diametrically opposed, when we
ose countries which formerly enjoyed a
civilisation that now exists no longer.
always regretted, for my own part, that
ors did not remain in possession of
which certainly has only lost by their
n. Under their dominion, if we can
the popular exaggerations so gravely
d and preserved by historians, Cordova
ed 200,000 houses, 80,000 palaces, and
hs, while its suburbs consisted of 12,000
. At present it does not number 40,000
nts, and appears almost deserted."

oaching the mosque from the bridge, we
he walls of a somewhat unpleasant yellow
At first some disappointment will be
nced; there is no grand view similar to
tained of a Gothic cathedral rising in the
of an elevated and open space. We
h, on the contrary, a comparatively
d dirty wall; and it is only by walking
hade for a long time that the magni-
the building gradually dawns upon
refuse to avail ourselves of the first side
es. To our left we pass with a hasty
at the episcopal palace, a worthless structure, built in 1745, bedaubed with a profusion of gilding, marble, and whitewash, as if mere glitter were synonymous with good taste, and hasten forward to pay indirect homage to Moslem triumphs. Soon a larger door than the rest offers itself, and this temptation can no longer be resisted. We pass under the horse-shoe porch, and find it is the side entrance of the Court of Oranges. Here are the historical trees, with their golden fruit still ripening in plenty amidst the leaves that look as if they were covered with a dark green enamel. This court is purely Oriental, though the bronze plating over the doors has both Gothic and Arabic inscriptions, which were restored at a comparatively recent date. The court itself was built by Said Ben Ayud, in 937, and nineteen aisles of the mosque opened on to the court, thus giving the freest ingress to the air after it had been cooled under the shade of the orange trees and by passing over the fountains; but this wise provision to mitigate the effects of the hot climate was not appreciated by the Christians. They, on the contrary, walled up the doors which had been so carefully provided; they shut out the view of the wonderful arches, colonnades, and aisles, lighted by hundreds of silver lamps; obliterated the arches with bricks and mortar, and veiled the arabesques with whitewash. Now there are only three doors leading into the mosque, and from the outside nothing can be seen.

The impression on entering is very difficult to define, and is altogether novel. We look up in vain for the lofty and gracefully-arched nave of the Gothic cathedral, and we miss the huge ponderous dome of the Roman architecture. But what a forest of marble columns surrounds us, forming endless avenues from whatever point we may look. If the Gothic cathedral reminds us of lofty trees with branches high in the air, tapering towards each other, forming a great avenue with two smaller avenues on either side; the mosque also recalls a forest, but it is a maze of short, stumpy, hardy trees, which combine, not to make one great avenue, but hundreds of smaller roads leading through a real forest of trunks. Out of the 1,200 monolithic columns which formerly existed within the mosque, 1,096 still remain; it is, therefore, no exaggeration to say that the columns equal in number the trees of a forest. This Arabian style of architecture may, consequently, claim the honour of deriving its inspirations from nature with as much reason as the Gothic school. The comparison with the forest holds good in the one case as in the other, but the interpretation of the same idea is widely different. At Cordova the columns are so placed as to make nineteen transepts and thirty-six naves! Each nave and transept is formed between rows of superimposed arches, some of which cross and combine with one another, and from whatever point we may stand avenues stretch out just as the spokes of a wheel travel away from the axletree. These columns, each hewn out of solid marble, are barely more than 10 ft. or 12 ft. to the capitals; they are full of force and elegance, and in style seem to be an Arabian adaptation of the Corinthian idea. The materials with which they are composed are also remarkable. The jasper, the porphyry, the green and violet breccia, may here be admired, and the archæologist will probably recognise some among them as most ancient, and admit there is good ground for the belief that they are remains of the old Temple of Janus which stood on this site in the times of the Romans and the Carthaginians. The fact that this spot has been consecrated to no fewer than three religions, and that the stones which constitute the actual building have been raised by Pagans, by Mahommedans, and by Christians, adds in no small degree to the interest of the surroundings. The stones that recall so many religions also remind us of different countries. One hundred and fifteen columns are said to have been imported from Nîmes and Narbonne in France; sixty came from Seville and Tarragona, in Spain; while 140 were presented by Leo, emperor of Constantinople. The remainder were, for the most part, taken from the temples at Carthage and other towns of Africa. Under such circumstances, it is not surprising if they do not match; but this irregularity renders, in any case, a comparison with the trunks of trees all the more appropriate. In several cases the shafts are so long that the column had to be sunk some feet below the floor, while others are so short that it has been necessary to add capitals of disproportionate size. The roof uphold by these pillars was originally flat, and is now only about 35 ft. high, while the width of the interior makes it look even lower.

The lowness of the building, the scarcity windows, the dark rich colour of stained glass, the contrast with the glare of the Spanish sky outside, all help to produce an impression of great darkness when the visitor first enters the mosque. This was not so, however, in the origin. The natural darkness of the building only added to the light of the 800 silver lamps, filled with aromatic oils, which illuminated the long aisles, reflected on the sparkling jasper, and the porphyry. The gilt stars in the ceiling shone by the side of the crystal mosaics, and verses of the Koran blended with flowers and arabesques. The soft light of the lamps enhanced a hundred-fold this style of decoration, and gave to the whole a rich, mysterious aspect, admirably adapted to the solemn rites inherent to the worship of Mahomet. But all this splendour remains only on record. The silver lamps have all disappeared; the Christians have recaptured the bells of St. Jago de Compostella, which the Moors had won in battle; and, turned upside down, had suspended them with silver chains, so that they might serve as lamps to illuminate the Temple of Allah. The wooden flat roof which Abderahman had built of cedar and larch has been replaced by arches and half cupolas, and all the magnificent decoration of the old ceiling has disappeared. The floor, on its side, has been bricked over, so that a part of the pillars is concealed, and the original fault of lowness in structure is intensified. These are, however, comparatively slight acts of profanation when compared to the deed of barbarism committed by the Bishop Alonso Manrique, in 1523. Since the year 1238 the mosque had been converted into a Christian church, dedicated to Sta. Maria; but no one had thought of pulling a part of the building down and constructing in the middle of this triumph of Arabic architecture a ponderous Roman Catholic Church. There it stands, however, right in the centre of the mosque, like a huge wart,—a troublesome parasite, disfigaring the Arabian edifice. To the credit of Spain it must be recorded that the greatest of Spanish kings fully appreciated the folly that had been committed; and, to the honour of Cordova, it should also be stated that the *ayuntamiento* did all in their power to prevent this desecration. It was the bishop who proposed the change, the chapter who supported him, and the local government, or *ayuntamiento*, who resisted tooth and nail. Unfortunately the king, who knew nothing about the locality and the splendour of the mosque, sided with the bishop, and gave his consent. When, however, in later years, he visited Cordova, and saw what mischief had been wrought, he turned sharply round upon the bishop and chapter, and, reproving them, exclaimed,—"You have built here what you, or any one, might have built anywhere; but you have destroyed what was unique in the world!"

This comparatively modern church, built in the middle of the old and magnificent mosque, might elicit some admiration, if it had been constructed elsewhere, and if visitors were not so irritated and scandalised at its intrusion that they refuse to be pacified by the contemplation of its beauties. The fine brass balustrades, the splendid pulpits, the *Silleria* with its 109 seats, though a striking specimen of Churriquera art, the *Retablo* painted by Palomino, all these things fail to excite our admiration. It is not for this that we came to the mosque; the same and much better may be seen nearer home. We had read Victor Hugo's lines:—

> "Cordoue aux maisons vieilles
> A sa mosque où l'œil se perd dans les merveilles,"

and we at once concluded that the greatest marvel of all, though the most unpleasant of sights, was precisely the introduction of all these objects into a place where they could only spoil and be spoilt by the force of contrast. A few steps fortunately sufficed to take us away from this monstrous anomaly. We were once more surrounded by the Moorish columns, and finally reached the *Mihrab*, or sanctuary. No words can express the beauty of the arabesques, and we felt almost inclined to breathe a prayer to the memory of Alonso el Sabio, who, in 1275, had the wisdom and liberality to sanction the employment of two Moorish masons and two Moorish carpenters to keep the cathedral in repair, and decided that they should be allowed to live at Cordova free from all taxes. This accounts for the excellent preservation of at

least some of the Moorish remains. Never did Arabian civilisation reach a higher level than that illustrated by the unparalleled combination of colour and the beauty of design displayed in the ornamentation of the *Mihrab*. In gracefulness, richness, and harmony, it is unequalled, and it is with the greatest difficulty that we could tear ourselves away to examine, at the bidding of our guide, such comparatively insignificant trifles as the tusk said to have belonged to an elephant employed to assist in building the mosque. Then General Concha's tomb must be visited; close to it are texts from the Koran, which have recently been disclosed by the removal of whitewash, plaster, &c., and this leads us to hope that many other *chefs-d'œuvre* may be thus discovered. These, however, must be spoilt to some extent; as, for instance, the walls of the *Capilla de los Reyes Moros*, where the colours of the arabesques have been tarnished by the whitewash with which the Spanish fanatics sought to wipe away the memory of the Mahommedan creed. The bitterness of this contest between the Spaniard and the Moor is thoroughly stamped on all we saw at Cordova, and must produce on those who are imbued with the tolerant feelings of this century the most unpleasant impression. Respecting neither learning nor art, nor that which was useful and great, unable to appreciate the refinements of a higher civilisation, the Christians, when they at last reconquered these southern provinces, only thought to obliterate the glorious memories of the past, because they were not of their own creating, and reflected honour on those who held a different creed. A greater nation, and a nobler race, would have attempted to show its superiority, not by destruction, but by achievements yet more sublime. Unfortunately, it was the inferior people who conquered,—it was a triumph of barbarism over civilisation.

COMPARATIVE COST OF LABOUR IN ENGLAND AND IN JAPAN.

A RECENT discussion at the Institution of Civil Engineers, on a paper, contributed by Mr. W. F. Potter, descriptive of railway work in Japan, is of interest, not only for the information which it gives of the state and progress of public works among that remarkable people, but also as furnishing facts which possess much significance with regard to the relative prices of work and wages in Japan and in England.

Since 1869, when the line from Yedo to Yokohama was commenced, sixty-six miles and a half of railway have been completed, and are now in working order. The portions of railway which form this aggregate are:—The line from Yedo to Yokohama, of 18 miles long; that from Kobe, on the southern shore of Japan, to Osaka, also a southern port; and that from Osaka, 26½ miles long, across a narrow neck of land, to Kioto, a central point of great importance. One hundred and forty-two more miles of line are surveyed and laid out, the sections, working plans, and estimates being complete. These lines will put Kioto in direct connexion with Otza, on the great inland lake Biwa; with Tsuruga, on the northern coast of South Japan; with Kanu, which will hereafter be an important junction; and with Mya, situated at the head of one of the great bays which so deeply indent the southern coast of the island. From Kanu a line is projected through the central district of Tanaka, whence the rail runs on in two directions, one to Niigata, on the north coast; the other curving round to Yedo, with a northward inland branch to Utsonomya. This projected group of lines amounts in all to 455 miles, making a total aggregate of 664½ miles. As far as it is possible to form an opinion, great judgment appears to have been shown, both as regards the general course of the lines laid down, and the selection of the small, but busy sections first opened for public traffic.

An especial peculiarity of the Japanese is the manner in which they continue to avail themselves of the best services of Englishmen and other foreigners, while, at the same time, they keep them so much in the dark, with regard to everything but their own especial duty, as to leave the Japanese perfect masters in their own house. Thus, while availing themselves of the services—evidently very valuable services—of English engineers for their railways, the Japanese have allowed them no control whatever over expenditure. A large staff of Japanese officials was appointed, who arranged all the contracts, and made all the payments. When an engineer required materials or labour, he had to make a demand, or as Mr. Potter expresses it, to "indent," upon these officials, who furnished them without giving any information as to the cost. It is natural that the foreign engineers should not approve of a method which so exclusively confines them to the position of special experts, only called in as far as required. It is not so sure that the Japanese have not shown much political wisdom by the arrangement.

The chief peculiarity of the engineering features of the Japan railways arises from the fact that the beds of the rivers are nearly all higher than the level of the country through which they pass. Thus, when the railway has to be led across what we should call in other places a river valley, it is by an ascending gradient that the river has to be reached. In the sections which are attached to the paper read, the line of rails is very slightly raised above the water-line in the five instances which are shown of river bridges. In the case of a navigable river, the cost of bridging would be materially increased by this result of the long care given by the Japanese to the maintenance of their river banks. Something of the same kind is going on in some portions of the River Po, in Italy, and in most rivers that are not fully open to the tide.

Our present object, moreover, is not so much to inqure into railway engineering in Japan, as it is to form some idea of the degree of competition to which the English workman may possibly be exposed from the Japanese workman. In all features of trade disputes, the question of foreign competition is one which experience shews to be likely, sooner or later, to exert a controlling influence. A people that depends on free trade will be unable permanently to shut out free trade in labour. It is thus most important for us to learn exactly those facts which the jealousy of the Japanese Government has done its utmost to prevent us from ascertaining.

The prices which Mr. Potter gives as a fair average of what good railway work can be done for in Japan under the present system, as far as they go, may be taken as about equivalent to those which obtained in this country in the early days of our railway construction. Thus between Kobe and Kioto the price of bricks in the kiln is given as 38s. per 1,000; and timber of from 12 in. to 18 in. square, at 10d. per cubic foot. The price of the timber, however, increases rapidly with the length of the stick; white pine from 24 ft. to 30 ft. long being priced at 2s. 8d.; and teak of the same length at 4s. per cubic foot. Brickwork is priced at 28s. the cubic yard, a Birmingham price in 1835; rubble masonry at 29s. per cubic yard, which would be high for this country. Earthwork is priced at 10d. per yard, but as nothing is said as to "lead" it is impossible to derive much information from the quotation. If the price includes lead up to a quarter of a mile, it is close upon English prices of 1835.

While work and materials are thus by no means much lower than was the case in England when we began our great series of railway works, the price of labour is only about one-third of that now current in this country. The workmen, Mr. Potter tells us, are extremely intelligent and industrious. The carpenters are extraordinarily skilful in the use of the adze, and until a person is accustomed to their work it is alarming to see how they place a bare foot on a bit of wood, and adze away within an inch of their toes. As to the length of the hours of work, or the proportionate quantity of work done in any way that can be measured (as, for example, in superficial feet of timber sawn), it is curious to remark that no one took the trouble to put any question during the discussion.

Three classes of excellence are allowed among the workmen, the pay rising with the class. Thus a carpenter earns 1s. 3d., 1s. 5d., or 1s. 8d. per day; a blacksmith, 1s. 3d., 1s. 5d., or 1s. 6d.; a mason or bricklayer, 1s., 1s. 3d., or 1s. 5d.; and a coolie or unskilled labourer, 8d., 10d., and 11d. These prices are so low that it is difficult to reconcile them with the prices quoted for brickwork, masonry, and earthwork, except on the supposition that the amount of labour actually rendered is only in proportion to the pay.

The importance of this question, as bearing on the future of English labour, is so great, that we shall be very glad to find that either Mr. Potter, Mr. Cargill, who spoke with great knowledge of Japan, or any correspondent of our own, will throw light on the subject. It may be confidently laid down that there c for every country, normal prices, at which greatest amount of good work is given b workmen. Increase on these prices is as chievous, in the public interest, as decr The great point is to ascertain, in each what the true balance is. Prices in Japa low. But they have to be compared, on th hand, with the cost of living; on the other h with the amount of good work which carpenter, for instance, will turn out of ha a day for 1s. 8d. wages.

It should be fresh in the remembran those of our readers who are themselves tically acquainted with the work of the penter or the joiner, or with any detail o builder's craft, that a competition to a c extent has already sprung up between Jap and English labour. Our own columns recorded cases where steam vessels have fitted up with woodwork not only prepar Japan, but fixed by Japanese workmen; n our readers have forgotten the remarkable trast to which a correspondent lately attention as to the interest displayed by fo and by native workmen in the prompt co tion of their work. In America, in spite resistance which threatens to become an opposition, the steady, silent influx of labour is assuming proportions of very s magnitude, and the conflict between the ciples of American Republicanism, and th free trade and political economy, cannot, probability, be very long postponed. It these reasons, among others, that we are a to take every opportunity to throw light question of normal prices. If England co as isolated from the rest of the world a the case a thousand years ago, it mi possible for English workmen, if they a a perfect organisation, to regulate the of labour. With the Channel, and ev Atlantic, bridged by steam, such a proje comes every year more wildly impossible. is no forgotten nook of the world from competing produce, or competing labour not at any moment come. We are on th there can be but little doubt, to such an ec tion of prices all over the world as regulated, not by grains of silver or o but by the proportion of comfort and of in each particular locality, that can be by so many hours' work. As to the tendency there can be no doubt. The which the movement will proceed it is, of impossible to forecast. All that is cer the matter is, that any violent attempt t fere with this self-adjustment of prices likely to involve disaster and suffering therefore, again, we ask, what does the J carpenter, mason, or smith give, in tim work, for his wage of less than two s a day?

CONDITIONS OF LIFE IN INDI

THERE is such a complete difference b the Presidency towns and the country that residents whose duties do not ca them to make tours, such as Judges Supreme Courts, advocates, merchant bankers, have little more acquaintanc the interior of India than is to be gaine rapidly travelling to and from one of sanitaria. It will appear further on wh should be so little anxiety to go about pleasure excursions. At the Presider civil engineer will easily observe that the rewards of Indian service are not attainab profession. The secretaryships to Gove Railway, and Public Works Departme agency of the Guaranteed Railway, c almost the only positions he can expect which are all as well paid as are those the upper administrative class. He w ceive that while a considerable number of ments of the higher order, such as those Political, Educational, Forest, Postal, an graph services, are open to members Military and Medical services, the Civi neer of the Public Works Department is to the restricted grades in the latter. young officials of other branches of the are constantly selected for places that the most important kind of offices un Indian Government, such as resident Political Agents, it would excite some if a civil engineer expressed a wish to share in public administration. In fact

* See p. 473, *ante*.

didates of the same age,—one a young
tleman of literary education, and the other
had added to this the theory and practice
ngineering,—the former, or purely literary
didate, would be preferred by the dispensers
ndian patronage, as if the technical attain-
ts of the engineer were an incumbrance fit
eigh down the possessor through his whole
of active service. In consequence of this
ngineering profession takes a very moderate
l prominence in India, as may easily be
by conning the lists of official precedence.
re is little more trouble taken about the
y-arrived Public Works officer than gazetting
to his out-station.

is a befitting time at this juncture to
e what are the peculiar conditions under
h an individual taking service under the
n Government comes. Some are of a
rsal nature, others appertain to the Public
s Department. Upon landing, the newly-
ed European cannot but be struck with the
r and want of robustness that characterise
tenths of the white race he encounters.
emarks the prolonged stare at him as he
s, as if the distance between vision and
al perception was traversed slowly. Be-
pallidness, there is a visible decline in
h from a European standard in most Indian
ents. This alteration is real, and not
inary, and it begins to tell on a new-comer
on as he gets into contact with the Indian
sphere. A newspaper has well described
hat it consists, and the passage is worth
oing, as it clears up many things observable
dia that admit of no other explanation :—

he *Englishman* writes : - 'One of the first effects of
imate of the Indian plains, from which probably,
a it may not strike every one, no European is exempt,
minution of the intensity with which visual images
pressed upon the brain. To a certain degree the
ith all objects, this is especially the case with an
ded scene. Though with the eye we see, or seem to
uch the same as ever, the brain seems to respond
vidly to the impulses conveyed to it by the nerves of
or, to use a metaphor which exactly fits the case,
as so hardened as to be susceptible of a superficial
sion only, where it would formerly have taken a
one. . . . . The impressions conveyed through the
enses do not appear to be affected by climate in so
d a way ; though we are not so sure that something
same sort does not happen in the case of sound.
is hard to believe that the deadening process does
tend to all the senses, and to the nervous system
lly. The brain probably works more slowly : voli-
excited less easily ; the nerves convey the message
wer rate of speed, and even the muscles themselves
d less promptly. If we are not mistaken, a set of
uments to ascertain the average 'personal equation'
undred European residents of the plains of India
hundred of the same class at home, taken indis-
sately, would show a result very much in favour of
ter; while a hundred natives would yield a much
result than even the former. The comparative slow-
f movement of the natives under ordinary circum-
s is most marked. In every handicraft, as well as
less special movements of ordinary life, it is pain-
bvious. We impute it to laziness. But it is some-
ess culpable and less remediable than that."

s a singular thing that natives of India are
insensible to the charms of landscape.
Europeans in India scarcely ever allude,
t in the most cursory way, to the scenery
e country. It is carried so far with the
es, that, while able to follow a plan, they
nable to understand a picture. If a native
man whose education has been solely in
ernacular is given a number of the *Illus-
London News*, he will turn the engravings
e down in looking at them, and it is pro-
that they convey no idea of the scenes
they depict. When a European who has
some years in India revisits Europe, as
riter actually found in his own experience,
rst land in Europe he sights,—for example,
.—seems positively painted, so heightened
he tints from those to which he is accus-
1. The fact is, that the colouring of Indian
ry only bears a resemblance to that of
perate climate for from half to three-
ers of an hour each day before sunrise
ully taken place. It is only then that the
as the cool and grey quality which allows
de and meadow to wear their gayer tints.
rmer times the great attraction to India
neither the beauty of its scenery nor the
efulness of its air, but that nominations
given away so far as recipients were con-
d for nothing, and a provision for life to be
ed by satisfying the tests applicable to an
ary liberal education, was too excellent to
aside. Since the abolition of the East
Company in 1858, aspirants after Indian
ntments have had to depend upon their
exertions to obtain them, and to go in for
line of occupation as they would embrace
profession elsewhere. The attraction of
which has determined choice of the
country has mainly, if not exclusively, been the high rate of pay obtainable by European public servants in the East. The salaries of the heads of departments and superior officers of state, actual governors excepted, are not much in excess of those given either at home or in foreign countries. Where the principal inducement lies is in the salaries during the early periods of service being greatly beyond what are conceded out of India. Where a young man would consider himself lucky in starting on 150*l.* a year in England, going to India puts him in possession of from 400*l.* to 500*l.* a year, supposing the rupee as it once upon a time was at par of exchange, so that to those so situated as to make a good income at the outset indispensable, Indian service presents very great enticement. These persons, however, are perhaps the last to reflect how it comes that the country can afford to pay high salaries to youthful servants. A little attention to the altered prospects of longevity by going to India will throw some light upon the question. People may not be aware of it, but they live under a materially different law of mortality from that to which they are subject in a temperate climate. It would appear that between the twentieth and thirtieth year the risks to life are nearly the same in India and England. From the thirtieth to the fortieth those risks are doubled in India, while during residence between the fortieth and fiftieth years the mortality in India is quadruple that of England. After the age of fifty-five the Indian civilian is superannuated. So that in reality the Indian Government pays a high figure to secure agents, who, up to the age of thirty, can with comparative impunity make the same exertions in the tropics that they are capable of at home. It would not do to stint them of the means of producing influential results till advanced in their career, with so many chances of their not surviving to perform their task. Hence, Europeans in India cannot economically be long kept in ill-paid subordinate positions. If an Indian public servant adds up the emoluments he has received between the ages of twenty-one and fifty-five, and the successive incomes from twenty-one to sixty-five of one of his contemporaries who has remained at home, he will find the balance is much closer than might have been supposed.

It is usual for writers and speakers about India to descant upon the great variety of languages and nationalities in the country, and to say that the native races differ as much as do Poles and Germans from Portuguese and Englishmen. But the engineers will find that there is a very strong general resemblance between native habits and customs from one end of India to the other, that the races are very uniformly represented in the cities wherever he goes, and that the peasantry are especially alike in their situation, manners, and circumstances. Even the climate is much the same in its effect, the houses have to be built on the same model almost all over India, and the Hindustani or Camp language, a composition of the old Hindu dialect, Persian Arabic, and some stray words of English, is understood over the length and breadth of the peninsula. Take a village of natives in Malabar and another under the Himalayas, and there will be only slight differences, in the daily routine of the inhabitants' existence, their dress, and their appearance. It is true that there are numerous languages in India, but they no more affect the dealings and the political fusion of the population than do the existence of the Welsh, Scotch, or Irish Gaelic interrupt the business relations of the United Kingdom. Such distinctions as do exist in India are of minor importance. They are chiefly of antiquarian interest, and to the newly-arrived European every native he meets seems alike. It takes some time to discriminate Mohammedan from Hindu, and actually in some cases a person is obliged to inquire from the individuals themselves who is who. However, as a general rule, the various castes and tribes are, with a little practice, at once recognisable. The Hindu is fleshy, and has a round shaven face, while the Mussulman is spare, manly-looking, and bearded. The low castes are dark, and the upper classes a light brown. In this way there is a great simplicity in the aspect of native Indian society, and the engineer acquainted with natives in one part of the country is competent to deal with the people throughout all the different provinces.

The East India Company ruled India by dividing it into the three Presidencies of Bengal, Madras, and Bombay. The system is by no means extinct. All their servants were appointed to one or other Presidency, and, with rare exceptions, shared its fortunes from beginning to end of their term of service. Fresh appointments are still made to the Indian service by Presidencies. The result was a great deal of animated and often wholesome rivalry. The distinguishing features of Presidencies are more striking to the European than those presented by the natives. Bengal is much the largest Presidency, and being administered by the Governor-General, contains all the highest appointments to be had in India by the members of the services in the course of ordinary advancement. In consequence, the gentlemen nominated to Bengal have a much better chance of succeeding to one of these than if they had gone to either of the minor Presidencies. For instance, while there is only one chief engineer of the first class each in Madras and Bombay, there are seven engineers of that rank in the Bengal Presidency, exclusive of the secretary to the Government of India in the Public Works Department. The Presidencies differ, not only in extent, and the optical prospects they offer, but in natural peculiarities. The Madras Presidency being farthest south, is, of course, the warmest throughout the year. On the east or Coromandel coast and upon the plains of the interior there is a hot sun nearly every day in the year. It rises about six a.m., and acquires great force by half-past eight, while remaining out under it after ten o'clock is scarcely possible with entire safety. The heat is simply furious, and the sensations excited overpowering. Europeans cannot venture out of doors again till from four to five in the afternoon. The sun sets about six p.m. with scarcely any twilight. It is to be observed that the natives work as a rule during the same hours that labourers exert themselves in a temperate climate, namely, from half-past six a.m. to twelve, and from one to half-past five p.m. Their constitution and diet enable them to stand the heat. The temperature of a native's circulation is at least 1° Fahrenheit below that of a European, so that touching hands the former feels cool to his touch. Besides being hot in Madras during the day, after nightfall the ground gives off its warmth, so that for the greater part of the night it is nearly as hot as in the daytime. Just towards dawn there is a respite, and when sleep is most refreshing it becomes time to get up. So much for the Carnatic districts. On the Malabar coast the climate is totally different. There are lofty hill-ranges which intercept the clouds and condense the moisture, there are sea breezes, and, generally speaking, cool nights. Dense forests give shade, and there is a strong resemblance to the foliage and climate of Ceylon. The thermometer seldom rises much beyond 82°, and for the months of June, July, August, and half September there is almost continuous rain during night and day. It is in this region that the coffee estates are situated, and there are places which rather pleasantly recall the scenes of a temperate climate, and one settlement, Ootacamund, on the Neilgherries, which is as like an English town as India is capable of producing. The Madras Presidency is, notwithstanding the heat, proved to be healthy. This is owing to there being no extremes of temperature, and the proximity of the sea, with its purifying ozone and refreshing zephyrs. The tropical seaboard, though enervating, is always grateful to the constitution of the European, and the moisture of the air wards off the direst rays of the Indian sun. This Presidency has the added advantage of never having experienced the embittering tragedies of the mutiny of 1857. Hence the relations of the Europeans to natives are amicable. The latter have made great strides in education, and large numbers of the business and working classes speak English. In fact, the process of Europeanisation has gone inconveniently far, as a native is not necessarily raised in the scale of civilisation by eating and drinking like an Anglo-Saxon. Expensive tastes and habits are acquired, and these indirectly force up the price of living and diminish the comforts that a European can command in more unsophisticated Northern India. The Bombay Presidency is smaller than Madras. It has coast districts which are situated like those of Malabar, and are, indeed, a continuation of these. But the hills have been denuded of forest, and the consequence is a sunnier climate, but still not unadapted to the European frame. Inland the country is elevated some 1,200 ft. to 1,800 ft. above the sea, and

has a clear, dry atmosphere, without any extremes of heat. The natives know little English as a body, and for public intercourse employ a prattling form of Hindustani which goes straight to the point without any of the superfluous adornments of grammar. The language most spoken is Mahratta, which is one of the purest representatives of the old Sanscrit extant. The climatic features of the south of India last up to about the latitude of Jubbulpoor, after which the Bengal climate succeeds. Most of the Bengal Presidency is out of the tropics. This makes a material difference. The year is divided into a hot and a cold season, which are periods very distinctly marked off. In Madras there is practically no cold weather; in Bombay this only lasts for at most two months; but in Bengal there are six months of cool, and in the majority of localities sharp cold weather. The heat sets in with the reaping of the spring crops in April. There are then strong sirocco winds till the middle or end of June. The temperature in the sun in vacuo is 160° Fahrenheit, in the shade 110°, and the humidity goes down to below 25 per cent. of saturation. The European sits all day behind a netted grass screen in a shady room, with a fanner blowing in cold damp air. By this means the temperature inside a house is got down to 80°. But any out-door exertion has to be performed in one that is extremely different, and heat apoplexy is a possible attendant of incautious exposure. In lower Bengal and the North-west Provinces the periodical rains set in during the month of June. They bring relief from the hot winds, but both the day and night temperature is still very high,—about 92°,—with a clouded sky, and the direct rays of the sun much mitigated. In the Punjab the rains do not come till much later, and the months of July and August are extremely trying, the mid-day temperature being felt as high as 120° in the shade in tents. By the middle of October the cold weather has set in. Mechanical refrigerators are packed away, and by New Year's Day there is frost on the ground and snow visible on the nearest Himalayan ranges. But the sun between eleven a.m. and three p.m. is always warm enough to make the European uncomfortable, and he cannot sit out of doors or wear the same head-gear as he would at home. Such an improvement as this in the conditions of climate is not without its effect on a European. There is not the feeling of weight and uneasiness which down in Madras or Bombay makes the European always think and talk of leave of absence to Europe. Nor do the generality of Europeans age so rapidly as in the south. A person of fifty or more in Bengal has hardly turned grey, and preserves the appearance of comparative youth, while in the other presidencies he may chance to have the hair well turned to white, and the aspect of feebleness due to an advanced time of life. But this can be to a certain extent warded off by frequent visits to Great Britain, which residents in the south of India are well advised to make. The clearness of the intellect is perhaps on the whole better preserved southward than northward, and more literary work used to be done in Madras and Bombay than in Bengal. In the same way there is fully as much physical exertion practised in these, if not more, than in the north. Engineers usually ride to their work, whilst they commonly drive in Bengal. This is partly because the Bengal sun, as it is termed, is really more injurious than where the oceanic atmosphere prevails. The new arrival has thus rapidly surveyed the more prominent characteristics of India, as these are presented on landing at one of the Presidency townships. There are a great number of traits which can only be appreciated after acclimatisation to the interior; and in order to understand the peculiarities under which Indian public works are undertaken, it is necessary to delineate the ordinary routine of provincial existence. This being largely seasoned by relics of the old East-India Company's system will require a digression now and again into the origin and significancy of the traditions of policy with which the Public Works engineer is thickly surrounded, and an explanation of native ways of thinking, living, and labouring.

Social Science Association.—On Monday evening next, the 12th inst., a paper, by Mr. Frederick Hill, will be read, "On Agricultural Distress; with special reference to the mode in which Farm-rent is paid." The Marquis of Huntly will preside.

THE GOLDSMITHS OF MEDIÆVAL FRANCE.

The business of a gold and silver smith held a high rank in France in the thirteenth and fourteenth centuries. In the industrial census, as embodied in the "Livres des Métiers," and the "Livre Rouge Vieille du Châtelet," we find that there were in Paris at that time 8 refiners, 6 *aneliers*, or gold ring makers; 3 *argenteurs*, but translated by silver gilders; 40 workers in enamel; 19 coiners (though not in the invidious sense in which we use the word); 14 goldbeaters, or *batesurs*; 253 gold and silver workers, including two females, who followed that branch. The profession embraced a good many varieties of artisans, such as, for instance, those who engraved the edges of pieces of money and seals. It is true that seals, which were in great request amongst the many corporations and brotherhoods of those days, were properly made by a special body of workmen called *seeleurs*, but they often fell into goldsmiths' hands as well, for we find a notice to the effect that "Ung nommé de Lachesnel, orfèvre, contrefist les coings de la monnaie du Roi et ouvra des blans de mauvais aloy"; and again,—"Arnold Bourel, orfèvre et graveeur de seaulx." In one respect, the gold and silver workers were strictly limited, and that was in the trafficking in precious metals. This right belonged to a separate branch of "changers," who had a monopoly of it under a caution of 500 livres, and who often had occasion to defend it vigorously against the gold and silver smith.

To a certain extent, France was in those days a producer of precious metals, gold being yielded in tolerable quantities from the beds of the Rhine, Rhone, and Vienne, the sand and silt being washed and then tested with mercury. This, of course, was supplementary to the supplies that came from the East; but as regards silver, it is mentioned that in the fifteenth century valuable silver mines were worked near Lyons. Whenever the king determined upon a new coinage, the precious metal required was obtained at as cheap a rate as possible; and to help the carrying out of this part of the affair, all business in it was prohibited for the time,—at all events, at any higher rate than that fixed by the changers. The weight of all gold and silver was strictly limited, refining was forbidden, and, in fact, every possible restriction was put upon the trade; though an instance to which this did not apply was where ecclesiastical gold-work, or that for the royal family, was in hand. Although refining was a special branch of the trade, goldsmiths frequently refined for themselves till the end of the sixteenth century, when they were forbidden to do so. Le Roy, in his "Statuts des Orfèvres-joyailliers," does not mention the invention of the cupel as earlier than 1300; but the monk Theophilus, whose treatise must have been written before that, as also Geber, who lived in the eighth century, both speak of the refining of gold and silver in the cupel. The purity of the gold refined in Paris in the Middle Ages was unequalled, and the penalties incurred by the goldsmith who used bad metal were very severe, extending to imprisonment, the pillory, and banishment, while the work itself was invariably destroyed. The use of the hammer in goldsmiths' work was very similar to what it is in our own time, and the processes of manufacture described by Theophilus and Benvenuto Cellini are almost identical with those of the present day. It is somewhat singular, by the way, that there are few specimens of Parisian goldsmiths' work which throw any light upon the style and technical treatment of the thirteenth and fourteenth centuries, though there are, on the other hand, numerous detailed reports, which tell us more of the forms and taste of their objects than of the minutiæ of their work. Certain specimens are marked by the words "Façon de Paris," or Avignon, or Montpellier, but we are not informed in what these styles consisted, and they simply prove that certain styles were recognisable by these marks.

A curious instance of the jealousy with which trade proceedings were watched in the Middle Ages is shown in the fact that, while gilding was permitted, plating silver articles with gold was forbidden. In 1396 a case occurred of this, in which the Parliament had occasion to deal with a cup or bowl of silver, to which the artist, Albert le Grand by name, had attached a plating of gold. He pleaded that the real nature of the metal was perfectly clear from the weight of the cup and other parts; but the Procurator-General decreed that the cup should be br and the goldsmith expelled from the corp tion. The sentence, however, was not ca out, and the artist was permitted to sel work quietly; but plating was strictly forbi from that time forth. Enamelling was largely practised in Paris in the thirte century, and occupied the attention of a sp guild, whose laws, drawn up in 1309, are in existence. At that date it comprised th eight master enamellers and an indefinite nu of apprentices and artisans. The lengt apprenticeship was fixed at ten years, an work by night was forbidden. The Marqu Laborde, who investigated these trades, that the enamel-workers mentioned in the and reports were Parisian goldsmiths devoted a greater part of their attention t branch; but this was not the fact, and it m meant that the goldsmith sometimes unde to get the enamel-work completed, but it invariably through that particular guild goldsmith paying the charges and inclu them with his own.

Jewelry was another auxiliary trade, w while it embraced both goldsmiths and lapid yet formed a separate brotherhood, unde title of "Cristalliers et pierriers de pi naturelles," the first-named of whom ha exclusive right of mounting the stones. statutes of 1355 were very strict, and f the workers to cut crystal in the shape diamond; to place spangle under an ameth garnet; to polish and stain the stones, and cially quartz, so as to make them pass for pr stones; to mount Scotch pearls in gold and work by the side of Eastern pearls, exc the case of ecclesiastical jewelry; to set beads together with fine stones in silver *teris*; or to stick bits of coloured glass the very thin precious stones, with the doubling the apparent thickness and This last process was known as *doub voirrines*. In the registers of the Corpo of Goldsmiths is found the following ent "*Item*, en leur temps qu'ils trouvèrent d'or où il avoit 'un voirre' et avoit fueil saphir, lequel anel Robert du Montacelin av à un lombert et pour ce fat le dit Robert Chastellet charjié du dit fait." The prohi of cutting crystal in imitation of the di proves that before 1355 it was known give the facets to this precious stone. a German, named Jean Boule, set up in P a diamond-cutter, and there were about six the goldsmiths proper who devoted them to the cutting of precious stones generally

The goldsmiths also engraved on fine Theophilus gives receipts for softening and ing crystal, onyx, beryl, emerald, jasper in fact, most precious stones. Togethe the lapidaries of crystal and natural there existed a corporation of workers in tion stones, both cutters and colourers. brethren, the true lapidaries, looked a after these last, to take care that they attempt to counterfeit the crystal with artificial glass, and the colourers (who called "verreniers") were forbidden Provost of Paris to stain their glass wit or to cut them into facets.

One curious feature in the goldsmiths' was that they sold in their shops a vast num articles which could not come under the of gold and silver work proper, but belonged just as much to the mercers' The Goldsmiths' Corporation had a st feud with the mercers for selling so articles of ornament or dress profusely dec with gold and silver work, and considere the latter were trespassing on their d A petition was presented to the Parliam the goldsmiths against the farmers of the mercery, so as to try and get an exempt the tax on those goods which seemed to it were, on the common ground of both smiths and mercers. "Supposé sans pré que en tells œuvres vendues par les me les d. fermiers devissent preuve l'impo toutes voies pour tells œuvres vendues orfèvres qui la d. œuvre font, raison ne souffrir que il en lièvent inposition." In the goldsmiths sold a multitude of which had but slight connexion with that except perhaps that they contained a gold, silver, or jewel work about them, game-bags, purses, needle-cases, girdles, nets in gold and silver thread, pins, clasps, writing-cases, bottles, inkstand fact, what in the present day wou called nicknacks. The goldsmiths did

ce these things, and only added a little of r speciality by decoration; but so tenacious e they of their rights, that in 1402 they ed upon a cutler, named Henze, who had rnented the handle of a dagger with some r beads, and did not let him go until he had essed before the provost of Paris that he had rped the right of the goldsmiths.

mongst the other curious prohibitions of the workers' trade, they were forbidden to work ight except in the service of the king, the l family, the Bishop of Paris, or with the ial consent of the heads of the corporation. ry goldsmith marked his articles with a *fleur-* and his own printed trade-sign, such as a a heart, a tongue of flame, &c., which me his guarantee to the public that the was genuine. In 1378 there were a great y impositions and infractions of the techni- y of the trade, and the king therefore red the masters of the Mint to break all the *de-lis* stamps, and to establish another of a *de-lis* with a crown over it; and no gold- n's work, except what was marked in this le manner, was accepted on the responsi- y of the Corporation.

COLLECTION OF REPORTED CASES LATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Extras.

HEN it is stipulated in a contract that addi- made "by an order in writing" shall be for, extras done without such order, even gh at the request of the employer, cannot aimed for by the contractor or builder.— ell *v.* Da Bandeira, 13 C. B., N. S., 149; J., C. P., 68 (1862).

his is the leading case upon this point of an in writing for extras. But see Goodyear ayor of Weymouth, 35 L. J., C. P., 12); *ante*, p. 364, which shows that if the tect has certified that a certain sum is due spect of extras, though no order in writing quired by the contract has been given, the ficate does away with the want of a written .]

HEN alterations in, additions to, or deduc- from work originally engaged to be done r a contract are not to be executed without tten order from the employer's architect or neer, and they are in fact executed without order, certificates under which advances made by the employer to the contractor time to time will not do away with the sity for written orders, without which the actor cannot make a valid claim for extra .—Tharsis Sulphur and Copper Company Elroy & Sons, 3 App. Cas., 1,040 (1878).

his case really confirms a still older deci- viz., Lamprell *v.* The Billericay Union, J., Ex., 283 (1849), and the effect of it is as stated. These certificates, given during rogress of the work, are, according to Lord s's judgment, as has been already pointed simply statements of a matter of fact, ly, what is the weight and what is the act price of the materials actually de- d from time to time upon the ground, and ayments made under those certificates are ether provisional and subject to adjust- or readjustment at the end of the con- . They are, in fact, only notices that there fficient security for any interim payments ay of advances which may be made by the oyer to the contractor. This case, therefore, not seem to be irreconcileable with Good- *v.* The Mayor of Weymouth, 35 L. J., C. P., which the certificate was a *final* declara- by the architect that a certain sum was due e contractor, although no written orders xtras had been given to him.]

HEN alterations and additions must be rvised by the architect in writing, sketches tra work, prepared by the architect, and shed by him to the builder, are not suffi- authority.—Myers *v.* Sarl, 30 L. J., Q. B., 9).

HEN there is a contract to build and com- a house, according to a specification, and in details necessary for the proper comple- f such house are omitted from the specifi- n, the contractor is not entitled to charge for such details as extras, though they are not mentioned *verbatim* in the terms of the contract. —Williams *v.* Fitzmaurice, 3 H. & N., 844 (1858).

[In this case, under the head "Carpenter and Joiner," there was specified the scantling of the joists for the floors, the rafters, and ridge and wall pieces; but no mention was made of the flooring, and it was decided that this could not be charged for as an extra. The specification, coupled with the memorandum of agreement, made it clear that it was unreasonable to hold that the contractor could have supposed that the flooring was intended to be an extra.]

IN a claim for extra work it is necessary to prove by the original contract what is included within such contract, and if this document is inadmissible in evidence for the want of the proper stamp, it cannot be looked at, though not actually required to prove the extras themselves.—Buxton *v.* Cornish, 12 M. & W. 426, 13 L. J., Ex., 91 (1844).

* See pp. 364, 423, 479, *ante*.

THE IRON AND STEEL TRADES.

THE meeting of the Iron and Steel Institute draws special attention to the peculiar condition of the industries of which it is the chief parliament, and which have not only been affected by the general dulness in trade, but also by special causes arising from the state of transition in which they have been for some years. Since the application of the discoveries of Bessemer and Siemens, the iron trade has been literally paling the ineffectual fires of its puddling furnaces, and there has been a continual growth of the steel trade, which at present seems receiving a very great impulse. Hitherto the steel trade has been carried on under difficulties, — difficulties chiefly arising from the limited area in which ores fit for use in the steel manufacture have been found in England, but these difficulties are now vanishing, and the age of steel seems drawing near very fast now. There have been for years attempts to utilise iron made from phosphoric ores in the steel manufacture: these were known to be scientifically successful, and it is now stated on authority that one of the latest is also commercially successful; so that the metallurgical problem of the age is fairly solved. Henceforward, if all is true that is claimed for recent processes, we may look to an enlargement of the area from which ores are drawn in England for the purposes of the steel manufacture, and to a falling off in the demand for foreign ores.

The most striking feature in the recent history of the iron and steel trades is the great cheapening of the cost of production. Not only has this been the case in one, but in nearly every branch. Prior to the strike in the Durham coal trade, pig-iron in Cleveland had reached the price of 34s. per ton, one unexampled in the recent history of the iron trade; whilst for finished iron the rates are as low comparatively; and the fuller adoption of the direct process in the Bessemer steel manufacture has brought down the price until its product is as low as iron, although hitherto the great bulk of the ores for the manufacture of the former have been brought from Spain and other countries rich in purer ores than the bulk of ours. With this increased cheapness there has been a change in the production, an increase in some branches, and a decided decrease in others. It appears probable that steel will, for many uses, supersede iron. In rails this is virtually done, and it is becoming imminent in the plate and angle trade, whilst it is by no means improbable that for foundry purposes ultimately the more enduring metal may be preferred. Hence it was more and more imperative that our native ores should be used for the steel manufacture, and the accomplishment of this and the further reduction in the cost of production which will spring from the use of cheaper home ores, will give an accelerated momentum to the change which has been slowly progressing for some time. Not only, then, in Britain, but generally, there has been a very considerable enlargement of the production of steel, at the expense of the output of iron.

There has been are duction of that output in two methods: by the reduction in the number of furnaces in blast, and by some of the number in operation having been turned to the production of Bessemer pig for the converting-furnaces. This diminished production is general, and is in spite of the enlargement in the average output of the furnaces. It is doubtful whether half of the melting-plant of the kingdom is at the present time at work, and there is no immediate prospect of any great enlargement of the output of iron. Our large export of crude iron has hitherto enabled us to keep up the production; but although that export is rather increasing now, it is in anticipation of an injurious effect from foreign duties in contemplation, the imposition of which would materially affect this branch of the trade. Our home consumption of crude iron is less, and is likely still further to fall as the reign of steel extends,—that is to say, of iron unpurified by the "converter," or some similar method of expelling those vitiating elements which preclude its use in the steel manufacture. In the manufactured iron trade, in spite of prices lower than known for long, it is evident that there is a general dulness which must increase, as steel is used in larger quantities in the plate and angle as well as the bar trades; and the consumption of iron being thus diminished, the trade of the puddler will be more and more in danger. The highly-paid labour necessary in the production of manufactured iron is being less and less in demand, preference being given now largely to a metal the production of which calls only for a limited amount of labour of other than an unskilled character.

The condition of the iron and steel trades, as a whole, is depressed by the falling off of the foreign demand, as well as by the transition from iron to steel, which is now in progress. It is evident that the progress of the changes will materially mould the future of the industries; and that another chief factor will be the fate of the duties proposed in other countries. Hitherto we have had to import a million tons of iron ore, and should the recently-published processes stand the test they will now have to meet,—that of trial on a large scale,—it is probable that we shall find that our imports of ore will show a large falling off, and that there will be a larger demand for the ores that have been hitherto neglected for the steel manufacture. There will need to be an adaptation of our rolling-mills for plates and angles, as there has been for rails; and there may be a removal in part of the industry from some of its ancient seats to others nearer the sea. If we further cheapen the cost of production,—as we shall when we produce steel at the present rates for iron, any falling off in our crude iron trade from the effect of foreign duties will be met in some degree by the growth of our steel trade. We have not had, hitherto, the competition to meet with in the plate and angle manufacture that we have had in the rail trade, because so large a proportion of the former is used in our own shipbuilding and boiler manufacture, in which we retain still the foremost place. But if this is to continue there will need to be an adaptation of those later processes which aid in economical production. It is evident that metallurgy is undergoing a change, and the prospects of those nations which earliest avail themselves in the fullest degree of recent discoveries will be the brightest. It is highly probable that we lost no small portion of our rail trade by the comparative neglect with which many metallurgists here treated the Bessemer process on its introduction, whilst some foreign nations eagerly took it up. It is to be hoped that this folly may not be now repeated; for our hold of many markets is comparatively slight, and to retain, as well as to increase it, we need all the aids that science can give to our natural advantages. In the future, we shall have to improve our products as well as lessen the cost of production; and both these are now made possible, if we will avail ourselves of the means.

Elmore.—The ancient church of Elmore, near Gloucester, is about to be restored, under the superintendence of Messrs. F. S. Waller & Son. It is intended to erect new roofs over the whole of the building, those existing being so dilapidated as to be almost dangerous; to re-floor and re-seat the church, using the interesting old oak seats as far as possible; to generally repair all the stonework of the walls, windows, and doors, and the internal plastering; to repair the tower floors and bell framing, restore the woodwork of the porches, and put a gutter-course all round the church. A tender of Messrs. Gyde & Cox, of Pitchcombe, has been accepted; the amount is between 1,500*l.* and 1,600*l.*, but the work to be at present undertaken will cost between 1,000*l.* and 1,100*l.*

THE SHOREDITCH NEW GOODS STATION.

The Great Eastern Railway Company are incurring a very large outlay in converting what was formerly known as the Bishopsgate passenger station into a huge goods depôt, which will not only occupy the area of the former station for passenger traffic, but will also be extended a considerable further distance northward. The railway level being very much higher than High-street, Shoreditch, the approaches for passenger traffic were by a steep incline from the Shoreditch thoroughfare. This having been found impracticable for the goods and merchandise department of the company's business, the works now in progress have been so designed that the entrance from High-street will be on the street level, the goods being raised and lowered to and from the level of the railway by hydraulic power after passing under arches and roadways beneath the railway, now in course of construction.

The immediate requirements of the company in connexion with their goods business, not less than the magnitude of the new depôt itself, have necessitated the works being carried out in sections. Before the work is completed there will be five contracts in all, and the first of these, which embraces a considerable portion of the south-west section of the station, including about 140 ft. in length of the High-street, Shoreditch, elevation, is being executed by Messrs. Vernon & Ewens, contractors, of London, Cheltenham, and Plymouth. What may be designated the preliminary portion of the works, before the superstructure from the railway level can be proceeded with, is unusually heavy. The old passenger station was built upon arches, and the directors have decided that as the building is demolished the whole of these arches shall also be excavated and cleared away, to be replaced by new arches of a more substantial character. In order to carry out the design for this underground portion of the structure, where all the merchandise will be received, it has been found necessary in many instances to excavate to a depth of 6 ft. and 8 ft. below the foundations of the old arches, and the construction of these new arches, upon which the floor of the warehouses,—on a level with the railway,—will stand, forms one of the heaviest portions of the works. They are built at right angles, and from spacious roadways intersecting each other, with approaches from the thoroughfares, on different sides of the station, for the arrival and departure of goods lorries. The average span of each arch is 32 ft., upon walls 4 ft. 6 in. in thickness, the materials being Staffordshire and red bricks built in with cement. This part of Messrs. Vernon & Ewens's contract has for some time past been completed, and the superstructure is considerably advanced, the High-street elevation having already been carried to a height of 45 ft. This consists of blue Staffordshire brick piers, 5 ft. square, upon which will rest massive iron girders. The upper portion of the elevation, above the ceiling of the warehouses, will be built upon these piers and girders. It will be a neat architectural frontage, 30 ft. in height above the piers and girders upon which it will rest. It will be built of red brick, with a range of white brick circular and segmental windows, alternately arranged, with white brick panels or piers between every third window. Above the windows the cornice will be in terra cotta, surmounted by a balustrade of that material. The entire height of the Shoreditch frontage, from the street line will be 75 ft., and when finally completed will be about 400 ft. in length, extending from New Commercial-street on the south to the new Bethnal Green-road, just opened, on the north. For this extension the company have had to purchase a considerable amount of property. Those portions of the station buildings above the warehouses facing Shoreditch will contain the manager's and general offices for the company's clerks. The whole of the station will be covered in with an iron and glass roof, supported by lattice girders, resting on massive iron columns and main girders, and the weight of iron which will be required to complete the whole of the structure may be imagined when it is stated that for Messrs. Vernon & Ewens's contract alone 1,000 tons have to be supplied.

In addition to the new goods station the company are also making a considerable extension to their low-level line immediately adjoining, from the Shoreditch low-level station to Brick-lane. The enlarged low-level line is being constructed on the north side of New Commercial-street, and provides for additional double lines of rails, with new roadways and approaches. It is stated that one of the objects of this extension is to relieve the Liverpool-street station so far as regards the excursion traffic. This portion of the work is being executed by the company themselves, under the superintendence of their own officers.

The whole of the works have been designed by Mr. Langley, the company's engineer.

EXHIBITION OF GAS APPARATUS IN LEEDS.

Under the auspices of the Gas Committee, an interesting exhibition has been held in the above town with the object of demonstrating, in a practical way, the various uses to which gas may be economically applied.

Some time ago their engineer, Mr. Woodall, propounded a scheme for placing a small stove in every house supplied with gas in the borough. But although this scheme met with considerable favour, and was resolved upon by a majority of the council, it had to be abandoned eventually out of regard for another proposition which occupied public attention at the same time. Foiled in this attempt, and still desiring to equalise, as far as possible, the consumption of gas throughout the year, the committee then resolved to hold an exhibition. The result has been an unequivocal success. Up to Saturday last more than 20,000 visitors had paid for admission; and as, in consequence of its popularity, the show was to be prolonged until Wednesday night, it may fairly be inferred that not many short of 30,000 people will have been present. From the outset every effort has been made to break down prejudices in regard to gas as fuel.

The Corporation, superior to the cries of an indignant public, granted the use of their magnificent Victoria Hall for the Exhibition, which, from the very outset, has been used for the display of gas-ovens of all descriptions in full operation. It would be difficult to say what quantity of meat has been cooked therein; but it is a fact that excellent dinners, of seven or eight courses, for as many as eighty persons, have been prepared daily, under the ken of the visitors, who, had it not been for information conveyed to them by the exhibitors, would have been all unconscious of what was going on. The engineer relied throughout for the gas required upon the supply previously laid on, which has proved amply sufficient for all purposes at ordinary pressures. A 3-in. wrought-iron pipe is carried under the gallery, and from this four 2-in. pipes, descending behind the pillars, are laid along the floor of the hall.

The ovens and other apparatus, placed back to back along these lines divide the space into five avenues, an arrangement which is simple in the extreme, and provides a sufficient area for unimpeded circulation.

During the exhibition a series of tests have been applied to the various gas-ovens exhibited, to determine their relative merits, both as regards consumption of gas and saving in meat roasted, the general result of which has been to show that a leg of mutton, weighing 10 lb., can be roasted with 24 ft. of gas, costing at Leeds less than ¾d., with a loss of from 23 to 25 per cent., calculated on the raw meat, and from 5 to 8 per cent. actual loss after taking the dripping into account.

As compared with the ordinary method of roasting before a fire, this result is strikingly economical, for a similar joint under the ordinary conditions loses as much as one pound in excess of the waste in cooking in a gas oven. And as cooked meat is worth not less than one penny per ounce, and the cost of gas employed in cooking rarely exceeds a penny, it follows that the saving is about 1s. 3d. on a joint of mutton.

The Gas Committee are advised that their plant is only worked to one-fourth its capacity during six months of the year, and that a reduced price of gas would inevitably follow the extended use of gas which the above-mentioned economies would warrant. We are informed that during the summer the sale of gas in Leeds is about 1,500,000 cubic feet per day, whereas in winter the sale reaches more than 6,000,000 ft. Practically the corporation could make as much in summer as in winter; and as the charge for interest on plant is nearly one shilling per 1,000 ft. sold, it follows that a reduction of sixpence per thousand could be made at once were the consumption equalised between summer and winter.

The price of gas in Leeds is at present 2s. per 1,000, and it is contemplated to make a further reduction of 4d. on the 1st of July. At what low figure the price will eventually come it is therefore difficult to estimate, but we may safely augur that Leeds will be one of the first places influenced by the electric light, especially when it is remembered that the illuminating power of the gas supplied is equal to eighteen candles.

In addition to gas ovens there are numerous examples of gas fires producing an excellent appearance and calorific effect at a cost not exceeding (at Leeds) 1d. per hour; and Messrs. Crossley Brothers, of Manchester, show two gas engines, noiseless and admirably designed, which work at a cost of a half-penny per horse-power per hour.

Apart from the mere business-like aspect of the exhibition, endeavours have been made to instruct the public in regard to the processes of manufacture of gas and residuals, by means of excellent models supplied by Mr. Hunt, the engineer of the Birmingham Corporation, and also a complete exhibit of the various substances and colours obtained from the distillation of coal tar exhibited by Messrs. Stainsby & Li[ndley].

Messrs. Harvey & Reynolds have illustrated to much advantage the value of Mr. Fletcher's inventions, by the melting of copper and other metals in small crucibles heated by gas, and the Leeds Corporation have shown the various apparatus and processes for testing the illuminating power and purity. They have also shown what they can to show, through the agency of a qualified cook and laundress, what can be done with the smallest stoves, costing not more than 3s. each.

Altogether the Gas Committee have been very liberal in their arrangements, and we have no doubt that they will have their reward in a largely-increased consumption of gas in the town. And considering the present low price of gas in Leeds, and prospective reductions, we feel disposed to accept for it the correctness of the motto which they display with telling effect in front of the orchestra, "The Fuel of the Future."

THE EXCAVATIONS AT OLYMPIA

The excavations carried on at Olympia during the first week in April show, we are informed, that the so-called Slav settlement on the east and south-east of the Zeus temple [illegible] have been exceptionally dense and extensive. This would account for the smaller fragments from the western pediment being collected together in that spot. Very important portions of the group of Alcamenes have recently been found there, amongst them the trunk of the boy-stealing Centaur, a large fragment of the recumbent elderly female figure, the arm of one of the Lapithæ, who is thrusting his sword into the breast of the Centaur, as well as many fragments. The moulding of the sculptures has commenced, and it is expected that a considerable addition will be made in the course of this summer to the Olympia exhibition in the Campo Santo at Berlin. That exhibition was reopened to the public on May 1.

WOOD PAVING AT THE NEW LAW COURTS.

The Government authorities wish wood pavement to be laid down in the Strand, opposite the new Law Courts. At last week's meeting of the Strand Board of Works a letter was read on behalf of the First Commissioner of Her Majesty's Office of Works, acquainting the Board that that Department deemed it extremely desirable that the roadway of the Strand fronting the new Courts of Justice should be rendered as noiseless as possible, and that this view wooden pavement should be substituted for the present granite pavement, from Temple Bar to the west extremity of the new buildings. The letter stated that, as one portion of the building would be occupied immediately, the First Commissioner wished the Board to be informed that he would be obliged by knowing whether the Board were prepared to undertake the work, that Department making a fair and reasonable contribution to the cost. After some discussion the matter was referred to the Works Committee.

KSHIRE FINE ART AND INDUSTRIAL EXHIBITION.

e York Fine Art and Industrial Exhibition formally opened on Wednesday morning We give a view and plan of the building. tion of the report made by the Executive ittee will serve to show the steps that taken to bring the undertaking to its t position.

the year 1866 a general Exhibition of of Art and Industry was held in this n a temporary building erected for the e in Bootham. This Exhibition remained l eighty-six days, and was attended by 400,000 persons, the receipts from all s amounting to 13,000*l.*, and leaving a net le, after defraying all expenses, of 1,866*l.* results proved that our ancient city had ions and advantages which permitted of and Industrial Exhibition being held, not r the elevation of the taste and social of the people, but with a pecuniary result couraged the repetition of the experiment, e committee was continued in office to ut the suggestion contained in its final This suggestion was as follows:—'We pinion that it (the surplus) will be best ed in providing some permanent building l to the encouragement of art and industry. uring of an eligible site and building for ibition of paintings, &c., would be an ap- te use of the money, and if insufficient purpose, might be supplemented by sub- ns or shares bearing a limited rate of . We believe that the possession of a g of this description, and a frequently ng Exhibition of Works of Art and y, would be a great boon, and tend to rmanence to that impulse which the late ion certainly has given to the trade and ts of the city.' Many circumstances delay the carrying out of this recom- ion, and it was not till eight years had that the subject was revived at a of the Executive Committee, held on of July, 1874, when a sub-committee pointed to report generally on the sub- The first great difficulty was the site; re very few spaces available sufficiently nd at the same time central; and the tee came to the unanimous conclusion these none was so suitable as the one h we now stand, a piece of Crown land, to the Yorkshire Philosophical Society nted as a garden. After long and diffi- gotiations (in which we were admirably ed by George Leeman, esq., M.P.) ments were concluded with the Com- ers of her Majesty's Woods and Forests Yorkshire Philosophical Society, and a r 999 years obtained at a cost of 4,000*l.* meantime the public spirit of the city stirred that a loan fund of 14,000*l.* was ed. The plans and specifications were ed to Mr. E. Taylor (the architect of the ion Building of 1866), and the foundation as laid by the Right Honourable the Lord (Mr. Alderman Varey) on the 22nd of 878." The floor of the Great Hall and its s are filled with a display of manufac- oods, embracing almost all departments e, the exhibits in the furniture and ng departments being specially im- . To the west of the Great Hall is the ry annex, covering an area of about square feet. In this many very interest- nufactures and processes are going for- he motive power being a powerful engine gye Brothers, of Birmingham, and one sley's "Otto" gas-engines. Adjoining at Hall on the eastern side is a spacious room, where from time to time exhibitions s by the limelight and chromatic fountain ce place."

Exhibition stands on a piece of Crown ormerly known as Bearpark's-gardens, g the Wilberforce School for the Blind, arated from Bootham and Marygate by ls erected for the defence of St. Mary's and the houses built in the abbey moat. g St. Leonards, but standing back 180 ft. e thoroughfare, is the permanent build- ich is two stories in height at the front h at the back. The style is Italian, and ompletely finished the building will take inent place among the numerous objects rest the attention and excite the admira- the visitor to this ancient capital of the The front is 104 ft. long, and consists of al pediment with tympanum, flanked by two wings, and an open arcaded portico or loggia of five arches, with one arch in return. Above the ornamental capitals of the loggia are four circular medallions in stone, filled with heads symbolical of Music, Sculpture, Painting, and Architecture, each represented by four past York worthies, viz., Camidge, Flaxman, Etty, and Carr. On the parapet immediately above are four grotesque terminals, and at the upper corners of the loggia are four carved pilaster panels, while the keystones of the arches are decorated with "swags" of flowers. Each end of the loggia parapet is relieved with a draped vase in stone. In each wing is a doorway flanked by stone columns in pairs, with floriated capitals, and on each side of the columns are oblong ornamental panels. Supported by the columns is a parapet with balustrade, having at each end a pedestal for a single figure or small group. Above the line of these parapets the whole front is divided into seven sets of panels, the upper being semicircular and the lower oblong or square; three are in the central pediment, one on each side of it, and two (with larger square panels than the rest) in the side wings. It is intended at some future time to fill these panels with some of the many striking events in the history of the city, the upper panels in stone and the lower in mosaic. At the sides of the pilasters which support the ornamental semicircular heads above the panels in the wings are niches for figures. When finished the tympanum of the pediment will be filled with sculpture. At each end of the pediment are stands for figures, and the apex is surmounted by an ornamental finial. Over the wings, the upper portions of which are connected with the centrepiece by balustrading, are massive pedestals, both in front and at the sides, which are destined to receive grouped statuary. At suitable intervals between the main figures the upper parapet is ornamented by ten draped vases in stone. The general design of the building, as it will appear when finished, is one in which dignity and repose are judiciously blended, and it will lend an additional charm to the spot about which the chief treasures of the city are clustered.

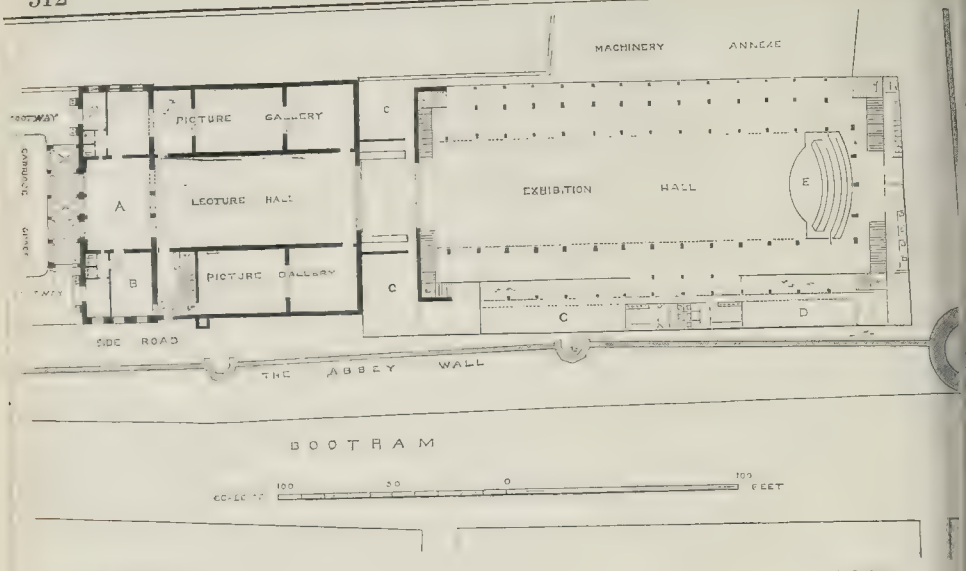
The building is entered from the loggia by three central doorways, 7 ft. wide, and, as indicated, by one doorway on each side of the portico. These open into a central hall, 38 ft. by 29 ft., having on the right master's room, lavatories, &c., and on the left secretary's room and conveniences. The entrance-hall leads directly by three arches, supported on granite columns, into a central lecture or concert hall, 86 ft. long, 38 ft. wide, and 50 ft. high, which has a curved open-timbered roof. To the right and left the lecture-hall communicates with continuous picture galleries. That on the right is in three divisions, the whole being 85 ft. by 29 ft., including a room for statuary, which is separated from the rest of the gallery by the grand staircase leading to the saloon above, while the gallery on the left is in four divisons, and is 107 ft. long and 29 ft. wide; both galleries are 26 ft. in height. This permanent picture-saloon occupies the whole space above the entrance-hall and adjuncts, and is 100 ft. long, 29 ft. wide, and 26 ft. high. Care has been taken to render this room fireproof on Homan & Rodgers's system. Separated from the permanent building by an interval of 25 ft. is the large exhibition hall, a lofty and ornate wooden structure 200 ft. long and 90 ft. wide, with an aisle on each side and galleries 20 ft. wide above and in front. The semicircular roof, relieved with ornamental timbers, is over 60 ft. in height. The story-posts, which afford support to the principals, give off in a line with the gallery front, and above are projections similar to those in the roof, and neat bracketing underneath the gallery line, while the spaces between the posts, all round, are filled with open trussed framework supported on light arches. The gallery front is in perforated woodwork of good design. The organ is placed in the west gallery; it is a fine large instrument,—the wooden pipes by Telford (of Dublin) and the metal ones by Schultz,—which has been purchased by the committee to occupy the centre. The galleries are reached by four staircases,—two at each end of the large hall,—each 6 ft. in width, and of easy ascent. The space on each side of the covered way between the permanent and temporary buildings will be utilised for first-class refreshment-rooms. That on the left, 25 ft. by 25 ft., is intended to be used chiefly for the sale of tea, coffee, cocoa, and other light refreshments. The room on the right has an area of 35 ft. by 25 ft., while adjoining it, and erected in the rear of the main exhibition-hall, are a kitchen and store-room of ample dimensions. A large cellar is also provided for the storage of liquors. The second-class refreshment-room, 62 ft. long by 23 ft. wide, is situated under the right gallery, partly occupying the aisle space and partly extending beyond the limits of the main building, as in the case of the kitchen and store-room. This projection is utilised for another 60 ft. by ladies' and gentlemen's lavatories, &c., and the remainder of the length of the main building on that side is taken up by a small lecture-room and ante-rooms. Underneath the orchestra retiring-rooms are provided for the use of the musicians. Additional ladies' lavatories constitute an extension of the main building at the orchestral end.

Running nearly at right angles to the exhibition-hall, to the left, is the machinery annexe, which covers a space of ground 190 ft. long by 130 ft. wide. The building is in one story, and is divided into fourteen bays, spanned by a roof of five spans.

In the left aisle of the exhibition-hall, adjoining the first-class refreshment-room, are a set of grottoes, and the partition between them and the hall contains some of the choice specimens of stained window work which form a prominent feature in the exhibition. The permanent lecture-hall is lighted from clear-story windows filled with ground glass, while the side galleries and temporary exhibition-hall are lighted with Rendle's patent glazing, the latter having a continuous band of glazing 10 ft. 6 in. wide over each gallery, and a band of the same width on each side of the ridge. The permanent saloon has a long curved skylight filled with ornamental ground glass. Helliwell's patent glazing is used in the skylight of the machinery annexe, to the extent of about 11,000 feet. The temporary buildings are chiefly of red and white deal, the story-posts being of pitch pine. As it is intended that the exhibition-hall shall remain standing for some years, stained V-jointed boarding is generally used in the interior. The whole of the woodwork in connexion with the erection of the permanent and temporary buildings has been carried out by Mr. G. Mansfield, builder, York, and it is estimated that nearly 50,000 cubic feet of timber have been used. The other contractors are:—Mr. J. G. Hebden, York, mason work; Mr. G. W. Milburn, York, the sculpture; Mr. John Thomas, York, painting; Mr. J. W. B. Lee, York, bricklaying; Mr. J. Hawley, York, smith's work; Mr. Charles Nelson, Bradford, plumbing; and Mr. Michael Croft, York, plastering. The works have been carried out under the superintendence of Mr. E. Taylor, architect, York.

The cost of the permanent and temporary buildings, which give an available area of over 55,000 square feet, or 25,000 square feet more than the Exhibition of 1866, is estimated at about 24,000*l.*, including 4,000*l.* for the lease of the site for 999 years; while to complete the adornment of the front, a further sum of 1,200*l.* will be required. Towards this total cost a balance of 2,000*l.* was left in hand from the former Exhibition, and upwards of 14,000*l.* have been promised, chiefly by subscribers resident in the city or neighbourhood, thus leaving a chargeability upon the guarantors of some 9,000*l.*

Large as is the space at command compared with that in 1866, the executive have found it very difficult to meet the wishes of the numerous applicants, and in most instances it has been found necessary to curtail the allotments. The exhibits will be arranged in seven divisions, viz.:—1. Natural products; 2. Manufactures—sub-section, art manufactures; 3. Machinery; 4. Applied science; 5. Educational; 6. Literature and antiquities; 7. Fine art. The North-Eastern Railway Company have lent a boiler for driving the machinery in the annexe. In the fine-art division the collections of most of the county nobility and gentry will be represented, the following, among others, contributing works of ancient masters:—The Archbishop of York, Lord Herries, Lady Mary Thompson (Sheriff Hutton Park), the Hon. Payen Dawnay (Beningborough), Sir H. Meysey-Thompson (Kirby Hall), Sir Harcourt Johnstone, M.P., Mr. Ralph Creyke (Rawcliffe). In addition, the whole of the Earl of Faversham's magnificent collection of pictures and statuary, including "Jennings's Dog," saved in the recent disastrous fire at Duncombe Park, will occupy a prominent place in this department. The



A. Entrance-hall. B. Statuary. C. Refreshments. D. Lecture-room. E. Orchestra.

FINE ART EXHIBITION BUILDING, YORK.—*Plan.*

Jacquard loom will be among the features of interest in the machinery annexe, where all the motive powers—steam, hydraulic, electric, and gas—are represented; and the Secretary of State for War has granted to the committee a loan of various specimens of armour from the Tower of London. A large area of the wall-space in the Exhibition-hall is occupied by specimens of stained glass from the works of the principal manufacturers.

THE STAGE.

A delicately nurtured, educated, and well-brought-up young lady, who takes to the stage, not from necessity, not from love of personal display, or mere desire for excitement, but from a strong conviction that it is her vocation, and that she may so best do her duty to society, is not a common event; and it is for this reason, among others, that we look with special interest at the progress of Miss Rosa Kenney as an exponent of Shakspeare and the classical dramatists of this country. Miss Kenney's performance of *Juliet* is full of promise; her natural aptitude is remarkable, and the representation has a charm of its own which already goes far to indemnify for any want which may be apparent of that mastery of *finesse* and power of inflection which are to be gained only by practice and long study, and has justly obtained for her the applause of a well-filled theatre on two occasions. On Saturday last at the Princess's Theatre, she was ably supported by Mr. Charles Warner as *Romeo*, and Mr. Sinclair as *Mercutio*; and on this Saturday, the 10th, she will essay the character of *Pauline* in "The Lady of Lyons," to Mr. Warner's *Claude*. We cordially wish her success in the intellectual and arduous profession on which she has entered with such high aims and earnest resolves. Our stage will have more such recruits by-and-by, and it will be the better not alone for the stage, but for the people.

St. Alban's Cathedral.—It is reported that the woodwork of the new high roof being completed and ready for fixing, the contractor has called on the Faculty Committee to decide on the covering, which was deferred in order to see whether an adequate amount would be specially subscribed for lead. This has not yet been done, but enough has been subscribed to induce them to run the risk, large as it is, of doing the work in the way that the subscribers generally desire, and they have ordered lead accordingly.

THE SYDNEY INTERNATIONAL EXHIBITION BUILDING.

We have before now mentioned the International Exhibition, to be opened in August next, in Sydney, and having illustrated in our pages all the Exhibition Buildings which have been erected since their origin in 1851, we give, as a matter of course, a view of the building which has been erected in Sydney for this purpose. The London offices of the Exhibition are at 3, Castle-street, Holborn. On the 7th of February, 1878, the Governor of New South Wales, with the advice of the Executive Council, directed the fact to be notified for general information that it was intended to hold an International Exhibition at Sydney, in August, 1879, under the supervision of the Agricultural Society of New South Wales. Medals and certificates will be awarded to exhibitors in nine sections—fine arts; apparatus of the liberal arts; furniture and other objects for use in dwellings; clothing, including fabrics and other objects of personal wear; products of mining industry, forestry, chemicals, &c.; apparatus and processes used in common arts; food, and cattle foods; artisans' section; school work. Australia is fifth on the list of purchasers of English manufactures; and New South Wales is the eleventh State in the world for revenue. The population of Australia is now 2,500,000, and the import and export trade is 70,000,000*l*. Captain Cook discovered the magnificent harbour of Sydney only a century ago. An import trade of about 6,000,000*l*. from the United Kingdom alone, and of 7,000,000*l*. from British Colonies, with an export trade of corresponding amount, is now conducted by means of this harbour. The exports from England in 1876 to Australia were 19,470,063*l*.

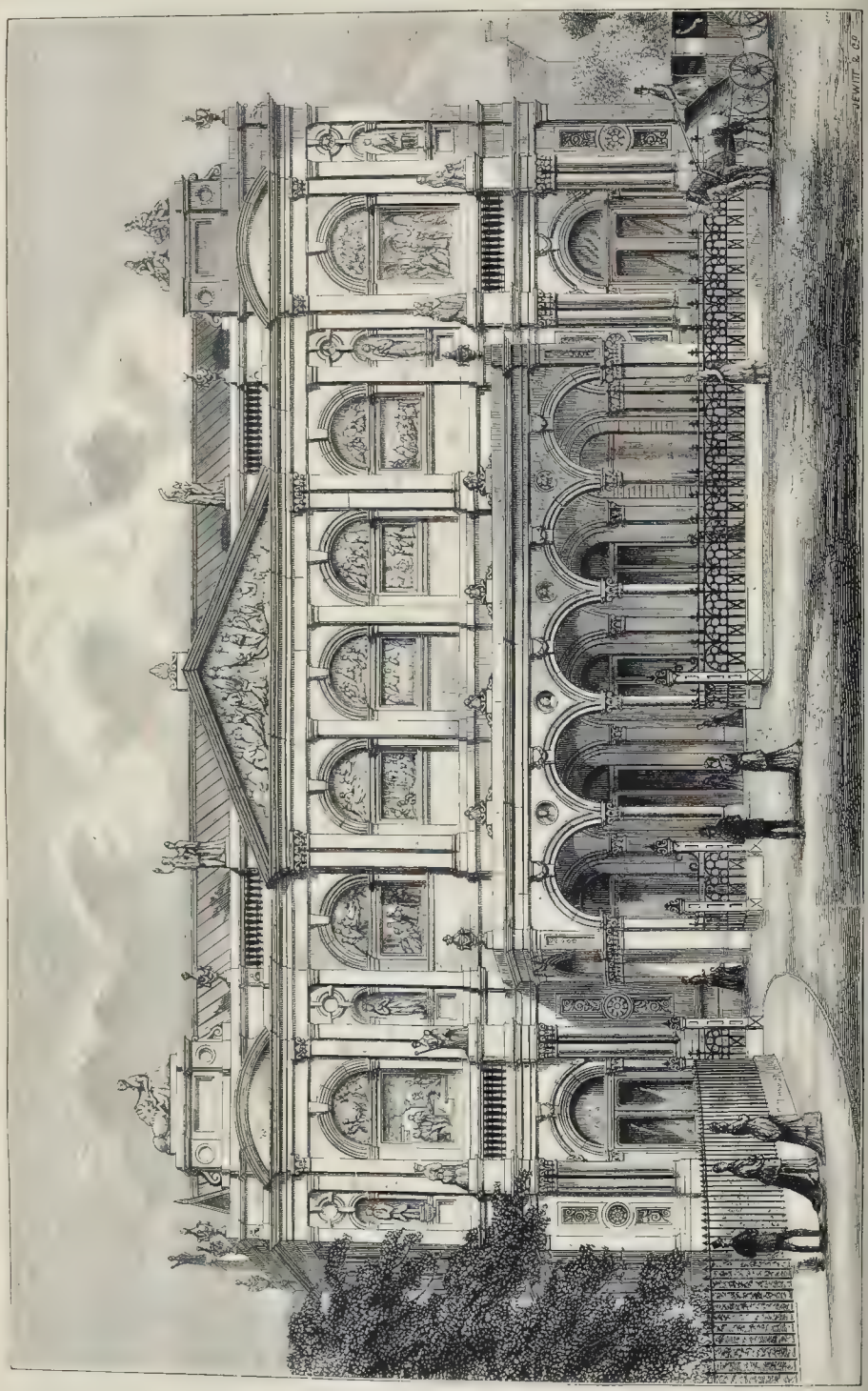
The building, of which we give an illustration, is built in the Inner Domain, and designed to suit a site of great natural beauty; overlooking the Botanic Gardens, the waters of Farm Cove, and the anchorage of her Majesty's Australian squadron; but, from its rapid slope, it presents considerable difficulties to the erection of a building suitable to exhibition purposes. These difficulties have been overcome by facing the building towards the north-east, following as far as possible the contour of the ground, and taking advantage of the fall to obtain on the north-eastern front—as seen in our view from the harbour—two stories, but at the rear, or south-western front, towards Macquarie-street and Governor Bourke's statue, one story.

In plan the building has a nave 800 [illegible] and transept 500 ft. long, 50 ft. wide, an[illegible] high; surrounded by a gallery 25 ft. wide o[illegible] side, and of similar length, are aisles 50 f[illegible] and 25 feet high; and on the south-[illegible] side what may be termed annexes, or co[illegible] tion of the aisle, 450 ft. by 100 ft., 25 ft [illegible] on the north-eastern side a basement [illegible] 1,000 ft. long, 75 ft. wide, and 20 ft. hig[illegible] the intersection of nave and transepts [illegible] dome, 112 ft. diameter, and top towers [illegible] square at each of the four main entrances [illegible] the horizontal line of the structure, are [illegible] afford a fitting although temporary ho[illegible] the rare examples of industry and art f[illegible] various quarters of the world and our [illegible] bouring colonies. The total floor-space p[illegible] is 7½ acres; the basement, 1½ acre; [illegible] floor, 4½ acres; and the galleries, 1½ acr[illegible] building is designed so that it can be [illegible] or extended if necessary without marr[illegible] effect. The basement is lighted from lof[illegible] windows, the aisles and annexes from th[illegible] the nave and transepts from the cle[illegible] and the whole ventilated by a novel a[illegible] ment for the delivery of fresh air vertica[illegible]

Water is laid on all round the building [illegible] and in, with ample power of extinguish[illegible] on its first appearance. The electric li[illegible] been used to enable the workmen to p[illegible] night and day, to complete the building i[illegible] The design is by Mr. James Barnet, the [illegible] architect, under whose superintendenc[illegible] structure is erected.

The foundation, constructed of brickw[illegible] surmounted by a superstructure of [illegible] columns, roofed and enclosed with iron[illegible] and wood, the materials being so dispose[illegible] suffer the least waste, and with a view t[illegible] being utilised again when the building [illegible] moved. The erection was undertake[illegible] Mr. John Young, with the co-operatio[illegible] assistance of Messrs. Hudson, Broth[illegible] Sydney.

All the space available for the United [illegible] dom has, we believe, been applied for [illegible] last meeting of the London Committee [illegible] importance of urging upon exhibitors the [illegible] sity of arranging, without delay, for th[illegible] ment of whatever is intended for the Exh[illegible] was referred to, it being stated that [illegible] immediately notified the Orient Ste[illegible] Company would be unable to provide a[illegible] notice the necessary tonnage, or to arra[illegible] one or more extra steamers should s[illegible] required.





THE SYDNEY INTERNATIONAL EXHIBITION BUILDING.—Mr. James Barnet, Architect.

CERNING THE FABRIC OF THE HURCH AND THE FORM THEREOF, ROM THE EARLIEST AGES TO THE ND OF THE ELEVENTH CENTURY.*

HE title of this paper may seem to some er too comprehensive as to the first part, rather too abrupt as to the ending, objec- reasonable enough, but as this is the first al working meeting of the society, it has thought more advisable to give a rough general outline of the subject, so that certain nt points may be carried in your minds, er than to dwell upon details which can be ered hereafter; and, secondly, as to the rent abruptness of the ending, the history be taken up by others at the point men- d in the title, and most probably dealt with far more detailed manner than it is possible here.

e bear the name of the St. Paul's Ecclesio- al Society, and our intention is to study siology in all its branches. This word, se root is *ecclesia*, is derived from the Greek pound of ἐκ and καλέω, and in St. John's el, xv. 16, we find the term ἐξελέξαμην, h we have translated as "I have chosen " perhaps better defining the actual ning of the word than the first aorist of λέω ἐκαλεσα, "called forth, summoned," hence this word "ecclesia," now generally rstood as meaning, in its first sense, the ch and body of the faithful; and, secondly, fabric where they assembled.

the Old Testament there is no record of temple dedicated to the service of the ighty before the age of Solomon. The itic race during the patriarchal age was adic, each tribe being really one large ly, the head of which offered sacrifice for rest, and altars were erected wherever in course of their wanderings they found ure and water for their flocks and herds; when Israel went down into Egypt and rned there, it was not until they had been ght out into the wilderness that the taber- e and its services were first ordained ac- ing to the pattern shown unto Moses upon Mount, and so it remained until the of David, who, as he sat in his house edar, first conceived the idea of building temple which Solomon, his son (B.C. 1015), wards carried out. In 2 Chronicles vi., account is given of the solemn dedication of temple, and in that magnificent prayer of dication there recorded do we find shadowed the use of the church when the old law been replaced by the new, how deep and ificant is the meaning which we now attach is words.

the form and appearance of that temple, ugh its dimensions and ornaments are all inutely described, nothing is known of a inty. It might have borrowed forms from ot,—the vast propylæa, the outer courts and bers surrounding the inner enclosure and point rather to Thebes or Karnac; or it have copied Assyrian or Chaldean forms, h is the more probable.

utterly had it been given over to destruc- that at the commencement of our era ing remained. The temple at Jerusalem hich our Lord taught daily was of a far ent character. Greatly enriched and tified with superb additions by Herod, it out the shadow of what it once was, and nce had even gone forth against that that ne stone was to be left upon another.

though after our blessed Lord's ascension oly apostles were still to be found pro- ing the Gospel among its colonnades and cos, and although they still frequented and nded the law in those smaller assemblies n to this day by the name of synagogues, was on that "upper chamber" at Jeru- that their thoughts were centred, as detail of that memorable paschal supper the divine ordinance which followed it ne indelibly fixed in their hearts as the ght of how the bread was broken and the taken and blessed, and those mysterious s uttered, so soon to become, by the sacrifice alvary, of such deep and significant mean- it is to that upper chamber, where all this taken place, that in turn our thoughts should irected as the first visible church of the Testament.

llow the history of that infant church:

*Read before the St. Paul's Ecclesiological Society, on esday, April 23rd, by Mr. George H. Birch, Hon. of the London and Middlesex Archæological Society.

again and again do we find reference to an upper chamber. When the cloud had hidden their Lord from them on the top of the Mount of Olives, it was to the upper chamber they first directed their steps, in the first chapter of the Acts (v. 13), and again in chap. xx. 7, 8, where it is said,—"the first day of the week when the disciples came together to break bread," it "was in an upper chamber, and there were many lights." Such were the first surroundings and the first type of the fabric of the church, a place not to meet in for the purpose of expounding the law, or of simply hearing the word preached; it was a place where the first Eucharist had been offered, and which was to be continued *daily* by those who followed the Apostolic doctrine.

It will be hardly necessary to advert to the form or decoration of such a chamber; we do not require antiquarian knowledge to tell us that it was the "guest chamber," and therefore the best. Holy Writ tells us that, and this type, which had its origin at Jerusalem, spread with the knowledge of the Gospel throughout Syria and into all lands. In Rome itself, where the Apostles SS. Peter and Paul laboured, we have this room alluded to, in the Epistles; it is there called "the Church which is in the house of Priscilla and Aquila." Now this phrase, the "Church which is in the house of," means something more than that body of Christians meeting under the roof of some wealthy convert to Christianity; it probably means the oratory or room in which the divine mysteries were celebrated. But at this period persecution after persecution sweeps over the infant Church, and these little assemblies of the faithful are dispersed; so searching and so rigorous are these persecutions that above ground it is no longer possible to meet with safety, and in the gloomy and tortuous recesses of the catacombs, in fear and trembling, are gathered the remnants of Christ's flock, ostensibly to pay the last duties to those bodies of the holy saints and martyrs whose life-blood had been shed to grace the triumph of an imperial monster and to gratify that craving and lust for blood without which the sports of the arena were tame and spiritless to the Roman people. This hiding-place among the tombs and galleries of the catacombs becomes the second type assumed by the Christian Church. The tomb of the saint becomes the altar, and the vision of St. John the Divine is realised on earth. "I saw under the altar the souls of them that were slain for the Word of God, and for the testimony which they held: and they cried with a loud voice, saying, How long, O Lord, holy and true" (Rev. vi. 9, 10).

Of the danger incurred by the Christians in thus meeting we find several instances, as witness that noble reply of Justin Martyr to the Prefect Rusticus, who inquired of him, "Where did the Christians assemble?" "Where they wish and where they can: do you think we always assemble at the same place? The God of the Christians is not confined within an enclosure, but he is invisible, and fills heaven and earth."

Now there is one curious characteristic connected with these subterranean oratories which must not be passed over in silence. We hear much in these days of simplicity of worship, and the recent storm which was raised when the question of properly and richly decorating our own cathedral church of St. Paul will be fresh in our minds; but here, these underground sanctuaries of the very infancy of the Christian Church, we find adorned with frescoes. The execution may be rough, and the drawing of the figure imperfect, yet there they are unmistakably Christian, and contemporary with others in the same catacombs of Pagan origin. You see, therefore, that notwithstanding the persecutions which had compelled the congregation of the faithful to flee to these dark recesses, the tradition of the "upper chamber" was still preserved, and they tried, as far as their scanty means would permit, to make His sanctuary glorious.

But leaving this subject of the decoration of the church to be treated hereafter in a fuller and more comprehensive manner, we must revert to the architectural form which these oratories assumed.

As the traditional ornamentation of the upper chamber had been impressed upon the chambers used by the early Christians in the catacombs, so in turn did these underground vaults exercise an influence upon religious architecture when Christianity was able to emerge from them into the full blaze of sunshine. Hence the origin of those vaulted crypts so often to be found here and on the Continent. In Rome churches were built exactly over these spots which contained the tombs of the Holy Martyrs. San Martino was built over the subterraneous chapel where the body of the Pope Saint Sylvester reposed. Santa Prassede, San Lorenzo, Santa Croce, San Sebastiano, San Paolo, *fuori le muri*, and last, but not least, the huge basilica of S. Peter, were all over the tombs of the several saints to whom they are dedicated.

In those first centuries of the Christian era, when the blood of the martyrs became the seed of the church, there were intervals of repose, but the last great effort of Pagan malice, the persecution under Diocletian, was the most severe and extensive of all, for it even reached these shores, and St. Alban, the proto-martyr, became its first-fruits. During these intervals Christianity was reviled, as may be inferred from the writings of Juvenal, Pliny, Apuleius, and Tacitus, this last calling it a detestable superstition, but the underground sanctuaries had been exchanged for more commodious buildings above ground, probably the houses of the most wealthy, such as the house of Clemens, of the Gens Flavii, an old consular family, known now as St. Clement, the third successor to St. Peter in the see of Rome, on the site of which now stands the very ancient Church of St. Clemente, and partly under which have been discovered the remains of a still earlier, probably the original. The house of Pudens, where St. Paul lodged on the two occasions he was in Rome, before he lived in his own hired house, now the church of Santa Pudenziana or Pudentilla, the daughter of Pudens, incorporated in the present portions of the original house; therefore that apostolic saying, "the church which is in the house of," as before alluded to, was no empty phrase. It is not likely, or probable, that any building erected by the Christians for the purpose of specially celebrating the Divine mysteries would have survived the persecution under Diocletian. That they did possess churches we know, because in the account given of the martyrdom of St. Laurence reference is made to the prefect visiting the church, expecting to see there the vessels of gold and silver in which he had been informed they offered libations, and also the golden candlesticks in which they burnt their tapers; and when Galerius persuaded Diocletian to issue his infamous mandate at Nicomedia the very first thing done by the prætorian guards was to pull down the church erected by the Christians, and to destroy every copy of the Scriptures.

Having thus arrived at a turning-point in Rome, let us look back at Jerusalem. Prophecy had been fulfilled,—not one stone of that temple had been left upon another; Vespasian and Titus, the instruments of Divine wrath, had utterly destroyed it; and those few of the inhabitants who had escaped from the general massacre had been dispersed into all lands. The account given by Josephus of those last days of Jerusalem is a very fearful one. Eusebius tells us that the Christians in Jerusalem had received a Divine intimation to leave the city, and to retire to Pella, a small town on the other side of Jordan.

But the cities of Asia Minor and Greece, Antioch, Laodicea, Athens, Corinth, Ephesus, and others, all possessed Christian churches, although nothing before the commencement of the fourth century can now be actually identified. It was the accession of Constantine to the imperial throne which changed the face, as it were, of the world, and is the turning-point in its history, to whose reign we must look for those first manifestations of Christian architecture.

Marvellous as were the productions of ancient times in this art, as exemplified in their temples, yet Christianity would have nothing to do with them; and even when Christianity became universal the temples of the heathen were not used for their worship. St. Paul had stood and preached on the Areopagus; he had seen the most beautiful temple of the old world, the outcome of the refined intellectuality of the Greeks, the Parthenon, or the Temple of Pallas Athene, in all its pride of position and magic sculpture of Pentelic marble; he had wandered through the sacred groves of Athens, the violet-crowned, wholly given to idolatry, and had preached from that text inscribed on one of the numerous altars of that too superstitious city,—Ἀγνώστῳ Θεῷ, "TO THE UNKNOWN GOD." At Ephesus, for the space of three months, he must have passed daily the

porticos of the Temple of Artemis, with its sumptuous sculptured columns, Diana of the Ephesians, the great temple of Aphrodite at Corinth, and finally he had seen Rome in her magnificence, the baths and temples and triumphal arches, amphitheatres, and the Golden House of Nero, which, even now, in their ruined grandeur, strike us with awe and admiration. The holy apostles and their successors had seen all these glories of the old world, and had turned from them as things offered to idols, and would have none of them. It has been reserved for us and for our times to revive in a Christian church the portico of a temple of Bacchus, to add to its sides the caryatides of a temple to Erechtheus, and to crown it with the temple of the Winds or wingless Victory, and to decorate the exteriors of others with the skulls of oxen. Constantine removed the seat of Government from Rome, as if that city was too deeply stained with heathenism and its hideous memories, and founded at Byzantium a new Rome, known as Constantinople, and it is to these and to Asia Minor that we must look for those buildings that are purely indigenous to Christianity, rather than to Rome, where buildings would be necessarily adapted rather than originated.

We are now brought, then, face to face with these two types of architecture, at their first point of divergence, as distinct as are the two great branches of the Church Catholic, the East and the West, who adopted and developed these types; and it is to the latter that we must look for the types adopted for our architecture in England, although the East exerted no small influence on our Liturgy, and can be traced even in our architecture.

As they were contemporary, it matters little which we first consider; but as, perhaps, the Western exercised the most influence, we will take that first.

Now, among the many sumptuous buildings of ancient Rome, there is one particular class which offered to the early Christian Church certain advantages of plan and arrangement suitable to its wants, and which was also free from the pollution of heathen rites. This class of building was called a Basilica: the origin of the word was Greek, but why it was applied to these buildings no satisfactory reason can be found; it was generally used in connexion with another Greek word *Stoa*. There were several of these in Rome (two in the Forum), and were used as law courts and places for transacting general business; the most simple form was that of a long parallelogram, with one or two rows of columns on each side, and an apsidal recess sometimes only at one end, sometimes at both. This was the form adopted by the Western Church, in preference to any other, as it lent itself more easily to its requirements.

It is supposed that the name "basilica" was adopted from the Greeks at Athens, whose second archon was styled *ἄρχων βασιλεύς*, and the tribunal where he adjudicated *στοά βασίλειος*, situate in the Athenian Ceramicus, immediately beneath the Pnyx. According to Livy, it was not introduced into Rome until B.C. 182. In the centre of the apsis was seated the quæstor, or prætor, in a currule chair, with seats each side for the assessors, or judices, and in advance was the altar for libations. St. John (xix. 13) alludes to this as Gabbatha, or Lithostroton, the "pavement." The ranges of columns extending down each side of this hall were not always closed in by walls, nor was it universally roofed. No secular basilica remains now, with the exception of the one at Trèves, in use as a Christian church. The early Christians adopted the form, but not the actual building, although the same conscientious reasons which deterred them from adopting the temples could not apply.

The Pantheon at Rome is the only exception to this rule as to heathen temples. It was not originally a temple, but the hall of some large baths built by Agrippa, although undoubtedly afterwards used as a temple, and a portico added. When first used for a Christian church is uncertain,—probably not in the first ages of Christianity.

To assimilate the basilican plan for Christian requirements certain modifications had to be made to meet them, and they were carried out in the following manner. First, the three orders of the clergy had to be provided for, bishops, priests, and deacons; next, the general body of the faithful, men and women; and, lastly, the catechumens, or those who had not been received into the full fellowship of the church.

In the apse, or semicircular projection at one end, usually the west, was seated the bishop, and on each side of him the presbyters or priests, facing east in front of them, a little in advance of the chord of the apse, was the altar; between the altar and the body of the church, was the place for the inferior clergy or deacons, where the ordinary services, other than that of the Eucharist, were conducted; then came the congregation, the men on the south side, the women on the north. If the church possessed a narthex, or pronaos, the catechumens and penitents were located there. This narthex was an outer court, or portico, with three doors of entrance into the church; if this architectural arrangement did not exist, a curtain or veil separated the catechumens from the general body.

In celebrating the Eucharist the bishop or priest stood on that side of the altar, with his face towards the congregation and looking east, a position which for eighteen centuries has never varied, while the position of the congregation has been exactly reversed. At St. Peter's, the Pope, when he celebrates at the high altar under the dome, does precisely the same as his predecessors fifteen centuries ago.

In the East, where the basilican plan, although used, was not, from various causes, universally adopted, perhaps from liturgical reasons, most probably from that freedom which the great metropolis of the Christian world, Constantinople, wished to assume in the matter of architecture, desiring rather to found a style entirely free from the taint of Paganism than adopt one associated with it, however remotely; but Constantine did not entirely dispense with the basilican arrangement.

The main feature of this style introduced by Constantine was covering vast spaces by one huge vault or dome, out of which opened lesser half domes, and in the Church of St. Sergius, at Constantinople, and again in that ancient cathedral of the Christian world, the Church of the Holy Wisdom or Santa Sophia, now alas! in the hands of the unbelieving Mahometan, to the scandal of Christendom. This feature of vaulting is carried out almost to an excess. At Ravenna, in the Church of San Vitale, we find a similar complex arrangement of vaults, but the most usual and most simple plan adopted by the Eastern Church was that of a Greek cross of four equal arms, with a dome at the intersection, often square-ended, and sometimes triapsidal, that is, having three apses or semicircular recesses at the east end. Unlike the Western in this particular, the divine mysteries were celebrated behind a solid stone screen, pierced with three doors, the centre being the largest and widest, and provided with curtains. The altar, or, as the Greeks call it, the throne, stands in advance of the apse, but during the prayer of consecration the doors of the screen or "iconostasis" are closed, and the veil drawn. The space behind the screen is called the *ἅγιον βῆμα*, and the term "altar" is applied not to the actual altar, but to the whole of the space behind the screen. The arrangement of the seats for the bishop or patriarch, and priests or elders, was the same as in the West; on the left of the central apse was a smaller one, containing the table of the Prothesis, answering to our credence. On the right hand a similar apse was termed the Diaconicum, and corresponded to a vestry or sacristy. In front of the iconostasis was a space railed off for the singers and lesser clergy; beyond were the congregation, and, like the Western church, provision was always made for the catechumens by a narthex or pronaos.

In these two leading types, both of which have survived to this day, and are in common use, one can trace the influence exercised by the ancient liturgies, and it is natural that in the East, where necessarily the use of the liturgy of St. Mark, or St. James, the first bishop of Jerusalem, and other ancient liturgies, such as those of SS. Basil and Chrysostom, would be general, certain traditions of the Temple at Jerusalem, with its veil and holy of holies, would slightly influence the ritual arrangements.

In the foregoing remarks, it has only been possible to summarise, as it were, the two leading types of church architecture; much has been necessarily left out, especially the descriptions of ancient churches and their contents as described by Eusebius and others; but those who are curious on this point cannot do better than consult that before-mentioned great father of ecclesiastical history.

The second head or division on which we must now dwell is, "How far, and to what ext these types of the visible Christian Church a fabric existed here in England and in sister isle?"

The old tradition that Christianity was brought here by the patron saint of our cathedral, that great apostle of the Gent St. Paul, and St. Joseph of Arimathea, is which, however one would like to believe it, quires a little more evidence before it can taken implicitly.

Christianity was preached here at a early period, there can be little doubt, whether its introduction was due to apost labours, or whether it was introduced by sionaries from Gaul subsequently to the tim the apostles, the most probable conclusion, not detain us now.

That our own city of London was, eve those days, no mean or contemptible city have the authority of Tacitus, "Londini copia negotiatorum et commeatu maxime berrimum." (London, famous for its merchants, and the abundance of its provisic But Eusebius states that at the council hel Arles, A.D. 314 (Hist. Eccl., lib. x. cap. Eborius, bishop of York, which, with all deference, to Eusebius, must mean, not the n of the man, but that of his see, "Ebor," Eboracensis, Restituus, bishop of London, Adelphius, bishop of Caerleon, were all pres that fact alone showing that Christianity so far universal that even in those early ti London was possessed of a cathedral, and the whole country was mapped out for e siastical purposes, and they were also summ to attend at Nice, 325; Sardis, 347; and A nium, 359. There is something glorious in idea that a bishop of London was one of t who drew up that mighty confession of f the Nicene Creed.

St. Helena, the Empress-mother of Cons tine, generally supposed to have been a Br princess, doubtless favoured the land of birth, and the Roman city of London prob possessed several churches other than cathedral, but the utter ruin which fell London after the withdrawal of the Rom and the long struggles with the Picts and S and afterwards with the Saxon hordes, e in the total expulsion of its Christian inh tants. Theonus, archbishop of London, Theodicus, archbishop of York, fled with clergy and people into the wilds of Wales Cornwall, to the shores and rocky coas Brittany, and to Ireland.

But we have some traditions here in Lo not to be utterly ignored. St. Peter's-u Cornhill sets up a claim for remote antiqu and again with regard to St. Helen's, Bish gate, what could have been more natural that the early Christians of this city sh have dedicated a church to her to whom owed so much? That portion of London, outside the limits of the Roman city, was a wealthy quarter, as the numerous remain tesselated pavements of villa residences s And why, lastly, was our cathedral ch dedicated to St. Paul,—a very rare dedicat These questions are very suggestive, and all point to a very remote and early perio Christianity, some centuries before St. Augu and his monks ever reached these shores. whatever this primitive type of church arch ture and arrangement was, the succeeding centuries of Paganism, when the worshi Wodin, Thor, and Friga replaced Christi for the time, had so utterly obliterated it at the advent of St. Augustine it existed al in tradition only. Ireland, whither St. Pa had fled,—for the patron saint of the Eme Isle was himself a Briton,—has preserved very ancient stone structures dating from t times. The plan of these is generally a p lelogram, divided into two portions by an a but the workmanship is so rude that it is bably the reason why so simple a plan adopted, and one which could easily be buil rude and inexperienced workmen.

Wales possesses a great number of very churches, consisting of only nave and cha almost invariably square-ended. In Corn although showing traces of the early Ch especially in the curious dedications to sain essentially British origin, the churches nearly all been rebuilt in later times.

Brittany, again, another place of refug the early Christians, although full of monum of an age still more remote,—the megalith has nothing that can positively be identi Perhaps Lanleff may be; if so, it is an ex

the rule, being circular. Some excava- at the Reculvers brought to light the plan exceedingly early church; but this, from sition in the midst of a castrum, would bly be Roman, and the same may be said church of St. Mary, in Dover Castle, and other ancient church at South Elmham, Bungay, and again another at Castle —all these are within the precincts of n prætorian camps. The Reculvers had considerably altered before it was pur- ruined in the last century, but there is nt left to show what the original plan efore the additions in the twelfth and nth centuries.

basilican type is so apparent that some aries would have us believe that it was a a and not a Christian church. It has a livided from north and south aisles, not umns, but by piers or portions of the dividing the nave from the chancel were ofty arches, the centre being the highest, l on two detached columns. The chancel dal, with two small openings or doors nicating with chambers at the eastern f each aisle, corresponding to the pro- and diaconicum of a Greek church, and ole floor is a bed of solid concrete. At m there are no aisles, but the nave was at the distance of 27 ft. from the west olid partition, pierced by two narrow lofty and a central pier, the pronaos or nar- f the Greek church. At Castle Rising n consists of a nave, 41 ft. by 19 ft.; narrow arch, only 9 ft. wide, leading into el, 13 ft. square; then another arch, 9 ft. pening into an apsidal recess, 15 ft. by in.

he authority of the Venerable Bede, St. ine was advised by St. Gregory not to the heathen temples of the English, but remove the images of their gods, to e walls with holy water, to erect altars, posit relics in them, and convert them ristian churches, not only to save the s of building new ones, but also that the might be more easily prevailed on to nt those places of worship to which they en accustomed.

A.D. 602.

In this period we do possess authentic s of ecclesiastical architecture. ugustine, on his arrival at Canterbury, one ancient church in use,—that of St. for Bertha, the queen of Ethelbert, was tian, and another one in ruins, destined me the venerable mother church of every England, and the seat of the metropolitan shops of Canterbury.

church, as rebuilt by St. Augustine, as so conversant with the basilica of St. at Rome, would naturally present similar s, and accordingly we find, from the given of it by Eadmer, that it was a ; but, with one or two unusual features. essed both an eastern and a western apse; stern one contained the high altar, and stern, the altar of St. Mary. It further ed two towers,—one dedicated to St. y on the south side, through which was nce into the church, and another on the dedicated to St. Martin; these towers out in the centre of each side. It still carried out the basilican tradition in ing a crypt; and the bodies of SS. of York and Swithin of Winchester placed under the altars; and the chal chair in the western apse behind ar, so that the priest celebrating mass at ar of St. Mary had his face to the con- on. Of course, when the celebration ace at the other altar in the eastern apse itions were reversed, a change which has come universal, and which very probably rom this proto-cathedral.

was the first cathedral of Canterbury, a likely to exert an immense influence on er churches of the converted Saxons out England, and to be adopted as a type, such manner did it exist until 1067, when otally burnt by fire.

cathedral church of St. Peter at Win- dates from a period even more remote at of Canterbury. Lucius, king of the , a personage whom some consider purely al, although constant reference is made in very ancient records, founded it 64, and dedicated it to our Saviour 39; from the authority of Moracius, an n whose works are now lost, we have a circumstantial account of its size, two Pagan temples are spoken of as being in close proximity—Concord and Apollo. The city was then called Kaergwent, afterwards Winton or Winchester. This church was totally destroyed during the persecution under Diocletian, but was rebuilt A.D. 293, and rededicated to St. Amphibalus, but on a smaller scale. It fell under the power of the Saxons, and for the period of 142 years was a heathen temple. St. Birinus, who converted this part of England forty-one years after St. Augustine, was instrumental in getting it rebuilt and rededicated (for the third time) in honour of the Holy Trinity.

St. Swithin, who died A.D. 863, was interred, according to his own injunctions, outside this church, and Wolstan in his life of him says that a tower, capped with a roof, and of the greatest magnitude, stood before the lovely entrance of the holy temple; between this and the sacred nave the body of the saint was interred, for he thought himself unworthy of being buried within the church. But it was again rebuilt and rededicated to the holy apostles St. Peter and St. Paul, by Athelwold, consecrated bishop A.D. 963. This bishop was a great builder of churches. Ely and Medeamstede, afterwards called Peterborough, and Thorney, all experienced his benefactions. Wolstan gives a poetical description of this church and of its dedication in A.D. 980, which will give a fair idea of its magnificence; and yet scarcely a century had passed when it was once more destroyed, and the present one erected by the side of it, by Bishop Walkelin. York, Worcester, and St. Paul's have similar histories attached to them of buildings and rebuildings, and these instances are given to show that architecture in Saxon England was anything but a stationary art, and that these churches were built of stone, and possessed aisles and chapels, triforia and clearstories, and central and other towers, and that the only reason why in these days we cannot absolutely fix upon any portion of our bigger minsters as being Saxon is that each age pulled down the work of the preceding one, only to replace it with something better; but, to dismiss Saxon architecture altogether, and to argue that it never existed, and that the buildings were of the rudest description, and generally built of wood, as some authorities do, is a manifest absurdity and a wilful shutting of one's eyes to documentary evidence so clear and so precise. Thus what can be clearer than the following description of the cathedral at York, given by Flaccus Alcuinus?

But a new structure of a wondrous basilica was in the days of this bishop (Egbert) begun, completed, and consecrated. The house, of appropriate altitude, is supported by solid columns set under curved arches. Within it sparkles with admirable ceilings and windows, and in its beauty shines environed with many aisles (or apsidal chapels). It has a great number of apartments with distinct roofs, which contain thirty altars, with various ornaments. Two disciples, Eanbald and Alcuin, at the command of the prelate, erected this temple, and he himself consecrated it to the "Alma Sophia" ten days before his death.

It has been observed that the plan adopted by the Anglo-Saxons was invariably the basilican; but certain modifications began to be apparent, both in the structional plan and in the ritual arrangements. The growth of monasticism had a good deal to do with this: the necessity of a long choir, to accommodate a number of monks, and the consequent seclusion of their altar, their part of the church being screened off, necessitated the provision of an altar for the laity, either outside the screen or in some chapel especially set aside for that purpose. The cross was very strongly marked in the ground plans. The projection of the transepts brought this into greater prominence, but these changes only affected the large cathedral churches and monasteries; the smaller parish churches were still constructed on a modified form of the basilican type, with or without aisles.

At Brixworth we have the remains of a Saxon church, now considerably reduced and modified, founded by Saxulphus as a cell to Medampstede (Peterborough), *circa* A.D. 700. The plan consisted of a nave of four bays, with north and south aisles, a choir with two short aisles only half its length, and a semicircular presbytery beyond. The arches are quite plain, and are supported by square piers, or rather portions of the wall, for the pier is of the same size as the opening; the aisles have been destroyed, but the foundations yet remain; they opened into square chambers at each end, communicating with the western tower and the choir; an arch separated the nave from the choir, and the choir from the presbytery, and a similar arch existed at the west end, opening into the tower. It very much resembles the church of the Reculvers. Roman brick is extensively used in both these churches. The similarity between the two buildings is so striking that we must either reject the Reculvers as being Roman, or Brixworth as being Saxon, and the evidence being so strongly in favour of the former, it is most probable that the foundation by Saxulphus was only a refoundation.

Scattered throughout England are certain other architectural remains to be found in about 120 churches; these remains are supposed to be Saxon, and they generally consist of rude balusters, shafts, angular straight-sided arches, flat strip-like pilasters, corner stones alternately long and short, masonry disposed in what is called herring-bone fashion, and doorways with plain stone semicircular arches, without any mouldings or enrichments whatever. Sompting, Barnack, Deerhurst, Earl's Barton, and S. Benet, Cambridge, are all in this style, or show decided traces.

But we have a remarkable corroboration of the richness of these Saxon buildings in many of the beautiful illuminated manuscripts of the same period. They represent very often buildings showing all the characteristics of a style called now Norman. Take as an instance the "Benedictional of St. Ethelwold" now in the possession of the Duke of Devonshire, and in these gorgeous pages we find in the borders and in the miniatures columns and capitals of which we can easily find the prototypes.

This book had been ordered by St. Ethelwold of a certain monk subject to him, one Godemann, and in a part of the metrical dedication occurs this passage:—"He ordered also to be made in it many arches elegantly decorated and fitted up with various ornamental pictures expressed in divers beautiful colours and gold." Ethelwold, or Athelwold, has been referred to in the history of Winchester Cathedral as a rebuilder of that and also of Peterborough, Ely, and Thorney, and the date of this book must therefore be between the years 963 and 984; and on the last page is represented a bishop,—probably St. Ethelwold, or his predecessor, St. Swithin,—giving the benediction, and at the top some architectural details, especially a very graceful bell-tower, surmounted by a weathercock, showing the bells; and Wolstan, whose poem has been already referred to, thus speaks of this very tower:—"A sparkling tower, which reflects from heaven the first rays of the rising sun. It has five compartments, pierced by open windows, and on all four sides as many ways are open. The lofty peaks of the tower are capped with pointed roofs. Above these stands a rod with golden balls, and at the top a mighty golden cock, which boldly turns its face to every wind that blows."

But we now approach a period always looked upon as a turning point in our history, that is the so-called Conquest by William, Duke of Normandy,—no more a conquest than that of another William, of Dutch extraction, at a later period of our history; and according to almost universal authority, we are called upon to believe that in a short period of about fifty years every ecclesiastical building in the kingdom was either wholly or partially rebuilt, and that the architecture of Saxon England was entirely destroyed; thus disposing of all the great cathedrals, and equally great abbeys, and some thousands of parish churches. It might have been so, but does it seem likely? Was the state of society sufficiently tranquil to allow of this? or sufficiently wealthy to afford it? Let others answer this as they can, but the impression must remain upon the mind of all who consider this question, that in nine cases out of ten these pompous and eulogistic descriptions of the universal rebuildings by Norman bishops and abbots were nothing more than recasings or remodellings of existing structures, and that we still possess in most of them the shell or carcass of the original Saxon work overlaid with later enrichments and embellishments.

A.D. 1066 to 1100.

No modification whatever of the existing plan adopted by the Saxons, that is the basilican, with transepts, and aisles, and apses, with surrounding aisles and chapels for the larger churches, and naves, with or without aisles and chancels and western tower for the

ordinary parish churches, took place on the change of dynasty; but there was one feature which soon became universal, namely, vaulting after the Roman manner, that is, without diagonal ribs, at first only over the aisles and chapels, the main roof being still of timber, according to the old basilican tradition. The principle of this vaulting was that of two barrel-vaults intersecting one another at right angles, a principle known and practised long before by the Romans. The semicircular arch is universal; the capitals of the pillars are of that character called cushioned cap; the bases are plain, generally only of one member; ornament is at first sparingly introduced, although as the century approaches the end it becomes redundant, giving to the so-called Norman style a richness scarcely equalled, and never exceeded, by the successive styles. The piers, which were before nothing more than one or two plain orders in the arches carried down to the ground, and separated from them by plain chamfered strings, become now pillars, the arches of the triforia, instead of being of one opening, now having two or more arches grouped under one containing arch; and the clearstory, instead of having one window perfectly plain and only splayed internally, is enriched now in the inside by being placed in a sort of triple arcade; a greater use is made of wrought stonework, the rough walling now being universally ashlared,—that is, covered with a casing of wrought stone blocks. The larger churches are generally adorned with three towers, sometimes more, and are surmounted by high pyramidal roofs covered with lead. The external doorways now become of several orders, each differently and highly enriched. Figure sculpture of a rude and archaic character, interspersed with gryphons and dragons and rude foliage, now adorns the capitals; and, lastly, two very characteristic enrichments, the chevron or zigzag and the billet. The walls are always of an enormous thickness, and the buttresses are of only a very slight projection.

In the small parish churches the chancel arch, which is often very narrow, has sometimes two smaller arches on each side, and, following a primitive tradition, the chancels are generally square-ended. This square end is undoubtedly an ancient British custom, perhaps one of those traditionary rules derived from the Eastern Church before Roman colonists or missionaries introduced the apse, and in the low chancel arch, and the two others, as at Barfreston, there may be just a faint reminiscence of the iconostasis and its triple doors.

Kilpeck, and one or two other churches in the county of Hereford, have this peculiarity of plan, a square chancel, and a second arch opening into an apsidal recess, resembling the churches at Brixworth and South Elmham. In the great churches at Caen in Normandy, built by Duke William and his consort Matilda, called respectively the Abbaye aux Hommes and the Abbaye aux Dames, we might have had a good opportunity of comparing these buildings with the work at Winchester, St. Alban's, and Rochester, but these Normandy examples have unfortunately undergone some very material changes since their first erection, and recent researches now prove that very little remains of the originals,—the twelfth century having remodelled them. The addition of the vaulting also has entirely changed their appearance, for the original roofs were of timber. In the chapel of St. John, in the White Tower, we shall find a very early and very pure specimen of Norman architecture, and again, in the substructure of the dormitory at Westminster Abbey, some early Norman work, the latter being very similar to the transepts at Winchester. These two examples we shall hope to have the pleasure of seeing on Saturday next, our first field-day, when a personal inspection will give you all a better idea of the characteristics of the style than the mere dry description given here.

No attempt has been made in this paper to enter into the subject of symbolism, and how far it influenced Christian architecture, neither has the subject of the decoration of these buildings been touched upon; both are subjects to which your attention will be hereafter directed; but from this point at which we have arrived carry your mind back through the thousand years which have elapsed from our starting-point, and mark how carefully primitive tradition has been handed down from age to age. The outer forms and architectural ornament may have changed and varied, the constructive skill may have improved as the principle of the arch became better understood and better applied; the pure Pagan style of ancient Rome, with its columns and horizontal entablatures, gradually develop into a pure Christian style under Constantine; then the partial eclipse of art during those dark ages, only to shine forth again under Charlemagne, in Western Europe, and under St. Wilfrid here in Saxon England; and yet how little have all these changes influenced the plan of the fabric, for in the Saxon and Norman cathedral or church we can still trace the arrangement of the early basilica, with its colonnaded aisles and semicircular apse and wooden roofs. In the bigger minsters the cross may affect the plan, but does not materially alter it; the sober dignity of the upper chamber, the best room, is imparted to the church, the best building in the town or village; the solemn gloom of the oratory in the catacombs is reproduced in the vaulted crypts, and beneath the altars still repose the bodies of the saints. The atrium and the cloister are identical. The narthex can be traced in the galilees of Durham, Glastonbury (and Ely in a modified form), and in the porches of the smaller parish churches. The Christian altar is still the centre of worship, and where its highest acts are performed, and the apostolic doctrine perpetuated.

Christianity has stamped its seal upon this early architecture. These venerable churches could never be anything else but temples of the Lord. The stern and massive grandeur of a Norman cathedral or church strikes one as the very embodiment of the Christian faith founded on a rock. Her foundations are upon the holy hills:—

> "That upper room is Heaven on earth;
> Within its precincts lie
> All that earth has of faith or hope,
> Or Heaven-born charity.
> Those tongues still speak within the church,
> That fire is undecay'd;
> Its well-spring was that upper room,
> Where those twelve princes pray'd."

ELECTRIC LIGHT APPARATUS AT THE ALBERT HALL.

UNDOUBTEDLY the most complete exhibition of the capabilities of the several varieties of the electric light which has yet taken place in any part of the world is the one which, formally inaugurated on Wednesday evening last, in the presence of H.R.H. the Prince of Wales, H.R.H. the Duke of Edinburgh, H.R.H. Prince Christian, H.S.H. the Duke of Teck, and in the midst of a large and brilliant (in more senses than one) assemblage, will remain open until this (Saturday) evening. It was a happy idea on the part of the Council of the Royal Albert Hall to practically apply the electric light to the illumination of that unique building, and, as the Duke of Edinburgh observed at the close of the meeting, the Council should receive the thanks of the public and of the seatholders for their enterprise in the matter. The idea of holding a comprehensive exhibition of the powers of the electric light seems to have naturally ensued, and the suitability of the hall for such a display as that witnessed on Wednesday evening was apparent to all who were present. In and around the arena were fixed a number of lamps for exhibiting the different varieties of the electric light now before the world. Other apparatus of the most diverse kind, but all having some relation to the subject of lighting, was exhibited on benches placed between the various groups of lights, and in each opening of the arcade of the upper gallery was placed a Jablochkoff light. As Mr. Preece proceeded with his lecture the several kinds of light were in turn exhibited, generally without any hitch or *contretemps* whatever. The marvel is that with such a complication of wires, machines, lamps, and engines, everything went so smoothly. The labour of getting the materials together must have been very onerous, and the Council of the Royal Albert Hall owe much to the co-operation of the Society of Telegraph Engineers.

We cannot better introduce the subject than in the words prefixed to the programme by Mr. J. N. Shoolbred, C.E., who has materially assisted Mr. Wentworth Cole, the manager, in the arrangement,—no slight job,—of the various engines and machines:—

"The council, in this collection of apparatus in connexion with Electric Lighting, have endeavoured to make it embrace the entire scope of all applications into which electric light strictly enters; and likewise as completely representative as possible of all the various means hitherto devised for the producti the electric light by mechanical means. will, consequently, be found among the ex apparatus superseded by modern improve They will, nevertheless, be of interest, in ing the steps which have led gradually present, more or less perfected, invention was not until the electric current was able by mechanical means that the use light from it became at all general; its duction from the voltaic battery, owing costliness and the care required, having oc its use to the lecture theatre and to a few applications. The introduction of the g improved methods now employed for th duction of electricity by mechanical me due to the development of Faraday's disc in 1831, that an electric-spark cou obtained by causing a soft-iron bar, or having a coil of copper wire wound upo approach and recede from the poles of a nent magnet. This discovery, small tho seems, is the germ which, developed hand-worked machines of Pixii, of Sax Wilde, and others (some of which are in th sent collection), led up to the large e machines of Nollet, driven by a steam-e From these machines it was that, after modifications, Professor Holmes, in 18 Paris, first produced in a practical form tinuous and steady stream of electric Amongst the exhibits are some of the ty machines by means of which this inven troduced, in 1859, this brilliant lumina our lighthouses; to be closely followed Alliance Company of Paris with those French coasts. In 1867 the discovery simultaneously by Sir Charles Wheatsto by Dr. W. Siemens, of the principle of a tation of electric currents by the reac electro-magnets upon one another, added class of electric machines to those known; since the further necessity for nent magnets was thereby dispensed w the action of two electro-magnets upo other, it was found, by commencing w very feeble magnetism always latent iron-core, gradually intensified the current produced, a portion of it being backwards and forwards through the re cores until it became of very consi power. These machines, using electro-m only in their construction, are termed 'd electric,' in distinction to the earlier ones permanent magnets of steel are used, which the term 'magneto-electric' is From this date the successive machines of Siemens, of Gramme, and of others, single lights, followed in quick succession about 1875 Lontin, and, later on, G devised machines suitable for the produ many lights. It is from the last-name the well-known Jablochkoff candles are supplied; while the former is distinguis the method which bears the inventor's na of the systems of lighting just referre well as the Wilde and the Wallace-Farm be seen in operation in the interior of t and the first-named also round a portion corridors; while certain parts of the of the building, and of the adjoining will be illuminated by the concentrat emanating from a Gramme machine, a jected by a reflector attached to a Serri Most of the best-known forms of lamps, with the electric-light is produced, are i in the collection; which also contain sides, samples of carbons, conducting-wir other smaller appliances, examples of meters, and of other instruments for me the intensity of the light produced; or, cases, of the electric current itself."

The space at our disposal will not allo give at this time any detailed description exhibits, several of which have, indee previously described in our volumes. be of interest, however, to state that the tion includes the following:—

WORKING EXHIBITS.

West Arena Entrance.—Otto gas engine, 8-h.p. exhibited by Crossley Bros.; electric machine 2 "A," by British Electric Light Co.

East Arena, Covered Entrance.—Two Marshall's steam engines, driving four Gramme "A" machin ing approach to Hall, by India Rubber, &c., Co.; o and Steevens portable steam-engine, driving Farmer machine, by Anglo-American Electric Li Gramme "D" with "Brotherhood" three-cylinde complete on frame, by the War Office.

Engine-room: Electric Machines.—Siemens sin by Siemens Bros.; Gramme multiple light, by th Générale d'Electricité; Lontin multiple light, Harding; Wilde multiple light, by the Electric Co.

...ena of Hall are the following working exhibits :—
... Lights.—Siemens, by Siemens Bros.; Serrin, ...mann, Reynier, and Higgins, by British Electric ...ompany; Rapieff, by National Electric Light Cor...; Wallace, by Anglo-American Electric Light ...y; Iridium incandescent light, by Anglo-American Light Company; Jablochkoff, by Société Générale ...icité; De Meritens, by Edmundson & Co.; Wilde, ...lectric Lighting Co.

...STRATIVE EXHIBITS IN ARENA OF HALL.

...as-engine, 3½ h.p. driving, by Crossley Bros.
...ne machine and Werdermann lamp.
...ic Machines :—Sarton, by Royal Institution; ... (original magneto-electric machine), by Trinity ... Alliance Co. (magneto-electric machine), by ...louse; Holmes (original dynamo-electric machine), ...ity House; Gramme (magneto), by Ladd; Gramme ... "M" size, by India Rubber and Gutta Percha ...ilde's magneto, by Royal Institution; Siemens ...l dynamo-machine, shown before Royal Society), ...ons; Ladd (double armature) dynamo, by Ladd; ...e (single-light) dynamo, by Siemens Bros.; Siemens ...ht-light) dynamo, by Siemens Bros.; Gramme ...y-working Werdermann) dynamo, by British ... Light Co., Gramme (dividing-light), by Edmund... ; De Meritens (small machine) magneto, by De ...s; Schuckert dynamo, by B. Brain; Wallace... ... by Anglo-American Electric Light Company; ... dynamo-electric, by S. C. Tisley & Co.; Wilde's ...agnetic inductine, by The Electric Lighting ...
...c Lamps.—Regulators: Siemens (small size and ...se), by Siemens Bros.; Dubosc, by Trinity ... Holmes (original and improved), by Trinity ... Chapman, by H. Chapman; Serrin and Suisse ... by the British Electric Light Company; Serrin... ...a ordinary form, *b* for sixteen hours burning, ...arine size), by F. Suisse; Rapieff (four and three... ...rms and "Moderator"), by the National Electric ...rporation; Serrin-Lontin, de Mersanne, by G. P. ...; Wallace, Jasper, and others, by the Anglo... ...n Electric Light Company; Hand and inclined of ...l kinds, by the War Office; Krupp, by B. Brain; ..., by B. Brain; and De Fonvielle, by W. de Fon...Candles: Jablochkoff, by the Société Générale ...icité; Wilde, by the Electric Lighting Company; ...tens, by De Meritens; Rapieff, by the National ...Light Corporation; and André, by G. G. André.—...cent Lamps: Reynier, by W. Crooks; Werder... ... the British Electric Light Company; Higgins, ... C. Hill; Iridium light, by the Anglo-American ...Light Company; and Mining, by G. G. André.
...s.—Samples of manufactures of by Carré; Sautter, ..., & Co.; Siemens; India Rubber and Gutta ...ompany.
...ctric Apparatus.—Photometers, and 6-wick colza ...y lamp, by Trinity House; Bunsen photometer, ...odie sperm-oil lamp, by T. W. Keates; Bunsen ...ers, lamps, and standard sperm candles, by W. ...d Wheatstone photometer, by British Electric ...mpany.
...Apparatus.—Holophote, by War Office; light... ...ptric apparatus, by Trinity House; projector, by ... Brothers; Harding's velocimeter, by Siemens ...s velocimeter, by R. Applegarth; instruments ...e the use of the electric light in surgical opera... ...G. Trouvé; hand-lamp for use in surgical opera... ...B. Squire; Bracket-lamp for use in dental opera... ...B. Squire; Grieve's lantern shade or theatrical ..., by J. J. Calder; and Obach's galvanometer, ...ns Brothers.
...ing Wires and Cables.—Samples of different kinds ...electric lighting, by Siemens Brothers; British ...Light Company; G. P. Harding (Lontin lights); ...énérale d'Electricité (Jablochkoff candles); and ...ber and Gutta Percha Company.

...xhibition was formally inaugurated on ...day evening by a lecture by Mr. W. H. ...

...I. the Duke of Edinburgh, in opening ...oceedings, said that as senior vice-...t of the Council of the Royal Albert ...t devolved upon him to introduce ...audience Mr. Preece, the electrician to ...ht-office, who had been kind enough to ... to lecture upon electric lighting.

...reece said:—Your Royal Highness, my ... Ladies, and Gentlemen,—The greatest ...f light that we possess on this earth is the ...e worst is the farthing rushlight. Between ...ve we have various sources of artificial ...ation, dependent on oil, on tallow, on gas, ...electricity. But in all these sources we ...ply dependent for our light upon the ...ion of heat. A piece of coal, as you are ... has merely to be lighted to produce a ...put if we, instead of leaving the com... to be supported by the atmosphere, ...xygen, we increase the glow through the ...ion of increased heat. And, to give you ... illustration of this, we will burn a ... charcoal in an atmosphere of oxygen. ... here a flask full of oxygen, and we ... it a piece of charcoal and introduce ... the flask, and you will see that the ... will burst into flame with a brilliant ...pendent upon the mass of heat pro...

Besides producing heat, it is very ...y to have matter in a very fine state of ...ion; and when intense heat is applied ...r of this description we increase very ... the supply of light. Here we have a ...ame, and we throw upon it some lyco...

You see at once that the application to this matter in its fine state of sub... produces intense light. The first pro...at we have to solve in artificial lighting is how to produce heat. Heat can be produced by chemistry, by the production of electricity, and by various other means. Here I have the ends of two wires communicating with a machine out of doors, and when I bring the wires into contact the effect is very feeble. But they always feel the power of electricity. You will observe that somebody has come to my aid, and by simply bringing those two wires into contact we produce heat by electricity. Now if, instead of passing the current through these two wires, I pass it through a long piece of platinum wire, you will see that the wire becomes incandescent, and visible to you all. Again, if instead of passing the current through the wire I bring it across the air without making a contact between the two pieces of carbon, I produce what is called the electric arc, because in an electric arc the current bridges over a space of air, and forms there an arch of flame. Now, in order that you may see this arc in its perfect form, we will throw an enlarged image of it upon a white screen fixed against the organ. Let us go back a little in our history and start from the year 1831. In that year Faraday succeeded in producing electricity by the simple motion of wires in the neighbourhood or in the field of a magnet, and through the kindness of the Royal Institution we have to-night on the table in front of me the very apparatus itself by which Faraday succeeded in attracting the spark from the magnet. Mr. Ladd will now turn that small machine very rapidly; and in doing so he has converted the muscular energy of his arm into currents of electricity which produce heat and light. But man is not strong enough to afford the power to produce such currents as will give us the electric light; we must call in either steam or gas or some other motive power; and in order that you may see all these operations, we have in the arena Mr. Crossley's gas-engine, which we will now start, and it will work a small Gramme machine. The Gramme machine is now at work, and the currents produced by it are conducted to yonder lamp, and there produce the electric arc, giving intense heat and light. All these operations will be more evident to you when you have the opportunity of inspecting the machinery at the close. Electric lighting by incandescence is illustrated by the lamp of Mr. Werdermann. There you have five pretty little lights produced by this principle of incandescence; and at this table we will produce a light by incandescence by rendering that very rare metal, iridium, incandescent. We have in this globe a piece of iridium, about 3 in. long. Passing through it a powerful current of electricity we produce a soft and pretty light. We will also show this metal rendered incandescent in the port and starboard [red and green] bow lights before you, showing how the electric light can be applied to nautical purposes. The lights, as you will see, are far more intense than those usually employed, and have the advantage of being more durable, for iridium possesses the great advantage of not being destroyed by the heat produced. The next lamps to which I will call your attention are those which are dependent for their light upon the principle of the electric arc. Here we have the Lontin lamp, illuminated by currents produced from a machine placed outside the building. I will also call your attention to the Wallace light, which is also dependent upon the arc. This light was the one experimentally tried in the Liverpool-street Station of the Great Eastern Railway, and it has one peculiarity that makes it different from the other lights, and that is, that it will last for a week. The other lights, as a rule, will only last for a few hours. Another light that I will call your attention to is the Rapieff light, which is that used in the *Times* office. It is a remarkably constant light; as a rule, it behaves itself well, but to-night it is rather dilatory. Now it has burst into flame, and you will see what a pretty light it produces. In the *Times* office there are six of these lights, which distribute over the office a very fine bright, clear, and steady light. The next lights to which I will call attention are those called "candles," from the fact that they burn down like a candle. You are well acquainted with this kind of light from what you have seen in Paris, and, in London, on the Thames Embankment and the Holborn Viaduct. I will first direct your attention to the form of "candle" which has been produced by Mr. Wilde. The Wilde light is in these six white globes to my left, and the Jablochkoff light is in the gallery. The use of the electric "candle" admits of one problem being solved to a certain extent, and that is, it allows us to distribute the light; but then the distribution of the electric light means considerable waste. So great is this waste that the light is reduced as much as from 1,500 or 2,000 candle-power down to 200, or less. The practice of measuring light by candle-power is illustrated in the centre of the hall by photometers, which are kindly exhibited by the Metropolitan Board of Works, Mr. Sugg, and others. In fact, there is a very large quantity of apparatus exhibited here to which I cannot refer, but it will be found enumerated in the programme which has been printed. [At this point, a little delay occurred in the illumination of the Jablochkoff lights in the gallery, owing to some misunderstanding in signalling instructions. Mr. Preece therefore gave directions to turn on the Wallace light, which was controlled from the orchestra end of the arena, and in which, as Mr. Preece remarked, they had a friend upon whom they could rely in their difficulties.] It is (continued the lecturer) one of the misfortunes that always happen at lectures on the electric light that it generally plays one false; but such temporary failures are simply due to over-zeal. We will now show you the electric arc in another form,—that of Siemens's holophote lamp, which concentrates the powerful light of the lamp upon a fixed spot. This lamp is eminently calculated for use in lighthouses; and in fortifications, and on board ships, it will be of advantage in illuminating land or sea, and in enabling a watch to be kept against the approach of an enemy. It is going to be used in the Spithead Forts, to illuminate the sea with the view of preventing the approach of torpedo boats. The holophote, as you will see, may be turned round on a pivot, so as to bring its light to bear in any direction. Now, having shown you the different forms of the electric light, I will direct your attention to its practical application in the lighting of this hall. In the engine-room belonging to this establishment the engines used for pumping water and other purposes are utilised to rotate five Siemens machines, specimens of which are exhibited in the arena. These machines produce the powerful currents which illuminate the five large lamps in the roof. It is a question among physicists as to whether electric lighting by the arc or by incandescence is to be the light of the future. The light produced by the arc has been shown by Professor Tyndall to give 2½ times the amount of light given by incandescence; but there are reasons to think that much will arise from the experiments that are being made in the production of light by incandescence. The latter light has many advantages. In the first place, it is extremely steady; in the next place, it is very durable; and, lastly, if chemists can only succeed in producing a metal or material which can be raised to a very high temperature, say 5,000°, without fusion, the question is solved. Up to the present time only one substance is known which will fulfil that condition, and that is the metal iridium, which is very rare and very expensive. Another point to be referred to in connexion with the electric light is, that it is possible to have too much of a good thing. If, for instance, the electric light be used to illuminate a street, and the light afforded at the extreme end of the street be sufficient, the light at the "home" end of the street,—i.e., in immediate propinquity to the light,—must be greatly in excess of the requirements at that end, and therefore there must be waste. Again, theory as well as experiment has shown that to economise your light you must centralise it; you must make one machine operate upon one light, and by that means secure as much as you can of the energy of the machine. But in the most perfect form of light you can only secure less than 50 per cent. of the energy put into the machine, and therefore to distribute this wasted energy is to cause still further waste. There are many defects in the electric light so far as we are acquainted with it. It throws intense shadows; it is flickering and unsteady; it occasionally, at most awkward moments, hisses,—a circumstance very disturbing indeed to singers, especially when they are on the high notes; it is also, in its present form, not durable. But, on the other hand, it has many advantages. It is very brilliant. If this large hall were to be properly lighted it would require fifty Jablochkoff candles, but with only half that number you see what a good light is produced. Again, the electric light produces no smoke, no noxious vapours. It rids a room or a hall of the vitiated atmosphere caused by the burning of gas; and

when you remember that in one hour every person vitiates 3,000 cubic feet of air, and that in the same time every gas-jet vitiates 9,000 cubic feet of air, you can easily understand what a benefit to health the introduction of the electric light would be. Again, the electric light clears the atmosphere of one great source of trouble in regard to sound. Professor Tyndall has shown that layers of heated air act as screens or curtains, and prevent sound from being transmitted from place to place. In each of our opera-houses and theatres we have a row of footlights in front of the stage, throwing up between the singers or actors and the audience a volume of heated air, which prevents the passage of much of the sound. Clear away those jets of gas, and use electricity, and you at once improve the acoustic properties of the theatre. All practical applications of physical science pass through three stages. First, there is the theoretical stage, when it is the dream of the philosopher. Next we have the tentative stage, when it is the dream of the capitalist. Thirdly, we have the practical stage, when the practical man takes the matter in hand, and realises the dream of the capitalist. At present the electric light is in its tentative stage. It has been tried here, it has been tried there. It is "no chicken"; it is as old as the century. It was brought into existence at the same time as gas and steam, yet gas and steam are giants, while the electric light remains a mere stripling. But there can be no doubt that the results of the experiments that are being made must lead to its further extension. It is already practically applied in one department, that is, in the illumination of lighthouses. The Trinity Board of this country have, with an enterprise which is highly creditable to them, seized upon this electric light and applied it to several important lighthouses. Other countries are following our example, in this respect. Again, it has been used largely for naval purposes. Some thirteen or fourteen of our ships are equipped with the electric light, and the War Department are securing some large and important machines, some of which will be found in this building. Again, the electric light has been used, we may say practically, in this hall. But a very serious difficulty has cropped up with reference to the application of the electric light to the illumination of large halls of this kind, and from a source whence we should have least expected to meet with obstruction. I always blush to name it. It comes from the ladies! The eye of the lady has been educated to adjust her dress to the yellow glow and the warm tint of the gas, and now, when the purer and brighter light of the electric arc comes into play, the colours that looked well by gaslight are found not to look so well by the electric light. But let us hope that the eye which some years ago regarded with complacency the enormous curvilinear development of the crinoline, and which has now become accustomed to more scanty garments, will in a short time get used to the purer rays of the electric lamp. We have here a brilliant display of this light in the roof. In the production of the machine which supplies the currents perfection has been well-nigh reached. From the very best steam-engine only 10 per cent. of the energy of the fuel is obtained; but in the dynamo-electric machine of Siemens no less than 90 per cent. of the energy thrown into it is converted into electric currents. Your Royal Highness, this exhibition is really only illustrative; it is not in any sense competitive. All the gentlemen who have freely and willingly and courteously sent their apparatus here have done so not with the slightest idea of competing with their neighbours, but have taken advantage of the opportunity which the council of this hall have given them to exhibit to the public the results of the trials and experiments of the last few years, and I am sure that I shall be only anticipating the Council in offering our thanks to those inventors who have assisted in making this exhibition what it is. In conclusion, I have only to call attention to the various classes of exhibits. There are in this hall, and outside it, engines of various kinds, exhibited by Robey, Ransomes, Wallis & Steevens, Marshall, and other firms; and we have the Siemens machine, the Gramme machine, the Lontin, Wilde, Wallace-Farmer, and many other lights. We have machines in every stage of their progress. The history of the whole subject is before you. We have hand machines, dynamo machines, magneto machines; we have lamps dependent upon the arc, and others dependent on incandescence; we have electric "candles" and, in short, a collection of apparatus connected with electric lighting such as has never before been brought together in this world.

The Duke of Edinburgh then rose and said,—On behalf of the Council of the Royal Albert Hall I wish to propose to you a most cordial vote of thanks for the very interesting lecture which we have just heard, and to express our warmest thanks to Mr. Preece for the very able manner in which he has explained to us this historical exhibition of the various experiments of past years towards attaining perfection in electric lighting. But on this occasion nearly all those who appear before you appear at a great disadvantage, especially I may say the electric light, for there was not much time given to place all these weighty materials in this hall, or to form the vast number of connexions, and place the large number of wires which convey the electricity from the engines without. Our lecturer this evening has also been at a great disadvantage through not having all the wires laid to his hand, for no one can command properly unless all the wires are laid to his own hand. I am also at a disadvantage, for I was not aware I should be called upon to address you this evening; but I have done so with great pleasure, on my own part, to thank Mr. Preece for the trouble he has taken to explain this matter to us to-night. We have all been much interested, not only by the lecture, but by the experiments we have witnessed. In witnessing them we must have noticed the progress which has taken place from the first experiments which commenced with the lump of coal which lies before me; but, at the same time, we must notice that the electric light is, in its application, still in an imperfect state, and in alluding to that I may say that in this hall experiments have been made by the corporation, and an endeavour has been made to produce electric lighting here as the light, generally, in place of gas. The result is that you see now. The Council feels that this light is still very imperfect, and it will take time and further experiments before this can be remedied; and we trust that the seat-holders and the public will give us their encouragement that we may be able to produce something which will be thoroughly satisfactory. At the same time our lecturer has pointed out to us that, in one point, the electric light has received a thorough and practical application, and that is in lighthouses. I believe that the lighthouses which the Trinity House has lighted by the electric light are superior to any that have yet been established. I feel also perfectly certain that the electric light will form a very great and powerful agent in preventing accidents at sea. The bow lights I have seen illuminated by electricity to-night will, I am sure, prove of great value to the vast number of steam-ships which traverse the seas at enormous speed, and prevent collisions, which often occur now from the defective lights in use. The application of the electric light to protect ships of war from being attacked by torpedo-boats, — the light which we have seen shown by the holophote,—will be of great importance in naval warfare. It remains now for me only to repeat what Mr. Preece has said, to thank those gentlemen who have so kindly come forward to exhibit their machines and instruments for the production of the electric light, and also to say how much we are indebted to the Society of Telegraph Engineers for their co-operation on this occasion. I have now great pleasure in proposing a vote of thanks to Mr. Preece for the very interesting lecture he has given us on this occasion.

The Prince of Wales, who was enthusiastically received, rose and said,—I have great pleasure, ladies and gentlemen, in seconding this vote of thanks.

The exhibition will remain open till (this) Saturday evening, and should be visited by all who are interested in the subject.*

Proposed Municipal Buildings, Greenock. Complaints are made to the effect that the Town Council's own harbour engineer is amongst the competitors.

* Readers who desire information on the general subject may usefully consult a volume just now published, "On Electric Lighting," by Jas. N. Shoolbred. Hardwicke & Bogue, Piccadilly.—A new edition of Noad's "Student's Text-book of Electricity," with an Introduction and additional chapters by W. H. Preece, has been published by Crosby Lockwood & Co., Stationers'-hall-court.

THE CHURCH OF ST. SEPULCHR SNOW HILL.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SO

At a meeting of this society, held on Mo the 28th ult., Mr. M. H. Bloxam, F.S.A., i chair,

Mr. John E. Price, F.S.A., read a pap "The Church of St. Sepulchre, Snow-hill." observed that the parish of St. Sep appeared to have been originally of vast e It formerly included a large tract of land the walls of the City of London, running the course of Warwick-lane about as f Warwick-square. The portion of the within the walls was separated from th the Liberty and that in Middlesex at the lution of the monasteries in the rei Henry VIII., and was, with the site of the Friars, the parish of St. Nicholas Shamble that of St. Ewin, formed into the new par Christ Church, Newgate-street. Four c wills under which the parish of St. Sep holds property were proved before that di of the parish, viz., that of William of New proved in 1338; that of William Cres proved in 1407; that of Richard Bry 1411; and that of John Joyner, 1427. present Liberties of London, the parish Sepulchre in early times followed the cou the wall of the City from Aldersgate Ward until it reached the parish of St. Ludgate; it was then bounded by the river until it reached that part of the which is in the county of Middlesex. The part of the parish continued along the cou the Fleet until the limits of Clerkenwell were reached, and was bounded by that the parish of St. Giles, Cripplegate, wh now St. Luke's, Old-street. This large included the Priory and Hospital of St. B lomew, and much of the site of the Charter and probably part at least of the precinct John of Jerusalem. In the time of Henry tracts of land now the parishes of St. Bal mew the Great and Less were alienate St. Sepulchre's, as was, in 1371, much land on which the Charter-house was e St. Sepulchre's parish as now constitute prises four-fifths within the Liberties City of London and one-fifth situate county of Middlesex. The first mention church is in the twelfth century, the ded as implied, in commemoration of the Sepulchre at Jerusalem. In the reign of H Roger, Bishop of Salisbury, gave the pat of the church to the prior and canons Bartholomew's, Smithfield, which gift w firmed by Henry III. in 1253. The ch twice mentioned in the "Liber Custum edited by Mr. Riley, pp. 229-30, 237, and of 31 Edward I., 1307. It is also men under date 1312. Among the Patent R the reign of Richard II., date 1392, is a resting document, viz., letters patent gr in consideration of 40s. paid by John St and Richard Asshewell, "*custodes fabrici siæ Sancti Sepulchri extra Newgate, Lo* licence to John Sexy, citizen of London, and assign one loft, with the appurtenan the suburb of London, held of the b burgage, to the same custodians, to them and their successors towards the s of the fabric of the aforesaid church fo This bequest has been lost sight of or al in later times. In the year 1338, Wil Newcastle-under-Lyme bequeathed a co able estate to the parish. He gives and his tenements in the parish of St. Sep after life estates to his wife and h to the vicar and four parishioners Sepulchre, "*ejusdem ecclesiæ custodibus,* latter being churchwardens of the par the time being, and their successors fo to found and maintain therewith a chant chaplain to celebrate mass for his soul; directs that whatever shall be received ou out of the said tenements and their tenances beyond that purpose shall go fabric and support of the said church fo The lands and tenements thus devis William of Newcastle were at his death in Giltspur-street, Christopher-alley, nea born-conduit, and Chick-lane. These la now represented by premises in West field, Bear-alley, Parliament-street, Palac Durham-yard, and Greville-street, garden. In Maitland's "History of Lo the value of the Newcastle gift is put d the sum of 127*l.* The revenue now accr the parish from the property is very co

There was no distinction in the bequest
'St. Sepulchre, London," or "St. Sepulchre,
lesex." The funds were to be appropriated
e requirements of the building, and to that
. The question has now arisen as to how
t arge income accruing from the bequest
r be expended, and under whose control. It
accumulation of this money that has led
the unnecessary and uncalled for changes
alterations in the form and arrangement of
building. Had there been no money to
, the parishioners might now have had
church as it existed for generations. If it
een necessary to make a rate for the pur-
ort to call for a public subscription, we should
heard but little of the restoration of the
ng. Maitland, in his description of the
, divides it into two liberties. He has two
nts, one for the City liberty, the other for
berty in Middlesex. The officers for the
r are described as being four church-
ns and six overseers, and there was a
of 1,286 houses. The officers for the
were one churchwarden, four overseers,
constables, nine head-boroughs, "four
gers, who pay the raker for cleansing the
s and carrying away the ashes the sum
hty pounds per annum," one beadle, and
atchmen, and there was a rating of 626
s. This description is from the edition of
While there are now two vestries, for the
nience of local government, yet, to all
s and purposes, and especially for those
eir nature ecclesiastical, St. Sepulchre's
can be but one. The early engravings
church illustrate the niche over the porch
ing the statue of Chancellor Popham; and
the restoration of the church was first
mplated as regards the tower and porch,
intended by the architect, Mr. W. Pettit
h, F.S.A., that a figure of the Chancellor
be restored to its proper position over
ter doorway; but it was decided that the
over the porch was required for office pur-
therefore an oriel window was substituted,
injury of the general design. The arms
pham were *azure*, on a chief *gules*, two
heads cabossed *or*. Stow says that they
represented in the windows of the chapel
south side. In the course of the works
na has been discovered in the south wall.
as probably the situation of the Popham
l. In addition to the Popham Chapel,
were chantries belonging to guilds or
nities. Among other remains of interest,
iscina belonging to St. Stephen's Chapel
en discovered, as has been another, with
tions of colour on the mouldings, at the
nd of the north aisle. Near to this chapel,
tions have been found of the ancient rood-
nd the doorway by which it was ap-
ed. The building, as erected in 1450,
en described by Mr. Pettit Griffith.* The
over the porch appeared to have been
s a schoolroom, for in a will of one John
, bearing date 1592, the testator described
lf as "schoolmaster within St. Sepulchre's
h," and left his body to be buried at the
f the stair leading up to the schoolroom.
hurch was considerably damaged, but by
pans destroyed, by the Great Fire of
n in 1666. Since the casing which covered
iginal walls has been removed, the terrible
s of the fire finds illustration in the effect
left upon the stone. In places, the stone,—
ample, that composing the magnificent and
arches of the tower,—has been literally
ed by the heat. The main injury done
the interior. The tower, still one of the
landmarks of the City, was left standing.
horch on the south side, St. Stephen's
l, and the walls generally, it was pos-
o repair. Soon after the Fire the work of
ding commenced, under the direction of
hristopher Wren. He had but to recon-
the interior, with a portion of the east
leaving the flanks, with their mullioned
ws, perfect, and making use of the old
as far as they went. In Maitland's
he tracery still remained in the win-
and from the engraving he has given
south side of the church it appears
he design of the filling-in of the windows
bled those of the porch still existing.
al drawings of these windows, by John
, still exist, and are in the possession of
ohn E. Gardner, F.S.A., therefore they
have been accurately reproduced. It has

Builder, vol. xxxiii., p. 755. A view of the church, the restored tower and porch, accompanied the tion.

been asserted, and is very generally believed, that Wren had little or nothing to do with the reconstruction of the church, but this belief may have arisen from the fact of no entry having as yet been found in the parish books wherewith his name can be associated. But it may be observed that, with the vast number of churches which at this time were confided to his care, it would by no means be surprising for such a record to be passed over. It is, however, abundantly clear that Wren was associated with St. Sepulchre's Church, for in his biography, written by James Elmes, under the year 1674, we read:—"St Sepulchre's, on the north side of Snow-hill, opposite the Old Bailey, which was almost demolished by the Fire, began to be rebuilt in 1670, was finished about this year. This church has nothing remarkable, either in design or execution, being only a restoration and partial rebuilding on its former plan." But there is, however, more conclusive evidence. In the Bodleian Library at Oxford there are preserved the actual ledgers belonging to Sir Christopher, and among the accounts there appear the actual sums paid over to him by Dr. Bell, the vicar of the parish at the time. Dr. Coxe, of the Bodleian Library, having been kind enough to send to Mr. Price a copy of this interesting record, we are enabled, by the courtesy of Mr. Price, to print it. The following is the extract from Wren's ledger.*

"ST. SEPULCHER'S, WILLIAM BELL, MINISTER.

Dr.

Per money received of Sir Christopher Wren, on account of this parish church, as by th· severall payments following, attested by witnesses, do appear.

1670. Aug. 19.	Recd. then the sume of ...	£1,700	0 0
and 25.	.....	1,500	0 0
1671. July 6.	.....	200	0 0
,, 26.	.....	200	0 0
Sept. 9.	.....	500	0 0
1672. Aug. 29.	.....	393	0 0
End of the first state, &c.			
1674. Mar. 29.	.....	100	0 0
July 11.	.....	50	0 0
Aug. 7.	.....	50	0 0
1675. July 31.	.....	50	0 0
Oct. 7.	.....	50	0 0
1676. Nov. 15.	.....	100	0 0
1677. July 4.	.....	50	0 0
Sept. 22.	.....	48	4 0
Total	.....	£4,993	4 0

PER CONTRA.

Per his disbursements laid out to several workmen for repairing the church as by an order dated June 12, 1671, £4,993. 4s."

That both sections of the parish had in this troublous time to act in concert over such an important matter as the rebuilding of their parish church is evidenced by the entries, careless as they appear to be, in the Vestry minutes. About this period the twelve Tuscan columns were constructed. These are of large dimensions. They are raised on octagonal plinths, placed, in fact, upon the foundations of the pillars belonging to the original building. These plinths were of the same height as the recent pewing, but now they are out of proportion as to height, owing to the unnecessary lowering of the floor. Mention of these pillars occurs in the parish books in 1667, where there is a minute stating that the Vestry treated with one Mr. Marshall concerning the twelve pillars of the church, and it was resolved that he should "prepare them with as much speed as he can." These columns were connected on either side by semicircular arches. These arches were not constructed at the same time as the columns, but at a comparatively recent period. Christ Church, in Newgate-street, is one of the few churches having columns without arches. This peculiarity was altered at St. Sepulchre's when the new roof was added in the year 1835. The ceiling of the middle aisle is slightly coved, springing from behind the cornice, and is divided into seven compartments by horizontal bands. The aisles have groined ceilings, ornamented at the angles with doves. The galleries constructed in the seventeenth century at the time of the general repair occupied the whole of both aisles except the extreme eastern division on each side, and it was continued in a sweeping direction across the west end, which portion was sustained on Composite columns. The fronts of the galleries retired behind the main columns; they were panelled, each panel being filled with carving in relief. In 1863 alterations were made to these galleries. Under date of November 9th a committee was appointed to issue directions as to the removal of the pulpit, and to alter, take down, and rebuild, if necessary, the galleries on the north side. In the following year a similar arrangement took place with respect to the south gallery. In 1686 there were repairs ordered to the south porch, and a vault was constructed beneath St. Stephen's Chapel. The floor of the porch was raised, the chancel paved, and the church-gate altered. The galleries have now been entirely destroyed, and their removal has led to a series of difficulties which might well have been anticipated in an attempt to harmonise work constructed in 1450 with that of the seventeenth century. The gallery at the west end divided the Gothic tower from the Classic nave. This, of course, all told its own tale; it spoke for itself, and the most ordinary observer could understand the line of demarcation. The organ, which also stood in the gallery of the west end, shut out the pointed arches of the tower. All this has been changed. The organ has been taken down, to be re-erected, it is said, in St. Stephen's Chapel. It was once believed to be the oldest and one of the finest instruments in London. It was built by Renatus Harris and Byfield in 1677, and had forty stops. About forty years ago, a set of double open pipes was added; they were those previously used in the instruments erected for a great musical festival in Westminster Abbey.* In the parish books there are some amusing records of squabbles between Renatus Harris and the churchwardens concerning the building of the organ. In 1790 the church was in a state of decay. Mr. Griffith records that in that year the walls were cased with Portland stone, and all the windows were taken out and replaced by others with plain semicircular heads. The battlements were taken down, and a plain stone parapet substituted. The roof of this time was wagon-headed. The angle piers of the tower being weak, they were strengthened by inserting within the fine pointed arches semicircular arches and Bath stone Tuscan columns. When about to construct the new roof, it was found that the columns on the south side of the church were considerably out of an upright line (the sinking of the side wall having drawn them over), and fears were entertained that it would be necessary to take them down, by which a considerable increase of expense would have been entailed. The architect, however, with great ingenuity, contrived, by sawing each of them half way through at the base, and by either introducing or removing a wedge-shaped piece, as the case might be, to force them into their proper position.†

To the discussion which followed the reading of the paper we may return. The question was asked by more than one speaker, "Did anybody, even Mr. Billing [the architect at present in charge of the works] himself, know what was intended to be done with the interior of the building when the clearing out now in progress is finished?" In reply to this question Mr. Billing did not state that any definite plan had yet been agreed upon.

* Rawl. MSS., B 388, fol. 104.

EXHIBITION OF CUTLERY.

THE Earl of Carnarvon last week opened an exhibition of cutlery at the hall of the Cutlers' Company of London, in Cloak-lane, Cannon-street. The exhibition, which is the first held by this company, includes specimens of domestic cutlery, surgical cutlery, and sword cutlery, sent by manufacturers and artisans in London, Sheffield, and Birmingham, and a loan collection of much interest.

According to the Master (Mr. T. G. Pocock), previously to the reign of Henry V. there were three trading fraternities or guilds in existence, viz., the Forgers of Blades or Bladers, the Makers of Hafts, and the Sheathmakers; but in the fifth year of the reign of Henry V. these were incorporated as one united body by the name and style of "The Master Wardens and Commonalty of the Mystery of Cutlers of London." Various other charters had been granted from time to time. That under which the company was now governed was obtained from James I. in the year 1607, and this charter gave the company power to make ordinances for the government of all using the mystery, art, or trade of cutlers within the City of London, or suburbs thereof, &c., with right of search and power to levy penalties for all deceitful wares.

When we receive no intimation of exhibitions or meetings in connexion with subjects of which the *Builder* takes cognisance, we are led to con-

* Godwin's "Churches of London," vol. i.
† Ibid., vol. i., p. 7.

clude that they are badly managed, and we have usually found the impression justified. Tried by this test, the Cutlers' Company's exhibition is badly managed.

THE HACKNEY NEW INFIRMARY.

The new infirmary at Hackney, proposed to be erected on the Castle House Estate, adjoining the workhouse, which the guardians recently purchased, is to be on the pavilion principle, and to consist of four blocks. The plans having been forwarded to the Local Government Board for their inspection, the Board have returned them, suggesting certain alterations and additions. They advise the guardians that in erecting the buildings the several pavilions should stand at a distance of not less than 70 ft. apart, and that the area of the window space should not be in greater proportion than the rate of 1 superficial foot to every 70 ft. of cubic space in the ward; the windows to be arranged so as to be about 12 ft. from centre to centre, and carried up to the ceiling-level, or to within 12 in. of the height of the ceiling. They also suggest that there should be some small wards erected for special cases, and that a ward holding three or four beds, arranged in connexion with each of the larger wards, would be found the most suitable arrangement. At their last meeting the guardians instructed the Building Committee to confer with Messrs. Lee & Smith, the architects, respecting the suggestion received from the Local Government Board, and advise the guardians on the matter.

PROPOSED CONVERSION OF THE ST. KATHERINE'S DOCKS.

From a communication which has just been made to the Corporation, it appears that the directors of the London and St. Katherine's Dock Company contemplate the appropriation of the St. Katherine's Docks to other than their present purposes, on the completion of the extensive new Victoria Dock Works, now in progress. At the meeting of the Corporation, held last week, a letter was read from Messrs. Vigers, surveyors to the Dock Company, to the effect that, as the question of improved access to Billingsgate Market, or its removal, was now before the Corporation, they begged to draw the Corporation's attention to the fact that the Company, having greatly increased the Victoria Docks, were in a position to treat for the purchase by the Corporation of St. Katherine's Docks as a site for a new fish-market. The communication added that the Great Eastern, Great Western, and the three northern railways had direct railway communication with the docks, while the street improvements and proposed new bridge over the Thames would afford good road access. The communication is under the consideration of the Markets Committee of the Corporation.

PUBLIC BATHS AND WASHHOUSES FOR THE PARISH OF ST. GEORGE THE MARTYR.

The authorities of the parish of St. George the Martyr are about to proceed with the erection of public baths and washhouses, provided a faculty, which is necessary for the site that has been selected, can be obtained. At last week's meeting of the vestry, the commissioners who had been appointed by that body to carry out the undertaking requested permission to apply for a faculty to build the baths and washhouses for the parish on the site of the Lock Burial-ground, Old Kent-road. Mr. Pocock, in moving on behalf of the commissioners that the required permission be granted, stated that the site now proposed was the freehold of the parishioners, and situated in the midst of a densely-populated neighbourhood. If the faculty were obtained, it was proposed to erect two large swimming-baths, and a number of men and women's private baths, besides washhouses. One of the swimming-baths would be 93 ft. long and 28 ft. wide, and the other 45 ft. long and 25 ft. wide. The private baths would consist of first and second class, both for men and women. Attached to the washhouses there would also be drying-rooms for the clothes, with every convenience. The estimated cost of the buildings was 15,000*l*. He added that it was not necessary to say anything more in favour of baths and washhouses, for their great utility and advantages to the community were admitted. Judging from the working of the Bermondsey baths, he thought there could be no doubt that the baths, if built upon the proposed site, would be remunerative, and at the same time would be an ornament to the road. In answer to a question, the surveyor said that the estimated cost of excavation and removal of the bodies was 1,000*l*. One of the members of the vestry (Mr. Bordman) thought a burial-ground was a most objectionable site for baths. The permission to apply for a faculty was almost unanimously adopted, twenty-three voting in its favour, and only two against it.

THE LONDON STEAMBOAT COMPANY.

PROPOSED LEASE OF THE PROPERTY.

It transpired at the annual meeting of the proprietors of the London Steamboat Company that there is a probability of the working of these river steamers being undertaken by a private capitalist under a lease. According to a statement made by the chairman of the company, it appears that Mr. J. O. Lever has proposed to lease the fleet, property, and business of the Company for a period of twenty-one years, undertaking to pay 5 per cent. on the 200,000*l*. preference stock now intended to be issued, and the sum of 1,500*l*. per annum for remuneration of three directors, to be elected by the shareholders, and to represent the Board. The chairman stated that after the circular announcing Mr. Lever's proposal had been issued to the shareholders they were advised by their solicitor that sufficient notice had not been given. Consequently it was unnecessary to discuss the subject until the next meeting. The chairman added that the Board of directors approved of the offer, and that he would leave the shareholders to say whether it was not better to have a fixed guaranteed dividend, extending over twenty-one years, at 5 per cent., than a fluctuating one.

ASPHALTE *v.* YORK PAVING IN FULHAM.

The subject of asphalte as compared with York paving has latterly engaged much of the time and attention of the Fulham District Board of Works. At a recent meeting, the Works Committee recommended that all new streets should be paved with 3-in. York paving, but this was referred back to the committee as to asphalte; and at the last meeting of the Board the committee again reported, stating that they had viewed the footways in the district laid with asphalte, and found it very unsatisfactory, and they now recommended that each case be considered on its merits, and that no asphalte be laid of a less thickness than ¾ in. This recommendation gave rise to much discussion, during which there was considerable diversity of opinion. In the course of the discussion, Mr. Mugford, one of the members, said that York paving was much superior to asphalte, though the latter might do very well for builders, whose interest in a street might cease in twelve months. Another speaker thought the Board should only permit asphalte in very exceptional cases. York paving would last twenty years, but the asphalte in certain roads in the parish was worn out in two or four years. As a speculative builder, he would rather be charged for asphalte, but as a ratepayer he would vote for York paving. On the other hand, Mr. Slattery said the asphalte laid down many years ago in Bond-street and Broad-street was as good as new now. He moved that the report be again referred back. It was stated during the discussion that ¾-in. asphalte cost 7s. 9d. per square yard, and York paving 7s. 10d. per square yard. The report and recommendation of the committee was ultimately adopted.

THE "BLACK AND WHITE."

With the exhibition season, and in its due succession, the "Black and White" will open at the Dudley Gallery. This ought to be one of the most useful and instructive exhibitions in the metropolis; but it never can be so as long as its *raison d'être* is misapprehended, and the claims of book illustrations and crude sketching take precedence of the higher order of design and more ambitious endeavour. We are so absolute, and work upon a notion so completely in some narrow and immediately literal bearing, without attempting to grasp the f of what we are about, that it cannot be wonc at if many seemingly promising projects "Black and White" conveys to the superficia offhand Englishman nothing but the notic black etchings, ink, chalk, and charcoal on paper. These means are also associated i mind with chiaroscuro and Rembrandt. is about the limit of his mental concepti the matter, and from this "stump" stand he begins to "orate" and write grandly o advantages of the study of chiaroscuro; and the hack critic sees a liberal display of blac he estimates merit by the quantity of "osc Now all this is exceedingly absurd and sided. This absolute Black and Whiteness very recent date in the annals of art belongs *par excellence* to the Dutchmen, on the rule of reaction, sought solace scrubbed floors and whitewash in positive and white art,—in etching. This was a which was quite unknown, in the Dutch to the higher and far more intellectual I school,—the school which ought to be he as an example to our students. With the Italians, black was not considered esse either to the development of the design the chiaroscuro, by masters who, compared the Dutch painters, were intellectual g Red, with the Italians, was far more in f than black; and, in truth, the thunder flashes of black and white are not neec set forth the higher forms of human requiring as these do a finer and more sense of composition, severer drawing defined human expression. The broad of light and shade are all very well in way, but it should be remembered that are not the highest aims of art, and if the L Gallery is to be a success it must acce the higher forms of design and drawin give prominence to cartoons and prepa work for the grander order of invention. said thus much, we look forward with our interest for the forthcoming exhibition.

THEATRES AND THE METROPOL BOARD OF WORKS.

The following are the regulations ma the Metropolitan Board of Works und provisions of the Metropolis Managemen Building Acts Amendment Act, 1878 :—

1.—These regulations shall apply to all theatres, or places of public resort within the metropolis, to open for the public performance of stage plays, an houses, rooms, or other places of public resort wi metropolis containing a superficial area for the modation of the public, of not less than 500 squa to be opened or kept open for public dancing, m other public entertainment of the like kind un authority of letters patent from Her Majesty the her heirs or successors, or of licences by the Lord berlain of Her Majesty's Household, or by any Jus the Peace, or by any Court of Quarter Sessions wh be granted for the first time after the 22nd day of Jul

2. *Drawings of Theatres, Music-halls, &c., to be s to Metropolitan Board of Works.*—Every person w the first time after the making of these regulation be either desirous of obtaining authority to op house, or other place of public resort, within the polis, for the public performance of stage plays, or any house, room, or other place of public resort the metropolis containing a superficial area for the modation of the public of not less than 50[illegible] square public dancing, music, or other public entertainm the like kind, shall give notice of such desire Metropolitan Board of Works. The notice must a statement as to the nature of the interest of such in the premises so proposed to be opened, and be panied by plans, elevations, and sections of such room, or place of public resort, or of the premises o such house, room, or place of public resort may for drawn to a scale of not less than one-eighth of an in foot, and by a block plan showing its position in to the premises adjacent, drawn to a scale of not le 1 in. to 20 ft., and in the case of new building buildings to be adapted as a place of public resor be also accompanied by a specification of the work executed, describing the materials to be employed mode of construction to be adopted, together wi other particulars as may be necessary to enable the and its officers to judge whether the requirements regulations will, when the building has been cor have been complied with. The notice must be also panied by a detailed statement of the respective n of persons proposed to be accommodated in the portions of such house, room, or place of public res of the area to be assigned to each person, which sh be less than 1 ft. 8 in. by 1 ft. 6 in. in the gallery, than 2 ft. 4 in. by 1 ft. 8 in. in the other parts of the room, or other place of public resort.

3. *Walls.*—Every such house, room, or place of resort shall be inclosed with external walls of b stone, or partly of brick and partly of stone. Th ness of such walls shall not be less than the thickne scribed by the Metropolitan Building Act, 1855, fo of similar height and length in buildings of the wa class.

4. *Proscenium Wall.*—In any house or other p public resort, for the public performance of stage p where a proscenium shall be erected, the prosceniu shall be of brick, not less than 1 ft. 1 in. in thickne shall be carried up to a height of 3 ft. above the ro be carried down below the stage, to the level of the

the external walls. No openings shall be formed proscenium wall, with the exception of a doorway s orchestra, and one doorway on each side of the r communication with the auditorium. These door- all not be more than 3 ft. 6 in. wide, and shall be with iron doors, fixed without woodwork. The ions round the proscenium shall be constructed of sting materials.

ibe Staircases, Corridors, &c.—The staircases and rs of the passages, lobbies, corridors, and landings of fire-resisting materials. Every staircase for of the audience shall be supported and enclosed walls. The treads of each flight of stairs shall iform width. No staircase, internal corridor, or way for the use of the audience shall be less than wide. Every staircase, corridor, or passage-way se of the audience, and which communicates with ion of the house intended for the accommodation ger number of the audience than 400, shall be in width by 6 in. for every additional 100 persons, maximum width of 9 ft. be obtained. Provided hat in every case where the staircases are 6 ft. upwards a dividing handrail be provided. A clear or gangway, of not less than 3 ft. wide, shall be d round every part appropriated to the audience, at next the proscenium or place of performance.

ework.—All ironwork used in construction shall ted against the action of fire in such manner as required by the Board.

ns of Exit.—In all cases where a portion of the is to be accommodated over or at a higher level rs of the audience, a separate means of exit, of above prescribed for staircases, internal corri- passage-ways, and communicating directly with t, shall be provided from each floor or level. tiers of boxes shall for this purpose be reckoned as forming one floor or level. One additional he least, communicating with the different levels, ing directly into the street, must also be pro-

rs.—All doors and barriers shall be made to open

rming. — In theatres and places where the m and stage shall be warmed artificially, hot y. and that at low pressure, shall be used, and ing apparatus shall be placed in a position to be by the Board.

ilation.—All openings for ventilation shall be the plans, and properly described in the specifica- ne openings shall be made in such places and in ner as may be approved by the Board.

rkshops.—No workshop, painting-room, or dress- shall be formed or constructed over the audi- in the space under the same.

ne-docks, &c.—No scene-dock, property-room, or a, shall be permitted within any house, room, or ce of public resort, unless such scene-dock, room, or store-room be separated from the house, other place of public resort, by brick and fire- nstruction.

ter Supply.—In any case where there are not fire constant supply, there shall be provided on the proscenium wall or at some other place to be by the Board, two cisterns, each capable of con- least 250 gallons of water for every hundred the audience to be accommodated in the build- nains shall be connected with these cisterns, d round the whole circuit of the building, and be hydrants in such places and manner as may be by the Board.

s.—All gaspipes shall be made of iron or brass. metal pipes shall be used in any part of the

ration of Buildings.—In cases in which a house, other place of public resort, forms a part only of , such house, room, or other place of public all be separated from the other parts of the build- per party walls or party structures.

rations and Additions.—Notice shall be given to of any intended addition to or structural alters- house, room, or other place of public resort, in which the Board may have granted a certificate t that such house, room, or other place of public on its original completion in accordance with ing regulations, or otherwise, in compliance with Act, and the conditions required by the Board thereto. Such notice shall be accompanied by rations, and sections, showing such additions or , and also by a specification of the works to be in the same manner as in the case of a new build- rtified for the first time by the Board; and the , if necessary, cause a fresh survey of the build- made.

smuch as by section 12 of the said Act, the Board time to time, in any special case, dispense with its regulations, all applications for dispensation or on must be in writing, addressed to the Board, in a statement of the facts of the particular case, asons why it is desired to modify or dispense regulations as applicable thereto.

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tock.—The parish church of Radstock been reopened, after restoration and lebuilding. The old chancel has been wn, the east end entirely cleared away, church extended about 30 ft. to the 1. A new chancel has been built, the ries removed, and a new roof has been pon the building. There have also been new organ-chamber and vestry. To ate for the loss of the galleries, 113 al seats have been placed in the church, ill now accommodate 520 worshippers. at present only a north aisle, but it is t to place another aisle on the south n necessary. The old church had no d the only portions of the structure main are the tower, a portion of the all, and the south porch. The tower been touched, with the exception of ening and restoring the internal arch. hitects are Messrs. Willcox & Wilson, nd the contractors, Messrs. Wall & roud.

ANNUAL GENERAL MEETING OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the annual general meeting, held on Monday evening, the 5th of May, the secretary read a letter from Mr. S. W. Kershaw, M.A., stating that, in consequence of his increasing duties at Lambeth Palace Library, he felt it necessary to tender his resignation as librarian of the Institute, an office which he had held for eleven years, and which he relinquished with great regret. Several members spoke with great approbation of Mr. Kershaw, and a vote of thanks to that gentleman for his lengthened and valuable services was passed.

In reference to the forthcoming international exhibitions, to be held at Sydney and Melbourne, the president, Mr. C. Barry, read the following letter:—

"Marlborough House, Pall-mall, S.W.
21st April, 1879.

Sir,—As President of the Royal Commission for the Australian Exhibitions, may I request you to have the goodness to invite the members of the Royal Institute of British Architects to lend me their valuable assistance in promoting the success of these exhibitions.

It is unnecessary to enlarge on the favourable opportunity afforded by these exhibitions for promoting friendly intercourse with our fellow subjects in the colonies, for increasing and developing the demand for works of art and industry produced in the mother country, and for advancing the interests of trade and commerce in general.

With these objects in view, I would ask you to bring under the notice of the members as soon as possible the desirability of securing such an exhibition of drawings as will maintain the reputation of British art at the Sydney and Melbourne Exhibitions, where, I am informed, the artists of Italy, France, Germany, and Belgium will be well and largely represented.

The Exhibition at Sydney will be opened on the 1st of September next, and all objects intended for it should be despatched not later than the first week in June. I would therefore request that the members of the Institute will have the goodness to take this matter into consideration at the earliest opportunity.

It is proposed that at the close of the Exhibition, in Sydney, the drawings should be transmitted to Melbourne for the Exhibition which is to be held there in the following year.

I have the honour to be, sir, your obedient servant,
ALBERT EDWARD P.

The President of the Royal Institute
of British Architects."

It is understood that the architectual works sent to Paris, together with others that might be produced, will be suitable for exhibition in Australia,—seeing that as very few Australians were able to go to Paris, these drawings would be new to them, and might satisfactorily be exhibited as illustrations of British Art.

With reference to the proposed improvement of the premises, a modified plan was proposed, which may be carried out for about 1,200*l.*, with 800*l.* for fittings and furniture, and the Council were empowered to proceed with the works.

The Council have negotiated (subject to the approval of the general body) a new lease for seventy-nine years from the Architectural Union Company, at an increased rental of 100*l.* a year.

The report of the Council for the official year having been received and adopted, the following office-bearers were elected:—

President.—John Whichcord, F.S.A.
Vice-Presidents. — Thomas Hayter Lewis, F.S.A., Horace Jones, and Edward Middleton Barry, R.A.; John Macvicar Anderson, Arthur William Blomfield, M.A., David Brandon, F.S.A., Arthur Cates, Ewan Christian, Joseph Clarke, F.S.A., Henry Currey, John Gibson, Ostavius Hansard, John Honeyman (Glasgow), Edward l'Anson, F.G.S., John Loughborough Pearson, A.R.A., F.S.A., George Vulliamy, Alfred Waterhouse, A.R.A., Thomas Worthington (Manchester).
Honorary Secretary.—Thomas Henry Wyatt, F.S.A.
Secretary.—William Henry White.
[The above form the Council.]
Treasurer.—Sir Walter Rockliffe Farquhar, bart., Hon. Associate.
Solicitor.—Frederic Ouvry, F.S.A., Hon. Fellow.
Auditors.—William Allen Boulnois, Fellow, and Francis Thomas Dollman, Associate.

On the motion of Professor Donaldson it was resolved unanimously,—"That the grateful acknowledgments of the Institute be presented to Mr. Charles Barry for the efficient and courteous manner in which he has discharged the various and specially important duties of his presidentship—including his constant attendance at the Paris Exhibition—and by which the efficiency of the body has been materially improved and its influence strengthened."

Mr. Edwin Long's Fine Picture, "The Pool of Bethesda," is on view at Mr. Arthur Lucas's Gallery, Duke-street, Piccadilly. Although exhibited in 1876 at Burlington House, it was so placed that comparatively few of the visitors saw it, and it now comes to the notice of the majority of persons as a new picture. It will make a delightful engraving.

EMPLOYERS' LIABILITY FOR INJURIES TO SERVANTS.

At a meeting of the Law Amendment Society, held on the 29th ult. in Adam-street, Adelphi, Mr. Joseph Brown, Q.C., read a paper "On the Bills before Parliament for extending the Liability of public Companies and other Employers for Injuries to their Servants arising from Accidents,—viz., the Attorney-General's Bill, Mr. Macdonald's Bill, Earl de la Warr's Bill, and Mr. Thomas Brassey's Bill." The chair was occupied by Mr. T. Brassey, M.P.

Dealing first with Mr. Macdonald's Bill, Mr. Brown said that the Bill proposed to sweep away altogether any defence founded on the doctrine of common employment in the same service, or founded on the fact that the injured servant thoroughly and voluntarily incurred the risk; and his Bill extended to all servants in all employments, and of course to domestic servants. He submitted that this great extension of the employers' liability was both unjust and impolitic. It seemed plain that they could not do anything more likely to promote accidents than to take off all responsibility from the men whose negligence caused them. Mr. Macdonald's Bill might also have the effect of inducing a vast number of men who now insure against accidents in various friendly societies to withdraw their subscriptions, and rely on the employer for indemnity. The Attorney-General's Bill was aimed at railways, mines, factories, and other works. The effect of this Bill was to make the owners of railways, mines, manufactories, and other works liable to their own workmen for injuries caused by the neglect of any "servant in authority," this phrase being carefully defined in the Bill so as to include all persons employed to manage the whole or any part of the works, but to exclude all others. He was unable to see in the Government Bill any sufficient advantages to justify the extension of an inequitable rule of law to a new class of cases, or to atone for the violation of principle involved in it. Both of the other Bills embraced the provisions of the Government measure, and were therefore open to the same remarks; but both of them went a good deal further, for they would embrace not only managers, but even foremen or overseers,—in fact, any one who gave orders to the men. Another provision found in both the Bills made the employers liable for all injuries to a workman arising from defective works, machinery, plant, or stock. None of the Bills contained any clause to prevent a workman from contracting himself out of the Act. But suppose they were to enact that no contract should deprive a workman of the benefit of the Act, what would be the probable result? A large employer would probably think it necessary to insure all his workmen against claims under the Act in some accident insurance society or in some friendly society, and to reduce the wages by the amount of the premium. Consideration led to the conclusion that an insurance by the workman himself, and not by the employer, was the only proper and expedient kind of insurance for the case. He had already advocated a system of compulsory insurance, to which both employers and workmen should contribute.

The Chairman said his conviction was that under existing law and practice the railway companies did bare justice to their men in numerous cases of accident. It seemed to him that when an individual had obeyed an order that he was bound to obey, the employer should be responsible if that order had been wrongly given.

Sir Arthur Hobhouse said the exception of the law was irrational, but perhaps it would lead to show that the law itself was irrational.

Mr. Macdonald, M.P., said the reports of the inspectors proved that 95 per cent. of the large accidents that had occurred in the mines were traceable to the employers or managers, and not to the recklessness of the fellow-workmen.

Mr. Graham, who stated that he was connected with the railway servants, gave the workmen's view of the question. They had gone in strongly for Mr. Brassey's Bill and did not agree with Mr. Macdonald's; for while they believed those in authority should be made responsible, they did not agree in a law making the master responsible for the act of a servant to a servant. The Attorney-General's Bill was excellent to a certain point, but in defining who the person in authority should be the value of the Bill was taken away. He argued that the Bill was simply an electioneering dodge.

Mr. Findlay, of the London and North-Western Railway Company, said there were 275,000 railway men in the kingdom. The Amalgamated Railway Society in itself did not represent five per cent. of the railway men.

WORKMEN AND HIRERS.

ORRIS *v.* SHAW AND SON.

EDWARDS *v.* SHAW AND SON.

Both these actions, in the Westminster County Court, before Mr. Judge Bacon, were test actions of importance to employers and workmen in the building trade. The plaintiffs were both bricklayers, and the defendants builders and contractors carrying on business in Page-street, Westminster. The action was brought in both cases to recover the sum of 30s., being for wages at 9d. per hour, alleged to be accruing due when the plaintiffs left the defendants' employment. Mr. Henry Kisch, who appeared as counsel for the plaintiff, said that the claim was for wages from the 8th to the 15th of March. When the plaintiff applied to Mr. Goodhall, defendants' agent, for the balance, he was referred to a Mr. Pugh, a builder who had taken the works on the Cadogan Estate in Hans-place under a sub-contract, and consequently the defendants were not liable.

The plaintiff E. Orris, called, said on the 11th of December he applied for work on the Cadogan Estate, and saw Charles Goodhall there, and was told that he was manager for the defendants, and he could commence work. He did so at once, and remained there till the 15th of March. He had previously paid him all sums as the defendant's agent, except the sum accruing due from the 8th to the 15th of March. He had all along considered Goodhall as deputy-foreman to the defendants. In reply to Mr. Kisch, the plaintiff said he had never seen a Mr. Metherall, and had not received any instructions from him, but all general instructions were given by Goodhall, who had paid all wages up to Saturday, 8th March.

In cross examination plaintiff said that he saw Mr. Pugh during the second week he was employed, and saw Mr. Metherall continually on the work, but he never interfered, as he always acted under the direction of Goodhall. Mr. Pugh sometimes paid as well as Goodhall, but Mr. Metherall never did. When he applied for his money to the defendant he was told that, after the works had been commenced, Pugh had entered into a sub-contract to do the work, and he must look to Pugh for payment, as he only was liable.

At this stage of the case Mr. Henry Kisch addressed the Court in support of the plaintiff's case, and said as this was a test action he should not call the other plaintiff, as his honour's ruling would affect the interests of many men similarly situated.

Plaintiff recalled, said the defendant had seen him at work, and complained that the bond in the front of the work was not correct.

At this stage of the case the learned judge considered there was no liability whatever on the part of the defendants unless Mr. Kisch could prove that Goodhall was the agent of Pugh, which had not hitherto been done.

The defendants here put in the sub-contract entered into with Pugh, after looking at which his honour said that although it might appear hard to the plaintiffs to rule in the defendants' favour, still the law compelled him to do so. In future it would be most necessary that all workmen should ascertain by whom they were really engaged by calling at the office before entering upon their employment, and ascertaining whether or no there was a sub-contract in the way.

Judgment was accordingly entered for the defendants, leaving the plaintiffs to sue either Goodhall or Pugh for their money.

WEYMOUTH DRAINAGE.

In a recent issue a letter appears on the above signed "Radipole," who thinks the amount of money already spent is not exactly known, and that the plan adopted by Sir John Coode is a very good one, inasmuch as all his outlet-pipes are so arranged as to be able to concentrate the sewage at one given point. Allow me to say again the sewage flows from the pipes into the harbour and breakwater, where it is concentrated by the incoming tide, and carried up over the dam, and the greater portion there remains deposited on the sand, &c., forming an intolerable nuisance at times.

The amount spent on the dam has been placed at various amounts, from 6,000*l.* and upwards, but "Radipole" corrects all by stating the amount to be 13,000*l.* So much the worse for the ratepayers. If the dam was no part of the drainage scheme, there was not the slightest necessity for putting it across the backwater, now was there any necessity for borrowing and spending so large an amount of money on a system of drainage which it was foretold would be a failure, and as was lately proved before the magistrates in the case of Betts & Co. by Major-General Baugh, Colonel Scott, Captain Prowse, Captain Neale, Mr. J. Venour, Mr. R. C. Bennett, C.E., Mr. Samuel Jackson, architect and surveyor, and Mr. Tregarther, her Majesty's Inspector of Schools, and many others, that the nuisance was caused by the dam being placed there, forming a receptacle for the sewage, showing that it is a failure. And all that "Radipole" may assert as to the concentration and expenditure will not do away with the fact "that the present concentration of the sewage into the harbour and backwater allows it to speak for itself both to nose and eyes."

Q.

ROOFING SLATES.

Sir,—Permit me through the medium of your valuable paper to ask the question as to the best way of nailing roofing-slates to the battens? The practice in my neighbourhood seems to be to hole the slate about 12 in. from the tail, for countesses, to get a lap of 4 in.; consequently the nails are only covered by one slate, and that only for a space equal to the lap. The practice in London and other parts of the country is to place the holes near the head of the slate, where the nails are covered with two slates instead of one, and the slate lies closer on the batten, and more firmly attached to the batten, and offers by far the greater chances for keeping out the wet and the nails from rusting. I hope some of your readers will be able to explain why so important an alteration has been made.

An Observer.

SAFETY LADDERS.

Sir,—I am greatly surprised that amidst the numerous inventions of modern times for the benefit of the human race no invention has yet appeared to afford greater security to those who have to work on ladders, such as bricklayers, painters, masons, &c. Now, when we consider how inadequate for security are the rounds of a ladder to a man standing on it, that he has no protection whatever from severe injury or death if he lets go that foothold, it does seem to me a matter of complete astonishment that no further protection can be afforded him, something in the shape of a safety belt or an endless chain or rope connected with the ladder, with a weight suspended on the inner side, to which a man may attach himself, so that, should he happen to slip, his descent would be gradual, and danger almost impossible. I do think, sir, that it is quite possible to make a safety-ladder, by which a man may work on it in security.

Joshua Rhodes.

OUR FOOTPATHS.

Sir,—A few months ago you inserted a letter from me upon the above subject, in which I drew the attention of your readers to the existence of the Footpaths Defence Association that had been formed for the express purpose of opposing the illegal inclosure of public footpaths and other rights of way. The publicity which my previous communication in the *Builder* gave the association has prompted me again to trespass upon your consideration. The society has, by timely interference, been successful in averting the threatened inclosure of several footpaths in various parts of the country. That such an association as the above was a *desideratum* is clearly shown by the fact that we have been overwhelmed with applications for advice and assistance; but the funds at the disposal of the committee being at present very small, we have not been in a position to respond to these calls in a manner that we wish to do in the future. The interest which has been awakened during the past two years in "Our Footpaths," and the consequent desire to preserve them, has resulted in the formation of permanent defence committees in two or three large provincial towns. There is a vast field of operation open to the association were the needful funds forthcoming; and I trust that those of your readers who are lovers of natural scenery will assist the consummation of the society's work by becoming members, especially as the subscription is merely nominal. In many of the country districts these footpaths were originally trodden because of the grand and beautiful scenery which they disclosed; and it is evident that if the people are deprived of the beaten ways over which they have wandered unmolested for generations, much of the beauty of nature will be denied them.

Although the general public have a special interest in these footways, and derive no little pleasure from their maintenance, yet, notwithstanding, the burden of opposing encroachments, &c., invariably falls upon impecunious local communities, who are frequently unable to raise the necessary funds, when, as a consequence, footpaths are closed with little opposition beyond a mere formal protest. The wrongs of the working classes have become such an unpalatable theme that to hint at them is the signal for inattention. The maintenance of our footpaths, however, although an estimable boon to rural populations, is a privilege which affects the whole community, and is not a benefit confined to any particular class.

I may mention that at the present time inhabitants of a district in Cumberland being tyrannised and deprived of their ways by one who is generally alluded "His Lordship." Of him it cannot be "*Noblesse oblige.*"

James Geo. Buckle, Hon. Sec.
28, *Essex-street.*

Miscellanea.

Electric Lighting.—On the 25th ult. Tyndall gave evidence before the Select mittee appointed to consider the subject of ele lighting, Dr. Lyon Playfair presiding. The ness pointed out that the Voltaic battery had proved to be too expensive a mode of produ electricity, as the waste of zinc plates chemicals was so great. Oersted, Ampère Arago followed with inventions, and the ar between electricity and magnetism was de strated. With regard to the amount of l single Siemens machine was capable of ge experiments conducted at the South Fo had been made with a medium-sized machin the light given amounted in round numb 6,000 candles. An enlarged machine was constructed, but it had not been brought much into operation of late, for the reason its power was so considerable that it re such great care to prevent combustion commutator. He did not think a 10,000-machine could be made to give 10 lights o candles each. There was nothing in scie practice to show that they could divid current in that way without losing a gre of electricity. If the wires were not of conducting power there would be a great electricity. Certain impurities were pr in the burning of gas, and though the purities would be produced in the case o coal points, it would not be so much s the case of gas, for the reason that the of the air was not essential to the pro of the electric light, which could be with great splendour in a vacuum. Al carbonic gas would be infinitely less in t case than in the other; for in one case sence was an accident, in the other a nec It might be possible that nitrous acid w given off by the carbon points, and w that would injure books more than gas question which deserved attention; at p they had not sufficient experience of it In reply to Mr. Puleston, witness said although there were great difficulties in t of Edison applying the electric light s fully to domestic purposes, one was entitled to say he would not be able to ov them.

Society of Engineers.—At a mee the Society of Engineers, held May 5t R. P. Spice, president, in the chair, was read by Mr. E. D. Barker, on "Hy Continuous and Automatic Brakes." The in introducing the subject, pointed out the ability of hydraulic power for actuating brakes, and the advantages of its applic this respect. He then stated that in t trains fitted with his hydraulic brakes, p then only required that the brake sh worked by the guard, and not by the although the latter was undoubtedly th man to work the brake, and the author quently adapted his brake to suit the practice. The author then gave a short d tion of his earlier form of hydraulic bra a [detailed description, illustrated wi grams, of its latest development, viz. automatic as well as a continuous bra which arrangement, he stated, met Government requirements. It was stat an express train on the Great Eastern R fitted with the latest development, was cessful daily working. Attention wa called to the importance of being able t late the hydraulic pressure brought to the brake-blocks,—brakes not only be quired for emergencies, but for conveni traffic. Taking into consideration the desirability of diminishing the discom passengers, the author contended that t perfectly the power could be regulat more appropriate brakes became for the requirements of railway working, and t hydraulic brake fulfilled the required co more perfectly than any other.

yal Society.—The annual *conversazione* Royal Society was held on Wednesday ng, the 30th ult., at the rooms of the y, Burlington House, when, in response to vitation of the president and council, there brilliant assemblage. Many new inven- and works of art were exhibited. Mr. Bright exhibited models of his electric arm. A printed description furnished to itors stated that the report of the New Fire Patrol Committee showed that the t announcement of fires had reduced the to the extent of 76 per cent. in houses ed with indicators, as against those not vided. Mr. Bright showed the plan of the he was arranging in the west district for ndon Fire Brigade. His electric plan can plied either to communication from street s to the central or district office, or by atic action from small instruments placed room of a house, when the heat caused nflagration affecting the coiling of a spring gives electric contact. Among the jects bearing on natural history were teresting vases from Japan, obtained by rdner, F.G.S., from the Paris Exhibition. re what are known as Satsuma ware, and te the way in which the Japanese can ly represent fish, crabs, and other "lower " of life, even if they are not so successful gher animals and the human form. The emarkable of the Japanese work was a lab stated to be the largest slab of real in ever made.

hing Signals.—The operations in the ar have called attention to the system of nicating intelligence by flashing signals, e led to inquiries for information on the We get the following from the *En-* —"The transmission of light may be by different means. By day a mirror the reflected light of the sun to be for a very great distance,—in the case e, about thirty miles. The principal y must lie in the fact that not only is it to point the instrument truly on to an ot, but it is further necessary to keep g so as to correspond with the apparent of the sun. At Chatham there is a helio- sisting of a plain mirror fixed on a theo- tand, with a small hole through the of the mirror, and an arm, which has on t. This sight can be pointed on the object, and the mirror continually so as to project its beams through it. perations, however, can only be at- when the sun is shining brightly. A ore reliable method can be adopted at uen a strong light is placed in the focus rabolic mirror, so that the beams are it in parallel rays in any desired direc- his is, of course, always available on a clear night. It is unlikely that the of Ekowe had any regular instrument for the purpose. It is obvious, how- it is easy to improvise one sufficiently practical purposes. The mirror to be for sunlight should, in the nature of be a simple plane,—a parabola being ed to a light which can be fixed in its The difficulty, of course, lies in the fact, noticed, that the beam has to be accu- rected on the distant station, and kept spite of the apparent motion of the sun. this is the reason that so much diffi- been experienced in reading the signals. any pre-arrangement, well-directed would soon be read, inasmuch as the f flash would soon be observed to be ic, and any intelligent soldier who has ructed in telegraphy, would be able to m."

r's Remuneration.—An American says, — "Milton received $25 for Lost.' Pope $10,000 for his transla- Homer.' Edgar Allan Poe, $10 for ven,' his most famous poem. Dr. $12,000 for 'Bitter Sweet'; $8,000 for '; and $5,000 for the 'Mistress of the Mr. Bonner, of the *Ledger*, paid $5,000 for a single poem. Augusta ilson, author of 'Beulah,' has made in eight years, out of her novels. Sir cott made $259,000 out of his. Bret ceived $10,000 for 'Gabriel Conroy.' $15,000 for the copyright of 'Barnaby or six months. Stanley has alread; $50,000 for his 'Through the Dark .' Shakspeare got $25 for 'Hamlet.' it, $150,000 for 'The Shaughraun.' "

Visit of the Architectural Association to St. Paul's Cathedral.—On Saturday afternoon last a large number of the members of the Architectural Association visited St. Paul's Cathedral, where they were met by Mr. Penrose, and under his guidance conducted over the building. The carving of the upper part of the stalls of the choir, in oak and lime-tree wood, by Grinling Gibbons, was seen to advantage, the brightness of the sunlight revealing to many for the first time the remarkable variety of expression in the cherubs' faces. Dean Milman's monument, by Williamson, and that of Bishop Blomfield, by George Richmond, R.A.,—who has in this work shown his skill as a sculptor as well as a painter,—were pointed out. The Munich windows in the apse were, Mr. Penrose remarked, not calculated to be seen with good effect from a distance, but on a near view they had merits which, he thought, ought to be acknowledged. The wrought-iron gates by Tijou having been pointed out, the visitors descended into the crypt, of which they found an increased space open to the public. The Duke of Wellington's funeral car has been removed from its former position near the great sarcophagus in which is entombed the body of the "Iron Duke," to the extreme west end of the crypt, and a considerable portion of the floor has been covered with marble mosaic pavement. The morning chapel at the east end of the crypt was glanced at, and having visited "The Artists' Corner" to see the grave of Wren, the members ascended to the nave and thence to the triforium, library, and dome. Before leaving they inspected the remains of the chapter-house of Old St. Paul's, found last year to the south of the present cathedral. These remains will be carefully covered over and preserved. By the alterations now in progress in the "churchyard," the massive iron railings on the south side of the cathedral have been set back some 7 ft. or 8 ft., making room for the provision of a footpath,—an improvement which has long been needed at this spot.

Paris Decorations.—Some weeks ago it was announced that Mlle. Alice Regnault had sold her hotel, in the Rue Balzac, to M. Michel Popoff, the Commissary of the Russian section of the Universal Exhibition, the furniture having gone by the hammer. The hotel was open to the public for the inspection of the furniture, and the *salons* and *chambres* were filled with the curious, for, as Mlle. Regnault is celebrated for her excellent taste and style in dress, it was interesting to see how she employed these gifts in furnishing her dwelling. The walls of the *salons* were in black and gold, the armchairs and lounges covered with most delicate stuffs. The dining-room, in black and green, opened into a large glass-covered room or conservatory, the walls of which were covered with a brilliant chintz, as were the *canapés* that encircled each end. In the centre was a carved and gilded sleigh (Louis XV.) filled with flowers, forming an odd and original *jardinière*. The state bed-chamber was princely, the walls being hung with garnet satin and heavy *portières* of the same, and a canopied bed, about 7 ft. wide, stood in the centre, the hangings and coverlid also of garnet satin; the light was subdued by Chinese screens at the windows, and the rich mantle ornaments and works of art distributed about added to the luxury of the chamber. The dressing-room was large and well appointed, and the bath-room, with all the modern conveniences, would have pleased the eyes of a newly-arrived American. — *The Parisian.*

Stamp Duty Notice.—A notice has just been issued by the Commissioners of Inland Revenue in regard to the law regulating the stamp duty on agreements for letting furnished houses and apartments for terms less than a year. "The law requires," the notice states, "that such agreements shall be stamped either before or at the time of execution (*i.e.*, of signature), and imposes a penalty of 5*l.* on any person who executes, or prepares or is employed in preparing, any such agreement which is not duly stamped before or at the time of execution, in addition to a penalty of 10*l.* which may be imposed on stamping the agreement. An unstamped agreement cannot be enforced in any court of justice." The scale of duties is as follows: —Where the rent for the whole term does not exceed 5*l.*, 6d.; exceeding 5*l.*, but less than 10*l.*, 1s.; exceeding 10*l.*, but less than 15*l.*, 1s. 6d.; exceeding 15*l.*, but less than 20*l.*, 2s.; exceeding 20*l.*, 2s. 6d.

Liverpool Builders' and Property-owners' Association. — The third annual dinner of this Association was held on the 25th ult., the president, Mr. W. O. Elias, in the chair. After the removal of the cloth, the secretary, Mr. O. Owens) read the annual report, which showed the Association to be in a highly prosperous condition, a large number having been added to the list of members during the past year. The election of officers for the ensuing year was proceeded with, the president (Mr. W. O. Elias) being re-elected by acclamation. The question of the reduction of wages was regarded with considerable interest, and sympathy with the operatives was frequently expressed. It was satisfactory to know that the joiners and bricksetters had reasonably regarded the necessity for the notice given by the employers six months since, and that terms had been comfortably arranged without semblance of strike or dispute. Great firmness was, however, manifested in reference to the masons and plasterers, who have not as yet concluded terms, and the necessity for reducing the bricklayers' and plasterers' labourers' wages was regarded as urgent. The whole matter was by resolution referred to the newly-elected committee, who were also requested to specially direct their attention to the assimilation of the hours of labour in all the various branches in the trade.

"Wilkinson's Improved Roof Tile."—The aim of the patentee here has been to furnish a tile roof of about the same weight as a slate roof, and to make the tiles superior in finish to any other tile in the market. Thus by using the patent tiles it is urged that a fourth in carriage is saved, also the timber is not required to be so strong. There is a bevel on the bottom to make them appear thin and neat; also a continuous nib for security, and to make the tile lie true. The tile looks not over-strong, but the proprietor guarantees it to be strong enough, to wear as long as any other tiles that are made, and to be thoroughly impermeable. They are to be seen on the Streatham Public Hall, Alperton Schools, a house at Oakleigh Park, Great Western Railway, Haggerston-road Schools, and the Middle-class College, Hereford, where they have given satisfaction.

The Albert Medal.—The council of the Society of Arts attended on Tuesday at Marlborough House, when his Royal Highness the Prince of Wales, as president of the society, presented to Sir William George Armstrong, F.R.S., the Albert Medal awarded to him "because of his distinction as an engineer and as a scientific man, and because, by the development of the transmission of power,—hydraulically,—due to his constant efforts, extending over many years, the manufactures of this country have been greatly aided, and mechanical power beneficially substituted for most laborious and injurious manual labour.

Public Baths for Chippenham.—At a meeting of the Chippenham Local Board, held on Monday evening last, the plan of their surveyor, Mr. Lightfoot, for the erection of public baths in the town, was ordered to be sent to the Local Government Board for approval. The Board are borrowing money for the erection of the building, under the Baths and Wash-houses Act.

TENDERS

For the erection of laundry and swimming-bath at Southall Schools, for the Guardians of St. Marylebone. Messrs. H. Saxon Snell & Son, architects:—

Crockett	£4,000	0	0
Wall, Bros.	3,977	0	0
Kearley	3,689	0	0
Howard	3,675	0	0
Taylor	3,590	0	0
Woodbridge	3,575	0	0
Aldin & Sons	3,554	0	0
Jones & Co.	3,540	0	0
Beauchamp	3,450	0	0
Gibson (accepted)	3,120	0	0

For four cottages at Deal, for Mr. D. M. Hill. Mr. Edward W. Fry, architect. No quantities:—

Bourne	£960	0	0
Knight	942	17	0
Redman	869	0	0
Gibbons (accepted)	856	15	0

For farm buildings, cottage, &c., for the Trustees of the Leith Estate, Walmer, Kent. Mr. Edward W. Fry, architect. Quantities by the architect:—

Petts & Son	£2,790	0	0
Stiff	2,716	0	0
Bourne	2,375	0	0
W. & T. Denne	2,199	0	0

For additions to entrance-lodge, Stoke Farm, for Lord Alexander Gordon Lennox. Mr. Arthur Vernon, architect:—

Silver (accepted)	£169	0	0

For the erection of Workmen's Club, Woburn-green, Bucks, for Mr. Alfred Gibbey. Mr. Arthur Vernon, architect:—

Williams	£854 0 0
Silver	853 0 0
Child	761 0 0
Taylor & Grist (accepted)	752 10 0

For alterations and additions at Hillside, Wimbledon, for the Rev. C. J. Wynne. Mr. Geo. McDonell, architect:—

Shaw (accepted).

For boundary-wall and other works at Polegate, for Mrs. Carter. Mr. Amos Crisford, architect:—

Stevens	£337 0 0

Accepted for addition, &c., to Cromwell House, Stockwell Park-road, Brixton, for Mr. W. T. Wiseman:—

Maxwell, Bros.	£196 0 0

For the erection of two houses, and for sundry alterations to three houses, Addington-square, Camberwell, for Mr. Goodyear. Mr. H. Moxon, architect:—

Goad	£1,247 0 0
Baker	1,153 0 0
G. & T. Fisher	975 0 0
Shapley	895 0 0
Perkin	799 0 0

For building schools and teachers' residence, St. Matthew's, Surbiton. Mr. C. L. Luck, architect. Quantities by Messrs. Northcott, Son, & Neighbour:—

	Stone.	Brick.
Besse	£3,778	£3,456
Mudie	3,673	3,449
Clemence	3,570	2,980
Yare	3,500	2,947
Hockley	3,480	3,110
Manley	3,201	2,947
Hook & Oldrey	2,980	2,712
Adkins	2,900	2,640
Jarvis	2,795	2,535

For a pair of small semi-detached houses at Goldworth, near Woking Station, Surrey. Mr. Henry Peak, architect:—

Pratt & Son	£739 0 0
Clark	650 0 0
Garnett	647 0 0
Whitburn	600 0 0
Butt (accepted)	515 0 0
Harris	493 0 0
Martin, Wells, & Co.	490 0 0

For new school buildings at Wyke, near Guildford. Mr. Henry Peak, architect:—

Swayne (accepted)	£500 0 0

For a detached house and stable, &c., at Hooke Heath, Woking, Surrey. Mr. Henry Peak, architect:—

Whitburn	£1,550 10 0
Clark	1,330 0 0
Garnett	1,326 0 0
Harris	1,175 0 0
Martin, Wells, & Co.	1,049 0 0
Butt (accepted)	1,045 0 0

For additions and alterations at No. 96, High-street, Guildford. Mr. Henry Peak, architect:—

Smith (accepted)	£865 7 11

For new building in the Walworth-road. Messrs. Lauder & Bedells, architects:—

Body	£2,031 8 0
Williams & Son	1,857 0 0
Brown	1,760 0 0
Grover	1,694 0 0
Elkington	1,569 0 0
Marsland	1,555 0 0
Downs	1,485 0 0

For ten cottages at Bexley. Mr. Rickwood, architect.—

Hills (accepted)	£1,342 0 0

For Wesleyan Chapel, Plumstead-road. Mr. Rickwood, architect. Quantities supplied:—

Wilkins	£1,271 0 0
Tongue	1,235 0 0
Johnson	1,175 0 0

For house, Wrottesley-road, Plumstead. Mr. Rickwood, architect:—

Johnson	£1,200 0 0
Harris	1,138 0 0
Wilkins (accepted)	1,075 0 0

For pair of houses, Upper Eglinton-road, Plumstead. Mr. Rickwood, architect:—

Johnson	£1,800 0 0
Harris	1,285 0 0
Wilkins (accepted)	1,135 0 0

For house, Plumstead Common-road. Mr. Rickwood, architect. Quantities supplied:—

Kirk & Randall	£1,195 0 0
Tongue	1,106 0 0
Harris	985 0 0
Wilkins (accepted)	735 0 0

For tank and retaining wall, &c, Sevenoaks, for the Sevenoaks Gas Company. Mr. A. Penney, C.E. Quantities supplied by Mr. W. H. Barber:—

White	£2,673 0 0
Matthews	2,240 10 0
Tibbitt & Adams	2,170 10 0
Botterill (accepted)	2,140 0 0

For the erection of the "Mary Fletcher" Memorial Chapel at Leytonstone, Essex. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Hobson	£5,045 0 0
Woodward	4,940 0 0
Lucas & Son	4,566 0 0
Staines & Son	4,560 0 0
Hunt	4,560 0 0
Hook & Oldrey	4,529 0 0
Stephenson	4,512 0 0
Tarrant & Son	4,500 0 0
Bangs & Co.	4,488 0 0
Niblett	4,478 0 0
Chessum	4,424 0 0
Morter	4,387 0 0
Gregar	3,939 0 0

For rebuilding No. 123, New Bond-street, and premises in Lancashire-court. Mr. Marks, architect. Quantities by Mr Shoppee:—

Laing & Son	£6,047 0 0
Conder	4,990 0 0
Colls & Son	4,170 0 0
Masters	4,675 0 0
McLachlan & Sons	4,610 0 0
Nicoys	4,500 0 0
Braid & Co.	4,400 0 0
Brass	4,377 0 0
Shaw	4,360 0 0

For the first portion of a large church to be erected in the Albert-road, Battersea Park. Mr. William White, architect. Quantities supplied by Mr. E. Crutchloe:—

Adamson & Sons	£6,454 0 0
Browne & Robinson	6,085 0 0
Patman & Fotheringham	5,976 0 0
Dove Bros.	5,870 0 0
Lathey Bros.	5,863 0 0
Macey & Sons	5,735 0 0

For new aisle, &c., to St. Paul's Church, Loxden, Colchester:—

Gozzett	£1,267 10 0
Gardner & Son	1,033 0 0
Dobson	985 0 0
Garwood	859 15 11
Grimes	753 7 6

For alterations at the Marlborough Head, Marlborough-road, Peckham, for Mr. Pearce. Mr. W. Nunn, architect:—

Reered	£787 0 0
Lamble	727 0 0
Anley	676 0 0
Grimwood & Sons	583 0 0

For two warehouses in Heneage-street, St. Mary Axe. Mr. Robert J. Worley, architect:—

Toms (accepted)	£2,815 0 0

For alterations and repairs at the Victoria Tavern, South Tottenham. Mr. F. Fred. Hollingworth, architect:—

Mark	£980 0 0
Drew	873 0 0
Toms	849 0 0

For alterations and repairs at the Rodney Hea... tonville, for Messrs Combe & Co. Mr. Henry R. ... architect:—

Toms (accepted)	£243 0 0

Bar Fittings.
Toms (accepted).

For repairing, painting, &c., at 221, New Cros... Mr. Henry R. Cotton, architect:—

Harris	£235 0 0
McLachlan	223 0 0
Toms (accepted)	178 0 0

TO CORRESPONDENTS.

A. B.—M. P.—P. D.—E. 6.—G. C.—E. T.—W. D.—D. W... Sons.—Berdmore.—H. L.—W. L.—T. D.—L.—G & S. F.—... R. P.—T. G.—T. H. B. C.—T. P. W.—S. R. L.—T. E. M... (shall have attention) —M. (too late) —W. L. N. (next week).

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We are compelled to decline pointing out books an... addresses.

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VOL. XXXVII. No. 1893. SATURDAY, MAY 17, 1879.

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The Vertical, the Horizontal, and the Arched.

SOME few weeks back, in writing on the subject of Architectural Style (p. 273, *ante*), we referred to the two opposite, or rather complemental, ideas of the vertical and the horizontal, as dominant in certain schools or classes of structural design. It must, however, be borne in mind that there is a close and essential connexion between the two ideas. They represent co-ordinate elements in space. To a certain extent they are functions of one another. It is not possible to have a purely vertical or a purely horizontal building. Under any conditions a certain height is required for a wall, —a certain breadth is required for a roof. Nor is the compromise ...which has to be effected between the ...wo dimensions which are at right ...gles to each other always expressed in ...eir own terms. Indeed, horizontalism ...ture is more conventional or artificial ...rpendicularity. To set a tent-pole up- ...a natural effort, because its stability is ...atest when it is upright. But from the ...n sheet which forms the shelter of the ..., to the pediment of the Greek temple ...e lofty pitch of Gothic roof, inclined ...o far more naturally resorted to by the ...han true horizontal lines. Long level ...shade mark the eaves of a building or ...he ridge of its roof. In domestic ...s, in Italy as in Greece, a level roof is ...ttained; but it is attained for the pur- ...forming an additional story or terrace ...pp, and it is attained at a very consider- ...rt of constructive skill.

...a most ancient architecture of which ... any unbroken monumental record,— ...Egypt,—the oblique line dominates. It ...ere be said that the incline is a com- ...between the vertical and the horizontal; ...he contrary, all that which in Egyptian ... to some extent either vertical or ...al seems to have been developed out ...which is inclined. The primary form of ...mid controls almost the whole series of ... in the architecture of Egypt. It is ... to a mere symbol in the obelisk, but ... there. So it is in the pylone; so in the ...olumniation of the temples. The true ...line may almost be called an abomina- ...the Egyptians. Whether the form natu- ...umed by the tent has been taken as the ...r their architectural construction, whether ...from the excavated architecture of the ...hether the stability that is attained by the form of the pile in which four spheres can be readily arranged struck the mind of the early architect, or how he arrived at that most unarchitectural of all architectural outlines, is uncertain. But the fact remains, a fact heavy with all the weight of the Great Pyramid.

Far different has been the fortune of the other compromise between the vertical and the horizontal, namely, the arch. In the arch we may be said to have the first original structural idea conceived by the human race. To support a beam on poles, to rear a tent, to slope the roof of a shanty, even to build a pyramid, is a matter that requires little that deserves the name of original conception. Birds have structural powers equal or superior to rude work of that nature. Even the monkey is said, in certain species, to have attained it. The beaver certainly has aimed at the practice of horizontalism; and foxes, rabbits, and moles have learned how to form tunnels for their abode, in anticipation of the lessons of human troglodytes. The mere leaning of a stick against a tree suggests the commencement of the hut. It is otherwise with regard to the arch. That structure may, doubtless, have originated in what we call accident. There are few mountain districts, at all events in limestone formations, of any extent, in which natural arches are not to be found; spans which are usually, by common consent, attributed to an infernal architect; the growth of the quasi-domical roof of the early "treasuries," formed by overlapping horizontally-laid stones, ultimately meeting at the apex, is understandable; but to pile together the series of blocks, whether of wood, of brick, or of stone, that formed the earliest voussoirs,— to support the lateral thrust by adequate abutments; to weight the haunches in due proportion to the curve; to seal the trembling balance by the wedging home of the keystone,—all this, however slowly man may have arrived at the aërial grace of the Gothic builders, springs from a power of origination which can find neither pattern nor followers in the infrahuman world of life. Man may take the invention of the arch as a surer measure of his high intellectual status, as compared with all other terrestrial creatures, than even the use of fire. For fire may originate, and has originated, as legends bear witness, in natural causes. The great sanctity that attended, in such very distinct races of men, the guardianship of the sacred fire, seems to point back to a time when the means of kindling flame were unknown or of great difficulty, and when, if the light of the sacred hearth were quenched, there was a prospect of a gloomy and unrelieved winter. It is, no doubt, an enormous step that was taken by man in the mere maintenance of fire,—a step to which none of those creatures to whom the warmth is as grateful as to ourselves have attained, although a raven has been executed for arson. But the guardianship of the hearth is but a small matter when compared to the invention of the arch.

It is, therefore, not without due reason, deeply founded in human nature, and therefore in human history, that the most venerable of unwritten traditions ascribes a mystic sanctity to the symbol, or to the title of the ARCH. We are not about now to attempt a lecture on the drawing-board! We are not about to refer to the cedar-hewers and builders of Hiram, to the "lost word," to the Temple, or to the Ark. Indeed, we may observe in passing, that no reconstructor (on paper) of the Temple, whether that of Herod, of Zerubabel, or of Solomon, has had the courage to vault it with an arch; or as referred to the arched portico found on certain Jewish coins. We wish to bring into clear relief the originality, grace, and beauty, of the grand conception of the arch. It may not, in one respect, be quite so good an example of a pure human invention as the wheel. But the wheel, though it has no prototype in nature in the form in which we are acquainted with it, may be gradually traced to the roller, and thus to the mere log. The arch, though it may have been suggested by such natural arches as exist,—to cite one among many, in the neighbourhood of the islands of the Sirens, on the lovely promontory of Sorrento, or as it expands in its shadowy vastness in the great cavern of the Peak,—demanded such a degree of study and of practical geometric knowledge, before it could be reproduced on a scale of any magnitude, that it may well be regarded as the first great triumph of the human builder.

The word arch, to an English reader, suggests in these days that simple and striking form of the structure which belongs rather to the province of the engineer than to that of the architect. It is with the latter that we have now principally to deal; but it is pardonable to throw a glance at the former. One of the earliest instances of a great arch in this country,—of origin so near our own times that its construction has not hitherto been attributed to the ingenuity of the great enemy of mankind,—is that which was thrown over the river Taafe, near New Bridge, in the county of Carmarthen, in the year 1750, by William Edwards, a country mason. To many of our readers this bold and beautiful work may be familiar, under the name of the Pont-y-tu-Prydd. It carries the road from Llantrissent to Cardiff and Merthyr. This arch measures 140 ft. between the abutments, and has a rise, or versed line, of 35 ft. The curve is the segment of a circle, of 175 ft. in diameter. The soffit rises from the water level of the stream, which is ordinarily but a few feet below that of its banks. The top of the parapet is defined by the segment of a circle of much larger radius than the soffit; and where the spandrel formed between the two curves allows, the haunches are lightened by three elliptical apertures, which pierce the masonry from side to side, and which, on the building of the bridge, were filled with charcoal. The roadway is only 11 ft. wide over the centre of the arch. It is said that Edwards consulted Smeaton on the design, which was made in order to replace an elegant bridge of

three arches which had been swept away by the floods of the Taafe. But by whatever counsel the country mason may have profited, the Pont-y-tu-Prydd Bridge long remained a unique specimen of the arch-building skill of the Welsh masons. The Grosvenor Bridge, over the river Dee, at Chester, with a span of 200 ft., and a rise of 42 ft., being a semicircular segment of 140 ft. radius, which was opened in 1834, was probably the first successor of Edwards's arch which much extended it in dimensions. When these light and graceful structures are compared with the ponderous and yet unstable erections once common in England, and of which old Bow Bridge, as well as old London Bridge, may be cited as examples,—bridges on which the piers occupied as much space as the arches,—it will at once be seen how high a flight was taken by the untutored native genius of such a man as Edwards.

No single arch in this country, however, or so far as we are aware, in Europe, equals in majestic simplicity and chaste elegance the bridge erected by the Chevalier Mosca over the Dora Riparia, near Turin, of which the versed sine is only 18 ft. to a span of 147 ft., thus forming one of the flattest segmental arches of any magnitude which was ever attempted before the great stimulus given to arch-building by the introduction of the railway system into England.

It is not, however, to such a structure as that of the Dora Bridge, perfect example of its kind as it must be admitted to be, that we wish to call attention as the normal type of the arch. We now have to regard the work of the architect rather than that of the engineer, as affording examples of the development of the mode of structure in question. For the dwelling-house, when it assumes the magnitude of a stately residence; for public buildings, churches, courts of justice, palaces; for great commercial centres, such as custom-houses, docks, warehouses, the arch takes a form to study the true development of which we must again turn to the cradle of the builder's craft,—to Italy. The voyager who enters the harbour of Civita Vecchia or of Genoa,—the tourist who drives along the lovely marine terraced road that leads from Naples to Baiæ, or who visits the romantic little archiepiscopal city of Sorrento, can hardly fail to be struck with the magnitude and grandeur attained by that imposing form of structure, the semicircular vault.

The Roman builders were engineers rather than architects; workmen, rather than artists. As workmen they were unrivalled. Their brick-work, their rubble, their cement, remains, where it has had a chance, as solid to-day as it was the year or the century after it was completed. It once fell to the lot of the writer to explore a part of the course of a subterranean aqueduct which had been constructed along the ridge of the St. Angelo hills (which form the Southern side of the Bay of Naples), to supply Pompeii, or perhaps Stabiæ, with water. The existence of this small tunnel had been forgotten. It is not (so far as we remember) mentioned in any classical author. But except in such parts as bear the marks of violence, it is fit to have the water turned into it to-day. Much the same may be said of the aqueduct for the supply of Jerusalem that was built by Pilate, and measured and described by the author of "Tent Work in Palestine."

This excellence of workmanship, however, is accompanied by a want of artistic delicacy. The Roman attempts to copy, or to improve, the Corinthian order of the Greeks, are at once distinguishable by the absence of that pure and exquisite taste of which it is as impossible to disguise the absence as it is to impart it to those who have it not. And this exquisite delicacy of taste is connected with a metrical exactitude of detail of which few persons have any correct appreciation. The delicate gradations of moulding or of entasis were not, we apprehend, worked by the Greek builders by eye. We have no doubt that they used the most exact geometric rules, which were kept as an oral tradition of their craft, and which are thus only to be rediscovered by the most precise application of the callipers and the scale to the relics of the Grecian architecture. And we speak with the more certitude in this respect for this reason. Sculpture will be generally regarded as more of a "free-hand" art than architecture. If, then, we find such minute geometrical accuracy of proportion in undoubted Greek sculptures, as to prove that they were wrought to exact measures of height and of girth, we have an *à priori* evidence that the details of architectural structure were at least as carefully measured. Personal measurement of the majority of the finest relics of Grecian sculpture, some *in situ*, some in casts, enables us to speak with positive certitude as to the exactitude of the measures adopted by the Greek artists of the grand age for the human figure. The "Canon of Polycletus" has often been referred to as to vertical proportions. It has not ordinarily been regarded as dividing the erect figure more minutely than into four equal parts. But it has a fulness and perfection of accuracy (as may be recovered from the marble) so great as to enable the properly-instructed student to ascertain from a single dimension the original height of a statue. In the same way the absolute measurement of the girths by the modulus of the foot comes down to the taper of the fingers. Apply a measuring-line to a Greek statue, and this mathematical relation becomes apparent. Apply it to a Roman copy, and it has entirely disappeared.

It is thus the more worthy of remark that it is to the Romans that we owe, not indeed the invention of the arch, but its adoption as the main crowning feature of their noblest buildings. It is associated with triumph. Those persons who, looking at our London park gates, and especially at that one which is crushed into ridicule by the ponderous superimposed weight of a huge equestrian statue,—unhappy attempt to associate a sense of the ridiculous with one of the grandest names in our history,—we may almost say, in history,—may sneer at the idea of a "triumphal arch." Let them go as far as the Barrière de l'Étoile, however, and they will admit that, however little they may admire, or even understand, the conception, it is capable of producing magnificent effect. And if they go a little further,—go to Rome itself,—or go to that more southern city, celebrated by Horace in his journey to Brindisi,—Canosa, the bilingual,—where the solemn arched portico of Roman brickwork now stands in a cornfield, at the distance of half a mile from the shrunken town, it will press upon the imagination that there was a mighty grandeur in the Roman arch.

Grand as the semicircular arch is, when its size is considerable, as a feature open *au jour*, its effect is incomparably increased when it casts a shadowy gloom. The finest examples of this that at the moment recur to the memory are in certain vast vaults, partly overthrown by earthquakes, which lie off the road from Naples to Baiæ, and which were formerly parts of some of the most costly and luxurious villas, belonging to the great Roman millionaires, ever reared in the world. They impress the imagination by their gloom; they spring like a lesser firmament over the head, a firmament that has power to exclude the bright light and the torrid heat of the higher and more aërial arch of heaven; for here, be it remembered, lies great part of the secret of the effect produced by the Roman architect. He was not working for effect, or at all events for effect alone. He was not rearing up an utterly useless, and therefore unmeaning, erection. He had a definite purpose. In that profound shadow, in those spacious but sunless vaults, he provided a refuge from the heat of summer; a refuge which rendered human life, in the hottest part of the Italian year, a long dream of luxurious enjoyment, to those who had the wealth to command his services, and to avail themselves of his skill. For six weeks or two months of the year, with the shade thermometer by day varying from 86° to 96° Fahrenheit, movement, exertion, or even serious thought, becomes very trying to the brain. Memory itself seems to fail under that great heat. If any business is attempted, the one great desire to be still, or to get into the cool and the dark, renders it a condition all but impossible. But to lie on a couch, in a vast, dark, lofty apartment; to have on no more garments than are shown on the representations in fresco on the walls of Pompeii of Campanian feasts in the time of Augustus or of Tiberius; to listen to the trickle of the little jet of water in the atrium, or even in the apartment itself; to refresh the limbs in the bath; to take off the heated stiffness of the hair by the use of scented unguents; to eat the juicy *nespilus;* and to weave a coronal of the Southern flowers, which include many species of the gorgeous African flora,—this is to enjoy the life of the senses in its highest intensity.

Thus the arch, in its form of the semicircular vault, was the great triumph of the Roman architect, because it was not only a form, [illegible] reality. It was exactly that kind of stru[illegible] most suited to the climate and the soil [illegible] which, therefore, most readily lent itself t[illegible] production of true architectural effect. Ju[illegible] a triumphal arch erected as an adornment [illegible] English railway is a falsehood in stone [illegible] marble, a vaulted hall in Italy is an approp[illegible] and valued truth. This prime *ratio entis* c[illegible] semicircular arch,—its use in the form o[illegible] vault,—led to the reproduction of the for[illegible] other cases (where, perhaps, it is not so a[illegible] priate), as matter of congruity. For a va[illegible] room the windows, if there are any, [illegible] naturally have semicircular heads. Not, per[illegible] necessarily; but the only other admissible [illegible] is the flat trabeate top to the light, and, [illegible] for structural and for æsthetic reasons[illegible] adoption of the arch is thus almost deme[illegible] by the very nature of the building.

How this grand form of roof passed int[illegible] dome, and how, owing to the introduction [illegible] new and symbolical arrangement of gr[illegible] plan, it gave birth to other forms, which, c[illegible] broad zone of the world of architecture, [illegible] superseded the more primitive outlin[illegible] may be interesting and instructive to [illegible] But there is yet a word more to be s[illegible] to the vaulted architecture of the Im[illegible] Romans.

Vast size of rooms, in the climate of It[illegible] a primary luxury; nor is it a luxury fo[illegible] season alone, but for all seasons. A room [illegible] by 40 ft., and 30 ft. high, if properly arr[illegible] as to aspect and illumination, has this va[illegible] we speak from experience. It is habitabl[illegible] the year round. It is cool and luxuri[illegible] summer, care, of course, being taken to e[illegible] the direct sunbeams by rush-mats or w[illegible] jalousies. But it requires no fire in w[illegible] proper care being then given to admit the [illegible] day beams and to exclude the northern cu[illegible] It preserves so nearly a normal tempe[illegible] all the year round that the owner feels a [illegible] independence of the outer weather.

In the great vaulted apartments in the [illegible] bourhood of Baiæ, however, the w[illegible] Romans were not content with this medi[illegible] moderation. They sought the direct [illegible] effect of the ground. A partially subterr[illegible] dwelling has a chill which is more than [illegible] be anticipated from knowing the norma[illegible] perature of the earth. A very few [illegible] below the soil is enough to descend in ou[illegible] attain, we will not say an ice-house tem[illegible] ture, but a refrigeratory, quite as cool [illegible] most luxurious can desire. Therefore, [illegible] not so much as a part of the dwelling[illegible] regarded as a structure built upon and [illegible] above the ground that the vault obtain[illegible] importance, as it was as dividing the bas[illegible] from the upper story of a large building[illegible] roofing a retreat constructed in the gar[illegible] grounds, independent of the house. Fo[illegible] an apartment as we have described, occ[illegible] the centre of the *piano nobile*, or firs[illegible] of an Italian palace, a timbered and [illegible] roof often proves cheaper, more secur[illegible] altogether more suitable than a vault. I[illegible] the roof of the subterranean, or semi-s[illegible] ranean hall,—whether that be construct[illegible] the summer repose of the luxurious, or i[illegible] long slumber of the dead, that the vault [illegible] more perfect fitness; and it is as such [illegible] has taken so unrivalled a place in the his[illegible] Italian architecture.

City Street Architecture.—No. 112, [illegible] street has been rebuilt with a greatly im[illegible] entrance to Poppin's-court. Formerly th[illegible] riage-way of this thoroughfare had a height [illegible] than 8 ft. In the erection of their buildin[illegible] owners, Messrs. Brentini, voluntarily inc[illegible] this height to nearly 13 ft. The new bui[illegible] erected from the designs of Mr. S. Knig[illegible] Cornhill, are faced with the red-toned m[illegible] now often adopted. The plain surfac[illegible] relieved by carvings in stone. Beneat[illegible] upper story a long tile panel, bordere[illegible] bold majolica enrichments, is inscribed [illegible] Poppinjay," thus restoring the name [illegible] ancient hostel which once stood near th[illegible] and in a carved niche in the centre of t[illegible] story the poppinjay (or parrot) is suspen[illegible] a ring. It was here that the town-house [illegible] abbots of Cirencester stood, and the [illegible] recorded by an appropriate tablet. The [illegible] contractors are Messrs. Roberts Broth[illegible] Islington, Mr. Dunn being the clerk of [illegible] under the architect.

BRAZEN GATES FROM BALLAWAT.

period in the long story of Assyria's rule
be so fitly styled the "iron age" as that
n marks the middle empire, commencing
n the tenth century and ending with the
n age of Sargonide dominion. To the
rch, "the father of all gods and men," the
a's ancestor, the great god Assur, had been
ated the early empire, which rose round
imitive metropolis of Assur (Kileh Shergat),
hich slowly spread its rule north and west
the fertile river land, reaching its zenith
reign of Tiglath Pilieser I. (B.C. 1120).
mall Semite colony, with its "city on the
bank,"* was but the foundation course, the
pedestal, of that colossus which in after
stood forth as Assur, the conqueror of all
This early empire, with its pastoral
schooling themselves in the border raids
Akkadian Babylon for mightier deeds in
o come may be fitly styled the "stone age
lssyria." A deep layer of historic *débris*
tes this strata from that of the iron age,
plintered fragments of tradition, thickly
d with legend and mythic dross, are all
emain of the link which bound the two.
n the tenth century a soldier king, with a
's name, Tiglath Adur, "servant of the
bd," came to the throne of Assur, and
im dawned the new empire,—the middle
Assur. As in the patriarch time of early
a, the godfather Assur had guided and
the young child of Babylon, so now the
Nergal, the "giant god of war,"—the
lies of Assur,—protected and guided
uthful empire. Calah, the new capital,
a well-chosen position on the east bank
Tigris, near the mouth of the greater
ecame the metropolis of Assur, and there
he palaces and temples of Assur-nazir-pal
885) and his soldier son, Shalmanesar III.
860). From the mounds of Calah,
nown to the Arabs as Tel Namrúd, that
xplorer, Sir A. H. Layard, brought forth
cords of the kings who ruled there, and
n palace wall and temple floor have left
cord of their mighty deeds. The pave-
labs from the temple of the war-god, on
rth-western extremity of the mound, have
ded us with the folio edition of the reign
ur-nazir-pal, and the walls of his palace
y in sculptured frieze the victories there
ed. The flank of winged bull, or lion, and
le of sculptured obelisk, hand down to us
uals of his warlike son. But of this latter
ch two new records have been found,
far surpass all that had rewarded the
of former explorers.

icated as the middle Assyrian empire was
r's dread lord, it was but natural that
zealous devotees as Shalmanesar III. and
her should have built to him they served
e of sacrifice and prayer, and it is this
Assyrian house of Janus that Mr. Hormuzd
m has discovered during his last visits to
ave mounds of Assyria, and from the ruins
ich he has rescued the rich *Portæ Belli*
gave entrance to its courts. Nine miles
north-east of the rugged tumuli of Nim-
e traveller will see rising from the plain
ll oblong mound, crowned at either end
wo dome-shaped eminences which mark
ins of some crumbled fane. This mound,
strange significance, has been called by
abs Ballawat, "The Ruin," and at a short
ce from its southern entrance there has
up a village of some thirty houses, which
a similar name. This mound, now a
n cemetery, was once the site of the
city of Imgur Bel, the home of the war-
f Assyria, and thither, across the now
ed plain, from the new capital of Calah,
y year, in triumph passed the conquering
of nations, to render homage to his pro-
god.

he bright eastern sun there had flashed
h weapon and bright armour of the kings
ur, who had passed to this rich suburban
to render thank-offerings to him who had
ed the exploits of the year with victory.
ow changed is all; where once was life
and wealth and beauty is now nought but waste, decay, and death.

> "The dying sun who sadly leaves the plain,
> With golden hands would conjure up again,
> From these sad mounds, of dull and sombre hue,
> The ruddy flame, which nightly flash'd adieu.
> No temple tower, or brazen portal wide,
> Rich with the record of a monarch's pride,
> Nor terraced lawn, in wide and stately rank,
> Return'd him answer, as to rest he sank.
> Black night, oblivious sable-vested queen,
> Were better mistress of this death-like scene,
> So as light's weary monarch laid him slowly down,
> She, dreaded queen, assumes his empire's crown.
> A buried state, a nation pass'd away,
> Has nought in common with the lord of day."

Nearly thirty years ago the English surveyors, under Captain Felix Jones, who surveyed the regions round the Assyrian mounds, marked the position of Ballawat, lying, as it does, about nine miles north-east of Nimroud, and fifteen south-east of Mosul, and but a short distance from the banks of the Shor Derreh, a stream which flows into the greater Zab. But Layard, who frequently visited the regions round Nimroud, never seems to have devoted any attention to this site, which has now proved so prolific of records of the past. The mound had been for some years used by the villagers of Ballawat as a cemetery, and graves were from time to time dug on its surface, but none until 1875 appear to have reached a sufficient depth to touch the treasures hidden beneath the *débris*. About that time, however, certain fragments of bronze were discovered by a gravedigger in the mound, and as they were seen to bear *kitabé*, or "inscriptions," as well as figures of the infidels, they were preserved, and during some expedition to the town of Mosul were borne thither by the finder. The exploration carried on by Sir A. H. Layard and his followers have taught the turn-penny natives that the Frangi have a value for these *antika*, the result being a far less destruction of monuments than before. Some of these plates of bronze were taken by their finder to Mosul, and were there purchased from him. Two of the largest fragments, about 2 ft. in length and 6 in. in diameter, were purchased by a friend of Mr. Rassam's, and sent to England to him. They were examined by an Assyriologist, and one fragment was found to bear the legend, — Tribute of the Zurái (Tyrians), and Zidunái (Sidonians); while the other fragment represented the Assyrian soldiers cutting down the Cedars of Lebanon. These fragments were exhibited by Mr. Rassam at a meeting of the Society of Biblical Archæology in Conduit-street. Other fragments, smaller than the English portions, were purchased by the French, and are now in private hands. One of these bears the name of the king Shalmanesar. At the time of the arrival of these fragments in England it was not known from what site they came, and so no further search was made. During his expedition to Assyria in 1877-8, for the trustees of the British Museum, Mr. Hormuzd Rassam was able to trace the site whence these records came, and by him Ballawat was first explored. The labours of explorers in Assyria since the time of Sir A. H. Layard had been almost entirely confined to the site of Nineveh, few had devoted any attention to Nimroud. Mr. Rassam commenced operations almost simultaneously on both sites, and from the workmen employed on the latter mound he was enabled to detach a small body to go and tap the site of Ballawat. The mound being the cemetery of the village, it was extremely difficult to excavate, but by his perseverance and native knowledge of the people, Mr. Rassam was able to avoid any direct riot, and to lay bare portions of both the north-west and south-east sides of the mound. The city or temple town of Imgur-Bel, which the inscriptions discovered on the site show to have stood here, was erected on a raised oblong mound, with its corners pointing to the cardinal points. The circumference of the mound was roughly estimated as about 2,000 ft., the decay of the upper portion of the erections on the north and south having caused it to assume a somewhat oval form. On the south-east side of the mound was found the shrine of the god, and a small temple attached to it. The temple was in greater part cleared for Mr. Rassam, and its plan ascertained. It was small in size, but probably was richly decorated for the royal worshippers. It was 45 ft. in length, and 25 ft. in breadth, and the corners seem to have had curious chamfering buttresses. Its axis was nearly due east and west, and at the east end was situated a chancel, where was the altar of sacrifice, standing 8 ft. from the east wall, and approached by four graduated steps. Of all the Assyrian edifices discovered, there is none which at first glance is so Christian in its plan as this temple of Nergal at Ballawat. Near the altar was found a tank, with drain for carrying off the blood of the victims slain, or the wine and other libations poured on the altar. No trace was found of the statue of the god, which had been placed there. On the north side, Mr. Rassam discovered a stone cist, 3 ft. 6 in. by 2 ft., containing inscribed foundation-stones of the temple. This interesting safe is now to be seen in the central saloon of the Assyrian gallery in the British Museum. The opening to admit the tablets was in the centre of the face, and grooved to admit of a stone lid being placed over the opening. On the face of the cist was carved a duplicate text to that found written on the stone-books within.

From this text we learn the name of the royal builder of the shrine, and read his pious dedication of it to the warrior god, gaining a faint glimmer of the history previous to his reign.

The temple seems to have been erected, and indeed the whole block of buildings built, by Assur-nazir-pal (B.C. 885), who commences his inscription with the royal genealogy.

"Assur-nazir-pal, the great and powerful king, king of multitudes, king of Assyria.

Son of Tiglath-Adar, the great and mighty king, king of multitudes, king of Assyria.

The son of Rimmon Nirari, the great and mighty king, the king of multitudes, and the king of this same Assyria."

Such was the thrice royal pedigree of the builder king, who records the erection of a "holy house" to Nergal, the war-god.

This opening passage is followed by a well-drawn *précis* of the royal conquest, and a most concise definition of the geographical limits of Assyria.

From the slopes of the Zagros to the shores of the Mediterranean, "the great sea of setting sun," from the rugged stones of the Syrian and Armenian hills, to the alluvial shores of the Persian Gulf, he was lord and master of all. The new Phœnician and Syrian States had rendered homage and service to him, and the wild rebels,—the Arabs or Bedouins, called in this inscription the Súkhi, "revolters,"—had submitted to him. Much of the southern frontier had been recovered from Babylonian marauders, and restored to his rule, and we may perhaps include in these portions the ancient capital of Assur, which has now quite fallen from the page of history.

The troubles which had closed the early empire had ruined and made desolate many cities of Assyria, and among them seems to have been the one which occupied the site of Balawat; for the royal scribe states,—"This city anew I built, and the city Imgur-Bel I proclaimed its name." Here he states, with rich cedar from Lebanon and other precious woods, and the spoil of his many campaigns, he built this temple, and placed in it the statue of Nergal. The text concludes with the usual petition to his ancestors to respect the records here deposited.

In the south-west portion of the mound was found a deep well of ancient construction, and communicating with it and circling the whole of the pile, the explorer found a series of broad aqueducts or water-channels. The smallness of the stream and these water-conduits lead to the supposition that the temple was surrounded by groves of trees and gardens. Interesting as the discoveries on the southern portion of the mound were as restoring to us a most interesting Assyrian edifice, they are far surpassed by the monuments which were uncovered at the other extremity. The brazen fragments which had first attracted the attention of Mr. Rassam were discovered on the side of the mound, and a further search laid bare the interesting monuments of which they formed part.

Carefully removing the accumulation of *débris*, Mr. Rassam uncovered a strange brazen monument, which, as it lay thickly corroded with age and crushed and bent by the weight of earth above, was utterly beyond explanation. Long scrolls of bronze, more than 8 ft. in length, some perfect, some broken, but all thickly encrusted with oxidation, and crumbling with exposure to the air, massive caps of brazen-plated posts, and other fragments, all indicated that here had stood some grand trophy of Assyrian kings.

Owing to the graves upon the mound, excavations could not be carried out in so systematic a manner as could be desired, and so, instead of

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* The ancient name of Assur.

laying bare all the surrounding space, Mr. Rassam was only able to cut around a series of test trenches. By means of these, he discovered a second mass of bronze fragments, evidently forming a similar trophy to that discovered at first. This second object was discovered about 70 ft. east of the first, and other trenches brought to light the marble platforms of a third and fourth object of a similar kind. It is much to be regretted by all who would study the archæology of this interesting site that the space could not have been entirely uncovered so as to give the relation of these great brazen gates, for such they prove to be, to each other and to the adjacent edifices. Some idea of the terrific confusion of the remains may be gathered when we inspect the first restoration of these brazen portals, as drawn by Mr. Rassam from local study with that which has now evolved itself after the labour expended on the remains by Mr. Ready, of the British Museum. The extraordinary object resembling a set of signal arms, without utility or purpose, has given place to a pair of well-proportioned brazen gates capable of almost complete restoration, with posts, caps, &c., in perfect harmony.

Fortunately, although crushed and bent, and thickly covered with oxidation, these gates were in bulk complete, and now that by patient toil they have been cleaned, we are able to form a very full idea of their appearance.

The framework on which the brazen plates were nailed was of cedar or pine, and consisted of two large folding-doors, each leaf of which was 22 ft. high by 7 ft. wide. These leaves were joined to the massive posts required to carry the ponderous mass, which were 1 ft. in diameter, and pierced throughout with a wrought-iron core, being crowned by massive wooden caps. The whole of the framework, doors, posts, and caps, were covered with plates of bronze, those on the doors being richly worked, while the caps and shoes of the posts were covered with beaten metal. The decoration of the doors was by a series of long bronze bands, 2 ft. wide and 8 ft. long, which were laid horizontally on both door and post, and secured by brazen nails. These scrolls were each divided into two horizontal friezes of sculptured work, divided by a narrow band of plain bronze, studded with the rosettes which decorated the nail-holes. These bands of relievi were about 9 in. wide, and were treated in *repoussé* work, finished with a graving-tool. As there were seven arms to each leaf of the double doors, we may suppose that a short space intervened between the plates, showing the rich polished cedar backing, which harmonised well with these works of art.

These stately brazen portals, which, twenty-seven centuries ago, fresh and bright from the metal-worker's hands, swung to admit the conqueror home, may now take their place in that long list of Triumph's records raised by victor kings. The stately halls of Karnak, the obelisks and pylons which spoke of the victories of Egypt's lords, the columns and triumph-arches of Roman victors, now find a fellowship with this Portæ Triumphalis of Shalmanesar, whose brazen surface portrayed in vivid tableaux the triumphs of the warlike king.

This long line of rich, worked bronze, wherein are figured all the triumphs of the great king and his heroic soldiers, may now take its place alongside of the great war panorama of Seti Meneptah in the halls of Karnak, or of his son Rameses II. Indeed, in the long series of pictured victories here set forth, and accompanied by short inscriptions which explain their meaning, we have a close resemblance to the sculptured tableaux of Seti I., where the scribe, with his ready style, aids to send forth the record of his master's deeds of valour. Here, in the historic scroll of Shalmanesar III., which was completed shortly after his 9th year, B.C. 851, we have set forth in regular sequence the events of nine years of his reign. Here march the armies forth to war, bright in arms and armour, with prancing steed and rumbling chariot; there in the camp they rest, after hard-won fight, and captive kings render homage to the victor.

In other scrolls we see portrayed the siege of rebel cities, battles in rugged mountain passes, or along the river bank; here sea-bound Tyre and Sidon, render tribute to the victorious king; there Hittite, Carchemish, or rock-built Armenian towns pour their rich gifts in homage at his feet. The long winding ribbon of sculptured tableau which winds around the Trajan column has furnished much of interest to the students of the legions of Rome, so now the scrolls from Ballawat portray in a similar, though fuller manner the *matériel*, discipline, and system of the hosts of Assur.

Space will not permit us to deal with the numerous places of interest in the rich series before us, but as the sequence is so well preserved and so instructive, we will in this first notice of the royal panorama select those scenes which illustrate the Syrian wars of Shalmanesar, reserving the Armenian and other campaigns for a future notice.

Syria and Assyria.

The latter years of the reign of Tiglath-Pilieser (B.C. 1120) saw the sun of the early empire past his zenith, and sinking slowly down and giving place to the gloomy night of depression and trouble. This decay of the Assyrian empire must have been rapid, as is always the decay in Oriental rule. As in the human frame, when poison enters the blood, quickly it spreads over the frame, until it reaches the heart, and death is victor. So with an empire: the poison of sedition and rebellion, quickly spread by the hot blood of popular uprising, at last strikes the royal heart,—so dies an empire. With Assyria dead or lying in servile torpor, we must turn to other lands to gain the tesseræ with which to build the mosaic of the history of Western Asia. Less than half a century saw the fall of Assyria, and around her rose a fringe of states. Westward we turn. Those strange Semitic colonists who centuries before had wandered forth from Egypt, and conquered the fertile plains of Canaan, were now growing into a wealthy commune, forming the link between the rich ports of Tyre and Sidon and the Nile Valley. David, the son of Jesse, had given them a capital in the rock-built Jebus,* now the "City of Peace," and his all-wise son, the rich and enterprising Solomon, had spread his influence far and wide, from the sea-coast to the river Euphrates. Tyre, under Hiram, was rich in its merchant princes, and the Syrian kingdoms of Hamath, Damascus, and Carchemish form important factors in the polity of Western Asia. The division of the Hebrew kingdom on the accession of Rehoboam but added another State to the Syrian confederation, which formed a cyclopian barrier, closing the sea from the armies of Assur. It was this homogeneous mass of states which faced the founders of the middle empire, and which at last broke before the iron bands of Assur.

Assur-nazir-pal (B.C. 885), the warlike father of the king whose record is before us, had cut his way through the Syrian lines to the shores of the Sea of the Setting Sun.

"In that day, also, to the slopes of Lebanon (*Labnana*) to the Great Sea of the land of Phœnicia (*Akharri*) I ascended. In the sea my weapons I flashed. Victims to the gods I carried.

Tribute of the kings of the seashore of the Tyrians, Zidonians, Gebalites,† Makhaltai, Maizai, Kazai,‡ and the Phœnicians, people of Arvad who dwell in the midst of the sea, I received silver, gold, tin,§ copperplates of copper, woven dresses, precious woods, and teeth of the dolphin (*nakhari*), the offspring of the sea as their tribute I received."

Such was the result of the expedition of Assur-nazir-pal in B.C. 875, which broke the Syrian confederation for the time, and once more Assyrian weapons, bright with the gleams of victory, flashed on the blue waves of the Mediterranean. But it remained for Shalmanesar his son to crush the league and strike terror into the heart of allied Syria; this he did by the great victory of Kaskar in B.C. 854.

Shalmanesar came to the Assyrian throne in B.C. 859, and, like his father, he at once plunged into glorious war. His first campaign seems to have been a tribute-gathering expedition; and it was at the close of this march to the shores of the Great Sea that the Phœnician cities rendered him tribute and service, and vividly the artist has worked out for us in the brazen scroll the details of a scene which forms a mile-stone on the path of civilisation.

"The Tribute of the Ships of the Tyrians and Sidonians,"—such is the explanatory gloss written by the scribe above his brother artist's picture.

Here we see the Phœnician city built on a rocky island a short distance from the shore, fulfilling exactly its description by the Assyrian scribe, "Tyre in the midst of the sea." The city is surrounded by a high wall, with but towers, both wall and tower having serrated battlements of the type usually found in representations of Syrian cities. The towers which flank the gate facing the main land are of lofty and of greater strength. From this gate there slopes down to the sea an inclined road, which formed the landward wharf or quay, down this the artist has represented the Tyrians bearing tribute offerings to the ships, which transport them to the main land. With that ingenuity worthy of the inhabitants of the Celestial Land, the artist has included in one picture individuals,—male and female,—a typical representation of the inhabitants of Tyre. This people come forth from the city gate, bearing heavy baskets or trays, with ingots of precious metal to the ship beside the quay. But here the conservatism of space ceases, and with very considerable freedom the artist has placed before us the whole scene which took place. The Tyrian ships pass to and fro from the mainland bearing the tribute. One we see alongside the quay being loaded, another is just being drawn on shore by some of the carriers employed by the Assyrians. The boats differ much from the Phœnician ships, as figured in the sculptures of Khorsabad, or of Sennacherib when representing the flight of the Phœnicians to Cyprus or those of the Mediterranean pirates represented in the Egyptian paintings and sculptures. The high-curved prow and stern, and of shallow draught, they resemble in many respects the shore-boats of the Levantine ports, or the Venetian *gondola*, of which they may have been the types. They are rowed by two men, one at each end, with broad-bladed and curved oars. We may, therefore, conclude that here we have not pictured to us the "black ships of the Phoinikes," but only shore-boats. On the shore we see the Assyrian king awaiting the procession of tribute-bearers, who are being marshalled into its proper order by the soldiers. Carriers bring up from the ships the trays of precious metals, the bales of cloth and fine-woven linen, the brazen bowls and caldrons, and each is placed in orderly sequence by the soldiers of the conqueror.

The Assyrian host is drawn up on the land probably on the site afterwards occupied by Roman Palæ-Tyrus, and the king, surrounded by a brilliant group, has stepped from his chariot, and stands in strict conformity with the courtly etiquette awaiting the deputation of submissive Tyrians. Among the attendants round the royal person we see the eunuch who holds the rich embroidered umbrella over the royal master's head; the armour-bearer who carries the royal bow in its leather or skin case, the scribes, and military commanders. In the rear of the group are picked troops surrounding the royal chariot, with its richly-caparisoned steeds. The king is clad in his long fringed royal robes, rich with embroidery and, perhaps the produce of some Tyrian loom. Before him come the tribute-bearers, headed by the princes of Tyre, who are introduced by attending Assyrian officers, and behind follow the tribute-bearers.

A train of eight men bear the bales of garments, folded, and bound with cords. These are the rich robes similar to those Hecabé sent with cared as the produce of Sidonian work. Blue robes, as garments clothing the statues of the gods of Assyria, are mentioned in the earliest days of the Babylonian empire, and in the legends of the hero Isdubar. Next follow the bearers of brazen cauldrons, the work of the metal-founders of Phœnicia, the cunning Sidonians. Gold, silver, and tin, in ingots or bars, are carried by the remainder of the train, and help to swell the "tribute of the ships of Tyre."

It should be noticed that the fragments of bronze, with Tyrian and Sidonian tribute-bearers, in possession of Mr. Rassam, do not belong to other scrolls, or even to a later series of gates, as the brazen picture now before us on these gates has come down uninjured.

Considered historically as an event in the history of Assyria, the tribute service of the Tyrian princes here portrayed is important; but how much does its value increase when we view it as an event in the history of civilisation. Here we see the practical, war-trained Assyrian a rich patron of the arts, and a purchaser of the wares of merchants more

* 2 Samuel v. 6-10.
† People of Bylbus.
‡ The Kash-kash of Egyptian inscriptions.
§ Tin called *kastaritu*; the Greek *kastiteros*, perhaps from Britain.

* See Layard, Mon. Nineveh, series i., plate 7.
† Iliad, vi., 288—91.

princes of the Trader-land. The acute nician trader saw in his victor one who d purchase his wares gathered from the s of distant lands. Year by year he came alah, or Nineveh, his sons and young men ted in the foundries and workshops of the l patron of the arts, or studied in the ols of the priests the learning and wisdom e Chaldean doctors. To distant lands they eir turn bore the learning gained, and the om and wealth of Assur were by them nd on the distant west. In this sculpd plate now before us we have the repreation of a great event, not only in the hisof the Assyrian empire, but one which s a landmark in the sands of time. e are other scenes in these Syrian ruins h must be withheld until a second notice of rich work of art. Here, step by step, we race the progress of that grand victoryned campaign which in B.C. 854 broke for the great Syrian league, when Ahab, Benid, and the kings of Hamath and sea-washed nicia made one last stand against the iron s of Assur. The description of these s, and others connected with them, will the subject of the next notice of the on Gates of Shalmanesar.

EMPLOYER OF LABOUR AND THE GOVERNMENT.

e arguments employed by the very importdeputation of the employers of labour who, e 9th instant, waited on the Prime Minister ge upon the Government the withdrawal of ill introduced into the House of Commons e Attorney-General respecting the liability ployers for injury sustained by their serd, afford a pregnant comment on the re- we offered to our readers on the sub- (see p. 299, *ante*). When, at the comment of the session, the matter was first t under public attention, the arguments se who wished for a change in the law almost exclusively put forth. We then inted that there were two sides to the ques- and that any attempt so to strain the fair sibility of the employer as to disturb the alance of the scales of justice could not be mischievous to the employed. The yers themselves have now brought their ase before the public, in the serious form rotest addressed to the Prime Minister. ut attempting, for the moment, a further al investigation of the question, it is de- to call attention to the contention of the yer.

first speaker was Mr. Knowles, M.P., the an of the Coal Trade Association of Great n. He spoke, no doubt, from the point of f a single trade; but it is a trade which, 75, employed 525,843 persons in the ies alone; to say nothing of the large r engaged in the carriage, distribution, ale of coal. In 1872, Mr. Knowles re- d the Prime Minister, the Mines Regula- t became law; a most stringent measure, ich the agents and managers of mines rendered liable to fine and imprisonment, hard labour, for dereliction of duty. So ent was the Act that a manager could not ployed until he had undergone an examinand possessed a certificate approved of by me Secretary. It was the feeling of the rs, as expressed by Mr. Knowles, that it be a very cruel thing to put any further sibility on the coal trade. Experience ught the employer, said Mr. Knowles, whenever disasters of a fatal nature red in the mines it was always found upon nation that they might have been pre- if proper precautions had been taken. ost probable that we have but an imperport of what Mr. Knowles actually said, argument, thus baldly stated, tells rather t than for, his own object. But what we ve to be the true view of the case, as far operation of the Mines Regulation Act is ned, is this. The safety of the men ds on two elements, namely, the care and tion of the masters, exerted through the ers, and the corresponding action of the ual miners. As it has been hitherto wherever investigation was possible at least, is the statement) that exhs, which are the most fertile causes of injuries, have almost invariably arisen he fault of miners themselves, and from breach of the regulations of the mines, it is not against the owners that any increased stringency on the part of the law should be invoked. That, we apprehend, would be the position of the owners of collieries. It cannot be denied that it is one of a grave nature; but another consideration occurs to us, on reading the remarks of Mr. Knowles, which is one that affects all parties alike. The manager of the coal-mine, according to the provision of the present law, is in a position of personal responsibility of a grave and serious nature. If to this be added the further responsibility of having to respond to any claim against the owner for damages in case of accident, the manager will be placed in a position so ambiguous that it may prove difficult to induce men of sufficient character to undertake it. The first object of men and masters is, or ought to be, one,—namely, to avoid disaster. That the Legislature have sought to attain by throwing a certain onus on the managers. The idea of avoiding disaster is one thing, and the idea of obtaining compensation is another. Of these, one is a national, the other a personal, interest. Everything that would tend to divert the energies of all parties employed to the latter, rather than to the former object, would be an injury to the most important interest, and this the Employers' Liabilities Bill is, in the opinion of the employers of labour, calculated to effect.

Mr. R. Baxter approached the subject from a wider, but not a less exact, point of view. Millions of capital, he pointed out, had been invested under the existing state of the law. Thousands and thousands of men had been engaged upon that basis. If, as under the proposed Bill, the opposite of the present state of things was introduced, any defaulting workman would at once be able to injure his fellows and to ruin his employers. Thus, supposing three hundred men to be lost by an explosion, in addition to the very serious injury to his property (caused perhaps by a single miner resolving to indulge himself in "a smoke," contrary to regulation), the mine overseer might be called upon to pay 300,000*l.* as compensation to the families of the men killed. Such a measure would effect an entire revolution in the relation of capital and labour. It may be added that it would be a revolution which could have only one out of two results. It would either drive away solid realised capital from industrial employment, leaving open the door, either for co-operative associations, which have not hitherto permanently succeeded in the conduct of such operations, or for rash speculators, whose action on industry could hardly fail to be ultimately ruinous; or, on the other hand, it would compel all owners of such property as incurred risk of the kind, to contract themselves out of the danger, and to make it a part of their agreement with the workmen that the provisions of the new law should not be applicable to that special case.

Mr. Robinson, the president of the Federation of Employers of Great Britain, struck a new keynote, and one which, if it could have been struck by the opposite party, would at once have been accepted with acclaim. He considered that free trade should exist in reference to the employment of men. It is true that this view of Mr. Robinson is diametrically opposed to the general action of trade unions. But the question is, after all, is free trade a humbug and a delusion, or not? and, if not, why are the workpeople, who generally have the causes of danger in their own hands, to apply for protection against the masters, who have not?

We shall not attempt either to estimate the effect which these representations are likely to have upon the Government or upon Parliament, or to anticipate the replies which may be adduced by the advocates of a change in the existing law. But we point with satisfaction to one thing which was suggested by several speeches, and which has our most hearty good will and support,—that is, the introduction, or rather the extension of the system of mutual insurance. The chairman of the Great Western Railway stated that his company paid the handsome contribution of 15,000*l.* a year to aid the self-helping associations of their men. Any tentative legislation,—and no new Act of Parliament on the subject can be anything but tentative,—that tended to stop such solid benefits to the workpeople as subscriptions of that nature, must involve much loss and suffering for very questionable benefit. We urge upon all parties to turn their attention to a ground on which they can meet in common. There can be no question whatever, supposing a given sum,—take it at 100,000*l.* per annum, or any other figure,—has to be paid by the employer of labour in one of two ways,—in which way it would be of most advantage to the country, as well as to all concerned. Let us regard it, on the one hand, as extracted by the courts of law from the pockets of the masters for compensation for fatal accident, or, on the other, as freely offered in subscription for mutual assurance. In the first place, a price of life and suffering, somewhat equal to the amount of the fine, must be previously paid. In the second case, not only would the money be paid without a contest, but the worst cases of demand for its application would be in all probability obviated. The more the *status* of the working man is raised; the more self-respect, based on a proper sense of the duty and dignity of work, is encouraged; the more good feeling is raised between master and men,—the fewer will be the great disasters. Such, at least, all analogy leads us to anticipate. We shall be very glad to hear of the direction of a serious effort on the part of industrial people to help themselves, instead of running to Parliament on every pinch for help that Parliament is, ten to one, utterly powerless to afford, even if it tried to do so. Heaven helps those who help themselves.

MORE ABOUT PICTURES AT THE ROYAL ACADEMY.

The long gallery (III.) contains some of the best portraits of this year's exhibition. We have already mentioned the "Gladstone" of Mr. Millais, and considerable, though hardly equal, interest will be felt in Mr. Ouless's portrait of Mr. Bright (183), though we doubt if we should class this as among the artist's most marked successes. It may be that the subject is not a good one in a pictorial sense, the face not presenting the kind of character that is effective in portraiture. It is a thoroughly faithful likeness, studied and finished with great care, and strikes one as a likeness rather than as a picture. Mr. Ouless has a most telling portrait, however, in Gallery V., that of Sir Thomas Gladstone (395), a strongly-marked, thin, nervous face, the energetic expression of which is admirable, and quite out of the ordinary line of portraiture. Among the leading portraits of the exhibition is the group by M. Fantin, in the lecture-room, "La Famille D." (1,030), a group painted in that hard pronounced style and predominance of grey tones which have marked other portraits by this accomplished and original painter. His manner results in an absolute and almost prosaic realism of delineation which nevertheless is removed from the category of realistic painting by the peculiar and conventional tone of colouring. The effect is perhaps rather original than agreeable; interesting as a break in the normal style of portrait-painting, but hardly the kind of representation one would wish to have permanently of one's friends. As a specimen of almost defiant (one might say) realism may be taken the portrait of the Rev. Thos. Stevens, by Mr. E. J. Gregory (276), an artist who made a bit last year by a very clever portrait in the Grosvenor Gallery of a gentleman in a rough shooting-coat, and who seems accordingly to have taken to rough subjects. The painting is original and powerful enough, but seems almost purposely to exaggerate the peculiarities of an obviously peculiar sitter. Still, Mr. Gregory has a way of his own in portraiture, and that is a good deal.

Mr. Jas. Archer, an able painter, has several good specimens of his art. His "Lady Giffard" (264) amongst them, is dignified and easy in style. Mr. Calderon sends a very pretty and successful family piece (268) "A Voyage Round the World," a young party and their mother seated together; the individuality of expression in the children of different ages, and the half demure and staid look of the elder girl, are most happily and delicately rendered. The large gallery contains two or three of the most original things in the Exhibition; Mr. Marks's "Old Friends," for instance (251), where a couple of naval heroes are admiring some battered and historic figureheads of ships, which look most amusingly classical and stolid, each perched on the top of a post. Mr. Orchardson contributes one of the best things he has ever painted, "Hard Hit!" (257), a card-playing scene, where a young Charles Surface is leaving the room after a hard night's card playing, trying to adopt an indifferent swagger; the companions who have been fleecing him look

bad enough for anything; the floor is strewed with heaps of cards. The general style and scheme of colour resemble "Left by the Tide" of last year; it is not a completely satisfactory style, but the painter has made it himself, and done good things in it,—none better than this. His compatriot, Mr. Pettie, is also exceedingly successful this year in a larger and also a more serious picture than is his wont, entitled "The Death Warrant" (220), a large painting, representing the scene in a council-chamber, presided over by a poor young delicate boy-king, who has to sign the death-warrant handed over to him by stern old men, long hardened to such business. There is real and true pathos in the sad revulsion of feeling of the sweet feminine-looking lad, all the more impressive that one feels how historically true it is,—the principal figure, by the way, seems to suggest our own Edward VI., though not so named. It is noteworthy that Mr. Pettie has here managed, almost for the first time, to be perfectly serious over his subject.

Mr. Eyre Crowe has not been very successful in his "Death of Marat" (301); the editor of *L'Ami du Peuple* is odious enough, but Charlotte Corday is weak, and, moreover, has a portentously long head. Near this is a picture appealing (alas, how rare in an English exhibition!) to the most purely cultured and artistic sympathy, "Le Ducat" (306), by Mdme. Henriette Browne. It is simply the figure, seated, of an old man of very pronounced aquiline physiognomy, in black silk gown, examining a gold coin through a magnifying glass. There is not much in the subject *per se* to interest; why is it that we look at this picture with such a feeling of refreshment? Because it appeals to a sense of delicacy of balance and finish little cultivated among English picture-seers, and is completely above the mere prosaic interest of every-day life to which alone so many English painters appeal. Compare it, for instance, with Mr. Leslie's very pretty work in the same room, called "Naughty Kitty"; each of them represents an imaginary and trifling incident of real life, but the English painter's work smells of bread and butter; it seems painted to amuse children and to be "chromo-ed" for an illustrated paper; the good-looking girl may be any Miss Lucy or Miss Clara out of any steady-going respectable parsonage, without an idea beyond housekeeping and lawn tennis; the other is a figure that interests and fixes one from its profound significance of character and manner, as well as for dignity, breadth, and completeness of style in the whole work. Mr. Boughton's "Resting-place" (330), is one of the best things he has done, in which sadness and indifference sit side by side as they do in life; which, moreover, is most effectively composed, and shows, besides the admirable character in the figures, very delicate and true painting of an ordinary bit of English roadside landscape. Mr. Marks's diploma work, "Science is Measurement," an old naturalist making a careful drawing of an extinct bird's skeleton, is in his best style of dry humour. Mr. Elmore's study called "Sabrina" is a good piece of figure-painting, but it is a pity he did not call it merely "study of the nude": as an ideal of Milton's lovely and chaste creation it is little short of revolting.

Gallery V. has for a centre-piece Sir John Gilbert's big canvas "The Return of the Victors," in which a number of the hectoring fellows on armoured horses, whom he has so often inflicted on us, are all filing past in procession, and let us devoutly hope we have now seen the last of them. Sir John has shown us lately how much better and less common-place things he can do, and it is too bad of him to fall back upon these worn-out tinsel properties again. The picture of the room is the "Sea-Birds Resting-place," by Mr. Peter Graham (447), a perfect triumph of realism in the painting of the slippery rocks and the cool green water stained by the black sea-weed floating below; one would like to sit on a ledge there and listen to the "lap" of the water. A very admirable portrait by Mr. Storey (421) is to be found here, a three-quarter length of a thin-featured refined young woman in a blue dress; there is a great delicacy of feeling in this, and very fine execution. Mr. Bridgman's effective archæological picture of "A Royal Pastime in Nineveh," proves deservedly very attractive; the architectural detail is most carefully studied, and the lion just loosed from his cage equally so.

Mr. C. Napier Hemy strikes somewhat of a new key in his "Vespers" (468), where a boat winds slowly along brown water under the high walls of a town: the effect of the whole is fine and solemn, and answers to the suggestion of the title. We do not know what Mr. Britton Riviere is at with his large picture, and cannot care for Mr. Woodville's "Before Leuthen," which has been talked of a good deal, but hardly tells its story, and contains very curiously-drawn horses. Some little things in the room are very good; notably a little landscape by Mr. W. S. Jay, "Showery Weather" (512); a "Study," by Mr. G. Clausen (518); "A Stranger in the Field," by Mr. Meyerbeim" (502), an admirable cattle painting; and "The Duet," by Mr. R. M'Gregor (513),—a children's scene. We may also mention Mr. Hodgson's work, "The French Naturalist in Algiers,"—a good specimen, but hardly the best, of his own style.

The centre place of Gallery VII. is filled by Mrs. Butler's principal work, "The Remnant of an Army," the one man and horse who found their way back to Jellallabad after the destruction of a whole army of our troops in 1842. The man and horse are in the centre of the picture, the horse staggering and ready to drop, the rider apparently holding on to the pommel of the saddle with both hands; in the distance a party come out of the town gate to meet him. This is no commonplace work, and well maintains Mrs. Butler's reputation. Mr. Ouless's "Dr. Ridding" is an excellent portrait of a head-master who seems well calculated to rule, and there is a vigour and "go" in the style of the painting, which suit the character of the head. Mr. Croft's battle-picture, Napoleon leaving his carriage at Genappe, in order to get away on horseback (which, it seems, he did in such a hurry as to leave his hat behind), deserves more cordial mention than it has received in some quarters; it is a very good and real fighting picture, the figures of the sturdy cool old warriors of the old guard presiding quietly over slaughter in the foreground, and keeping a margin for the Emperor, are as characteristic as possible, and the attitude and expression of Napoleon, betraying no feeling in his face, but with his passion indicated by the clenched hand, is exceedingly good; the whole of the details are well studied. Mr. Brett's large painting of Conway, from the sea, with a rather affected title (643), is one of the most powerful things in the exhibition: possibly the landscape is almost too strongly made out, but the clouds are grand, and it is worth while to specially notice the wonderful reality of the contrast between the sandbanks and the water from which they rise, the banks so solid, the water so absolutely transparent and liquid, that it is difficult to believe this is but a surface of pigments.

In the lecture-room the big works are not the best, it we except Mr. Wirgman's large portrait of Mr. Marnock (951), which is well painted. Mr. Joseph Clark has a small picture full of character, "Jeane's Wedden-day in Mornen" (915), only spoiled by the uninteresting and rather foolish look of the bridegroom; the other figures are admirable, especially the children admiring the modest-sized wedding-cake. Mr. G. Reid has a small landscape, "Norham" (936), down in a corner, well worth looking at; and Mr. Howard Helmick, whose name we have noticed in the last year or two as an admirable painter of semi-humorous scenes on a small scale, has a very clever little work, entitled "The Theologians" (1,031). A curious fanciful piece by Mr. Arthur Hughes, called "The Property-room" (929), contains some most delicate painting, but is rather too vague in its aim and meaning to be quite satisfactory. Mr. Rooke's series of small paintings, entitled "King Ahab's Coveting," seem to us remarkable rather as studies of antique costume and surroundings than of human passion, though there are very fine points; the figure of Jezebel, in the scene where Ahab is rebuked by the prophet, is exceedingly good; a handsome, tall, supercilious woman, utterly undaunted by an attack under which her husband cowers. The artist seems to affect rather an antique style in his painting, which, perhaps, is one reason that he fails to give an impression of reality. Mr. Long's large painting of Vashti we cannot feel interested in.

We can only mention in Gallery X. Mr. Peter Graham's remarkable scene in a deep rift between cliffs eaten into by the sea for countless ages (1386), a grand subject, hardly so well painted as his quieter one before mentioned; Mr. F. Dicksee's large painting, "Evangeline" from Longfellow's poem, which has fine feeling; Mr. Frank Holl's "Absconded" and Mr. Barnard's "At the Pantomime," the latter as two g illustrations of very disagreeable phases human character, forcibly rendered. We s say something about the sculpture separatel

THE GROSVENOR GALLERY.

Among the first things which we come t going round the larger gallery at the Grosv are some oil sketches of morsels of buildin Italy and elsewhere, by Sir F. Leighton. T are charming bits of architectural illus tion from Capri, from Granada, from Damas and form, we believe, specimens only of a nu rous collection of similar studies of this emi painter, which must be of great interest to ar tects, and of which, we hope, more will be in future exhibitions. The system of grou the works of each contributor is adhered a good many cases, though not entirely. W. B. Richmond, who seems now to have ent transferred his allegiance from Burlington H to Bond-street, is very well represented several works, some of them of exceptional rest and power. That which strikes us is the half-length of a young girl in a bi brimmed hat, under the title, "A Stud Light and Shade," the face being part deep shadow from the rim of the hat. The r is a remarkably successful and delicate s of the modelling and tones of the face u half lights. The portrait of Miss Ada V Thompson is a large powerful representati a stately figure in white dress, seated, tr with statue-like breadth and simplicity, forming a very dignified and monumental of portrait. A small painting, under the "Phydile," illustrates a passage from Hora "Rustica Phydile" standing naked befor altar in the forest, with hands uplifted, attitude reminding one rather of the well-k statue of the "Boy praying": the figure is r long-legged, and strikes us as deficient in nine character and build; indeed, at the glance one almost takes it for a male fig but though hardly very beautiful in rege form, the little work is quite fascinati its purity and delicacy of colour. Mr. Tadema's one contribution to the exhibiti a portrait of Herr Henschel, seated a artist's celebrated piano, manufactured his own designs by Messrs. Broadwood singer is in the act of accompanying hi in a song. The likeness is good, but the e tion strikes us as hard, and not one of most successful of Mr. Tadema's productio regard to artistic effect. Mr. Dicey's painting, entitled "Relics of the Past: in the Museum of Algiers," seems like borrowed from some of Sir F. Leighton's traitures of Eastern domestic architecture interest is not so much in the figures as i execution of the architecture and in the fo of the broad-leaved plants, with the light seen through them. Mr. Carl Haag's "N Warrior" and "African Beauty" shot usual well-known characteristics in works c class in their best form. Miss (?) S Wortley's "Charing Cross Bridge at Midn is an echo of Whistler, so far as general is concerned, in which it is very successful the details and proportion of the bridge a correctly represented, and not in proportion each other, which is a deficiency of some portance when the bridge occupies so prom a place as a foreground object. At the e the room the two sides of the wall are occ by large companion pictures by Mr. W Hills, "Ophelia and Laertes," and "Nymp Young Satyr," of which the latter is the fine and rich in colour, and in a large an manner in keeping with the character o subject; the Ophelia is less powerful in and the faces are deficient in marked char In the centre we have Mr. Richmond s represented by a strange-looking and suffici original painting of "Sarpedon borne awa Sleep and Death," a painting which, like Burne Jones's Pygmalion series, strikes on Gothic treatment of a classic legend. T tional classic grace is quite ignored i Sarpedon is doubled up with his boots (we s say greaves) towards the spectator, his supported by one shadowy figure, while other, with wings pointed parallel and verti draws him up by the shoulders; which is and which is Death we hardly take upon selves to pronounce, but the work, though odd, and, at first sight, indeed, almost ludi in effect, improves on acquaintance, a especially grow sensible of the success

h the feeling of motion is imparted to the
p, who seem almost to glide upwards past
clouds which form the background, and
ugh which they are progressing.
r. Herkomer's large water colour, called,
er pretentiously, "Light, Life, and Melody,"
have already mentioned when on private
elsewhere. Mr. Walter Crane's "Sirens"
raceful but weak, with nothing in them to
t Ulysses' crew to jump overboard. Various
r things in this part of the room may be
d over, just noticing a charming little night
t in Cairo by Mr. Albert Goodwin, and con-
ulating Mr. Strudwick on having given up
ting early Italian masters and painted a
re with a certain beauty of its own, though
not Keats's "Isabella," but a lady of the
rn artists' favourite type, with the usual
air and long chin. Mr. Herkomer's portrait
he Poet Laureate, larger than life, and
ed in water-colour, is not satisfactory, and
inly not flattering to its subject. As to the
m of adopting water-colour for works on a
scale we can see nothing to be gained by
ough, of course, the experiment is interest-
and in the larger picture of peasant life
ioned just now the force with which some
e accessories, such as the tankard on the
, are painted is remarkable, considering the
am, and shows a great success in giving to
-colour the look and the force of oil paint-
Still, *cui bono?* The oil painting would
bly have been better. Mr. R. B. Browning's
re will certainly *not* do, and the less said
the better. Under it is a very pleasing
nen of Mr. Millais's best style of lady's
it, a three-quarter figure in profile, digni-
n attitude, fine in colour, thoroughly lady-
n expression; he has been fortunate in
ter and has done her full justice, to all
rance. Then we find ourselves opposite to
histler's "arrangements," of which the por-
of Miss Corder is almost as good, in its very
nt way; the lady stands with her hat in
and, and in an attitude of immediate move-
as if just about to walk away from the
tor; her back is nearly turned to us and
ce seen in profile over her shoulder; the
is full of character, life, and animation;
it have been any the worse for being
d in detail? Surely not. This work
the more by contrast with the artist's
large portrait of an exceedingly impudent-
g girl in "tights" and with a skipping-
and "*chic*" written in every line of her
nd figure; that it is one of the most dis-
able and vulgar things we ever met with
exhibition is an opinion which not even the
of farthing damages can hinder us from ex-
ing. Passing a good many things of slight
st (for with all respect for Mr. Legros's
or genius we cannot find ourselves
sted in his "Jacob's Dream"), we find at
top end of the room a group of
Watts's intellectual and thoughtful works.
, however, we believe are no new paintings,
s the "Orpheus and Eurydice" be so—we
remember to have met with it before. This
ine and very dramatic treatment of the
ble, the moment chosen being that when
us has just made the fatal look round, and
diately the life has departed from his
ed companion, and she hangs from his arm,
ound her waist to support her, a limp and
s body. The instantaneous transforma-
s so forcibly given, the look of utter life-
ss in the body of Eurydice so complete,
we almost expect to see her glide from her
nd's arm and sink to the ground: it is not
we see so vivid a realisation in painting of
stantaneous incident. The face of Fran-
, in the picture of Dante's ill-fated lovers
quisitely pathetic; and if the colour in
work (the Eurydice more particularly) is
what dead and ghastly, this is not out of
ng with the nature of the subjects. Mr.
n contributes several replicas in oil of
s in water-colour which have been seen
here, and of which it need only be said
that we prefer him in water-colour, and
e that to be his "mission."
dy Lindsay, besides other interesting
s, contributes a very good likeness of
r Piatti, a head only, in which the some-
grim iron-grey head so familiar to fre-
ers of classical concerts is given with
truth and realism of character. M.
t's group of works strikes one quite curiously
an exhibition containing so many paint-
of which the aim is so utterly opposite to
of this painter. He has luckily not re-
peated his unfortunate attempts at moral allegory; indeed, his paintings are about as thoroughly destitute of all moral as could well be imagined, and we could even wish that his type of realistic life were more pleasantly chosen; yet there is a certain satisfaction in seeing a painter's aim, though not a high one, so completely realised. The three people represented in "The Rivals," two elderly men conjointly flirting with a red-haired young woman, are all thoroughly odious, but their "odiosity" is so completely life-like that one cannot help being drawn to it; and it may be a question whether even this vulgar type of girl, being a real human figure, is not a sort of refreshment after the number of lanky, sentimental, impossible damsels of whom the Grosvenor is the chosen home. The best and the most pleasing work among those of M. Tissot is "Going to Business," the elements in which consist of St. Paul's Cathedral, a Hansom cab, its occupier, and the *Times;* the cab drives straight at us into the front of the picture, and is admirably given, and we opine that the gondola of London is a sufficiently characteristic and typical article to be quite worth painting well once in a way; the picture may be of value to future historians, when the Hansom has become as classic as the *biga.* The part of St. Paul's which is seen and forms the background is also, it is almost needless to say, a model of correct and solid painting of architecture.

One feature among the sculpture exhibits in the gallery (neither many, nor for the most part of much importance) is of interest, as indicating that there is a disposition among other painters to follow up Sir F. Leighton's lead, and to lay a hand on the sister art. Mr. W. B. Richmond has contributed, besides his paintings, a life-size bronze figure of a man running at the top of his speed, balanced on one foot, the other outstretched behind him, the whole figure leaning forward in the impulse of the run. The aim of the work is realistic, though there is perhaps a certain intention of giving an antique type to the face; there is nothing to call remarkable in it as a work in sculpture, but it serves to show that as far as technical workmanship is concerned there is nothing to prevent the combination of two arts under the hand of one artist in the present day, in the manner so common in the great period of Italian art.

If it were once fully recognised that this line of demarcation between classes of artists has no absolutely necessary existence, and that power of drawing need not necessarily exclude power of modelling, the practice of modern art would no doubt assume a very different aspect, and the result would in all probability be very much in favour of originality in artistic production, and would tend to habituate our artists to wider views and sympathies, and prevent their ideas travelling so much in a groove as those of many of even our ablest painters apparently do. Something like this has been suggested by Mr. Browning (whose works are so full of pregnant art criticism incidentally introduced), in the last act or scene of his well-known dramatic poem, "Pippa Passes." But the painters must not have this all their own way. Which of our sculptors will give us a picture?

"TRANSITIONAL."*

What is there in a name, that I should detain you on the threshold of my subject?

In this case, however, there is a good deal in the name, and something that might be misleading, although more that is appropriate; so that some preliminary explanation of it appears necessary.

All architecture, so long as it was a living art, was in reality "transitional"; it only ceased to be such when its vitality vanished, as it did at the close of the period to which this transitional was the introduction. Still, from our standpoint, as heirs of all the centuries, we can note certain links in the chain of its progress as having been exceptionally "transitional,"—more from their relation to the preceding and succeeding links than from any intrinsic peculiarity of their own.

It is in this sense that the period I have to explain to you has specially obtained the above name, and that its applicability to it has become recognised, and the name consequently familiar.

The late Mr. Edmund Sharpe, who, if not its original sponsor, was its most loving and devoted exponent, has aptly called it "the tomb of the Romanesque and the cradle of Gothic."

While again reminding you that all architecture, speaking of it, historically, as a living art, was an unbroken sequence, with but one cradle (Greek) and but one tomb (Renaissance), I will adopt Mr. Sharpe's definition, so far as to allow that the "Transitional" was the link that stood between the Romanesque and the Gothic, and I shall endeavour to make its character, as such, and its connexion with its predecessor and successor, as clear as I can; and therefore now proceed to point out whence this "transition" sprang and whither it tended.

Greece was the cradle of refined systematised architecture, the elements of which had, however, existed in a state of chaos for ages previously throughout the East. Grand and elaborate works had, it is true, been built before in India, Persia, Assyria, and Egypt, but in neither of those countries had any style been developed which the world could accept as a model to work upon.

The purest and most perfect art of its kind, though not the most original or vigorous the world has seen, was unquestionably that of Greece. In its crucible the heterogeneous, unassorted elements of the early Oriental world were fused and refined, and they issued thence in a form systematised and adapted to the requirements of the time and clime of that highly-gifted nation, and they became an acknowledged canon of taste for all ages to come.

The Romans had no art of their own, and that of Greece became degraded in their hands, and applied as a mere dress to constructions with which it had no affinity. They added the arch, however, as their contribution to the repertory of this art. But the Romans spread their system of architectural veneer, such as it was, over the whole of the then known world, and though it fell into decay, together with the Empire itself, it lay, as seed instinct with life, ready to burst forth under the revivifying influence of a new age and circumstances, and to leave, as a husk behind it, the dross with which Rome had encumbered it. That influence in due time was supplied by Christianity.

The art of the ancient world had been intellectual, and it had dealt with the material. Its aim had been a comparatively low one, and within human compass. This had been achieved by the Greeks in a manner approaching perfection as nearly as lay within the power of man to attain. But Christianity added another and higher aim, yet one far more difficult to realise. It sought the spiritual in art, and subordinated to that the intellectual, which had been the final goal hitherto, and it found material elements to its hand in the fragments of the ancient architecture freely strewn around, and strove to mould them to its own wider purposes.

I shall pass but lightly over this portion of its history, and only to show the connexion of the several links in this chain of progress; my object being to point out to you that Christian architecture has been ever in a state of transition from its rise to its close, and that from its nature it could not have been otherwise.

It is true that in its infancy its steps were faltering and slow, but they were sure, being founded upon right principles. The end might have been predicated from the beginning, just as the contrary might have been prophesied of the false system the Romans had grafted upon the Greek life,—vigorous life was the rational outcome of the one, as palsy and death had been of the other.

The Christians set up the fallen columns and entablatures that the Romans had used as masks to their structures for rational supports to the walls wanted to divide the naves from the aisles of the churches they at first built in imitation of basilicæ. As their vaulted construction became complicated, and they found these no longer suitable, they gave each weight its visible support, and thus arrived at the compound piers, &c., which embody the principle that distinguished their architecture throughout, and which has been tersely summed up thus,—"That every artifice of construction must be displayed."

Henceforth it was ever in a condition of transition, though for a long period its progress was slow. Commencing with the fourth century, from the ruins of heathen basilicæ and temples, this Christian-Roman type was modified when transplanted, together with the Empire, to Byzantium (A.D. 476) by the purer Greek and Oriental influences lingering there. It was not till the time of Charlemagne (A.D. 768) that

* By Mr. J. P. Seddon. Read at a meeting of the St. Paul's Ecclesiological Society.

ny great movement took place, though in the intermediate period, notwithstanding political troubles, foundation was being laid both in the East and West for the time to come. Under Charlemagne the Empires were reunited, and the arts encouraged, and the style of architecture known as the *Romanesque* then grew out of the fusion of the Christian-Roman and the Byzantine. This spread over North Italy and Germany, along the great highway of the Rhine, and became the established style throughout Christendom; though, after the death of Charlemagne, the arts somewhat slumbered again till after the year A.D. 1000, which men had dreaded as the probable end of the world, and till the establishment of the feudal system in place of the preceding anarchy seemed to give them fresh opportunity.

With the eleventh century, Christendom awoke to life, and a change passed over the spirit of the world. Feudalism, with its chivalrous enterprise, was the established order of things in Europe; and the Romanesque style of architecture became a worthy exponent of its character. The conquest of England was one of the most stirring incidents of the century, but one quite in harmony with the age; and the Norman architecture which William and his barons,—ecclesiastical and military,—introduced was a visible embodiment of the spirit and circumstances of the builders. Stately and awe-inspiring were the fabrics of the Church; as haughty and alienated from the people were its priests.

The Chapel of the White Tower of London, the work of William, has a grave dignity in its simple proportions, which bespeaks a need for defence rather than display; and the noble names of Gloucester, Norwich, Tewkesbury, Peterborough, and Durham, impress us by their solemnity and massive character, with but small aid from any details of their ornament.

The twelfth century, however, was ushered in with signs of a still mightier impetus. Those who returned from the first Crusade, which Peter the Hermit had preached (A.D. 1096), brought back wider views and new ideas. At the close of the reign of Henry I., a great and popular religious revival took place, which shook the feudal society, already weakened by internal discords, to its foundation.

The austere Cistercian Order founded by St. Bernard (A.D. 1119) forced reform upon the church. This new zeal found vent largely in the buildings required for the numerous monastic foundations which then became a rage; of these, 1,200 abbeys, and no fewer than 3,000 dependencies, were owned by the Cistercian Order alone, and the other bodies of the Church emulated their example. In London, the cathedral of St. Paul was built upon a stupendous scale, and St. Bartholomew's Church is, in many ways, a typical example of the work of this remarkable period,—as its founder, Rahere, the Court minstrel, was a striking specimen of a class that gave practical expression to the fervid feelings of that time.

Such were the political conditions of the period the work of which I have undertaken to explain; in one sense, perhaps, this is not more specially transitional than others in the history of architecture and art, but yet one that has not without good reason obtained the recognised special title of the "Transition," in that it marks the point of divergence between ancient feudalism and modern progress, between tyranny and liberalism; and, in architectural detail, between the use of the round and of the pointed arch, between the prevalence of sturdy simplicity and elegant elaboration and splendour of detail, between surface ornament basking in light and recessed shrinking into shadow. In brief, it was the link between the old and the new civilisation of Europe.

This period of the "Transition" may be said broadly to occupy the latter half of the twelfth century (1145—1190) and the reigns of our Angevine kings, the Plantagenets, viz., the latter part of the reign of Henry II., Stephen, and Richard I.

Having now given you an historical sketch of the sequence of the art of architecture, I proceed to trace the development of the same more technically.

The Greek Doric order of the trabeate construction, as perfected in the Parthenon, set the canon for architectural proportion, and was suited for its place and purpose. But Christian architects, for other purposes and places, did well to deal, as they did, freely with this type of column and support. They adopted the Roman arch instead of the Greek entablature, and altered the proportions of the column, so that in the sturdy Norman we find it often but two or three diameters high, and in what may be called the weedy Perpendicular its shafts are as "linked sweetness long drawn out." In short, they subjected their ancient precedents wholly to plain common sense, and used them as they needed.

Breadth, horizontality, and repose had been the essential characteristics of Classic architecture, and remained so, to a great extent, until this period of the "Transitional." The characteristics of the Gothic architecture, to which that style was the portal, and which was the logical result of the common-sense principles followed by the Christian architects, were, on the contrary, subdivision, verticality, and aspiring energy. The period of the Transition was that of the struggle between these opposite tendencies.

Dr. Whewell has selected five points of essential difference between Classic and Gothic architecture, which it may be as well to recapitulate, as the details of the struggle upon this Transitional battle-ground.

1. In Gothic architecture, as opposed to Classic, the arch is essential, the entablature not, and the columns support arches instead of entablatures.

2. There are any number of planes of decoration, one behind another,—leading, with several arches under one, to *tracery*, and, with arches of different forms under another, to *foliation*.

3. The weights are divided into as many parts as possible, and these are given to independent supports, whence *compound piers* and *clustered pillars* result.

4. The diagonal pressures of the arch are conspicuously displayed, whence come *buttresses* and *pinnacles*.

5. The dominant lines are vertical instead of horizontal.

The gradual establishment of these new principles at first in the early Christian-Roman works in Italy has been well traced in Okeley's "Christian Architecture in Italy." They had, however, always to struggle in that country (the fountain-head of Classic) with strong local influences, and were never able wholly to assert themselves as they did ultimately north of the Alps. Transferred for a time to Byzantium, and thence to Ravenna, they combined there with strong original Greek and Oriental influences. In the former case the Latin cross plan, the basilican arrangement of nave and aisles, wooden roof, and Roman rounded-edged type of foliage were followed. In the other, the Greek cross plan, domed vaults, and sharp pointed Greek type of the acanthus foliage prevailed.

But the *Romanesque*, developed from both these styles, united distinct features of each, and noble buildings arose in and after the time of Charlemagne, throughout Lombardy and Germany, having the Latin cross plan, with nave and aisles, with Byzantine apses, with semi-domes and vaulted roofs. In these the new principles were carried further, as the requirements of the vaultings to the compartments of naves and aisles demanded, to the limited extent that the retention of the round arch permitted.

The Romanesque did not spread to France till shortly before the time of the Conquest of England, when Byzantine feeling had diminished. Few buildings in that country claim higher antiquity than the early part of the eleventh century, when Rollo, in Normandy helped to build Notre Dame, Rouen, and other large churches elsewhere. The two abbeys at Caen were completed, the one just before, and the other just after, the Conquest; Jumièges in 1067; and St. George's de Boscherville in 1057. Thence the Romanesque was imported to England, where it was wrought out with so distinct and original a character as almost to form a style of itself, nearly free from all Byzantine influence, even its Roman origin being difficult to trace; it became, as it were, a self-contained and distinct style of which we may be proud.

The distinctive features of the details of Romanesque as needed for our present purpose of comparison with Transitional may, then, be briefly summarised thus:—In Germany, where it was purest, as nearest its sources, and grandest in conception, though not most beautiful in detail, numerous towers compose splendid groupings; its naves as well as its aisles were vaulted, the piers were large and plain; cylindrical shafts were not used. The arches were, of course, round only. Transepts occur at both end the church, often with apsidal terminati there, as well as to the east and west end the nave; plain door and pier arches, compared with English. The simple zig and triple billet alone, out of the vast var of English ornaments of the class, were fre used, and in the shape of openings m strange forms occurred, such as arches frio with rudimental cuspings of an Oriental c racter, and windows resembling in shape ace of clubs.

In France, the simple basilican type, with nave and aisles, prevailed, with only an east semicircular apse; central towers, and ol two at the west end. Among its ornamente find the zigzag, billet, chevron, nail-head, ca fret, &c., together with sculpture of Byzan character, in which the Corinthian capital imitated, but with Greek, rather than Ron foliage. Slight projections, recalling ant pilasters, were the only buttresses. masonry was rude, its joints large, its st square and axe-faced. It had large circ single pillars, but later square pillars, with sh attached. The naves were wooden-roofed, flat ceilings; but the aisles were vaulted.

In England the Early Norman was still r massive than in France, though the h Norman was much lighter than these (as in galilee at Durham). The great cylind pillars were relieved with zigzag and o groovings. It was often most richly o mented, sometimes with rude, vigorous, tesque carvings, as at Kilpeck, with a profu of various simple ornaments, but at others exceedingly delicate and beautiful work, sembling that in France, supposed to derived from Byzantium, like jewelry pearled bands, of which there are good exan at Barfrestone and Patrixbourne in Kent.

In comparison with "Transitional," the dows, round-headed in both, are in Norman and broad; the pier-arches plain and squ edged, or with heavy rolls on the edges of or more of the orders of the arch. The cap in Early Norman, are after a very Corinthian type, and the later Norman eg primitive, upon the Doric type, which become known as the cushion capital.

The Transitional style in France has bee well described in the work entitled "Romanes and Pointed Architecture in France," that I I cannot do better than quote the follo passage from it:—

"In Normandy, where the intermediate s by which the First Pointed style attains complete development are to be traced onl an occasional and indiscriminate mixture o circular and pointed arch, the mouldings of th the section of the abacus and decoration o capital undergoing, for the most part, no t formation, this Transitional epoch possesses feeble interest, and absolutely no claim to s tinct consideration.

On overstepping, however, the boundari this province, no matter in what direction discern abundant evidence of a mighty ch in the spirit of architectural creations; we cover a class of monuments which conduct u progressive and almost insensible gradat from the first incomplete perception of a principle of beauty disclosed in the poi arch, to a system so full of harmony, of st dour, and of grace, that were we not familia with the stupendous works the art was destined to accomplish, we might well be her to have attained her utmost limits, and nounce her incapable of sublimer efforts these her first essays.

The buildings referred to are distinguishe the almost universal use of windows, still re headed, but drawn upwards into lengthene more graceful proportions, by pointed van in all, and in many of them by a peculiar e celled domical ribbed roof, doorways ind ently circular or pointed, enriched wi profusion of statues in the sides, and sculpture in the arch mouldings; a chara istic capital of uncommon beauty of desig fantastic foliage where this is not displace small figures; constant invariable moul of pier arches; west fronts broken into an in of minute particles, and niches occupie statuary; a lavish use of cornices on the i as well as externally; of light and el sections, supported by corbels of inexhau variety and great delicacy of workmanship almost entire absence of the ornaments o first Romanesque era, and in most cases peculiarity in the plan of the church."

the carved work in France there is great
y and character in that of the different
ces, betraying Byzantine and Oriental in-
es, the latter doubtless through the means
e Crusades. These were all of a conven-
character, and not of the original nature
t of England, which was developed from
Norman and a study of natural foliage.
was, however, a profusion of sculpture in
e of a highly conventional character, both
ure and costume, also undoubtedly derived
a Byzantine source,—apparently imported
gs. The transitional style in Germany
een carefully dissected in "Whewell on
an Churches." Some of its special pecu-
es are due to the fact that vaulting large
s was practised here at an early date.
g vaulted the aisles during the Romanesque
l, it was then attempted to vault the naves
but in doing this difficulties presented
elves, since semicircular arches would only
modate themselves to the covering of square
rtments. Consequently it compelled the
to be double the width of the aisles, and
ternate piers only carried the nave vault-
these were distinguished by greater bulk
he intermediate ones, which had only to
their share of the aisle vaultings.

light from the small windows of the early
nesque churches being found insufficient,
clearstory windows were introduced. In
of the single window which before
ed the centre of each compartment, two
later in that style, placed near each other,
rs, so as to reach the central higher part
arch.

se difficulties and limitations were found
vercome by the use of the pointed arch,
enabled the breadth of the central aisle to
longer necessarily double that of the side
and to be oblong in shape instead of
; usually the transverse arch was the
l one, and the longitudinal ones remained
cular. Next, both these became pointed,
g any proportion of breadth and length.
rtite vaulting, only possible with pointed
, became common, with octo-partite at the
gs, and a German peculiarity of transi-
vaulting was its usual domical treatment,
from the diagonal ribs rising higher than
nsverse and wall ribs; while an ugly
y of a domical vault, with face-ribs, is
tly to be met with. As to plan, whereas
omanesque apse had been circular, in the
itional it was usually polygonal, or the
ere combined in the same church. We
pses and towers at both east and west
combined with octagonal cupolas or pyra-
and the termination of the towers with
ents on each face and pyramidal roof
is peculiar to Germany, though a few
examples exist in England.

triforium was during this period deve-
from a plain blank awkward space occa-
ly left between the pier arch and clear-
in Romanesque churches, into a fine large
gallery, forming a second story to the side
and used as such.

clearstory was enlarged, and filled with
windows, sometimes triplets, and others
curious local fan-shaped openings. But-
s of small projection, with plain cappings,
ake their appearance.

m these details it will appear that, as
hewell points out, the introduction of the
d arch was by no means at once accom-
d by all the other changes which distin-
the Gothic from the Romanesque. "The
ms and tendencies lingered long, and were
ed gradually, and the Early German
tecture offers an image of the conflict and
ision of a revolution which is to end in
ing the prevailing principles by their
ites." It never attained the unity and
ony remarkable in the contemporary work
ance; it was disfigured by many features
curious than beautiful; and though often
dingly grandiose, was deficient in the re-
ent which in the "Transitional" of Eng-
was so happily conspicuous.

e Transitional style in England must cede
t of the Continent as to priority; yet, like
edecessor, the Anglo-Norman, and its suc-
r, the Early English, it arrived at a higher
of refinement and completeness of cha-
r than its contemporary style in either
nany or France. It was free from the
tness, bordering on the coarse or grotesque,
h the one indulged in, and the want of
stency which the other showed, from the
tion of many scarcely-disguised Classic features, together with the introduction of others of prematurely developed Gothic. The English Transitional is more self-contained and harmonious than either. It is no longer stern and forbidding, as was the Early Norman. It is no longer ponderous and plain; on the other hand, it is not so light or graceful as to verge upon flimsiness, as was certainly often the case with the lovely Early English. It unites happily the best qualities of our art; and though it would have been undesirable, as well as impossible, to have arrested the tide of architectural progress at that stage, we may and should look back to it with keen admiration, and give to it our earnest study.

In sketching its principal technical characteristics, I shall do so upon the lines laid down by Mr. Sharpe in his "Seven Periods of Church Architecture."

Exterior Compartment.

The round arch still prevails in the windows and doors, as in Norman, but the windows are higher and their shafts slenderer. The buttresses and base course project more, and in late examples have sets-off and pyramidal cappings, and the walls are thinner, and the masonry finer. Moulded cornices are carried on corbels of uniform profile, and the parapets have sloped copings. Generally increased lightness pervades all parts of the building.

Interior Compartment.

The heavy cylindrical columns to piers of a lighter mass of semicircular shafts and square edges, or slenderer circular and octagonal and clustered piers, alternate, and sometimes a shaft with pear-shaped section is substituted.

The capitals still have square blocks moulded down to the circular form below, the lower part being hollowed to the circle, instead of being full and round, as in Norman. Frequently they have small volutes, forming the curled end of a plain leaf encircling the bell. The abacus is square, and its upper edge square in section till late in the style, when greater freedom obtained. The cushion capital is subdivided with intervening leaves, and the small cushions become more and more detached, and at last by successive stages of enrichment become balls of stiff conventional foliage peculiar to English work, and leading by easy gradation to the beautiful Early English foliage. About A.D. 1175 the importation of French influence, through the employment of William of Sens at Canterbury, led to considerable modifications, and the capitals begin to Corinthianise as in France, and the French projecting horn (crochet) takes the place of, or is set beside, the other types described.

The pointed arch makes its first appearance in the earlier buildings in arches of construction, only as pier arches, or those of the crossing; the circular form being retained for arches of decoration, but later it is used for them also, particularly for clearstory windows, which naturally were the last built.

The pier arches are therefore generally pointed, at first obtusely, and lately acutely; the mouldings are few and plain but lighter, usually a roll or pear-shaped at the angle of each shoulder of the arch, and still maintaining the general square section of the soffit, whereas in Gothic it became angular. There is often no hood-moulding. The usual ornaments of the previous Norman disappear, except the chevron occasionally; and in later examples the dog-tooth appears. The vaulting shaft has usually the pear-shaped section, giving it great refinement.

Plain pointed quadripartite vaulting sometimes covers the side-aisles, and occasionally the central one, even with circular-headed windows beneath the acutely pointed wall-ribs.

To enumerate the chief even among the noble buildings of the Transitional period would be tedious. The most characteristic of the works of the period were the abbeys built by the Cistercian order of monks, to whom was due the religious revival of which I have spoken. The whole of their foundations were laid out upon one general plan at this period. They were all dedicated to the Virgin, and built in the most secluded sites that cou'd be found, in the form of the Latin cross,—in England with short choirs generally of but two compartments; the east ends were square, in contrast to the Continental apse fashion; the transepts were aisleless, but had two or three eastern chapels to each; there were no lofty towers till a later date, but simply a low lantern over the crossing with a pyramidal roof. No figure-carving was permitted in them, and there was a general restraint in matters of ornament. The architecture was sternly simple and practical, yet excellent and even elegant; but always dignified in proportion, and neither rude and clumsy, nor frivolous and flimsy. Its remains are truly well worthy of study, and as such I heartily recommend it to this society. It is unfortunate that but few examples have been left in London. But the Temple Church, one of the few examples remaining of another characteristic class of its buildings, the round churches, contains, in its western circular portion, one of the gems of the "Transitional" architecture of England. It is, indeed, fitted by its aspiring and *spiritual* character to elevate the mind. It thus justifies the claim I have made for the award of a higher place than even the intellectual and material glories of the Parthenon secured for Classic, to that style which embodies the principles of Christian architecture.

THE SALON OF 1879.

The Parisians this year, and the strangers who visit Paris, will have, the former an opportunity of claiming the glory of presenting to the world, and the latter of having seen, the most complete thing of the kind that has yet been witnessed,—the largest collection of bad pictures that the ill-directed industry and greed of artists have ever brought together.

So much art of one kind or another is displayed in Paris that one is disposed to believe that there may be some occult design in the vast display of rubbish this year at the *Salon*, which, as in former years, is presented to the public in the most alluring manner, with the fine old sixteenth-century tapestries adorning the vestibules and staircases, and the display in the rooms of magnificently-arranged *plantes à l'aquarelle*, which, by the way, are not nearly as good this year as usual.

In addition to the twenty-six enormous rooms in the Palais de l'Industrie, which were opened on Monday last, and that we have been in former years in the habit of wandering through, four large rooms have this year been annexed, and the whole display of works of art catalogued this year numbers 5,895,—an increase in pictures alone over last year of very nearly a thousand.

In former exhibitions of the *Salon*, one had to brush up one's historical and anecdotal recollections to properly understand the subject of many well-painted pictures, and we have often had reason to be grateful to the memory, or the more recent reading of our friends, to aid us to understand the pictorial passages from the history of France, or for the poetry of the past. But this year our acquirements in this way are not severely taxed; for neither the historical nor the anecdotal painters have taken much pains either to instruct or to amuse.

Gaston Melingue's "Edward Jenner performing his First Experiment in Vaccination,"—an admirably-painted picture,—may almost be pointed to as the picture that is to gain the honour of the *Prix du Salon*; but the judges will find it difficult to select more than two or three other pictures that are likely to be sufficiently popular to gain the public approbation. In fact, the larger pictures of great pretension are rarely in any way meritorious this year, and there are, indeed, even very few small pictures that have anything like uncommon interest.

Without doubt, M. Henri Lehmann's "Lady in Blue" will become one of the best remembered pictures in this year's *Salon*; indeed, the smiling thoroughbred gentlewoman in blue, as she appears from a little distance, whence she should be seen, is perfectly charming, and is as unlike anything French as any picture we have seen for a long time, and yet, of course, it will be said that the picture was suggested by Goupil's "Lady in Brown," but the "Lady in Blue" will become a formidable rival for popular favour, and will long smile at us from the canvas, and from "photogravures," in well-bred triumph. Years have passed away since Sir Charles Eastlake, from the president's chair at the Royal Academy, thanked Mr. Henri Lehmann for the honour he had done them by exhibiting on the walls of the Academy one of his earlier fine portraits, and still Lehmann is painting in Paris with unabated skill, as his brother Rudolph is doing in London.

Bonnat's portrait of Victor Hugo is certainly inferior to his portrait, exhibited two years since, of M. Thiers, at which time, it is said, Bonnat had arrived at the highest point of that peculiarly strong mode of painting which has, after

all, something in it approaching vulgarity. We rather fancy that the portrait of Victor Hugo in chalk, to be seen in another room, possesses much more of the character, and profoundly thoughtful expression of the romantic author of "Hernani" and the "Hunchback of Notre Dame," of the uncompromising republican, and of the benevolent theorist.

It is interesting in this year's *Salon* to see a work by the painter of "Rome in its Decadence," Couture, who died only the other day; but the work is painfully commonplace and coarse, although still showing the peculiar manner of painting that led in its day to such splendid results.

Cabanel's two portraits also have but the merit of business-like carefulness, and even Henner's two pictures draw too largely on our respectful feeling for the painter and his aims, and not enough on our admiration for the pictures themselves. Duprez's "Capitaliste" is amusing, and exactly suited for photogravures; and as for Delance's "Three Ages of Life," we cannot say which of the three periods, as he represents them, is the most uninteresting.

Benjamin Constant's "Night on the Terrace" is really as vulgar and absurd as it is possible to imagine; and Bouguereau's "Birth of Venus" is surprisingly deficient in intellectual treatment, and not, as one might have expected, too cleanly in its painting for Bouguereau or for the subject.

It cannot be said that Bastien Lepage has made any advance; and although he is now considered the rising hope among French painters, his pictures this year are certainly not equal to the fine portrait exhibited by him in the *Salon* of 1877, and afterwards at the Royal Academy last year. Of his portrait of Sarah Bernhardt, the care at least with which it is painted is highly meritorious; but the portrait, like all those,—like the many,—that are now appearing of that eminent actress, is pretentious and vulgar, owing to the evident attempt at strange and unusual peculiarity. But artists, they say, are not to be judged by the standard of other people, and Sarah Bernhardt, at all events in Paris, is allowed to do exactly as she pleases.

Of Gustave Doré's enormous picture of the "Death of Orpheus," all that can be said of it is, that it is another picture by Doré, rather worse than usual and exceedingly green in colour.

Lefebre's picture, "Diana Surprised," on which the painter, we hear, has been very long engaged, will gain for him but small additional fame; and as for Herkomer's picture, "Eventide," exhibited last year at the Royal Academy, it is surprising how little it "tells" in the *Salon*, notwithstanding that it is surrounded with so many worthless paintings; but its ugly old women are English, and ill understood in Paris, and the picture altogether does not seem to attract much attention from the Parisian artists.

Detaille this year is not in great force, and we miss altogether the works of Meissonier, Gérôme, Alfred de Neuville, Chaplin (although we find a charming picture by his pupil Mrs. Louise Jopling), Clairin, Toulmouche, Stevens, Baudry, Gustave Boulanger, Pasini, Robert Fleury, and many others, all of whom seem to have shrunk from the anticipation of uncongenial contact. Literally, it can be said, there is not one fine landscape in the Exhibition, only two or three sea and sky pieces, such as we have seen for some time, and with which Artois long ago made us familiar.

There are fewer nude pictures than usual, and still fewer tolerable attempts, and pictures exhibiting carefully selected and harmonising colours of draperies than we have long been in the habit of seeing in Parisian galleries, and a general look about the portraits as if the painters had been unable to secure sitters among great or famous folks, and had to content themselves with second-rate dressmakers and substantial grocers.

Mr. Sargent, the American painter, in his portrait of his friend Carolus Duran, bids fair to secure a renown in his own country, that will add a fresh glory to that growing republic. Charles C. Bernier's large wood scene is, after all, but a feeble Diaz on an enlarged scale, and Breton's head of a peasant girl is ugly, but truthful. Clay's pictures, as usual, are substantially painted, but as works of art too much resemble each other, and are not sufficiently like nature, as common people see nature, to please us all.

Signor Cotti's "Dante at Verona" is but little like Dante, and still less like Verona; and Karl Daubigny's landscapes are much too slight even for the present day, when painters appear to be trying to see with how little work they can manage to get up an effect, caring little or nothing whether that effect be good, so that the canvas be covered. As for the portrait by Gonzalez of the lady and gentleman in a box at the Italian Opera, the picture looks as much a ruin as we had the grief the other day to see the old Italian Opera-house, which is now being pulled down. As for the other followers of the great master Fortuny, they appear to have gone wild in their mad search for frippery and insignificant effects of contrasting and harmonising tints. Fortunately, however, the Spanish school does not appear to spread beyond the few who have so successfully followed in the immediate footsteps of Fortuny, and whatever the faults of the school may be, they do not consist in any attempt to shirk work or inquiry.

In this year's *Salon*, for the first time, we think, the work of the men who are called, or call themselves, "Impressionists" exhibits conspicuously stupidity and carelessness, and one wonders why a committee formed of painters, sculptors, and literary men such as constitute this year's selecting jury, could have been so madly liberal as to accept the pictures they have admitted for exhibition.

Paris.

A MUSEUM IN RUINS.

The stranger who arrives at Verona cannot fail, before he has passed any great length of time in the city, to find himself in presence of the old Roman Amphitheatre, or, as it is now usually called, the "Arena," which, not unjustly, has long formed one of the chief points of interest of Northern Italy. Many a happy and profitable half-hour may be spent in wandering round the grandiose old ruin still standing so stoutly, in spite of its having been stripped and pillaged for centuries; or, as almost equally interesting, in the network of streets in the vicinity of the old pile, where at every step the most indifferent observer can detect relics and fragments unmistakably of a period when the Romans were masters of Europe.

It is almost impossible for the stranger to be any time in the broad open piazza, over which stands sentinel the old Roman Amphitheatre, and with it its hideous brother building of the Municipio, which does its best to injure the effect of its senior by so many centuries, without having his attention attracted by the gateway, with its quaint fish-tail castellations, disfigured by an only too legible china clock-face, and near it, on one side, the Gran Guardia, on the other, gauntly staring through the rusty railings of its courtyard-gateway, the so-called Teatro Filarmonico.

Much as the desire may have taken hold of us to penetrate to the narrow streets of the town, with their stately palaces and rich Renaissance doorways and innumerable balconies, so familiar to the professional student, there is a mystery and a romance hanging over this old theatre that seem strangely in character with the home of the legends from which Shakspeare drew more than one of his world-famed compositions. In the weed-choked courtyard there seems to lurk that spirit of neglect that speaks so plainly a tale of want of interest, while the moss-grown fragments of bas-reliefs and inscriptions, scattered here and there, arouse attention, even in a city where at every turn a quick eye is able to detect, imbedded in the walls of the houses, some fragment of the work of ancient times.

Under the tall, pseudo-classic columns of the inner entrance lie other remains, seemingly untouched. There is not the appearance in this old-world corner, so near the bustle of the *piazza*, of its being opened even one day in the week "for a consideration" to the apparently absent custodian. There is no eager rush at one by that usually officious official as one is seen, *a forestiero*, to peer inquisitively through the rusty railings, for when one inquiringly passes along the inclosing wall, and past the neglected but stately entrance to the theatre, and so to the back of the old place with its quiet garden, through which flows the Adigetto at the foot of an ancient tower, whose age it is almost impossible at a glance to determine, but which bears the local name of the Wall of Theodoric. The appearance of neglect is only too truly in accordance with facts, and within a few days past, after having lain thus in disorder for years, the whole history of the old museum has been brought before the public of Ver and the consideration of its communal co sellors.

And an interesting history it possesses, fused as it is with that of the Teatro Fi monico, itself no stripling, for the muse appears to be one of the oldest of all such lections in Europe. The connexion of eminent antiquary, Scipio Maffei, with subsequent formation, after a century of e ence previously to his time, takes us back to first years of the eighteenth century. land on which the Museo Lapidario is built in 1561, given by the Venetian Republic in for 25 ducats annual rent, to the family Il Torre, and, some thirty years later, was so the city of Verona for 2,300 ducats. In 1604 property was handed over to the Philharm Academy, and on this society being absolve a later date from its yearly rental, the Acade as a proof of their gratitude, presented to municipality a white wax candle, orname with its own escutcheon and the arms of city; at the same time the society comme to build on the space of ground given to their still existing home, with a large hall, the Ionic vestibule, the design of Curtoni some say, Fontana, both pupils of the schoo the Veronese architect, Sanmichele.

The real origin of the Museo Lapidario be said to be the collection of antique ins tions and torsi of statues which the C Nichesola had made at his villa at Pontone by him presented, in 1600, to the Philharm Academy. This collection, we learn fro existing manuscript, was transported fro Canon's villa to the courtyard of the Acad in number the inscriptions and fragments some sixty.

Thus we see that the museum, as a mus has existed ever since 1600, an antiquity few, if any, of the great European colle can boast. But in those days, as now museum was allowed to fall into neglect the moss, as Venturi tells us, had already menced to creep over the old grey stones, as now, lying in the courtyard. Fortunate Philharmonic Academy possessed among its bers, Scipio Maffei, one of the most le initiators of that "science" of archæolo investigation which has now arrived at a position, and to which we owe such a de gratitude for having cleared away the dar that surrounded the history of the past. 1714 Scipio Maffei determined to take in and arrange the museum. In a letter w exists in the library of the Silvestri fam Rovigo, he speaks at length of the care expense which this collection of Greek Roman inscriptions had entailed upon him

"The Philharmonic Academy," he writes i letter to Camillo Silvestri, "which occup sumptuous home built specially for its own possesses, and has possessed for many ye collection of some sixty or so inscriptions, a these not a few rare and valuable piece gether with some bas-reliefs of great beaut have, after much difficulty, persuaded my f academicians to drag from their moss and ne these relics, and place them under shelte shall eventually arrange them in methe order; but before commencing, I should li increase the collection as far as is possibl have already given all my own inscription Conte Bevilacqua has done the same, and r other noblemen. . . . . What we should most would be Greek inscriptions. The re why I prefer these arises from the fact t have no knowledge of any museums posse more than seven Greek inscriptions. We al possess ten, four we shortly expect to a and three others we confidently reckon on. I am certain that you will not refuse to a in such a cause, and awaiting a reply, I devotedly, your obedient humble servant, Scipione Maff

Verona, 2nd December, 1716."

We can judge what praise Maffei des when we learn that the collection and arra ment of the museum occupied this distingu antiquary from the year of the above tioned letter till 1744, at which time was the wall of the courtyard and rebuilt, a portico divided by Doric columns,—a m choly specimen of the art of that day. A the architrave of these columns may sti seen the coat of arms of the learned and de Maffei, and here were gathered and prote from the weather the more interesting ma and inscriptions.

...e work terminated in the middle of the ...century, a few years before the death of ...i, who died in 1755. The academicians ...wished to name the museum after its inde...fatigable curator and founder, the Museo Maffe...ano, and had even ordered the erection of a ...le bust, together with a laudatory inscrip...tion. But both honours Maffei refused, content ...that the country should enjoy the museum he had ...reared so many years to form as a "public ...museum," and in order to make the collection ...its treasures better known to the world, he ...published, in 1749, his famous "Museum ...Veronense."

...After the publication of this work, other ...valuables were added to the museum, and were ...placed where room was found for them, and ...so the original classification was disturbed. ...These more recent additions, many were ...long neglected in the courtyard. During the ...French occupation at the end of the last cen...tury several of the most valuable relics were ...exported to Paris by order of Napoleon, ...among them the testament of a certain Dame ...Matta, which was, however, returned at the ...restoration.

...In 1811 the Philharmonic Academy was recon...stituted and formed into the existing Philharmonic ...Society, the museum still being under the con...trol of the society. A complete catalogue of all ...the objects in the museum is wanting; as ...indeed, any clue by which a student or ...stranger may visit and verify any of the un...rivalled treasures which the museum contains. ...The "Museum Veronense" of Maffei embraces ...the Museums of Turin and Vienna, and ...many other collections, while a corresponding ...list of numbers on the walls is wanting; those, ...therefore, even who possess this valuable and ...useful work would meet with much difficulty in ...finding any desired inscription. The Marchese ...Giuseppe Muselli, to obviate this inconvenience, ...had prepared for press a work containing alone ...the index of the contents of the Verona Museum, and ...Girolamo Targa had prepared another work of ...the same nature. In 1795, the Abate Tommasili ...donated these two manuscripts, and presented ...them to the public in a volume entitled "Museo ...Lapidario Ridotto a Maggior Chiarezza," but ...the work is now rendered useless, the situation ...of many of the inscriptions having been changed. ...It would be eminently a desirable task for the ...municipality to prepare, with the aid of a special ...commission, a careful catalogue of the museum, ...which would enable the many students who are in...terested in such studies to examine the various ...collections at ease, and also to make known ...to those even who may be unable to visit Verona, ...the many interesting treasures which the ...museum possesses.

...There is now every prospect that an intelli...gent management of the collection will succeed ...the neglect of years. In the discussion which ...has occupied the municipality of Verona for ...the last few days, an excellent proposal has ...been put forward to absolve the management ...of the Philharmonic Society from the very incon...venient duty it has held, of the care of the ...Lapidarian Museum, the care of which will ...henceforward be one of the duties of the muni...cipality.

...As soon as this proposal meets with the neces...sary approval, a great change, it is certain, will ...take place in the aspect of the old museum and ...the moss-grown courtyard. The strangers who ...visit Verona, if not this autumn, at least next ...year, will be able to admire one of the till ...lately most unjustly neglected glories of ...Verona, and the restless spirit of old Scipio ...Maffei will settle down at length to comfortable ...repose in his tomb at Sta. Maria della Scala.

Roma.

OBITUARY.

W. H. Woodman, Architect.—The death ...of this gentleman, late of Reading, took place ...o'clock on the 30th of April, at the age of ...seven. Mr. Woodman was at one time ...borough surveyor of Reading, and surveyor to ...the Reading Local Board of Health; and as a ...practising architect, in connexion chiefly with ...Coulton, designed and executed a number ...of buildings. Illustrations of several will be ...found in our volumes, including the French ...Congregational Church, Halkett-place, St. ...Helier's;* Independent Chapel, Bridport, Dor...set;† and Basingstoke Cemetery, Hamp...shire—chapel and lodge.‡

* for 1855, p. 554. † Vol. for 1859, p. 360. ‡ Vol. for 1859, p. 761.

THE CITY CHURCHES AND A PLEA FOR THEIR PRESERVATION.

The threatened, nay, the somewhat more than threatened, wholesale destruction of some thirty of the City churches would seem to be a matter of so much import, and indicative of so much in the future, not only as to architecture, but of many other things,—hardly so much thought about as might be expected, considering their import,—that we feel quite assured a few added thoughts about the City churches, many of them well known to us in detail, can hardly at the present moment come amiss; for the more the matter is cogitated, the more momentous and urgent does it seen, as regards architecture, and especially London architecture. There can hardly be seen, mentally, a more striking contrast than that presented by the aspect of Old London immediately before the Great Fire, and the London of to-day, as pictured in a modern map. It is very difficult to compare things so totally different,—so small in dimensions the one, and so apparently boundless the other! It would be right curious, indeed, to speculate on what the architect of new London, after the Fire, would say could he but be present at a modern lecture-table, some eventful evening, and there recount his day's experiences in studying maps of London, and in looking at the huge City, say from the top of his Monument, whence so striking a view can be got.

It is very difficult indeed to define accurately what is meant by the term "architecture,"—where it begins, and where the plain building ends; for the very roughest and most clumsy of structures may and do rise into "architecture." An Old London street before the Fire, and before Wren went to work in it, was most surely an architectural creation, and certainly picturesque beyond anything we now possess in the most improved of our modern highways, however costly and "architectural," as that term is understood. And yet what was it? It may still be realised in idea by the mentally putting together what few remains we yet have of single houses scattered about here and there in narrow byways and in out-of-the-way and tumble-down streets and courts. A London street before the Great Fire was a work full of architecture, certainly; and Wren, when he went to work to rebuild it, did but follow in the old lines, as these very City churches of his sufficiently prove. No one can pass through any one of the narrow ways in which these churches for the most part still are without seeing this, and without acknowledging the influence, spite of all disfigurements, the old ideas of town and city planning and building. had over and in him. Thus, in the caring for and in the preservation of these City churches only as buildings, we are, first of all, but preserving memorials of our capital City's antiquity,—surely a something worth the doing.

But, after all, there is another and a greater difficulty than any connected with architecture, or antiquity, or the picturesque, in the matter of these City churches. It is what to do with them, the purpose for which they were expressly built and designed being provided for elsewhere. In these days, enlightened as they no doubt are, all things are more or less simply "utilitarian." There is but narrow room, indeed, for mere fancies and sentiment. If a thing be of no practical use or purpose, it is quickly put aside and forgotten, and a something else is found to fill its place of immediate and practical usefulness. All these quaint and curiously designed churches will, without doubt, if pulled down, make room for shops, or warehouses, or dwelling-houses, no such valuable ground as that on which they now stand being long left unoccupied. Well, be it so. But is there nothing, it may be asked, in these days of trade and business, to be allowed to mere human feeling and sentiment, and love of the old for its own sake, and for the sake of historic memories and the calling up to remembrance the images of things as they were? Surely an object here and there, though converted to no practical purpose, might well exist, if but only for those who look a little deeper than for the merely utilitarian. Nay, may we not add to our plea by affirming that all more or less do this, though they may not, indeed, know it, or be conscious of it?

It would be hard, indeed, to select, out of the many narrow ways in which these condemned City churches are situated, any one specially typical. We might, indeed, take the very first on the list given on page 489,—St. Mary's-at-Hill, near Thames-street. And here, in passing, we may note that there are no more "picturesque" London ways than those immediately following the line of the bending and winding river, and of those byways immediately leading from some main thoroughfare down to it. Wren would seem to have seen this; and most certain it is that this very Thames-street, so picturesque in detail of house-building in his day, must needs have impressed him, together with the other narrow ways in which so very much of his work lay, and thus have influenced in no small degree his designing powers, and almost compelled him to make of these very churches what they now are,—structures in one special style of art powerfully influenced by another and a different one. We will venture to affirm that there is no more curious and instructive fact in architectural practice and history than this one of the influence of the great Gothic art and feeling of the Middle Ages on the mind of a very able and clever man educated and brought up under the all-powerful and all-potent influences of another and a totally different phase of art.

And hence, even if there were no other reason, we should deplore the destruction of those City churches, they giving, as they do, so special a character to the City proper of London, and distinguishing it from that of the enormous mass of buildings, and lines upon lines of streets and ways which surround it. It is the architectural centre of the whole mass of buildings, and makes London, indeed, the city which it specially is. Since Wren's time, it must be borne in mind that though London has increased so enormously, there has indeed been but very little, if anything, added to it in idea but the great railway stations,—those huge and open doorways into the country,—which surround it. What Wren would have done with a great railway station it might be hard to determine; but that it would have been somewhat more imposing and suggestive than anything we yet have about us in London, we may, we think, be quite sure of. But this in passing, and for the purpose simply of evidencing that we have nothing, indeed, to throw away in the architectural range of things, no architecture that we can afford to dispense with in mighty London. Indeed, may we not go much further even than this, and affirm that the worthy citizens of London City have good and ample reason to be proud of what Sir Christopher Wren did for them, and that those outside the City walls and boundaries have as yet but little to compare with it?

We might, indeed, well and usefully go through the whole list of the churches, each one of them remarkable for a something or a somewhat, but must forbear. We would but specially take note of St. Mary's, Abchurch, 1686, for the sake of the wonderful carving in it, and for the specimens of artist-workmanship it contains by Grinling Gibbons,—remarkable work truly, and but rarely if ever excelled. In his own special line of work, Gibbons was a master. If for no other reason, this special church should be religiously preserved, and, we would suggest, left open, under due regulations, for the purposes of study. The artist-workman, we will venture to affirm, can hardly anywhere find carving better worthy of study, and even of copying. In our great museums there is none better, or more useful, or more inspiring; and the day will most surely come, though not perhaps very quickly, when such work as may here be seen will come within the range of even Royal Academy notice. Thus this special church, if no other, should be preserved for the sake of the workmanship found in it, if for no other purpose. Here, then, is one good reason for preserving a City church,—as a school of art for working artists and "carvers" in wood and stone; and for the purpose of evidencing the fact of the existence of high artistic and inventive power, applied to a good purpose, in our own country, and without being borrowed!

It is impossible thus to point to the fine carving by Gibbons, and to its careful study by students and workmen, as a motive for the preservation of even one of these City churches, without note of the interest which attaches to them generally as simple objects of study and as schools of art and architecture. Surely we may usefully bear in mind that in other and distant countries there are not a few buildings of which so much has been through all time heard, which have been suffered to remain as pure memories and memorials of past and forgotten times, or all but forgotten times. We need not here specify them in detail,—the

Athenian Parthenon and the Roman Coliseum will of themselves suffice. Both are ruins, if there be any such anywhere, and both useless, in all practical senses of that word. But who will venture to say they have done or even now do nothing? How much has the world got through the careful study and measurement of them even to the minutest detail! How much do they prove and teach, and how much should we miss them, useless as they are and purposeless! More, very much more, we need hardly say, might here be said, and not a few proofs offered to show how much the world of humanity has gained by the preservation and study of what past time has left it,—purposeless and useless though it now, in this actual present, may seem to be.

THE ARTISAN OF JAPAN AND HIS WORK.

In Japan, the skilled workman is socially the superior of the trader, and the carpenter is foremost and the most important; in fact, he is called *Dai-ku* [great workman], and is architect, builder, and joiner; although for the minor branches there are special terms used, and the subdivision of labour is carried out to a greater extent than in other trades.

When it is proposed to erect a building, or rather the series or group of buildings that constitute a residence or a place of business, the master carpenter is called in, a plan is discussed, and the outline fixed upon; in the course of a few days, perhaps, the estimates are prepared, at so much per *tsubo* (of 36 superficial feet), measuring from the centre of the corner uprights; a plan is drawn to a large scale on a board, ground-plans, elevations, &c., the *ken* (of 6 ft.) being the unit of measurement. The ground is then marked out, carefully measured, and levelled with a water level,—this is a piece of 4-in. or 6-in. square stuff, which is planed level and square, with a groove in the upper side, with also a small hollow in the centre, and one near each end. Tthe water is poured into the centre, and the "level" propped up until the hollows at both ends are quite full of water, and consequently level. Of course, when the surroundings do not arbitrarily debar a choice of frontage, a southern aspect would be preferred, the north-east being most objectionable. Certain rooms would be placed in "lucky" parts, and the astrologer and soothsayer must be consulted. The position of the kitchen, the altar for the household gods, and other details, having already been decided in accordance with well-known fixed rules of procedure, a lucky day must be chosen upon which to break ground and commence the foundation. Unless a large building or a fireproof storehouse is to be erected, the foundation will give but little trouble; however, the "ground-worker" must be next called in; this is the class similar to our "navvy," and from which the "fire-brigade" is chosen. Should a very solid foundation be required, piles driven, &c., a scaffolding is erected, and a large rammer, made of hard wood, is used, varying in size according to the circumstances, with a heavy iron band on the lower end, and just above which a number of ropes are attached, one for each man. There are two slight poles attached, parallel to the axis of the rammer, used by one of the men above to guide, while the others, who are mounted on the scaffold, lift it by the ropes and let it drop; the foreman remains below to guide the head as it drops, with the aid of a short piece of rope. While working at this the men chant a chorus of the most peculiarly hideous and noisy character, an old custom, which, they say, drives away the evil demons: certainly it is frightful enough in its way; it affords opportunity for jests and by no means choice language, for these "workers of the soil" are a very rough lot. The foundation is usually formed by scraping out a few inches of earth and ramming down some rubble, upon which is laid a course of rough-hewn stone, the ordinary size being about 10 in. to 11 in. square, and in 2 ft. to 3 ft. lengths, basalt, granite, or sandstone, as may be necessary or advisable; the latter is the cheapest, of course. Upon this is usually, in the better class of construction, a course of clean-dressed stone of better quality, upon which will rest the frame of the building, uprights to support the floor, or, in the case of large heavy roofs, centre posts are rested upon large blocks of stone with a tep cut in them to prevent slipping when the house is shaken by an earthquake.

There is little opportunity for the stonemason, or the quarryman that supplies him with materials, to exhibit his skill here, but of these more hereafter. They have no idea, however, of the "natural bed" of stone, facing it on the side most easily worked.

While this has been doing, the "contractor" has been to the timber merchant to arrange for delivery of timber as required. The bulk of the stock is stored in shallow ponds, stacked up so as to keep it completely submerged, and the Japanese tradesman prefers the wet timber to work upon. Timber is rough-hewn into lengths that will give clean timber of 6, 9, 12, 15, and 18 ft. lengths, and for square stuff a mortice also; the large timber is then taken to the "works," and there cut up into the sizes required.* These "sawyers" form a special branch of trade.

To prevent the timber splitting and warping, the Japanese take a half-cut to the centre and parallel to the heart, and fill it up with a slip, as the wood dries and the cut "gapes" or expands.

The carpenters take their measures from the "working plan" already mentioned, and the roof, composed of rough crooked timbers, is placed together by most builders as they are cut, although there are some who scorn to do so, depending entirely on the accuracy of their plan and measurements; every joint and every piece is marked ready to put together. When the frame is completed, a lucky day is selected to erect it, and this is very speedily done, for the carpenters and friends are eager to set to work at devouring the good things provided upon all such occasions.

The details of the processions, the various superstitions, &c., interesting though they undoubtedly are, cannot be introduced here, as they would occupy too much space.

Most of the partitions and walls of a Japanese house are formed of sliding panels, either covered with semi-transparent paper, or else thickly and strongly papered on both sides for inner partitions; some portions of the inner partitions and outer walls being of plaster, a framework of small-sized and split bamboo is used, upon which mud and stiff clay are plastered, coat upon coat, at least three coatings, and then finished as necessary.

The plasterer is the "right hand" of the carpenter, and ranks next him; he is usually more of an artist, the better tradesmen being highly skilled in ornamental and fancy plaster work. Lime made of burnt shells is much used, and it is mixed with size extracted from sea-weed by boiling; outer walls are generally protected by thin weather-boarding, which is coloured with lamp-black and the same kind of size as that already mentioned. Broken shells, pure gravel, and coarse brilliant sand are often used for portions of interior walls plastered, and give a very pleasing appearance to the room, as a contrast to the neat matting and daintily-papered screens and panels. The roofs of dwelling-houses of the better class are tiled; they are first boarded with ⅞ in. pine, then thin split shingles; sometimes the bark of the *cryptomeria* or *retinispora* is laid on this, but invariably a large quantity of clay or river-mud is used to "bed" the tiles in.

Fireproofs are so successful in resisting the fierce heat, if of short duration, that they withstand the sweeping conflagrations that occur in the Japanese cities. A wooden frame with a lacework of bamboo forms the foundation for a solid mud structure that becomes as solid as a firebrick, and stands firm long after the wooden frame has decayed.

The Japanese will remove a house, even one of their large heavy fireproofs, for a long distance. Securing crosspieces to the main uprights, they raise it off the foundations with a number of long balks for levers, to the ends of which heavy stones are attached. The foundations removed, timber is substituted, and small rollers (about 2 in. diameter) are used, planks of hard wood being laid down, between which the rollers work.

Brick and tile makers will be mentioned fully hereafter. We must now return to the finished house, and see about fittings and furniture.

The mat-makers keep a stock of mats ready to be covered. These are made of rice-straw which has been beaten flat and woven and sewn together until it is about 1 in. thick, 3 ft. wide, and 6 ft. long. This core is covered with fine matting, turned round the ends, and the s are bound with a coarse linen border 1 in. w black, or white with spots for some sp purposes. Considerable experience and j ment are required in fitting the mats and la them down, so as to wear well. The tr should be with the grain, and nothing apr so unsightly as a badly-matted room.

The sliding panels that form a partitio either in pairs of 3 ft. each, or in fours, filli space of either 9 ft. or 12 ft. These are pap on both sides, with a wooden border. method of securing this border, without appearing, is curious, and, as the bord generally neatly lacquered, a matter of consequence.

The windows are sliding panels, outsi which rain-shutters are fitted, to be clos stormy weather, and nightly.

The aforesaid panels are supplied by a br of the carpenters, and are kept in stock made and well seasoned, of all qualities. cheaper are made of *Cryptomeria*; indeed wood forms the principal building material. better class of fittings, and some portio the more expensive houses, are made of *Ret spora obtusa*. Fancy woods are used to a extent only.

In the reception and living rooms there variably a recess, raised some 3 in., w border of lacquered or fancy wood, in whic hung pictures, and where flower-vases swords are mostly seen; in fact, it seem recess has been the especial place for the and art objects. Some rooms have little boards, sets of shelves, &c., fitted, so that is plenty of opportunity for the *dai-ku* to d his good taste and ability as a designer.

The Japanese workmen and artists do no ceed at random; there is a systematic tr based on ancient custom and precedent; books, with elaborate instructions, and gressive lessons, are cheap and accessible poorest, for circulating libraries abound. first strokes to the finished drawing, ar each class or style of design, there are elaborately illustrated works that co referred to.

The blacksmith does not contribute larg the ordinary dwellings, but the metal-w in small articles is an important person: t a great amount of small ware needed in th of hinges, hasps, plates to hide corner other joints, where the hand touches the in opening and closing, and in trifles abo house.

The worker in metal is without exc the most artistic of Japanese tradesmen the least dependent upon others' skil deserves special notice. Although the smith and the nailmaker are kindred bra yet the latter is but a secondary perso iron nails are not extensively used; even foreign-made nails find but little sale.

The house being furnished and fitted, a g cleaning up precedes the grand ceremo entering upon occupation thereof. The of drawers (made of the timber of the *Paul imperialis*),—of the several members family, each lady has at least one, her toilet mirror stands, work-box, &c.,—are moved placed in their appointed places behind sl panels in recesses specially constructed. come in the large bedding-chest and its con the kitchen furniture, and the small stands, &c., for each member of the family has a utensils, the greater portion of all of whic of wood, lacquered.

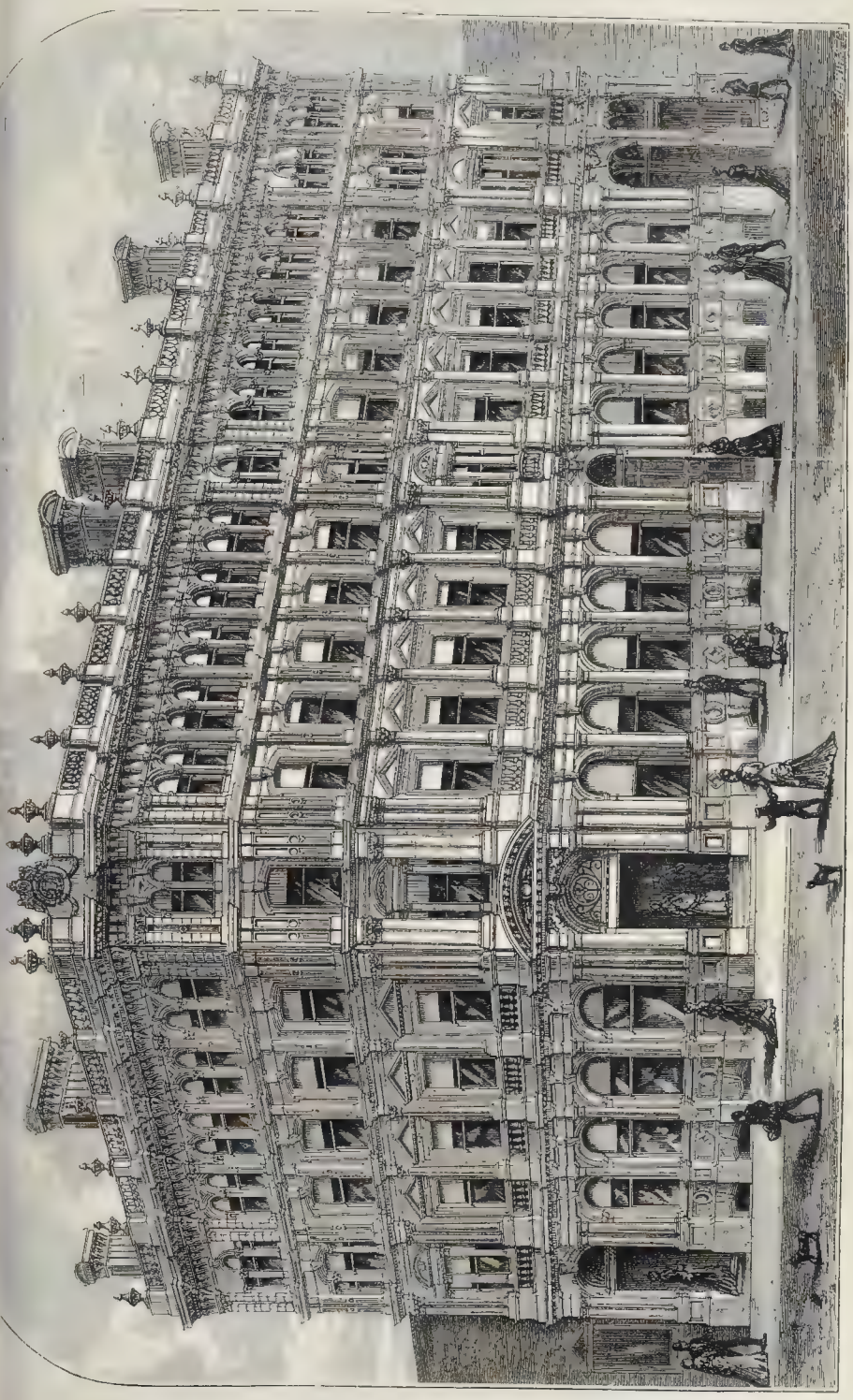
* The tools used are peculiar, and deserve description, but illustrations only can give any idea of them.

A PACIFIC CABLE.

According to the German *Postarchiv* concession for a cable between San Fra and Yokohama has been obtained, and the cessionnaire is now taking steps for securin permission of the Chinese Government continuing this cable to Tientsin, and conn ing thence a telegraph line to Pekin. would thus at last be placed in direct telegr communication with the rest of the world. junction of the Chinese lines with the Siberian telegraph line, perhaps at Kia would then be only a question of time. this progress, and the prospect, in consequ of the events in Zululand, that the electric will shortly encompass the Cape of Good from St. Vincent, thence seeking for a conn with India, justify the hope that sever the larger gaps still existing in the subm network of telegraphs covering our globe soon be filled up.



THE NEW CATHEDRAL, ORENBURG, RUSSIA.—Designed by Herr B. A. Schröter, Architect.



THE LONDON AND SOUTH-WESTERN BANK: BRISTOL BRANCH.—Mr. Wein, Architect.

E NEW CATHEDRAL, ORENBURG.

e time ago a committee was appointed e purpose of collecting subscriptions for nstruction of an orthodox cathedral at rg. This committee applied to the St. burg Society of Architects, requesting tter body to issue a programme of com- n, with a view of obtaining designs for roposed cathedral, and inviting at the ime the members of the society to take the competition. It is proposed to erect thedral on a square of the town of an e length of 1,120 ft. and a width of 560 ft. nce allotted for the cathedral, together he enclosure in which it is to stand, is in length and 210 ft. in width. Accom- on is to be provided for 2,000 worshippers, ing about 2 feet square for each person congregation. In conformity with the of, the programme elaborated by the ersburg Architectural Society, allowance be made in the altar-space of the church construction of the sacristy and the library, the entrance to the latter to be a e one. The altar-step platform in front iconostasis was to be no less than 7 ft. in The church was also to have a special room for the verger, situate near the e. The number of cupolas was not ined, and the choice of the style of con- on was left entirely to the discretion and f competitors, no instructions or condi- whatever on this subject being issued. was proposed to do without a separate for the peal of bells, of which the largest ot exceed 11 tons in weight, provision nging them was to be made in the side , and only in a case of emergency was a y constructed belfry to be adopted. The al is to be built of ordinary burnt brick, stered over both inside and out. In the rominent places in the interior, how- he walls are to be lined with jasper Jasper being found in great abundance renburg country, this mode of ornamen- will not increase the cost of the proposed re to any considerable extent.

e designs were sent in by the time ap- to the jury appointed by the Society of cts. They bore the respective mottoes ghise Steppe," "God helps those who emselves," and "Go ahead." The first designs appeared at first sight to satisfy irements of the specification, the altar- oeing sufficiently roomy; but the form of chapels was exceedingly inconvenient egant, and presented difficulties to artistic ion such as is required for an orthodox The façade of this design was also too d and narrow; the side cupolas and terior forms were inelegant and unsuc- y treated; and, besides, in the profile of gn the curved side portions seen behind iostases of the side-chapels produced a able impression.

econd design was acknowledged by the satisfactory generally,—the façade as very good, and its dimensions as fully ng to the conditions of the specification. same time, in the opinion of the jury, as a want of harmony, one of the prin- fects in this design being the existence s whence divine service could neither be or seen. The depth of the altar-spaces ddle one of 16 ft. 4 in. and the side ones 8 in.) was declared insufficient, and the ep platform in front of the iconostasis narrow.

design selected (of which we give an ion), with the motto, "Go ahead," fully to the conditions laid down by the St. urg Society of Architects, according to he space for the cathedral with inclosure l at 280 ft. in length by 210 ft. in The cathedral itself, together with the ading up to it, occupying an area of n length by 116 ft. in width, there re- space all round of nearly 50 ft. up to losure, which will permit of ornamental being formed round the edifice. Accord- the design, the available parts con- uperficial measurement of 5,370 square d if we add to this the space occupied by s, the total area fully answers to the re- nts of the specification as regards the of worshippers to be accommodated.

design, on the whole, has been approved the jury; but they have pointed out defects, which will be remedied in the of erection. For instance, the chief altar is not sufficiently deep for the purpose of celebrating high cathedral service; while the side chapels, although they are of sufficient depth, are not wide enough. The width allowed, 12 ft., is not enough for the accommodation of the iconostasis, and is insufficient for its artistic decoration. The sacristies, of 6 ft. in width, are considered rather narrow, and, having a passage through them, are inconvenient for placing the presses in them. The library (*bibliotheca*), not quite 5 ft. wide, is too narrow, and it should not have been made open on the side of the altar, as the bookcases, which will be placed in it, and which may be rather high, will spoil the view of the altar from the main body of the church. The general perspective of the cathedral is pronounced perfect. A person entering the church will be struck with the display of artistic richness, the elaboration of the profile of the design producing a beautiful effect. The side entrances have been very successfully placed, obviating draughts in the nave of the church. They are convenient both for high cathedral service and service in the side chapels. The façade is considered exceedingly good and artistic, but it would be desirable, in the opinion of the jury, to widen the cupola a little. The belfry, opening only on one side, is not quite practical, the sound by this arrangement not penetrating equally all round the building. But, as has been already remarked, all these defects will be remedied.

The author of the successful design is Herr B. A. Schröter. He takes the first premium, and the second and third prizes naturally fall to the share of the other two competing architects, there being no other competitors.

The whole affair appears to have been very well and creditably managed.

LONDON AND SOUTH-WESTERN BANK: BRISTOL BRANCH.

The building for the Bristol Branch of the South-Western Bank is being erected on the site of the Church of St. Werburgh, lately pulled down for city improvements, and is situated at the junction of Corn-street and Small-street, Bristol.

The corner is intended for the bank use, and the remainder is to be let out in offices, for which two separate approaches are arranged,—the one in Corn-street and the other in Small-street. The whole is being executed in Bath stone.

The architect is Mr. James Weir, of London; the contractors are Messrs. E. C. Howell & Son, of the Colston Steam Joinery Works, Bristol. The clerk of works is Mr. W. H. Williams. The carving is being done by Mr. Seale, of London. The floors, it may be mentioned, are all of Dennett's fireproof flooring.

LIME AND BRICKS.

In the course of the annual meeting of the Iron and Steel Institute, which was held last week at the Institution of Civil Engineers, Great George-street, Westminster, Mr. Edward Riley, F.C.S., read a paper, entitled, "A ready Means of Moulding Lime, and making Lime or Basic Bricks and Linings for Furnaces, Converters, &c."

Mr. Riley said that several plans had been suggested and used for the manufacture of basic or lime bricks, for the lining of Bessemer converters and cupolas, and various attempts had been made to line the same by ramming either with lime or limestone. One difficulty and objection in using limestone either for the manufacture of bricks or for ramming is the very large loss in weight and bulk the material must sustain from the expulsion of the carbonic acid and a little water, the per-centage varying from 40 to 45 per cent. in weight, and the shrinkage in bulk being at least from 25 to 35 per cent. The use of quicklime is impracticable, as it is too dry and pulverulent in its character, and it is impossible to mix it with water, on account of the chemical action of the water on the lime. It occurred to the author that if some cheap liquid could be used that had no chemical action on the lime, it would be possible to mould the lime either by ramming or by pressing it into moulds. Various liquids had been tried, such as crude petroleum oil, coal oil, and resin oil. All these answered very well. Experiments were first made on a small scale, by mixing ordinary lime with from 5 to 10 per cent. of crude petroleum oil, and compressing it by hammering in a small steel cylinder with a piston of about 1½ in. in diameter. It was found that the cylinders of lime, after compression, might be at once placed in an ordinary fire, the petroleum burned quietly off, and left a solid cylinder of lime. If burned at a low to a bright red heat, no contraction takes place at all. If, however, the cylinders are burned at a high temperature, they contract to a small extent. Many hundreds of experiments have been made with different kinds of lime, and no difficulty has been experienced in making perfectly solid cylinders; the only precaution necessary is to see that the lime is well burned, and that it has not been exposed too long to a damp atmosphere. Lime that has been exposed for ten days or a fortnight to a damp atmosphere would not give satisfactory results. Various mixtures of burnt clay and oxide of iron and other substances have been made with the lime. From 5 to 7½ per cent. of burned clay makes it much harder after burning. An admixture of 3 to 5 per cent. of oxide of iron in the form of blue billy also consolidates the lime, at the same time the shrinkage is increased. The above proportions were used with a nearly pure lime. My experiments on a small scale being so satisfactory, I at once commenced to make ordinary bricks, using a Bodmer's hand hydraulic brick-press, which answered admirably. On submitting the lime to a pressure of about one ton per square inch, most perfect bricks were made, and from twelve to fourteen could be readily moulded and forced out of the mould in an hour in the hand press; the bricks could be easily handled, and would bear shaking if taken hold of at one end. These bricks were made at Notting-hill, and had to be carried on a man's back and by rail to my laboratory in Finsbury-square. Although I have made some dozens of the bricks, in no case was one broken; the only injury,—and this is of no practical importance,—was that the sharp square edge on a few was sometimes slightly broken. The only means that I had to burn the bricks was by using a small square assay furnace, 1 ft. square and 2 ft. 6 in. deep. After lighting the furnace, it was filled to a depth of 8 in. to 10 in. with coke, broken small; the bricks were then placed on this material and burned at a moderate temperature for about twelve hours. The three first bricks were quite perfect, excepting that one was broken in two with a sharp fracture, probably due to the falling of the brick with the coke. The lime used was made from Huddlestone stone, which is a fine-grained building stone used in London, the same with which York Minster is built. It is nearly chemically pure magnesian limestone. In burning the bricks, so far as my experience has gone, it is better to use a moderately quick fire instead of a slow, gradual fire. A small experimental converter about 20 in. wide and 20 in. deep, exclusive of top part was rammed up with the ordinary magnesian lime used in Sheffield. The lime was ground in a mortar-mill with from 10 to 15 per cent. of crude petroleum oil. The vessel was first fired with a slow fire, which had the effect of making the upper overhanging part of the converter crumbly, and ultimately caused it to fall. After repairing this damage, the fire was relighted, a gentle blast was put on, and rapidly increased to a full blast. A little roll scale was thrown into the converter, and it was found that a good hard glazed surface was formed after blowing some hours with coke. From 1 cwt. to 2 cwt. of Ferry-hill pig-iron was run into this converter, first adding some iron scale and lime. After blowing a minute or two, a few pounds of a mixture of iron scale and lime were added. It was found, however, that this chilled the metal, and after blowing for rather less than ten minutes, it was thought desirable to run it out. A second charge was then run in and blown about ten minutes, but, from the small size of the converter, and the fear of the metal setting, it was found necessary to run it out again before complete blowing.

The metal from the first blow was so much mixed with cinder and sand that it was difficult to get a fair sample. In the small converter the head was movable, and the lower portion was first burnt with coke. It was found that the lining expanded and rose up above the edge of the plates. Some of the metal remained in the converter on account of its being chilled. The lining was very solid and hard, and could only be detached from the converter by driving in a chisel with a hammer.

The experiments made up to the present time have been carried out under considerable disadvantages. I have only within the past

week had the advantage of a kiln, and am still without a properly-constructed brick-press at Sheffield, so that the bricks may be burned where made. I have succeeded in making and burning several ordinary Bessemer tuyeres for an 8-ton converter as nearly as possible perfect, by simply ramming the lime in the moulds. The kiln I am using requires alteration so as to obtain a higher temperature, and the only means I have at present for making the bricks is under the steam-hammer. The blow, however slight, makes the upper part of the brick scaly, and not solid, as when pressed by hydraulic pressure. I have also found this to be the case in my small experimental cylinders. I have made a few experiments in moulding lime into forms adapted to metallurgical purposes, such as scarifiers, crucibles, &c., and anticipate that my plan for these purposes will be especially advantageous. As yet, however, I have only made scarifiers. I find that bricks and cylinders made from ordinary Sheffield lime may, when burned at a high temperature, be steeped in water without slaking.

The following is the composition of the bricks after burning:

Silica	8·85
Lime	51·80
Magnesia	35·35
Alumina	2·60
Peroxide of iron	1·40
Sulphide of calcium	·55
	100·55

I regret that, in consequence of the short experience I have had in the manufacture of bricks and tuyeres, and other moulded forms of lime, I am unable to present to the Institute so perfect and practical a description of my process as I could wish. It was only at the commencement of this year that I made my first bricks, and my process requires further time to perfect and develop it.

I hope by the assistance of one of Mr. Bodmer's excellent hydraulic brick-presses to turn out from six to twelve bricks a minute mathematically true. These, I believe, can at once be used to line up a converter or other furnace. The bricks, being perfectly true and square, can be built in almost without mortar or material for the joints; and I see no reason why ordinary converters should not be lined in twenty-four hours, and burnt and glazed in another twenty-four to forty-eight hours. Either the lining of the converter with bricks or by ramming seems to me the most ready and economical means of obtaining a lime or basic lining.

An objection might be raised to the use of large quantities of crude petroleum, viz., that it would materially increase the price.

There are, however, so many sources of cheap crude oils,—as tar and resin oil, &c.,—that any quantity could be produced, and if such oils are required in large quantity, it would pay to distil much of the bituminous shale that is now thrown away for the crude oil, extracting, at the same time, the solid paraffine.

NOTES ON ST. ALBAN'S ABBEY.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association on the 9th, Mr. James Neale, F.S.A., read a paper entitled "Notes on the Measurement of Old Buildings, having special reference to St. Alban's Abbey." Mr. H. L. Florence, president, occupied the chair, and there was an unusually large attendance of members.

Mr. Neale commenced his paper by observing that the easiest way of telling his audience how he thought an old building ought to be measured was to describe an actual instance. He could not give a long list of buildings which he had measured as thoroughly as he had St. Alban's. Measuring small buildings and parts of buildings was not what he had in view, but he wished to take his audience through the task of completely delineating a building of considerable size, and therefore he would be pardoned for saying that St. Alban's must be for him that building. Therefore without further preface he would describe what he did there. It is not necessary that we should here go into the description of Mr. Neale's labours at St. Alban's with any minuteness, seeing that we have already* referred in detail to the method pursued by him. Suffice it to say that with the aid of plans and diagrams on the blackboard Mr. Neale entered minutely into the difficulties he had to overcome, and his recital of the way in which they were surmounted testified,—if any testimony other than that given by his recently-published work* were needed,—to his indomitable perseverance and energy. The somewhat dry and technical narrative was enlivened here and there with touches of humour. The magic influence of "beer" in procuring ladders, and the allurements held out by lithographers and admiring friends to induce sketchers to publish, were noticed in passing. From what Mr. Neale stated, it would seem that architectural students are sometimes induced to publish their sketches in the hope of growing rich almost beyond the dreams of avarice, and there was much of practical significance in his advice "to those who are about to publish." That advice may be summed up thus,—"Don't! Or, at any rate, before you do, take counsel with one who *has* published." Mr. Neale having discussed some points to be borne in mind in making sketches for publication, concluded his paper with the following interesting remarks on the architecture of St. Alban's Abbey:—

After measuring a large building like St. Alban's, which happens to afford good specimens of work from the Norman onwards, one is supplied with all the materials for comparisons between work of the same scale in the same materials in different periods. Let us, for instance, consider for the moment the subject of proportion. The difference of expression in the various periods is very considerable, although the total height and the spacing of the bays differed very little. The relation of solid and void is the base of all architectural expression. In a Norman bay of the nave the pier of the ground story or triforium is as wide as the arch carried by it. The width of the glass of the clearstory window is only one-fifth of the distance from centre to centre of the bay. Another valuable help to the memory may be supplied by the statement that in each bay, reckoned from centre of pier to centre of pier, the area of the openings is between one-third and one-fourth of the total area of the wall (more precisely ·293 of the total area). In the Early English bays on the north side of the nave the great piers of the ground-story are less than half as wide as the arches between them. The width of the glass of the two clearstory windows is between one-fourth and one-third of the distance from centre to centre of the bay. These windows supply nearly double (Norman, 30 ft.; Early English, 54 ft.) the amount of lighting found in the bays of the Norman building. The Norman windows are the widest, but the Early English ones are higher, and there are two in each bay instead of only one. In each bay the amount of actual piercing through the wall area is between one-half and one-third (more precisely ·421) of the total wall-area,—reckoning from floor to plate of roof, and considering the triforium arcades in the light of actual piercing of the wall-surface. If these proportions are borne in mind, the strong contrast between the work of the end of the eleventh and the first half of the thirteenth century,—say a period of from one hundred to one hundred and fifty years,—will be seen. The architecture has been lightened in every sense. The relation between solid and void has undergone so considerable a change that, in place of the somewhat unwieldy dignity of the earlier days, we have graceful, vigorous manhood, full of life and spirit, and,—one need hardly say, as this is architecture of the best class,—with a sufficient dignity of its own. In the Decorated period the proportions are not so widely different from those prevailing in the century before as to demand a lengthened description. If a spectator could throw away for a few moments the habit of questioning about detail,—a herculean effort that I am afraid most architects would find beyond them,—and could devote those few moments to standing in front of the Early English bays, and thereafter before the Decorated bays in the nave, he would find their general expression so similar that he might fancy he was looking at two parts of the same work. The spacing of the bays, the dimensions of all the piers, the sizes of the openings, and the scale of the details, are similar. It is but bare justice to interpose in this connexion a mention of the influence of the Norman church on all the work that supplanted it. The height that the Normans gave to their walls, widths of their bays, the sill levels of t clearstory windows, the impost levels their ground-story arcade, not to s of many other coincidences, are ec in the work of the thirteenth, and, slight modifications (all improvements, b noted), in the work of the fourteenth cent To state the reason why the proportions i sanctuary differ so widely from those in the we should be led through a lengthy, a interesting, bit of history anent the thou and doubts and conclusions of the thirtee century builders. The very capable artists dealt with the sanctuary did not destroy they completely altered the work which found in existence. They kept it,—evid with great regret,—merely because its rem would have imperilled the safety of the c tower. But almost every bay of this ch has its own interesting architectural his deducible not from records,—the very fa compilations of untechnical gossips,—b be read clearly enough by the painst student of the language of which construc proportion, and distinctive detail are the of power. The Perpendicular period i represented in this structure to the same e as the three earlier periods. It cannot lay either, to the very rare excellence and pleteness of some of the work of other The abbots commanded skill equal to the of the time in England, but they directed efforts merely to the alteration and enrich of the structure; they were not urge ambition to destroy and to rebuild, nor to additions, as their predecessors had Thus we find changes constantly goin massive dignity at the first, then more and lightening of the masses, grace gained and space parted with. The piers and wall occupy between two-thirds and three-fo (really ·707) of the total wall area of a plete bay of the Norman building; they pied less and less as time passed on, u the middle of the fifteenth century, the were reduced to comparative tenuity. windows in the end walls of the transep nave have an amount of glass that woul filled, within some 8 feet, the whole windows in the Norman church.

Let us take up another subject, and in a few comparisons, such as the form of a In the original Norman church, consecrat 1115, all the arches are semicircular. are semicircular arches, worked to interl the slype, the work of the late Norman 1160. Such interlacing arches have re credit for suggesting the form of the p arch, but they are not justly entitled For I may remark, parenthetically, tha real motive for the use of the pointed arc a constructive one. The sensation of fri peril felt for so long during the critical p of the underpinning of the great tower Alban's in 1871 would thereafter allow getfulness of the need for aiding great a carrying prodigious loads. Any one who re the tremendous risks, and saw from time t the necessarily gigantic shoring, would fail to bear the impression in memor memory began to fade. These precaution necessary because semicircular arches of span are, for 5 ft. or 6 ft. in the centre o spans, almost as flat as lintels. The ten to become crippled in those parts was p to the minds of the Normans, and they stone largely there. This was a slight im ment, by making the wedges more mas but was no such radical improvement uniform acceptance of the pointed ar arches of construction some three-quarte century or so afterwards. In the Early E work at St. Alban's, the arches are, w exception, pointed. The advent of th Early English period,—say 1190,—was m as a general rule in England, by the use arch of which the form was so acute justifies the application of the epithet "la used by Mr. Edmund Sharpe; and as the advanced the extreme pointedness gave more frequently to arches struck with radii. It may be useful to some youthful s to remember that St. Alban's furnishes exceptions; for instance, the arches western porches, and in the western bays nave, are not nearly so acute as some arc the eastern part of the church, which ar than half a century later. In the Perpend work the four-centred arch is used, and centred and elliptical forms also occur.

* *Builder*, vol. xxxvi., pp. 445, 525.

* "The Abbey Church of St. Alban, Hertfordshire."

will undertake one more comparison with ce to a matter purely of detail,—I mean ngs. In the Norman period these mould- e almost non-existent in the original ire. Such stone as was used was shaped ne axe, and the varied and delicate forms r times would not have harmonised with ad wall-spaces of the Norman builders. the chisel came into use, mouldings possible that previously were quite out tion. In the Late Norman work, shallow and some beads (three forms in all) found. In the Transitional work in the ve have five independent forms. The e strides of fifty years produced thirty- ndependent forms in the Early English the nave. The history of the character uldings, in about a dozen words, is:— ndercutting, and then a little; 2. Much utting; 3. Less undercutting; 4. Little ndercutting. We are now treating of undercutting." The deepest hollow in man building measures ¼ in. from the ne. In the Transition work there are 2 in. deep from the wall plane. In the de of the nave there are hollows that ally 5 in. deep, measuring from a line the mouldings on each side of them. it remembered, these mouldings in the eriods are found in work not differing a scale, if at all. The number of separate f mouldings is about the same in the ed period as in the Early English. The in the depths of the hollows is very ble. The greatest depth of hollow is against 5 in. in the Early English work, d in the same way. In consequence of pe of the hollows being altered in rela- the mouldings adjoining, the sharpness adows is much decreased. The mould- not composed of regular curves, but by free-hand. Much of the ease in the esults from this sweetness of line, where binations are adapted to one another. ct of mechanical harshness, which is one crying sins of modern work,—pro- following almost slavishly the work of y masters,—is avoided. In the Per- ar work the chamfer-plane is used for gs, and the character of the mouldings changed. For instance, there are im- asements in the jambs 13½ in. wide by p. I could carry you through com- touching on the elements and on the nts of our art which would extend this eyond all reasonable limits,—let this be se for terminating abruptly what it has much pains, but given me much to write and to deliver to you.

course of the brief discussion which

Flint Clarkson moved a vote of thanks eale for his interesting paper, remark- it was exceedingly kind and generous art of Mr. Neale to give to architectural at large the many valuable practical ich he was able to give them as the his exceptional experience. Mr. Neale ongly identified himself with St. Alban's and the work he had done would remain s books lasted.

aton Webb seconded the motion, which pported by Mr. W. L. Spiers, and after marks from the Chairman, Mr. Neale l his acknowledgments, and the meeting ght to a close.

CHURCH OF ST. SEPULCHRE, SNOW-HILL.

e course of the discussion which ensued eading of Mr. Price's paper * on this t the last meeting of the London and x Archæological Society,

hairman (Mr. M. H. Bloxam, F.S.A.) the sacramental plate was of any and whether the fireplaces in the room porch were ancient. The will of the ster, quoted by Mr. Price, was an gly interesting document of the time of

sephs asked whether, in the soil which removed from the body of the church, an remains had been found? He took part in the restoration of the Church ary Aldermary, and he could only hope e restoration of St. Sepulchre's there would be removed a great deal that Wren or some one else after him had put there, for much of the work was entirely out of keeping both with what the church originally was and with what it ought to be. No doubt Wren was a very great man, but he made mistakes in dealing with churches anterior to his own time.

Mr. Billing, the architect in charge of the works now in progress, said that wherever it had been found necessary to cart anything away in the shape of soil,—and he did not believe that the quantity removed amounted in all to so much as fifteen cartloads,—the earth had been thoroughly sifted and examined, under the supervision of Dr. Sedgwick Saunders, the Medical Officer of Health for the City of London. Indeed, in every possible way the greatest care had been taken that no human remains should be taken out of the church. Mr. Price's very interesting paper had contained an allusion to the south-east wall having been rebuilt, but he (Mr. Billing) did not think it had been rebuilt, for within the past few weeks he had found the old stone jambs, but they were of an earlier character, as it seemed to him, than that of the Perpendicular building now in course of restoration. The east window he had been requested by the churchwardens to pull down, much to his disgust. In preparing his plans he had to bear in mind that it was stipulated as a *sine qud non* by the vicar and churchwardens that the reredos should be retained. He should like to know whether the documents which Mr. Price had quoted stated distinctly that Wren was engaged upon the reinstating of the church after the Fire, because he (Mr. Billing) was told that there was a tradition in the family of a parishioner, named Hoby, that Wren refused to give a certificate. The workmen would soon be engaged on the walls of St. Stephen's Chapel, in which portion of the church it was proposed to place the organ.

Mr. Jones asked whether the Council of the London and Middlesex Archæological Society were cognisant of what was being done in the works now in progress at the church? As to St. Mary Aldermary, he was sorry that Mr. Josephs's energy did not meet with that resistance which it should have met with. Had it met with greater resistance a great many interesting features of that church would have been preserved.

Mr. Alfred White, F.S.A., said that the Council of the Society were keeping their eyes steadily upon St. Sepulchre's Church, and had done so since their report to the vicar and churchwardens in October, 1873. He did not think that what was done at St. Mary Aldermary could be cited as a precedent for what was now being done at St. Sepulchre's. At St. Mary Aldermary, the architect, Mr. Innes, prepared a plan which was substantially adhered to throughout. The parishioners of St. Mary Aldermary knew at the outset what was going to be done, and there was no doubt that what had been done had been done very judiciously, and the church had been very much improved. In that church there was, he believed, no alteration of level. In fact, the two cases were not at all parallel. With regard to Wren's work in the Church of St. Mary Aldermary, he did not think it had been much damaged. That church was rebuilt a very few years, comparatively, before the Fire of London, and in a very peculiar era, when Pointed architecture was taking very different lines to those pursued by it in former times. The church was rebuilt, in fact, almost at the commencement of the Renaissance. It was not *rebuilt* by Wren, after the Fire, only repaired. In the recent "restoration" of St. Mary Aldermary the fabric had been left substantially as it was left by Wren. What had been removed was no doubt cumbrous stuff, perhaps not exactly suited to our modern ideas of church architecture. He was proud to say that the masonry remained intact, and especially so because the church was one of the two or three instances only in which Wren had attempted to work in the Gothic style. In the case of the present works at St. Sepulchre's, there had been no definite plan presented for the "restoration" or rebuilding of the church. He (Mr. White) believed that neither the architect, the churchwardens, the vicar, nor any one else knew what was going to be done. He begged to move a vote of thanks to the reader of the paper, Mr. Price, to whom the Society owed a great deal for his care and watchfulness in the matter.

Mr. Josephs seconded the motion, and in doing so called from Mr. Alfred White the explanation that his remarks as to St. Mary Aldermary had reference entirely to the interior of the church.

The Rev. Mr. Gibbs, in supporting the motion, said he thought that such a church as St. Sepulchre's presented one of the most difficult problems which the architect could have to solve. It had been well said that the church told its own history, but he could not help thinking that it would never look thoroughly well. It would always look a mongrel,—half Classic, half Gothic.

Mr. Coote, F.S.A., made a few remarks on the history of the parish, which, he said, was unique in London with respect to its churchwardens. One liberty appointed one set, and the other liberty another set of wardens, but although each liberty appointed the wardens in its own division, the wardens were not for that division only, but for the whole parish.

Mr. Billing, in the course of some additional remarks, said that the eastern arch of the tower was one of the finest in the City of London, both on account of its size and of the character of its moulded work. The piers were of Kentish rag, and were as strong as though they were of granite. Nothing that Wren put in St. Paul's could be stronger.

Mr. John Hayes, a former churchwarden of the parish, was invited to take part in the discussion, but he said he could not enter into the subject. He was no antiquary, and could only say,—

"Give me the thing that's pretty, young, and new:
The old and ugly things I leave to you."

Mr. J. E. Price, F.S.A., the author of the paper, replied on some of the points raised in the discussion. He said that the Communion-plate possessed no interest except such as attached to it from the fact of its having been stolen by a former sexton, and afterwards recovered from the bottom of a pond. The fireplaces over the porch were modern. As to the question whether it was true that Sir Christopher Wren was ever employed on the building, there surely could be no better affirmative proof than that furnished by his ledgers. The tower and porch had been restored by Mr. Pettit Griffith, without any serious objection, and what was wanted now to make the body of the church harmonise with the tower externally was to put a parapet along the nave. He thought that antiquaries and the public had good cause of complaint in the fact that they did not know what was going to be done, nor was any one else, apparently, able to tell them. The income now accruing to the parish for the repair of the church (from the property of William of Newcastle) was nearly 2,000*l.* per annum, and it had become a question how the money was to be spent year after year. It would be absurd to go on "restoring" the church every few years, but it was of great importance that the works now in progress should be in keeping with what had already been done.

[We note that the legal points in dispute as to the works now in contemplation have been argued before the Consistory Court, but judgment is deferred.]

Builder, p. 522, *ante*.

THE EARL OF SHAFTESBURY ON THE HOMES OF THE METROPOLITAN POOR.

AT the annual meeting of the London Home Mission, which was held last week, several of the speakers adverted to the sad condition in which the officers and visitors of the society had found the homes of the poor to be in several parts of the metropolis, and the Earl of Shaftesbury, who was present, incidentally stated that there never was such a capital as London, with its 4,000,000 of people living in every possible form, and in many parts more disgraceful than any other city. He observed that there would be no hope for religion and decency so long as the domiciliary condition of the people of London and of other cities remained as at present, and he therefore called upon the assembly not to cease crying out for an improvement of the domiciliary condition of the people.

We can personally endorse what Lord Shaftesbury says on the matter. And this is the state of things after thirty years' agitation on the subject!

Westminster Industrial Exhibition.—His Royal Highness the Prince Leopold has consented to become president of this exhibition, which will be opened on Saturday, the 24th inst.

THE PURPOSE OF ART.

AT the opening of the Yorkshire Fine Art Exhibition Building, illustrated in our last week's issue, the Archbishop of York, who delivered an inaugural address, in the course of it said,—

In order to answer the question, What is the use of art to a people, and why should we teach it? we must pause for one moment upon the soil of theory; and of no subject, perhaps, is the theory more debatable. We shall all agree that art is not mere imitation. If that were so, the photograph of a building (I do not say of a landscape, on account of the false colouring) would be the highest product of art. Because the power of imitation is requisite for the painter, and is the power most easy to appreciate for the untaught spectator, and because realism is the most prominent tendency at present, skilful imitation is sometimes confounded with art. It may happen to be the enemy of art. The bespattered boots of the fallen Emperor in Delaroche's great picture attracted very often the attention due to the head and bent figure, heavy with the weight of a crushed empire, with the ruin of a thousand schemes of a selfish life. Interpretation, not imitation, is the artist's function. "Every natural object," says Victor Cousin, "however beautiful, is on some side defective. Here the humble and the hideous unite with the sublime, there elegance and grace are separated from grandeur and force. The features of beauty are scattered and divided. To unite them, borrowing from one face a mouth, and eyes from another, without any rule to preside over the choice and to direct the borrowings, is but to compose monsters; and when you admit such a rule, you thereby admit an ideal different from all individuals. It is this ideal which the true artist forms for himself in the study of nature. Without the study of nature he could never have conquered the ideal; but with it he judges Nature herself, he corrects her, and he ventures to undertake to measure himself against her." Let us take at a venture three examples, in this year's Academy, of the truth of this theory,—"The Waning of the Year," by Mr. Parton; the portrait of Mr. Gladstone, by Millais; and the Flight of Dr. Brydon, the one survivor of the Khyber Pass. In one sense they are imitations of an autumn landscape, of a statesman's face, and of an exhausted horseman and a spent horse. It is not the imitation, however, which makes the charm of each, and will arrest the admiring eyes of thousands in the coming weeks. No; in the one case the artist is confronted with an autumn scene, and it speaks to the artist of the decline of the year, and the withdrawal of its exuberant summer life. The sadness of such a scene, or at least its solemnity, comes from within; for it reminds us of the waning of our own year of life. The thought of age, of oncoming winter and death, all enter into the artist's ideal of such a subject, and, in consequence, all that tends to speak the same feeling to other minds will come naturally to the pencil, whilst features in the real landscape that are void of significance, and would hinder the expression of the idea, will fall away. So the portrait of the statesman comes from one who could understand that he was in the presence, not merely of a strong and vigorous head, but of one which is the speaking record of a long, earnest, passionate career, marked with its force, but also with its sorrows and disappointments. The result is a portrait which will never be forgotten. I learn from the *Times* that some people find that the coat is thinly painted, and that sufficient care has not been bestowed on that indispensable garment. The *Times*, of course, rates that criticism at its proper worth. I am free to own that I have no recollection of the coat. The third picture, less bound to imitation,—for no one would expect that at this distance of time horse and man should be exactly reproduced,—bears its idea out with even more clearness: alone, exhausted, snatched out of universal death, and sustained by sheer force of will to the end of the desperate flight, amidst an arid, stony landscape which says "expect no help nor shelter, of roof or tree from me"; the man has come back to tell of a powerful army blotted out, of the shame and humiliation of a great people. Some one will say that, at this rate, truth is sacrificed; that if the artist gives us not true reproduction, but extracts and fragments of nature, he cannot be trusted. The answer is, that this is the very problem of art, to interpret nature, without detracting from her; to give the maximum of thought with the minimum of loss of exactness. The artist would lose his power, if the landscape were not such as we can see for ourselves; the portrait would gain no admirers if it were pronounced unlike, exaggerated, or distorted. In Hogarth's didactic series, as in "The Rake's Progress," the realism of every picture is what strikes us most. Just such features were in those rooms when they were the scenes of that soul's tragedy. And yet, on closer observation, you see that every feature is carefully selected to conspire towards the common effect. It would not have been so in reality; something or other would have been found which did not aid the story, and the artist must have the benefit of all the accessories, for he has much to tell, and little means of telling it, only such signs as he can gather, without violation of nature, into the four corners of a limited canvas. You find in it the fidelity of a Dutch picture, and I find the perfection of arrangement: the combination of these is the artist's secret and his triumph. This ideal of the artist, what is it? whence does it come? Upon this the world is divided. Is it that the world is but the development of an idea, and that in the mind of man the idea exists, and needs to be evoked, so that man goes before Nature, interprets her, and knows what she tends to and strives towards with throes and struggles through ages? This transcendental view is not in favour at present. It is the view of Schelling and others. Or is the ideal no more than the abstraction, by a cultivated mind, of the special features of many observed scenes of beautiful nature or beautiful life? I shall ask you to avoid the thorny path of this discussion, that we may keep our heads clear for the works that we are presently to study. But there are some things on which we can agree and which we can all understand. The critic and the artist are alike in taste for the beautiful; they differ in the creative element. The artist must not only observe; he must speak. He finds a necessity laid on him to communicate to others his ideal of beauty. This feeling is called inspiration; it is the demon of Socrates, and the word genius is akin to that. Such a gift is sure to carry with it an element of pain; and the more intense the longing, the greater the suffering is apt to be. "Art is long and life is fleeting;" and the resources of expression are limited. Ere the inner ideal can get itself interpreted, much scorn from a world unaccustomed to a new mode of interpretation may have to be borne. Then artists must live; and to yoke Pegasus to the market-cart, and to subdue his paces to such a use, is a degradation. Some defect of eye or hand shows itself, intractable to all teaching; it will fetter and hinder for ever the artist's power of expression. With such limitations without, and such an imperious call from within, there cannot be unbroken peace; there must often be exquisite pain; exquisite, because the whole temperament of the artist is sensitive and finely tuned. . . . . .

THE HERTFORD COUNTY GAOL.

UNDER the operation of the recently-passed Prisons Act, the Hertford County Gaol, the governor's house, chaplain's house, and grounds were offered for sale by auction last week at the Mart, by Messrs. Fox & Bousfield. The property was described as being situated close to the town of Hertford, and, in addition to the buildings, to contain nearly three acres of excellent building land. The property was submitted in two lots, the first lot containing the gaol and the governor's house, comprising nearly two acres of land, which, it was stated, was admirably adapted for building operations, in which the mass of sound material in the gaol buildings could be readily utilised. The property was said to afford an excellent opportunity for supplying the demand for houses, which were much wanted in the neighbourhood of Hertford. In introducing the property, Mr. Fox, the auctioneer, stated that land in the neighbourhood of Hertford was worth 800*l.* an acre, when a gentleman present said the auctioneer had overrated the value of land in the locality. Mr. Fox, however, warmly rejoined that he knew it was worth that sum, and as he could prove it, he was not to be put down. The bidding commenced at 2,000*l.*, and after a spirited competition the property was sold for 4,000*l.* The chaplain's house adjoining, with the grounds and one acre of land, was next offered, but the highest bid being 1,410*l.*, the property was withdrawn.

CALCIUM WHITES.

THE account of the preparation of Bla
Meudon, in the *Builder* of May 3, sugge
notice of whites derived from lime gene
which will probably interest those conc
with the employment of these materials.

It was even with Pliny a regret that in
portion as the number of pigments incre
and more brilliant ones were introduced
seemed to decline from the nobility and pc
nence which had characterised its earlier
simpler phases. I fear we have at the pr
day too much reason to echo his complaint
the brilliance and variety of the modern pr
have certainly a tendency to blind the artis
due consideration for the stability of his

The subject is perhaps of sufficient impor
for me to give some reasons why I believe
whites, essentially the same as that prepa
Meudon, date their use to very ancient tim

Chalk in greater or less purity is found
tifully in nature, and was therefore proj
one of the earliest colours used. Some
rudest savages use it among their war-p
It was one of the four pigments to whi
early writers commemorate, the palette
pristine artists was limited. Theophr
indeed, expressly mentions its employme
painters. To go, however, no further
than Pliny, who possibly only copies
Theophrastus, we find that he me
among the white pigments a substanc
doubtedly little differing from the chalk
new prepared at Meudon. In book
chap. 19, he tells us "Melinum is whit
The best is supplied by the island of Meld
is also found at Samos; but this last-na
too fatty to be used by painters. The
engaged in obtaining this substance lie
flat to find the vein among the rocks.
the same medicinal properties as E
chalk." Sir Humphrey Davy informs u
as the result of his analyses, that the
colours found at Pompeii, and those used
decorations of the Baths of Titus, consi
chalk.

There can be no doubt that essentially
preparations have remained in use in the ar
the Classic times throughout the Middl
until our own day. One special use o
was to mix with size in order to form a
for leaf-gilding, which should be hard
durable, and at the same time capable of
burnish. In gilding as old as the twelfth c
we find a white ground of this sort, an
quities discovered in Rome prove the u
similar plaster, or "gesso," for the appl
of gold in classic times. I have no doub
its use in this way has been handed d
our own times as a "trade secret," and i
the same as that now employed by our
gilders." A "gesso" of this sort was ev
for gilding the backgrounds of miniat
books, and often with such skill as to c
appearance of laminæ of smoothly
gold.

Illuminated manuscripts, indeed, a
veritable ark wherein have been conserve
the tablets of art history through the bo
times of the Middle Ages: Careful exam
of these gorgeous volumes will, I think, c
most observers that a chalk white of gre
was used also as a pigment; for the wh
most pure and brilliant even in the fine
lines. It is difficult even with the best
whites to execute lines of the same finen
delicacy, and yet body and brilliancy,
marvel at in these reliques of an art t
and laborious for this age of rapidity.
however, is more to our present point
these old whites do not blacken and ta
white-lead does when used as a water
Yet these ancient manuscripts were
executed in water-colour, the mordants e
being white of egg, gum arabic, and o
ally a little yolk of egg and animal
must be remembered that the permane
white was not then known. It is, of
true, that books being normally close
especial immunity from the injurious e
light and of noxious gases, still this
enough to account for the wonderful p
tion of the brightest colours in these ad
paintings, and we are led to believe
pigments were prepared in some care
secret manner which seems in some inst
least, to have surpassed our present pr
F. Lefort ("Chimie des Couleurs") says
chalk whites that they "possess most
physical properties of zinc whites."

manuscript written, or rather copied, in rteenth century, and of an origin pro- much earlier than that date, and which in the British Museum, an Apuleian "Album de Apuleya") is mentioned, and ecially stated that this white may be with orpiment,—a wise caution to the o substitute it, in such a mixture, for which would react chemically upon the t. This must have been a chalk white. no Cennini wrote his treatise on painting beginning of the fifteenth century. In he describes a white pigment called *San Giovanni*. I quote from Mrs. Merri- translation,—"There is a natural white which, however, requires some prepa- It is prepared in this manner:—Take hite slaked lime; pulverise it, and nto a little tub for the space of eight anging the water, and mixing the lime er well together, in order to extract all unctuous properties. Then make it all cakes, put them upon the roof of the n the sun, and the older these cakes are er they become. If you wish to hasten ess, and have the white very good, e cakes are dry grind them on your slab ter, and make them again into cakes and n as before. Do this and you will see fectly white they will become."

regoing considerations, I think, leave t that chalk whites have been long in the sooner a good white of the same repared for the *aquarelliste's* palette the r for the permanence of water-colour s.

H. Wilson.

URTHER DISCOVERIES BY DR. SCHLIEMANN.

journals publish a letter of Herr to one of the Council of the Berlin logical Society, in which the writer s himself to the following effect on the ns of Dr. Schliemann at Troy:—mann is having a great part of the leared away entirely, in order to com- expose the 'Trojan' city. In this colossal masses of burnt material n laid bare. Large blocks of unburnt the form of flat squares, which have l in the construction of the wall, have nt to melting-point; they are com- tazed over. To-day (April 10), in my a new 'treasure' of gold, quite to that illustrated in the sixth part of *chrift für Ethnologie*, including long as found, as well as a series of gold ch as were of frequent occurrence at

I am consequently able, from my rvation, to bear testimony to the truth- Schliemann's descriptions. He is a defatigable activity, and his endurance verance are really wonderful. As M. E. is also staying here, the authenticity, te, of these last excavations is com- sured."

all very polite and well intended by how, but we are not aware that any senses has as yet pretended that Dr. nn did *not* find the treasures he has e the world.

CHITECTURAL ASSOCIATION.

pecial business meeting called for he 18th ult., not having been held, in nce of the non-attendance of a suffi- nber of members to form a quorum, the general meeting held on Friday even- 9th inst., was preceded by a special Mr. H. L. Florence, president, in the en it was unanimously resolved to agree llowing alterations in the rules:—

—To insert after "proposal of two members," "and also of rejecting any proposal." To omit "Every nomination shall be made at a General and to substitute for them "The nomination de at the first General Meeting in each month." last two words in the Rule, and to add, "In ular case, if demanded at a General Meeting, or dressed to the Honorary Secretaries. In this ection to be postponed for at least a fortnight, to be given at a General Meeting, and sent to er and Seconder by the Honorary Secretaries, eek before the election."

form for the nomination of candidates laid before the meeting and adopted.

ordinary meeting, Messrs. J. S. Nanson Whitelaw were elected members.

of thanks was tendered to Mr. F. C. for his kindness in conducting a large number of the members of the Association over St. Paul's Cathedral on the 3rd inst.; and it was announced that the next visit would take place this Saturday, the 17th inst., to the Highgate Infirmary, situate at the junction of Highgate and Archway roads, and recently illustrated and described in the *Builder* (pp. 227-9, *ante*).

A vote of thanks having been accorded to the Entertainments Sub-Committee for work done in connexion with the Members' *soirée*, held on 25th ult.,

The President announced that the Water-colour Class, under the tuition of Mr. Sutton Palmer, would commence work on the 19th inst. The Surveying Class would also be resumed very shortly, provided that not fewer than twelve members signified their intention of joining it.

Mr. James Neale, F.S.A., then read an interesting paper, entitled "Notes on the Measurement of Old Buildings, having special reference to St. Alban's Abbey." The substance of this paper we publish on another page.

At the next meeting of the Association, to be held on the 23rd inst., the officers for session 1879-80, will be nominated, and Mr. W. Penstone will read a paper on "Late Wrought-iron Work."

VISIT TO THE TEMPLE CHURCH.

The members of the St. Paul's Ecclesiological Society met on Saturday, the 10th inst., in large numbers, at three p.m., at the Temple Church, which Mr. Seddon had undertaken to exhibit and describe to them, permission having been kindly granted by the sub-treasurer and the master of the Temple. They were met by Mr. St. Aubyn, the architect in charge of the church, who had been good enough to hang up conveniently for inspection within the church a goodly array of drawings, both general and detail, together with the set of drawings of the Temple Church by his present assistant and former pupil, Mr. Langford, which have obtaind the silver medal of the Royal Institute of British Architects.

After an inspection by several of the members of the remains of St. Anne's Chapel, outside the round church, to which access is obtained by an opening in the pavement of the court, Mr. Seddon conducted the party through the fine western portal, which is under part of the old cloisters, and now forms a porch to the church. He first read some extracts from Stow's "Survey of London," which gives interesting particulars of the order of the Knights Templars, established A.D. 1118, for the protection of pilgrims visiting the Holy Sepulchre at Jerusalem. Many noblemen throughout Christendom joined this order, and temples were built for it in every large city in England; but this, the chief one in London, all being after the form of that at Jerusalem, on a circular plan. The first temple of the order in London had been in Old Bourne (Holborn). Of this some most interesting remains were recently discovered, but, unfortunately, have been since destroyed. In 1185 this was abandoned, and the extant noble structure commenced in place of it, and dedicated by Honorius, Patriarch of Jerusalem, who was on a visit to England to endeavour to engage Henry II. in the Crusades. The round part of the church is a most excellent example of the architecture of the period of the Transition, on which Mr. Seddon had on the previous Wednesday read the paper to this society which we have given elsewhere.

The mixture of the pointed with the round arch, the characters of the splendid compound pieces of Purbeck marble, the dignity and stateliness of the proportions as compared with the lovely but slighter work of the Early English portion of the church eastward, of fifty years later, were pointed out, with all the minutiæ of the details of each. After the party had carefully inspected the whole of the building, and the drawings of Mr. St. Aubyn and Mr. Langford, and examined the restored monumental effigies of noble companions of the order (not members of it) which are on the floor of the round church, they were taken over the very fine Elizabethan hall, which, with its richly carved screen, was extremely admired. The party then proceeded to view the crypt of St. John's, Clerkenwell; on the way they passed under the gateway of the old priory of that rival order of the Templars, and were gratified to be told that the Order of Hospitallers was still in existence, or had been revived, and that Sir Edmund Lechmere was the present head of it, and that it had been enabled to purchase the gateway and advowson of the church, so that both were practically made safe for the future.

At the church, where the party was met and welcomed by the rector, the Rev. Mr. Dawson, Mr. Seddon resigned the conduct of the party to Mr. Birch, who has written a paper upon it, which will be found in the volume of this journal for 1876, and to which we may refer our readers for information with respect to this interesting relic. The crypt is on an unusually large and sumptuous scale. What remains of it was under the choir and its aisles, and is partly of the date of the Transition, viz., the two easternmost bays, and the rest is of Early English, so that here again the gradual development of the Gothic principles of construction and ornament was explained to the assembly, which then broke up, well pleased with the manner in which the programme for their meeting had been carried out.

ST. SEPULCHRE'S CHURCH, SNOW-HILL.

Sir,—In the concise and correct notice of Mr. John E. Price's interesting paper, reported in the *Builder* of last week, are omitted a few points of some importance. In consequence of the damage by the Great Fire, Sir Christopher Wren strengthened the four great piers supporting the tower, by inserting semicircular arches and columns; these have been wholly removed, and without any strutting or shoring, until the shafts have been restored. The result is, the tower has bulged, and the stone staircase is filled with concrete, the bellringers having to ascend the belfry by a ladder. Mr. Price, also, does not mention that the seventeen bosses in the groining of the porch have been wholly knocked off and destroyed. The windows now being inserted in the south wall of the church are of a Flamboyant character, and not as designed by Sir John Popham; this can be proved by engravings and drawings in existence. It is very unusual, and somewhat remarkable, that this interesting church should have been taken to pieces prior to "any definite plan having been agreed upon." The tenders for these works have been published in the *Builder*. The highest was 12,620*l.*, and the lowest accepted was 7,275*l.*! The anticipated cost was 5,000*l.* By the time the works are completed they will cost the same as if the body had been restored to its original state. W. Petit Griffith, F.S.A.

LONDON CHURCHES.

Sir,—Allow me to thank you very much for the reproduction, in your number of May 3rd, of the picture, "The Threatened City Churches."

I think I may claim an almost unique experience, even among London men, in the fact that I have attended divine service in nearly every church within the City boundaries. Every edifice represented in your picture is familiar to me; and I cannot but regret that these buildings should not be preserved from the warehouse mania which has set in so strongly. But as long as lovers of architecture, and even those who would wish to have our City churches spared, will not move a finger or spare one penny in their defence, it is to be feared that ruthless speculators, who see only in the sacred ground occupied by these memorials of the past so much "eligible" building-ground, will be allowed to have their destructive way. Looking upon your picture, it is pleasing to see that some,—St. Mary Aldermary, for instance,—have weathered the storm which at one time threatened to destroy them. It remains for us jealously to guard the remainder.

I am afraid you will consider this letter but an expression of "gratitude for good things to come," when I ask if you cannot also reproduce the other two pictures of City churches which you mention in your article. Twenty-five years is a long time. Those who saw your pictures then will welcome them again; while those who knew not the *Builder* of that epoch will be only too glad to see them for the first time, as I shall. R. Clark,

Secretary Tyndale Memorial Fund.

The Seat of War.—War has one advantage, it leads to the study of geography. Mr. Wylde has published a new map of British South Africa, showing the successive acquisitions and the topographical details of the Cape colony.

ROMAN REMAINS IN GERMANY.

AN interesting discovery has been made in the communal forest of Eutingen, near Pforzheim (Grand-duchy of Baden), on the occasion of the construction of a new roadway through it. The workmen, at not quite 1 ft. below the surface, came upon a male statue of white sandstone, beautifully formed, but unfortunately without head, and otherwise much injured. With it they found some copper coins, the point of a javelin iron, and a number of hollow tiles. The objects have been transmitted to the Grand-ducal Archæological Collection at Karlsruhe, and there their undoubted Roman origin was determined. The sandstone figure is a Mercury, resting on the caduceus, and carrying in his satchel a kid. The coins are sesterces and asses of the time of Emperor Antoninus (A.D. 138-161), and probably of Trajan (A.D. 98-117) and Commodus (A.D. 180-193). The spot where these objects were found, together with dressed building stones, is close to a former Roman road leading from Pforzheim to Oeschelbronn, which at the present time still serves as a footpath, and is known by the name of "Post Road." It is suggested that there may have been here (as we find in other places) a small sanctum to the god of commerce. During the last few years various Roman remains have been discovered in the neighbourhood of Karlsruhe. Thus at Stettfeld, in 1875, at a spot called the "Swedes' Fountain," the remains of a fountain, consisting of the somewhat mutilated head of a fish-goat and the upper part of a votive stone, with the inscription:—"In honorem divinæ Domus æneatores" (corps of trumpeters) "Sueton Cæsar [cohortis XXVI voluntariorum civium Romanorum]." In another instance Count Normann had some interesting Roman anticaglia disinterred in the tower of his castle of Obergrombach. Near the castle of Ettlingen a fragment of a Roman inscription, CONF, was found (probably CONFLUENTES), whence has arisen the name of Coblenz. In digging for the foundations of a new church in Schollbrunn, in 1878, an altar covered with reliefs representing Hercules and Hippolyte, Minerva, Mercury, and Juno (Ceres?), was met with. It is preserved in the Hall of Antiquities at Karlsruhe.

A MUSEUM OF CURIOSITIES AND ITS LATE OWNER.

FOR many years past there resided in Charterhouse-square a Mr. Snoxell, a name not unknown to collectors, sight-seers, and to a pretty large circle of old citizens. Early last month the ardent old collector and husbander of varied and rare objects amassed during a long lifetime, died at the age of eighty-three. The collection which now, as we hear, is about to be dispersed by Messrs. Puttick & Simpson, is certain to command attention, if it were only on account of the relics of Handel, which, according to the catalogue, include not only the watch and original will of the great composer, but also his portrait, by Woolfand, and the hammer and anvil used by Handel in composing the "Harmonious Blacksmith."

Some years since we heard that the British Museum authorities, on learning that Mr. Snoxell had Handel's watch and will, were anxious to obtain them, but they were said to be equally anxious at the same time to know how, and when, and where their possessor obtained them. Mr. Snoxell volunteered no information in respect to the latter, and contented himself with remarking that he *had* Handel's watch and will, and that that was sufficient. He also said that it was possible the British Museum might obtain them after his death, but while he lived he intended to retain them in his own possession. The catalogue includes singing-birds, automaton clocks, upwards of 600 valuable miniatures, and about eighty paintings, chiefly of subjects connected with music. There are a number of rare prints relating to remarkable places, subjects, incidents, events and characters, autograph letters of Johnson, Burns, Evelyn, &c., medals, bronzes, musical instruments, library and standard works, and sundry other articles and objects of interest. Mr. Snoxell himself, though he was not exactly what might be truly termed an eccentric man, had some traits of eccentricity in his nature. To wit,—a notice outside his door warned passers by and visitors that there were "no lodgers" within, and on the landing without his hall-door there was framed a trap so constructed that the ancient collector could, if he willed, by moving a certain lever or appliance, have dropped a "troublesome customer" fully 6 ft. below the previous level of his feet. We do not know whether the late resident of Charterhouse-square ever scared any intending burglars by "letting them down," or whether his drop-table was more usefully applied in the reception of goods intended for the lower regions of his odd museum.

A NEW VESTRY-HALL AND FREE LIBRARY FOR BERMONDSEY.

THE Bermondsey Vestry are taking steps for the erection of a new vestry-hall in the parish, in connexion with a free library. At their last meeting the Vestry-hall Committee presented a report, in which they requested the Board to give them power to purchase a site for a new vestry-hall, free library, and a public hall, in Tranton-road, if the same could be obtained at a fair price. Several members of the Vestry objected to the proposition being carried forward at a time when the trades of Bermondsey were especially suffering from the general depression, and it was also urged that the site proposed was ill suited. A resolution having been moved to the effect that the consideration of the question be deferred until the next meeting, Mr. Cyrus Legg, in seconding the resolution, observed that the proposed buildings, if carried out, would cost the parish at least 50,000*l*., and that under existing circumstances the Vestry was not justified in incurring such an expenditure. The proposal to erect the new buildings was, however, warmly supported by a considerable majority of the members present, and after a long discussion, the request of the Committee was granted. Steps will therefore now be taken with a view to the proposed buildings being erected.

NEW STATION EXTENSION AT LIME-STREET, LIVERPOOL.

THE alterations and extensions here, which are now approaching completion, have occupied a considerable period; and when these are in order for regular traffic, the station, it is said, will be the largest in the United Kingdom. About three years and a half ago the work of excavation for the extension was begun by Messrs. Taylor & Thompson, contractors, and the difficulty of their work may be imagined when it is stated that the cuttings had to be made wholly through solid rock. Mr. E. W. Ives, C.E., was entrusted with the contract for carrying out the erection of the roof. Mr. Ives has already made his mark in this direction in connexion with the roof at Woodside station, the Metropolitan Railway works, the bridge at Farringdon-street station (where, in the course of seven months and a half, he put up about 900 tons of iron, the whole erection costing 37,000*l*., while between 1,300 and 1,400 trains passed underneath daily), and also in his designs for the whole of the large bridges on the Central Railway stations to Manchester. The actual erection of the ironwork in the roof of the extension at Lime-street was commenced under his direction on the 6th of April, 1878, and the whole of the roof has been put up at the rate of three bays per month, each bay weighing 62 tons, the work including the removal of the ponderous staging, which in itself weighed 540 tons, from one position to another; and it may be an interesting fact to engineers to know that one of these bays was completed in the short space of five days and a half. There are altogether eighteen bays in the roof,—the ironwork weighing somewhere about 1,800 tons,—in connexion with which there will be 84,000 square feet of glass, four-fifths of which are now completed. The west gable screen, facing Lime-street, remains to be done, but all the work in this direction will probably be finished in the course of three months. The roof is arched, with diagonal struts, and flat bar bottom tie-rods. The total rise to the top of the boom is 42 ft., and the rise of the tie-rod is 25 ft. The roof is supported on cast-iron columns, each of which weighs 11 tons. The columns of the old station and new extension are braced together with iron rings, so as to give them greater stability. When completed, as already stated, it will cover the largest area of any station in England, in two clear spans of 200 ft. each. St. Pancras station, London, which is supposed to be the largest now existing in the kingdom, is 243 ft. in width, as compared with about 410 in the Lime[-street] station, and the average height of the la[rge] 82 ft.

The whole of the ironwork has been [manu]factured by the Darlaston Bridge and [Engineering] Company, who also supplied the iron for t[he] station; and the glass was made by [Messrs.] Chance Brothers, of Birmingham. Durin[g the] progress, Mr. Stevenson, chief engineer [of the] London and North-Western, and Mr. Thr[ough's] assistant and resident engineer, have be[en] great pains upon the proper carrying out [of the] great undertaking.

THE LIVERPOOL SEAMEN'S ORPH[AN] INSTITUTION.

OPENING OF A NEW SANATORIUM.

A FEW years ago a Seamen's Orphan I[nstitu]tion was erected in one of the public pa[rks] the east side of Liverpool, chiefly by th[e] scriptions of the local ship-owners. A[bout a] time ago an epidemic broke out among[st] children in the institution, which almost[ed] its being temporarily closed. This ha[s been] followed by the erection of a sanatori[um] connexion with the institution, at a c[ost] 4,000*l*., which has been entirely defra[yed] Mr. R. Brocklebank, one of the olde[st] largest shipowners in the port. The b[uild]was opened by the Mayor recently, with[out] ceremony, in the presence of a large ga[the]of merchants and others. It forms a d[etac]block, but is connected with the orp[han]itself by a covered corridor. The archit[ect's] design is in keeping with the orphana[ge], constructed of the same materials, vi[z.] bricks, with red brick window dr[essings]. Internally, the building contains the adm[inis]tive department on the ground floor, co[n]of the offices, the surgery, and medical [staff's] apartments, together with kitchens and[ther] rooms. The upper portion of the build[ing] tains the sick wards, with dormitories f[or] children. It is intended to apply the b[uild]to a double purpose, and it will be u[sed] teaching the girls in the institution cook[ery] laundry work when not occupied as [a sana]torium. In addition to the two buildi[ngs] erected in connexion with the institu[tion] erection of a residence for the chaplain [is con]templated.

The architect of the sanatorium is M[r.] Grayson, and the builders are Messrs. [J.] Nicol.

NEW POST-OFFICE, CORK.

IN a few days the new Post-office [in] George-street, will be handed over to th[e] Telegraph authorities by the builde[rs]. officials have purchased the site of [the] theatre. The temple of Roscius has [gone] away, and in its place is the practi[cal] where letters are posted and from wh[ence] grams are transmitted. This building h[as] erected at a cost of 8,000*l*., and though all what it should be as regards exte[rior] pearance, it is solid and substantial, [and] ing internally a variety of modern i[m]ments. The first story is entirely of li[me]and the others of local sandstone, wit[h] ings and cornices of the limestone. T[he] three tiers of boxes that will be disp[osed] in the usual way, for letters, newspap[ers] On entering the doorway there is a la[rge] on the left-hand side of which is a fi[re] 60 ft. long by 38 ft. broad. This is co[n]"sorting-room," but for the present a[ll] of it will be thrown open to the public purchase of stamps, transmission of tel[egrams] &c. The entire front portion of the bu[ilding] devoted to the postal department, and portion to the telegraph department. [On] the sorting-office on the ground-floor telegraph stores and waiting-rooms [for] messengers. A noticeable feature in t[he] post-office is the extensive use of concre[te] division walls, steps of stairs, arches an[d] are made of concrete, and this is the fi[rst] in Cork in which every step in a flight c[on]numbering nearly 100 steps, is composed of concrete. The steps and landings are concrete, with iron balustrades and mas[sive] handrails. The back room on the first devoted to the telegraph department, called the "instrument-room." It is 60 by 60 ft. broad, and is lighted and venti[lated] an open roof. The first floor in front up by the postmaster's and other offi

story is also occupied by offices, utilised e employed in the telegraph department. lding was designed by Mr. Owens, archi- the Board of Works, and the contract ried out by Mr. Richard Evans, Cork. nes Williams was clerk of works.

ROPOSED NEW ROAD, RAMSGATE.

eported in our last issue the award of ms to competitors made by the profes- referee, Mr. Abernethy. Mr. A. Cumings, n the first was awarded, thus describes ,—"In submitting a design for the pro- ew road, I shall briefly call your attention I think are the three salient points to be ed,—(1) the route, (2) the construction, the cost, hoping that I may succeed in ing you favourably with the view which aken of the subject generally.

Route.—In the opinion of the author of sign, the route of the proposed road n the Parliamentary plan is very nearly a route as can be selected. Certain tions of it are, however, recommended, ill be found to be in accordance with the conditions and requirements, and are as —First, the road has been brought more uth between Twenty-steps and Albion- d secondly, on the East Cliff it has been to the edge thereof. This last altera- suggested as a decided improvement on iamentary plan, on the ground that this of the road being a sea-view promenade d be as near to the sea as possible, with- intervening objects to intercept the ample means of access to the new road ided from the adjacent street, and a mmunication established between the and the sands, railway station, har- by the widening of Kent-terrace and The Military-road will be improved by ghtly widened in front of the proposed but the Inner Harbour will be in no ted. The gradients of the road are the those on the Parliamentary plan, which t the best that can be obtained.

nstruction.—The road is proposed to be le between the kerbs, with two paths, t. 6 in. wide, and would be formed with dints or 4 in. of gravel, on a foundation or dry filling; the paths would be on concrete. Commencing at the west new road would be carried on a viaduct ts foundations in the Military-road. duct would be constructed almost of concrete, and consists of seven bold ith their connecting piers, with a bold cornice over the same. Red brickwork used in certain portions, as shown on awing. Passing on from the east end iaduct, the road is carried over York- another viaduct of a plainer and totally character. Crossing Harbour-street it ween retaining walls until it arrives on ng levels on the East Cliff Promenade. mentioned viaduct and the retaining ald be built of concrete, faced with . A handsome cast-iron ornamental runs throughout the length of the th Portland stone pedestals supporting standard lamps of a bold and orna- haracter, and it is thought that the ce of the road when lighted up in this would be highly satisfactory. Provision made in the estimate both for the and drainage of the road.

st.—The tender submitted with this is been supplied to the author by one rst contractors in London, and has ed on quantities carefully taken out erienced surveyor. The committee may rely upon it that this design can be car- ut for the sum named on the drawings in ghly complete and satisfactory manner. clusion, I beg to state that I have ly ignored the idea of iron as a material in the construction of the g of opinion that it is unsuitable for the ooth on the ground of constant expense atter of repair, painting, &c., and also it does not present that bold and ppearance to the eye that a stone or structure does. I do not think it more economical in the first cost than whilst I am quite certain that for ace and cheapness afterwards it would mparison therewith. In brief, I beg r your considerate notice a design that will commend itself on the ground of suitability, durability, and economy, and thus justify the motto I have adopted."

The cost is estimated at 40,982*l.* 14s. 11d., exclusive of any sums to be paid for purchasing property, or as compensation. We wonder if 41,000*l.* would not have been as nearly right?

Mr. Abernethy, in accepting the office of judge, wrote to the chairman of the committee, —"I shall be happy to undertake the duty of referee as regards the designs for the premium- fee charged by engineers in my position,—viz., one hundred guineas." This is information.

THE UNIVERSITY CO-OPERATIVE STORES.

CONVERSION OF THE QUEEN'S THEATRE.

THE reconstruction of the interior of the Queen's Theatre, in Long-acre, for the purposes of the University Co-operative Association, by whom it has been purchased, is at present in progress, and the contractors are under an engagement to complete the works by the end of June, when the stores are to be opened for business. The whole of the interior of the auditorium and stage departments of the theatre have been cleared away, the main walls only remaining, and the entire area, which is 125 ft. in length and 54 ft. in width, is being converted by the erection of four spacious floors and a basement, of uniform dimensions, and when completed, the aggregate floor area, including four other floors at the east end, running north and south from Long-acre, along Charles-street, will be nearly an acre in extent. The basement part of the reconstructed building is divided into two portions, one portion consisting of cellarage, and the other for receiving and delivering of goods. The floor of the basement is of concrete, and has a fireproof ceiling, also in concrete. The several floors above are also of fireproof construction. The ground-floor, which is 18 ft. in height, has an arched and vaulted ceiling, resting on strong iron columns, and consisting of iron girders and concrete, constructed on Dennett's patent, the ceiling of the second floor being of similar construction, the ground and first floors being thus separated from the two upper floors by fireproof materials. The first-floor is the same height as the ground-floor below, and the second and third floors are 14 ft. high. All the several floors are supported on iron columns and girders. The ground and first and second floors will be set apart for the sale of goods in the several departments, whilst the third or top floor will be used as offices and workrooms. That part of the theatre at the east end, which consisted of the scene-dock, painting-rooms, and dressing-rooms has also been reconstructed with four floors, which will be used for the business purposes of the Association, in conjunction with the several floors already described. The west end of the building, containing the principal entrance from Long-acre, to the box circles, together with the handsome and spacious staircase and saloons, has not been structurally disturbed, and is intended to be re-decorated, whilst what were the saloons, on a level with the first and second floors, are intended to be appropriated as reading, writing, and refreshment rooms, for the accommodation of members of the association, who will be at liberty to spend their leisure there, the arrangements in this respect giving the association the character of a club. This part of the building has been entirely refaced and decorated externally.

The architects are Messrs. Drury & Lovering, and the contractors Messrs. Kirk & Randall.

Proposed Female School of Art.—We understand that Mrs. E. M. Ward proposes to supply a want which has been greatly felt in this country, in the shape of a school of art to which ladies can send their daughters to learn painting and drawing. For this purpose she has obtained the co-operation of Mr. P. H. Calderon, R.A., Mr. J. C. Hook, R.A., Mr. W. P. Frith, R.A., Mr. J. C. Horsley, R.A., Mr. J. E. Millais, R.A., and Mr. L. Alma-Tadema, R.A., who have consented to visit the school once a month, thus securing to the pupils an advantage which it would be impossible to obtain elsewhere. The instruction will include oil-painting in all its branches, water-colour painting, drawing, tile and china painting, and fan painting. Each department will be under the direct management and supervision of Mrs. Ward, assisted, when necessary, by competent instructors.

THE ARTISANS' DWELLINGS ACT AT DERBY.

ANOTHER FAILURE.

THE Derby Town Council and the inhabitants of the borough generally beheld with satisfaction the passing of the Artisans' Dwellings Act in 1875, and they were not slow in deciding that when an opportune time should arrive they would put it into force in some quarter of the town. There was unanimity on the question both in the Council and among the outside public, excepting, of course, those who were the owners of buildings which were liable to come under the Act. Near the centre of the town, to the north-west of the Market-place, there exists an area which has been characterised as "unwholesome" time after time in the council-chamber. This area contains courts and alleys of a narrow, ill-ventilated character, while the houses are dilapidated and unfit for human habitation. The medical officer's reports for years past have been conclusive as to the absolute necessity for something being done to clear away the dwellings which at present exist on this area. A committee was appointed by the Town Council in 1876 to report on the best steps to be taken to effect a reform. This committee at length prepared an exhaustive report, which was laid before the Council on the 9th of November last. It recommended the entire pulling down of an area embracing 31,761 yards super. Of this, 7,576 yards were proposed to be used in the widening of old and the construction of new streets. The total cost was estimated at 86,000*l.*, 52,000*l.* of which would be realised by the re-sale of the building land, thus leaving the sum of 34,000*l.* to be paid out of the rates. The above recommendation was adopted by the Council unanimously. The matter was next brought before them on January 23, when signs of wavering were shown. Speeches were made against the project, and an amendment proposed, which was to the effect that the time had not come to put the Act into force. The amendment was, however, withdrawn, and the necessary formal representations were made to the Local Government Board. A public inquiry was held in March before Mr. Morgan, one of the Local Government inspectors. The scheme was opposed by several owners of property, some of whom urged that it was wholly unnecessary, while others contended that the Corporation were trying to take advantage of the Artisans' Dwellings Act to secure good property at the price of "unwholesome" habitations, in order that they might effect some street improvements at a little cost. As to whether or not this charge was well founded, we need not venture an opinion;—anyhow the, committee decided at the inquiry to submit to a considerable reduction of the scheme. At the meetings of the Town Council held since the inquiry, when the scheme has been introduced for its advancement, there had been sharp discussions and divisions, which had shown that the unanimity of the 9th of November has totally left the Council. On the 21st of April a meeting of the Council was held, when the decision of the Local Government Board (which was favourable to the application of the Act in the area proposed) was brought forward. The Artisans' Dwellings Committee also came forward with a proposal that the Board be asked if they would allow the corporation to divide the area into three parts, dealing with each part separately and at different periods; also that the Corporation might be allowed to possess optional power as to whether or not it should go on with the second and third portions of the scheme, after having dealt with the first. The proposition was carried by a majority of eight,—forty-four members of the Corporation voting. The Local Government Board refused to accede to this request, and at the last meeting the Council were called on to decide whether they should abandon the scheme altogether, or commit themselves to the carrying out of any portion or portions of it. In a thin Council it was decided by a majority of six to abandon it altogether. The chief argument urged against the carrying out of the scheme by its opposers was that it would tend to increase the already heavy rates of the town. Also, they point to the heavy expenditure which must soon fall on the ratepayers on their erection of a new lunatic asylum, the adoption of a thorough system of sewage, &c. But it may be said that the total cost of carrying out the original recommendation of the committee would only augment the rates by 1½d. in the pound, and this comparatively small de-

mand would not fall on the ratepayers all at once, as the work would extend over several years. Of course, all the money which has been spent in preliminary work has been thrown away, provided the Local Government allows the Council to abandon the scheme at this stage. The Derby Town Council is noted for its vacillating proclivities, but this latest *coup* of theirs is most inexplicable. By it they aver that they made a mistake on the 9th of November; that the unwholesome area near the centre of the town is no cause of immorality, crime, and disease; that the medical officer of health's reports are fallacious; and that it is to the best interests of the town to conserve with all their accompaniments the foul courts and alleys in the vicinity of Willow-row and Walker-lane.

CARDIFF WATER SUPPLY.

The Cardiff Corporation are promoting a Bill in this session of Parliament, called "The Cardiff Corporation Bill," for the purpose, among other things, of vesting in them the undertaking of the Cardiff Waterworks Company. The price agreed on for the works is 300,000*l*. The company obtained powers by an Act last year to construct additional works, partly pumping and partly gravitation, at an estimated cost of 135,000*l*., to meet the growing requirements of the rapidly-growing population of the town of Cardiff and the outside districts within the area of the company's supply. The Bill came before a committee of the House of Commons on the 24th and 25th ult., Sir Wilfrid Lawson, bart., chairman.

The only petition remaining against the Bill was that of the Rural Sanitary Authority of Llandaff and Whitchurch, which are not now supplied with water by the company, but are within their area of supply. The Corporation offered to construct the works necessary to supply them in the usual way, or to deliver water in bulk to them at a certain point, on liberal terms. After hearing the evidence of Mr. Alderman Jones, J.P., and Mr. John A. B. Williams, M. Inst. C.E., the engineer to the Corporation, the Chairman stated that,—

"The Committee are of opinion that the preamble of the Bill has been proved, and that they agree to clause 7; and they consider that the sum of 400*l*. a year, which is proposed to be charged to the Llandaff Sanitary Authority, is a fair and equitable amount, and they will require a clause to be framed to that effect."

The petition of the Penarth Local Board of Health, whose district is supplied by the water company, was withdrawn,—a differential rate of ten per cent. having been agreed to in favour of the ratepayers of Cardiff,—as were also the petitions of Lord Windsor and the Marquis of Bute.

NATIONAL WATER SUPPLY.

The annual conference on national water supply, sewage, and health, was opened on Thursday, and continued yesterday (Friday), in the rooms of the Society of Arts.

Lord Alfred Churchill (chairman of the Council of the Society) occupied the chair in the absence (through illness) of the Right Hon. James Stansfeld, M.P., and in opening the proceedings, stated that in response to the offer of the Society of one gold and three silver medals for the best suggestions for dividing England and Wales into districts for the supply of pure water to the towns and villages in each district, twelve papers or essays were sent in; of these the committee appointed to adjudicate upon them (Professor Abel, Mr. John Evans, F.R.S., Captain Douglas Galton, Professor Prestwich, Professor Ramsay, and Mr. G. J. Symons, F.R.S.), selected seven as being worth printing for circulation at the Conference. The committee were of opinion that none of the essays sent in were worthy of a gold medal; but they had selected two which they thought worthy of silver medals, viz., —1, the essay bearing the motto, "Better late than never," by Mr. Frederick Toplis; 2, that bearing the motto," "Gutta cavat lapidem, non vi, sed sæpe cadendo," by Mr. Joseph Lucas, F.G.S. The committee thought that there were many points of merit in all the seven essays they had selected for printing; but they were unanimously of opinion that the two they had selected for awards were much superior to the rest.

Mr. Toplis and Mr. Lucas having given the substance of their essays, Mr. James Birkett, Mr. Samuel B. Goslin, Mr. A. T. Atkinson, and Professor Ansted, authors of other essays sent in in response to the Society's invitation, each made a few remarks, and the discussion was continued by Mr. John Evans, F.R.S., Professor Ramsay, Mr. G. J. Symons, Mr. Henry Bright (Leamington), Captain Douglas Galton, Mr. A. H. Brown, M.P., Mr. Edwin Chadwick, C.B., Mr. C. N. Cresswell, Dr. Tripe, and Dr. Wilson.

When the Conference re-assembled after a brief interval for luncheon, Mr. Stansfeld was able to be in his place. The Conference continued sitting till past five o'clock, and the following resolution was agreed to:—

"That this Conference wishes to express its entire satisfaction at the action taken by the Prince of Wales in applying to the Government for the appointment of a Royal Commission to inquire into the subject of a national water supply; and earnestly hopes that the Government will take steps without any delay to carry into effect the resolutions of last year's Conference."

We shall publish some more extended notes of the Conference in our next.

We may add that a "national water supply" exhibition is to be opened this Saturday at the Westminster Aquarium. The exhibition will contain the following sections:—

I.—Meteorology.—Class 1. Rainfall and catchment basins, illustrated by maps, plans, tables, and models. Class 2. Instruments, rain gauges, percolation, evaporation, and river measuring apparatus, &c.

II.—Geology.—Illustrating the connexion between geological structure and available supplies of water.

III.—Collection and Storage of Water.—Plans and models of existing waterworks and waterworks in progress.

IV.—Suggested Development of Supplies.—Plans for improved supply as regards fresh sources of supply to the metropolis by embankment, &c., as regards fresh sources of supply to the metropolis, as regards groups of towns, and as regards villages and isolated towns and districts.

V.—Distribution of Water.—Class 1. Historical illustrations of old piping, taps, valves, &c. Class 2. Modern appliances for water conveyance. Class 3. Pumping, extinguishing fires, &c. Class 4. Cisterns and other household appliances.

VI.—Water Examination.—Exhibition of appliances used for chemical analysis, in microscopic examination, and in examining clearness of water.

VII.—Filtering.—Class 1. Early attempts at filtering. Class 2. Large filters for public companies. Class 3. House and domestic filters,—cistern filters, table filters.

VIII.—Hardness.—Class 1. Illustrations of the effects of hardness upon washing, cooking, and tea and coffee making. Class 2. Methods of testing hardness. Class 3. Methods for lessening hardness.

IX.—Disease.—Class 1. Maps, plans, and statistics showing the connexion between disease and bad water, polluted water, unsuitable water, and insufficient supply.

X.—Antiquarian.—Class 1 Plans and drawings illustrating early water supply of London. Class 2. Drawings, engravings, and pictures generally, illustrating buildings connected with waterworks, dolphins, fountains, &c.

XI.—Pollution.—Class 1.—Plans for preventing river pollution. Class 2. Plans for preventing well pollution. Class 3. Pollution in connexion with fisheries. Class 4. Diagrams and plans showing how pollution (often unsuspected) may occur. Class 5. Maps and plans showing the area of extensive river pollution.

XII.—Literature.

XIII.—Class 1. Appliances for cooling water in summer. Class 2. Waters artificially aërated.

AN INSURANCE QUESTION.

MARTIN *v.* COUNTY FIRE OFFICE.

This was an action brought to recover from the defendants the amount of two policies for the sum of 750*l*. on stock, plant, &c., in two houses in course of erection at Redesdale-street, Chelsea. The houses were nearly completed, and were insured in the Law Union Company's Office by the owner. The stock, plant, &c., were insured in the County by the builder. There had been a former policy on stock, plant, &c., which expired on March 25th. The new policy for 750*l*., by mistake of the agent of the County, was effected on the houses instead of stock, the same premium being paid, viz., 8*s*. per cent. After the fire the error was discovered, and on application to the County they were willing to rectify the policies, provided the Law Union would allow them to do so. The Law Union refused to recognise the error, thus the present action.

Mr. Roxburgh, Q.C., and Mr. Plunkett, appeared for plaintiffs, and Mr. Chitty, Q.C., and Mr. Burt, for defendants.

From the evidence it appeared that the plaintiffs originally effected a policy on stock, &c., in the four houses for 1,000*l*., and on February 5th effected a further policy on two of the houses for 500*l*. On March 26th, on the expiration of the 1,000*l*. policy, a fresh policy was effected for 280*l*. The old policy for 1,000*l*. being given to the office to copy from (they keeping the old policy). After the fire occurred the mistake was discovered that the last policies were on houses instead of stock, &c., but the same premium being paid, viz., 8*s*. per cent., policies were shown in court by the Law Union proving that it was not an extra rate of premium. The plaintiffs showed to the contrary, by placing policies before the Master of the Rolls, by which they proved that the County Fire Office had charged just double for stock to what was charged on the policy for houses, with workmen therein only. After a great deal of evidence the Master of the Rolls said there was sufficient evidence that the policies in question was a mistake on the part of the agent, and he did not think the County Fire Office should have allowed the case to come. He would adjourn the case till Thursday, in the hope that the case would be settled by the counsel.

On Thursday morning, May 1st, before the Master of the Rolls, the case again came on. Mr. Chitty, Q.C., for the defendants, stated that the Law Union withdrew from the action, and would allow the County to rectify the policies, with the consent of the Court, and would also pay the expenses of the action.

ACCOMMODATION IN THEATRES.

With your consent, I suggested in the of the *Builder* (vol. xxxv. (1877), p. 644); as cabs and omnibuses were licensed to l certain number of persons, so should theat so licensed. It is gratifying to find th many suggestions made public by you a by one carried out. In the bye-laws iss the Metropolitan Board of Works (publish your last number), the minimum space al to each person in any new theatre, musi &c., must not be less than 1 ft. 8 in. by 1 f in the gallery, and not less than 2 ft. 4 1 ft. 8 in. in the other parts. The nex should be to alter some of the present The theatre in the Haymarket (upper bo a disgrace to civilisation, worse than a slaver, for in the case of the theatre with the hope of receiving a little ea comfort. I look forward to the day when hear that a rearrangement of the seats he been insisted on.

In the dress-circle of the Lyceum, agai withstanding what has been said of im ments in it, there are three "places" o side, at the extreme end of the back which it is simply impossible for any ma long legs to sit; at any rate, there wer places on the opening night of the present I have taken good care not to make a experiment.

To return to the aforesaid bye-laws, pity that the last (17th) law (qy.) wa duced, because the whole of the precedi (qy.) might be entirely dispensed with, ing to the personal or friendly positi applicant might be in with the Board.

BLOOM ON TILES.

I have had some practical experience laying, having, since March, 1846, la thousands with my own hands. Of cou bed must first be levelled and floated w crete, and Roman or Portland cement half-and-half with sharp sand, taking wash off the surface as the work proce coarse flannel drawn over the work efflorescence will soon show itself, and continue for a year or two. This always washed off "with plain water and grease," as my dear friend the late Minton once told me,—nothing better. occasionally show itself for years, espec frosty weather. Tile floors in churches be washed weekly if it be desired to their primitive beauty. In private whether glazed or plain, they should be daily.

As for tiles on wall surfaces, they are in with Keene's cement, gauged half- with freestone sand. Glazed tiles rarel any efflorescence; but as it proceeds fr cement it will find its way and appear joints. As for laying encaustic tiles such would be scamping the work.

H.

WASTE-WATER COCK.

Sir,—In reply to an inquiry which a in yours of April 19th, from "J. S. R.," leave to inform you that a premium guldens has been awarded to Mr. Anton gartner, engineer, Vienna, for the best preventing water-waste in houses, and a pa of 300 guldens to Mr. Emil Schrabetz best cock for street drinking-fountains.

John Thomas Gramlich
Plumber and Maintainer to the Municipality.

YORKSHIRE FINE ART EXHIBIT

Sir,—My attention has been called to an arti last week's number of the *Builder* with referenc Yorkshire Fine Art Exhibition, in which the q my patent glazing (which was used for the perma of the bui ding) has been omitted. The area gla principle over the Lecture Hall, Picture Galler was 13,660 superficial feet.

Wm. Edgumbe R.

Memorial Theatre, Stratford-on A view of the theatre in Stratford-o inaugurated on Shakspeare's birthday la be found in our volume for 1876 (xxxiv.). According to the plan originally publish dress circle was very badly arranged for It is to be hoped this has been amended.

BATHS AND WASH-HOUSES.

ord.—The work of erecting new public in Blackfriars-street, Salford, has been nced. The site has an area of 1,155 yards, situate between Blackfriars-street vald-street, and was purchased at a cost per yard. The contract for the erection of hs was let to Mr. J. Wilkinson, Pendle- 6,025*l.*, and the contract for the erec- the superintendent's house adjacent was to Messrs. Lord & Holland, contractors. ilding will be two stories in height, with The material used in construction will k with stone and terra-cotta dressings, ue slates and light iron girders forming ft. The swimming-bath for men will be 87 ft. length and 37 ft. in breadth, the water eing 80 ft. in length by 25 ft. in breadth. re to be twenty-six dressing-boxes on each the bath. The women's plunge-bath will ft. 6 in. in length and 23 ft. in breadth, e water-space 33 ft. in length and 17 ft. dth, and in this department there will be dressing-boxes. On the ground-floor it intended that there shall be twelve class slipper-baths for men, and on the story there will be eight first-class baths for men, thirteen second-class baths for men, and seven first-class baths for women. The buildings will be from designs prepared in the Salford engineer's office, under the superin- e of Mr. Jacobs, and, including the price and, &c., the total cost is expected to be ,000*l.*

agham.—Some short time ago the Baths ashhouses Committee of the corporation of ham resolved on increasing the bathing imming accommodation of the town, and ecided to build a bath in Gedling-street tly large to meet all requirements. This t undertaking has just been completed, following description will give some s character:—The bath, which has been y years an open bath, has been covered er the direction of the committee. The ilding is 120 ft. long by 60 ft. wide, and ached by a broad flight of stone steps e present ticket-office at the Gedling- trance. The bath proper is 102 ft. long c. wide, with semicircular ends, and led to the proper height contains up- f 130,000 gallons of water. A con- supply of warm water for this bath is from the condensing engine at Mr. s works in Roden-street, Mr. Windley placed this supply of water at the dis- the corporation. The roof is in one 0 ft., and is carried by seven wrought- or principals, which are semicircular The soffits of the ribs are 29 ft. above of the coping of the bath, and the total f rib, including part below the floor- about 95 ft. Each rib, for a height of ve the floor-level, is of cast-iron; the r is of wrought-iron, with open lattice- e latter giving the ribs a very light ce. The weight of each rib is about The building is ventilated by means ve running the whole length of the the top of this louvre, which is nearly le, is entirely glazed, so that there is ght as well as ventilation. Dressing- irty-eight in number, and a jumping- e been provided for the convenience s using the bath, and the woodwork of ese are made, as well as the underside oodwork of the roof, is stained and var- The bath is believed to be one of the n the kingdom, and the cost of the been about 2,500*l.*

ow building and roof have been de- d constructed by Mr. M. O. Tarbotton, neer-in-chief to the corporation, and the been carried out under the immediate ndence of Mr. A. Brown, assistant Mr. R. Middleton was the contractor general builder's work, and Messrs. & Massey supplied the ironwork. Mr. d as clerk of works.

Slade Professorship at Oxford.—. Richmond, son of Mr. George Rich- A., has been elected to the Slade Pro- p of Fine Arts in the University of acant by the resignation of Mr. Ruskin, eld the appointment since its establish- 869.

CHURCH-BUILDING NEWS.

Preston Bagot.—The parish church of Preston Bagot was re-opened on the 25th ult., after restoration under the direction of Mr. J. A. Chatwin, of Birmingham. As the east end had to be taken down by order of the diocesan surveyor, the architect took advantage of this by extending the chancel a few yards and erecting a chancel arch, which adds greatly to the appearance of the building. The old east windows have been inserted in the new walls. In place of the red brick chamber at the west end for the bells a turret in character with the building has been erected; it is constructed of oak and covered with shingles. The old south porch was falling into decay, and has been replaced by a new open porch of English oak. The choir seats and wood pulpit have been fixed temporarily; it is hoped to have new ones in character with the building. Several of the windows of the church are filled with stained glass. The two small Norman lights in the north wall are to be filled with glass by Messrs. Hardman. The builders were Messrs. Smallwood & Co., of Wootton Wawen; the carving was executed by Mr. Roddis; and the ironwork by Mr. Wilson; Messrs. Jones & Willis made the altar-cloth and dossal and the lamps which are suspended from the roof. The heating apparatus is by Messrs. Hassall & Singleton.

Thorpebasset.—The *York Herald* says that no fewer than six churches in the Malton district are now under restoration. One of them, the interesting little Norman church of Thorpebasset, will be ready for opening in June. The piers and arches, which were blocked up in the north wall, have been opened out. A vestry has been added, separated from the north aisle and chancel by two arches, and spanned by a plain oak screen. The east and west walls retain their original character, but the higher elevation of the new roof has necessitated the reconstruction of the bell tower. The roof is now of one uniform level from east to west, and the main portion is covered with grey Westmoreland slates, the north aisle (the only one) with lead. A new porch has also been added, of open woodwork, on stone base; and this will prove a much-needed protection to the fine old Norman doorway, which has survived so many restorations. All the windows in the north and south walls are new, replacing what were really "cottage" windows. In pulling down the north wall the workmen found, in two portions, a sarcophagus, with decorated front. The architects are Messrs. Paley & Austin, of Lancaster, and the contractor is Mr. Brown, of York.

Gloucester.—It is proposed to enlarge and improve St. James's Church. The church, which was erected about forty years ago, is a large parallelogram, 79 ft. by 38 ft., is placed on the ground north and south instead of east and west, and has no defined chancel. There is at present accommodation for about 640 worshippers, and it is proposed to increase this to 900 by adding an aisle on the east side, 71 ft. in length and 12 ft. wide, and extending the building towards the south, so as to provide a proper chancel, with aisles in which the organ and choir can be placed, to reseat the whole church, and to carry out various minor alterations. Messrs. F. S. Waller & Son are the architects.

Hockerill, Herts.—The parish church of All Saints, Hockerill, was reopened by the Bishop of Rochester on the 30th ult., after considerable enlargement and alteration. This church, built in 1851, was found insufficient to meet the growing requirements of the parish and the students from the Diocesan Training College near. The additions, from designs by Mr. Clarke, have been an extension to the length of nave, new north aisle; extension of south aisle, by adding baptistery; new clergy and choir vestries, and an extensive organ-chamber, with arcaded frontage to chancel. The chancel has been rebuilt and extended, the arch and gable over being taken down and rebuilt to obtain extra height and width. The small south porch has been removed, and a porch erected in a new position. The columns of chancel arch and east window are of Devonshire marble; the sedilia, credence, and piscina are of Ancaster stone; and the floors are laid with Godwin's tiles, specially modelled from old examples. The stained-glass windows are by Mr. W. G. Taylor; the heating-apparatus is by Messrs. Price & Co.; and the gas-fittings by Mr. Shrivell. The cost of the works has been about 9,000*l.* The columns of arcade and all external dressings are of Ancaster stone; the internal dressings are in Bath stone; and the external walls are faced with Kentish rag-stone, worked on the site in random coursed work. The contractor for the whole of the work was Mr. Thomas Gregory, of Clapham Junction. Mr. J. White acted as clerk of works, the builder's foreman being Mr. J. W. Crook.

VARIORUM.

We have mentioned before now the little "Health Primers," edited by several well-known men, and published by Messrs. Hardwicke & Bogue, of Piccadilly. Several additions have since been made to the list, notably "Baths and Bathing" and "Personal Appearances in Health and Disease." These may be usefully read.——"The Secret of a Clear Head," by one of the editors of the last-named series, Dr. J. Mortimer Granville (Hardwicke & Bogue), contains much sound and sensible teaching. We fully agree with him when he says,—"The head may be cultured at the cost of the heart; but it is the latter we need most earnestly to purify and elevate."——A good and well-known novel for *sixpence!* If any doubt it, go to F. Warne & Co., of Bedford-street. "Notable Novels" is the title of the series, and we have now before us "Mr. Midshipman Easy," by Marryat; "Attila," by G. P. R. James; and "Rory O'More," by Samuel Lover, as evidences of the fact.——The current *Quarterly* includes two articles which which will be found specially interesting by our readers, namely, "Michel-angelo and his Age," and a review of "Brugsch's History of Egypt." This was the work which produced our article, "Architects in Ancient Egypt" (p. 415, *ante*). An English version of Brugsch has been recently published.*——From *Great Industries of Great Britain* we take a paragraph as to the Potter's Oven:—"We hear a great deal of the potter's oven; but to the uninitiated it certainly gives no complete conception of the cavernous structure, in which, night after night, tens of thousands of articles in soft clay are being burned into hard, brittle, resonant, opaque, or semi-transparent articles of pottery. Viewed from the outside, the oven looks like a huge tan-dish, imitated in brick. Inside, when the grey light from the opening high above falls in dull rays, it appears like a massive domed cylinder of brickwork. Running round it is a kind of conical casing, also built of brick, which has the effect of protecting the kiln from the changes of temperature. The kiln itself, at the opening above, merely joins this outer casing. Of late years many improvements have been made in the construction of these kilns; and by an arrangement of flues, to a great extent, if not entirely, they consume their own smoke. There are also means for regulating the draughts. The oven, it should be added, is strongly bound with iron bands, and the bricks are of the very best fire-proof quality. The task of filling this little cavern, called in modesty an oven, is no light one. It is a work which engages the labour of strong and sturdy men all through the day. The kiln, it must be borne in mind, runs to a great height, and the 'seggars' are packed to the top. They are piled in rows one above another, the flat bottom of one 'seggar' forming a cover to the open mouth of the 'seggar' immediately beneath it. The surfaces of the 'seggars' are separated by a ring of soft clay, which acts as a tight-fitting joint. The oven is full when it contains from 700 to 800 'seggars,' and this quantity would contain about 30,000 pieces. There are, however, some colossal kilns which will receive as many as 2,000 'seggars.' The 'seggars' having been properly arranged and steadied, the door of the kiln is bricked up, and, generally in the evening, the fires are lighted. These fires run underneath the kiln, and in some large ovens there are as many as ten, and never less than eight. The consumption of coal is necessarily enormous, as much as 10 or 12 tons being burned at one firing. After the firing has lasted about forty-eight hours,—which is the average for the 'biscuit' fire,—the oven is allowed gradually to cool; and it is afterwards 'drawn.'"——We reprint from the *Magazine of Art* the following as to ancient sculpture in gold and ivory:—"Of all the sculpture of the Greek artists of antiquity none was more remarkable than the chryselephantine statues. The Greek words *chrusos* (gold) and *elephantinos* (of ivory) indi-

* A History of Egypt under Pharaoh, derived entirely from the Monuments. By Henry Brugsch Bey. London Murray. 1879.

cate the costly material of which such sculpture was made. We have not so much as a fragment of any of these statues remaining, nor have we more than scanty notices of how they were put together, and what they were like. But they were the most renowned, the oftenest seen, and the most carefully tended, among thousands of objects of public and religious veneration. The materials are so precious that we should naturally expect to hear of such statues having been on a small scale. Ivory might have been obtainable from mammoth-tusks by the Greeks, and a good deal larger than those of the elephant in the Middle Ages and modern times. Such tusks were, perhaps, to be dug up in various parts of Europe, as they are still found in Russia; but still any objects sculptured in ivory we should conclude must have been of small dimensions. This, however, was not the case. Gold, again, could not have been very abundant in Greece; nothing like what it became in imperial Rome and in Constantinople. But these famous statues were the largest known (out of Egypt). The general tendency of modern theories leads to the conclusion that though the materials of which sculptors make use should be of fine grain and pure whiteness, such as Pentelic or Parian marble, yet that little reliance is to be placed on the splendour of mere material, and that the mind should be directed rather to the deep and imaginative beauty which the artist has embodied in his sculpture. Statues of gold and ivory are to some extent in contradiction to such teaching, true as it is when broadly stated. Some great authorities of our day have gone so far as to think but little of the reputed beauty of these pieces of sculpture. Except for the preciousness and splendour of the materials, these authorities do not consider that they were by any means the masterpieces of Phidias and the other sculptors by whom they were executed. The marbles that have survived to our days, such as those of the Parthenon, have lost any colouring material that may once have graced them, and their beauty is such, and so perfect, that we find it difficult to imagine it as greater by any addition of colour. It remains nevertheless, true that the greatest sculptors made gold and ivory statues as their masterpieces; expended all their art upon them; and these productions were accepted during many centuries by the most critical of nations, not only as the most precious, but also as the most beautiful examples of sculpture in the world."

Miscellanea.

Mr. James Forsyth, Sculptor.—We have pleasure in recording the formal opening of Mr. Forsyth's new premises, which took place on the 1st instant. They are situated in the Finchley-road, Hampstead, immediately adjoining the Finchley-road Station of the London and North-Western Railway, and appear in every way fitted for the execution and display, on a large scale, of his art works. We have had many opportunities of referring to and, on several occasions, of illustrating in this journal Mr. Forsyth's works, which are generally above the average of their kind. He is to be congratulated on his enterprise, in having secured such a good position, and on the erection of such large and convenient premises. They consist of a dwelling-house of four floors, flanked by a gallery 43 ft. long. This gallery conducts to the operative parts of the premises, through a modelling-room, 27 ft. high, to the shops for carvers, masons, painters, and joiners, with a yard in the centre spanned by a travelling-crane equal to 20 tons. Mr. W. Smith, of John-street, Adelphi, was the architect, and Messrs. Patman & Fotheringham were the builders.

Truro Cathedral.—A meeting of the general committee of the Truro Cathedral Fund has been held to inspect the plans of Mr. J. L. Pearson for the proposed cathedral. The style is that of the early part of the thirteenth century, and there are to be a central and two western towers. The length from east to west is about 300 ft. For the choir 115 ft. is allowed, and for the nave 165 ft. Mr. Pearson estimated the cost at 95,000*l*., which, with 10,000*l*. required for purchase of land, &c., gives a total to be raised of 105,000*l*. The plans, which were in an unfinished state, owing to the illness of Mr. Pearson, were referred to the executive committee to examine and report upon to the general committee.

St. Bartholomew's Hospital.—A handsome addition to Bartholomew's Hospital is in course of construction, and is finished externally. It consists of a library, practical class-room, museum, lift-rooms, and offices. The frontage to Giltspur-street displays a fine Classic elevation, designed and executed in the best style of that school of architecture. The base is composed of Dalbeattie granite, and is 7 ft. 6 in. in height. The upper portions consist of Portland stone, with intermediate Aberdeen polished granite panels sunk and moulded. There is a chaste cornice and balustrade, under the former being the inscription "Schola Medicinæ Sancti Bartholomei, A.D. MDCCCLXXVIII. The principal room in the interior is the Turnerian museum, 26 ft. 6 in. by 96 ft. 6 in. The height is 26 ft. from the floor to plate of roof, and 15 ft. from the plate of the roof to the ceiling. The lighting is effected by a skylight and lanternlight. There are two galleries, which will be fitted up in the style of those in the Royal College of Surgeons, Lincoln's-Inn-fields. The practical class-room and library are of about nearly equal dimensions with the museum. The library, situated on the ground floor, will have one gallery. The staircase to the offices is of Dalbeattie granite, and the same material has been used for the entrance steps to the porch. The grand staircase, as well as all the internal stairs, are composed of choice Craigleith stone. The floor of the museum consists of wainscot parquetry in narrow widths, diagonally laid with pitch-pine borders. The material used in the construction of the offices and lift-rooms is white glazed brick facings, supplied by the Farnley Iron Company, near Leeds. The building has an iron span roof by Messrs. Moreland & Son, who also furnish the girders, which are of unusual strength. The greatest care has been taken to make the building thoroughly fire-proof, and the whole of the works are being carried out by the contractor in the most efficient and substantial manner. The heating will be by hot water, for which the apparatus has been supplied by Messrs. Herring of Chertsey. The architect is Mr. Edward P'Anson, Laurence Pountney-hill; the contractor, Mr. Deputy Brass, Old-street; the clerk of works, Mr. G. Streeter; and the builders' foreman, Mr. A. J. Pearce.—*City Press.*

London Temperance Hospital.—The memorial stone of a hospital in which patients are to be treated without the use of alcohol has been laid by Sir Wilfrid Lawson, M.P. The site chosen for the new hospital is a plot of ground about 100 ft. by 160 ft. in area, adjoining St. James's chapel, on the eastern side of Hampstead-road. From October, 1873, when the Temperance Hospital was opened in Gower-street, to April, 1879, the number of indoor patients had been 725, and of these only 34 had died. The number of outdoor patients had been 6,655, making a total of 7,380 patients who had been under treatment in the institution. It was hoped that the builders would be able to complete their work in the autumn, and that the hospital might be furnished and ready for patients before the close of the year. About 1,000*l*. were laid upon the memorial stone as contributions to the cost of building the portion now commenced, leaving about 2,000*l*. still to collected to make up the sum of 11,500*l*. required for the present contract. The architect is Mr. F. R. Barker, of Manchester.

Fire Prevention.—The destruction by fire of the Shakspeare Library, at Birmingham, has, not unnaturally, attracted attention to the necessity of providing additional and adequate appliances for the protection of historic buildings of educational or other interest. At Oxford, it has been resolved to equip the city brigade with a powerful steam fire-engine; and with a view to making the most satisfactory selection, the authorities, with whom the matter rested, personally visited or made inquiries of the principal brigades throughout the kingdom, the result being that the order was placed with Messrs. Merryweather & Sons, who obtained two gold medals at the Paris Exhibition.

Tell's Chapel.—We learn from the *Urner Zeitung* that the taking down of the Tellscapelle on the Vierwaldstädter See is proceeding, after the frescoes which it contained had been successfully removed. They are to be placed again in the new chapel, the erection of which will be commenced immediately. The bell of the old chapel bore the date 1590, the oath taken on the Rütli by the founders of the Republic being also engraved on it.

Liverpool Engineering Society.—A seventy-eighth meeting, on Wednesday, the inst., the president, Mr. Morgan E. Yeatman the chair, a paper was read by the secre Mr. J. Birch, on "Some recent Develop of the Manufacture of Mild Steel and its A cations." The writer, after giving a account of the newly-invented process of M Bolckow, Vaughan, & Co. for making Bess steel from phosphoric Cleveland ores, wh ultimately successful, as expected, promi largely, if not entirely, supplant the man ture of iron, proceeded to point out with rapidity the use of steel had advanced. T years ago it was scarcely in use for g purposes, and now the large demand for causing an amount of attention by the metallurgists of the day, that would of it likely to lead to existing obstacles removed, and the great objections on the of un-reliability, the difficulty of weldin liability of corrosion, no longer stand way, many of these being now in con removal, and their importance being exagg by the employment of steel without su care, or by persons prejudiced agains material from previous experience, at when the manufacture was not as well stood as now, the success of the open system having led to far greater care Bessemer process.

Antiquarian Discoveries in Glouc shire.—The interesting church of Iron in this county, is now in course of resto and the laying open of the original pav long covered up, has (according to the *G tershire Chronicle*) led to several disco Hidden under a Jacobean tomb, proba about 1600, was found a slab covering the of a priest. A small brass, which do bore the name of the deceased, has disap but there are still a beautifully foliated in fine condition, and representations of a and chalice. Another slab is still more ir ing. As it appeared until recently, it an ordinary tombstone, in memory of the in-law of a rector, who died early in century. But upon the workmen turn over it proved to have a much earlier finely-cut Latin inscription denoting tha covered the grave of Florence, wife of Poyntz, lord of the manor, who died A peculiarity of the inscription is tha giving the date of death in the mo March, it adds,—"juxta computationem cani." Another slab discovered,—to the n of Hugh Poyntz, who died in 1604,—als the words "juxta comp,"—the rest letters being obliterated. There seems of accounting for these words except posing that the Poyntz family, being Catholics, rendered this inferential obed the head of their Church, the correction calendar, known as the New Style, havin made by Pope Gregory XIII. in 15 effigy, in armour, in very good condition to innumerable coats of whitewash, e the church, and is supposed by some to of Sir Nicholas. A female effigy of ab same date also survives the iconocl centuries. There are also slabs of Sir Poyntz and his two wives. He was the of the singularly-beautiful churchyard one of the finest in the West of England.

West Derby, Liverpool.—The surv the West Derby Board, Mr. E. H. Al lately made his annual report, from w appears that the total length of roads district is sixty-three miles. The nu houses for which plans have been submit approved during the year, is 427. New twenty. The population of the district is the number of assessments, 6,799; rateable value, 174,514*l*. The health district has been very good compared borough of Liverpool, the death rate bei per 1,000. The sewage farm of 207 ac prospered, and shows a profit on working the year of 632*l*. 16*s*. 3*d*.

"Mowlem & Co."—The testimonial of Mr. Sheriff Burt, intended for pres to Mrs. Burt by more than 1,000 wor the employ of Messrs. Mowlem & Co., i the sheriff is senior partner, is No. 34 Royal Academy Exhibition. It is the Mr. J. Edgar Williams.

Surveyorships.—At the last meetin Toxteth Park Local Board, Liverpool, M Hall, jun., was appointed assistant-surv the Board.

...chester.—On the 30th ult. the memorial-...of the new board school which is in course ...ction in South Hall-street, Strange-... was laid by Mr. Joseph Phythian. The ...g, with which considerable progress has ...ade, is situate at the junction of South ...reet and Lord-street, Cheetham. The ...as an area of 3,960 square yards, having ...es to three streets, that to Lord-street ...ing 76 yds. 6 in., that to South Hall-...78 yds. 29 in., and that to Clarence-street ... 28 in. The building is of Gothic cha-... the principal façade fronting Lord-street, ...ersuring in length 66 yds., having a ... feature and end projecting wings. In ...uth Hall-street front is the tower, mea-... from the ground-line to the eaves, 48 ft., ... quick-pitched hipped roof, terminating ...rought-iron cresting and finials, the total ...from the ground being 70 ft. The walls ...lly are faced with picked common bricks ...ht tint, and finished with a strong slate ...he arches and moulded corbelling to ...and projecting windows being in stock ... The windows generally are finished ...one jambs, mullions, and transoms, those ...main gables having in addition geometric ...and heads. The ground-floor is arranged for ...f and juniors. The upper part is devoted ...oys and girls, each department having ... entrance, with convenient well-lighted ...es, and comprising schoolroom, 56 ft. by ...and 18 ft. average height, and three class-... two of which are 19 ft. 6 in. by 17 ft., ...o 17 ft. by 15 ft. 6 in., all with a mean ...of 16 ft. The warming arrangements ... carried out by Messrs. William Wilson ... of Manchester, and will be by means ... fireplaces and ventilating grates. A ...itchen, with coal and fuel stores, is ...d in the basement. There are three ...playgrounds. The schools are designed ...modate 1,038 children, viz., 300 infants, ...iors, 264 boys, and 265 girls. The floor ...llotted to each child is 10 square feet, ...d cubic air space 165 feet. The contract ...erection of the building, including the ...y-walling and playgrounds, but exclusive ...foundations, furniture, and fittings, is ... The works are being carried out by Mr. ... Southern, contractor, Salford, from the ...s and under the supervision of the archi-...essrs. Royle & Bennett, Manchester.

...worthy Houses in London.—We are ...d at the Court of Common Council has ...d to take into consideration the proposal ...ted by the Society of Arts to erect ...al tablets on noteworthy houses within ...o bounds. It is desirable that the present ...ceeding generations should be reminded ...ay of the men whose works have helped ...e England great in the world of art, ...e, and science. Nor should they be ...d to lose sight of the ancient landmarks ...City. Temple Bar has almost entirely ...ared, yet no definite plan has, we believe, ...ided on,—though doubtless it will be,— ...bling those who may come after us to ... the historic spot on which it has stood ...turies. What, too, of the sites of the ...ty gates? What visible record is there ...sites of Aldersgate, of Ludgate, and of ...portant structures, the memory of ...h chiefly kept alive by the designation of ...oughfares in the neighbourhood of which ...merly stood? The cost of putting up ...rmanent memorial of these structures ...public buildings whose names have been ...ed with the City's greatness would not ...us, and no one would begrudge it. What ... to point out the precise locality of the ... which Milton lived, in the neighbour-... Aldersgate-street; or of the place where ... as born, in Fore-street; or of the theatre ...kfriars, where many of Shakspeare's ...al plays were performed?—*City Press.*

...n.—A picture of "Danae," ascribed to ... is now on exhibition at the Cercle ...ue in the Rue Vivienne, Paris. Danae ...sented reclining in a voluptuous pose on ...; beyond the drapery, at the back, is ...ed landscape with the shades of night ...ing. The descent of Jupiter is depicted ... proverbial shower of gold. The same ... and the same model have been several ...ainted by the great Venetian master; ...ent example, to the discovery of which ...s history is attached, is remarkable for ...cefulness with which the subject is ... and the exquisite beauty of the figure.

The Legend of Cologne Cathedral.—A correspondent of the Buffalo *Courier* relates the legend of Cologne Cathedral in a form slightly different from the one that it usually wears. He says:—"As the story goes, the inventor was walking one day by the Rhine, trying to think out some design which should be sufficiently grand, and sketching his thoughts in the soft sand at his feet. At last he was satisfied, and said, 'It shall be like that.' 'Oh, I will show you a much better plan;' said a voice behind him, and on turning he saw the figure which has become familiar to the readers of 'Faust,' and to the users of profane language. With his cloven hoof this newly-found friend drew the outlines on the beach with startling rapidity and skill. But he had met his match in this plain German workman. He was made to explain minutely every detail, for the trembling architect knew that probably his own soul would be the price of this knowledge. Then he said to Mephistopheles, as he suddenly thought of a way out of the difficulty, 'Your plan is not quite satisfactory; I will not take it.' The soft voice of his hoof-footed visitor became a rough roar. He saw that he had been outwitted. 'You may build your cathedral according to this plan,' he shrieked, 'but you will never finish it!' This was seven hundred years ago. The Satanic threat was not in vain. Though multitudes of men have worked upon it for hundreds of years, the cathedral has never been finished. Now, as if in despair, the authorities have apparently turned once more to the outwitted but revengeful author of the design. The tickets of a gigantic gambling scheme, called the 'Cologne Cathedral Lottery,' are sold in every town of the empire, and the profits form a church-building fund. If the famous black gentleman is ever influenced by flattery, and by humble appeals for his assistance, we may soon expect that the curse will be removed and the great cathedral completed."

Surcharging the Metropolitan Board of Works.—At the annual audit of accounts of the Metropolitan Board of Works for the past year, Mr. W. Tucker, the auditor appointed by the Lords Commissioners of her Majesty's Treasury, upon reading an item of over 16,000*l.*, charged in the accounts as expenses incurred in the promotion of the Bills introduced into Parliament by the Board last Session for the better supply of water to the metropolis, announced that he had received several notices of objection to the payments of such accounts, and that he had been called upon to surcharge the Board for such expenditure. The auditor ruled that he could pay no attention to these combined oppositionists, but the objectors must appear before him as individual ratepayers and state their objections. Upon this one or two of the strong opponents in the Board, backed by several ratepayers, were heard upon their objections, which were combated by prominent members of the Board. The auditor contended that what the Board ought to have done was to have procured the resolution of Parliament, which would have cost nothing. He held the expenditure to be illegal, and surcharged the Board the 16,000*l.* It is understood there is no appeal against this decision.

The Drainage of Brecon.—A meeting of the Town Council was held on the 9th inst., for the purpose of completing the following agreements and contract in reference to the sewage works, by affixing the corporate seal thereto, viz.,—Agreement with Messrs. Gotto & Beesley, as consulting engineers; agreement with Mr. Rhys Davies, as resident engineer; agreement with Mr. Charles Harvey, as clerk of the works; and contract with Mr. John Mackay for execution of sewage works.

Value of London Property.—Property of the late Mr. Edmund Rushworth, of Savile-row, sold at the Mart by Messrs. Chinnock & Galsworthy, met with remarkable competition. It consisted of houses and shops in various streets in Soho, Regent-street, and Paddington, realising 29,340*l.*, being, we are informed, 20 to 30 per cent. higher than the price the property was purchased at a few years since, although the leases of some of the houses have become considerably shortened.

The National Penny Bank, Limited.—The ceremony of laying the foundation stone of the Clerkenwell Branch, Clerkenwell-road (at the corner of St. John's-square), will take place on Wednesday, the 21st May, at four o'clock p.m.

A Romano-British Tomb.—A discovery has been made on the estate of Mr. George Palmer, M.P., at Eling, near Newbury. During the course of excavating for field drainage, the workmen struck upon an arched vault or grave, which has been pronounced by Mr. W. Money, F.S.A., of Newbury, to be a Romano-British sepulchral chamber. The tomb lies north-east and south-west, and gives an inside measurement of 8 ft. in length by 2 ft. in breadth, the height of the roof from the floor to the ridge being about 4 ft. The walls, which are built of rough flint with bonding courses of brick, are 2 ft. high, and as perfect as when they were first raised. From the walls spring an arched, peaked roof or cover, formed of the well-known flanged Roman roof tiles overlapping each other, and set in mortar. Within this the interment took place.

A Sensible Workman.—Not long since, the remark was made in the presence of a New York plumber, that one of his neighbours had refused to subscribe to the *American Plumber*, because he knew all he cared to learn about plumbing. With an indescribable expression of disgust, the other observed, "That man is evidently a d—— fool! I've been working all my life, and when I can't learn anything more I want to die." Michelangelo said the same thing in other words.

Price of Land in Paris.—Eight lots of ground in the Rue des Pyramides, near the church of St. Roch, were sold recently. The City demanded 1,309,650 francs; they fetched 2,396,500 francs, or nearly double. This represents an average price per mètre of 1,330 francs, or about 54*l.* sterling the yard.

The Marble Doorway from one of the old palaces of Genoa, which has lately been acquired by the South Kensington Museum, at a cost of 750*l.*, has now been set up in one of the arcades of the North Court, where it is seen to advantage. It is the work of L. da Romenio da Campione, and the date is given as A.D. 1519.

TENDERS

For building stable, Commercial-road, E., for Mr. Smith. Mr C. A. Legg, architect:—

Parrish (accepted)	£168 0 0

For the erection of Wesleyan chapel, Rotherfield. Mr. S. W. Haughton, architect:—

By local arrangement, £600	0 0

For erection of two houses, part of proposed terrace, at Hanwell, for Mr. F. Whiting. Mr. J. Norris, architect:—

Hoare (accepted)	£1,340 0 0

For proposed new warehouse at Bankside, S.E., for Mr. Moss Isaacs. Mr. Charles Sewell, architect:—

Stevenson	£4,618 0 0
Martin, Wills, & Co.	4,479 0 0
Jones & Co.	4,363 0 0
Niblett	4,349 0 0
Dickenson	4,339 0 0
J. Smith	4,294 0 0
Wise	4,285 0 0
S. & G. L. Mann	4,197 0 0
Pront	4,100 0 0
Laing & Son	4,091 0 0
Castle	3,923 0 0
W. & F. Croaker	3,787 0 0
H. R. Wagner	3,610 0 0
Sheffield & Prebole	3,473 0 0
Scott	3,446 0 0
Stone	3,260 16 0

For picture-gallery, library, and sundry alterations, at Downside House, Leatherhead, for Mr. W. Lee. Messrs. Edward Salomons and R. Selden Wornum, architects. Quantities by Mr. W. G. E. Bagg:—

Dove Brothers	£5,560 0 0
Holland & Hannen	5,475 0 0
Nightingale	5,283 0 0
Kinninmont & Son	5,160 0 0
Shaw	4,868 0 0

For rebuilding Scottish Hospital, Crane-court, Fleet-street. Professor Donaldson, architect. Quantities by Messrs. George Lansdown & Harriss:—

Thora	£6,880 0 0
Aldin & Sons	6,033 0 0
Lawrence & Son	6,612 0 0
Brown & Robinson	6,459 0 0
Patman & Fotheringham	6,335 0 0
Langmead & Way	6,350 0 0
Bury & Co.	6,150 0 0
Kirk & Randall	6,140 0 0
Hobson (accepted)	5,778 0 0

For rebuilding the Mansion House Tavern, in Evelyn-street, Deptford (exclusive of bar fittings), a shop adjoining, and four cottages in the rear, for Mr. W. H. Chapman. Mr. Albert Vicars, architect:—

Grimwood & Sons	£5,430 0 0
Heath	4,650 0 0
Beale	4,595 0 0
Kirk	4,562 0 0
Macey	4,391 0 0

For a pair of semi-detached villas, in Waterloo-road, Shepton Mallet, Somerset, for Mr. F. Gare Messrs. Budd & Spire, architects:—
F. W. Pullen (accepted) £1,368 0 0

For shop and dwelling-house, in High-street, Shepton Mallet, for Mr. Thomas Parker. Messrs. Budd & Spire, architects:—
J. & S. Emery (accepted)..... £1,450 0 0

For a pair of semi-detached residences, at West Shepton, for Mr. C. J. Brown. Messrs. Budd & Spire, architects:—
J. H. Pullen (accepted) £510 0 0

For shop and premises, at Oakhill, Shepton, for Mr. C. M. Jones. Messrs. Budd & Spire, architects:—
J. & S. Emery (accepted)..... £674 0 0

For villa residences, Arlington-road, Surbiton, for Mr. A Hitchcock. Mr. Samuel Mather, architect. Quantities by Mr. Alfred Boxall:—

Mudie	£3,700	0	0
Wells	3,450	0	0
Hickinbottom	3,446	0	0
Hurst	3,393	0	0
Jarvis	3,153	0	0
Adkins	2,865	0	0

For alterations and additions to premises, Duke-street, and King's-road, Reading, for Messrs. Holmes. Messrs. Brown & Albury, architects:—

Sheppard	£1,949	0	0
Higgs	1,949	0	0
Foffley	1,930	0	0
Searle	1,900	0	0
Simonds	1,897	0	0

Work divided between Searle and Simonds.

For alterations at the "Yorkshire Grey," No. 17, London-street, Fitzroy-square, for Mr. Thomas Sturdy. Mr. James Robert Furniss, architect:—

Wimple	£342	0	0
Edgley	330	0	0
Adams	326	0	0
Sprake & Foreman	277	0	0
Steed Brothers	276	0	0
White	273	0	0
Grimwood & Sons	248	0	0

For the erection of purifying-house for the Tottenham and Edmonton Gas Light and Coke Company. Mr. W. H. H Broadberry, engineer:—
Contract No. 1.
Clemence (accepted).

For first section of works for restoration of Shern Hall, Walthamstow. Mr. Sextus Dybail, architect. Quantities by Mr. W. E. Stoner:—
Abbey Brothers (accepted) £3,152 0 0

For new building, Benjamin-street, Cow-cross, for Messrs. Crow & Sons. Mr. Edmund Woodthorpe, architect. Quantities by Messrs. Franklin & Andrews:—

		Deduct if zinc instead of lead.
Elsdon	£3,125	£95
Ashby & Horner	2,472	120
Browne & Robinson	2,434	125
Ashby Brothers	2,420	110
Conder	2,335	158
Langmead & Way	2,342	121
Brass	2,303	120
Jarratt	2,244	75

For new roads and drains on the Eversfield Estate, St. Leonard's-on-Sea. Messrs. Fowler & Hill, architects:—

Gasson	£806	0	0
King	775	0	0
Cruttenden	723	0	0

For two houses, Sale, Manchester. Mr. G. H. Courtis, architect:—

Wilson, Stott, &c.	£2,519	0	0
Winstanley	2,484	0	0
Holt	2,435	0	0
Stone	2,420	0	0
Harrower	2,400	0	0
Hibbert	2,330	0	0
Williams	2,240	0	0
Elms & Evans	2,223	0	0
Johnson	2,200	0	0
Thompson	2,138	0	0
Macfarlane	2,088	0	0

For rebuilding public-house and twelve houses, Paradise-street, Rotherhithe, for Mr. W. Whale. Messrs. Snooke & Stock, architects. Quantities by Messrs. Linsdeel & Gilliard:—

Joselyn	£8,890	0	0
Browne & Robinson	8,250	0	0
Rider & Son	7,988	0	0
Holland & Hannen	7,987	0	0
McLachlan & Sons	7,980	0	0
Greenwood	7,809	0	0
Wells	7,777	0	0
Bangs & Co.	7,630	0	0
Manley	7,565	0	0

For carrying out the system of sewerage about to be applied to Royston:—

Harris	£2,925	0	0!
Varty & Honour	2,648	0	0
Stapleton	2,470	0	0
Worboys	2,182	0	0
Hunt	2,129	0	0
Dover Brothers	2,119	0	0
Cowdery & Co.	2,050	11	0
Potter	1,995	0	0
Stiff	1,937	0	0
Needham	1,875	0	0
Williams	1,869	0	0
Dixon	1,799	0	0
Strachan & Co.	1,750	0	0
Rowand Brothers	1,700	0	0
Coker	1,680	0	0
Pattinson	1,548	0	0
Redhouse	1,485	10	0!

For a new jetty in the River Usk, to discharge ballast from vessels (exclusive of crane), for the Newport Harbour Commissioners. Mr. E. A. Lansdowne, architect:—

Marrows	£1,005	0	0
Firbank (accepted)	870	0	0
Thomas & Son	850	0	0

For the erection of conventual building, with chapel, in the Lillie-road, West Brompton. Messrs. Goldie & Child, architects. Quantities by Mr. James Schofield:—

Braid & Co.	£12,150	0	0
Nash	12,000	0	0
Snaw	11,915	0	0
Higgs & Hill	11,794	0	0
Rider & Son	11,772	0	0
Perry & Co.	11,624	0	0
Longmire & Burge	11,580	0	0
Roberts, Brothers	11,439	0	0
Nightingale	11,383	0	0
Macey & Sons	11,370	0	0
Conder	11,236	0	0
Lucas & Son (accepted)	10,770	0	0

For alteration to Yarra House, Cleethorpes, Great Grimsby, for Mr. Joseph Chapman. Mr. J. Henry Maughan, architect:—

Emerson	£886	12	0
Doughty	670	0	0
Wilkinson	622	0	0
Sowden	499	0	0
Glew	482	10	3
Fletcher	452	0	0
Mashford	434	0	0
Nightingale & Danby	427	14	0

For the erection of a pair of villa residences, Grove Park, Chiswick, for Mr. Thomas Waterhouse. Mr. William George Tutt, architect. Quantities supplied:—

Holtern	£2,345	0	0
Jones & Co.	2,250	0	0
Simmonds	2,210	0	0
Niblett	2,080	0	0
Dorey	2,070	0	0
Wagner	2,050	0	0
Went & Perkins	2,048	0	0
Raymes	1,980	0	0
Beale	1,836	0	0

For building thirty cottages on Hounslow-heath, for Mr. P. MecKlenberg:—

Hiscock	£4,000	0	0!
Martin & Wells	3,769	0	0
Gamage	3,800	0	0
Dannells	2,910	0	0
Leonard	2,750	0	0!

For building five cottages at Hounslow, for Messrs. G. & W. Hayes:—
Gamage (accepted).

For three pairs of cottages, for Mr. S. Day, L... head. Mr. R. W. Moore, architect:—

Brown	£1,445	0	
Batchelor	1,069	0	
Walker	984	0	

For alteration at Railway Hotel, Silvertown, for E... Ouston. Mr. J. T. Newman, architect:—

Hoskings, Brothers	£457	0	
Reed	438	0	
North, Brothers	420	0	

123, *New Bond-street*.—Messrs. David G. Laing ... write to say that the amount of their tender was ... and not £,0471. as printed on p. 528.

TO CORRESPONDENTS.

R. M. W.—D. W.—E. A. L.—J. K.—W. E. R.—T. H.—W. H.—T. G.—F. W.—C. B.—J. D.—J. C. B.—F. F. (*we cannot*) ... Surveyor (next week).—W. G. S.—H. S.—F. K.—C.—India.—S. D.—G. A. W.—J. A. H.—L. & H.—B. & S.—H. & ... week).

All statements of facts, lists of tenders, &c. must be accom... by the name and address of the sender, not necessa... publication.

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1894. SATURDAY, MAY 24, 1879.

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A London Bookbindery.

REPARING, Forwarding, and Finishing are the names of the three stages through which a regularly-bound book must pass between leaving the printing-press and being ready for the library-shelf. In the first stage the sheets are dried, smoothed, and then collated into distinct books or quires. The binder then begins his work,—and the folded sheets are squeezed rm, fly-leaves are pasted on, and the back is Shaping the back follows, and forming s in the sides of the mass of sheets in the boards may lie,—done by hammering k while the book is fixed upright in the press. Then the boards are laced in,—and ds of the bands, previously frayed out, are down, and hammered flat and smooth. he head and tail are cut, the volume is girdled, the back beaten flat, and the fore-t with the plough; when the back rounds gain the gutter of the fore-edge is formed. ges being coloured, sprinkled, marbled, or ; head-bands, usually of silk, on strips of , are put on to fill part of the space at the etween the edges of the leaves and the of the boards, and to cover the folded-in of the leather. The next process (the s putting the leather on the covers; and hat the forwarding is completed. In the tage the finisher adds elegance to solidity lasticity,—esteemed the three great tes of a well-bound book. If he possesses f the quality of Gascon, poor Roger Payne, rles Lewis, he does not lay down his tools has confirmed De Quincey's estimate of reation of the Farrers, and shown once hat "bookbinding and one or two other stand on an isthmus, connecting them on e side with the vast continent of merely nical crafts, on the other side with the aller continent of the Fine Arts."

ugh not belonging to the higher forms of bliopegic art,—case-binding, or "doing up in cloth or paper," is really the branch of t which is now so fecund as to outrival all her branches cultivated by bibliopegists. years ago the printing-press started on areer of unlimited productiveness which egins to shock some conscientious and us souls. The first iron press, Earl Stan-invention in 1800, having a considerably ed platen, did a good deal of work in com-n with the wooden presses. After Novem-th, 1814, the hand-press was no longer used inting the *Times*. On the 29th the number team-printed by König's machine. From to 1823 the Cowper and Applegath im-ments resulted in the perfecting-machine, which prints the sheets on both sides at once. Rapid and cheapened printing thus became possible at a time of increasing population and increasing desire to possess books. The covers were thought about as well as the contents. Mr. Pickering, publisher, and Mr. Archibald Leighton, bookbinder, are usually credited with the earliest use of binding in cases in England. It is said that one of the first books of importance issued in coloured cloth cases was the 1825 edition of Lord Byron's works, in seventeen volumes. Before this, new books were issued in mill-boards, covered with drab or dull-grey body-papers. The title was printed on a white label, and pasted on the book. This was a genuine binding of a rough kind, the bands being regularly laced into the boards. Any one with a modest purse and a longing for a quiet hobby might do worse than form a collection of about 100 books (or more, of course), just as they were ordinarily issued by publishers between 1700 and 1850. There might be an especial leaning towards cheap books,—certainly there should be memorials of Donaldson, Lackington, and Tegg,—and mingled with these might appear a few early editions of notable books in undress uniform.

Rapidity of production and cheapness were the motives for the introduction of the novelty, and are among the recommendations nowadays; though there are others as well, especially since varied and tasteful ornamentation has ceased to be exceptional. A regularly-bound volume would not, if treated fairly, be deemed sound and fit to be used in less than a week. Elegant finishing by hand must not be named in connexion with strictly limited time. Spurts of energy in casemaking are recorded, such as 1,000 volumes brought to the binder in sheets and put up in cloth covers, lettered and gilt, in six hours. No one would recommend such a rate as this, however convenient in a special instance. From nine o'clock in the morning to seven or eight on the night of the next day,—twenty-four to thirty-six hours,—seems no excessive time to devote to putting on a cover, which, if not too heedlessly used, may last, with fair wear and tear, as long as the book itself. The total number of volumes done up in the thirty-six hours will depend upon the size of the building. One house at New York is able to send out 10,000 completed volumes a day. The number of new books and the number of copies issued will show the work for the binder at different times better than any general statement. From 1700 to 1756 the yearly average of new books (including tracts) was ninety-three. From the English Catalogue of Books it appears that in 1874 (a good year) about 4,500 books were published in Great Britain and Ireland, including new editions of works previously issued, as well as the principal books published in the United States. Sweynheym and Pannartz claim to have printed up to 1472 (they settled in Rome in 1467) 12,475 copies altogether. Their editions of classical authors numbered only 275 or 300 copies—Virgil, Cicero, and theological works 550 copies. 1,000 or 1,250 copies used to be considered a good, and 2,000 copies an excessive edition. Donaldson, of Edinburgh (1760-70) began to publish cheap editions, and as an innovator got well abused therefor. His followers have improved on the examples set them, till 20,000, and even 50,000 copies, are struck off for a single edition. One London publisher in 1872 printed over 5,000,000 copies of books. Case-binding in cloth, finished in good style, may be put at one-fourth of the time, and less than half the cost, of the cheapest genuine binding.

The word "bindery,"—a new-comer in England, though in common use in Canada and the United States,—has recently been welcomed with something like a bonneting by correspondents of *Notes and Queries*; who have, however, granted that, in default of a better word, it has a right to appear in England, and implied that it will become acclimatised in all English-speaking countries. We have ventured to give it help here, and in the illustration on p. 570. The building shown was remodelled and added to a short time ago by Messrs. Diprose Brothers, and is now to be added to again by taking in the remainder of their property in New Church-court. Some mention of the original buildings,—of which parts of the walls, floors, and roofs remain,—should be interesting to topographers. Jacob Tonson moved from his old shop, "The Judge's Head," in Chancery-lane, close to the corner of Fleet-street, where he had been from 1678, to "Shakspeare's Head, over against Catherine-street, in the Strand." Andrew Millar,—who published Thomson's "Seasons" in 1730, and continued to publish for Thomson,—who took the principal charge of the first publication of Johnson's Dictionary (1755),—of whom Johnson's "I respect, Millar, sir; he has raised the price of literature," is recorded by Boswell under 1755,—who published Hume's England and Fielding's novels,—carried on business at the same "Shakspeare's Head,"—141, Strand. Gaze's tourist offices, on the south side of The Strand, opposite the middle of Catherine-street,—the windows looking towards the office of the *Builder*,—is at the present time called 142, but includes 141 also; there is now no number 141. Millar retired from business in 1767, and his apprentice Thomas Cadell, who had become his partner in 1765, succeeded to the business. This was the Thomas Cadell who toasted the four Bees to which he said he owed his prosperity,—Blackstone's Commentaries, Blair's Sermons, Burn's Justice of the Peace, and Buchan's Domestic Medicine. Cadell lived at 141, Strand, like his predecessor. His name will be remembered as the host of Johnson and Gibbon,—as "the Mr. Cadell, a respectable bookseller," of Gibbon's Autobiography, "who undertook the care and risk of the publication [of the first volume of the History], which derived more credit from the name of the shop, than from that of the author." Old Thomas Cadell resigned his business to his son, and to William Davies jointly, and this was the "respectable house of Cadell & Davies in the Strand, which,"

as Lockhart puts it, "may be said to have first introduced Scott as an original writer to the English public,"—by the publication in January, 1802, of the first two volumes of the "Minstrelsy of the Scottish Border." On May 1st, 1803, Cadell was one of the parties in "a contract for the building of a stack of Warehouses in White Hart-yard, Drury-lane,"—not quite 150 yards distant from 141, Strand. The buildings were specially designed for the storage of books; and were in more recent years owned and used for that purpose by Mr. H. G. Bohn, and thereafter by Messrs. Bell, his successors in the publication of the Libraries,—up to 1875, when Messrs. Diprose Brothers purchased the north-eastern portion of their property.

The new fronts of the buildings, under the special sanction of the Metropolitan Board of Works, are formed almost wholly of cast iron and glass.* The iron uprights are braced together by cast-iron cills bolted to them, and are held in position also by rolled-iron trimmers secured to pockets in the stancheons and to the main girders of the floors, which are large timber girders trussed with iron, supported on cast-iron + stancheons, and with heavy fir joists over. The builders employed were Messrs. J. M. Macey & Son, of Milford Wharf, Strand, for the building, and Mr. S. Morby, of Dorset-street, for the fittings. The ironwork was carried out by Messrs. H. Young & Co., of Eccleston Iron Works, Pimlico. A 12-horse power boiler, in the basement, supplies steam for a 10-horse power (nominal) engine, working all the machinery and the steam lift, also the pumping for the hydraulic presses. Glue-melting, paste-making, and other tasks are also done by steam; and it warms the building. The machinery was supplied, and the presses, blocking-machines, &c., were fitted up by Messrs. J. Richmond & Co., bookbinders' engineers, of Kirby-street. Messrs. J. & S. Flint Clarkson, of Great Ormond-street, architects, have designed and superintended the works.

The references on the plan show where extra and super-extra bindings are carried on; but the larger portion is devoted to all the other sorts of binding, in such great demand at the present time. There are now more extensive binderies both in London and elsewhere, but it is large enough to be fairly characteristic of the present aspects of the trade. As a general guide to architects and others it will be useful to note that,—in addition to all ordinary and extra binding,—about 2,500 cased books a day can be completed and sent out from a building of this size, well fitted with modern machinery and intelligently used. Cloth cases blocked, plain cloth cases, paper boards, and paper wrappers, are the recognised divisions in this class of trade. Purists somewhat indignantly refuse to call any of it "binding." Their moral antipodes speak (with shame-facedness) of "bound in a wrapper," and with cheerful confidence of "cloth-bound." "Neatly boarded in cloth" was a modest phrase in use in the thirties. It happily does not fall within the sphere of our duty to put an end to these disputations. In truth, since Mr. Walter Shandy set forth his opinion "that there was a strange kind of magic bias, which good or bad names irresistibly impressed upon character and conduct,"—judicious persons fight shy of light-talking even about the Proper Names of men or things. Our duty at present is to follow the sheets, which are to be "done up," from their delivery by the printer at the bindery, and to see them sent out in boarded cases ready for the hands of the gentle reader,—who shall be assisted by each process being numbered; and references have been put on the plan to show the way in which the work passes through the various floors of the bindery.

Quire Store-rooms.—When brought in, the sheets will be put into one of the store-rooms, which must be provided in good plenty, and be dry and properly ventilated,—but not necessarily well lighted. The parcels of unfolded sheets, in wrappers boldly lettered on the exposed sides, may remain on the shelves of the store-room for some time. Out of 10,000 copies, perhaps only 2,000 will be put into covers at once, and sent to face the critical and destructive world. From time to time other captives will be freed from the dusky prison-house,—by good fortune the whole of the first batch, and of fresh relays. But the unappreciative world not rarely refuses to show a wholesome appetite in any reasonable time. Then the sheets, to which the binder has temporarily afforded house-room, must be removed; and the modern substitutes for the terrors of old authors will flit before the imagination. Horace, in his excellent flattery of Augustus, determined to avoid the fate of ill-written verses,—"being carried into the street where they sell frankincense and scents, and pepper, and all that is wrapped in the pages of the dunce":—

> "In vicum vendentem tus et odores,
> Et piper, et quicquid chartis amicitur ineptis."
> Epis., lib. ii., 269-270;—

and Pope, in his Imitations "To Augustus" (George II.), followed the lead, making the imitation piquant after his manner, with touches of his pleasing personality:—

> "And when I flatter, let my dirty leaves
> (Like journals, odes, and such forgotten things
> As Eusden, Phillips, Settle, writ of kings)
> Clothe spice, line trunks, or flutt'ring in a row,
> Befringe the rails of Bedlam or Soho."

Now-a-days large quantities of unused printed paper go back direct to the paper-maker to be worked up again. Cheap figured papers and cotton stuffs have raised the souls of the modern trunk-makers above the use of papers disfigured by printer's types. Cheese and bacon are found to have affinities for what the trunk-maker rejects; retailers and the domestic world appreciate the virgin condition of literature untouched even by binders. Butter retailers demand the printer's more carefully finished productions,—which have been cold-pressed between glazed boards to remove the impression-marks, and to brighten the surface of the paper. The ink does not set-off after that, and setting-off is the *bête-noir* of buttermen and of possessors of engravings. These practical satires on ambition,—the work of a would-be conqueror of worlds returning to baser uses than "patching a wall to expel the winter's flaw,"—convey even ruder rebukes than the dealings of the remainderman,—the Jas. Lackington of 1879,—who buys the orthodox three-volume 31s. 6d. novel in quires at 1s. a copy, binds it in a single volume, and sells it for 2s. 6d.; trying thus the effect of the potent whet of cheapness on the appetite of the public.

Forwarding: Women's Department.—This is at the top of the building. The work, being sent up in the lift, is here carried to a certain state of forwardness, then sent down to the floors below to be worked upon further by the workmen, and afterwards passed down again to the ground story, for examination, packing, and despatching. A book ordinarily passes through seven processes in the women's department. If the sheets are double-crown, 31 in. by 21 in., or 30 in. by 20 in., as they come from the printer, two sheets of a crown-octavo book, with pages about 7½ in. by 5 in., have been printed together for the sake of rapidity and consequent cheapness. When the sheets have been cut in two, making two sheets of crown 15 in. by 20 in., the folder puts the face of the sheet which contains the first page downwards, the bottom of the first page at the left-hand lower corner. In doubling, 15 in. by 20 in. is made into 15 in. by 10 in., then into 7½ in. by 10 in., and lastly into 7½ in. by 5 in. To suit this method of folding (process 1), which is always pursued, there is not only a signature, or distinguishing letter (as K), at the bottom of the first page of the sheet, but (simply as a guide to the folder) there is also a second signature (as K 2) at the bottom of its third page. This second signature is seen at the right-hand lower corner as the sheet lies open before the folder. The whole subject of signatures, their first introduction, variations in them aforetime and at present, the omission, in most cases of A, J, V, and W,* double signatures,—and the allied subject of catch-words, their early uses, the disuse of them at present, odd instances of survival, as in Acts of Parliament, till 1868, and in the *Quarterly Review* to the current number,—would afford ample material for lengthy gossip,—perhaps not all of it strictly to the point. Pagination, directions to the binder, and the retention of old names to designate the shape of books, although they have long ceased to have the old meaning, are other tempting topics. The crown 8vo book mentioned above was clearly not formed of sheets doubled into eight leaves; and the *Builder* itself may supply another illustration. It is a book of folio size as names go, and would, according to ancient wont, measure 4 pages to the sheet of paper. But the 56 + 60 pages of this number of the *Builder* are printed on three pieces of paper only. The 4 pages in the centre happen to resemble folio pages: the sheets containing plates are usually kept of small size in order to allow careful printing. The next piece is the inner 24 pages; and the outer sheet of paper is 30 in. by 36 in., furnishing 32 pages. Last week's *Builder* was made up of 8 + 16 + 32 = 56 pages. The reader will, perhaps, lament over the rough edges,—one of the novelties of the current volume,—which will not allow him readily, with much edification, to test the statement that the outer part of this number is 16mo. A well-trained girl will fold 300 sheets 8vo. per hour on an average. The folders require a strong table properly they should hold each sheet up to the light, and then fold so as to humour the margins between the printing, which, especially that done with the perfecting-machine, is frequently imperfect in the register. In folding the edge of the sheet must always be carefully regarded,—sheets of paper are rarely exactly alike in size. A description of a folding-machine, what it can do, and what it can only attempt, is not required here, as hand-folding is still the rule in England. An active gatherer puts together in a day, according to the signatures, at least 10,000 sheets (process 2). The gatherer knocks the sheets together evenly at the back, and ascertains that the gathering has been correctly performed (3). The hydraulic press gives the collated sheets a pressure of solidity (4). Revolving saws set to a gauge cut all at once, three deep grooves or notches at the back for the bands, and two shallower for kettle-stitches (5); and the whole is ready for sewing (6),—a process to which many a long essay has been devoted as there are bands of many sorts, methods of sewing, working one "all sheets on," kettle-stitches,* and sewing-machines to talk about. It is possible, however, that the subjects will be merely matters of antiquarian interest in a short time. In a goodly number of new books, issued during the last two years, three pieces of wire may have been noticed in the centres of sheets in place of thread. The Brehmer wire-sewing machine is now in extensive use in good houses. The sheets are sewed on three pieces of webbing, each about an inch in width, by short pieces of wire. The sheets simply cut into lengths, its ends double thus ⌊⌋, and the ends thrust through the sheets, and clenched by a side stroke of the machine, which is thoroughly automatic. With the great beauty of the most perfect simple one machine the work of four hand-sewers can easily be done, and the work is said to be very durable. It comes from Philadelphia, and, although not much bigger than a large developed sewing-machine, costs in London 200*l*. Many of the machines to be used in bookbinding have been invented in the United States. The high price of labour may be responsible for stimulating invention there; but in England do not insist on supplying their own ideas to men only, or even first of all. English printers and case-binders were wont to reflect with complacency on their own powers, and till recently on the relative cheapness of labour here, which enabled them,—although paying 25 per cent. *ad valorem* duty and carriage to the 3000 miles to undersell the citizens in their own market. Byron's "Lara," with Mr. Birch's illustrations, recently cloth-cased in this building by Messrs. Diprose Brothers for the Art-Union of London, and now in the possession of some of our readers, may be mentioned as an example of a "case book." In most respects it was dealt with as an ordinary cloth-cased book of good class, as each page was a distinct piece of paper. The sewer had to carry the stitch through through the gathered pages at a distance from the back edge, and the

* See p. 568 and p. 570.

* The omission is not merely a freak, neither is it to be classed with those instances of exclusion of set purpose,—resulting in no A in Chapter I., no B in Chapter II., and so on from cover to cover. These perfect examples of the "cut direct," rarely practised even at this time of conceits and crazes, should be in steady favour in England. "That resource of sullenness and shyness" [the cut], says Dean Merrivale, "is, I believe, a strictly English institution."

* Kettle-stitch is said to be a corruption of "chain"—if so it does credit to the ingenuity of the corrupt importance of stitching has by chance been rec Thus we have *brochure* (Latin, *brocare;* Fr., *broc* stitch, whence also *brocade*), a *stitched* work of a fe *Pamphlet* also (if from Lat. *pagina filata*, a thread or Fr., *paxfilet*),—any work which does not exc sheets octavo *stitched* together, but not bound. (κέντρων, a garment of scraps *stitched* together also be adduced, but there the stitching is at a stage of the manufacture.

l at the ends. Therefore, it was not y to make indentations in the back. No. 7 applies, however, to cased books y, which all require strips of strong ued on the backs to hold them together, waste-papers." Each book usually re- record by which blunders may be traced, ut to light later. On the page with the o B, the collator's mark in pencil is ly in the centre, the folder's at the bottom age, and the sewer's at the bottom of page in the book. After the appearance has thus been reached to some extent, leaves the women's department, and own the lift to the next story.

rding : Men's Department.—In France many good books are very frequently paper wrappers (sometimes not sewn), nd afterwards bound to the directions mer. Pasting on the wrappers is then additional piece of forwarding beyond s been already described. Only very oks are treated thus in England; but oals of magazines find their way into azine-wrappering rooms. A table of cost would run thus for 8vo. size :— gularly-bound book, cheaply half-bound r, 1s.; (2) a cloth-cased book, gilded ked, 5d.; (3) "paper boards", the pub- pplying the paper cover for boards and ., or the whole cost of "doing up," 2½d.; in paper wrappers, 1d. Process 8 is pressing the book once again in a press (7 to 10 tons on a crown 8vo. book), at the air between the sheets, and prevent k. Three edges of "Lara" were cut with otine, but the most ordinary English s to keep the head and the boits uncut, im (not out) the tail and fore-edge (9). back must be glued to impart firm- d a slip of strong canvas put on, nearly s the book, and extending about an inch side of the back (10). At this stage ican case-binders cut the head, tail, and with the guillotine, and it seems likely will be imitated a good deal in Eng- ne future. English publishers used to o be convinced that we like to find our books with our own paper-knives, and blace in struggling with new volumes andishing and smelling our weapons. he labour of cutting has no influence on ish binder. The fore-edge must lose a f-inch, and the head a short 1-8th inch er the sheets are knocked together at The value of these paper-shavings, ex- re-use in paper-mills, would more than the labour of cutting. The United ve taken paper cuttings to the extent ns a week from England. Binders hope, that every cased book will be bound ; and shiver in imagination at the nar- rgins, after resewing and cutting again . A love of tall copies means—in the tender regard for the welfare of every- the shape of a book, which has the une to be started properly in life, or, ste, not to belong to the Gibeonites of time. Rounding the back (11), and (12), come next. The latter process is of an ingenious hand-machine. The part of a book being held tight in a vice, is brought down on the back, passed ds and forwards, making the sheets good deal, and a seat is thus given for ds. Much of the success of a case, its less and its endurance, depend on these esses.

ent Story : Making Cases.—In con- of the weight of the blocking and achines, a lower story is most frequently making the cases. No pains should be o give good daylight, especially in the case-making, and blocking rooms. the millboards is process 1. The upper er revolving disks are set to distances bindles, and several cuts are made at a with pairs of scissors, and the boards to widths at a great pace. One machine, y steam, will cut 50,000 pairs of boards fifty-four working-hours of a week :— , nine hours; four days of ten hours each to 1 p.m., 2 to 5, and 5·30 to 7·30); y, 5 hours. Millboards are thick rough ow made of old rope, junk, canvas, have, since the middle of the seven- ntury, superseded the pasteboards,— f paper pasted together,—which about a before had superseded to a great extent oden boards of the Middle Ages. The rds, usually 25 in. to 30 in., in packages weighing about ½ cwt. each, are brought in by the goods entrance,—B on the plan,—and stored in the basement. "Cloth" is, when it leaves Lancashire, rough unglazed calico; mostly prepared in London for use in binding, being dyed, stiffened, and passed through heated rollers to give a lined, grained, or smooth glossy surface. Bold Levant grain is used for the "Lara" cases. The pattern embossing, once in use, but now out of fashion, was carried over the whole sheet of cloth, and the pattern came on the cover just as it happened. Embossing rarely enters into the ornamentation-proper now, as the blocking press produces many of the effects of hand-finishing, and can be used when the case is made. A case can be put into the presses for blind and black or other printing, and the greatest accuracy of register secured. The cloth is supplied to the binder in rolls about 40 yards long and 40 in. wide, and is cut (2), glued on two boards (3), the distance of the boards at their back edges being the thickness of the book, and rubbed down with an india-rubber roller (4). The case is then hung up on a line to dry (5). Blocking is stamping in an "arming-press" a title and ornamentation upon the cloth case, by the pressure of a heated brass block or stamp. For gilding, a good patch of the surface will be washed over with glaire (white of egg), and gold leaf applied (6). The case being put into the press, the metal block heated by gas jets descends and presses heavily on the surface (7). In the blind portions, bold Levant grain is changed by this pressure into a smooth surface well recessed,—and the heated block fixes the gold where the projecting pattern presses on it,—the rest of the gold-leaf can be rubbed off. The completed cases may now be sent up the lift to the Cloth-forwarding Department, where we left the book after process 12.

Cloth-forwarding Department (continued).—Cover and book, each at quasi-maturity, but each incomplete without the other, are then united by a deft workman, who pastes the overhanging slips of canvas to the case, and puts an end-paper inside each cover (12+7+1=process 20). Frequently the canvas is the only connexion between the back and case. In wire-sewn books the ends of the webbing supply the attachment, the canvas backing being frequently omitted. The end-papers hold canvas and webbing down. "Tight backs," largely used for religious books of small size, have the sheets glued to the backs, and make very solid cases. But the covering in the case of tight backs must be of leather; cloth must not be attached to the back; it must be quite free everywhere, or it will crack and tear. Each copy of "Lara" must go for a third time into a press (21), and remain there at least four hours to dry and harden before it can be passed down to the lift, to the

Ground Story : Despatching-room, where the whole of the finished copies will be carefully examined and packed for delivery. Some copies of "Lara," watched thus with some vigilance will find their way to every continent; but we will be content to part with 1,000 of them in the bookbinder's cart, and follow them in imagination only as far as their temporary halting-place, the offices of the Art-Union of London, in the Strand. Byron wrote the poem in his rooms at the Albany, 2A, facing Savile-row.* A tablet, properly inscribed, and built into the north wall of the house, would be a graceful addition to other memorials. Mr. Belt's statue and the new edition of "Lara" testify, half a century after the poet's death, to the enduring nature of his influence. Whether the case-bound volume will prove "*ære perennius*" will not be decided till some centuries have slipped by.

* Albany House was converted into sets of chambers, and the gardens built over with additional suites of rooms, in 1808. Byron's Diary, under 28th March, 1814, has,—"This night got into my new apartments"; and a note to this in Moore's "Byron" mentions,—"These were in the original house on the ground floor, No. 2." "Lara" was begun at the latter end of May, 1814:—"'Lara' is finished, and I am copying him" (letter from Byron to Moore, 14th June, 1814). At the beginning of July the poem was in the hands of the printer, and nearly ready for publication. To the ninety-three pages of the first edition Rogers's "Jacqueline" was added, making a volume of 128 pages,—of course an octavo of graceful slimness after all. No names of authors were given on the title-page. The "advertisement" of "Lara" has traces of the author's peculiar modesty, especially in the conclusion. "To the reader's conjecture is referred the name of the writer, the knowledge of which would be of no service in assisting his decision on the failure or success of the attempt." Time did not bring about a change of nature. "What do the reviewers mean? 'Lara' I wrote while undressing,—after coming home from balls and masquerades, in the year of revelry, 1814."—(Letter of 1822.)

SCULPTURE AT THE ROYAL ACADEMY.

THE sculpture this year at the Academy, includes a good many able and striking works among which two stand forth pre-eminently, and will unquestionably have attracted the notice even of that unfortunately large class of visitors who, we fear, hardly pay any attention to the sculpture at all. These are Mr. Simonds's "Dionysus," in the lecture-room, and Mr. Birch's "The Last Call," which faces the spectator on entering the central hall from the vestibule,—two works which have the additional interest, when taken in conjunction, that they illustrate respectively the ideal and the realistic in sculpture. Giving the first place to the ideal, not only on general grounds, but as the form of art which is most especially the province of sculpture, we may congratulate Mr. Simonds and the Academy upon the exhibition of a work which gives more promise for the ideal school of sculpture than any work by a comparatively young artist which has been seen there for some time. This is a life-sized figure of a naked youth, seated on the back of a tiger sideways, and with one leg drooping by the side of the animal, the motive of the whole group a little recalling Dannecker's Ariadne, but not so as to leave any room for a charge of plagiarism. Dionysus carries the thyrsus, which was his symbol, and gazes on us with fixed, passionless, almost melancholy countenance, having nothing in common with the "jovial" type of Bacchus; the feeling of the conception is rather Asiatic than Greek, though the face is of Greek type. The tiger is remarkably fine; sufficiently conventionalised to harmonise with the character of the subject, and to avoid any merely menagerie suggestion, yet with the leading points in the animal's framework and movement fully and powerfully brought out, and the idea of motion most successfully conveyed. The treatment of the hind-quarters of the tiger, and the powerful modelling of the extended foreleg as seen from the front, are especially fine; and the group will bear looking at from every point of view, the most favourable being perhaps that in which the front view of the tiger and the side view of his rider are combined. It would have been better to have omitted the long paragraph in the catalogue giving the history of Dionysus, which is somewhat too matter-of-fact in expression, and tends to remove the work from the category of merely abstract ideals to which it really belongs.

Mr. Birch's bronze group of horse and rider represents a battle-field incident, the sudden and simultaneous death of a trumpeter and his horse, from a volley of the enemy, just as the former has sounded the "charge" call for his regiment. The horse is in the act of falling violently forward, his forelegs doubled under him, and his head twisted sideways with the force of the fall; the rider must have at the same moment sprung backward convulsively from the effect of the bullet-stroke, as he is leaning back and high up in the saddle; his head is thrown back, and his arm, from which the bugle is just falling, thrown up in the air. One of the best riders we know has expressed to us his serious doubt whether such a position would be possible for any rider at the moment of a horse falling headlong when in full career, which we gather to be the intention of the sculptor: it would seem probable that in such a case the body of the rider must inevitably fall forward. The point could, perhaps, only be satisfactorily determined by setting a man on a horse and shooting them both when at full gallop; and though there might have been a time when such a sacrifice would have been considered legitimate in the cause of art, it could hardly be ventured upon now. So we must be content to leave it, as we think it is at all events a point open to discussion; merely adding that we have no doubt whatever that the sculptor has given much consideration to it, and that it must be admitted that the attitude he has adopted for the dying rider produces a finer and more impressive effect than could have been produced by the headlong fall of man and horse together, and that therefore we should hold it justifiable, if it can be shown to be even possible, however improbable. In other respects this is a very fine and striking work; a touch perhaps of the melodramatic about it, but a touch also of the heroic, and the falling horse is very finely modelled, and impresses one forcibly with the idea intended to be conveyed, of sudden and helpless overthrow.

Among the other works in the central hall is the marble of Mr. MacLean's "Ione," of which the plaster model was in the Grosvenor Gallery last year. There is perhaps nothing especial in the character of the figure to connect it with Bulwer's heroine, who, however, is rather a vague character herself: the name does very well to symbolise a figure representing a lady, *par excellence*, of the Roman period—a Greek amid Roman surroundings, which is what "Ione" was. The figure is seated, reading; the extended left arm, holding the book, is a study in itself, and is the most beautiful part of the work, which generally is remarkable for a serene refinement and repose; the drapery is finely treated, the chair an admirable specimen of conventional sculpturesque furniture; a small detail this, but one often very unsatisfactorily treated. Another very admirable work in the same room is the "Callicles" of Mr. G. A. Lawson: this was, we believe, executed merely as an ideal figure, and had the honour of being baptised by an eminent English poet, after the name of the creation of another poet, Mr. Matthew Arnold.* The figure is that of a young, slim youth, seated and playing the lyre, with his head and body thrown rather back from the instrument, in an attitude of poetic abstraction. This is a nude figure, hardly representing the most complete type of bodily perfection, as there is something of the half-development about it which belongs to a figure not fully grown to manhood; the attitude is very fine and expressive, and the whole feeling far removed from the commonplace of mere figure modelling; there is a Greek spirit in it, but no mere repetition of Classic style. As a contrast to this, we may notice the "Sleep" of Mr. G. H. Saul, also a nude figure, but in this case thoroughly realistic; not a typical or ideal representation of sleep, but a copy of a sleeping woman, or a woman professing to be asleep, for in fact she does not seem so, there is too much about it of the model posed for the occasion: half-seated, but reclining with her cheek on her hand on the back of the couch. This is in many respects a fine specimen of life-size figure modelling, and we hold that the human figure is well worth reproduction on this scale merely for its own innate beauty of line and expression, when effectively posed, as this is: still, it is impossible not to feel how prosaic is this work in comparison with the last-mentioned. Signor Torelli's child figure, "La Vergognosetta" (the little bashful one), is a charmingly modelled and finished work in marble, embodying a very pretty and characteristic representation of childish attitude and manner: the little girl is holding up her dress to her face, and half-coquettishly hiding behind it, the face is very expressive of the feeling intended to be conveyed, the limbs are beautifully modelled. We cannot help thinking, however, that we have seen this work before in London, at one of the International Exhibitions; if not, it was something with a remarkably similar *motif* and action.

Among the row of busts which line the wall of the sculpture-gallery are some that are marked by great force and originality, none more so than the bronze bust of Mr. Tadema, by a young sculptor, Mr. Amendola, whose name is new to us. The likeness seems to us to have been slightly idealised with an intention of giving to it a Roman aspect happily in keeping with the associations connected with the name of its subject; the portions of dress that are shown suggest Roman costume; the head is treated with great power, possibly with a certain exaggeration of the overhanging brow; it is sufficiently a likeness, but suggests the idea that the aim has been, if one may say so, to show what Mr. Tadema ought to look like if judged from his pictures, rather than to produce a precisely realistic portrait. There is a touch of eccentricity about this, but still it is a powerful thing that one cannot pass without stopping to see what it is. The bust of Mrs. Tadema by the same artist we do not like so much; the mouth is parted in a smile, and the teeth shown; the effect of such a momentary facial expression stereotyped in a bust is not altogether happy. The bust of Mr. Poynter, by M. Dalou, may be mentioned after this, as another specimen of portraiture of a painter by a sculptor: this also seems to aim at being an idealised head to a certain extent, in pose and expression at least; there is great energy and individuality in it: the companion portrait of the painter's wife, also by M. Dalou, is very successful in rendering with great delicacy and spirit a countenance of great delicacy and spirit a countenance of marked but refined character; this is in every way a completely successful portrait bust, equally excellent as a likeness and as a work of art. Mr. Lawson's bust of Mr. Pettie adds another to the interesting list of painters' portraits by sculptors: we cannot say we ever saw Mr. Pettie look as melancholy as he does here, but the expression may be true, of course; the likeness otherwise seems a very good one; but on the whole we prefer Mr. Lawson's bust of Mr. Howell near it, the more interesting as representing a head of strongly-marked character of a kind not often aimed at in sculpture: it is certainly a marked exception to the kind of thing that is commonly called a portrait of a gentleman, and which often looks as if it might be any one. Mr. Onslow Ford's bust of Mr. Herkomer makes another of the painter-busts: we hope we shall have all our painters soon "in the round," and a very interesting collection it would make to exhibit together; we cannot, however, very much admire this last-named specimen, which strikes us as theatrical in character. In one corner of the room a life-size study of a female head and the torso, under the title, "Lost Paradise," by our veteran sculptor, Mr. Bell, should be looked at; it is hidden away rather unfortunately among a row of busts; the figure is cut off rather awkwardly just above the hips; we heard it called "a woman in a waistcoat," which is rather the effect that the line where it is cut off produces; but this says nothing against the modelling, which is very fine: one does not often see the soft and yielding look of the female form so well conveyed in sculpture as in this figure, with the arms crossed over the beautiful full bosom; the head is turned up with a sad longing expression in keeping with the title. Among the smaller works on stands in the sculpture-gallery is a very pleasing model of a seated figure sent in competition for the Rowland Hill statue by Mr. E. R. Mullins; the attitude is realistic, easy, and natural, and it comes as near being sculpturesque in style as perhaps can well be managed with a figure of rather unpicturesque type clad in every-day costume. Mr. Roche's group, called "Return from the Plough," a small study in bronze of a man with a couple of cart-horses, has a great deal of merit.

In the vestibule the two most noteworthy works are bas-reliefs; at least, M. Dalou's large decorative panel is called a "bas-relief," though we should have said "alto-relief" described it more properly, and the distinction is of importance, as the conditions in the two methods of modelling groups on a ground are really so very different. This is a large circular panel, containing a Satyr and Bacchante group, we suppose it would be called, evidently intended for the front of a building, and modelled in a large and rough style to allow for distance, so that the conditions under which it is ultimately to be seen must be taken into account in judging of it. There is no very great interest in the subject, which seems to represent merely an already drunken Bacchante, lying on the ground, and getting more juice of the grape squeezed over her head by the style of beings who in Rubens's pictures usually occupy themselves in that kind of way (we can imagine the female muttering, after the manner of the old Scottish lady in the story, "Not a drap mair, neither cauld nor het"); in short, the thing must be judged merely as a method of giving sculpturesque expression to some part of a building, in which light we have no doubt it would be very successful and very effective; the manner in which the form of the recumbent female is made to follow the circular outline of the panel, without appearing forced or unnatural, is very good. The other work we referred to is a bronze shield, also by a French artist, M. Ladeuil, adorned with bas-reliefs (really in low relief) illustrating the Pilgrim's Progress; the centre shows the celebrated combat of Christian with Apollyon, the margin various scenes from Bunyan's allegory; the work is characterised by great force and spirit, and is completely in keeping with the style of the material and the kind of execution to which it is best suited; it is hung rather out of the way, for which reason we the rather call attention to it, as it should not be passed over. Few of the other works in the vestibule suggest special comment; they are portrait busts, mostly of the average type; an exception is Mr. MacCarthy's interesting and highly-finished bust of the late Recorder of London, a face of strongly-marked charac features, very interesting and sugge a sculptor.

On the whole, we look at the sculp year with much more satisfaction than done for some time back: there is more of high aim, more of ideal work and And now a word, by no means for the fi on the great injustice done to the scul the manner in which their works are se Academy. While all the rest of the r in a glow of colour and gilding from the pictures collected in them, the scul ranged in rooms which, except the cen are absolutely dingy; and the effect on coming into the cavernous sculptur after ranging the picture-galleries is ghastly, and it is no wonder that the p depressed and repelled by it, and sta little as possible. The gallery should h colour and life given to it by drape flowers, instead of being left in the d state in which it is. But an even mor drawback is the manner in which mai which ought to be seen all round a against a wall so that one view only can be obtained, and much of the as well as the possibility of fairly of them, entirely lost. We befor attention to the excellent effect w sculpture had, and the favourable e under which it was seen, in the galleri International Exhibitions at South Ken and our most strong opinion is that thing should be done at the Academy, best works in sculpture, and more those which from their character and tion demand an all-round view, should in the middle of the picture-gallery flo light, on the whole, we believe would favourable for them, and the other would be immensely improved; they brought under public notice more, seen more completely, and accompanie off by the colour of the pictures. Eve sake of the educational effect on the p sculpture should be put where their must be drawn to it, instead of being together in a cold bare room. Thi public are so neglectful of and so ill about sculpture, that at least every should be taken to induce them to attention to it, for their own good as w that of the sculptors.

TWO SCULPTORS OF THE FR RENAISSANCE.

The influence of Italy was to a lar the chief factor in the production of th sance in France. "The warriors c came back from Italy with the wonde South on their lips, and her treasures hands," and though the general con freedom from purely Mediæval ideas general cause of the whole Renais Europe, yet the sentence which we hav from Mrs. Pattison's recent work a short and even eloquent form, the cause of the Renaissance in France. of Charles VIII. and Francis I., and thi reigns themselves, became imbued with to encourage art, like the Medici at Flor to render themselves immortal by wor should commemorate their reigns. natural results of the reaction from th of life which had prevailed for so m tuaries in Europe was, at least in Franc on, so far as art was concerned, by the motives of ambition and statecraft ha the kings of France to enter on camp Italy, and there meet with the great outburst which distinguished the Ren beyond the Alps.

Of the characteristics of French a rally, whether in architecture, in or in sculpture, much may be lear Mrs. Pattison's two volumes,* which marred by strange attempts at fine is yet a book which contains a great research, a great deal of thought, and, authoress does not overwrite herself, many really eloquent and telling passag

We do not now propose, however, into a discussion of all parts of the Ren in France, but to touch upon two n stand out very prominently at this peri

* "Callicles" is the harp-player and singer in Arnold's poem, "Empedocles."

* "The Renaissance of Art in France." By M Pattison In two volumes. C. Kegan Pa London, 1879.

's Jean Goujon and Germain Pilon. They eminently the great French sculptors of naissance, but they are also pre-eminently in all the characteristics of their work, ugh their one particular art, again, was ed by the work which had been done in et, as we have said, the creations of both en are, above all, French. These artists, n, hardly be considered apart, for they all intents and purposes, contemporaries, e work of the former extends from about 1572, whilst that of Pilon covers the om 1542 to 1598. Of their lives, which is no reason to suppose were pecu- ventful, not very much is known, for orked almost wholly in subordination great architects of the time, and it e to whom the chroniclers of the day e greatest prominence. It is De l'Orme rre Lescot, rather than Goujon and Pilon, m the student of art finds mention made. is in some respects matter for admiration ese eminent artists did not endeavour to adue prominence to their work so as to out of harmony with the buildings to it generally belonged. It showed, in- real loyalty to art, a perception that and not the artist was the true master, in these days cannot be too carefully ed.

ave said that not much is known of the these sculptors; yet a tradition exists as the death of Goujon of a very striking, very accurate kind:—"During the black f St. Bartholomew, Goujon, it is said, ith the chisel in his hands: some say in rt of the Louvre; others, at the hôtel de nte de Poitou, Rue de la Harpe; others, e was re-touching a still unfinished por- the Fons Nymphium; yet all agree that the second or third day of the great re, when he thought he might with return to his work. He was on his scaf- when he was struck by a ball from a bus, and fell dead." Whether he thus d because he was by faith a Huguenot ow impossible to say: "his name does cur in the lists published of the Hugue- of their slaughtered brethren, which re- the fate of persons of infinitely smaller tance." The first time that Goujon's name ntioned as a sculptor is in the accounts of apter of Rouen Cathedral and of the n of St. Maclou, for he had executed the s for the porch and the fountain, for he received the sum of 6 livres 15 sols. , too, we find him executing marble ns in the same church, and a "*custode porter le corps de nostre Seigneur.*" Thus some of the finest and most memorable diastical architecture of France must sociated one of the principal sculptors of ench Renaissance. Work, too, by him was in the church of St. Germain l'Auxerrois aris. Then he leaves the church for the lion-house, and we find him busy at the au d'Écouen for the Constable de Mont- ncy. But more celebrated creations of on are the Caryatides of the Louvre,—work d of world-wide fame; the Fontaine des ents, the bas-reliefs from which are now e Louvre; and the work upon which his in modern days chiefly rests, the Diane seresse, which once rose out of and above sparkling waters of the fountain of the yard of the Château d'Anet, but which now s in a gallery of the Louvre, removed from scenes for which it was originally intended. s say, briefly, that it represents Diana the ess resting on the ground, grasping a bow r left hand and encircling with her right the neck of the antlered and timid stag. said that in the form of the mythological ess was portrayed the celebrated Diane de ers; but be that as it may, in the graceful nscious form of the huntress, in the small res, and the well-braided hair are visible ents of French art in their most obvious

t us now turn for a few lines to Goujon's mporary, Pilon, a man of a longer career. too, was one of the workers at St. Germain xerrois; indeed, for fifty years he lived and ed in Paris. About 1586 he was busily ged on a work such as the sovereigns of time delighted in,—the Mausoleum of ri II. and his Queen Catharine,—and upon he seems to have worked at intervals for twenty years. The bronze figures of Henri Catharine, in full court dress, are seen ling in prayer in the flat roof, and four bas-reliefs,—Charity, Good Works, Faith, and Hope,—are inserted at the four sides in the base. Then we find him busy with the monument commissioned by the Italian, Réné de Beraque, Chancellor of France, in memory of his wife Valentina Balbiani, another work of a remarkable and noticeable character. Next we have an "Image de la Vierge Marie," executed in 1586 for the Queen Mother; but in this Pilon is not considered to have shown the same fine qualities as in others of his works. Lastly, we may mention a work of a secular, indeed of a mythological kind, by which Pilon, like Goujon, is best known to art-students of the present century. This was the group of the Three Graces, executed about 1560, and which is held by many to be the flower of all his works. The Graces bore a strange burden, for, standing back to back, they supported the urn which held the heart of Henri II. Mrs. Pattison describes this group tersely and well. "They are the highly artificial rendering of a highly-artificial product. Both attitude and expression are cultivated, polished, and finished; but without truth, without simplicity, without honesty. That which Pilon saw he mastered and reproduced with consummate skill. These women were such as he presented them; but over every defect he has cast the veil of exquisite grace." Therefore, again we say that Pilon, like Goujon, though he was influenced by the current of the Renaissance, yet was thoroughly French in the character of his work. Whether it is Diana or The Graces which are represented, the type of form is not ideal; it is graceful, but it is the grace of the court, not the fine simplicity of nature. And further, as has been already hinted, if the whole careers of these two sculptors be considered, they must be thought of in connexion with the great architectural works which were created at the beginning of the sixteenth century. They were, indeed, in this respect but the two chief artists of a band of facile and energetic workmen, but it was, as we have said, a fact worthy of the fullest recognition that sculptors capable of producing the Diana and the Three Graces could retain their individuality, but yet give themselves up to the common performance of a great work like the adornment of the rich church of St. Maclou, or the splendid structure of St. Germain l'Auxerrois. The Renaissance of art in France thus had one element in common with that of Italy. We see Michelangelo painter and sculptor; we see Leonardo painter and engineer; and we see Pilon and Goujon at once capable of creating purely independent work, and also of doing that which was to form parts of a large, and so far as the particular piece of work was concerned, often an overwhelming whole. But in connexion with French sculpture, the Diane Chasseresse and the Three Graces will always keep the memory of these two sculptors fresh in the minds of students of art without going further afield to columns of pulpits and bas-reliefs of tombs, to which these versatile men could, with equal skill, devote their unerring chisels. For they showed, too, the highest qualities,—considering their time and nationality,—of artistic creation, and also equally noticeable skill in workmanship. In this, too, there is much room for thought, because apart altogether from the fact that French artists have generally been skilful workmen, there can be no doubt that the sculptors of the past were men who were, in the best sense of the word, fine technical workmen, so that not only may students of the Renaissance study the works of Goujon and Pilon with interest, but the ordinary workmen will find in them execution of the most skilful kind applied in most cases to purely decorative design.

Bostel's Brighton "Excelsior" Water-Closet.—We have a very good report from those who have adopted this closet, the invention of Mr. T. D. Bostel, of Duke-street, Brighton. The invention consists of a valveless pan, made of earthenware, with a thorough flush all round the pan (not from one point only as at present), altogether free from metal fittings, and with a simple arrangement for immediate access in case of stoppage. The advantages are apparent. The make of the pan, the absence of metal, and the complete flush, secure the carrying away of every particle of impurity. There being no mechanical action, it cannot get out of order; and if a stoppage should occur it can be put right at once. Moreover, it has the recommendation of cheapness.

BILLS OF QUANTITIES: THEIR PROPER RELATION TO CONTRACTS.*

As you are aware, the modes of measuring artificers' work vary considerably in different parts of the country; and, still more markedly, in other matters connected with contracting the practice is diversified. In some localities the quantities are taken out by a special class of men variously styled quantity-surveyors or measurers, in others by architects; in some they are taken out with the greatest minuteness, and with elaboration of detail, while in others the descriptions are general and comprehensive, and the contractor is obliged to interpret the details for himself; in some it is customary to base the contract upon the plans and specifications alone, while in others the practice so greatly differs that the contract is based upon the bill of quantities alone, and there is no such thing as a specification referred to at all. In these circumstances it is extremely probable that defects exist in many, if not in all, the methods of contracting for buildings now generally in use, and it is perhaps equally probable that each of the various methods possesses certain merits peculiar to itself, or more or less common to the others. An earnest and unprejudiced investigation into these peculiarities, then, cannot fail to be interesting and profitable; and I am sanguine enough to hope that it may lead to the conviction that the construction of a system superior to any of those now in use is not only desirable, but practicable. It is with the desire that I may be able to assist, however feebly, towards the realisation of such a consummation that I now address you.

Before proceeding to consider the various modifications which have been made, or which ought to be made, in the relative positions of building-owners—or proprietors, as I shall call them—architects, surveyors, and contractors, I wish to direct your attention very specially to the elementary truth, which we must never lose sight of, that in contracting, the normal state of matters is this: the architect, having completed his plans and specifications, occupies in relation to the contractor exactly the same position as his client the proprietor, who might, in point of fact, get in tenders himself without the further intervention of the architect. It is generally convenient for the proprietor that the architect should get in the tenders for him; but in doing so, the latter, if he has followed his employers' instructions, and represented what is wanted by sufficiently explicit plans and specifications, incurs no other responsibility. He has nothing to do with the means which the builder may employ to ascertain the value of the work. One builder may measure the work himself, another may get some one to measure it for him; one may have it minutely measured, another may do it roughly, or even guess what the value should be. All the proprietor, or his agent the architect, wishes, is an offer *bonâ fide* for the execution of the work he has illustrated and described. That, I say, is the normal relation of the parties in estimating. In these circumstances it is a matter of indifference to a proprietor or his architect what quantities of materials a contractor uses so long as he executes his work satisfactorily in accordance with the plans and specification; the onus of ascertaining how to do this at the smallest cost rests upon him, and competition with others effectually keeps him from careless or wilful exaggeration. This responsibility was in former days fully accepted by contractors, and men who understood their business thoroughly had no difficulty in tendering without the intervention of a third party; moreover, they enjoyed a distinct and legitimate advantage over others who were less competent or experienced, the tendency of which was beneficial in many ways. Now, however, so great a change has occurred in this respect that it would be extremely difficult to find in any locality contractors able or willing to tender for a work of any importance without bills of quantities. The present generation of builders has become accustomed to them, and it may be safely said that many could not give an intelligent offer without them. The normal arrangement, as I have called it, is henceforth inapplicable, and it is generally admitted that it is impossible now, even if it were thought desirable, to return to it. But, and this I wish particularly to emphasise, it by no means necessarily follows that the change in the practice of contractors

* By Mr. John Honeyman, of Glasgow. Read before the Royal Institute of British Architects on Monday evening last, as elsewhere mentioned.

should affect in the slightest degree their proper relation to proprietors. The change has been introduced primarily to facilitate the work of the contractor; but the proprietor may and ought to share in its advantages. There is evidently something radically wrong if its effect is to load the proprietor with expense and responsibility for which he has no equivalent; and it is the duty of the proprietor's architect,—or, speaking for proprietors generally, I may say it is the duty of this Institute,—to see that we do not drift into the use of a system which must produce such results. This duty is, I think, brought home to us forcibly by the following among other considerations:—First, and most directly, because it is the proprietor who has to pay for the surveyor's work. In some cases this payment is made wholly or in part through the contractor; but in every case it comes out of the proprietor's pocket, either directly or indirectly, whether he realises the fact or not. In one shape or another it is a charge which the proprietor must bear, and it is, therefore, clearly the duty of the architect, in the interest of his client, to see that the money is judiciously expended, and that a fair equivalent is obtained. A second reason why architects should now devote special attention to this subject arises out of the circumstance that in times past they have too much neglected it. They have failed to control the development of the system which, as it exists, is eminently unsatisfactory, especially for proprietors, although regarded by our profession with a complacency or indifference which seems to me, I confess, astonishing. A third reason for their more active interference is, that they may control the further development of their system, and by their united action counteract tendencies which are mischievous, confine the measurer to his legitimate province, and fully utilise his work for the benefit of the proprietor, who pays for his services. Of course, as we shall afterwards see, such a course is not incompatible with due consideration for the interests of the contractor. He is, and the quantity-surveyor ought to be, directly under the control of the architect, who is no more likely to act unjustly to the one than to the other.

Before suggesting some changes which I think would be advantageous, it will be necessary to refer at some length to the existing systems in different parts of the country, and to examine critically the special features of each which bear upon our subject. I have, therefore, arranged my remarks under the three following heads:—First, the actual state of matters; second, a critical examination of the prevailing systems; third, proposed changes.

I.—The first of these need not detain us long, because the members of the Institute already know a great deal about it. You are all familiar with the modes of measuring and contracting in some localities, and many of you have had experience in all parts of the country, from Land's End to John O'Groat's. I must, however, for future reference, state succinctly the distinctive characteristics of the systems now generally recognised. First, and by far the most extensively practised, is that to which you are accustomed here in London. In your practice the bills of quantities, or the "schedules,"—as we call them in the North, and I think the term is more convenient,—after they have been issued are practically ignored by the architect. They are, whether prepared at the instance of the contractor or under the direction of the architect, regarded simply as aids to the contractor in arriving at an intelligent idea of the cost of the works, and it is the exception when they are still further utilised as guides in fixing the cost of additions and deductions. Formerly, and not many years ago, it was usual for the contractors to choose the surveyor, and in works of considerable magnitude a second surveyor was employed by the proprietor as a check upon the other. This cumbrous and expensive system is still occasionally adhered to, but it is rapidly losing favour, and even now may be regarded as exceptional. As a rule now the architects, acting as the proprietors' agents, select surveyors in whom they have confidence, whose bills of quantities are generally accepted by contractors as a safe guide. But, strange to say, the architects have failed to recognise the fact that this interference on their part alters the relation of the schedule to the contract, and they still assert that it has no relation. It is therefore ignored: the proprietor is supposed to have nothing to do with it, and an attempt is made to free him from responsibility by a legal figment,—the arbitrary transference of the surveyor's services to the contractor at a certain point. With slight modifications, which for our present purpose it is immaterial to mention, the London system is followed throughout England and Ireland; but generally the interference of the architect is carried a step further in the provinces; he does not select a surveyor to take out the quantities, but he takes them out himself, thereby incurring serious responsibilities over and above those which his position as an architect necessarily entails; in fact, he becomes responsible both to the proprietor and the contractor,—an anomalous and dangerous position. Both in the London and the English provincial practice the surveyor is paid by the contractor, unless there is an express agreement to the contrary.

The Edinburgh system resembles that of England in many respects, the principal differences being these:—First, contractors never have anything to do with the selection of the surveyor or measurer, as he is called, who is always employed by the architect. Second, the measurer is paid by the proprietor. Third, the schedule is referred to in the contract. It is lodged with the architect with the various items cashed and summed up, and the rates contained in it regulate the cost of additions or omissions which may be ordered in the course of the work. It also is a useful guide to the architect in certifying for instalments. A somewhat similar arrangement is sometimes made in England and Ireland, but in these cases the priced schedule is generally lodged under seal, and even with this modification the practice is by no means common. There are some other shades of difference in provincial practice, but no other system is sufficiently distinctive to merit notice, except that which prevails in Glasgow and the West of Scotland. In Glasgow the schedules have superseded the specification altogether, and it may almost be said that a specification is never referred to in the contract at all. The architect selects the measurer, who, with the aid of the drawings and specification, or such substitute for that as he may get, prepares a detailed schedule of quantities. Copies of this are issued by the architect to selected tradesmen, who are invited to tender by a certain day. These schedules are returned to the architect with rates filled in at each quantity, the amount extended, and the total summed up at the end. A letter accompanies, or more generally is attached to the schedule, in which the builder offers to execute the work in accordance with the drawings, and "to the extent of the schedule" for the sum brought out by the addition of the extended prices, it being further provided that the whole of the work shall be measured after it is finished, and whether it turns out to be more or less than estimated the cost shall be determined by the rates contained in the schedule; or, where these do not exactly apply, by others strictly in proportion to them. Having considered the various offers, the architect writes on behalf of the proprietor accepting the one which is preferred, and that completes the transaction; in nine cases out of ten there is no more formal contract. When the work is in progress, and when it is finished, the measurer measures it, and prepares a final measurement, applying the schedule rates to the various items, and so bringing out the total sum to which the contractor is entitled. This document is examined by the architect, and if he is satisfied that it is compiled in accordance with the estimate, he signs it as a final certificate. Half of the cost of the original schedule and subsequent measurement is deducted from the contractor's accounts, and the proprietor pays the full amount,—that is, ostensibly the half, but in reality the whole. In the east and north of Scotland the Edinburgh system is more or less closely followed, while in the west the Glasgow system prevails; the principal difference in the smaller towns being that in most cases the architects prepare the schedules themselves instead of employing measurers.

From the foregoing brief account of the existing state of matters, it will be observed that, leaving out of account the now comparatively rare cases in which no quantities are supplied, there are three distinct modes of estimating in common use, in each of which the schedule or bill of quantities occupies a different relation to the contract. In the first the actual contract is independent of it, and its only use is to enable men to form a correct estimate of the sum for which they may prudently contract. In the second the schedule is supplementary to the contract; it is s appendix regulating the modification contract in certain contingencies, a supplying the architect with informatic is very useful to him during the progres work. In the third the schedule is the c to all intents and purposes. Now, s three modes of estimating have been in many years in the largest centres of po we may reasonably expect by caref sideration of their working to obta useful lessons, and this none the less s we may be compelled to regard the state of matters as upon the whole factory,—the existing diversity itself, in unsatisfactory; but passing from this now take up the second part of my subj

II.—Examine critically the distinctive teristics of the three systems just de First, then, let us criticise the system, with its modifications as p generally throughout England and Not many years ago, before it was co to supply quantities, the London procedure was theoretically right, thoug what inconvenient for contractors; th tect showed and described exactly w wanted, and left the contractor to find any means he thought proper what th would cost. The issuing of the quant the proprietor or his agents, however, fundamental difference. One good remains, namely, this,—that if no cha made after the contract is entered into, prietor knows exactly before the work menced what he will have to pay for i feature, however, is not peculiar to the Before it became customary to supply ties, contracts were equally definite, would be rash to conclude that they w favourable for the proprietor; on the c the customary allowance for contingen now probably been increased, and in mo the definiteness is only obtained at an gant cost; and I say so, although I means regard it as a thing of little conse Now I fear you will consider me to be gant when I declare,—as I am constr do,—that I have failed to discover else about the London system and pec it which merits commendation. Nor is satisfactory state of matters to be wond because you have made the radical mist adhering nominally to a principle whic tically you ignore, while you have introduced a practice which, if followed legitimate issues, is antagonistic to it; have thus insensibly drifted into a false Hence naturally the confusion as to the responsibilities of parties and the inconsis and contradictions of legal opinion subject. The root of the evil,—and many branches,—seems to be the illegic I think, illegal, repudiation of the resp ties necessarily associated with the supplying quantities. It is clear that lc and in equity the party estimating, not any voice in the selection of a survey having no means of testing the accuracy documents given to him for his guidance proprietor through his agent the ar ought to have recourse against the propr he can prove that he has been eith intentionally or deliberately misled. T deny, and this denial leads to many obj able consequences. Traditional usag prejudices bind you to the old theory it is the contractor's look-out to se the quantities are accurate, although know perfectly well that in ordinary c stances it would be absurd to expect hin anything of the kind, and that, in point o he takes the accuracy of the quantit granted, either because he has faith in faith in the surveyor, or perhaps because faith in the chapter of accidents, and have a chance of contracting unless he a what you give him for his guidance. As resort, you take refuge in this expedient declare that you are not, or that you are be held to be, responsible; and you roll t sponsibility over upon the surveyor, and t contractor to pursue him if he has any Now, it is quite right that the surveyor be responsible for the accuracy of his wor not to the contractor; for observe the n result of such an arrangement, the prepa of the bills of quantities and all respons connected therewith is virtually handed o men whose direct interest is to victimise client to the greatest possible extent. T

it broadly; but that is necessary for tion,—it is still literally true. You will erstand me to impugn the honesty of surveyors as a profession. Far from it. my own experience has led me to form highest opinion of their probity; but I le to bring out clearly the actual relation parties and the consequent results. The and the contractor alone are benefited uantities being excessive. Every penny arily added to the contract price by full ments is a direct gain to both. The or is not even deterred from taking full re of such errors by the fear of losing ract, because he knows that his fellow- have all been supplied with the same s; while the surveyor, being held to be ant of the contractor, paid by and ble to him, has obviously most powerful nts to keep on the safe side with the ments, to the direct prejudice of the r, who has absolutely no check upon is, gentlemen, is the position in which ly you are quite content to leave your It appears to me that your interference contractor has either gone too far or nough. In the old-fashioned system of ag, the experience of offerers came into safeguard against excessive cost; but, leparted from this, abolished competi- heck on the accuracy of quantities, e the amount of the offers to turn on variety of rates, you take totally ground, and ought to be prepared for h of aspect. In the altered circum- ne or other of two things seems to be sable,—either the absolute accuracy of f quantities must be guaranteed, or some ngement must be adopted by which the of the proprietor, as well as of the con- shall be secured, in spite of inaccuracy ls of quantities. Now, the first of these res is hardly practicable, and, as far as are, you have made no attempt to face d. It is probable, indeed natural, that on system, and the Edinburgh system, not essentially different, should, upon e, work smoothly and satisfactorily. It undue burden upon the architect; the r and surveyor have, as we have just d reason to be satisfied with it; while prietor, however adversely affected, othing whatever about it, and is con- pay what his architect certifies to be e. The absence of friction in the of such a system is obviously no indi- its harmonious adjustment, and the ess of proprietors and their complete ce upon us for protection ought to ry strongly to our sense of duty, and e us to grapple with the difficulties of tion. I must not pursue the subject nder this head; but this is of the less nce, as I shall have occasion to refer to er defects and anomalies when treating dinburgh system, which is affected by vicious principle of undefined or em- sponsibility.

dinburgh system, in so far as it pro- the modification of the contract in ce with the rates in the schedule, rom the English system as generally l, but it affords little (if any) further n to the proprietor. The question of ility is more boldly dealt with, but not cessfully. The measurer expressly the schedule that its accuracy is not ed,—that is, of course, either by the r or the proprietor,—and contractors are requested to satisfy themselves on that hich is simply absurd. Practically, the rs take care to measure the work fully, contractor adds a percentage for con- es, and takes his chance of being rightly to the cost. Now you will observe that tent of this fulness and this contingency ge, the proprietor is a loser; he gets no r either. But these are small matters; o effective check on the omission of por- work which, although embraced in the , may have been inadvertently left out specification, or of works put into the by mistake. Suppose, for example, the r inadvertently doubles the number of ets in the stone foundations, the con- —executing the work to the full extent ming of the drawings,—would pocket the the double quantity of foundations with- body but himself being a bit the wiser. gain, the unfortunate proprietor alone e the loser, and his case is indeed a hard one; first he pays the measurer, then he pays for everything that is done, and he also pays for everything mentioned in the schedule, even if it has not been done,—that is, of course, assuming that no alteration has been made on the plans and specifications by order of the architect.

It may be said, indeed, that there is every likelihood that errors to the prejudice of the proprietor may be balanced by others in his favour; but granting this,—granting that the surveyor is as likely to make a mistake the one way as the other,—observe where this doctrine of compensatory errors must lead you. There is a chance of errors being made which shall balance each other, but on the other hand there is hardly any chance that two such errors as I have noted (and it is not an imaginary illustration) shall be made in one bill of quantities. It would say very little for the surveyor if they did; but even the assumption that they may does not relieve you from the difficulty, because while it is quite true that they may balance each other, there is at least an equal chance that they are both in favour of the contractor or both in favour of the proprietor. If, however, you admit, as doubtless you will, that a surveyor only makes such serious mistakes as this occasionally, then it necessarily follows that while his first mistake seriously injures one contractor, his second may as materially benefit another; but the thought that this is likely to be the case can hardly be expected to afford either compensation or comfort to the man who has suffered. A different system is required to protect the contractor in the one case and the proprietor in the other from serious wrong; it is a most unscientific procedure to relegate such a function to *chance*.

But let me illustrate another set of difficulties which the system cannot satisfactorily deal with by an actual case. In a town, which I need not name, two banking companies resolved to erect new offices. They employed the same architect, and the sites were contiguous; but in everything connected with the planning and contracting for the buildings they acted independently, so much so, indeed, that they employed different measurers. It was arranged that the wall separating the two offices should be a mutual or party-wall, but inasmuch as complete plans had to be made for each bank, the party-wall, of course, had to be shown on each set and being so shown it was in due course measured by both measurers. Now it so happened that the same contractor got the contracts for both buildings, and it never seems to have occurred to any one till the work was done, that by his contracts he had exactly twice as much for the party-wall, as he ought to have had—he had erected both buildings according to the plans and specifications, but he had erected only one party-wall, and was entitled to payment for two. The contractor refused to submit to a reduction, on the ground that he had offered to do the work for a lump sum. He also pleaded that for some other portions of the work the quantities stated in the schedule were insufficient. Finally, it was agreed that the whole work should be remeasured in accordance with the Glasgow system, under which no such difficulty could have arisen. In this case it will be observed that the final arrangement was facilitated by the architect having in his hands the priced schedules according to the Edinburgh custom.*

* The remainder in our next.

THE SURCHARGE ON THE MEMBERS OF THE METROPOLITAN BOARD OF WORKS.

What is the value of good advice? The question is one not easy to answer. What may be the cost, and even the personal cost, incurred by public men in persistently running counter to good advice, has received a very unexpected illustration within the past few days. But the reward of the good counsellor, whatever may be the practical value of his counsels, is for the most part extremely shadowy. When that advice is laid before the public, in columns, for example, like our own, the best response that is at first to be expected is—silence. Let the least slip occur,—the displacement of a figure, or even of a letter, that has escaped the lynx, but often over-taxed, eyes of that important though unknown contributor to the service of the public, the printer's reader, to say nothing of the author and of the editor,—and a perfect hailstorm of corrections, complaints, and expressions of reprobation, beats upon the letter-box. For the least error the retribution is prompt; for the most patent exposition of truth we have to wait long for any response.

Not, however, that it altogether fails to come. There is a stored-up power in good work; and sometimes, when least expected, the toil of the public writer is cheered by some gratifying proof that it has not been spent in vain. Sometimes the recognition may come from the Continent or from the Antipodes; sometimes, plainly and agreeably, from a correspondent nearer home. But generally it is only by watching the slow advance which the views long advocated by a serious writer make in public opinion, that any marks of the utility of the work are to be detected. And even then he may often not be sure how much of the good and silently fermenting counsel came from his own pen, how much from the work of fellow-labourers, unknown even to himself.

These reflections are very naturally suggested by the statement made in the morning papers to the effect that the official auditor has disallowed the large sum of 16,000*l.*, an outlay incurred by the Metropolitan Board of Works in Parliamentary costs for the promotion of their Water Supply Bill. We presume that the figures refer to the costs on the present session; as we are under the impression that the costs of the application for the two coincident and inconsistent measures applied for last year came to a much higher figure. Our readers will do us the justice to admit that a very ordinary degree of attention to the arguments which we, on more than one occasion, adduced as to these schemes, would have prevented the metropolitan councillors from incurring what proves to be such heavy personal obligation. The expression "the Board is not afraid of cost," was one on which we commented as a proof that a serious question of this nature had been approached with a light-heartedness which was not of good omen for the interests of the ratepayers. It is stated that there is no appeal. How far that may be the case we are not prepared to say. We cannot tell, at the moment, whether the members of the Board who did their utmost to prevent what the auditor has determined to be an unwarrantable outlay will be liable for their quota, or whether the whole punishment is to fall on the compact majority, who so complacently set aside the report of their own committee on the subject.

The advice of the old judge to the young one, —never to give his reason for a decision, because the decision would probably be right, but the reasons advanced wrong,—is not inapplicable in the present case. We can conceive of the propriety of the decision that an Act of Parliament should not have been applied for until some definite scheme, well considered in all its bearings, had been at least wrought out upon paper. On the 9th instant the Home Secretary received a deputation on the subject of the water supply of the metropolis, which came to complain of the arbitary powers possessed by the water companies. Sir C. Russell, who spoke first, admitted that the amount of water at present supplied was sufficient, but thought that there was much waste, which could be avoided by united action. Mr. Watherston read a memorial, stating that at least 100,000*l.* per annum might be saved in management charges by consolidating the various companies,—a statement which, considering that the total amount paid for management in 1875 was 91,443*l.*, may be called hopeful rather than accurate. Mr. Beal endeavoured to ensnare Mr. Cross into allowing it to be taken for granted that as he had agreed to receive a deputation on the subject, he meant to take it in hand; a line of argument the only effect of which, if persisted in, would be to close the doors of the Home Office against deputations in general. Mr. Cross, however, promply repudiated the insinuation. Mr. Beal further attempted to show how much saving could be effected if a property which paid 9½ per cent. in one part and 6½ per cent. in another could be compulsorily purchased at par, by money borrowed for the purpose at 4 per cent. This is a style of calculation which it must have taxed the good manners of the Home Secretary not to cut short. It is equally relevant to remark that if the Fundholder could be paid off at an arbitrary price say at 60*l.* for 100*l.* Consols, a very large sum might be saved to the nation. In fact, the art of reckoning without the host was carried to an heroic extent by the deputation. But Mr. Cross pertinently remarked,—"You have not supplied me with any figures showing how this can be

accomplished. Parliament has granted powers to certain companies, who have laid out enormous sums of money on the faith of those powers Parliament has never interfered with such powers, except in the way of enacting Bills to carry out arrangements which had been made As to the capital of the companies, it might be easy to borrow the money cheaper; but the terms which the companies are inclined to accept must, in the first instance, be considered."

The Home Secretary has here at once put his finger on the blot of those ill-digested schemes. the hollowness and futility of which we have all along been most anxious to point out. We have done so chiefly for the reason that nothing can so much tend to arrest water-supply reform, or gas-supply reform, as predatory attempts to filch the profits of the companies. Much has been done of late with regard to the supply of gas and of water, both in the way of securing improved quality by scientific inspection, and in the way of placing a limit on the profits of the companies. Much remains to be done. That is a cause which will always receive our most hearty support. But it is a cause which is damaged and paralysed by what we must call predatory proposals. Time is wasted, attention is misdirected, and real sanitary work is stopped, by proposals which, if they do not savour of job, have at least a highly utopian aspect. Such is the meaning of the reply of the Home Secretary. Such, as Mr. Cross has now not for the first time intimated, would be the feeling of Parliament. It is not, therefore, on the ground of any technical mistake on the part of the Metropolitan Board of Works, such as the applying for a Bill (which is the regular and proper course for a public body to take), instead of asking for a resolution of the House of Commons (which it is not within the competence of a public body, so far as its machinery is designed, or so far as precedent is to be relied on, to do), that any disallowance of their expenditure can, in our opinion, be for a moment justified. It is on the more just and practical ground that a very large sum of money had been laid out without taking sufficient preliminary care to ascertain whether there was the slightest chance of its being laid out effectively. For a third time the Legislature was asked to enact a new law, which, as it was sketched, would have been a Bill of pains and penalties, without any scheme being even suggested by which that law was to be carried out. In the former Bill provision was made for paying the companies for their property in "water stock," if they would accept it. If they would not accept it, no provision at all was made. Thus the whole thing hung in the air, like a bottle supported on a needle. It might have been at once made plain by consulting any man of Parliamentary experience that neither House of Parliament either would, could, or ought to pass such a vague and inconclusive measure. It is here, in the imperfect and impossible nature of the schemes proposed, that the responsibility of the proposers lay; and many persons have expressed satisfaction that a somewhat stern check should have been placed on such a mode of dealing with public money.

We only hope that between surcharge on the one hand, and deputations that propose to add two and two together to make six on the other hand, the cause of sanitary improvement will not suffer. The most mischievous opponents of the reform we have long advocated are the proposers of wild and impracticable schemes. In all cases of compulsory purchase of gas or water works, from 20 to 30 per cent. has to be added to the par value of the works as compensation for compulsory purchase. It is certain that Parliament will not alter its mode of proceeding in this respect. Persons who advocate schemes of purchase and consolidation either are, or are not, aware of this fact. If they are, their proceedings deserve to be stigmatised in terms which any honest man may apply for himself. If they are not, the fact betrays a hair-brained rashness in meddling with the property of other people which is hardly more excusable than the more direct attack upon their pockets.

Their Royal Highnesses the Prince and Princess of Wales, accompanied by her Royal Highness Princess Mary, Duchess of Teck, have promised to open the new buildings at the Alexandra Orphanage, Hornsey-rise (Junior branch of the Orphan Working School), on Midsummer-day next.

THE CONDITION OF THE ART OF LINE ENGRAVING.

THE FINE ARTS SOCIETY.

At the ordinary meeting of the Society for the Fine Arts, on the 15th inst., Mr. E. P. Loftus Brock, F.S.A., read a paper "On the Uses of a Collection of Ancient Engravings."

Mr. George Godwin, who occupied the chair, in introducing the lecturer, said,—Our business this evening is to hear from Mr. Loftus Brock a paper on the uses of a collection of old engravings. Mr. Brock, knowing the great interest with which I have long viewed the subject, and sharing the regret which I have long felt for the present condition of the art of line-engraving in this country, has asked me to say some dozen sentences preliminary to his lecture. The neglect of the art of line-engraving is indeed singularly great,—so much so, that there are now very few eminent professors of the art in England. We have lately heard much of the revival of etching, and we have many admirable professors of that beautiful art amongst us, notably Mr. Seymour Haden, whose works are all exceedingly fine, and many of them, I have no doubt, well known to you. But etching is a very different thing from line-engraving. Etching is a mode of production which is itself the means of showing the artist's own drawing, but it is not the best means of reproduction, of setting before thousands the work of another,—of enabling thousands and hundreds of thousands to enjoy that which, but for proper reproductions, would have been known to but a few. For that purpose there is, I venture to say, no art equal to that of line-engraving,—that art which has made Michelangelo, Raffaelle, and Leonardo da Vinci household words to millions who have never seen any of the works of those masters, and the great majority of whom never will see them. At the present moment, in England, mezzotint, stipple, woodcuts, lithography, photography, the autotype, the photogravure, and many other rapid and cheap means of reproduction, serve to satisfy the demands of the public, and the result is that publishers of engravings,—who are now very few in England,—are afraid to undertake the cost of such works of line-engraving as those I have mentioned. And in this connexion I think it will be admitted that but for the persistency of the Art-Union of London in producing and issuing a large engraving (and sometimes more than one) in each year, the art of line-engraving would positively have died out in England. The *Art Journal* has, I am bound to say, done a great deal in that respect (and in other matters too), which has not been so fully recognised as it might and should have been; but the engravings of the *Art Journal* have necessarily been less important than those to which I have alluded. The cost of line-engraving is very considerable,—many of you will be surprised to learn how considerable. I can give you an instance,—that of "The Meeting of Wellington and Blucher," admirably engraved for the Art-Union of London by Mr. Lumb Stocks (whom I am very glad to see present this evening), after Maclise's picture in the Royal Gallery at the Houses of Parliament. The engraving of that work, and the right of engraving, cost 3,600*l.*, and the paper for and the printing of the copies cost another 3,000*l.*, so that, to produce all the copies issued, 6,600*l.* were spent. Very nearly as much was spent on the companion engraving of the "Death of Nelson," executed by Mr. Sharpe. Such being the case, fine impressions of good engravings are necessarily costly when produced in the ordinary way of commerce; but then it should be remembered that the possession of a fine engraving is the next best thing to the possession of the actual work of which it is a translation,—and that this fact is now being recognised will be known to those who have watched recent sales, and noted the high prices obtained for good engravings. What is desired is to lead the public to appreciate the beauties of this art of line-engraving, so that there may be such a demand for specimens of the art as may induce publishers to give commissions to engravers.

Mr. Brock then read his paper, the first part of which we print elsewhere.

Mr. Lumb Stocks, R.A., said he should esteem it a great privilege to take that opportunity of thanking Mr. Brock for his very interesting paper, and for the able way in which he had set forth the uses of engravings. Some of the ways in which engravings might be of use had never, so far as he (Mr. Stocks) was aware, occurred to his mind,—probably because so fully engaged in the actual work of eng that he had little time to think of the ma varied uses to which the art could be put graving was an invaluable assistant in thi of education. The man of taste was attracted by the beauty of the art than practical value, but to the latter quali antiquary was much indebted for the in tion it gave him as to buildings, &c., whi been swept away.

The Chairman said he was quite sure t present would agree with Mr. Lumb Sto that expression of thanks to Mr. Brock interesting paper, illustrated as it was large collection of engravings hanging walls. He (the chairman) was exceeding that Mr. Brock had referred to the very r able collection of views of old London, b ing to Mr. Crace, and now on view at Kensington, because he feared it was not as it should be, or it would be attended b persons than had hitherto visited it. He that arrangements could be made where Brock's collection then in that room remain there for a few days, in order th members of the Society who were una attend that evening might have the oppo of seeing it. The trouble that had been by Mr. Brock in removing so many engu from their mounts, and in hanging them that large room, deserved to be compe for in some measure by the collection be spected by as many persons as possible. seven years ago it was his (the chair privilege to address a few observations society upon the condition of the dram those remarks led to a movement, whi still going on, and which, he hoped, before long result in giving to the at any rate one theatre not whol trolled by the prevailing popular tas one where the highest works of dr art could be represented. It would, quite sure, be a great reward to Mr. Bro like manner what had been said that should direct general attention to the b line-engraving in the highest style of t and so provide that public opinion an desire for the purchase of line-engravings would enable publishers to spend money engravings with something like a fair p of return upon the outlay. If any oth what was now being done in England t trate for posterity the part which we had and which we were continuing to bear world's history, he was afraid we shou to admit that very little of a high cla being produced. He begged leave to secon warmly, the vote of thanks to Mr. Loftus

The motion having been carried by ac tion,

Mr. James Edmeston moved a vote of to the Chairman for presiding, and remarks with which he had prefaced Mr. lecture. With the permission of the Soc British Artists, who were the present t of the Gallery, and who were alway courteous and kind, he had no doubt th Brock's collection of engravings could re view for a few days.

THE PARIS SALON OF 1879.

SOME HISTORICAL AND OTHER PICTURES.

The immense number of worthless wor only serves to crush down, and rende difficult of discovery, the too few praise pictures scattered here and there,— produced in the true spirit, and cont forcibly, as far as they are able, with the base attempts which the committee have lessly accepted.

In historical pictures no *Salon* is ever de canvasses large, colossal, and of ordina all showing an effort to excel in a direc which the French and Belgians perhaps consider that they have no rivals; and h see historical subjects taken from the period of the Egyptians and the more days of the Gauls, down to almost yes One not uninteresting work, by a Belgian M. Delpérée, represents one of the ma seemly scenes which as late as 1875 oc between the lay and ecclesiastical author Liège. In the first room on entering one with a subject treated as only the Franc capable of handling such subjects, He Larochejaquelin and his brave band of Bretons, an incident of the terrible strug

alists and the Revolutionaries of the end st century; elsewhere we find another well-painted incident of the Vendean picture by M. Boutigny. Cardinal n, with some incident of his typical life, is e to be found in a French exhibition; de at his house, doubtless the Palais , better known to the world as the Palais Cardinal Richelieu we again meet in the sal of Mirame," also doubtless at the oyal.

ne, after speaking of Cardinal Richelieu, ed to call a religious subject an histo- ident? If so, we have, by M. Duez, a ely-painted and finely-conceived picture, compartments, representing three inci- the life of St. Cuthbert. As a sharp which their position demands, we have nt figure of Mme. Tallien, the favourite eon I., in the attractive costume of "the y," which at this moment in Paris is becoming the fashion. Far away in room we see again, but painted in a not table style, Mme. Tallien with her boon ns, Mme. Recamier and Mme. de Beau- first presenting herself in public, in the the classic past, a costume which so ully set off, if not entirely displayed, the figure of the gay Revolutionary; but to meet in this picture with any of ce which Debucourt threw into his tations of that period.

times are no less recalled, though *ançaise*, in M. Ollivié's "Oath of Brutus Body of the unfortunate Lucretia." gman has again presented to the public om Egyptian life, the "Procession of the s," painted with that firmness and care pupil has so successfully learnt from er, Gérôme. Although the American broad,—and their number is legion just e at present divided between the schools and Munich, there is a decided pre- shown on the part of the majority in Paris, and, to judge by the exceedingly e figure that American painters in this don and in the Royal Academy are now they have every reason to rest com- d their belief that the success which so follows them in many pursuits will em in the slow career of art.

aking of America it is a pity that some painter could not have taken, instead rmand-Dumaresq, the subject of the of Gen. Burgoyne at Saratoga (so in- y spelt *Saragota* by the artist), and dly serves to remind one of the entire any of the sterling merit that old Colonel showed in his pictures of that memor- ggle. A far more praiseworthy repre- of an historical incident is the "Episode Revolt of the Finland Peasants" at the he sixteenth century,—a well-painted y a Finnish artist, M. Edelfelt.

brother of Gaston Melingue, to whose we referred last week, Lucien , whose "Death of Robespierre" uch interest two years since, we have a fine subject finely treated, "Étienne nd the Dauphin," one of those turbulent ge incidents in the history of Paris rough so many centuries have always sovereign under control.

lingue's successful competitor for the Salon of 1877, Jean Paul Laurens, the of the "Death of Marceau," so familiar the world, through woodcuts, photo- , and engravings innumerable, we have a fourteenth-century incident from the history of the Albigensian Inquisition.

Flight into Egypt," by M. Merson, is, novel and agreeable presentation of a subject,—the Virgin and Child reposing nbraces of the huge stone sphinx while sleeps by the fading fire, the white which curls gently upwards to a deep us Eastern sky dotted with twinkling A contrast to this peaceful scene is the of Kramn," an incident of Gaulish history, y treated. M. Vannise's simple canvas, ting Louis XI. and his familiar, Olivier , of Scott reputation, is no unsuccess- npt to recal those distant days; as also 's (a South American) "Philip II. g a Flemish Deputation in his Cell at astery of Saint Laurence." M. Roubadi's t," or rather the famous duel scene the Prince and Laertes, is a most work, ill hung; the action of Hamlet in y the throat the king as he pours, accord- ne reading of the words, the poison down his throat, is excellent, and a deviation from the traditional action, which Retzch has immortalised, of the king being stabbed by Hamlet. M. Moreau de Tours presents us with a strange scene in an incident from that most strange of all centuries, the eighteenth, the crucifixion of a female fanatic, attended in her delirium by a number of persons dressed in the costume of Louis XVI.'s reign.

An equally-expressive ecstatic is the "Saint Jerome" by a pupil of Cabanel, M. Larrue. We meet with this familiar ascetic in another picture (by M. Carteron), which, if the saint is not painted with the splendour of Leighton's "Saint Jerome," is more intellectually employed, surrounded by a band of earnest followers listening to his inspired teachings. To the literary student, such a picture as this is even more valuable than to the ecclesiastic, showing as it does the enthusiasm,—as in the days of the Renaissance,—that the men of those early centuries displayed in studying the written words of the earlier moralists.

An incident in the revolution of 1793 is given us by M. Flameng, a pupil of Cabanel,—an incident admirably painted, but which reminds one too forcibly of M. Melingue's "Death of Robespierre" of two years back; the subject is the call to judgment and execution of the Girondins from their dinner-table, lighted by the large prison-window of the Conciergerie,—the same prison in which the unfortunate Marie Antoinette passed the last unhappy hours of her life.

In our hasty lines announcing the opening of the *Salon*, in last week's *Builder*, we omitted mention of Bastien Lepage's larger picture, which, indeed, in the crowd of the opening day we had not seen.

The October scene by this painter, in its simple beauty, represents the most complete result of modern scientific artistic observation: Never have the peasantry of any country been more truthfully and yet so poetically represented; not even in the works of Bréton, Mason, or Walker have we ever seen the simple, unaffected beauty of healthy labour more successfully portrayed, and never have the humblest objects in nature been invested with a more perfect atmospheric glory. The cool, illuminating October light that reveals the details of this unassuming scene we can only compare with the wonders shown by the mystery of the microscope.

In M. Luigi Loir's "Scene during the Inundations at Bercy," also, we find the work of an artist whose manner of representing out-door nature, as it appears to so many of us, shows, if we take the trouble to compare his large picture with the many out-door canvasses surrounding his, how much nearer his picture approaches nature, and how much happier is his newer mode of conveying his impressions than the methods adopted by his immediate predecessors to produce their more conventional pictures.

If the painters of such pictures as those by M. Bastien Lepage and M. Luigi Loir have arrived at their present happy mode of painting by gradual and well-defined scientific processes, and should their methods be capable, like other scientific inquiries, of comparatively easy communication, the art-students of other countries will, in larger numbers than ever, seek Paris as their field for at least instruction how to paint; for here in Paris it must be admitted that, notwithstanding the glaring faults of vulgar taste that present themselves in more directions than in any other city in the world, the mere art of the painter, the use of colours and of brushes, whether on the canvas, the panel, or the wall, is best understood.

Paris.

"Westmacotta."—This is the name of a material suitable for external and internal decoration in lieu of ordinary plaster of Paris, or perhaps we ought rather to call it a process for rendering casts impervious to water throughout the mass and unaffectable by an impure atmosphere. When required to be cleansed, water, soap, and a brush may be used. Some specimens can be seen at Brucciani's *Galleria*, in Russell-street, Covent-garden; also at the Royal Academy Exhibition. Mr. Miller's "Pleasures of Peace" and "Miseries of War," in relief, have been subjected to the process for internal purposes, which is of a less complete character than that applied in out-door decorations.

THE LIABILITY TO BUILDERS OF HOLDERS OF A FUND INTENDED FOR THE ERECTION OF ECCLESIASTICAL OR OTHER BUILDINGS.

It is always a matter of regret when disputes arise in connexion with the erection of churches or similar buildings, but, unfortunately, such disagreements, as a matter of fact, too frequently occur. Very often the persons who have to manage these affairs do not possess the highest business capacity; very often capable men who may have to do with the matters cannot give to them that time and attention which they would do to affairs of their own, and very often not a little obstinacy and bad feeling are displayed, which would be quite astounding did we not know how continually they are affecting the daily affairs of life. We can indeed recall several disputes connected with the erection of churches which ought never really to have occurred.

It is, perhaps, well, therefore, that any legal rights and liabilities which are clearly ascertained from time to time in connexion with this subject should not be passed over without a word of comment. For this reason we may dwell for a short space upon a case of some importance which must now be considered as settled law. The decision to which we refer is that of Williams *v.* Hathaway, 6 L. R., Ch. D., 544. It arose in connexion with the works, so well known to many of our readers, of the Midland Railway Company, in the parish of St. Pancras. By setting out the facts very briefly, we shall lay the foundation for any subsequent comments. By the Parliamentary powers which the Midland Railway Company obtained in 1863 they were authorised to take the Church of St. Luke, King's-cross, and for so doing the sum of 12,500*l.* was to be paid by the company to the vicar of St. Pancras and the incumbent of St. Luke's, to be applied by them with the sanction of the Ecclesiastical Commissioners in providing a new site and church for St. Luke's district, with power to apply any surplus for parsonage-house. Passing on, we find a site for the proposed new church was granted by the Dean and Chapter of Christchurch, and in July, 1868, an agreement was entered into between Mr. Williams, a builder, and Dr. Champneys, the then vicar of St. Pancras, and Mr. Andrews, the incumbent of St. Luke's, in whom the building fund was vested. Mr. Williams agreed by this contract to erect the proposed new church for the sum of 9,391*l.*, to be paid by Champneys and Andrews, "or the person or persons for the time being entitled to apply the said fund," in accordance with plans and specifications prepared by the architect. There was also a clause in which it was stipulated that the above sum should be paid in the manner provided by the specification. By this specification the architect had power to order alterations and additional works, the price of which was to be added to the contract at the conclusion of the work. Payments were to be made monthly on the architect's certificate, and payments for additional works and alterations were to be made "on completion of the entire works, after the balance had been ascertained by the architect." There was also in this agreement a covenant deserving of notice, that Champneys and Andrews agreed with Williams, "to the intent (so far as they lawfully could or might bind such person or persons, their executors, &c.), as aforesaid, but not so as to bind either of themselves, or his heirs, executors, or administrators, after he or they should have ceased to be entitled to apply the said fund. Endorsed on this agreement was another, in the same terms and of the same date, by which Williams agreed to erect a parsonage-house for 2,615*l.* Thus the amount to be expended on the church and house came together to 12,006*l.*, which constituted the available balance of the original sum of 12,500*l.*, after payment of the costs of obtaining the Act carving out the new district, and authorising the erection of the new buildings.

Now, one of the first points which strikes an observer in regard to this contract is its incautious character, so far as the builder was concerned. For here were two agreements to erect two structures, with power to the architect to order additional works and alterations to be paid for at the conclusion of the work, yet the original price of the two buildings was sufficient to exhaust the fund which the builder knew, or

should have known, was available to defray the cost of the work. To our minds, such an agreement was, so far as the builder's interests were concerned, most foolhardy; for, to the outward eye, he placed himself under an obligation to do additional work for which it was, on the face of it, possible he might never be paid. And this observation brings us to the gist of the case, for when the buildings were finished the builder had a claim of 1,500*l.* odd against the other parties to the contract. So that it had happened, as one might have expected. Here was 1,500*l.* due,—but from whom? The building fund was exhausted. Mr. Andrews was wholly unable to pay the sum, even if liable; Dr. Champneys was dead; and so Mr. Williams, by way of a *dernier ressort*, brought an action on the covenant against Dr. Champneys's, executors, which was decided more than ten years after the agreement was entered into, with the result that the builder was held not entitled to receive the sum for which he sued. The Master of the Rolls stated in his judgment that the specification gave, as he was sorry to say many specifications did, power to the architect to order alterations and additions. It seems to us that such a power if reasonably exercised is perfectly wholesome, especially in connexion with churches where private gifts may often render a change in the original plan desirable. The absurdity of such cases is that builders in their eagerness for business bind themselves to do things in a way in which no prudent man should do. The actual grounds of decision were however twofold. The first was that Dr. Champneys and Mr. Andrews had bound themselves only to be liable for the period during which they were respectively vicar and incumbent; and next that in any case they had agreed that their liability should extend only to the amount of the building fund, and that consequently they were in no sense personally liable for any sum over and above the amount of that fund. Now in this case this restriction was perfectly good, but in some cases it has not succeeded. Thus, in a case decided in 1813, Furnival *v.* Coombes, the defendants were churchwardens and overseers, who could only make a personal covenant, and they sought in one clause to limit their personal liability altogether, and next to restrict it to the amount of the parish funds; but the judges decided that to covenant personally and then deny their personal liability was repugnant, and therefore that whilst they were churchwardens they were bound to pay the builder who sued them. But in the present case it was clear that the covenant was only to bind the fund, and that there was no personal liability at all; so that even had Dr. Champneys been alive and been vicar, and the fund had been exhausted, yet he would not have been liable personally for any sums over and above the amount of the building fund. The result therefore of the case, together with the older one to which we have referred, is, that when persons are the holders of any sum obtained by gift or otherwise for the erection of churches or similar buildings, they must be careful to have the contract with the builder framed so as not only to limit their liability to the time during which the fund may exist, but also to make it plain that they bind, not themselves, but the fund. If this is done and is plainly understood by all parties to the contract, a great deal of annoyance and expense will very likely be saved. On the other hand, this same case seems to show with equal plainness that every prudent builder will in such cases either give himself a considerable margin within the actual amount of the fund, or else take care not to allow any clause giving power to the architect to make alterations,—at any rate, without securing some guarantee that they will be paid for. In the St. Pancras case it seems obvious that both parties were somewhat in fault; the builder was most imprudent to bind himself by such conditions as we have mentioned, and the architect and those for whom he acted were rash and by no means justified in ordering alterations without being sure that they could be paid for. In fact, it is clear they should have seen the church more or less completed before entering into a contract for the parsonage-house at all, if there was the smallest doubt or possibility as to the sufficiency of the fund to pay for both church and house as originally planned. So that amidst this bungling the lawyer who drew up the agreement for the clerical parties can alone view his work with the pleased composure of success.

THE WIVES OF THE DURHAM MINERS.

The wives of the Durham miners have come forward to express their own views as to the strike. They are in favour of its continuance. They encourage their husbands and sons to hold out. They are ready to take their share of the hardship. Nor is this share by any means the least. Hard as it is to work for little, it is yet harder to stay at home waiting for the food that does not come. The voices, then, of the Durham women are entitled to a most respectful hearing. They come, there can be no doubt, from the heart; they express the honest feelings of the utterer. But is it quite so sure that the miners' wives fully understand the case? They quite understand the difference between twenty-five shillings a week and twenty-one shillings and three-pence; but do they quite understand how it has come to pass that the twenty-one shillings and three-pence is all that the masters say that they can afford? And (which is the main point) do they understand how much of the reason for the reduction has been furnished by the miners themselves? We do not think that they do. Their husbands have certainly not told them, for they cannot themselves be fully aware. Let them listen to the true story.

In the years 1865, 1866, and 1867 every man employed in an English colliery, taking one with another, raised a little more than a ton of coal a day. In the year he raised 315 tons, which comes to just 21 cwt. per man per day, taking 300 working-days in the year. This rate of work was kept up for three years, the work done per man in 1866 and 1867 being rather more than in 1865.

Trade, however, was brisk. Year after year more coal was raised, and more was sold. In 1868, 26,000 more men were engaged in the collieries than there were in 1865. In 1871, there were 50,000 more colliers at work than in 1865. People began to inquire how long the coalfields would hold out. Alarm was raised, and the price of coal ran up, till it fetched, at the pit's mouth, more than 15s. a ton.

The miners had their share in the rise of price. From 1871 to 1874, as they now tell us, wages rose 50 per cent. That is to say, that the miner who, in 1871, earned 4s. a day, in 1874 earned 6s. a day.

He earned half as much again for himself. But how was it for his employer? The miner was not asked to work harder. He was paid more for his time, and his part of the bargain should have been to do at least as much work as he did before. Was that the case? On the contrary, from 1870, when he did most work, to 1876, the miner turned out less coal for his day's wages, year after year. In 1868, as we have seen, he raised 21 cwt. per day. In 1876 he raised less than 17 cwt. per day.

Nor was this all. He shortened the time for which he worked. This is a different thing from raising his own wages. It is burning the candle at both ends. It costs as much, very nearly, for the employer to keep his establishment open, if the men will only work fifty-two hours and a half in the week as if they were at work fifty-eight hours and a half in the week. But he will do one-tenth less work with his plant in the shorter time. All the cost of machinery, engine-power, clerks, rent, interest of money, and the like, will be increased one-tenth, and that will be equal to increasing the cost of coal by one-twentieth, or 5 per cent., at the pit's mouth.

Now, the miners say that out of the 50 per cent. increase of wages obtained from 1871 to 1874, 44½ per cent. has been reduced,—that is to say, that the 4s. man, who was advanced to 6s., is now paid 4s. 2½d., and a further reduction of 15 per cent. would bring him down to 3s. 7d., and other wages in proportion: and that, the miners say, they cannot and will not stand.

It is hard, no doubt. But is it quite the fault of the master? Coal, which sold at 15s. 7d. per ton, will now only fetch 4s. 7d. per ton at the pit's mouth. It is a question whether it can be raised for that price. That it can be raised at any considerable profit at that price no one can pretend to believe. The miner complains of his loss of less than 2d. in the shilling, as compared with times before 1871; but he forgets that he only raises 17 cwt. instead of 21 cwt. of coal a day. If wages were reduced in proportion to work, the 4s. man, instead of the 3s. 7d. now offered by the master, would only receive 3s. 3d. And even then, by refusing to work for more than nine hours, he is increasing the expenses of the colliery by 2½d. per ton at the very [illegible] He is 5d. out of 4s. to the bad himself. [illegible] has made the master, by short work and [illegible] time, 11½d. out of every 4s. to the bad. [illegible] amount of argument will get away fro[illegible] ugly fact.

The industrious and honest women [illegible] county of Durham should be told these fa[illegible] they are told them, they will perhaps [illegible] their minds. When a man comes home a[illegible] his wife, "They are cutting down my [illegible] again," let his wife say, "What work [illegible] give for the wages? You won 21 cwt. [illegible] for 4s. You now grumble at being [illegible] 3s. 7d. for winning 17 cwt. of coal. Put o[illegible] strength again,—for wife and bairns. [illegible] good measure, and then demand good pa[illegible] back to the honest labour of 1868; and [illegible] the masters do not meet you half way, [illegible] wives and mothers of England will be w[illegible] As it is, we cannot say that the blame i[illegible] one side, or that the balance of loss has b[illegible] put unjustly on the working man."

THE ST. GOTTHARD RAILWAY.

It is satisfactory to have to record th[illegible] great enterprise of the St. Gotthard [illegible] and Railway is at last in a fair way of [illegible] successfully accomplished, and that, too, in [illegible] paratively very short space of time. [illegible] German Reichstag voted the money re[illegible] for the supplementary subvention to be [illegible] Germany some time ago; and now w[illegible] there is no doubt that the Italian [illegible] ment will readily assent to the call ma[illegible] the national exchequer for the same pu[illegible] The new financial statement of the r[illegible] company has been acknowledged as sa[illegible] by the Swiss Federal Council, and the [illegible] will soon be in full swing again from Im[illegible] over Brunnen and Flüelen to Göschenen [illegible] side and from Airolo to Bellinzona [illegible] southern side of the mountain. It ap[illegible] quite recently as if a fresh hindrance [illegible] arise in the course of operations; but [illegible] expected that the tension between th[illegible] tractor, M. Favre, and the railway co-op[illegible] be smoothed over, although that gentlem[illegible] his indiscretion in sending a sort of manif[illegible] which he fully set forth his alleged grie[illegible] against the company) to the members [illegible] Italian Parliament, gave rise to much in[illegible] tion at Bern. This movement on the p[illegible] the contractor looked very much like [illegible] nœuvre, and people well remembered how [illegible] the long Gotthard crisis, the voices most [illegible] and persistently calling out for the liqui[illegible] of the company hailed from Geneva, from [illegible] the intimate circle of which M. Favre [illegible] pivot. It was hinted that the Geneva fin[illegible] in question interested in the construction [illegible] great tunnel were anxious to induce the [illegible] Parliament to withhold their sanction [illegible] new convention proposed, in order to ove[illegible] the reconstruction scheme, and thus to [illegible] upon the ruins of the old company a ne[illegible] cern more profitable to the financial gent[illegible] However, the works in the tunnel hav[illegible] been resumed, and there is every appe[illegible] that the present arrangement betwee[illegible] contractor and the railway company w[illegible] faithfully carried out.

At this point of the works, which, it is [illegible] hoped, will be the last stage before their [illegible] pletion, it will not be out of place to s[illegible] recapitulate the history of the operations i[illegible] nexion with the great work. On a f[illegible] occasion* we referred to the steps taken [illegible] Federal Assembly for ascertaining the wis[illegible] the Swiss people with regard to this mat[illegible] a popular vote. That vote emphatically [illegible] tioned the proposal of granting a subsi[illegible] wards the completion of the tunnel, thoug[illegible] very cantons which will profit most show[illegible] greatest reluctance. However, their oppo[illegible] has not affected the result, and the ente[illegible] will be carried out in accordance wit[illegible] original plans. It will be remembered th[illegible] 1870, Germany, Italy, and Switzerland sig[illegible] convention for the construction of a railway [illegible] the Alps by way of the St. Gotthard range, [illegible] a tunnel through the mountain commonly k[illegible] by that name. This convention or agree[illegible] guaranteed to the company which should u[illegible] take the work a subsidy of 3,400,000*l.*, of [illegible] 1,800,000*l.* was to be paid by Italy, Ger[illegible] and Switzerland contributing each 80[illegible]

* See *Builder* of August 3, 1878.

Swiss portion of the subsidy was not supplied by the Federal Exchequer, but by the Central Railway and the North-East Railway, the two lines principally interested and benefited by the work, and by the seven cantons through which the international railway would pass. By 1875 it became evident that the costs of construction had been considerably under-estimated, from no fault it must be admitted, of the original designers of the undertaking, but from the unexpected difficulties met with during the progress of the works. After tedious negotiations, the Commination was reluctantly come to to postpone the construction of certain branch lines, though highly important as feeders of the trunk railway. It was thought best to make certain sections at present, rather than blight the prospects of the undertaking for some considerable time to come. Moreover, the three Governments interested came generously to the relief of the struggling company. The three cantons originally parties to the agreement came to an arrangement, in pursuance of which it was stipulated that they should furnish an additional subsidy of 1,120,000*l.*, of which Switzerland was to pay 320,000*l.*, and Italy and Germany 400,000*l.* each. The share capital and the bonds issued by the company, amounting to 4,000,000*l.*, and the amount granted in subsidies by cantons, 4,520,000*l.*, the total sum expended before the work is completed will be over 9,000,000*l.* It is proposed by the Federal Council during the summer session of the Federal Assembly, last month, that the Confederation should relieve the railway companies and the thirteen cantons that share of the burden, and after much opposition the proposal was carried by a large majority, but with the proviso that a sum of 400,000*l.* was to be granted to the thirteen cantons, instead of to the company itself.

OUR ARTISANS AND MACHINERY.

MANUAL labour has undergone great changes in departments within the last half-century, and some more serious are looming, and will probably be witnessed ere the century closes. Machinery has changed the direction of labour almost every branch to which it could be profitably applied, though there are a few special branches still in which thought, sensitive touch, artistic and executive finish are deemed to be indispensable, and in connexion with which the utilisation of the unthinking machine finds no encouragement. Machinery is a pioneer if it can be kept constantly and profitably in action, but while it has a direct tendency to supply a want, it also creates other wants. It cheapens itself, it cheapens its products, and not rarely, owing to a variety of local circumstances, and some of which have hardly become apparent, machine labour multiplied over a large area reacts upon itself, and unfortunately upon its users, and the general community. It is not to be inferred that we are covertly trying to disparage the mighty results that the workman as well as the master owes to machinery, whatever be its motive power, apart from physical energy and application. As effects must be traced to causes, both lie within our purview, and must be touched upon incidentally or otherwise, as our thoughts flow. Machines are multiplied yearly, and the products results are organised and subdivided more, or branches of trade, in departments than the single craftsman of our younger days with the general executive and all-embracing mind in respect to a practical knowledge of all the subdivisions belonging to his distinctive

The workmen now, who have a taste for invention, have more book-knowledge than their predecessors, but in our large cities and towns, so far as relates to several distinct trades, our workers are but artisans in part, instead of artisans as a whole. This is a serious drawback to a class of men in a country said to be overcrowded, and from which hundreds, from one motive or another, are often obliged to emigrate to distant colonies. The English artisan, indeed, we might write the British artisan of our large towns and cities of to-day, is seriously handicapped in several branches of trade when compelled to travel through country districts, to emigrate where he will have to compete with the general workman of his own branch of trade. The indicated evil may not be one of great magnitude in the particular case alluded to, still it is an evil for the time being, and will be, until the course of events equalises all workmen in respect to wants, by putting public needs on the same footing in foreign settlements as at home. A poor consolation, perhaps, to the bread-winner, who must live, and suggestive of that homely proverb which says, "Whilst the grass grows the steed starves." We know several branches of trade in London at the present hour (and they are yearly increasing) in which the workmen are engaged from one end of the year to the other doing the most common-place operations, requiring scarcely any thought, little skill, and they are neither suggestive nor ennobling, for there is nothing to afford an impulse, save the one still beginning, never ending sameness of toil and object from morning till night. An active, contemplative artisan-mind would soon sicken over such a deadening repetition of unthinking labour. Where a craving for drink, or bad habits, does not drown recollection of self, perhaps the music-hall or the theatre at night is the consoler in the mind of the workman. If the artisan is fond of aquatics or field-sports, he has a look forward to pleasure; but, save once a week or on holidays, workmen in general have not much opportunity in our large cities for field exercise, for the ordinary summer evenings, after work and the evening meal are finished, leave but scant time to even the young and robust workman to hie away to the parks and suburbs, or for a row upon the river. Machinery, to be sure, is a lightener of labour, as well as a cheapener, and herein to some extent the artisan has a compensation if his mind is otherwise relieved by constant employment. The latter joy falls to the lot of a comparatively small percentage of our workmen.

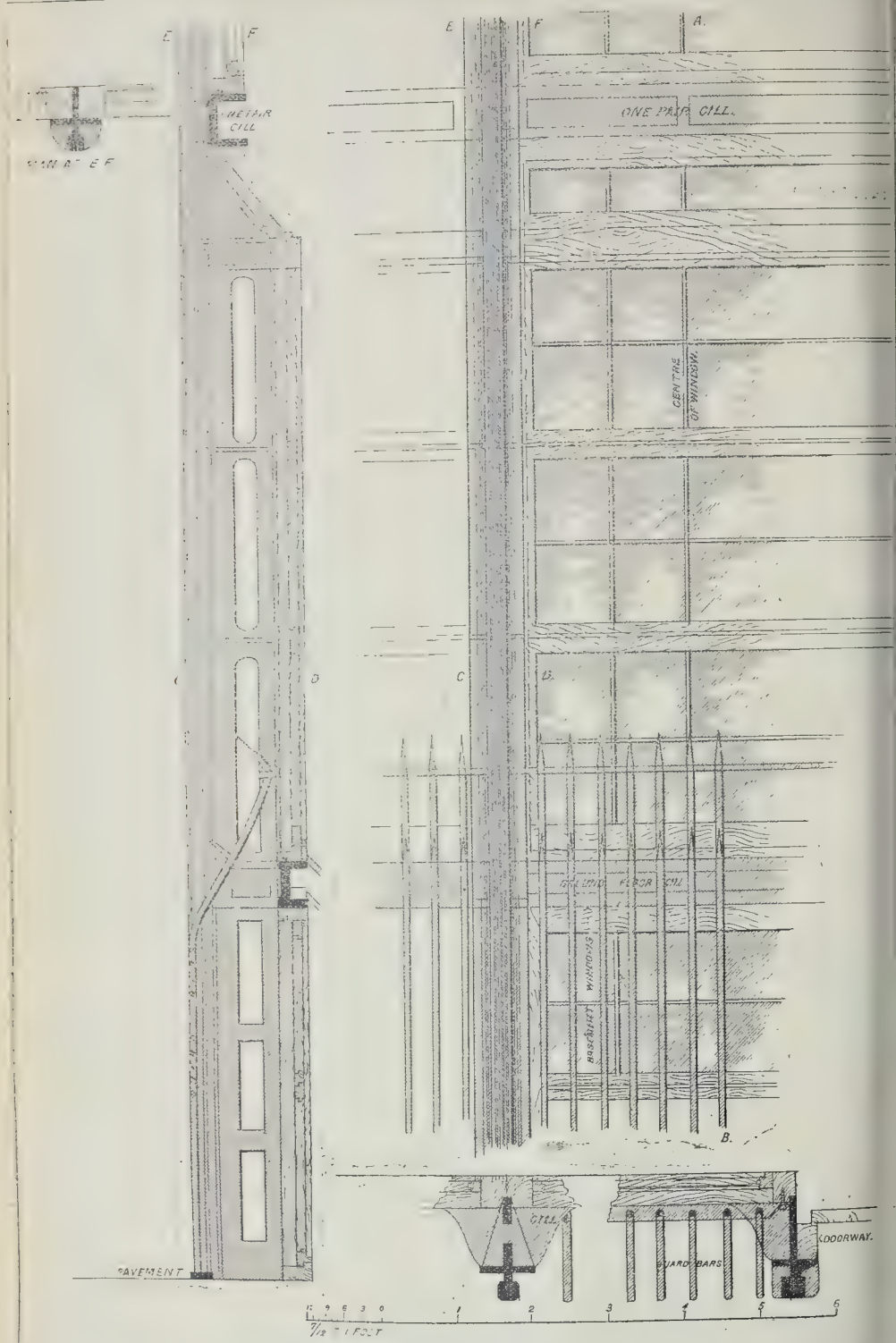
Even in the building trade, with which we are more intimately acquainted than others, there are constant shiftings and changing of employers for a large number of workmen throughout the year.

If the drift of our argument or object is not fully understood as yet by the reader, we will speak still more plainly and pointedly, by saying that the present condition of labour in the British Islands, on the whole, is not conducive to the improvement of handicraft,—even if technical education were further advanced than it is at present. In many branches of subdivided labour our artisans are working as unthinkingly as the machines that may be in the same workshops, and far less steadily and unerringly, for it needs thought, acting in unison with the labour of the hand, to enable the workman to execute even commonplace work well; whereas the thoughtless machine, if properly adjusted, acts with precision in performing its set work. Precision, however, in progressive operations towards an end, does not mean precision in finish, and as a general rule machines do not finish work as a whole. The thinking mind and the feeling hand of the executive workman are necessary to completeness in all the arts. We may manufacture by wholesale, and cast works and objects as we would turn types out of a matrix, or bullets, bricks, or plaster enrichments from a mould; but this is not skilled manipulation; and even in these and similar operations, commonplace as they are, the hand or hand-appliance finish of the workman is necessary to add completeness to the work. The machine never in itself improves upon its labour without the intervention of maker or user. Defective operations suggest improvements in construction, and the user improves upon the work by various shades of adjustment and by keeping the principal performing parts of the machine in proper working order. A hundred or several hundreds or thousands of hands less may be required over a stated area in consequence of machinery, but man, with the thinking mind and the ready and skilled adjusting or moving bone and muscle, is still the guide, the governor, and controlling power. As honey and poison may be extracted from the one flower, so the substances of life may be made the instruments of death. The children of our brain, carried out to their practical embodiment, may be our ruin, as well as our salvation, whether they belong to the world of mere literature or to that of the science and the arts. All great inventions are the advent of great reforms, or, rather, revelations, and steam-power applied to machinery was the commencement of a vast revelation still violent with upheavings and inseparable from partial evils. We will not attempt just now to approximate the extent of the good and the evil, for both co-exist, and evil to some must always be associated with the progress of machinery, and its introduction into new branches of trade. One thing is certain, and more than one thing. The rapid progress of machinery has powerfully helped, with other auxiliary causes, to do away with the system of apprenticeship, to subdivide labour in trades, and to make skilled artisans less skilled and many-sided as general workmen. The organisation or subdivision of labour, though it might make a particular workman ready and expeditious in executing a part or piece of work belonging to his trade, has not added to the concentration of his thinking faculties and skill in the character of a general workman. The single work in a distinctive branch of trade, which is the outcome of several hands, no matter how well executed in its individual parts, must lack completeness in finish, though the want may not be apparent to the outsider or common observer.

It will be a sad day in our opinion for art when the duplicate-producing machine is received into favour in its domain. There is a magical and wonderful power still in printers type, but the compositor as a craftsman is but a poor power without "copy." Give the latter to him and mayhap in Roman letter it will revolutionise the world and lift a slumbering school of thought from a system of eclipse into a region of light. Give to our British workmen more food for practical thought, which can only be done by giving a more practical education. Stop at once your minute subdivision of trade; it may be profitable to large speculating manufacturers, but it is dwarfing the intellect of workmen, and it is unmistakingly injuring handicraft by making the workman less useful, less experienced, and certainly less thoughtful and skilful as a whole, than he was in bygone years. A watch is a neat and compact piece of mechanism of its kind; but there is no distinctive character and individuality in it. It is a compound of many hands, and were not the maker's name or adopted figurings marked upon it, it could not be identified from a thousand and one of similar makers. Certain distinguished literary men are recognised by their style; and so are the works of painters, sculptors, and architects. The individual and complete workman, too, is known by his style, or rather by the conservative finish of his work; but what craftsman cares, even if he had the skill, and were allowed the time to boot, to improve the finish of the works of others, though a contributor himself? Handicraft of a verity, in many branches of trade, is at present emasculated; and we have pointed out some, if not the chief, causes. An artist who has no love for his art can never become a great artist. It is so with the workman; but while the artist can still exercise discretionary power, the workman has become a martyr to circumstances; his choice is becoming more and more limited, and his path is beset with numerous obstacles.

A retracement, or a new departure, is necessary, if we would maintain the olden glory of British handicraft, and particularly in its relations with architecture.

Overcrowding.—At the last meeting of the Halstead Board of Guardians (Essex), Mr. Bromley, medical officer of health, reported a case of overcrowding in the cottage occupied by Stephen Dowsett, Swan-street, Sible Hedingham. There was only one bedroom, containing 650 cubic feet, and it was occupied by three adults and three children, who required 1,350 cubic feet. Another cottage in the same parish, on the Halstead-road, containing only one bedroom, with a cubic capacity of 1,040 ft., was occupied by Arthur Ellis, aged 17, and his wife! his mother (Mrs. Rulton) and her husband, and their family, making a total of five adults and five children, who require 2,250 cubic feet. The Inspector said the last case was a gross one. Ellis was only sixteen years old when he married his wife, who was about thirty years of age. The cottage was let under the supposition that there were but two in the family, but shortly afterwards Rulton and his family (who had been previously prosecuted for overcrowding in other dwellings) made their appearance, and remained there in spite of the landlady's wishes. The Chairman expressed his conviction that the cottages of the poor in Sible Hedingham were worse than any parish in the union, and he sincerely wished that steps could be taken close a fourth of them to human habitation.



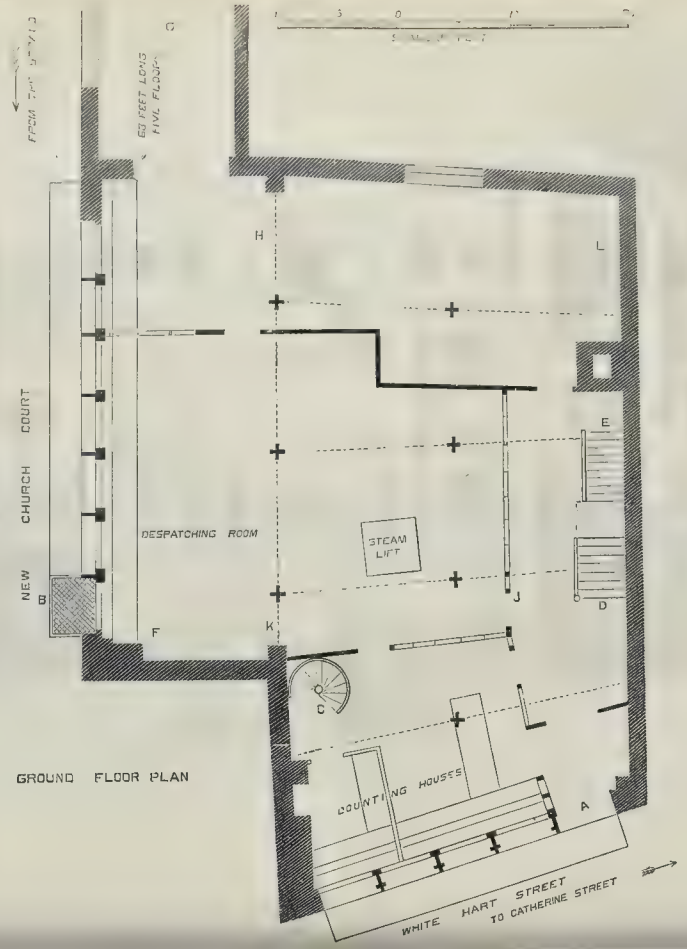
MESSRS. DIPROSE'S PREMISES.—*Details of Iron Front.*

[See p. 557, a





SIDE NEXT TO WHITE HART STREET STRAND.



GROUND FLOOR PLAN

APPROPRIATION OF THE DIFFERENT STORIES.

The letters on the ground-plan here given are used in referring to the same parts of the other stories

BASEMENT STORY.—*Motive-power and Making Cases.*

A. Engine-room.
D. Boiler.
B. Goods Entrance.
F. Lobby for receiving Goods.
A. to C. Millboard-cutting and Case-making.
F. to H. Blocking-room.
G. to J. Millboard Store-room.
L. Glue-melting and Paste-making.

GROUND STORY.—*Offices, Storage, and Despatching.*

A. General Entrance.
C. Private Stairs to Upper Floors.
D. Workpeople's Stairs to ditto.
G. H. G. Store-rooms.

ONE-PAIR STORY.—*Finishing.*

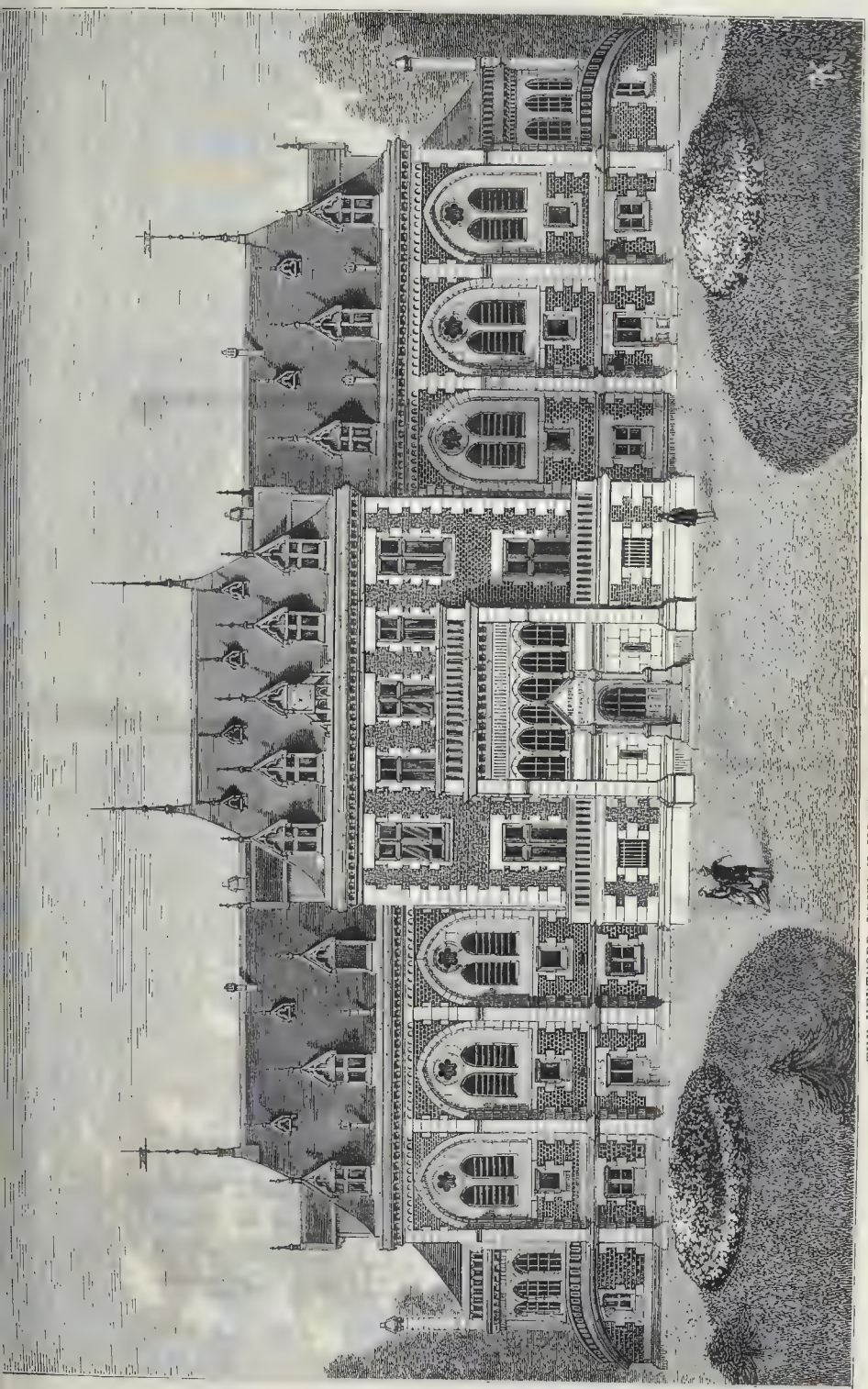
A. to C. Assistant Finishers.
F. to G. Finishers.
G. to H. Magazine Wrappering Room.
G. Quire Storeroom (No. 4).

TWO-PAIR STORY.—*Forwarding: Men's Department.*

A. to C. "Extra" Forwarding.
F. to H. Cloth Forwarding.
K. to H. Cutting-machines.
G. to H. "Paper Boards" Forwarding.
G. to J. Hydraulic Presses.
L. Lavatories, W.C.s, &c.

THREE-PAIR STORY.—*Forwarding: Women's Department.*

A. to C. and G. to H. } Folders.
G. to J. Gatherers.
F. to H. Sewers.
L. Lavatories, W.C.s, &c.



THE HERTFORD BRITISH HOSPITAL, LEVALLOIS, NEAR PARIS.—M. Sansom, Architect.

HERTFORD BRITISH HOSPITAL.

:E has city received a more admirable .n that which Sir Richard Wallace has ed to Paris in the form of the hospital at Levallois (adjoining Neuilly), and he has dedicated to the memory father, the late Marquis of Hertford. ve years' study the plans were decided ie architect being charged by Sir Richard to "build something that should not e a hospital." Within two years of the f the foundation-stone the building was ed, and its architect, M. Sanson, has out the idea of the donor by erecting a which has the appearance of a château, ing structure surrounded by verdure, the smiling with flowers and foliage, and the sical with the song of birds. Those for the doors of this house of suffering

"But for one short hour,"

gine themselves in some fine ancestral where the sun, the fresh air, the grass, "balm of peace" will hasten con- ce. Our readers do not require to be at an unhealthy moral influence the l aspect of a place has upon the minds flicted, and how much better it is to let l, in every possible way, that entering l they are not in the "ante-chamber of but on the threshold of renewed life and

cting the Hertford British Hospital re has been taken; the interior walls ced and impermeable, and the only ed is the American pitch pine, its close b offering any harbour for pestilence, ployed, as it is, in its natural state, it s to exhale a healthy resinous odour. s forming the ends of the two principal the building give on to perrons from scend handsome circular flights of steps ng to the gardens. Entering the hos- he front, on the right-hand side is the lodge; a little further on, a study, which sed as a refectory by the lady-super- nt; on the left is her parlour, and close chapel, simple and neat in appearance. rcase forms the centre line, or so to e axis of the building; a corridor open- to the right leads to the dispensary; es the laboratory, and afterwards the g-room for out-door patients; for these, ing-rooms are provided, one for men other for women. The other portions ound-floor corresponds with the above, e left-hand side of the building are voted to baths and every description athy, here applied on the latest scien- ciples. Round the bathing and douche nall and comfortable cabins are ar- ith beds for the convenience of out- nts, who are admitted gratis on an m the head-physician. On the first two large wards, one for men other for women.* The ventila- btained by means of friezes opening in the upper portion of the rooms, so oid draughts. Smaller rooms are for serious cases requiring quiet and each of these opens out on to a terrace o the south, where, as soon as his l permit, the patient is allowed to he balmy air, and enjoy the sun's rays. The second floor is reserved for perations, and for the after-treatment who have undergone them.

carries the patient gently up to the -room, in the centre of which is a al bed, which can be adjusted to any l surrounded by a bench with steps for mmodation of practitioners desirous of at any operation. The room is lighted windows looking north and south. Two e reserved for persons having under- rations, and the nurse's room is so s to enable her to watch them both at time; each of these rooms looking on ce, the patients are carried on to it in her. On the second story also are the rintendent's and the resident doctor's ts. By an ingenious disposition of s, the former commands a view of the sions of the female department, and the the male portion. A certain number of the beds are an American invention, enabling the sufferer to lie or recline in any position. The furniture is simple, solid, and suitable. The third story is reserved for the attendants, servants, &c., and the storing of the linen, which is of the best and most durable quality. A wing running out towards the grounds contains the accessory offices, kitchens, wash-houses, bath-rooms, &c. These are separated from the main building by means of a long corridor, through which a current of fresh air passes continually. This system of isolation by means of an incessant current of air is practised by M. Sanson on a large scale throughout the building, thus lessening the possibility of contagion. In front of the hospital are a lawn and gravel walks, which lead on either side to the grounds reserved for the convalescent, the garden on the right hand side for men and the one on the left for women, corresponding with the two large divisions of the building. A large avenue, planted on both sides with a thicket of quickset hedge, divides the gardens, thus ensuring privacy. This avenue, which is terminated by a handsome gateway, leads to the mortuary situated at the extreme end of the garden, where also are to be found closets, gardeners' tool-houses, and so on.

The worthy possessor of an immense fortune, Sir Richard Wallace "seems," to quote a French journal, to "regard it as having been *lent*, not *given*, and that, under God's guidance, he will administer and control it," remembering that "he who giveth to the poor lendeth to the Lord."

Every detail in the hospital has been the object of careful study, and nothing has been forgotten,—thanks to the unbounded generosity of the donor, and the attention of his architect.

When everything was ready the doors were opened, and the patients admitted, quietly, unostentatiously, without any previous inaugural ceremony.

"Charity vaunteth not."

l give a plan in our next number. The hospital ty beds. We may add that our view has been the architect's drawings, with the special per- Sir Richard Wallace.

ON THE USES OF A COLLECTION OF OLD ENGRAVINGS.*

The subject of ancient engravings has not received from lovers of art the attention which its importance deserves. We collect paintings, statues, medals. We are beginning to consider it desirable to make our homes artistic internally, and even externally. Dress, pottery, and many still more every-day matters, obtain some of the attention which they need, and it is a hopeful sign of the times that this is so. No apology is, I am sure, needed, therefore, for bringing before the Society for the Encouragement of the Fine Arts a subject which will amply repay all the attention devoted students of art can bestow upon it. We hear of the few connoisseurs of ancient engravings who are supposed to pay large sums for small prints. We hear of a plate with a broad margin being valuable, while one with a narrow one is supposed not to be so. A few extra lines on an obscure part of one engraving makes its market value considerable, while another not so distinguished is thought to be commonplace. All credit to men of means and leisure who have devoted both for the preservation of rare examples which now enrich our museums and aid research. However, these matters may have had effect in some degree to deter men of ordinary means from becoming collectors of old engravings, for collectors are undoubtedly few in number. This is abundantly testified to by the moderate price and the great numbers of engravings that remain to reward the collector. The public at large at present seem not interested to any great degree in engravings, old or new, and the modern art has not the amount of patronage that the skill of the few able engravers who remain to us so thoroughly merits.

Much attention has lately been given, however, to the subject of etching, and the encouragement shown to it is, I hope, evidence that were the claims of old line-engraving (to use a modern term) placed more frequently before the public, more interest would be shown, and good results would follow. I have chosen my theme purposely for the furtherance of this; and I propose, not any particular reference to old engravings in the abstract, but the *uses* of a collection, believing that in these utilitarian days a vocation which can be shown to be of actual service to our every-day life has greater claims upon us, deservedly, and greater chances of commending itself to public favour, than any mere pleasant and harmless feeling which cannot commend itself to us on the plea of utility. These engravings have an educational value, deserving of all attention, which I now propose to show.

* By Mr. E. P. Loftus Brock, F.S.A. Read at the Fine Arts Society, as elsewhere mentioned.

I intend my remarks for the numerous class who know but little of old engravings or their history. I propose to trace their history very briefly, and then to proceed to point out some of their uses. The interest centred in the question, Where did engraving originate? has a great antiquarian charm. I must, however, not take time for its consideration, in view of the length of the subject before me. Let it suffice to say that, with the numerous incised monumental brasses constantly in the hands of art-workmen, and the equally large number of engraved cups and flagons ornamented with patterns of great beauty and intricacy, it seems almost as a matter of necessity that the effect of rubbings taken from these would afford some insight into the art of engraving, purposely to obtain copies of the work to judge of its effect. We find accordingly that the earliest engravings date so early as the commencement of the fifteenth century, when works of the nature referred to were common. Engraving, however, may be said to have become general only at the end of this century and the beginning of the sixteenth. It is, then, remarkable how numerous were the artists practising it in all parts of Italy, Germany, &c.; and, indeed, the time was remarkable. The new impulse given to human learning may well be styled the "Renaissance," and excite the wonder of men of this age. On all sides,—in religion, in architecture, painting, sculpture, the study of the Classics, in the discovery of printing, in the development of literature,—alike in all these, and in many more, the human intellect appeared to take a fresh accession of power. The results will live to the end of the world. Italy claims deservedly the honour of first notice for the number and the diversity of its artists.

At Florence, in the northern cities, at Bologna, Parma, Milan, and, lastly, at Rome, we find numberless artists at work. So numerous are these that their names even have not in many cases come down to us.

A collection of Early Italian works alone is of great interest, for we may trace the strivings of the workmen to master the new art. With much done with rough and hard outline, we find the work of artists in the truest sense of the word, and trace their grasping unskilfully, it may often be, to develop the details; and in the result producing designs worthy of our most careful inspection. We notice in many instances the contemporary transcript of some canvas or other produced by some painter whose name is now a household word among us.

In this constitutes one of the greatest charms of the early engravers. They reproduce to us the designs of the painters, and the engravings seem imbued with their spirit. We know that very often the painters superintended and corrected the plates. Further, the painters themselves were often engravers: of this more hereafter. As examples of Italian work, I exhibit several plates by Marc Antonio, Bonasio, Caravaggio, Guido, Salamanca, Æneas Vico, Ghisi, the three brothers Caracci, Agostino Veneziano, and many others, with examples of later date, bringing down the history of the Italian school to the end of the last century.

The school of Germany deserves second rank, not only by reason of the numbers and proficiency of its engravers, but by chronological order. Indeed, if we include wood-engraving, the consideration of which I am bound by stress of time to exclude altogether, it may be that the earliest engravings of Germany were somewhat in advance of those of Italy. Albert Dürer, the prince of engravers; Aldergave, his follower; Lucas Cranach, the master of 1466; Schongauer, and a host of others, show the interest with which the new discovery was followed in Germany. As specimens, I have taken at random, almost, some by the brothers Sadeler, Goltzius, and many more.

The Low Countries amply merit the third place on our list. Indeed, it may be closely questioned whether wood-engraving was first followed here or in Germany.

The names of the earliest engravers on metal are lost to us, and we are glad in prizing their works to distinguish them as the "Engraver of 1480," the "Master of the Shuttle," and others. Lucas Van Leyden, the friend of Dürer, like many other artists of the time, practised the

engraving of armour and goldsmiths' work, and his beautifully-drawn and minutely-engraved plates are worthy of all the praise they have obtained. A century later, Rembrandt's works gave fresh impetus to the school of the Low Countries, and in the vast number of plates produced by him, we can delight ourselves in his remarkable style. We have in him one other example of the frequency with which painters of high repute thought it not beneath them, but rather that they added lustre to their art, by practising equally that of the engraver. Van der Velde, Potter, Ruysdael, and other illustrious names are ranked among this school. In addition, the works before you are those of Ostade, Berghem, Morian, Breughel, Heemskirk, Cock, M. de Vos, Sanredam, and many others, with some of later date, to illustrate the art to the beginning of this century.

The school of France has many claims on the gratitude of print-collectors: for the artists of this school have produced a vast number of works of great beauty and diversity, while their character is very much unlike those of the other schools. This is more so in the later than in the earlier schools, since the influence of that remarkable impulse, the school of Fontainebleau, had the effect of introducing a certain amount of Italian feeling, which is readily traced in many of the earlier sixteenth-century art works of France. No country appears to have rejoiced more in the liberty of the new arts developed in her midst than this country, then reposing for a moment in an interval of peace. Although the number of early French artists were not few, their works are not common. It is different with those of later date. The works of Limousin, Leu, Millan, Callot, Bosse, Sabastian Le Clerc, Claude Lorraine, Andrieu, Stella, Nauteuil, Watteau, and a host of others, have rendered the French school illustrious, and particularly that of the seventeenth century, while we may still find among the living artists of this country some of the best professors of what I regret to have to call a declining art.

Were we to believe many Continental writers, England has hardly had a school of engraving. It is certain that its history has yet to be written in detail, and a very interesting theme it would be. A very short acquaintance with old engravings would soon prove the falsity of the statement, and would show there have always been engravers in England. I am willing to admit that the most conspicuous of these were foreigners, but on taking up their abode among us a certain individuality is apparent in their works, their styles being adapted to the requirements of their clients, and I maintain that we have a clear right to claim these foreigners as artists of the English school, so far as their English works are concerned. Simon de Passe produced in England many of his best works. His pupil, Payne, was an Englishman, as was also Faithorne, of whose engravings any country may be proud, who worked almost exclusively here. It would be strange were we not to include the German, Hollar, among our engravers, for this was the country of his adoption, and the place of his decease. Would that his reward had been in proportion to the benefits he has conferred upon Englishmen for all time, for we owe to him almost all we know of the appearance of ancient London, and of many scores of old buildings which have passed away. Dorigny did good work here, but he did not take up his abode with us, but it is different with Baron and Vivares, and some others. I am prepared to admit that there is too much evidence of the public taste for foreign artists rather than for those of our own country, —a taste which I am glad to say is now all but gone. I am also prepared to admit that the seventeenth-century works of our English artists are often poor and weak, and they rise seldom above the rank of book illustrators. Nevertheless, if our school of line-engraving was thus backward for want of encouragement, it most worthily distinguished itself in the next century. Here, too, our painters were engravers as well, —the two arts went hand in hand. Hogarth engraved his own works most worthily, and we can readily trace how, in the midst of other occupations, his busy graver could not keep pace with his prolific designs. Grignon and others came to his aid, and the artists worked side by side. Strange has produced some of the best engravings that Europe can show. Woollett's landscapes are simply superb, and his boldly-cut shadows show results that commend themselves for admiration at all time. Virtue's graver embraced all classes of art-works. Before speaking of the engravers of a somewhat later period, a style peculiarly English demands more than a passing word. I am not going to speak as a special pleader on behalf of the discovery of Mezzotint engraving by Prince Rupert, for I think the weight of evidence is against it. Nevertheless, in no country has this style become so thoroughly adopted as in England. We possessed a large number of native artists who appear to have worked almost exclusively in this style, and the result is a magnificent series of works of great power and beauty. In these we have lively portraits of the stately ladies and the great men of the latter part of the seventeenth century, while their number is continued through the whole of the eighteenth century. The works of Reynolds and Gainsborough, and later the beautiful faces and figures of Sir Thomas Lawrence, are reproduced with a delicacy and softness deserving of all praise. This essentially-native style is still flourishing among us in all its beauty, and with much more elaboration of detail than we observe in the early works, and this we owe to the skill of the artists who yet remain to us. Would that public patronage would afford encouragement to the more laborious style of line-engraving. The engravers I have named are sufficient to show that the art was in a flourishing condition in the early part of the eighteenth century. But the later part witnessed a great increase and change by the appearing of artists who produced works of great softness and delicacy. The admirable works of Bartolozzi stand foremost; Ryland, Cosway, and many others followed in the same style. The commencement of the nineteenth century opened with the works of these worthies well before the public, and in deserved estimation. My limits forbid my bringing before your notice any work of later date than the close of the eighteenth century, and references to the admirable engravers of this present century are, therefore, outside my purpose.

Of other schools, I exhibit a few Spanish engravings, showing that there was sufficient native talent to have produced an excellent school of engraving. However, their works are not well known, and they appear to have arisen at intervals apart from one another, so that it may well be doubted if a continuous school of engraving ever existed. I exhibit one work of Rubiero's, and a few of much excellence executed towards the end of the eighteenth century.

I will now proceed to note some few of the uses of a collection of old engravings. One of the uses is to bring the best works of the old masters to our knowledge. Indeed, there is no method of obtaining their designs except by engravings. Works more or less modern have ably illustrated the galleries of Paris, Italy, Germany, and England, but apart from these, we are dependent entirely upon ancient contemporary engravings for a knowledge of the rest of the productions of the old masters. Their numbers are so vast that we can appeal to them for evidence in many ways, and may bring to our homes illustrations of many a grand work far away on the Continent, or in some closed private collection. There is hardly any painting of note that has not been engraved more than once. The result is, that the authenticity of almost every painting is well guaranteed by old engravings. We have seen recently at South Kensington the "Vierge aux Candelabras," by Raffaelle, and near it a large collection of engravings ably brought together, and by various alterations of detail, suggesting that there may be more than one copy of this picture. The like could be done again and again. The value of engravings as transcripts of paintings is well before you, for all here are of contemporary date, and show the works of Romano, Raffelle, Michelangelo, of the artists of France, of Germany, and of England. Another point deserves our notice. Many of these works are the productions of the painters themselves. Here are some plates engraved by Guido Rene. Here are examples by each of the three brothers Caracci, by Dürer, by Rembrandt, and by many others of the old masters, whose works are priceless on canvas, but so well within our reach on paper. Another point must be referred to. These engravings were of necessity multiplied in large numbers. They are on apparently fragile paper. This material is, however, one of the most indestructible in existence. Keep it from fire and water, and it is so for all practical purposes. The engravings before you are all from 350 to 370 years old, and their condition is fairly good. The canvas once destroyed has no record unless copied, beyond what engravings furnish; and an interesting collec might be formed illustrative of paintings have entirely passed away from us. Here specimen is Titian's Peter Martyr, destr by fire at Venice a few years ago. Engrav have many illustrations of the devotion fondness of their authors for their work be what is shown on its face. Let us note admirable plate by J. Sadler, with its ins tion stating that it was produced at the a nineteen. It is a work full of promise. is a fine engraving by Bartolozzi, prod when he was seventy-five years of age, and one of his last works, produced at the a eighty-two. It is a remarkable monume human patience and labour.*

NOTES ON THE PRESENT ART REVIVAL.†

In taking up this subject, the first thing strikes us is the practical tendency of thought of the present time. That it is tially so cannot be doubted, and in the ex of its critical functions it does not exclude ters which are acknowledged to be purely tions of taste, notwithstanding that man these are of such an abstract nature that might be exempted from being measure ganged by standards suitable enough, perha unravelling an intricate mathematical pro or explaining some of the causes which produced the present stagnation of trad which all must admit to be singularly plicable when attempting to define a subj highly æsthetical in its qualities.

This phase of the British mind has been the theme of much comment by our favoured neighbours on the Continent, good fortune has been so much greater ours in respect of the easy and ready they have at hand to the innumerable a ties and examples which they possess matters pertaining to the practice and st art. These comments are not at all flat to what we deem the good sense and stric priety of thought and action which we gen display when called upon to give our op regarding other subjects. They, howeve pare us for the strong terms of denunc which are applied to us for our want of ciation when judging of artistic work and and it is all the more humiliating when w sider that the most popular art critic country endorses those adverse sentiment

In the face of these circumstances w naturally led to inquire into the causes loud outcry against our want of art-sym In doing so, it is of the first importanc while under the potent influence of th which the works of Ruskin exercise ov mind engaged in studying his elucidati those theories which render his writin unique in character and so dazzling in tiveness, that one should not lose sight practical. For the faculty by which enabled to absorb material benefit, while enjoyment of those visionary allurement quires to be kept in constant tension under the sway of this author's power. also be remembered that a nation, like a vidual, should first, by strenuous and directed effort, endeavour to acquire a st independence with all the beneficial accruing therefrom; and it may be that in process of rising to this desirable st might appear to the merely superficial ob that the loftier and more ennobling em qualities of head and heart were being ig or at least kept in undue restraint, wh aim in view was being accomplished. T whom fortune may have placed in a p far above the necessities by which the gling mass of humanity are beset, it migh so. But they would be forgetful of th that the like vitality which enables natio individuals to battle bravely for indepen clearly shows in the strongest light thei bility of taking up.—when successful achievement of their first aspiration,—the and truer intellectual form of existence. struggle against adverse circumstances h the solid advantage, when the contest is creating a better and heartier intellect which is recognised as the reward of toil, while it bestows dignity to after-ea

* To be continued.

† By Mr. Thomas Bonnar. Read at a meetin Edinburgh Architectural Association.

es opportunities for the acquirement of that ture of the loftier faculties of the mind in ich art, in all its aspects, holds such a large re in the varied relations which distinguish a hly-civilised condition of society.

But while it would be injudicious to go a tithe he way in the direction indicated by Ruskin, s, nevertheless, very evident that there is ch cause of regret for the summary treat- nt which artistic matters invariably receive. such an extent have the ideas concerning e things been carried that one is often,— n the strongly suggestive observations,— le uncomfortably conscious that the Christian ne of possessing a sympathetic emotional re is looked upon and stigmatised as exhi- ng a weakness of character rather than as ving a quality to be emulated.

ut, fortunately, my subject, while possessing elevating influence of sentiment, is of a oughly practical nature, and it will be my avour to show that its adaptability to ern thought and purpose will sufficiently ant its being pronounced utilitarian in all ects.

his revival of art has, like all other novelties, looked upon as an innovation, and received an aspect strongly expressive of that le feeling which usually awaits the un- ome intruder. It has obtained at the hands itics censure of the severest kind, and un- rable strictures have been applied to it to an extent as to raise the question of its ility of being esteemed worthy of having wed upon it the dignity of criticism. This ion, however, is being gradually dispelled, may observe for ourselves, in its vigorous steady growth in public favour, in the ation it has acquired, and the wonderful ess of its development into an accepted and me medium of daily thought by a large n of the educated classes in this country; specially so in the south, where it has d an assured footing, carrying along with unquestionable testimony of manifest s, by which it is stamped as a refined and rable phase of art life.

action of the faculty is fully demonstrated transformation presented and the genuine satisfaction pervading those homes where sthetic feeling has become a recognised onoured instrument in producing results e beautiful in design, and yet in perfect mity to the ordinary requirements of day life. No doubt in these homes there formerly be found every essential neces- o form a complete domestic arrangement; nen, there was an utter absence of artistic ng, the materials being present, but the principal continuing dormant, until the ce of art-knowledge enabled the tutored and eye to frame from these elements creditable to good taste, and marking the ent of their fortunate possessors, besides incalculable good in diffusing more and n correct appreciation of this expression

the evident indifference to the state of matters which frequently even assumes pe of wilful neglect, may assuredly, in a measure, be attributed the ignorance of l constituents of art in many from whom hings might be expected, and who strive eal their deficiency by assidnously follow- the wake of those whose names are in the world of art, imagining that the possession of the works of noted artists ns the presence of appreciation, when, in as oftentimes happens, intrinsic value is ding consideration.

different is the love of art when it is d on the pure instinctive attraction which harmingly presented in all its beauty in dscape that nature spreads before us in rying, ever-pleasing changefulness, and exemplified in the works of man when d by the spirit of genius. The contem- of these must naturally incite emotions can only be satisfied by the presence of picturesqueness in all domestic sur- ngs, which, to the mind imbued with the ministration of external beauty, is de- l as necessary to the completeness of xperience.

n the feeling of such requirements be- apparent to the individual sense of pro- then the more active feeling of the ity of such knowledge being cultivated

The germs of its teaching are found on ation to contain certain subtle principles ve to, and which will quickly be found discernible in lending expression to, the general tone of home life. For our homes ought in the very highest signification of the term to be beautiful; avoiding, of course, any attempts at meretricious display, and aiming at a simple and harmonious concord throughout. With the principles of this art sympathy once inculcated, a complete reversal of the old order of ideas immediately takes place. Beauty is discovered where it was scarcely dreamt of before, and its theory becomes intelligible to the average student. His mind, becoming absorbed in its study, is exercised to its utmost capacity in blending his thoughts with his experience, and the results are certain to contain that characteristic faculty which is never absent in the work of sincere thought of the artistic mind, namely, individuality. It is the presence of this combination of the ideal operating on the realisation which excites the imagination, and produces the pleasurable emotions which could not exist were those qualities wanting, let the object viewed be ever so complete as a specimen of mechanical skill. The consequence of this genius faculty, which displays such varied degrees of activity, is that even in works of purely skilful effort, its presence is accepted by parties professing to be endowed with keen powers of critical observation; but it is vain to expect that inexpressible sensation of pleasure which can only be called up in the presence of the Beautiful when it is touched by the hand of genius.

But, as already hinted, the appreciation of this innate quality in artistic productions would be intensified in proportion to the mental inherent capacity of the worker and observer, and that again in a proportionate degree as those talents are cultivated. Hence the divergent opinions of many men of the highest mental attainments as to what should constitute the standard of ideal beauty. This state of matters will doubtless continue as regards the ideal. But the presence of that which appertains only to the truly gifted inspiration cannot be understood if judged by a sympathetic critic. Therefore the necessity of making a careful selection of men who may be entrusted and authorised to act for the public in matters of taste, as by this means much that is crude and uncultured in the artist, as well as in those whose position devolves on them the duty of having to advise and arrange these matters, might be avoided, especially in works that are destined to indicate to future generations the state of art, and which, from the importance of the subject, may be presumed to be the productions of our leading representative artists, and typical of the highest art performances of the age.

But what, do we find, is in reality the common experience, and that more particularly when subjects of national importance are involved? Why, it is almost the reverse of the course indicated, and instead of our monuments being representative of our art knowledge, they exhibit in only too marked a degree the mechanical work employed in satisfying the fussy self-importance of officialism, rather than the dictates of the higher sense of a citizen's duty and obligations; and what is still more to be regretted is the baneful and deterrent influence which is thus exercised on the minds of the rising aspirants to fame, who are unwittingly involved by this want of conscientious discharge of the grave responsibilities attached to the duties of thorough supervision, resulting probably in retarding, if not crushing, the ardent artistic proclivities of true genius, and in general reprobation of what was the outcome of elevated artistic attainment, and whose only demerit lay in the fact that it was greatly in advance of the experience of its judges; thereby obstructing the advance of a living art which can only be invigorated by association with genuine reciprocal emotion and sympathy, both mental and material in their operations.

Surely this is a most undesirable condition of things, more especially when viewed in relation to the large share of encouragement which the pictorial or higher phase of art obtains, many examples of which we have, indeed, great cause to be proud of, as illustrating a very powerful imaginative faculty of thought. And it is all the more gratifying, when we take into consideration the circumstance that they convey a purely national typical character. This influence, however, is mainly operative within a comparatively narrow circle, and, therefore, it is not with this species of art that we are at present dealing, as it may well be left to take care of itself.

Although it is not altogether without the range of probability that in our efforts to improve and strengthen the revival, we may reasonably hope to accomplish in our houses and homes results which will go far to render them actual pictures and studies of all that is chaste and harmonious in design and colouring. Uniting in perfection of detail those picturesque fragments which our best artists seem to linger over with such fondness and admiration, and of which the public seem never to lose their just appreciation, when placed before them as a pictorial composition. It is, however, to the general acceptance (in the widest sense of the word) of æsthetic ideas in the adornment of the homes of our countrymen that attention is sought to be interested. We wait in hopeful reliance that brighter and better days will do much to bring about the desired consummation, and meanwhile apply our united efforts in endeavouring to unclog the wheels of progress which conventionalism,—amongst other equally obstructive causes,—has been the means of retarding in such a great measure: and that all the more so when our hopes and wishes seem to be within reach of our grasp. Indeed, we need but to watch with approving glances the gradual but secure basis on which the present revival is founded, and on which it is rising with such evident solidity and success, despite the fierce storm of criticism to which it has been subjected, and out of which it is emerging strengthened and purified.

That searching criticism should be applied to this art revival is not only admitted as being of service to it, but it is absolutely necessary, as it is a matter claiming to bear an important relation to the social well-being of our country, in order that its all-important educational bearing may be of such a character as shall permit of its honourable association with the higher instincts of civilised life. For, if it possesses the vitality assumed, in good time its intrinsic worth will become manifest, and it will throw off all the defects of crudeness and vulgarity by which it is disfigured, and stand forth as an unquestionable authority in all matters relating to decorative design, the appliance of colour, or the fabrication of dress materials. It is chiefly by its application to those higher functions of its usefulness that my subject must be tested ere it can be esteemed worthy of becoming one of the active sensations of daily life. This test becomes all the more necessary when we take into account the varied opinions so freely expressed on all sides in local circles; for although the contention in the South is by no means at an end, yet its action is of the most feeble nature, and the successful issue may be fairly said to have been accomplished, and the work of its active propagation begun and earnestly carried on. Its acknowledgment as a practical as well as inexpensive medium of art in making our homes capable of being rendered as picturesque and pleasing to the mind and eye as are those splendid mansions where all the resources of wealth are at command is being tacitly conceded, and although active opposition to its progress may be said to be at an end, yet there still remains a good deal of what may be termed passive resistance. These difficulties are, however, merely in accordance with what has often occurred in the history of the progress of art, with which we are too familiar.

As might be anticipated, this art revival in England received a very fair share of attention from all classes of thinkers; and while it could rank amongst its supporters many of the most distinguished artists and architects of the period, it also received most arbitrary and determined opposition from a large number of the artistic professions, who doubtless, from their success in the more familiar and prosaic lines in which they had so long wrought, fancied their positions stood in danger of being assailed, and perhaps rendered valueless by the advance of the revived art. Their fear on this point should be accepted as affording an explanation of the lukewarmness shown towards the progress of the new system. There is likewise unequivocal evidence on another important point, which it may be surmised had something to do with their opposition, and that is, that the singularly artistic qualities of the revived art demanded an extent of capacity which many doubtless were painfully conscious of the fact that they did not possess. Hence their denunciations of the new art, as they called it. It was stigmatised as clap-trap and worthless, and also called by the innumerable epithets and expressions of contempt with which any novel idea is inva-

riably assailed, when it is found impossible to confute it by argument, no matter what its merits may be.

These rough experiences which it had to contend with and overcome in the land of its origin, are now to a certain extent, as already stated, being re-enacted in our midst, and are as briskly as possible at work at the present moment, contending with hindrances to which, it must be confessed, it was not subjected in England. But the nature of our architectural characteristics, being so distinctively different from those of the south, may serve to explain the primary source of much of this opposition; for with us the movement is labouring under the disadvantage of being represented as a purely English method of treatment, — an assumption which is, however, fortunately easily disposed of, as we have several specimens still extant of the true picturesque treatment in interior decoration, although when placed in comparison with those of the South, our examples appear, indeed, limited. For even the castles and mansions of our ancient nobility have all, with very few exceptions, been remodelled within the last hundred years; and, as far as picturesqueness is concerned, they have, it is to be feared, been correspondingly affected. This fact makes it all the more refreshing to be in a position to refer to such a unique specimen as that presented to us in the treatment illustrated so well by Barncluith House, near Hamilton.

By all who have made this subject a study this is admitted to be a fair criterion, by its completeness as an example of graphic treatment and wonderful preservation of what the houses of the gentry were in the last century; showing also how this desirable end can be attained in the most simple and natural manner. The masses of colouring materials are formed of leather and textures, the prevailing tints consisting of blue and gold, with the curtains of a yellow tint, out of lemon. The margins of the floors are of a rich dark walnut tone, the woodwork also partaking of the same hues, but modified in depth. The furniture keeps up the harmony by its appropriate form and tone, the general design being what is known as Chippendale, and it is covered with charming bits of textile stuffs of various complementary tints, combining with the light in breaking up the masses of blue and yellow. The carpet is a French tapestry, and maintains the prevailing hue of blue of a delft shade, forming an exceedingly chaste and elegant ground for the furniture; the whole producing that pleasing and delightful effect which it is so gratifying to the artist to realise in interior treatment of colour and design, presenting a subject found ready to his hand, and exemplifying in a special degree the illustrative powers of the simplest mediums, exhibiting their capability of producing all the effects of the pictorial which the art revival aims at imparting.

It will, perhaps, occur to many that to enjoy the beauty which the style of treatment alluded to affords, can only fall to the few who have the good fortune to be only now considering the question of constructing their dwelling-house to realise the possibility of its partaking of all the concurrent attributes which are combined in the mode of this highly artistic example. It is, doubtless, true with reference to the general external design, but it is otherwise in respect of the internal arrangements, for in the hands of one who has made this an earnest study all things are possible, and may be made conducive to the attainment of pictorial beauty and effect; the chief operating means consisting wholly in the exercise of judgment in appropriately massing suitable tints, and then breaking them up with just proportions of richer colour sufficient to improve the relative value of each other, and to be thoroughly satisfactory they must appear constructive, but at the same time unobtrusive, and useful only as serving for a background to the portable objects in the apartment. Indeed, they should merely serve as a reflective medium, in concord with the surroundings, producing by their unity an atmosphere of indescribable artistic pleasure.

In passing, it may be noted that it is advanced as an objection that in the style spoken of there is an obvious tendency to gloomy effects, which are often mistakenly, if not, indeed, ignorantly, employed for the purpose of obtaining what is supposed to be pictorial interior treatment. Doubtless this use of colourless mediums may be deemed a safe resource when there is lacking the knowledge of the correct treatment in combination of the primary and tertiary tones of colour, and the perception of being competent to apply them in harmonious blending, by uniting them with their respective complementary shades, and keeping them in due subjection in their constructive relation and fitness to the subject treated. It is only through this knowledge and correct perception that full tones of colour can be brought into true position as an appliance for obtaining richness and harmony, and bestowing a furnished aspect to a room. By this means masses of colour that would,—taken by themselves,—promote a feeling of harshness, even to crudeness, from their incomplete operation, are controlled and moulded, as it were, to lend form and richness, which can only be arrived at by strict attention to their ulterior purpose, always, at the same time, having in view the textile and other accessories which go to make up the complement of an appropriately furnished apartment.

Before leaving this part of my subject, I may be allowed to refer to a still earlier example than the one quoted, and of a more dignified type, namely the royal residence of Holyrood, where, particularly in Queen Mary's rooms, are exemplified the spirit, at least, of that period when the refined influence of its beautiful mistress was all-pervading; and fancy can readily conceive how pictorial it would appear in the hands of her whose sad career has cast a halo of romance around its walls, and has rendered it, in a manner sacred in the eyes of our countrymen, to which cause we are mainly indebted to its being preserved to us.

The circumstance of our receiving from England the original spirit of this art revival does not necessarily preclude our retaining those characteristic features which are familiar to us from the study of the examples to which I have referred. To them may be traced the source whence the earnest silent workers who have preceded us have drawn the thoughts which have been slowly unfolding their influence throughout the country, and making it especially felt in the mansions of the wealthy, where their works have long since achieved, by their merit alone, a reliance and confidence in the authors, of which we are now beginning, in some measure, to realise the fruits, and have also proved invaluable agencies in endowing the present movement with a vitality and strength it could not otherwise have attained in such a short period had it been the mere creation of fashionable caprice. Were the latter theory accepted, it would certainly afford plausible grounds for the argument put forward so prominently by its detractors, that it bears evidence of being simply a fashionable mania, as its progress has been too rapid to be the genuine outcome of a purely national growth, and all such impulsive artistic ideas must be of a very transitory nature.

This reasoning should not be passed over unnoticed, as it demonstrates in a marked manner the necessity of clearing away all doubts as to the genuineness of our study. But we can meet it by pointing to the works of the earlier exponents of decorative art, whose presence remains with us, and gives strength to our position by their suggestive examples, and to them may be ascribed the rapid growth in public estimation and appreciation which the later revival has received.

At the same time, it would be injudicious to conceal from ourselves the fact that there is much truth in the prevalence of what is distinguished as fashionable mania in the artistic notions which pervade society. However much the existence of this state of things must be regretted, it should not tend in any way to subvert our art inclinations on the basis that they want genuineness; for when we recall to mind the circumstances that invariably control all states of society on the inauguration of an intellectual movement, be it of a religious or artistic nature, we are reminded that these are the occasions on which the day-dream votaries are stirred up and exercised. But, fortunately, on these occasions, there are also present men who, by sincere study, are desirous and capable of supplying a recognised deficiency in that perfect sense of enjoyment which goes to complete an ideal of comfort and happiness, whether of a physical or mental order. This desire is father of the thought, and the consequent inference clearly shows that, being the outcome of a natural acquirement, it will essentially be deeply imbued with the strength or weakness of the character of its promoters; and as with this revived art we find the patrons of its successful development and practice amongst the highest and most cultured classes, its assumption by the many is not to be wondered at, from this circumstance the accepted artistic æsthetic novelty will assuredly rapidly spread and maintain its hold, particularly with those who reverence all ideas bearing the authoritative stamp of approval of the recognised promulgators of what is considered correct and fashionable.

That there are blind devotees who give the support to what has the reputation of being the right thing, without further inquiry or thought is only too manifest to all: consequently the patronage is of that variable kind which often brings calamity on the object of their admiration for if it has the misfortune to rely on no surer basis than the unstable one of their approval it is pretty certain to subside and disappear in the rising tide of the next fashionable movement.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE QUANTITIES QUESTION.

At the tenth ordinary general meeting of the Institute for Session 1878-79 held in Conduit street, on Monday evening last, Mr. John Whichcord, F.S.A., took his seat for the first time since his election as president.

Mr. Thomas Henry Wheeler and Mr. Jo Groom were balloted for and declared to be duly elected as *Associates*; and Mr. John Robi Bourne, of the Bedford Estates Office, Bloomsbury, solicitor, was elected an *Honorary Associate*.

The Secretary, Mr. William H. White, announced several donations of books, includi several works given by Mr. Octavius Hansa member of Council, for the Loan Library.

The President called attention to the limi time which was available for the preparat and despatch of architectural drawings for Exhibition at Sydney this year. It was p posed that the same drawings should, at the cl of the Sydney Exhibition, be sent on to Melbour for the Exhibition to be held there next ye and it was desired that as many as possible the drawings exhibited in Paris last year sho be sent to Australia. The Council felt that shortness of the available time precluded th from taking the same steps as those adopte reference to the Paris Exhibition last year; Mr. Roger Smith, who was honorary secret to the committee appointed to represent Institute in this matter in connexion with Paris Exhibition, had been kind enough to operate with him (the President), and they been already in communication with the c missioners.

The Secretary then read a circular which been issued in reference to the matter.

Mr. Charles Barry expressed the hope the members of the Institute would, despite shortness of time, do their utmost to mak creditable show of architectural drawings the Antipodes. The Institute had the hon to be charged by the Commissioners for Exhibitions in Australia (as was the case connexion with the Paris Exhibition last ye with the work of collecting and sending dr ings for exhibition, and that being so, ev member ought to feel it incumbent upon hi do his best to comply with the wishes of Commissioners.

Mr. C. F. Hayward asked how the draw which might be sent to the Antipodes would returned, or whether they ever would be turned. He understood that their safety return were guaranteed only so far as rega the Sydney Exhibition; and it was also a q tion whether, although the owner of draw might be willing to send his drawings away a year, he would be willing to part with t for two years.

The President said the Commissioners only undertook to send the drawings out to Antipodes, but they undertook to return th and to insure them at their (the Commission own expense against all risk and loss.

The Secretary said that Mr. Wyatt, hon. had been requested by some of the member the Institute in Ireland, to announce that t will be an exhibition of sanitary appliar under the auspices of the British Me Association, in Queen's College, Cork, from 5th to the 8th of August next. The Secre also reported the receipt of a letter from W. W. Pocock to the effect that the writer authorised by the Carpenters' Company to

* To be continued.

t what remained of their old hall in London-ll, including a small portion of Tudor work, l a ceiling (probably by Wren), would be de-lished in the course of the next few weeks, . that any members of the Institute feeling icient interest in them might have access to m so long as the building is still standing.

'he President announced that Professor ıaldson had presented to the Institute a very rming collection of Wren's autographs.

. hope was expressed that the Council of the ɔtitute would take some steps to urge the penters' Company to preserve the old frag-ıts in question if possible, to be incorporated heir new hall or in some other building,— ı work was constantly becoming scarcer; or, ny rate, that the Carpenters' Company and .Pocock should be written to by the Council, ng the importance of making carefully-sured drawings of the fragments in question, ı drawings to be added to the collection now g formed by the Institute.

ı the motion of Mr. Joseph Clarke, seconded Mr. C. F. Hayward, it was resolved, "in embrance of his great services as Presi-," to ask Mr. Charles Barry to allow his rait to be painted and placed in the rooms e Institute, in continuation of the series of raits of past presidents. Mr. Horace Jones, Clarke, and Mr. C. F. Hayward, consented ct as honorary secretaries, and to receive criptions for that object.

. John Honeyman, of Glasgow, then read a r on "Bills of Quantities: their proper ction to Contracts." The substance of the r we print on other pages.

the discussion which followed,

. Wyatt Papworth asked what was the edu-n of the measuring-surveyor in Glasgow?

. Arthur Cates said that, obliged as the bers of the Institute must feel to Mr. yman for introducing the subject, for the ndingly able manner in which he had dealt the subject, and for the striking originality any of the points which he had brought rd, yet he thought Mr. Honeyman had a little too bold, and had failed to fully ıs the importance of some of his words, ea, taken by themselves, without any quali-on, had a very serious import, reflecting as did upon the members of another profes-—that of the measuring surveyor. He stated all responsibility for the quantities was ed over to men whose direct interest it was timise their clients. He (Mr. Cates) sin-hoped that so sweeping a statement as would not go forth to the world as autho-by the Institute. He was quite sure that foneyman did not intend his remarks to be weeping. Quite recently there had been curious litigation going on,—litigation of unusual character: an action against a respectable measuring-surveyor, brought, a contractor to recover for deficiency in uantities, but by a proprietor for excess in uantities, the proprietor alleging that he een damnified by the quantities being considerably in excess of the amount of ial actually used. The proprietor alleged hat had been done by the surveyor with the as intention of increasing his commission, olour would be given to such a statement e of the expressions in Mr. Honeyman's were not modified, and the Institute nsactions" would be quoted to the detri-of a highly-honourable and respectable sion. Mr. Honeyman had stated that the nsibility of ascertaining the amount of the ities was in former days fully accepted by actors,—men who understood their busi-and who had no hesitation in accepting esponsibility; and Mr. Honeyman seemed r that that was done without cost to the etor; but, as a matter of fact, when the ctor took the quantities for himself, he s included in the amount of his tender the of making his estimate. The difficulties arose out of the old system had been ly obviated by the system now generally ed in London, whereby one gentleman is ited to take out the quantities for the t of all. Mr. Honeyman had taken a view London system which London measurers hardly accept as correct. If the quan-were carefully prepared the proprietor rtainly an equivalent, and a very full dent, for the surveyor's commission. He he equivalent of all the contractors being on a level as regarded the quantities,— ivalent of an equal basis on which the ct could be founded. It was all very well to say that the bills of quantities were not taken into account, but in the majority of cases they were taken into account,—and necessarily so. Mr. Honeyman had stated that in London it was customary for contractors to charge so much for "contingencies," but it had been his (Mr. Cates's) lot for some years to deal with estimates from contractors to very large amounts, and on no occasion whatever had he seen in an estimate such an item as "contingencies," although, on the other hand, he had sometimes seen provision made for enabling those for whom the works were to be executed to get the benefit of a turn in the market-price either of labour or material. The system in vogue in London avoided contingencies, and avoided extravagant cost, as completely as any system could do so. The illustration given by Mr. Honeyman as to the party-wall was exceedingly curious, and it could only have arisen by reason of the negligence of both architects. There were many points in Mr. Honeyman's paper with which he (Mr. Cates) fully agreed. The subject was one which was not quite new to the Institute. At the first General Conference of Architects, Mr. T. H. Wyatt, then president, introduced the subject.* A committee was appointed at the Conference to consider the relations of architects and quantity surveyors. That committee issued the following series of questions *re* the employment of surveyors:—

1. Is it desirable that the practice generally adopted in the case of large works (whereby a surveyor is appointed to represent the employer, and another the builders), such surveyors being jointly responsible to the builder for the accuracy of the quantities, should be in any way modified?

2. It was suggested as a convenient course for general adoption that the quantities should be prepared by a surveyor nominated by the architect, and who would be responsible to the employer for his accuracy; the builder being relieved from any responsibility in regard thereto.

3. The adoption of this course would go far towards disconnecting the surveyor from the builder, and making him the agent and adviser of the employer in the matter of quantities, &c. Would this be a system advantageous and desirable for general adoption?

4. A suggestion that the bills of quantities should form part of the contract was well received; architects in leading practice mentioned that they had for many years adopted such a course, and found it to work well, and to be equitable to both employer and builder. Are there any valid objections to the introduction of such a system; the dimensions on which the bills are founded being, in such a case, placed in the hands of both architect and builder?

5. It appears to be not unusual for some architects, especially in the provinces, to furnish the bills of quantities for works to be carried out under their own superintendence. However convenient this practice may be in some instances, are not special precautions necessary? Should not the "bills," in such instances, invariably form part of the contract? And from whom should the architect receive payment for such quantities?

6. It was mentioned as being an ordinary and reasonable course that the responsibility of the accuracy of the quantities should be thrown upon the builder, by fixing a time, say one month from the acceptance of the tender, during which he might prove the quantities, but after which no objection would be allowed. Might not great injustice be committed under such a system?

7. It would be desirable to secure more general uniformity of practice with regard to the taking out of quantities. How can this be best attained?

At the Conference held in 1872, the committee reported on the subject, and their report was issued to the members of the Institute at the time. At the Conference it was resolved "that no resolution be passed on the general recommendations and opinions contained in the report, but that the Council be requested to re-appoint the committee, with the view of laying before the next Conference a further report containing definite proposals on the subject." The report referred to was in the following terms:—

"The wide range of the subject, and the varied opinions which had been expressed at the Conference, rendered it difficult for the committee to determine how best to proceed; after having collected a certain amount of information, they prepared a series of inquiries, which were circulated in the profession throughout the country, and to which sixty replies were received. These replies evince a wide diversity of opinion, arising from local circumstances and individual varieties of practice, and have satisfied your committee that for the present it will not be practicable to lay down any fixed rule for the guidance of the architect in dealing with 'quantities.' Each case must be governed by local or personal considerations, and the committee have therefore deemed it expedient to make their recommendations and expressions of opinions so general as to meet these varying conditions.

The object to be attained by the employment of surveyors to take out the quantities of a building is to afford the builders who are to tender one uniform basis for competition, and to define more exactly and accurately than can frequently be done by the general drawings and specification the exact amount and nature of the work to be executed; and as no employer should desire to obtain from his builder more work or greater value, and should not obtain less than was included in the estimate, while, on the other hand, he should have the greatest facility to secure due allowance in the case of omission, it would appear reasonable that the bills of quantities, which should express in an exact form the intentions of the architect as set out in his general drawings and specification, ought to form a part of the contract, and be dealt with as a recognised exposition of the responsibilities of both employer and builder.

The established practice in London in the case of large and public works, by which one surveyor is nominated by the architect to represent the employer, and another by the builders to act for them, giving the construction of the work and the elucidation of the architect's ideas the advantage of the experience of two professional men, who consider each question from different points of view, has apparently for many years worked well; though in many cases the advantage derived from the engagement of two can only be considered nominal. There is an understanding that the surveyors so employed are responsible to the builder for the sufficiency of the quantities supplied, and the general drawings and specification prepared by the architect being sufficient, the employer is guaranteed against any excess of cost, and the builder is held safe against loss from errors of quantity. On this system your committee do not think it necessary to make further remark, although some objections have been made to it by leading members of the profession, who prefer to adopt the course next mentioned.

Many eminent architects have adopted the course of nominating a surveyor who shall prepare the quantities on his own responsibility, and, as far as the builder is concerned, such quantities become practically a part of the contract. Your committee thoroughly appreciate the great advantages which the architect (and no less the employer) may derive from the employment of a surveyor acquainted with all the details of design peculiar to the architect and with his general manner of proceeding, and also how such an arrangement facilitates proceedings, when time is insufficient for the preparation of drawings and specification in such full detail as would be necessary if a stranger were employed as the surveyor. They are, therefore, of opinion that this system may in such cases be advantageously adopted, provided always that the builder be relieved from any responsibility as regards the quantities, and that the bills be considered as representing the work to be done. The successful working of such a system must depend entirely on the ability and position of the surveyor employed, his relation to the architect, and the extent of the confidence which the builders tendering may repose in him.

It appears to be an ordinary custom in the provinces for the architect to supply the quantities for the carrying out of his own designs; where this is done it should be with the knowledge and concurrence of the employer, and the quantities should form a part of the contract. The architect accepts the duty of providing the quantities, and should not attempt to evade his responsibility by throwing on the builder, as is sometimes done, the labour and risk of checking them, a course which your committee believe to be unsatisfactory, and, in some cases, likely to lead to great injustice.

Your Committee are of opinion that the practice of making the bills of quantities part of the contract has not been fully considered. Recognised or not, the quantities should be invariably referred to as the interpretation of the general drawings and specification; and in all cases where they are supplied to the builder by the architect, or by a surveyor in whose nomination the builder has had no part, and who is not responsible to the builder, they should form part of the contract. At the same time, when once it is admitted that these documents are to form part of the contract, the necessity for the employment of more than one surveyor in their preparation vanishes.

The more general adoption of quantities, the extension to country work of the system of measurement usual in London, the gradual modification of local terms and usages, and, not least, the discussions consequent on such meetings as the Conference, will all tend towards uniformity of practice; and as builders become more familiar with the London system of measurement, and the public better acquainted with the nature and bearings of the questions, as to the employment of surveyors, and both recognise, when such acquaintance increases, the special advantages to be derived from the adoption of one or the other system of employing them, architects and surveyors will find it to the interests of their employers to adopt a uniform practice

H. Currey. Wyatt Papworth.
C. Fowler. Arthur Cates, } *Acting Secs.*
J. Jennings. T. M. Rickman, } *to Committee.*"
J. T. Knowles.

At the Conference held in 1874 the committee reported that,—

"The experience of the last two years has fully confirmed the views expressed in this Report, and the committee are further of opinion that the diversity of metropolitan and provincial practice and the varying circumstances of individual cases, render it at present undesirable to submit 'definite proposals,'"

Mr. Honeyman now came before the Institute with the very definite proposal that in place of having one operation in the measurement of a building there should be two such operations in order to arrive at its cost. Now he (Mr. Cates) contended that if the drawings and specification placed in the hands of the quantity surveyor were complete, a competent quantity surveyor could easily ascertain the quantities of materials required in the construction of the building, and probably more correctly than in the actual measurement of the completed building, for clerical errors were much more likely to creep in in measuring a building *in situ* than in taking the quantities from carefully-prepared drawings. In conclusion, Mr. Cates said that, while he agreed with much that Mr. Honeyman had said, because a great deal of his observations had gone in the direction of the report of the committee, he could not see that he had shown any ground whatever for change in what was called the London system.

Mr. Charles Barry said that any one who had followed Mr. Honeyman's paper with care would admit that the very interesting and important subject with which it dealt had been treated very thoughtfully and with much originality. He did not think he had ever heard a paper read in those rooms which more strikingly illustrated the wisdom of allowing a fortnight to intervene between the reading and discussion of

* *Builder*, vol. xxix., p. 399.

a paper. Such an interval was not possible in that instance, and it was exceedingly difficult to adequately discuss so large and important a subject at so short a notice. He could not help thinking that Mr. Honeyman had based his arguments on utterly false premises, so far, at least, as the London system of practice, properly so called, was concerned. If Mr. Honeyman's premises had been correct, he (Mr. Barry) would follow to his conclusions. In his paper Mr. Honeyman spoke of the quantity surveyor as the servant of the contractor, and, therefore, as having an interest in taking the quantities "full,"—in order, it was presumed, that he might be employed again. That was hardly a statement that ought to go forth to the public with the authority of the Institute. He did not for a moment believe that the quantity-surveyors, as a body, merited such an observation. He did not believe that they would knowingly "take" any quantity that was in excess; but of course they were human, and made mistakes at times. It appeared to him that if Mr. Honeyman's panacea for incorrect quantities, the measurement of the building, were adopted, there would be no immunity from mistakes; indeed, he agreed with Mr. Cates in thinking that mistakes were far more likely to arise in the measurement of a finished building, or of a building in progress, than in the taking of the quantities by a competent surveyor from a complete set of drawings. Mr. Honeyman had stated that, under the London system, it was difficult to obtain an appreciable difference in the amounts of the tenders based on the quantities; but it was his (Mr. Barry's) experience that it was possible,—and, indeed, frequently so,—for the amounts of tenders for a given building to vary considerably, and that to a large extent, owing to the desire of a firm to give full employment to its "hands" at what might be a rather slack time, or by reason of advantageous purchases of materials or plant. Mr. Honeyman had treated somewhat scornfully the idea of pecuniary responsibility on the part of quantity-surveyors for the mistakes they might happen to make; but their guarantee was not quite so shadowy in its nature as he thought it to be. He (Mr. Barry) could quote instances where surveyors, having inadvertently made serious omissions in their quantities, to the prejudice and loss of the builder, had, without hesitation, paid the cost of the work omitted in their quantities. Of course it would ultimately become a matter of simple honesty on the part of the proprietor to consider whether, seeing that he had the work and the material in his building, he should not remit the cost of it to the surveyor; but he knew more than one case in which the proprietor had been content to accept work which had been paid for by the surveyor. In his opinion, bills of quantities should either have everything to do with the contract, or nothing at all to do with it. Where the bills of quantities were issued on the authority of the proprietor or his architect, then it would appear to be only just that they should form part of the contract. But, on the other hand, where the London system prevailed it was equally just that the quantities should have nothing to do with the contract.

Mr. Waterhouse said that although Mr. Honeyman had described the Glasgow system somewhat minutely, he had not stated what it cost to take out the quantities in the first instance and then to re-measure the work afterwards. Although he did not think that the Glasgow system exactly hit the nail on the head, he must confess that there was something very anomalous in nominating a surveyor to take out the quantities, and yet not taking the result of his labour as the ground upon which the tender was to be based. He thought it would be a very good thing if architects could persuade their clients to insist upon carefully-prepared bills of quantities as the bases of their contracts.

Mr. T. M. Rickman said that he had been largely engaged in taking out quantities as a branch of architecture, and not as a separate profession. While he agreed with Mr. Barry in saying that Mr. Honeyman had not fairly represented the London system, the practice of appointing two surveyors, one on behalf of the proprietor and one on behalf of the builder, was rapidly being superseded by the practice appointing only one surveyor, and that one surveyor was fast taking a very different position to that taken by the surveyor of a generation ago. He thought that the measuring surveyors of London would hardly care to become "licentiates" of the Institute; they were prepared to take a much higher position; and, as a matter of fact, they were sometimes appointed arbitrators in preference to Fellows of the Institute.

Mr. T. Chatfeild Clarke said the fact that the large master-builders were in favour of the proposal to make the bill of quantities the basis of the contract should not be taken by the Institute as an infallible indication of the best thing to be done.

The President (Mr. Whichcord) said that had there been time he should have offered some observations on the paper, although his remarks would have been very much on the lines of those made by the previous speakers. The paper was one of great practical importance, and it was greatly to be regretted that there was no time for its further discussion.

The usual vote of thanks to the author of the paper having been put and carried, Mr. Honeyman made a few observations in reply. He said that while he wished to bring out very strongly the position occupied by the quantity-surveyor with regard to the contractor, yet he was extremely sorry that his remarks should be thought capable of being misunderstood, and he should be anxious to do everything he could to so modify the sentences complained of as to do away with the possibility of the existence of any such impression. He was quite sure that it would be just as reasonable to accuse members of the Institute of causing extra expense to their clients for the sake of the extra commission, as to accuse quantity-surveyors as a body of taking their quantities "full" in order to retain the favour of the builders. The one profession was no more likely to commit the one offence than the other profession was likely to be guilty of the other proceeding. The cost of the Glasgow system, for both operations, *i.e.*, taking the quantities at the outset and afterwards measuring the building, was from 1¼ to 2½ per cent.

CONFERENCE ON NATIONAL WATER SUPPLY, SEWAGE, AND HEALTH.

SOCIETY OF ARTS.

As we briefly mentioned last week (p. 552), the annual conference on national water supply, sewage, and health, under the auspices of the Society of Arts, was held on Thursday and Friday, May 15th and 16th. The programme included the following heads, viz.:—1. Methods of securing a sufficient supply of pure water. 2. Evils of impurity, and consequent connexion of the question of water supply and sewerage. 3. Methods of sewerage, &c. The object of the conference was stated to be,—"To discuss existing information in connexion with results of any systems already adopted in various localities, referring to the subjects of national water supply, sewage, and health; to elicit farther information thereon; and to gather and publish, for the benefit of the public generally, the experience gained." The introduction and discussion of untried schemes was not permitted. Special papers, prepared at the request of the council, were printed and circulated at the conference. These were taken as read, but each writer of a paper was allowed five minutes for stating the substance of it, in addition to the ten minutes allowed for a speech on the general question, or any particular phase of it. These limitations were not, however, strictly adhered to.

The first day's proceedings commenced with the announcement by the Chairman (Lord Alfred Churchill, who acted in the temporary absence of the chairman of the conference, the Right Hon. James Stansfeld, M.P.) as to the award of medals for the essays sent in in response to the Society's offer of one gold and three silver medals for the best suggestions for dividing England and Wales into districts for the supply of pure water to the towns and villages in each district. We published the result of the competition in our last (p. 552).

Mr. Toplis, the author of one of the two essays to which silver medals had been awarded, gave a *resumé* of his essay. He suggests,—

1. That the country should be mapped out into water-shed districts, each containing one or more complete river basins, and that a body of commissioners should be appointed to each district. These commissioners should be nominated by Government with the sanction of Parliament; they should be men not connected with the district by personal residence, or by having property or business in the district, and their appointment should be for life, or at any rate for a long term of years, otherwise they will not take sufficient interest in their work to acquire a thorough knowledge of it. A man appointed to a post for a year or two rarely cares to go through the drudgery necessary to make himself acquainted with all the pe[cu]liarities connected with it.

2. That these commissioners should be assisted by ce[r]tain legal and engineering advisers. They should i[n]clude a permanent engineer, at a salary sufficient to secure [the] services of a thoroughly competent man, and there should be a consulting engineer chosen from the first rank of engineers engaged in this class of work. It may, however, be left undecided for the present whether the counsel of the commissioners should have its own consulting engineer, or whether two or more districts should be grouped together, or whether there should be only one or perhaps two, consulting engineers for the whole of England and Wales.

3. That these commissioners should have charge, not only of the waterworks in their district, but also of the rivers and other waterworks, and, in fact, that every drop of water falling in their district should be more or less under their control, from the time it falls on the land until it reaches the sea. All existing commissioners for [the] improvements, &c., must be abolished, and their authority merged in that of the new commissioners, whose duty it would henceforth be to initiate and carry out works for the improvement of river navigation, for the prevention of floods, &c.

4. The commissioners must have power to acquire existing waterworks, and, if necessary, all canals. With regard to canals, it will not, perhaps, be advisable that the commissioners should acquire them, except where, owing to the scarcity of water in a district, and the [in]smallness of traffic on the canals, it may be considered advisable that they should be closed.

The author proceeded to show in detail the duties of the proposed Water Commissioners, and how they would provide against pollution, floods, storm-water, and for an abundant and wholesome supply to every inhabited house in the kingdom. He suggested the formation of twelve districts, specifying their boundaries, and giving the estimated quantity of water available in each.

Mr. Joseph Lucas, F.G.S., the author of the remaining essay to which a silver medal was awarded, then gave a *précis* of his essay. He proposed the formation of Watershed Boards, whose areas of administration should be determined by the number of inhabitants in the several watersheds. Mr. Lucas had arranged the 215 watersheds given on the Ordnance map into thirty-six natural groups, "each of which groups stands so related to the watershed basins contained in it, that a statement of the rainfall and geology of the group applies to every basin within the group. Several of these groups form single basins. The groups are only for the purpose of illustrating the geology and rainfall of the basins, and are not suggested districts.'"

The advantages of the arrangement proposed were thus summarised by the author:—

1. The areas administered by Watershed Boards would be large enough to be properly dealt with, which the existing areas are not. 2. The Watershed Boards would unite the commissioners and sub-commissioners residing in their districts, familiar with their wants, working with them, and, for this reason, having amongst them the very highest scientific attainments and knowledge (the qualifications of a commissioner should be a high one), accessible without an amount of red tape that now renders the scientific staff of the Local Government Board of great extent useless to country districts. 3. It would be to the interest of the commissioners to see water properly carried out, whereas at present nobody but the engineer who prepares the plans and carries out the works cares anything about it. 4. The Local Government Board would have nothing to do with it, beyond granting provisional orders, and, perhaps, in rare instances, [in]terfering with some scheme. 5. The people would [re]alise, and gladly, that they were acting for themselves, carrying out their own schemes of improvement in water supply, and without the depressing sense of the existence of a superior authority immediately above them, always ready to press them rather faster than they are inclined to go, in a state of things which has produced a deadlock with the Local Government Board (which was intended to be a mainspring of action) and local authorities. 6. In those cases in which the Local Government Board may refuse a provisional order, the action is not direct, but there is a commissioner as a cushion in between to bear the blow, and who, doubtless, will be well paid to bear it.

Thus the real mainspring in the provision of knowledge is the Hydro-Geological Survey, and the independent operation of the Watershed Boards with their commissioners, would, no doubt, soon produce the good result of placing the water supply of the country in a satisfactory state. But there is a great deal to be done, and the smallest part of which is the education of the people themselves in sanitary subjects.

Mr. James Birkett, another essayist, stated that, although not an engineer himself, he had prepared his project in consultation with a competent professional man, proposed to collect and impound the rainfall of the hilly district of Westmoreland and the adjoining counties at a minimum low-level of 600 ft. above Ordnance datum.

The rainfall would be collected over an area of 413 square miles, stored in reservoirs, where, with reference to position and strata, such could be selected, erected by damming up the valleys, so as to insure a constant supply during dry weather, and led by collecting and leading canals to the head of a main carrying canal near Settle, situated at about 514 ft. above Ordnance datum.

The main canal would then be brought south; and as contemplated, if found necessary, to adopt the same line of collection where the canal passes through Derbyshire. The main canal would deliver, at a level of 223 ft. above Ordnance datum, a daily minimum supply of 200,000,000 gallons for the metropolis. Reservoirs would be constructed

.l the metropolis at Harrow, Highgate, Hampstead, ..ndra Park, Muswell-hill, Norwood, and Forest-hill. .. supply of 2 0,000,000 gallons would be delivered ravitation, thus affording ample pressure to supply ydrants for the purpose of extinguishing fires in the est buildings in the metropolis.

.e surplus of water collected and carried by the main ld would be distributed right and left of this canal to owns and villages standing in need of water supply. .e main canal, as proposed, will have a fall of 16 in. mile; it will follow what is called the backbone of and; and being always at a great height, will be able, ughout its length, to distribute the waters it carries ravitation.

Mr. Birkett went on to detail his scheme, of h the foregoing is but a brief outline. As ost and revenue, he states,—

a rough estimate, the cost of collecting the water and making of the main carrying canal would amount to 11,175,000*l*. Supposing that the sum of threepence e charged per 1,0 0 gallons for the daily supply of 00,00 gallons, the annual revenue derived by same ld amount to over 2,500,000*l*.

Mr. Samuel B. Goslin submitted an essay, of h the points and suggestions are set forth e following summary:—

ake a full account of the requirements and condition peoples.

ake an account and to consider the best and most ble resources for the work.

Draw out the plan of division and of district and de- ent works

arry out the work.

ppoint means for payment.

statistics and particulars to be taken for every —as for a single place now: this is absolutely neces-

present statistics are not sufficient, being too l.

requirements should be anticipated for 60 or 70

Ordnance Survey should be completed without

ational Hydraulic Board should be appointed.

y water supply should be under Government in- n or supervision and control.

fall and wind-pressure records should be taken.

ewer divisions are now made they will have to be ed as parts of a whole scheme

me arrangement will be found suited to every con-

country should be divided into departments and s.

Department Board to decide what is to be done.

must be made to give powers.

hes of requirements to be embodied in the Bill.

A. T. Atkinson, the author of another proposed to divide the country into dis- but, he went on to say,—

foreseen that, before division of the country into districts can be of much practical benefit to the unts, a further subdivision into sub-districts will be ry; but before this can be accomplished with any y of success, the measures recommended in the on of last year's congress must be adopted. A ount of detailed information, in the form of observ- reports, plans, and gaugings exist in the hands of ies, corporations, engineers, and chemists, which ve yet been made public, and which might be ren- ailable. Mr. G. J. Symons has for a great number devoted himself most indefatigably to the enrol- an immense staff of rainfall observers, and to the ion and comparison of their returns. The British ion, through their Committee on the Underground has done much valuable work in a parallel direc- ile Messrs. Baldwin Latham and Lucas are pur- vestigations of an equally useful nature; but, e are contented to wait for a century at least, the nt of the object in view must not be left to private se. The appointment of a permanent commission rtment "to investigate and collect facts connected ter supply in various districts throughout the kingdom, in order to facilitate the utilisation of nal sources of water supply for the country at s indispensable; and further, to strengthen their should be enacted that every corporation, com- al board, or other body exercising powers con- der Act of Parliament be compelled to furnish to rtment a copy of every report, analysis, plan, gauging, or other observation received by them on ject of water supply.

ssor Ansted was also amongst those sponded to the Society's invitation to n essays. He made the following sug- s:—

livide England and Wales into principal districts, isting either of one complete river basin, or of of adjacent river basins under similar physical s.

subdivide these districts into convenient and roups of moderate extent.

abulate the names, relative positions, and extent ge area of all the streams in England and Wales, primary or tributary, within whose catchment re is any urban population, and to estimate the of such population with regard to each stream.

abulate the names, position with regard to natural and natural river basin, and population of all the England and Wales of more than 1,000 in-

divisions and sub-divisions here proposed being it would be desirable, for the purpose of water to collect and tabulate as many trustworthy f the waters of each stream as can be obtained.

mplete alphabetical index of the streams and entioned in the lists and tables suggested would ible for reference, should the suggestions be

ap on the scale of the Ordnance Survey River which the position of every town and every stream d, and in which the divisions and sub-divisions are duly inserted, would be of great interest and reference.

nly remaining essay of the seven selected e twelve submitted) as worthy of being printed and discussed at the conference was by Mr. W. H. Perring, who was not present. The author proposes that England and Wales be permanently divided into twelve main sections, each one being separated from those adjoining by well-marked physical features.

The proposed plan of division is exactly the reverse of that of river basins, the lines of separation being, not the water-sheds, but the rivers. All the large and some of the smaller rivers, therefore, form the boundaries of these sections, which thus have low and comparatively level ground at their margin. They are traversed throughout a good part of their length by a central elevated line of water-shed, or, in some instances, by the main water-parting of the country. The surface waters of each section thus flow in two directions from the central lines, one portion going to the river of one basin, the other into that of the adjoining basin, or directly down to the sea. As the rivers follow a definite course, the boundary of each section thus circumscribed is (with trifling exceptions) very clear, and in many respects is to be preferred to an arbitrary line, or to an irregular margin, such as is presented by a winding and frequently indistinct line of water-shed, which always varies with the contour of the higher and more broken tracts of country.

Rivers frequently follow, for a considerable distance, a course corresponding, or nearly so, with geological lines of division; as examples may be mentioned the Trent and the Severn, near the junction of the Triassic and Liassic formations. The main lines of water-shed, on the other hand, frequently coincide for great distances, with geological escarpments, as the Chiltern Hills formed by that of the chalk, and the Cotswolds by that of the Lower Oolites. Therefore, the sections having rivers for their boundaries, and main water-sheds for their longer axes, will include larger areas of similar geological structure than the river basins do, which, as a rule, have widely differing rocks on opposite sides, the Thames being the only noteworthy exception.

We must break off for the present at this point in our account of the proceedings. We may, however, here put on record that during the second day's sitting of the conference, the following resolutions were adopted, viz.:—

Moved by Mr. Ernest Hart, and seconded by Mr. C. N. Cresswell,—

"That since a comparatively minute quantity of the poison contained in the evacuations of enteric fever patients may, it is believed, when subjected to conditions favourable to the development of the poison, lead to the specific infection of very large volumes of water to which it has gained access, all possible sources of excremental contamination in the vicinity of water-sources should be rigidly dealt with during their construction or repair and in their use."

Moved by Mr. C. N. Cresswell, and seconded by Sir Henry Cole,—

"That this Conference recommends the Council [of the Society of Arts] to arrange that a deputation wait upon the Government to urge the necessity of taking further legislative means to prevent the continuance of the pollution of the Thames by sewage."

SHALL OUR MUSEUMS, ART GALLERIES, AND LIBRARIES BE OPEN ON SUNDAYS?

On Saturday last the fourth annual public meeting of the supporters of the Sunday Society was held in the large hall of the Freemasons' Tavern, Sir Henry Thompson, president, in the chair. There was a large attendance.

Mr. Mark H. Judge (honorary secretary) gave a *resumé* of the work of the society during the year. The income for 1878 was 539*l*., showing an increase of 73*l*. over that of the previous year. The work accomplished since the last meeting had been eminently practical. In London the opening of the Grosvenor Gallery on five Sundays, and of the Loan Collection on three Sundays, made it impossible for the Sabbatarian party to deny that large masses of the people were anxious to avail themselves of opportunities for culture on leisure days. In the provinces the work of the society had had successful results. In Lambeth, Brighton, and Keswick, libraries had been opened on Sundays. The recent vote of the House of Lords on the question marked the advance which had been made.

Sir Henry Thompson, in the course of his address, said:—I shall endeavour to define the chief objects which the society seeks to attain. First, we desire that Sunday in this country should preserve its grand and distinguishing characteristic as a day of rest. We have united, not only to preserve this national institution, of which, as of others belonging to our country, we have reason to be proud, but we seek to establish it on a surer basis by increasing its utility and adapting it more fully to the wants of a changing society. I suppose no one cares to dispute the statement that nine-tenths, at all events, of the male population of this country are compelled to expend the greatest part of their physical and mental power during six days of the week, in order to obtain what is understood by the common term "a livelihood." Both body and mind are trained by such life to activity, and it is to be remembered that both are maintained in the highest health by action, provided always that this be not so intense as to become exhausting. With hard bodily labour comes rude health; with the trained hand and eye comes the faculty of skilful workmanship; with continued mental labour comes the cultivated and subtle brain. Now, for all workers after these various modes, rest is desirable. But I contend that the rest they need is in no single instance to be obtained by devoting an entire day in seven to attempts to concentrate the mental faculties on religious subjects, or to arouse the religious sentiments by special exercises. So far is an entire day so spent from being a day of rest to any of the labourers referred to, that it is, on the contrary, I do not hesitate to affirm, to the great majority,—whatever they may dare either to say to others or to confess to themselves,—a tedious and wearisome day, the close of which is welcomed as a relief. No; true rest is not to be found in forced inactivity of mind and body, nor in concentration of thought and feeling on a single subject, however momentous, to the exclusion of every other subject as unholy. Very little knowledge of human physiology,—very little, indeed, of human experience,—teaches us that real rest, relaxation from the six days' labour of routine, is rather to be obtained by engagement in interesting occupations of varied kind. While we agree that during the prime portion of the day all facility should be afforded to assemble for religious exercises and instruction, we ask that at least during a second portion they shall possess the opportunity,—that is all we require,—to visit, if they please, the national museums and treasures of art, and also such libraries as can be rendered accessible, especially those public collections which they themselves have contributed indirectly to make and preserve, and which they have not the means of seeing on working-days. And I go further, and say that there is no day in the whole week so appropriate for the study of Nature's works and the achievements of human art as the day which, while entirely ceasing from their ordinary labour, the labourers can only call their own. Now, I have reason to believe that a great many persons who do not support this movement, and who, indeed, are among those who oppose it, agree in the main with all that I have said thus far. They acknowledge the force of the claim, and would find little difficulty in granting all that we ask, provided only they were sure that other changes of an objectionable kind would not certainly follow. Thus, say they, if what you demand be conceded, the way will be made more easy to abolish altogether the distinction between Sunday and week-day. It appears to me that this is really the main objection now offered to our proposal, and it is evidently regarded as the most weighty argument against us, since it is constantly repeated. Only the other day I observed that it was used in public by a very influential speaker, and evidently regarded by him as decisive. The argument is usually couched in some such terms as these:—"We are not prepared to affirm," says the objector, "that it is absolutely wrong to open museums and libraries during a part of Sunday; but of this we are quite sure, that if permission to do so be granted, in a very short time the Continental Sunday will be established in this country. Only transplant the Continental Sunday to our soil, and a great calamity will befall the nation." In reply to this oft-repeated remark, let me observe that, so far as we, the Sunday Society, are concerned, it must be already clear that we are not advocates for turning Sunday into week-day, if that is what is meant by the Continental Sunday. It may be worth while, however, to ascertain if possible, what this comprehensive and somewhat vague term, a "Continental Sunday," denotes; and I think that one very obvious fact is, that some of the most distinctive characteristics of the Continental Sunday have of late been materially changed, according to my own experience, let me say within about the last thirty-five years. During that period public opinion abroad has, according to our views, made it a better day for the people, by diminishing employment of labour thereon. In Paris, and the provincial towns of France, and in Belgium also, shops of all kinds were formerly open,—at all events, during the forenoon. Now all large establishments are closed, and only a few of the smaller ones are open, and some of these close at midday. On the other hand, houses for refreshment,—absolutely essential under the habits and conditions of living

pursued abroad, and rendering unnecessary much domestic household service, — are accessible all the day. These establishments, it is hardly necessary to say, have a character every way superior to that of our taverns and gin-palaces. Throughout Italy also business operations are, perhaps, even a little more restricted than in France. This gradual progress has taken place, let it be remarked, notwithstanding that the public galleries and museums are everywhere open, and are largely frequented during at least half the day. The chief and essential difference existing between the English and the Continental Sunday, the museums and galleries excepted, will consist in the fact that theatres and ball-rooms are open abroad, and that the mechanical trades, especially those connected with building, and also agricultural operations, are more or less pursued, at all events during the forenoon. Is there any reason to fear that the amusements of the theatre and public ball-room will be demanded as a result of opening the doors of galleries and libraries to the people? I cannot discern the slightest ground for anticipating such a result. On this matter, then, we cordially say to our opponents, join us in our effort to obtain objects which you agree are in themselves not blameworthy, and we will stand by your side, if need be, to secure a day of rest to the actor and his allies. On this point we are at one, and very few will be against us. And here I beg your permission, as president of this society, to record an expression of grateful thanks to Sir Coutts Lindsay for his generosity in opening the Grosvenor Gallery to the public on Sunday afternoons. Not only do we prize the privilege of access to the treasures it contains, but we value even more such an assertion of the principles we hold, and such an illustration of their applicability to practice. The magnificent private gallery of the Duke of Westminster has also been opened to the public on Sunday afternoons,—another valuable testimony in favour of our plan, which we gratefully acknowledge. Our thanks are also equally due to Mr. W. L. Thomas, whose collection of drawings, made by himself in Switzerland, was open on three Sundays in October. But it is a great mistake to suppose that the interests of the "working class" alone are concerned in this matter, if by that loosely-used term it is intended to denote only those who live by hard, manual labour. Let us suppose for a moment that every man among them was indifferent to the advantages of open museums on Sunday, or even preferred them to be closed,—than which nothing can be more contrary to fact,—still there are tens of thousands of other week-day workers who desire to profit by those advantages. Why should these suffer from the indifference or prejudice of the former? Let us, then, put ourselves for a moment in the position of the harder-worked clerks,—of those who are confined in shops of every grade,—of the artisans employed in more or less skilled labour of different kinds,—all of whom, although largely occupied with physical activity, are required to cultivate their intelligence, and most desire to do so. This very large class, not altogether now without political influence, may, at no distant period, exercise still more power in the management of the State. That these men should be denied access on their day of rest to the best sources of intellectual enjoyment, and the easiest modes of learning valuable lessons, solely because such access is on theological grounds, and not on moral, displeasing to another class, which is well-to-do in the world, and therefore powerful, is an anomaly the continuance of which is imprudent, to say the least. In these circumstances the thoughtful artisan, desirous above all things to turn his short and valuable leisure to the best account, feels keenly the profound difference which exists between his own condition and that of the wealthy and powerful man who is responsible for the regulations complained of. For what picture, think you, is drawn of the master by the man under these conditions? May he not put such words as these—and with absolute truth—into his master's mouth? "I have on Sunday the resources of my clubs, my well-appointed house in town, my place in the country, my pleasure farm or park, my right to visit Botanical and Zoological Gardens; or, if I choose to spend the day at the seaside or elsewhere, fast trains are at my disposal to bring me back in time to overlook my business. I have at home my library, collection of art-treasures, the society of educated friends, unlimited sources of pleasure for which, doubtless, I am not sufficiently grateful. And I dare to oppose, in social conversation, or on public platform, the claims of my hard-working brother who has none of these things. I dare to vote in Parliament that the museum and the gallery, barely wanted by me, and belonging to every class as part of the national property, but well fitted to furnish him with Sunday recreation in the most profitable and pleasant form, shall be closed on that very day on which alone he can use them. I dare to utter platitudes about his soul's welfare, when I close every avenue to mental and moral improvement, except the temple where strict Sabbatarianism is preached, and the public liquor-shops where dangerous snares both to body and soul await him." Such is the view which is taken by thousands who seek for themselves their liberty on Sunday. Can we say the picture is overdrawn? Let us pledge ourselves to increased exertion to attain the object for which the Sunday Society exists.

The Earl of Dunraven moved the first resolution,—

"That this public meeting congratulates the Sunday Society on the practical shape the movement for opening museums, art galleries, and libraries on Sunday has assumed under its auspices; it accepts the Society's Fourth Annual Report as most satisfactory, inasmuch as it encourages the hope that the reform sought cannot long be withheld; and in view of the fact that in August, 1877, the Society decided to bring the question before the House of Lords, this meeting rejoices that so large an amount of support was given to the proposal submitted to the Upper House on the 5th inst., when, in a House of 126, there was only a majority of eight against the motion in favour of including the British Museum, South Kensington Museum, the National Gallery, and the Bethnal Green Museum among the national institutions open on Sunday."

He observed that their opponents would make it appear that it was intended to have the British Museum open on Sunday, and to compel all working-men to go there, whether they liked it or not. But they did not want anything of the kind. What they said was, "Let those go who want to go, and let those stay away who wish to stay away." What they all wanted was a day of rest, not one of absolute idleness, and not one of drunkenness. His idea of rest was recreation, which was necessary for all, in face of the fact that their climate was not favourable to basking in the sun. There were few opportunities for working-men in London to recreate themselves. If a working-man wanted to get away from home on a wet Sunday there was no place for him to go but to the public-house. People said working-men ought to stay at home on Sunday, but many a case there was in which the working-man had but one room, and that not the most comfortable. Sometimes the relations between husband and wife became what diplomatists styled a "little strained" on Sunday, and then, perhaps, the best thing to do was to get away from home. His impression was that the opening of museums, &c., would tend to diminish drunkenness. The question of prevalent intemperance was so important that if there were a chance of removing that disgrace in some degree the experiment would be worth trying.

Mr. James Heywood, F.R.S., in seconding the motion, thought it might, perhaps, be advisable to endeavour to get one museum, say that at South Kensington, opened on Sunday, as an experiment. He was satisfied that the result would be so favourable as to lead to the opening of the other museums and public galleries.

Mr. Alderman Mathers, of Leeds, and the Rev. H. R. Haweis supported the resolution, which was carried unanimously.

The Hon. J. C. Dundas, M.P., moved the second resolution.

"That this public meeting maintains that the Prime Minister is not justified in assuming that it would be in opposition to the wishes of the people to extend to the metropolis those opportunities for instruction and recreation which can now be enjoyed in the suburbs; this meeting therefore calls upon the members of mechanics' institutes, workmen's clubs, trade societies, and other organisations to appoint delegates to represent them on the national council now in course of formation by the Sunday Society, in order that it may be demonstrated beyond all question that public opinion demands the opening of the national collections in the metropolis on Sunday; and this meeting calls upon the electors throughout the country to give due prominence to the question in selecting candidates for the coming general election."

He referred to the fact that, so far back as 1840, that distinguished reformer, Mr. Hume, proposed a resolution very similar to that which was proposed now upon this subject. What was called the "thin-end-of-the-wedge" argument was the only one which was opposed to them, and that had been shown to be based on entirely false premises. He urged that at the general election which would come at no very distant date the electors of the country, while not making this an all-important test-questi might advantageously bring a little pressure bear on the candidates who seek their suffrag

Mr. George Godwin, in seconding the moti said he believed Lord Beaconsfield's convict on this question was founded upon insuffici knowledge and information. He trusted t the curtness of the language of the first par the resolution would not be disagreeable to Prime Minister, who argued the question in House of Lords fairly and dispassionately. even if he (Mr. Godwin) had it proved to that the working classes were not anxious the opening of museums, gardens, and galle on Sunday, it would not alter his opinion th was most desirable that accessibility should obtained to them. He happened to have t for many years, through peculiar circumstan in communication with large numbers of working classes, and he had no hesitatio saying that the great masses of them recogr the enormous advantages which would ri from the means of information and instru that would be afforded them by the Su opening of these places. He was glad to that the Sunday organ recitals at the A Hall had been thoroughly appreciated, ar a member of the Council, he was in a po to state that arrangements had been whereby Mr. Heathcote Statham would sh give a further series of six or seven rec The other day, Sir Thos. Chambers, speaking at what might be called an oppo society, made the astounding statement "according to the elevation of art was the l ing of morals." He also said that the str works of fine art never kept a man out o Old Bailey. One would imagine that those Sir Thos. Chambers had sentenced had be their lives listening to the music of Hand Beethoven, or gazing at the works of Fla Michelangelo, or Raffaelle. It was not, ho those whose tastes were improved and aspirations were elevated by the study of of fine art who formed the criminal classes cordially seconded the resolution.

The resolution was enthusiastically ad and on the motion of Lord Dorchester, secon Sir Arthur Hobhouse, a vote of thanks wa to Sir Henry Thompson for his able addr

PICTURES OF NORTHERN INDI

Monsieur B. Vereschagin was resid Northern India for two years, includin period of the visit of his Royal Highn Prince of Wales in 1874. During this he made a large number of ethnologic architectural drawings among which, from nature, are to be found represe types of almost all races and castes, and tectural styles existing in Northern India. are now in the French Court, Exhibitio South Kensington, and deserve more at than they appear to have received. M chagin brought home a complete assort costumes, arms, and furniture, by the as of which he is now engaged in preparing of pictures, which he proposes to call a "P Poem," illustrative of the stages of the p of European influence in the East. The f last only of this series of pictures are ex The first represents the spacious inter mosque, in which the Great Mogul court are at devotion, and is to be, as the overture to the introduction of "E ambassadors; and the last is a large minute representation of the procession Prince of Wales through Jeypur, w Vereschagin describes as the climax triumph of the European ideas. The i diate pictures are being prepared fr studies that surround the gallery, a represent the leading incidents of moder history.

Protection against Fire.—The re the head-quarters of the Metropolita Brigade from Watling-street, City, cau siderable anxiety among the inhabitant east-central district, more especially a considerable magnitude have recently o causing great devastation before the fire could arrive. City merchants are ad system of self-protection, and no l terest attaches to the fact of Messrs & Co., the well-known paper me placing over the whole of their pre Upper Thames-street hydrants, invente fire-engine manufacturers, Messrs. Mason. Nearly a dozen other City m have adopted the same principle.

LEICESTER AND ITS TRADE.

[OETHE's traveller, who renounced "many ngs in order to enjoy more," might have nd that enjoyment on coming to the centre he fair county of Leicester, on the banks of little river Soar. Dating back before the of the Romans, and having claimed for it the dit of being built over by King Lear, it has honour of many tokens of antiquity,—nan stones and pavements having been found, les having been battered, historic abbeys ing vanished, and world-noted inns having ed away. To Leicester, Wolsey came on his ney south, but took thence a more momen- journey; at Leicester, the third Richard ed before the battle of Bosworth field, whilst y a noted one has there passed, and left tokens of his presence. The old borough, y with its age and honours, has found long that to stand still is practically to fall back e rank of towns, and it has in a considerable ree cultivated those industries for which its tion best fits it, and has had new life given to The changes it has known have been great, have those within recent times been the , or those bearing less fruit. One of the arkable results is that the population of 25 in 1821, and 39,306 in the following de, had risen at the time of the last census 5,200. The olden industry of hosiery is ex- ed, and there are added thereto, on a large , the manufacture of elastic webbing, , gloves, cottons, woollens, and shoes. oking at Leicester as it was a little over two years ago, we shall find that its govern- was of the olden type,—its mayor had the tance of a recorder and high sheriff as well bailiff. There were quarterly courts of ons as well as courts leet and baron, and a of record. The "freemen's piece" gave ese gentlemen special privileges, and the of the manor was then a personage of more nominal importance. The town was even forward in the ranks of boroughs,—it was lighted by gas, it had stately public es; its passing canal and the Leicester and nington Railroad gave to it many facilities affic then exceptional. Amongst its five h churches some bore the impress of the panaments of the civil wars. It had a or more of chapels,—Baptists predomi- therein; and its hospitals, schools, ms, and charities were many. Turning to ade, hosiery, and especially the production orsted stockings, was prominent,—18,000 s of hose being estimated as then weekly . There were bleachers in those days on Island; the bootmakers were many; and s, gloves, hats, laces, yarn, sewing-cotton, s, and umbrellas were amongst the articles ; whilst special industries employed frame s and stocking-frame needle-makers. c and travel were ministered to by a very number of coaches and carriers, and by ater conveyances, furnished by the Pick- the Pickerings, and the Wheatcrofts of ay; but though there had been a cheapen- f the cost of fuel by the opening of the ay just named, the trade of the town, t in a few special articles, was very limited. estionably the position of the county has, very considerable extent, dominated the ter of the trade of the capital. Its l position, and the absence of any large of minerals capable of being remunera- worked, have kept from the county certain tries which in recent years have very ly swelled the trade of many counties; he great agricultural regions around ster have given to it other trades in which s acquired pre-eminence over many dis- . The shoe manufacture has taken root in wn to an extent almost undreamt of in rthern regions, where the old proverb is s, "There is nothing like iron"; and some e Leicester establishments in the shoe for completeness and extent, and for the ion of the newest and most efficient inery, may rank with the best in the om. In another class of trade,—in the b-web manufacture, Leicester holds no rank; in wool and in hosiery the trade town has increased with the years that passed over it, and its exporting con- seems to have increased of late. Whilst may still be looked to as amongst the f the trades, there are others which have uccessfully cultivated. The implement of the town are noted; its breweries are e extent; and it has to the full those minor but not unimportant industries which cluster in country towns. It furnishes the example which is so frequent in Britain of a drifting of industry into certain grooves; partly because there is a favourable situation, and partly because the outgrowth of one large industry almost necessarily brings others in its wake. The chief industries of Leicester have been those already indicated, and there are necessarily brought with them other subsidiary trades,—trades which contribute to the needs of the larger industries. Trades are like the insects in the disfich, which had "smaller fleas," the latter being attended by others still more small, and "so on *ad infinitum*." It is so in Leicester to an extent which it is needless farther to recapitulate.

With this industrial growth, there is a full development of those institutions which almost invariably attend the growth of towns, and of some of the undesirable but inevitable accompaniments. The infirmary is actively at work with other curative institutions; science and literature have varied homes; and there has been an ample growth of the phases of religious life and of its extent. The Victoria Park is one of the lungs of the town; and there are recreation-grounds and other exemplifications of green oases in the midst of brick and mortar. The Town Council has its sewage works, the tramways are known, and there are other tokens of the enterprise of the town and of the influx of capital thereto. Crime in the borough is not of the lightest order at times, as the borough quarter sessions prove. The 2,000 paupers and 200 vagrants weekly relieved show that of poverty Leicester has its share. But there are lighter gleams in the picture, as the provident associations, the savings-banks, and similar associations testify; whilst the character of the workmen of the town must be stated to be as high as in towns of a similar extent.

Wooed by more than one railway company,—for the Great Northern Company is spending large sums on the completion of its lines converging near Leicester,—with central position, and great advantages for its special trades, the town should be able very materially to advance in the future, and probably at as rapid a rate as it has done in the immediate past. When one or two industries on a large scale are planted in a district, it is rare to find a falling off in that district, unless it arises from the decay of the trade from some of the changes necessarily arising from time to time through the application of scientific discoveries. The chief trades of Leicester may be subject to the momentary caprices of fashion, but they are not so subject to those more momentous changes just indicated. The boot trade is not, for instance, subject to the revolutions which the iron trade of Great Britain has experienced within the past score of years, and which it is apparently now again experiencing. Thus with something like stability in many of her industries, with public spirit in some of her citizens, and with capital galore, the future of Leicester should be prosperous. It does not appear likely to make those new departures in trade which give such great impetus to towns that have been flourishing previously; but it is in every way likely to continue that steady growth which it has maintained for so long, and which has given it no mean rank in the roll of inland towns.

ARCHITECTS' BENEVOLENT SOCIETY.

AN APPEAL.

SIR,—In the years 1870, 1871, and 1872, when I had the honour of being President of the Royal Institute of British Architects, I ventured, in each of the annual addresses which it was my duty to read, to set forth the strong and urgent claims that the Architects' Benevolent Society had upon the support and sympathy of our profession. I stated in 1871 that only 256 architects throughout the United Kingdom subscribed to this fund, and of that number, with 519 (fellows and associates) members of the Institute, only 153 members were subscribers. I regret to say that in the last of those three years I had to read a letter from the secretary of this society, in which he said,—"Up to the present time the Society has had little further accession of funds in the shape of donations or subscriptions traceable to the appeals you have made." This result somewhat damped my efforts and my hopes, but three circumstances which have somewhat lately occurred have led me to believe that I may once more seek to interest my brother architects in the claims of this most deserving charity, and, if possible, to call forth their bounty.

1st. I have had the honour of being appointed to succeed the late Mr. Sidney Smirke in the office of President of the Architects' Benevolent Society.

2nd. The generous legacies bequeathed to the Charity by our late members, Mr. C. C. Nelson and Mr. Johnson, the former having left 100*l.*, and the latter 1,000*l.* towards our funds.

3rd. The generous offer of Mr. George Godwin to contribute at once 100*l.* if fourteen other contributors can be found to give a similar amount within three months, so that the funded capital of the charity might be brought up to 5,000*l.* (an amount which would even then contrast unfavourably with the 25,365*l.* subscribed by the engineers for a similar benevolent purpose).

Up to the period when the two legacies I have already mentioned accrued to us, only two others in twenty-eight years had been left, amounting in all to 220*l.* The funds invested up to the end of last year amounted to 2,393*l.* 6s. 8*d.* ("Stock" New Three per Cents.) to which there was added in January last 177*l.* 1s. 2*d.*, and there will soon have to be added whatever additional stock Mr. Johnson's bequest of 1,000*l.* may produce. It is to raise this fund to 5,000*l.* that the council now appeal to the good feeling of our profession. The subscribers to this charity are only 26*½*, contributing 33*¾*. 8s.: what may now be the number of architects practising in the United Kingdom I do not know, but they may be without exaggeration counted by thousands; and it should be remembered that amongst the numerous and painful cases which come before the council for relief, a large proportion are from the outside of the metropolitan practitioners, or from members of the Institute. In the Institute alone there are now 680 fellows and associates, and in the Architectural Association about 700, not members of the Institute.

The Council of the Architects' Benevolent Society are most unwilling to press unduly on the generosity of those who have already so liberally subscribed, nor is it right that they should do so seeing that a large number of architects who could well afford it neither subscribe nor give; but if our efforts fail to enlist the sympathy of these individuals we must as a last resource turn again to the "willing horse" and ask its aid to realise the important object of having a funded investment of 5,000*l.* To those who would find it inconvenient to make *present* donations, we can but point to the generous examples of Mr. Nelson and Mr. Johnson, and ask them to do likewise remembering that increased annual subscriptions will go far to compensate for the lack of present donations.

In reply to Mr. Godwin's generous offer we have had up to the present time but five favourable responses. It is true that this offer may have been very imperfectly made known to the profession generally; and one of the objects I have in view in this appeal is to let so generous an example be more publicly known. If we fail to get the number proposed at the larger amount, we can but seek to realise the deficiency by smaller donations: individual members uniting together to make up sums (or purses) of 100*l.* each. I have Mr. Godwin's authority for saying that his offer will remain good and the time be extended to six months provided that the deficiency be by that time made up and duly invested. I cannot believe that this will be found an unreasonable hope.

THOMAS H. WYATT, President, A.B.S.

No. 77, Great Russell-street.

THE PROPOSED MUSEUM FOR SOUTH LONDON.

THE proposal is revived for the establishment of a museum in South London, and last week a public meeting on the subject was held at the Bridge House Hotel, London Bridge, Colonel Bereaford, M.P., in the chair. During the discussion which took place, it transpired that Messrs. Sutton & Dudley, the builders, had offered the use of the hall in the late Surrey Gardens, provided a certain sum was spent on the building, but it was stated that the other conditions required by Messrs. Sutton & Dudley were such as to preclude Government support. Mr. Andrew Dunn, one of the candidates for the representation of Southwark at the next election, said, in some remarks favourable to the establishment of the proposed museum, that the City companies were manifesting great liberality in regard to the public education, especially in regard to art classes, museums, technical education, and libraries in connexion therewith; and it had struck him that if they saw on the part of gentlemen in whom they had confidence earnest effort in South London, they would come forward with help. He was, therefore, disposed to urge that a body of gentlemen be appointed to endeavour to obtain a suitable freehold site for a museum for South London. Some gentlemen well acquainted with building operations should be consulted to ascertain what the necessary buildings would cost. Government had given large sums of money to Bethnal-green, on a certain condition, that condition bring that the money should be subscribed in the locality to purchase a freehold site, and they had offered the same for South London. He believed that if they could secure the freehold site they would help them, as they had helped Bethnal-green, and even build the museum. He therefore proposed that a committee be appointed to use every endeavour to find a suitable plot of freehold ground for the erection of a library and museum. The resolution was unanimously adopted, and the committee named and appointed accordingly.

THE MIDLAND RAILWAY COMPANY AND THE HOUSE DEMOLITIONS IN SOMERS-TOWN.

THE Midland Railway Company, which, under its Act of Parliament obtained upwards of five years ago, has been engaged during the last three years in clearing away almost all the houses and other premises in Somers-town, covering an area of some seventeen acres, has again, during the last two or three weeks, had a large number of workmen employed in demolishing more than 100 other tenements, and there has been a repetition of the former outcries by the inhabitants that they are being unfairly ejected. The scene presented at Somers-town at the present moment is certainly one of much desolation. Long ranges of streets of houses are roofless. In many cases the bare walls only are remaining; other houses still standing are more or less in a dilapidated condition, whilst several acres of ground are still covered with the *débris* of the houses already demolished. The company are clearing the ground piecemeal, so to speak, and it is said that something like eight years will elapse before it can be all cleared. In the meantime the trade of the locality has been to a great extent destroyed, and the shopkeepers and inhabitants have been forced to migrate to other localities. It is stated that during the progress of the clearances now going forward force has had to be used in many instances in ejecting the tenants, and that in several cases the furniture was turned into the streets. What the company intend to do with the land when they have finally cleared it appears to be involved in mystery. It has been variously stated that it is to be converted into a huge goods depôt; then again it was rumoured that the company's intention was to construct a spacious wholesale vegetable market; and now a report is current that a portion of the ground is to be turned into a garden and recreation-ground for the use of the visitors patronising the St. Pancras Hotel. We should be interested in knowing what has become of the former inhabitants.

NORTH LONDON RAILWAY COMPANY'S SURPLUS LAND AND BUILDINGS.

THE twenty-first sale of the surplus property belonging to the North London Railway Company took place at the Auction Mart last week, when twenty-three lots were offered by Messrs. Beadel & Co., consisting of several plots of building land adjoining the company's railway in the neighbourhoods of Barnsbury, Highbury, Ball's Pond-road, Dalston, Shoreditch, and Bow. The property likewise included house and shop property in the same localities, and also in Camden Town. There was a very numerous attendance, including several persons connected with building, and the competition for the various lots was close and spirited, the whole of the property offered, with the exception of one or two lots, being sold. The first lot offered was a large freehold public-house in Chalk Farm-road, Camden Town, called the Carnarvon Castle, which was knocked down for 4,000*l*. A large block of freehold building land, close to the Dalston Junction station, containing 45,000 superficial feet, described as very eligible for the erection of manufacturing and business premises, was sold for 3,300*l*. There are some buildings and materials on the ground which the railway company undertake to remove. Another freehold plot of building land, adjoining the first-named lot, and containing an area of 2,440 superficial feet, realised 500*l*. A block of freehold building land, opposite Bryant & May's match manufactory at Bow, containing 3,600 superficial feet, and at present in the occupation of the Third Essex Artillery Company, was sold for 600*l*. The other building plots included land in Great Eastern-street, Holywell-lane, and Drysdale-street, Shoreditch, the prices realised for this portion of the property ranging from 1s. 6d. up to about 4s. per superficial foot. Two ground-rents of 30*l*. per annum each, secured by house and shop property at the Highbury Station buildings, each sold for 760*l*. The proceeds of the day's sale amounted to upwards of 17,000*l*.

Growth of Hornsey.—Fifty years ago this parish numbered 2,000 people, now the number is 25,000. Some portions of it, which then had not above 10 inhabitants, now have over 2,600.

THE HOUSES ON THE MILKWOOD ESTATE, AND THE SPECULATIVE BUILDER.

THE outcry which is at present being made by a certain section of builders against bye-laws proposed to be enforced by the Metropolitan Board of Works in connexion with the Metropolis Buildings Amendment Act of last session, suggests the inquiry whether or not the complaining parties are entitled to much sympathy on the part of the public. A few facts respecting the buildings on the Milkwood Estate, at Brixton, where considerably more than a thousand houses have been erected within the last three or four years, will serve to illustrate the manner in which houses and shops are run up in different parts of the metropolis by a certain class of builders. Those who may have passed along the various roads on the estate during the time the erection of the houses was in progress, cannot have failed to notice the announcement in almost every dwelling as it was completed, "this house to be sold"; and in this respect the builder has, in the main, been successful. He has managed to dispose of the tenements which he has erected, to the well-to-do artisan and the mercantile clerk, who have purchased them either as an investment or for occupation, and the estate knows the builder no more. As regards a very large proportion of the houses on the estate, however, it now turns out that it is far from satisfactory to the unfortunate purchasers, who find themselves in possession of dwellings in many respects badly built, and comparatively worthless, the materials being unsound and fragile, whilst the structural arrangements as respects decency and general domestic convenience are simply discreditable.

Should any one doubt the correctness of these allegations, let him pay a personal visit to the estate, as the writer of this notice has done, and examine and judge for himself. He will find, for example, in the locality of Poplar-walk-road, where some 200 houses have been built, that many of them are of the most unsubstantial character, and seemingly dangerous to live in. The writer inspected several of these houses of cards, in company with the tenants and some of the purchasers, and as a sample of the structures, it may be stated that mortar appears to have been altogether dispensed with, the material used in lieu of that essential ingredient for good and safe building being mainly earth, with an infinitesimal sprinkling of lime, the consequence being that the so-called mortar is now nothing more than dry dust, fast crumbling away, and during the visit this fact was illustrated by an ordinary dinner-knife being easily passed through the walls in several places between the different courses of brick-work. Fissures and cracks in the walls are observable in numerous instances, and in many cases there are manifest indications that unless substantial repairs and even rebuilding are undertaken, the structures must come to pieces. The bricks are also of very inferior description, whilst the woodwork, including both floors, windows, staircases, and doors, is best described as being of "green" material. In many cases the interior walls are plastered with the same "mortar" as has been used in the exterior of the buildings, and one of our informants,—a purchaser,—remarked that "the papering alone saved them." Another fact pointed out to the writer was the defective drainage and sewer arrangements of many of the houses, and we were shown two cases which we were assured were only representative of many others on the estate. In these cases the connecting drain-pipes of the houses with the main sewers were constantly choked up, and this was alleged to be owing to the Board surveyor having been deceived by several of the builders, who instead of connecting each house by a separate drain-pipe with the main sewer, had made one drain-pipe common to a number of houses. Large numbers of the houses on the other different roads on the estate are of a similar character to those in Poplar-walk-road, although it is only fair to admit that some, especially of those at the south or Herne-hill end, are of a much superior description. The cheerless character, however, of those portions to which reference has been made, has had the effect of causing a constant change of tenants, until, like some other building centres of the kind in Peckham and the neighbourhood, the estate has been designated "Slopers' Island." It is to be hoped that the new building bye-laws will at least be sufficient to prevent the erection of other buildings of a similar character.

THE MOSQUE OF CORDOVA.

SIR,—In his interesting account of the Mosq of Cordova, published in your impression of th 10th inst., the writer, as well as M. Théophi Gautier, seem to be under the impression th the whole of this vast building was erected t Abdu-r-rahman I. in as short a time as twent one years. This idea, however, is not correc for the first mosque, built between 786-79 consisted in plan of only eleven aisles, runni from north to south, and twenty-one aisles the direction from west to east; and it was n till 961-967 that Hakem II. cut through t southern wall and continued the aisles twel bays farther to the south, the central aisle t minating in the exquisite Mihrab and chape rich in mosaic. Later still,—988-1001,— Massour cut arches through the eastern wa and added eight more aisles, extending the whi length of the older building.

On a careful examination, a month or so a of the styles of the three portions of t building, we found that the differences of di are very marked in the columns, capitals, a arches. In the earliest portion the colum are of various sorts and sizes, irregularly pla with regard to their colours, with Roman a Byzantine capitals most richly and delicate carved.

In the addition of Hakem II. the columns a uniform in size, and the black and red mar is arranged alternately, the capitals ha blocked out to the proportions and outlines the ancient Corinthian ones, while the doub semicircular arches are beautifully construc in brick and stone. There are between th arches (in the middle aisle) engaged as octagonal shafts of stone corbelled out, most delicately fluted and carved in var interlacing patterns. On these formerly res the tie-beams. The latest addition to the e is carried out in a rough and inferior mann the columns in some cases are most irregula spaced out, making the arches of varied shap and the capitals are very coarsely blocked o in fact, the evidence of the building it proves that it is not of one date, and that old story of the twenty-one years does not "] water."

With regard to the destructive work done the Christians, while deeply regretting it, is forced to admire the ingenuity and skill e cised in providing the supports for the w and buttresses of the choro, and the rich m ner in which these great blocks of masonry treated, especially behind the high altar. there is another great chapel introduced i and destroying fifteen bays of, Hakem work, which has nothing in its design or det which can palliate its intrusion. I thoroug agree with the writer that this building ma the Christians of that day appear the "infa people."

R. HERBERT CARPENTER.

THE THREATENED CHURCHES OF T CITY OF LONDON.

SIR, — Feeling, for many reasons, a g tenderness towards those threatened churc and believing their demolition would be a l and retrograde step, I cannot resist the imp though it is more than probable that, sh they remain, I shall never again behold th to second your protest of last Saturday ag it;—not with any hope of strengthening y you have ably advanced, but simply to lab more voice be heard in their behalf.

I well remember, on my first visit to Lon now thirty years ago, the first objects I sa for, after St. Paul's, being Wren's parish churc all of which, from what I had read of the considered highly worthy of inspection, as now,—masterpieces of planning, showing application of geometry to architectural position as it is shown, perhaps, nowhere and how perfect uniformity and symmetry be called by it out of the most irregular amorphous space; which alone, without carving and other valuable features of m of them referred to by you, and saying not about historic *prestige* and antiquity, n render them worthy of the land they stan however valuable.

Since this first visit they have grow familiar to my eye, bodily and mental household things, and their steeples ess

* Mr. Carpenter has sent us a corrected pl the mosque; and we will make an opportun publish it.

res in that picture of London which dwells
y memory, and without which it would
London no longer. Their removal will
a lonely air to the cathedral, to which
serve as connecting links leading off to
secular and ordinary street architecture,
which will seem like a mother robbed of
offspring. It will produce a change of
t that will, I should fancy, be felt as a
holy one by those who never entered
churches; something like what would be
ated by Constantinople despoiled of her
rets, or a park of its trees.

ey are not the most perfect specimens of
les in the world. They do not exhibit
and spire so blended into one beautiful
ure as some celebrated Gothic examples.
of the threatened steeples are without
poetic element, the colonnade, which so
es Bow steeple and that of Dean Aldridge
ford; but they are most of them pleasing
picturesque in outline, and all original
diments of artistic feeling for form, and
to the true method of working and
ing beauty and originality. Wren rightly
the spire (a Gothic feature) small, and
united the pyramidal to the prismatic
and conducted from the square to the
nal prism. He made in these structures,
eve, no misapplication of the Classic
; for nothing could produce a more
play of light and shade, or pleasing out-
gainst the sky, than the kind of compo-
at which he aimed, and in two or three
es most successfully achieved. One ex-
that of St. Edmund's, Lombard-street,
its spire concave,—a graceful feature,
of imitation, and most of them an aërial
ss suited to their aërial position.

whatever their merits or demerits, they
e finishing points, pinnacles, or finials of
ty, which would be disfigured by their
tion as much as would a Gothic minster
levelling of its clearstory battlement,—
t a disfigurement, perhaps, as the demo-
of thirty whole streets, or the bombard-
of the City from the Thames would pro-
And there is not a man of true taste and
ed judgment but would feel London to be
rer, and that the land they occupy had
early recovered for any secular or com-
purpose by the loss of such familiar
, which were growing, by the "golden
f time" and historic associations, more
ing every year.

preservation is the more important as
sque skyline is that in which our cities
dient, and especially behind Oriental
which far outshine ours in brilliancy of
rising into the air, as they have done in
sness of the materials of which they are
ed and covered.

would fancy that the odour of sanctity
ttaches to buildings long devoted to the
of God, and from which the incense of
and praise had gone up to heaven for
enerations, would be a sufficient shield
protection of both churches and steeples.
rd for this will, I fear, have an ill effect
he minds of the people, especially the
r and uneducated classes, who, un-
med to make nice distinctions, will
see in the demolition of the thirty
s so many altars thrown down, so many
directed fingers put aside. While *we*
t as a blow at architecture and as a slight
at man, who no doubt thought when he
nstructing so excellently, that he was
for eternity, by the people generally it
deemed a blow at religion itself.

w not if it has been suggested before,
important do these steeples appear to me
aspect and identity of the City, that, if
use could be found for the churches,
worthy of their character and original
tion (which I cannot think to be the
nd their destruction is really inevitable,
ld still plead for the sparing of the
, which would occupy but little space
parison of the whole sites, as marks of
and historic spots, dear to memory and
Englishmen of any feeling for art or

SAMUEL HUGGINS.

onal Water Supply Exhibition.—
was opened on Monday at the Royal
tm, Westminster, an exhibition intended
rate the "various points that have to
en into consideration in selecting and
ining a 'pure' water supply."

ST. SEPULCHRE'S CHURCH, HOLBORN VIADUCT.

SIR,—A statement having been made in the *Builder* of last week "that, in consequence of the Great Fire, Sir Christopher Wren strengthened the four great piers supporting the tower by inserting semicircular arches and columns beneath, these have been wholly removed, &c., the result is the tower has bulged, and the stone staircase is filled with concrete," may I be allowed to quote from a minute of the vestry books that "the alterations under the steeple" were carried out in the year 1790, not by Sir Christopher Wren, as alleged, but sixty-seven years after his death, when the circular arches were inserted within the ancient Gothic arches of the tower, not with the intention of strengthening the tower, whichit did not require, but to invest the work with a Classical dress, and to cover the surface of the damaged stonework where much calcined by the effects of the Fire. The tower has "not bulged," but finding that the western buttress to the stone staircase was out of an upright ("had bulged"), and that there were two or more old cracks in the masonry of this turret staircase I think the churchwardens, upon my representation, and exercising a wise discretion, directed the lower portion to be made solid, which was carefully carried out with brick-work in cement.

The groins generally in the porch probably suffered also greatly at the time of the Fire, and later on at the hand of the plasterers when its ribs and carved bosses were covered with cement. This has been very lately carefully removed, and in so doing revealed the sad havoc made from the effects of the Fire, and in hacking off the surface of the stonework to receive the cement.

I would also ask to be allowed to remind your readers that, in reply to the question "did any body (even the architect at present in charge of the works) know what was intended to be done with the interior?" which was asked at the meeting of the London and Middlesex Archæological Society, I there distinctly stated that there had been two faculties applied for by the vicar and churchwardens of the parish, and to each of these before they could be lodged at the bishop's registry office, the plans and specifications are required to be prepared to accompany each application for a faculty setting forth the nature of the proposed works, which were duly lodged for the approval of the Vicar-General, Dr. Tristram, with each application. It is surely hardly worth alluding to again, after having done so in the *Builder* of September 28th last, but that these misstatements have been inserted in other papers also.

ARTHUR BILLING.

APPOINTMENTS.

Deputy-Surveyor for the West Riding of Yorkshire.—The appointment of this officer took place on Saturday last, when, out of the 143 candidates for the office, seven met the Finance Committee at the County Offices, Wakefield. This number was then further reduced, leaving the appointment between Mr. J. V. Edwards, borough surveyor, Burnley, and Mr. R. S. Dugdale, deputy borough engineer, Salford; finally Mr. Edwards was elected to the position, subject to the approval of the Court of Quarter Sessions. The salary is 400*l.* per annum.

Newtown Local Government Board District.—Mr. Charles Law Green, C.E., has been appointed by the Local Government Board for the above district, resident engineer, on the construction of the extensive sewerage and drainage works for this district.

SOMETHING MORE ABOUT JAPANESE THEATRES.

IN a recent issue of the *Builder*, a description of a Japanese theatre was given, with illustrations. The following further particulars may be of interest to some of our readers.

The origin of the stage in Japan is generally believed by the natives to be the effort made about A.D. 1467 to collect money for the purpose of re-erecting a shrine in the province of Idzumo, dedicated to Oanamuchi* no Mikoto, and which had been in existence for some twenty-three centuries. It was at this shrine that the myriad of divine spirits were said to assemble during the tenth month every year to arrange the marriages. When the divines became weary of their task and somewhat careless, ill-assorted couples were too often paired, so much so that the bonds had often to be severed.

Okuni Kabuki, a woman who was a native of the district, wished to aid in the restoration of this the great shrine of the province, and with the assistance of a man called Nagoya Sansaburo, erected a temporary stage on a grass plot in Kioto (the Imperial city), and gave performances for the first time in Japan.

Although a temporary roof over the stage appears to have been general, even in the earliest days, there were few large buildings especially erected and fitted up as theatres; the audience were accommodated on mats spread on the ground, and in some special cases, like the modern wrestling exhibitions, the outer ring of the enclosure would be formed of tiers of raised platforms, each group of visitors occupying these providing their own material for erecting temporary awning of matting or other fabric, while those in the centre would be without any shelter, unless, indeed, between the acts or during a shower of rain, when umbrellas would be spread by those fortunate in the possession thereof.

Both sexes do not act together. There are a few troupes composed of women alone, but they are not popular. Youths of effeminate cast of feature are trained to take the female parts; and even in private life they affect the dress and habits of a woman.

Actors, as a class, are looked upon as very low, socially, and are considered loose and immoral; yet successful "stars" are made much of; travelling from place to place, they often receive much attention from the upper and wealthy classes, whilst the townsfolk usually give them an ovation, and will go out miles to meet a "star" on his way "to town," and carry his chair,—a proceeding that in their enthusiasm often becomes most uncomfortable to the actor. The division of parts, disputes, jealousies, and other minor matters behind the scenes are very like human nature under the same circumstances amongst ourselves, and the "free list" also exists. There are no *encores*, bursts of applause, and annoying interruptions. Occasionally the audience will give way to laughter; some tender-hearted maiden will cry under the influence of a pathetic scene; once in a way some Japanese "man about town" or friend of the actor will explode with some short terse expression, such as "Well done!" "Hear that!" "The best in Japan!" but it is considered "bad form," and far from decorous.

The successful author is frequently employed as a prompter, usually so for his own pieces; while the poor author, less successful, must put up with some subordinate or even menial employment.

Actors are said to be a very superstitious and illiterate class, and as they appear to intermarry, the profession is almost an hereditary close corporation.

When the Tokugawa Shogonate power became firmly established in Yedo, at the end of the sixteenth century, actors were encouraged. Saru-waka Kan-Saburo was sent there, to assist in making merry during the festivals given at the building of the citadel.

There is one family, the descendants of Ichikawa Danjuro, which forms an exception to the low estimation in which this class is held. Members of it are actors of renown at this day, and highly respected.

Actors are invited to feasts by their admirers, and it is not uncommon for ladies, and even men, to take off some outer garment and send it, in a moment of enthusiasm, to the actor, to be redeemed afterwards, usually by a gift of money considerably more than the value of the article.

To jot down every curious particular that is remembered, would take more space than can be now spared.

The description in a former issue refers to a theatre built within the last few years, in the centre of a quarter of the city at the time entirely occupied with houses of ill fame, but which, since an extensive conflagration destroyed most of the buildings, mainly depends upon its proximity to the foreign settlement for its prosperity.

P.

* Oanamuchi is credited with having introduced and fostered the potters' and other useful arts in Japan.

INDIVIDUALISM IN ART.

SIR,—Will you allow me, through your columns, to express my pleasure at the manner individualism in art was advocated at the Sheffield Art Schools? After such a demonstration of this important element in the production of art, we will hope that architects will see that the work produced upon their buildings bears that characteristic more forcibly, for there are many "English workmen" who do not "conceive absolute uniformity the one condition of perfect work," and will be pleased to see a way out of dull system.

Surely there is not much individualism in the monotonous ornaments and enrichments that are repeated, yard after yard, in terra cotta. If such were not not used by architects, commercial enterprise,—which at best is discordant with the true spirit of art,—would find a way to have the same modelled, suitable for its "situations and surroundings." But each branch of decorative art in architecture needs more or less unhinging from mechanism. Like-

wise the artisan may lack much of the spirit required; but competition and "the love of money" are the root of much evil in this matter.

An Artisan.

ASPHALTE *v.* YORK PAVING IN FULHAM.

Sir,—Having noticed the article in your recent issue under the above heading, allow me to make the following additional remarks.

No one will attempt to dispute the suitability of York stone for paving purposes; its great cost, however, has brought into the field many substitutes, such as Victoria and other artificial stones, tar pavements, and various asphaltes.

Rock asphalte, however, seems to be its great opponent, the first cost of which is approximately one-third less than York stone, and when laid of sufficient thickness, and a thoroughly good material is used, it has been proved to last in streets where there is a heavy traffic quite seven years. After which it can be repaired at little cost, when it will be equal to when first laid. York stone is certainly not more durable than this.

With reference to the asphalte laid in Fulham, had the vestry laid it down ¾ in. instead of ½ in. in thickness, and adopted the plan usual with most Boards, their pavements would be in a very different condition from what they now are.

After testing the relative merits of the different asphaltes, it is usual for a Board to enter into a contract with one company to lay their footpaths, taking care that a monetary or other security is given for the proper maintenance of the work extending over a series of years. In Fulham it has been otherwise. Tenders are advertised for almost every street, and such low prices have been paid for the work that it is not surprising the asphalte is worn out in three or four years, as stated in your article.

Although an engineer is able to judge a good or bad piece of York stone, it is impossible for him to judge asphalte whilst being laid down. Time alone proves its goodness and durability.

Jno. Knight.

AGENTS' COMMISSIONS.

EVERSFIELD *v.* SPENCE.

This was an action in the Common Pleas Division by a house and estate agent to recover commission for work done in pursuance of an agreement between himself and the defendant.

The defendant being desirous of obtaining 5,000*l.* by the sale of some land at Willesden, employed the plaintiff to find a purchaser on the terms that if he succeeded he was to receive 500*l.* The plaintiff busied himself to earn this commission, and succeeded in finding a person who was willing to buy the property; but in the meantime the defendant had himself found a purchaser and disposed of the estate by private contract. The case was tried before Mr. Justice Grove, when it was admitted by the plaintiff that he knew other agents were employed besides himself, but it was urged on his behalf that he had actually incurred certain expenses in procuring a purchaser for which he was entitled to be reimbursed, as the defendant had not taken the trouble to give him notice that his services were no longer required. It was agreed at the trial that the judge should leave the question to the jury whether the defendant had acted reasonably in giving no notice, and the jury, in answering the question, found that he had not, and gave the plaintiff,—damages, 30*l.*

Mr. Marshall Griffith, Q.C. (with Mr. Houghton), now moved for a new trial on the ground that the damages were excessive and for misdirection.

The Court declined to grant the rule, being of opinion that real work had been done by the plaintiff under the agreement, and that it was perfectly easy for the defendant to have sent a circular to the different agents informing them that he had found a purchaser. With respect to the damages, Mr. Justice Grove had expressed his opinion that 15*l.* or 20*l.* would have been sufficient compensation; but the learned judge was not dissatisfied with the amount awarded by the jury, and, in any case, the difference between the two sums was not sufficient ground for disturbing the verdict and granting a new trial.

Rule refused.

PLAYGROUNDS FOR THE CHILDREN OF THE POOR.

Sir,—Considering the urgent remarks of Dr. Hardwicke on this subject, at the inquest on Heron, and the unsatisfactory reply last week of the Home Secretary to Mr. James in reference to open spaces in the metropolis, might not something be done when *future* dwellings for artisans are built? Some of the most picturesque and useful buildings of the Middle Ages were elevated upon pillars and arches, thus leaving the covered space level with the adjoining streets available for markets, public meetings, and other purposes. The old town-hall at Hereford, lately destroyed, was one of these. Adopt this plan in building future artisans' dwellings, and you have a playground for their children at once. It would, of course, be necessary to close in the front arches with iron railings, the children having access to the playground from the staircases, and, in a large block where there would be an internal area it would be desirable to have a glazed, or partially glazed, roof, to deaden sound and as a protection in wet weather. If the plot were surrounded by streets on all sides the external walls to the north and east might be built solid to secure comfort and a degree of privacy. Or if the plot were sufficiently large to admit of it, the tenements on these sides might commence at the street level in the ordinary way.

The advantages of this proposal would be, that the playground would be provided just where it was necessary, for the children would be within sight and care of home; that the land would cost nothing, the only expense being the few constructional details alluded to above, viz., pillars, arches, and staircases.

If this idea should be approved of, the compulsory provision of the playgrounds could probably be secured, as I believe these dwellings are usually built with money borrowed from the Board of Works, who could adopt, or obtain power to adopt, a condition to this effect.

H. T.

A CHEAP METHOD OF DISPOSING OF SLOP BY A CONTRACTOR.

Joseph Williamson and William John Charlesworth, in the employment of Mr. W. T. Williamson, the contractor, were summoned at the Clerkenwell Police-court, before Mr. Barstow, by Mr. J. J. Jordan, Sanitary Inspector to the Vestry of St. Mary, Islington, for disposing of slop collected in St. Pancras, by mixing it with water pumped from the canal on to the Belmont Wharf, York-road, in the occupation of their employer, and sweeping large quantities of the slop, when mixed, down the inlet of the drain, and from which large deposits had been found in the sewer at the mouth of Mr. Williamson's drain.

Mr. Layton stated that the proceedings were taken under the 209th section of "The Metropolis Local Management Act," 18 and 19 Vic., cap. 120, by which a penalty not exceeding 5*l.* was imposed upon any scavenger or other person, who might be induced to adopt the cheap and primitive method of disposing of slop or other refuse by putting such filth into the sewers under the jurisdiction of the local authorities, thereby increasing their own profits, by adding to the burdens of the ratepayers.

The offence, which was laid for the 10th of April, 1879, was established against each of the defendants by the evidence of the inspector, and of Mr. W. Jupp, foreman and horsekeeper to Messrs. Russell & Co.

The foreman of sewers, Mr Enoch Browning, deposed to finding 2 ft. 4 in. of deposit in the sewer at the mouth of the drain on the 12th of April, 1879, the deposit continuing a distance of 415 ft. down the sewer, though gradually lessening in depth towards the outlet.

Mr. Charles Higgins, surveyor of sewers and buildings, &c., to the Islington Vestry, also gave evidence.

For the defence, Mr. Ricketts urged that the defendants were only anxious to keep the wharf clean, and therefore frequently washed it down; and that they were only doing this when the inspector saw them; and that the deposit in the sewer must have come from other drains as well, and not altogether from Mr. Williamson's.

Each of the defendants gave evidence for the other, and directly contradicted the witnesses for the prosecution.

Mr. Barstow said the offence, which had been clearly proved, was of a very serious character, and it was evidently the practice to make the slop more liquid by mixing it with water, and then getting rid of it by sweeping it down the drain into the sewer, and he should therefore inflict the full penalty of 5*l.*, and 2*s.* cost in each case, or, in default of payment one month's imprisonment.

The 10*l.* for penalties, and 4*s.* the costs, were at once paid by Mr. W. T. Williamson.

Royal Polytechnic Institution.—"Metempsychosis" is the title of a new development of the well-known optical illusion, "Pepper's Ghost." It was shown last week by Professor Pepper, who took leave of the audience, announcing his approaching departure for Australia; but this popular professor of science for the multitude is advertised in the programme to appear a few more times; and in his absence the invention will be shown by Mr. Walker. In the new entertainment an artist's lay-figure becomes animated, descends, and continues the painting which the master has begun. The substitution of an actor for the lay-figure is effected in a raised chamber at the back of the stage open to the audience, and it is in this change that the ingenuity of the invention is shown. The deception depends apparently upon the use of a powerful light, which projects an image made visible to the audience on a large glass, as the lamp in a railway carriage throws a fainter presentation of the travellers upon the window-pane. It is very clever and very amusing.

RAMSGATE NEW ROAD.

Sir,—With reference to the description of my given in your last issue, will you be good enough to ... a slight correction in your next by substituting "H ... "A." as the initial of my Christian name?

I would not trouble you on such an apparently ... matter, but that I have a brother in the professi... initial of whose Christian name is A., and he ha... supposed to be the auth-r of the plans in question, ... not in any way connected therewith.

H. Cumt...

DAY ACCOUNTS.

Sir,—As a surveyor, having constant practice ... making up of builders' accounts, I am frequently ... ished, on meeting different surveyors, at the differen... opinion as regards the question of charging a for... time in purely day-work accounts. Some allow it ... a question, others entirely repudiate it. I will ... for the present that, taking an account of, say 30 ... week, the profit is considerably reduced, if the for... time is to be thrown in gratis. I should be pleased ... some good opinion on the matter.

Surve...

Books.

Dickens's Dictionary of London, 1879. *A ... conventional Handbook.* 26, Wellington-... Strand.

The word "unconventional," and the quo... from "Pickwick" heading the title-page ... lead some to expect in this little volum... ticulars of the "night-side" or Bohemian ... of London, which they will not find. W... selves, indeed, looked for some little ... of the minor social clubs,—for exampl... "Cocked Hat," "The Noviomagians," ... "Our Club,"—but found them not, an... some little account of "Evans's" might ... pected beyond the mere mention of the ... under the general head "Music Halls." ... being understood, it will be found to co... large amount of interesting and useful in... tion not elsewhere brought together. ... may now be wanting will be supplied ... ceding editions. The Art-Union of ... should be mentioned, also the Arundel S... The Artists' Orphan Fund is in the ... charities, but we do not see the Artists ... volent or the Artists' General Benevolent ... house of the Junior Athenæum Club wr... for Mr. *Henry* Hope, not "Adrian." ... "Nash of *Bath*" is not a correct descrip... the architect who designed the Hay ... Theatre. We mention these two or three ... observed during a hasty dip into Mr. Di... useful little book, not with any expres... surprise, but simply to help it on towar... fection.

VARIORUM.

"Local Taxation and the Rating s... chinery," by Thos. Fenwick Hedley (Ki... Co.), will be found useful by valuers and ... authorities. It includes a report on the ... of machinery, and notes of all the de... cases.——"House-Plans for Everybod... S. B. Reed, of the United States (I... Trübner & Co.), should have as a seco... "And Elevations for Nobody," those gi... so terribly ugly. Builders in the countr... ever, would find much useful informatio... and to emigrants and colonists it would ... more useful.——The number of *L'Ar...* for May 18th is devoted entirely to a... trated account of the "Salon de Par... includes twenty-six illustrations, many ... page-size. The London office is 134... street.——Messrs. Chatto & Windus ar... for immediate publication "Church W... Life in English Minsters," and the "... Student's Monasticon," two vols., with ... and ground plans by Mr. Mackenzie Wal...

Memorial of the late Lady Hathe... The memorial to be placed in Lady Hat... parish church, is being prepared. ... Clayton & Bell have received instructio... a window in the south aisle of St. Ma... Westminster, with stained glass, and th... has been approved. The three principa... of the window will contain life-size rep... tions of Faith, Charity, and Hope, with ... beneath illustrating acts of mercy, alm... tending the sick, and teaching ch... Messrs. Clayton & Bell have undertaken ... plete the work towards the close of nex... The cost of the window and memorial ... will be about 250*l.*, which will leave ... treasurer's hands a balance of about 3...

Miscellanea.

ders' Benevolent Institution.—The
st election of pensioners on the funds of
titution took place on Thursday at Willis's
St. James's. Mr. George Dines presided.
were five candidates,—three men and two
—and there were vacancies for two men
woman. The candidates were: Gregory
, aged 75 (second application); Thos.
ck Cooke, aged 59 (first application);
h Bromley, aged 68 (first application);
Gulson, aged 62, widow of Thomas Gul-
cond application); and Mary Ann
l, aged 64, widow of Daniel Hibberd
plication). Shortly after three o'clock
rutineers (Messrs. Thomas Stirling
F. Rider) announced the result of
ing to be as follows:—Cooke, 4,504;
., 3,035; Bromley, 1,077, plus 75 votes
n accordance with the rules of the In-
n, to which the candidate was a sub-
for thirteen years, making a total of
Gulson, 1,561; and Hibberd, 896. The
n therefore declared the successful
tes to be Thomas F. Cooke, Gregory
, and Susan Gulson. Votes of thanks
corded to the scrutineers (on the motion
Cruttenden, seconded by Mr. New); to
checkers (on the motion of Mr. Rider,
d by Mr. Richardson), on whose behalf
pson replied; and to the chairman (on
ion of Mr. Bussell, seconded by Mr.

Institute of Irish Architects.—Very
able displeasure is manifested in Dublin
ference to the apathy shown by this
The *Irish Builder* says,—"Is architec-
only profession in Ireland, we would
t is to remain somnolent and laggard?
re no architects in our midst with
courage and self-denial to step for-
d do a little weekly or monthly
y labour for their own credit's sake
of their order? Is there nothing that
done to move from within the inert
dogged sluggishness and selfishness
not do what is right, nor let others do it,
itting to have itself decently removed
he way? In domestic life one would
ir next-door or opposite neighbours
courageously to keep their credit up."
re a few architects in our midst who
would cheerfully do what they feel
called upon to do, if others of their
f but indifferent brethren would show
energy or interest. The Alpha and
f the whole matter is stagnation, utter
; a number of architects representing
out their individual selves, outwardly
themselves they are members of a
stitute of Architects, and fondly be-
at the British public cherish the same
as themselves. We have over and over
ppealed to the pride, the spirit, the
and the common sense of the members
fession; we have published a journal to
them,—to advocate their grievances
d them from the onslaughts of numerous
us amateurs and scribblers in the daily
ut each day we have lived to witness
sterility and barrenness on the part of
itectural profession in this city." The
ment of another architectural associa-
reatened, we are told.

Legislation: Bills in Parliament.
pondent writes,—The attention of all
interested in the subject of gas is
directed to the injurious provisions
clauses inserted in Gas Bills now before
nt, and to arrest which immediate
necessary. Gas companies are seek-
some of the following powers, viz., to
ure, sell, buy, deal in, fix, remove gas-
toves, &c.; enter into houses, inspect,
condemn, replace, and substitute such
s, in their opinion, may seem necessary;
t fines from consumers for any breach
mpany's regulations, &c.

ight in respect of Architecture.—
our readers who interest themselves
nestion may be glad to know that the
Mensuel de la Société Centrale des
s (Nos. 3, 4, and 5, for January, Fe-
nd March, 1879), contains a valuable
copyright in respect of architecture,
the Society by M. Ach. Hermant.
ptin is published by Ducher & Co., 51,
Écoles, Paris.

Artists' General Benevolent Institution. The sixty-fourth anniversary dinner of this institution was held on Saturday last, at Willis's Rooms, under the presidency of the Bishop of Peterborough. The company numbered upwards of 300. The institution was established in 1814 for the relief of distressed artists, their widows and orphans, merit and distress alone constituting a claim; and the names of persons relieved are not made public. The institution is principally dependent upon voluntary subscriptions to meet its yearly expenditure. Ninety-seven applications were relieved, during 1878, with the sum of 2,050*l.*, in sums varying from 10*l.* to 80*l.* The working expenses of the year amounted to 228*l.* From the establishment of the institution to January, 1879, 3,429 donations have been granted, in sums amounting in the aggregate to 51,173*l.* Sir F. Leighton, P.R.A., proposed the toast of the other societies connected with art in London, namely, the Royal Institute of British Architects, the Society of Painters in Water Colours, the Institute of Painters in Water Colours, and the host of others. During the evening subscriptions and donations to the amount of 2,459*l.* were announced.

The Stephensons.—The house, No. 17, Eldon-place, Newcastle-on-Tyne, built by the late Mr. Burnup, of the Barras Bridge, Newcastle, about the year 1815, and still in the possession of his family, has, by association, become a place of interest as the joint residence of two illustrious men, viz., George and Robert Stephenson (father and son), at the time when they were commencing those labours which have conferred a boon upon the world. A few gentlemen, careful to preserve the connexion of these well-known names with their native town, have instructed their townsman, Mr. Craggs, to prepare and fix, in the front of the house, a tablet of Cornwall Red Serpentine Marble, bearing the inscription:—

"THE RESIDENCE OF
GEORGE AND ROBERT
STEPHENSON,
1824-5."

The first figures indicate the date of the commencement of the works in South-street, the latter that of the opening of the first of the local railways, the "Stockton and Darlington."

Accident at Kensington Vestry-hall.—Mr. J. S. Langham has held an inquiry at St. George's Hospital as to the death of John Douglas, thirty-five, an excavator in the employment of the contractors engaged in building the new vestry-hall at Kensington. On Saturday last a heavy balk of timber, weighing some three-quarters of a ton, was being hoisted to the first-floor of the building by means of a crane, when the rope, which was of the heavy cable description, supporting the timber gave way, and the timber fell upon Douglas, who was working beneath, and killed him almost instantly. A verdict of "Accidental Death" was returned.

Patents.—A Memorial on the Patent Bill introduced by the Government this Session has been presented by the Council of the Society of Arts to the Home Secretary. It says,—"Your memorialists are desirous that the present Bill should pass, so that patent legislation may be brought into one comprehensive Act, and to remedy those other matters in the present condition of the law which it has long been felt should be altered. This Bill as it stands already provides for many such alterations, and is therefore, in the opinion of the Council, one which ought certainly not to be allowed to miscarry."

The Fulham Smallpox Hospital.—A crowded meeting has been held at the large hall, Lillie-bridge Grounds, in opposition to the Fulham Smallpox Hospital. Sir W. Palliser presided. It was moved by Mr. Lammin, seconded by Mr. Schofield, supported by Sir Charles Dilke, M.P., and carried, that the presence of the hospital was detrimental to the neighbourhood, and that every exertion should be used to expedite its removal. Every effort should be used to effect this.

Mr. and Mrs. German Reed's Entertainment—"Grimstone Grange" is announced to be withdrawn after Monday next, to give place to a new first part, on Tuesday, May 27th, entitled "100*l.* Reward," written by Arthur Law, the music by Mr. Corney Grain. "Our Calico Ball," Mr. Corney Grain's admirable Musical Sketch, will for a short time retain its place in the programme, and the favourite Musical Proverb, "Charity begins at Home," will conclude the entertainment.

The Institution of Civil Engineers.—At the meeting on the 20th of May, Mr. Bateman, F.R.S., President, in the chair, the paper read was on "The Improvement of the Bar of Dublin Harbour by Artificial Scour," by Mr. John P. Griffith, C.E. On Monday, May 26th, the President's *conversazione* will be held in the Engineering Galleries of the South Kensington Museum. On Tuesday, May 27th, last meeting of the session, a paper on "Dock Gates," by Mr. A. F. Blandy, C.E., will be read.

A Stained-Glass Window has been placed in the east end of Great Bedwyn Church, by the Marquis of Ailesbury, in memory of his parents. The window is filled with a representation of our Lord's Ascension. The work was designed and executed by Messrs. Heaton, Butler, & Bayne, of Garrick-street.

TENDERS

For lecture-hall and reading-room, &c., Walton-on-Thames, Surrey. Mr. Henry Peak, architect. Quantities supplied:—

Brown	£1,100 0 0
Clark	1,069 0 0
Moon	993 0 0
Lee	869 0 0
Faulkner (accepted)	819 10 0

For two detached residences, Walton-on-Thames, Surrey. Mr. Henry Peak, architect. Quantities supplied:—

		Add for Plate Glass.
Moon	£5,420 0 0	£64 4 0
Lee	5,000 0 0	82 0 0
Faulkner	4,965 10 0	46 10 0
Brown	4,980 0 0	32 0 0
Harris	4,879 0 0	21 0 0
Martin, Wells, & Co. (accepted)	4,500 0 0	30 0 0

For shops and offices for Mr. J. R. Whorlow, Lower Thames-street, London. Mr. Edwin T. Hall, architect. Quantities by Mr. T. M. Deacon:—

Greenwood	£6,300 0 0
Browne & Robinson	6,127 0 0
Ennor, Julian, & Co.	5,730 0 0
Ferry & Co.	5,475 0 0
Braid & Co.	5,450 0 0
Bangs & Co.	5,295 0 0
Toms	5,100 0 0

For alterations and decorations for Mr. C. G. Hale, Austin Friars, London. Mr. E. T. Hall, architect:—

Burdett & Co.	£1,129 0 0
Browne & Robinson	1,120 0 0
Colls & Sons	1,094 0 0
Ennor, Julian, & Co. (accepted)	870 0 0

For shops, warehouses, and dwellings, in Fann-street, Aldersgate-street. Mr. E. T. Hall, architect:—

Bangs & Co. (accepted)	£3,600 0 0

For park pale fencing for the Managers of the Metropolitan Asylum District, Darenth, Kent. Messrs. A. & C. Harston, architects:—

Iron Wire, Rope, and Fencing Company	£1,235 0 0
Taylor & Brooker	1,190 0 0
Beadle Brothers (accepted)	1,020 0 0

For repairs, painting, &c., at the Out-relief Offices, Mary-place, for the Guardians of St. Mary Abbotts, Kensington. Messrs. A. & C. Harston, architects:—

Roberts, Bros.	£1,425 0 0
Gallon	820 0 0
Mills	697 0 0
Lathey, Bros.	599 0 0
Cowland Bros.	537 0 0
Carpenter	535 0 0
Derby (accepted)	515 0 0

For the first portion of roads and sewers on the Leyton Park Estate, Leyton. Messrs. Wilson, Son, & Aldwinckle, surveyors. Quantities supplied:—

Wilson	£2,789 0 0
Harris	2,698 0 0
Crockett	2,650 0 0
Etridge	2,944 0 0
Ford	2,819 0 0
Jackson	2,535 0 0

For works on the Cadogan and Hans Place Estate. Mr. Forbes Ashdown, architect:—

		Alteration.
Killingback	£1,600 0 0	£65 0 0
Nowell & Robson	1,525 0 0	35 0 0
Bell	1,363 11 0	34 3 0
Keeble	1,310 0 0	41 0 0
Mowlem & Co.	1,243 0 0	36 10 0
Ford & Horn (accepted)	1,200 0 0	60 0 0

For entrance gate-way, Pont-street-mews. Mr. Forbes Ashdown, architect:—

Dovey	£175 0 0
Marsh, Wells, & Co. (accepted)	120 0 0

For stable in Pont-street-mews, for Mr. G. F. Jalloh. Mr. F. Ashdown, architect:—

Dovey	£950 0 0

For alterations and repairs to two maltings at Westmill-road, Ware, for Mr. G. E. Foster. Mr. G. H. Colson, architect:—

Hunt	£869 0 0
Hitch	640 0 0
Castle (accepted)	534 0 0

For alterations to bar, King's Head, Union-street, Deptford, for Mr. T. R. Salter. Mr. Henry Roberts, architect:—

Hubble & Trott	£219 0 0
Simpson (accepted)	160 0 0

For additions to Cale-street Distillery, Chelsea, for Mr. J. Burrough. Mr. H. Roberts, architect:—
Lathey, Bros. (accepted) £220 0 0

For repairs, &c., to Morland House, Harrington-road, South Norwood, for Mr. H. Still. Mr. H. Roberts, architect:—
Saker (accepted) £250 0 0

For finishing four semi-detached villas, Chiswick. Mr. R. Tomlinson, architect:—
Winter £1,200 0 0
Haynes 1,177 0 0
Brown & Funk 1,175 0 0
Wickham 1,050 0 0
Niblett 890 0 0

For the erection of new business premises, Broad-street, Reading, for Mr. A. Farrer. Messrs. Brown & Albury, architects:—
Searle £1,425 0 0
Higgs 1,403 0 0
Simonds 1,397 0 0
Pedley 1,370 0 0
East 1,369 10 0

For alterations and additions to the Essex and Colchester Hospital, Colchester. Mr. T. H. Wyatt, architect. Quantities by Messrs. George Lansdown & Harris:—
Dobson (reduced estimate accepted) £5,550.

For the construction of new road and sewers on the Rowley Hill Estate, for the Corporation of Stratford-upon-Avon. Mr. J. Lattimer, surveyor:—

	Contract No. 1.	Contract No. 2.
Bolland & Golby	£1,123 1 3!	£1,090 2 3!
Robbins	864 16 9	823 13 1
Urry	672 4 6	790 0 0
Hughes	654 0 0	805 0 0
Carrall & Lewis	640 0 0	697 10 0
Law*	551 0 0!	553 0 0!

* Accepted for both contracts.

For the erection of additional wards at the Workhouse Infirmary, Alcester. Mr. J. Lattimer, architect:—
Urry £1,108 0 0
Bourne, Bros. 1,078 0 0
Compton 1,076 0 0
Hunt 1,050 0 0
Girling & Eborall 1,010 0 0
Robbins 989 0 0
Hughes & Son 950 0 0
Smallwood & Co. (accepted) 850 0 0

For the erection and completion of a drill-hall, club-room, &c., in the St. George's-road, Wimbledon, for Capt. Henry Webb, 11th Surrey Rifle Volunteers. Mr. A. G. Olley, architect. Quantities by Mr. C. Barnard:—
Scrivener & Co. £2,940 0 0
Wilson & Exton 2,810 0 0
Faulkner 2,705 0 0
Crosker 2,625 0 0
Brasier 2,605 0 0
Nightingale 2,588 0 0
Harmer (accepted) 2,498 0 0

For a three-story warehouse, New-street, Worcester. Plans and quantities supplied by Mr. J. G. W. Coombe:—
Bourne & Son £508 0 0
Beard 499 0 0
Dixon, Bros. 476 0 0
Wood & Sons 470 0 0
Taylor 462 0 0
Compton 460 0 0
Kendrick (accepted) 425 9 8

For the erection of a new hotel on the site of the old Windmill Tap, at Salt Hill, near Slough, Bucks, for Messrs. Wethered. Quantities supplied by the architect, Mr. C. Carter, county surveyor:—

		Allowance for Old Materials.
Lovell	£1,232	£75
Hopkins	1,233	90
Woodbridge	1,143	20
Reavell	1,130	30
Hing rloe	1,150	50
Taylor & Grist	1,138	50
Silver (accepted)	1,137	106

For alterations and additions to the Beaufoy Arms, Lavender Hill, Wandsworth, for Mr. R. W. Earl. Mr. E. Clerk, architect. Quantities supplied:—
Bywaters £597 0 0
Manley 577 0 0
Smith 533 0 0
Green 479 0 0

For main sewers for the Barmouth Local Board. Mr. T. Roberts, engineer:—
Pritchard ..... £660 0 0!
Tabiner 650 0 0
Morrow 610 0 0
Weyman 612 0 0
Hunter 591 0 0
Morton 480 0 0
Davener 461 0 0
G. Owen 460 0 0
Beardsell 425 0 0
Davies 395 0 0
Hughes 385 0 0
Jones 387 10 0
Braddock 371 0 0
F. Owen 370 8 0
Morgan 370 0 0
S. Owen (accepted) 320 0 0
Jones, E. ..... 291 6 0!

For forming new roads and draining the same with 12-in. pipes, and curbing, upon the Harvard Estate, Lewisham, for Dr. John Attfield. Mr. C. Young, surveyor:—
Second Contract.
Woodham (accepted) £550 0 0

For alterations and additions to Caldecote Hall, Warwickshire. Messrs. R. J. & J. Goddard, architects:—
Lovatt £26,672 0 0
Everett 24,949 0 0
Webb 24,070 0 0
Bromwich, Foster, & Co. 23,746 0 0
Barnsley 23,378 0 0
Herbert 22,525 0 0
Parnell (accepted) 21,846 0 0

For a new cattle-market, Kettering, Northants. Mr. R. W. Johnson, architect. Quantities by the architect:—
Contract No. 1.—Buildings, &c.
Barnes ..... £5,150 0 0!
Duxbury & Son 4,122 0 0
Saint & Son 3,948 0 0
Hicks 3,907 0 0
Margetts 3,600 0 0
Barlow 3,325 0 0
Henson (accepted) ..... 2,845 0 0!
Contract No. 2. Ironwork.
White & Son £1,506 2 10
Hicks 1,314 0 0
Barnes 1,300 0 0
Wigglesworth & Son 1,270 0 0
Brettell & Co. 1,172 0 0
Jukes, Coulson, & Co. 1,138 0 0
Rice & Co. 1,100 0 0
Smith & Son 1,098 0 0
Mallos 1,059 0 0
Salmon 1,016 0 0
Williamson & Son 1,015 0 0
Hill & Smith 993 0 0
Gimson & Co. 921 13 0
Fletcher 880 0 0
Lewis & Son 869 7 6
E. C. & J. Keay 860 0 0
Wallace (accepted) 854 14 10

For building a house at Leytonstone, Essex. Mr. F. W. Barrat, architect:—
Allen £620 0 0
Judd 560 0 0
Lunn 495 0 0

For the erection of national school's for girls and infants, Buntingford, Herts. Mr. T. T. Smith, architect. Quantities supplied:—

	Entire School. Brick.	Entire School. Flint & Brick.
Chinnock	£1,361	£1,376
Cates	1,216	—
Saint & Sons	1,145	1,177
Prout	1,110	1,130
Lawrence	1,080	1,090
Scales & Norris	954	936

For the erection of stable buildings, &c., at Bush Hill Park, Enfield, for Mr. J. R. Gloag. Mr. T. T. Smith, architect:—
Bentley £632 0 0
Hampton (accepted) 540 0 0

For the erection of a villa residence at Bush Hill Park, Enfield, for Mr. G. Cole. Mr. T. T. Smith, architect. Quantities supplied:—
Field £950 0 0
Philps & Bisiker 930 0 0
Melville 888 0 0
Hampton 885 0 0
Fairhead (accepted) 880 0 0

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VOL. XXXVII. No. 1895. SATURDAY, MAY 31, 1879.

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The Fitzalan Chapel, and the Right of a Rector to Desecrate a Church.

E must confess that it is with no little disappointment that we have read, and re-read, the judgment of the Court of Common Pleas on the question of the Fitzalan Chapel. We are not, of course, about to commit the impropriety of expressing an opinion on the law delivered by a Chief Justice, especially if no appeal should be raised. But we may venture on a few remarks, notwithstanding, on a subject of such great interest to all members of the architectural profession. The question, for example, might be raised whether,

ase of which we must be permitted to at the common law point of view is ne out of several which may be taken, ht not have been more desirable to the services of an architectural assessor; o hear the opinion of an eminent profes- man, to pay him a high compliment, and o treat his opinion as entirely irrelevant case. Again, we may be permitted the : that the right of property appears to een exclusively regarded, much in the ight as if a barn or a pig-stye had been bject of contention. It is, perhaps, un- ble that, in a court of common law, this have been the case. But it only follows very strong doubt may in consequence whether a court of common law is the tribunal for the decision of a question ng so many issues. For to us it appears ere was involved not only the question of etary right, but the question, which does not o have been raised in the judgment, whether re not certain implicit limits within which ight can be properly exercised.

very names of the parties to the suit t one of these possible limitations. The ay between the Duke of Norfolk and the of Arundel. That last title is a highly tive one. What is a vicar? The word, use it in this country, carries us back to a of change and of revolution in matters astical, to which no reference, in the sense ich we speak, was made in the judgment. et the very tangle of the case lies, it seems in the history of that revolution.

It is not as Duke of Norfolk that the owner of the Arundel property claims the building disputed. Lord Coleridge admits that "any one who looked at Arundel Church would come to the same conclusion as Mr. Butterfield"; that is to say, that there is a unity in the structural character of the church. The right involved is that which, so far as the judgment allows us to go back, appears to have been vested in the Prior of Arundel. This right, we presume,—it is curious that it has not been distinctly stated,—was that of the rector. In 1380 the priory was suppressed, and a college, consisting of a warden and twelve brethren, was created in its stead. This is called in the statutes the "College of the Parish Church of St. Nicholas, Arundel." Does not that seem to imply that the rights of the rector were given to the college? At this time, according to the learned judge, "the church spoken of in the various documents was the whole parish church of St. Nicholas, including what was now claimed by the Duke of Norfolk." The church of the college, it is admitted, was the same as the parish church of Arundel. This being so, we entirely fail to see how there is even an attempt made to show how the two portions of the church became disintegrated. In 1511, when disputes arose between the college and the parish as to the repair of what the legal documents describe as one church, the matter was settled by arbitration. It is not suggested that the arbitrators either had the wish or the power to separate church and chancel. Then came the surrender by the college to the Crown, and the re-grant to the Earl of Arundel,—of what? The word *ecclesia* is used; and the question is cardinal as to what the college had to surrender? Clearly, we should presume, the rectorial rights. As to these, the fact that since 1544 no act of religious worship,—with the important exception of burials,—had taken place in the chancel, seems to us irrelevant. As far as we can follow the sketch of the story given by the Chief Justice of the Common Pleas, the Duke of Norfolk is the rector of the parish of St. Nicholas, Arundel; and it is as rector, and in no other manner, that he is owner of the chancel,—as representing the "sole corporation" in whom certain rights are vested.

If this is so,—and there has been nothing urged, so far as we can see, to the contrary,—is it to be admitted that the proprietory rights of the rector are absolute and unlimited? If so, what is to prevent the rector, secular or ecclesiastical, of any parish church in England from walling off the chancel? In the Greek rite such a division of the church is usual. The choir is quite walled off from the congregation, and the clergy only issue in procession from the choir-door into the body of the building at certain parts of the service. Supposing a new Hatcham case to arise, in which the rector has very strong views as to the antiquity and authority of the Greek rite,—supposing him, in order to carry out these views, to wall off the chancel,—will he not have a precedent afforded him by the judgment in the case of the Fitzalan Chapel which it will take some pains to disallow?

We apprehend that something more than common law is required to disentangle this puzzle. Speaking as laymen, and under correction, we should imagine that ecclesiastical lawyers had something to say to it. We have recently seen that the old conflict between the canon and the common lawyers is not yet by any means exhausted. And we cannot but think that a decision in such a case cannot safely ignore the rules of the latter. To hand over a building which is admitted to be an integral part of a consecrated edifice to a private owner to do what he likes with is likely to call no small degree of attention to this discrepancy of views. "The proof of this building having been always private property was as strong as the nature of the case allowed." That is one statement in the judgment. "The whole fabric, as it now stood was substantially of the same date .... The church spoken of in the various documents was the whole parish church of St Nicholas," is another. To business-like persons accustomed to read specifications and similar documents with attention, lighted by the plain dictates of common sense,—if these two sentences of the same judgment be read side by side, it follows that the Duke of Norfolk has the right to do as he will, not with the chance alone, but with the entire church of St. Nicholas.

What we desire to have explained, then, is this,—What are the rights of the rector to the chancel? Such we consider, taking the judgment of Lord Coleridge for our authority as far as it goes, and none other,—are the rights of the lay rector of St. Nicholas, Arundel. These rights are at present vested in the Earl of Arundel, who is also Duke of Norfolk,—a nobleman of illustrious descent. But not "all the blood of all the Howards" can give to the rector of St. Nicholas, Arundel, a right, as such that he does not otherwise possess. How the expression "private property," apart from the qualifications of rectorial responsibility, can have dropped from the learned judge is to us at present incomprehensible.

Nor can we admit that the case can be satisfactorily determined without any reference to the change of rite. It may be, or may not be, true that the law of the Common Pleas Division shows nothing about rite. But it cannot be argued that the question is irrelevant, or one which it is safe to ignore. Had there been no change of a religious character, it is no doubt improbable, if not impossible, that such a case as the present should have arisen. We do not usually find our rectors walling up their chancels. We call to mind many of the noblest architectural monuments on the Continent, which are at the same time sanctuaries, held in the highest veneration, and the mortuary chapels of lines which run back to the date of the introduction of Christianity into Europe. What was the cathedral of St. Denis? What the chapel of St. George at Windsor? In whom is vested

the "private property" of King Henry VII.'s Chapel at Westminster? Without referring to these noble examples, in our own land,—cases in which royal and noble lines have shown a pious reverence for buildings which they considered none the less hallowed for religious uses because they protected the tombs of their ancestors,—let us inquire what would have occurred in France, in Italy, in Spain, in Belgium, or in Catholic Germany if a noble had asserted "private property" in the chancel of a great church, and had proceeded to desecrate it in the manner of which Lord Coleridge spoke with such deserved severity in the case of the Fitzalan Chapel. It is pretty clear what the ecclesiastical authorities would have said in such a case. Property or no property, they would have come down on the offender "for his soul's good." Such a procedure as the walling off of a chancel would have been impossible under the Roman obedience. It would be, we should venture to think, impossible in any unbroken order of things ecclesiastical. It is by taking advantage of the several breaks in the ecclesiastical order that occurred from the reigns of Henry VIII. to that of Elizabeth, all the troublers of the quiet of the church in our time have made their market. It is, certainly, extremely desirable that the law of this part of the case should be clearly and lucidly laid down. Had all the parishioners of Arundel remained in the obedience of Rome, or had all the lay-rectors of St. Nicholas, Arundel, been Protestants, we should have heard nothing of the walling off of the Fitzalan chancel. It is melancholy to reflect that matters which ought to be regarded in so different a spirit should lead to the physical opposition of the mason and the locksmith. But, such being the case, it is blinking the question to leave this matter of rite out of view; and, as far as we can see, not a syllable has been said as to the important question of how far the entire ecclesiastical property of England has been affected by the change of rite.

In any event, that ecclesiastical authorisation which is denoted by the term "faculty" is required in order to enable any Protestant rector to interfere with the structural arrangement of a chancel, which, notwithstanding, is his freehold property. What are the precise steps that would be taken to bring such a rector to book, in case of his asserting his right to neglect, or in any way desecrate this chancel, there will not be found many clergymen ready to say at a word. But that steps of some kind would be taken they will all at once admit. Why, then, should the fact that the lay-rector, or the proprietor whose rights, when traced back to their source, can only be regarded as rectorial, of the church of St. Nicholas, Arundel, is a Roman Catholic, withdraw him from the ordinary control, to which all English rectors, spiritual or lay, are bound to submit?

Had the case even been one of a building specially erected by the Earls of Arundel for mortuary purposes, the question would still have been open,—"What character had been given to the structure by consecration?" Without in any way wishing to raise a purely religious question, there is here a very important point involved. Whether the common law touches that point or not, we do not profess to know; but that there is a very strong feeling on the subject in the minds of people in general, there is no manner of doubt. What we should like to know is, how far the common law affects the matter. That is a point neither to be overlooked nor despised. There is an old legal maxim *nullum tempus occurrit regi*. Much more, we apprehend, is that maxim applicable in the case of a consecrated building. Nor do we see that anything can set aside such a presumption, unless it be the distinct words of an Act of Parliament. Of course we do not pretend to say whether such an Act of Parliament is or is not in existence. But at all events, none such has been cited by the Chief Justice. On the behalf, then, of the architectural profession, of the clergy, who at times seek for architectural advice, and of the people of England, who have a right to the poor man's church, which they will be loth to see relegated to the regions of illegal assumption of these points.

Does the English law recognise any difference between a consecrated and an unconsecrated building? Does it recognise any difference between the freehold right of a rector, as a 'corporation sole," to the chancel of his church and the right of any individual to a pigstye which he has built, or which has come down to him from his grandfather? If there be no difference, what is to prevent any rector in England from doing as he thinks fit with his chancel? If there be no difference, what is the meaning of the term "faculty"? If there be a difference, how is the chancel of St. Nicholas, Arundel, made an exceptional case?

If it be replied that the only difference is one recognised, not by the Common, but by the Ecclesiastical Law, the question immediately arises, what is the function of the latter? Is it spiritual alone? Is the desecrator of a chancel only to be restrained by the threat of excommunication, or of some similar penalty, efficacious against those who submit,—utterly shadowy against those who do not? Is it optional for the lay rector of Arundel to say that he does not admit the spiritual authority of a Protestant ordinary? If such is the case, it is high time that it should be authoritatively stated. If it is not the case, it is clear that some sort of postscript is requisite to the judgment of the Court of Common Pleas. For if it be competent to a Roman Catholic, however pious, dignified, and illustrious, to ignore the exercise of powers such as those implied by the use of the word "faculty" by a Protestant bishop or his court, it must be equally competent to Mr. Jack Straw, or Mr. Wat Tyler, or to any supporter of Communistic or Nihilistic views, to do the same. And in any case of a lay rectory, where is then the protection of the building, or that of the rights of the parish?

We prefer putting these questions in their naked simplicity, to attempting ourselves to propose any solution. They are of the utmost gravity. They are not settled, but, on the contrary, opened, by the judgment of Lord Coleridge. We cannot for a moment imagine that any satisfaction will be attained until they are settled. It is of course always open to any one to advise another person to incur expense for the satisfaction of the first party himself. But we cannot but hope that the Vicar of Arundel will take, as Lord Coleridge seemed to anticipate, the opinion of a higher court on the case. And as it is one that affects not the parishioners of Arundel alone, but all those persons who take interest in the enforcement by the law of the land of the inviolability of our yet remaining cathedrals, and of our numerous ancient churches, it is one for which we think it would be highly proper for a subscription to be set on foot, in order to enable the Vicar of Arundel to obtain an exhaustive and fully authoritative decision of a case which, as we hope that we have made apparent, has hitherto been only half investigated, even if it be considered to be wholly settled.

Englishmen are justly proud of the impartiality of the judicial bench, and of the purity of the ermine. We are happy to think that at no former period of our history was this pride more fully justified than at the present time. Corruption, or subserviency (as they have been but too frequently displayed in other countries which it is needless to particularise) are almost unknown amongst us. In the very case now under notice, the learned Judge showed a remarkable degree of impartiality by the very hard,—and by no means undeserved,—comments that he bestowed on a part of the conduct of the party on whose behalf he gave judgment: using the word "party," not as meaning an individual, but rather a line of noble proprietors. But if it is not from partiality that there is any danger likely to accrue to the fair fame of the English Bench, we wish that as much could be said of another element, which tends at least as much to disturb the profound reverence that should attend on those who "bear the balance and the sword" of justice. We hardly like to use such words as eccentricity or crotchet, or to hint at regard being paid rather to public opinion than to the exact requirements of an individual case. But yet few persons of literary habit and unbiassed judgment can have failed to feel, on reading more than one utterance from the judicial bench within the past few years, a sense of profound disgust, not to say humiliation. We do not include the Arundel judgment among these cases. But we must express a feeling of profound regret (supposing the report of the judgment before us to be correct) to read such a sentence as "The neglect of this beautiful building by the Dukes of Norfolk also showed a right of ownership." That the arched carved roof no longer exists; that the statues and noble monuments of the Fitzalans, including an alabaster altar-tomb, should be all in a state of "dirt, neglect, and mutilation," are matters which the architect no less than the man of truly religious feeling must deplore. But these ugly facts, which we wish were spec the Fitzalan Chapel, go to show that the of Norfolk is the right proprietor of the buil is to us inexplicable. A more extraord case of deriving *lucus a non lucendo* we r remember to have seen.

In all cases where an extremely novel p sition raises doubt, it may be of use to re the case, and to see, as when we look at a known face in a mirror, how far the unaccust point of view may modify too hasty impres Thus if the neglect of a building be a pr ownership, the care of a building must be proof of ownership. If the neglect of the containing the Fitzalan tombs by the ho Howard be a mark of proprietorship, what we say of the care taken by the Dukes of B of their noble mausoleum at Chenies? argument here adduced, that care must b dence that the reverently-tended chapel th a part of the parish church.

We hope that we have made plain our on this important case. We are anxious t should be so, because we consider that i subject of both professional and nationa rest. We desire, we must repeat, to of opinion *ultra crepidam*. We do not presu question that to be the law of the Co Common Pleas which the Chief Justice We may think it inconvenient that in thi there has been a departure from our old dents, and that the public has to take the as well as the law from the same lips think this case alone is enough to sho inconvenience of the novel mode of proc But we do not so much refer to what the has said as to what he has not said. told us that the Duke of Norfolk is th prietor of the Fitzalan Chapel. We thin that is only a part of the case,—to our the weakest part. What we wish to unde is the nature of his Grace's proprietorship. Chief Justice traced this to its origin, n the rights of the former priors of Arundel question here is one that imperatively de "what was the nature of the rights?" they rectorial, or anything else? And, thing else, how did such right originate? a word has been said in the judgment as t As regards the facts of the case, this m considered as the cardinal one. But it h even been raised, so far as the report w seen goes. It is hardly likely that so imp a point should have escaped a reporter if had been done to it. First, then, this pr fact requires decision. Secondly, comes t graver point, "Does the law of England, existing, whether settled by direct statute judicial decisions, entirely set aside, overrul nullify ecclesiastical law?" As to this we hav very lately, a dispute more acrimonious than ing between two of the highest legal autho the one representing an ecclesiastical, an other a common law court. The fact t allusion was made to a possible contest of diction in the judgment does not obviate the bility of such a conflict. We cannot bu that the decided expression from the Bench opinion that a part of "the whole parish chu St. Nicholas, Arundel," is shown by proo strong as the nature of the case allowe have been "always private property," which it will be found impossible to leave out review. We cannot, of course, expre opinion that these two statements are mu exclusive. They form part of the main ment, and must, therefore, have been consi by the learned judge to be mutually consi But if it be so, the new question that i brought forward as to the right of a p proprietor to a parish church; the right private proprietor to disregard anything c nature of ecclesiastical law; and the ver necessary trouble and expense to which re lay or spiritual, are now so constantly p obtaining "faculties" to do what they wi their own, imperatively call for full elucida and for being set at rest by the highest a rity known to England. These points of re general interest are rather confused than s by the recent proceedings.

New Infirmary, Croydon.—Plans are prepared for a new infirmary to be built b Guardians of the Croydon Union, for 400 The site is about eight acres in extent. arrangement of the buildings will be on pavilion principle. The architects are Me Berney & Monday, of Croydon.

LD AND SILVER SMITHS' WORK.

book thus entitled is one of the South gton Museum catalogue series,* of which be said "and yet the end is not"; indeed, be doubted whether the making of cata- will not go on longer than the building will last, and that the New Zealander ld the proof-sheets of a new catalogue the ruins. The present work yields to size and elaboration; it is, indeed, of l bulkiness; but that the importance and t of the subject may seem to demand.

catalogue is preceded, like most of the by a general essay on the subject, in he author, Mr. J. H. Pollen, says that attempted only to direct attention to the examples which have been handed o us, and to the excellent treatises which te the history of goldsmiths' work; and, se, it would be hardly possible to do more is in any treatise occupying the place reface, though (as in this case) a pre- nearly 200 pages. The essay is an ble one, and includes as much and as nformation as could well be got into the ccupied. The writer starts from the ng, and bestows some consideration on ions for the value set on gold by people race and period. In addition to obvious its fine colour and durability, other which are less obvious to every one are ersally-similar chemical character of the herever found, and the fact that sub- of its bulk does not affect its intrinsic whereas, "if a diamond were divided into arts, each would lose most or all of its

In speaking of the various European which gold has been found, Mr. Pollen cidentally to the reopening in 1796 of Wicklow gold workings (referred to in a oly tone by Moore as "our Lagenian which he instanced as an illustration of hopes); the works were destroyed the Rebellion of 1798, but Mr. Pollen that they might still be made produc- other chance for Ireland. Judging from t number and the massive character of ancient Irish gold ornaments, it should at Ireland must have been productive of the metal in the days when Malachi e collar of gold; though, by the way, ticular piece of bullion was "won from d invader," and not of native production. does not invalidate the conclusion that ent Irish nation must have had much dy to their hand, as they could not have d entirely on proud invaders for bringing it is an interesting question,—Is there uch of it left? It would surprise those bitually think of gold as an exotic of continent, to be told in how many parts e it was found formerly in considerable es. Few probably know that gold has bitually obtained in small quantities up recent days, "on a small area of a few niles north of the road from Dolgelly to h"; up to April 1, 1866, our author "between twelve and thirteen thousand ad been found there"; he does not say en, and it must be admitted that the ected is a suspicious one. The greatest on of gold in any European country at ent day is from the western slopes of Mountains in Russia.

uching on the various epochs in the f gold-work, attention is drawn to the delicacy of the method and treatment Greek gold-work, especially the use solder or other methods of attachment ng very thin coats of gold one over an- metimes in a manner resembling some- effect of *repoussé* work, and in joining nute particles so as to give a special surface. There is, however, of course, leal of ancient Greek gold-work, such as hat unearthed by Dr. Schliemann, which ve enough; and Mr. Pollen seems to e impression that after the successful f Persia by the Attic Greeks, the latter o possession of gold in great abundance, hich, coupled with the spirit of ostenta- profuseness which always follows a vic- poch, led to such costly productions as the phantine Athené and other similar works. mans were great collectors if not great

* nt and Modern Gold and Silver Smiths' Work in Kensington Museum, described; with an intro- y John Hungerford Pollen, M.A., &c. London: & Hall. 1878.

artists in gold (their line generally was rather that of wealthy purchasers than of artistic producers), and it is curious to consider whither all the gold and silver they must have possessed can now have gone, and how much of it is in existence in the world in other forms. The nearly indestructible character of gold, combined with its capability of being easily melted down and entirely altered in shape, gives it a very exceptional place among precious materials; and one cannot but think how interesting it might sometimes be to trace out, if that were possible, the history of the metal forming an ornament of gold, the various forms in which it had reappeared, and the various rites or costumes which it had adorned. On the question as to how much gold the ancient nations really did possess, as compared with our own times, Mr. Pollen quotes several calculations, but the data are obviously very vague, and the results correspondingly at variance one with another. The estimate of Dr. Linderman, director of the United States Mint, of the amount of gold and silver now in the world, brings it to about the value of 2,000,000,000*l.*; and he believes the present rate of production to be about 1½ per cent. on the existing stock.

The Roman gold and silver smiths' work, probably in a majority of cases really the work of Greek hands, lost its Classical characteristics along with other arts derived from Greece, with the gradual rise of Christianity and of asceticism. The mingling of Christian feeling and even Christian inscriptions with debased but still perfectly recognisable pagan ornament and symbolism, is a characteristic of the goldsmith's art of this early Christian period, as it is in so many other forms of work, and as it became again when the Renaissance arose in Catholic Italy, and a compromise had to be made between the revived admiration for everything pagan, and conventional recognition of the Church and her symbolism. But the Byzantine period, from the fourth to the eleventh century, showed the ascendancy of the superstitious over the artistic spirit in a more striking manner. The peculiar characteristics of Byzantine work of this class are thus admirably summed up by Mr. Pollen:—

"The outlines, compositions, and details borrowed from antique architecture were much used in the larger Byzantine gold work and rolling acanthus scrollwork in beaten and chased work on smaller things. The shapes and outlines are stiffer, heavier, less graceful, and more complicated. Human figures no longer represent gods and goddesses, the images of natural strength and beauty, the pride or the passions of mankind. As the old religion had inspired the earlier art, so did the solemnity of the Christian religion set its mark on the new. Its austerities, its strife with the world, its contempt of pleasure, its future hopes, found expression in the heads and bodies of prophets, apostles, and martyrs. Instead of the smoothness of face and roundness of limb of the Greek artists, those of Byzantium represented the wasted shapes of hermits, the sorrows of the Mother of the Redeemer, and the mystery of the Cross. Thus their art, besides its technical shortcoming, was severe. These solemn subjects, however, were set off with the utmost magnificence, hammered gold, filagree, precious stones, and enamel. The splendour of material used in Byzantine art deserves especial notice. It took the place of good designs and refined details, for which artists could no longer be found."

And that, we may add, is the common characteristic of a semi-barbaric or a declining art: the effect is got by the mere value of brute matter instead of by the amount of thought bestowed on the design. This is almost equally exemplified in the semi-barbaric art which the Bond-street jeweller produces at the present moment. People are offered armlets, necklaces, and earrings of massive character, and containing a great amount of bullion, and charged accordingly; the design is a secondary consideration.

The brief description of the precious metal employed in the furniture of the church of St. Sophia is of itself enough to give a vivid idea of the rich magnificence of this age of gold. As is so often the case, a decline in figure design was accompanied by great richness and ingenuity of merely ornamental design; and no better and more striking example of the kind of taste in this respect which Byzantine influence gave rise to, and introduced into Mediæval Europe, could, perhaps, be found than that of the great seven-branched candlestick at Milan, a portion of the base of which has been appropriately given as an illustration to this portion of the introduction. Traces of Byzantine influence may be easily detected, too, in that remarkable relic, the crown of Charlemagne, of which an illustration is also given. Of the early goldsmiths' work of this island, in the Saxon period, records and examples are but scarce; of that of Ireland there is enough to raise the regret of all lovers of curious and beautiful ornamental art that so much of this which we might have had to this day, has been deliberately melted down. It is noted that some of the modern silversmiths and jewellers of Ireland have estimated that they have purchased as much as 10,000*l.* worth of this old Celtic gold ornament for breaking up. Among the ornament which may be described as semi-barbaric in feeling there has probably hardly ever been a finer and more marked and characteristic style than this, with its flat treatment and its endless interlacing bands, so suitable for producing a rich effect without garishness or vulgarity.

This and most of the Byzantine ornament was what we may call pure ornament, in which the effect was produced by richness of line and surface and distribution of forms very distantly borrowed from vegetation,—borrowed from it, in fact, mainly at second hand, through the intervening stage of Classic ornament, itself usually sufficiently conventionalised. With the great impulse which Western art acquired, and architectural art especially, after the eleventh century, a great deal was imparted into ornamental work which had not before formed a part of it. The distinct and intentional reproduction of architectural forms in little, and often with much distortion and almost caricature, became a marked characteristic of ornamental work. The most casual observer of Gothic work is familiar with this architectural character in woodwork, for instance, and knows how constantly the imitation on a small scale of masonic features,—arcades, buttresses, and gables,—runs through the woodwork of the Mediæval period. In fact, at this period architecture was everything, and penetrated everything; and the reproduction of architectural detail is carried not only into such semi-constructional woodwork as we have been just referring to, but into the still smaller objects of goldsmith's work, and ivory and other carving; and the arch and pier (or shaft) and niche meet us everywhere. Mr. Pollen calls attention to, and gives illustrations of, this characteristic: he expresses no opinion in regard to it. But it is almost impossible to mention this phase in ornamental work without the observation that, highly interesting both historically and in every other way as this Mediæval school of architecturalised ornament is, it is æsthetically an inferior school of ornament; it is used on a small scale and in materials quite different from that in which they originated, features which have little meaning and little suitability when so used, and the design shows a lack of invention and of a true perception of the principles of ornament, as compared with those of the purely decorative schools of ornamental work. There were, however, articles in which the necessity of considering the convenience of practical use kept the Mediæval artists from this misappropriation of masonic forms. Of these none are more admirable and more characteristic of their period than the church chalices, for a long period very much the same in their general form, for the same practical reason which dictated that form to begin with. There has hardly ever been any class of ornamentally-treated object more peculiarly and significantly suited to its purpose than are these Mediæval chalices, with their heavy wide-spreading base giving so much security, their stem with the large knob so convenient for the hand, and their plain bowls in which suitable form is alone considered and surface ornament mostly dispensed with, and which, in their finely and delicately curved lines, remind us,—more, perhaps, than anything else in Mediæval art,—of the refined taste and feeling which dictated the delicate curves and outlines of Greek pottery. The lesson which these chalices read to the ornamental designer is exactly analogous to that which is pointedly and effectively conveyed by Viollet-le-Duc in one of his lectures on architecture, in which he illustrates the difference between true and false design by three stages in the changes of form of an imaginary copper vessel, the first arising entirely out of convenience for use, the other two marked by arbitrary changes for the sake of change, which impair

the usefulness of the article, and at the same time injure and vulgarise its form.

In speaking of the goldsmith's work of the full Gothic period, the thirteenth to the fifteenth century, the author touches upon the important change made by the introduction of the figure into work of this kind, not in the rude forms of the Byzantine type, but in what were intended as realistic representations, and as such were fairly successful, of the figures of the monastic and warrior society of the times. He points out how the power of thus designing and executing figures in small shrines and reliquaries was the natural fruit of the impulse given to sculpture as an accessory of architecture at this period, and which communicated it itself also to ornamental work on a smaller scale. This is, no doubt, the real state of the case; but it is worth remark that the relation between sculpture and goldsmith's work,—a relation traceable in so many periods of art,—has sometimes had an order the reverse of this. The reader may remember that we drew attention to this point in reference to Dr. Schliemann's great find at Mycenæ, where the goldsmith's work seemed to precede and give the promise of the future school of Greek sculpture.

The Renaissance was marked by nearly as much introduction of architectural design into goldsmith's work as the Mediæval period; accompanied by the same use of purely ornamental form, as distinct from architectural detail, in articles in which convenience of handling was an essential consideration. Otherwise, the Classic cornice and column were everywhere in ornamental art, and have, as we know, retained much of their hold upon it unto this day, with slight intervals of banishment, after which they persist in reappearing. The Spanish artists, as Mr. Pollen observes, were especially architectural in their goldsmith's work; we may add that the taste cut both ways in the case of Spain, and that the architecture for a considerable period partook very largely of a goldsmith's character.

Some useful information in regard to the Hall marks, and the methods of testing gold and silver in France and England, conclude Mr. Pollen's very valuable and ably-written treatise, which deserves the praise, not only of conveying a great deal of information in the space, but of conveying it in a clear and readable manner, which cannot always be said of treatises of this kind. The catalogue itself is one of the fullest of these works which has been brought out, and gives a minute, and in many cases lengthy, description of all the characteristics of make and design in the principal objects referred to, with something about their history, where this is known, and is of any interest. Some of the leading objects are illustrated, as in most of the previous catalogues, one in chromolithography, but the remainder by etching, and we notice with interest that these etchings are the work of students in training as art-teachers in the etching-class at South Kensington. The admirable and effective execution of some of these (for they are unequal) speaks of a thorough feeling for the peculiarities of this means of illustration, so well calculated to give the glistering effect of metal-work: the beautiful Nuremberg cup, facing page 153, is a particularly good specimen of execution, and so is the silver-gilt vase facing page 157. Our only criticism against the book is the one which we have brought forward before in regard to these catalogues, their almost absolute practical uselessness as guides to the collection itself, owing to the utter want of order or arrangement, either in the objects themselves or in their sequence in the catalogue. You know from the catalogue what is in the museum, and you get a good description of it; but suppose you want to see the object itself: the catalogue does not give you a hint where to find it; you may hunt in vain, unless you come across it by mere chance; and, conversely, if you are interested in a particular specimen in the museum, and want to learn more about it, you have to turn over the whole catalogue, and take the chance of finding it; for as far arranging the objects in the catalogue in the order of their press-numbers, even, the lower numbers first and the higher afterwards, that would be far too matter-of-fact and simple a proceeding for South Kensington. We tested the matter, as we have sometimes done before, by looking for a particular object illustrated and described in the catalogue, and invoked the aid of three several officials in an ascending scale,—but all in vain; the thing was not to be found. It seems to us, as we have before said, an absolute want of ordinary common-sense to spend all this money and all this learning in an elaborate and costly catalogue, but to neglect the one simple and every-day desideratum of consecutive arrangement, so that what is named in the book can be identified with the object in the museum. Clearness and system in arrangement are the first requirements of a catalogue, and they are absolutely and almost contemptuously ignored in these costly books, which are thus deprived of five-sixths of their practical value.

MODERN IDEAL SCULPTURE: ITS PRETENSIONS AND ITS POSSIBILITY.

The life-size bronze statue of a "Runner," by Professor W. B. Richmond, which is a conspicuous object in the Grosvenor Gallery of Sir Coutts Lindsay, may worthily engage attention, not only for the sake of its proper originality and merit, but as encouraging to re-open certain questions as to the possible future of English and modern sculpture generally, which now may appear to have been prematurely put aside. If there is novelty in such a proposal, it is but in harmony with the surprise that, for the second time within a short period, the high distinction of success in sculpture should have been achieved by one who is primarily a painter. Neither in the present instance, nor in that of the "Athlete with the Python" of the President of the Royal Academy, are any allowances required for the work not being that of a sculptor by exclusive training and profession. In view of these noble bronzes, we may rather wonder that sculptors so accomplished should display distinguished power in painting also, than turn from their canvasses to be simply astonished at exhibition of a faculty to work also in the round.

Considering how closely the work of Mr. W. B. Richmond has followed on that of the President, we are shut out from the inference that it is a mere outcome of impromptu rivalry; in that case traces of crudity and incompleteness could not have been wanting; in place of which we have before us the unchallengeable mastery of well-matured study. But no blame would attach even were it otherwise; indeed, much the reverse. From the competition of the cartoon of Pisa,—nay, from the earliest days of antique sculpture,—generous rivalry has been an efficient incitement to success in the arts. Even apart from the stimulus of overt rivalry, one of the most potent factors for the artistic distinction of an age is the providential concurrence of men of genius who have reacted on each other by sympathy or by emulation. Hard, indeed, is it for an isolated genius to warm up a world to appreciation, independently of such assistance. Strings that vibrate most forcibly must be reinforced and enriched by overtones and chordal response, if they are to tell as harmony. Too true of a world ever tending to lapse into effeminacy, is what the poet imputes, or suffers Philip van Artevelde sourly to impute, to the larger half of it,—

> "An unreflected light did never yet
> Dazzle the vision feminine."

The general world requires its "stepping-stones." The attention of the many follows the clash of competition, or only climbs to admiration of the highest, by direction of the admiration of those who are nearer to themselves on an intermediate level. For the artist himself there is much to add spurs to industry, to invention, even in the consciousness,—apart from close and desperate rivalry,—that a second intelligence exists quite competent to appreciate the best, and certain to make manifest his sense of it, whether in candour or in pique, or in the truest homage of silent response by reaction in his art. Very far, indeed, was Raffaelle from equalling in the Stanze the mastery of fresco, as Michelangelo was practising the art upon the Sistine ceiling; but who shall say how much the "Disputa" of one master and the "Sybils and Prophet" of the other may not have owed to the consciousness of impending comparisons? But no comparative estimate of merits is here proposed to be pursued, however naturally it might seem to be invited; more pleasant and appropriate is it to follow clues of interest and instruction, in recognising how the motives of contrasted subjects have fitly induced variety of treatment in either case aptly self-consistent. It were greatly to be desired that an opportunity should be given of seeing the "Runner" and the "Athlete" in well-disposed juxtaposition. It can scarcely be a question that each would be found to gain. The statue b Frederick Leighton is the property c Academy, and at present visible as a lo South Kensington,—but it is to be feare before long be relegated to share the sec of the diploma pictures; whether the d and destination of the "Runner" are decid know not; I can but say that some s regrets will follow it, if it is to disappe private possession, and only the distant o be left of one more passing glance in that through the auction-room of Christie, seems the destiny of all admirable art does not cross the Atlantic and finally s yond the western wave.

Sir Frederick Leighton's statue is freq called an "Athlete struggling with a Pyt it seems that it should rather be called,—a get whether the artist so called it,—an "A strangling a python." The man h grasp firmly and effectively on the throat choking reptile. He is no victim, like La of a divine agent of punishment, power mere rigour of the hampering folds whic without crushing him, and are unaffected grasp. The Athlete has decisive, thoug just conscious and certain, mastery; the which enwrap his limbs are so far we already as to give no sign of their irre faculty of constriction; so much is suffi and happily indicated, albeit the concer power which is salient in every fibre figure declares the exactly culminating of the momentous conflict.

Whether by process of recondite associ which the suggestion escapes the subjec or whether otherwise in any way, the muscularity which is realised in Mr. Rich statue is most favourable for at once bor and communicating interest by contra perilous exertion in absolute fixity of the exercise of running at full speed i opposed: it developes the freest action limb, the spontaneous poise and balance and body, the maintenance of unemba breathing in equable alternation. One cr said that in some aspects the figure seem and we hear the same remark from lips suspicion of sophisticated æstheticism, which the last pretension is to be criti principal charm, indeed, which attrac detains us, whether as conscious or unco critics, is the sense which is conveyed active power sustained compatibly wit sensitive and most composed vitality. afterwards recall the harmonious outli truthful tone of the muscles, the very el of the expanding chest and of the jo contracted or extended, it is almost amu recall how entirely were lost to our obse at the time the colour and positive rig the actual metal. We have, indeed, be the "*spirantia mollius æra*" of the po statue by Myron of a celebrated runner, represented him as coming in victorious long race, but only to yield his last exh breath; Mr. Richmond's figure is in the highly-trained and fully-exercised vig height of speed and in unruffled confid power to the successful end.

The ancients regarded fleet running exercise which implied in its perfecti most happily-developed and proportione and disciplined vigour. "Fleet-of-foot the most characteristic epithet of Achil model of all bodily force and beauty; and makes his Ulysses, the hero of his secon a victor in a foot-race.

Rivalry in fleetness of foot seems to most natural form of all gymnastic ri admitting as it does of competition of n at the same time on perfectly equal term free from the liability to angry exci scarcely separable from rude personal vi such as may easily embarrass wrestling, the very soul of boxing. Success is mos lutely personal and individual, and is n tributable, as in the case of horse and racing, to be shared by the trainer, the the rider, the chances of place, or of favo ness of weather and aptitude of course.

The earliest Olympic contest was decl have been the foot-race, however tra might vary as to whether Hercules, or mion, or the Curetes were the institutor The very boundary between mythical and traditional Greek history, is marked of victory in a foot-race, the first assignab recorded name. The Olympiads are re from that one which was associated wi name of the victorious foot-racer Corœbu

e may be something more than an apt con- in the suggestion, that the "Runner" of the svenor Gallery should be styled *Cursus;* it may not unfairly be taken as a type of fulness for a new epoch in the art, and, as uced, not without significance at the time n the covering sands of Alpheus and Cladeus being removed from the relics and records e victories of like kind of yore. So long as Olympic games continued, the footrace was first in order of the contests that came on decided; and, by a rule that has rarest ex- ions, it was the name of the victor in it by h the Olympiad was thereafter currently re- d to. The shortness of the course,—a stadium, t the ninth of a mile,—encouraged the utmost aring expenditure of force in swiftness, the nd for a reserve of staying power being in lute abeyance. Other races were contrived at endurance of runners to the test; the os of longer extent, which also involved a turn, and, in one modification, was run the burden of the heavy shield. That the bus of Mr. Richmond has only the shorter he more trying course in view, is apparent glance. The harmonious relation of the r and lower extremities is no bad com- ary on that line of Homer which tells how ne, to help her favoured champion, Ulysses, e footrace, makes light and elastic not only gs, but his arms above them.

e success of this work, however, as of that r Frederick Leighton, is insisted on here in terest of an ulterior argument. Does not chievement of such successes re-open the ion which has long been assumed as nega- closed? With such evidence before us, e not entitled to urge that ideal sculpture erified possibility for the British school in ur day? If sculpture is not to be ideal,— to renounce bald imitation of nature in r of the highest conceivable perfection of e, sculpture in a worthy sense ceases to be; is nothing worth unless ideal. The ideal less has its gradations; Teniers could se a back kitchen; and what, ye gods! not Jan Steen idealise? Even sculpture, lusive of all plastic art, cannot shake itself at will from the playful and the idyllic, sportive groups in Dresden china, and ative plaques of Wedgwood jasper. But we would range works of sculpture proper ding to order of dignity, assuredly fall- h figures in contemporary habiliments are deep down towards the lower limits of the , while works that worthily treat the nude verge ever upwards towards the height oetry, and who shall say "where the ne progression ends"? Sculpture has the ntage over every other art in its power to r the perfections of the human figure, the st visible work of God, and to forego the pt is indeed for it to make *il gran rifiuto.* rn sculpture has been thought to be em- ssed by twofold difficulties independently sible failure of specific genius. We moderns, said, no longer have the advantage that was led by the palæstra to the Greeks, of ually studying the nude figure in liveliest air activity; and then the public, of which redilections and capacities have to be con- ed,—will make themselves considered,—is ved to be as shy of interpreting poetic con- ns presented in marble, as of being called to hold conversation in a language un- ar, if not unknown. As regards the first ion, we may point to what has been done. ecret of such success, obtained independ- of what was doubtless a most important may be traced perhaps to modern facilities natomical study; certain artistic aptitudes given, it is quite impossible to say how far opportunities may not be pressed in com- tion for other disadvantages.

ow contemporary art has shown that it is tent to deal with success with the ure of the nude male figure in excited and licated action, there need be no hesitation erring that sculpture in its appropriate n and realm,—ideal sculpture,—is suscep- of a modern,—of an English revivification. the far more difficult nude male figure is red, there need be no mistrust as to the ul realisation of feminine beauty; and the plished realisation of the nude completes condition of that secondary, but only dary, achievement of art, the beauty of ry. Drapery in sculpture, unless as sary to the action of the figure, and as ssive of the nude form, would be but able naturalism. The supreme drapery of the Fates of Phidias,—for Fates, Moirai, they may safely be declared to be, as they have long been, any array of German authorities to the contrary notwithstanding,—the drapery of these marvellous figures, owes its charms and its supremacy to the fact that, as drapery, it contributes the utmost that drapery can to the suggestion of the magnificent, the majestic, beauty, that it veils.

That statues of distinguished men "in their habits as they lived" are to cease from among us, is too much to be expected; perhaps it is more than should be rightly hoped for. It is conceivable that men with every title to be considered distinguished, and perhaps great, may look forward to such a display of themselves as a reward,—may be willing to accept the not slight risk that the habit assigned to them will, after all, be as little like what they were familiar with as a toga or a sagum. Invention, which has for some time come to a pause upon the combination of one advanced leg in close-fitting coverings, with one in modest retirement behind the folds of a plaid or a cloak hanging over from the arm, may claim and be indulged with a further prolongation of opportunities. Coat-seams and boot-heels, and puckers of gowns, professional and doctorate, may be presented yet for no little time in bronze and marble, and stand their ground in competition with the less stern but more authentic realities of guaranteed originals at Madame Tussaud's.

But at least there is now no reason why others of contrasted predilections may not claim that commemorations of merit can take with advantage a properly sculptured form,—be ideal not only in an admissible, but in the highest sense.

Doubtless imagination must be assumed if we are to demand that the merits and special characteristics of a warrior, a statesman, a man of science, or of letters, are to be commemorated by a group or by a figure which is in nearer relation to poetry than to our work-a-day world. But that imagination is forthcoming is postulated in every proposal for the employment of art of any kind. The recent complaint of the Premier that his ascription of imagination to the British School of Art had been cavilled at, clearly missed the objection taken to his enunciation,—clearly, that is, if we are to be understood as intended to construe dinner-table words not as "chaff," but of that truthful sincerity said to be equally at home in wine and in a well. The cavil had another and notorious application, and those who had their amusement out of it before are not likely to be ungrateful for the story having been refreshed and re-pointed for another course of illustrative circulation. Joking apart, however, if anything so innocent or becoming as a joke is in question, let us exemplify the drift of our present argument by single sufficient instances. The reverse of Pistrucci's Waterloo medal is poetical; the obverse, so far as chiefly occupied by the profiles of the allied sovereigns, is surely prose itself. The same may be said of his George IV. sovereign, with St. George and the Dragon. These are more successful, it may be agreed, than the Achilles of the Park, by the late Sir Richard Westmacott,—a dedication of the ladies of England to the Duke of Wellington. In this case, certainly, besides a primary incongruity, there is the not unimportant mistake of adapting the antique figure in the act of reining a spirited horse, for a warrior in the attitude, inappropriate enough for the occasion, of retreat and defence. But at least in intention the work is worthier in aim, and even in execution, than the *commendatore* who dreadfully surmounts the arch of Constitution-hill.

The further question, whether the world we live amongst will tolerate, or is worthy of high art, in its highest manifestation, may seem to bring us to a still more dangerous pass. On the part of the public, let us speak plainly. Have artists given us a chance of appreciating high art? When artists have aspired to do so, can we say sincerely that the story of rejected, or accepted and ill-displayed works, would not reveal, in some striking,—some typical,—proofs, that the Royal Academy has not given either artists or public fair play? The world is a complex world,—Richardson's "Pamela" and Handel's oratorios were the rage at the same time. It is well that the establishment of the Grosvenor Gallery should give an opening to genius that is animated by artistic as well as general independence, and so provide an opportunity of appeal from a tribunal that is recruited from a certain class to a judgment that it is not impossible may be superior.

THE SALON OF 1879.

THE ANECDOTIC PICTURES.

We wonder how many of the numerous purchasers of this year's unusually bulky catalogue,* have read the excellent speech which the Minister of Public Instruction and Fine Arts, M. Bardoux, delivered in June last, in distributing the annual prizes for the *Salon* of 1878, a speech forgotten and buried away among the already-bound and dusty volumes of the *Journal Officiel* of the middle of last year, but brought again to life among the so-called "documents" which form the preface to the catalogue. We are afraid these "documents" have suffered the fate of so many prefaces, which, by all careful readers, however, are never neglected.

Uttered now nearly a year since, how far are the patriotic sentiments of M. Bardoux applicable to the present *Salon?* It is as true now as then, we suppose,—though the statement is set forth in an amusingly self-satisfied and thoroughly French manner,—that "the whole of Europe" (the Minister might add, this year, America) "crowd to Paris to judge, to criticise, and appreciate the creations of the French national genius,—to France, the fatherland itself of taste, whose capital, Paris, as in that country chosen among all others, where grace united to exquisite harmony in line and in proportion carried art to its highest pitch of perfection, as in those famous cities where the ideal type of man was so perfect that the noblest images of the gods and goddesses were multiplied indefinitely, Paris, by the variety of its artistic productions, by the ingenious fertility of its masters, by its profound knowledge of life, replaces in the present day, for every one who admires delicacy and elegance, those republics which our dreams have so often peopled."

This, to English ears, may sound high self-praise, but it is in France no unusual occurrence to hear such language used by Frenchmen when speaking especially of Paris; though why the modern Babylon of the Seine should be termed "the fatherland of taste" by a Minister of Fine Arts is somewhat inexplicable when we consider the claims in this matter of Greece, of Italy, and, above all, of India. We hope that the Minister of Fine Arts, in his oration on the occasion of this year's distribution of recompenses, will not be tempted again to compare his beloved Paris with the republics of Greece and Italy, to which he referred so warmly last June; for his comparison will approach the "odorous" in speaking of a *salon* such as that of this year, a *salon* which, as a demonstration of French art, seems only to point ominously to a sad fact that, as the Government perfects and increases the beauty and order of its museums and its libraries, an effect is not produced upon the class of art-students greatly for whose benefit these museums have been formed. It is the numerous foreign students who certainly, as the Minister observed, "yearly crowd to Paris," who seem to be showing their French brethren how efficiently they may be taught away from Paris and its schools, and how successful and artistic may be their education and training away even from "the fatherland of taste."

In classifying the exhibits at the *Salon* of this year in no one of the divisions as much as in that of the anecdotic pictures is this more apparent. Indeed, the visitor who, without referring to his catalogue, glances over the 3,000 and odd oil-pictures ranged upon the walls, will be surprised to find on consulting at home the pencil notes of those works which have struck his attention, how many of these are produced by painters not French. Spain, Belgium, America, Switzerland, Norway, Russia, England, and even South America, supply not a few of the more praiseworthy pictures of this exhibition.

When after passing up the broad staircase of the Palais de l'Industrie, the walls of which are decorated with Cozette's "Don Quixote" series of Gobelins tapestry,† one enters the large room, it is an American picture which, as one turns to pass through the rooms, attracts the attention; a homely touching Breton scene, "The Return," in which the bare-foot boy, kneeling by the candle-lighted bedside of his dead mother, watched over by the village *curé*, tells the sad tale admirably.

* On Ascension-Day, the entrance to the *Salon* being free (as it is every Thursday and Sunday), 36,672 persons visited the galleries, and 1 946 catalogues were sold.

† On the other staircases are hung Lebrun's and Van der Meulen's familiar Louis XIV. series, and some superb sixteenth-century tapestries.

By an Italian, Sig. Nittis, is the ugly, dismal, old lady, selling matches under one of the arches, presumably of Westminster or Waterloo Bridge, as in the distance is a shadowy semblance of Hungerford Bridge; it is a firmly-painted picture, but the model Sig. Nittis employed was scarcely, we imagine, the original of the old story of the reduced gentlewoman afraid of her feeble cry of "matches for sale" being overheard.

By Mr. Herkomer is a picture which is undoubtedly one of the features of the *Salon* (a picture known in England), "Eventide," though here again the old ladies are not too comely; and as for the tea-pot in the foreground, the cruel way in which the French critics persist in only seeing in it a coffee-pot is wounding indeed to our national pride, especially after M. Louis Blanc's recently-published "Letters from England" have told the Parisians so much about our worship for afternoon tea.

Few things would be more agreeable, we imagine, than to sit down to a *tête-à-tête*, and over a cup of tea, too, with the original of M. Garrido's model, who has thrown herself down on the sofa after a long afternoon walk,—a lady whose tasteful dress is equally tastefully painted. M. Garrido is a Spaniard. The painters of the new Spanish school this year do not merit high praise for their work, with one or two exceptions. Casanova's "Prince's Marriage" is indeed little more than a collection of extravagantly-painted frippery and flutter, but M. Jimenez-Aranda's "Sermon dans la Cour des Oranges" of the Cathedral of Seville, a scene of the last century, is a very different work; thought, expression, and care are shown in all the figures.

A praiseworthy work, by a young American painter, Mr. Gay, represents another characteristic eighteenth-century scene, the "Fencing Lesson,"—a youth, under the shadow of the old trees of the family château, being instructed in his passes, while the father and brothers learnedly "as judges bear a wary eye." Another lesson in the art of self-defence we owe to another American, Mr. Blashfield, a scene somewhat novel: a number of Roman ladies practising in the arena the manœuvres of the gladiators. It is a scholarly picture, and an admirable pendant to Mr. Bridgman's "Procession of the Bull Apis,"—an Egyptian scene, it need hardly be stated.

But scenes from the history and life of such early days, apart from the ambitious attempts of some of the exhibitors in the representation of the conventional academic Roman subjects, do not abound in the *salon;* it is chiefly the more familiar and fascinating centuries of modern history that attract the painters, and innumerable are the incidents in which the seventeenth and eighteenth centuries are brought before us. There are but few painters who, as successfully as M. Duez has done, can recall the early ages when St. Cuthbert, of blessed memory, worked his homely miracles 1,200 years since. A peculiar interest has always lingered round St. Cuthbert, the Scotch monk, whose memory we should venerate in Great Britain as highly as is venerated St. Patrick's in the sister isle: thanks to M. Duez's noble conception of the simple-hearted English apostle, the French Government, which has wisely purchased the picture, now possesses, perhaps, the sincerest and most truly-painted religious subject (the landscape of which is treated in a no less masterly manner), that has been painted (may we venture to say?) since the devout days of Giotto and Fra Angelica.

Turning from such honest solid work as that of M. Duez, it is not a little difficult to take interest in the representation of every-day life, even when it succeeds partially in transporting one back to days not quite so far distant as those of Saint Cuthbert. One has, however, only to look at M. Goupil's charming pictures to return to the world of silks and satins; but it is something more than mere silks and satins that M. Goupil gives us in his "*Repos*": it is a charming young lady-artist before her easel, admiring (criticism, or rather displeasure, is certainly not depicted on her beaming countenance) the canvas on which she has evidently been placing the last touches. Is it possible that this is Angelica Kauffmann?—the costume is of her period; if so, we scarcely require Miss Thackeray to explain to us Sir Joshua's admiration for the fair Academician.

And so we have come back again to the eighteenth century, not least amusing among the episodes taken from which is M. Dansaert's (a Belgian) "*Monde qui s'écroule*," a council of some eighteen diplomats, presided over by a papal nuncio. The picture has a double meaning, evidently, as shown in the decrepit and by no means too aristocratic gentlemen, admirals, generals, and ministers clustered about the room. A picture, curiously in the same spirit as this, is M. Boutet's "Diplomatic Conference," in which two ministers have fallen fast asleep in their chairs, surrounded by maps, globes, books, plans of campaigns, and numerous other documents, watched over by the wakeful bust of Richelieu in the background.

Sleeping from very different reasons are the two tired-out huntsmen before the comfortable fire, from the enjoyment of which,—in M. Gaudefroy's picture,—they are called to dinner by the welcome cry of two comely serving-maids, "*Ces messieurs sont servis*": what tales will go round before the dinner is cleared away! Of dangers which are passed, one is reminded by M. Gide's very amusing representation of Othello recounting his exploits to Desdemona and her father, presumably on the terrace of some noble Venetian palace,—one of those ridiculous conceptions of such a scene which it seems almost impossible could have been painted in the present day, when excursion trains from Paris to Venice are advertised for a few francs on every hoarding in the city.

Italy is recalled in more than one picture in this exhibition, but in few more successfully than in Mr. Sargent's (an American) "Under the Olive Trees," a reminiscence of that most delightful of islands, Capri.

But numerous other pictures crowd upon the memory: those by M. Galliac, as also M. Piatowski (a Pole), both tell a moral tale, each representing, the former in Etruria, the latter in Ukraine, the punishment which in past times was inflicted on faithless spouses. M. Ferrier's "Scene of the Inquisition" recalls the sad days of the cruelty of that terrible body, and is additionally interesting, as the principal figure shows probably the first result of the study of the beautiful new Venus that has only so recently been added to the sculpture gallery of the Louvre. M. Pousan reminds one of the familiar piety of Louis IX., justly termed Saint Louis, in an incident on the battle-field, where the king is represented as raising in his arms the unburied body of one of the many unhappy victims to the famous Crusade he led against the infidel.

The French painters apparently have no objection to make the public's flesh "creep" in the constant repetition of death, either in its calmness or its horrors. It is the serene but painful side of death that M. Blayn has taken in his "*Épave*," in which the village *curé*, with a band of fishermen and women, are praying round the body washed ashore of some unfortunate mariner; the tale told is sad, and one is left to fill in the dreary outline of the bereaved family of this brave toiler of the sea. Perhaps it is this same group which a Hungarian artist, M. Bruck-Lajos, has so firmly painted for us in his picture, "Abandoned." By a Russian artist, M. Chelmonski, is a very characteristic market-scene in Ukraine, which, with his other picture of a troublesome set of three hard-mouthed horses, succeed admirably in depicting the miserable nature of the country they represent.

In striking contrast is M. Arbonin's "Painter in his Studio," a subject which carries one back two hundred years and more to the quiet days when painters studied hard in their work-rooms, undisturbed by the desire to mingle in the social pleasures which now damage many of our painters. And no less does M. Steinheil's "A Lover of Engravings" carry one back to the days when worthy burgomasters called upon their friends and patronised them in the genuine old-fashioned manner, and when, even if dealers did not exist, the burly merchants were not ashamed of driving a trade in Rembrandts. But though so long a time has passed away since those receding days, the Flemings still are able to hold up their heads even in an exhibition at Paris, as more than one picture here attests. M. Van Beers's "*Laitière*" is, if not the subject of a very attractive picture, at least a thoroughly characteristic type of the good-looking women of the Low Countries. In his other work, a triptych, there is but little to commend; the models are to the utmost degree strange and unnatural. Painted by a native of the interesting borderland between France and Belgium, M. de Winter's "Palm Sunday" shows us types of the frontier people, the old ladies, with their Flemish hooded cloaks and silver clasps, mingled w the more modernly-costumed young ladies w their flounces and furbelows.

The Swiss artists send to this year's *Sa* more than one attractive picture. M. Ra "Drawing School," representing a numbe young ladies studying from an Italian mode no unsuccessful attempt to show the efforts m in the present day by the lady-artists to exc an art, specimens of which by whose fair hands not quite so numerous on the walls of the *Sa* as they have been within the last few years those of Burlington House. By a Swiss pain M. Pata, is the "Giovannina Sononini under Torture of the Inquisition," a painful sub recalling terrible recollections.

The "Arrest in a Picard Village," the w of a Stockholm painter, M. Salmson: praiseworthy: thought and care are shown each of the many figures surrounding an happy girl who is in the hands of two *gens-d'armes*. An original and careful pict a scene from the Middle-age customs of mark, we owe to a Bohemian artist, M. Br But notwithstanding the proverb, "Those drink beer think beer" (M. Brozik was bor that most famous of beer countries, Pil there is no evidence of weakness in his pic of the charming marriage custom of the p of chess between a betrothed couple, playe presence of the families of both "the Seig Strange and the beautiful Dagmar."

Two more pictures of every-day life an trials, and one of those of the past mus noticed before we end this article with a me of the happily decreasing scenes from the Franco-German war of 1870-71. The first Buland's "Offering to the Virgin," in which simple piety of a young child and that of an lady are carefully contrasted. Perhaps befor younger of these two devotees has passed years of the life before her, she will remem the offerings she used to make in her vi church, as did doubtless the elegant danc the *Fenice* of Venice, to whom we recall hi seen given a superb bouquet in the cold wea last March,—a present that a whisper in house stated had cost some 500 francs, which same bouquet might have been seen following day "offered to the Virgin," scenting with its delicious odour that myste and holy side chapel of St. Mark's, where f many centuries repentant sinners have reco consolation. The second picture, by M. C Merson, represents St. Isidore, the ag turist, rapt in an ecstacy, while a bear angel with pink wings is ploughing fo devout saint with his docile oxen. It is a pi that is deservedly thought not a little of. modern scene we owe to M. Gervex, "Return from the Ball," in which *Madame* terly crying, has thrown herself down o sofa in all her finery, while *Monsieur*, wi expression of being utterly bored, unbu his white kid gloves. The tale is left to spectator to tell, and various certainly ar versions that one may make.

With the battle-pieces and scenes from tary life we must close this article. These as we have already remarked, happily numerous than in former years. It is t Castellani, a Belgian painter, that we ow large and spirited picture of the terrible stru of the marines at Bourget. M. Philippote whose powers are not unknown in Engl sends a scene in the defence of Châteaudun night attack lighted by the flames of the l ing houses of the town. M. Detaille presen with one of his carefully-painted and mi scenes, "Champigny, December, 1870," in w a château and its garden are being defende a body of French soldiers; the old gard in the foreground, in conversation with t officers of the staff, is an admirable pie nature, and his simple, homely appearan the midst of the sad havoc of his beloved and plants, forms a strong contrast to seriousness of the bustle around. "Bazei and its terrible battle is painted by a S American, M. Pallière: the *curé* who, in as God's pardon, orders his small band to "l is a touching incident. M. Médard's "Retre is another terrible incident in the horro war; and M. Princeteau's clever trooper, Vedette," in the snow-storm, with his car ready cocked, gives one no pleasant impre of the duties of war.

So much for the actual battle incidents. M. Dupray's amusing picture, the "Capitaine we have already spoken; M. Berne Bellec "Sur le Terrain" is not quite so amusing

sents two troopers stripped and preparing duel with their long sabres in the grass- moat of an old château occupied as a ck. It is a return to the more pleasing f military life to see M. Aublet's truthful, above all diverting, picture, "The Re- t's Wash-trough," a picture possessing, in on to its perfection of execution in the sentation of actual facts, the amusing and le quality of creating a smile on the face most melancholy and *blasé* looker-on. picture, common-place in subject, is never- s ideal in its artistic treatment, possessing nigh degree the touch of the artist, which the most common material beautiful, showing also the difference between the the present century and that of previous s, in the greater intellectual research into ner actions of the mind.

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NATIONAL PORTRAIT GALLERY, SOUTH KENSINGTON.

s valuable gallery has been recently under of re-arrangement under the superintend- f Mr. G. Scharf, and will be opened to the on Whit Monday in its new form. The tion was formerly rather crowded in the rs gallery attached to it; the same extent ce on the ground-floor, and immediately h the original gallery, has now been ob- in addition, and in consequence a much rowded and better lighted arrangement of tures has been possible. The works which rly hung on the wall opposite to the win- and with all the disadvantage of lighting t to such a position, are now distributed screens, and seen much more easily, and ter advantage. The portraits have been nged with careful regard to chronology storical relation; commencing at one end upper room with the oldest pictures, and been continued chronologically to the r end, the order is continued in the ite direction on the floor below, till it comes o the latest portraits nearly in the present tion. Large boards, with easily legible tions, have been placed over each main specifying in general terms the historical n of the paintings comprised in that and the approximate dates between their subjects lived. In addition to these alleries, there is another room, one of the reshment-rooms of the International Exhi- which has been altered, so as to be suit- or a picture-gallery, under Mr. Scharf's on, and which is filled with two bequests siderable interest. These are the pic- which were formerly getting dusty and on the top of the cases in the British m, and the portraits of eminent judges formerly adorned Serjeants' Inn, and on the demolition of that brotherhood, pontaneously and very sensibly consigned National Portrait Gallery as the best use to of them. The British Museum portraits course those of former benefactors or ent managers of that institution. The hich would have come upon them if left r original position was illustrated prac- by some two or three of them having ft half cleaned, so as to show on one side te in which they were when made over to rtrait Gallery. They are now in the way g well preserved, as well as made more ble. Thanks are due to Mr. Scharf for re he has given to arranging an exhibition national and historical interest.

lington House Colonnade. — Sir: a gave the Royal party a right loyal ne on Saturday, and it was a pleasant on Sunday afternoon and evening to see rking folk with their children crowding Albert Bridge, still dight with much g, and with its emblazoned "Free for to enjoy the lawns and walks of Battersea But it was less pleasant to see some of hobbledehoys making rough play over ved work and columns of the famous colon- of old Burlington House, which lie close Albert Bridge, between the ride and the in Battersea Park. Could not the loyal iasm which was so successful in decking mbankment and the bridges be enlisted rect this colonnade, as an approach to sea Park from the river, in commemora- f the freeing of the bridges and of the visit?—A. Z.

REMARKS ON THE WORK OF THE SMITH IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.*

ARCHITECTURAL ASSOCIATION.

Among the manipulative arts connected with architecture, that of the smith, I think, appeals as strongly as any to the æsthetic mind. There is a strong sense of individual power and skill impressed upon one by the contemplation of works of beauty and ingenuity developed from the rough ore, which awakens to its fullest extent the sympathetic interest forming so important a factor in the constitution of an "artistic" nature. The hand that wrought the interlacing scrolls and flowing leafage, centuries ago, has left its impress on the work so markedly that it seems, through them, stretched out to us in the universal brotherhood of art. I do not wish to compose a poetical exordium for my paper, but unquestionably there is poetry in the subject. From the days of Homer to these of Longfellow and Mackay, bards have delighted to sing of the glowing forge and ringing anvil, and their music has furnished the *motif* to the great masters of harmony. Believing the sense of beauty in art to be in a great measure dependent upon extraneous associations and influences, rather than of a nature to be analysed and scientifically deduced from inherent qualities contained in the objects contemplated, I am unwilling, whilst looking at the productions forming the subject of our consideration, to eliminate entirely the element of sentiment in order to gain credit for a "highly practical" paper.

The metal-work of the Renaissance fully partakes of the incongruities, vagaries, and debasements common in the contemporary architecture, so irritating to the modern Mediævalists and purists, from whose platform it is easy to discover reasons why the greater part of the works of this class should not rank as high productions of art. But speaking generally as to the art of the period, much interest is awakened, and, indeed, many a lesson may be learned, from these very vagaries,—the outcome of an age when the increase of population was leading to a spirit of restlessness and travel, and the struggle between old formulas and new ideas developed constant incongruities and piquancies in the vigorous life which is so strongly reflected in the literature and art of these centuries. And, in the new motives and fresh impetus given to art-workmanship at this time may be found ample field and principles for study and judicious imitation, without reproducing extravagances for the sake of quaintness, or making precedent of failures.

It is worthy of remark that, whereas in the earlier Gothic period the ironwork has a character of its own consonant with, but not in imitation of, the other architectural details of the time, in its later developments the ornamental forms of wood and stonework were adopted by the smith and wrought with wondrous skill and finish, but with a corresponding loss of power. The introduction of sheet-iron into use during the fourteenth century brought other tools into play than hammer and tongs, and although the new form of material was at first used with the simple adaptiveness and propriety so characteristic of the Mediæval workman, the greater ease of manipulation in time led to over-elaboration and imitation in lieu of natural treatment of the material. At the end of the fifteenth century we find the work of the smith, in locks, hinges, railings, &c., with all the detail characterising the contemporary stonework. Traceries, crockets, finials, and foliations are executed by means of overlaying plates in many thicknesses riveted together, chiselled, stamped, and chased. But the iron industry was now growing with great rapidity, and assuming a more important place than it had hitherto occupied. In the next century the southern forests of Germany and our own timber districts were glowing with furnaces, and with the increased facilities for the production of the metal came increase of power in dealing with it as an ornamental material. In the hands of those artist-workmen, who, encouraged and protected by the municipal systems, added so much to the power and wealth of the great independent or semi-independent cities of Central Europe, metallic design was developed with a vigour and freedom which left behind the architecture of the age,—then in the efflorescent decadence of an exhausted style.

And although this branch of work partook of the infusion of Classic detail with which, as with new blood, it was attempted to re-invigorate constructive design (and which did, indeed, give some sort of new life), it did so in a perfectly natural and adaptive manner.

For the best examples of the work of the sixteenth and seventeenth centuries we must turn to Germany,—certainly for the most numerous. The great imperial city of Augsburg and its neighbours seem to have especially fostered the art of the smith. The hinges and other ironwork on the doors of the Town-hall,—a building erected at the commencement of the seventeenth century by Elias Holl,—are very good examples of the treatment of flat iron, cut into scroll interlacing patterns, lined and worked up with the chisel. There is a peculiar character about this class of German work. The curves seem to have been suggested by the tentacles of the star-fish. Work of similar character is to be found at the Dom Kirche, which also contains some good railing. This latter, however, whilst showing a close grille of excellent design, and a beautiful corona of flowing scroll-work, is spoiled by the extraordinary freak of representing at the bottom a platform surrounded by balusters, in perspective, on the vertical plane! There are two or three railings of much beauty enclosing the chapels of the great Fugger family in the cathedral of St. Ulrich, the moulded baluster-standards of which deserve attention. The railing enclosing the Augustus fountain is a very remarkable work, consisting of a much-enriched corona of scroll-work, above moulded uprights. The cloisters of St. Anne's Church also contain some good work. At the Three Moors hostelry, in the same city, in the chamber shown as that of Antony Fugger, is an iron stove dated 1532, ornamented with scenes from the wars of Maximilian I. Augsburg especially excelled in the use of the cold-chisel and chasing. Besides sword and dagger handles treated in this manner, detached statuettes were carved out of the hard metal. Considering the much greater adaptability of other and mixed metals for this purpose, and the rapid oxidation to which iron is liable, one cannot but consider such labour as in a wrong direction. One of the most elaborate works of this description is now at Longford Castle, near Salisbury. It is a chair presented by the city of Ausburg to the Emperor Rudolph II., decorated with small statues and reliefs representing events in the history of Roman emperors, most highly-wrought and chased. It is the work of Thomas Ruker, A.D. 1574. It is, of course, entirely out of our province to take up the subject of arms and armour, which at this period received the highest decorative skill of the smith; and such works as this may be relegated to the same class.

I do not intend to make my paper a catalogue of the chief works in iron, but merely to point out a few accessible examples which are worthy the attention of the student. At Salzburg, Austria, in the Cemetery of St. Peter, are several grilles to tomb entrances of the seventeenth and eighteenth centuries. The best of these is that of the Zillber family, 1640,—a good design, with the prevalent round iron scrolls, flat leaves, and *repoussé* masks. It is this period,—that of the sixteenth and early part of the seventeenth centuries,—which I consider furnishes the best examples of iron treatment, fully equal to, if not surpassing, any previous efforts of the smith in Germany, even at the best period of Gothic work. Most of the examples I have quoted belong to this era, and much work of this kind may be found scattered over Germany. Nuremberg, as might be expected, contains many specimens. One interesting piece is the railing around the Schoenbrunnen fountain, the work of an Augsburg smith named Paul Keen. This encloses a fine structure of Pointed work, and the feeling in cuspings to cresting and buttressed standards is decidedly that of the Late Gothic; but the character of the foliage and scrolls to standards is of an independent type. The grille itself is of a pattern much used,—cross diagonal bars forming a diamond pattern, those in one direction being placed square, and in the other edge-wise, the former passing through the latter. Scattered upon this ground are sprays of foliage and geometrical patterns entwining and interpenetrating the bars. Another example of similar work may be found in vol. iii. of the Architectural Association Sketch-book, in a grille to a house at Frankfort, sketched by Mr. Aldridge; and on the same plate is a drawing

* By Mr. W. Penstone. Read at the meeting of the Association on the 23rd inst., as elsewhere mentioned.

of gates to a chapel at Cologne, which is very suggestive in character, the lower part being filled in solid with wood and flat iron. The ancient Nuremberg houses contain many grilles. One very fine one is that to No. 37, Winkler-strasse. There is a fountain-enclosure of simpler character than the Schon-brunnen in the Ebner-strasse. Riveting is scarcely resorted to in this work. In the flat-iron the intersecting bars are halved and welded, and in the prevalent round-bar work they pass through eyes in the opposing stalk. The branches are well welded on, the larger ones often uniting inside a cup terminating the main stem. The lines generally flow easily out of one another, spiral patterns predominating. The round smaller stalks flatten into sprays or small leaves, whilst the larger terminations are cut from the sheet into the form of leaves or foliated masks. These were often painted and gilt, or *repoussé*, and lined with the chisel. Quaint forms, recalling, perhaps representing, the gnomes and dwarfs with which Teutonic imagination peopled the depths of the forest and recesses of the mine, are very generally introduced, being boldly indicated by the chisel in the flattened iron. The work displays a suitable amount of finish, but the marks of the forge are not obliterated by the file. But the most noticeable feature of this early German Renaissance work is the beautiful flower termination so generally used, and which I consider a triumph of just conventionalism. Petals, stem, calyx, leafage, and buds are represented in an illustrative and general, rather than an imitative manner,—a treatment more in accordance with true principles than the closer renderings of specific flowers, beautifully executed as these are found in later work. These terminations severely test the powers of the modern smith in reproduction, being formed by intricate pieces not riveted or soldered, but welded together from the furnace. (Indeed, there are many operations of the old smiths which appear to have been lost, as, for instance, that by which the railings of the tomb of the Emperor Maximilian at Innsbrück were formed. Here leafage, undoubtedly of *repoussé* work, has been applied to the baluster-formed uprights in such a manner that it appears as if wrought in one piece.) There is a very careful drawing, by Mr. Anderson, in the last volume of the Sketch-book, of one of the flowers I have been speaking of. At Munich some good street work still remains. The church of Notre Dame formerly contained some very fine inclosures of early seventeenth-century work; but during its "restoration" in 1860 these were taken out and probably destroyed,—a fate that has, I fear, too often overtaken ecclesiastical work of this description during the earlier stages of the Gothic restoration movement. At Bremn, on the Moselle, there is, I believe, a curious iron pulpit dated 1663, but I have not been able to find any illustration of it. From the end of the sixteenth century to the middle of the eighteenth century it was everywhere the custom in Germany to ornament tombs with iron crosses,—though they have been very generally removed, in some instances being preserved in the vaults belonging to the burial-ground. They were generally painted in oil, and part gilt, and have often a small locked box or reliquary at the intersection. A good specimen of the general style of these may be seen in the South Kensington collection, in the form of a cruciform candelabrum; also some examples of cruciform lamp-suspenders used in lighting churches. Cressets or torch-holders, and other funereal furniture in wrought-iron of the sixteenth and seventeenth centuries, have been often preserved in churches; and the cathedral of Cologne possesses some remarkably fine examples of these. There is some good ironwork in the cathedrals of Ulm and Ratisbon.

The work of the period I have been dwelling on is characterised by a boldness and vigour which, later, became much refined upon. The features and details of Classic art, which in Italy were re-developed with a refinement due to the presence of the ancient models and to the character of the people, received at the hands of the Northern smith, in their earlier introduction, a very free translation, in which the element of what may be termed elegance was often entirely lost, whilst that of power was intensified. A remarkable exemplification of this spirit in art will be doubtless familiar to students of the great master of the German Renaissance, Albert Dürer, whose sketches and adaptations from works of the Italian painters display a total indifference to their refinements, and exaggerations of their most forcible points. In truth, until the seventeenth century the influence of the revival was but little felt in German metal work, the artists in which, taking a departure from the forms of the later Gothic, had formed in the previous century or so a school of their own, of great originality. But the Thirty Years' War, paralysing the industries of Germany, seems to have stopped the full development of this national style, and that country never recovered her pre-eminence in this direction. The work of the latter part of the seventeenth and the eighteenth centuries succumbed entirely to the Classic spirit everywhere triumphant, and except for a somewhat sturdier rendering there is little to characterise this later work from that of other countries. The execution is always good. Rich work of the heraldic "lambrequin" character was often compiled by various flat pieces overlaid and welded at the stem, but branched, twisted, and curved in various directions as they develop.

In Italy, naturally the return to classical traditions appears at a date anterior to their acceptance in other countries. Thus, in the well-known lantern and torch-holders affixed to the Strozzi Palace, these forms are adopted at a period when works of the Pointed style were being carried on everywhere. They are the work of Niccolo Grasso, about 1480. The warm climate of the South led to the extensive use of balconies and railings and openwork window panels, which may be found in great profusion in most of the Italian cities, especially Venice,—mostly of seventeenth and eighteenth century date. They are usually of scroll treatment, in a combination of flat and round iron, with moulded bands, devoid of applied or cut leaf-work, but of an infinite variety of pattern,—re-entering curves being very generally used. Close diaper grilles, with rosettes, are, however, frequently met with. In the lighter forms, what may be called "riband-work" is much employed,—the iron used being of the thickness of about one-eighth of an inch, doubling upon itself, and confined to the shape required by ties of thin metal. Beautiful chains of this description were used for hanging lamps, and are frequently picked up by the fortunate hunter in *bric-à-brac*. Stands for majolica bowls are another form in which much fine work was executed by the smith.

France possesses some very good forged work, although it is not nearly as plentiful as in Germany. This may be in part owing to the excesses of the Revolutionists, who, however, like our Ironsides, are doubtless credited with more destructiveness than is their actual due. In the wholesale demolition of châteaux and desecration of churches, such easily-removable work as iron gates and grilles have, doubtless, disappeared to a large extent. Paris, however, contains many examples of fanlight openwork, chiefly of a late date; but there are two of these, of the end of the sixteenth century, well worthy of remark. One is from a door to the Church of St. Nicholas des Champs,—semi-circular in form, fixed in two halves in a wooden frame; *fleur-de-lys* ornaments cover the points of contact of the bars, and rosette terminations are used, formed by many thicknesses of serrated sheet iron. The initials S. N. and S. J. occur in the centre. A fanlight somewhat similar is to be found in the Rue St. Paul. The Louvre contains a work of the smith which, like our Hampton Court screens, is monumental in character, and affords the best example of this industry in France at its best period. I refer to the two gates in the Apollo Gallery. Perhaps some of my hearers who may be well acquainted with French architectural literature may be able to refer me to good illustrations of these. These magnificent specimens were discovered in the reign of Louis Philippe, at the Château des Maisons Lafitte, in a sadly neglected state. They are of late sixteenth-century date, and one is said to be the work of a Frenchman and one of a German. They have been very carefully restored, the firm into whose hands they were entrusted having practised their workmen for months on similar work before taking them in hand,—a contrast to the treatment of our Hampton Court screens, which have been very indifferently repaired. The Louvre-gates are of a purer classical type than ours, and the details of construction are better. The structure of the design, however, is too directly imitative of wood-panelling, and there is too much repetition in the forms. These possess much grace of outline, and the top panel, representing *amorini* crowning Time, is a most beautiful composition. At what was the Lycée Napoléon is a seventeenth-century gri of good design, in five panels,—those at both being well filled with a pattern of many pa the centre ones with open upright bars, and top large panel occupied by a shield surrounc by flowing scrolls. There are some balcon typical of the thirteenth century style at L'Ec Centrale des Arts, formerly the ancient Hôtel S In the latter part of the seventeenth century, lines of design in iron follow very generally contortions characterising the school of deco tion termed "rococo." The applied leafage often of bronze. At Fontainebleau is a wrou iron railing of seventeenth-century wo manship, surrounding the moat; and sim enclosures may be met with in a few of châteaux remaining of this period. The cat dral at Rouen contains a railing of the reign Louis XIII., enclosing the chapel of St. Eustac At Nancy, in the eighteenth century, J La-Man, smith in ordinary to Stanislaus, ki of Poland, executed many remarkable work iron which are amongst the cherished mo ments of the ancient capital of Lorraine. T have, I believe, been illustrated in a spe work. At Toulouse, in the Museum Garde a well with ironwork of the seventeenth tury, of somewhat eccentric design. A sim example of the same period may be foun Mothault, in Belgium, and there is one in Hôtel Cluny at Paris. Window panels of sim character to the Italian ones we have mentio and altar-rails of like design, may be foun provincial towns, more especially in the sout provinces. I exhibit sketches of some from Ferté Bernard and Nogent-le-Retun. The gent explorer may find some few of the sign-brackets remaining in Paris and o cities, from which were displayed the tr marks or insignia once in universal use amo tradesmen, but now displayed only by publi and pawnbrokers. These were often of el rate construction, as in the example now South Kensington. Also, though now scarce, there are, I believe, to be found som the old "lanternes" of decorative chara from which were suspended the oil-lamps in street lighting, and which acquired so ter a significance during the first Revolution.

A most interesting and quaint work on was published in the year 1627 at La-Flèch one Mathurin Jousse, a provincial wor smith, who also issued treatises on perspe and carpentry. It contains a number of de chiefly for locks, keys, and similar work, are marked by great spirit and invention. original work is very scarce, but it is believe, been partially reproduced in *simile*.

The elaborate door-furniture produce Italy and France during the seventeenth eighteenth centuries forms a subject in itself has, I believe, been so treated in a volume published in Paris. The knockers especiall of great variety and richness, containing groups of figures executed in the highest st art, such as the well-known one at the P Pisano, Venice, representing Neptune and horses. These, however, belong more pro to the art of the sculptor and founder th that of the smith. Many examples are duced entirely by the chisel and file. Bu simpler varieties, such as two I have ske at Caudebec, will often afford good hints f treatment of ordinary work. There is a knocker brought from Paris at Barnard's Holborn.

In this rapid sketch I can but just allu the work in other countries. That in the Countries assimilates in character to the Fr although, perhaps, heavier in style. At k near Brussels, in the Church of St. Deni some good gates, date 1760. At Bruges be seen some few wrought-iron finials t many gables,—notably, one in the Rue d dated 1628. Spain possesses much remar work in iron, characterised by the ornat displayed by its architecture. In Switze also some fine work may be found in wi grilles. As I have remarked about the Ge so in the works of Italy, France, Spain, Eng and the Low Countries, the national distinc in style are but faintly marked from the s teenth century. Scrolls, masks, acanthu other leafage, urns, spears, shields, sword other forms, all modelled on distinctly C precedent, are used in a similar manner countries to produce works of great ric and beauty, but which often convey a ser over-elaboration and artificial effects unsu to the material. In Germany, as we

, the rendering of this Classic detail is s rather than elegant. In France, the ud versatile spirit of the nation is dis- by graceful combinations of curvature y adaptations from antique models. In , there is often an affected quaintness, n our own country there is to be dis- a certain sense of fitness, a degree of dence, which makes much of our work aluable and suggestive. But these ces are of so subtle a nature that it equire a much more exhaustive paper line to analyse them; and we must er that the interchange of work and n among the different nations tended obliterate local characteristics.*

A SUMPTUOUS PIANOFORTE.

Mr. Tadema set the example, it seems robable that the beautifying of the se of the pianoforte will become a with those who can afford it. Messrs. & Mansfield, of New Bond-street, have ur attention to one which they have mpleted for Sir Julian Goldsmid, and unquestionably a splendid specimen of nship in wood inlay. The top of the lid ated with a double inlaid band round s, with panels over part of the surface d by similar bands, and filled with sprigs rs and foliage executed in inlay; the e diapered in a small geometrical with very good effect, along with other t of a more Renaissance type. The n of the diaper-work, consisting as it multitudes of very small pieces, is a fect piece of painstaking workmanship. t of the whole is good; the legs of the nt seemed to us rather wanting in and characteristic treatment, their n is hardly distinguished from that of parts of the case sufficiently; it should n more constructive.

commenting on the subject, however, ot help suggesting that the value of oration is, after all, ultimately in the bodied in the design, rather than in rkmanship, however refined. This is what is deficient in the present instance. nothing in the design specially related rpose of the instrument, nothing, in fact, e of any leading motive at all. The n is suitable to the process employed, in quiet and good taste; but it hardly rth while to spend a good many hundred n producing, in a very costly manner, f which no more can be said than this.

WESTMINSTER INDUSTRIAL EXHIBITION.

e temporary buildings in Victoria-street een at present an extraordinary medley s which have been collected together above title, the exhibition being con- "the *bonâ-fide* work of persons belonging rking classes resident within the London istrict." The peculiarity of the exhibi- at it does not represent for the most best work of people in the particular which they have been trained, but their nts out of working-hours. We have d designs by a pork-butcher, glass by a foreman engineer, pictures by a ustable, pencil drawings by a brass- and so on *ad infinitum*. It is very that the executants of these contri- hould have such harmless and agree- to amuse their leisure hours, but why be collected and exhibited passes our comprehension. The best portion of ition appears to be the mechanical speci- ich are mostly made by people engaged aft which they illustrate. The art ele- he exhibition is what might be expected system on which it is got up, just o. There are a few bits of modelling e interesting and praiseworthy as the n of hard-toiling men trying to get a llectual recreation in the land of art; rge part of the exhibits which come he artistic classes is so bad that we onceive that their collocation can ny effect except to vitiate the those who visit the collection. As ant specimen of what is to be found may mention a large object libellously called a model of St. Paul's Cathedral, "executed in pure sugar,—the largest ever made," and we devoutly hope the last. The mere admission of such a monstrosity as this is enough to stamp the undertaking as beneath criticism from an artistic point of view. To some it will appear to be the result of a spirit of patronage of "the lower orders" by a few wealthy and influential people; but the names of some of those concerned forbid this belief: it is simply a question of judgment, and we must be content to differ from them on that ground. An exhibition of this sort might be made a very good thing, an interest and an incentive to improvement on the part of the contributors; but certainly this is not the way to do it. An exhibition on a similar footing of the efforts, in their leisure time, of West-End people in arts which they did not properly understand would hardly be spoken of very respectfully, though the work would, no doubt, be absolutely better; and why are "the working classes" to be encouraged to do this kind of thing in public, and what good is to come of it?

* The remainder in our next.

A NEW THEATRE FOR GLASGOW.

Mr. Frank Matcham having been commissioned by the Central Halls Company (Limited) to submit designs for the erection of a new theatre in Sauchiehall-street, has been appointed architect, and the building is now in course of construction. The principal entrance (through a great hall and staircase) is in Sauchiehall-street, with minor approaches and exits in Renfield and Renfrew streets. The auditorium consists of orchestra stalls, pit stalls, and pit, on the ground-floor, with dress-circle and boxes above, and balcony and gallery over all. In addition to these, the architect provides crush-rooms, ladies' and gentlemen's retiring-rooms, together with smoking saloon and refreshment buffets in communication with all parts of the house. The theatre will be fitted up with all the most modern improvements.

VICTORIA DWELLINGS ASSOCIATION.

BUILDINGS AT STROUD VALE, ISLINGTON.

This Association was started in 1876 under the name of "The Metropolitan Artisans' and Labourers' Dwellings Association," and immediately received the countenance and support of a large number of influential persons.

As our readers may remember, the first blocks of buildings erected by this Association, and adjoining Battersea Park, were formally opened in June, 1877, by the Prime Minister, the Earl of Beaconsfield, on which occasion he was specially charged by her Majesty to express her hopes for the success of the Association, and to announce her formal sanction to its change of name to the "Victoria Dwellings Association."

The blocks of buildings at Battersea are partly for artisans and partly for labourers, &c.; they stand on ground obtained from the Government at a very moderate cost, and provide for about 950 persons. They were described in our pages at the time.

The Association proceeded to take on a long lease a neglected plot of ground at Copenhagen-fields, called Stroud-vale, occupied by a very low class of population, and in houses quite unfit for human habitations. The old houses have now nearly all disappeared. Two blocks of labourers' dwellings, containing together 440 rooms, and providing for over 1,100 persons, were completed last year, and filled immediately with tenants; while a third block, with 380 rooms, to provide for about 900 persons more, has been begun. The memorial stone of this new block was laid with ceremony on the 24th inst. by Mr. R. Assheton Cross, M.P. The entire group of buildings here erected, and in course of erection, by the Association was formally named by Mr. Cross "The Beaconsfield Buildings," and we are informed that applications are already registered on the books of the Association by persons sufficient to occupy this block as soon as completed, which it is expected to be by the end of this year. We will take occasion to visit the buildings presently.

It is difficult to see a more wise investment of the money of the people of this country than is to be found in the permanent buildings, fully occupied by tenants, which have risen, and will rise, under the auspices of such associations if capital is supplied to it to an extent at all commensurate with the magnitude of the demand; an investment which may be favourably contrasted with loans to foreign governments, too often of the most insecure character, or in aid of enterprises destined to benefit foreign populations rather than our own, and of which the management and success must be a matter of faith rather than (as in cases like these) of practical experience under the personal observation of those who invest.

THE CHARITY COMMISSIONERS AND THE DULWICH COLLEGE FUNDS.

THE PROPOSED NEW SCHOOL BUILDINGS.

The latest new scheme of the Charity Commissioners for the future management of the Dulwich College foundation and estate appears to have provoked a stronger opposition on the part of the southern parishes even than any of those which preceded it, all of which, it may be observed, proved abortive. By the new scheme it is proposed to raise the fees at the Upper School at Dulwich College; to abolish altogether the Lower School; and to erect a new school for middle-class education at Camberwell, in connexion with what is known as Wilson's Foundation. It is then further proposed, under the scheme, to expend 90,000*l.* of the funds of the college estate in the erection of new schools for the four northern parishes named in Alleyn's bequest,—namely, St. Luke's, St. Botolph's, and two others,—and also to expend 5,000*l.* a-year for the maintenance of such schools. To all these proposals the strongest opposition is being offered by the southern parishes, and Parliament is to be asked to reject the scheme in its entirety. It is contended, as regards the proposal to increase the fees at the Upper School, that it would practically shut out all those whom the founder intended to benefit, and confine it altogether to the wealthy classes, whilst it is also urged that the Lower School, instead of being closed, ought to be improved, and brought into closer connexion with the Upper School. As respects the proposal to erect a new middle-class school at Camberwell, in connexion with Wilson's Foundation, it is contended that no interference whatever ought to take place with the last-named foundation, and that with the very large population of Camberwell, and the districts immediately around (Camberwell alone containing a larger population than the four northern parishes combined), there is ample room both for the Lower School at Dulwich, and a new school at Camberwell, belonging to Wilson's Charity, which the trustees of that foundation contemplate erecting. It may be observed that at a public meeting recently held in Camberwell, when resolutions against the scheme were carried, Mr. Turney, chairman of the Camberwell Vestry, and one of the governors of Dulwich College, who presided, incidentally stated that the College Estate contained about 1,000 acres; that the present income was something like 30,000*l.* per annum; and that by the sale of ground-rents it was increasing at the rate of something like 300*l.* a year.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

The eleventh meeting of the session was held on the 21st inst., Mr. Syer Cuming, F.S.A. (Scot.), in the chair. Some charming paintings, copied from the rood-screen of Westall Church, Suffolk, were exhibited by Mr. Watling. This screen has a remarkable series of figures of apostles and saints, each with his proper emblem, and of fifteenth-century work. Mr. Cecil Brent, F.S.A., exhibited a small cylinder of Assyrian date, the inscription upon which was rendered by Mr. de Gray Birch, F.R.S.L. Mr. Morgan, F.S.A., described a Spanish figure of the Virgin Mary, which is said by tradition to have been carried by the Christians before their armies during the Moorish wars. It is about 18 in. in height, and is admirably carved. Mr. Loftus Brock, F.S.A., described a series of fragments of Samian ware, recently found in excavations near the Bank. They are for the most part ornamented, and are remarkable for showing traces of some great fire in remote times, many being burned black, a peculiarity which has frequently been met with in other parts of London.

The first paper was by Mr. W. G. Fretton, F.S.A., "On the Antiquarian Losses in Coventry during the last 150 years." The history and position of all the ancient buildings of the city which have been demolished during that period were passed in review, and the circumstances of

their removal were dwelt upon. Their demolition was occasioned for the most part by the indifference of their custodians, who appear to have had no interest in them as examples of art. A similar record might be made of almost every other ancient town in the country. The loss of the beautiful market cross and of the town gates was especially dwelt upon. The restoration of the churches has resulted in several ancient features being brought to light, but much unnecessary "newness" has been given to these buildings.

In the discussion which followed, the principle of removing the work of the last 200 years in so-called restorations was condemned by several speakers. These were evidences of the history of the buildings, as well as the features of the older date, and should be retained.

The second paper was by Mr. Pinches, who described the remarkable bronze gates recently brought to light by Mr. Rassam at Balawat, nine miles from Nimroud. The circumstances of the discovery, the position, and the whole series of the figures on the bronze plates, were passed in review, and were illustrated by several admirable photographs. The so-called Greek figures were referred to, and the peculiarities of the armour pointed out.

THE MONUMENT TO FREDERICK WILLIAM III. AT COLOGNE.

The history of the equestrian statue of which we give an illustration in this issue is a somewhat chequered one, for its erection, especially in its first stages, has seen more vicissitudes and given rise probably to more heartburnings than are usual even in the case of public monuments. Twice competition was invited, and twice it failed to satisfy the views of the committee charged with carrying out the construction of the monument. It had been resolved, as far back as 1860, to erect a statue to the King of the Hohenzollerns under whose reign the Rhine Provinces were finally incorporated with the Prussian monarchy. When competition was invited in that year, thirteen models were sent in; but not one of them was found practicable of execution. And when, two years later, competitors were once more asked to submit designs, strangely enough the same unsatisfactory result followed, the committee not being able to adopt one from those submitted. However, something had to be done; it was, therefore, resolved, in 1865, to select two of the sculptors who had already sent in models, and to commission them with the execution of the monument. They were Gustav Bläser and Hermann Schievelbein, both of Berlin. The former was charged to execute the equestrian statue, the latter the base, with the figures surrounding it. Unfortunately, Schievelbein died in 1867, and the task of executing the whole monument devolved upon Bläser. The latter drew up a fresh and somewhat simpler design for the base; but he also was not destined to complete the work; he died early in 1874. During his life, however, the equestrian statue, the four corner figures of the base (Blücher, Bülow, Kleist, and York), as well as those of the front and back (Stein and Hardenberg), were completed, partly also cast. After his death the committee confided the completion of the monument to the sculptors A. Calandrelli and R. Schweinitz, of Berlin. The former undertook the execution of the reliefs of the base, for which the designs were then still wanting, as well as of the upper socle, while Schweinitz carried out the completion of the figures of the two longer sides. The statues of the one side (Schön, Solm, Scharnhorst, Beuth, and W. von Humboldt) had already been begun, those of the other (A. von Humboldt, Niebuhr, Gneisenau, Arndt, and Motz) were entirely the creation of Schweinitz. Early in 1878 the casting was completed, the base of Swedish granite erected, and the whole monument was finally mounted in the same summer, the latter work taking up several months. The unveiling took place on the 26th of September, in the presence of the Emperor and Empress of Germany, the Crown Prince, and other royal and distinguished personages.

The monument, which has been placed in the square extending from the Gürzenich to near the Rhine, and obtained by pulling down the old Exchange and other buildings, is a very successful piece of sculpture, the variously grouped figures of eminent men of the reign of Frederick William III. conveying to the German mind a vivid impression of the history of those eventful times. While the equestian statue of the king (above life-size) is the principal feature of the whole, the forms (over 9 ft. high) of the warriors, statesmen, and men of letters surrounding the upper story of the base illustrate the progress made by the Rhine Provinces under Prussian rule; the figures of the friezes, on a somewhat smaller scale, of the friezes, on a somewhat smaller scale, elucidating this still further. The king is represented with head uncovered, holding in the right the sceptre, the left guiding the quietly stepping horse. From his shoulders flows a mantle covered with eagles. The face is executed with great fidelity, and exhibits a noble, if somewhat serious, expression. The king looks towards the east, towards the Rhine, as if to indicate that he has gained this much praised and much fought for river for Germany. The front of the base bears, supported by genii of Justice and Lenity, a tablet with the inscription: "Dem Könige Friedrich Wilhelm III. die dankbaren Rheinlande." ("To King Frederick William III. the grateful Rhine Provinces.") Below is the year 1865. At the four corners of the polished granite base, which project to some extent, are placed the generals of the Wars of Liberation, Blücher and York, Kleist and Bülow; the two former on the eastern side, the two latter on the western side. Hardenberg, who at the time of possession being taken of the Rhine Provinces was at the head of the Prussian ministry, occupies the place of the front narrow side, while Stein is on the opposite side. The southern face shows us the figures of Gneisenau, E. M. Arndt, Niebuhr, Alexander von Humboldt, and the Finance Minister Motz; the northern, the forms of Scharnhorst, President Count Solm, Beuth, von Schön, and Wilhelm von Humboldt. Below this upper socle is a second, its sides filled with reliefs. They illustrate the history of culture in the Rhine Provinces since 1815, the most important performances in the spheres of arts and sciences, commerce, industry, and traffic being typified by their respective representatives. Although there are forms among them which do not belong to the closer limits of the Rhine Provinces, but rather to the wider German fatherland, this has been done with a view of paying a tribute to the benefit the men here represented have rendered to the countries of the Rhine, always a susceptible soil for advancement and progress. If, for instance, Borsig, the late well-known manufacturer of locomotives, appears here, it must be remembered that he supplied the first engines for Rhenish railways; further that Schinkel gave a new starting-point to architecture on the Rhine; that Dr. Hufeland worked in the domain of medicine, Fichte and Schleiermacher gave an impetus to philosophical studies, the poets Körner and Rückert by their patriotic songs aroused and electrified the national feeling of the Rhinelanders. Men like Haniel and Diergardt, Stinnes and Merkens, Camphausen and von der Heydt, A. W. von Schlegel, Kaulbach, Schadow, Lessing, and Bendemann, Max von Schenkendorf, also Professors von Walther and Welcker, are quite in their place here. The building of Cologne Cathedral is brought to mind by the figures of King Frederick William IV., Cardinal von Geissel, von Wittgenstein, von Groote, Zwirner, and others, while Wallraff and Boisserée have found places here on account of their labour for Cologne art. The reliefs are extremely life-like, and exhibit great plasticity. It may be incidentally mentioned that the late King Frederick William IV. proclaimed Cologne Cathedral the symbol of German unity; his successor, the present German emperor, has fulfilled this prophecy, by making that unification a reality. The cathedral and the monument are two pearls in the architectural crown of old Cologne.

The total height of the monument is about 48 ft. The equestrian statue has a height of 25 ft., and is consequently the highest in Germany, the statue of Frederick the Great in Berlin being only 19 ft. in height. The total weight of the monument is about 35 tons, that of the equestrian statue 12 tons.

Edinburgh Architectural Association.—The usual fortnightly meeting of this association was held on the 21st inst., the president, Mr. W. T. Russell, in the chair, when a paper on "Elgin and its Cathedral" was read by Mr. Robert Menzies. The paper gave a minute description of the cathedral, and was illustrated with views shown by means of the oxyhydrogen light.

THE PADDINGTON BRANCH OF TH LONDON JOINT-STOCK BANK.

The directors of the London Joint-Stock having acquired the premises situated a corner of Craven-road and Eastbourne-te determined to erect a new building on that for their Paddington Branch, the busine which had grown beyond the contracted bilities of their present establishment. accordingly instructed their architects, M Isaacs & Florence, of Verulam-buildings, G inn, to prepare a design for the pro structure, and, this being approved, te were received, and the new building was menced in the autumn of last year.

The ground floor is principally devoted banking office, which is entered from a pr ing porch at the angle of the site extendi the areas on either side. This office is long by 23 ft. broad, and 16 ft. in heigh an appearance of considerably greater leng given by the mahogany screens dividing it the manager's room and the waiting adjoining, being glazed with clear glass fo greater part of their height, the lower p only being ground and embossed.

The counter, desks, screens, and fi throughout are executed in Spanish mah by Mr. Frederick Sage, as are also the window-sashes, &c.; the space in front c counter being laid with Minton's tiles.

In the rear of the clerks' desk is the staircase down to the basement, and also t for the bullion, books, and plate-chests latter provided by Messrs. Goddard & Co., neers. Great care has been taken in th struction of the basement, which contain large strong-rooms, and a third, or bullion approached through one of the strong only. This strong-room and the bullio are lined throughout by Messrs. Chubb iron plating, and provided with strong doors and gates. In this floor are plac messenger's room and the clerks' lavatorie and each compartment is connected by e bells and alarms with the manager's roo the upper floors The private entrance manager's residence is placed at the end side in Eastbourne-terrace, and leads t an entrance-hall to the principal staircase

On the first-floor are the dining and d rooms, 20 ft. by 16 ft. and 23 ft. by 16 spectively, the drawing-room having in a a circular oriel window over the porch, diameter.

On the floor above are three bedroom principal one having the oriel the same below. The top floor contains kitchen, sc and two bedrooms, a service-lift communi with the lower floors.

The frontages in Craven-road and Eastb terrace are executed in Portland stor principal entrance having a semicircular-h archway in red polished Aberdeen granite period chosen as regards the elevation is the Early Renaissance, with slightly-proj pilasters on the first and second floors, cr by a cornice with a richly-carved friez surmounted by an attic story, with small pilasters at regular intervals, breaking pediment at the canted angle, and the finished by an open balustrade. The c the pilasters, panels to the windows spandrels to the porch, &c., are all enrich carving, the whole of which has been ex by Mr. Bromfield.

Fireproof construction has been used ground and first floors, and the works been substantially carried out by Messrs Scrivener & Co., the contractors.

The total cost, inclusive of fitting linings to strong rooms, amounts to about The new branch will be opened for busin (this) Saturday morning, May 31st.

WELLINGTON BARRACKS, ST. JAM PARK.

The chapel here, after being closed for time for alterations, has been again open service, and will not be recognised by tho knew it previously. A very large sum of has been spent upon it, and we may find portunity to give some particulars. The d of all the mosaic work, stained glass, and br brasses were prepared by Messrs. Clay Bell, the execution of the glass and mosaics has been by Messrs. Salviati & and the whole work has been under the pe superintendence of Mr. Street, R.A.

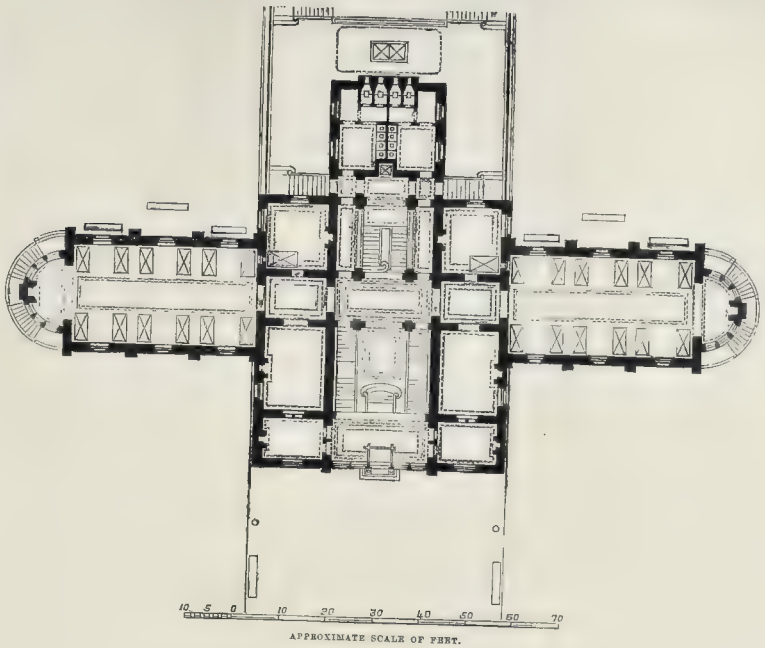


MONUMENT TO THE EMPEROR FREDERICK WILLIAM III. IN COLOGNE.





THE PADDINGTON BRANCH OF THE LONDON JOINT STOCK BANK.—Messrs. Isaacs & Florence, Architects.



THE HERTFORD BRITISH HOSPITAL, NEAR PARIS.——*Plan.*

HERTFORD BRITISH HOSPITAL.

id a plan, according to promise, to the and view of the hospital founded in Paris ichard Wallace, given in our last.* As nged and in use, the beds are more paced than they are shown to be on

OF QUANTITIES: THEIR PROPER ELATION TO CONTRACTS.†

marks I have made on the English and h systems evidently point to this conclu- at both are generally advantageous to rs at the expense of proprietors, and that of matters is tolerated simply because rs do not understand the subject, and s, on whom they rely for protection, decided—many have not considered— sures of reform are desirable or prac- Cases in which contractors are the o sometimes occur, but they are com- rare; because, as a rule, contractors their own interests in time; and it s in the case of the Worcester Guild- hich I shall further refer), succeed in n arrangement made which relieves t subverts the system. There is no hem except by such subversion; and o systems under review are strictly most of us have known cases of ex- dship—as they are called,—but which more accurately described as cases of stice, in which contractors have been yment for work which to the certain of both the proprietor and architect rovided for in the estimate, and the hich was deliberately withheld from ctor on the plea that he was bound to k according to the plans and specifica- tout reference to the quantities. In mstances the case of the contractor d still more hopeless and helpless if ect is also the measurer and the sole . Such a combination of functions y to be deprecated, but it is utterly le when there is no re-measurement rk, and its legality would seem as le as its expediency. It seems to me an extraordinary thing that any law-court should recognise or respect the pretensions of an individual who claims to be at once the accused and the judge, a party in the arbitration and the sole arbitrator. By a recent decision, however, in the case of Stevenson *v.* Watson, in the Court of Common Pleas, it appears to be ruled that an architect may so act; and that because he must exercise "judgment or opinion" in two of these capacities, he shall be utterly irresponsible for his conduct in the third. That, at least, is how I understand Lord Coleridge's judgment in this case: the quantities taken out by the architect and the additions and omissions measured by him may be grossly inaccurate, but because he has to exercise "judgment or opinion" as judge and sole arbitrator in his own cause, the contractor must be debarred from challenging his accuracy, and must be left helplessly at his mercy. Of course, in the case in point there may actually be no inaccuracy. I express no opinion on that subject, not having seen the arguments; but the above inference seems to be warranted by the judge's opinions. I am tempted here to refer to a remark which fell from Mr. Justice Denman. He said,—"Ordinary acquaintance with building contracts showed that an architect could not be regarded as a mere caster-up of figures, and ought not, therefore, to be held liable for negligence where a mistake in figures or measurements occurred." That is a strictly fair and accurate statement of an architect's position; but it is not a strictly accurate statement of a measurer's position. The latter is clearly responsible for the accuracy of figures and measurements, and the architect-surveyor cannot escape from this responsibility by the mere assumption of the two-fold duty without great injustice to contractors. In such a case as this of Stevenson *v.* Watson, it may for ever remain doubtful whether the contractor is justly treated or not; but here again, as in my previous illustration, the remeasurement system would clear away all dubiety, and prevent all chance of complications and law-suits, thus standing out in marked and favourable contrast with the prevailing systems in England and Edinburgh.

The grand obstacle to the satisfactory working of the systems as at present practised seems to be the impossibility of securing either an effective attachment of responsibility or the substantial results of its due recognition. While some legal authorities maintain that the measurer is responsible both to the proprietor and the contractor, others hold that he is responsible to the proprietor only, who is responsible to the contractor. This latter view seems most consistent with the well-known legal principle that one cannot at once "approbate and reprobate." If a proprietor issues a schedule of quantities as a safe guide for a tradesman from whom he wishes a tender, it seems most consistent both with sound law and sound common sense, that he should bear the consequences of inaccuracies which might prejudice such offerer; otherwise contractors might be systematically swindled with impunity. But at present special agreements in violation both of common sense and law come in, to cause confusion and seeming contradiction in legal decisions. Such *ex parte* contentions, however, can hardly be justified, and at all events it will generally be found in practice that while proprietors are not likely to hear much about quantities which err by excess, they are sure to find the burden of responsibility for any serious deficiencies by some means or other rolled over upon them. In this connexion such a dispute as that which recently arose regarding the contract for the Worcester Guildhall is instructive. In this case, which was reported in the professional journals about six months ago, it is the contractor, as usual, who discovers that he is aggrieved. He demands a readjustment of the contract on the ground that the quantities supplied to him for his guidance in making a tender were inaccurate, which he is prepared to prove. This seems a most reasonable demand, but he is met with the plea that the bills of quantities were not referred to in the contract. This plea, however, was not maintained, and ultimately a new arrangement was made with the contractor; the proprietors no doubt in this case recognising the manifest absurdity of expecting the tradesmen before offering to satisfy themselves as to the accuracy of the quantities. It will always be extremely difficult for proprietors to get rid of the responsibility of their own act in issuing quantities; it ought to be impossible for them to do so; and many cases such as the above prove that in addition to other burdens which the present system lays upon them they

pp. 571, 573, *ante*.
Mr. John Honeyman. See p. 561, *ante*.

may at any time be called upon to submit to a "scientific rectification" of the contract at the instance of the contractor; and this notwithstanding that theoretically they are not responsible. As we have seen, the payment of the surveyor by,—although it is really only *through*,—the contractor is held to make him the contractor's servant and so responsible to him. I have already shown how prejudicial this is to the proprietor's interest, but besides that, it is not a straightforward arrangement, and, as we should expect, misses its object. The truth is that the full acceptance of this responsibility by surveyors would in most cases be of not the slightest avail either to the proprietor or the contractor, because obviously a guarantee of accuracy is valueless unless the guarantor has adequate means to meet claims which those to whom he is responsible may legally prefer, or rather substantiate. Now I fear both proprietors and contractors would stand a very poor chance of getting 2,000*l.* or 3,000*l.*,—or even 200*l.* or 300*l.*,—from the average quantity surveyor, however valid their claim; and if so, it is clear that this attachment of responsibility is merely fictitious. Some have proposed that architects should be responsible, but under the present system, with which we are at present dealing, architects are not involved unless they think proper to involve themselves by acting as surveyors,—a practice which, under present circumstances, is probably as objectionable as if they also acted as masons or joiners, as some "architects and builders" do; because they necessarily put themselves into this equivocal position:—they are liable at any time to be pursued by the contractor, who, theoretically, is their master; and surely a contractor can make an action-at-law a more powerful lever for moving the architect as he pleases than a direct bribe. On the other hand, the architect-surveyor alone can discover and expose blunders of his own which prejudice the proprietor who is also his client, and if the exposure of such blunders would involve him in a loss of several hundred pounds, I leave you to estimate the chances of such an exposure being made. The position of the architect as the impartial arbiter between the contractor and the proprietor is one of sufficient difficulty and delicacy without the interference of such complicated responsibilities, the effects of which, on average human nature at least, must be vicious and demoralising.

Upon the whole, I think it must be conceded that the English and Edinburgh systems are inconsistent with any intelligible theory of the proper relation of parties, and that the practical outcome of both is this:—To the proprietor, unproductive expense, indefinite responsibility, and liability for payment of work which he does not get, but which has been either inadvertently or purposely measured in excess of what the plans and specifications require; to the contractor, great facilities for estimating, for obtaining payment for everything which he does, and for obtaining payment for much which he leaves undone.

The remaining system to be considered, that practised in Glasgow, shares its favours more equally. By it the proprietor is entirely relieved from responsibility connected with the quantities; he is called upon to pay only for what he gets, and the contractor gets paid for what he does and nothing more,—nothing being referred to in the final measurement except what has been actually done and measured.

This mode of contracting is by no means free from drawbacks, but it is the logical consequence of the interference of the proprietor or his architect with the preparation of the schedule of quantities, and I can see no escape from it. It has many excellent points: for example, it solves the difficult question of responsibility which we have just been considering, and supplies the only substitute for a guarantee of absolute accuracy which has been practically tested. The experience of many years has proved that this substitute is complete and satisfactory, or as nearly so as the circumstances permit. The arrangement is equitable, and it deals impartially with the two parties chiefly interested, which, as we have seen, the other systems do not. Even clerical errors are as likely to benefit the one as the other, and there is always the check of the second measurement *de novo*. The result is, that all cause of quarrel and excuse for complaint is removed, actions connected with contracts are almost unknown, and the system altogether works satisfactorily on this solid and intelligible basis,—the mutual convenience and interests of the parties. The defects of the system have recently been the subject of discussion before the Glasgow Architectural Society. They are almost entirely of a kind which would vanish before a little determination and co-operation on the part of architects and measurers; and I have no doubt that some improvements will very soon be introduced. Passing from this I must notice one objection which is often urged against the system,—namely, that it leaves a proprietor in uncertainty as to the cost of a building till it is finished and measured. But this is not so, unless the architect has neglected his duty in the preparation of proper plans and specifications. But if an architect neglects his duty in this respect, the proprietor is not relieved from this uncertainty by any other system, as it is then impossible to foresee the probable extras. If it were otherwise the objection would be fatal to the Glasgow system; but if the experience of a hundred years proves that there is no likelihood of any discrepancy between the estimate and the measurement,—that practically there is none, except where it can be clearly traced to the carelessness of the architect or the measurer,—then it will be seen that there is little weight in the objection; because, if the architect and measurer do their duty, there need be and there will be no difference between the measurement and the estimate; and if they neglect their duty it is perfectly obvious that, in justice both to the proprietor and the contractor, there *ought* to be a difference, and the two offenders, or either of them, should at least suffer in their professional reputation.

It can, I think, be proved that with equally explicit plans and specifications, there is less chance of the final account exceeding the tender under the system of re-measurement than under any other; and not only so, but (and this is an important set-off against some uncertainty) the work is done at lower rates than if it were not to be remeasured. It is only in localities such as Edinburgh and Glasgow, where contractors are accustomed to both systems, that a comparison in this particular is possible, and there it has been abundantly proved. I have been assured by contractors of high standing and long experience that they invariably charged from 10 to 15 per cent. more for work which was not to be remeasured, besides a considerable sum to cover contingencies; so that, when the work is remeasured, not only does the proprietor pay only for what he gets, but he pays from 10 to 15 per cent. less for it; and this, you will admit, is a very substantial advantage. Another objection which may be fairly urged against the Glasgow system is that it has a tendency to encourage carelessness in the preparation of the documents necessary for obtaining an accurate estimate. Knowing that all will be made right at last, the architect is tempted to pass the plans on to the measurer in an incomplete state, and the measurer to assume quantities which, in consequence of that incompleteness, cannot be exactly ascertained. The undue haste of the architect, it is true, is often the result of undue pressure from the proprietor, who does not realise how necessary ample time is for the preparation of complete working drawings. By resisting this urgency we may escape the danger on the one side, and by exercising proper authority over the measurer we may escape it on the other. Of defects of a more accidental character I shall mention only two. One is, that the facilities afforded by the system for obtaining estimates encourage young men to undertake work on their own account before they are properly qualified to do so. A man who could not write a specification himself gets an experienced measurer to prepare schedules for him, who thus gives him the benefit of the specifications of others. Another defect is the undue delay which usually occurs in settling accounts. This is caused chiefly by measurers neglecting old work for the sake of securing new: to such an extent is this sometimes carried, that I have known premises entirely and satisfactorily finished and occupied for twelve or eighteen months before the tradesmen's balances could be ascertained. This, I need hardly say, leads to much inconvenience, and frequently to heavy and undeserved loss, both to contractors and architects. I endeavour to mitigate this abuse by employing several measurers, instead of confining myself to one or two, which would really be much more convenient and agreeable in many respects. But there is no reason why the evil should exist at all, and it might, with other abuses, be entirely swept away, if arc would co-operate and take a more co control over all the operations of the mea

It may, perhaps, occur to some to s another objection to the system,—namel is is impracticable,—that it is, in sho possible to re-measure a large buildin that objection is very easily disposed of. not only practicable, but it is constantl and buildings of every size and comple detail have been measured when finis Glasgow and neighbourhood during generations; that question, therefore, m be discussed. I must now hasten on to c the last division of my subject.

III. *Proposed Changes.*—What I have advanced points to these conclusions:— that the usual practice in contracting is ra defective, being based upon false prin is merely fictitious. Some have proposed that architects should be responsible, but under the present system, with which we are at present dealing, architects are not involved unless they think proper to involve themselves by acting as surveyors,—a practice which, under present circumstances, is probably as objectionable as if they also acted as masons or joiners, as some "architects and builders" do; because they necessarily put themselves into this equivocal position:—they are liable at any time to be pursued by the contractor, who, theoretically, is their master; and surely a contractor can make an action-at-law a more powerful lever for moving the architect as he pleases than a direct bribe. On the other hand, the architect-surveyor alone can discover and expose blunders of his own which prejudice the proprietor who is also his client, and if the exposure of such blunders would involve him in a loss of several hundred pounds, I leave you to estimate the chances of such an exposure being made. The position of the architect as the impartial arbiter between the contractor and the proprietor is one of sufficient difficulty and delicacy without the interference of such complicated responsibilities, the effects of which, on average human nature at least, must be vicious and demoralising.

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n whether the extra cans are on the
ng or not, that being a matter of fact,
ot of opinion, is very easily settled. All
s have good grounds for satisfaction with
an arrangement; and I may add that
is no difficulty in dealing with every
y of work in the same way. It may be
sting, as indicating how successfully such
em disposes of all legal difficulties, and
ell it works even with its present defects,
ention that on taking a hurried retrospect
r own experience since I commenced busi-
n my own account, I find that I have
ed upwards of 1,100 tenders for the prin-
departments of works connected with
gs, besides innumerable offers for spe-
s; I have had to cancel contracts, to
ede bad contractors, to get rid of bank-
contractors, and arrange with their
rs without allowing the interests of my
to suffer, to make deductions from con-
rs' claims, and, generally, to do all the
es of disagreeable work usually devolving
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hese 1,100 contracts, and not one single
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A system capable of producing such
would doubtless, if freed from its ad-
defects, prove generally acceptable and
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lly turn to such a body as this Institute
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ill be observed that the proposed changes
I recommend are,—a radical change in
lation of the bills of quantities to the
ct, and subordinate changes which will
e expedient. I shall now only venture
ation one of these. Assuming that the
of re-measuring is generally adopted, it
found that in some respects the interests
itects will be more directly affected than
ent by the conduct of the measurers, and
occurred to me that many of the minor
which we find in the working of the
might be removed, and the interests of
fession protected, if measurers were not
to practise,—in other words, if they
ot employed by architects,—unless they
certificate of competency from the Insti-
This at first sight seems rather a
g proposal; but after a good deal of
eration, I believe it to be practicable, and
ertain that, if carried out, it would be
ial. I may not now expound the many
which support this belief, but I may
generally that, if a change in the mode
nating is introduced, such as I believe to
essary to meet fairly the exigencies of
se, it is evident that it will rest entirely
e architects of the country to determine
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In the altered circumstances, indeed,
ots might with perfect propriety mea-
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a branch of their business; although I
y that, personally, I regard such a course
trong repugnance. Now, in suggesting
comprehensive stretch of the Institute's
ity, it must not be supposed that I speak
as a member of the Institute with an
rated idea of its cosmopolitan influence.
very well how far short it comes of our
but it is, nevertheless, all we have in the
of a national professional association, and
matters of general interest it is bound
rt itself, and to direct and govern the
of reform. Were I not a member, I
be equally solicitous that the Institute
take the matter in hand; and this feeling
am sure, be shared by members of the
ion throughout the country. It is to be
ed that every one who is duly qualified
a member. It is needless to point out
mmensely such union would strengthen
ition as a profession, when we come to
ractically with measures such as these,
y affecting us all. I am confident, how-
nat in introducing changes in our mode
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to be beneficial, the Institute might safely
te upon the active and hearty co-opera-
all members of the profession throughout
untry. Even now the representative
ter of the Institute, and its value as the
ganisation which can efficiently deal with
ional difficulties, is more generally recog-
han it has ever been before; and I am
sanguine enough to believe that that recognition is destined to be progressively more cordial, more universal, and therefore more energetic.

ON THE USES OF A COLLECTION OF OLD ENGRAVINGS.*

One of the most important uses of old engravings is that we may trace the history of the world by them for nearly the whole of the last four centuries. These are no mere fanciful transcripts, but are true to life, of contemporary date, exhibiting faithfully the scenes and the actors. The number is practically without limit. Let us notice a few, to demonstrate their wide range. Here is a scarce print of the "Tournament," given by Pope Pius IV. in the old Vatican. We see the new Church of St. Peter's in progress in the background. Michelangelo's dome has not yet been begun above the lower pillars. The whole composition is filled with neatly-drawn figures, true in all the details of their costume and armour. Here is the congregation of cardinals for the election of a pope, 1565, and here the whole ceremony of the extraordinary reception given at Venice to the Doge Antoine Priuli, 1628. The canonisation of saints, in 1712, by Clement XI., is finely rendered in Picart's plate, and Louis le Lorrain, 1745, records one of the grand pageants prepared in honour of the marriage of the Dauphin of France with Maria Teresa of Spain. France may claim the largest collection of historical engravings. Here, as examples, are two records of the fêtes at Versailles, engraved by Chasteau, 1676, and by Le Pautre. A charming engraving represents a *bal masqué* a few years later, while Le Clerc, 1681, gives a true representation of the siege of Tournay by Louis XIV., an example of a large series of battle-pieces, by various artists, deserving of special mention. Another plate represents the coronation of Louis XVI., dated 1775, and indicates the ceremony with wonderful regard to detail. A sadder subject is that of his visit to the Hôtel de Ville, 1789, and of much interest in illustration of Parisian topography. This is followed by one of the beautiful plates of the series of the coronation of Napoleon, rendered in the charming style of the period. Another print shows the translation of Voltaire to the Pantheon, 1791.

Holland has a fine series of engravings illustrative of the progresses of William and Mary. Here is a triumphal arch at the Hague; there is the army at Arnheim; and there the oaths in the English Parliament. The marriage of Franciscus Mollo with Anna Maria Ooms, 1674, has occasioned a well-engraved allegorical print; and the dedication of the synagogue at Amsterdam, 1721, has not been forgotten by the engraver. The print is an admirable rendering of the ceremony.

The English series demands passing notice. Here is a specimen of the ordinary book illustrations of the end of the seventeenth century, done by a native hand. It poorly represents the lying in state of Queen Mary, 1694, "to the great greefe of all good subjects." The reception of James II. at St. Germains, 1689, is well rendered by a small Dutch plate. Carrington Bowles, 1747, devotes one of the best of his numerous plates to the trial of Lord Lovat in Westminster Hall, and which is coloured after prevalent taste. A print, dated 1750, records the action at Porto Bello, and the fashion of English ships, while the death of General Wolfe is full of artistic treatment, as might have been expected from its composer. The "Volunteers in St. Stephen's Green, Dublin, 1784," recalls a stirring time in English history, and of the creation of a force which, revived so lately, will still do honour to our country. "Victory" represents an illumination in the streets of London, with an admiring crowd in the foreground. This review of a class of engravings is miserably meagre, for the theme is endless, and every incident in history is recorded by the engraver; but how can I bring in more in the compass of my time? We may trace the manners and customs of all countries by the study of old engravings. I must only indicate it, and produce a few very diverse examples. Here is a skating scene, drawn from the life by Peter Breugel, and dated 1553. It represents a severe winter, and a crowd of skaters are gathered in the moat outside St. George's Gate, Antwerp. Both moat and gate have passed away, but we see both here. Crowds of male and female skaters are seen in the costume of the period, and we may notice the form of the skaters, the hats, the cloaks, the game of hockey in the distance, the child's go-cart, and the travelling wagon. Callot's "Fair" is dated 1620. It is a perfect encyclopædia of the manners of the people. The scene is laid in Italy, and we may observe the improvised juggler's show, with the snake-charmers, the open-air *restaurant*, the hawkers, the covered booths, the design of the open carriages, and a thousand little matters of the life and detail of 250 years ago, of which not the least interesting is the punishment accorded to a rascally trader who has been detected in giving false weight. He is suspended by his hands, which are bound behind him, to a gallows, and raised and lowered, while the scales are tied to his feet. The English plate, the "Royall and most pleasant Game of the Goose," initiates us into a once popular game; and the "Doctors in Labour; or, a new Whim-wam from Guildford," recalls a once wonderful imposture, as well as affording evidence of an Americanism which was once popular English. The "art" of advertising, as it has justly been called, has an apt illustration in the curious trade-ticket of Mary and Ann Hogarth, "from the old frock-shop round the corner of the Long Walk." It is designed by W. Hogarth, and is an interesting example of a large series. The simple church of St. Marguerite at Saltzbourg indicates a picturesque cemetery surrounding it, with crosses and monuments of all sizes, of design not now common. The "Hag of the Dribble" recalls a once-dreaded superstition, prevalent throughout Wales. Indeed, it may be doubted if it has yet thoroughly died away. These few examples may suffice to show how limitless is the extent of the engravings for illustrating the events of daily life of all countries.

Religious manners and thought have their illustration in an ample manner in old engravings. To glance rapidly at this subject. Here is a beautiful plate by Nicholas Beatrizet, a Frenchman settled in Italy, of the Invention of the Rosary; there Marelly's coronation of the Virgin; and there one scene only in Vannus's life of St. Catherine of Sienna. Of miracle records, I show a scarce print of the "Translation of the Holy House of Loretto." Angels are bearing the house across the sea, and we may notice with strange wonder how it settled down in safety at the place of its rest. Another is a Dutch print, by Frederick de Witt, of the appearance of the Virgin at a ruined chapel, with a circular procession of pilgrims. The miraculous image of "Our Lady of Roncevalles," and that, also, of "Our Lady of Reggio," may be studied with interest. The Dutch plate of one of those fearful stigmas to humanity, "An Auto da Fé" of the Inquisition, bears its record to all time of how religious hate would erect the cross of Christ on one side, and a heap of faggots on the other. A more gentle Dutch print represents the collection in Holland in aid of the persecuted Protestants of Piedmont in the seventeenth century. One of the charms of these records is that they are of contemporary date, or nearly so. A curious emblematical plate, by T. Cecil, 1632, of the objects of our Lord's Passion, may be taken in illustration of the very numerous emblematical engravings, so common alike in Protestant and Catholic countries during the whole of the seventeenth century.

One of the uses of old engravings is to trace the history of costume. A series will afford a perfect record of all the various changes that have occurred, and this applies to all countries where engraving has been practised. In the fifteenth-century engravings we may trace exactly the costume of every state of life and society. Let us examine a specimen or two. Here is Lucas Van Leyden's Pilgrims (1520). We see the cockle-shells and a pilgrim's sign on one side of the pilgrim's cap, while on the other is his wife's spoon and his own, illustrative of the fact that at inns articles of this sort were not supplied, and had to be brought by the guests. He has a costrel at his girdle, and on his back is a wickerwork pannier for his children. One child walks, having an owl on its shoulders. Notice the boots and the costume generally. T. Sadeler's "Marriage" gives us a faithful rendering of the sixteenth-century German costume, as does the same artist's "Marrying and Giving in Marriage." Notice the form of the knives on the table, and the primitive mode of placing dessert. The "Festival at Fontainebleau" fifty years later (1633)

* By Mr. E. P. Loftus Brock, F.S.A. See p. 573, *ante*.

introduces us to an admirable study of French costume. The guests are all men, and all, cleric and laic, including the king, wear their hats,—a fashion which was highly popular indoors in all places, and which has not yet quite died out of our own country. The serving-men alone are uncovered. One plate of Titian's "Costume," which treats of that of all countries, will afford an example of all. The attack upon travellers by J. Van Velde is a capital specimen of his style, and also a good example of the costume of the Netherlands. The English soldier with a caliver is one of a large series. Notice the quaint costume, the iron or leathern helmet, the lighted match, the powder-flask. The other engravings before you bring down the history of costume to the commencement of this century.

No small use of old engravings is that they recall the men and the women who have passed away from us. The number of engraved portraits may be reckoned by the thousand, and they record for us with more or less exactness the aspect of many a man or woman whose name is still famous in England. They were engraved, for the most part, from paintings done from the life, and therefore they have considerable interest to us. Since it is impossible, among so many, to make anything like an acceptable selection, I have contented myself to place before you a small consecutive series of portraits of ladies. These commence with line-engravings by Lombard; then mezzotints of varying excellence, but of interest as examples of the style of Smith, Simon, Faber, Wilson, McArdell, &c.; while I have continued the series a few years past 1800 to include some of M. Mee's soft portraits, and a later style of engraving. We may here trace once celebrated beauties,—Ladies Carnarvon, Middlesex, and Carteret; the Countess of Essex, one of the beautiful Miss Grunings, and many others, are here. Sir Joshua Reynolds's "Strawberry Girl" is before you, as is also his Miss Farren, engraved by Fisher, 1781. The whole may be taken as illustrative of the peculiarly English school of mezzotint engraving, and of interest accordingly. I exhibit a few male portraits which may commend themselves to our notice for the elegance of their pose, or for the varying processes of their execution. Here is a portrait of George III., by Corbould, engraved by Bartolozzi,—one of a large class, where allegory is introduced with admirable effect. Why will artists produce stiffly-designed portraits when these old engravings point out to them a better way?

Old engravings can be appealed to by antiquaries for records of old buildings that have long passed away from us, while a magnificent collection can be made of buildings which still remain to us. The German and Dutch series is of much interest, for the engravers produced views without number of the principal towns, not only of their own localities, but of Europe in general. Here are a few examples. The Bourse of Antwerp, now burnt and rebuilt, is an almost contemporary print, showing the building with capital detail, even to the design of the weathercock. Merian's view of Wurtzburg is a fairly excellent specimen of his style, and we can overlook the quaint old town, and study the design of every building, its towers, its castle, and the numerous churches. A few other examples follow, each remarkable for recording the appearance of old towns which are now materially altered. Here is one of Merian's best,—his view of Ratisbon. Notice the perfect examples of Mediæval fortification, the quaint entrance-gates, the fortified bridges. Here is Oberwesel, on the Rhine, with the now ruined Castle of Schonberg represented in its perfect state. Here is Ober-Lahnstein, and we can trace the original design of the Marixburg and of Stoltze Veste, two ruined castles which now frown upon the voyager; while to the right, the now beautiful ruin, the Romanesque church of Nider Lahnstein, is represented intact. Some of these, however, reveal a sad record of the brutality of our forefathers. In many the gallows is shown to be a prominent feature in the landscape,—a permanent structure,—while often the movable wheel, on which many an unhappy wretch has been broken alive, appears as a common companion. Merian gives us a capital view of the Roman gate,—the Porta Nigra of Trèves, as it existed in his time, and until lately, in fact, crowned with the steeple of an ancient church, and many quaint buildings. Here are a few French examples, including, as a specimen, one of Israel Sylvestre's views. It is of Orleans, and represents the churches and buildings in ample detail as they existed nearly 250 years ago.

We owe to an English traveller a view of the beautiful church of St. Nicaise at Rheims, taken during its demolition at the revolution of 1798; and to a German a good view of the east end of Notre Dame, with the central *flèche* destroyed at the same period. A scarce view of Paris shows the demolished church of St. Géneviève, with a lofty steeple (the tower only remains), and many another demolished building. The Italian series is of very remarkable interest, for it commences early in the sixteenth century, and is still continued. There is a fine series of views of the antiquities of Rome, which date from 1550; but I show the work of another hand,—very ancient views of old St. Peter's, the Farnese Palace, and the Forum. Michelangelo's celebrated tomb is represented in a plate dated 1570; the design of the intended steeple of St. Peter's by a plate not much later; while we can study the condition of the Colosseum in 1703 in Specchi's plate. No reference to engravings could be anything like complete without notice of Piranesi's magnificent works, and I produce therefore his view of St. Paul's without the walls, now destroyed by fire, and rebuilt. The English series is sufficiently large to claim our best attention. Here are some specimens to show its scope. Hollar deserves our warmest gratitude for the number and the variety of his plates. A pupil of Merian, we can trace by comparison how far he departed from the manner of his master, and excelled him. Here is a reprint of his plate of Windsor Castle, which is placed beside one drawn by the celebrated Knyff, and engraved by Kip. It is sixty years later, and we can trace the appearance of the keep before it was raised by Sir Jeffrey Wyattville. The old church of the town is also shown. King gives us a view of Ripon Minster with the three spires; and Hollar does the same, 1672, for Lincoln Cathedral; and we can well imagine the magnificent effect of this grand old minster on its lofty hill, when crowned in this manner. Harris preserves to us the design of the central lantern of Ely Cathedral, recently so ably reproduced by the great architect who has passed away from us. He shows also the spire on the western tower, the aspect of which calls for its rebuilding. Fourgeron gives us a good print of the ancient bell-tower of Salisbury, ruthlessly and unnecessarily demolished in the last century. To turn to London for a moment. Here is Hollar's view of the choir of old St. Paul's, and beside it the west front of Westminster without its towers. I exhibit also Canaletti's view of old Ranelagh, and Toms's view of old Shoreditch Church. I will not linger over London views, interesting as they are, for the Grace Exhibition is still open at South Kensington. To afford some insight into the number of old engravings: Mr. Grace's collection in its assorted state numbers there over 1,500 examples. How limitless, therefore, must be the number, when there are so many of one city only? Hollar gives us a poor plate of Hereford Cathedral, showing a central spire and the old western tower. It is placed near a view taken on the day when this ancient tower fell, burying the whole of the front in ruins. The engraving is a capital record of the appearance of the building. The brothers S. & N. Buck produced a vast number of views about the middle of the last century. I have selected as examples one of the Castle of Cambridge, now demolished, and the panorama of Reading. What a change has come over this town! Here are the demolished church of Reculver, the old Bridge of Newcastle-on-Tyne, the Cross of Coventry, and Mitcham Church, all demolished, as is also the ruined church of St. Chad, Shrewsbury, which fell down about 1778. St. Winifred's Well is shown in a scarce print, the quaint sign of Schoale Inn is shown by another: the forlorn aspect of Scarborough in 1799 is ably shown by Lowry's plate. To show how limitless is this subject, here is the aspect of the church of the Recollect Fathers, all the worse for the bombardment, at Quebec, by Grignon, 1761; and here is the interior of the old dome of the Holy Sepulchre, now destroyed, done by an Italian hand.

To many people one engraving is like another, but the various processes are of much interest. One of the uses of old engravings is to show these, and with a few examples I will conclude. Here are charming examples of line-engraving, executed by the gravêr on the copper direct, by J. Sadeler and Mallery, and one of Mellan's wonderful graver. I exhibit his "Veronic 1649. The head of Christ is engraved circular line drawn by hand, commencing point in the centre, the whole effect being duced by deepening the action of the gr where wanted.

Thourneyser's delicate style is shown by Laocöon; while of etchings, I produce, as s mens, examples by K. du Jardin, 1642; Ost 1641; Bergham, Testa, Salvator-Rosa, Melchoir Kussel.

Special mention should be made of Cl Lorraine's view of the Forum, 1636, an Benedetto and Silvatore Castiglione, w works will amply repay examination.

Rembrandt's portrait of himself, 1639, fine plate, and completes a group of etchin great diversity. Of the processes of prin in bistre, in tints, and in colours, there several examples,—one, a wood-cut of Raffa cartoon the "Miraculous Draught of Fish being dated so early as 1609.

I have already spoken of mezzotint, ar the style of Cosway and Bartolozzi. I mains, therefore, but to show a few Contin examples of this beautifully-stippled styl have now traced some of the uses of ol gravings. How many more could have mentioned did time admit, and how readily illustrations could have been given, even o points that have been thus hastily pass review! The walls could readily have filled with engravings bearing upon each o the subjects named, and examples might been obtained of much more artistic merit those before you. My object has been, ever, simply to place on the walls ord engravings, each of but little intrinsic comparatively, and quite within the reach o collector. They are obtainable now, but cannot be reproduced as originals. The is large, and men and women of artistic t are on the increase. It is, therefore, not that the opportunities of to-day will remai morrow, and the facilities to our hand will surely decrease. When we consider losses of art works by accident, by decay by exportation to remote parts of the wo is evident that what I state is capab demonstration. I hope that what has said to-night will direct more attention o part of lovers of art to these beautiful w and that, in addition, this grand old art c graving, which deserves so well at our han reason of the worthy work it has done i world, may have, itself, more interest sho it. It ought not to be that in England, i nineteenth century, when we talk so mu art and art matters, one of its pri exponents should be suffered to languis want of patronage.

NOTES ON THE PRESENT ART REVIV

It may, however, be accepted as a tr that the existing revival is a hopeful one, ing as it does the impression of genuinen its artistic tendencies, and showing u takable proof of vigorous growth. These butes are in a great measure due t advanced studies and experience of the and true features of the art as employe our forefathers. But care should be taken it is not rashly interpreted too literally, ought rather to serve as an incitement t active operation of our sentiments, as suggest to us ideas of the prevailing mo thought and action of those bygone days.

Hitherto the *rare* specimens which exi the period alluded to have been carefully served either in the homes of our ancient lies, or jealously guarded in our public mus for the curious to look upon, and have serve one was sometimes inclined to think, as an cation to the designer of what he should a so divergent have been the principles gove the art of design. But this dubiety of fe and taste has, we are glad to say, altog disappeared, and the museum has becom workshop and centre of attraction of the re tated art thought. Indeed, it is accepted as a meritorious act to be able to repro literally, and apply to present requiren those quaint examples of the past; and wh is found necessary to introduce alteratio some of its less important parts, in ord adapt it to utilitarian purposes, such cha are effected with a feeling almost amounti

* By Mr. Thomas Bonnar. See p. 574, *ante*.

on. This is as it should be. In such a feeling we can easily recognise the g of a living art, freely transmitted e spirit of the past. The germs of its s have become deeply rooted, and they ceed in creating a faculty of mind of reconstructing that ideal picturesque which the artistic mind has poetically he domestic surroundings of past gene-

pleasing reflection that, notwithstand- altered conditions of the times in which we are conscious of still retaining the f appreciating the lineaments of that nd suggestive beauty which we may s our art heritage.

people which the brilliant fancy of er Scott has conjured up to re-enact the scenes and events of long ago, and to move once again in adventurous career, trace the forms and ideals of those ve characteristics of nationality of which so justly proud. And surely, if word- can obtain such a wholesome influence national mind as has been done by the the author referred to, in conferring tal vitality on our every-day life, and ing our patriotic sympathies, with how lcome should the power of appreciation t, by which we are enabled worthily to he presence of the efflorescent beauty an be produced by the style of art we n speaking of.

ve, indeed, reason to look with satis- on our present position, however great rfections may be, when we pause to the utter chaos out of which our art nated. The blithesome, healthful, ense was absolutely ignored, and what- graceful and elegant was received with ive disregard, notwithstanding the advantages enjoyed in the great y of the country. The rudiments of n have begun to be understood, as its s are too sincere and truthful to be over- Although where there exists so much m we must be prepared to allow lerable margin for deficiencies as he conception of the ideal as in its : sometimes we may discover it g anything and everything except nd meaning, which become conspicuous absence,—flaunting in the borrowed s, and dubbed with the title of its tistic contemporary. This, although a result, must always be regarded as a le obstruction to true and thoughtful nd if there is one thing more than which fans the flame of its existence, d in that unceasing craze,—the pursuit y for its own sake. The unhappy prompted by an anxious desire to gratify nds of the novelty-hunter, casts about rials in every quarter, ignorantly and inately mixing up all styles and f art in his misdirected zeal, bringing summation which must cause much of spirit to the lovers of the chaste and

But let us look a little ahead, and this boundary, and we shall find a aspect becoming visible, from the fact evived art containing evidence of its e outcome of that which could only from the incidence of its accessibility nks and conditions of society, thereby g us of its vitality, and that it is not t of forced and unnatural cultivation, it were so, would quickly sicken and dly collapse. The force of this conten- practically exhibited in the popular n towards the great names in art which en in our country. They are regarded ected as the accepted authorities. orks of these national masters are now with a reverential spirit of inquiry in voured regions where they are to be ving that they are no longer destined pt in the background; and this feeling sing with the rising tide of their popu- while the unostentatious work that has long going on has undermined the con- l veil formed by the arbitrary custom oclaimed that everything appertaining tistic must be the product of foreign

e works of such men as Wren, Inigo hambers, and the brothers Adam, our has been enriched with architectural nts of the highest order; while in and sculpture, heading the long list of names, we discern those of Reynolds, Hogarth, and Flaxman; and last, though not least, in the purely decorative function, we find the names of Gibbons, Chippendale, and Wedgwood.

Those were all men whose names have thrown a flood of glory on our land, appearing all the more radiant to us when contrasted with the prosaic baldness of the surroundings; and when the full knowledge of their enthusiastic and triumphant career has become familiar to every one whose sentiments are in unison with the spirit which animates their work, it will unquestionably inspire a sensation of that enthusiasm which originated in those great minds. It is to the examples which they have bequeathed to us that all eyes are now turned, and from the genius they display, evincing the keen intellectual vehemence of mind by which they were emulated, we can best receive our conceptions of the true in art, before whose presence the vagaries of the last sixty years must yield and be finally dispelled.

Surely, after such a long interval, and supported by the works of these men, it would appear incredible that the immature ideas expressed by a contributor to the *Edinburgh Review* in the early part of the century, when referring to a work just then published on household furniture and interior decoration, should be held by many otherwise progressive individuals in our own days. The writer in question says:—"A man of taste as well as leisure will show it no doubt in his furniture as well as in his dress, but he will infallibly make himself ridiculous in this country if he makes a study and an occupation of such frivolous concerns"; adding further,—"There is in England, we believe, a pretty general contempt for those who are habitually and seriously occupied about such paltry and fantastic luxuries."

To analyse the causes which could lead to the adoption of such crude ideas regarding the ordinary requirements of domestic life would be a difficult, as well as, we fear, an unprofitable task, particularly when we reflect on the circumstance that the germs and salient features which are adapted in the revived style were known at the time. The agencies from which such ideas originated may perchance be found in the rapid changes in political circles, and the enormous drain on the resources of the country arising from the great wars in which we were engaged, neither of these circumstances being exactly conducive to the active practice and generous patronage of the fine arts. This was more peculiarly the case in England, for although Scotland shared in the afflictions of these troublous times, in addition there was still apparent that strong latent iconoclastic impulse which never ceased to prey on the artistic proclivities of the nation.

The repudiation of all pictorial and sculptured works by the leaders of the Reformation, as they were presumed to afford facilities for the association of ideas with the system overthrown, strange to say, continued to maintain a hold on the minds of the people, and operated, to a certain extent, in moulding their thoughts, and it still obtains a certain degree of power in situations where it might be least expected. It is a remarkable illustration, indicating how tardily ideas of moderation take root in some systems of thought. This, in some measure, may account for the reluctance displayed by the people of Scotland in approving of the familiar use of artistic form and colour.

There is also another important feature which should not be lost sight of, when we take into consideration the drawback referred to, and that was our state of isolation from the art activities of our Continental contemporaries. This theory becomes specially significant when applied to the marked impetus which was given to all matters of taste in our midst by the accession of William of Orange to the British throne.

This event marks a great epoch in the flow of England's prosperity, and to it may be certainly ascribed that development of taste for and love of the picturesque in the domestic surroundings of the British people. At the same time, it must be allowed that the germs of the reanimated art fell in rich soil, for, scattered throughout the length and breadth of the land are to be found mansions, of which Speke Hall and Haddon Hall form fair samples, illustrative of a type of suggestive architecture that in abstract beauty it would be difficult to surpass.

It is, however, to the interior embellishments and arrangements that I desire to direct attention. It is highly improbable that the luxurious products of the East could have found a place in the decoration of the English homes of that period, had it not been for the opening up of a close relationship with the Dutch, who, as a nation, had long held intimate commercial intercourse with the countries of India, China, and Japan, and had become deeply impregnated with a liking for the materials and forms which characterised the works of those highly-gifted nations.

The Prince of Orange and his consort, we learn, showed a deep sense of their appreciation of the quaintness which was and continues to be a leading point in the domestic arrangements of the Dutch. From this the happy result ensued of introducing into England that complete embodiment of domestic art in the application of rich textures, tiles, and woods, which goes so far to perfect the realisation of pictorial effect and physical comfort for which the natives of Holland are so famous. It also carried the further recommendation of being presented to the English people with all the completeness that the lavish wealth and rich appointments of a prince called to the English throne had at command. By this royal acknowledgment, the acceptance of the imported art became a matter which greatly interested the general community. The change to brighter times by which it was accompanied, the establishment of a constitutional form of government, and the assurance of order and peace, were hailed with every symptom of sincere gratitude, and the return of confidence in their rulers lent a zest to that peculiarly English virtue, the love of home, which the people were now enabled to enjoy, but which the two preceding reigns had been the means of rendering very insecure from the prevalence of disorders at home and troubles abroad. With the new and higher era a demand for the choicest productions of the East soon sprang up, and exerted an important influence on the home manufactures and produce.

The details of household requirements began to be fashioned with evident skill and a certain degree of elegance,—indeed, all that went to make the family-hearth the rallying-place of home life, and a spot most inviting and elevating in tone,—was freely welcomed. The spirit prevailing at that time was somewhat analogous to that of our own experience. For, like ourselves, they had ignored in their works in stone, iron, and wood the materials for study which lay around them, and sought, instead, to discover that novel style which every generation in turn fondly imagines it will be instrumental in inaugurating, taking for their models the ruined temples of Greece and the palatial residences of Venice, neglecting all the while the vast stores of accumulated artistic productions, the results of the joint intellectual application of thought and action transmitted from one generation to another, in each stage being fired by motives all striving for the grand aim of creating monuments by which their claim to have been successful in adding their quota to the sum of national prosperity and greatness would be substantiated.

But what is the melancholy picture presented to us by the condition of architecture, as exemplified by many of the works that have been erected in our midst! To enumerate the styles of art freely employed in most inconsistent positions, and for purposes quite foreign to the original intention of the style, is unnecessary here. Suffice it to observe that it strongly illustrates the sway which the pursuit of novelty, for the sake of novelty alone, obtains, even where our highest faculties should alone be called into action.

There is, however, gratifying proof that we have amongst us many who, despite the difficulties which beset their path, are engaged in adapting with signal success for modern application in architecture all that has been esteemed for its historical picturesqueness. They take for their guides those castles which studded the cliffs of our coasts or nestled in the romantic glens. They also find worthy studies of this art in the antique crow-stepped gabled mansions, with their turreted staircases, which are found in our ancient cities. These men are worthy of all success, for they are fulfilling the dictates of the genius of the race, if it may be accepted that there existed a genius in the race which conceived and fashioned the Parthenon and the Colosseum. For however much we may neglect to foster the aspirations of the national in-

stincts, for the passing sentiment and appreciation of works which represent the culminating triumph of other races, we must, in the common order of things, if we desire to be judged from a similar stand-point, exhibit in our works the qualities which are visible in theirs. And to gain this distinction it is essential that we should adopt the means by which they realised their purpose, namely, independence and individuality; supplying an inference which points to the attainment of a higher object than merely present uses. And while treating of this topic, it may be received as a subject of congratulation that there are many amongst us, as I have already said, who consistently emulate those sentiments, regardless of the harsh expressions with which the critics of the day assail them: the sentiments referred to being relied upon as their guiding doctrines, and daily exhibited in the thoughtful work which relieves our longing eyes amidst the discordant chaotic mass of unthought so prevalent.

To account for this Babel of architecture, it is necessary to recur to the fact that subsequently to the Reformation there has not existed any party sufficiently dominant and powerful to construe architecture as an element in obtaining a hold on the minds of the people, as was the case in pre-Reformation times, when the glories of the Gothic style of art reached its height. Then the genius of all that was artistic was conserved and dedicated to the glory of the Church and the service of religion. Hence the perfection of poetic art which inspires us with so much admiration. Although we are conscious of the charm being illusory, when we witness the futile efforts by which it has been attempted to recall the spirit of the Mediæval artist, there is assuredly no lack of evidence to show that great efforts have been made, displaying much technical skill and careful study of archæological authorities, civil and ecclesiastical, in attempting to reach this high aim. The very fact that it emanated from the cloisters of Oxford, hallowed by the sentiments of veneration with which tradition there surrounds it in the eye and mind of the student living and studying within those ancient university walls,—surely if any vitality remained in it, with these adventitious aids it should have started into vigorous and healthy life! But although its employment failed to realise the anticipations of its projectors, its application to secular purposes soon became popular, as it has undoubtedly the advantage of being the most picturesque of external styles, and a highly artistic medium; but, as may be readily confessed, it was no trifling matter to overcome the difficulties of its application to domestic purposes. Nevertheless, in the hands of the artist-architect, it is at once a matter of surprise and congratulation to observe how the various difficulties have been mastered. It is more in relation to its interior arrangements that it exhibits signs of inappropriateness. Hence the necessity of seeking for something that would fittingly occupy its position as an artistic and architectural exponent of beauty and design. This desire spread, and created an impulse in favour of the style denominated "Free Classic," but more familiarly known as "Queen Anne." The characteristics of this style are that, while retaining much external picturesqueness, it renders its interior arrangements in a more natural and consistent form, the whole treatment being full of suggestive harmony, avoiding all unnecessary display of detail, which in Gothic interiors was found not only to be inconvenient, but sometimes actually objectionable, and invariably exceedingly costly. The latter objection, of course, tended very much to place an almost insurmountable barrier in the way of its general adoption. It had likewise another very serious defect (I refer to the so-called Gothic type) in its treatment, namely, in the temptation it affords the worker of executing the details in a mechanical manner when they are especially dependent on these parts being handled artistically so as to give them the advantage of being individually capable of receiving admiration as works of art, and yet be brought into control, and act in harmony as a whole, with the grand ulterior principle of the design. This meretricious method, as we are well aware, was very much resorted to, and may be said to have arisen from an intention to produce effects which the purely Gothic treatment demanded. But any one who has studied carving in either wood or stone will readily understand the feeling of repugnance which arises in the mind when witnessing such debasing representations,—especially after the mind has been agreeably influenced by the general effect of the design,—minute examination revealing the fact that the details are composed of spiritless work and mere castings. This is one of the many crying objections to the introduction and indiscriminate use of details that require for their delineation the highest form of art operation. It had far better be dispensed with if this essential point cannot be carried out. It is impossible to estimate the backward influence that this abuse of art material has upon the mind, when there are not the means, and too commonly the absence of inclination, to employ what is genuine for the work. As long as these lax notions are admitted in society, and are simply looked upon as matters of course, a species of unrest will be continuously mingling its gall with what should constitute the peaceful phase of our thoughts arising from that source in which pecuniary interests exercise their imperious control, and as a natural sequel, unless all the consequences which this hydra can command are boldly faced, the average mind will soon become indifferent to what is true and genuine, and the fire of our imaginations will be quenched in all that we delighted in, either of art or literature, and will be enervated, and quickly identify us with that which will involve us in the least share of thought and responsibility rather than utilise the collective pleasurable ideas that our experience could recall, and which could be so easily made familiar and act as a guiding medium in all that pertains to what is tasteful. It would tutor us instinctively to form a natural aversion to everything that is vulgar, and, above all, guard us from what is either deceitful or pretentious in those surroundings with which we endeavour to embellish our home circles.

It is so evident, from what has been advanced, that the Gothic type of art was very inappropriate for application to domestic purposes, not only from its apparent unsuitableness, but also from the manner in which it had been misused in ignorant and pretentious hands, that even the enthusiastic exponents of its peculiar style hailed with acclamation the introduction of the simpler forms which characterise our own Early English period, which has continued to hold its own throughout many changes, as it possessed merits which were the means of securing its preservation, and rendered it a favourite style with those who admire its constructive simplicity of form, whereby it becomes so readily adaptable for halls, dining-rooms, and libraries, in which severity of treatment is most acceptable. It also comes in very happily as a medium in developing the picturesque treatment already alluded to, not only from its peculiar breadth, but also in its freedom from being confined to any special architectural expression. One noticeable recommendation it possesses, is the facility it gives for the exhibition to perfection of the turner's work in its details.

The rapid transition from the severe type of which we have been speaking to the more elegant and graceful style of the Free Classic or Queen Anne was quite a natural consequence. The latter admits of higher and more decorative kinds of wood being used, designed with a tender elegance of form, especially suitable for boudoirs, drawing-rooms, and bedrooms, described generally as Chippendale, in the manufacture of which there has been exhibited great discernment in the employment of artistic talent in producing designs which have reflected much credit on the manufacturers; and this was an especial feature seen in the Paris Exhibition, and one felt justly proud and gratified to observe that, at last, the works of our own country in furniture and textures were distinctly conspicuous, from their purely English character, amongst the productions of other nations. Even the fertile, imaginative Frenchman is compelled to admit that we can put into shape a perfectly national style, with an expression peculiar to ourselves, and that we can do without his assistance in matters of design, in which they were hitherto allowed to claim pre-eminence. It may be further added that it will be a long time before our Continental friends will be able to understand the thoroughly English spirit which pervades the design and treatment of our interior decoration.

All this success, however excellent it may appear, is not without its drawbacks in the daily danger we are in of being restricted by the stereotyped expressions that upholsterers, as the agents of the manufacturers in the way of business, require those who place themselves in their hands to adopt; for it is less to say how soon the most genuine ar objects in their origin become, when op upon in this mechanical manner, an e instead of a pleasure. And this is all the to be regretted, as we are conscious that unnecessary, even from a mercantile po view, for the upholsterer to conduct busin this manner. Were he to cultivate a facu artistic appreciation, he could without effort dispose of his goods to the advanta his reputation and credit, and with a feeli satisfaction to his client, who may have ideas of his own in matters of æsthetic re which could be directed into correct and factory result, thus rising above the transaction of a mercantile negotiation acting from a conviction of propriety, r the command of fashion. This could be were it made clearly understood that in ing the revived treatment of colour and d in the decoration of a house, it is not nece that every article of furniture and the accessories should be discarded, in order t place to the complete realisation of the turesque; as, by judicious management in of colour and the other adjuncts, very fe in many instances no changes would be re in this respect, as with these materials rather be found the sources whence the of quaintness could be produced when pr assorted with coloured stuffs, and the arrangement considered artistically.

In conclusion, we would fain hope to be last of the not uncommon expression, freq heard in company from otherwise well-inf people, that they have a preference to ever white in relation to the embellishment o public rooms, and conveying in unmistakab guage their abhorrence for the employm colour in such places. As it often happe expounder of those dogmatical opinions a lady dressed in purple and gold, furnis proof of the inconsistence and the absurdit own observations, and of her profound ign of any of the principles by which she co plain the reasons that prompted her to ad colours in which she was clothed. So this evasive form of treatment is practic may look in vain for advancement knowledge of the arts as applied to hom poses. For the intention in decorating should be directed to obtaining the same ment of satisfaction which is experience we are clothed in a manner that give entire feeling of personal comfort. This we are aware, is in a greater or less present in all civilised society, and is parti prominent in the thoughts of the fair s decorating a room it should be borne i that the walls and general appearance tended to serve as a back-ground. With wall as a field for contrasting colours s purple and gold, the connecting quality by the figure and the ground would be broug harmony is wanting, and it would be imp to produce a unity by which the richne desired effect could be obtained witho introduction of an atmosphere of appr tone. We hope, however, that the day far distant when the expression of sent of dislike to artistic form and colour looked upon as an indication of weak comprehension, and as such will be ca guarded against. This association, ever d of maintaining its reputation for taste an in all such cognate matters, will end faithfully and consistently to aid in pro in every legitimate way the cause and p of the art revival now going on around studying its capabilities and beauties, a dering them in the full, true, and sincere of artistic appreciation.

Explosion of Gas.—A few days a Langham held an inquiry at St. G Hospital as to the death of James Manni a butler in the service of Sir James M Hogg, M.P., of 17, Grosvenor-gardens. evidence showed that James Bones, fitter, was called to the house to disco escape of gas. He and Manning, both ca lights, opened the wine-cellar door, wh explosion followed. Both were thrown ground, dreadfully burnt, part of B clothing catching fire. Manning was ta the hospital, where he died. The jury re a verdict of "Accidental death." Strang the gasfitter did not know better.

FERENCE ON NATIONAL WATER PPLY, SEWAGE, AND HEALTH.

SOCIETY OF ARTS.

ontinue our notes of this Conference.*
discussion which ensued upon the essays ed in competition for the Society's and of which we have already published stance,

ohn Evans, F.R.S., said he had no doubt e labour and research which had been d by the authors of the essays, and ad resulted in the collection and tabula- the large amount of useful information d in the appendices, would have a useful maturing practical means for providing nt,—*i.e.*, an abundant, pure, and cheap,— of water-supply throughout the kingdom. his there could be no doubt that it was y to divide the country into districts, while administered locally, should be y controlled by the central authority of al Government Board. The advisability rseding existing water companies in all as very questionable, quite apart from cial aspects. In many towns the water es' rights had been acquired by the al authorities, and the supply was y satisfactory. In other towns the was as efficiently carried out by private es, and it was needless to take it out of nds so long as efficiency was maintained. atever else might be done of a more ensive and national character, it was y that some alteration should be made ncidence of the cost of providing water- which at present was very inequitable d upon owners of property. Having ne or two instances of such hardship, ns observed that the schemes brought by the Metropolitan Board of Works r for supplying the metropolis with ere utterly devoid of even the most tary principles of equity, and it was not g that they fell through.

sor Ramsey said he had no doubt what- t if ever a large and comprehensive of national water supply were formu- e country must be divided into given drainage; indeed, he could not conceive her method by which an efficient and nt scheme could be matured. At the e, the geologist would be able to point to tricts of the country where a good and upply of water could be obtained from Red Sandstone. At Leamington, under hralty of Mr. Alderman Bright, a very ply had been obtained from that source. . J. Symons urged the necessity of some general and comprehensive instead of permitting the "scramble" as now going on, and which had been for some years, for obtaining a supply

Under the present system, the cor- or other authorities who were most ot to say reckless,—and powerful went ament with gigantic and wonderful which would have the effect of de- other districts of water. Such was the n the Thirlmere scheme, the opposition had been bought off, so that Thirlmere ll time to come the property of Man- bsolutely, and if any towns north of er and south of Thirlmere required m that source they would have to pay or it to the Manchester Corporation. hole series of Cumberland lakes, there three large enough and high enough the neighbouring country with water ation, viz., Thirlmere, Haweswater, and er. Thirlmere had already been seized Manchester; Haweswater, it was d, Liverpool had marked for her own; was only Ulleswater left for the supply e large manufacturing towns of East e. What was needed was the devising scheme which, while providing for the the present time, should not do so at the f future requirements. The sixth Report ers Pollution Commissioners contained arks as to the unfitness of rain-water ce of supply which he could not but as most extravagant and exaggerated, of course he should not like to drink ain-water. As to entrusting the national pply to the Local Government Board, dered that that body had already than sufficient amount of hetero- business to occupy its energies. The water supply of the country was too large a matter to be made a mere department of that Board. What we really wanted was a Ministry of Health, as advocated by Dr. Richardson and others, and to such a department would naturally be entrusted all matters pertaining to the water supply and sewerage of the country. We were too conservative in this country in our disinclination to create new offices and new departments of the Government in order to meet the growing requirements of the time. We, in this country needed a Minister of Health, and, in consequence of recent progress in legislation, we ought to have, as the French people had, a Minister of Education or Public Instruction. But it was especially needful that without delay the great mass of information and statistics existing on this question of water-supply should be collected and collated for reference. This work should be undertaken by one of the Government departments, and the information so collated should be always accessible to all interested in the question. He thought that these conferences were doing much in the right direction, and trusted that the Society of Arts would continue to hold them annually until some definite and comprehensive, and at the same time, practical scheme of national water supply had been settled.

Mr. Alderman Bright, of Leamington, said that although, forty years ago, Leamington obtained a tolerably good supply from the brook which ran through it, yet the progress of modern civilisation, or, in other words, the almost general adoption of water-closets, in the towns and villages on the stream above Leamington, had of late years done much to convert the stream into an open sewer, and the result was that the drawing of water from such a source was absolutely imperilling the very existence of Leamington as a health resort. However, acting on the advice of Professor Ramsey, in spite of much opposition on the part of some of the townsmen, a copious supply had been obtained by sinking down to the New Red Sandstone, a distance of 200 ft. It was found that it was possible to pump half a million gallons per day (being at the rate of twenty-five gallons per head of the population) without getting within 16 ft. of the bottom of the well.

Captain Douglas Galton said that as one of the committee of adjudicators upon the essays sent in he had read carefully through them, and he considered that they contained many suggestions of the highest value and importance. He thought that the attention of the meeting should be drawn to the suggestion (made in Mr. Perring's essay) that instead of taking the limits of the watershed area, the rivers themselves should be taken as boundaries of water-supply districts. Although he thought that suggestion to be radically wrong, the essay was of great merit, and contained a great deal of suggestive matter. The whole question had now come to a focus. Everybody who had any claim to speak with authority on the subject seemed to admit that it was necessary, for purposes of efficient national water-supply, that England should be divided into districts. Although there might be differences of opinion on matters of detail, there was a general concensus of opinion on the main point. It was also as universally admitted that it was highly desirable to collect and bring together for reference the large amount of information on the subject which already exists in various Government offices, in the archives of many of the learned societies, and in the scientific periodicals. A great deal of the most valuable information on the subject was in the hands of the Geological Survey Department; and probably there was no one who was so well versed in the question of underground water-supply as the present Director-General of the Geological Survey, Professor Ramsey. The Local Government Board seemed to be the legitimate focus for the collection of all this scattered information as a preliminary to future legislative action; and if, in the future, it were found desirable to create a Ministry of Health, the Local Government Board must necessarily provide the framework on which such a department would be devised. It seemed to him that such a Ministry of Health should comprise the Director-General of the Geological Survey, the Director of the Ordnance Survey, the Registrar-General, and a gentleman who should be at the head of a department for recording rainfall. The Ordnance Survey was originally organised as a military department, because its purpose was to make a military map of the country. As soon as that was done, an Act was passed transferring the department to the Office of Works, with which it had no connexion, by reason of its work, whatever. It would have been far better had it been transferred to the Local Government Board, a body which, although it had been much found fault with, must eventually, in his opinion, be invested with greater powers. Parliament had at the present time before it a measure of river conservancy, which took no direct cognisance of water supply, although the two things ought to go hand in hand.

Mr. A. H. Brown, M.P., then proceeded to give a *resumé* of a paper submitted by him "On the Incidence of Rating for Sanitary Purposes in Rural Districts." After dwelling on the opposition which is now generally offered to works for sanitary purposes, he suggested a remedy, based on an opinion expressed in the Report of the Select Committee appointed last year on the Public Health Act Amendment Bill. In dealing with the question of water supply, the Committee stated in their report that after full consideration they "think that the sound principle to lay down is that the water supplied by a sanitary authority should be paid for by the consumer. It is obvious that a fair charge made directly on the houses benefited will tend to disarm the opposition which now arises on the ground that the cost of the waterworks will be thrown on the rates." In like manner, said Mr. Brown,—

> Let the same principle be applied to drainage; and when a house is drained, let the cost of the works be a charge upon the house which is benefited. But I shall be told that this would require a great alteration in the law of rating. No doubt this is true; but the principle is not new. The principle is found in the Public Health Act itself as regards nuisances; for the cost of removing a nuisance is borne by the property to be benefited by the removal of it. The same principle is in operation with all water companies, for there the cost of water is paid for by the consumers. As regards drainage, we find the same principle adopted in many Acts of Parliament. It is admitted in the Public Health Act; for under the provisions of this Act it is possible to charge the property benefited with the cost of the works in some cases,—I mean those cases in which a private improvement rate is levied. It is also admitted in various local Acts, thus pointing conclusively to the policy of extending the principle I contend for into general law. For instance, in the Hereford Improvement Act, 1872, I find the following power to levy sewer rates. I need not quote the whole of the section,—the important part of it is that,—"A sewer rate is to be levied upon the houses, lands, and tenements, the drainage of which is connected by pipes with any such sewer or drain;" and in order to make it perfectly clear what the rate is for, the section concludes by stating that the rate is to be in lieu of any rates for making sewers under the authority of the Act of 1854. . . . . .
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> But I shall be asked whether this principle extends to urban districts. In any closely-built town you find the principle I am contending for is in operation, for every house being drained or supplied with water by the public authorities has the benefit of such water and drainage, for which it has to pay the rate. These are border cases, districts which have urban powers, but are rural in their characteristics; and I, for one, do not deny that there is considerable difficulty in dealing with them. Again, it is said that it would destroy the security on which money has been lent,—I mean the security of the rates of the whole parish. But this is not the case; for the rates of the district would be the ultimate security, and would be mortgaged, though the rates on the property benefited would be the first asset for the repayment of the interest and principal of the mortgage. With reference to the objection that, under the proposal I make, the areas might be very small, and, therefore, the rating might be high, I think the objection is a good one in those cases where, from various circumstances, the cost must be great; and, therefore, I think it would be necessary to put a limit of charge upon the property benefited, and any excess of charge should fall as it does now.

Mr. Edwin Chadwick, C.B., said he concurred with all that had been said as to the general consensus of opinion in favour of having a principal and central seat of administration in all these matters. It was not a question of the centralisation of authority, but of centralisation of knowledge for the common information. While he would not depreciate the great services which had been rendered by private commercial enterprise in providing our great towns with water,—he had, in fact, himself assisted in the promotion of a water company at Manchester,—he confessed that he thought that the water supply of a town would be better managed in the hands of a municipality, or, at any rate, managed to the greater advantage of the public, than in the hands of a company. He thought that the Metropolitan Board of Works, seeing that nothing was being done by Government in the way of securing a more efficient water-supply for the metropolis, was justified in promoting the Bills to which reference had been made, and he thought it would be very unfair to surcharge the members of the Board with the expenditure incurred in so laudable an effort, even though the Board may have been in error on some points. He believed that the counties afforded good bases of operation for sanitary administration, and he thought that competent county engineers might be appointed who would

* See pp. 552 and 678, *ante*.

undertake the charge, not only of the roads and bridges, but of the water-supply and drainage of the smaller towns and villages, leaving the larger towns to the care of the engineers appointed by the municipalities.

Mr. W. H. Wheeler, C.E., of Boston, Lincolnshire, submitted a paper on "The Water Supply of Rural Districts. He pointed out that—

By the amended Sanitary Act of last Session, which came into existence a few months since, it has become the duty of the Rural Sanitary Authorities of this country to secure to every cottage and house a supply of wholesome water, provided that such water can be supplied at a reasonable cost. The maximum fixed by the Act is a sum which shall not entail a greater weekly charge than 2d. for each house, allowing interest at the rate of five per cent. This represents a capital outlay of 8*l.* 13*s.* 4*d.*

In rural districts, where the houses are scattered, an organised system of supply from one general source, such as prevails in towns, is often impracticable at any reasonable cost, and, even where practicable for the supply of houses aggregated in a village, the unfairness of taxing a whole parish for one particular portion, and calling upon persons to contribute towards works from which they derive no benefit, is so inequitable as to make such detached local supplies often impolitic if other means can be provided. It is quite possible to supply every cottage and house in the rural districts of this country, however isolated, with a sufficient quantity of wholesome water, at a cost not exceeding the limit laid down in the Act.

The minimum quantity that is sufficient for the supply of a cottage or small farm-house, for all ordinary domestic purposes, may be taken at 13½ gallons per day, allowing 5½ persons as the average number to a house, and 2½ gallons for each person. This, of course, gives no margin for water-closets, baths, or other similar luxuries, which belong only to a larger class of dwelling. This quantity may appear small; but, having made extensive inquiries, amongst cottagers and others, I found sufficient evidence to satisfy myself that it was the full quantity that was used when the water had to be baled or pumped from a tank, and not left to run to waste from a tap. Mr. Easton, the eminent water engineer, in his evidence before the Select Committee on the Public Health Act Amendment of 1878, stated that, as the result of his experience and inquiries amongst cottagers in Sussex, he was satisfied that this quantity was sufficient. Col. Cox, put the quantity at 3 gallons a day, and the other witnesses agreed with the estimates of Mr. Easton and Col. Cox, some even putting it at less. In the sixth report of the Rivers Pollution Commissioners is given an instance of four cottages provided with a tank, in which the rain water was collected from the roofs, one of the inhabitants being a laundress, who used a large quantity of water, and another feeding a number of pigs. The size of this tank was barely sufficient to give 10 gallons a day to each cottage, yet it is stated that it had never failed to maintain a sufficient supply.

The large quantity used in towns, varying from 20 gallons to 30 gallons a head, is due partly to manufactories, street watering, and flushing sewers, but principally to waste. This is proved by the fact that towns supplied by meter do not average more than seven gallons a head, and by the test applied to several streets in Brighton, where it was found that the supply did not average more than 4½ gallons a head, although the number of persons to a house would be above the average, and water-closets and baths be freely used.

Mr. Wheeler, after combating the statements made in the sixth Report of the Rivers Pollution Commissioners as to the necessarily unwholesome character of rain-water, went on to show how rain-water could be collected from the roofs of churches, schools, and other buildings, and stored in tanks; and, further, how the roofs of a farmstead might be made to collect sufficient rain-water not only for all domestic requirements of the farmhouse, but for the stock in the yards, &c. He also showed how, when, and where, water might be obtained from wells and springs, and described the mechanical means by which the water could be conveyed into the villages,—instancing, in this connexion, what has been done at Sandringham by the Prince of Wales in providing a system of water-supply for his house and the cottages on his estate. In conclusion, he dwelt on the necessity of regulating the rivers and maintaining the water-level, with the view of obviating the disastrous floods which have occurred of late years. He also pointed out the advantage that would accrue to agriculture from the more general use of irrigation by water.

Mr. C. N. Cresswell, barrister-at-law, expressed his concurrence with the principle advocated by Mr. Brown. Sanitary works could only, as he had said, be effected by the expenditure of money, and that money had to be raised by taxation. Now, unless that taxation was based upon equity and justice, it struck at the root of all political and social action, and created an undue and unnecessary prejudice against the objects, however laudable in themselves, to which the money raised by taxation was to be applied. At a previous conference, the president, Mr. Stansfeld, had called attention to the absolute necessity of some re-arrangement of sanitary areas; and he (Mr. Cresswell) could not help thinking that if this latter question were carefully considered, and the districts arranged with some degree of logical sequence, one of the difficulties to which Mr. Brown had made allusion would vanish. Although, perhaps, it would be unjust to tax a man for water-supply after he had already, at his own cost, provided himself with a supply, it was a different thing with regard to drainage, because, although the man might not avail himself of the public drain or sewer to carry away the sewage of his own house, yet he could hardly reside in a district which was efficiently sewered without receiving great benefit in a sanitary point of view, even though the advantage accruing might be of a negative kind.

Dr. Tripe said that the plan proposed by Mr. Brown was equitable enough, if only it could be carried out. As a medical officer of health and as an analyst, he (Dr. Tripe) was able to speak with emphasis as to the superiority of rain-water as compared with the well-water of villages. In the great majority of village wells a great deal of the surface drainage, containing all kinds of poisonous refuse, found its way into the wells, with the result of spreading disease to an alarming extent.

We hope next week to find space for the remainder of our notes of the Conference.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, held on the 23rd inst., Mr. H. L. Florence, president, in the chair, Mr. John Cowell was elected a member.

A vote of thanks was accorded to Mr. Saxon Snell for permitting the members to visit the new Highgate Infirmary on a recent Saturday afternoon; and it was announced that the next visit would take place on Saturday next, June 7th, to St. Alban's Abbey.

The officers for session 1879-80 were then nominated, Mr. S. Flint Clarkson being proposed as president.

The Architects' Benevolent Society.

The President (Mr. H. L. Florence) said: I have now to bring before you an announcement with reference to the Architects' Benevolent Society. Those of you who have seen the professional journals published to-day will probably have noticed an appeal from Mr. T. H. Wyatt, president of the Architects' Benevolent Society, calling the attention of the members of the profession to the present financial position of the Society, which seeks to increase its invested fund to 5,000*l.* To enable it to do this, 1,500*l.* are required, and Mr. Godwin, the editor of the *Builder*, has offered to give 100*l.* if the remaining 1,400*l.* be subscribed within six months. It has seemed to your committee that this would be a very desirable opportunity for the Association to forward the good work by undertaking to provide 100*l.* of the 1,500*l.* required, and as soon as the matter was mentioned in the committee this evening a subscription list was started, and the amount already subscribed or promised amounts to between 35*l.* and 40*l.*, so that we are already a good way towards obtaining the 100*l.* needed. I have no doubt that the members of the Association generally will gladly avail themselves of this special opportunity, and make a special effort in so good a cause. In past years the Association has only subscribed small sums to the Architects' Benevolent Society, given in still smaller sums by individual members. The Committee of the Architects' Benevolent Society are very anxious to speedily raise the 1,500*l.* required, and I believe that we are the first of the professional societies to move in the matter. I think that we shall not have much difficulty in getting together 100*l.* as our quota, and I sincerely trust that our example will be followed by other professional societies throughout the country. Let every member put his name down for what he can afford, and induce his friends to do the same, and by the time we meet again, on the 6th of June, we shall be able to announce that we have filled our subscription list.

Mr. Aston Webb said he was sure the members would all cordially support the proposition of the President; for, although adopted and heartily endorsed by the committee, the credit of originating the proposal was due to the President, who had himself headed the list with a handsome amount. He hoped that the members would make it a point of honour to do all they could to make up the 100*l.* before the next meeting; for the Architects' Benevolent Society was an institution which all architects ought to support, and it had been far too long in want of funds to an extent which restricted its usefulness, and pre[vented] it from adequately meeting all the goo[d] deserving claims which came before it.

The President announced that it ha[d] arranged that this year's excursion of th[e] ciation would be to the district around [...] A very attractive programme was in pu[t] tion by the Excursion Sub-Committee, o[f] Mr. Pink was the honorary secretary. [...] would be the head-quarters of the party.

Mr. W. Penstone then read an able an[d] resting paper entitled "Remarks on th[e] of the Smith in the Sixteenth, Seventeen[th] Eighteenth Centuries." Of this we pr[int] first half this week, and next week w[e] the second half of the paper, togethe[r] some notes of the discussion which ensue[d].

THE IRISH INSTITUTE OF ARCHIT[ECTS]: DEAD OR ALIVE?

Sir,—A prominent paragraph in last [...] *Builder* generally charges the Irish I[nstitute] with a more or less criminal apathy a[nd] lessness, on the authority of the *Irish* [...] I wish to raise no unfriendly controver[sy] that enterprising and spirited journal. [...] it says may be all true; at all events, I [am] pared to admit it as true, so far as th[e] *Builder* happens to know. It is, perh[aps] its fault that it knows no more. I would [...] state what the Institute now is, and [...] does or tries to do.

There are not many architects in [...] There may be a score of recognised ar[chi]tects in the city of Dublin to "run" an In[stitute] There is every possible distracting circu[m]stance around to prevent their holding cro[wded] enthusiastic public meetings, or, in fa[ct] general meetings at all. The majority [of] architects reside at a distance from t[he] There are other diversions for them s[uch] rous in a social community,—social, [...] scientific, musical, nautical, artistic, &[c.] "Institute meetings" have no chance [...] them. There is no use in individual [...] trying to galvanise dead-life in this [...] It cannot be done. Still something may [...] by every local body of architects, [...] small, for the organisation and welfar[e] profession within the range of the possi[ble] this the Irish Institute, with unpretenti[ous] stitution and proceedings, still attempt[s] Abandoning the ambitious programme [of] stitution invented for it forty years [ago] now impossible of realisation, it has [...] attention mainly to preserving an [...] embodiment, and maintaining the machi[nery] standing council to watch over the well[-] interests of the profession. It now pro[fesses] itself to hold but one annual stated mee[ting] the election of council and officers, an[d] time an "emergency" general meetin[g] members if there is any work to be done [...] one wants one. The council have for ye[ars] with regularity and no want of zeal, [...] tinue to do so; the members breakfasti[ng] ther before business hours, and neglectin[g] as it can be avoided, no matter affecting [the] fession. For example, a meeting was h[eld] morning, but an average sample of the [...] ance and interest of the *agenda*. The[re] can be but of little interest to the [...] readers of the *Builder*, but I would wish [...] them as a specimen for the information [...] *Irish Builder* and Irish architects who m[ay] sider professional organisation of no u[se] ever.

Quorum present.—John McCurdy, F.[R.I.B.A.] president; Rawson Carroll, F.R.I.B.A.; [...] H. Owen, F.R.I.B.A.; Thos. Drew, F.[R.I.B.A.] Sandham Symes, treasurer; Geo. C. He[rd] secretary; William Mitchell.

"*Agenda.*—To nominate a new secret[ary] could afford to devote sufficient time [...] greatly increased amount of correspo[n]dence with public bodies and individuals arisin[g] the present conduct of affairs.

To appoint a committee to take im[me]diate action as to the draft building bye-laws [...] to be imposed for the first time in the [...] Dublin, without any satisfactory co[n]sultation with architects or builders of experience.

To receive from the treasurer a state[ment] all liabilities discharged, and a surplu[s] added to the small vested assets of the I[nstitute]

To consider the best means of increas[ing] disposing of a vested fund, and applyi[ng] annual interest in prizes or scholarsh[ips] to appoint a trustee.

discuss the relations of local members to oyal Institute of British Architects.
receive an offer from the president of a of 20*l.* to be offered at once for prizes or rships.
address the Postmaster-General and Mr. ell Henry, M.P., on the inconvenient ction of book-post packets to 18 in. long.
discuss the qualifications of candidates, urrent questions of local or personal pro- nal interest as to competitions, &c."

s appears to me a fair specimen of the of business that may be quietly done by ouncil of a local society from day to day, nately and usefully, although not making rish before the public and the press.

THOMAS DREW, R.H.A.

THE CONVERSAZIONE OF THE STITUTION OF CIVIL ENGINEERS.

Monday evening last, the President of the ution of Civil Engineers, Mr. J. F. Bate- F.R.S., was enabled, by the permission of ommittee of Council on Education, to hold *versazione* in the engineering galleries of uth Kensington Museum. These galleries n a large and varied collection of models chinery and of naval architecture, of collection revised catalogues have lately prepared by the Science and Art Depart-

To this collection several objects of interest were specially lent for the on. The company included many dis- shed visitors, in addition to a large number mbers and associates and their friends. ifferent galleries were brilliantly illumi- by the electric light. In the tea-room displayed four of Higgins's incandescent the electricity being produced by a ic battery. The adjoining vestibule and eption-room were lighted by the Electric ng Company, by standards fitted with automatic carbon-holders, the current ctricity being supplied by two Wilde -magnetic induction machines, placed in jacent porch. The next vestibule was by Werdermann lamps, the electricity derived from a Gramme "quantity" e, while the small ship-model room was with Serrin lamps, the electric current case being produced by two "A" e machines. These three machines, and mps connected therewith, were lent by itish Electric Light Company, and were by an eight-horse power Otto Silent Gas , exhibited by Messrs. Crossley Brothers. ncothness, regularity, and silence with this engine worked evoked warm com- ions. The central hall was illuminated e electric lights lent by Messrs. Siemens rs, the machines and engine being situated ft. away, in the Royal Albert Hall,— three "leads" proceeded to the lights, ourth "lead" was employed to actuate machine, to illustrate the transmission er by electrical agency, the amount so itted being indicated by a Prony brake. hting of the east or end room was under- by the Société Générale d'Électricité, and fected by six Jablochkoff candles, the being supplied by a six-light Gramme g machine, worked by a portable engine.

the special exhibits we may mention e's marvellous writing telegraph; Hamil- patent and ingenious dove-tail cutting e, exhibited by Mr. W. Tighe Hamilton, mines, Dublin; a number of briquettes from the sewage sludge of Windsor, Birmingham, and Leicester, exhibited E. Monson, and stated to contain 25 per t sewage sludge; Shakespear's Miners' Lamp, exhibited by the inventor, Lieut.- D. Shakespear, and claiming to be the and best lamp yet devised for mining s, inasmuch as it is impossible to with- e lamp without extinguishing the flame; bank's automatic railway coupling; 's patent "steam-quieting and blast r," for steamers, locomotives, portable, n, and stationary engines, railway steam- &c.,—the invention consisting usually cylindrical chamber of the requisite er, filled with balls or beads of d glass, between which the steam and escapes without making the snorting o familiar to residents in the vicinity of ay; model of concrete cylinders used in nstruction of the quay walls at the Dock, Glasgow; Bright's electric fire- alarm apparatus; Michele & Carrington's patent testing-machine for cement, wire, and paper; Frederick A. Sheppard's improved slide-rule for cubing quantities, exhibited by the inventor, and made by Mr. W. F. Stanley, of Great Turnstile, Holborn; the Mallory pro- peller (the invention of Col. Mallory, of the United States, and exhibited by Mr. Perry F. Nursey), an apparatus for propelling, steering, and manœuvring steam vessels by means of one and the same apparatus; specimens of Wood's patent transverse wrought-iron sleeper and clip- chair for the permanent way of railways; a model of Mr. Graham Smith's hydraulic or steam apparatus for shipping coal, corn, minerals, &c.; and a model of Messrs. Watson, Willcocks, & Sir Frederick Perkins's patent automatic signal-wire compensator, now being used with, it is stated, satisfactory results, at the Chingford Station of the Great Eastern Railway.

A NEW MORTISING MACHINE.

IN these days of competition, the attention of all constructive trades seems to be concentrated on the discovery of machinery capable of performing the maximum of work with the minimum of trouble and expense, and to this end we have repeatedly had occasion to notice improvements that have been made in recent years to the labour-saving machines used by carpenters and joiners, especially with regard to the tools employed in the making of mortises. The last machine that has come under our notice is "The Southwark," a machine that embodies two important patents, and is described as a "New Patent Multiple-Action Hand-power, Mortising, Boring, Core-driving and Tenoning Machine." Among the advantages claimed by its inventor, Mr. Phillips, is the ingenious arrangement of the several operating tools, which are so placed in the patent revolving tool-holder that the boring auger, the chisel, the core-driver, or the tenon-cutter can instantly be brought into position for use without any dismounting, thereby effecting saving of time, the wood requiring no further setting for the expulsion of the *débris* or core from the mortise. This patent tool-holder is capable of application to hand, treadle, or steam machines.

The application of the patented lever used in this machine is also worth attention; the fulcrum whence the power is developed being situated at the upper end of a rocking-arm or link whose centre of motion is in the strong stationary frame of the machine, the condensation of the power employed is brought full on to the point of the operating tool.

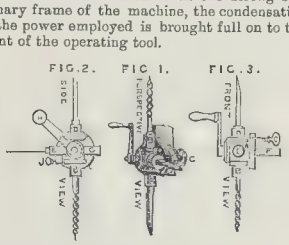


Fig. 1 is a perspective view of the tool-holder.

Figs. 2 and 3 are mechanical drawings of the same, and refer to the following description,—fig. 2 being a side view, and fig. 3 a front view:—

Imagine the tool-box A (fig. 3) is the nave of a wheel with four arms, B, C, D, and E, all capable of being turned round on the axle F fig. 3), and held in desired position by spring bolt G (fig 3). The auger is worked by means of a handle, H, which handle is also used for reversing the chisel when mortising, and is held in position by the spring bolt J (figs 1 and 2). To cut a mortise, the wood being fixed in the ordinary manner, B is ready for boring if required; when finished take spring bolt G in right hand and turn round D, the chisel, into position; after the mortise is cut, the core-driver E is brought into position in the same manner, and the mortise is thus finished.

We understand that both English and foreign patents have been secured by Messrs. F. W. Reynolds, of Southwark-street.

THE BRAIN TAX.

SIR,—Under this title I propose to fight the Patent Laws.

An English patent costs in Government duties 25*l.* within the first six months, then 50*l.* within three years, and then 100*l.* within four years more; total tax, 175*l.*, levied in seven years for a patent during fourteen years, *i.e.*, at the rate of 25*l.* a year for seven years.

Now a patent in America costs only 7*l.*, made in one payment, which gives rights for seventeen years.

Thus are the brains of Englishmen handicapped against those of their great rivals the Americans in the proportion of 175 to 7.

J. D. SHAKESPEAR.

VALUE OF PROPERTY.

Thirteen Freehold Houses in the Camberwell-road.—The high price realised by the above at the Auction Mart by Messrs. Rushworth, Abbott, & Rushworth, on Tuesday, 20th inst., will be of interest to our readers. After considerable competition they were sold for 17,000*l.*, *i.e.*, about 28 years' purchase on the rental, which would pay about 3½ per cent. only at the present rents.

London Wharf Property.—Messrs. Weatherhall & Green sold at the Mart the freehold wharf known as St. John's Wharf, in Millbank-street, Westminster, next but one to the Houses of Parliament, having a river frontage of 39ft., and now let to the Gaslight and Coke Company at a rent of 180*l.* per annum, for the sum of 7,050*l.*

Fall in the Rental of Land in Scotland.—The farm of Mains of Errol (says the *Dundee Advertiser*) has just been let for 19 years to Mr. James Kidd, Balmachreon, Meigle, at about 400*l.* below the old rent, besides a large sum expended on improvements free of interest. This is said to be one of the best farms in Perthshire, and is in high condition. The reduction of rent will be fully 40 per cent., and in about four years 20 acres are to be added to the acreage of the farm without additional rent. The *North British Agriculturist* states that grass parks let recently in the Huntly district of Aberdeenshire show a reduction of 12 per cent., while grass parks let at Dumfries showed a reduction of from 14 to upwards of 50 per cent.

Soho.—Messrs. Chinnock, Galsworthy, & Chinnock sold at the Mart, on the 13th inst., the freehold business premises, Nos. 51 and 52, Frith-street, Soho, at present let at rents amounting to 184*l.* a year, and having a frontage of about 36 ft., and a depth of about 80 ft. The lot sold for 3,830*l.* The freehold house, No. 62, Frith-street, having a frontage of 20 ft. and a depth of 76 ft., and let at 110*l.* a year, was disposed of for 2,320*l.*

Leicester-square.—Messrs. Chinnock sold by auction the freehold house and shop, No. 59, Princes-street, Leicester-square, having a frontage of 16 ft. 6 in., and a depth of 70 ft., and let at 85*l.* per annum, for 2,510*l.*

Regent-street.—Shop property, No. 252, Regent-street, having a frontage of 20 ft. and a depth of 70 ft., held for a term of thirty-nine years, and yielding a net profit rental of 380*l.* a year, sold for 6,600*l.*

Twickenham.—Poulett Lodge, Twickenham, the terrace embankment of which presents a striking feature on the Thames, just above the former residences of the Orleans Princes, was sold at the Mart by Messrs. Rushworth & Co. for 13,100*l.*

Shoreditch.—The three shops in Curtain-road, the corner of New Inn-yard, and the small houses and stabling in the rear, occupying an area of about 10,000 ft., were sold at the Mart on the 22nd inst. by Messrs. Newbon & Harding for 10,000*l.*

Freehold Ground-rents.—At a meeting of the Commissioners of Sewers recently, tenders were received for the purchase of several freehold ground-rents and reversions in respect of certain properties in some of the main thoroughfares of the City. The freehold ground-rent of 144*l.* a year of No. 14, Aldgate, let on a lease for eighty years, from 1876, to Messrs. Barham & Marriage, grocers, was sold for 3,610*l.*, which is over twenty-five years' purchase. Taking all the properties together, the total ground-rents disposed of amounted to 1,951*l.*, while the total sum realised was 52,114*l.*, which shows an average of very nearly 26¾ years' purchase.

CHICHESTER CATHEDRAL.

A REREDOS has been erected in the lady-chapel as a memorial of Mr. J. F. France, from the designs of Messrs. Carpenter & Ingelow. It follows in its detail the rich local style of the fourteenth century, when the lady-chapel was extended. The character of this detail has certain peculiarities of moulding and cusping, such as are found in the choir of Winchelsea, and in the tomb of Aymer de Valence at Westminster. The design consists of a canopied arch, with chief and subordinate cuspings resting on Purbeck marble shafts, and flanked by richly crocketed pinnacles, the whole being of polished alabaster, and executed by Messrs. Farmer & Brindley. Under the arch is a picture in Venetian mosaic, executed by the Venice

and Murano Glass Company, London, from cartoons prepared by Messrs. Clayton & Bell, the subject being the scene of the words of St. Peter to our Lord, "Lord, thou knowest all things: Thou knowest that I love Thee." Many figures besides the two principal ones are introduced, including that of the Blessed Virgin.

DAY ACCOUNTS.

Sir,—In answer to the query of "Surveyor," under the above head in your last week's issue, I would say that my experience leads me to venture the opinion that the question of the foreman's time being charged or not must be governed very much by the circumstances under which the work is being carried out, in the absence of any binding agreement made beforehand.

If the building in hand is large, and the work is partly contract and partly day-work, I should think it reasonable to charge the fair proportion of the time of the *working* foremen of each trade employed on day-work, and not to charge the general foreman, whose time may be assumed to be sufficiently paid for out of the contract-work. But, if the work in hand consists entirely of day-work, it would then be reasonable, in my view of it, to charge the time of the general foreman; providing that the prices charged for the ordinary workmen are not more than 10 per cent. on the actual prime cost. If more than 10 per cent. is charged, I should consider t sufficient to cover the cost of the general foreman's superintendence in day-work, amounting to the sum per week mentioned by "Surveyor."

Of course, where there is a schedule properly prepared and executed beforehand providing for any day-work required, such a document should settle this important query of "Surveyor," and should set forth that "the prices charged for the ordinary workmen do or do not include the general foreman's superintendence." N.

Sir,—Your correspondent "Surveyor," in last week's issue, does not mention whether his remarks refer to a working foreman on a job, or simply to the superintendence of a general walking foreman.

The usual rule (though, of course, there are exceptions) is to charge a working foreman's time at the same rate as the mechanic's; and to make no direct charge for the superintendence of a general walking foreman, as he is merely the representative of the master.

The rate charged per hour for the men must be sufficient to include all the necessary expenses of ordinary supervision. In the "Builders' Price Book," compiled by me, I quote 11d. per hour for ordinary mechanics, which includes requisite general superintendence; but on extensive works the rate is sometimes slightly reduced.

Exceptions to the usual rule occur frequently, especially in carrying out extensive structural alterations, where the mature experience and careful oversight of a thoroughly responsible, competent, and experienced general walking foreman is absolutely necessary to ensure the safety of both workmen and premises; and in these cases it is best to make a direct charge for extra superintendence, or to agree upon a schedule of prices beforehand, and so avoid subsequent disputes. H. C. Bevis.

INFIRMARY FOR MARYLEBONE.

TENDERS.

Sir,—Will you allow me to draw attention through your columns, to the practice as to dealing with tenders which have been obtained by express invitation, with a view to the possible alteration of such practice, if it appears to be objectionable?

We know that the ordinary form of advertisement for tenders provides that the lowest or any tender shall not necessarily be accepted,—and the object of this provision is manifest, and commends itself to prudence and commonsense; for if you invite the public generally to competition, you may possibly have replies from some whom you would not employ at any price; while, looking at the matter from the other side, no contractor need tender unless he likes. But it is quite otherwise when individual contractors are specially requested to send in tenders for a work. In this case, I have always understood that the invitation to compete implies that the contractor is approved of in all respects, and that the only thing left open is the price for the work. The advertiser, in point of fact, selects his men beforehand, and secures a due amount of competition from those whom he considers of an assured position: consequently the ordinary clause, above referred to, has no application either in reason or otherwise. My understanding to this effect, however, has been somewhat rudely shaken by circumstances which have occurred lately.

I was invited, in writing, in the early part of the year, by the Guardians of the Marylebone Union to tender for the erection of their proposed infirmary at Notting-hill, and I accepted the invitation. On looking into the particulars furnished I thought that the time named for completion required further consideration, and, in sending in my tender, I drew attention to this fact. The tender accepted on this first occasion (mine was informal) was withdrawn, and the guardians thereupon adopted the amendment to the specification which I had suggested, and again, in writing, requested me to tender for the work as thus amended. I did so; but, to my surprise, my tender, although the lowest, was passed over in favour of one above me. I naturally sought an explanation of what appeared to me a most unexpected proceeding, and was accorded an audience at a meeting of the Board; but, after bringing the matter fully before the meeting, the only result obtained was a resolution that I should be informed that the Board in accepting the higher tender in no way intended to reflect upon me.

Now, sir, it appears to me that the Guardians, in passing over mine, the lowest tender, after they had requested me to compete, were guilty of a breach of faith; and that, if not so already, it should be made an implied term of every invitation to tender that the lowest tender sent in compliance with the invitation should be accepted. John T. Chappell.

Lupus-street, May 26.

*** We fully agree in this opinion; indeed, we have always considered that, if a contractor be *invited* to estimate, his tender, if the lowest, should be accepted as a matter of course.

TENDERS FOR CHURCHER'S COLLEGE.

Sir,—May I ask you to give publicity to the following facts with reference to the above competition, as I think, in the interests of both the building trade and the architectural professional, they should be known?

In reply to advertisements early last year I applied for particulars for the purpose of tendering for the proposed new buildings, and received a letter from the architect asking for references and particulars of any large works I had carried out. My reply being, as I presume, satisfactory, I was informed that my name had been placed on the list of invited competitors, which was limited to eight, and early last month I received a formal invitation to tender, followed by bills of quantities, and believing, from the care with which the competitors had been selected, that everything would be straightforward, I sent in my tender. About a fortnight after tenders were delivered, I was requested by telegram to meet the architect at his office, and a letter from him the following morning contained a list showing mine to be next to the lowest tender, and asking for particulars of my estimate to see what reductions could be made. At this interview I was informed that the lowest tender had been unanimously rejected by the Governors under the advice of their architect, as it was impossible the work could be done at the price. Being the next above, I was then asked to reduce my tender, as it exceeded the amount the Governors were prepared to pay, and was told that although a good job was required, yet, if I would reduce my prices, every assistance would be given by the architect, although he could not reduce either plans or specification. I was further informed that a "respectable" builder had offered to execute the work for a sum of 1,473*l.* below my tender. While declining the offer of "assistance" from the architect, I took time to consider whether I could reduce my prices, and finding I could not do so, I wrote to the architect to that effect, at the same time complaining that another price had been obtained after tenders had been opened and made known; in reply to which I received an intimation that my letter had been laid before the Governors, and also that the author of the lowest tender had attended, and pointed out that an error of 1,900*l.* had been made in the casting of his estimate, upon which he was allowed to amend his tender, which was then accepted.

The injustice of this transaction is so apparent that any comment of mine is unnecessary. I only trust to your well-known impartiality to give this a place in your columns.

Milford, Surrey. Robert Pink.

List of tenders for the erection of new building for the Governors of Churcher's College at Petersfield, Hants. Mr. G. R. Crickmay, Weymouth, architect. Quantities by Mr. Thos Nixon:—

Booth	£13,800	0	0
Ftevens & Sons	13,442	0	0
Gammon	13,108	0	0
Cox	12,665	0	0
Pink	12,473	0	0
Crook	9,750	0	0

Obituary.—We regret to have to record the death of Mr. Horace Field. By his decease the District Surveyorship of Putney and Roehampton has become vacant. Mr. Hiscocks has been appointed surveyor *ad interim*. The election of a successor to Mr. Field was fixed to take place yesterday (Friday), the 30th.

THE LIABILITY OF ARCHITECTS

At the Clerkenwell County Court, on the 21st inst., Mr. Gordon Whitbread, the judge, Mr. Wm. Scott, monger and plumber, of 263, Junction-road, sued Mr Chambers, architect, of 1, Queen-street-place, Ci 11. 10s. for work done. The plaintiff stated that in la tember twelve months he received an order from the dant by telegraph to do plumbers' work to some hous being built, which he accordingly did, but when he as the money the defendant refused to pay him, saying was not liable, and that he must look to the builde he submitted that he should look to whomever gave h order, and handed in the telegram he received. Def said he was architect for a Mr. Turner, who was b some houses, and employed a Mr. Bates, who s portion of the work to the plaintiff, and he (defe gave the order as architect in the same manner as he to any other workman who was employed on the bu The plaintiff, in reply to a question asked by the said he had never before seen the defendant, an knew him as the architect of the buildings. His said there was no question about the liability of fendant, for he only acted as architect and not as pri Judgment for defendant, who said he did not costs.

*** We should advise architects to be very car giving orders to tradesmen employed on the bu they are superintending, notwithstanding this judg

THE CEILING, CARPENTERS' HA

Sir,—Surely the Institute is already in possessi drawing of this? At least, I seem to recollect seein years ago, in one of the portfolios of the library, whe kindly allowed to examine them with a view to th tion of some drawings to illustrate a lecture,— careful drawing, which would be, no doubt, of the in question. Edward B

Miscellanea.

The Gasfitters of London are petit to be heard by counsel against the Londo Light Company, who are promoting a Parliament in which they seek to gain p "to manufacture, purchase, or hire any other fittings, engines, stoves, pipes, and appliances for lighting, for warming, and lating houses and buildings, for the cook food, for motive power, and for all or any purposes for which the consumption of g any product obtained in the manufacture can be used, and from time to time to ent any contract with any person for the sale or use to or by such persons of any su and other fittings, engines, stoves, pip other appliances." The most respectable in the gasfitting trade have made a com effort to oppose the action of the comp asking Parliament for power to cre monopoly injurious to their interest and t the public.

Compensation Case.—Brooksbank London School Board. (Before Mr. Sheriff Burchell, Tuesday, May 20, 1879).— was a disputed claim of compensation i nexion with a small house in Gloucester East, South Kensington, required by the Board for the erection of a new school i locality. The property was held for forty years unexpired at a peppercorn, an let to a weekly tenant at 10s. per week the witnesses for the Board, namely Eilcart, Mr. S. Walker (Telegraph-street, Mr. F. T. Galsworthy (Chinnock & Co considered the house rack-rented, and esti its value at 20*l.* a year, giving for the pro in reversion, subject to life interest claimant's mother, now aged seventy-five a gross value of 200*l.*, exclusive of the compulsory sale; whereas Mr. Edmond Fuller (Fuller & Fuller, of 70, Queen-s one of the witnesses on the claimant's b put the value of the property at 390*l.*, or year rental value. The jury returned a v for 325*l.*, so that the offer under seal bei only 230*l.*, the Board will have to pay the of both sides.—*Metropolitan.*

Tiverton.—A memorial pulpit has jus erected at St. George's Church, Tiverton. building is Classical, and the pulpit, design the Jacobean style, harmonises well with i roundings. It is of wainscot oak, and on hexagonal, each angle being sustained by wrought brackets. The five cants c recessed niches, in which stand sculp figures in relief, representing SS. Mat Mark, Luke, John, and Paul. The resp emblems of these saints are also carved. pulpit is approached by convenient having massive handrails and worked trades. The whole has been designed carried out under the immediate superinten of Mr. Edward Ashworth, architect. The figures and symbols are by Mr. Harry He

...ter-Supply Exhibition, Royal Aqua-... Westminster.—A great deal of useful ...tion may be obtained from the exhibi... ...e of plans, diagrams, models, apparatus, ...ting to the supply of water for domestic ...or uses. Few people really know any... ...the various points that have to be taken ...sideration in selecting and maintaining ... " water supply, and the spread of some ...nowledge that has been obtained may ...remove many of the prejudices against ...ments, and may show that low water-... ...e not the only points that ratepayers ...egard. The exhibition is, for convenience ...sification, divided into thirteen sec... ...follows:—Section I. Meteorology. II. ... III. Collection and Storage of Water. ...gested Development of Supplies. V. ...tion of Water. VI. Water Examination. ...tering. VIII. Hardness. IX. Disease. ...quarian. XI. Pollution. XII. Litera... ...III. Appliances for Cooling in Summer, ...Artificially Aërated, Miscellaneous. Mr. ...ll, the well-known map-publisher of ...ross, shows large maps prepared for ...rs Pollution Commission Sixth Report; ...rical map of the United Kingdom; a ...phical map, coloured in various tints, ...rainfall varying from 25 to 75 inches ...m; a hydrographical map illustrating ...estic water-supply of the United King... ...map of polluted rivers, illustrating the ...ation of water by paraffin oil, alcohol ...es, starch works, tanneries, waste from ...bre from paper mills, &c. One very ...g part of the exhibition is provided by ... Gardner, F.S.A., who has contributed ...views, illustrating the old pumps, wells, ...rses, &c., of London, from his well-known ...n. Section XI. contains both plans and ...s, among them being illustrations of ... Scott's system, worked by a company of ...e Duke of Sutherland is chairman. In ...ed water section there is a large show of ...s by Barnet, Son, & Ashby, and crowds ...les in bottles. The Abyssinian well-... ...pparatus is shown, and Major Beau... ...P., has contributed a rock-boring ap... ...or water-tunnels. The exhibition is to ...or a fortnight more.

...Stage.—Mr. Arthur Sketchley, well ...d appreciated in many circles, appeared ...Gaiety Theatre on the 24th inst. as ...in some selections from Shakspeare's ... IV." By face, figure, and manner, ...as marked him for the part, and he has ...ell aided Nature by careful study. With ...ore practice,—for, though an old stager ...logue, he is new to the drama,—Mr. ...r will be the best *Falstaff*, all to ... we have seen since Bartley's time. ... play, Miss Rosa Kenney recited with ...ower and pathos "The Curse of ... translated from "Les Horaces," of Cor... ... her father, Mr. Charles Lamb Kenney. ...ney at once laid hold of her audience, ... reiterated applause from a somewhat ...thetic house. It is understood that ...ehley is about to carry "Mrs. Brown" ...*aff* to the Antipodes. If his reception ...cord with the wishes of the hosts of ...e will leave behind him, it will indeed ...m one.

...ng the Bridges.—Saturday last, the ... birthday, was appropriately chosen as ...ion for freeing five more of the bridges ...nect Surrey with Middlesex. On that ...abeth, Vauxhall, Chelsea, Albert, and ...h bridges were declared by the Prince ...to be free of toll for ever. For the ...hus thrown open the sums paid by the ...: Works were respectively 36,000*l.*, ... 75,000*l.*, and, for the last two, 170,000*l.*: ...a total of more than 500,000*l.* Wands... ...ridge, Putney Bridge, and the Ham... ... Suspension Bridge still remain to be ...d and opened free of toll.

...al Union of Carpenters and ...—On the 22nd inst. the first of a series ...ngs in important centres of industry in ..., with the General Union of Carpenters ... ers was held at the Manchester Athe... ...or the purpose of strengthening the ...position of the society. From the re... ...ppeared that the union was now in its ..., and that in the last year the expendi... ...trikes, lock-outs, and arbitration ex... ...nd amounted to nearly 12,000*l.*, a sum ...bly in excess of any other year in the ...history.

Intellectual Life in Liverpool.—In the course of an address delivered at the Wesleyan Young Men's Literary Society, in Liverpool, Mr. T. H. Hall Caine said:—Culture meant the brightening of the social life, the suffusion of those rare subtilties of the heart which are seen so to permeate the noblest types of men and women that the commonest acts of life, its mere courtesies, are coloured by their influence. It meant also the heightening of the intellectual life. No great town, the speaker said, appeared more to stand in need of the refining influences of culture than our own. Friends from southern counties who have lived for a time in Liverpool tell us that our manners lack something of the delicacy, cordiality, and geniality which not even the robustest Johnsonian temperament can afford to dispense with. There is, he added, no great city outside of London in England, Ireland, or Scotland, where the facilities for the pursuit of the intellectual life are so many, or the persons who avail themselves of those facilities so few. He continued:—I shall not be accused by those who know the facts of unworthy motives if I say that my own experience of Liverpool culture has been on the whole thoroughly discouraging. Liverpool people seem almost dead to the attractions of the best work and the most renowned names. Liverpool must, in respect of art culture, bend the knee to almost every other great town in the kingdom. Birmingham is ahead of us in all literary enterprise; so is Manchester; and so are Aberdeen, Edinburgh, and Dub.in. These cities are in some respects leading London. Glasgow and Edinburgh first gave us the daily newspaper, Aberdeen the school of art, Birmingham a library the British Museum could not match, and Manchester has been and still is abreast of the latest throb of literary life. As for us—

> The world is too much with us, late and soon;
> Getting and spending, we lay waste our powers.

To say that all this indifference to the value of the intellectual life was a little thing was, he said, in all the meaning of the word, appalling.

The Parkes Museum of Hygiene.—This museum, temporarily located at University College,—of which her Majesty the Queen is patron,—will be opened to the public on and after the 1st of July next. The opening ceremony will take place on Saturday, June 28th, when a meeting will be held in the Botanical Theatre, under the presidency of the Right Hon. R. A. Cross, M.P., Secretary of State for the Home Department. The executive committee,—of which Sir William Jenner is chairman,—rely on voluntary subscriptions for the support of the new institution under their charge. Of the subscriptions already received they have invested 600*l.* as the nucleus of an endowment fund. In all, something under 1,100*l.* has been subscribed, in sums varying from 1*l.* to 50*l.* Additional subscriptions are needed. Manufacturers and others desiring to place articles in the museum will be supplied with the necessary forms on application by letter to the curator, Mr. Mark H. Judge.

The Proposed Demolition of Haworth Church.—At a public meeting, held in the Drill-hall, Haworth, to consider the proposal made by the vicar, the Rev. John Wade, to pull down the ancient church and erect a new one on the site, Colonel Barres presided, and a resolution was proposed by Mr. Empsall, president of the Bradford Historical Society, expressing the desirability of preserving the church by judicious restoration or enlargement. An amendment was proposed by Mr. G. S. Taylor, of Haworth, approving the course taken by the vicar, having regard to the offer of Mr. Michael Murrall to contribute 5,000*l.* towards the erection of a new church. The original resolution was carried by a large majority, and it was decided to forward copies to the Bishop of Ripon, the vicar of Haworth, and Mr. Murrall. Memorials in favour of the preservation of the church have been extensively signed in the district.

A Secluded Spot.—A somewhat remarkable residential property is now in the market, "Grasmere," Woodberry Down, only five miles from London. The fact that justifies its name is, that it adjoins an open square mile of wood and two large lakes of the New River Company, covering about fifty acres of ground. The land surrounding being sacred to song-birds as long as the New River Company shall last. Mr. F. Statham Hobson, of 20, Coleman-street, would willingly give cards to view.

The Patent Bill.—On Tuesday last, the 27th inst., an influential deputation from the British Association waited on the Attorney-General at the House of Commons, to present him with a report, by a Committee of the Association, on the Bill for the Improvement of the Patent Law, now before the House of Commons. The deputation urged upon Sir John Holker the importance of passing the Bill during the present session of Parliament, and suggested certain amendments which they thought would improve it. Sir John Holker was addressed by Mr. Bramwell, Sir W. Thomson, and Dr. Siemens. In reply, he expressed himself as most desirous that the Bill should pass into law, with certain amendments which he believed might be made without difficulty, once the Bill had passed a second reading. He, however, reminded the deputation that as long as the Bill was opposed, the forms of the House rendered it difficult to make progress with it.

International Exhibition of Flowers.—A meeting was held on Tuesday, in one of the large rooms of the Albert Hall, to consider the advisability of holding an International Floral Exhibition in London in 1880. The last of the kind was held in 1866. At Tuesday's meeting, which was attended by a large number of well-known horticulturists, but was not officially connected with the Royal Horticultural Society, it was resolved, with only one dissentient voice, that the holding of the proposed exhibition was eminently desirable, and Mr. John Wills, F.R.H.S., and Mr. Fraser, were appointed to further the matter.

H.R.H. the Prince of Wales has taken Coworth Park, Staines, the seat of Mr. William Arbuthnot, for the Ascot race-week. Several thousand pounds have lately been expended on this residence, which has been re-modelled and enlarged under the superintendence of Mr. R. E. Tyler, architect, by Mr. George Phillips, contractor.

TENDERS

For conversion of existing building into five dwellings, Bagnall Hall Estate, for Mr. John Keats. Quantities supplied. Mr. W. Larner Sugden, architect:—

Grosvenor	£750 0 0
Matthews Bros.	737 0 0
Heath	690 0 0
Nadin	599 15 0
Green & Hall	565 0 0
Leek (accepted)	485 0 0
Harding	481 10 0

For woodwork of four houses in Grosvenor-street, Leek, for Mr. John Nadin. Quantities supplied. Mr. W. Larner Sugden, architect:—

Jos. Hudson	£159 19 0
Jas. Hudson	158 9 5
Bayley & Morris	157 0 0
Carding (accepted)	143 19 0
Green & Hall	140 0 0
Wood Bros.	139 12 0

For two houses in Portland-street, Leek, for Mr. J. Nadin. Quantities supplied. Mr. W. Larner Sugden, architect:—

Carding	£104 0 0
Bayley & Morriss	101 5 0
Jos. Hudson	98 14 0
Green & Hall	95 0 0
Jas. Hudson	91 16 10
Wood Bros. (accepted)	74 7 6

For swimming-baths, Rochester. Mr. George Rusk, architect:—

	If paved with Tiles.
Harman & King	£1,608 ..... £1,755
Calluud	1,620 1,730
Goose	1,574 1,679
Gates	1,565 1,645
Dover Bros.	1,514 1,597
West	1,439 1,525
Naylar	1,417 1,495
Ball & Gammon (accepted)	1,392 1,462

For proposed alterations at the Trafalgar Tavern, 77, Castle-road, Kentish-town, for Mrs. S. J. Petherbridge. Mr. James Robert Furniss, architect—

Bigwood (accepted)	£316

For alterations and additions to The Cedars, Blackwell, Bromsgrove, for Mr. Thos Scott. Mr. John Cotton, architect, Birmingham. Quantities supplied:—

Mathews	£1,821 0 0
Smith	1,694 0 0
Brazier & Weaver (accepted)	1,526 0 0
Thomas	1,502 0 0

For well-pumps, and fixing in a well 300 ft. deep, and a windmill for driving same, at Owslebury, near Winchester. Mr. A. W. Galbraith, engineer:—

Warner & Sons	£441 0 0
Tyler	423 0 0
Owens & Co.	405 0 0
Jackson	397 15 0
Adams	386 10 0
Pontifex & Wood	383 0 0
Soper	376 16 4
Tilley	365 17 6
King & Wingate	350 0 0

For national penny bank and artisans' dwellings, Clerkenwell branch:—

Aitchison & Walker, accepted.]

For shops, offices, &c., in Parliament-street, S.W., for Sir Sidney H. Waterlow, Bart., M.P. Mr. Edwin T. Hall and Mr. Henry A. Hunt, joint architects. Quantities by Messrs. Linzell & Giffard:—

Lucas Bros.	£6,261	0	0
Clarke & Bracey	6,258	0	0
Col's & Sons	6,099	0	0
Adamson & Sons	5,960	0	0
Browne & Robinson	5,937	0	0
Patrick & Sons	5,934	0	0
Braid & Co.	5,790	0	0
Bangs & Co.	5,686	0	0
Hills & Higgs	5,594	0	0
Brass (accepted)	5,547	0	0

For a new church at Nuthurst, near Knowle. Mr. John Cotton, architect, Birmingham. Quantities supplied:—

Brazier & Weaver	£2,435	0	0
Davies Bros.	2,400	0	0
Wilson & Son	2,390	0	0
Robinson	2,322	0	0
Smallwood & Co.	2,226	0	0
Partridge	2,179	0	0
Barnsley & Son (accepted)	2,123	0	0
Inwood	2,117	0	0

For village club at Clapham, near Bedford, for Mr. James Howard. Mr. John Usher, architect:—

Potter	£642	0	0
Lilley	598	0	0
Foster	576	0	0
Knight & Boston	560	0	0
Adams	550	0	0
Freshwater (accepted)	539	0	0

For Cornhill Chambers, Nos. 68 & 69, Cornhill, for Messrs. Lamplough & Co. Mr. Thos. Harris, architect. Quantities supplied by Messrs. Mann & Saunders:—

Browne & Robinson	£8,150	0	0
Brass	7,953	0	0
Wall Bros.	7,897	0	0
Fish	7,6 0	0	0
Hobson	7,426	0	0
Downs	7,379	0	0

For the erection of a new vicarage-house at Vowchurch, Herefordshire. Mr. E. H. Lingen-Barker, architect:—

Sandford	£2,000	0	0
Welsh	1,894	0	0
Coleman Bros.	1,593	0	0
Godwin	1,558	0	0
Rowberry	1,545	0	0
Watkins	1,499	0	0
Inwood	1,488	0	0
Balcombe	1,456	0	0
Giles (accepted)	1,455	0	0

For new business premises, Broad-street, Reading, for Mr. J. Belcher. Messrs. Brown & Albury, architects:—

Strong	£1,591	0	0
Simonds	1,493	0	0
Searle	1,4 7	0	0
Pollicy	1,400	0	0
Higgs	1,393	0	0
East	1,374	17	0
„ (reduced, accepted)	1,282	17	0

For new vicarage, St. Mark's Church, Marylebone-road. Messrs. Spalding & Evans, architects. Quantities by Mr. George Fleetwood:—

		Extra for Pitch-pine.
Braid & Co.	£2,265	£1 10
Roberts, Bros.	2,240	40
Patman & Fotheringham	2,175	69
Ansell	2,100	40
Temple & Foster	2,030	50
Longmire & Burge	1,996	87
Outhwaite & Son (accepted)	1,946	47

For County Police Station at Windsor, Berks. Mr. Jos. Morris, county surveyor. Quantities by Messrs. Morris & Stallwood:—

Kearley	£2,270	0	0
Taylor	2,186	0	0
Dover, Bros., & Co.	2,137	0	0
Kempsell	2,100	0	0
Silver & Sons	2,091	0	0
Prout	2,077	0	0
Reavell	2,073	4	0
Jones & Co.	2,038	0	0
Sim	1,997	0	0
Crook	1,995	0	0
Woodbridge	1,988	0	0
Bebington	1,976	0	0
Naylar (accepted)	1,912	0	0

For engineers' works at the new Workhouse, Endell-street, including steam, hot and cold water pipes, steam-boilers, steam-engine, laundry machinery, and cooking apparatus and tanks, for the parish of St. George and St. Giles, Bloomsbury:—

	Administrative Block.	Endell-street Block.
Strode & Co.	£6,762 0 0	£2,383 10 0
Mason	6,699 10 0	2,237 18 0
Fraser, Bros.	6,496 0 0	2,281 0 0
Hosser & Russell	6,380 0 0	2,140 0 0
P. & W.	6,430 0 0	2,070 0 0
Clarke	6,320 0 0	2,120 0 0
Smith, Son, & Co.	6,195 0 0	1,938 0 0
F. G. & R. Vigor	6,037 0 0	2,067 0 0
Berry & Sons	5,723 0 0	1,922 0 0
J. & F. May (accepted)	5,700 0 0	1,890 0 0
For Gas-pipes and Fittings.		
Castle	£719 4 0	£389 16 0
Boustield	520 10 0	412 0 0
P. & W.	600 0 0	293 0 0
Pearse & Co.	568 12 0	315 11 3
Morter	553 0 0	312 17 0
P. Brown	552 0 0	271 10 0
F. Brown	517 18 6	301 15 9
White & Son	553 13 3	264 18 7
Rosser & Russell	531 10 0	263 0 0
Taylor	515 13 8	279 0 1
Jones	505 13 0	275 14 0
Mason	472 5 0	242 10 0
Greene & Son	441 3 6	258 19 0
Crouch	458 0 0	237 11 0
Vaughan & Co.	433 19 4	236 7 10
Smith, Son, & Co.	410 0 0	212 0 0
Land & Co.	409 18 0	206 12 0
Clarke	406 10 0	204 0 0
Strode & Co.	402 6 0	206 18 0
Berry	372 0 0	184 0 0
J. & F. May (accepted)	345 0 0	210 0 0
Worrell & Co.	341 7 0	185 10 6

For alterations at the White Lion Tavern, High-street, Islington. Mr. T. Sams, architect:—

Williams & Son	£1,034	0	0
S. & G. L. Mann	1,034	0	0
Colls & Son	978	0	0
Manley	890	0	0
McLachlan & Son	865	0	0
Russell	828	0	0

For alterations and additions to the Borough of Hackney Club, Haggerstone. Mr. R. R. Blatchley, architect. Quantities supplied:—

Anley	£873	0	0
Downs & Co.	561	0	0
Taylor & Parfitt	559	0	0
Steel, Bros.	555	0	0
Sargeant (accepted)	548	10	0

For taking down and rebuilding three houses in Copenhagen-place, Lumehouse, for Mr. East. Mr. Westley, architect:—

Harris & Wardrop	£775	0	0
Taylor & Parfitt	719	0	0
Palmer	690	0	0
Walker	667	0	0
Williams, Jones, & Co.	645	0	0
Curtis	640	0	0
Bragger	620	0	0

For villa residence, Overhill-road, Dulwich. Mr. R. Peters, architect:—

Watson & Dennett (accepted)	£4,356	0	0

For alterations to chemist's shop and dwelling-house, Wick-road, Homerton. Mr. R. Peters, architect:—

Harris (accepted)	£556	0	0

For alterations to Norse Lodge, Lordship-lane. Mr. R. Peters, architect:—

Burchell	£432	0	0
Watson & Dennett (accepted)	339	0	0

For alterations to Rosebank Stables, by conversion of same into villa residence. Mr. R. Peters, architect:—

Watson & Dennett (accepted)	£1,260	0	0

For boundary fence walls and iron gates and railings to villa residence, Dulwich. Mr. R. Peters, architect:—

Watson & Dennett (accepted)	£115	0	0

For alterations and additions to the village club and lecture hall at Wimbledon. Mr. George McDonell, architect:—

James	£1,688	0	0
Gibbons (accepted)	1,629	0	0

For alterations at Moufiet's Hotel, Newgate-street. Mr. Ed. Power, architect:—

S. & G. L. Mann, accepted.

For the restoration of the old Council Chamb Mayor and Corporation of Abingdon, Berks. Morris & Stallwood, Reading, architects:—

Wyatt & Son	£1,331	15	
Wheeler, Bros.	1,300	0	
Silver & Sons (accepted)	1,184	0	

For stabling at Lansdowne House, Reading. Morris & Stallwood, architects:—

Higgs & Sheppard (accepted)	£565	12	

For caretakers' cottages at Coley and Ki Schools, for the Reading School Board. Mess & Stallwood, architects:—

Searle (accepted)	£463	5	

For small stabling at the new vicarage-house field, near Reading. Messrs. Morris & Stallwo tects:—

Silver (accepted)	£213	1	

For building four cottages at Radstock, for Wilkins:—

Catley	£913		
Wheeler	759		
Torey	691		
Bird (accepted)	670		

TO CORRESPONDENTS.

G. P.—T. M.—J. C.—F. M.—D. D.—Q & H.—M. H. W. L. S.—B. & G.—R. T. H. S. O.—J. T. C—G. N.— A. & W.—B & A.—S. & R.—An Old Subscriber (a flat pi on three uprights, wedged into the chimney tops, is remedy in such a case).—Joiner (we do not know an society of which he could become a member).—B & Co. this number).—W. T. B. (ditto).

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The Builder.

VOL. XXXVII. No. 1896. SATURDAY, JUNE 7, 1879.

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Egyptian Architecture: New Facts.

THE so-called Middle Empire of Egypt, or that period of its existence till the time of the Ptolemies from the beginning of the eighteenth dynasty, presents a great change in its architecture. The temple assumed greater development, and the original shrines were enriched with peripterts and halls of columns in a line of the ...s of the shrine. Before the doorways ...ced towering obelisks, one at each ... else colossal figures; and, when these ...nting, huge tablets, recording in many ...eroglyphs the praises of the founder ...llisher of the temple. Besides these ...ns, the approach to the building was ... a dromos or avenue of sphinxes or ...tatues, and this last kind of approach ...ied by the Greeks at the shrine of ...s. The temple also had an outer wall ...de of sun-dried bricks, the Greek peri-...The energies and wealth of the country ... longer devoted to heaping up geo-...ountains or pyramids, but still to the ...on of colossal buildings with columns ...ulptures finely carved and brightly ...

Each portion of the temple had its ...ate sculptures. The obelisks repre-...he triumphal columns, and the decora-... sculptures applied to the shafts of the ...olumns of the colonnades no doubt ...d the idea of the sculptured shafts of ...ple of Diana at Ephesus, and the subse-...iumphal columns of the Romans where ... relief tells the history of a campaign. ...ame way the pylons or propylæa of the ...n temples were the prototype of the ...riumphal arch, and the sculptures of the ...n propylon were essentially the repre-...ns of the wars and military exploits of the ...n who dedicated them to the gods. The ...n temple was rectangular, and there ...o circular buildings in Egypt except ...s, *s'enti*, which were domes like half an ...h a door in the middle to pour in the ...nd which were probably imitated from ...naval wigwam of the valley of the Nile. ...a of elevating these domes on columns ... does not appear in any architecture of a ...riod. The vicissitudes and additions of ...at temple of Karnak are well shown in ...rk of Mariette Bey entitled "Karnak, ...Topographique et Archæologique," fo., ...1875, tracing its condition from the ...th dynasty to the Ptolemies. In this ...ariette has followed that of Lepsius for a ... of the maps. It shows the development ... temple by the continued additions of court-yards one after another in the direction of the long axis of the original shrine, although occasionally courts were added on the side, and at an angle to the original building. The temples, it appears from the papyrus of Rameses III., had groves and gardens, in which were planted valuable exotic trees, and there was a great lake or pond at Karnak, which was essential, for sacred or other purposes, to the service of the temple. There was also a place for the reception of prisoners of war, who were given by the king to the service of the god; and there must have been dormitories for the priests and cells for those who dwelt, as it appears from the Greek papyri, in a kind of monachism in the temples. In all cases roofs were flat, but many of the courts were hypæthral. The dominant type of the temples, rooms, and details was the rectangle; the columns were cylindrical, with different capitals of the lotus and papyrus flower to imitate the stem and flower of these water-plants, or else with palm-leaves, to make the column imitate the palm. Occasionally, columns were replaced by caryatid figures, which carried the roof, and in the rock temples they represent the monarch and builder in the type of Osiris. In the temples of Athor, or Aphrodite, the Egyptian Venus, the columns are surmounted by her bust, head-dress, and collar, and represent standards surmounted by the head of the goddess. One feature of Egyptian columns was sculpturing the shaft with figures in intaglio, in divisions, a principle represented in the columns of the Temple of Diana at Ephesus, and carried to its full development in the triumphal columns of the Roman emperors from an Egyptian origin. In all these works the Egyptians showed great skill and artistic talent, but were deficient in some details, and their rectangular constructions are never perfectly accurate, either as to the length or parallelism of sides. Attached to some of the temples, as Dendera, were crypts, or underground chambers, recently discovered by Mariette Bey, at Dendera, which contained the valuables of the temples. Although the temples were on the largest scale, they were chiefly a series of courts, the smaller part being the naos or adytum, placed at the end, and containing the statues of the deities. The approach to the main building, at the time of the eighteenth and nineteenth dynasties, was formed by a dromos or avenue of sphinxes and lions, and these often conducted the worshipper or marked the passage from one court to another. The profusion of columns is the predominant feature of the architecture. Little or no information, however, is afforded by the monuments about the names and details of the portions of the temples beyond notices of a few rooms, such as the *mesxen* or *mammesi*, the place of the birth of the god, and the expressions "hall," *usr*, for the hypæthral courts, that of *ãb* or "sanctuary" for the adytum, and the *pa en s'a* for the "archive-room" or "library." It is not till the Ptolemaic period that much information is afforded by the inscriptions, and that is by the Temple of Denderah, published by Duemichen and Mariette. From this it appears that the Entrance or Great Court was called the *Uskh Nut* or "Hall of the Goddess Nut," one of the titles or forms of the Goddess Athor; that the second hall was the *Uskh* or "Hall" of "her Majesty," or the same goddess. The sanctuary in the midst of a court of chambers was called the *Uskh Nub* or "Gold Hall." The chambers on the three sides bore the titles of the purposes to which they were attached, as "the place or chamber of Birth," or "New Birth"; the chamber of the boat of the Goddess Athor, the chamber of Denderah, the chamber of fire, that of the god Ra, the chamber of purification, the hall of Isis, lady of Athribis, the treasury of supplies, the chamber of the ark and clothes. Other halls had similar descriptions attached to the chambers in them. Considering that all the temples were covered with sculptures and paintings, it is, of course, to some extent evident that they must have been appropriate to their respective halls and chambers. These are arrayed in several rows side by side, and represent the king standing on one side and the deity on the other, accompanied by their names, titles, and speeches. Thus in the lower row of one of the corridors at Dendera, the king offers his heart to the Goddess Athor, sistra to Athor and Horus of Edfu, incense and libations or fire and water to Osiris and Isis for a good inundation, vases of wine to Athor, flowers to the goddess, fields to Athor and her son Horus, sistra to Isis and Ahi, food to Isis and Horus in a succession of pictures, in which the goddess promises him in return to beloved of men and women, a good vintage, high inundation, and other benefits. In the smaller chambers the pictures are equally appropriate, the monarch being depicted as offering valuables in the treasury, oils and cosmetics in the laboratories. One series of sculptures, however, prevails in the temples, and is found complete at Dendera, representing, in four compartments, the initiation or coronation of the king. The monarch proceeds dressed in royal costume, preceded by five banners, to the temple; he then receives the purification, or baptism, from Horus and Thoth, after that the crowns of Upper and Lower Egypt; and finally presents himself before the goddess; but it is difficult to discover, in all instances, these scenes, although some represent the monarch making the first brick for the building of the edifice. The other subjects found in the temples are too numerous to describe, embracing various religious scenes. The principal point about the temples is that, although painting and sculpture rapidly declined under the Ptolemies, and Roman architecture visibly improved, especially the shape and arrangement of columns and architraves, and that the names and uses of the various chambers and halls are distinctly given in the Ptolemaic temples. The specs or excavated rock temples disappear at this period entirely, and the whole system of the necropolis altered also, which began to be executed in another manner. It is

remarkable that there are no other remains of civil architecture, although bridges are represented over the Tanitic or Pelusiac branch of the Nile, on the monuments of the nineteenth dynasty, and that granaries, arsenals, barracks, and fortifications have entirely disappeared, with the exception of traces of the wall of Sesostris, on the eastern frontier, and th fortified works at Samneh and El Kab, in which are found all the elements of modern fortification, the *terre pleine*, the rampart, the berm, ramp, ditch, and sally-port, and some of these as old as the twelfth dynasty. Several of these works were executed in unbaked bricks, and have consequently crumbled away. The same applies to most of the walls which surrounded edifices. These brick walls had occasionally doors inserted into them of another material, as the granite door discovered in part of the peribolos at El Kab; and a kind of double wall at Abydos, discovered comparatively recently, has low buttresses to support it. Besides the public buildings and offices which have disappeared, few remains of the domestic architecture have survived. It has been supposed that they were originally made of mud, with roofs of palm-branches also covered with the same substance. They were rectangular, with rectangular chambers at the side of the court-yard; and although they reached, according to Diodorus, to the height of five stories, none have remained. It appears, however, from the numerous foundations around the temples, that the houses of the great cities were grouped round them, and that the temples towered up as modern cathedrals in the centre of the towns. Although many representations of houses are seen in the sculptures of the temples and tombs, showing that the wealthier houses had extensive grounds and gardens attached to them, and that the city may have spread over a vast area, no traces of a continuous street or quarter of any city has been made out. From the papyri, however, it appears that the houses even of the poorer persons or working classes were approached by avenues of trees. Not only do the papyri and tombs give some information about the houses, but one, in mentioning the barber, describes him as wandering from street to street in search of employment, and the word street, *mer*, is determined by a labyrinthal line like the Greek key-pattern, showing that the streets were winding, and not laid out in straight lines, crossing each other at rectangles. In fact, the town may, in its ground-plan, have resembled the labyrinth itself, especially at the earlier periods. Recently the wooden model of a house has been discovered at Thebes, with its columns and figures unfortunately much broken and mutilated. The Egyptian house had chimneys or *malqufs*,—not for the fires, but to catch the north wind, to cool the interior. The windows had mats or shutters; the doors were often folding. The culinary operations often represented in the tombs do not throw any light on the arrangements of the architecture of the kitchen, except that the cooking-stoves were detached; and of the sanitary arrangements there is no information, modern excavations and researches having been chiefly exhausted on temples and tombs, especially their spoliation. It is only the great monuments which have survived or attracted attention, and the remains of the houses of the Pharaonic period have been built upon, or carried away so repeatedly and successively that scarcely a vestige of the original ground-plan attests their former existence. This, however, has not been the fate of the sepulchres. The pyramid system had been continued till the twelfth dynasty, and probably later, but after the invasion of the Hykshos or Shepherds, the tombs, instead of being excavated in rocks, and covered by these geometric mounds, were tunnelled in rectangular passages in right lines into the heart of the mountains of the Bab el Molouk, and only diverted from the right lines when they came across or near to a former sepulchre which the architect wished to avoid. These tombs at Thebes commence with the eighteenth and terminate with the twentieth dynasty. The entrances were afterwards carefully concealed and filled up, to protect the royal mummies; but as early as the reign of Rameses X. sacrilegious Egyptians, from the accounts of the papyri, had penetrated the sepulchres, and burnt and plundered the mummies and coffins. Taking the western valley of the El Asassif in addition to the Bab el Molouk, twenty-four tombs of kings and queens have been discovered, not indeed so many as there mentioned by Strabo showing the principle on which they were constructed. The tombs are long rectangular galleries, with recesses passing into a large rectangular hall, in which the sarcophagus was deposited. Some information on the names, dimensions, and destination of the different parts of one of the royal tombs is afforded by a papyrus at Turin, representing the ground-plan of the tomb of Rameses IV. at the Bab el Molouk. This plan, which is imperfect, does not agree with the actual one of the tomb as given in the "Description de l'Égypte," vol. ii., pl. 79, fig. 7. The plan, however, has some defects, as it represents the hill on which the tomb has been excavated as granite instead of limestone. The plan is accompanied with inscriptions traced in black in hieratic, and close to the door, which is represented bolted, is "the position of the door." The length of the entrance-passage is stated to be 35 cubits, the breadth 6 cubits, and the height to the ceiling 9 cubits 4 palms, decorated with chiselled work filled with paint." The dimensions extended to the outer door, for the length of the corridor is described "as 30 cubits, and the breadth 5 cubits 1 palm." At the right side of the corridor is figured a recess, described as "a niche of 2 cubits long, 1 cubit 2 palms broad, and 1 cubit 2 palms deep." These exist on the actual plan. From this corridor commenced a rectangular chamber, entered by a door, which is represented bolted, and which has at the door the words "the place of the door." At the upper part is written, "The waiting-hall, of 9 cubits long, 8 cubits broad, and painted with sculptures filled with paint." The middle of this hall has "Passage of the entrance-corridor, 3 cubits." This hall by another, also entered by a door, and in the middle of it is represented the cover of the sarcophagus of the king, made of granite, in shape of a royal cartouche, having in relief the god Osiris, with Isis and Nephthys at his sides. The inscription on this part of the plan calls it "the Golden Hall,"—*Uskh Nub*,—a term also applied to the temple, "in which he "lies 16 cubits square and 10 cubits high," and adds after, "painted with engraved sculptures filled with colours." The following additional remark, "decorated with subjects relative to his majesty [the king], on four sides, and the gods of the lower hemisphere" or "Hades." This is followed by a statement checking the dimensions, as "from the commencement of the first divine corridor to the Golden Hall, 136 cubits 2 palms"; and this is followed by another relating to the subsequent portions, as from the Gold Hall to the Silver Hall, and to the most beautiful chamber, 24 cubits 3 palms, making 160 cubits 5 palms." To this succeeds another rectangular chamber, also entered by a door, with the following description. The corridor, which is in "the place for the sepulchral figures, of 14 cubits 3 palms long, 5 broad, and 6 cubits 2 palms high," with the usual description of the paintings. At the right side is a kind of side-room, described as "the chamber where the offerings to the god were deposited, 4 cubits 4 palms long, 1 cubit 5 palms high, and 1 palm 2 fingers deep." This was not closed by a door. Besides this, at the right side nearer the door, was another rectangular chamber, closed by a door of 10 cubits long, 3 broad, 3 cubits 3 palms high. In a line with the corridors is the last chamber, called "the silver chamber or treasury of the decorations" or valuables, 10 cubits long, 3 cubits 1 palm broad, 4 cubits high." Although the plan does not correspond with the actual conditions of the tomb of Rameses IV., it may have been one prepared but not acted upon, but still gives the general design of these tombs. The long corridors for the passage of the sarcophagus, the ante-room; the sepulchral chamber, in which the sarcophagus was deposited; the room for the sepulchral figures; and another room for the ornaments or decorations; while the niches and rooms at the sides of the corridors held other sepulchral objects, and completed the final deposit of the deceased king. These requirements, more or less abridged or diversified, were carried out in the sepulchres of queens, princes, and princesses, all of which, till the close of the twentieth dynasty, pierced the solid calcareous rocks at the Theban necropolis. Greater diversity prevailed in private tombs, which were constructed at Gournah, with chapels and subterraneous chambers and corridors; but the last great sepulchre is that of Petamenophis, of the twenty-sixth dynasty, of great extent, and with portions vaulted with arches. The tombs of the monarchs after the twentieth dynasty are unknown, but may be subsequently discov other sites, as Bubastis or Sais, although unfortunately, convincing evidence th have been rifled and probably destroyed.

THE PROBLEM OF THE PARTHE

THE question as to "the mode in wh interior of a Greek temple was lighted" ceived much attention in Europe, and es in England; it has been the subject o pamphlets, chapters, and of discussion Royal Institute of British Architects. those who have put forth their own vie it with unfaltering confidence can scarce that it still fairly remains a question;— to say, there is still far more differenc spectable opinions regarding it, than can down as that mere residuum of irrationa which is ever invincible by most pe brayings in the logical mortar. It fectly fair for the advocate of a particu original solution to be confident that t will, at last, come round to the same ar own conviction, and to be a little impati the world moves so slowly towards so n consummation. Such, however, is the way, especially in relation to a subjec does not involve responsibilities of in and immediate action. Still, when a q merely abstract though it be, and thou some may call merely a question of hi art is concerned, it is not the less a m opprobrium when the question has, considerable interest, that those who a petent to entertain it should thrust it carelessness or idleness without settling definite conclusion. The outside worl right to require from candid and conse experts a declaration of some weight an ment. Whatever may be the amount of forthcoming in any matter, its impor duly studied, is decisive and positive, e the certainty of a particular solution, superior probability of one, the equal bility of more than one, or the genera tainty or insufficiency of all. In a question the issue is simple, and so s the result upon a show of hands. The ment of the discussion *sine die*, or the se of an ultimate appeal by a majority before a disinterested court, imply neith nor less than a serious intellectual fla where. Otherwise and in other places resolution is carried with difficulty by a on a close division, need not argue mo that other interests are in question be merits of the ostensible issue; but in of science it implies that a division h taken prematurely, before the fruits of di have matured, and discussion, there bound to proceed.

There is, therefore, nothing for it but up again the discussion as to the mode ing the interior of Greek temples, and en to move it, if possible, one step near least, a provisional settlement, be it distinct recognition of how much we a do not and cannot know.

The immediate invitation to revive the sion comes from beyond the Atlantic. the papers of the Harvard Art Club is se from the United States, entitled "The thral Question." It is the work of Mr. Thacker Clarke, architect, who passed London last year on his way to Greek expend time and labour, and much more on an original examination of Greek Doric architecture more particularly. E architects will be found to have left h scanty gleanings in this field. The g service which he could render in this d would probably be to present the wor surveys of the temples of Theseus at Athe the great temple at Pæstum, execute some approach to the completeness of t thenon of Penrose. It were sanguine in expect, and it probably is not expected, t monumental aid is still obtainable that upon the so-called hypæthral question hypæthral question *so-called*,—for, inde title is a misnomer as applied to a sion how temples that are positively guished from proper hypæthral temple lighted.

To the mind of an ancient the conceptio temple did not necessarily imply any buil all,—at least, its conditions in this di might be satisfied by a paved and, pe parapetted area, marked off as sacred, a apart for sacred rites;—that a *naos*, w

a dwelling, a structure in which the of a divinity was housed, should be on such a site, and be regarded as y sacred, was natural, but the open-air retained its distinction as consecrated.

uite in accordance with this usage that s, in his references to the temple at m, speaks of the open courts which ed between the temple proper, or the surrounding portico,—the Court of ien, Court of the Gentiles, and so forth, hypæthral temple, the temple in the as distinguished from that under cover. that had lost its roof, or that from any ances was unfinished, and had not the roof which was part of the design, called hypæthral in the general sense to the sky, as unroofed, or wanting the t the specific hypæthral temple, as by Vitruvius, was one which might ernal colonnades like the Royal Ex- but, like that, was destitute, and to remain destitute, of a covering roof central avenue, or, as we should say,

Such a temple was partially covered artially uncovered, and thus contrasts absolutely open-air sacred places (*sub ætheraque*) which in another place he hes emphatically as independent of are, from structures in true architec- e, Doric, Corinthian, or Ionic (1, 2). It rue that when he describes the hypæ- ple he specifies that it has ten columns and is dipteral, &c.; but this is only any examples of his way of confusing ental and the characteristic. Our ogicians would say that he fails by to "quantify his predicate," and ve done better to say "Decastyle ith roofless naves are *some* hypæthral ; and in the same way, "Temples with lumns on flank are *some* hexastyles," e saved him from implying, as he does, mple which had not this exact number s on flank was a proper hexastyle. the case is clear enough to a careful at the characteristic of a proper temple was that its central internal r area, was open to the sky, and thus term hypæthral has no application to temples that are known or are o have had certainly all but entirely roofs, like the Parthenon, or the Ægina and Bassæ. The possibility angement for the admission of light, f light and air, through one or more n the roof, of limited extent, would us to apply to them the term hypæ- speak of any such limited or occa- ing as an *hypæthrum*, even if we had to coin such a noun at all, to which gers would have a word of their own , therefore, we could agree that Mr. successful in the attempt which he most adventurously, and with com- industry, or assent to any other that hitherto has found an exponent ate, the determination of how the f the Parthenon was lighted would ever, not the "hypæthral question," n-hypæthral. It is not too much to to an "hypæthral question," nothing nd, in any consistent sense of the s. A temple designed to admit the eaven freely at all times upon its ,—a temple open to the sky,—was and unquestionably referred to as , but that alone; and there, as Dr. ould have said, "is an end on't."

rds the lighting of such a temple as non, however, there is a very serious ecause it was roofed,—for the very t it was non-hypæthral. We need to hat were the requirements, what were ties in meeting these when fairly and stimated. As regards the means of ese difficulties, we may attempt the y considering by what variety of ective at least, and better or worse, ourselves attack the difficulty with ces at the command of the ancients; cantiness of remains it is only finally npare conclusions with evidence, more ect and positive, as to actual Greek A mere summary of considerations is all that can be ventured on here; it at little more is required,—nay, that is practicable.

s of the Parthenon,—the main apart- e further end of which the chrysele- statue of Athene, 38 ft. high, was erected, had a full length of 100 ft. nearly, and a breadth of 60 ft. The pedestal was at about 60 ft. from the entrance. The opening of this single eastern door was about 16 ft., with 32 ft. height. No direct sunlight could ever enter by this door, which, set back more than 30 ft. from the edge of the stylobate, was also partially covered, even in a direct line, by the columns of the shaded pronaos and peristyle. The light obtainable, even at such disadvantage, would doubtless not be without its value, but was manifestly insufficient for even the general apartment, and absolutely without effect for the display of the statue.

Now, the requirement for the display of this marvel of art must be taken into chief account, when the mode of lighting the naos is in question. Colossal as it was, it was finished in every detail with the most delicate art, from the very helmet, with its griffins and surmounting sphinx, to the edges of the sandal soles, chased with the battle of centaurs; the rested shield, both within and on the outer convex, and the pedestal itself, were occupied by elaborate compositions.

If there is one thing in the whole matter that we may be justified in taking for granted, it is that such a statue in an apartment especially designed for its reception, and in the design of which Phidias had controlling influence, was most effectively displayed; and displaying sculpture implies a full sufficiency of light, and what affects the architectural considerations, of light that arrives from above.

It must be frankly said that we come here upon a difficulty that puts the theory of Mr. Clarke, that the temple was lighted exclusively by artificial light, out of court at once. After a review, which occupies his entire essay but for a final paragraph, of difficulties which none are disposed to underrate, he produces at last as the single undispersed residuum in his logical crucible, even this,—"In view of these various considerations, notwithstanding the now general belief to the contrary, I cannot but believe that the Parthenon, the temples of Olympia and Poseidonia,—in short, all true Greek temples, were covered with a complete roof and ceiling, and that the light by which they were illuminated was artificial." Mr. Norton, of Harvard College, in an introductory note to his friend's paper, may well be reminded, and reminds us of the Miltonic illumination, in which—

> "Many a row
> Of starry lamps and blazing cressets, fed
> With naphtha and asphaltus, yielded light
> As from a sky."

Nothing less, indeed, would be needed; but poetic imagination is more ready to suggest such a scene than archæology to justify it. What lamps, what torches, would be required, and how disposed and regulated and protected? And assuming light to be so obtained, with any approach to sufficiency, what was to be arranged about the inevitable fumes and smoke? It may be safely averred that no assemblage, however unstinted of such ancient lamps or candelabra, simple and compound, that are known to us abundantly enough, either in remains or description, would answer the required purpose, a purpose most assuredly not restricted to a single special anniversary. With every expression of true respect for the genuine zeal and interest in the exposition of this paradox, there is no suppressing the conclusion,—*Solvuntur risu tabulæ*. Mr. Fergusson seems to have provoked the revival of the notion by alluding to it as obsolete; he will, perhaps, take warning, and keep stricter watch over candour, and not again imprudently rouse a fallacy that has gone satisfactorily to sleep, by stepping aside to give it a passing spurn as too gross for the most paradoxically inclined.

It is, however, easier to denounce and demonstrate certain theories as impossible than to settle, among several that are in competition, which is moderately plausible and which most plausible. There are cases, and this it is to be feared is among them, when it behoves theorists to be on their guard with unusual caution; to bethink themselves that explanations may be possible yet scarcely plausible; and even that solutions which have all probabilities in their favour, considering what evidence is forthcoming, may possibly be wrong after all, and inasmuch as the evidence is in itself not decisive can only rank as possibilities. Lord Melbourne is reported to have said, "I wish I could be as certain of anything as Tom Macaulay is of everything." All honour is due to those who have the courage of their opinions in any case; even when they prove mistaken they have, at least, helped on truth by challenging the discussion of a definite issue, and so far clearing the ground; but the merit of such courage is marvellously enhanced when the opinion has been tested first with industry and care; the courage of assertion is after all a virtue of secondary temper, if it cannot develop into the courage to modify, or even to renounce, under due stress of evidence and argument. It may be seriously doubted whether any theory as to the mode of lighting the interior of the Parthenon has yet been evolved, that entitles its most confident advocate to any more positive confidence than that it may be safely entertained as provisionally plausible. We have dismissed the theory of lamp-light illumination as marking zero, if even that is low enough, in the scale of plausibilities; what, let us consider, are the conditions to be dealt with by those who recognise that the statue of the Goddess, whose special mythological attributes associated, and even went far to identify her, with the cope of heaven, could only be duly exhibited to admiring Hellas in radiant daylight direct from her own sky.

Lateral windows we would say there were certainly none, were it not for fear lest the positive assertion should be again taken as a challenge and provoke another paradox. So far, however, no theorist has taken this view. The light from the door was not only insufficient, but also out of relation to the statue,—a still more serious objection, and we are left to exercise daring and ingenuity in introducing light through the roof,—introducing light and excluding weather, which, in the country where Boreas was fabled to have carried off the nymph Oreithyia, was not to be trifled with. Rain at Athens can descend in a deluge, and architects who have familiarity with the contingencies of scaffolding in an exposed situation, speak very respectfully indeed of the wind on the Acropolis. These considerations make it difficult to give that assent to arguments of Mr. Fergusson in this case, which he so constantly commands, in virtue of something more than the vigour of his dialectic. His section of the Parthenon (History of Architecture in all Countries, woodcut 143, part i., book iii. 1865) exhibits a scheme for admitting the light through a clearstory,—in his own words, "similar internally to those found in all the great Egyptian temples," but with a change of arrangement necessary to a sloping roof. The tiling, in fact, is shown as omitted at certain parts over either aisle, where lateral ridges were to be admitted, while the complete and regular slope of the roof was retained between the openings. The design is too well known to require further description. The openings which are shown seem much larger than necessary; but, even if we make this allowance, the exposure of the delicate fabric of the ivory-plated statue to violence of weather would be surely excessive. As the scheme is put before us, if we rightly understand it, it does not appear what is to prevent the freest penetration into the interior of storm winds and storm waters. There are also difficulties as matter of structural arrangement in interrupting the tiling, as shown directly over the side avenues, in such a manner as to afford a course for light in the required direction.

The full height from the floor of the naos to the ridge line of the tiles is 55·354 ft. Of this dimension the utmost that can be allowed for the height of the apartment is 44 ft. The height which we have assigned elsewhere to the naos, on fully developed theoretical grounds, is as near the extreme available as 43·570 ft. This would allow nearly 6 ft. clear above the crest of the erect goddess, which is certainly not too much. But barely enough space remains beneath the rafters, which carried the tiles and the top of the side walls, for beams to bear the ceiling. This ceiling we may consistently conjecture to have been of wood, let us say of cedar, and coffered with richly-designed lacunaria. It is also a fair provisional conjecture that it was at least of the same height from the floor in the side avenues as in the central. The ceiling which is thus assumed represents that ceiling for effect and ornament which Pausanias speaks of in the temple at Elis as associated with the true protecting roof. The height of the apartment is properly taken to the line of internal cornices supporting the cedar-beams. The joint thickness of these beams and of the lacunaria has then to be deducted from the 15·354 ft. left above the ceiling at the centre. By analogy of the porticos 3 ft. or 4 ft. at least must be allowed, and the dimension from the floor thus

increased to 47 ft., brings us, as we have seen, as near as we can venture to go to the beams which would rest upon the lateral colonnades to bear the tiles. Timbers of very considerable importance must have spanned the nave, taking bearing above the lateral columns, and completing a truss to be responsible for the weight of the marble roof above. In accordance with the marvellous structural economy which, throughout the building, seems to rival the very organisms of nature, there is just room enough left for them and no more.

Those who will take the trouble to verify and set out these measurements as given by Penrose, will find that, consistently with the low slope of the roof, light could not have been admitted through interruptions of the roof above the aisles. We are, therefore, it would seem, thrown perforce upon the theory that the light was admitted through the roof, above the central avenue, an arrangement which would be most appropriate,—is it too much to say, was absolutely demanded?—for direction and distribution. It is here of importance to insist upon the very restrictedness of opening which is required in a latitude like that of Athens, for the perfect illumination of a considerable interior, and especially when light is to be admitted not laterally, but from above. How many of us have observed the extraordinary diffusiveness of light in Italy. The cathedral of Florence is lighted by windows so moderate and of such sparseness that they would leave a northern church of half the size in gloom. As it is, the light is only not in excess because the glass is not clear, but coloured. The theoretical opening, therefore, is to be reduced to a minimum, whatever that may be; it would, of course, be so placed as to display the statue and its enrichments most perfectly,—and, therefore, not immediately above it,—but rather to the front. The perforation then would either break the ridge line, or be on one or other, or more probably on both sides of it. As we are speculating now of necessity, not as to what must be, but rather as to what might have been, we prefer to take the alternative of corresponding lateral perforations,—one, and one only, let us say, on each side. It is thus more easy to imagine a contrivance for dealing with watershed. It may be observed, in passing, that while dismissing any supposition as to the burning of either incense or offerings within the nave, it is reasonable to assume that some thought was given to occasional ventilation.

This consideration, indeed, is cogent against the application which in itself were possible enough, of *lychnites*, or *lapis specularis*, of translucent slates, so permanently fixed as not to necessitate any actual opening. As regards appearance in the interior, we have only to imagine that the systems of coffers were arranged to be symmetrical about a pair of larger openings; the light, in fact, would be admitted through merely larger and open coffers. The very limited distance from the summit of the decorated lacunaria to the tiling, which, even at the centre is only 7 ft. or 8 ft., does away with cavil as to chimney-like openings; the openings might easily be so arranged by widening upwards as to allow only the clear sky to be discernible from below beyond the mouldings. Such openings would be elaborations of the primæval *opaion*, or central opening, of which there are so many notices. We are not without certain illustrations of the scheme, that tell at least as analogies. Among the antiquities of Palmyra, in Wood's publication, we see representations of elaborately-coffered ceilings, with a differentiated centre, where the sky is shown as visible, and figures apparent beyond. It is not to be doubted that these are representative of foregone facts, and familiar constructions on large scale, whether the Parthenon furnished an example or no. Resting in our hypothesis so far,—for with hypothesis only can we deal,—we may consider in what way we can keep out the inroad of weather, and that consistently with conservation of architectural symmetry and beauty. Certain fragments of marble tiles were found both at Bassæ and Ægina, which are so modelled as to seem to declare a relation to openings for admission of light; they will be found figured in the illustration to a paper read by the late Mr. John W. Papworth, before the Royal Institute of British Architects, Jan. 15, 1866. But if they betray the fact of an opening, they do not help us to a clear comprehension of how the opening was closed or protected. Considering, however, what ingenuity the Greeks displayed in the multifarious adjustments and contrivances that complete the roof and covering of the Temple at Bassæ, we are scarcely justified in assuming that they could not cap a square opening with a rimmed and sliding slab which should be perfectly weather-tight.

The plate already referred to gives, moreover, two examples of Greek sarcophagi which present models of a temple, two out of many that might be adduced. If we interpret this evidence literally,—and it cannot safely be ignored,—it implies that the offensiveness of a visible notch in the roof was precluded by a surrounding box-like margin or attic, which rose level at least as high as the line of the roof ridge. This enclosure, which would accommodate arrangements against weather, might be expected to range as oblong with the plan of the temple, but otherwise need be but of comparatively moderate length.

If such a scheme were really employed, it would abolish what may fairly be regarded as an anomaly, though hitherto unnoticed. It would give an outward visible sign that the nave of the Olympian divinity was not in utter obscurity. It may fairly be considered that some external expression of the admission of light into an apartment of such length, so closed in and secluded by portices,—some hint to preclude the suggestion of the blue-eyed goddess being immured in darkness,—would be satisfactory. Such an indication, indeed, may be boldly challenged as æsthetically indispensable.

Thus have we again thrashed out the subject of the lighting of the larger Greek temples, whether with the result of distinguishing some stray golden grains, it is for others to say. The theory of artificial lighting may be safely denounced as a will-o'-the-wisp that will tempt few followers; but when the advocates of other views ask themselves candidly what after all the solution must be, not the least ingenious perhaps will answer, "I do not know."

THE MARVELS OF SEVILLE.

THREE hours and a half suffice to convey the traveller from Cordova to Seville. The time is pleasantly spent, and the journey should be performed during the daylight, for the scenery is particularly refreshing when compared with what has been endured further north. The vegetation of Andalusia unfolds itself on either side of the line, the olive and orange groves nestle at the foot of hills surmounted by the ruins of Moorish castles that still seem to threaten the surrounding country. Cormona and its castle are passed, and then the Alcala de los Panaderos, where the best bulls are reared for the arena. This town is also celebrated for its excellent bread, but such small attractions are not likely to stop the traveller who can already obtain a distant glimpse of the Giralda, rising high above the "marvels" of Seville.

"Quien no ha visto a Sevilla
No ha visto a maravilla,"

is a universal maxim, which is also a very general subject of dispute. The tourist approaches Seville thirsting for the proverbial marvels which have attracted him from a great distance, and accordingly he is soon ready to acknowledge that Seville is a marvellous city. But, on the other hand, if we put aside the cathedral, where are the marvels? The Alcazar is certainly wonderful, but the Ayuntamento, the Palacio de San Telmo, the Torre del Oro, and the Casa de Pilato are not sufficient to justify the great reputation of Seville. The fact is that the attractiveness and peculiarity of the city rest on a multitude of little details rather than on its public monuments. These latter, we repeat, are remarkable, but do not correspond with the extraordinary reputation this town enjoys. Yet we cannot say we were disappointed with this, the capital of Andalusia, and of all the places we visited in Spain it is to Seville we should prefer to return. Perhaps the secret of its charms is due to the purity of its atmosphere; if its features are not always perfect, the beauty of its complexion is unimpeachable. A common-place house, all bedaubed with whitewash, which in London would soon become a grimy eyesore, assumes the aspect of a fairy palace at Seville. The cheap whitewash shines like marble in the brilliant sun, and the common tiles of the roof borrow a multitude of tints from the azure of the sky that delight the eye and fascinate the imagination. We
very matter-of-fact indeed, very har
and resolute, to analyse what at a little
we cannot help admiring. It all seems
ful that we cannot easily reconcile our
the closer examination that shall prov
have been in raptures over the most
bricks and mortar, the cheapest tiles, the
ornamentation and a universal smear
wash. From the high elevation of the
from the other side of a square, or look
at the other end of a street, all thi
peared so clean, so harmonious in colou
and bright, that it is impossible to re
little of this splendour is due to the wo
and how much to the magnificence of th
There Nature also provides striking v
tints, from the silver grey of the morn
blue, too bright to contemplate, of noon,
toning down till it reaches the unfa
marine of the starlighted night. U
variating influence the same view o
completely in aspect that it has all th
of novelty, disclosing at each modif
light details not noticed before, new
of colour, and other reliefs of shade.

The beauties of Seville are not,
limited to its climate and its effect on
and private buildings of the town.
life presents a multitude of picture
dents, and of curious peculiarities.
farious dresses of the peasantry,
caparisoned mules, the variety of pac
enliven the streets. Some of the pa
are made to convey valuable good
cloths, curiosities; others are overlo
green olives; while some are charge
commonest of articles, such as vegeta
water-buckets, and even house ref
mules, singly or in droves, stroll
through the narrow streets, stand in
ways, or look into the shop-windo
Sierpes. As in this, the Regent-street
there is no causeway, these anim
freely in the crowd, and it is necessar
constant guard not to come in collisio
pack-saddles. In the other streets,
are most striking in appearance. U
of the Sierpes, which are on the
French model, they have no front
doors; the whole is entirely open, tw
thin iron or stone columns alone s
cross beam of the ceiling above. T
at the back of the shop, the shop
customers, the whole process of bar
fully exposed to the unimpeded vi
persons passing to and fro in the str
system has the advantage of ensuri
plete ventilation of the shops, and k
cool in summer. It is not favourable
play of goods, which can only be hun
walls, ceiling, and at the sides and b
shop, where they are not in a good lig
seems excessively peculiar, and, to
live north of the Pyrenees, has the
novelty. The crowd, also, that thr
odd-looking streets is itself as rem
anything else. We have the greatest
type. The sombre Spanish gentl
veloped in his long dark cloak, shoul
Moor in bright blue loose breeches an
Tunisian jacket; the toreadors, with
tight-fitting black clothes, and long
tails; the soldiers, the gipsies, the pe
silk handkerchief tightly fastened
head, the workman with a French h
English tourist in an impossible Tweed
in and out through this cosmopolita
tripping along on the prettiest feet in
fully disclosed by appropriately short
Andalusian beauties add, by the lustr
eyes, to the general brilliancy of the
is in all these details that we found
city of marvels, otherwise we sho
disputed its claim to that qualification

A certain element of danger also
excite the imagination. Brigands, an
attended with violence, are such e
rencontres that a number of persons
the streets fully armed. While the in
of the town carry their revolvers con
their pockets, the peasant gaily and
trots into Seville, with a rifle slung
back and a huge revolver protruding
blue or red belt. The ride home at
some outlying country farm, with the
of the day's business in hard cash in hi
would expose the small peasant pro
untold dangers if he did not make a fo
display of deadly weapons. Even in t
of violence are frequently attempt

y with success. While we were there a house officer carrying some money along requented street was shot and robbed at ock on a beautiful sunny morning. The a pistol-shot is the signal for a general e: people prefer to abstain from inwhat is the matter till the thieves have ity of time to commit their robbery and ood their escape. Curiosity in such s might be dangerous, and no one seeks the victim till the perpetrators of the re at a safe distance. The senile s of the night, armed with long spikes ge stable lanterns, are much more as a chorus in the "Barbiere di Seville," ajesty's Opera, than as the protectors reets in Andalusia. They are useful in ut the hours of the night, so that we disturb the mosquito curtain to strike but the ringing of a church-clock might e same service, and in a language more nderstood, at least by foreigners. All siderations, together with the warnings, less exaggerated, the traveller will y receive, give to the whole town a of adventure and romance. The tortuous streets, the barricaded winere, in the quiet of the night, ladies answer to serenades sung in earnest, nhance these feelings.

rille, as at Cordova, there are many houses remaining in perfect condition. ate is so dry and equable that they sign of decay, though several cent. These are by far the most appro- the climate, and we fail to understand houses should be built after the tyle when this is suited neither to the or habits of the people, and must tend ate the picturesque aspect of the town. an be more delightful than the *patio*, l court, of the Moorish house, with its ants, fountain, and *azulejos*, or Moorish he cool colonnade of marble pillars round and serves as a sheltered comn from room to room gives the in- of each apartment easy access to the ch in summer is sheltered by a canvas e from roof to roof, and is used as a pen-air drawing-room. The streets, e Sierpe, are also covered over with summer, so as to exclude the sun, thus assume the aspect of a lofty eavily charged with tobacco-smoke, re-echoing to the monotonous cry of *a*; for in every thoroughfare there holy-looking men, more or less in ho stroll slowly up and down heavily one or two large *alcarrazas*, from ey extract draughts of cool water for farthing per glass. Here and there, ever the irregularity of the buildings corner sheltered from the traffic, with picturesque awnings are estawhich a great variety of refreshing beverages are dispensed to the everowd. It is a curious study for the n, whose mind is troubled by the k question, to stand and watch the ese little establishments. They are ented than the wine-shops, and are con- more respectable; in fact, all classes the cheap and excellent drinks prosconsist of a multitude of syrups mixed old water; of lemonade or orangeade, the fruit itself, and in your presence; *ata*, a delicious mixture of crushed nd sugar, which, when dissolved in verts it into a milky substance, and most delicate and refreshing flavour. s we have no wine, and, still less, ven tea and coffee would be con- exciting for constant consumption f doors in the hot streets. Yet we many times, magnificent men,— and others, gipsies, horse-tamers,— t, addicted to athletic exercise, leap orses, and drink with the utmost one of these innocent decoctions. them would have accepted, even if ything stronger; and certainly it said that this temperate *régime* did with them. In physique they were e most perfect men we have ever n to admire. Agile, with well-set d shoulders, small heads and features, ing those of a Roman emperor, they personification of life and health. It ising if the daughters of such a race rld-wide renown for their beauty. nts are the most sober of people though they live in a land that supplies strong wines to the whole world.

Such are some of the social and general aspects of Seville. To these features must be attributed the interest which this town has ever excited. The architect, if he is a true artist, will take them all into consideration. To understand the architecture of a town we should also understand its social life. It would be impossible to judge Seville merely by the stones with which it is built. Its cathedral should be admired in the light of its every-day existence, as a part of a living thing, a great city. Who would journey all the way to Spain to examine Murillo's paintings without first profiting by the opportunity of studying his beggars in the flesh? In these few words relating to Seville we have sought to demonstrate that in noting the very great difference existing between daily life in the capital of Andalusia and that to which we are accustomed in England, new ideas will be generated, new combinations of colour, light, and structure may suggest themselves, bringing forth fresh conceptions of beauty.

THE OPENING OF THE THAMES BRIDGES, AND THE RESULT, AS REGARDED BY THE ARCHITECT.

THE freedom of the Thames bridges is a subject that has been so long and so repeatedly advocated in the columns of the *Builder*, that many of our readers will feel more than ordinary sympathy with the expressions of rejoicing which made the river-side, from Lambeth to Battersea, gay with flags, and resonant of hearty cheering, on the Queen's birthday. Triumphal arches, not reared at municipal expense, but the free expression of the voluntary system among the riverside population, spanned the road over which the Prince and Princess of Wales, accompanied by two of their children and by the Crown Prince of Denmark, and joined by the Duke and Duchess of Edinburgh, drove from Marlborough House to Lambeth Bridge, then along the Albert Embankment to Vauxhall, on to the Chelsea, the Albert Suspension, and the old Battersea Bridge; crossing each of these structures on their route, and each of which the Prince declared to be thenceforth free and open to the public.

In a former number of the *Builder* (September 23rd, 1876) we gave some account of the twenty-one road and eleven railway bridges which cross the Thames below Windsor, without counting the two tunnels or the steam ferry, of which so little has recently been heard. Four of these bridges, which, ten years ago, were private property, namely, those at Kingston, Walton, Staines, and Hampton Court, were purchased for 90,773*l.*, and thrown open to the public between 1870 and 1876. Waterloo Bridge and the Charing-cross Railway Foot-bridge were freed last autumn; and five more bridges were added to the number on Saturday, the 24th of May, making eleven in all. Only three more, viz., the Wandsworth, Putney, and Hammersmith Bridges, now remain to be purchased, and a peaceful revolution of the utmost value to the properties and inhabitants of the vicinity will thus have been completed in a very reasonable space of time.

The cost at which these bridges have been secured to the public is as follows:—Lambeth Bridge, which it is already hinted must not be allowed to be covered with a crowd, and as to which we may thus anticipate that it may be found necessary to replace it by a more substantial structure, cost 36,000*l.* Vauxhall Bridge, formerly known as the Regent's Bridge, cost something over a quarter of a million. Chelsea Bridge cost 75,000*l.*; and the Albert and Battersea bridges make up the total cost to the round figure of 536,000*l.*, a sum of money which has been, we cannot doubt, well laid out. Before last week, as the chairman of the Metropolitan Board of Works remarked in his address presented to the Prince and Princess of Wales, there was no free bridge in the metropolis westward of Westminster. By the end of the year it is hoped that there will be none but free bridges throughout the metropolitan area.

The Prince of Wales said in reply to the address,—"The opening of the five bridges westward of Westminster is an important event in the annals of the metropolis, and I rejoice that you should have chosen the Queen's birthday to declare them free. A free communication across the Thames is an incalculable boon to all classes of the inhabitants on both sides of the river, and it is our earnest hope that you will be enabled to carry your promised work into effect within the specified time." As to this there was but one opinion expressed. The total cost up to the present time of the seven bridges as purchased for the public was stated, at a parish festivity which followed, to be "something like a million of money. Sir Chas. Dilke, on the same occasion, anticipated a farewell to Old Battersea Bridge (which can only be a question of time), in the simple observation that "the sooner they got rid of it altogether the better." The erection of a suitable bridge at this spot is a matter which before long must become urgent.

The increase of the traffic over Waterloo Bridge was stated, by Earl Cadogan, at 90 per cent. As this has occurred within about eight months, it is not too much to say that the traffic may be taken as doubling, within a year, from the abolition of the toll. We hope that exact statistics may be published on this score, although now that the Act of Parliament has been passed, and the measure of freeing the bridges has been so far carried through, there is not that object in ascertaining statistics which exists when a Parliamentary contest is to the fore. We confess that we should have expected the increase in the case of Waterloo Bridge to have been considerably more. One of the great points that were urged in behalf of the compulsory purchase of the bridge was that the tolls imposed at each time of crossing were prohibitory on the working people whose abodes might be to the south, and their occupation to the north, of the bridge. In this case the removal of the toll might have been expected to do much more than send nineteen passengers over the bridge for every ten who paid their halfpenny. Such a result might have been expected, with some confidence, from a reduction of the toll, say, from a halfpenny to a farthing. Perfect freedom, we confess we were among those who thought, might be expected to do much more. It must be remembered, however, that anything involving change of residence does not immediately come into operation. There is a difference in the air of sprightly business occupation between the Thames and the London and South Western Railway Station already, that is highly significant. And we shall not be surprised to find, some few years hence, that the traffic along this main line of north and south communication has very considerably increased.

One thing, however, seems already to make itself tolerably clear, as to this matter of river-crossing, and that is, that the particular requirements of each locality are very unlikely to be long neglected. Anything like forcing a cross-river public traffic we may well consider to be impracticable. Public wants soon indicate themselves, and modes of supplying them are a natural result. Density of population is one very great element in such considerations; but it is far from being the only one. Disposition and occupation of populations are quite as important to consider. Thus we may see, in many parts of England, how the axis of a town has accommodated itself to a certain line, sometimes that of a road, sometimes that of a river. Cross communication, in course of time, becomes necessary, and springs up. But there is almost invariably a great difference in the volume of the traffic which flows in the two directions. Something of this exists in London; and although we speak without any hesitation as to the importance of the movement now so happily carried thus far, we are not without some hesitation as to whether its immediate effects, as regards the value of property, or the march of the builder, will be as marked as we should have anticipated if a fuller volume of traffic had attended on the freeing of Waterloo Bridge.

When, as far back as pre-Roman times, London was rising into importance, a ferry at the site of London Bridge, and another at Westminster, were ample for the needs of the population. The maintenance of a ferry in those days was a pious work. There is an ancient and very beautiful legend of the ferryman at Lambeth, who on a stormy night towards the close of the life of Edward the Confessor, was roused by two cloaked strangers and bidden to ferry them across the Thames to Thorney Island. As the man waited on the bank for their return, he heard sounds from the newly finished, but unconsecrated, Abbey Church of St. Peter. Lights gleamed from its round-headed windows bells rang out from its pilas-

tered towers; and the scent of incense came on the westerly gale. After a time the two strangers returned, and for payment to the ferryman only advised him where to cast on the following day his hook for a salmon. Our readers may remember the rest. The salmon of the Thames, like the earlier fish in the Lake of Galilee, had treasure in his mouth,—not a piece of money, but a ring, from the appearance of which the Abbot of Westminster recognised the fact that the two strangers were no other than the Apostles Peter and John, who had themselves taken the trouble to cross the Thames on a stormy night to consecrate the abbey which should afterwards witness the bestowing of the sacred chrism on the kings and queens of England.

From the time when such a legend was credited, or held to be credible, to the time when the Prince of Wales declared five bridges to be thrown open in one day, we apprehend that the requirements of the riverside inhabitants of the Thames have been very fairly met. We now look upon a toll-bridge as a relic of the past. We consider it, like a turnpike, to be a barrier to that free circulation which is an important element of national welfare. Such, no doubt, is the case at present. But let us not forget the cause. Let us not forget that the builder of a toll-bridge has been, in his day, a public benefactor no less than, before him, was the establisher of a ferry. From 1815 to 1835 the best roads in the world were the self-supporting turnpike-roads of England. Nowhere was there such travelling, nowhere were there such horses. No one grudged the tolls, or, if he did, he only exercised the Englishman's privilege of grumbling.

The man who struck the first blow at turnpikes, toll-bridges, and self-supporting lines of road,—that is to say, roads exclusively maintained at the cost of those who used them,—was George Stephenson. Let us not forget that. The rapid change both in concentration of population and in activity of travelling which has marked the past forty years, is due mainly to the impetus given by railways. In clearing away any remaining barrier we are but carrying out the minor requisites of the new system. We act wisely in so doing; but we must not forget that it is the railway, rather than the road, which has become the main channel of our arterial communications.

DRAWINGS BY THE OLD MASTERS IN PARIS.

THE Parisian artistic body has, for the first time this season, introduced two innovations from the banks of our own Thames to those of the Seine, —an exhibition of privately-owned drawings by the old masters, and an exhibition of water-colour drawings. Strange as it may seem, in Paris, no annual exhibition devoted exclusively either to water-colour drawings or to drawings by the old masters has, till now, been organised. The special exhibitions devoted to the sketches by Ingres, Prud'hon, and Regnault aroused at the time great interest, exhibited as they were by the side of the finished conceptions of those favourite artists. But the means of comparison that it was then placed within the power of the observant critic to make, a comparison in which too often the picture stood but poorly beside the painter's original production,—led to no expressed desire to see any collection of studies by the old masters,—so many treasures by whose hands were known to be shut up in private portfolios.

And now from the initiative of our own Royal Academy and the Grosvenor Gallery, a few private individuals have organised this season an exhibition of drawings by the old masters, held in that interesting room of the *École des Beaux Arts* where each year are shown, as they have been for so many years, the ten pictures from which one is chosen as meriting the famous *Prix de Rome*. And no little justifiable pride do the Parisians take in their new exhibition; but may we not be allowed to differ from that most competent but amusingly self-satisfied French art-critic, M. Burty, when, in speaking of the Grosvenor Gallery and the Royal Academy collections without having, however, seen either, in comparison with this, he remarks that "they were neither as well chosen nor so varied as is that of the Beaux Arts, the remembrance of which will take long to pass away, and which before its close will attract to Paris all the great art-lovers of Europe"?

It is more than likely, from the accounts which will reach abroad, that many *dilettanti* will visit Paris expressly for this interesting exhibition, but none the less the Parisians, the first charm of novelty worn off, do not crowd, as they do the Hôtel Drouot, the classic rooms of the École des Beaux Arts, notwithstanding the efforts made by M. Charles Ephrussi and M. Gustave Dreyfus to make up their exhibition from the collections of the Duc d'Aumale, M. Gatteaux, and MM. de Goncourt among many others, and even from England by the aid of Mr. Malcolm and Mr. Mitchell.

It is not be wondered at that the selection of drawings by the old masters attracts so little attention, when we consider that day by day for so many years the extensive collection of drawings by the old masters at the Louvre has become, more or less, but very much too little, familiar to the Parisians.

We remember announcing in these pages, about two years since, that the Duc d'Aumale intended to exhibit in Paris his costly collection of drawings then lately arrived from England; but at the time the report was contradicted, and now that these drawings have at last been brought together, the exhibition cannot but suffer from its following so soon after the magnificent displays at the Royal Academy and the Grosvenor Gallery. Notwithstanding the very great value that may fairly be attached to a certain proportion of the drawings exhibited, it is impossible to accept in all its force the very high praise bestowed upon the collection by the Parisian art-critics.

Without doubt the main interest of the exhibition is divided between the collection of 170 and more drawings furnished by the Duc d'Aumale, and by the sixty or eighty drawings contributed by Mr. Malcolm and Mr. Mitchell, and it must be owned that never before have works of art been so enhanced by the beautifying aid of the mounter. We cannot think that the French critic is quite sincere in believing that this exhibition is really likely, as he states, to attract the whole artistic world to Paris this cold spring to see a collection which, after all, comparing it with the superb collection of the Louvre, is deficient in every school represented. So much so is this the case that, inconceivable as it may seem, notwithstanding that England has contributed so many valuable Italian and other drawings to the collection, only three drawings by English masters, and those three more than doubtful, occupy any place on the walls of the Beaux Arts.

But, stranger still, although Frenchmen are willing in the present day to claim the eighteenth century as the most typical French century of their history, and that they are now fully alive to the glories of their art at that period, glories which were not recognised twenty years ago, and the appreciation of which is almost due to the collection bequeathed to the nation by M. Lacaze, in 1869, the directors of the present Exhibition have failed to bring together anything like a complete series of examples of their own masters,—a series admirably represented on the walls of the Louvre, and at a time when literally every print-shop in Paris is filled with etchings, coloured aquatints, and engravings of the eighteenth century.

Without going out of Paris, without more trouble than crossing the Pont des Arts to the Louvre opposite to make comparisons, it is impossible not to admit that the national collection possesses finer examples of nearly every artist of the Italian and Flemish schools represented in the collection of the Duc d'Aumale; and notwithstanding that there has been a praiseworthy effort to fill up every gap from the first drawings by Giotto and Van Eyck to the last works of Prud'hon, it cannot but be admitted that there are some sad omissions, and not a few drawings the authenticity of which may be doubted. However instructive and interesting it may be to a few critics and *dilettanti* to compare and to doubt, to inquire into and to discuss the various peculiarities of the masters, and to show why or why not a drawing may or may not be an original, the public who visit such an exhibition are scarcely advantaged by the time spent there, unless they can be induced to feel perfect confidence that they are bestowing their admiration on thoroughly undoubted and authentic works. When this is the case, when studies by great masters are exhibited, the work is certain to be beautiful, and must prove to be of the utmost value for purposes of study.

It is scarcely desirable, for instance, that of the three Giottos exhibited, the two belonging to the Duc d'Aumale should be placed in such painful juxtaposition with the lovely [illegible] belonging to M. Galichon, unless the o[bject] to show the uninstructed the difference [between] the work of a great master and that of a [mere] imitator. We would like to see in su[ch a] lection as this purports to be a mu[seum] rigorous exclusion of questionable work[s].

The Pinturicchios at the Louvre [are] superior to those exhibited at the Beaux [Arts]; it would be difficult also to exceed in be[auty] Filippo Lippis of the national collection[s]; is no example in the Duc d'Aumale's c[ollection] by Taddeo Gaddi, but in the Louvre [there] seen a magnificent study; while the c[ollection] by Lorenzo da Credi in the national c[ollection] are of much higher interest than those [exhibit]ing at the Beaux Arts.

Mr. Morris Moore's gift to the Louvr[e] beautiful drawing by Signorelli is su[perior] any of the three drawings at the Bea[ux Arts] and the magnificent Andrea Mantegna s[epia] bistre, of the Louvre, is as interesting [as] the great master's completed works at [Padua] at Mantua.

Beautiful as are the two Fra Angelic[o] Duc d'Aumale, they are surpassed in [delicacy] by that of the Louvre; while the supe[rior] point drawings on red paper by Verroc[chio] national collection could scarcely be sur[passed] beauty.

Of Verrochio's famous pupil, Leon[ardo da] Vinci, the effectively-framed chalk he[ad] Beaux Arts is, after all, but a weak p[roduction] in comparison with the interesting stu[dy] Louvre, bearing, as it does, the trac[es] master's hand, both in the work an[d the] carefully-pricked outline followed, to t[he] to its now lost panel. Of course, we h[ave] that interminable series of caricatures [which] resemble each other, as also a fine [series] studies, on one piece of paper, for the [Adoration] Anghiari: a sketch, it may be mention[ed] bears the familiar initials of Sir Thom[as Law]rence. As for the careful study in te[rra] Leonardo, of a piece of drapery,—[which] familiar to every artist,—it is unfair [to] out of the Louvre any rival to its be[auty] proof of the great master's painful [effort] attain perfection.

When we reach the drawings by Mich[el] of which there are some thirteen at t[he] Arts, it is impossible not to compare t[hem] those in the national collection of the [Louvre] numerous and so instructive that one is [inclined] to believe that old Jabach, the original[ly] (who obtained so many rarities from [Charles] at King Charles's sale), must have com[e] means or other into possession of the[se] package of sketches which a story t[ells] great master begged his father to *very* [carefully] pack and send to him from home. Of [the] beautiful specimens of Michelangelo [now] here in Paris at the Beaux Arts, it [is] needless to speak, they are in the pos[session] Mr. Malcolm, and have been already [shown] at the Grosvenor Gallery. One not fi[nished] the British public appears to be the fir[st] the "Slaves" for the tomb of Julius [II.], another may possibly be a study for [the] figure of the "David."

Mr. Malcolm and the Duc d'Aumale [possess] Fra Bartolommeos, more than one of the[m] having previously passed through the [hands] can be seen by their private marks, of [Reynolds] and Lawrence. It is again the Duc [d'Aumale] and Mr. Malcolm who own the more [than] Andrea del Sartos, though none of the[m] equal in interest the small and perfect [study] red chalk) at the Louvre for the St. [Sebastian] the famous "Holy Family *del Sacco*." [The] sketch, lent by that most conscientic[us] art-workers, Signor Castellani, shows [how] Benvenuto Cellini's studies for the [bronze] the *Loggia* at Florence.

Again, with some few exceptions, [the] Malcolm and the Duc d'Aumale who [possess] Raffaelle drawings, so many of w[hich] familiar to the London public. It would [hardly] be difficult to "discover" any drawin[g] master not familiar, thanks to *fac-simi*[le] in more modern times to photography [the] drawings at the Beaux Arts equal in [interest] the original sketch at the Louvre [for] St. Catherine we prize so highly in our [National] Gallery. An additional interest is added [to] of these sketches from their bearing th[e] marks of more than one famous English [collector].

It is no little disappointment not [to] single study by Vasari at the Beaux [Arts] is true they are but rarely to be [met] M. Gatteaux, whose name figures in th[e]

largely, presented to the Louvre, only a
rs ago, a beautiful drawing by the in-
g author of the immortal "Lives of the
." Nor is Bernini represented, though
onal collection of the Louvre shows us
re than one drawing by that master is
nce.

igo Zucchero, of English reputation,
s but poorly represented in one small
the study for a portrait of Michel-
while at the Louvre there are a number
interesting studies for portraits. Two
s by Primaticcio (one, by the way, from
mas Lawrence's collection) represent
ter whom Francis I. so liberally em-
at Fontainebleau, where his work may
dmired. Here, again, the Louvre col-
ar surpasses that of the Beaux Arts in
f beautiful studies for the ceilings and
ns of that palace. A chalk drawing,
t, serves to recall the lovely work of
impossible to really appreciate out of
As for the Correggios, with one or two
s, they have all belonged to famous
collectors, and still are in the hands of
colm; the names and marks of Earl
Reynolds, Lawrence, and Woodburn,
no doubt, were that possible, of the
ity of these treasures.
Venetian school, Mantegna takes no
t. Two excessively rare and valuable
, in the possession of Mr. Malcolm,
that early Italian engraver, Nicoletto
na; while the Bellinis are not ill-
ed, thanks again to Mr. Malcolm and
d'Aumale; one Giovanni Bellini, is an
iation," a superb specimen of early work
colour. Though well represented in
re, Pordenone finds no place at the
ts.
Alcolm's landscape, by Domenico Cam-
is indeed a rare treasure, possessing an
nterest more than usual, when we con-
friendship that so long existed between
ola and Titian, whose pen-and-ink
trikingly resemble each other; another
by Giulio Campagnola, is equally rare
esting. In drawings by Titian himself,
is the Duc d'Aumale and Mr. Malcolm
the most beautiful examples, most of
e familiar in England, where for so
rs they have reposed; but few of these
unless it be that for a portion of the,
no longer existing "Peter Martyr,"—
Mr. Malcolm,—can be said to surpass
b sketch in red chalk, by Titian, pre-
uong many others at the Louvre, and
ing a man holding a halberd, a sketch
ext the carefully-laboured study of
y Leonardo to wh'ch we have already

on, one may pass through all the
hools, Mr. Malcolm, the Duc d'Aumale,
or two other collectors, having con-
all the choicer examples, and still on
he Spanish school. Two interesting
by Velasquez, are contributed by Mr.
but even these can scarcely compare
priceless sketch treasured at the
where it is but ill-seen, unfortunately,
rtion of the famous "Peace of Breda,"
slight as it is, showing, in spite of its
all the courtly action of the two
so admirably carried out in the com-
ture. Enough, however, for the present.

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d Glass.—A window has just been
the east end of Crich Church, by
Camm Bros., of Frederick-street, Bir-
The figures of our Lord and the four
ts are under canopies, placed on a
ground, surrounded by a border. The
a very large one. This with a reredos
f the south windows of the chancel,
by the same firm, are the gifts of the
urt, of Chase Cliffe, Derby. The
memorial, also an effective stained-
dow, by Messrs. Camm, containing a
our Lord (Rev. iii), "Behold, I stand
oor and knock," with the following
n: "This window was placed here
, 1878, by the parishioners and family
v. Wm. Chawner, B.A. Cantab., vicar
rish, in memory of a faithful ministry
over a period of twenty years. Born
d 1877." Two other windows, by the
, were placed in this church last year,
ining the figures of Faith, Hope, and
he other an ornamental window.

PERSONAL RECOLLECTIONS OF SIR G. GILBERT SCOTT.

MANY years ago, the late Sir Gilbert Scott commenced noting his personal and professional Recollections, at first merely for the information of his family, but later on in life with a view to the public, and in 1873 drew up directions for the publication of them in the event of his death. These instructions, which were very precise, his son, Mr. G. Gilbert Scott, has followed, omitting such matter as he thought unsuited to publication.* The Dean of Chichester, the Very Rev. John William Burgon, B.D., has added a short appreciative introduction; and an account of Sir Gilbert's last days, a portion of Mr. Edward M. Barry's lecture before the Royal Academy in January last (published by us at the time), the Dean of Westminster's Funeral Sermon, and some papers by Sir Gilbert in reply to attacks made on him by disciples of the "do-nothing theory," as he calls them, at the Institute of Architects and elsewhere, in respect of his treatment of ancient buildings,—attacks which, as we have reason to know, pained him greatly, are added as appendices. We shall give general consideration to the book hereafter. On the present occasion we confine ourselves to a few of his observations and opinions on one or two special matters. For example, in giving instances of the intolerance of the earlier revivalists, he says, speaking of the first occasion on which it was attempted to set aside the Ecclesiological Society's law as to the constant use of the "Middle Pointed,"—"The ecclesiologists had actually at one time doubted whether it would not be right to pull down Peterborough Cathedral, if only we could rebuild it equally well in the 'Middle Pointed' style; and now they were forced to swallow a veritable 'First Pointed' design, and to sing its unwilling praises. Clutton and Burges certainly had the credit of overthrowing the old tyranny, and even some of its most rigorous abettors soon found it necessary to outvie each other in setting at nought their former faith, and in trying who could be the *earliest* in the style of their buildings. One thing, however, never changed: the intolerance shown by them for all freedom of thought on the part of other men. Every one must perforce follow in their wake, no matter how often they changed, or how entirely they reversed their own previous views. Nor was anything more certain than this, that however erroneous their former opinion might have been, their views for the time being were right, and that every one who differed from them was a heretic or an old-fashioned simpleton. It had many years before been a saying of mine, that there was no class of men whom the Cambridge Camden Society held in such scorn as those who adhered to their own last opinion but one: and this sentiment has been the great inheritance and heirloom of their imitators."

Scott did not object to an earnest belief in the particular phase in vogue. What he did protest against was the custom of taking the cue from some self-elevated leader of their own, and, whatever the circumstances might be, treating with pitying scorn every one who did not chance to fall in with the new rule or opinion; even those who had no power of art in them setting themselves up as lights, because of their adhesion to the latest dictum of the clique, and those of a superior class neglecting often their own special training, in the intensity of their self-satisfaction at belonging to the privileged party whose great moral rule was to trust in themselves and to despise others.

The account of his struggle as to the designs for the Public Offices is a painful chapter, and will lead, probably, to discussion; but we cannot touch it now. We take, at hazard, a few passages, showing the opinion Scott had of the competing designs for the New Law Courts.

"I do not know," he says, "that my general architectural design was of much merit, though I think that it was fully as good as any recent work I know of by any other architect. Of its parts I am bold to say that many exceeded in merit anything that I know of among modern designs. I say this especially of the portico towards the Strand, of the internal cloister, and of the domed central hall; nor were other parts devoid of merit, but I refer to the drawings (some of which, by the way, were spoiled and vulgarised by bad colouring, through which much exquisite outline drawing was unhappily ruined). The two surveyor-assessors awarded the greatest number of marks to Mr. Edward Barry, and the second greatest number to myself, while the heads of law offices awarded the greatest number to me, and the second to Mr. Waterhouse. The competition judges, wishing to follow the advice of the assessors (now added to their own number), desired to give their verdict in favour of Mr. Barry, but as his architecture was approved of by no one, they conceived the idea of linking on to him some other architect, in whose architectural powers they had more confidence, and they pitched upon Mr. Street, whose arrangements no one had ever spoken in favour of. I at once protested against this as a palpable departure from the conditions, which were not to take the sum of two men's merits and balance this aggregate against the single merits of others, but to weigh each man's merits one against another. Mr. Street complained of my protest, and I then wrote to the Government, stating that if the judges reaffirmed their decision, I should abide by it. They did very unjustly reaffirm it, but the law officers of the Crown cancelled their decision as unfair. As, however, I had engaged to stand by the reconsidered verdict of the judges, I felt bound to adhere to my promise, and I withdrew from the competition; though I was vain enough to feel convinced that my merits (architecture and plan together) were greater than those of any other competitor,—an opinion to which I still adhere. Mr. Waterhouse was, perhaps, the closest rival, but Mr. Street had but a poor plan, while his architecture was unworthy of his talent, and had evidently been very much hurried; while Mr. Burges, though his architecture exceeded in merit that of any other competitor, was nevertheless eccentric and wild in his treatment of it, and his plan was nothing. Laughably enough, the competition ended in Barry, who had been buoyed up by Street's architecture, being cut adrift, and Street, who had only come in under Barry's wing, being declared the winner."

Sir Gilbert considered that this great competition as a conspicuous non-success did him much harm, and he had then begun to feel that he had rendered himself unpopular with his own party through giving way in respect of the style of the Government Offices. We have said enough for the present to show the character of the book. We will simply add that we note with regret the absence of any reference to some who well helped him at different times in the course of his career.

* Personal and Professional Recollections by the late Sir Gilbert Scott, R.A. Edited by his Son, G. Gilbert Scott, F.S.A. Sampson Low & Co. 1879.

THE HOUSE OF LORDS AND LONDON FIRES.

"IT is," says the proverb, "an ill wind that blows nobody any good"; and the ill wind which brought a fire to Lord Granville's house has in all probability blown not a little good to the householders of the metropolis. Indeed, the fact that, moved by the fire in his own house, Lord Granville has brought forward in the House of Lords the question of fires in London houses causes a certain feeling of regret that, however unfortunate for the aggrieved persons, some more noble lords cannot be injured or made uncomfortable in property or person: we should like to find Lord Derby compelled to sit out a play at a theatre we could name, and Lord Carnarvon with a first-class ticket sitting between a costermonger and a sweep in an evening train on the Metropolitan Railway. However, it is satisfactory to find that Lord Granville has given his attention to this subject of London fires; but we regret at the same time that he did not make some practical effort towards attaining the object which is so desirable, the larger safety of London householders from fire; for it must be borne in mind that since 1846 committees and commissions have been making reports on this subject, all more or less with the same result, namely, the urging of improvements without any practical result following.

The committee of 1877 brought forward twelve proposals, six of which were, so to speak, connected with the principle of the extinguishment of London fires; but these six are no nearer fulfilment now than they were eighteen months ago.

But when Lord Granville based his appeal to the Government to commence legislation on the basis of the report of the last committee, he, as it seems to us, did not point out that the proposals are severable. For the first three deal with the constitution and management of

the *personnel* required to extinguish fires, the two last with the subject of the water-supply; and it seems to us that while it is desirable that legislation should take place on all these points, it is yet possible that it may effectually be taken in hand first of all on the first three points. The first point was that the Fire Brigade should be transferred from the Metropolitan Board to the Commissioner of Police, to be placed under the immediate command of a separate Assistant Commissioner. The second was that the police-stations and the fixed points should be used as fire-brigade stations, or as places where small engines or other appliances should be deposited, and that the police should be auxiliary to the fire brigade. The third point embraces both the question of water and of the *personnel*, for it is in effect that consolidation of management should take place in regard both to the water and the men.

Now, it is evident that such points as the increase in the numbers of the fire brigade, the more effectual aid of the police, and the general management of the force, can be accomplished without going necessarily into the question of the water supply. It is on Captain Shaw's authority that if two great fires were to break out simultaneously in London the force at his command is too small to quell them both. The unpleasant difference between the brigades of London and Paris, namely, that in this metropolis we have 406 firemen to a population of 3,500,000, whereas in Paris there are 1,540 firemen to a population of 2,000,000, is capable of being remedied without touching upon the question of the water supply with which the replies of the members of the Government almost wholly dealt. Therefore it is that we hope Lord Granville and Lord Camperdown will first of all endeavour to remedy this part of the question, and so give us a half if we cannot have the whole loaf of bread which the last committee has recommended.

For it is obvious, when we come to the question of the water division of the subject, that it is part and parcel of the whole question of the water supply of London; and that, again, is intimately connected with the question of the Local Government of London. It is all very well to point out, as Earl Fortescue did, the high state of efficiency, especially in regard to the supply of water, which Manchester exhibits, where the water supply is managed, not by private companies, but by the corporation. But it must be remembered that London differs radically from all the great provincial towns. If this metropolis were the size of Liverpool or Leeds, governed like them by a corporate body representative of the ratepayers, reflecting their wishes, directly amenable to public opinion, and consisting of the best men of business of the town, there would be no difficulty in transferring the management of the water supply to this body. But, on the contrary, London is chopped up into districts; the Metropolitan Board of Works is not a really representative body; the vestries of London are not representative; and the best business talent of the metropolis is conspicuously absent from these bodies. This is, in fact, the great difficulty: in whom is the management of the water supply to be vested? As at present constituted, we should not wish to see it in the hands of the Board of Works; and therefore, until the local government of London is wholly changed, should the water supply be managed by the public, some kind of elective metropolitan committee must be the body to which it should be entrusted. And it was on this point that the debate of last week was somewhat feeble, for the speakers did not grapple with this supreme difficulty. The Government speakers uttered, as might be expected from officials burdened with two wars, a drooping exchequer, and an impending general election, a weak *non possumus*. The lords who urged the necessity of immediate reform neglected to grapple with the difficulties which beset the carrying out of the recommendations of the last committee. Therefore, we repeat, that as things now exist the *personnel* of the fire brigade must be first dealt with. Then, apart from that, the water-supply of the metropolis must be considered, either as part of a great scheme for the better governing of this metropolis, or by itself; and if dealt with by itself, the first question which Lord Camperdown proposes to touch upon in a resolution is what is to be the body to control the water supply of London? The taking over the rights of the companies is, after all, a simple matter; it is no more difficult than taking over the powers of the telegraph companies. In this respect Lord Camperdown was correct; but when he stated that, "of course, it would be necessary to have a central authority which would command the confidence of the ratepayers, and surely the Home Secretary was competent to create such an authority," we fear that he weighed too lightly the difficulties standing in the way, and looks upon the Home Secretary too much in the light of a divinity capable, like Hercules, of sweeping out Augean stables. At the same time, difficulties should not appal a Legislature composed of men of business such as sit in our Parliament, and therefore we very much hope that careful thought will be given to this latter part of the question, and that meanwhile the points connected with the efficacy of the fire brigade and the co-operation of the police will be legislatively dealt with. Everyone connected with houses and buildings in London is interested in this matter, and we shall be much disappointed if the fire at Lord Granville's produces nothing more substantial than the debate of May 23rd.

FROM PARIS.

At the same moment that in England the vexed question of our Sunday's "rest" is attracting attention, the French Chamber has been called upon to consider the necessity for the abolition of an old law passed more than sixty years ago, and now entirely unobserved, obliging all work to be suspended and all shops to be shut on the Sabbath. To the mass, the existence of the law was unknown, and its revocation is a mere formality. Paris, indeed, in spite of Napoleon's English efforts, still offers on the day of rest an appearance very different from that of the British capital. Among the many museums which are so generously thrown open on that day, few are more interesting than the Hôtel Drouot, where, on the Sunday afternoons, are held private views in each of the rooms, of the principal sales to take place during the week. The Sunday before last, after having delighted the eyes of the London public at Mr. Quaritch's for a few short days, some of the choicest rarities of M. Firmin-Didot's collection, or rather the second portion of his gathered treasures, were exhibited previous to the sale, which occupied the whole of last week; and treasures indeed they were, which are now dispersed to the four winds,—rare illuminated MSS. and early-printed books and choice old bindings, more than one of which had passed through the library of that prince of bibliopoles, Francis I.'s minister Grolier, together with not a few modern bright backs, the work of Capé, Lortic, Trautz-Bauzonet, Hardy, Duru, and other familiar French binders. As might be imagined, the bibliopoles of half the globe were represented in Paris last week, all being engaged in scoring their bulky, green-backed catalogues, on the margins of which not a few high prices were marked.

The whole 525 volumes produced a total of some 955,000 francs (38,200*l.*). Among the highest prices given may be mentioned a fifteenth-century MS. Bible, adjudged at 400*l.*; a volume of Psalms at 100*l.*; a fragment of an *Evangéliaire* on vellum, executed at the abbey of Luxeuil in the middle of the eleventh century, 600*l.*; a Commentary of Beatus, of the twelfth century, 1,220*l.*; the Comte de Bussy-Rabutin's Book of Hours, 1,040*l.*; and a volume of some forty-four original drawings by Hans Holbein, 800*l.* But the choicest treasure reached no less than 76,000 francs, with the per-centage (which here in France is charged to the purchaser), some 80,000 francs, or 3,200*l.* It was the Missal of Charles VI., in folio, of some 364 sheets, with wooden backs covered with velvet, and corners and clasps in chiselled silver. It is a truly marvellous and historical manuscript, on vellum, executed at the beginning of the fifteenth century for Charles VI., and which in later years passed to his daughter Catherine, the wife of our own Henry V. The volume in its beauty and rarity is unique, few MSS. being so profusely illustrated: it contains more than 500 illuminated pictures, exclusive of the innumerable borders and superb initial letters. Report states that this precious treasure was purchased for the Duc d'Aumale: whoever the purchaser may be, enormous as the sum may appear, the owner of this fifteenth-century Missal possesses a beautiful gallery of more than 500 pictures, such as can never again be produced; and such a picture-gallery at 3,000*l.* is, after all, not extravagant. The literary world has not yet heard the last of M. F
Didot and his superb collection, whi
already brought in to the family several o
of francs; other sales are announced f
season.

While every day the eighteenth cen
growing in favour with the Parisian publ
the trade sales at the Hôtel Drouot are
triously supplying feverish collector
eighteenth-century engravings, eighteen
tury furniture, and eighteenth-century
tions generally, it is not a little interes
hear that Mdlle. Adelaide de Montgolfi
daughter of the famous inventor of the
has recently presented to the museum
Académie d'Aérostation of Paris the p
of her father and uncle, Étienne and Jo
Montgolfier, the work of the eminent s
Houdon. The age of Montgolfier's daug
unfortunately not mentioned. When
sider the early commencements of Ste
and the steam-engine, and how long ag
efforts were made, it is not a little star
learn of the existence of the daughter
inventor of Montgolfier's balloon, whose
ments preceded by so many years t
Stephenson. We are carried back to the
diluvian" epoch of Louis Seize in a
scence of Montgolfier and his balloon.

The announcement of the death
Anspach, the worthy *bourgmestre* of
has caused not a little feeling even in P
Brussels itself, the public sympathy w
fested in a marked manner; the public
the Chamber and Senate, the Courts of
and the Bourse were closed, and the hou
hung with mourning flags. In the fune
cession the whole ministry and the dip
body were present, with an immense nu
civic and military functionaries. Burg
Anspach was truly loved by the Bruxel
nothing shows more the respect of th
for his memory and gratitude for the
during his too short life worked for h
city than the spontaneous mourning
for him by the whole of Brussels. Th
may remember the gay little capital a
tion since, and know the Brussels of
may be grateful to Burgomaster Ans
the favourable comparison which the
capital is able to make with the
not in its quaint picturesqueness,
in its increased supply of those
necessities of life,—air, light, and wat
determination taken by the municipal
henceforth to name the grand new B
Central after their late respected burgo
to be commended.

From all appearances, there is every
of the Hôtel de Ville of Paris being
freed from its case of bewildering sca
At the last meeting of the municipal
a councillor requested from the direct
works a statement of the progress of
building. Competed for in 1872, it wa
1873 that the plans of MM. Balla and De
were adopted, and the total expense
stated at fifteen millions of franc
600,000*l.* Since then, several modi
have been made which have entailed
expense, and it was in consequence
changes from the original plan that
ensued. For the last fifteen months the
activity has reigned in the progress
works. On the 19th of May last, no fe
1,098 workmen were engaged; from th
January to the 15th of May, 70,000 w
days' pay had been expended; but, o
the nature of the building, the number
men has been obliged to be restricted
culties have been met with in obtain
stone from the Yonne; the hard
from which we have suffered as n
France as anywhere, has ruined the
and the supply of material has th
seriously checked. Notwithstanding th
culties, the architects promise that by
masonry will be completed as far as the
in 1880 the roof and rough-casting will
pleted, and at the beginning of 1881 th
cipal council and the bureaux may take po
again of their old home. With regard
preparation and decoration of the privat
of the Prefect of the Seine, it is agreed t
point shall, for a time at least, be
Nothing, so far, shows that the sum of 22,
francs (880,000*l.*) will be insufficient, an
the amount voted by the council; but
to be expended on the statues and othe
of art is still under discussion. The co
a resolution, invited the Administratio

e municipal council at the opening of the August and February sessions, a the state of the works. Unless un- accidents occur, it is confidently ex- hat the inauguration of the new Hôtel de l take place in 1881. Thus one more the terrible reign of the Communists pear, leaving only the picturesque ruins uileries, and the Palais of the Quai

day evening, the 30th of May, with the nce of "Ruy Blas," the dramatic master- the veteran Victor Hugo, who in a few rs is to preside over the International Congress in London, the Comédie e took their leave, for a time, of sian public, and much do we exiles more fortunate brethren at home the of these delightful *artistes* in London The Literary Congress will have the e of two Italian opera companies and ch Comédie, not to speak of many s, where, if report speaks true, it will re to enjoy the undoubted powers of ctive Mdlle. Sarah Bernhardt, who, according to the French papers, "under ion of Sir Benedict" [*sic*]), proposes to natic readings.

RN COAL TRADE ARBITRATIONS.

ranch of our industries has arbitration disputes a fairer field for exercise than l trade, for the price of coal is easily able at the mouth of the pit, and the s to the portion of the selling price that ould receive is not complicated as in er industries, where the value of the f labour is varied according to the e product, and where the destination, and other qualifying circumstances value. But in the Northern coal itration in wages disputes was not duced, the old "yearly bond" having ill the present decade. When, how- coal trade entered upon the extra- hase of inflation, and the demand for e intense, especially for metallurgical it was deemed desirable that steps taken to secure, as far as possible, ted working of the collieries. When st was improving and coal went up ds in price, it was tolerably easy to reased wages, and from 1871 to 1873 f such increases were given. Local were at first the rule, settled at each tween the coalowners and the men; were included in the first general and thus it is easy to trace the the general increase in the county of Steps were taken to ascertain a verage" price of coal,—a price, that d from such a number of collieries in ositions and sections of the trade as e price a fair average to adjust wages average price for coal may be given, mount of the gross increase in wages e three years of prosperity and of es, as follows:—

ice of Coal and Increase of Wages.

	s.	d.	
1871	5	2	per ton.
1873	15	10	,,
Increase	10	8	

e of wages, in three advances, 58 per cent.

e advances in the rate of wages were y mutual arrangement between the s and the miners; and whilst the ve contended, and the figures above , the increase, in the total, was not ate to the increase in the price of mployers advance proof to show that been a more than equal advance in s of the cost of production, that the utput was on the average lessened, hus the heavy establishment charges d over a lesser area, whilst the work- Mines Regulation Act added to the reover, they show that whilst the l the highest rate of wages for four- hs, long before that time the price of eceded from its maximum,—it having three shillings per ton before wages ed.

when the downward tendency in the was a settled one, the first reduction ed at by mutual arrangement, but a series of arbitrations were needed ne the extent of the various reduc- ned. Mr. Russell Gurney, M.P., Mr. W. E. Forster, M.P., Mr. C. H. Hopwood, M.P., and Mr. J. G. Shaw-Lefevre, M.P., were the adjudicators, and by their award prices were brought down, with the previous reduction, fifty per cent. The last of these was in August, 1876, and in the spring of the following year, a "sliding scale" arrangement was entered into, which was inaugurated by a reduction of 7½ per cent., so that wages were brought down to the level from which they started in 1871,—these reductions being invariably preceded by ascer- tained reductions in the average price realised at the pits for coal. Put into a tabular form, we have now the following as the outline of the effect of the rise and fall of the demand for Durham coal on prices and on wages during the six years:—

	Per ton.	Per cent.
Price of coal, 1871...	5s. 2d.	
Price of coal, 1873 ..	15s. 10d.	= Increase of wages = 58.
Price of coal, 1877...	5s. 3d.	= Decrease of wages = 58.

In 1877 the sliding scale was brought into operation, but it was fettered,—that is to say, there was a general belief that the lowest price of coal had been reached, and the scale made provision only for an increase, not for a decrease in price. Thus, whilst, contrary to expectation, the price of coal has further fallen,—from 5s. 3d. per ton to 4s. 8d. in the two years,—there has been no corresponding fall in the rate of wages. It has been the contention of the representatives of the mines that in the years of prosperity they received only a portion of the increase in wages to which the higher prices of coal entitled them, and that therefore any excess paid in the later months of the sliding scale's operation was merely a counterbalance. But the owners retort that, from causes previously glanced at, the increase in the total cost of production was more than in a ratio with that of the increased price of coal; that owing to the shortened hours of labour, more men have been necessary and more houses (which are freely provided for miners by the owners); that increase of rates and many other such items make the wages paid much higher than the apparently equal ones of eight years ago. In additional houses needed for workmen to keep up the output of coal, it is estimated that capital to the extent of 500,000*l.* has been invested; and in other methods the coal-owners contend that they are entitled to an abatement in their wages. Nor was this denied by the workmen, and hence the strike might have been averted had any agreement been possible as to the amount of the reduction. The provisional reduction which has been made has more than passed the extent which the miners deemed they should submit to, but it has not come up to that which the owners claim. Hence the desire for a further reduction by the employers, and the reference to arbitration of the balance of the employers' demand. That arbitration will be a full one,—full and open,—conducted on the part of the coalowners by two of their number, and, on the part of the miners, probably by two of their leading officials; and although the primary reason for the decision of the umpire will probably be the selling price of coal, yet many other matters will influence that decision. In previous arbitrations the comparative output of the men, the standing charges of the collieries, the production and rate of wages in other districts, and the comparative purchasing power of money, have all been taken into account, and in some measure have influenced the decision of the umpire, in all probability. It is too soon to forecast the result of the coming arbitration; but it may be fairly said that, unless the coal-owners had strong grounds for a reduction they would be unlikely to disturb the present settlement; and that, in the interest of both parties, it would be well if the outcome were sufficient to enable the sliding scale to be again brought into practice free and unfettered in its operation. The cost of the strike to both parties must have been far more than the per-centage gained or lost; and, in addition, its results have been an embitterment such as will not readily be removed.

The Electric Light in France. — The French Minister of Finance has made an arrangement with the Société-Générale d'Électricité of Paris for lighting up the Salon in the Palais de l'Exposition, Champs Elysées, with 250 electric lights. This decision, it is understood, has been arrived at in consequence of the success attending the recent exhibition of the paintings in the École des Beaux Arts by means of artificial light.

THE LINCOLN, NORTHAMPTON, AND LEICESTER ARCHITECTURAL SOCIETIES AT STAMFORD.

On Wednesday and Thursday in last week the Lincoln, Northampton, and Leicester Architectural Societies held a joint meeting in Stamford. The visitors first inspected St. Mary's Church, where, as elsewhere throughout the town excursion, Mr. James Neale, F.S.A., gave the architectural descriptions, and the Rev. C. Nevinson (the local honorary secretary) supplied the historical details. Perhaps the most noticeable feature about the church is the fine Early English tower, with Decorated spire, added about the year 1300. In the body of the church there is work of the Early English, Decorated, and Perpendicular periods. St. Mary's Chapel, north of the chancel, has a rich cradle roof of timber, coloured and powdered with stars, the ornamentation being performed at the cost of William Hickman, alderman of Stamford, in 1467. In recesses of Decorated character in the north wall are two figures,—one a knight of the time of Edward III.; and on a rich altar tomb on the south side effigies generally considered to represent Sir David Phillips (who was attached to the house of Queen Margaret of York) and his wife. Attention was next devoted to the cellar of a house east of the chancel on St. Mary's Hill, which contains part of an Early English vaulting-shaft, with a well-moulded capital. The party next proceeded, under Mr. Nevinson's guidance, to view the site of the castle on the north side of the river. The first fortification is supposed to have been erected here by the Danes in 870, after they had destroyed the monasteries of Crowland and Peterborough; in 911, no longer able to keep possession, they demolished the work lest it should be turned to account by the English. From that time until the arrival of the Normans, the fortress changed hands with the varying fortunes of Dane and Saxon. It is known that in the reign of William the Conqueror a stone structure was raised, for Domesday Book mentions that "at the time of the survey five houses were waste on account of the building of the castle," and some of the Norman masonry remains to this day. During the reign of Richard III. the castle was destroyed, and the materials used in repairing the White Friary. Standing by the mill-stream an Early English postern may now be seen; and beyond it a portion of the Norman wall of the outer enclosure. The mound of the keep, doubtless in existence when the Norman castle was raised, is conspicuous. In the south-east corner of the enclosure is some fine arcading dating from the thirteenth or fourteenth century. The sites of St. Peter's Gate (dismantled 1770), Austin Friars (a religious house, founded in 1380 by Wm. Fleming, a merchant at Stamford), and the Church of St. Mary Bennewerk (burnt during the civil wars by Sir Andrew Trollope), with the tower and buttress of the time of Charles I. on the north side of St. Peter's-gate, and the fragments of Sempringham Hall on the north-east of King's Mill-lane, were next examined by the visitors. Sempringham Hall, it may be noted, was founded in 1292 by Robert Luttrell for students of the Gilbertine order. About this period there seemed a possibility of Stamford becoming a serious rival of the Universities of Oxford and Cambridge. When the students who had settled at Northampton retired from that town, some few preferred a withdrawal to Stamford, rather than a return to the old quarters at Oxford. The archæologists next proceeded to All Saints' Church, which is an excellent specimen of the Early English and Perpendicular styles. The lofty tower with spire (152 ft.) is of effective design (Perpendicular), but rather suffered from comparison with that of St. Mary's previously inspected. The rest of the church is mainly Early English, with insertions of later date. There is some very fine arcading below the windows of the exterior; and in the interior the beautiful foliage of the capitals is worthy of especial mention. Mr. Neale especially alluded to the restoration in 1857; and drew attention to the brasses to the Brownes, one of whom, William, paid for the building of the steeple, the windows, and the other Perpendicular portions of the edifice. Passing to St. John's, a small Perpendicular church of no special architectural interest, the visitors especially admired the rich oak wood screen, which Mr. Neale hoped would be speedily restored to its original position under the chancel arch. In the upper lights of the north aisle are considerable remains of very excellent stained glass; and it is stated by the

Northampton Herald (from which journal we condense this account) that in the beginning of the eighteenth century the church contained nearly 100 figures in Mediæval glass, all more or less mutilated. Leaving the church, the party went to Browne's Hospital, which is situated in Broad-street, and was erected in the reign of Edward VI., by William Brown, merchant, of Stamford, as "an almsbouse for divers poor of each sex, as well as for chaplains to celebrate divine offices therein." Mr. Neale spoke in high terms of the ancient glass in the chapel and audit-room, representing various Scriptural subjects. A few minutes were next devoted to an inspection of some curious antique vaulting in one of the cellars of the Red Lion Inn (opposite St. Michael's Church), and of certain capitals in a house (opposite the Conduit) in St. Paul's-street, lately occupied by Mrs. Bishop. Mr. Neale placed the date of the last-mentioned work at 1200. The examination of the remains of St. Paul's Church (apparently built in the twelfth century), now forming part of the Grammar School, Brasenose-gate (remnant of Brasenose College, destroyed in 1668), and the entrances to the Grey and White Friars,—the former opposite Cherry Holtwood, and the latter forming the gateway of the infirmary lodge, led up to St. Leonard's Priory, which is said to have been founded by Wilfrith toward the middle of the seventh century. No part of the present fabric is, however, earlier than the eleventh century, when William the Conqueror and Carileph, Bishop of Durham, restored the monastery, and gave it to the prior and convent of Durham. The building now comprises the west end of the nave, with five arches of the north arcade and part of the clearstory. Mr. Neale pointed out the gradations of style as seen in the northern arcade and in the rich west end. The visitors wound up the morning excursion by visiting St. George's Church, originally an Early English edifice, but greatly injured by fire in the fourteenth century. It was rebuilt on the old foundations, and is certainly, on account of the remarkable adaptations, a most interesting study for the archæologist. At two o'clock some 200 ladies and gentlemen sat down to luncheon in the Assembly-rooms, under the presidency of the mayor (Mr. Thomas Gurney Mason). His worship was supported by the Earl of Gainsborough, Precentor Venables, Rev. C. Nevinson (local secretary), Mr. M. H. Bloxam (Rugby), and a representative body of the archæologists of the three counties. The programme for the afternoon presented the alternative of a journey to Burghley House, and an examination of St. Martin's Church on the return; or an excursion to Uffington and Barnack. The party divided into about two equal bodies, and both spent a very pleasant afternoon. Burghley House, with its manifold attractions, has been ofttimes described. On this occasion no set lecture was delivered; but the attractions of the mansion were explained by the attendants. The visitors spent a short time in inspecting St. Martin's Church. It is a fine example of the Perpendicular period, and possesses special interest on account of the Cecil monuments being placed here. The party that visited Uffington and Barnack was much interested in the examination of the village churches, that of Barnack being undoubtedly one of the most notable examples in the country of the earlier Romanesque, as developed in England before the Norman conquest.

In the evening a meeting was held in the Assembly-rooms, the Bishop of Lincoln presiding. The Bishop, in the course of his introductory remarks, advocated the establishment of a county museum.—The Rev. G. Ayliffe Poole, of Winwick, read a very interesting paper on "Fragments of Diocesan History in the time of Charles I. and Charles II.," in which he described the troubles of the clergy in the Peterborough diocese during those times of civil strife; Mr. Neale, F.S.A., of London, followed with a paper on "The Stamford Churches"; and the concluding paper was "Notes on the History of Stamford," read by the Rev. C. Nevinson. Numerous architectural drawings, and a collection of engravings, &c., lent by Mr. Neale, were inspected at the conclusion of the meeting.

The number of members and visitors was largely increased on Thursday. The programme of the day commenced with an excursion, about a hundred persons starting in a long line of conveyances from the Red Lion-square about half-past nine o'clock in the morning. The first place visited was Ketton, and the church, which is a fine and interesting building, ranging from Trans-Norman, through Early English, to First Decorated, was much admired. The party then proceeded to North Luffenham, and, after inspecting the church and other places of interest, went on to Edithweston and Exton. At the latter place the company were received and entertained at the Hall by the Earl of Gainsborough. After inspecting the house, the family portraits, and other objects of interest, the party repaired to Exton Church, in which there is an elaborate display of Harington and Noel monuments, which were described by the Rev. G. Knox, the vicar. The beauties of the church were described by the Bishop of Nottingham. The remains of the old hall (which was of Elizabethan style, and almost destroyed by fire in 1810) were also inspected. Empingham was the next village along the route, and whilst inspecting the church the Bishop of Nottingham remarked upon the great want of restoration, and hoped some steps would soon be taken respecting the carrying out of such a work. The last place visited on the return journey was Tickencote, where the party were entertained at tea by Mr. and Mrs. J. H. Lee Wingfield. After inspecting the hall and the Norman church, the company returned to Stamford, which was reached between five and six o'clock.

In the evening a second meeting was held at the Assembly-rooms, which was presided over by the Bishop Suffragan of Nottingham, who called attention to certain illustrations of frescoes hanging on the walls, which had been found in the course of the restoration of the parish church of Friskney, near Boston, and expressed the hope, as he considered they were of a very valuable character, they would be preserved. The Rev. Mackenzie E. C. Walcott, B.D., was announced to read a paper on "Cathedral Precincts," but, as he was unable to be present, it was read by the Rev. A. Pownall, of South Kilworth. The Rev. R. A. Cayley, of Scampton, also read an interesting paper on "The Lighting of Churches."

A COLLECTION OF REPORTED CASES RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

PLANS AND DRAWINGS.

Plans.

A PERSON who invites tenders for work does not impliedly warrant the correctness of the plans or specifications according to which the work is to be done.—Thorn *v.* The Mayor and Commonalty of London, 12 L. R., App. Case, 120; 45 L. J., Ex. (H. of L.), 487 (1876).

[Neither is there an implied warranty, it would seem, by an architect, quantity surveyor, or engineer, that his plans are correct. But if one of these persons was proved not to have used reasonable care in the preparation of such plans, so that they were incorrect, and the employer suffered damage in consequence, then an action would be maintainable against such person for negligence and want of skill. Thus, in the case of Jenkins *v.* Betham, 15 C.B., 168 (1854), it was decided that one who holds himself out and is employed as a valuer of ecclesiastical property, is bound to bring to his task that ordinary degree of skill and knowledge which would reasonably be expected from country surveyors and valuers. Much less, therefore, is the house-owner liable either for the accuracy of the quantities furnished by the architect to the builder, as was attempted to be proved in the case of Scrivener *v.* Pask, 1 L. R., C. P., 715; 18 C. B., N. S., 785 (1865).]

WHEN an architect agrees to do certain work (laying out land for building purposes, and making surveys thereof), and to make no charge for such work, and it is farther agreed that in certain events (if the land were disposed of for building purposes) he shall be appointed architect, or if his services are dispensed with, that he shall receive remuneration for the work primarily done, he is not, though he has done the primary work, entitled to make any charge unless the event agreed upon actually happens.—Moffat *v.* Laurie, 24 L. J., C. P., 56 (1855).

[It will be observed in this case that the land was not let for building purposes; hence there were no services of the architect to be di with, the event after which the service become possible never having taken pla is an important case also, as showing ho ful professional persons should be in doi the payment for which is made contin the happening of certain events, which, though they will very probably occur, certain to happen.]

Drawings.

WHEN an architect agrees to prepare tionary drawings for approval, and working drawings and specifications, h entitled to payment unless his drawi approved.—Moffat *v.* Dickson, 13 C. 22 L. J., C. P., 268 (1853).

Quantities.

WHEN a surveyor prepares bills of qu and notice is given that the contractor w cessfully tenders for the work will hav the surveyor a certain per-centage f bills of quantities, and the contractor w eventually successful also agrees with veyor that his fees shall be paid out of instalment which he receives from the b owner, there is an implied promise contractor, when his contract is accep proceed with the work, and his obligatio the above-mentioned per-centage is est as soon as his tender is accepted.—McC Kilgallen, 2 Irish C. L. R., 119 (1878).

[The fact that the fees were to be pa the first instalment is not a further c precedent to payment, in addition to th tance of the contractor's tender, but shows the manner in which the paym be made; so that as the payment could made in this form, owing to the co abandoning the work, his liability becc solute and unconditional as if no such s stipulation existed.]

ARCHITECTS have by custom an implie rity to employ surveyors to take out t tities for buildings, the plans for the cre which they have prepared.—Moon *v.* G of Witney Union, 3 Bing., N. C., 814 Taylor *v.* Hall, 4 Irish L. R., C. L., 467

[The above seems to be the result two cases; but it must always be reme that such implied authority must be p the person who relies upon it, and t proof may fail. Thus, in Taylor *v.* Hall J., said:—"I am of opinion that there sufficient evidence of any such legal c that relied on by the plaintiff" (the su on the other hand, Monahan, C.J., co that the architect has an implied auth employ a surveyor. But it must also marked, in connexion with Moon *v.* Witne that the fact that quantities were to out by a surveyor had been communi the solicitor of the Union, and that w architect sent in the bill of the survey his own, the Union did not at once r their liability. Both these facts weigh with the Court.]

Tenders.

A TENDER by a builder, and an accep such tender by a house-owner, constitut ing contract, and the parties will be b such agreement. An intimation in the ance of such tender that a contract will pared, merely means that a formal ins shall be drawn up containing the term previous agreement.—Lewis *v.* Brass, Q. B. D., 667 (1877).

[This case shows that persons wh tenders should be careful to do so wi eyes open, otherwise they may find th are bound fast by the contract into wh have entered. If, however, it can be g from the tender and acceptance that th ment is made *subject* to the preparat approval of a formal contract, then the agreement independent of that stipulat the formal contract is that which bi parties.—See Winn *v.* Bull, 7 L. R., C (1877).

A PERSON who invites, by writing o of mouth, tenders for work or for t chase of anything does not by s impliedly promise to accept the lowes highest offer, or to accept any one tenders. The notice to persons willing to

* See pp. 364, 423, 479, and 599, *ante*.

nere proclamation that he who issues the
le is willing to receive and to consider
s.—Spencer *v.* Harding, 5 L. R., C. P., 561;
J., C. P., 332 (1870).
anything, say in the notice for tenders for
lding, could be construed as showing an
ntaking to accept, say, the lowest offer,
there would be an exception to the above
al rule.]

in a tender, or in the acceptance of a
r, there is a term that the materials to be
ied or the work to be done shall be at the
of the person who asks for tenders, then
n as such order is given the tenderer is
t to supply the goods, or perform the work
lied in the tender.—Great Northern Rail-
Co. *v.* Witham, 9 L. R., C. P., 16 (1873).
nus, if in a tender for the supply of bricks
nderer agrees to supply as many hundreds
house-owner may order between certain
then, as soon as the order is given, the
rer is bound to supply the bricks required.
suggested in the judgment in this case
tenderer before the order is given might,
notice to the person to be supplied, back
f the agreement. But it seems doubtful
s suggestion, upon consideration, would be
ound.]

NFERENCE ON NATIONAL WATER UPPLY, SEWAGE, AND HEALTH.

SOCIETY OF ARTS.

this week conclude our notes of this Con-
ce.*

Cutler, C.E., who described himself
oprietor and manager of some water-
at Eton, established in 1696, but which he
ntirely reconstructed, defended the water-
nies against the charges of extortion pre-
against them, saying that while it was
a subject of complaint that more money
ow charged for a given quantity of water
sed to be the case, it was entirely for-
that there was now a greater demand
ter, and it had, in consequence, gone up
ue.

Chairman (the Right Hon. James Stans-
L.P.) said he was quite prepared to admit
ere was something in Mr. Cutler's argu-
but not sufficient to justify the heavy
s of the London companies. With refer-
o the question of rating for certain sani-
rposes in rural districts, raised by Mr.
's paper, he thought Mr. Brown had very
shown that the absence of a sufficient
t of elasticity in our statues was a great
o sanitary progress.

Joseph Lucas, F.G.S., submitted a paper
Water-shed Lines: subteranean Water
." It was a paper full of interest, but
which it would be impossible, in the space
command, to give an intelligible
t. Some remarks on the paper were
by Mr. Edwin Chadwick, C.B., and Mr.
d, C.E.

Conference then proceeded to discuss
ject of river conservancy. In this con-
Mr. James Dillon, C.E., read a paper "On
ects of Under and Arterial Drainage on
Floods." The paper embodied the results
l at by the author in the case of the Upper
River works, in Ireland. These works
over 82 miles of rivers and tributaries;
tchment basin or area of country dis-
g its waters into this system of rivers
s over 278 square miles, and its centre is
d about 53 miles to the west of Dublin, at
of 211 feet above the sea, the rock for-
being limestone.

hole of the river works were designed so as to carry
4 ft. below the surface of land, the flood waters of
rmerly saturated and covered with water 12,260
cres of land, equal to 7 per cent. of the catchment
During the progress of the works, it was neces-
arry out extensive rock, gravel, and other excava-
d to rebuild sixty bridges, the total cost of which
unt to about 60,000*l.*
orks under my charge were commenced near
ron, at the point where the Lower Inney Works,
ut under the direction of the Drainage Commis-
f Ireland, were suspended on account of their ex-
cost and want of funds to proceed further up

nly to the commencement of the Upper Inney
works, the average summer discharge in the river
upper district amounted to ·0689 cubic feet per
minute, and the average flood discharge ,to ·4896
t per acre per minute. After the execution of the
he average summer discharge at the same place
d to ·0827 cubic feet per acre per minute, the flood
e to ·4827 cubic feet per acre per minute. Almost

* See pp. 552, 578, and 609, *ante*.

similar results have been obtained by me in other districts. . . . . I have reason to think that a new Act for the United Kingdom, drawn very nearly upon the same lines as the existing Acts for Ireland, omitting their defects, would confer a great benefit upon the people in the three countries.

Mr. Lloyd was of opinion that the under-draining of agricultural land materially increased the quantity of water passing off into the rivers; and he was also of opinion that the recommendation which had been made by the Select Committee of the House of Lords to make a call on the inhabitants of the upper part of a catchment basin for a small contribution towards the cost of river conservancy, was just and equitable.

Mr. Robert Rawlinson, C.B., said he had stated broadly, before that committee, and he reiterated it, that land-draining and agricultural improvements had little or nothing to do in causing the excessive floods that had occurred of late years. The conditions upon which floods depended were beyond human interference. He did not mean to say that land drainage did not bring storm water down to the rivers much more rapidly than it would pass off land which was undrained, but the surface water was not the cause of the floods,—before it could be so the subsoil must be water-logged.

Mr. Edwin Chadwick submitted a paper on "The Course of Inquiry as to Works of Sanitation, and as to their Expense and Results." The paper took the form of a joint report made to the King of the Belgians by Mr. Chadwick and a Belgian officer of health on the sewerage and other sanitary works at Bedford and Croydon, with a view to the adoption of desirable improvements in some of the Belgian cities.

Dr. John Brown, Medical Officer of Health to the Bacup Union Sanitary Authority, submitted a paper "On Some of the Diseases due to Sewer-Gas Poisoning."

Dr. Thorne Thorne, of the Medical Department of the Local Goverment Board, contributed an important paper on the recent outbreak of enteric fever at Caterham and Redhill. He said that,—

During the fortnight ending February 2nd last, enteric fever broke out at Caterham, Redhill, Earlswood, Bletchingley, and Nutfield, in the county of Surrey. The outbreak appeared almost simultaneously in Caterham and Redhill, the attacks commencing in one town only a few hours after they were heard of in the other, and within a few days cases also came under treatment in the other places named, the total number of attacks reaching 196 during the fortnight referred to. Here were a series of outbreaks almost simultaneous in their incidence upon a series of towns and villages which were situated at distances varying from about three to ten miles apart, and which were all ascertained to have been, for a long time, remarkably free from the disease by which they were now attacked. . . . .

There was one condition which the several towns and villages where the disease prevailed had in common; they all derived their water-supply from the same source, namely, from the works of the Caterham Waterworks Company. And not only so, but it was ascertained that among the occupants of over 1,400 houses, within the infected district, to which the Company's supply was not delivered, no persons who had not consumed this water were affected, and also that from amongst those who habitually used other supplies, the disease had specially attacked the few who had been recent and occasional partakers of that derived from the company's mains. The suspicion, however, which under these circumstances naturally attached to this water, received no support either from consideration of the source whence it was derived, namely, the chalk wells, more than 500 ft. deep, sunk at the southern extremity of the high-lying ground which bounds the Caterham Valley on the west, nor from the history which had attached to its previous use, and which, in point of wholesomeness, had won for it a deservedly high reputation. But the evidence which associated the spread of the epidemic with the consumption of this water gradually became overwhelming, and hence everything relating to its sources, storage, and distribution was, with the ready co-operation of the company's officers, carefully inquired into.

The possibility of soakage of filth into either of the wells from cesspools had, even prior to the occurrence of the epidemic, attracted some attention. But, although the steadily-increasing practice of fouling the chalk, in various parts of the Caterham Valley, by means of cesspool soakage, is one which can hardly fail, before long, to constitute a source of danger to the water services deriving their supply in this locality from the stratum, if indeed it does not do so already, yet it appeared obvious that the epidemic in question had not been brought about in this manner. . . . .

During the latter part of 1878, and the beginning of the present year, the Caterham Waterworks Company constructed an adit from one of their old wells up to a new bore, which had been made for them by the Diamond Rock Boring Company, and which was at the time approaching completion. This adit is situated in the chalk at a depth of 455 ft. It measures 6 ft. by 4 ft., and is 90 ft. in length. A number of men were employed in this work, some of them being in the well below, others on the surface. Inquiry was made as to whether any of the men had sailed whilst at work, and it was ascertained that one of them, who left work some time in January, was believed to have been ill, although no inquiries had been made concerning him since he quitted the works. This man was found out, and the history obtained, both from him and from his wife, can leave no doubt that he had recently suffered from enteric fever. Indeed, it was ascertained that, though continuing at his work in the adit below, he was, from about January 5th until January 20th, when the severity of his symptoms confined him to his bed, the subject of a mild though marked attack of enteric fever, which was accompanied with such profuse diarrhœa that, notwithstanding certain regulations to the contrary, he was compelled to evacuate in the adit "at least two or three times" during each shift. The exact method by which his poisonous evacuations found their way into the water is a little uncertain, but even assuming the absolute truthfulness of his statement to the effect that a pail which was constantly being drawn to the surface was invariably resorted to as a closet, there were ample means, on his own showing, by which the well-water could have been contaminated by them. Within fourteen days of the commencement of his purging, the disease broke out in an epidemic form amongst the consumers of the company's water.

Confirmatory evidence as to the nature of the man's illness was obtained when it was ascertained that on the previous December 25th and 26th,—the exact date when his disease, if enteric fever, must have been contracted,—he had been away from Caterham, and had stayed in a town where that disease had been somewhat prevalent.

In short, there can be no doubt that the pollution of this water, as the result of the man's disease and the epidemic in question, were related to each other as cause and effect; indeed, the several essential incidents recorded are linked together in point of date, with a precision characteristic of the results which might have been expected to have followed a scientific inoculation. . . . .

Amongst the points deserving special notice in connexion with the circumstances of this epidemic, I would suggest the following:—

1. That the view, to the effect that even a comparatively minute quantity of the poison contained in the evacuations of enteric fever patients may, when subjected to conditions favourable to the development of that poison, lead to the specific infection of very large volumes of water to which it has gained access, is fully borne out.

2. That a special danger attaches to the prevalence of the mild—or, as they have been termed, "perambulatory"—cases of enteric fever, by reason of the intensely poisonous nature of the diarrhœa which characterises that disease.

And, having regard to these facts,—

3. That all possible sources of excremental contamination in the vicinity of water-courses should be rigidly dealt with.

4. That care should be taken, in connexion with works for the construction or storage of water, to exclude from employment all persons suffering from any diarrhœal affection.

Mr. Ernest Hart gave a *resumé* of a paper submitted by him on "Epidemics caused by Polluted Water Supply." It contained a table giving, according to the author, the facts as to the causation, progress, and fatality of epidemics of a certain class of zymotic disease in England, which have been proved to have been due to polluted water since the passing of the Sanitary Act, 1866. In conclusion, he said:—

It is impossible to make any sort of estimate of the number of lives annually sacrificed in this country at the shrine of polluted water. But the deaths must represent a very considerable proportion of the fatality from enteric fever, to say nothing of other diseases. When it is remembered that, in 1877, no less than 6,879 entirely preventible deaths occurred in England and Wales from this one disease alone, and that thus, in one year, some seventy thousand people were caused needless suffering and anguish, through the ravages of a disease intimately connected with filth, it will be seen how great a stake England has in the maintenance of the purity of its water.

Mr. C. N. Cresswell contributed a paper on "The Thames and its Tributaries." He observed that,—

At the commencement of the present century, the Thames was a pure and wholesome river; now, throughout a great part of its course, it is the common sewer of Middlesex and Surrey. The Thames has many tributaries; either natural streams, as the Mole, the Crane, and the Brent, converted into open sewers by a process of gradual contamination, or artificial feeders directly conveying the sewage of populous towns into the river bed. This is the practical outcome of sanitary efforts in the Thames Valley during the past thirty years, the history of which period is a tale of doing and undoing, of official meddling and local muddling; of misdirected zeal on the one hand, inert bewilderment on the other. Heretofore the public health had been no concern of Government, but the ravages of cholera in 1847, and the abnormal increase of disease in the centres of population, arrested the attention of the Legislature. In 1848 the era of tentative legislation began, and the Act was passed "for improving the sanitary condition of towns." The metropolis and its suburbs were excluded from this Act, for divers occult reasons not altogether intelligible to ordinary minds. The alleged ground was, that the sanitary condition of the metropolis had, for a period as far back as the reign of Henry VIII., been regulated by Commissioners of Sewers, the powers and jurisdiction of which were extended and consolidated by another Act in the same year.

Having given the history of the efforts of Richmond and the neighbouring towns to dispose of their sewage, Mr. Cresswell concluded by referring to the discharge of the sewage of London into the Thames. On this head he observed:—

The condition of the river below Barking-creek in the heat of a summer's morning, at mid ebb, beggars all description. The mariner, fog-bound and becalmed, as each turn of the screw stirs up the film and the slime floating on the surface, can appreciate at his leisure the well-remembered words of the late Mr. Newton, chairman of the General Purposes Committee of the Metropolitan Board of Works,—"We have got rid of our sewage" (he is reported to have said in January, 1873), "and with the sanitary aspect we have nothing to do."

Nobody, in truth, appears to have anything to do with the sanitary aspect of metropolitan drainage. It is true there is the Rivers Pollution Prevention Act of 1876, but as in 1848, so now in 1876, the metropolis is above the law of the land.

There are Conservators of the River also, and their engineers and Captain Calver report ever and anon; yet the Conservators do absolutely nothing, paralysed, it may be, by the enormity of the transgression, or aghast at "that

matchless intrepidity of face" with which the authorities in Spring-gardens avow the deed, and openly seek to justify it. It has been asserted that the Metropolitan Board have violated both the letter and the spirit of their own Acts, the avowed object of which was "the purification of the Thames." Certain is it that, whatever the technical construction of the statutes, the Legislature at that time contemplated, and the public expected, the utilisation, not the total waste, of the sewage of the metropolis.

Meanwhile, the mischief accumulates, and although the Corporation of London has made some sign, and the Secretary of State is invested with power under the Act, upon complaint made, to direct an inquiry, and take proceedings thereon, nothing has been heard of any application by the Conservancy for the intervention of Government. There have been more than enough of local inquiries and reports, which stave off the reality of relief, and 'lose the name of action.' . . . .

At this juncture, neither Parliament nor the public are in earnest, whilst the Circumlocution Office in Whitehall stands with folded arms, waiting, peradventure, for a more convenient season than the eve of a general election, or for a new revelation in the guise of another national pestilence."

Several other papers were submitted to the Conference, but not read. We have, in our previous notes of the proceedings, given the text of the resolutions agreed to.

THE TURNHAM-GREEN MILITIA BARRACKS.

THE militia barracks at Turnham-green were sold by auction recently at the Mart, Token-house-yard, by order of the Middlesex county authorities. The property, with the parade-ground, covers an area of 1¼ acre in extent, and is situated on the south side of Turnham-green, close to the railway station, having a frontage to the main road nearly 200 ft. in length. The greater part of the buildings were described as of modern construction, and in an excellent state of preservation. The main block comprises the adjutant's residence, with two wings on either side for stores, armoury, orderly-room, pay-office, and guard-room, with the sergeant-major's quarters on the upper floor of one of the wings. Another block comprises the sergeants' quarters, two and three stories in height, and containing eighty-eight rooms, in suites of four and five rooms each. Mr. Fox, the auctioneer, in introducing the property, observed that the position and capacity of the estate admirably adapted it to building purposes, there being a great demand for houses in the neighbourhood of the site owing to its facilities of railway communication with all parts of the metropolis. He added that it was also particularly adapted for manufacturing purposes, the existing buildings being easily convertible. The Government, he said, had spent about 10,000*l.* on the land and buildings, but all that the county authorities now wanted for them was a fair market price. They were to be sold in consequence of the consolidation of the army arrangements in the county of Middlesex, and as the Government had now no further use for them they must be sold for what they would fetch. The first offer made was 2,000*l.*, quickly followed by one of 2,500*l.*, and the property was rapidly run up to 4,000*l.*, at which sum it was sold. It was stated in the room that the intention of the purchaser is to convert the buildings into a manufactory.

THE NEW PATENT OFFICE BUILDINGS, CHANCERY-LANE.

AMONGST the most recent buildings in the City is the new Patent Office at the corner of Chancery-lane and Southampton-buildings, which is now almost ready for occupation. The structure has bold elevations to the thoroughfares named, carried to a height of 66 ft. from the ground line, and mainly uniform in their architectural design and character. The Chancery-lane frontage, which is 44 ft. in length, contains three lofty stories, in addition to a deep and well-lighted basement and the ground floor. The elevation is carried up with projecting piers at each angle. All the windows to the several floors, including the basement (the ceiling of which is considerably above the street level), are two-light. On each side of the ground floor there are two mullioned windows of large size, together with a smaller double window in the centre. The first-floor windows are the most ornamental features in the structure. They are three in number, the central window projecting considerably beyond the general face of the elevation, and the base containing carved stone-work; whilst the two windows on either side have deeply recessed elliptical heads, under which are arches in stone, of about 18 in. in depth, and faced with fret-worked panels. The central window of the second story rests upon the bay window beneath it, projecting beyond the main face of the elevation in a similar manner, and is surmounted by a pediment. The third story contains a range of mullioned windows. The elevation is surmounted by a balustrade, with a lofty pediment in the centre, rising to a height of 70 ft. The general face of the elevation is in red brick, with Bath-stone dressings, and a free introduction of carving, a prominent feature of which consists of carved swags at the foot of the windows of each floor, festoons of fruit and flowers being also introduced in other parts of the elevation. An ornamental iron railing incloses an open area in the Chancery-lane frontage. The return frontage in Southampton-buildings is of similar length to that in Chancery-lane, the only difference in the architectural character of the two frontages being that the entrance to the building is in Southampton-buildings, by a lofty porch, surmounted by a pediment, which prevents an oriel window like that in Chancery-lane. The upper portions of all the windows are glazed with coloured and stained glass. The whole of the ground-floor of the building will be appropriated to patent office purposes, the upper stories being let as offices.

The architect is Mr. T. Searancke Archer, of Gresham-buildings, E.C.; and the builders are Messrs. Lloyd & Co., of Battersea.

SALE OF LEASEHOLD GROUND RENTS AT BRIXTON.

ON Thursday, the 29th of May, a large sale of leasehold ground-rents took place at the Auction Mart, Tokenhouse-yard, the sale being conducted by Messrs. Glasier & Sons, of Charing-cross. The property consisted of the ground-rents of the houses on the Milkwood Estate, at Brixton, situated near the Loughborough Junction and Herne-hill stations of the London, Chatham, and Dover Railway. It comprised the improved ground-rents secured upon 419 private houses, thirty-seven shops, and a large public-house on the estate, amounting in the whole to 1,528*l.* 12s. per annum, the estimated rack rental of the estate being set down at 15,000*l.* per annum. The estate was said to be held direct from the Ecclesiastical Commissioners, for an unexpired term of eighty-seven years. The property was divided into thirty-four lots, the lots ranging from 24*l.* to 107*l.* per annum, to suit the requirements of all classes of purchasers, and including the ground-rents of houses varying from about ten to 100 in number.

There was a very large attendance, and before commencing the sale the auctioneer announced that fourteen of the lots had already been sold by private contract, and he might add that he could easily have disposed of the whole of the lots in a similar manner, but, inasmuch as so much publicity had been given to the sale, he was anxious that those desirous of purchasing should not come to the sale to be disappointed, and it had, therefore, been determined to submit the lots now for sale to public competition. He then observed that the security which he had to offer to purchasers was of the very best kind, for there was no better security than ground-rents, and, in the present instance, there was this further advantage that nearly all the lots would be sold altogether free of the ground-rents payable to the Ecclesiastical Commissioners, from whom the estate was held. They would also perceive that the rack rents were many times the amount of the ground-rents which they secured.

The first lot consisted of a ground-rent of 78*l.* 10s., and was sold for 1,500*l.*; lot two, ground-rent, 70*l.* 10s., realised 1,400*l.*; lot three, ground-rent, 106*l.*, sold for 1,680*l.* This lot consisted of ground-rents of 104 houses on the estate, amounting to 470*l.* per annum, out of which 364*l.* per annum is payable to the Ecclesiastical Commissioners, leaving a net improved ground-rent of 106*l.* per annum. Lot four, ground-rent, 73*l.*, was sold for 1,465*l.*; lot five, ground-rent, 54*l.*, 1,075*l.*; lot six, ground-rent, 25*l.*, 475*l.*; lot seven, ground-rent, 45*l.*, 900*l.*; lot eight, ground-rent, 24*l.*, 470*l.*; lot nine, ground-rent, 25*l.* 15s., 480*l.*; lot ten, ground-rent, 31*l.* 5s., 620*l.*; lot eleven, ground-rent, 50*l.*, 1,010*l.*; lot twelve, ground-rent, 56*l.*, 1,100*l.*; lot thirteen, ground-rent, 36*l.*, 720*l.*; lot fourteen, ground-rent, 60*l.*, 1,200*l.*; lot fifteen, ground-rent, 30*l.*, 610*l.*; lot sixteen, ground-rent, 35*l.*, 700*l.* For lot seventeen, consisting of the ground-rents of 128 houses on the estate, amounting to 676*l.* 10s. per annum, out of which 605*l.* 10s. per annum is pay the Ecclesiastical Commissioners, there offer, and it was withdrawn.

As regards this lot, the auctioneer ob that they must not suppose because h drew the lot that they could buy it following day. He assured them that h private offer for it at about nineteen or years' purchase, and he could sell it at o returning to his office.

Lot twenty consisted of four plots of b land, of the estimated annual value of was sold for 590*l.* Lot twenty-eight, rent, 28*l.*, sold for 560*l.*; and for the l which consisted of a triangular plot of stated to be suitable for a church or building, there was no offer, and it wa drawn.

The total proceeds of the day's sale am to 16,545*l.*, and the aggregate sum reali the property, including the lots sold by contract, was 28,000*l.* It will be seen t lots, as a rule, realised twenty years' pu In other words, for the benefit of the n fessional reader, persons so buying gave money on condition of receiving 5 per c it per annum for eighty-seven years.

THE NEW NATURAL HISTORY MU SOUTH KENSINGTON.

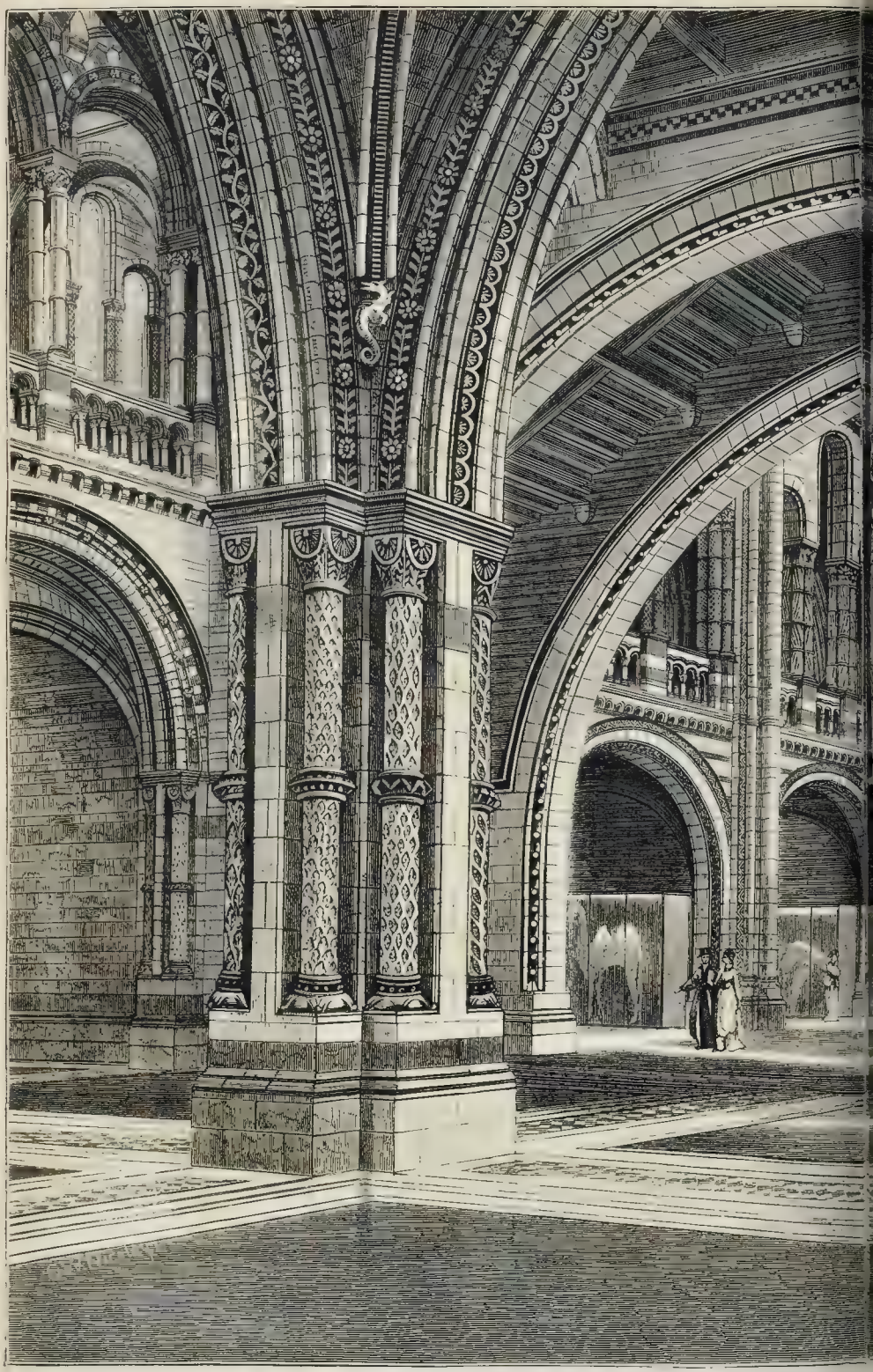
THE Index or Typical Museum, of wh illustrate the interior, is the great entrance the new Natural History Museum in Cr road, South Kensington. It occupies the of the building, and runs north and south

At the south end is the principal entra at the north end the grand stair up to t floor. Along the sides are deep bays used as exhibition spaces, and above th galleries which lead from the staircase north end to the foot of what is practic continuation at the south end. Here the spanned by a gigantic elliptical arch, c the staircase, which rises right and left reaches the summit of the arch, whence flight leads to the second-floor level. break of the balustrade, both here an north end of the hall, is a pedestal to statue. The hall is entirely faced wi terra-cotta, relieved by bands of grey mouldings of the arches, string-courses, enriched with a profusion of foliage, an interest is awakened by the introduc flowers, birds, and monkeys, which can in the view we present to our reader floor is of marble mosaic. The roof is ca wrought-iron semicircular lattice girde conventional foliage inserted into the tri spaces between the struts. A range lights runs on either side from end to en hall, while the flat centre of the ceiling decorated with a series of illustrations life on a blue ground.

A general view of the new Natural Museum was given in the *Builder* for th January, 1873, and a plan in the number 11th of January of the same year, togeth a descriptive account. Additional pa were given in our volumes for 1876 (p. 1 1878 (pp. 83 and 635).

The building has been erected from signs and under the superintendence Waterhouse, A.R.A. Messrs. G. Baker are the general contractors. The terr has been supplied by Messrs. Gibbs & C of Tamworth.

Patent Museum.—An interesting old Heslop's winding and pumping engine, p A.D. 1790, is to be seen at South Kens This engine was erected at Kell's Pit for coals, about the year 1795, afterwards re to Castlerigg Pit, and, in 1837, to Wre all near Whitehaven. At the latter p continued to raise coals, also work a pu means of a cast-iron beam placed abo main beam, until the summer of 1878, w was removed here. By this arrangement cylinders Heslop obtained advantages approaching those of the separate con and effected a signal superiority over the spheric engine of Newcomen, even as i existed, with all the structural improve introduced by Smeaton. No other eng this type now remains in existence, an therefore appropriate that this one, th that worked, should be preserved. The Museum is scarcely so much visited as it usefully be.



THE NEW NATURAL HISTORY MUSEUM SOUTH KENSINGTON.—



Hall, or Typical Museum.——Mr. Waterhouse, A.R.A., Architect.

SHAKSPEARE A BUILDER?

recent meeting of the Birmingham e Reading Club,
T. Bennett read the following able ckable paper on Shakspeare from a point of view:—

am Shakspeare we know very little, simply say that he was born at Strat- on, attended school there, went to urned actor, wrote plays and poems, o Stratford, died, and was buried. So usive are his writings, so apt his at he has been claimed as a lawyer, a r, a butcher, a doctor, &c. But I r heard of Shakspeare having been a builder, and it is because I happen mber of that trade, and, consequently, y to know more of its technicalities erwise should do, that I have ventured er his works, and see if any of his rove to us that his great knowledge, pplied with almost all subjects, ex- o the mysteries of the building trade. place, then, I find that in his play of ary IV.," part 2, he has laid down the rtant advice to a builder, or to one build, and at the same time, though r practical, in the most beautiful and guage. It occurs in the third scene t act, where the *Archbishop of York, Lords Hastings, Mowbray*, and *Bar-* discussing whether they are "a body ough to equal with the king," when olph is made to say,—

"When we mean to build,
survey the plot, then draw the model,
n we see the figure of the house,
st we rate the cost of the erection:
f we find outweighs ability,
we then, but draw anew the model
offices; or, at least, desist
at all? Much more, in this great work
is, almost, to pluck a kingdom down,
another up), should we survey
e of situation, and the model;
upon a sure foundation;
surveyors; know our own estate,
e such a work to undergo,
n against his opposite; or else
fy in paper, and in figures,
e names of men instead of men:
that draws the model of a house
his power to build it; who, half through,
er, and leaves his part-created cost
subject to the weeping clouds,
e for churlish winter's tyranny."

n, in my opinion, be more beautiful nor shall I be able to find another all Shakspeare more thoroughly Indeed, no better advice could be ny one, however intimately he might ed with the trade. Many of you have have seen, a half-erected building by day into decay, through want of in the first instance, which, if Shaks- vice had been taken, could never have and through which important omis- become "a naked subject to the weeping l waste for churlish winter's tyranny." e seems well to have known the influence of wind and weather upon cted building, and often in his writings love forgotten to a building thus de-, for instance, in the "Comedy of *Luciana* upbraids *Antipholus* of Syra- er the belief that she is addressing of Ephesus) with neglecting her d asks him if "Love in the building e so ruinous?" not doubting that in night decay, but in the building of the ot expected; and again in the Sonnets s that "ruined love, when it is built ws fairer than at first, more strong reater." Again, in the "Two Gentle- rona," when *Valentine* soliloquises on tion from *Silvia*, he gives us a fine in the following beautiful passage, mparing himself without *Silvia's* love l mansion, he exclaims,—

e not the mansion so long tenantless;
, growing ruinous, the building fall,
leave no memory of what it was!
air me with thy presence, Silvia."

an old saying that an empty house is a *bad* tenant, and I have no doubt it s.e., if the tenant is very bad, but with tely *good* tenant, the presence and will keep the house in better repair n it was empty. And, again, in the et, he says it is wrong

et so fair a house fall to decay
ich husbandry in honour might uphold
inst the strong gust of the winter's day."

nnet X.,—

ring that beauteous roof to ruinate,
ick to repair should be thy chief desire:"

which shows Shaksperian knowledge of the fact that the roof is the most important part of a structure to be kept in repair in order to ensure the welfare of the rest of the building. And the same thought is evidently at work when, in "Timon of Athens," he causes *Flavius*, on seeing poor, generous, and good-natured *Timon*, to exclaim,—

"Is yon despised and ruinous man, my lord?
Full of decay and falling? Oh! monument
And wonder of good deeds evilly bestowed."

A knowledge of the painting branch is displayed by the same speaker of the same person, when he says,—

"To have his pomp, and all that state compounds,
But only painted, like his varnish'd friends."

And again, in "Pericles, Prince of Tyre," we have a very good illustration of this, where the second lord, speaking to *Lord Helicanus* of the loss of the prince, compares the kingdom, without its head (*i.e.*, the *Prince*), to

"Goodly buildings left without a roof
Will soon to ruin fall,"

in order to persuade *Lord Helicanus* to rule in the absence of the *Prince*. Again, in "Cymbeline": *Lucius*, on discovering the dead body of *Cloten* without its head, he having been beheaded by *Guiderius* and *Arvirargus*, the sons of *Cymbeline*, exclaims,—

"What trunk is here
Without its top? The ruin speaks that some time
It was a worthy building."

You will perceive that Shakspeare might have got comparisons from a thousand subjects, but has chosen similes in direct communication with the building trade. The words "build" and "built" seem to have been with Shakspeare a very favourite expression, and it is simply marvellous how often he uses them, and I will, just for a few moments, draw your attention to instances, where you will perceive that many other words in the English language would have answered his purpose; *e.g.*, for instance, such words as placed, made, formed, &c., would do as well. In "Macbeth," *King Duncan*, speaking of *Cawdor* after his fall, says,—

"He was a gentleman on whom I built
An absolute trust."

In this case the word "placed" would have answered the poet's purpose just as well, and would not have increased or decreased the number of feet in the line. In the 10th sonnet,—

"A love that was builded far from accident."

In the "Winter's Tale," *Hermione*, in her appeal to *Leontes*, says,—

"Gentle, my lord,
You scarce can right me thoroughly then, to say
You did mistake."

Leontes answers,—

"No, no; if I mistake
In those foundations which I built upon
The centre is not big enough to bear
A school-boy's top."

Here the word "suspicions" might have been used instead of "foundations," and "rely" in place of "build." In "Othello," *Iago*, after setting *Othello* on the rack, then says,—

"You'll take no notice, nor *build* yourself
A trouble out of his scattering and unsure observance."

The word "make" here would do as well as "build." And in "All's Well That Ends Well," when *Bertram* despises the hand of *Helena*, the *King* says—,

"'Tis only title thou disdain'st in her,
The which I can *build* up."

In this case the word "supply" would do just as well. In "Timon of Athens," *Timon* says to the old Athenian,—

"This gentleman of mine hath served me long,
To build his fortune I will strain a little,
For 'tis a bond in men."

In "Troilus and Cressida," when the question is asked who *Troilus* is,—

"They call him Troilus, and on him *erect*
A second hope, as fairly *built* as Hector."

These are true building phrases, used in a literal sense to show the hope and trust that was placed upon *Troilus*, and that their confidence would not be misplaced. In the "Twelfth Night, or What You Will," *Sir Toby Belch* says, in the exact language of a builder,—

"*Build* me my fortunes upon the *basis* of valour."

In "Othello," *Iago* says to *Roderigo*, when he has called him to account,—

"Why, now I see there's metal in thee; and even, from this instant, do *build* on thee a better opinion than ever before,"—

where the phrase "form of" would have had precisely the same meaning. In "King Henry VI.," Part 3, *Prince Edward* says to *Warwick*—

"For on thy shoulder do I *build* my seat."

In the "Merry Wives of Windsor" *Falstaff* regrets

"having *built* upon a foolish woman's promise."

The word "relied" here would have conveyed *Falstaff's* meaning. In "King Henry IV.," part 2, *Shallow* says to *Falstaff*,—

"Shall I prick him, Sir John?"

Falstaff replies,—

"It were superfluous; for his apparel is *built* upon his back, and the whole *frame* stands upon *pins*: prick him no more,"—

a speech abounding in true building terms. In "Pericles, Prince of Tyre," the *Second Gentleman* says of *Lord Cerimon*,—

"Your purse, still open, hath *built* Lord Cerimon
Such *strong* renown as time shall ne'er *decay*."

In "Much Ado about Nothing," *Don John* asks *Borachio* if what he says

"Will serve for any *model* to build mischief on,"

which might have read, "for any *excuse* to make mischief of." In "King Henry IV.," part 2, the *Earl of Westmoreland* says to *Lord Mowbray*,—

"You should not have an inch of any *ground* to *build* grief on."

As we cannot build without ground to build upon, how *apropos* is all this, and what knowledge is shown, when it might have read with the same effect if "ground" had been "cause" and "build" had been "create"; and again, in "Richard III.," *Buckingham* says to *Gloucester*, when persuading him to play the hypocrite,—

"Stand between two Churchmen, good my lord,
For on that *ground* I'll *build* an holy descant."

In "King Henry VIII.," *Buckingham*, in his famous speech before execution, says,—

"Yet let them look they glory not in mischief,
Nor *build* their evils on the graves of great men."

In "King Lear," the *Earl of Kent* says to the *Gentleman*, whom he asks to take a letter for him,—

"If on my credit you dare *build* so far
To make your speed to Dover——."

Here again it might have read, "If on my credit you'll rely so far." In "Macbeth," *Macduff*, upon the discovery of the murder of *Duncan*, says,—

"Confusion now hath made his masterpiece;
Most sacrilegious murder hath broke ope'
The Lord's anointed *temple*, and stole thence
The Life of the *building*."

In "Troilus and Cressida," *Cressida* speaks of

"The *strong base* and *building* of her love,"

as the beginning and gradual continuance or formation of it, though Shakspeare's building terms here convey splendidly the meaning he intends. Of course, there are many more examples, but I think I have quoted sufficient to prove that Shakspeare's knowledge of the building trade, however attained, was as continually in his thoughts as any of the medical, legal, or other phrases that would justify the assertion that he belongs to any of the other trades or professions I have before mentioned, and that these building phrases and expressions would not have been used had it not been that Shakspeare possessed an intimate knowledge of the building trade, which caused him so continually to harp upon it, on the same principle that we invariably quote from the authors with which we are most conversant and familiar. In "Richard III." it is mentioned that Julius Cæsar commenced to build the Tower of London. In "Pericles, Prince of Tyre," we are told that "Tyre was built by Antioch the Great, for his chiefest seat." This shows his interest in building and building matters, and it is a fact that even to the present day, when we gaze upon any building of splendour or importance, the natural question is, who built it? and much more, especially between members of the trade, who are always anxious to know the name of the builder who has produced an effective or important work. *Cement* is a most important article in the building trade, and, as you are aware, is used principally to join two kinds of materials together, which when together form a whole; and when, in "Antony and Cleopatra," we find that the wife of *Cæsar* was the sister of *Antony*, it is really a very *apropos* expression, and in strict accordance with the object of this paper,

when we find the following remarks put into the mouth of *Cæsar* :—

"Most noble Antony,
Let not the piece of virtue which is set
Betwixt us, as the *cement* of our love,
To keep it *builded*, be the *ram* to *batter*
The *fortress* of it."

And in "Coriolanus," IV., vi., 85, *Cominius*, upbraiding *Menenius* for his conduct, says,—

"You have help'd to melt the city leads. Upon your pates,
Your *temples* burn'd in their *cement*, and
Your franchises, whereon you stood, confined
Into an augre's bore."

This is a smart reproach, and abounds with building phrases, showing Shakspeare's knowledge that the temples were constructed of cement, which would be a fact, and that the flats or roofs were covered with lead, which would necessarily melt in case of fire, and that an auger's bore was so small that their franchises could not be much less. Shakspeare also conveys the same meaning as to the smallness of the auger-hole, in his "Macbeth," when *Donalbain* says to *Malcolm*,—

"What should be spoken here,
Where our fate hid within an augre hole,
May rush and seize us?"

And, once more, in "Anthony and Cleopatra," II., i., 48, *Pompey*, speaking to *Menas* of the army of Cæsar that is coming amongst them, says,—

"But how the fear of us
May *cement* their divisions . . . . we yet not know."

Here we have an undoubted building phrase, when the simple word "unite," or others, would have answered the author's purpose. It is always a consideration with architects and builders to choose a site in such a position as to elevation or prospect that renders the building when completed both healthy and enjoyable, and Shakspeare seems to have known this, when he says,—

"Build there, carpenter, the air is sweet."

And again,—

"A pretty plot, well chosen to build upon."

And a really lovely passage occurs in "Measure for Measure." When *Angelo* is contemplating the seduction of the beautiful and chaste *Isabella*, he endeavours to banish her thoughts by the expression,—

"Having waste ground enough,
Shall we desire to raze the sanctuary
And pitch our evils there?"

This is magnificent language, and condemns a proceeding that no good builder would ever attempt. And in "Richard II.," II., i., 43, when *John of Gaunt* is on his death-bed, Shakspeare shows how well he understood the importance of the site England holds upon the map :—

"This royal throne of kings, this sceptred isle,
This earth of majesty, this seat of Mars,
This other Eden, demi-paradise,
This fortress *built* by Nature for herself,
Against infection, and the hand of war.
This happy breed of man. This little world,
This precious stone set in the silver sea,
Which serves it in the office of a wall,
Or as a moat defensive to a house,
Against the envy of less happier lands."

In "Julius Cæsar," *Flavius* asks one of the crowd,—"What trade art thou?" "Why, sir, a carpenter," *Marcellus* answers. "Where is thy leather apron and thy rule?" A carpenter always, or should always, carry a rule, and, though linen aprons are worn now, it was the custom for carpenters in Shakspeare's time to wear leather aprons, and, moreover, the question might have been answered by any other tradesman; but Shakspeare has chosen a carpenter, as he generally does whenever an opportunity presents itself, which I think shows an intimacy or connexion in some way with the trade he is so fond of quoting from. In the celebrated conundrum spoken by the *Gravedigger* in "Hamlet," Shakspeare honours the building trade by the mention of two of its branches :—

"Who builds stronger than the mason, the shipbuilder, and the carpenter?"

To which the *Second Gravedigger* makes reply :

"The gallows-maker; for that frame outlives a thousand tenants."

Shakspeare is here evidently punning, for the description of tenants intended to be conveyed are the unfortunate victims who come under the beam; but, at the same time, the tenons which compose a piece of frame-work are the pieces of projecting wood that are made to fit into the mortises, and it is a fact that the frame invariably wears out the tenons. This, to my mind, shows a very great knowledge, and may bear the construction of a double meaning.

This answer, however, not being satisfactory to the *First Gravedigger*, he gives the answer himself, as follows :—

"The grave-maker; for the houses he builds lasts till Domesday."

Here is a difference of opinion; some editions have "houses he makes," and others "houses he builds"; both would be correct, as in the case of an earth grave it would be "makes," and in the case of a brick one it would be "builds," but I am inclined to the word "makes" as being the one adopted by the 1623 edition, which I invariably find to be in accordance with my own idea. As I have mentioned Shakspeare's punning in the building trade, I will just give another example from "Love's Labour's Lost." The *Princess of France* is in a park, when the King says :—

"*Fair* Princess, welcome to the Court of Navarre."

To which the Princess answers :—

"*Fair* I give you back again; and welcome I have not yet; the *roof* of this court is too high to be yours; and welcome to the wild fields too *base* to be mine."

In the "Merry Wives of Windsor" occurs a passage which Lord Campbell has made much of in showing up "Shakspeare's legal acquirements," which is as follows :—

"*Falstaff*. Of what quality was your love, then?
Ford. Like a fair house built upon another man's ground; so that I have lost my edifice by mistaking the place where I erected it."

I think I have as much right to it as Lord Campbell, inasmuch as the simile used by Ford shows a familiarity with my subject, and that such a mistake does happen I may tell you that one of the Birmingham Board schools has suffered from a builder making a similar error. That Shakspeare must have been aware of the habits of men employed in the building trade I think there is no doubt, after the speech he puts into the mouth of *Canterbury* in "Henry V.," I., ii., 98, where he compares the bees to "singing masons building roofs of gold," as it is a custom, and especially with maons, to sing when at work, especially the stone-carvers, being work of skill and little laborious labour. Shakspeare, in his beautiful play of "Coriolanus," makes a very graphic description of the populace coming out to gaze upon the victor in the following words :—

"Clambering the walls to eye him. *Stalls, bulks, windows*
Are smother'd up, *leads* fill'd, and *ridges horsed*
With variable complexions; all agreeing
In earnestness to see him."

The expression used here of "ridges horsed" is very significant indeed, and refers to the apex of the roof, which is called the ridge, and safety would be best secured upon them by striding them, or horsing them, as Shakspeare puts it; in fact, his is the best expression, especially when I tell you that such shaped ridges are called *saddle-backs* even to the present day. In the sixth scene of the first act of "Macbeth" occurs a remarkable dialogue between *King Duncan* and *Banquo* upon their arriving at the castle of *Macbeth*, which is so brimful of building allusions that one would almost imagine two builders were speaking, instead of the king and his general :—

"*Duncan*. This castle hath a pleasant seat; the air
Nimbly and sweetly recommends itself
Unto our gentle senses.
Banquo. This guest of summer,
The temple haunting martlet, does approve,
By his loved mansionry, that the heaven's breath
Smells wooingly here; no *jutty, frieze, buttress*,
Nor *coign* of vantage, but this bird hath made
His pendent bed and procreant cradle. Where they
Most breed and haunt I have observed the air is delicate."

You will observe here that jutty is a projection in a building, such as a window that projects from the line of building was called a jut window. "Frieze" is that part of the entablature of a column which is between the architrave and cornice, or a flat face that used to be enriched with figures, &c., upon which a bird could easily build its nest. "Buttress,"—a prop, to support another wall. "Coign of vantage" means convenient corner. So that we see that Shakspeare, per *Banquo*, in expressing the belief that where the marten most builds its nest the air is soft and delicate, attempts to prove the assertion by drawing the king's attention to the fact that every jutty, frieze, buttress, and convenient corner is occupied by a nest. This not only proves what he has said to be a fact, but it also proves Shakspeare's knowledge of the building trade in putting into the mouth of *Banquo* such technical terms as "jutty," "frieze," "buttress," and "quoin." You will remember that *Coriolanus* has left the Roman camp and gone over[illegible] of the Volscians, and that his moth[illegible] and friend *Valeria* are sent to persu[illegible] return. *Menenius Agrippa* does [illegible] their solicitation will be of any ava[illegible] expresses himself to *Sicinius* :—

"*Men*. See you yond' coign o' the Capitol,—[illegible] stone?
Sic. Why, what of that?
Men. If it be possible for you to displa[illegible] little finger there is some hope the ladi[illegible] especially his mother, may prevail with him."

Shakspeare, to illustrate what he co[illegible] impossibility, might have chosen fi[illegible] sand subjects that his fertile brain [illegible] conjured up, but the one he has ch[illegible] an intimate knowledge of the buil[illegible] and I do not think one man in a hun[illegible] make use of the word "coign" (w[illegible] tell you, is a technical term for s[illegible] corner of a building) unless he had[illegible] experience or association of some kin[illegible] ordinary. And again, in "Troilus an[illegible] *Nestor*, in a conversation with *Ulysse*[illegible] deavouring to persuade him to let *Aj*[illegible] combat with *Hector* instead of *Achille*[illegible] his argument makes use of the fo[illegible] nificant expression :—

"His success shall give a *scantling* of goo[illegible] the general body of the soldiers."

Now, "scantling" is a word very seldo[illegible] literal sense, and in this instance me[illegible] measure; but in carpentry it is one [illegible] monest and most-used terms, and [illegible] dimensions of a piece of timber in h[illegible] thickness. I cannot but think that f[illegible] must have had a knowledge of the t[illegible] would not have used a word so seld[illegible] literature, and so commonly used in t[illegible] trade, when there were hundreds of [illegible] words from which he might ha[illegible] Beautiful is also the expression in the[illegible] Tale," where *Camillo*, speaking of [illegible] jealousy, says to *Polixenes*,—

"You cannot 'shake
The fabric of his folly; whose *founc*[illegible]
Is *piled* upon his faith.'"

In "Hamlet,"—

"The goodly frame, the earth:
This majestical roof freck'd with golde[illegible]

And also many familiar to the tr[illegible]

"Cymbeline,"—

"The gates of monarchs are arch'd so h[illegible]

In "Merry Wives of Windsor,"—

"The right arch'd beauty of his bro[illegible]

In the "Merchant of Venice" *Loren*[illegible] *Jessica*,—

"Sit, Jessica. Look how the floor of h[illegible]
Is thick inlaid with *patines* of bright [illegible]

"Patines" is an old word for plates of [illegible] laid on a floor. In "Richard II." (I[illegible] *Percy* says to *Bolingbroke*, speaking [illegible] Castle,—

"King Richard lies
Within the limits of yon lime and ston[illegible]

In "King Henry VI." (part 3, V., i., 84 [illegible] speaks of his father's house,—

"Who gave his blood to lime the stones to[illegible]

These remarks serve to show that Sh[illegible] well knew of what materials these buil[illegible] constructed. In "King Lear" (II., ii[illegible] *Duke of Kent*, when annoyed at the *Ste*[illegible] had insulted him, says,—

"I will tread this unbolted villain into *morta*[illegible] the *wall* of a jakes with him."

Mortar has to be well mixed, and [illegible] would effectually do it. Much contro[illegible] taken place as to what *Hamlet* intende[illegible] says, —

"I know a hawk from a hand-saw,"[illegible]

some of the texts giving,—

"I know a hawk from a heron-shaw,[illegible]

and others,—

"I know a hawk from a heronshaw"[illegible]

but I am inclined to believe in the expr[illegible]

"I know a hawk from a hand-saw,"[illegible]

as the correct one, because the differ[illegible] tween the two, *i.e.*, "a hawk" and [illegible] saw" is so great, and shows more [illegible] *Hamlet's* satire to his school-fellows, *Ros*[illegible] and *Guildenstern*, and because I belie[illegible] speare to have professed a more than [illegible] knowledge of the building trade, an[illegible] quently of the tools used in it; and [illegible] *Falstaff*, in his description of the scene [illegible] Hill, says,—

"My buckler cut through and through;
Sword hack'd like a *hand-saw*," —

re over which no controversy has ever
ace, and for which no printer has ever been

Persons outside the building trade
magine that a hand-saw was any saw used
and; but such is not the case, as every
a distinct and separate name, such as a
r, a dovetail-saw, a ripper, and the one
sed of all is called the hand-saw, which
ps to establish Shakspeare's knowledge
rade. *Falstaff*, besides using the term
aw," makes use of the word "lever"
e Henr, thus,—

e you any levers to lift me up, being down?"

b of the now much-quoted passage,—

"As dead as nail in door"

horship of which has been frequently
to Dickens). I would just mention this
n is used twice in all Shakspeare's
iz., by *Falstaff* and *Jack Cade*, and shows
Shakspeare is to nature in placing the
ns into the mouths of two characters
stent with each other. Shakspeare is
eloquent when describing places, and
know a builder or architect that could
er description of a chamber than that
"Cymbeline":—

"The chimney
oath the chamber; and the chimney-piece,
ke Dian, bathing.
* * * * *
roof o' the chamber
golden cherubims is frotted: Her andirons
d forgot them) were two winking Cupids
ilver, each on one foot standing, nicely
lending on their brands."

"Measure for Measure," *Isabella*,
of *Angelo*, says,—

h bath a garden, circummured with brick,
hose western side is with a vineyard back'd,
nd to that vineyard is a *planched* gate."

ed" is an old building phrase for a gate
not framed, but covered with planks or
When, in the play of "Othello," *Cassio*
his place and regard with *Othello*, *Iago*
s *Cassio* to solicit *Desdemona* to plead
behalf, and makes use of the following
nt language:—

oken joint between you and her husband entreat
bster, and my fortunes against any lay worth
is crack of your love shall grow *stronger than it*
"

ll familiar to the carpenter's shop, and
ct that one piece of timber jointed to
s "stronger than it was before," and if it
n again it will break anywhere except at
Hamlet speaks of the time being "out
" and in "As You Like It," when *Sir*
artext is called upon by *Touchstone* to
and *Audrey* in marriage, *Jacques* says,—

ellow will but join you together as they join
then one of you will prove a *shrunk panel*, and,
disaster, warp, warp."

rfectly correct, and "green timber" is
ession used for new timber to the present
the fact of its warping after being used
vitable consequence. Shakspeare seems
nderstood the nature and peculiarities
nt kinds of timber, *e.g.*, in the "Winter's
., iii, 90, *Pauline*, speaking of *Leontes*,

The root of his opinion, which is rotten
As ever oak or stone was sound."

Othello," *Montano*, speaking of the high
en *Othello* is expected to arrive, says,—

ller blast ne'er shook our battlements;
at ribs of oak, when mountains melt on them,
hold the mortise?"

n the same play,—

o seal her father's eyes up close as oak."

are also has a knowledge of the tools
d, *e.g.*, in "King Henry IV.," part 2, I.,
he Earl of Northumberland compares a
with "fever-weakened joints" to
tbless hinges." In "Hamlet" and
ys he speaks of the "grinding of the
n "Lucrece," he speaks of the "locks
wards giving way." In "As You Like
alind says,—

"That was laid in with a trowel."

g roughly done; which is the case still, I
y to say, with many bricklayers, whose
is to use a trowel. In the "Merchant
e," *Antonio* says to *Bassanio*,—

"Be assured
My purse, my person, my extremest means
Lie all unlock'd to your occasions."

g Kenry IV.," 2nd part, II., iv., 263,
er-sheet says to *Falstaff*,—

"They say Poins has a good wit;"

to which *Falstaff* replies thus:—

"He a good wit? Hang him, baboon! His wit is as thick as Tewkesbury mustard; there is no more conceit in him than is in a *mallet*."

In "Troilus and Cressida," *Thersites*, speaking of *Cressida*, says,—

"Now she *sharpens*. Well said, *Whetstone*."

In "Hamlet," *Rosencrantz* says,—

"The cease of Majesty
Dies not alone; but, like a gulf, doth draw
What's near it with it; it is a massy wheel
To whose huge spokes ten thousand lesser things
Are *mortised* and *adjoin'd*."

In "Troilus and Cressida," in the Prologue, where Shakspeare speaks of Priam's six-gated city, and, after describing the names of the gates, says that they have

"Massy staples,
And *correspondive* and *fulfilling* bolts."

In "Othello,"—

"Make me not to see it,
That the probation bear no *hinge* or *loop*
To hang a doubt on."

And in the "Winter's Tale," *Paulina* compares the fancy of *Leontes* to a

"Weak-hinged fancy;"

i.e., not able to support anything. A feature of very great importance occurs in the play of "A Midsummer Night's Dream," where, in the caste of the amateur actors, out of the six tradesmen who are introduced are *Quince the Carpenter* and *Snug the Joiner*. Now, Shakspeare must have had some insight into this trade to have made the carpenter and the joiner distinct, for I believe that many are under the impression that a carpenter and a joiner are one; but Shakspeare is, like he always is, perfectly right, for a joiner is a man who works in a shop and a carpenter one who works upon the buildings out of doors. When rehearsing, and when performing their play, the following takes place: *Quince* says,—

"Then there is another thing: we must have a wall in the great chamber, for Pyramus and Thisby, says the story, did talk through the chinks of a wall."

I am afraid many walls are built, even in this enlightened age, by some builders where the same proceeding might be indulged in. *Snug the Joiner*, who seldom speaks at all, here speaks with his knowledge of the trade:—

"You can never bring in a wall. What say you, Bottom? *Bottom*. Some man or other must present wall; and let him have some *plaster*, or some *loame*, or some *rough cast* about him, to signify wall."

And when *Wall* is speaking, *Theseus* is made to say to *Demetrius*,—

"Would you desire *lime and hair* to speak better?"

thus showing additional knowledge, for hair and lime are used together, and rough cast is the proper term at the present time. There are many allusions in Shakspeare to the tempering of clay, and as clay has to be tempered before it can be made into bricks, or for puddling, or other purposes for which builders use it, I will just give one out of the many examples. In "Henry VI.," part 2, III., i., 311, *Cardinal Beaufort* says,—

"The uncivil kernes of Ireland are in arms,
And *temper clay with blood* of Englishmen."

I have drawn attention to the word "cement," and I find two or three very fine examples occur in reference to "glue," used so much by carpenters. In "King Henry VI.," part 3, II., vi., 5, *Clifford* says that his "love and fear glued many friends" to the king. Again, in the same play, V., ii., 38, *Warwick*, when dying, speaks of the "cold congealed blood that glues his lips and will not let him speak," *i.e.*, freely. Shakspeare has touched upon many topics connected with my subject that I have not mentioned, such as cellar, cellarage, casement, lattice, well, bar, base, basis, bob, beam, edifice; and it may be interesting to know that the number of allusions from his plays and poems are as follow:—"King Richard III.," 6; "Macbeth," 6; "Pericles, Prince of Tyre," 3; "Julius Cæsar," 1; the "Sonnets," 6; "Timon of Athens," 6; "Hamlet," 8; "Measure for Measure," 5; "Merchant of Venice," 7; "Comedy of Errors," 2; the "Winter's Tale," 6; "King Richard II.," 3; "Titus Andronicus," 3; "Two Gentlemen of Verona," 2; "King Lear," 3; "Merry Wives of Windsor," 6; "King Henry V.," 3; "Othello," 10; "All's Well that Ends Well," 4; "Troilus and Cressida," 6; "Twelfth Night, or What you Will," 1; "King Henry VI.," 10; "King Henry IV.," 7; "Much Ado About Nothing," 1; "King Henry VIII." 1; "A Midsummer Night's Dream," 5; "Cymbeline," 5; "Coriolanus," 7; "As You Like It," 4; "The Tempest," 1; the "Passionate Pilgrim," 1; "Anthony and Cleopatra," 1; "Romeo and Juliet," 2; "King John," 2; "Love's Labour's Lost," 2; "Venus and Adonis," 2; "Lucrece," 1. Thus far, then, I have endeavoured to illustrate Shakspeare from "a builder's point of view," and in so doing I have no wish to be hypercritical, and to say that Shakspeare *was* a *builder*, because I think, by the same rule, I could prove him to be a gardener, a baker, or a groom, and many others, and because I think to make him out as belonging to all these would be as absurd as it is impossible. But I do think it quite possible that, after leaving school, there occurred a time, consisting of a few years, when his father, John Shakspeare, was no doubt in pecuniary difficulties, and during which time it is impossible to say how the time of our poet was employed; and I do consider it not altogether improbable that he may have sold his labour for the benefit of his family, and even have been one of the operatives of a Stratford or a neighbouring builder. If he ever was, he certainly left it again, which Shakspeare, from what I know of him, and what I know of the vicissitudes of a builder's life, would very soon have done; but whether this was so or not I am not prepared to say, but would rather content myself by saying that I am inclined to think that Shakspeare certainly was most industrious, that nothing escaped his notice in his thirst for knowledge, and that anything once having been under his notice it was in his "memory locked," to be released whenever his wonderful imagination required it. But certain I am of one thing, that he has built an edifice so vast in proportion, and so lovely in detail, that the taunts and criticisms of 300 years have never been able to destroy. He has held the mirror so faithfully up to nature that we find in his marvellous works passions to love and admire, to detest and to hate, portrayed to us in a manner that has never emanated from the pen of any other author. He has shown the vanity of all worldly greatness, and how those who venture on a sea of glory are left at last to the mercy of a rude stream that must for ever hide them. He has shown us the madness of ambition and the just reward of all evil. He asserts the responsibility of man and the righteous government of God. He has done service to the State and to humanity at large by spreading throughout the world a nobleness of purpose, a love of truth, a height of thought, a depth of feeling to every one of his readers. He has done service in supplying, in the most beautiful and interesting language, a history of our own land, which would have been a blank to many, and certainly to the masses, were it not for his grand historical productions. He has portrayed men and women in all the good and evil qualities of the human heart, and in such a manner that they are sterling patterns, either to attain to or revolt from. He at all times gives to his thoughts not only the most fit, but, at the same time, the most beautiful and rarest sentiments. He has given the loftiest moral truths, the loftiest expressions. His phrases have become household words; when we want an expression out of the common way we can turn to his pages and find it, and I do believe that in his marvellous pages there are passages applicable to almost every requirement. In short, his unapproachable genius has enriched mankind for ever with vast stores of moral wisdom and emotional interest, and has proved him to be the greatest builder the world has ever seen, inasmuch as he has built the grandest temple of literature that has ever been erected by mortal man, having chosen such a site that it can be viewed, and viewed with admiration, from all corners of the civilised world, and constructed it of such material that time can never decay, thus making him the greatest of all builders. And why? Because he has worked faithfully, and without any deviation, to those plans and details which were supplied to him by the greatest of all architects, the architect of the universe, God Himself.

Artists' Benevolent Fund.—The Anniversary Festival of the Artists' Benevolent Fund will take place on Saturday next, the 14th of June, when Mr. George Augustus Sala will preside. We cordially recommend to our readers this Institution, which was established in 1810 for the relief of the widows and orphans of British artists who might be left in necessitous circumstances.

REMARKS ON THE WORK OF THE SMITH IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.*

I MUST now proceed to the home view of our subject. The metal-work of our Perpendicular period is of a very high class, though the forms are of marked architectural character. The enclosure to Henry VII.'s tomb at Westminster, in bronze or latten, is, perhaps, the finest example of such work to be found; and the railing to Edward IV.'s tomb at St. George's, Windsor, is a marvel of elaborate construction. Both of these are probably the work of foreigners, the latter being popularly ascribed to the hand of Quentin Matsys. I have not been able to discover any conspicuous examples of ironwork of the Elizabethan age, though much of the smaller work, in lock-plates, hinges, &c., remains. In Exeter Cathedral there is a doorplate in the form of a crown, of sixteenth-century date, and the city itself possesses an interesting relic, probably of early seventeenth century workmanship, in some mace-holders of cut and chiselled sheet iron, coloured red and green, and parcel gilt. The vestry door to St. Saviour's, Southwark, has a handle in the form of a ring, with lizards on it of the same date. At Hurst Church, in Berkshire, there is a curious wrought-iron bracket for hour-glass, date 1636, painted and gilt. In most of the old Elizabethan mansions much useful work in the form of door-furniture, though generally of a plain character, may be found. Eastbury House, near Barking, furnishes some good examples of these. The Ashmolean Museum, at Oxford, has a fine lock-plate of a more ornamental description. I exhibit some sketches of a work of the Jacobean age, which is a very good example of the powers of the English smith. It is a screen formerly separating the pew of the Leversedge family from the lady chapel in the church of St. John, Frome. I consider this specimen singularly happy in design and delicate in execution. The composition gives due importance to the central feature bearing the armorial shield, whilst the side panels are agreeably diversified. The general size of main bars is $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by $\frac{3}{8}$ in. The lines of hammered work are not obliterated by sheet work, although there is quite sufficient of this latter to give a richness the design. Altogether there is what may be called a restrained freedom about this piece of work which is very pleasing. It has recently been added to the valuable collection of ironwork at South Kensington. Later in the seventeenth century we come to a series of examples which are probably well known to all London students,—the screens from Hampton Court. They are twelve in number, and were formerly placed at intervals of 50 yards in the fence dividing the Palace home-park. They were, however, dropping into decay, and were removed from the gardens into the Palace to preserve them. Seven of them have been for some years placed on loan in the Kensington Museum, and some of these have recently been placed in the East London Museum at Bethnal-green. Huntington Shaw, blacksmith, of Nottingham, is recorded as the artificer who constructed them, about 1695. His monument may be seen in Hampton churchyard. They are of large dimensions, about 13 ft. in width by 11 ft. high, and altogether exhibit a surprising amount of labour and ingenuity. The general construction of the whole series is on one pattern, but four of them are of richer detail than the others. Panels 2 ft. 4 in. in width, formed of uprights 2-in. square, filled in with a pattern of 1-in. bars, and supported by stays, form the supporting standards on either side. Between these is a flowing composition of elliptic scrollwork, with bold *appliqué* foliage and flowers, surrounding a panel about 3 ft. square, which in the four principal screens enclose representations of the national emblems,—the rose, thistle, and harp, the remainder being filled in with a diaper pattern. Above this is a heavy swag or chain of flowers, pendent from the beaks of eagle-headed scroll terminations, and crowning the whole is a foliated mask, with a figured and tasselled apron. All the detail is most wonderfully wrought out, the small rosebuds and sprays being represented with great fidelity to nature, as if in emulation of the work of Grinling Gibbons in wood. A naturalistic treatment, however suitable for the material in which this latter artist chiefly worked, is not, I think, at all so for iron. The ornament is almost entirely of an *appliqué* character. The larger scroll-ends, a subject on which I shall say a few words presently, are even cased with sheet-work. It is very surprising that notwithstanding the care displayed in the formation of these details the whole is very badly put together, and it is no wonder that the influence of time and weather were speedily bringing these fine works of art to ruin. Very few of the scrolls or stems are welded at their junctions, but simply united by iron tongues and pins, the heavy strains on which have in some instances caused them to give way. The leafage also, which in the most ordinary gatework of this period was always welded to the stems from which they spring, are here merely rivetted or screwed,—the larger branches in several pieces. Notwithstanding such defects, however, these works must always be objects of admiration from the boldness and originality of their design and the evidence of patient skill in their production. There are other productions of the smith at Hampton Court Palace well worthy of attention, such as the balustrading of the Kings' and Queens' staircases,—the work of a Frenchman, though doubtless from designs by Wren.

Of great importance, and doubtless familiar to most of you, is the ironwork in St. Paul's Cathedral by the same artificer as the last mentioned,—one Tijou, a Protestant refugee. The hand of the master-designer is here very apparent, although probably very much more was left to the workman than would be the case under our present system. The gates to the choir are noble in design and proportion, and exhibit a refinement, compared to the Hampton screens, which may be partially due to the nationality of the producer. In those facing the nave, exception may be taken to the imitation of fluted pilasters in open work, and to the *flattened* flaming urns at the top. I do not think the urn-shaped standard terminations at all an inappropriate form, but I do consider them unpleasant if in the flat, especially if the smith attempts to put them in perspective, and more especially when he represents them as if seen from the clouds, as in the Leversedge screen. The side gates display neither of these defects, the panelling being filled with close scrollwork, and the corona containing sconces for large candles, twenty-three to each screen. Nevertheless, we lose the vertical treatment in the gates, which gives so much more value to the flowing work above in the others. The grilles at back of stalls, the balustrade to gallery round the dome, and the work to the geometrical staircase, are, especially the latter, worthy of study.*

Many of the entrances to parks, public buildings, and mansions of the reigns of Queen Anne and the early Georges display noticeable gate-work on a large scale. A list of these, if made, would be of some length, but useful to the student. Amongst the more remarkable we may mention the gates to the Clarendon Press at Oxford, 1712; those at Trinity and New Colleges, in the same city; the gates to Temple Gardens, 1730; and to Gray's-inn, 1723. In the older suburbs of London, and in many provincial towns, one's attention is often drawn to the home-like dwellings of the last century, with fore-courts enclosed by wrought-iron railings and gates. Chelsea, Hampstead, and Clapham contain many examples, and through the medium of the Association's "Sketch-book" I have been able to place many illustrations upon the walls. It is amongst this domestic work, rather than in the more ambitious efforts of the smith, that the student of design will find most valuable motives and ideas. There is always a sense of fitness for the purpose designed, and generally a temperate use of ornament other than constructional,—that is, the hammered bars and scrolls are not overlaid with sheet-work, but depend upon the variety of curve and pattern into which they are wrought for richness. The natural structural composition of an open enclosure,—that of upright bars,—is seldom lost sight of, the leading lines being vertical, and the scrollwork being kept in subsidiary panels, or confined to the heads and principal standards. The gates themselves are often quite plain, the ornament being confined to the frame surrounding them. The flowing work of beautiful design gains much in value by being thus temperately employed, and the whole composition embellishes the building of which it forms a feature w disturbing its repose. Often unpret enough, such work impresses one as that who gave their hearts to it, though usually produced in humble smithies. careful and often excellent work turn from our modern art factories somehow to lack the power of interesting you in i ducer as this old work does. Doubtle reason is that it is too perfect: you neve curve gone slightly wrong, and the lea cut too closely to pattern, and are to balanced. You can picture the old pausing to consider which way the curve now be turned, or what twist to give the of the leaf,—possibly arguing a point of flexure with the idling critic, or interrupt work to shoe a passing traveller's hor hear all the latest news of Marlborough the while. One's mind would scarcely upon the art-metal workman of the prese tracing down on the sheet careful det elaborate foliations.

Before the opening up of the Northe Midland coalfields, smelting operations we ried on in such forest districts as still a abundance of timber. In the reign of Eli it was foreseen that the great demand f to feed the increasing number of furnaces tend to the rapid exhaustion of growing Various repressive statutes were enacte hibiting the establishment of works altoge some districts, and limiting them in other Weald of Sussex and portions of the neig ing counties were the nearest source of to the metropolis. The earliest specim castings came from this district, and the " iron," in the form of andirons or firedo firebacks, is well known to the collecto dealer in "antiques." The decorative w the firebacks is especially noticeable seventeenth and eighteenth centuries, son elaborate compositions being produce always marked by a suitable or plastic ment. The fine railings around St. Paul' being refixed, were the produce of a foun Lamberhurst in Kent, and are good spec of the right treatment of cast-iron r The Sussex furnaces were finally extinguished in the middle of last century. Their hist an interesting one, and may be found i volumes of the "Sussex Archæological Jou

I have not the space to go into the ques cast-work, to the abuse of which useful facture we owe the pretentious, vulgar, a comfortable accessories which have disf our architecture to so great an extent.

The subject of iron design in the prese has been taken up by abler hands than m only feel it incumbent on me to urge the sity of making one's-self thoroughly acqu with the different phases it has gone thro the periods I have been dwelling upon. earlier German and the simpler forms o own eighteenth-century work, we have n of a natural and therefore artistic treatm material, which will repay close study, an sure each of these periods might be advan ously treated of in a more detailed and tec paper than I have been able to put befor I have now only time to indicate one o points wherein I think such work offers guidance to the designer.

The most natural way of employing i an independent manner is surely that arrangement of bars or lines connected tog in a constructive manner to combine ligh and strength. These bars may be manipu in various ways, of section round or squa moulded, and the combinations of curve straight lines offer an endless variety of pa Decorative work of lighter form, in whic sheet-iron is brought into play, may be ap to a certain extent only without interfering the sense of stability given by the preponder forged work. And this is always the pri of the earlier smiths, though generally lost of in the more important works of the centuries, when the forged work was ofte a constructive frame concealed by the ap tion of decorative forms. Large moul imitative of those in stone and wood, formed out of sheet-iron, enclosing the supporting the structure, whilst cut and be work, highly-wrought, and made-up imita of natural foliage, human forms, draperies other objects, frequently attached by only, crowded the whole composition. No German work the figures, which were introduced, were usually continuations of scroll-bar, out of which they were worke

By Mr. W. Penstone. See p. 593, *ante*.

* In some of the City churches yet remaining may be found interesting pieces of ironwork. The Church of St. Paul, Covent-garden, contains some good work of a subdued design, harmonising well with that remarkable structure.

…, forming part of the structural com… though often with wings and foliations …-work attached. The leafage grows … out of the main lines, to which it is …abordination. The terminations of the …scrolls are points of the design which …ive ornamentation, and this detail alone …ng of attentive study. Although the *appliqué* sheet-work, in the form of …or geometrical rosettes, is here quite a …e form of enrichment, we find that …erally sufficient effect is produced by …reatments of the hammered bar. A …riety of these may be evolved out of …principles of spreading the end,—in one …the direction of the depth of the … the other in the direction of …n. These methods in their simplest …ich a parallel treatment and a variation …and flat iron, are generally found used … in our English gatework, giving a … to otherwise similar forms. By … an additional metal, and by a com… of the two principles, with alterations …tional form of bar, many other develop… …ay be obtained, of which we have here …vo examples, chiefly German. Or the …on may be hammered and chiselled, or …(as usual in modern work) into clog… geometrical patterns. In all cases …xposed to probable rough treatment …thods are preferable to the use of cut …en ornament. As an example of con…n of fitness for purpose I would point …te of German work now at South …on. It is of a close diaper pattern, a …rs ornament being formed on the …bar by stout hammered foliations …on. The points, of which there are …e all carefully turned well inwards, …tected by the inclosing bar-work. …clips are used, and it is quite possible …be pushed against the gate without …tters.—a *desideratum* which is too fre…ost sight of by the modern designer. …ral rule, I do not think ordinary pro…nclosures require highly-ornamental …The area-railings of the last century, …e familiar to us all, with their standard …intervals in the assemblage of square …to my mind much more satisfactory in …ntage than elaborate patterns. The …ns of the spear-heads and occasional …aps, with the now obsolete lamp-brackets …ch-extinguishers, quite sufficiently …he designs from tameness,—a failing …s material suffers less than any other, …hich is often most conspicuous in the …nate work. There is often more …" in a simple forging than in many …us patterns drawn from the sand… as a comparison between the spear-…haves mentioned and the usual run of …ing will testify. And I would repeat …t the great lesson which all old work …s upon one is that the refinements of …r scissors, and pliers should not be …o emasculate the vigour produced by … tongs, and chisel.

…at I feel to be rather too sketchy a …y endeavour has been to interest the …ural student in a subject worthy of …ttention. The present phase of the …t erratic course by which modern art …es has brought the periods I have been …to to the front. Whether it is a mere …"craze," as some would have, and we …turn to the earlier work, or whether, …an through the styles of all centuries, … twelfth to the eighteenth, "to get our …" we shall now satisfactorily develop a …h-century school of distinct character, …tion I should not care to discuss. But …I am sure, that all earnest, laborious … whatever age or style, is worthy of …nd the lesson of thoroughness may well …ad in these productions of the forge.

…ith also striking by the anvil and considering …rk; the vapour of the fire wasteth his flesh, and …s with the heat of the furnace. The noise of …e and the anvil is ever in his ears, and his eyes …pon the pattern of the thing that he maketh … his mind to finish his work, and watcheth to …t perfectly."

…discussion which followed,

…ilbert R. Redgrave moved a vote of …o Mr. Penstone for his interesting paper. …itectural students of London had every …for the study of old ironwork in the … collection now in the Bethnal-green …s,—formerly at South Kensington. The …n Court gates by Huntington Shaw had been repaired with thin copper, coloured to represent iron. It seemed to him that the great failure of modern ironwork was over-elaborateness. Modern ironworkers attempted too much.

Mr. W. Hilton Nash, in seconding the motion, said he thought that the designer of ironwork should use that freedom and restraint combined which had been advocated by Mr. Penstone.

Mr. Aston Webb supported the motion, and observed that Mr. Penstone had not said much as to Italian ironwork, a great deal of which was extremely good. One very notable and particularly good example was the grill of the tomb of the Scaligers at Verona. He could hardly say he quite agreed with Mr. Penstone in his strictures on modern ironwork, for he thought that our ironwork was one of the few things to which we might look with some satisfaction. The iron screen at Holland Park, Kensington, a modern work, was, he thought, a most beautiful example of the art of the smith.

After a few remarks from Mr. Farrow,

The Chairman put the motion to the meeting, and it was carried unanimously.

Mr. Penstone, in replying, expressed his indebtedness to Messrs. Hart, Son, Peard, & Co., for lending him specimens of ancient and modern ornamental ironwork in illustration of his paper. He expressed concurrence in Mr. Aston Webb's opinion of the iron screen in front of Lord Holland's statue at Kensington, and said it was by Mr. Thomas Jekyll, by whose hands, he was sorry to say, no more work would be produced.

THE GUARDS' CHAPEL, WELLINGTON BARRACKS.

The Venetian enamel mosaic work is an especial feature in the alterations which have been made here. This has all been carried out by the firm of Dr. Salviati, Burke, & Co., of Venice and London.

Dr. Salviati, whose name is well known as the reviver of this class of work, is now associated with Mr. W. H. Burke.

The present work consists of a picture of Majesty above the chancel arch, "Placed by Queen Victoria to the glory of God in memory of the Soldiers of the Foot Guards who have died for their Country." Our Lord is represented in glory; He is seated on a throne; His right hand is raised, in the act of blessing; His left is holding a globe surmounted by a cross, denoting His supreme power, and the universal influence of the Cross over the world. On each side there is a kneeling angel, the one bearing the cross, the other the pillar of the flagellation, with the words above them, "Be thou faithful unto death, and I will give thee a crown of life." All these are on a gold ground, and executed by instructions from Mr. Street in the Byzantine style. In the apse is a picture of the Crucifixion. The Saviour is shown nailed to the cross. The sun and the moon are obscured. On the right of the cross stands His mother, with the two women who accompanied her to Calvary; on the left, St. John, and also the Roman centurion, who made the memorable confession of faith, "Vere Filius Dei erat iste,"—"Truly this was the Son of God." This central mosaic is to be supplemented later on by the addition of one of similar size on either side, which will represent the bearing of the cross by our Lord, and the descent from the cross.

Later on, the semi-dome will have a mosaic containing a representation of the Resurrection of our Lord. All these mosaics are on gold grounds, and when all is complete, this assemblage of mosaics will be the largest in England as a mass.

The cartoons have been all made, as already mentioned, by Messrs. Clayton & Bell. Mr. Burke visited Ravenna, Florence, Rome, and other cities in Italy to study the peculiar treatment of Byzantine mosaic, and afterwards went to Venice to superintend the execution of the work. The inscriptions, "Placed by Queen Victoria" and "Be thou Faithful unto Death," are on Jura marble supplied by Burke & Co.

The marble mosaics are to consist of twenty-seven pictures. On the north side they represent some of the most famous characters recorded in the Old Testament; and on the south side the Twelve Apostles. Of these there are already placed eight figures:—Joseph in the costume of a ruler over the land of Egypt; Aaron, in his garments as a High Priest, holding in his left hand a censer,—in his right, his rod "that budded"; Moses, with the Two Tables of the Commandments; Joshua, dressed in armour; David, in his kingly robes, the harp in his hand, and in the act of singing the praises of the Lord; Elijah, in his left hand he holds a scroll, upon which are the words "Manus Domini facta est super Eliam,"—"the hand of the Lord was upon Elijah"; and the raven reminds us of the famine in the land of Israel, when the prophet was commanded to "hide himself by the brook Cherith," and "the ravens brought him bread and flesh in the morning, and bread and flesh in the evening"; St. Matthias and St. Bartholomew.

The spandrels of the arches of the nave will contain pictures of angels holding instruments of the Passion. Two are already completed and fixed, and show the hammer, with the pincers and the nails. All the cartoons for these pictures have been made by Messrs. Clayton & Bell.

This, which is a new departure in marble mosaic, is an application of what has been termed *Opus majus vermiculatum*. Sir Digby Wyatt says, referring to marble mosaic:—"Tesseræ are but rarely found on walls, excepting when they are adopted to form flat tints of uniform colour." Indeed, in Mr. Burke's journey through Italy, visiting Venice, Ravenna, Orvieto, Florence, Rome, and Naples, although he found marble tesseræ largely combined with glass or enamel,—especially at St. Mark's, Venice,—the colours were all drabs, browns, and greys. Now, in the marble mosaics to be put up at the Guards' Chapel, there are used marbles and limestones of many colours and tints,—as, for instance, four different shades of greens, three of white, five of red, and so on, and nothing but marbles and limestones have entered into the composition of these mosaics.

In the famous pictures of enamel mosaic in St. Peter's at Rome, the joints are so close that the majority of visitors to the Basilica believe them to be oil-paintings. Every effort has been made to avoid this result in the case of these mosaics at the Guards' Chapel, and joints and tesseræ are clear and unmistakable.

One great feature of this marble mosaic is its comparative cheapness; the price is from 10s. to 25s. per superficial foot,—at the latter price the most elaborate figure-work can be executed.

THE BATH AND WEST OF ENGLAND SOCIETY.

This Society opened its 102nd annual exhibition on the 2nd inst. at Exeter, the weather during the early days of the show being most unfavourable. The "ever faithful" city decked her ancient streets with triumphant arches and flags innumerable.

The exhibition itself took place just outside the city, in an inclosed space upwards of 600 yards by nearly 300 yards.

Messrs. F. W. Reynolds & Co., of Southwark, exhibited a fine display of wood-working machinery, nearly thirty pieces of which they had in operation. Amongst these was their new mortising-machine, noticed in the *Builder* for the 31st ult. An improved mortar-mill, with rollers that shift, so that the under-plate be worn regularly, also attracted much attention. Messrs. Polyblank & Co., of Newton Abbot and Dartmouth, showed band and circular saws in motion. The special feature in one of these is the fact that instead of canting the table, and with it the work to be dealt with, the saw itself moves by an elbow, and, by the action of clever though simple machinery, to any angle required with great exactness. This saw, however, whilst of exceptional use to shipbuilders and cabinet-makers, hardly offers the same advantages to the building trade generally. Messrs. Charles Powis & Co., of Millwall, exhibited seven of their saws, five in action. Messrs. Easton & Son, of Exeter, showed some good grooved granite clod-crushers, and fine examples of their Haytor, Moreton Hampstead, and Dartmoor granites. They also exhibited an extremely interesting series of geological specimens of polished Devonshire marbles and granites. Messrs. Candy & Co., of Chudleigh-road, Newton Abbot, showed samples of their tiles, white bricks, and Doulton ware. Mr. W. Parham, of Bath and Oxford-street, Messrs. Granston & Luck, of Highgate-street, Birmingham, and Mr. W. Harding, of Exeter, contributed many samples of their improved greenhouses.

The Fine Art Department was as excellent a one as has ever been brought together under the auspices of the Society, and about 500 pictures, some of them of high merit, were hung upon the walls. Sir Stafford H. Northcote, Chan-

cellor of the Exchequer, and many others, contributed to the loan department. Amongst the water-colours were some clever sketches from Brittany and Normandy, by Mr. R. Medley Fulford, architect. The collection of old china embraced choice specimens of Bow, Chelsea, Derby, Worcester, and Wedgwood ware, and some curious old Liverpool tiles. The display of lace was exceedingly fine. Miss C. B. Cossins, of Broadgate, Exeter, showed beautiful specimens of Honiton lace, and illustrated the mode of working it. The choicest collection, however, was shown by Messrs. Piper & Sons, of Exeter, who, in one of Sage's cases, 6 ft. by 5 ft. by 2 ft., contrived to exhibit nearly 2,000*l.* worth of that precious material. Two point-lace flounces were ticketed at 180 guineas and 150 guineas respectively. Mr. Harry Hems exhibited several samples of his carved work, in the shape of church-fittings; and Messrs. Beer & Driffield showed specimens of their stained-glass windows. Mr. W. S. M. D'Urban, the curator of the Albert Museum, contributed some interesting cases, filled with models illustrative of the injuries to gardens and crops by attacks of destructive British insects.

OPENING OF THE NEW ELEPHANT AND CASTLE THEATRE.

THE Elephant and Castle new Theatre, which replaces the building destroyed by fire some time ago, was opened for the first time on Saturday night, with the performance of a new piece having the appropriate title "Raised from the Ashes." The new theatre is a material improvement upon that which it replaces, both as regards the substantiality of its construction and its internal arrangements. It is considerably higher than the old structure, with greatly increased accommodation in the auditorium department. The pit is said to be one of the largest in the metropolis, having seating-room for an audience of upwards of a thousand, in addition to four rows of stalls in front, having two separate entrances and exits. There is a spacious promenade round the pit, to which there are three exits, two of which are 5 ft. 6 in. in width, and the other—the main entrance—7 ft. wide. A special feature in the building is a saloon 50 ft. in length, on the left-hand side of the pit, looking in the direction of the stage. It does not form a portion of the theatre proper, but is built under the platform of the Elephant and Castle Railway Station. Two of the exits from the stalls and pit, coming out into Caroline-place, at the back of the theatre, are also constructed underneath the platform. The dress-circle is approached from the main entrance in the New Kent-road by a staircase 7 ft. 6 in. wide, and attached to it is a saloon. In addition to the main entrance there are also two exits down fire-proof staircases, on each side of the proscenium. Above the dress-circle there is a spacious amphitheatre and gallery, with several exits. In connexion with the gallery there is a fire-proof staircase at the back of the house, in addition to three separate exits in other places. The decorations have been executed by Messrs. Pashley, Newton, & Young, of Red Lion-square. The principal colour is a pale green, the front of the dress-circle being in satin panels of varied colours. The ceiling is domical in form. The theatre is lighted by a sun-light, containing 206 jets, furnished by Messrs. Berry & Son, of Buckingham Palace-road. The stage is 40 ft. in depth, with a proscenium width of 30 ft., and the entire width of the stage to the main walls is about 67 ft.

The late Mr. Robinson, architect to the Lord Chamberlain, designed the building, which has been carried out under the personal supervision of Mr. Frank Matcham, architect. The original contractors were Messrs. Bracher & Son, of Great Ormond-street, but the building has been completed by Mr. J. H. Brass, of Manor-street, Chelsea.

Domestic Economy Congress.—The annual Congress on Domestic Economy will be held at the Society of Arts' Rooms, on Thursday, 26th June. The following subjects taught in public elementary schools will be discussed in order:—Thrift, Discipline, Cleanliness of the Person; Needlework, Knitting, Netting, Clothing, Health; the Dwelling and its Cleanliness, Ventilation, and Warmth; Food and Cookery; Drill; Gymnastics; Recreation, Music, Games, &c.

THE ART-CULTURE OF THE UPPER CLASSES FROM THE POINT OF VIEW OF AN ART-WORKMAN.

SIR,—The above is a clumsy title to start with, but only indicative, I fear, of the method of treatment; that, again, is partly due to the nature of the subject, partly the result of the writer's view thereof; but, to cut short further preamble,—"to leave such damnable faces and begin,"—I have two propositions to make in this letter, which I respectfully submit to your readers, and will endeavour to establish. Should I succeed, as my presumption and temerity scarcely deserve, then I respectfully opine such propositions to be worthy the attention of the class to whom they are chiefly addressed; and if I fail "I will gain nothing but my shame and the odd hits." My propositions are, first, That the British art-workman has been unjustly treated hitherto by his critics of the class referred to; and, secondly, That such injustice has been mainly due to the general art-ignorance of the said critics. In support of my first proposition I must respectfully affirm that the condition, aims, and objects of the working-classes generally, and art-workmen in particular, in this country are not only not understood in the upper circles yet, but that they are scarcely on the threshold even of such an understanding; and the whole nature and constitution of modern society is a formidable barrier against that closer and broader view of the strata two or three layers beneath them, which prevents that nearer knowledge; and therefore if I seem somewhat aggressive at starting, it is not from any other *animus* than the conviction that we are treated unjustly from ignorance more than indifference, that the "evil is wrought from want of thought as well as want of *art*."

What makes this ignorance so painfully palpable is, among other things, the absurd and contradictory charges they bring against us,—the gross inconsistency of their complaints. We are,—that is, the working classes,—"extravagant and improvident especially; we are coarse and noisy in our pleasures, when we have any, and behind the foreigner now in our work; we lack originality and freedom in the treatment of our work, also technical training for its more skilful manipulation." That much of this is true in detail might as well be candidly confessed at starting; and were yours, sir, a political organ, open to a radical argument, it would be a very easy task to lay the blame of most such regretable facts at the proper doors, which would not be that of the true working-classes; "but such eternal blazon may not be" of flesh and blood, nor can I concern myself generally with the great class in question, but confine my remarks to the section known as art-workmen. I am compelled to reply to the charge, however, with the counter accusation, that the upper, or rather the wealthy, classes have used their superior power, position, privileges, and attainments in the direction of depriving the art-workman of the means of culture, both directly and indirectly, whilst they taunt us with the absence of that which they withhold, arrogating to themselves meanwhile the monopoly of refinement and taste which, did they possess it to anything like the extent they themselves affirm, would by natural or known laws create the demand for excellence in art-work. They accuse us of not being able to supply it, and we retort,—it is not supplied only because it is neither appreciated nor understood, and is only demanded occasionally in sections, and that as the dictate of fashion, and not as the result of a genuine self-cultivation.

But with all our drawbacks and disadvantages, our "negligences and ignorances," some recent exhibitions have conclusively shown that the old spirit that once helped to build up our country's greatness is no more dead in the British workman than the old military prowess is extinct in our modern army and navy. And the fact is undisputed, that there are English workmen with true art instincts and some considerable technical training and experience, working for weekly wages at art drudgery, not because they are incapable of producing good art work, but that they must not, *dare* not,—it is not desired or required of them. And who is to blame for this? Not the employers, I contend: they "but found the system, not made it," and would be too glad in most instances to produce a better article at a better figure; but the blame must rest with the main body of the purchasing public, who, as Ruskin told them long since, "know nothing of art, and care less, but must nevertheless *make believe* t taste," and get up the greatest artistic e the smallest possible outlay. In fact, t of the "veneerings" seems as strong despite the great Dickens's attempt them down in our "Mutual Friend." S vious to satire is fashionable folly, tha devoutly believe 99 out of 100 of the w middle and upper classes, according Service Stores experience, would rat say, 18*s.* 6*d.* per foot for veneer than level pound for the solid wood, unless, some mahogany merchant could set the for the genuine solid-throughout artic direct result of this is, of course, that t cater for them, in the keen compet supply a meretricious article at a prof by the most rapid mechanical means consistent, of course, with a marketable of art-pretence in the article in questio

The effect of all this on the workman scarcely point out, is to effectually h him, and prevent him from taking that of interest in his work necessary, a Northcote pointed out at the opening Industrial Exhibition at Westminster success. And I may remark that, co the system complained of puts a premiu slap-dash work,—work that, technically ng, must be *knocked-off* to pay,—cultiva encouraging a class of work more for th diate profit than the final benefit of ployer, the satisfaction of the purchase credit, much less honour, of the age o that produced it. This phase of the subj too, glanced at by the speaker on the mentioned. So, after so eminent an a as a Chancellor of the Exchequer had e his misgivings as to the ultimate *co* value even of such productions, it accepted without any further emphasis writer. Then, if my complaint is at founded, it requires very little logic t that to limit and restrict the demand f work is a direct injury to those who producing it. Whether the motive be ig of the difference between bright brass a gold, or a brazen preference for brass score of the little gold essential for a gre of it,—and it is purely an aggravation offence that the same class of Mammon-w pers attempt clumsily to shift to our sh the stigma of want of taste and igno art,—we suffer materially from their poverty in.

Then I have to ask who it is that r and restricts the facilities for culture am bulk of the people, but the governing Who have it in their power to extend th of opening of public galleries and muse the week-days, and on the only clear working man has for himself,—*the Su* and who, for reasons obvious and contra refuse to grant him that essential assista higher culture? Not that we are indiffe or ungrateful for, recent concessions direction. Nor is there any need to rai the religious or Sabbatarian difficulty nexion with this question, but it seems ne to enlighten the vague conceptions ente of our condition to get the fact at all c hended of why we place so much stress acquisition of Sunday. This argument, ho was so ably treated by Sir Henry Thompso other gentlemen at the Sunday Society's ing, reported in your issue of May 24th (s whose advocacy I am profoundly grateful I would not here presume to do othe supplement it by a few observations sug by my own special standpoint. It was powerfully pointed out at the meeting re to that the Continental workman has advantages over his insular compeer, do not think it has ever been adequately i on, what an immense advantage his So alone give him over the English workma capitals where art is fully and officially nised, honoured, and appreciated, whe citizen is surrounded by an atmosphere and interpregnated with its spirit, amon he literally lives and moves and has his for seven days in the week,—and yet, in th of this special facility of Sunday, w which his opportunities of improvement greatly exceed ours, the bishops, and whole array of their supporters, say to u tually, "You see these clever foreigners, are *you* not as proficient as they are? We care you shan't have half their advant why don't you do better without them they do with them? You waste your pre

s at home and in the public-house. is because we don't consider it good to on to go anywhere else, except to church, ou can't be driven there you shan't go icture-gallery or museum, at least *not in* —such is our idea of consistency, logic, and common sense." It scarcely needs, proposition to be thus barely stated to utter and indefensible absurdity.

are one or two other points I consider ll in stating my case completely, but o touch on now would unduly lengthen ady long letter, so I will thank you for ttience, present and prospective, begging aders' indulgence, and request them to their judgment on my conclusions, a second communication, I can place them the "conclusion of the whole

J.

PAUL'S CROSS.

meeting of the Society of Antiquaries 29th ult. at Burlington House, Mr. F. C. , surveyor of St. Paul's, read a paper, the Dean and Chapter an account of the discovery of the identical platform upon he superstructure of Paul's Cross origi- food. Mr. Edwin Freshfield presided, e was an unusually large attendance.

enrose commenced by calling attention arious plans of the cathedral, and of the s illustrative of the recent discoveries of ross. In the spring of 1878, he said, it visite to sink a pit about 12 ft. deep on th side, and near to the bottom was fragment of the foundation, which to belong to the old cathedral, and to sage from the cathedral cloister to the house. With the approval of the dean pter, search was immediately made for pter-house, but without result. On a of the search some evidence of the ons of the west wall of the south tran- found, and shortly afterwards three or s of the cloister. Whilst laying out the l garden on the north-east side of the ard, the opportunity was given for an examination towards the east, firstly, s of finding the foundations of Paul's and, secondly, for some confirmation in to the deflection of the axis of the l. The first search was for Paul's uided by the only plan which marked

After one or two trials he came upon alk formations, which invited further n, and on the 31st March last he was repaid iscovery of a wall 3 ft. high, showing an f 35°, and probably belonging to the of which he was in search. The other were looked for. One was found, and had been cut away. After a time he pon the identical platform upon which erstructure of Paul's Cross originally It was known to be octagonal in form, foundation now laid bare exactly corre- to this form, as correctly as the site onded with the drawings and descrip- ll extant. The diameter of the octagon m 37 ft. to 40 ft. from angle to angle, e pulpit was about 17 ft. or thereabouts. ner might have been the remote origin of Dross, there could be little doubt that the were part of the work of Bishop Kempt, uilt it. From this cross, in those days, cements and harangues on all such as were deemed of public concern were ,—those being days when there was no and little reading. It was used for eccle- l purposes for the first time during the Edward I., the earliest record of such ment being in the year 1299. After this ard of sermons regularly from the cross, y played an important part during the ation. In Henry VIII.'s and Elizabeth's this pulpit was filled by the most emi- eachers, amongst them being Latimer ley. In 1642 Paul's Cross was demolished.

rose then referred to the question of the on of the axis of St. Paul's Cathedral, of he has already given an account in the of [a paper which was read some time t the Royal Institute of British Archi- nd reported in the *Builder*. In conclu- promised to lay before the Society the f any future discovery in connexion with hedral.

erley, in the course of the brief discus- hich followed, expressed the interest he the discovery made, which was of great al value in connexion with the cathedral. His attention, however, had rather been devoted to the other parts of the cathedral, and he would like to ask whether Mr. Penrose had come across any trace of the "substantial western towers" mentioned by Stow. No reference was made to them in Dugdale's works; but it seemed remarkable that in such a great cathedral as St. Paul's there should be no western towers.

The Chairman, in proposing a vote of thanks, said that they were all indebted to Mr. Penrose for his valuable paper. In his description of the discovery of the site of Paul's Cross he had brought back vividly to their minds the sermons that were formerly preached there. It was almost impossible to thank him sufficiently for the persevering manner in which he had carried out his investigations.

Mr. Penrose, in reply to the vote of thanks, which was carried by acclamation, said that as regarded the "western towers" which had been referred to, down to this time the search had not been of a promising character, and although they had got into the very lowest stratum there was not a single atom of masonry to be found. He thought that the western towers could not have existed, from the appearance of the foundations.

THE BRITISH MUSEUM.

The annual report of the trustees of the British Museum has been presented to Parliament, and issued as a Parliamentary paper. From it we learn that,—

"The following changes have been made in the arrangements affecting the exhibition of the collections in the British Museum, and the hours of admission to the galleries, the readiug-room, and the print-room:—In order to prevent the disappointment of intending visitors occasioned by the closing of the museum to the general public on two days of the week, as has been the custom, the trustees have ordered that henceforward the museum shall be opened daily, and free admission be given to all the exhibition galleries, excepting, on Wednesday and Friday, those of Greek and Roman antiquities on the ground-floor, and general antiquities on the first-floor; and, on Tuesday and Thursday, the rooms of natural history; which will on those days be reserved for special students of the collections. The regulation excluding children in arms has been rescinded. With a view to making the collection of the departments of prints and drawings, and of coins and medals, more extensively known and more easily studied, arrangements have been made for exhibiting a greater number of the former and a selection of the latter in the King's Library. Twelve screens for the exhibition of prints and drawings have been added to those already placed there; and on these have been exhibited, in the first instance, a series of water-colour drawings, by J. M. W. Turner, Thomas Girtin, David Cox, William James Müller, and Antonio Canaletto, recently bequeathed by the late Mr. John Henderson, with a set of early and curiously-designed playing-cards, presented by Major-General Augustus Meyrick. These objects will shortly be replaced by a selection of prints illustrating the various schools of engraving. Six table cases and two upright stands have also been placed in the King's Library for the exhibition of English and foreign medals, and electrotypes of the finest Greek and Roman coins. The hours of opening for the reading-room have been extended from five to six o'clock during the month of April; and for the print-room from four to five o'clock from the beginning of April to the end of July. The regulations requiring the renewal of reading-tickets every six months, and of necessarily presenting them at the entrance of the room, have been withdrawn. Experiments have been made with the electric light, by the gratuitous assistance of the Société Générale d'Électricité de Paris, in order to test its applicability to the reading-room. It is proposed, with the sanction of the Treasury, to make further experiments with the electric light towards the close of the year, with a view to its adoption during the winter months. An addition has been made to the entrance-hall, forming a room for the exhibition of the Lycian sculptures, the removal of which from their former gallery of exhibition has given space for an arrangement of archaic Greek sculpture. The upper floor of the addition to the hall has been fitted for the reception of Mediæval antiquities, and will be occupied in the first instance by collections bequeathed by the late Mr. John Henderson and presented by Major-General Meyrick. It is anticipated that a commencement of the removal of the natural history collections may be made before the conclusion of the present year."

The number of persons admitted to the Museum (exclusive of readers) during the year 1878 was 448,516,—a smaller number than has visited the collection in any year since 1873. The number of visits to the reading-room was 114,516, which is an increase over the number of visits in any of the preceding five years. The average number of readers daily has been 392, and each reader appears to have consulted on an average eleven volumes per day. The average time occupied in supplying a book to a reader is stated to have been fifteen minutes.

MEMORIAL FOUNTAIN AT WOOLER, NORTHUMBERLAND.

A drinking-fountain has been placed in a central position in Wooler, in memory of the late Mr. William Wightman, and in recognition of his services to the town. It is formed of sandstone, and enriched with both red and grey granite. It stands on a base of steps 13 ft. square and 4 ft. high, and is protected by an iron railing round it. It is composed of three stages, and rises to a height of 17 ft. The lowest stage steps up from the base in five gradations of chamfered plinths, till it is narrowed from a square of 5 ft. 5 in. to one of 3 ft. about 5 ft. above it. On two of the fronts of this graduated mass of solid white sandstone masonry are two ornamental corbelled drinking-troughs, into which the water flows through the mouth of a bronze lion-head. The second stage is an open arcade supported by red granite columns at the angles, with richly carved stone caps and bases, and four cusped trefoiled arches. Upon these spring a canted octagonal canopy. In the centre of the open arcade a fountain base is placed, with carved caps and base, out of which there flows a perpetual spring of mountain water brought from the neighbouring Cheviot hills by gravitation. The canopy is also enriched with carved foliated ornament. The third stage is square. It has couplets of grey granite columns at the angles, which support a cruciform canopy, having four gables corbelled out with a trefoliated cusped arch in each, above which is a spirelet finished with a floriated finial. The four gables are crocketed, and each is surmounted by a moulded finial. The style of the design is Edwardian, in keeping with the numerous castellated remains of that period in the county. Although richly ornamented, the memorial is sufficiently massive in its treatment and substantial in its workmanship to withstand the "Cheviot blasts," or winds with which the district is visited in tempestuous weather.

The fountain has been executed by Mr. Daniel Mac Millan, Alnwick.

ELECTION OF A DISTRICT SURVEYOR.

The election of a District Surveyor for the district of Putney and hamlet of Roehampton (in the room of the late Mr. Horace Field) took place on the 30th ult. at the Metropolitan Board of Works. There were twenty-six candidates, and these, in accordance with the usual practice of the Board, were each voted upon in the first instance with the view of reducing the number of candidates to six. The following is a list of the candidates, with the number of votes obtained by each in the preliminary voting, viz.: Badock, J. B., 4; Bridgman, H. H. (too late); Brooks, B. W., 11; Burden, R. H., 6; Carritt, E., 17; Conder, A., 13; Edmeston, J. S., 14; Ferguson, J. M., 9; Hammond, F., 21; Hewitt, E. R., 0; James, J. W., 20; Large, W. A., 14; Lovegrove, H., 0; M'Donell, G., 14; Notley, F. C. 14; Payne, A., 27; Quilter, J. S., 5; Smallpiece, W., 7; Stone, T., 6; Street, E., 22; Tasker, W., 23; Todd, F., 10; Turner, J. G., 10; Williams, T., 17; Willis, T. W., 27; and Young, J., 14. The six candidates receiving the highest number of votes were therefore found to be Messrs. Hammond, James, Payne, Street, Tasker, and Willis. The further voting was as follows:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Hammond.....	16	—	—	—	—
James.....	17	11	—	—	—
Payne	22	21	23	23	17
Street	17	17	10	—	—
Tasker	19	19	18	16	—
Willis.....	26	26	25	24	26

Mr. Willis was therefore declared to be duly elected.

SCIENCE AND ART IN IRELAND.

WE learn from the Dublin *Freeman's Journal* that "the committee for promoting an inquiry into the South Kensington 'management' of science and art in Ireland have submitted, for the consideration of all interested, a report. The report charges against the South Kensington authorities that they have managed the Dublin College of Science in a careless, unscientific, and extravagant manner." The report then branches into the case of Professor Galloway, and concludes as follows :—

"Injustice to an individual has led to the opening up what we hope will be considered an important inquiry in a public point of view. It is to be hoped the inquiry will be vigorously prosecuted by those who represent Ireland in the Imperial Parliament. If it should be found that money is wasted at the Royal College of Science, many means for the useful application of the money to Irish purposes may be found. Four thousand pounds saved at Stephen's-green might be made available, for example, for artisans' drawing or science schools, and, on the general question of South Kensington *versus* good, honest local management, the time spent in inquiry would be well employed. Professor Galloway, during his twenty-three years' residence in Dublin, has warmly interested himself in Irish affairs; his students, his laboratory, and some local improvements occupying all his time. In the discussion of the Vartry water question in 1861 Mr. Galloway and his assistant, Mr. Plunkett, took an active part. No less active were they and their laboratory students in considering the question of Dublin main drainage. Mr. Galloway was one of the directors of a chemical enterprise at Galway, intended for the development of Irish resources by teaching our people the profits to be derived from the extraction of iodine from kelp. He laboured well and successfully for the instruction and advancement of his students. Irishmen are not ungrateful. They cannot see this man sacrificed without a fair trial. South Kensington was prepared to pension him in 1862, and this year he had but to obtain a medical certificate to be recommended to the Treasury by 'my lords' for a retiring allowance. He has refused those offers, demanding justice and nothing more. This is the issue between him and a department known to us in Ireland only by its intrigues, by its waste of public money, and by its general indifference to our wants and wishes."

A SUGGESTED SCHEME FOR THE DECORATION OF THE DOME OF ST. PAUL'S.

A CORRESPONDENT of the *Times*, writing from Florence on the 28th ult., says :—"The attention of the artistic community in Florence has just been very strongly called to a proposed contribution towards the solution of the problem how to finish Sir Christopher Wren's great work, London's St. Paul's, in the shape of a suggestive design for the decoration of the interior of the dome, the joint work of Charles Heath Wilson, so well known to English visitors to Florence for many years past, and to England as the author of 'The Life of Michael Angelo,' and for his long labours in connexion with art and art-teaching, and R. P. Pullan, the well-known architect. It is understood that the design is volunteered, and is rather the result of strong interest in the work the St. Paul's committee have before them, and is intended rather as an idea for bringing together the designs of the artists whom the committee propose to employ, than for displacing them, the suggestion being limited to the central idea, leaving the details of design to the respective artists. Messrs. Pullan and Wilson have for many years, each in his own way, made a special study of architectural decoration, and the principle to which they adhere, and of which their design is an exemplication, is, that in all such work the architectural unity should be made the *sine qua non* of the employment of pictorial appliances, and that the painting or sculpture should distinctly be conformed to the architectural composition. This was unquestionably the case with the Greeks and with Michelangelo, as well as with the Byzantine masters. If this be sound, the collection of a series of pictures by different painters, whether of a symbolical or realistic nature, disconnected in subject, and not tied together by some decorative design, would, however fine the art of each separate work, be inferior to a decorative whole, however inferior the parts, so long as in their whole the architecture itself found an illustration and an illumination. The theme chosen by Messrs. Pullan and Wilson is the *Te Deum*. The dome is divided into eight sections by broad decorated ribs, painted and moulded, and the rib panels filled with arabesques in monochrome. At the bases of the ribs are eight thrones, on which are seated as many prophets. The thrones are architecturally designed, with cornices, pilasters, and niches. Over the cornice of each, to carry the human element into even the design of the ribs, stands an angel erect. The ribs terminate at their summits in foliated capitals united by arches, surmounted by frieze and cornice with pendentives. Between these ribs an architectural composition runs round the dome to support, divide, and facilitate the grouping of the human and angelic figures which form the dominant element of the entire design. The Evangelists that already occupy the spandrels will be included in this plan. The dado contains a decorative design, and in the podium above it are ranged the martyrs, the drum or tribune, as it is here called, beneath the dome not being included in the present design; but, if this were accepted, it is proposed to include the drum in the system, and arrange it with a series of men of all nations representing the Church,—'The holy Church throughout all the world doth acknowledge Thee.' Then would come the Martyrs,—'The noble army of Martyrs praise Thee.' In the colonnade above the podium are eight Apostles, each (omitting the Evangelists already there) under a baldacchino and seated on a throne, continuing the theme,—'The glorious company of the Apostles praise Thee'; and above the architecture the hollow space of the true dome contains figures of angels rising and vanishing in space, and still above them, around and beneath the lantern, are cherubim and seraphim, while in the cupola of the lantern is the Lamb. The design prepared by Messrs. Wilson & Pullan is of one section, the eighth of the project, and the figures are intentionally borrowed from the best known representations of the old masters, it not being their intention to suggest them as the designs for the individual figures, which will be left to the artists charged with carrying out the suggestion contained in the illustration of the *Te Deum*, both the idea and the design of which have been met here with warm approbation by the native artistic as well as the foreign *dilettante* element of our society. If the purpose to be accomplished is rather the decoration of an architectural work than forming a gallery of pictures and designs, there can be no doubt that the design under notice gives a consistent and comprehensive plan. I believe it is the intention of the artists to send the design to London shortly, in order to offer it for the consideration of the committee for the completion of St. Paul's."

A DISPUTED AWARD.

CORPORATION OF BIRMINGHAM *v.* WEST BROMWICH IMPROVEMENT COMMISSIONERS.

THIS case, which was before the Queen's Bench Division of the High Court of Justice last week, involved a question of considerable importance, arising out of the dispute between the Corporation of Birmingham and the West Bromwich Improvement Commissioners as to the amount to be paid by the Commissioners to the Corporation for a transfer to the Commissioners of certain powers and undertakings vested in the Corporation for the lighting of the district with gas; and the controversy had arisen in these circumstances :—

In 1875 the Corporation obtained an Act for the transfer to them of the undertakings of the Birmingham Gas Company and the Birmingham and Staffordshire Gas Company, the former of which then supplied with gas the town of Birmingham, and the other supplied not only the town, but the district twenty miles around it, including among others the district of West Bromwich, a clause being introduced giving the local authorities of these various districts the power to purchase the works of the Staffordshire Company situate in West Bromwich; and this clause also enabled the local authority of each district to purchase the portion of the undertaking within its own district for a rateable proportion of the whole sum paid by the Corporation to the Staffordshire Company, the Corporation, however, retaining the West Bromwich works, the amount payable being referred to arbitration. An arbitration accordingly took place, Mr. Bramwell and Mr. Hawksley being the arbitrators, and Sir H. Hunt the umpire, with Mr. Wills, Q.C., as their legal assessor. They sat twenty-six days, and took evidence and heard counsel at great length, the question being as to the mode or principle of valuation. It was contended on the part of the Corporation that the object was simply to find out the value to them of the thing to be sold, and that they ought to be compensated for what they were about to lose, *i.e.*, a part of their general or combined gas undertakings, made up of the undertakings of the Staffordshire and Birmingham companies transferred to the Corporation, with all the advantages resulting from the union and the economical and improved management of those undertakings in the hands of the Corporation, and that the basis of valuation was the amount of profit annually realised at the Staffordshire works, which supplied all the suburban districts, and that then West Bromwich should pay its proportion of that amount. Upon this principle the valuation of the West Bromwich portion of the gas undertaking to be transferred would be from 258,000*l.* to 318,000*l.*

On the part of the West Bromwich Commissioners, it was contended that this principle of valuation was utterly wrong, and that the thing to be purchased was only a part of the Staffordshire Company's undertaking; that as the works at West Bromwich were not to be sold by the Corporation, but retained by them, the value of those works was not the true basis of the valuation; and that the true basis was the intrinsic value of the part of the [illegible] shire undertaking to be taken by West Brom[illegible] this principle the valuation of the sum to be p[illegible] Commissioners would amount to 58,000*l.*—a diff[illegible] will be seen, of about 200,000*l.*

The arbitrators differed in their views, and the[illegible] Sir H. Hunt, fixed the amount to be paid at about[illegible] setting forth on the face of his award the pr[illegible] valuation he had adopted, and which was rather i[illegible] ance with the contention on the part of West Br[illegible] in order to enable the Court to correct it if it wer[illegible] This was an application on the part of the Corpo[illegible] set aside the award, on the ground that it proceed[illegible] a wrong principle of valuation.

The Court (the Lord Chief Justice [illegible] Justice Mellor) gave judgment uphold[illegible] award.

COMPENSATION CASE.

BUTLER AND ANOTHER *v.* THE METROPOL[illegible] BOARD OF WORKS.

AT the Middlesex Sheriffs' Court, on t[illegible] ult., the case of the Hon. C. Lennox But[illegible] another *v.* The Metropolitan Board of [illegible] was heard before Mr. Under-Sheriff Burc[illegible] a special jury. The claim was 6,830*l.*, [illegible] freehold house, No. 2, Nassau-street, [illegible] which had been used as the Hôtel de la [illegible] and was now required for the formation [illegible] new-street from Piccadilly to Oxford-str[illegible]

The witnesses on both sides were cor[illegible] in their views of the value of the pr[illegible] The highest value was over 5,000*l.*, [illegible] lowest value on the same side, with the[illegible] cent. allowed for compulsory sale, 3,89[illegible] the part of the Board the value was repr[illegible] as 2,931*l.* All their witnesses fixed it[illegible] 3,000*l.* The lease would expire in 1887, [illegible] property would then be worth an additio[illegible] a year, making the rental 140*l.*

Mr. Under-Sheriff Burchell left it to t[illegible] to decide the value, on the conflict of tes[illegible] in the best manner they could. They h[illegible] the property, and had heard the evid[illegible] both sides.

The jury, after a brief consultation [illegible] court, assessed the compensation at [illegible] which, they said, included the 10 per c[illegible] compulsory sale.

PUBLIC WORKS ABROAD.

British Guiana.—Steps are being ta[illegible] extend the railway accommodation i[illegible] colony by the construction of a line from C[illegible] town to Berbice, and the Government is e[illegible] in the execution of important works [illegible] extension of the sea-wall at Georgeto[illegible] drainage improvements, and other [illegible] measures.

Ceylon.—The Colombo correspondent [illegible] *Times* writes, under date May 3 :—"Our [illegible] water works have made small progress [illegible] the past working season, from October to [illegible] owing to the unusually unsettled state [illegible] weather. In the next north-east monsoo[illegible] hoped a sufficient length of arm may b[illegible] pleted to allow of steamers anchoring in[illegible] all weathers. It is understood that instr[illegible] have reached our Government from the C[illegible] Office to give every possible encouragem[illegible] local contractors in the execution of [illegible] works, as a means of effecting a saving i[illegible] At the same time I hear that all public ex[illegible] ture will be cut down with an unsparing[illegible] in view of the badness of the times and [illegible] pated decline in the revenue."

The Institution of Civil Engine[illegible] At the last meeting of the session, held [illegible] 27th of May, the president, Mr. Bateman, F[illegible] being in the chair, the paper read wa[illegible] "Dock Gates," by Mr. A. F. Blandy, C.E.[illegible] author commenced by defining the ge[illegible] features of a pair of gates and their surro[illegible] ings; then passed on to the strains to wh[illegible] gate was subject, and gave a formula fo[illegible] pressure per unit of length. The magn[illegible] and direction of the primary forces acting o[illegible] pair of gates were investigated, and it[illegible] shown that a point could be found on the c[illegible] line of entrance, the distance of which fron[illegible] point on the back of the gate was propor[illegible] in magnitude to the resultant of all the f[illegible] acting on a section taken through the ga[illegible] the point measured to. It was also shown[illegible] in practice, the line of position of these resu[illegible] forces in most cases corresponded with th[illegible] of a circle drawn through the centre of [illegible] heel-posts and of the meeting faces of [illegible] mitre-posts.

IE COACHMAKERS' COMPANY'S PRIZES.

ply to the offer of prizes for freehand or nical drawings, and drawings of carriages s of carriages, to the scale of one inch to ot, there were thirty competitors in all, ighty-six drawings, thus classified,—x freehand or mechanical drawings, and -two carriage drawings. Some of the itors sent in both freehand drawings and gs of carriages to scale. The court have d the prizes as follows, namely:—For nd or mechanical drawing.—1st prize,—former prize-winners and others, and no es to age,—the Company's Silver Medal , with the Company's certificate, to illiam Farr, of Castle-street, Salisbury. ge,—excluding former prize-winners, and it as to age,—the Company's Bronze and 2*l.*, to Mr. George Mundy, of 1, Cam-street, Spittlegate, Grantham, Leicester. ge,—for apprentices and others under -two years of age,—the Company's Bronze and 1*l.*, with the Company's certificate, am Thomas Easton, of 39, Commercial-rtsmouth, apprentice to coach-painting. ompany's Certificates of Merit were d to Edward Atterby, of Huntingdon, an ice to coach-smithing; to Henry Hewer, High-street, Southampton, coach-body to Walter Reynolds, 37, Tulloch-street, ood-road, Newcastle-upon-Tyne, coach-aker's apprentice; and to Robert Davies, t. Julian's Friars, Shrewsbury, appren-coach-smithing. For drawings of car-or parts of carriages, to the scale of one the foot:—1st prize,—among former nners and others, and no limit as to he Company's Silver Medal and 3*l.*, with pany's certificate, to Mr. J. P. Lake, of , Howick-place, Victoria-street, West-3rd prize,—for apprentices and others wenty-two years of age,—the Company's Medal and 1*l.*, with the Company's cer-to Herbert H. Mulliner, of Hawey-villa, gton, Warwickshire, clerk.

rize drawings have been exhibited in of the Mansion House by permission of Mayor, and in addition a very interest-otion of books, engravings, and carvings d with the trade and its art. It deserves our pages that the present Master of the y is an architect, — Mr. Frederick lor.

JANTITIES AND CONTRACTS.

—I have read with much interest Mr. an's paper on "Quantities" as reported *uilder*, and would like to take exception of his statements anent the Edinburgh which are apt to be misleading to those inted with it.

eaking of the Edinburgh style of con-, he says, "Third. The schedule is lodged e architect, with the various items up and cashed." Mr. Honeyman is stating the above. The offers are first n writing; then the architect, in accept-tender of the successful contractor, e does on behalf of the proprietor, sends lank schedule to fill in the rates for the quantities and the sum total which nds with his tender. The contractor, in g the schedule thus made up, signs it as to his offer, and retains the one from is estimate was first made up.

riticising the Edinburgh method of ng, Mr. Honeyman went far astray, a slur on the Edinburgh surveyors in "The measurer may double the number feet in stone foundations" (Mr. Honey-perhaps, not aware that foundations of s, whether stone or brick, are measured, Edinburgh mode, by the superficial foot, thickness). Such a mistake might take Glasgow; I never heard of it occurring burgh. There is no such practice here ontractor making an allowance for con-es on account of any presumed errors in edule.

Edinburgh contractors have the utmost nce in Edinburgh surveyors, all of whom tlemen of unimpeachable character and y in their profession. For an Edin-surveyor to subscribe his name to his aments, is a guarantee for their correct-at no Edinburgh contractor would gain-y the proprietor is a loser in paying the contractor for the measuring is more than my humble judgment can make out. It surely makes no difference whether the proprietor or the contractor pays the surveyor? The proprietor must pay in the end, either directly or indirectly. If the contractor employs a surveyor to measure the work he will add the fee for the same to his estimate. The fees must be got out of the work, *i.e.*, out of the proprietor, who pays for the work.

I fail to see the superiority of the Glasgow mode over that practised in Edinburgh. So far as I know, the system pursued here gives every satisfaction to those concerned.

The architect must be very lax indeed to allow a contractor to proceed without a specification, as Mr. Honeyman defines to be the Glasgow system.

In Edinburgh, the contractor always tenders to act up to the specification, which is generally embodied in or referred to in the schedule.

I trust that when the next discussion comes up before the members of the Institute of British Architects they will be more able to enter into the details of the different systems as exemplified in Mr. Honeyman's paper.

J. A. E.

ST. MILDRED'S, BREAD-STREET, CITY.

SIR,—In the *Builder* we have had some very interesting notices of this City church. Many of your readers, I am sure, thank you. You especially mention the church of St. Mary Abchurch, Cannon-street (now under repair). I know the church very well, with its beautiful domed ceiling painted by Sir J. Thornhill, of famous memory. But, sir, I very much doubt if the extreme beauty of the interior of St. Mildred's is not quite equal to that of St. Mary Abchurch, in respect of the richness of its oak carvings and the plaster-work of the domed ceiling. Indeed, I am inclined to think that the beauty of the oak carving of the pulpit and the sounding-board, and of the noble brackets and wreath of fruit-work round the domed ceiling of St. Mildred's, far excels that of the work at St. Mary Abchurch.

I am using every influence I possess to bring this beautiful interior of St. Mildred's, Bread-street, before the public.

R. P.

MASTERS AND MEN.

Barnsley.—The strike in the Barnsley building trade has been settled, the masons and bricklayers agreeing to accept 7½d. per hour and work fifty hours per week during summer, the winter period to be regulated by the Leeds hours. The labourers also agreed to accept 5½d. per hour, and work the same hours as the masons. The rate of payment in all cases is to be by the hour instead of by the day, as hitherto.

Bristol.—In November last, the master builders of Bristol gave six months' notice of a reduction of a halfpenny an hour, and the men had fully determined to resist and to come out; but when paying the wages on Saturday last, most of the employers told their men to come in after the Whitsuntide holidays on the old terms. Some of the masters adhere to their resolution, and their men will remain out on strike if during the holidays these employers do not adopt the course of the majority.

Northampton.—The dispute in the building trade of Northampton has been terminated. The men recently went out on strike against a proposed reduction of wages from 7½d. to 7d. per hour; but some of the men having gone in at the reduced rate, the others have returned to work, it being understood that each *employé* would henceforth make the best terms he could with the employers—obtain 7½d. if he could; otherwise accept the 7d.

Wallasey.—A strike has taken place among a portion of the bricklayers employed by the Wallasey builders. All the other branches—masons, plasterers, plumbers, and joiners—are working. The strike is stated to be for the purpose of obtaining a reduction of hours.

Newsvendors' Benevolent and Provident Institution.—The annual dinner is fixed to be held at Willis's Rooms, St. James's, (this) Saturday, 7th June. Mr. William L. Thomas, Managing Director of the *Graphic*, will preside, and will be supported by many eminent men. It is a most deserving institution.

WEYMOUTH DRAINAGE.

CORPORATION OF WEYMOUTH *v.* BETTS & CO.

THIS case (to which reference has already been made in the *Builder**) was before the Queen's Bench Division of the High Court of Justice on the 26th ult. It raised a curious question as to a charge against a local board of health for a violation of the sanitary regulations established under the Public Health Act.

The Town Council of Weymouth, who are the Local Board of Health for Weymouth, had made a charge against Messrs. Betts, of that town, for keeping up a nuisance on a part of their premises; and Messrs. Betts made a cross-charge against the Board for a nuisance alleged to arise from their causing the sewage of the town to flow into a certain place. Upon the charge made by the Local Board Messrs. Betts were convicted, but they the other day succeeded in getting the conviction set aside in this Court upon the ground that some of the magistrates who sat on the hearing of the case were members of the Town Council. The cross-charge by Messrs. Betts against the Local Board was made against them as owners, but it appeared that, though the Town Council were owners of the place on which the nuisance was alleged, they were not owners as the Local Board, and, as they alleged, did not occupy the place, so that they were not liable as the Local Board, either as owners or occupiers, and the magistrates dismissed the charge. This was an appeal by the complainants to this Court.

Mr. Channell, for the appellants, the complainants, contended that under the Public Health Act, 1875, secs. 94 and 103, the Local Board might themselves be liable for causing or keeping up a nuisance.

Mr. Pitt Lewis, on the other side, contended that the Local Board had been charged in this case as owners and occupiers, whereas they were not, as the Local Board, liable as owners or occupiers.

The Court (the Lord Chief Justice and Mr. Justice Mellor), without at all doubting that under the enactments referred to the Local Board might be liable for a nuisance to health, said that in the present case, as they had been charged as owners, the charge could not be maintained, and so they dismissed the appeal, leaving the complainants to take out a different summons, and, as all parties appeared to have been wrong, they dismissed the appeal, without costs.

DRAINAGE AND SEWERAGE WORKS.

Salisbury.—The Town Council of Salisbury is about to carry out a scheme for the disposal of the sewage of the city, and to take steps for the compulsory purchase of the land required for the purpose. The scheme, which has been submitted to the Local Government Board, involves a sewage farm.

Alcester.—An adjourned meeting of the Alcester Rural Sanitary Authority was held on the 27th ult., when the Board visited the sewage beds, where they were met by the engineer and contractor. On arriving at the reception tank, the engineer, Mr. E. Pritchard, gave a short explanation of the works. The contractor is Mr. George Law, of Kidderminster. The cost of the works, with engineering expenses and extras, amounts to nearly 3,000*l.*, which at 3½ per cent. for fifty years would make an annual payment of 127*l.* 18*s.*, or for thirty years 163*l.* 14*s.* 3*d.* Mr. Pritchard called upon the Rev. C. Dolben, as Chairman of the Authority, to let the sewage on the beds, and which appeared to work admirably, the beds being laid out in sections, and provided with a number of small tanks in addition to the receiving tank. Previous to turning the sewage on, the Chairman remarked that the Sanitary Authority had a great deal of anxiety and trouble in considering the best and most inexpensive scheme, and at length carried out the one now completed. There was considerable expense attending the works, and he hoped they would now prove successful, and that the town would be benefited. Mr. Pritchard explained that great obstacles had been removed and much expense saved by Lord Hertford allowing them to go upon his land so near to the town, which was a great advantage.

Lichfield Cathedral.—The Dean and Chapter of Lichfield have issued a photo-lithograph of that part of the west front of the cathedral which is in process of restoration, showing the places of the figures—fifty-four in number,—which they hope to introduce, but which are not included in the contract. The average cost is estimated at not less than 45*l.* each, but those which it is proposed to place in the higher stage of the tower may probably cost somewhat less. The Dean and Chapter invite offers for such figures, and their choice will be left as far as possible to individual donors; but for the sake of securing uniformity of plan, the selection of the sculptors and the arrangements of the plan must be left to the cathedral authorities.

* See pp. 435, 487, and 526, *ante*.

Miscellanea.

Is there Anything in It?—The Berlin correspondent of the *Daily Telegraph* writes:—"The Chinese ambassador at the Berlin Court, Li-Fang-pao, is famed among his countrymen in the Flowery Land as one of the most eminent among their learned men. He has not neglected the opportunities which his travels in Europe have afforded him of making himself acquainted with the details of Western civilisation. The fruits of his observations have, in one instance at least, been most remarkable, and will perhaps open a new and wide field for antiquarian research. Li-fang-pao has been examining the remains of Grecian pottery of the Trojan and pre-Trojan period, and has made a valuable and interesting discovery. He proves that the vases found in Trojan territory, and buried or imbedded in excavations dating from pre-Trojan ages (such as those referred to by Schliemann on page 50 of the introduction to his book), are really of Chinese origin. On one of these vessels Li-Fang-pao finds an inscription to the effect that about 1,200 years before the Christian era some enterprising individual had enclosed in the vase three pieces of muslin, and despatched them for inspection. It seems, therefore, that this piece of pottery, at all events, significantly records the fact of the commercial intercourse which existed so far back as the pre-Trojan era between the industrious natives of Cathay and the enterprising merchants of Asia Minor and Greece."

Submarine Telephony.—Mr. Raymond, an engineer in New York, recently read a paper before the Society of Engineers in that city, in which he described some improvements he had made in using telephones in diving operations. According to the *Electrician*, the arrangement first employed consisted of two Phelps telephones, which, being oval and flat, are convenient for this purpose. One of these was fastened in the diver's helmet, in such a position that by simply turning his head the diver could place his mouth or his ear to the instrument. The other was placed on the scow which carried the assistants and the air-pump; and the two were connected by means of insulated wires inside the air-hose. This was found to work very well, so far as communication from the diver to his helper was concerned; but there was difficulty in sending messages the other way, since the bubbling of the air as it escaped from the helmet into the water interfered with the diver's hearing of the telephone. This difficulty was overcome by the use of Edison's "carbon-transmitter," which rendered the sound so much more audible that conversation could be carried on with the utmost facility. It was found that the diver could talk in the helmet without putting his mouth to the instrument, and be heard plainly, so that work and conversation could go on at the same time. The saving of time effected by this means is considerable.

Projected Improvements at Aberdeen.—A sub-committee of the Aberdeen Town Council are maturing a scheme for the improvement of the city by opening up new thoroughfares. A report by Mr. M'Kelvie, city assessor, shows that the cost of the properties affected by the projected new streets and improvement of existing thoroughfares is estimated at 288,000*l.* Including the expense of laying out the streets, the improvements will cost probably close on half a million sterling. It is proposed to straighten the end of Skene-street and the communication with School-hill by cutting away the block of houses known as Black's Buildings; to form a line of communication from Union-terrace to Baker-street and on to Skene-square; to form a curved thoroughfare *viâ* Wallace Neuk from the corner of St. Nicholas-street up to the top of Broad-street, facing the Marischal College; the extension of Union-street to the Links; a line of street from Castle-street to Shore Brae; the widening of Correction Wynd, &c. At the other side of the city it is proposed to widen Fonthill-road and St. Machar-place.

Bradford Art Gallery and Museum.—An art gallery and museum has been opened at Bradford, by the Mayor, in connexion with the Bradford Free Library. The collection of pictures has been insured for the sum of 150,000*l.* They have all been contributed by their owners in Bradford and the immediate neighbourhood.

Sanitary Institute of Great Britain.—The annual meeting of this society was held on the 29th ult., at the Rooms of the Society of Arts, John-street, Adelphi, Dr. B. W. Richardson in the chair. The report showed that four examinations had been held under the direction of the council for local surveyors and inspectors of nuisances. Twenty-six candidates had presented themselves, of whom twelve wished to obtain certificates of competence as local surveyors, and fourteen certificates as inspectors of nuisances. Five surveyors and thirteen inspectors of nuisances had gained certificates, and seven surveyors and one inspector of nuisances had failed to satisfy the examiners. Sixteen candidates had expressed an intention to present themselves for the next examination, in June. By what right this society has constituted itself an examining body we have still to learn. On the motion of Dr. Lory Marsh, who was supported by Dr. Russell, of Edinburgh, and Capt. Douglas Galton, a resolution was carried suggesting that the council should proceed with as little delay as possible to carry out that part of the basis of constitution which related to the establishment of a school and classes for the technical teaching of sanitary science.

A Patriarch of the Press.—The *employés* of the *Macclesfield Courier* newspaper, together with the workmen in the bookbinding and general printing departments, have been celebrating the eightieth birthday of Mr. J. Swinnerton, J.P., the proprietor of the newspaper, and the senior partner in the general business. Many of the staff have been upwards of forty years in Mr. Swinnerton's employment, and the whole had testified their hearty congratulations to their honoured employer by presenting him with a brief *impromptu* address, significant of their respect and good feeling. It was mentioned as a noteworthy fact that Mr. Swinnerton is one of the oldest,—if not, indeed, the oldest newspaper proprietor in England, having been for more than fifty-one years proprietor of the journal of which he is the head, and which has long enjoyed the reputation of being one of the best provincial papers in England.

Worthily Honoured.—We are much gratified by the announcement that the Queen has been graciously pleased to confer the honour of knighthood upon Mr. Henry Bessemer. The honour has been worthily won, though somewhat tardily awarded. Mr. Bessemer's inventions have been numerous and valuable, and his name will ever be indelibly associated with the history of the steel manufacture. In 1856 he read before the British Association, at Cheltenham, his first paper on the manufacture of malleable iron and steel, which has given him a world-wide name,—literally so, for the Americans have christened after him a thriving new town on the Cincinnati Railway, and "Bessemer metal" has become current in most of the languages of civilised communities.

Imitation Ivory.—Harris's patented imitation ivory is made by dissolving 100 grammes of glue in 1 litre of water, 50 grammes of alum in 1 litre of water, and mixing 50 grammes of good bleached cellulose with 3·5 litres of water. The moulds are carefully oiled with a mixture of equal parts of goose-grease and lard; then a mixture is formed, in an earthen vessel, of 75 grammes of the glue solution, 200 grammes of the cellulose water, 200 grammes of water, 250 grammes of finely-sifted gypsum, and 200 grammes of the alum solution. This mass is placed in moulds by a spoon, shaken so as to remove bubbles, and left to set and thicken. It is then removed from the moulds, covered with a woollen cloth, the superfluous water pressed out, and, after it has completely stiffened, the fat is removed by hot water. It is then dried and soaked in a hot mixture of equal parts of wax and stearine. After cooling, it is brushed until the ivory lustre shows itself.—*Dingler's Journal.*

Roman Antiquities.—The *Cologne Gazette* states that the Villa of Marioweiler, near Dueren, has turned out to be a mine of Roman ruins. Enough of the villa has now been laid bare to allow of the apartments of the bath being marked off with considerable precision,—viz., the tepidarium, the caldarium, and the frigidarium. A part of the stove and of the hot-air clay pipe has also been excavated. A tile bearing an inscription has likewise been found. It is not yet definitely deciphered, but seems to bear the date of the eleventh year of the reign of Augustus,—that is, 19 B.C.

Arsenical Wall Papers.—Mr. [illegible] Dyer, public analyst, writes:—"I h[ave] ceived for examination a large number papers of various textures, patterns, and but consisting chiefly of the fashionable olive or sage green papers now so [in] vogue for what is known as the 'Dad[o] of decoration. Out of some three dozen that have been handed to me for during the last few weeks, I found half-a-dozen free from arsenic. To avo[id] apprehension, I would observe that the p[re]s of arsenic was by no means confined green papers, for among the worst spe[ci]s were samples of various other shades, in light blue and sombre brown. The makers remonstrated with, have in one or tw[o] denied that they intentionally introduced into their papers, but complain that the exists as an impurity in the pigments receive from the colour manufacturers they allege, will not take the trouble their colours from the arsenic which duced into them in the course of manu and which ought to be removed bef[ore] finished dyes are sent out. That papers most brilliant tints may be produced p[er]fect free from arsenic is now well known. not take up your space by more than allu[de] the serious consequences that may accru[e] especially to delicate persons, from t[he] in or habitually occupying rooms hun[g] arsenical papers."

Revenues of the City of London.—*City Press* publishes a return which h[as] submitted to the Common Council of t[he] and revenues of the City for the year 18[7]8 principal items are leases of City p[ro]p 96,198*l.*; leases in Middlesex and 16,474*l.* 18*s.*; rents of dwellings for the ing classes, 3,297*l.*; fines for the renew leases, 3,552*l.* 13*s.*; markets, 140,797*l.*; of corn and fruit, 3,042*l.*; brokers' re[n]t fees, 9,572*l.*; justiciary fees, 1,475*l*; rei[m]t ment on account of prisons, 4,053*l.*; rei[m]t ment on account of criminal prosecutions, Lord Mayor's Court fees, 7,382*l.* 10*s.*; offic[e] plus fees and profits, 3,283*l.*; reserve fund reducing amount overdrawn, 30,000*l.* received on the renewal of market 716,189*l.* 15*s.*; with other items amoun[t] 1,044,880*l.* 9*s.* 11¼*d.* In addition to t[he] rents and profits of the Bridge House amount to 60,713*l.* 5*s.* 5*d.*

Vestry Halls in the East of Lon.—Mile-end, Shoreditch, St. George's, Lim[e]house and Poplar can all boast of a suitable p[la]ce for their local parliaments, and them, excepting Limehouse, pride the[m]selves upon being in a position to afford accom[mo]dation for large gatherings of the ratepa[y]ers in capacious halls attached to their p[ar]ish buildings. Before very long two other p[ar]ishes—Bromley and Limehouse, will have to be added to the list of those parishes possessing [a] commodation. For in Limehouse the s[ite] of a new town-hall has long been awaiting building to be erected on it, and at the [pre]sent time tenders are being received for the e[re]ction of the building that has been designed by Messrs. Harston. In Bromley matters are advanced, for there the foundation-stone of a new Vestry-hall was laid on Tuesday, May [2]4, by Mr. Churchwarden Langdon. The buildings will be erected from the design[s] of the architects already named. It will cost 5,300*l.* The builders are Messrs. Cocks &[c.]

Charge against a Surveyor.—At the Chapel-en-le-Frith Petty Sessions, on the 1[st] ult., Joseph Trueman, of the Mechanic's [In]stitute, Manchester, who had resided in Bugsworth, was charged with contravening the Highways Act by not having delivered up all books and accounts pertaining to his office as surveyor, and also with not paying over the balance of [the] moneys (36*l.* 4*s.* 6½*d.*) to his successor in [the] person of William Ashby. Defendant was fined 1[s.] costs, and an order was made for payment of the balance, 36*l.* 4*s.* 6½*d.*; in default a d[is]tress would be levied, or three months' imprisonment would be imposed.

Sewer Scandals in Liverpool.—At a meeting of the Liverpool Town Council on Wednesday last, the Health Committee submitted certain resolutions in respect of the construction of sewers recently made, and recommending the censure and dismissal of certain subordinate officials. The consideration of the subject was adjourned for a fortnight.

al Association for the Promotion d Science.—This year's Social Science is to be held in Manchester. Last meeting of the local executive com- as held, Mr. J. H. Agnew in the t was reported that the following ative members had been nominated to the committee, viz.:—By the Man- edical Society, Dr. F. A. Heath; by Infirmary, Mr. E. Stanley Heywood; hool of Art, Mr. W. H. J. Traice; by nester Society of Architects, Mr. Thos. on; by the Manchester and Salford ards, Mr. Herbert Birley. The resolu- d by the committee at its first meet- the guarantee fund for meeting the nses of the congress at 3,000*l.*, was re- , and it was resolved to fix the amount l at 2,000*l.*

llon System of Raising Sunken —This is described as consisting in g the vessel to be raised by an air- of tent-like construction, which is l lowered over the vessel by means of chan ical appliances. The water is aced from beneath this bell, and at time from out of the ship, by means ssed air. "When a sufficient amount as been displaced, the bell rises to the ad with it, strange to say, comes the ugh not in any way supported or r the bell." This is the essential and ing feature of the latest development m of ship-raising, upon which Mr. id to have been engaged for several . The difficulty would seem to be in tion of the system.

at at Clapham.—On Tuesday Mr. held an inquiry at St. Thomas's nto the circumstances attending the Mr. Charles Owen, aged 51 years, ling at No. 86, Brook-street, Ken- d, South Lambeth. It appeared vidence that the deceased was em- Messrs. Phillips & Rice, builders, of ad, Clapham-road. On the 23rd of as placing a new skylight on the roof room at the rear of the premises of ncourt, linen-drapers, Clapham-road, ld structure that was being removed and the deceased fell with it a dis- ver 15 ft., striking his head against of a chair-back, inflicting a severe d. He died on the 1st inst. The ed a verdict of "Accidental death."

rchæological Association.—It has ged to hold the annual congress of ation on the 12th, 13th, and 14th of farlborough will be the head-quarters, ions will be made as follows:—On y Granham Hill to Oare Hill, cross- Dyke, to the earth-works at Huish at Martinsell, *viâ* Wootton Rivers rest, by the Obelisk to Savernake nce by Folly Farm to Marlborough; th, by Rockley to Barbury Castle, road of Ridgeway, to Avebury hurch, and Manor House), to Sil- y of Stones, and Devil's Den.

London School Competition.— *ress* of Wednesday last stated that y the City of London School Com- ld meet to receive the report of the tee on the selection of plans for the buildings on the Embankment. The tee (according to our contemporary) mmend that the first premium be the design bearing the motto "Live "; the second premium to "Sim- and the third to "Playgrounds." ese recommendations were adopted mittee we do not know, neither have le to ascertain the names of the the designs mentioned.

ussels Exhibition of 1880.—In s des Manœuvres at Brussels, the he National Exhibition of 1880 are actively. According to the *Parisian*, on the right has its walls already ur mètres above the ground, and the of the second one are rising rapidly. men are employed there, and more arts are constantly bringing mate- ell-paved road, five mètres in width, nstructed from the entrance of the centre of the structure. A railway n with those of the city is being will be finished in a few days.

A Good Engraving.—Mr. Arthur Lucas, of Duke-street, Piccadilly, sends us an impression of an important plate he is about to issue, engraved by Mr. Geo. H. Every, from the picture by Marcus Stone, A.R.A., which may fairly be considered that painter's *chef d'œuvre*, and which was selected by the commissioners as his chief contribution to the Universal Exhibition in Paris last year. Its title is "Sunshine and Shadow," and it illustrates the lines from Shakespeare,—

> "'Tis better to be lowly born,
> And range with humble livers in content,
> Than to be perk'd up in a glistering grief
> And wear a golden sorrow."

We can well believe what we are told, that the engraving is the result of upwards of twenty-four months of assiduous and loving labour on the part of Mr. Every, and we will add that it is as conscientious a transference on to steel of all the subtleties of tone and refinements of a painter's conception and touch as we have ever seen. It is an excellent picture charmingly rendered.

Adhesion of Mortar.—In building the Pont de Claix, some experimental blocks were joined by mortar, which was allowed to harden for three years, when the mortar was broken by an average load of 10·0125 kilogrammes per square centimètre [142·228 lb. per square inch]. This experiment seems to show that the adhesion of mortar to stone is only about one-third as great as the cohesion of the mortar itself. The result is noteworthy, as this adhesion is the true measure of the resistance of masonry. Further experiments of a similar kind are desirable in order to establish formal conclusions.—*Ann. des Ponts et Chauss.*

Southampton Docks.—The coffer-dam at the new dry-dock works gave way at about a quarter past ten o'clock on Monday night, causing a breach in the same 180 ft. in length, and admitting the tidal-water into the new dock, but otherwise not doing any serious damage. The accident is attributable to the soft ground and the high tide at the time, together with the constant and heavy rain on Monday. Fortunately, no person was injured, and the completion of the dry-dock works will not be much retarded by this accident.

The Mansion of Cowarth Park, recently alluded to, has been provided with a new water supply and waterworks. The fresh spring-water, brought in a conduit from a distance, is raised by a high-breast water-wheel and pumps, the power being given by a polluted stream. The machinery was constructed and supplied by Messrs. Warner & Sons, of Cripplegate, under the direction of Mr. S. B. Goslin, one of the seven essayists on national water supply districts and divisions, accepted by the Society of Arts at their recent Congress.

New Public Buildings, Ipswich.—Mr. Charles Barry, ex-President of the Royal Institute of British Architects, was requested by the Corporation of Ipswich to advise them upon twenty-one sets of designs submitted in competition for the proposed new building adjoining the town-hall, intended to accommodate a new post-office, and some of the municipal offices found to be necessary, and to say which of the designs comply with the conditions issued by the Corporation, and which design he would recommend to be carried out. Mr. Barry has just now sent in his report.

Work for Builders.—The *John o' Groat Journal* says that although numerous houses have been built in the town during the past ten years, there is not a decent dwelling unlet in Wick or Pulteneytown at the present time. "More dwelling-houses of a moderate rent are urgently required. Now is the time to build."—At Oundle, in Northamptonshire, there is stated to be a continual and increasing demand by the working class generally for comfortable and convenient dwelling-houses. It would seem that suitable sites are now available for the erection of such buildings.

Fall of Houses.—An accident of an alarming nature occurred in the Junction-road, Kentish Town, on Saturday evening last. A row of shops had just been completed, and were in course of letting, none, however, being occupied at the time. About 7 p.m. a loud crash was heard, and it was found that two adjoining shops in the row had fallen in, carrying away a large quantity of woodwork. The remaining portions of the wall were speedily removed, leaving only the partition wall standing.

Ecclesiastical Art.—It is proposed to hold an exhibition of works of ecclesiastical art in London, during May and June, 1880. The exhibition will be open to British and foreign art, and will comprise a loan collection of Mediæval and modern ecclesiastical art, a division for architects, artists, and others who exhibit original work, and another for works of manufacturers. The gallery of the Albert Hall is spoken of as the probable locality.

Paris taking a Hint from South Kensington.—The Paris correspondent of the *Times* says that a pedagogic museum and library are to be established at the Ministry of Public Instruction. M. Ferry, in decreeing this measure, dwells on the example of the 20,000 volumes in the scholastic collection at South Kensington, an example already imitated by Canada, Russia, Austria, and other countries.

South Kensington to Chelsea.—The Albert Bridge Company originally undertook to continue Oakley-street to the Fulham-road. It is to be hoped the Metropolitan Board of Works will now take up the scheme. A wide thoroughfare from South Kensington to Cheyne-walk, and so over the river, would be a great and valuable public improvement.

"Cow-house and Piggery Fittings."—For palace or piggery architects must be alike prepared. The St. Pancras Ironwork Company have issued an illustrated catalogue of iron cow-house and piggery fittings, with prices and details. In view of the stringent Orders in Council respecting keepers of cows these fittings are likely to be in special request.

The Monument to King Frederick William III.—By inadvertence, the monument in Cologne to King Frederick Willliam III., of Prussia, illustrated in our last issue, is named under the view as that of the *Emperor* Frederick William. The article describes it correctly.

Lord Wolverton has been making great improvement in his kennels at Iwerne-Minster. Claridge's patent asphalte has been laid to all the kennel floors and approaches, with a view of rendering them watertight, which is so essential a matter for hounds' feet. The work has been entrusted to Messrs. G. Smith & Co., of London.

Copyright.—At the next meeting of the Social Science Association, on the 9th instant, a paper, by Mr. J. Leybourne Goddard, "On the Law of Copyright, with special reference to the term for the duration thereof, and the Report of the late Royal Commission with reference thereto," will be read and discussed.

The Paddington Branch of the London Joint Stock Bank.—We may add to our description of this new building that it has been fitted up with electric bells and alarms, by Mr. Julius Sax.

Burning of a Race Stand.—At the Auteuil steeple-chases, near Paris, on Monday, the secondary stand caught fire during a race, and when crowded with people. It was utterly destroyed, but, fortunately, no person was injured.

Sale of Architectural Books.—The library of the late Mr. C. R. Cockerell, R.A., will be sold by Messrs. Christie, Manson, & Woods, on the 10th and 11th inst. At the same time a section of the library of the late Mr. P. Hardwick, R.A., will be sold by the same firm.

Melbourne International Exhibition of 1880.—It is announced that the time for receiving applications for space to exhibit at the Melbourne International Exhibition of 1880 has been postponed to the 31st of October.

TENDERS

For the erection of three houses, at Hackney, for Mr. James Child:—

Fortescue	£1,995	0	0
Larter & Son	1,938	0	0
Sargent	1,923	0	0
Forrest	1,847	0	0
Beale	1,800	0	0

For painting and other works at the Leytonstone School, for the Guardians of St. Matthew, Bethnal-green. Messrs. A. & C. Harston, architects:—

Wythe	£141	0	0
Emmett	123	10	0
Arber	123	0	
Cocks	110	0	0
Derby	97	0	0
McCarthy (accepted)	80	0	0

For distempering works, &c., at the Poplar and Stepney Sick Asylum, Devons-road, for the Managers. Messrs. A. & C. Harston, architects:—

Whitford	£221	0	0
Sheffield & Co.	199	14	0
Derby (accepted)	198	10	0

For the erection of four houses, Gale's-gardens, Bethnal-green. Messrs. A. & C. Harston, architects :—

Wire	£1,829	0	0
Thomason	1,816	0	0
Beale	1,780	0	0
Wise	1,697	0	0
Edwards	1,634	0	0
Johnson (accepted)	1,427	0	0

For the erection of a new warehouse in Fieldgate-street. Mr. Walter Stokes, architect. Quantities supplied :—

Ashby, Bros.	£4,695	0	0
Browne & Robinson	4,667	0	0
Crabb	4,460	0	0
Conder	4,395	0	0
Mark	4,200	0	0
Downs	4,185	0	0
Grover	4,144	0	0
Little	3,818	0	0

For alterations, Zetland Arms, Brompton, for Mr. Puttsam. Mr. H. J. Newton, architect :—

Grimwoods	£364	0	0
Lamble	363	0	0
Knight	350	0	0
Godden (accepted)	335	0	0

For cabinet-fittings, &c., at the George and Dragon, St. John-street, Clerkenwell, for Mr. Pierpoint. Mr. H. J. Newton, architect :—

For Cabinet.

Warne	£241	0	0
Godden (accepted)	232	0	0

For Counter.

Heath	160	0	0
Godden	149	0	0
Warne (accepted)	131	0	0

For the erection of three houses, at Denning-road, Hampstead, for Mr. A. Field. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Wall, Bros.	£4,265	0	0
Linzell & Sons	3,963	0	0
Scrivener & Co.	3,915	0	0
Morter	3,893	0	0
Williams & Son	3,770	0	0
Niblett	3,497	0	0

For the erection of three houses and shops at Balaam-street, Barking-road, for Mr. T. Kerslake. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Lewis	£2,590	0	0
Read	2,573	0	0
Hosking, Bros.	2,570	0	0
North, Bros.	2,502	0	0
Morter	2,343	0	0
Hearle & Son	2,293	0	0

For alterations and additions to Nos. 32 and 34, Chrisp-street, Poplar, for Mr. R. Jones. Mr. J. T. Newman, architect :—

Harris & Wardrop	£325	0	0
Abrahams	297	0	0
Sheffield & Prebble	297	0	0

For Limehouse new Town-hall, for the Vestry of St. Anne's. Messrs. A. & C. Harston, architects. Quantities by Mr. G. P. Raggett :—

Frout	£13,450	0	0
Staines	12,984	0	0
Crockett	12,831	0	0
Foster	12,555	0	0
Crabb	12,500	0	0
Johnson	12,195	0	0
McLachlan & Sons	12,080	0	0
Stevenson	11,975	0	0
Braid & Co.	11,900	0	0

For the erection of a new warehouse at Putney. Mr. George Edwards, architect. Quantities supplied :—

Lidstone & Son	£1,000	0	0
Wilkins	987	0	0
Martin, Wells & Co.	965	0	0
Aviss & Co.	948	0	0
Avies	880	0	0
Richardson	855	0	0
Cullum	791	0	0
Williams	788	0	0

For alterations and additions to Ravenswood, Loats road, Clapham Park, for Mr. F. Corfield. Mr. T. Anson, architect. Mr. D. Campbell, surveyor :—

Colls & Son	£1,972	0	0
Brass	1,909	0	0
Hider	1,878	0	0
Pritchard	1,839	0	0
McLachlan & Sons	1,743	0	0

For new Primitive Methodist Chapel, Worksop. Quantities supplied :—

Tutin	£2,340	0	0
Ullett	2,250	0	0
Rollet & Wilkinson	2,195	0	0
Hanson	2,120	0	0
Wilson	2,058	0	0
Goddard	1,967	0	0
Wilson & Bulling (accepted)	1,900	0	0

For house, No. 1, Manor-road, High Barnet, for Mr. G. J. Urdidcombe. Mr. John Ladds, architect :—

Macfarlane	£1,040	0	0
Somerville & Hill	960	0	0
Butler	830	0	0
Niblett	814	0	0
Gould & Brand (accepted)	725	0	0

For house, No. 2, Manor-road, High Barnet, for Mr. G. J. Urdidcombe. Mr. John Ladds, architect :—

Macfarlane	£1,135	0	0
Somerville & Hill	1,080	0	0
Butler	911	0	0
Niblett	860	0	0
Gould & Brand (accepted)	860	0	0

TO CORRESPONDENTS.

B. Q.—W. N. P.—T. W. W.—P. B.—S. J.—J. B. D.—J. S.—St. P.—H. J. N.—W. S.—S. B. G.—M. & L.—R. H. C.—C. L. H.—J. P. S.—G. & B.—R. L. C.—Mr. V.—M. & Sons—F. B.—W. & Son.—D. W.—J. A.—F. P.—H. H.—Mrs. F. R. W.—J. B.—C. H.—S.—G. R.—L.—C. S. P.—F. S. A.—F.—C. P.—Betti (so)—Jas. S. (shall have attention) Resident on the Milkwood Estate (ditto. Too late for this week) C. F. (in type)

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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Personal Recollections by Sir Gilbert Scott.

In return, according to promise, to fuller consideration of this book,* which will probably excite considerable interest beyond the circle of those who have professional reasons for studying the autobiography of an architect. The subject of it was so widely known, and had ght into contact in his busy life with people, that there will be no lack of r a book that gives records of the he most successful architect of the is own point of view.

ve for the preparation of the memoirs e force of which many will feel, viz., n's children have no means of getting iculars of his life up to the time when observation and memory begin to , and that they are particularly apt nistaken impressions." It was to fill ble gap in family history that Scott se notes of his life, which were there- sly intended originally for private y on the part of those most directly in them; but at a later period changed his mind, and drew up for the publication of the book nt of his decease, feeling it due he said, that the statement of ional life "should go before the fair and unprejudiced form." It is d thing, considering human nature is, that any man should offer his ption of his life and work as the d unprejudiced one, which is what e must imply if it means anything. e autobiography fulfils these con- fairly as is usually possible with n when appraising and estimating gs: it does not do more than this; metimes does less.

ds furnished by the writer as to the round which his first recollections characteristic and amusing. His was that Gawcott, the village where n, was a very quaint place in its the character of the inhabitants. r had told him that when, on his first t to the living, he went to Gawcott re, he found the road to it rendered impassable by a large hole dug across it, in which the inhabitants were baiting a badger. The description of the native domestic architecture of the place has an interest more or less connected with the subject,—

> "The cottages were usually of the old thatched type, built of rough stone, or of timber and plaster. The one sitting-room known as 'the house' had the old-fashioned chimney corner, in the sides of which the master and mistress of the family sat, with the wood fire placed upon bars and bricks, on the floor between them. In the ample chimney over their heads hung the bacon, for the benefit of the smoke, and below it all sorts of utensils for which dryness was to be desired; and high overhead, as they sat there, the occupants could see the sky through the vertical smoke-shaft. The room was paved with unshapen slabs of stone from the neighbouring quarry or 'stone-pit,' and the oaken floor timbers showed overhead, though hardly sufficiently so for a tall man to feel his head to be safe. Between one of these timbers and the floor there was placed (where babies were to be found) a vertical post, which revolved on its central axis, and from which projected an arm of wood, with a circular ring or loop at its end, so contrived as to open and shut. By passing this about the baby's body, the litt'e thing could run round and round at will, while its mother was busy at her household work or at the lace-pillow. The bedroom arrangements I do not recollect, but I do not think they were so defective as those we now often hear of, and the generality of cottages had a pretty ample garden."

It was a good while subsequent to this that some one in America patented a "baby-jumper," but the inhabitants of Gawcott, primitive as they are said to have been, were obviously beforehand with the Yankee in the main idea. He provided the baby with the means of vertical movement, while they of Gawcott preferred horizontal movement; but that is only a difference of detail.

Scott's family were what were then called "Methodists," later "Evangelicals," and from his own account lived in a state of great social isolation in their neighbourhood, which he partially traces to the hatred of what was called Methodism, though evidently with an impression that this alone did not quite account for it. From his description of his mother (a very pleasing figure in these early recollections) we should imagine that there would have been about the family something of the reserve (and the consequent misunderstanding by others) which often accompanies characters at once original, self-respecting, and rather quiet and regular in habits; people who will not make friends of those who are at all below them in station, and may by their social equals be regarded as deficient in social amenity and companionable qualities. It is a kind of family character often found associated with solid and exceptional abilities and marked individuality. Scott's description of the old "high-and-dry" clergy, and his analysis of their probable ideas and motives, tally precisely with what we learn of them from some other sources, and display a good deal of observation and a certain dry humour.

The various details as to the persons connected with Scott, either by family or association, in these early years of his life, have a good deal of interest, and are given with occasionally very lifelike touches of character; but we must pass over these to come to passages more nearly affecting his professional career, only first mentioning, as an architectural reminiscence, that Scott remembered his father writing to the then Duke of Buckingham to repair the church of Hillesden (a church about two miles from Gawcott, and which was the architectural lion of the district), and that the result was that his Grace whitewashed the exterior of the tower. It is interesting to read of the manner in which this and some other apparently good churches in the neighbourhood impressed the mind of the future church-restorer, and especially the astonishment and mystification which the Early English work at Chetwood Church caused in him, he having previously seen, apparently, only specimens of Late Gothic, interspersed with stray bits of Norman. "Never having before seen such windows, I was greatly perplexed with them, and, failing to get the key, and being reduced to peeping through the keyhole of the west door, I was astonished and puzzled to find that the east windows had shafts with foliated capitals, a thing I had never seen, and could not understand. I remember continuing all day in a state of morbid excitement, on the subject, and having no access to architectural books, it was long before I solved the mystery." It was, however, this boyish interest in churches which led his father to think of his becoming an architect. His uncle undertook to give him some further education tending in that direction, while they looked out for an architect to whom to article the boy; and during what appears to have been a very happy period at his uncle's charming rectory, at a place bearing the picturesque and suggestive name of Isenhampstead Latimers, Scott became acquainted with Stewart's "Athens," and (as far as he remembered) with Rickman's "Gothic Architecture," and made some progress in architectural drawing. He was then articled to Mr. Edmeston, "better known as a poet than an architect," on the recommendation of the travelling agent to the Bible Society, who told them there was hardly a religious architect in London,* and apparently must have recommended Mr. Edmeston as the one pious practitioner to be found. And to this gentleman he accordingly went in 1827, living with his master's family at their own house, as well as working in the office.

The first remark which he remembered his new master making was, that the cost of Gothic architecture was so great as to be prohibitory; that he had tried it at a Dissenting chapel, and that the mere cementing of the exterior "had amounted to a sum which he named with evident dismay." On being asked next day to walk out and see some of the work that was going on, Scott found that his fairy visions in regard to architecture were for the present dis-

and Professional Recollections by the late ott, R.A. Edited by his Son, G. Gilbert Sampson Low & Co. 1879.

* Mr. Edmeston was, we may observe, a writer of evangelical hymns, which used to be familiar in the collections of the day, and some of which are of real beauty of feeling from their own point of view: at least, as Scott calls him a "poet," we presume he was the author of these.

sipated; the romance of architecture reducing itself to some common-place brick houses, with cemented porticos. He admits, however, that the entire want of any taste at all in the office at which he was articled may have been an advantage in leaving him free to pursue and develope his own ideas; and to the well-meant kindness of Mr. and Mrs. Edmeston he bears testimony. The examination and sketching of buildings in and around London, such as were within tolerably easy reach in those days (St. Alban's pre-eminently), formed the antidote or supplement to the office teaching. While serving his time at Mr. Edmeston's, a builder named Moffatt, who had done work for Edmeston, induced the latter to take his son as a pupil; and it is probable that the practical cleverness and readiness in regard to everything connected with construction which this youth possessed had considerable influence on his office companion. Scott mentions a little later his entering for a time into connexion with Messrs. Grissell & Peto, the contractors, giving them such services as he could in return for the run of their workshops and their buildings, and speaks very strongly of the advantages in the understanding of practical work which he derived from this arrangement. He had once to assist two eminent surveyors in measuring up all the work in a row of houses for the firm; and, he says, "a most valuable lesson it was." We may call the attention of some of the rising architects of the exclusively æsthetic school to this. Scott's subsequent fame was not made as what is generally called a specially "practical" architect, yet we see what an idea he had, writing years afterwards, of the value of this kind of prosaic practical training. His taste, at the period immediately after leaving Grissell & Peto, he says, was quite chilled by the effects upon him of the next gentleman to whom he acted as assistant, Mr. Roberts, who had been with Sir R. Smirke, and had imbibed what Scott calls "Smirkism"; though in using the expression, and in the meaning obviously implied, he was probably expressing rather his feeling in looking back to that period than his feeling at the time.

The circumstances under which Scott got into practice were as singularly unpromising of, and at variance with, his future career as were those of his professional apprenticeship. He obtained, through circumstances which are related, the appointment of architect to four Union workhouses, not without diligent canvassing of every guardian; and when the work began to be such as to require another hand, he engaged Mr. Moffatt to help him, and eventually made the latter resident superintendent of some buildings within a few miles of each other. Moffatt in turn attracted the goodwill of an influential gentleman in Wiltshire, and through him obtained a workhouse architect's position himself. The state of things thus created was somewhat "anomalous," as Scott says: Moffatt was assistant or clerk of works to him on some buildings, and was architect for other buildings, the plans of which were drawn at Scott's office. Moffatt then proposed the partnership which was shortly afterwards entered into.

Mr. Moffatt appears to have entered heart and soul into Union-hunting, and it is not difficult for those who read between the lines, even without the traditions which are extant, to see that this must have been a period of getting hold of work anyhow, hunting it down, and that neither partner could have allowed himself to be too particular or sensitive in regard to the means of influencing committees and guardians. According to Scott's description (which we confess we take a little *cum grano*) it was the recognised practice at that time for architects in Union competitions to canvass and fight their way to the reception of their plans by any and every means that pertinacity could suggest; whether this was quite the case, or whether, in fact, Scott, in later years, writing about his own practice, preferred to think that he only did what every one else did, we should imagine was an open question. To Mr. Moffatt's energy at this time Scott bears strong testimony, and both seem to have lived in a perpetual hurry-scurry after work. They used to go to Peele's Coffee House every week to look up notices of competitions; then one partner went down to the spot to get up information, and on his return the two set to work with violence to prepare competition drawings, working day and night; then more travelling about to interview guardians, &c. His partner, Scott says, was most successful in this kind of fighting, having an intuitive perception with men to aim at pleasing; and that he was the best arranger of a plan, the hardest worker, and the best hand at advocating the merits of what he had to prepare of any man the writer had known, and he thinks he thoroughly deserved his success, "though it naturally won him a host of enemies and traducers." This style of doing the thing was no doubt a pretty sure way to success, in the ordinary sense of the word; and the world judges of such efforts according to their success. We confess, however, that we think there are two sides,—at all events, that another side is worth considering,—in the matter. People may say, of course, that the man who wishes to get on must take the world's way; and we may be told that, but for this diligent pushing, Scott's subsequent successful career might never have been brought about at all. But we can hardly blame those who would feel that the whole thing, at this point, is not very dignified; and if architecture is to be carried on as the profession of a gentleman in every sense of the word, we feel sure that many a high-minded man would rather see his son make a very moderate and slow success in a quiet way than see him lay the foundation of a brilliant practice by jumping about after everybody who has anything to give, and elbowing others out of the way. It is a fact that some of the most successful practices we have heard of have been originated in this kind of way, and the public judge by the event, and prefer a man who has been successful without being too curious as to the means; but we may also be allowed to observe, which we do with certain inward feelings not altogether of pride or pleasure, that architecture is the only occupation taking rank as a liberal profession in which this kind of pertinacity is so much practised and is so successful. A physician or a barrister who would take the same kind of means for getting together a *clientèle* would probably be very much snubbed by the objects of his efforts, and would certainly lose caste hopelessly with his professional brethren. We commend this view of the matter to the young architect anxious for practice, and on the whole we do not say to him, in reference to this part of the biography of a successful architect, "Go thou and do likewise." Dignity and self-respect are something, and to part with them to grasp a rapid success may be paying too dear for one's whistle.

We do not wish, of course, to infer that Scott had effected this exchange, except for the time being, and in so far as he assisted and partook of his partner's eager chase after architectural game. At the same time, we may just say that it seems to us that Mr. Moffatt, who is, we believe, still living, has been a little hardly treated. It is pretty evident that Scott was very much indebted to him in the getting together of his practice, and the subsequent story of the dissolution of partnership looks rather as if he was cut adrift when Scott obtained credit enough and work enough of a higher class to stand alone. The announcement of his wish to dissolve the partnership appears to have been postponed continually by Scott in a sort of nervous dread, and was eventually brought about by Mrs. Scott in his absence and without his knowledge. However, we cannot, of course, know all the circumstances which may have rendered such a course necessary.

The subject of our notice confesses that he perpetrated many monstrosities before he fairly came to his Gothic. The first work which he seems to have looked back upon with satisfaction was the Martyrs' Memorial at Oxford, which came somewhat appropriately, as the somewhat similar monument at Waltham Cross had been one of his earliest studies. We gave a pretty complete review of Scott's life and works in the number of this journal the week after his death, and therefore do not repeat such summarising or criticism now, but we mention this particular work in consequence of the little story connected with the choice of stone. Scott had suggested that in the district there would possibly be found a stone more suitable for the purpose than those over which the committee were disputing, and was snubbed by Dr. Buckland, who said that no one who knew anything of geology would have thought of making such a suggestion. Scott, however, believed in his own practical experience, and went on an exploring expedition, which resulted in his being taken by a quarry-foreman to the very description of stone he wanted. The committee at once adopted it, "and in their next report attributed the happy discovery to the pre-eminent geological skill of Dr. Buckland,"—a kind of proceeding will surprise no architect who has had mu do with committees.

The brief advice to architects engaged pairing old work, in regard to its pra handling, given at page 99, should be look and made note of by every young arch Interesting in another way are the refle in regard to the Camden Society and their b and high-handed proceedings, and he tells a of their criticising one of his churches fo posed errors which it did not contain, a fending themselves by the statement tha had only an imperfect lithograph to go b that this was the architect's fault for not h submitted his plans for examination!

We must content ourselves with one o remarks in regard to some of the great tested events in public building in which was concerned, and upon which his thoughts are given here. The whole a the Foreign Office affair is told at some l and with an obvious bitterness that is understandable and excusable. Scott what is evidently intended tacitly (thou so expressed) as an answer to the man as he must have known, thought that he have better consulted his own fame and l fessional dignity by declining to carry o building in a style he disapproved of, a long been practically unacquainted wit says that "to have done so would have give up a sort of property that Provider placed in the hands of my family, and w simply rewarding my professional oppone their unprecedented attempt to wrest from the hands of a brother architect," & the professional opponents referred to w do not profess to know clearly; the oth of the argument seems to us rather doub the part of a man who could not have want of means, and who had almost sta professional repute on Gothic. The stor Albert Memorial is very fully illustrated, n out pretty smart raps at those whom Sir calls his revilers. The remark most dir the point as throwing light upon the me defects of the work, is that "my notion, good or bad, was for once to reali 'jeweller's architecture' [the architec model shrines, &c.] in a structure of f and this has furnished the very keynot design and of its execution." It appe that this sentence is also the keynote to appointment which has been felt by so the structure as a whole. He rather to pats on the back Mr. Armstead, whose b on the south and east sides form the pa work best worth a visit to see. What h by saying, in referring to the conce beams supporting the spire, that such c supports were common to all such struc the Middle ages, we cannot understand. seems to have settled it that the Albert M was his great work, and avers that it was by criticisms predetermined and prem some of which "were groundless, some some merely stupid, and most of them malicious." Is this a "fair and unpre way of putting the case? The accoun Law Courts competition is marked b considerable satisfaction with his own quite excusable in private writing for family, but not so wise to publish; and somewhat courageous in saying that Mr design was what "no one approved of," or two further we read that "a race of d of me and of my work has arisen, the n whom say that I have fallen off since n by Lord Palmerston. I do not think t be any ground for this statement, as so best works are of subsequent date," of the best works follows. This, we suggest to scoffers the Archbishop in "

The point in which Scott was *facile* was in his complete and apparently insight into the anatomy and desi cathedrals and churches he was call to restore. We should have been wel had space permitted, to have gone thro of his remarks on his cathedral work of which, we may quote one instance Dean of Chichester gives in his prefac Scott came to look at a certain church the Dean was then interested, after a l below, they went on to the leads, a survey of the roof. "'What is *that*?' suddenly, directing his glass to the s he gable. I volunteered the stateme was the ruined fragment of a former much it seemed. '*That* was never

, he at last said thoughtfully, 'it is part e tracery of a window. I can see the y for the insertion of the glass.' To be , it proved to be, as he at once suspected, ne necessary clue to the restoration of the window. On the window-sill, which was combed with decay, his practised eye had dy distinguished traces of *four* mullions. w more fragments were found built into all, and the entire window for the archi- purpose was recovered." It was this y of seeing at once everything that was seen that could throw a light on the al design of a half-ruined structure, which so peculiarly developed in him that the at building seemed to come at his call.

re are points, however, which are not so able, which find illustration in this auto- aphy, and which will hardly tend to his reputation for knowledge. He was ertainly below the usual standard of the sion in regard to matters of general otual interest, but his views and observa- on important subjects beyond the profes- e disappointing. It is impossible not to at his account of his pleasure in talking to ld German philosopher named Schopen- ' who, however, was "unhappily an it," without apparently the slightest sus- that he is speaking of a man who fills a more important place in modern intel- Europe than Scott or any other modern ect. The entire want of recognition of who were of any service to him cannot remarked. Mr. Bruce Allen, who had more than any one else to do with getting Architectural Museum, is merely referred a "strange person" who called on him ; and while there are continual bitter se about his assailants among the ls, there is not one word of recogni- f the help which he received from journals when he most wanted it,— which he urgently entreated in letters as if his professional life or death for ment depended on an editor's good-will. e cannot help feeling that there is some- little undignified in the frequent impu- of malice and reviling, and other strong in reference to criticism which in the vas probably as honest as criticism, as orld goes, usually is. "This great com- t" (the Law Courts) "did me harm, as a conspicuous non-success, and as g me to the gibes of enemies, whom I nocently supposed not to exist, but whom brought out of their lurking-places." eally Scott had no enemies more than n who had raised himself to a conspi- place usually has; and he had far more wn way in the world, professionally, than to more than one man in half a century He was quite right in what he said as ssional men writing down each other in priuts, and it is to his credit that he id that himself. On the other hand, we at he sometimes fancied private injuries airness from professional compeers in where there was no unfair intention.

more remarks: one is, that we highly ove of the proposition made on p. 176, ere ought to be two Professors of Archi- at the Royal Academy, "one for Classic, er for Gothic architecture." Nothing l-advised was ever said. A man who can y understand one can understand the and to consider them entirely apart is to lf the meaning and history of Gothic. al remark is merely the quotation of an te anent a late brilliant ecclesiastic. At r-table, referring to a church thought to a dangerous condition, some one said, a mercy it was the tower did not fall the bishop's visitation." "Not at all," a barrister who was present, "I'd match dodge a falling church with any man." d to ask who "Sam" was.

Clothworkers' Company and Textile ries.—The Clothworkers' Company have 5,500*l.*, over and above the 10,000*l.* pre- voted, to cover the complete cost of the ilding, furnishing, and fitting with all ry appliances the textile industries and instruction departments of the Yorkshire , Leeds, and they have further agreed to in the building and its operations in full without extraneous or adventitious aid, eriod of five years, from January 1st t a cost of 1,200*l.* per annum.

ART AND THE ART-WORKMAN AT THE MANSION HOUSE.

As luck will have it,—may we say it?—there turn up every now and then opportunities of looking into both the past and present of things, artistic and otherwise, contrasted. It is from out-of-the-way places, and from those who perhaps do not altogether estimate at its true value what they do so kindly, that this help towards a better knowledge of things at times comes. In all trades and vocations where art can possibly find a place, we discover,—if we but look for it, and do a little in the way of research,—as we go into and back into its history, that art, and fine art too, is to be found in the making of the very commonest things, and in objects wherein no one nowadays thinks for a moment of looking for it. That this is a fact but few, if any, will dispute who but go a little below the mere surface, and none will do so, certainly, who looked, even superficially, into the exhibition, at the Mansion House, of the past and present of coach and carriage building, and at both English and foreign carriage building, as there seen. We propose to note a few things in and about it, not so patent to all as perhaps might be, but which will, we think, have their value, and perhaps aid in the better appreciation of such displays, and may, we can but hope, lead to their multiplication and wider extension. No trade in which art does or can find a place should be neglected, as well for the sake of those concerned in it as for the public.

That we should be but poorly off without "antique" art, to use a general term, is quite certain, and but few, perhaps, fully estimate what it has done, and yet may do, for us, and for modern art and art-workmanship. It has, perhaps, hardly as yet commenced its work in its true and legitimate sense, though we have no wish whatever to underrate what it has done, and what is owed by modern men to it. We are, of course, not speaking here of Greek and Roman art merely, but of past art generally, and of the past methods of art production as contrasted with the present. Of the whole range of Gothic, how much might be said, from its earliest to its latest, and how much of the Renaissance, all Europe over. We speak here, too, not so much of the forms to be found in the old art, wherever found, but of their mode of production, and of the action of the workman in that production. In this interesting exhibition we see, even in drawings and etchings, and pictured representations, how very different all this was from that of the present mode of production, and how all things fell, as it were, into the general course of art-thought and feeling current at the time in which the objects were produced. Indeed, small as this exhibition of the coachmakers' art at the Mansion House was, in it might be discovered not alone the powerful influence of the executive workman on his age, but of that age on him.

We scarcely know where to point, as the objects exhibited, got together for the most part by chance, and placed without chronological sequence, are difficult of analysis. We might note first, as that nearest to hand, and a simple matter, an engraving showing the Strand as it appeared in the year of grace 1713, and on the precise 7th of July in that year, when both Houses of Parliament went in solemn procession to Saint Paul's Cathedral in the days of Queen Anne, the whole of the "charity children" of London being provided with seats to view the procession. This representation of things as they were was drawn and engraved by G. Virtue, and is without doubt sufficiently authentic. It contains a long length of the procession, and of the quaint carriages and coaches which went to make it up, and shows us how things have changed, and how out of the way, and from almost another world, such a show would now-a-days seem. Such locomotion cannot now-a-days be imagined, nor can the special forms of it. All is alike quaint and harmonious, the buildings, the men and women, and the street itself. How was this? Had this very procession of the two Houses of Parliament, as is here depicted in a drawing, been sculptured on marble blocks, in the front and sides of a great temple, as in Greek days, we should doubtless dwell on it with far more of interest, and see more in it; but even as it is, it may read no slight or uninstructive lesson.

It is a pity, indeed, that this procession was not sculptured, and that we must needs content ourselves with its representation and embodiment on a sheet of fragile paper, and open to public gaze only for a few days at the Mansion House. The men of England, in the days of Queen Anne, were not Greeks, that is certain; neither are we of the present day. Here we see our own work. Let us go a little further, for we can but make note of a thing here and there. There was nothing in the whole of this exhibition of the past and present of coach building and construction more notable, even as seen in engraving and drawing, than the action of the hand of the artist workman in the past of such work, and the action of the all-powerful machine in the present, and of the action of the workman as simply a part of it; and it is certain that this fact is now more or less appreciated; for close to this "procession" there is a panel of French carvings, which professes, and loudly too, to be the result of a patented or other such process, and to rival "machine-work" in accuracy and finish. And this in reality it does, and it must have been useful to the student to compare it carefully with some specimens of carving in wood scattered through the Mansion House rooms every here and there, from a variety of hands and places and objects, and perhaps more than this with the carvings as photographed from so many other objects from different places and by different hands.

We have gone with some care through this collection, and selected for notice and comparison much that was noteworthy. We may usefully call attention to two or three of these, for they well deserve study from those who nowadays do such work, as rivals, if not as imitators. In the magnificent state-coach of King Jean V. of Portugal, of the date of 1706, both the front and back, as well as the sides of the carriage, are covered with elaborate and beautiful carving, too intricate to be described, but altogether harmonious, and fitted for its place and purpose as the decoration of a state-coach. The workman here must have been an artist, with head to comprehend the work, and a hand to execute it. Fine and noble work is simply not confined to any special place or time, but is the product of all places and times,—if but the right way of work is fully carried into practice, and both the mind and hand are working together. We point to this sumptuous carriage not because it was singular and alone in this display, for there were many others equally noteworthy and ingenious. Close to it was a photograph of the "funeral car" of Austria, and solemn as the sight of such must always be, when so much has been done to enhance its impressiveness, it is impossible not to institute comparisons, and to feel how much remains to be "invented,"—shall we say?—even here, and how much is due, and needs must be due, to the executive workman.

Coach-building and carving, and art-workmanship, are thus, as we see, not for the living alone, but for the dead; and we can but note how well they have been provided for, the "funeral procession" never lacking a solemn display of some kind or other everywhere. Another state-funeral coach was from Spain, and some ruder ones from other places,—for the exhibition comprehended work from all over the world, north and south, east and west; and "workmanship," which we are here more especially calling attention to, was visible from all and each one of these, and all served to show that the hand of the workman is ever ready to follow his head guidance whenever the conditions are sufficiently favourable; and these state-carriages thus curiously brought together for comparison fully bore this out. We have, by way of illustration, named but two or three items, but the display at the Mansion House contained a large number; and even these might well be added to, and might in the future be made to form a complete collection and full illustration of carriage-building and decoration,—from the rude Turkish bullock-carriage, to the coach built at Milan for use at the wedding of Napoleon I. and the "Voiture de Gala du Roi Jean V.," and the Earl of Kenmare's "drag,"—each having a special interest of some one kind or another, and especially of workmanship.

Some of the original drawings shown here we would note, in conclusion,—as those by Cipriani,—are very fine, as are the etchings, and help to evidence the fact that true artist-work is not confined in its operation, but is to be found everywhere. Painting is here seen on the panels of a state-coach; and what a pity it is that this action of the artist-workman is not more in vogue, and that encouragement is not

given to painters, in the Academy sense of the term, to put their talents and powers of mind and hand to common and useful objects, as here seen, not limiting it, as now, to carriages or panels within gilt frames, simply to suspend to bare walls.

We would earnestly hope that this special exhibition of art-work at the Mansion House will not be the last, and that in each year,—shall we say?—the authorities there will aid in art matters by the yearly exhibition of art by the workman, in every trade in its due turn in which art and art-workmanship can find place. We forbear at present to name them, as they must need occur to all who are in any way interested in the action of the workman as an artist, and in the "art progress" or movement of the age in which we live. There cannot be a wider or a much newer field wherein to work, and none certainly of more interest to a vast trading community like that so well represented at the Mansion House.

"NOTES ON BUILDING CONSTRUCTION."

THIS is the text-book for the Honours Examination of the Science and Art Department at South Kensington; though, as we learn from the preface, it is carried beyond the limits of what would be required for preparation for that examination, and additional information given, such as may make it a useful book of reference for architect and engineer. What the book professes to do (on which head the compiler is strongly desirous to guard against misunderstanding) is to "deal with the nature, characteristics, qualities, and defects of the materials used in building and engineering works, and to describe the methods of examining and testing such materials." The volume is, of course, a compilation from the information contained in various practical treatises; and a list of the principal works (a very long and full list) which have been adopted as authorities is given.

The very length of this list suggests the special usefulness and convenience of a work like the one before us. Few people in active practice possess all or even the majority of the works named, or would have time to study them if they did; and the collection of a large quantity of the information spread over such a number of theoretical and practical books, and its compression into its briefest form, and into one volume, is really a very useful piece of work.

Taking the first section of the book, on stone, we find the subject treated briefly, indeed, but comprehensively, almost from the beginning; the characteristics of good building-stone generally as to surface and texture stated, and the influence upon its durability of chemical composition and of its place in the quarry strata (illustrated by a small section of part of one of the Portland stone quarries). A highly useful table of various methods of testing stone follows under the heading, "Examination of Stone," in the course of which ready chemical methods are described of forming a judgment as to the capability of a stone to resist special conditions of atmosphere, tests which might well and wisely be more often employed than we suspect they are. There would be, perhaps, in regard to stone to be used in London, some inconvenience in acting too conscientiously in accordance with the results of testing, as the result might not improbably be to prove to the experimenter that no stone whatever could last in that smoke-laden and chemically-corrupted atmosphere. Then follow the principal species of stone, under the heads of granite, slate, sandstone, limestone, &c. In each case the general qualities of that class of stone are described, the proportion in which its various constituents should be present, the manner of dressing and testing it; and to this general information are added in regard to each class a tabular list of the principal quarries in the kingdom from which that stone is obtained, any special characteristics of the quality supplied by special quarries, and references to important and accessible buildings or engineering works in which that stone is known to be employed. This last feature of the book is one of the greatest practical value, of the importance of which the compiler is well aware, and he draws attention in the opening remarks on this section to the manner in which these tables have been prepared. They include, it appears, all the quarries reported upon by the Royal Commissioners who selected the stone for the Houses of Parliament (not a very satisfactory instance of the successful result of a Government commission, by the way), and the list was rendered more complete by information collected from other acknowledged authorities, and from what was within the knowledge of the compiler himself. The list thus formed was further completed, as far as possible, by comparison with specimens in the Museum of Practical Geology in Jermyn-street, and was then sent to a great many parts of the country to be checked and supplemented by professional men having local knowledge, and it was also submitted to a London stone merchant of great experience, and special information was obtained from experienced persons in regard to any important varieties of stone of which the writer had no personal knowledge. This, which is the writer's statement as to the manner in which these tables were compiled, shows a sufficient sense of the responsibility attaching to the publication of tabular information on such a subject, and a commendable trouble and pains bestowed in making it as far as possible correct, which deserves recognition, and which, if we are to take it as a specimen of the manner in which the book generally is got up, increases our opinion as to its general value as a book of reference.

The section on bricks is treated in the same comprehensive manner, with a brief description of the varieties of bricks in the market, the processes of brickmaking, the characteristics of good bricks, and tables of the results of experiments on the absorption of various bricks and their resistance to compression. The diagrams or illustrations are, however, not very exact in their representation of the proportions of bricks. In reference to the size and weight of bricks it is observed that this has been practically fixed by Act of Parliament, in regard to which point we may remark (as we have remarked before) on the undesirable manner in which the taste of the architect, and even his judgment in regard to practical conditions of building, is hampered by this mechanical hard-and-fast rule as to size, so that it is practically impossible for those who may have a preference, with whatever good reason, for a different proportion of brick, to obtain it at any price. It is partly owing to this legal uniformity as to the size of bricks that our brick streets look so exceedingly dull and monotonous,—a defect which in the more costly of brick houses is being relieved by the extensive use of moulded and ornamental brick; but this is too costly an expedient for ordinary street-building, which is accordingly left to its unrelieved monotony of character and surface. A little wholesome liberty and variety of practice in regard to brickmaking would do something to render our streets more characteristic, relatively speaking; and our own opinion is that a thinner and flatter brick makes an absolutely better wall, as it most certainly makes a more picturesque and agreeable one in appearance, than the normal pattern.

The portion of the book treating of the difficult subject of limes, cements, and mortars does not seem quite so consecutive and readily comprehensible to the uninstructed reader as the previous portions, though it is more so than many instruction essays on this subject. We call the subject "difficult," because it seems so difficult to state lucidly in print, though that may be partly the fault of the writer rather than of the subject itself; it certainly is the case that in essays written to explain the constitution and action of cements and mortars, there seems in general to be a remarkable want of clearness and logic: authors forget that the learner is supposed to know nothing about it, and omit to point out what it is that is looked for from the chemical action of the materials, or why certain action should produce the results required. In the work before us there is more lucidity than in many treatises on this head, but it would have been better to have combined the description of the mode of action of the materials with that of the constituents themselves, instead of keeping them sixty or seventy pages apart. Over and over again we have looked in books dealing with this subject for some clear consecutive account of the mode of acting of cements and mortars, such as would be intelligible to any one previously entirely unacquainted with the subject, but never seem to find it; people who write about it always seem to be more or less muddle-headed in regard to their way of expressing themselves, and drop a link in the chain, or forget that some particular point which is a matter of course to themselves will not be so to the student coming to them for information. For example, we doubt if any student will learn from these the reason for the process of slaking; he that by slaking, a pure lime is reduced to p and greatly increased in volume, and by p two and two together from different p the book he may with some difficulty m what function the slaking has in the object of the process, but he is nowhere so many words: he will lay down the bo the perception that slaking is a necessa of the process, but he will hardly und why, for anything that is told him. scription of the chemical action which re the setting and the hardening of the or mortar is, however, much more given (p. 221) than we have generally we have seen books, and those by peo would have been supposed to be en qualified to speak on the subject, from would hardly have been possible for an find out what the setting process rea though the author obviously intended to it, and probably thought he had done s is very much the case with Burnell's limes and cements, from which some pa information given in this volume is borrowed, sometimes in nearly the sam

The sections dealing with iron and filling, of course, a large portion of t seem to be very clearly, fully, and co done, a great deal of information being regard to iron, not merely as to its actu ties and properties generally considere to the special qualities, prices, and b special manufacturers; such information be of use, in fact, in specifying. A n test results from Mr. Kirkaldy's imm lection of experiments are tabulated. to timber, the compiler has obvious largely on Mr. Laslett's book, which viewed some time ago, and which is the best accessible authority on the We can hardly review in detail a book professedly a compilation, and not orig ter: it must suffice to say that the co in the main seems excellently done, for useful book, and does credit to the pains of its anonymous compilers.

FROM THE BANKS OF THE S

IT is to the undoubted success of F in the Paris Exhibition of last year Parisians owe the formation of the Int Society, which has just opened in t de l'Opéra its first exhibition, in the o well-known journal *L'Art*. The Fr generously descended from their habi ference of our insular artistic po through their press, have expressed that these exhibitions,—we shall she another, of architectural design,—will international, and that "they will serve known the works of artists from b Channel with whose names even t public are at present unfamiliar." A Germany contribute also their quot the side of the familiar names of Linto Hennesy, Lockhart, Fisher, and Mark with those of Alt, from Vienna, of Lembach, from Munich, and of Israels, land, together with not a few famili names. Each of the exhibitions w open during three months, the entra serving for a lottery, which will be dr last day of the exhibition, the fund from which are to be employed in th of a certain number of the works exh fact, a French Art-Union. The idea h met with encouragement from hig but it may be doubted whether, with tion of a few cosmopolitan collector of the French public will be easily their path of unswerving admirati productions of the artists of their o who are already increasing in such that among the more thoughtful mem artistic world not a little serious ap has been expressed. In larger nu ever, the young painters,—increase year or so by an influx of American seen crowding, paint-box in hand, th the classic quarter which surround th Beaux Arts; and the Louvre and t bourg; but more particularly the *ate* popular painters, are crowded with rants, who, in a very large numbe judging by their exhibits at the *Salon* far have stayed at home and soug in lines of life for which their limited more suitably fitted them.

Placed in such a manner as to purposely raet attention, it is impossible for the visitor the Louvre,—and what is better than a visit to national collection in this unnatural weather, en Thomson, were he alive, would doubtless bethinking himself of a new and copiously notated edition of his favourite "Seasons"?—passing down the broad stairs so skilfully rised by Pierre Lescot, not to be struck with eatly-written announcement, stating that re than 2,000 canvasses, some perfectly an, others sketched upon, and left by the yists, remain in the hands of the administra-, and if not removed within, &c. This nber of foundlings is not a little astonishing, must doubtless be the accumulation of ay years; if so, what discoveries might not ie diligent artist make? Who knows but t he might light upon some unfinished sketch the far from able brush of Thackeray? We know how earnestly in his youth our greatest elist desired to become a painter, and how by painful hours he spent at the Louvre, re he was often seen hard at work. Those e the thoughtful jolly years of his student which he passed on the Continent, and the es of which he has immortalised in more n one of his inimitable works.

peaking of Thackeray, it was impossible, the r day, in listening to the perfect music of the de Républicaine amidst the summer shower alling petals from the chestnut-trees of the embourg gardens, where this famous band played for the first time for many years, to recall the familiar face of dear old hael Angelo Titmarsh, who loved the gardens ell and has described them so vividly; not sedate, but ever jovial figure of the author "Vanity Fair" and the "Roundabout ers" more familiar to our younger genera-, but the tall and juvenile figure of the est and already double-eyeglassed contri-r to *Fraser's*, whom Maclise, in his sketch 835, placed prophetically among the then famous *Fraserites*.

It was the great band of that day, that then ed in public places, as perfect a result of as the band of the Garde Républicaine of ay? Have ever the lovers of music listened nore perfect rendering of the composer's ghts than that of the seventy musicians now, twice a week, for the public, enrich memory with so much that is beautiful? ly, of all art that is to be met with in Paris nly modern art that can be said to have ed at perfection] is that of the band of the le Républicaine.*

alking of Thackeray, how often must he enjoyed the Comédie Française? And now old house in the Rue Richelieu is empty for ne, and the cleaners and painters are busily loyed in washing the exterior and beauti-g the interior of "Molière's home." Those the days, precious even to Rachel, when keray was correspondent for the ill-starred *titution and Public Ledger*, of vanished , on which he and his step-father, Major th, lost their, up to that time, well-em-ed fortunes. It was Mme. Dorville, if we ake not, who then claimed public admira-

Apropos of Rachel, it was only to-day that nglish play-bill of 1850, advertising Rachel Marie Stuart," might have been seen in the low of a well-known shop in the Rue parte.

ast week the medals of honour and the *Prix alon* were awarded in the midst of great sty in the artistic world, little allayed by report that no *prix* would mark this year. juries of the different sections of the *Salon* at the Palais de l'Industrie on Thursday in week, after having awarded a large number ther medals, the first of which was very erly accorded to M. Duez for his "Saint ubert." M. Carolus Duran, in the section of ting, and M. de St. Marceaux, in that of pture, were awarded the two medals of ur; the *Prix du Salon* was accorded to Flameng for his "Call of the Girondins in Prison of the Conciergerie." This *prix*, instituted within a few years, has to be ed by an artist,—sculptor, painter, or archi-—aged less than thirty-two, who appears, he merit of his works, to be in a position to t by a stay of three years abroad; but urquet, the under-secretary to the Minister Fine Arts, has this year determined that, ead of the allotted time being passed, as erly in Italy, it shall be spent, one year only

* we are not misinformed, our readers may hope to this celebrated band before long in the Albert Hall.

in Rome, a year in Spain, and a year in Flanders, from each of which countries, if a painter, he is to send home a work representing some incident connected with his compatriots' stay in, or possession of, that country. The idea is an excellent one.

In connexion with the *Salon*, let us note that the Exhibition was on Saturday, the 7th inst., lighted until eleven o'clock by a number of M. Jablochkoff's electric lamps, but the success with which the new light has so far met, in the exhibition of the drawings by the old masters notably, appears not to have been so noticeable with the public in the galleries of the Palais de l'Industrie.

SCULPTURE IN THE SALON OF 1879.

There has clearly been too great haste or too much indifference on the part of the English critics, in readily allowing French sculptors to repose so complacently in the comfortable belief of their superiority. French sculptors, for a long time, have innocently denied themselves the healthy advantage to be derived from the wholesome food that artistic comparison affords, and have indulged overmuch in self-glorification.

Notwithstanding that the houses and mansions, the galleries and gardens, of the favoured ones of the world are adorned by statues in bronze and marble by artists of other nationalities, whose opinion of themselves has been more modest, and who have acknowledged the possibility of art existing away from Paris, the French sculptors have been in a measure justified in their belief by the enormous commercial patronage that the world has long bestowed on French plastic art.

We have not yet heard what French critics have to say of Mr. Richmond's statue, now exhibiting at the Grosvenor Gallery; but we were surprised and shocked the other night to hear in Paris that it was merely out of *complaisance* to Leighton's exceptional position here during the Exhibition last year, that French sculptors allowed themselves to regard his "Athlete" as a meritorious work.

The pre-eminent importance that has always been assigned to sculpture and architecture in all civilised ages, when art has occupied its just position in the consideration of governing bodies, has nowhere been more nobly acknowledged than in France. Reluctantly disregarding for the moment the magnificent collection of antique sculpture at the Louvre, which has so lately received an addition by one single fragment of a figure which appears to enrich the museum as if its treasures had been suddenly doubled, and passing over the exquisite gallery of the Renaissance and the various rooms in which are exhibited the chronological series of the works of the French sculptors from Germain Pilon, Jean Cousin, and Jean Goujon, down to the magnificent "Despair" of Perrault, but glancing on our way through the Tuileries Gardens at the eye-filling statues which decorate its historic alleys, and with no small admiration for the work of the clever French sculptors, who find now in London so liberal an acknowledgment and exercise of their talents, both artistic and commercial, we confess to no little difficulty, on visiting the sculpture in the *Salon*, in finding amongst the 671 pieces of sculpture exhibited, half a dozen objects, either in bronze, marble, terra-cotta, plaster, or wax, that can be called veritable works of fine art.

Sculpture is justly entitled to the high rank it holds, because it can, and must, carry the expression of action to its highest point of perfection, without the aid of what may be called, in the present day, the "properties" of the painter, which are now as essential to the get-up of a modern picture as the "mounting" of a play is to the stage.

We do not think that even Parisian sculptors this year can point to many works that entitle them to the enormously high altitude to which they lay claim. We hear of not a few appeals to the public for patronage from the State and from private collectors on the score of the difficulties the profession in France have to encounter; but it appears to us that the sculptors of this country endeavour in so many cases so grossly to emphasise and to exaggerate vulgarity, to heighten too familiar charms, and to add imagined graces and affectation to simple beauty, that we are left hopelessly in wonder as to where all the shameful nude absurdities go when they leave their present pedestals of disadvantage.

Recently we heard it said by a practical builder here, in reply to a painter who disclaimed any knowledge of sculpture, that the day was approaching when architects, sculptors, and painters would have to work harmoniously together, or one of the three at least would have a hard time of it, and we fully agreed with our friend the builder, whose duty it is in Paris and elsewhere to make good use of the three inharmonious sisters.

There is one work in the *Salon*, at any rate, of which we can speak with warm praise,—M. Ferrary's "Wild-beast Tamer." It appears to us that this figure, with the crouching panther by its side, comprises many of the attributes of a high work of art; that it exhibits a very profound acquaintance with the human form in well-expressed and easily-understood action; and that its proportions are those with which we are most of us familiar from the works of the ancients; above all, however carefully we examine the parts, the limit of its ideality, or the moment of expression, or look at the statue from a distance, or from whatever point of view, the eye and mind are struck by its ornamental and agreeable eye-filling composition, its variety and outline perfectly satisfying the artistic sense.

The Parisian critics find time and space in their daily papers to praise at length the "Au Matin" of M. Schœnewerk, and attach attributes of attractiveness to this little figure which we fail to find in it. In M. Mercié's tomb of the historian Michelet, about to be placed in Père la Chaise, we certainly find an approach to seriousness and conscientiousness in treatment which is at least up to the mark of tomb-work in that or any other modern cemetery; but it is certainly inferior to Chapu's monument to Regnault at the École des Beaux Arts.

Small praise, even in Paris, is given to the statue of the astronomer Arago, also by M. Mercié; and the vexed question of modern costume for statues of men of the present day is well argued by Parisian critics, Theodore de Banville, of the *National*, citing, with sufficient authority, the fact that neither the Greeks nor the Romans represented their portrait statues in the costume daily worn by the people, and that in the days when the most thorough consideration was given to the subject of art and its treatment of portraiture, and its successful perpetuation, the good taste of the ancients adopted a becoming but simple mode of draping their famous and beloved men and women.

Of the busts exhibited this year little can be said in their favour, the only interest of the great majority consisting in that striking amount of resemblance that must, of course, be interesting to the sitters themselves and to some of their friends.

With regard to M. Paul de Vigne's bronze statue of Fame crowning the Belgian horticulturist, Louis Van Houtte, which forms the central group of the sculpture garden, it has, at least, the merit of being picturesque; and the figure of Fame not unpleasantly reminds one of the magnificent fragment of the Samothracian Victory in the Louvre.

If the figures, fragmentary as many of them are, in that superb museum of antique sculpture, were suddenly by some magic power gifted with the ability to move from their pedestals, how nobly and simply would they conduct themselves as they moved about from place to place, and how little would they gain or lose in grace by being suddenly recalled to their stony existence without time to study a new attitude or to elaborate a fresh pose!

How different would the case be in the department of modern sculpture in the Champs Élysées! What an unseemly shouting and struggling! what a vulgar bustling and jostling and throwing about of arms and legs in impossible positions! what efforts to adapt ill-shaped clothing and inconvenient drapery might be expected; and at the unexpected moment of recall to marble, how disturbed and contorted would the actions become in the ill-concealed affectation to be graceful again, and by their efforts to out-do in violence or singularity the rest of their fellows in clay or marble!

Such a scene for the moment alone could be compared with that daily to be witnessed at the Parisian Bourse, between two and three o'clock in the afternoon, or at the French Chamber at Versailles when MM. Langlois and La Vieille are in the full swing of their gymnastic oratory. But one must not seek in the Parisian *Salon* for the beauty, the charm, and modesty of learned simplicity.

Paris.

THE RECENT EXCAVATIONS OF THE ROMAN FORUM.*

ALTHOUGH the subject of the Roman Forum has been more than once discussed in this room, still it is a subject ever replete with interest, and as the excavations which have been going on during late years have disclosed facts and settled questions which have been matters of voluminous controversy amongst antiquaries and literary men for generations, having recently seen these excavations, I now propose to describe their present condition.

I am neither an antiquary nor versed in classic lore, so that all I propose to do is to record what I observed, and to note the conclusions which others have drawn from the facts disclosed.

When I first visited Rome, my knowledge of the classic monuments it contained was derived from Taylor and Cresy's book,—two interesting folio volumes,—and such information as Mrs. Starke's Guide-Book afforded; for it was before either the days of Murray's Handbook, or the learned observations in Baedeker's Handbook, that I paid my first visit.

At that time the Roman Forum was a plain extending from the base of the Capitol to the Colosseum, and the monuments then visible consisted of the upper portions of two groups of columns known as the remains of the Temple of Jupiter Stator, now determined to be the Temple of Castor and Pollux; one group of Ionic columns, a considerable part of the podium on which they stand; and one single column which had been excavated to the base by the Duchess of Devonshire in 1813, and in Byron's time was called the nameless column with a buried base. Besides these there was the triumphal arch of Septimius Severus at the north-west end of the Forum, and this was all. I will now endeavour to describe to you the Forum as I saw it last November and December. I propose to follow the description, and in many cases the words, of the latest English work I can find written on the subject (Nicholls's "Roman Forum"), published by Longmans in 1877. Beginning, then, at the north-west end of the Forum, we find a large building constructed on the south-eastern slope of the Capitoline Hill; much of the lower part of the ancient building remains. It has been raised upon by Michelangelo, and is now incorporated with the Senatorial Palace, of which the principal façade is in the Piazza del Campidoglio. The façade which is next the Forum is very lofty, and forms a conspicuous object, forming a considerable part of its north-western boundary. In this building was a long arcade, one-half of which is now open, with Doric half-columns at the sides, and the capitals of several other columns. Very considerable traces of the cornice, indicating the continuation of the arcade, may be seen embedded in the walls. By an inscription which existed until the seventeenth century, this building is known to be the Tabularium, or Public Record Office. Its destruction by fire is twice alluded to by Cicero. It was rebuilt by Quintus Lutatius Catulus, consul, B.C. 78. Some portions, however, must be of more ancient date, being built of tufa; the lower and ancient part, which is now used as a museum for the reception of the architectural gleanings arising from the excavation of the Forum, is still in excellent preservation, although a portion used during the Middle Ages as a storage for salt has been much injured by its corroding action on the tufa stone. Above the ancient part is reared the lofty buildings added by Michelangelo. On the south-west side of the Tabularium is the principal road leading from the Capitol to the Forum, called the Clivus Capitolinus.

On the north-east side of the Forum, under and against the Tabularium, are the remains of the Temple of Concord, the extensive podium of which, with its rich marble pavement, and some portion of the outer walls, with its marble lining and plinth, still remain, particularly next the western angle. The building of which we see the remains appears to have consisted of a large cella placed against the wall of the Tabularium, with a portico of less width projecting towards the Forum, the portico being approached by a lofty flight of steps, but none of the columns are left remaining. Between the cella and the portico are two wide marble cills, on one of which the door was placed, and on the cill of one the mortises for the hinges or pivots on which the door hung are observable, with a shallow sinking in which the figure of a caduceus, probably of bronze, appears to have been imbedded. When Varro wrote there seems to have been not only a Temple of Concord, but a basilica, called the Basilica Opimia, on this ground, and in earlier times in the same locality a building called the Senaculum also stood. Some antiquaries, I believe, now consider that this ruin did consist of two separate buildings. The first Temple of Concord placed on part of this site was probably that of L. Furius Camillus, B.C. 367. The temple existing in the time of Cicero and Varro appears to have been erected in the Forum by L. Opimius, consul, B.C. 121. The edifice of which we see the present remains was, it is believed, undertaken by Tiberius during the reign of Augustus, A.D. 6, and dedicated after the triumphal return of Tiberius from his German campaign, A.D. 12. This temple was frequently used for the meeting of the Senate. It was to this place Cicero brought the accomplices of Cataline, and here he exposed the conspiracy, whilst the Clivus Capitolinus was thronged with the noblest of Rome. It was here that Cæsar was threatened by the Roman knights, and it was here that, after Cæsar's death, Cicero and the Senate defied Mark Antony. The base of the temple at the southern extremity is composed of rubble masonry; then follows a rubble wall; and at a still higher level is a mass of stone rubble-work, forming, no doubt, the substructure of the steps leading from the level of the Forum up to the floor of the temple. Where the cella appears to have joined the portico are two large massive stones, which apparently formed the cill of the door or doorways either of the cella or of two separate buildings. On the northernmost of the two cills are two deeply-recessed mortise-holes, as though to receive the pivots or studs on which the door turned, and on the other cill is the matrix of what appears to have been a figure of the caduceus, probably in bronze. The cella of the temple (or, if it were so, the separate building next the Tabularium) is covered with marble paving, but the whole is much fractured. The back wall does not touch the wall of the Tabularium, but there is a small space between the two buildings. There are considerable traces of the marble lining of the walls at the south-west corner, and there are also ruins of a brick construction, the remains of a church of the Middle Ages built within the area of the ancient temple. On the wall of the Tabularium at the back or close to the back of this temple is an excavation through an ancient doorway, made, as I understood, at the expense of our veteran English archæologist, Mr. Parker, to ascertain whether it formerly communicated with the interior of the Tabularium, but the excavation does not lead to this conclusion. In front of the ruin of the Temple of Concord stands the arch, which its inscription shows to have been erected in honour of the Emperor Septimius Severus and his sons Caracalla and Geta, but from which the name of the last was erased by order of Caracalla. The carriage-way between the Temple of Concord and the north-west front of the arch of Septimius Severus is part of the ancient road leading from the Clivus Capitolinus to the prison, but the road branching from it and passing under the arch is probably not older, if indeed so old, as the arch itself. The Via Sacra runs steeply up to the arch of Septimius Severus, and just within the modern roadway is a large altar base and a square altar. The north side of the arch is very ruinous, and there are several mortise-holes for the insertion of timber, but the south side of the arch is in much better preservation. The central roadway through the arch is paved; after passing through it turns sharply to the south-west, and the paving is very dilapidated; the footways through the arch are paved with square stones not very regularly laid. Beyond, and north-eastward of the arch, are some remains, which are supposed to be those of the equestrian statue of Marcus Aurelius, now in the Piazza del Campidoglio, certainly one of the finest, if not the very finest, equestrian statue in the world. At the western corner of the arch in the front of the Temple of Concord is the nucleus of a tall circular structure about 15 ft. in diameter, supposed to be the Umbilicus Romæ. Commencing from the Umbilicus Romæ is a platform on a level, or nearly so, with the ground next the Capitol, with a perpendicular face about 10 ft. high, forming part of a circle towards the Forum, which is cased with marble, and on which there are several projections and the remains of copp cramps, to which some antiquaries, a amongst others Canina, considered the rost of vessels were affixed. Part of this monume is still covered by the modern road carried a higher level by arches, and which here t verses the Forum in a south-westerly directi Returning to the wall of the Tabularium, we fi separated from the Temple of Concord by passage of 5 ft. in width, the remains o temple, three of whose Corinthian columns s support the north-west corner of the entablat of the portico. This temple which, like all others in the Forum, stands on an elevated podi faced towards the Forum, and concealed a p tion of the loggia of the Tabularium. Bef its southern corner on the other side of the r which passes in front of it, is the nearly pari Ionic hexastyle portico of another tem having its façade at right angles to that of temple last mentioned; upon the entablatur the Ionic portico may still be read the comp inscription, "Senatus populusque Romanus cendio consumptum restituit." Under the c of the temple are considerable remains of vau chambers; in front is a ruined terrace, wh the steps of the temple must have been, ro which the Clivus Capitolinus is carried s steep incline, continuing its upward cor along the north-western side of the tem The two last-described temples are beyond pute those of Vespasian and Saturn. quaries have differed very much as to t identity, but modern opinion has gener agreed with Canina in ascribing the Ionic ter to Saturn. For the conclusion there seem be full and sufficient reason, and assumin therefore to be correct, it necessarily fol that the other Corinthian temple, and form called the Temple of Jupiter Tonans, was dedicated to Vespasian; it was probably in the time of Titus, and appears to have restored by the Emperor Severus. In the of the Tabularium, behind this temple, is a t way which was built up in ancient times further concealed by the construction o temple: it gave access to a staircase, whic still preserved, and led to the upper floors o Tabularium without any communication the lower story. The age of the Templ Saturn was a much-disputed question with Roman antiquaries; Macrobius says it was cated by King Tullus Hostilius, while V asserted it was begun by Tarquinius Supe and dedicated by Titus Lartius, the first tator, B.C. 501; Dionysius attributes it t consuls of the year B.C. 497; Gellius attrib it to L. Furius, Military Tribune, B.C. 381; all agree in carrying back its original cons tion to a remote date. The temple was re in the time of Augustus by Munatius Pla and though the existing portico is eviden late and clumsy restoration, it would ap that the character of the building in time of Trajan was as we see it The Temple of Saturn was the treasury o Roman government, and the military stan were kept here. It was into this temple Julius Cæsar made a violent entry for the pose of taking possession of the treasure o State. Between the Temple of Saturn an Tabularium is a terrace at a level consid above the Forum, having at the back a portico, or colonnade, built in part against Tabularium and in part against the reta wall of the Clivus Capitolinus, which is above it; behind the colonnade is a ser small cells. The colonnade has been muc stored, I believe by Canina; and by the res inscription on its entablature it appears this colonnade once contained images o twelve Dii consentes placed here by Vet Prætextatus, prefect of the city, A.D. 367 this, in all probability, is a restoration of a earlier shrine, containing, as mentioned by twelve gilded images,—six of the gods a of the goddesses. At the level of the below, and approached by a narrow passa the south-west side of the Temple of Vesp is a series of cells or chambers; they supposed to have been waiting-rooms or for notaries, or the clerks or criers of the E they are called Schola Xantha, a name found in the apocryphal account of the r of Rome which passes under the name of Rufus. The lane running between the T of Saturn and the Basilica Julia was the Jugarius, running from the base of the Ta Rock to the Forum. The whole of the western side of that part of the Forum by some authors the mid-Forum, is bounc

* Read before the Royal Institute of British Architects on Monday evening last, by Mr. Edward I'Anson, F.G.S., Member of Council.

he sides of the Basilica Julia, occupying ngular space of about 400 ft. by 160 ft.; losure was formed by an arcade, of which re considerable remains at the west where, owing to the rapid rise of the next the Vicus Jugarius, this corner of lding was constructed against the sides hill, and having become buried by the f the hill-side, has been better preserved an the other portions. Abundant evi- however, has been found amongst the ts of the building to enable a restora- be made of part of the enclosing colon- which has been done by Signor Rossa, also caused brick piers to be built, in- the position of the piers of the entire . Antiquaries seem to be quite agreed edifice was begun by Julius Cæsar and by Augustus, who afterwards rebuilt ginal edifice on a more extensive scale e destruction by fire of the first building. nour of this restoration was attributed by peror to his grandsons and adopted sons, and Caius, and the Basilica for a time own by their names. It was repaired in nd century, and underwent some restora- the reign of Diocles an; but the archi- l features of the building of Augustus to have been preserved. This Basilica court of the *Centum Viri*, which had in e of the younger Pliny, who practised it, not less than 180 judices, and it is ed by Dio as one of the places in which peror Trajan sat to administer judgment. surrounded on three sides by streets,— us Jugarius already referred to on the est; on the northern side was the prin- reet, part of the Via Sacra, which tra- the Forum in the direction of its length; the south-eastern side it is bounded by identified as the Vicus Tuscus, which n to have led from the Forum to the m, and where now stand the Church of rgio in Velabro, lately become more to us as being connected with our English l Newman, and the Circus Maximus. eet vies with the Via Sacra in its fre- mention by ancient writers and in its s character, being the route taken by at processions on the occasion of the Romani, in which the statues of the ere carried on cars from the Capitol the Forum to the Circus Maximus, at ck of the Palatine hill. The Vicus had also the character of a busy and able tradesmen's quarter, and was con- as the Bond-street of Rome; in later it was called Vicus Turarius, apparently e spice-shops which were situated there: ime of Plautus the neighbourhood of this and the district behind the Temple of had a bad reputation as the haunt of and infamous persons. The remains of d pedestal about 10 ft. by 8 ft. has been red, at the north-east corner of the basilica, statue of Vertumnus. The whole of the a Julia is covered with paving, that of ades being of, I believe, travertine stone, e centre portion with yellow and black , all perfectly level but much crushed and ed: the paving of the arcades has been ly repaired. On the pavement of the s, especially on the north-east next the , there are many inscriptions, and also a r of rudely-incised figures, most of them circles variously divided, one I noticed rectangular in form: these are supposed e been made by boys for playing games. are also rude imitations of other objects, ended to represent an owl, one a branch ee, and other subjects.

osite to the basilica on the north-east side Via Sacra, formerly stood the Tabernæ, ps of the Forum, originally founded by Tarquinius Priscus; they were naturally quired for the trades generally carried on narket-place; hence the butchers' stalls, ne of which Virginius took the knife to lis daughter. The schools for children lso among the shops in the Forum, and it to be there that Appius Claudius first irginia reading. In ancient times there to have been two rows of these shops, t used for general market purposes, but ards more particularly as jewellers'; no doubt very shallow, like the shops s of the bridges at Florence or on the at Venice, or like the pantiles at Tunbridge

They were standing in the times of and Livy, but they were burnt down shortly the death of Agrippa, B.C. 12; and we may doubt whether what was then destroyed was ever rebuilt, as we now find seven low brick piers about 13 ft. square, supposed to be the remains of pedestals on which statues or columns were placed. Some fragments of statues have been found amongst the excavated ruins, which it is asserted are part of statues, formerly placed on these pedestals; if so, they must have been quite small, and probably numerous. In the open spaces of the mid-Forum, near its most western side, is the monument of Phocas, consisting of a Corinthian column which long stood with its base buried in the Campo Vacino, supposed, until 1813, when its base was excavated, to be the remains of a temple. It was then found to stand on an isolated pedestal mounted on a broad square base of tufa masonry and brickwork; and the pedestal bore an inscription, which shows it to have been erected A.D. 608 by the Exarch Smaragdus, in honour of the Emperor Phocas, probably the last of the triumphal buildings erected on the Forum. Near the eastern corner of the base of the column of Phocas is one of the most interesting monuments which have been discovered during the recent excavations in the Forum. It consists of two marble slabs, about placed parallel to each other. Antiquaries call them Plutei, and suppose that their use was to form a gangway through which those coming to vote could as they passed in single file deposit their voting-ticket. They were discovered in 1873. The outside of each slab is carved with bas-reliefs of a very fine character, and not greatly injured on the inside. On each bas-relief is represented the same subject, namely, a bull, a sheep, and a pig. The sculpture on the external faces represents two scenes, which are differently described by antiquaries, — one attributing them to scenes in the life of Domitian, another to scenes in the life of Titus (and this seems to be the most accepted explanation), and another to scenes in the life of Septimius Severus. However, these we may leave for antiquaries to discuss and settle, and proceed to describe what has the more special interest for us; namely, the backgrounds of the sculpture scenes represented on the outer faces of the Plutei; and this I propose to do in the words of the author I have already referred to, namely, Mr. A. Nicholls. When we turn to the backgrounds of the two bas-reliefs we find that they both represent the scene that was in reality before the spectator (the Forum Romanum), and in this lies the important topographical interest of the sculptures. The locality of (what our author supposes to be) the Burning of the Registers is most easily recognised, and may be conveniently taken first. In the foreground, to the left of the spectator, is a fig-tree, and next it a statue on a pedestal. In the background behind the figures were five arches of a building divided by piers with half-columns or pilasters of the Tuscan order. At a short distance from the end of this building is a hexastyle Ionic portico with a pediment. Then, after a short interval, through which an arch is seen in the further distance, is another hexastyle portico and pediment with Corinthian columns. A part of the bas-relief to the right is lost, but in the foreground is a portion of the rostra upon which the emperor was seated. In order to identify the scene, it is only necessary for the spectator to turn from the sculpture to the ruined buildings before him. In the Corinthian columns of the Temple of Vespasian he will recognise the remains of the Corinthian portico, in the portico of Saturn the Ionic portico of the bas-relief. The arch seen in the distance between the two porticos would probably be a part of the loggia of the Tabularium. The long line of arches, with piers between them, will be found in the Basilica Julia, with its ornaments of Tuscan architecture. The whole of the background may thus be explained by the aid of the ruins which remain. Of the objects rrepresented in the foreground no distinct traces are now to be seen. They consist, as has been mentioned, of the rostra to the right, and a fig-tree and statue to the left. On the other bas-relief, which is more perfect than the first, the same statue and fig-tree are seen in the foreground; on the right and next to them behind the figures are seven arches, with intermediate piers, similar to those of the first sculpture. Then, after an interval of some width, is a Corinthian portico, which is represented as having five columns; and finally, to the left, an arch, which appears nearer to the spectator than the portico. In the foreground are the rostra from which the Emperor is speaking. It will be observed that in the foreground of each sculpture we have the rostra on one side and the statue and fig tree on the other; but in one representation the rostra are on the right, in the other on the left. In the two scenes the spectator is supposed to be placed on different sides of the rostra, but in both cases the statue and fig-tree are seen in the same relative position, or nearly so, the tree to the left of the statue. In order that these two objects should be so seen from the right and left of the rostra, we must suppose both of them to have been before the rostra at about equal distances from it. Thus, though the spectator has changed his position from one side of the rostra to the other, his situation with reference to the statue and fig-tree remains nearly as before, and as the one sculpture ends with those objects on the left, and the other begins with those on the right, the background of the buildings behind these two objects in the second sculpture may be expected to begin at about the same point where it terminated in the first. With this clue we find in the piers and arches of the second bas-relief a continuation of the long colonnade of the Basilica Julia. In the wide interval to the left of the Basilica the portico of the Temple of Castor might be expected to be seen; but the artist has not thought fit to introduce this monument, possibly because hidden from the rostra by some nearer objects. In the portico with the Corinthian columns we may recognise the Temple of Divus Julius, the podium of which has been recently excavated, and which is represented in medals of Augustus and Hadrian with a tetrastyle Corinthian portico. The five columns may be assumed to be a mistake, as this form of portico is unknown. The arch behind the rostra was probably that of Augustus, of which we have some obscure mention as standing near the Temple of Julius. The explanation here given of the first background (in which the temples of Vespasian and Saturn appear) agrees with that of Signor Brizio, to whose paper I have referred. In the other background that learned antiquary thought we might find the Basilica Æmilia and some other buildings of the north eastern side of the Forum. This opinion was founded on the supposition that the two views were taken in opposite directions,—a supposition which is contradicted by the similar relative positions of the statue and fig-tree in both scenes. The two sculptures are, in fact, united by the recurrence of these objects, and present us with a partial panorama comprehending the south-east, south-west, and part of the north-west side of the Forum, as seen from the neighbourhood of the rostra.

We may now turn to the identification of the objects in the foreground. Among these are the rostra of the Forum. The removal of this monument from its site at the edge of the Comitium, where it stood till the time of Cicero, is testified by Dio and Asconius, but its subsequent position has not been ascertained, except so far as the sculpture before us enables us to do so. The statue seen in both the bas-reliefs represents a figure nearly nude, but shod with a sort of loose boots.—On his left shoulder he bears a full wine-skin, and his right arm (which is lost in both sculptures) appears to have been raised in the air. This figure has been recognised as that of Marsyas, who is represented with the attributes of a satyr, or Silenus, a character ascribed to him by Herodotus and Pausanias. To those who desire to carry further the inferences which the author I have so largely quoted has arrived at, I refer to the second chapter of his book, who concludes that these bas-reliefs enable us to determine with accuracy the position of the equestrian statue of Domitian, the Lacus Curtius, the statue of Marsyas, and the rostra; but excepting the ruined base of the equestrian statue, no trace of either of the other monuments remains. On the north-eastern side of the Forum may be seen some traces of the ancient Via Sacra. The south-eastern end of the mid-Forum is bounded by a cross-road, extending from the north-west corner of the Temple of Pollux in a north-easterly direction until it joins the Via Sacra. Before leaving the mid-Forum, I should refer to the Cloaca Maxima, which is in part uncovered, and can well be traced passing under the Basilica Julia, and obliquely nearly in a northerly direction, until it is lost under the still unexcavated bank on the north-east side of the Forum. The surface of the Forum, as we now find it, is paved where it was intended for the use of carriages with large polygonal blocks of hard, grey volcanic stone, called by the ancients silex, although its com-

position, in fact, does in no way correspond with the meaning of this term as used in science; and where it is intended for foot-passengers only, with rectangular slabs of travertine stone. The ruts caused by the chariot-wheels, as at Pompeii, are very noticeable, especially at the sharp turn of the road at the corner of the Temple of Castor; and from some cause which I find it difficult to explain, the stones,—and it is the same at Pompeii,—are worn away at the joints, so that each stone presents a convex surface. At one part of the roadway, near the bottom of the Clivus Capitolinus, is a more perfect portion of the roadway, where the joints are well squared, apparently more recent, and less worn, and where the rounding of the edges is not perceptible. Adjoining the Vicus Tuscus, at the south-eastern end of the Forum, are three Corinthian columns, which formed one of the landmarks of Campo Vacino, formerly known by the name of Jupiter Stator. Canina at one time considered them as part of the Curia Julia, but they are now recognised as the Temple of Castor and Pollux, the divine twins, whose supernatural interpositions are so curiously interwoven with the traditions of the early struggles of Rome. The Temple of Castor,—originally built 482 B.C.,—was rebuilt by L. Melittus Dalmaticus, B.C. 119, and whatever may have been the character of the original temples, the edifice of Melittus was one of considerable size and importance, and was frequently used for the meetings of the Senate. This temple was amongst the numerous public edifices which were rebuilt in the time of Augustus; it was erected by Tiberius, in his own name and that of his brother Drusus, out of the spoils of the German campaign, and although dedicated to two divinities it generally bore the name of Castor only. About 20 ft. from the eastern corner of the steps of Castor are the remains of a low round construction, apparently a basin of water, which is probably the Lake of Jumena, and the pool or spring referred to in early story, at which Castor and Pollux gave water to their heated steeds after the battle of the Lake Regillus. A little further east is the round podium of a circular building, which is supposed to be the remains of the Temple of Vesta, but authorities, as usual, differ on this point. The age of the temple, which existed in the time of Augustus, and which was then covered by a bronze dome, is unknown,—it was burnt down in the great fire of Nero, and was probably rebuilt by Vespasian, but again burnt down during the reign of Commodus. The temple must, judging from the size of the ruins of the base, have been quite small, and the fact of its having been, in the time of Augustus, covered by a bronze dome seems to strengthen this conclusion. On the southern side of the temple are some ruins half-hidden in the still unexcavated bank, which probably occupy the site of the houses of the Vestal Virgins. North-east of the Temple of Castor and Pollux are the ruins of the podium of a temple, which it is believed faced north-west toward the Capitol, and is supposed to have been built on the spot where Cæsar's body was burnt. On the site of the cremation the partisans of the Dictator, very soon after the event, placed a column, described as Numidian marble, nearly 20 ft. high, and inscribed "Parenti Patriæ," and before the column was an altar; the column and altar were afterwards removed by Dolabella, and the temple to the deified Julius Cæsar was erected soon after, by Augustus. On the north-west side of the temple there are very distinct traces of a wall, segmental on plan, with the segment portion built into the podium of the temple which now covers and conceals it. Traces of the plinth and marble lining of the straight portion of the construction abutting north-west on the Forum still remain: this is said to have been the Rostra Julia. From this rostra Julius Cæsar is said to have harangued the people, as well as from the platform of the adjoining Temple of Castor and Pollux; and here, too, it is said that Marc Antony addressed the people; and close by where the temple now stands the pyre was hastily constructed on which the body of Cæsar was burned. Here also Tiberius read his funeral speech on the death of Augustus.

I have endeavoured to note the position and present condition of these ruins which cover and surround the Forum, giving only so much description as seems necessary to identify them. The plans I have put before you are enlarged from those of Mr. Ferdinand Debret, Ancien Pensionnaire de l'Académie de France de Rome, and the plan which accompanies this paper is a reduced copy of part of the plan which forms part of his Memoir.*

Nothing is, I think, more striking, considering how large a portion Roman history fills in the history of the civilised world, than the small area within which the scenes of Roman history were enacted. The Forum of Rome was the focus of all, and the Forum of Rome is not actually larger than Lincoln's Inn Fields. And the Via Sacra, through which, we are told, the emperors of Rome passed,—followed by captive potentates, with the trophies of victory and long trains of armed warriors and slaves, and on their way to the Capitol, where the victorious emperors proceeded to solemnise their triumphs with religious rites, and the captive kings were led to their prisons,—and where the great annual religious processions of the people, carrying their images and their gods, passed on their way to the Palatine Hill,—this great thoroughfare of Imperial Rome was only 12 ft. wide.

THE PANAMA CANAL.

IT is reported as likely that M. de Lesseps will take advantage of his presence at the banquet given by the Lord Mayor to the Society for the Protection of Copyright to explain his project for cutting through the Isthmus of Panama. A short reference, therefore, to the stage at which the great work has arrived will be opportune. The International Congress for the Construction of Canal Communication between the Atlantic and Pacific Oceans through Central America has concluded its deliberations with recommending the Panama route. The choice, supposing that an assembly composed of eminent engineers has thoroughly examined the preliminary conditions, can only be endorsed from a geographical point of view. The simplicity of surrounding circumstances alone recommends the route over the Isthmus of Panama, which is already crossed by a railway from Aspinwall (Colon) to Panama, the construction of which has involved not only the expenditure of millions of money, but the loss of thousands of lives. The construction of the canal will, it is to be hoped, be greatly facilitated by the experiences gained, as well as by the aid which the existing railroad will render to the transport not only of building material for the canal, but also of provisions and workmen. Quarters situate at a high level and food suitable to the climate must be provided, and no workmen not acclimatised and used to work in damp hot countries should be employed. Labourers from the Chinese rice districts, and negroes from the west coast of Africa, will offer the most suitable constitutions, especially of liver and lungs. The technical committee of the Canal Congress adopted a scheme on which Voisin Bey reported in the last sitting, and which was finally passed.

Seven proposals had originally been submitted for decision. Estimates were given of the following six routes:—1. Tehuantepec, 160 miles (giving round numbers), 120 sluices; twelve days' passage. 2. Nicaragua, after the plans of Menocal-Blanchet, 200 miles, seventeen sluices; cost, with sluices, 770 million francs, total cost, 900 millions; four days and a half. 3. Panama, canal of the same level, forty-eight miles, one sluice, four miles of tunnel; cost, 1,070 millions; total cost, 1,200 millions; two days. 4. Panama, canal with twelve sluices, forty-eight miles; cost, 570 millions; total cost, 700 millions; two days. 5. San Blas, thirty-five miles, ten miles of tunnel; cost, 1,270 millions; total cost, 1,400 millions; one day. 6. Atrato-Napuipi, 180 miles, two sluices, two miles and a half of tunnel; cost, one milliard; total cost, 1,130 millions; three days. The cost of repairs, &c., is estimated at 5 per cent. The committee had no exact data respecting the Tehuantepec route, but they were convinced that the cost of construction would greatly exceed that of the above route. The Nicaragua route, according to the views of the technical committee, would offer an inexhaustible supply of water; there would also be no obstacle to the construction of a harbour on the west (Pacific) side; but there existed very considerable difficulties at several points. The Panama routes have excellent harbours on both sides, and the existing railway will facilitate the transport of material. The canal with the same level would involve the construction of bu
sluice on the side of the Pacific Ocean.
proposal for cutting through the Isthm
Darien was, like that of Nicaragua, de
impracticable, and it was specially and
pointed out with respect to the latter the
volcanic nature of the country would f
constant source of danger to the canal.
Panama route, for some time, has proportion
suffered little from earthquakes, and de
also in this respect the preference. On
being taken, M. de Lesseps, the founder
Suez Canal, pronounced for the Panama
the same was done by Sir John Stoke
resolution to that effect was finally pass
seventy-four to eight votes; sixteen memb
the Congress abstained from voting. A
La Roncière le Noury, the president
French Geographical Society, dismisse
members of this memorable Congress wit
hope that M. de Lesseps might live to s
completion of the second great cuttingi
that the latter canal would prove as succ
as the Suez Canal.

It is evident that the connexion of the At
with the Pacific for sea-going ships will g
benefit the trade of the world, and will
up the coasts of South America and M
hitherto so far and so difficult of access
trade and commerce of Europe, to a
greater extent than has hitherto been po
If the republics of Columbia, Ecuador,
Bolivia, and Chili were to enjoy the qui
development required for the purposes of
sation and commerce, of which they
much in need, and without which they wi
withstanding the favours Nature has sh
upon them, be ultimately ruined, they wou
ago have agreed on the solution of this imp
question. The Panama route offers also
cally the most favourable position, becau
and order for this international undertaki
the necessary severe police supervision
much more easily provided for on this lin
on the other routes that have been und
sideration, where long years of anarch
undermined the government as much as
quakes and eruptions of volcanos have
the soil through which the canal would h
be taken.

The Panama Canal will be nearly fift
long, and follow for the greater part
course the line of the railway. Its dep
be 28 ft., and its width 72 ft., rende
passable for ships of the greatest tonnage
traffic which might accrue to the canal i
is estimated at 7,250,000 tons at 15 franc
so that the canal, if not at once, will p
itself at no distant date.

BUILDING LAND AT LUDGATE-H
STATION.

THE present value of building-land
neighbourhood of Ludgate-hill was show
sale which took place on Thursday, Jun
the Auction Mart, when the freehold
piece of land on the east side of the Ludg
Railway Station, comprising an area of
feet, was submitted to competition by M
Dowsett & Woods. The land was descri
situated in a very central and valuable pa
near the great publishing trade, close t
of the best thoroughfares in the metr
having four street frontages, and eligibl
for warehouses, storehouses, factories, ar
dwellings, institutions, or offices. Befo
viting offers, the auctioneer observed th
immediately adjoining was publicly s
years ago, at 2*l.* 15*s.* per foot, whilst a
plot, having a frontage to Water-lane, l
so eligibly situated as that now offered, r
2*l.* per foot. Under these circumstance
land at the present time ought, at the le
be worth 2*l.* per foot. The first offe
15,400*l.*, being at the rate of 1*l.* per fo
advance to 18,000*l.* was immediately ma
the property shortly stood at 20,000*l.*, wh
biddings slackened, but by degrees r
27,000*l.*, and there being no further ac
the auctioneer intimated that it could
sold at that price, which was only at the
1*l.* 15*s.* per foot. He observed that it wi
worth 2*l.* per foot, and at that price the pu
was withdrawn.

Domestic Economy Congress.—
asked to mention that the intended meet
which we referred in our last, has be
avoidably postponed for this year.

* These accompany the paper as published in the Transactions of the Institute.

OLLECTION OF REPORTED CASES .TING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Authority of Architect.

architect is the agent of the house-owner ally for all purposes connected with the ure of which he has prepared plans, and ilding of which he is to superintend.—rley *v.* Dick, 13 L. R., Eq., 1; 41 L. J., 3 (1871).

is case was decided upon the general ce of what passed between the architect he building-owner, and it seems to show s a rule the architect is the agent of the for all purposes relating to the building stion. In Scrivener *v.* Pask, 18 C. B., N. S., id 1 L. R., C. P., 715, the question was par- raised as to whether the architect was use-owner's agent to take out the quan- but the decision of the Court did not this point. When an architect is em- merely to prepare plans he can scarcely sidered as an agent at all, for he supplies in thing for a certain sum; but since, as eral, architects have more to do than supply plans, they become agents for the g-owner, and fall within the class known neral agents,—that is, agents who have ity to act in a certain character, as dis- hed from special agents, who have a authority to do a particular act. An of the former class can bind his principal acts within the scope of his employment inst third parties, although the employer ave privately limited his authority; but dealing with an agent of the latter class make themselves acquainted with the of his authority. Therefore, since archi- generally speaking, must be considered as l agents, the question which must often n practice is whether certain acts fall the scope of their employment. Thus, has hitect who is engaged to prepare plans superintend the erection of a building ity to order a quantity surveyor to prepare quantities and to bind his employer to erate the surveyor? This, apart from any ly-expressed or implied agreement be- an architect and his employer, is a point annot at present be decisively answered absence of any authoritative decision on oint. It will be obvious that other ns of a similar kind easily arise in e which must be decided by the light of nciple briefly mentioned in this note.]

N there is a clause in an agreement n a contractor and an employer that in e employer or his surveyor shall at any uring the progress of works order any ork to be done, this means not that the or has authority to alter the general plan works, or any part of such plan, in a manner, but only to deal with alterations ters of detail.—Rex *v.* Peto, 1 Young & 37 (1826).

s case was decided chiefly upon the con- on of the instrument before the Court, but s that, as a general rule, unless the contract it clearly apparent that the architect can radical alterations he will only be held e power to deal with details: the question authority of the architect to order altera- was raised in Cooper *v.* Langdon, 9 M. & where no authority was shown on the gs to the architect from his employer to lterations from the plans. But this point subsidiary to questions relating to an tion that it is little authority as a ent.]

Duties of Architects.

surreptitious dealing between one prin- o a contract and the agent of the other al is a fraud on such principal cognisable Court of Equity, and entitles the first- principal to obtain full redress for such or to have the contract rescinded, and to to proceed with it in any shape.—Panama outh Pacific Telegraph Company *v.* The rubber Telegraph Works Company, 10 Ch., 515; 45 L. J., Ch. D., 121 (1875).

last part of this proposition as to the n of the contract was laid down *ipsissimis* by James, L J., but was not wholly con- to by Mellish, L J. But this case enunciates an important principle to be observed in the dealings of architects and others, and in the course of the judgment of the court below the cases connected with this subject in which architects have been concerned were dealt with. Examples and further extensions of the proposition will be found in the cases which immediately follow.

WHERE an architect agrees with a house-owner that the work in respect of which he is employed shall not exceed a fixed sum, such agreement is not binding on a builder unless it is brought to his knowledge.—Kimberley *v.* Dick, 13 L. R., Eq., 1; 41 L. J., Ch., 38 (1871).

WHERE an architect is by the contract between the employer and builder to determine the amount due to the builder, and such architect has given to the employer an assurance that the cost of the work shall not exceed a certain sum, the architect does not, in the eye of the law, possess the unbiassed mind which will enable his decision to be just and conclusive, and the builder may bring a claim for a sum over and above that allowed by the architect.—Kemp *v.* Rose, 1 Giffard, 258 (1858); 27 L. J., Ch., 264. On appeal, 3 De G. & J., 354; 28 L. J., Ch., 230. Confirmed in 1871, by Kimberley *v.* Dick, 13 L. R., Eq., 1; 41 L. J., Ch., 38.

IF an architect falsely represents to another person that he has the authority of his employer to do some act, and that other person, acting on the faith of this representation, is thereby injured, he is entitled to recover from the architect damages in respect of the actual loss sustained by him in consequence of his action on the representation.—Randell *v.* Trimen, 18 C. B., 786 (1856).

[The principle of Randell *v.* Trimen was confirmed by Collen *v.* Wright, 7 E. & B., 301; 8 E. & B., 647 (1857). The principle is applicable when the architect not having, in fact, authority to make the contract as agent, yet does so under the *bonâ-fide* belief that such authority is vested in him. In Randell *v.* Trimen an architect ordered stones for a church, representing that he had authority from his principal so to do.]

THE NEW YORK UNIVERSAL EXHIBITION OF 1883.

IT will be remembered how, not long since, and but shortly after the close of the Paris Exhibition, the report reached Europe that a number of gentlemen had met in committee in New York to determine on the formation of another great Universal Exhibition for America, to be held in the Empire City. In New York circles the idea seems to have met with much favour, and during the last week of May, so we learn from the latest letters from the United States, among the Bills presented to the House of Representatives, was one intended to give a precise and definite form to the proposal of a Universal Exhibition to be held in New York in 1883.

This Bill, prepared by a committee of New Yorkers, stipulates that the future Exhibition shall, like that of Philadelphia, be organised and directed by private initiative. The Government will only serve as intermediary between the promoters and the foreign Governments. With this end in view, it will appoint an official commission, which will, however, assume no financial responsibility. When the organisers of the Exhibition have collected a million and a half of dollars, the Federal Treasury will advance them a like sum, but under the express condition of eventual reimbursement, a system successfully carried out in 1876. In other terms, the Government still say to the New Yorkers, "Pay the expenses of your enterprise and I will assist you; but we decline all responsibility and risk in the affair."

So far, all is in strict accordance with precedent, and no one would dream of asking more from Congress; for a formal refusal would be the only reply to such a proposal. As it is the city of New York which will most profit by the enterprise, it is by it that the risk must be incurred. The whole project is as yet not a little vague and uncertain, but if the various conflicting interests which have already displayed their respective feelings, can only come to an agreement, the Universal Exhibition of 1883 may soon pass into the domain of certainty.

But difficulties have arisen, as usual in such matters, where private initiative is the motive element, and if we are to believe the *Parisian*,—an excellent Anglo-Franco-American journal, which has recently made its appearance in Paris and London,—the project of holding a world's fair in New York has already given rise to no small amount of heated discussion. The original promoters of the enterprise have not been allowed to retain undisturbed possession of their idea. Two or three other self-constituted committees, on the contrary, have made their appearance, and all of these are endeavouring to seize the direction of the future Exhibition. On the most important of these committees are to be seen the names of Judge Hilton (of female hotel reputation), Appleton, Tiffany, and other prominent New Yorkers; but another, entitled the "Board of Trade Committee," and stigmatised by Messrs. Hilton and friends as irresponsible, has the advantage of priority, and has already called a national convention for the 18th of this month; a third committee is composed of Brooklynites, who demand for their city, now connected with its huge bridge to the Empire City, the location of the Exhibition on their side of the North River; a fourth committee has been formed with the openly-expressed object of establishing the Exhibition on the real estate of its members. We all know how dear to the heart of the New Yorker is the great "real estate" question.

All these interested gentlemen are working hard to gain their various ends, and each to obtain the important encouragement of Congress. It is only to be regretted that so much somewhat unseemly wrangling should have marked the early commencement of an enterprise the essence and chief value of which should be entirely national if it is to gain the respect of the world.

THE EXCAVATIONS AT OLYMPIA.

IN our issue of the 10th ult. we had a short note on the progress of the excavations at Olympia. We are now enabled to supply fuller particulars. A correspondent, writing from Olympia under date of April 22nd, says:—

This month has witnessed the discovery of three more marble heads and three torsi, and it has brought us in a rich harvest of inscriptions.

The principal interest attaches to the excavations undertaken for the completion of the pediment groups in the east of Zeus's temple. Here we have to praise especially the find of the Kladeos head, on account of its excellent preservation. It was drawn on April 1st from the later walls over the south end of the Hall of Echoes, and joins with its neck exactly to the torso found during the first year of excavations. Youthful and beardless, with short hair just indicated round the edges, the head confirms the opinion formed from the position and proportions of the body that the youth who, resting on his body, with elbows set up, looks up from the right corner of the pediment towards the assembly of Olympian heroes in the centre of the eastern pediment must represent the smaller, so to say youthful, River, while the broadly flowing Alpheios is personified in an older man reclining in a dignified attitude. The head, looking upward with a lively movement, but still archaic in expression and form, appears somewhat small in proportion to the powerfully developed shoulders and the capacious chest. The River God is a reflection of the genuine and unrefined type of those Greek youths of the good old time who endeavoured, on his shores, in the celebrated Gymnasion of the world, before all things to develop the activity of their limbs. There is not a trace in his unrestrained attitude of that dreamy natural feeling which lives in the softly bedded forms of river-gods of a more deeply thinking and more refined time.

Amongst the numerous newly-discovered fragments of the eastern pediment we may mention one of the larger ones, which comprises the whole left leg of the bald-headed old man sitting in a meditative posture, and proceed to draw attention to the interesting fact that we have excavated here at the extreme eastern limit of the Altis considerable portions of statues from the western pediment. This fact, very important for further searches for fragments of the western pediment, may be explained by the assumption that the material for their huts began to fail to the extremely dense settlements in the east, while we have found at the western front the dispersed mem-

* See pp. 304, 423, 479, 509, and 624, *ante*.

bers of the pediment groups nearly all unused, evidently because there was no extensive settlement near.

Thus we have in the far east, nearly 550 ft. from the body, the greater portion of the immense legs and the right hand of the colossal centre figure of the western pediment. This completion is extremely fortunate; for only now are we able to admire its exceedingly slender proportions, its grand posture.

Of metope fragments, a piece of the helmet of Geryones, and at the north end of the Hall of Echoes another head of Hercules, looking to the right (the third this spring), were picked up on the 8th of April.

The remaining finds of marble objects which we have to record to-day belong nearly all to Roman times. We have first an exceedingly well-preserved head of the elder Faustina, the wife of Antoninus Pius, which fits with its neck tenon exactly into a female torso derived from the exedra of Herodes Atticus. Next there is a draped female figure without head, to conclude from the place of its discovery one of the empress statues of the Metroon. Finally, we have two naked male torsi, which were lying in a hut erected of fragments over the "Leonidaion." They appear to have belonged to ideal portrait-statues.

In about the same neighbourhood we have raised with the lower layers of earth three very valuable archaic bronze inscriptions of considerable length. From the Byzantine wall, in the east, a large long marble base for one of the dedicatory presents was broken out, which Mummius offered to Zeus from the booty after the overthrow of the Achaian League. As it could not, from its form, have supported one of the two Zeus statues mentioned by Pausanias, we have here a proof that Mummius endeavoured also, with other dedicatory presents, to wipe out the memory of the infamous burning down of Corinth. It is remarkable that the similarly worded dedicatory inscription which this base bears on its two narrow sides is on one side engraved in the characters used in Mummius's time, the other one being of a later form. This may probably be explained by the assumption that the statues were turned round at a later period, perhaps in consequence of a change in the direction of the streets, and the inscription repeated on the opposite side.

Another memento of the time of the subjection of Greece to the Romans has been met with in the south-west corner of the Altis, which has now been completely laid bare. Between the numerous long bases of equestrian statues, of which there still exist undisturbed a goodly number, there is a square limestone block, upon which a Macedonian adherent to Roman rule from Thessalonica erected the statue of Q. Cæcilius Metellus, the conqueror of Macedonia, "on account of his virtues and the goodwill shown by him continually towards his native town, towards other Macedonians, as well as towards Hellenes generally," as stated in the inscription. There appear to have been here deposited several Macedonian mementos. Thus we met with an inscription of a hitherto unknown Macedonian sculptor, Herophon, and especially with the base mentioned by Pausanias (vi. 16, 5), of the express messenger of Alexander the Great, Philonides, the "wanderer through Asia," *βηματιστὴς τῆς Ἀσίας*. There were here other honorary bases with inscriptions, that of the Elean Antigenes, who conquered with a team of foals, and that of L. Cæcilius Rufus. To these must be added in the south of the Philippeion a bathron, upon which five victories are registered with so many laurel-wreaths; two honorary bases of strategists of the Achaian League, that of L. Pompeios Krateros at the south of the Heraion, and that of Tiberius Claudius Pelops at the east of the Zeus temple; finally, the especially interesting fragment of a decree which seems to have reference to the holding of the Olympian Games, and in which mention is also made of the honours to be paid to the Roman emperors.

Of discoveries of bronzes there is, excepting the usual daily harvest of small fragments of implements, coins, &c., only little to record. Deserving mention are a life-size muscular bronze arm, which may have belonged to one of the victory statues at the south-west of Zeus's temple, the back of a coat of mail, and, finally, the handle of a vessel, formed of a male winged figure of perfect Assyrian style, already the second example of this type, curious from an art-history point of view, which has been met with on Olympian ground.

While on this subject, a communication to a German contemporary respecting the disposal of the sculptures deserves quoting. The writer says that King George of Greece, in consequence of a visit he recently paid to Olympia, has expressed a wish that a museum should be erected on the spot for receiving the antiquities found there. A preliminary sum of 100,000 drachmas (4,166*l.*) has already been reserved for that purpose. The present Greek Minister of Education, M. Augerinos, is greatly in favour of this plan, the acceptance of which recommends itself by the fact that the transport of the colossal groups of the pediments would entail very heavy expenditure. On the other hand, it is urged that it is desirable, in the interest of science, that the yield of the Olympian soil should be brought to Athens. Only at Athens is there a guarantee that the works of art would be suitably placed and utilised in accordance with the requirements of science; only there a comparison with related works of art and their study would be possible, because there is the University which unites the more highly cultured youth of all Greek countries; because there are the German and French Institutes of Archæology, to which an English institution of the same character is soon to be added. There we find an international soil for classical science, where, each winter, connoisseurs and friends of art are meeting for a prolonged stay. Only a limited number of tourists arrive at Olympia once a year, who stop at most only a day, and then continue their wanderings. It is admitted that there must be at Olympia a museum which should receive the architectural remains,—a building whence the site of the temple might be superintended and protected against destruction and spoliation; but it is desired that the works of sculpture should be collected together at the capital. There is something to be said on both sides, but we rather go with King George.

IPSWICH MUSEUM COMPETITION.

ONLY ten sets of drawings have been sent in for this competition,—a small allowance amid the rage for competing that we are accustomed to meet with now. The building required is to be erected on a site in High-street; not, as usual under such a name, the main street of the town, but a quiet road apparently named from its elevation of site. The buildings are to include provision for a museum, library, and reading-room, school of science and school of art, the cost of the whole to be about 7,000*l.* The competitors seem on the whole to have endeavoured, more fairly than is usual, to keep their buildings within the limits of the sum named. The style of design seems pretty equally divided between Gothic and Queen Anne, with an occasional touch of the regulation "Classic" or Italian. We may briefly characterise those plans which appear best worth attention.

"Dispatch" divides the departments into parallel blocks at right angles to the front, the museum central, library to left, and schools to right; the centre part of the museum goes up two stories, the story over the library is added to the museum above. The rooms are conveniently arranged on the ground-floor, except that the curator's room has not sufficient connexion with the museum; the upper school portions on the right are badly planned, one class-room forming a passage to another. The design is a late and very weak Tudor, verging towards Elizabethan. A south light for the reading-room, with very large windows, does not promise well for the comfort of the readers.

"Economy" also treats the museum longitudinally in the centre, but with a far better and more systematical plan. The staircases are better planned; the library and school departments have their separate lobbies; the reading-room is a good shape, and has light from two sides, and the access to it, and connexion between it and the library, are well-arranged. The upper plan is conveniently arranged for communication, but no very special care seems to have been taken as to lighting the art-class rooms; the lights (side) have the right aspect, but it would be difficult to avoid pupils getting in each other's light in the painting-room. The design is that of an unobjectionable, but uninteresting, Jacobean building.

"Bona Fides,"—a fine set of drawings, with alternative plans: one showing the museum in the centre, with a top light; the other with the library ditto. The latter necessarily com library and reading-room in one, which is good; and, for a small reading-room, windows are more comfortable, and give choice of light (if light two ways c obtained), so that we prefer leaving the m for top lighting. The outer reading-room however, have very bad light at the bac the committee can only get to their through both reading-rooms and the l Curator's room well placed. Art-class with large north windows, the lower p which would probably have to be obscu produce the right result. Design pronc Queen Anne,—ambitious, heavy, and expe looking.

"Work and Win": the author has rest himself to a very modest-looking exte Domestic Gothic, neatly drawn, but de in picturesque feeling. Within this exter has aimed at producing an effective plan: symmetrical, and in which (as usual in symmetrical plans for small buildings) a deal of space is wasted, and things are prominent which should not be so. Tal is, in fact, quite unsuitable, but the authc ideas, and may carry them out better more experience.

"Simplicity" answers to its name in n to the plan, which is convenient in the w intercommunication, but it is not difficu manage this when so large a space is di to a central hall, from which the rooms The result of this kind of simplicity is a of seclusion and separation; the reading- for instance, is uncomfortable, one end of s coming nearly opposite a door opening rig the central hall; and the bookcases are so as to intercept a great deal of light the tables. The central hall would be m sufficiently lighted. The museum depar is all above, and divided into various roo as to suggest a classification of subjects, is good. The designs and pencil sketches the hand of a good draughtsman; Gothi Classic alternatives are given; the latte best, though the cutting into the pilast insert busts within circles has a villanous such decorations should be placed in spa or wall spaces, and not in constructive fe The design seems to be a favourite, s elevations, &c., are no doubt attractive, b plan wants much modification in detail, a Classic design, at all events, could not b for the money.

"Pro Bono Publico": a finely-drawn plans, with a great deal of merit. The au almost the only one who has shown any of the necessity of providing special lig the art class-rooms, which he has done in that shows he understands this part work. The defect of the plan is the re room, wanting in light, and made a pass the committee-room. Alternative d Gothic and Italian, with some individua detail, both good in effect, are shown in s ably drawn perspectives; both, however stipulated cost.

"Architect," a Queen Anne design, with very ugly detail, and also some character side elevations: drawings very good, plan the reading-room is a passage to the libra the author has recognised the fact th library for patent publications should be accessible. He places the curator's room that gentleman were to act as hall-porter alternative plan, in which the plan is compr more towards the front, and extended from to back, seems the best of the two.

"Suivez-moi," a very pretty set of dr spoiled by the unnecessary eccentricity of ing a large part of the museum (on upper over open space and upon piers and arch use being suggested for this space below, is thus thrown away. The museum is effec and suitably divided into rooms with large arches from one to another, so as to them all one suite, while suggesting classifi but the unfortunate curator is classified th way, and is to sit in a room with no door for the sake of symmetry. A pleasing of Italian character, carried out in a r manner, but costly and a trifle heavy.

"Shield and Supporter," a very Me design, of which one need only say that th spective view has a certain picturesqu The plan is utterly unpractical; in fact, in parts.

The committee will hardly be able to cover the ground and get the acc dation they want for the sum named

wed, however, a margin of 10 per cent., ay take it that 8,000*l.* will be expended. remium was offered for the best design. vice to the committee would be, not to a grandiose building, but something in omestic style, as the site is in a retired d not in the more public part of the e keep their museum accommodation nd their library and reading-room on the oor, and easy of access, as likely to be gely and continuously used; and the of the art-school upstairs goes as a f course, in order to obtain the best light for it. The larger portions of a are best top-lighted also.

rchitecture of Ipswich is generally in the picturesque: it is for the most and commonplace; so that a building ithout expensive detail, gives a pic- and characteristic outline, would be ; and it should be borne in mind that ding is to stand on a considerable in- ng from the town, and therefore will looked at coming up the hill towards important features of the building urally should, therefore, stand promi- n this direction, which will be more than a symmetrically-arranged central could be in a building standing on a d with little width of road in front

THE ERUPTION OF ÆTNA.

RESPONDENT writes:—Visitors to the Syracuse or Catania about six years at is to say, towards the end of 1873,— ely have been struck with the fact that ral theme of conversation among the ring company was the then expected of Ætna. There was some justifica- the pre-eminence which the gigantic ok in men's minds at the time. ke-capped mountain is always before eyes in South Sicily, whenever they are he open air; it is, in fact, the all- ating feature of that hilly landscape. uld we, of the three active volcanoes , first behold Ætna, neither of the the much more peculiarly-shaped cone boli (Lipari Islands), rising direct from n, and the Ladies' Volcano, *i.e.*, the scribed Vesuvius, because so easily even by tender members of the fair uld create a similar impression. To t be added that Ætna, less fickle than , retains his smoke-cap almost without ion from one year's end to the other, Stromboli, who not only expels his f smoke more intensively and more tly, but even emits flames, which at rve the navigator of these seas as a If in that spring of 1874 the con- ad been come to from the increased f smoke, as well as other external hat the eruption would in reality ken place within a few days or nths, the virtue of patience would have ly tried. The eruption came, it is true, not come until the 24th of August of r; it was so weak and insignificant, that it cannot be compared with the ne. The lava spread only in the imme- nity of the crater; and thus it is now ars since the volcano was as approxi- otive as it is now. The ordinary signs pending eruption, such as increase in ne of smoke, earthquakes, and sub- rumblings, appear to have preceded al outbreak only by a few days. At ountain began to emit larger masses of d fire, accompanied by the ejection of d rubble, from its ordinary vent, the ing for years past. On the evening of of May a new crater was formed on the e, whence lava at a white heat imme- egan to flow. The formation of three rs on the north side followed, as well fresh ones on the south side, and soon ome time broad streams of lava were down nearly all round the mountain. On side, one of these streams was flowing tion somewhere between Randazzo and lla, while another was turning more the east to the sea, destroying on its ds, fields, and forests, threatening for ne village of Linguagrossa, and finally bed of the brook Alcantara. On the slope the safety of the villages of la and Paterno was seriously jeopar- d it was even stated that a lava stream had interrupted the road from Catania to Acireale, running along the sea-shore. The distance travelled over by the lava streams varied, according to the obstacles met with, between eight and twelve miles.

The great eruption of 1669 has proved that those liquid masses of fire may spead destruction to far greater distances. In that memorable outbreak, the largest lava stream threw itself with terrific noise into the sea at Catania, after it had overcome, in a course of no less than twenty miles, every natural or artificial obstacle. On arriving at Catania by sea we are struck, even if our attention is not drawn to a perfect ridge of cold lava, with the dark black colour of the soil, which reminds us of the blackest of our coal districts. The impression is more sombre, less pleasant than anywhere else in Italy; even if we are not thinking of the dreadful distress which the population of Catania endured during that most frightful eruption of all. A rampart of earth was raised to protect the town at that time, but the lava rose higher and higher, until it finally, overflowing its crest, poured with a fiery rain into the streets of the town.

The road to the Casa Inglese, well known to all visitors to Sicily, and where most of the excursionists to Ætna spend the night, has been interrupted in many places, and the lava commenced its destructive course over valuable cultivated land. The lava streams are said to be at their upper end about 240 ft. broad, at their lower end only 20 ft., but they reach in some depressions of the soil, which they have filled up, a depth of over 120 ft. The rain of ashes seems principally to have been driven towards the north, for in Reggio, on the Calabrian coast, distant fifty miles, as well as in Messina, the descending masses of ashes caused at times a night-like darkness. Professor Rossi has established the volcanic origin of the ashes which have fallen in Reggio.

As far as history serves us, seventy-eight eruptions of Ætna have occurred, the earliest noted being those recorded by Thucydides in the year 425 B.C., consequently more than 2,300 years ago. But of those outbreaks, but few have jeopardised the lives of the inhabitants living close to the mountain; and as the eruptions of Ætna have always occurred less directly than those of Vesuvius, the apprehensions felt for the Sicilian volcano are in ordinary times not very great. The fertile lava lands on the slopes of the mountain are cultivated, it is true, up to a certain height, and inhabited, but they are less densely populated than the slopes of Vesuvius. Moreover, the inhabitants, knowing the danger and precariousness of this tenure, provide for this by constructing and furnishing their houses as lightly and as cheaply as possible. No loss of life has hitherto been recorded, except it be that a traveller, tired of life, has precipitated himself, as in his time did Empedocles, into the abyss of the crater. But the lava would hardly have this time left behind the celebrated slipper.

According to latest telegrams from Sicily, the eruption has at present ceased, although smoke continues to issue from the mountain as usual, and thus the apprehensions felt have been considerably allayed.

A NEW COUNTY HISTORY.

At the recent Stamford meeting of the Lincoln, Northampton, and Leicester Architectural Societies, the proposed history of the county of Lincoln was, of course, talked about. The Bishop Suffragan of Nottingham observed at one of the meetings,—It is the wish of the Bishop of Lincoln, and certainly it is my own, that we may at least see the beginning of that great work demanded so long by those who are interested in the past history of this great County of Lincoln, which I trust may be finished during the lifetime of many who are here present. It will be of great value, not alone in this county, but throughout England; for there are no histories more valuable than those of counties, and I grieve to say when a demand is made for a history of the County of Lincoln, we are obliged to turn away our faces in shame and say, "We have none." We ask for contributions, great and small,—I am not speaking of money, though that would be very acceptable.

The Committee of the Diocesan Architectural Society have now issued a report made in accordance with a request last year from the Bishop of Lincoln, which deserves to be reprinted here, accompanied by a suggestion to the residents in other counties without good modern histories to go and do likewise.

"The committee have given the subject their best attention, and are happy to be able to report that the scheme appears to them perfectly practicable, and that, with the support of the chief persons connected with the county, together with the co-operation of the parochial clergy, it might be commenced within a comparatively short time. The result of the deliberations of the committee, and of the inquiries they have made of those who have been engaged in similar undertakings, is that the first measure essential for the completeness and accuracy of such a work is the thorough examination of all such documentary authorities as the records of the realm, calendars of wills, episcopal registers, heraldic visitations, and other similar sources, having reference to places within the limits of the county. It would, then, be necessary that all the extracts derived from these materials should be sorted and arranged, according to the hundreds, parishes, manors, &c., to which they belong, and thus be prepared for use when each particular district is described. By this means the materials necessary for such a work would be collected, with the assurance that no important omissions were made, and without unnecessary labour. Such extracts can only be supplied by experts, accustomed to the deciphering of ancient records, and familiar with the terms employed in them, and the agency of these experts would necessarily involve a considerable expenditure of money, far larger than a committee of voluntary workers could possibly undertake. It is, therefore, absolutely essential that a sufficient publication fund should be provided before any steps can be taken towards the production of this important and most desirable work. If such a fund should be ensured, the committee will lose no time in arranging for the collection and transcription of the materials referred to, and there would then be a reasonable hope of this great work being commenced before long. It would be issued by subscription, in parts, beginning with the hundred of Grimsby, for the description of which considerable materials already exist. The committee issue this statement in the hope that they may receive such assurance of support as will warrant their commencing this important work, the want of which has long been felt. They would take this opportunity of suggesting to all persons interested in its production, especially the clergy, that they would be rendering most valuable service by at once addressing themselves to the task of collecting and arranging such materials as may be within their reach, so that no time may be lost when once the actual compilation of the work is commenced. All communications should be addressed to the Secretary of the Architectural Society, 45, Silver-street, Lincoln."

In connexion with this subject, it may be mentioned that the collection of books, annotated books, MSS., and transcripts bearing reference to the county, see, and city of Lincoln, got together by Mr. E. J. Willson, F.S.A., of Lincoln, is now offered for sale, and that there seems to be a very natural wish to keep the whole in the county, to be used in the proposed work.

"TEMPLE GARDENS:"

THE NEW BUILDINGS IN EXTENSION OF HARCOURT AND PLOWDEN BUILDINGS.

THESE buildings are situated in the Temple Gardens, and form the termination of Middle Temple-lane, towards the Thames Embankment. Middle Temple-lane divides the property held by the Hon. Society of the Inner Temple from that belonging to the Hon. Society of the Middle Temple. The houses on the eastern or Inner Temple side of the lane are called Harcourt-buildings, and those on the opposite or Middle Temple side bear the title of Plowden-buildings. The two societies desiring to extend their respective structures towards the Embankment agreed to adopt a common style of architecture, so as to avoid the sudden contrasts which may be observed in some other parts of their property. Middle Temple-lane was still to divide the extensions of Harcourt and Plowden buildings, which would thus have formed two blocks of moderate widths, with Middle Temple-lane dividing them. Mr. Edward M. Barry, R.A., was specially appointed by the Benchers of the Inner Temple to advise them in the



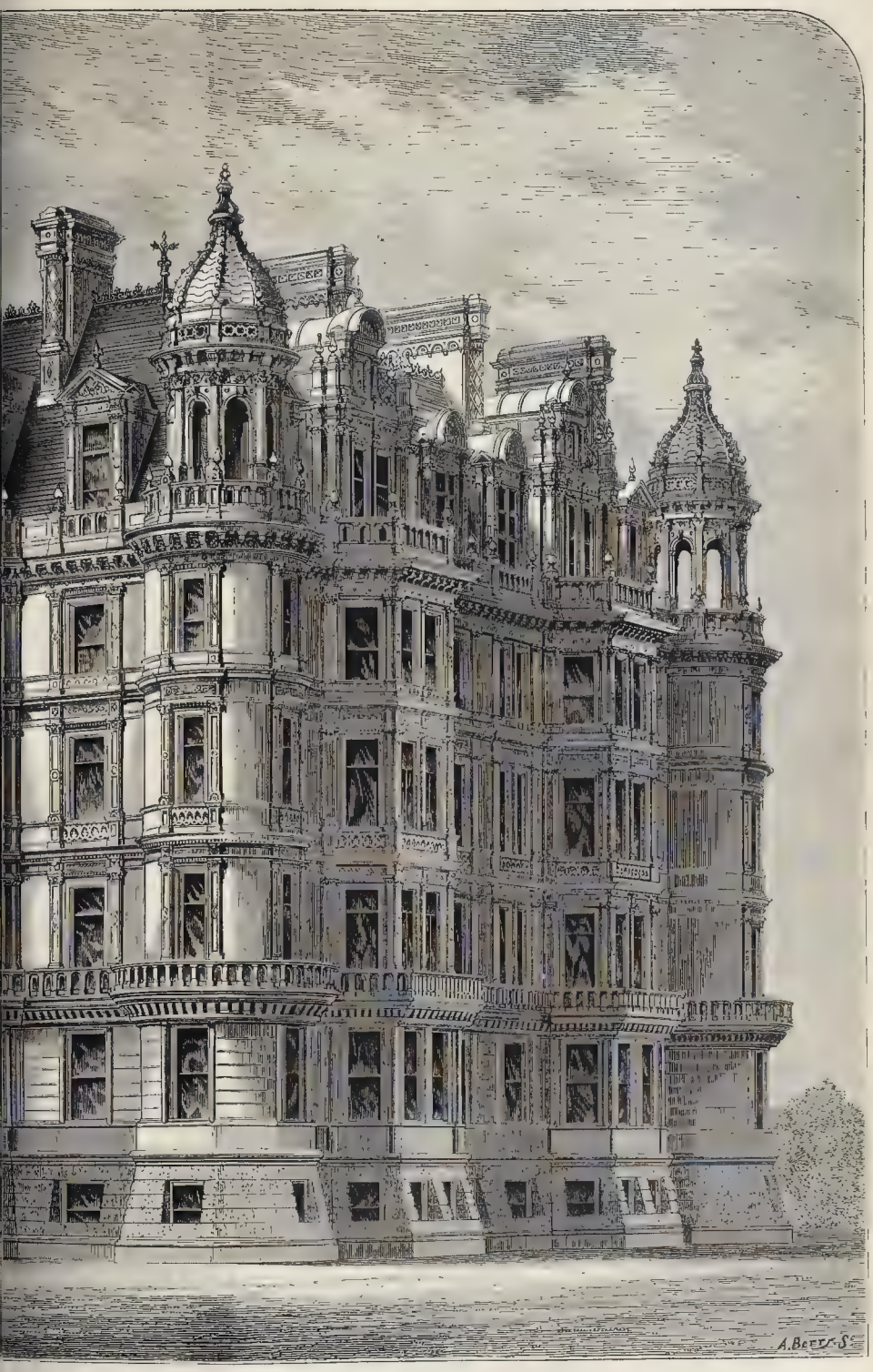
"TEMPLE GARDENS."—*Second Floor Plan.*

matter, and Mr. J. P. St. Aubyn, the architect to the Middle Temple, was consulted in the usual course by that body. It was determined, by the advice of Mr. Barry, to abandon the idea of two blocks of buildings, and to substitute for them one block to be appropriated between the two societies, the continuation of Middle Temple-lane being provided for by an archway, forming a central feature of the design. It was afterwards agreed between the architects to leave the architectural design and details of the exterior entirely to Mr. Barry, while each architect should be responsible to his own employers for the planning and internal arrangements of their respective chambers. The building has been carried out according to this arrangement, and the view which we publish shows the building as now completed. The space available for building not being rectangular, the broken outline of plan and elevation was adopted, with a view of dealing as effectually as possible with the somewhat awkward angles presented by the site, the circular angle turrets being specially designed with this view. The arrangements of the plan have needed some ingenuity to avoid as far as possible loss of space and inconvenient and unsightly irregularities of shape in the various rooms. The entrances to the chambers are in Middle Temple-lane, and by setting the same backwards in the midst of the new Harcourt-buildings means are secured for obtaining side-lights to the adjoining rooms. The central archway continuing Middle Temple-lane is an important feature of the elevation towards the river. It is surmounted by a carved balcony, and is flanked by niches, in which are to be placed statues of Justice and Learning, by Mr. W. Calder Marshall, R.A. Beneath the archway appear the armorial bearings of the treasurers of the two societies who have held office during the erection of the new buildings. The dormer windows, which constitute an important feature in the composition, display among their ornaments the flying horse and the lamb, the well-known insignia of the two societies, and the central dormer is decorated with their shields, with labels bearing the names of Harcourt and Plowden buildings. Each set of chambers comprises two barrister's rooms, a pupil's room, a clerk's room, and a strong-room, besides a small pantry, or closet, for the laundress, a lavatory, &c. Shafts are built in the walls to conduct the dust to the basement, whence it can be cleared away, and there are lifts on the staircases for coals. The internal finishings of the chambers are plain and substantial, and the floors are of fire-resisting n
constructed by Messrs. Dennett. The st
are lined with glazed bricks instead of
the colour adopted by Mr. St. Aubyn
white, while Mr. Barry has used a pal
The roofs are covered with green slat
surmounted by an ornamental cresting
The chimneys rise boldly above the line
and are so arranged as to be easily acc
The elevations are of Portland stone,
carving has been admirably carried
Messrs. Mabey, of Westminster. Messrs
& Co. have fitted up a number of their
self-coiling wood shutters in the new bu
Mr. G. W. Booth, of London and Gosport
contractor, and Mr. Goodchild is the
works. The buildings will be ready fo
pation about Midsummer next.

Bronzes and Ivories. — The Bu
Fine Arts Club are exhibiting in their
an important and singularly interesting
tion of bronzes and ivories of European
ranging from the later days of original
art to the beginning of the eighteenth c
An excellent catalogue, with introductory
has been prepared.



"TEMPLE GARDENS," LON



M. Barry, R.A., Architect.



FAÇADE OF THE IMPERIAL TELEGRAPH OFFICE, BERLIN.

IMPERIAL TELEGRAPH OFFICE, BERLIN.

hardly a century since the reversal of es of the magnet in a ship's compass by of lightning revealed to us the close ship between electricity and magnetism; y sixty years have passed since Ampère rstedt (1819) established the deviation of gnet-needle through the electric current; more than forty years separate us from scope-telegraph apparatus of Gauss and ingeniously constructed, but unsuitable ctical purposes, as we'l as from the first - telegraph of Steinheil, of Munich: hen, thanks to the splendid successes eatstone, Werner, Siemens, Morse, and s, a development has taken place in the of telegraphy which may rightly be one of the greatest achievements of the intellect. The victory over space, over e, which enviously separates men from her, is completed. The *glebæ adscriptus* Roman poet has no longer any meaning. no longer attached to the soil, to a par- spot: his thoughts, his very words, are by the tamed messenger of the king of ls with lightning speed over lands and oceans, over glaciers and deserts. The nse of the words of the Bible, to "take gs of the morning," has become an ay truth.

thoughts cross our mind as we enter the t splendid hall containing the telegraph ms of the Central Telegraph Office, situate ügerstrasse, Berlin, the central organ, the f all the thousand and one nerves spread the great body of Germany, and con- with neighbouring systems. It is only a ths since this most important telegraph- f the German Empire, that of Berlin, d a home of its own. Like that of the chief Berlin telegraph-office was d up in a location utterly insufficient for wing traffic, until a nobler and more s erection could receive it. Until ber 18, 1873, it was housed in a building corner of the Französische Strasse and lstrasse, which, twenty years ago, corre- to the requirements of the time, but no means be called sufficient for modern The gigantic growth of traffic, the tion of numerous territorial institutions an telegraphs into one whole organisa- , the Imperial German telegraphs, as the extended political and economic ment of the German Empire; finally the use made of the telegraph by the people, e necessity arising therefrom of the lown of numerous new telegraph lines, he urgency of providing larger spaces for graph service in Berlin more and more felt.

, at the beginning of 1876, the Sir How- ll of Germany,—Generalpostmeister Dr. ,—undertook the direction of the German phs, a new life seemed to have entered auch of the public service. Numerous es and new telegraph-offices were opened suggestion, and a new and more simple as introduced. Being a man of large Dr. Stephan directed his activity to the cture of postal and telegraph buildings, ised this branch of the administration, o treated in a most niggardly and mean to a level of efficiency to which the n Empire is indebted for a series of suit- nmental edifices. He himself supplied architects the *motifs* and styles of archi- ; he combined the measure of require- with the demands of artistic creation, vanced, by his personal influence, their ction in such a manner that more postal egraph buildings were erected in a few than formerly in a whole generation. came about that he erected in Berlin tral Telegraph Office (of which we give) in accordance with its importance, and e most beautiful square of the German , the Gendarmenmarkt, where are located aracteristic creations of Frederick the in the style of the Renaissance. The of the building is of a light-coloured sh sandstone. The first floor has an Ionic the second story, Corinthian. A frieze, legoric juvenile figures representing traffic, , and balustrade crown the edifice. The -floor includes a large rectangular hall, ing the apparatus, 140 ft. by 65 ft. It ed from above. The central part of the ises several feet above the two side-galleries, and the whole is richly decorated, including portraits in relief of the men whose meritorious services rendered to the science of telegraphy have entitled them to such places of honour. The walls and columns have received a light, yellowish-grey ground colour, which, variously toned down, and surrounded by a dark red border, gives a pleasant and cheerful impression. The warming of the hall is effected by hot-air pipes. The wires which serve for connecting the apparatus, transferrers, &c., have been laid down under the floor, and are thereby entirely withdrawn from the eye. Sixty-four cables, mostly of from four to seven arteries, receive the conduits introduced. On the tables the take-in wires are also invisibly passed up, either inside the legs or in separate tubes. The number of the conduits ending in the hall is 254; 167 Morse and thirty-six Hughes apparatus serve for working them; the latter are placed in the central portion of the room. The connexion between all these different apparatus is effected, and the currents are introduced from without by the so-called transferrers, of which the largest consist of four transferrers, each of thirty-six longitudinal and cross rails or slides. Numerous instruments, transfer systems, measuring tables, and apparatus for the pneumatic tube-service, and, finally, ten clocks moved by electricity, complete the fittings of the hall. The motive-power for all these conduits and apparatus is contained in 5,000 elements placed on seventy-six frameworks, in a room of the basement in admirable order. Refreshment-rooms and cloak-rooms for the ladies and gentlemen of the office are also provided in the basement.

It was high time, indeed, that the erection of this building should be proceeded with, for the demands made on the telegraph administration in consequence of the immense development of the German telegraphs during the last three years had considerably increased. The long lines of underground cables connecting the capital of the empire with all the places of commercial or military importance which have been in course of construction since the spring of 1876 (we have noticed their progress from time to time in the *Builder*) are nearly all completed. The routes from Berlin through Frankfurt on the Main to Mainz, from Frankfurt through Karlsruhe to Strassburg, from Berlin through Halle to Leipzig, and from Berlin through Hamburg to Kiel, of a total length, in round numbers, of 1,600 miles, with over 10,000 miles of wire, are in working order. The cables to Metz, Stettin, and other cities, will be completed this year. This is a most important step in advance, for underground communications are independent of external influences,—of rains and storms, snow, and other causes of interruption. An isolation of the capital, as happened to Vienna in November of last year, is now impossible in Germany. It is asserted that, in the matter of underground cables, Germany has outstripped every country of the globe. But the work has been extremely difficult. The cable, containing within its protective covering highly sensitive arteries, had to be embedded in rocks and morasses, had to be securely deposited in rapid and frequented rivers, or carried under the streets of populous cities and the walls of fortresses. But the German Empire is now in the possession of a defensive arm which ought not to be underestimated.

Besides the cables, the over-ground telegraph lines have been increased in length from 21,000 miles to 30,000 miles, which required 216,384 poles, 675,500 isolators, and thousands of tons of iron wire, which were all supplied at home, and gave employment to many thousands of workmen. The increase in the number of telegraph-offices went hand in hand with the construction of the lines. At the end of 1875 there existed 1,686 offices; by the end of 1878 they had been augmented to 4,115. The progress thus recorded, without detracting from the merits of the men who have worked with him, is principally due to the indomitable energy of Dr. Stephan, the Postmaster-General of the German Empire.

Putney.—At the Board of Works, on the 4th inst., it was unanimously resolved to increase the salary of the surveyor, Mr. J. C. Radford, 50*l.* a year. The question was brought forward by Mr. Collier and Mr. Cutler, who spoke in high terms of Mr. Radford's energy and ability.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE eleventh ordinary meeting of this Institute for session 1878-79 was held on Monday evening last, Mr. John Whichcord, president, in the chair.

Several donations to the library were announced, including a memoir of the late John B. Papworth, architect, concerning whom Professor Donaldson said he was a man of most genial manners, possessing great business aptitude, and withal a lively genius. He was one of the founders of the Institute, and devoted great care and attention to its affairs. Upon his judgment the members had largely to rely in the framing of the rules and regulations for the governance of the body.

The following gentlemen were balloted for and declared to be duly elected, viz.:—As *Fellows:* Mr. Lacy W. Ridge (Associate), London; Mr. Charles Baker (Associate), Leicester; Mr. Isaac Barradale, Leicester; Mr. Henry Shenton, Leicester; Mr. H. R. Gough, London; Mr. Campbell Douglas (president of the Glasgow Institute of Architects), Glasgow; and Mr. Alexander Graham, of London. As *Associates:* Mr. W. A. Dugleby, of Napier, Hawkes Bay, New Zealand; Mr. Thomas Garratt, of London; and Mr. William Owen, of Manchester. As *Honorary Associates:* Captain T. B. Heathorne, R.A.; Mr. John Braddick Monckton, F.S.A.; the Rev. Canon Venables, M.A.; and Sir Seymour Vesey Fitzgerald, G.C.S.I.

The secretary, Mr. W. H. White, announced the decease of Mr. E. Brainerd Webb, C.E., Hon. Associate; of Mr. Horace Field, Associate; and of Professor Semper, Hon. and Corresponding Member, of Vienna.

PROFESSOR SEMPER.

Professor Donaldson then read a short notice of the life and works of the late Professor Semper. He said that the honorary secretary, Mr. Wyatt, had called his attention to the loss the Institute and the profession of architecture had suffered by the death of Professor Gottfried Semper, which took place recently at Rome. Professor Donaldson said that Semper was one of his earliest friends, and one for whom he had a great regard and a cordial admiration for his talents. The earliest notice of his name in connexion with the Institute was in the volume of the "Transactions" for 1836, in the introduction, by Kügler, to a paper on the polychromy of Greek architecture. In that introduction, the writer spoke of Herr Semper as having recently expressed himself in terms almost equivalent to those of M. Hittorff. Semper was born on November 29th, 1803, at Altona, then the second city of Denmark. He studied law from 1822 to 1826 at the University of Gothenburg, but afterwards studied art at Munich and Paris. He subsequently visited Italy and Greece, and returned with portfolios rich in studies of ancient monuments. In 1834 he published a short but suggestive essay on the painted architecture of the ancients. His talents seemed at that time to have been appreciated in Dresden, whither he was invited to go as Professor of Architecture in 1834, on the recommendation of Schinckel. He there, in 1841, built the Court Theatre, burnt down in 1869, and many other fine buildings. The portfolio in the Institute Library containing photographs of his works showed his marvellous facility in adapting the Cinque-Cento style of Italy to modern wants and requirements. He was also the architect of a splendid synagogue in Dresden. In 1847 he began the new museum in that city. In all these buildings he yielded to his *penchant* for coloured decoration, which he introduced profusely, to some extent realising the dreams of his earlier years. He was architect to the King of Saxony, who bestowed upon him many personal favours; but in the unfortunate political disturbances of 1848 he forgot the grateful allegiance he owed to his sovereign, and, yielding to his democratic instincts, took part with the insurgents, assisting them by preparing a plan indicating the spots where barricades should be put up. This unfortunate burst of political feeling was the commencement of a long series of years of misfortune. He fled to Paris, and thence to London, as a place of refuge and of possible employment. In 1853 he joined the Department of Practical Art at Marlborough House, and taught the principles of decoration as applied to metals of all kinds, and he commenced a treatise on that subject, which, it was to be feared, he never finished. He designed the well-known Wellington funeral

car, which bore the remains of the illustrious Duke to their resting-place in St. Paul's Cathedral. In 1853 he made a rough sketch for erecting permanent buildings on the site of the South Kensington Museum, and for this he was paid by the Prince Consort. He also designed the certificate of the Art Department. After passing several years in this country, he was offered, and accepted, the Professorship of Architecture in the University of Zurich, in which city he erected several fine buildings, including the Polytechnic School, the Town-hall, and the railway station. The latter was a remarkably fine building, the interior halls being conceived after the style of the *thermæ* of the Romans, and admirably decorated. Semper represented Switzerland as its commissioner at the French International Exhibition of 1866, and designed the Swiss buildings and other art structures representing that country. By a strange combination of circumstances, he who fled in 1848 as an exile from Dresden was, in in 1871, recalled to rebuild the Court Theatre, burnt down in 1869. While, however, he prepared the designs,* the practical execution of the work was confided to the superintendence of his son, Herr Manfred Semper. His recall to Dresden was an instance of the power of genius to outlive the mistakes of the past. In 1869 he made a design for the Exchange at Vienna, and in 1870 was called to that city to make a design for the new museum there. He also designed and carried out some material additions to the Imperial residence in that city.† Of late years he had lived alternately at Venice and Rome, being much afflicted with asthma, and he died in Rome on the 15th of May.

Mr. T. H. Wyatt, honorary secretary, said that in the death of Mr. Brainerd Webb, Honorary Associate, the Institute had lost a valuable member. He was an accomplished civil engineer, and was for many years engineer-in-chief of the Dublin and Coleraine Railway.

Mr. E. C. Robins exhibited some richly-wrought and chased metal work from off a muniment-chest, such as was formerly used by the City companies, and he asked the opinion of the members as to the nationality of the work. He had recently exhibited and described it at a meeting of the Society of Antiquaries, when Mr. Octavius Morgan and Mr. Cox, of the Bodleian Library, were of opinion that it was Italian, while Mr. Franks and Mr. Shoppee thought it was German. His own opinion of the work, based on its comparison with some early sixteenth-century French work in the Bethnal-green Museum, was that it was French, although it might possibly be Flemish.

On the motion of Mr. Charles Barry, seconded by Mr. T. H. Wyatt, a vote of thanks was accorded to Professor Donaldson for his interesting memoir of the late Professor Semper.

Mr. E. I'Anson, Member of Council, then read a paper on "Recent Excavations of the Roman Forum." The substance of this we print on another page.

A brief discussion (in which Professor Donaldson, Mr. E. C. Robins, Mr. C. F. Hayward, Mr. Streatfeild, and the Chairman, took part) ensued.

A cordial vote of thanks was given to Mr. I'Anson for his paper, and it was announced that the last meeting of the session would be held on Monday, the 23rd inst., when the medals and prizes awarded by or through the Institute are to be distributed.

ARCHITECTURAL ASSOCIATION.

THE last ordinary meeting of this Association for Session 1878-79 was held on Friday, the 6th inst., Mr. H. L. Florence, president, in the chair. Mr. James Linsell was elected a member, and Messrs. Farrow and Cresswell were appointed scrutineers of the balloting-papers for officers and committee.

The Architects' Benevolent Society.—The Chairman said that at the previous meeting of the Association ‡ he had brought forward the claims of the Architects' Benevolent Society, and had expressed the hope that the Association would be able to collect and contribute 100*l.* out of the 1,500*l.* required to increase the invested fund of the Society to 5,000*l.* He was very glad to say that his hope would be realised, for in response to the appeal that had been made he had received promises amounting to more than 100*l.* He was pleased at the result, but at the same time he regretted to observe that the subscription-list comprised the names of only forty-six or forty-seven members of the Association. It was only necessary to glance at the "Brown Book," which contained the names of nearly 900 members, to see what a slight tax it would be upon the Association to raise even a second 100*l.*, for if each of 800 members gave 2s. 6d. another 100*l.* would be available. However, he was grateful for what the Association had done, and thought that the incident would hereafter be looked back upon as marking a red-letter day in the history both of the Association and of the Society. The Architects' Benevolent Society had been much neglected by architects. Many of them, while subscribing to kindred societies, such as the Artists' General Benevolent, had most unaccountably forgotten their own Benevolent Society, which, he thought, had greater claims upon their consideration. He was glad to say that the Association was the first professional society to move in the present effort, and he hoped its example would be widely followed by other societies. To Mr. Aston Webb was largely due the success of the effort which had been put forth by the Association in this matter.

It was announced that the annual dinner of the Association would take place on Monday next, the 16th inst., at the Holborn Restaurant, and that an extra visit would be made on (this) Saturday, the 14th, to the new offices of the Holborn District Board of Works, at the corner of Clerkenwell-road and Gray's-inn-road.

Mr. Hampden W. Pratt then read a paper entitled "A Tour on the Continent," the first portion of which we print on another page.

A discussion ensued, to which we will return.

Election of Officers for Session 1879-80.

The scrutineers reported that the following officers had been elected for next session, viz.:—

President: Mr. S. Flint Clarkson.
Vice-Presidents: Mr. E. G. Hayes and Mr. R. E. Pownall.
Members of Committee: Messrs. A. Payne, W. H. Nash, E. B. I'Anson, T. E. Collcutt, J. Neale, A. Conder, G. R. Redgrave, E. E. Deane, H. L. Florence, and W. Penstone.
Treasurer: Mr. J. Douglass Mathews.
Librarian: Mr. H. W. Pratt.
Secretaries: Mr. R. C. Page and Mr. F. Eales.
Solicitor: Mr. Francis Truefitt.
Assistant Librarians: Mr. J. W. Stone and Mr. F. Hemmings.
Auditors: Mr. T. E. Mundy and Mr. W. Crisp.
Registrar: Mr. Thomas H. Watson.

On the motion of Mr. Phené Spiers, seconded by Mr. Thomas Blashill, a hearty vote of thanks was given to Mr. H. L. Florence for the ability and courtesy with which he had fulfilled the duties of president during the past year.

On Saturday last a party of about fifty members of the Association visited St. Alban's Abbey, under circumstances which would almost have sufficed to prevent even a Mark Tapley from being jolly. In the first place, the rain was incessant; in the next place, the clerk of the works, Mr. Chapple, was found to be absent, although it had been arranged, as we were informed, that he was to conduct the visitors over the building; and in the last place, the five o'clock service somewhat interfered with the examination of the interior of the building. Mr. S. Flint Clarkson was, however, present, and from his knowledge of the Abbey he was able to discourse pleasantly of it, to the profit of all who heard him. The weather was not propitious, nor did ladders appear to be available, for mounting to the level of the nave roof, but the new high-pitched fir roof was found to be making rapid progress, several of the principals having been framed and hoisted to the top of the nave walls, across which they were lying sideways, awaiting their elevation to a vertical position. Mr. Clarkson recounted the history of the nave, so plainly told in its architecture, and recapitulated the salient points in the roof controversy. He briefly described the method adopted * last year for "screwing-up" the walls of the nave, and pointed out the peculiarities of the porches. An opportunity did not present itself for an ascent of the tower, but considerable time was spent in the east end of the c
In the transepts, the quaint and pri
baluster columns of the triforium
attracted attention; and in the Saint's
were noticed the shrine of St. Alban
of the fragments of which have bee
covered of late years and pieced tog
after being used as rubble for a wall
tomb of Duke Humphrey, and the
oak rood-loft, whence the monks kept
over the shrine. The tombs of
Ramryge and Wheathamstead, the Wallin
screen, and other features of this part of t
end of the Abbey having been noticed
visitors passed into the lady-chapel, whic
presents the appearance of a masons'
The remains of the shrine of St. Amph
(also discovered within the last few
attracted some attention, as did the sculp
figures on the window-jambs and mulli
believed to be unique in England. Afte
an hour's look from beneath umbrellas
exterior of the building, the visitors seps
though not without hearty thanks to Mr. Cli
for the efficient and agreeable way in wh
had performed the duties of *cicerone*.

ENGINEERS IN INDIA.

THE engineer who has newly arri
India has barely had time to make o
meaning of all that meets his view, or to
his prospects, before he is placed under
for some inland destination. The glar
heat, the peculiarities of life occasioned
despotic form of government, the bewil
because apparently formless structure of
society, and the manners and customs
countrymen established in the East,
novelty which makes the portals of
romantic. The new-comer is, however, a
impressed with the greatly-enhanced c
everything. The old Indian practice of ch
rupees for shillings is by no means e
Then the rents paid for their houses by Eurc
are exorbitant. The young engineer hear
amount equal to the whole of his salary
given for a very ordinary residence, with
white-washed walls, unfurnished, and bu
very coarse materials. So with a very
defined scale of salary, and tolerably
guessed prospects of promotion, it is a
of wonder when he himself can occupy
these airy mansions at such a heavy
Who, again, he ponders, can be the peopl
purchase the wares in the shops at prices
would make his own bag of rupees now so
that he can hardly carry it in the hand
appear before very ordinary wants could b
plied? How can Europeans do any work
seven a.m. and before five p.m. out of
when none of the Presidency folk stir d
the intervening hours, except in co
carriages? Questions like these crowd o
mind. But as a matter of fact the ste
British society at the Presidency tow
readily explained. It is the oldest and best
officials who as a rule live there, and
salaries range from 1,400*l.* to 4,000*l.* a
The rate of remuneration is calculate
compensate for the expense of living;
they can afford to pay rupees for shill
The principal Indian shops depend imme
on the up-country orders they receive.
are civil servants throughout India recei
in considerable numbers, incomes bet
1,000*l.* and 2,000*l.* a year; a few military
officers are about as well off; and the exp
ture by the numerous military messes
rise to a brisk trade in domestic stores.
Presidency firms likewise act as depôts
agencies for other shops in the interior.
work to be performed at the Presidenci
moreover, literary and contemplative, and
of the kind calling for exertions in the
which accounts for the use of vehicles and
short time daily during which Europeans a
be seen moving about. There is little or not
in the appearance of the Presidency engine
offices of control to indicate the nature of the
done in the country generally. The heads o
department seem overwhelmed, and have sca
time for any but the briefest conversation,
there are rooms, packed with clerks, seemi
abstracted in thought, absorbed in writin
hurrying to ask for instructions; it would,
ever, be perplexing to follow an engineer to
out-districts, without some idea of the
springs which set the secretarial machi
going on its assiduous course, and the pla

* In last year's volume of the *Builder* (xxxvi.), pp. 636-41, we published a description of the new theatre, together with a plan, an exterior view, and a view of the interior of the upper vestibule.

† We may add that Professor Semper, in conjunction with Baron von Hasenauer, prepared a design for the new Imperial Court Theatre, now in course of erection in Vienna. We published a description and view of the building in 1877 (*Builder*, vol. xxxv., pp. 106-103).

‡ See p. 610, *ante*.

* See *Builder*, vol. xxxvi., pp. 465, 475.

works are executed. The Indian Public
Department took its rise in the provision
rack accommodation for the European
, and in the necessity for military roads
nect distant stations together. As long
country is held by British garrisons, this
nas to be attended to, and furnishes an
t of employment that is of a steady
; for when barracks are built they have
kept in good repair, and when roads are
ucted they must be maintained. Of late
railways have superseded roads along
ain lines of traffic, and though the
railroads are not directly worked by
ate, the statistics are compiled by, and
udit of the accounts rests with, the
Works Offices. Hence a great deal of
ering routine has to be disposed of in
as in other countries where roads and
ys are among the defences of the empire.
e East India Company was a trading cor-
on, and the element of speculation entered
into their system of public works. The
lture of the natives is carried on mainly
tiers, working upon borrowed capital, and
substantial farmers, so that raising a
rith the least expenditure of labour and
e is essential to the ability of such culti-
to pay a high land-tax. In the south of
rice is a crop which meets this obligation.
ning the silt-laden river-waters on to the
ds of the deltas, or by impounding the wash
rains in tank reservoirs, for the satura-
low-lying patches in the valleys, a rice-
raised with the very minimum of trouble
utlay. Land thus irrigated can afford to
rupees an acre, against the 1 rupee or
es which the people can pay who have to
manure their acres to get a crop; in
uence there has been an increasing official
to lay additional land under rice cultiva-
No Government ever, it has been urged,
ch facilities of increasing its revenue as
dian, able to get two or three times the
from irrigated as from ordinary cultivated
but, like all other schemes offering un-
l profit with comparatively small outlay,
be found that the increase of revenue
he irrigation of rice is only obtained by
pression of the other branches of agri-
e which are better worth encouragement.
ch is this felt to be the case that irriga-
orks are not now permitted to be termed
ltural. But a very large part of the duty
Government engineers is connected with
ate-protected growth of rice and other irri-
produce. Another peculiarity of Indian
works is their almost exclusive dependence
he budget of the year. There is no cer-
that a work once begun will be carried
gh. Provision is made year by year, and
angements lasting beyond twelve months
e definitively assured. This introduces a
s hesitation into the Department, gives
constant reorganisations in the different
ishments, and a fluctuation in aims and
ions that is to be seen in no other Indian
ment. As a matter of fact, Indian public
are a much simpler matter to consider
s usually supposed. It may startle some,
e fact is that very few large works have
been undertaken by the Public Works
y prior to the very recently-constructed
railways. This is easily seen by the
g number of engineers who have received
ublic decoration for the works with which
ad been connected. There are only two
ee names that rise to recollection.
large works of India are:—1. The Grand
Road, from Calcutta to Peshawur, which,
ver, was opened up in sections, under
al officers, and even distinct local ad-
trations. 2. The Godavery weir and
s, as well as the weirs and canals in
anjore and Kistnah districts, for which
Arthur Cotton has received the prin-
credit. 3. The Ganges Canal, planned by
Proby Cantley. 4. The lighthouses, on
us reefs, such as at Alquada, on the coast
rmah. The engineers who have taken
n these constructions are the persons who,
: at present or till lately, have held the
ng situations in the Public Works Depart-
It is not that a variety of useful works
not been carried out in India reflecting
: on a considerable number of engineers,
hat the above are the only really large
s which have been calculated to confer
The few extensive works enumerated
quickly superseded in importance by the
unteed railways, which do not belong to
the class of works executed by Government agency, but quite take the wind out of the sails of the Public Works Department, have been made as a mere matter of business under London Boards, and are not thought off when Indian Public Works are the topic of discussion. The engineer, before landing, has heard so much of the requirements of India, and the large sums spent annually, that his expectations are raised to a pitch that the actual operations of the Department, as seen on arrival, are likely to disappoint. Of course it must be so when there are no works of any magnitude in course of construction by the Department of Public Works, and grants are limited by the budget of the passing year. Before entering further into the nature of Indian public works, it is advisable to take a look at the interior of British India. There is a great sameness all over the country. The stations containing Europeans are of two classes; those which are cantonments for troops, and the rest, which contain only civil officials. Each district contains one or more of these European positions, forming usually the head quarters of the senior engineers. Military cantonments are of different sizes. The largest contains a general and his staff, a military magistrate, the regimental messes, a club of some sort, a Freemasons' lodge, some shops, and a few pensioned warrant-officers and soldiers. What distinguishes the occupation of the military and civil servants, and imparts their distinguishing bents, is that the duties of the former are exclusively confined to the limits of the station. There is no sort of tie between the military residents and the native population of the districts. Every locality beyond the station boundary ranks as the Jungle. Their associations are peculiarly English, and after the morning parade of the troops, the chief consideration is a proper style of dress, a smart social code, paying and receiving visits, and the evening promenade and dinner. Shooting parties are now rare, travelling is mostly confined to railway journeys, and leave is taken either to a hill sanatorium or to England. Conversation hardly turns upon Indian matters, as what affects the native population is not brought home in any way to the members of regiments or the staff, Indian politics run so much nowadays on frontier questions, and the European army has nothing to do with the affairs of the immediate neighbourhood of the inland stations. The civil servants live close to the cantonment where there is one, having very often a large native town in close contiguity, which furnishes a fertile group of police cases, and is commonly a hotbed of litigation. The senior civil officials are much tied down to head-quarters, and form an integral portion of the society of the station; so that it is only the junior officials in civil employ who move much about, and see the natives in their own villages. In the smaller stations where there are no military forces, the European community consists of the district judge, the collector of revenue, the joint magistrate, the assistant collector, the chaplain, the doctor, the officer of police, and the executive engineer. In this case, moving about the country is a relief from the tedium of everyday existence, and a society entirely composed of hard-working, pre-occupied men and their families. Native opinion is more noticed, the contact with natives is closer, and their doings are objects of curiosity and interest. Punctilio is of less moment, and habits of simplicity are encouraged. Altogether, British influence of the soundest type is wielded from these small stations, and they are free from the scoundrels and riff-raff who collect round the bazaars where there are troops. The engineer, after joining at head-quarters, rapidly finds that the Public Works Department consists of but two classes—secretaries and overlookers. This is, perhaps, most noticeable on what are termed the ordinary public works. The State railways form a separate category, and as they are the only works of any size entered upon with the determination to carry them to completion at a regular pace, may be considered as lying outside the domain of public works proper. The latter consists of the roads, bridges, barracks, public edifices, harbours, drainage, navigation, and irrigation canals. There are scarcely any positions in which an engineer is exclusively engaged in designing works to be carried out by contractors. The engineer who plans is at the same time called upon to manage the financial details of construction, to hire, control, and pay the labour. There are no means of advancing an efficient engineer except by making him into a secretary. The reason of this is that there are no large works on which the services of an engineer are required for the mere preparation of the designs, and advice during construction. India is divided off into a dozen different provincial administrations, each presenting a Public Works budget. Certain sums are sanctioned annually for each province according to its revenue and extent, and then the Local Public Works secretaries decide how these grants will be spent. The provinces are divided off themselves again into civil districts, under collectors of revenue, and to each district an executive engineer, with probably one or more assistant engineers, is posted. The districts have their annual allotment out of the budget. The exact manner in which these allotments are to be utilised is a very complicated matter of arrangement, giving rise to a great deal of secretary's work. But when once made, the actual expenditure is closely watched by a series of elaborate checks. The executive engineer is permitted the very smallest amount of discretion, and has to refer for constant instructions to his secretary's office. It is a *sine qua non* that the budget grant be expended within the year, otherwise when a per-centage is struck of how the charges for salaries compare with the outlay upon works, and a heavy lapse, as it is termed, has raised this, there is a discussion as to a reduction of the number of engineers by transfer to a distance. The civil districts are subdivided in their turn, and of one of the subdivisions a newly-arrived engineer usually assumes charge. Upon coming out to India he perhaps expected to join some large work in progress, where there was a call for professional science, heavy calculations to make in office, elaborate plans to be drawn, and lines of section to be levelled and laid down on the ground. Instead of this, he takes up his quarters at some native town in the centre of his subdivision, and is immersed in the expenditure of numerous petty grants upon road repairs, revenue buildings, and rural irrigation works. Possibly there is a small police-station, court, or school-house to be built. To aid these are a swarm of low-paid natives of inferior caste, and one or two native clerks experienced in the voluminous accounts of the Department. The system gone upon evidently is that no one except a European is capable of being trusted with money. Consequently great stress is laid on the engineer making payments with his own hands, it being presumed that native palms are so sticky that much of the public works money would never reach the actual labourers unless disbursed by a European or under his close check. It has to be remarked, however, that the Public Works is the only department in which native agency is completely distrusted, as the collectors of revenue do all their business by judiciously distributing it to native coadjutors of various degrees. The engineer stationed in the district compiles at stated times his estimates for all kinds of works proposed for the year, and submits them for sanction. It is a cardinal and excellent principle of the Department that no outlay of money can take place except upon sanctioned estimates. The preparation of these documents, however, is a formidable matter in some cases, when minute details are demanded for works of a simple kind, and ends in every item having to be entered on paper before it can be reduced to accomplishment. The smallest deviation from programme has to be explained by letter. So that there is probably no country in the world in which the simplest piece of work gives rise to so much wielding of the pen and use of ink as India. There are several things which combine to enhance this peculiarity. It takes four natives at least to perform the same task as one European labourer or artisan, so that ledger accounts of wages have necessarily quadrupled the number of entries and bulk of English contractors' accounts. Then there is the custom of a monthly settlement of claims, which is universal throughout India. Most of an engineer's returns are monthly, so that here again the clerical accumulations are bulky compared with quarterly returns. Another reason for so much writing being resorted to in India is referable to the climate. It is impossible to be out of doors for pleasure between the hours of nine a.m. and four p.m. The sun is too powerful, and produces highly unpleasant sensations in those exposed to it between those hours. It is the case, speaking generally, that throughout the year every one who possibly can stays indoors between the forenoon and afternoon hours. What, then, is to be done to fill up this

space of time with anything resembling engineering work? Receiving and answering a shoal of letters exactly fills the vacuum, so that the table of every Indian official is crowded with posted envelopes every morning, according to the extent of his jurisdiction. If these did not come in he would have the obnoxious sensation of having no ready-cut-out day's work to perform. Concede certain powers to assistant engineers, and certain higher powers to engineers of districts, and there would be few references to the secretary; but abridge such concessions, and a deluge of correspondence invades the secretariat, because it has to be recollected that the sums of money spent on individual works are really in themselves very moderate, and the works now undertaken are of inconsiderable magnitude, and scattered over an immense area. There is little a person of ordinary experience cannot decide on the spot without asking for a further opinion; but under centralised Governments the chain has to be pulled through every link before effective work can be commenced.

It is rare in India for an engineer of any class to be put in charge of a single work capable of occupying his entire energies, such as a line of road, a bridge, or a fine building. He must take up a charge of a certain extent in square miles, and do the best he can for any work that chances to fall within those limits. By great good luck there may be some sort of house in the locality he can rent from Government; otherwise the engineer has to reside in a tent, and, when moving about, lodge anywhere he can, in tool-sheds or native buildings. A diary of all inspection excursions is kept, and sent monthly to the local secretariat. As Government gives a solatium in the form of travelling allowance, about ten shillings a day for short journeys, and one shilling a mile for long and rapid tours, these diaries are closely scrutinized. They also serve to show how far payments have been made by the engineer himself, and whether the vigilance that is supposed to keep the natives from idling and peculation has been exercised. Indeed, the engineer observes that his repute as a departmental agent rises the farther and the oftener he travels. He is able to write from day to day about a fresh item of work, and thus is constantly before the notice of the secretariat, either inviting positive instructions or suggesting instances of the value that his presence has been in furtherance of work and prevention of abuses.*

A TOUR ON THE CONTINENT.†

My paper bears, I am afraid, a rather hackneyed title, but at the time I received a request to read one I was in the fair city of Verona, in the midst of my peregrinations, and consequently unable at that time to name a more definite subject. Taking a long-looked-for opportunity of making the acquaintance of some of the architectural gems which adorn other soil than that of Britain, I determined last year to spend some months in a journey on what we call the "Continent"; and as everything across the Channel was new to me, I decided to spend a portion of the time in France, and the rest in Italy. In choosing the route which I followed, I may say that I did so in order to gratify certain personal wishes, so that I do not pretend to suggest it as a model. On the contrary, it may be contended that it would have been better to work more thoroughly some one or more districts; this, however, would not have given one the broader field which a more prolonged tour makes one capable of surveying. . .

Route.—It may be as well that I should briefly indicate the route I pursued, so that you may understand the limits covered by these remarks. Starting from Paris, I visited Chartres and Orleans, whence I followed the valley of the Loire to Nantes,—a district well known for its picturesque châteaux. I next skirted the coast of Britanny, traversed Normandy, and returned to Paris by way of Amiens, Beauvais, &c. Leaving Paris once more, I took a long journey to the South of France, halting, amongst other places, at Sens, Nevers, Auxerre, Bourges, Limoges, Perigueux, Cahors, Toulouse, Carcassonne, Arles, Avignon, and Nimes; then going north-by-east *vid* Le Puy, Lyons, Grenoble, and Chambery, reached Geneva. Taking a pleasant holiday through Switzerland,—crossing the romantic Pass of St. Gotthard and a flying visit to the Swiss-Italian lakes,—Milan was "struck," as the Americans say. Passing thence from town to town of North Italy, Venice was reached, and, further south, Bologna and Ravenna. Crossing the Apennines, Florence, Rome, Naples, &c., were visited; and on the return journey, Orvieto, Siena, Pisa, Lucca, Modena, Parma, Piacenza, Genoa, and Turin. Halting at Dijon on my way back to Paris, I thus completed a ramble of some 6,000 or 7,000 miles in eight months.

Natural Situation.—In natural and romantic situation we have nothing in England to compare with our foreign friends, picturesque grouping being by no means rare,—more especially south of the Apennines, where so many Mediæval cities still crown the summit of irregular eminences, and strike the traveller with wonder and delight. Such are Arezzo, Perugia, Assisi, Spoleto, Orvieto, and Siena, the latter being built on three hills, each forming a separate arm, and radiating from a common centre, where there is a fine amphitheatrical piazza. Florence, too, might be counted in this list, although it is chiefly its surrounding heights, with their villas and churches, from which one looks down upon the famous city on the Arno. In France most of you are familiar with Mont St. Michel, which is unsurpassed for picturesqueness, while Loches, Perigueux, Carcassonne, Avignon, Le Puy, and Lyons may also be noted. In picturesqueness of buildings themselves, *i.e.*, in outline and grouping, the French are far ahead of the Italians, and, in some respects, of us; but in detail our Mediæval work is infinitely better; although the Italian brick, terra-cotta, and marble detail is refined and pleasing. But our national character is stamped on our work: there seems, and is, something real and substantial about it, and let us hope that we in the present day may not trifle with so goodly an inheritance.

Arrangement of Churches: Italy.—With the limited time at my disposal, I can only touch lightly a few matters of observation and study, and as in my journey from place to place I was perhaps more particularly struck with the variety and interesting arrangement of ecclesiastical buildings, I propose to dwell chiefly on this, reserving for the close a few more general remarks.

Early Basilicas.—Whether the basilicas were actually converted into Christian churches, or suggested the form which was first adopted, is not a question upon which I shall here enter. In Rome and Ravenna we find the earliest and best examples of the simple basilica type, with sundry variations. At SS. Cosma e Damiano, Rome, is a nave and apse without aisles. At Ravenna, we universally find no transept, but nave, aisles, and an apse, as at S. Giovanni Evangelista, S. Apollinare Nuovo, and S. Apollinare in Classe. The fine patriarchal basilica of Sta. Maria Maggiore has transepts of same depth as aisles; while at S. Prassede the transepts project beyond. S. Paolo fuori le Mura and the Lateran Church furnish examples of a nave with double aisles, transept, and apse. Unfortunately, all these churches are not spared to us in their original condition. Those at Ravenna are perhaps most intact, while Sta. Maria Maggiore was altered and added to in the twelfth, fifteenth, and sixteenth centuries. S. Paolo fuori le Mura, once the finest, was destroyed by fire in this century, and is now rebuilt on its original grand scale, and wears a modern and expensive dress. The Lateran Church has also been destroyed by earthquake and fire; rebuilt, and altered at various times. Of course, I might mention other early churches, such as S. Clemente, Rome, where the present twelfth-century building is erected above, but not following, the walls of a fourth-century basilica, and where there is a good example of an atrium. S. Lorenzo fuori le Mura might also be named, though the basilica, rebuilt in the sixth century, was much altered in the thirteenth. Let us now take a survey of Mediæval and subsequent times, and see what modifications were adopted.

Mediæval Basilican Churches.—It is an exception to find lateral chapels to nave, but these occur at Verona Cathedral; S. Giovanni e Paolo, Venice; S. Petronio, Bologna; Parma Cathedral; S. Croce, Florence; Orvieto Cathedral; and the Certosa di Pavia. While speaking of chapels, I would here remark the good effect of placing a series of eastern chapels to transepts. At SS. Giovanni e Paolo, Venice, and at Sta. Anastasia, Verona, there are two to each transept. At the Frari, Venice, three, [illegible] Sta. Croce, Florence, has a row of five on [illegible] side. Another plan occasionally met with [illegible] choir raised some 7 ft. or 8 ft. above th[illegible] of the nave, and approached by a fi[illegible] steps on each side, below being a crypt, e[illegible] by an arcade from the centre of the nav[illegible] with a descent of about 4 ft. These R[illegible] esque crypts present quite a forest of [illegible] columns, dividing the area into a num[illegible] aisles or alleys. They are usually use[illegible] winter choir, and are much warmer th[illegible] upper part of the church, as I can [illegible] testify, though when crowded, as they frequ[illegible] are, with worshippers, the atmosphere [illegible] as to force one to beat a hasty retrea[illegible] see examples of this treatment at San Z[illegible] Verona; S. Miniato al Monte, Florence; [illegible] Cathedral, and Piacenza, Parma, and [illegible] cathedrals. The provision of a triforium [illegible] is occasionally seen. This arrangement, [illegible] accommodation of women, occurs in th[illegible] basilicas of S. Agnese and S. Lorenzo [illegible] Mura, Rome, and at a later period in [illegible] Ambrogio, Milan, and the cathedrals o[illegible] Lucca, and Parma. The double-aisled [illegible] is not often met with in Italy. Besides t[illegible] previously alluded to, viz., S. Giova[illegible] Laterano and S. Paolo fuori le Mura, [illegible] mention Pisa and Milan cathedrals, [illegible] which have transept aisles as well, a[illegible] double choir aisles. I may refer here [illegible] curious treatment at Pisa Cathedral of con[illegible] the triforium gallery across the transept [illegible] gallery extends over the two aisles, but [illegible] duced to the width of one aisle across th[illegible] sept. This feature does not commend i[illegible] one, for the transepts are already lo[illegible] narrow between their aisles, and this [illegible] them look more so; it, moreover, destro[illegible] effect of the cross plan, and the idea sugg[illegible] after-filling in. The transepts of Lucca Ca[illegible] are also treated in a somewhat similar w[illegible] instead of the gallery being carried across [illegible] is only a wall pierced with similar open[illegible] the triforium, and no passage of communi[illegible] and, further, the transept itself is divide[illegible] tudinally into two aisles by a similar a[illegible] and piercings, the effect of which is by no[illegible] bad.

Round Churches and Baptisteries.—[illegible] come to that important and interesting [illegible] buildings which leave a marked impres[illegible] the visitor to Italy. I refer to the nu[illegible] churches and baptisteries of a roun[illegible] octagonal plan, and to which a domical[illegible] ing seems so natural and appropriate [illegible] Pantheon at Rome was perhaps the first [illegible] temple that was transformed into a C[illegible] church, the consecration taking place A[illegible] some six centuries after it is supposed [illegible] been built. This building is too well kn[illegible] need description,—suffice it to say that w[illegible] an example in this of a domed building [illegible] has withstood the storm of ages, and [illegible] nothing short of an earthquake seems li[illegible] destroy. In the same city, or rather [illegible] the walls, is the circular Church of S. Co[illegible] covered with a dome of about 70 ft. dia[illegible] and surrounded by a barrel-vaulted aisle[illegible] ing into the central part by an arcade of [illegible] circular arches, supported on double c[illegible] (one behind the other). This buildin[illegible] erected by Constantine as a monument [illegible] daughter Constantia, and was not convert[illegible] a church till 1256. On the Coelius [illegible] interesting Church of San Stefano R[illegible] noted for its great size, and originally c[illegible] ing of a circular space, about 70 ft. dia[illegible] surrounded by two aisles, making a[illegible] diameter of about 210 ft. It was erec[illegible] the end of the fifth century, but subseq[illegible] fell to ruin, and in the fifteenth centu[illegible] enclosing wall was formed by filling in th[illegible] between the columns dividing the two [illegible] At the foot of the Palatine is San T[illegible] another round church, erected probably [illegible] end of the sixth or beginning of the s[illegible] century, and supposed to occupy the sit[illegible] temple. Adjoining the Lateran Chu[illegible] the ancient baptistery,—S. Giovanni in [illegible] —erected in the fourth or fifth c[illegible] The interior consists of an octagon, s[illegible] in two heights, covered by an octagona[illegible] and surrounded by an aisle. Ravenna [illegible] our attention next. Here we find Sta. M[illegible] Cosmedin, a small octagonal domed bu[illegible] said to have been an Arian baptister[illegible] sixth-century mosaics being added when [illegible] adapted to the Roman Catholic faith. [illegible] ing the cathedral is a larger baptistery

* To be continued.

† Read at the Architectural Association, on the 6th inst., by Mr. Hampden W. Pratt.

and domed; this was erected in the ary, and still retains its font of that st interesting of all, however, is the f San Vitale, consecrated in 547, and as the earliest Byzantine church in is singular building consists of what rmed a foliated octagon, surmounted cular cupola, and surrounded by a ded octagonal aisle, over which is a Each hemi-cylindrical side of the inner s pierced with a triple round-arched hat the ground-floor and gallery levels, ase of the dome is pierced by a two-low over each recess. The continuity e and gallery is broken by the forma- choir, which projects beyond the ad is apsidal-ended. On the opposite choir is the principal entrance, now disused, being rendered inaccessible a large cloister or parade-ground to a barrack. The raising of the el of the city has affected this as well her churches, the floor being raised above its original level. The effect erior is unfortunately spoilt by the on the walls and dome, in horribly iaroscuro, the colour being in strong with the beautiful mosaics in the choir ich marble veneering of the lower part alls and piers. The Church of S. at Milan is another domed octagonal it is surrounded by an aisle, and has circular apses. The date of this is, I certain, but it has been ascribed to period as that of San Vitale. At the round Church of S. Angelo, sup- be of the sixth century; the central out 40 ft. diameter, and has an arcade circular arches, with a surrounding central part is sixteen-sided on the but no dome exists. The baptistery at was formerly the cathedral. There be some doubt as to the date of its some ascribing it to the seventh or atury; its present character being the subsequent periods, and its present use m the twelfth century. It is a large building, with a square recess on one narrow gallery surrounds the interior, he summit of the cupola is a small rected in the sixteenth century, before is said to have been lighted like the —an arrangement which would be eous at the present day to those who ee the beautiful mosaics on the dome, leprived of that pleasure except on the ghtest of days. S. Sepolcro, Bologna, is of the ninth or tenth century. The art is twelve-sided, and covered with a corresponding shape. A twelve-arched pens into the surrounding aisle, the ll of which is octagonal. The building ut is constructed of brick, including the d columns of the arcade. I should that this church forms a part of what ered one of the curiosities of Bologna, liarity consisting of there being seven all united together, built at various nd occupying different levels. I was urious to investigate this strange group ngs known as the Church of San Ste- er the bewildering and fanciful ideas of had been the recipient from more than rist; for you must know that tourists in rticularly get so much led about by and mystified by their Anglo-Franco- guides that I fear many return to omes with a very confused notion of nd things. Well, here is a rough ground- the buildings:—Church No. 1 is a late interesting building, from which No. 2 olcro) is entered by a descent of a few this building I have just described; it obably by the baptistery to No. 3, which is resting brick church of about the same and dedicated to S. Pietro e Paolo. ys on the east of the baptistery lead into of atrium, which forms No. 4, while a f steps in one angle leads to an eleventh- crypt, under the east end of No. 1; this forms church No. 5. No. 6 is entered rom the atrium and the crypt, and is by enclosing the north and west sides of enth-century cloister, belonging to a sup- l monastery; while No. 7 is an irregular- church of various dates. You will probably with me that this seven-fold mystery is far-fetched. The baptistery at Pisa was nced in 1153, but remained unfinished ng time, and was only completed in the enth century. It is circular on plan, and about 100 ft. in diameter; within this circumference being an aisle all round with a gallery over, and an arcade of twelve arches to both stories; the upper part of the wall on the exterior becomes a polygon of twenty sides. Covering the whole is a double twelve-sided dome, the inner one conical, and the outer hemispherical. An unpleasant outline results from the cone rising upwards of 30 ft. above the outer dome. In the same city is the small church of S. Sepolcro, commenced in the same year as the baptistery, and by the same architect, Diotisalvi; it is an octagonal building, also containing an aisle, and was built for the Knights Templars. The baptistery at Padua dates from the twelfth century, and is interesting on account of its unusual plan, which is a square surmounted by a circular dome, on the east side being a small apse, also domed; fourteenth-century frescoes cover the walls and dome, and make a delightful interior. At Cremona there is an octagonal domed baptistery, erected towards the close of the twelfth century, and at the beginning of the thirteenth century the fine baptistery at Parma was built. The exterior is octagonal, and the interior sixteen-sided, with two galleries carried round, and covered with a dome. The latest of this series of baptisteries was the one at Pistoja, erected in the fourteenth century, and built in the characteristic Pisan style, but possessing a very bald interior; it is octagonal, and has a lantern at the summit of the cupola, and possesses an external pulpit.

Domed Churches.—I now come to S. Mark's, Venice, commenced at the close of the tenth century. Its plan of a Greek cross, covered with five cupolas, is familiar to you all. This arrangement alone is sufficient to interest and delight one, but when to that is added the marvellous wealth of colour on the walls, vault, and pavement, our enthusiasm knows no bounds: we are entranced; and no words can adequately express our feelings. Of all buildings that have ever been described and analysed, perhaps none have been more thoroughly and lovingly so than S. Mark's by our architectural poet, Mr. Ruskin, and, indeed, so far has his zeal carried him in this respect that he seems to find throughout nothing but what is beautiful and consistent, though I venture to think that there are others who are not prepared to go with him to some of his extreme points, in which apology may be said to take the place of what would be blame in any other building. Somewhat analogous to S. Mark's, though with no real resemblance, is the Church of Sant' Antonio, Padua, erected in the thirteenth century. It consists of nave and aisles, transept, and apsidal choir, surrounded by an aisle and chapels, the whole crowned by seven cupolas. In spite, however, of this grand conception, the interior suffers from poverty of treatment, while the exterior at first sight has an uncomfortably - crowded look. Viewed, however, at a little distance, the group assumes more pleasing form, and the several domes surrounding the more pronounced central one, together with the lofty and slender octagonal minarets, constitute a unique and striking whole. The dome forms, too, a prominent feature at the Duomo, Florence, Siena Cathedral, Pisa Cathedral, and S. Peter's, Rome, &c. Just a word, then, about the plans of these buildings. That of Sta. Maria del Fiore, Florence, consists of an immense octagon, 138 ft. 6 in. internal diameter, surmounted by a lofty dome of corresponding plan. On the north, south, and east sides are semi-octagonal-ended arms, each surrounded by five chapels, and west of the octagon a long nave and aisles divided into four enormous groined bays. Siena Cathedral has an unequal-sided hexagon at crossing; a squinch at each angle converts this into a twelve-unequal-sided figure, covered by a circular dome. A small lantern crowns the summit of the dome, as at Florence. The plan of Pisa Cathedral I have before referred to. At the crossing is an elliptical dome, which cannot be regarded as satisfactory either internally or externally. The dome of S. Peter's is of course known the wide world over, and all I would remark here is, that one only regrets that so important and striking a feature of the interior should be incapable of being seen except at an unreasonable distance.*

French Architectural Congress.—The *Congrès des Architectes Français* will be held next week in Paris, commencing on the 16th inst.

* To be continued.

ON THE ART-CULTURE OF THE UPPER CLASSES, FROM THE POINT OF VIEW OF AN ART-WORKMAN.*

SIR,—Fearing I may have fallen into the error of that numerous class of writers not conspicuous for brevity or conciseness, I may be asked to define my definition, and therefore beg to explain that, by art-culture, I refer chiefly to "the fine arts as applied to decorative purposes,—a sympathy with their æsthetic character and knowledge of their right application." I know that poetry, music, sculpture, architecture, and the drama, are arts as well as painting (and all phases of beauty that appeal to the eye relative to and inclusive with painting); but to clear the ground further, I may state briefly that I confine my accusations of ignorance among our patrons, clients, and critics of the wealthy, chiefly with respect to the decorative department of art in its broader sense, and make no charge in reference to a want of appreciation, as a class, of poetry, painting, music, sculpture, and architecture; but, as regards the drama, I fear this exculpation cannot justly extend. And this I consider it germane to the subject briefly to consider. The drama is itself the most evanescent and the most powerful, the most fascinating and impressive, of all the arts of which the chief corner-stone is the divine element of poetry. The celestial art of music is, too, inseparable from it; the permanent beauty of form and colour in scenery and habiliments are its accessories; and the grand intellectual art of the actor is its chief exponent; so that the anomaly seems the greater that the "powers that be" should be guilty, as they are, of the sins of omission and commission charged to them, of the influential support accorded to inanity and corruption, and of the cold and contemptuous neglect meted out to virtue and talent. All this your journal, and, latterly, some others, have not too loudly or severely reprobated. But it may be challenged,—what has all that, granting its truth, to do with my subject? Simply this, that if the drama is so potent for good or evil; if it is truly an *art*, and the *masses* require the influence of art to elevate and refine their sordid natures, seeing that by their wicked extravagance they persist in going to shilling pits and sixpenny galleries when they can; if the fashionable instincts of society, acting through the noble patrons of the drama, demand for their delectation a something very clever, sparkling, and delightful, but containing little that is either sound in morality or refined in taste,—then it must be acknowledged that one great avenue of improvement is closed against us, and worse, the influence is used more powerfully to corrupt and degrade; for it is much to be lamented that the lower orders cannot imbibe their vice decorously like gentlemen, but must obtrude it as something to be proud of (an extra accomplishment clumsily copied from their betters), and that in a manner coarse and offensive. We know and anticipate the rejoinder from an antediluvian school of moralists that tell you to leave the drama alone; but I do not anticipate any readers of the *Builder* affect such ostrich-like reasoning. Many worthy and clever people have no dramatic instincts, and do not trouble themselves about the drama; but the majority of mankind are otherwise constituted, and must feel its influence for good or ill: and if I fail in every other contention, my charge against the upper classes holds good in reference to the drama, painfully and incontestably. Not that the work of reformation has not made some strides already; but a cleaner sweep of abuses must yet be made: "indifferently well" will not do; they must "reform it altogether."

Here the writer, having, after the manner of some energetic disputatious orators of the pulpit, thoroughly disposed of his figurative antagonist, has a merciful disposition to be grandly clement to all who ask for quarter,—to cease posing as a miniature of an avenging saint or figure of Victory,—to smooth his ruffled plumes, and spread his pinions on serene sky, and carry his indulgent reader with him to "fresh fields and pastures new."

Whilst gratefully acknowledging all recent moves in the direction of extension of hours and lowering of restrictions of museums and public galleries, and still asking, like poor little Oliver, *for more*, I have to point out,—what should be sufficiently obvious without any special emphasis, but does not appear, however, to be properly apprehended,—that none of these

* See p. 636, *ante*.

privileges can be of much use to a man who has not the means or leisure to enjoy them. I am aware of the vague supposition that the art-workman, with his shorter hours and increased wages, has ample time and means at his disposal, if he wills, to spend them profitably. A little consideration of the actual circumstances of the present case would, I think, greatly modify that impression. The general lowering of wages in all trades, on account of the commercial depression, is a patent fact. It is also well known that general education is, and has been for years, at a premium. Art-education is now so widely diffused for this country that art-labour, too, is much cheaper and better than even a few years ago, so that from that cause alone the ample wages of five or ten years back are reduced in some branches as much as 50 per cent.,—jewellers to wit. And as the working classes are, according to the playing classes, the specially improvident section, it is natural to acknowledge that some of us have got so accustomed by habit to living as near to the old rate of wages as possible, that, notwithstanding the cheapness of some provisions and clothes, which rent and rates quite counterbalance, and without the slightest extra expenditure, there is a constant struggle to meet current expenses at all, which can only be done, in many instances, by adding some kind of work, in what should be the leisure, to eke out the reduced wage and make both ends meet. So that, however reprehensible this may be, and however different to the conduct of the upper classes in their spheres, there the fact is; and an evening off work, and a journey,—say, from Islington to Bethnal-green, or from Camden-town to South Kensington, even on a free-day,—involves for journey and refreshment a loss, both direct and indirect, and a sensible diminution of the week's bread-money; to omit such luxuries (though improving and essential, artistically) as the drama, a shilling concert, or lecture, books, prints, and periodicals,—the cheapest involves outlay and pecuniary loss. It is true we can do without these things,—we can let them severally alone,—we can merely vegetate, like our respected brethren the yokels. We can fly "far from the madding crowd's ignoble strife." We have long since "learned to scorn delights and live laborious days,"—and "weary nights"; but how is this programme to be reconciled with that other we are bidden to follow by our self-complacent Mentors of the superior circles? How are we at once to stop at home and practise economy, prudence, and all other homely virtues, and give up all we cannot afford, which is, in effect, everything, and to go and have contact with our fellows, enlarge our views, and perfect ourselves in various graces and accomplishments, of course in our own humble sphere? "Art is long; life is short." Bring a fresh unwearied mind to your refining study. All this and more I would deferentially ask the way to do. Which are we to choose, with narrow means wasting at one end, and nothing worse than a weary, fast-wearing life, at the other? There is another consideration,—for the interests of morality, society, the church. Most of us, after a few years' deliberation, take unto ourselves a wife,—always on less than the nominal 300*l.* per annum, under which sum none but fools try to live. The natural result soon follows, according to old Bartle Massey in "Adam Bede." Of course the fools increase, multiply, and impoverish the earth. These are additional assistances both to economy and culture. Well, at least they are incentives to exertion. Granted. They do not quite stop at that, though,—they become compulsions to over-exertion, and the machine collapses prematurely. It is all very well for Smiles to tell us how Flaxman was not ruined for an artist by marrying. The old bachelor who ventured that prediction was generally conceded an authority on many subjects, not given, as I read, to speak the language of "irresponsible frivolity," though more used than we moderns to the "hair-brained chatter" of "coffee-house babble," but he spoke largely from experience when he made that prediction (happily for himself, the experience of others). Fortunately for Flaxman, and to the glory of his better half, Sir Joshua was wrong for once.

But admitting, for argument's sake, that all wives are real helpmeets, sympathising with and assisting their husbands' projects and doing generally as Ann Denman is said to have done. We know that is admitting much more than, strictly speaking, is warranted by facts. But, then, where ladies are concerned it is extremely ungallant to stick too precisely to,—well, "it is not meet that every nice offence should bear its comment;" but there are other small considerations generally in a family circle not mentioned in the interesting biographical sketch referred to; in short, in all these wonderful examples of getting on, there is a strange, a mysterious, reticence concerning the juvenile element. Ann Denman, or rather Mrs. Flaxman, you see, was such a pattern wife, she would not trouble her lord with such distractions from study as babies. John's children of the brain disturbed his dreams sufficiently, but the registrar's returns will show you that all artists' or artisans' wives are not quite so considerate.

Tom Hood, senior, in his inimitable "Ode to his Son," gracefully confesses the awkward truth I have modestly endeavoured to indicate, viz., what blessed young hindrances the young cherubs are. But, unfortunately, we cannot all make capital out of our misfortune. For, supposing, on the contrary, the interruptions spoilt the ode instead of completing it,—that the first-born was not the only angel of destruction,—that there sprang up a noble little band of brothers to take the lead with, say, a sprinkling of sisters, to give variety and piquancy to the daily *mêlées*,—and the household arrangements do not include a nursery away from the study out of ear-shot and elbow-way,—dare one of our young counsellers, gifted with imagination, conceive aught in this direction? "But that I am forbid to tell the secrets of my prison-house, I could a tale unfold whose lightest breath,"—but I need go no further, and ask, "Dost like the picture?" "Would'st have me paint" it for you? I would not so harrow up the susceptibilities of the readers of the *Builder*, but have merely raised the edge of the curtain to show the sceptical and perhaps friendly censor of our class that unless he could experience similar circumstances by trying to take his own advice, and study at home by the calm tranquillity of his own fireside, with the bow unbent and the quiver-full flying all round him in gentle sport, he does not know what impediments children are to self-improvement and general art-culture. The genial Bishop of Peterborough, at the Artists' Benevolent Fund dinner, told the world how he yielded to temptation, and bought a picture he could not afford, and what a solace and a comfort that picture was ever after to him, and an assistance to his highest art-culture, notwithstanding his better half's disapproval of his extravagance. Now, I should be loath to take a mean advantage of an after-dinner speech to attack the enemy on the flank, but might it not occur to an humble son of toil to ask what the moral is of this pretty incident as related? Certainly not that 'virtue is its own reward": the reward is acknowledged joyfully, but not the virtue. How would the incident tell the other way: say John Smith fell away from the right path, and yielded to his besetting sin,—of buying etchings or line engravings, or translated classics, and his poor neglected wife pointed out to him,—with tears, of course (the women never bully in good story-books, it is always the men),—pointed out to him, "more in sorrow than in anger," how many quartern-loaves, or new boots for the boy, or even the "print" promised her (this very modestly) could be bought with the hard-earned money foolishly lavished on such useless rubbish! Ah! my dear friends, let this be a warning to you never to yield to evil promptings, &c.; but of course poor Mrs. Smith would be quite right from her point of view, and have a solid rather than a sentimental grievance. And so, for the matter of that, would many a struggling hard-working wife of a man who had eventually got on and improved his position, or rather, as he would pompously term it, "made himself." Madam Palissy is held up to the contempt of all worshippers of success for her want of sympathy with her enthusiastic lord. The world can never repay Palissy the boon he left us, nor his wife the misery it caused her. Let us do justice to the humble working bee that has helped so materially the building of the splendid hive that houses the greatness of the buzzing spouse. The great creator of the potter's art gloriously failed, and gloriously succeeded. It is not invariably the case. Many failures precede great discoveries, and they are most divided among different men. Success can always claim its reward, but we get so dinned into us the importance of it, and its all-sufficiency, that I consider it time the harshness of the sentence should at least be mitigated to the man that tries and fails. That "nothing succeeds like success" is too painfully evident from the adulation from all classes meted out to

succeeds, no matter how. It is too

inferred that a man's success in li

nothing but credit on his moral wor

his mental force; and the attai

wealth and position, "covereth a

of sins." But history and all

teach us that it by no means follow

successful man is a fit study for imita

the contrary, it is only too palpab

demeanour and actions of some public

have boasted of their success in life, t

been attained, not so much by self-sa

the sacrifice of others; less by self-de

greed, avarice, and parsimony; that

economy, prudence, thrift, &c., so much

about in their preceptive lectures to

gling failures, meant, when practi

spells of meanness and exaction,—

evidenced too often afterwards, narr

mind, chilling the affections, starving

lect, and shrinking all the generous i

humanity to the contemptible comp

money-grubbing machine. With all

influences at command, the utter

all æsthetic culture, and the degradati

higher nature, the overweighted wor

are too debased to discover, or too

cultivate; and, whilst pleading guil

latter indictment with the amount

that in strict justice would attach to

fession, and no more, my simple conte

working-man is, that the majority of

so sedulously point out to us such sho

would never have been in the positio

had they not themselves, to obtain tha

more completely neglected their own a

than we,—sacrificing their better selv

shrine of Mammon that has alone g

that advantage over us. And their grea

tunities, more greatly neglected, onl

the eyes of all just men to aggravate

sumption and hypocrisy. Here I would pa

wish to guard against misinterpretatio

seeming indifferent or ungrateful to th

art-authorities and enlightened art-pa

included in my somewhat sweeping ch

would be invidious to mention name

course there are those whose few and

names are household words that are

Pecksniff-Mac-Sycophantic crew name

scarcely add, however, that the excepti

the rule in this as in other instance

conclusion, there should not be appa

quate cause for the impatience expres

letter, let it be remembered that u

advice poured out in a continuous

undeserving if not unregarding ears.

infliction that even poor Job himself

patience over when he retorted on his

friends, but indubitable censors and

pointed, self-satisfied critics, "No don

the people, and wisdom shall die w

And until the modern Bildad and Zo

show more justice and more satisfactor

tials, I fear their pert platitudes wil

received with the respect and revere

consider the due of all that drops from

of our betters, irrespective of whet

speak sense or utter nonsense. But

not part in anything approaching t

even with these cold comforters. Much

offence is really more their misfortune t

fault, the result of a neglected education c

vision or vicious surroundings, only if th

would spare us from further advice w

not then be so sorely tempted to extend

the commiseration felt by Tam o' Shant

he casts the reflection, slightly paraphr

> "Ah, gentle sirs, it gars me greet
> To think how mony counsels sweet,
> How mony lengthen'd sage advices
> The workman from the swell despises

But in the good time coming, the ha

of that vigorous art-revival the pr

whose dawn shoots many a ray of hope

the murky gloom that the once honoured

art-workman has long sighed under,

bright morn we shall all see clearer, an

fore understand better, each other, to

persion of many fallacies that disto

views, to the destruction of many pet pr

that keep us asunder, and the final ov

of Thackeray's favourite ogre, snobbis

and all other obstacles that retard the

of that great republic of intellect, unde

sway alone the poor and the wealthy,

ployer and artisan, art-patron and art-w

will see each other with the clear eyes o

and regard each other with equal court

justice.

S. J

OF LONDON SCHOOL COMPETITION.

design marked "Live and Learn" appears to have been selected, as we mentioned week, for the first premium. The authors this design are stated to be Messrs. B. uel and H. D. Davis. The second premi- design, "Simplicity," is attributed to . Chatfeild Clarke; and the third, "Play- d," to Mr. T. E. Knightley. The secrecy which the selection has been conducted, sence, as is supposed, of any professional r, and other circumstances, appear already e produced much discontent, and we have ed some communications containing asser- concerning the truth of which we have no s of judging at present.

the meantime we give some particulars of lected design as afforded by the architects selves.

principal entrance in the centre of the nkment front, arrived at by a flight of 19 ft. wide in the clear, gives access to trance-hall of the same width, and 15 ft. ght. On the one side of the entrance-hall he waiting-lobby, secretary's outer office, ary's office, waiting-lobby attached to the ittee-room, and the committee-room, all unicating; and on the other side are the r's room, the book-store and library, and master's room. Thus the whole of these ments, constituting "the administration ," are all in immediate communication with other, and are placed on the ground-floor e Embankment front. A corridor, 10 ft. runs the whole length of the building d the administration block. The east end is corridor gives access to the dining-hall, ning which is the servery, and above which the kitchen, scullery, larder, accessory- s, and lifts. The west end of the corridor to the teaching block, containing on the nd-floor eight class-rooms, of which one is ead master's class-room, communicating the head master's room. A staircase leads to the gymnasium and playground, and o the remaining twelve class-rooms, the re-room, laboratory, chemistry class-room, to other apartments particularised in the ment of accommodation. Rising behind front administration block, and filling up whole space between the east and west s, is the hall, with its lofty front facing the nkment, but well recessed from it. The front has been sufficiently set back from embankment, to avoid building over the rground railway, and also to obtain a en in front.

rst in importance is the teaching depart- . It fronts on to the quiet side, and not on ie comparatively noisy Embankment. On ground-floor the head-master has the south- room of the block (overlooking the Victoria nkment), and has his class-room in direct munication with his own room. There are seven other class-rooms on the ground-floor, adjacent to each other: on the first-floor class-rooms, all adjacent; and on the second three class-rooms. Each of these twenty s-rooms holds a maximum of forty boys. The imum cubic allowance of air for each boy been fixed by the committee at 140 ft., and a minimum height of room of 14 ft. The ors have given an allowance of 200 cubic of air for each boy, with an average height oom of 15 ft. Each class-room has its hat coat lobby, divided off from the class-room a light framing, 6 ft. high. Five pairs of the s-rooms would be separated by movable titions, so arranged that each pair could be de to form one large room.

The width of the corridors throughout the ching block is 8 ft.

The lecture-room, laboratory, best apparatus- m, and practical chemistry class-rooms,— stituting what may be called the science tion,—are all placed in intercommunication the second-floor. The lecture-hall is rec- gular, 56 ft. 6 in. by 48 ft., having a flat ing with a coved cornice, and with the ners of the room rounded off for acoustic poses. The gallery is set out on an isacoustic rve, with the lecture-chair and table as its us. Space for 400 boys is provided in the lery and rows of side seats. The hall is ated by an octagon lantern rising from the ceiling.

The laboratory and best apparatus-room are ch in communication with the lecture-hall, d also with the practical chemistry class- m, arranged as shown, for thirty pupils.

A descent of twenty steps on the main staircase leads from the ground-floor to the playground level. Here will be found the gymnasium, occupying the entire space below the great hall. Its dimensions are 89 ft. long, 49 ft. wide, and 24 ft. high. The covered playgrounds are under both wings, and along the east, north, and west sides of the site, occupying 13,700 ft. super., or nearly one-third of an acre. The open playground is placed in the centre of the site, and contains 26,814 ft. super., or close upon five-eighths of an acre. Thus the gymnasium, with the open and covered playgrounds, covers more than an acre of ground. Four fives-courts, viz., two open and two covered, and each 30 ft. long by 17 ft. wide, are placed on the east of the site.

The hall overlooks the Embankment front, but is recessed from it, and is on the first-floor. It is 90 ft. long, 50 ft. wide, 31 ft. high at the sides, and 54 ft. high in the centre. It has five entrances. The walls of the hall would be lined with wood framing for a height of about 6 ft. up from the floor, and the space between this and the window cills would be filled by the marble memorial tablets and pictures which now occupy the staircase and committee-room walls in the present school. Here, too, would be placed over the door-heads or on tazzas the busts of the benefactors of the school.

The dining-hall on the ground-floor, detached from the teaching block (but at a short and convenient distance from it), is in the west wing, and is 59 ft. long, 22 ft. wide, and 15 ft. high. It is separated for its entire length from the great hall by a corridor 7 ft. wide.

The ground-floor facing the Victoria Embankment is in the main devoted to the administration of the school.

The estimate is 51,000*l.*, exclusive of fittings. The style of the early French Renaissance has been adopted by the authors, and the materials suggested for the exterior are red brick, with Ancaster stone dressings, and green slates for the roofs.

THE *City Press* of the 11th inst. displays a frankness which would be beyond price if there were no other human virtues. "It is certain that all the plans sent in may turn out to be, to the Corporation, as useless paper. The Common Council may not adopt any of them, or agree to vote any money for an establishment the proposed playground of which would be worth about 90,000*l.* . . . . It is open to doubt whether, looking to the fact of the existence of an architect's department in connexion with the Corporation, it is an indisputable course to invite designs from the profession generally. It leads to what the Corporation have lately expressed their abhorrence of, namely, canvassing for patronage, and often establishes jealousies and bitter feelings, which are injurious and ineradicable."

All this may be true enough, but some of the fifty competing architects would have been better satisfied if the existence of the architect's department had been remembered by the school committee *before* the best work of their brains was set down upon nearly 500 square yards of "useless paper." Our contemporary should make clear what is meant by "*canvassing for patronage*" in a competition under mottoes. As it stands it might imply discreditable conduct on the part of the successful competitors, which is out of the question. It would be useful to show by a case or two that the school committee looked with disfavour on any design which came before them with any other recommendation than its own merits. Such examples should be made much of when they occur, as they are all too rare.

A Marriage, by Meissonier.—We are not speaking of a picture, but of a genuine marriage performed by M. Meissonier, and yet it was a very artistic event too. Mr. Sidney Arboin, the painter, was joined in marriage at Poissy, on May 30th, to Madlle. Gabrielle Bock, and Meissonier, being mayor of Poissy, performed the civil ceremony, his very last official act, for his resignation had been sent in, but, fortunately for the parties, not accepted by the appointed day. It is related that M. Meissonier wore the tricoloured scarf, his badge of office, artistically across his breast, after the manner of a field-marshal, instead of around the waist in the ordinary fashion. The eminent painter of great works in small might make a delightful picture in recording the event.

WESTMINSTER INDUSTRIAL EXHIBITION.

WE have expressed somewhat strongly the objection we entertain to the leading idea which underlies the formation of this collection,—the exhibition not simply of the best work of people in the particular craft in which they have been trained, but their amusements out of working-hours, the circumstances under which they were produced being held to condone their shortcomings,—uncouth models, for example, in sugar, towers in shells, pictures by good people who do not know how to either draw or colour, and so forth. We are unwilling, however, to seem unjust in our crossness, and in expressing dissatisfaction with part of the exhibition, to slight that in it which is very interesting,—the productions of those who have "stuck to their last." The collection includes some beautifully-made models of engines and machines, some very good furniture, inlaid work, and carvings, and one or two good pieces of metal-work. A silver medal has been justly given to F. Smith, cabinetmaker, for an inlaid cabinet (84); another to J. Reeves, bricklayer, for a model of a piece of brickwork, including a niche (400); similar medals to H. Gunthorp, stone-carver (561); W. Hopkinson, potter (563); J. Emms, art metal-worker, for an excellent wrought-iron panel (990); and R. M. Logan, chaser, for an embossed iron tray (991), very meritorious. W. Allan, carver, deserves, and will receive, a bronze medal for a carved wood panel, the "Presentation in the Temple." Looking here and there we notice also for commendation L. Colin, carpenter (21), model of spiral staircase; J. Golonza (129), specimens of fret-cuttings; H. Holmes, carver's apprentice (133), a carved Cupid; G. Rumford, carver (154), a Bacchante; Bathurst & Mathewson's improvements in hanging sashes (262); J. Goodge, ornamental sculptor (578), a Renaissance marble panel; and W. P. Lekeux, gas-fitter (1019), who sends a specimen of iron-tube bending. Other exhibitors equally deserve notice, and we advise our mechanically-inclined readers to go and pick them out for themselves.

ART-UNION OF LONDON.

THE following are the chief works chosen up to this date by prizeholders:—

From the Royal Academy.—"Door of a Mosque, Lower Egypt," Chas. Robertson, 210*l.*; "In the Queen's Bower Wood," F. Hines, 150*l.*; "The Village Well," E. R. Taylor, 90*l.*; "Wild Wales—Fuel for Winter Fire," F. C. Newcome, 75*l.*; "Whitby Harbour," Dr. Law, 73*l.* 10*s.*; "Resting," F. B. Barnwell, 50*l.*; "After the Duel," G. C. Hindley, 50*l.*; "Canal at Giudecca," F. Hampson Jones, 50*l.*; "The Morning Paper," Haynes King, 50*l.*; "A Welsh Moorland in Autumn," J. M. Southern, 50*l.*; "The Sailor's Sweetheart," Marcella Walker, 50*l.*; "This Cunning Cardinal," H. H. La Thangue, 40*l.*; "Twilight," J. G. Sowerby, 40*l.*; "Rustic Bridge," Thos. J. Watson, 40*l.*; "Does he mean it?" T. F. Goodall, 35*l.*; "Below Bridge," Peter P. Pugin, 33*l.*; "Spring," Jas. B. Graham, 30*l.*; "The Solo," L. Mearns, 28*l.* 5*s.*; "Dry," Alfred Taylor, 20*l.*; "Limehouse Pier," F. A. Winkfield, 20*l.*

From the Society of British Artists.—"The Twin Sisters," Geo. Wells, 100*l.*; "The Abbey Trees," Stuart Lloyd, 75*l.*; "On the Glaslyn, near Beddgelert," Jas. Peel, 75*l.*; "The Way Home," P. Macnab, 70*l.*; "The Rest of Friends must Part," Yeend King, 60*l.*; "Ecclesbourne Glen," A. Ludovici, 60*l.*; "After the Storm," J. T. Peele, 60*l.*; "The Gwynant Valley, from Beddgelert," J. J. Curnock, 50*l.*; "Evil Beginnings have Bad Endings," Jas. Ricks, 50*l.*; "The Rustic Sibyl," A. F. Patten, 42*l.* 12*s.* 6*d.*; "The Precipitous Path," E. J. Cobbett, 42*l.* 10*s.*; "Wood Gatherers in the New Forest," T. F. Goodall, 40*l.*; "First Lesson in Piety," J. T. Peele, 40*l.*; "The Way to the Harvest Field," G. Turner, 35*l.*; "The Canal and Civic Hospital of St. Mark's, Venice," W. Henry, 31*l.* 10*s.*; "Crossing a Stream in the Highlands," Edwd. Holmes, 30*l.*; "My Love she is a Kitten," Yeend King, 26*l.* 5*s.*; "The River Glaslyn, North Wales," Alfd. A. Glendenning, 25*l.*; "The Close of an Autumn Day," Jas. E. Grace, 25*l.*; "A Village Stream," Jas. E. Grace, 25*l.*; "Fresh Breeze—a Vessel off Portsmouth Harbour," E. Hayes, R.H.A., 25*l.*; "The Broken Fence," Ed. Holmes, 20*l.*; Scene near Christchurch, Hants, C. Pearson, 20*l.*

From the Crystal Palace.—"Entangled," J. C. Waite, 80*l.*; "Valley of Linth, Switzerland," R. Schultze, 62*l.* 10*s.*; "La Perche, a Valley in Brittany," Y. King, 50*l.*; "Eagle Crag," J. Peel, 35*l.*; "A Pastoral," B. Mordenberg, 25*l.*

From the Society of Painters in Water Colours.—"The Miller's Holiday," C. Branwhite, 50*l.*; "Temple Lock on the Thames," S. P. Jackson, 33*l.*; "At Dorking, Surrey," Chas. Davidson, 20*l.*

From the Institute of Painters in Water Colours.—"Witherstack Scar, Westmoreland," J. Mogford, 52*l.* 10*s.*; "Gleaners, South Devon," J. H. Mole, 36*l.* 15*s.*; "Ashburton, Devon," J. H. Mole, 30*l.*

From the General Exhibition of Water-Colour Drawings.—"The Valley of the Jordan and Dead Sea," Winter, H. A. Harper, 31*l.* 10*s.*; "A Tavern Bird," Arthur Stocks, 20*l.* 7*s.* 6*d.*; "A Mountain Lake," J. Carlisle, 20*l.*; "Sweet Seventeen," E. S. Guinness, 20*l.*

From the Society of Lady Artists.—"The Castle of Chillon," Baroness Helga Cramm, 40*l.*

AGENT AND PRINCIPAL.

AT the Lambeth County Court last week Mr Jackson, a sculptor and monument writer, residing at Lower Norwood, brought an action against Mr. Curtis, of Balham, in respect of a headstone. The claim was for 10*l.* 5*s.* The case was one of a rather peculiar character. On the part of the plaintiff it was stated that the defendant had ordered a headstone, which was to take the place of an old one at Norwood Cemetery. The cost of the stone, which was to possess an inscription in imperishable letters, was originally fixed at 22*l.* 5*s.*, a deduction of 3*l.* being made by the plaintiff for the old stone.

The defence was that the order was given to the plaintiff through the defendant's undertaker, and not by the defendant personally. The defendant's solicitor produced a bill bearing out this statement, and on the plaintiff's own acknowledgment an arrangement had been entered into between his son and the undertaker.

With this evidence before him the judge said that he must give judgment for the defendant, with costs.

The plaintiff, on this decision being given, asked the judge if he could proceed against the undertaker, but his honour declined to advise him in the matter.

WHAT IS A "BUILDING"?

MR. JAMES PULLEN SEAGRAVE, of the Westminster Zinc Works, Rochester-row, Westminster, appeared to two adjourned summonses taken out at the Westminster Police-court at the instance of Mr. Edward Dru Drury, the district surveyor of St. Margaret and St. John, Westminster, to answer two complaints under the Metropolitan Building Act, 1855 (18 and 19 Vic., cap. 122), one under section 41, "for not giving two days' notice to the district surveyor prior to the commencement of the erection of a building," and the other under the 46th for "omitting to enclose the 'building' in walls of brick, stone, or other hard and incombustible substance," section 12, first schedule.

Mr. Drury conducted his own case, as did Mr. Seagrave.

The "building" in question is an erection on six columns of a roof standing in the yard of Mr. Franks, job-master, of Vincent square, at the corner of Carey-street and opposite the cricket lodge, the dimensions being,—length, 20 ft.; width, 16 ft.; extreme height, 12 ft. 6 in.; the highest part or centre of roof 4 ft. above the wall. It is situated in a yard or forecourt, and was intended to be used as a covering to protect a couple of broughams or gigs from the wet. It is unattached to any part of the premises, and is on wheels or runners inserted in oak bases at the feet of the pillars, and is capable of being moved along on these wheels or runners. When first seen by the district surveyor it stood on blocks of stone let into the ground on concrete, but on the first hearing the defendant explained that as the material weighed nearly 15 cwt. it was necessary to have a substantial base on which to get a foundation on which to keep the pillars upright, and the wheels or runners were put in afterwards. The contention of the surveyor was that the erection was a "building," while, on the other hand, Mr. Seagrave contended that it was nothing of the kind, was moveable, and had no sides or ends, and never was intended to have any, and consequently could not come "within the meaning" of the Building Acts; the question of "line of front" did not arise, as that would be a matter for consideration under the Metropolis Local Management Act. After hearing some evidence, Mr. D'Eyncourt, the presiding magistrate, adjourned the case, with the intention of viewing the premises.

On the case being resumed, Mr. D'Eyncourt said he had seen the place, and although at first dubious on the point, considering that he was going to see a sort of extensive "dog-kennel," he had come to the conclusion that it was a building under the Act.

Mr. Seagrave hoped that he would be allowed to make a few observations, especially as he had not prepared his defence last week. He contended, first, that this was not a "building," whether on wheels or on the ground. He took "Walker" for an accurate guide, and "Walker" laid down that a "building" was a "fabric or edifice" with a "foundation." He (Mr. Seagrave) went further: a building must mean something fixed and immovable; this was merely a "protection" or "shield" against the weather, or simply an "awning" or "covering." The word "shelter (that was the best name he could call the subject of this litigation), by the same authority that he had quoted, was "something that covered from external injury," and in this instance the external injury was rain. Again, the Building Act was silent as to what was a "building."

Mr D'Eyncourt agreed with that, but the Act must be liberally construed, and every case governed by the surrounding circumstances.

Mr. Seagrave asked whether a tarpaulin spread on four poles over a hayrick would be deemed a building, that being made of combustible material, while his was all iron; or one of the erections in the Horticultural Gardens, which protected fruit, &c., from the rain?

Mr. D'Eyncourt said he was against him, but asked the district surveyor whether, if the defendant had applied to the Board of Works for power to erect the building where he had, would they have allowed it?

Mr. Drury thought certainly not, for the "line of front" would then have been considered.

Mr. Seagrave said that question had been decided by the late Mr. Arnold at that Court in August, 1871, and a full report appeared in the *Builder* of August 26th of that year (he produced it). In that case Mr. John Whitehead, the stationary and mason of Vauxhall Bridge-road, had erected a large pay-box on wheels, which could be made a parlour if one liked, and could be wheeled about from job to job at pleasure; it stood on his own ground, and was built of combustible materials, wood and the like; it was 4 ft. or 5 ft. beyond the general line of front, and "flush" in the area railings. In that case the magistrate, the late Mr. Arnold, viewed the place, and came to the conclusion that the only power he had was to order the demolition of the so-called "pay-box," the words "set back" being omitted in the Metropolis Local Management Act, 1862, section 75, and that omission on the part of the Legislature evidently was intended to limit the operation to structures that could be removed only by demolition. He dismissed the summons against Mr. Whitehead, and offered to grant Mr. Arntz, the surveyor, a "case" for a superior court; but they knew Mr. Arnold was right, and did not avail themselves of the magistrate's offer: the "pay-box" was there now, and had been so ever since.

Mr. Drury thought it a pity it had ever been allowed to remain.

Mr. D'Eyncourt.—But that was a smaller thing than this?

Mr. Seagrave.—No, much larger. This was 15 ft. by 20 ft., 12 ft. 6 in. extreme length to centre of the arched roof. It was a corrugated iron roof, on six iron pillars; could be shifted about, and could be taken to pieces in a couple of hours. In Whitehead's case the pay-box was 35 ft. long.

Mr. D'Eyncourt, on a perusal of the case in question, said it would not help the defendant, as this was not a proceeding *ejusdem generis*.

Mr. Seagrave observed that he could see the magistrate was against him. He hoped if any doubt existed in his mind, therefore, that he would be accorded the benefit of it, and if a rich and powerful body like the Board of Works chose to ask for a case for one of the Division Courts, well and good; he could not afford to go to law with them. His duty was merely ministerial: he had put up the roof and was done with it; and again, on the 13th of April, he agreed for a price to put up a "portable corrugated iron roof on six pillars," and he produced his letter-book to prove it. It had never been intended to be a permanency.

Mr. D'Eyncourt informed the defendant that there was a very strong case against him, the case of "Stevens *v.* Gourley," reported in the *Law Journal* Reports, 1860, vol. xxxviii., part 2, Cases at Common Law. In that case, in order to evade the Building Act a structure was erected without footings or foundations, and placed merely on the ground; it was, in fact, a shop. In the Common Pleas, Michaelmas Term, 1859, before Lord Chief Justice Erle, Justices Crowder, Byles, and Williams (the latter *dubitante*), the Court held that although the shop was capable of being removed, still it was a building made in order to evade the Building Act, and had been originally intended to have footings and foundations. It was held in that case that a "structure which rests on the ground without being let into it" may be a building within the meaning of the Act. (In this case one of the Judges agreed that the word "building" was not defined in the Act, and must be defined according to circumstances.) In the present case the mere placing this building on wheels was simply an evasion of the Act, an afterthought after the Surveyor had seen it on stones let into the ground, and the defendant would have to pay a penalty of 1*s.* to carry the costs, 2*s.*, in the first summons. With regard to the second summons that was inapplicable, and he could not deal with it.

Mr. Seagrave asked what he was to do now.

Mr. D'Eyncourt replied that he had only decided that it was a "building."

Mr. Seagrave urged that he could not go into Mr. Franks's yard and pull it down: he would be committing a trespass. Besides, his work was done.

Mr. D'Eyncourt replied that he had merely decided it was a "building."

Mr. Seagrave urged that he was called upon by the second summons to enclose it, and thereby make it a building; and even were he to be ordered to do that, he could not commit a trespass.

Mr. Drury reminded the magistrate that the defendant was liable to a penalty of 20*l.* a day.

Mr. Seagrave said he had no desire whatever to thwart the action of the district surveyor, but he felt the difficult position he was in.

After further discussion, it was agreed that the second summons be adjourned for four weeks to enable the defendant to confer with the Board of Works on the matter.

Adjourned accordingly.

PAYMENT FOR QUANTITIES.

TOMLINSON *v.* ADAMSON.

THIS was a claim heard at the Brentford County Court on the 29th of May, before Mr. Serjeant Wheeler, for 14*l.* 5*s.*, being 2½ per cent. for working out quantities relative to certain buildings to be erected for Mr. Charles Boun, and which the defendant tendered to build, and in which tender the plaintiff's claim was included, as usual in tenders, and according to the custom of the profession should have been paid to the plaintiff out of the first instalment paid by Mr. Boun to the defendant; but the defendant had not paid the plaintiff, although Mr. Boun had paid the defendant over and above the contract price.

The Judge, after hearing the evidence and arguments of the legal gentlemen engaged, came to the conclusion that beyond a doubt the plaintiff had done the work, and ought to be paid; but as there was no privity of contract between the plaintiff and the defendant, Mr. Boun, the client, must pay the plaintiff, and recover the amount from the defendant,—that is, if the amount in question was included in the tender by the defendant.

The Judge allowed the plaintiff to withdraw from the case, and receive back the hearing-fee.

CHURCH-BUILDING NEWS.

Hanwell.—The foundation-stone of th church dedicated to St. Mark has be by Mr. Octavius E. Coope, M.P. Th contract comprises the chancel, transep first bay of the nave and aisles. Sin contract was taken, however, the cor have been enabled to give orders for the and second bay of nave and aisles, an trust, before the works in hand are com sufficient funds will be forthcoming to co remaining portions of the church, thus the tower and spire to a future period church is to be built of stock bricks, wit and red brick dressings. The internal and arches are of red bricks, specially m with Pennant stone columns to nave and c The roofs are of pitch pine, plastered b rafters, covered with red tiles. The ar is Mr. Wm. White, F.S.A., and the contract the whole of the works is Mr. Thomas Gi of Clapham Junction.

Barton-Seagrave (*Northants*).—The chu St. Botolph has been re-opened, after s ment and restoration at the expense of th of Buccleuch. The edifice was a difficult treat; it consisted of a nave, central and chancel, south aisle and chantry nave and central tower are Norman, of a and massive character, the two arches tower between the chancel being of be detail, but so narrow (like some Irish ex that the chancel was shut out from the t the church. As the removal or alteration arches was not to be thought of, it was determined to build a new nave and side by side with the old nave and to place of the old narrow aisle, re-inserting lancets and other features, and adopting style of the new work the Early Decora correspond with the inserted windows date in the nave and tower. The old with its beautiful wall arcading, has restored, and may be used for occ services. The details of the Norman wo ternally are treated richly on the side faced the great castle, very plainly on the (as, too, at Steeping Church). Of this ca remains exist on the mounds on which t keeps stood; but richly-moulded stonew the Norman and thirteenth-century date time to time found built up in old walls roofs of the old church are all new, and of oak. The whole has been reseated; church having its seats on the Norman f the new one on the thirteenth-century (two steps up) defined by the arcade ba that date, and the old oak seats of the fif and sixteenth century dates have been re in again. The work has been carried out Mr. R. Herbert Carpenter and Mr. B. I architects, by Mr. Foster, of Kempston Peacock acting as clerk of works.

Lostwithiel (*Cornwall*).—The ancient church of Lostwithiel was re-opened on 29th ult., after restoration. This edifice, in the thirteenth or fourteenth century, is Early-English style of architecture; or, properly, belongs to the Transition perio ceding the Decorated style. The spire object of much interest to visitors, being rare architectural features in Cor or, indeed, in the West of England at all. lower part is Early English, consisting a base of a square tower, over which is an gonal lantern supporting the spire proper. topmost part of this was not old, and "crippled." This has been rectified. Th floor, consisting of irregular slates and st under which there was an accumulation of has been replaced with a solid bedding of crete, over which a wooden floor is laid aisles being prettily paved with red ence tiles. Another great improvement has effected by the removal of the gallery a west end of the church, and placing the o which previously stood in the gallery, in north-east corner of the church, near the ch The old lath-and-plaster ceiling has been moved, and a panelled pitch-pine roof carved ribs and bosses over the chancel been substituted. The carved work is by Harry Hems. The walls have been sco (the whitewash in some places was se coats in thickness) and plastered, and the a facings and pillars have also been cleaned. east end of the church is lighted by a large light tracery window, and there are se stained windows in the aisles, the remai being of cathedral glass. Two small win

een cut in the west end of the church. arke was the architect. The contractors e works were Messrs. Brown & Phelp, 's, of Lostwithiel.

ey.—Darley Church, near Bishop's Wal- a venerable structure, dating from n times, with Early-English and post- iation additions, is about to be restored larged. The work has been entrusted to . Colson & Son, architects, Winchester. urch is a cruciform structure, dedicated Holy Cross. Says a local paper, "it tter of deep regret the work of demoli- is proceeded with so vigorously that three of wall-paintings were uncovered from yers of whitewash and destroyed before hitects, who are zealous antiquaries and logists, were apprised of the fact, and rgyman of the parish seems to have been of them by the workmen." The top of wall-decoration consisted of post- iation work in the form of texts, &c.; h these was a series of subject paintings Mediæval period, and beneath them fres- the Late Norman or Transition style.

ham-green.—On the 31st ult. Earl Nelson e of the first stones of a new church on dford Park estate, Turnham-green. The urch, of which Mr. Norman Shaw, R.A., architect, is in the "Queen Anne" style, hen completed, it will consist of a nave, and south aisles, chancel, and organ- er, being constructed to accommodate 728 s, with an open fir-timbered roof, the being 120 ft., the width, 69 ft., and the to the ridge of the roof, 50 ft. The t of the builder's contract is 5,500*l.*, but ontemplated to enlarge the church. The s are Messrs. Goddard & Son, of Farnham rking.

way.—The parish church of Stanway, is being restored. It is stated that the f demolition is going on in the old Chapel Albright. The whole of the new chancel s has disappeared to make way for a and statelier building, and the founda- f a new aisle, extending along the in- new chancel and the nave as far as the uth door, have been laid. This ancient n doorway, turned in Roman bricks, has aid bare, but the work has hitherto pro- with few discoveries. Mr. Dobson, of ster, is in charge of the works, under the on of the architect, Mr. Scott.

NTING CHURCH BUILDING NEWS.

burgh.—On the 30th ult. the new Mayfield Church was opened for worship. The , which is situated at the north-west of St. Andrew's-terrace and West May- s of cruciform plan, and in the early n style. The nave is 88 ft. in length by wide, including the aisles; while each of ansepts recedes about 18 ft. There are doors of access to the building, one of communicating by a covered passage with ll and session-house. The tower, mean- is only partially built. The church is to accommodate about 700 persons. The has been carried out from designs by ppolyte J. Blanc, architect.

ndhay-road (*Leeds*).—A new chapel, at thay-road, in connexion with the United dist Free Church, has been opened. It een erected by the Lady-lane Circuit, to the growing wants of the large population has rapidly sprung up in the neighbour- of Roundhay-road. It is expected that, ling the land, furniture, &c., the chapel will st less than 5,000*l.* The building is of the nesque style of architecture. The front ion is divided into five bays, having three- er columns to the centre portions, and ers to the angles, with moulded bases and d capitals. The four front columns which ct are surmounted with a pedimental gable circular windows and scroll ornaments, and moulded and bracketed cornice and curved al towers at each angle. The windows circular moulded heads with moulded cills string-courses. The arrangements of the consist of school, with infants' room, band- class-rooms, kitchen, and heating appa- room under the chapel. The whole of the de ashlar work is of Meanwood stone, with wood and Potternewton stone wall-stones. inside woodwork is of pitch pine, varnished. heating is by hot-water low pressure, and with the ventilation, has been executed by Messrs. Nelson & Sons, of Leeds. The whole of the remainder of the works has been carefully executed by Messrs. Craven & Umpleby, of Leeds. The architect is Mr. D. Dodgson, Park-row, Leeds. The church will accommodate 600 persons. In the schoolroom will be accommoda- tion for 250 scholars.

BATHURST HOSPITAL, NEW SOUTH WALES.

Attention being now directed to this colony by the forthcoming Exhibition, some account of buildings now in progress there may interest our readers.

The entrance-front of Bathurst Hospital faces the south, and is sheltered from the fierce southerly winds by the crown of a hill, while the tower or north front commands a most extensive view of cultivated undulating plains dotted with villages and farms, with a back- ground of the Blue Mountains. The hospital has an administrative block of two stories in the centre, containing hall and public stair, public room, doctors' consulting-room, accommodation for superintendent and family, and a private ward. In the rear of this, divided by a corridor, there is a tower, with kitchen, board-room, and convalescent ward, and at each side in the tower story a bedroom, scullery, pantry, and above, a semi-octagonal operating-room and dispensary.

The tower rises four stories, and has a lofty roof with flat top and iron railing around. Corridors connect this central block, with a tower-storied pavilion at each side, with bal- conies and verandahs. Each ward is 48 ft. 6 in. by 26 ft. by 16 ft. in height, and contains ten beds, with a window to each ward, and at each corner of the end of the ward there is a turret,—one containing baths, &c., and the other, water- closets, &c. These are to be ventilated by Banner's system. At the entrance to the ward is the nurses' room, with window overlooking the beds, and a ward kitchen in a small turret; at the side of the entrance is the staircase-room leading to the ward in the first floor, and entered from the outside.

Each ward is similar to the above, and is ventilated by Tobin's system of ventilation, in addition to windows, fireplaces, &c.

There are lifts for linen, food, &c., and it is intended to have a lift in the corridors for patients instead of taking them up by the stairs.

The water-closet drainage is taken into cess- pits of brick, well ventilated with Banner's cowl.

The bath-water, kitchen-slops, &c., are taken into separate brick-tanks well ventilated.

Every sanitary precaution has been taken to make the hospital a success.

The style may be termed Gothic-Italian, and has, in the Howick-street front, a central block of two stories with verandah and balcony; and at each side a two-storied ward, with verandah and balcony of eight bays, having iron columns supporting brick arches and balcony-plates, and flanked by a tower at each end, with steep- pitched roof.

The Durham-street front is similar with respect to the wards, but in the centre there is the tower above mentioned, rising to a height of 82 ft., and having a semi-octagonal wing at each side, giving a very unique effect.

The footings are of concrete, and the wall of red brick, struck, pointed, and ornamented with cement strings, &c.

The roofs are covered with corrugated iron, and the roof-water from them is drained into large brick tanks.

The contractor for the whole is Mr. Willet, of Bathurst; and the architect is Mr. William Boles, of 130, Pitt-street, Sydney.

THE LIGHTING OF THE PARTHENON.

Sir,—Are there not some slabs in the Museum at Athens, which were discovered in excava- tions made close to the external wall of the Parthenon, which bear unmistakable evidence that they had served the purpose of lighting and protecting the famous frieze now in the British Museum? I myself believe that the interior of the Parthenon was lighted through thin slabs of pure white marble, perhaps satu- rated with olive oil, or with wax. A more charmingly soft and subdued light than could be derived from large openings covered in in this way I cannot conceive.

W. Cave Thomas.

SHAKSPEARE A BUILDER.

Mortar was made in Lancashire by treading, the labourer having clogs found him to tread with. The introduction of mortar-mills and pug-mills, and the use of ground lime, such as lias and Portland, may have diminished mortar- treading in towns. I have, however, no doubt but that mortar is still made by treading in the country districts of Lancashire and Yorkshire.

The word "sneck" is used by Shakspeare, which is part of the latch of a door. To shut a door is to sneck it. R. R.

Sir,—I have been much surprised that a quo- tation from Shakspeare much discussed, viz., the difference between a hawk and a handsaw, should have been left undecided, when it appears to me so easy and palpable of explanation. Everything seems to have been supposed but the right thing, viz., the tool used by a plasterer, —a board about a foot square, with a handle beneath, and held in the left hand to receive the lime and hair or other material, called a "hawk," and supplied, by constant attention, by a boy, who, with a long handle (4 ft. or 5 ft. long), called a server, supplies the hawk with properly-prepared material for the work in hand. The boy is called a "hawk-boy." I have no doubt, from the perfect knowledge that Shakspeare had of the trade of a builder, as shown by the quotations in your last number, that the tool called a "hawk," as shown by ascription, was the intended comparison, as there is no affinity in comparing a handsaw to a bird. W. H.

*** This suggestion was made and argued some time ago in our pages, by Mr. Picton, of Liverpool.

QUANTITIES AND CONTRACTS.

Sir,—Although averse to engaging in corre- spondence, I am also unwilling that any one who is really interested in the important subject which I recently ventured to bring before the Institute, should be either misled or left to labour under any misapprehension. I shall, therefore, with your kind permission, briefly notice a letter which appears in your issue of the 7th inst., signed "J. A. E."

Your correspondent contradicts me in only one particular. He says that "there is no such practice as contractors making an allowance for contingencies on account of any presumed errors in the schedule." Now, against this I can only set the testimony of several contractors of large experience, who have assured me that they in- variably do make such an allowance, although it does not appear as a separate charge in the schedule. But it is obviously all the same to the proprietor whether it appears as a separate charge, or, without appearing, exists in the shape of a considerable increase of prices.

In other respects your correspondent only confirms my statements. The schedule of the successful contractor is lodged with the archi- tect, although, as frequently happens here, the offer may have been first received and con- sidered. Then the Edinburgh surveyor *may* make a mistake about the foundations or he would not add this clause, which I quote from an Edinburgh schedule now before me,—"The accuracy of the measurements is not guaran- teed." In the case which I used for illustra- tion, where the quantity is supposed to be inadvertently doubled, the mode of measuring the foundations would not affect the result in any way. Again, "J. A. E." says,—"How the proprietor is a loser in paying the contractor for the measuring is more than my humble judgment can make out." Now it surely does not require much judgment to comprehend that if a proprietor gets an inadequate return for the payment he is a loser. "J. A. E." almost uses my words when he says,—"The proprietor must pay in the end either directly or indirectly"; and this being admittedly so, one object of my paper was to show that he was justly entitled to a great deal more for his money than he could possibly get either by the English or Edinburgh systems.

I need hardly say that before writing upon the subject, I sought—and most readily obtained —information regarding modes of contracting with which I was not personally familiar, from professional brethren in different parts of England, Scotland, and Ireland; and, while the prescribed limits of my paper prevented me from alluding to many slight local diversities of

practice, I have not intentionally omitted to notice peculiarities having any appreciable bearing upon my argument; but allow me to add, I still invite additional information, and, if need be, correction. JOHN HONEYMAN.

LATE WROUGHT-IRON WORK.

SIR,—As a supplement to Mr. W. Penstone's exhaustive and most instructive paper on this subject, it may be useful to add that one of the finest collections I know of in this country of exquisite old German ironwork may be seen at the Weston Museum, Sheffield. It may, perhaps, be remembered that Mr. Street, in his recent address at the School of Art in that town, drew particular attention to the exceptional grace and beauty of the wrought-ironwork at that museum. HARRY HEMS.

AN IRON TRADE MILLIONAIRE.

THE sale of the effects in Gunnergate Hall, Marton Cleveland, has just taken place, and in consequence of the exceptional character of the contents of the mansion, has attracted large numbers of persons. The mansion was the residence of the late Mr. John Vaughan, one of the founders of the Cleveland iron trade, and was left by him, with an immense fortune, to his only son, the head of the late firm of T. Vaughan & Co. The fittings of the house are described as magnificent, the chief bedstead having cost more than 1,000*l.*! whilst the billiard, dining, and other rooms are said to have been furnished on a scale hitherto unknown in the North.

VARIORUM.

THE *Gardener's Magazine*, speaking of "Our Public Gardens," says:—"Speaking generally, we have abundant reason to be satisfied with the public gardens of the metropolis. The Thames Embankment derives much of its charm and dignity from the leafy trees and green lawns that fringe it in the greater part of its course; and those 'minor parks' at Kennington, Islington, and other half-suburban spots, are pleasing features that beneficially break up the monotony of bricks and mortar, and cheer the spirit of man while they do something for his health. The poorest bit of London gardening is perhaps the enclosure of Leicester-square, which has a dry, starved look, and might, we think, with great advantage be ploughed up and planted again. A correspondent lately directed attention to the healthy vegetation of the Thames Embankment as in part due to proximity to the river. The explanation gains force by comparison of the case with that of Leicester-square, which is certainly not benefited by proximity to the river. But we think the fewness of deciduous trees and the prominence of rhododendrons are the two main causes of the poverty in the midst of which Shakspeare has been planted; for there is only one satisfactory way of employing rhododendrons in such a spot, and that is to destroy and renew them annually. Common lilacs, that are sure to live and make a cheerful show of green leaves, are more to be prized for the purpose than rhododendrons, worth in the first instance twenty times more money.——A writer in the *Magazine of Art* maintains that great changes have been brought about by the dado. He says,—"See it as it lies quietly against the wall at Burlington House, taking upon itself nothing more than to be a gentle amplification of a skirting-board; content to be unseen: content to be brushed during the season by the dresses of many thousands of ladies, and then to be forgotten, even by the few visitors who might by chance have been aware of its existence. And yet no trick ever played by *Master Puck* in the 'Midsummer Night's Dream,'—from the squeezing of the juice of 'the little western flower' into *Lysander's* eyes, to the translation of *Bottom*,—ever led to such momentous issues as did the appearance of the real dado, of which I would tell the story. It has simply revolutionised the school of English painting. The intelligent foreigner is, indeed, fond of telling us that we have no school at all, but only an aggregation of individual fancies. As I am not at this moment, however, concerned with foreign opinion, but only with a very serious matter affecting the interests of my own countrymen, I will tell my story my own way, and will assume that the drift, or general direction that art takes, in England, has some of the distinctive characteristics of what may be called a school. This drift, I say, has changed. I do not say whether for the better or the worse, but it has changed, and the change dates from the dado, and the dado is the cause of the change."——Cassell's *Dictionary of English Literature* reminds us of the recentness of the formation of the British Museum Library. "This originated with the grant by Parliament (April 5, 1753), of 20,000*l.* to the daughters of Sir Hans Sloane, in payment for his fine library and vast collections of the productions of nature and art, which had cost him 50,000*l.* In 1757, George II. presented the Old Royal Library; and many important additions have been given and bequeathed to it since. It was first placed in Montagu House, and afterwards removed to the present building. The great reading-room, erected by Sydney Smirke, was opened May 18, 1857. It affords accommodation for 300 readers, who have free access, under certain slight restrictions, and contains upwards of 80,000 volumes. In 1870 it was estimated that the library of the British Museum contained 1,600,000 volumes and MSS. It is constantly receiving additions, being one of the five Public Libraries which, under the Copyright Act, are entitled to a copy of every book published in Great Britain and Ireland."——From the *Great Industries of Great Britain*, for June, we get this account of japanned wares:—"The important manufacture of japanned wares can claim a high antiquity, the art of japanning having been practised in China and Japan for an indefinite period before our first intercourse with those countries. This beautiful lacquer or varnish not only preserves the iron from rust, and gives it a cleanly surface, but at the same time affords opportunity for the most elaborate and varied ornamentation. Articles in this ware frequently owe by far the greater part of their value to the decorator's art. Japan painting is, in fact, a distinct artistic profession, and has, in its time, educated more artists than any other. More than one Royal Academician has graduated in the japanner's *atelier*. As with tin-ware, the early productions of this class were, no doubt, clumsy and ugly enough, and for the same reason,—that it was difficult to get iron that would bear bending and twisting, or that would be sure to keep a good even surface. The modeller and stamper has now free play, and the decorator has no reason to fear that his work will be spoiled. Tea-trays, waiters, coal-vases, canisters, &c., are among the staples, and the production is enormous. In Wolverhampton alone, which is the chief seat of the manufacture, as many as 100,000 trays and waiters will be turned out in a week, when trade is good. Most of these, however common, used to be painted by hand, with a celerity of execution that would put Wardour-street to the blush. It was said that a 'skilled artist' could, with ease, paint two gross of landscapes in a day. Most of this common decoration is now effected by the new method of transfer-printing, for which, probably, porcelain decoration suggested the idea. The pattern or picture is printed by the lithographic process on fine tissue-paper, which is laid face downward on the japanned plate, and adheres to the sticky varnish with which it has been treated. After a time the paper can be wiped off, but the colours remain, and are afterwards fixed by stoving."

Miscellanea.

British Archæological Association.—At the meeting on Wednesday, the 4th, it was announced that Lord Waveney had been elected President for the year, and that the Congress had been fixed to commence on the 11th of August at Great Yarmouth, ending at Norwich on the 20th. A large number of antiquities were exhibited. The first paper was by the Chairman, Mr. Syer Cuming, who described one of the figures on a richly-embroidered chasuble of the close of the fifteenth century, found in 1825 in a walled-up crypt beneath Warrington Church. The figure represented "St." Thomas, Earl of Lancaster, beheaded at Pontefract, 1322, after being taken prisoner by the Royalists. The second paper was by Mr. C. H. Compton, and descriptive of the Company of Horners of the City of London,—a company which, instead of being extinct, as has been said on high authority, is still extant. The antiquity of the craft was referred to, and it was shown that horners were classed among the eight mysteries of the city *temp.* Edward III., but the company was not incorporated until 1641.

Mechanical Refrigeration.—The of refrigeration by purely mechanical devised by Messrs. Bell & Coleman, of Gl and described in the *Times* of October la now passed into a condition of practical s The essential features and operation apparatus we may briefly recapitulate object is first and chiefly to cool or atmospheric air, but, in addition to t performs a minor, though still important tion in rendering the air so cooled drier th surrounding atmosphere. The air to be is drawn into air-pumps, in which it i pressed to about 35 lb. per square inch. in this compressed condition it is acted jets, and, subsequently to leaving the pressors, to fine sprays of cold water, w the heat developed by pressure,—about 2 Fahr.,—is withdrawn. The air, cooled b under pressure, then passes through a range of surface condensing-pipes, ranged the walls of the chamber being refrigera which it deposits its mechanically-susp moisture, and so dried it returns to the to be expanded down to ordinary atmos pressure. In the act of expansion the a forms an amount of mechanical work in t the mechanism proportioned to the st energy it thereby loses, and thus cooled, and expanded it is ready to be conveyed distributed in any chamber or hull as conve or necessity dictates. The primary object invention was to supply a means of br dead meat from American and other markets in a more economical and e manner than had hitherto been accomplis ice-refrigeration, or by any other of the m which had been experimentally invest Last year dead meat of the value of mor 1,330,000*l.* was imported into the Kingdom from the United States. We trated some time ago refrigerating cha of another description, already fitted London in connexion with this important Complete success in this direction will co boon on the populations almost equal in in ance to the repeal of the Corn Laws.

A New Mineral.—A new mineral, cially (and accidentally) produced, has re been described by Professors Emerson Re and V. Ball. In the process lately paten Messrs. Thomas and Gilchrist for the el tion of phosphorus in the Bessemer con it is of great importance to have a durab refractory brick for the lining of the conv This the inventors, it is stated, have succ in producing, and thereby a basic conditi the slag, hitherto unattainable, has been se In the preparation of these basic bricks, are made of an aluminous magnesian lime an oven is used which is lined with or silicious fire-bricks, the basic bricks being on the floor in direct contact with this li The oven is subjected to an intense white and on one occasion, after the oven had broken down on cooling, it was found th lower layers of the pile of basic brick actually passed through the flooring, ar siliceous bricks showed sharply-cut mou the edges of the basic bricks where these had cut through them. The resultant mass occurred partly as an assembla semi-transparent crystals, partly in a stal form, with a minutely crystalline stru The new crystallised mineral occurred i prisms, belonging apparently to the mono system; some of the crystals were color others were greyish, and others more o strongly tinged with green. Its compo indicates that it is a member of the gro pyroxenes that includes malacolite and side.

A Memorial Pulpit to the late Mr. Patch has just been erected in St. Ge Church, Tiverton. It is Classic in chara hexagonal, and rather Jacobean in style, to monise with the interior of the church, is Italian Ionic, dating in the last century. design is by Mr. Ashworth, architect, E and it has been carried out by Mr. C. Hai of Exeter, and has in each panel a figu good relief, the subjects being the four E gelists and their symbols, and St. Paul. are by Mr. Hems.

The Working Men's Club and Instr Union.—The Annual Meeting of this U will be held on Saturday, June 28th, in W minster College Hall. The Dean of Westmi will take the chair.

Englishman's Palace in Mexico.—pondent of the *New York Times* describes l the situation and appointments of what tless one of the most sumptuous esta- nts in America. It is situated in the of a charming landscape a few miles e city of Mexico, and is the property of Englishman named Barron. The grounds rround this house are beautifully laid l kept. Life-size statues peep at you t the branches of the green trees; the wind through little green valleys, turn tedly past miniature cascades, and lead ic seats, cool grottos, and beside steep es. The house is built of stone. The ondent says:—"We went up half a dozen stone steps, crossed the verandah, and eceived at the big front door by the trador. Marble statues and statuettes his broad entry on both sides all the way he grand staircase at the further end. ng glass pendent chandeliers and shining handeliers alternated with each other. gs as large as the side of a small house both the walls. The floor was made of tiles in gay colours. We were taken, to a room to the right of the hall filled mily portraits. It was said that half a pictures could be selected any one of vas worth more money than the house grounds, and everything else about the The solemn guide took us upstairs into large hall with more marble statues, and ictures and more chandeliers. Here the began to grow interesting. Downstairs ing was in a style of old-fashioned com- l luxury; upstairs the furniture looked might have come from Paris within a Everything was bright and costly and me. The first room we entered upstairs e of the parlours, a room so long that at the other end of the room looked This room was furnished in the Mexican which has an idea that the more furniture rble that can be crowded in the better. rniture was upholstered in pink satin, hly-carved frames. There were so many and bronze clocks and marble-topped that it was hard to walk. "The whole listened and glittered like a fairy palace. double door led into another parlour, large and quite as elegant. It was a here the Duke of Buckingham might say morning' to the Prince of Wales, and to stay to dinner."

Trade-Book.—A new and handsomely- ted catalogue has just been issued by l-known firm of Bunnett & Company, l. In addition to the patent lifts of their ucture, they add their other specialities, bronze castings in the illustration of the gates executed for the national bank at Ayres, and some examples of bronze work just completed for the Gresham surance new offices in the Poultry. The for fireproof stores and buildings in iron as used in America, are framed to meet the ments of their foreign trade, and judging e extent of the foundry and engineers' s depicted in their catalogue, Messrs. t & Co. seem well able to produce quickly eaply. We understand that lately several ial men have joined the Board, new and ed machinery being laid down, and the ices in Queen-street being reconstructed he direction of Messrs. Ford & Hesketh, cts. We may add to our notice of the l History Museum that the above firm have pwards of 3,000 feet super. of their bank safety-shutters for the protection building in question.

n's Patent Complete Sanitary .— This new closet is one piece of ware, entire in itself, and perfectly l above the floor line, the inlet and out- g central with the basin. Stoppage is ely, as the inlet is narrower than the At the apex of the trap there is pro- ventilating outlet, with a chamber to be ith charcoal or other deodorising material. nufacturers and patentees are Charles Co., Wood-street, Birmingham.

orary Degrees at Cambridge.—On y, the honorary degree of LL.D. was ed upon several distinguished men, in- Sir Frederick Leighton, P.R.A.; Mr. Bond, principal librarian of the British n; and Mr. C. T. Newton, C.B., keeper of eek and Roman Antiquities in the British n.

The Strike at Sundswall, Sweden.—The Gothenburg correspondent of the *Timber Trades Journal* writes under date May 31st, as follows: "It is my duty to inform you of a somewhat unusual occurrence in reference to the timber trade of Norrland. It appears that the labourers in the saw-mills and timber-yards in the Sundswall district have, since the commencement of the season, been very much dissatisfied with the rate of wages which the saw-mill owners have paid them, and this dissatisfaction gave itself expression on the 27th of May, by the whole of the saw-mill labourers, as well as those in the timber-yards and those engaged in the loading of ships, leaving their work. After the strikers had commenced operations by ill-using the foreman at Mons saw-mill, Sundswall, belonging to Mons Travaru Aktiebolag, they marched off to Swartwick saw-mill, belonging to Messrs. James Dickson & Co., of this place, and compelled the whole of the men employed there, to the number of 500 or 600, to leave their work, notwithstanding the fact that they were in nowise wishful to do so, nor dissatisfied with the wages they were receiving. It is understood that several of the mills had large numbers of vessels chartered, and as it is improbable that a strike clause was inserted in many of the charter-parties, serious loss and delay are sure to take place."

The Bristol Building Trade.—Nearly 2,000 men (including labourers) employed in the building trade of Bristol and the neighbourhood came out on strike against the proposal of the employers to reduce the wages rate one halfpenny per hour, and to lessen the restrictive character of the trade rules. The men contend that the wages rate in Bristol compares unfavourably with that of other towns, and that, owing to the many weeks of enforced idleness through the frost during last winter, they are unable to yield to the demand made upon them. On the other hand, the master builders assert that they are forced to carry out the reduction, as trade has been in a most depressed state for many months past. The Master Builders' Association have resolved to adhere to the notice given. With regard to the painters and decorators, it is stated that there would be no strike in this department, as masters and men have agreed to submit the dispute to arbitration.

Lynn Corn Exchange.—Visitors to the Corn Exchange will be struck with the improved appearance of the new roof, which has lately been reconstructed and has been glazed on the new principle, entirely dispensing with the use of putty or any other cement. The length of the roof (which is constructed of iron) is 170 ft., by about 28 ft. wide on either side, and contains an area of nearly 9,000 feet superficial of the patent glazing. According to the *Lynn Advertiser*, the increase of light is nearly 50 per cent. over the old method, and the appearance is vastly improved by the removal of the heavy sash-bars for the small vertical tubes which are used in this system. The whole work has been carried out by Mr. W. E. Rendle, of 3, Westminster Chambers, London, who is the patentee of what is now known as "Rendle's System of Glazing." His patent is now used by most of the railway companies, Her Majesty's Government, and the leading architects and engineers.

Gloucester County Lunatic Asylum Competition.—The designs for the additional County Lunatic Asylum, to be erected on the Barnwood Mill Estate, have been sent to the office of the Clerk of the Peace. Plans have been received from about thirty architects in all parts of the country, and they have been arranged in the Shire-hall for inspection by the Visiting Justices to the Asylum, with whom rests the selection of the one to take the first premium of 150*l.* and the other for the second premium of 70*l.*

Fire.—With a view to the protection of the metropolis from fire, the appliances of the Fire Brigade have this week been materially strengthened by the addition of two more powerful steam fire-engines, constructed to the order of the Metropolitan Board of Works, and fitted with all the most recent improvements, by Messrs. Merryweather & Sons. The severe practical tests to which the engines by this firm have been subjected have proved that they fulfil completely all the conditions necessary.

Mr. C. B. Birch's bronze group "Retaliation," which is intended for the Sydney International Exhibition, will remain on view at the Gallery of Messrs. H. Graves & Co., Pall-mall, till the 19th inst. It is a very meritorious work.

TENDERS

For the erection of schools to accommodate 316 children, with master's house (including out-offices, boundary-walls, palisading, &c.), at Newbottle, Durham, for the Newbottle School Board. Mr. William Fox, architect. Quantities by the architect:—

Sheraton & Rutter	£4,430 12 11
Cook & Seymour	3,771 5 0
Balmer & Elstob	3,046 9 6
Sanderson	2,923 0 0
Hirst & Sons	2,912 13 0
Heslop & Surtees	2,814 0 8
Rutter	2,832 0 0
Nicholson	2,8 6 1 5
Robson & Son	2,800 0 0
Robson & Tremble	2,762 8 6
Purdy	2,745 6 7
Kellett	2,710 0 0
Parkin	2,704 12 8
Fishburn	2,670 17 6
Westgarth	2,577 15 0
Whaley	2,570 0 0
Elstob	2,565 0 0
Robson	2,559 0 0
Harrison	2,541 0 0
Oates	2,436 10 10
Gibson & Mordue	2,438 7 6
Foster	2,434 7 3½
Hurst & White	2,434 0 7
Forster (accepted)	2,166 0 0

For building wash-houses in Workhouse, Mile-end Old town, for the Guardians. Messrs. H. S. & C. A. Legg, architects:—

Perry & Co.	£1,221 0 0
F. F. & J. Wood	1,139 0 0
Steed Bros	1,100 0 0
Harris & Wardrop	1,075 0 0
J. & H. Cocks	1,059 0 0
Farnah	1,030 0 0
Hearle & Son	993 0 0
Atherton & Latta	975 0 0
Hunt	975 0 0
Palmer	949 0 0
Walker	845 0 0
Judd	739 0 0

For the erection of a Primitive Methodist Chapel, Belgrave, Leicester. Mr. John Wills, architect. Quantities by the same:—

Rudkin Bros.	£2,270 0 0
Watts	1,998 0 0
Smitten	1,975 0 0
Billington	1,966 3 6
Glover & Son	1,889 0 0
Onion	1,776 4 6
Saunt & Smith	1,740 15 0
Minchin & Law	1,680 0 0
Lueham (accepted)	1,630 0 0

For the erection of St. Stephen's Vicarage, Wandsworth. Messrs. Lee Bros. & Pain, architects. Quantities supplied:—

Arics	£2,275 0 0
Roberts	2,176 0 0
Lathey	2,150 0 0
Pain	2,029 0 0
Adamson & Sons	2,010 0 0
Parsons	1,935 0 0

For completely finishing two detached and four semi-detached residences on Grosvenor-road Estate, Chiswick, for Mr. R. H. Veal. Mr. Richard Tomlinson, architect:—

Cross	£320 0 0
Johnson	8 0 0 0
Beauchamp	759 0 0
Winter	709 0 0
Ireland	690 0 0

For executing repairs and decorative work to Woodbury Farm, Addiscombe-road, Croydon, for Mr. Bruce Johnson. Messrs. Walter Graves & Hulbert, architects:—

Burdett & Sons	£755 17 6 1
Mansfield & Son	720 0 0
Haynes	510 0 0
Taylor (accepted)	405 0 0 1

For the erection of a lecture-hall for the borough of Hackney Working Men's Club, Haggerstone-road. Mr. E. R. Blatchley, architect:—

Anley	£673 0 0
Downs & Co.	561 0 0
Taylor & Parfit	559 0 0
Steel Bros.	555 0 0
Sargeant	548 10 0

For the erection of a boundary-wall at the Westminster Union Industrial Schools, Wandsworth. Mr. E. R. Blatchley, architect:—

Downs & Co.	£876 0 0
Hobern	799 0 0
Johnson	763 10 0
Street	735 0 0
Dover Bros.	733 15 0
Prout	697 0 0
Cock	697 0 0
Smeaton & Sons	636 0 0

For alterations and additions to Buckhurst, near Wokenham, Berks, for Mr. C. J. Murdock. Mr. Edward Power, architect:—

Watson	£2,500 0 0
S. & G. L. Mann	1,935 0 0
Conder	1,921 0 0
Hunt	1,866 0 0
Henderson	1,866 0 0
Toms	1,823 0 0
Boyce	1,820 0 0
Braid & Co.	1,438 0 0

For repairing and painting Vine-street Casual Wards, for the Guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects:—

Chambers	£154	0	0
Nuthall	132	10	0
Day	120	0	0
Liles	112	0	0
Patton	99	10	0
Stone	97	0	0
D. McCarthy	90	0	0
Dixon	84	0	0
M. McCarthy	75	0	0
Surridge	75	0	0
Redding	63	0	0

For repairing and painting schools at Mitcham, for the Guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects:—

Dixon	£235	0	0
Surridge	229	0	0
Merrett	220	0	0
Patten	194	0	0
Nuthall	185	0	0
Stone	177	0	0
Redding	162	0	0
D. McCarthy	150	0	0
M. McCarthy	87	0	0

For enlarging the boiler-house and engineers' shops at St. Luke's Workhouse, for the Guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects:—

Morris	£750	0	0
Potter & Sons	711	0	0
Smeaton & Son	593	0	0
Wise	588	0	0
Bamford	585	0	0
Crockett	571	0	0
Wall Bros.	563	0	0
Patman & Co.	561	0	0
Howard	539	0	0

For additional boilers and machinery at St. Luke's Workhouse, for the Guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects:—

Potter & Sons	£480	0	0
Benham & Sons	472	0	0
Frazer Bros.	398	0	0
Mason	393	0	0
May Bros.	390	0	0
Bamford	350	0	0

For Messrs. Dobson's premises, Goswell-road. Mr. F. Harger, architect:—

Stamp & Bowtle	£1,843	0	0
Hatton	1,590	0	0
Stone & Humphries	1,570	0	0
Perry & Co.	1,430	0	0
Gill	1,400	0	0
Auley	1,377	0	0

For new Board schools for the United Districts of Farlington and Waterloo Ville, Hants. Mr. George Rake, architect. Quantities supplied by Mr. H. P. Foster:—

Light	£2,085	0	0
Moore	1,983	0	0
Hayter	1,895	0	0
Flood	1,890	0	0
Stallard	1,798	0	0
Webb (accepted)	1,700	0	0
Edney	1,645	0	0
Edwards	1,487	0	0

For the erection of toll-houses, band-stand, refreshment and waiting rooms, for the New South Parade Pier, Southsea, Hants. Mr. George Rake, architect. Quantities supplied by Mr. H. P. Foster:—

Hide Bros. & Cook	£1,600	0	0
Ward	1,579	3	0
Beech	1,457	19	0
H. T. & H. Jenkins	1,412	0	0
White	1,292	0	0
Hyde	1,282	0	0

For twelve houses, South Parade, Southsea. Mr. Geo. Rake, architect:—

Burbidge	£17,629	0	0
Quick	17,470	0	0
Light	16,850	0	0
Jenkins	16,789	0	0
Larcome	15,400	0	0
Longley	14,970	0	0
Cooper	14,747	0	0
Earwaker	14,4 2	0	0

For three cottages, &c., on the Somerleyton Estate, for Sir Saville Crossley, bart. Mr. J. T. Bottle, architect:—

Rounce (accepted)	£730	0	0

For new schools and offices at Duncombe-road, Upper Holloway, in the Finsbury division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. C. W. Brook:—

Roberts	£13,623	0	0
Higgs & Hill	13,530	0	0
Williams & Son	13,347	0	0
Grover	12,944	0	0
Brass	12,909	0	0
Perry & Co.	12,853	0	0
Jerrard	12,820	0	0
Lawrance	12,790	0	0
Wall Bros.	12,772	0	0
Hobson	12,743	0	0
Rankin	12,665	0	0
Hook & Oldrey	12,534	0	0
Tongue	12,516	0	0

For new schools and offices at Wenlock-road, Hackney division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Brass	£10,552	0	0
Perry & Co.	10,416	0	0
Peto Bros.	10,161	0	0
Roberts	10,045	0	0
Pritchard	9,991	0	0
Hook & Oldrey	9,990	0	0
Boyce	9,894	0	0
Wall Bros.	9,872	0	0
Lawrance	9,716	0	0
Atherton & Latta	9,568	0	0
Grover	9,488	0	0
Cox	9,453	0	0
Kirk & Randall	9,424	0	0

For alterations to the King Harold public-house, Circus-road, Haverstock-hill, Mr. James R. Furniss, architect:—

Arnold	£597	0	0
White	543	0	0
Grimwood & Sons	528	0	0
Whitelaw	495	0	0
Edgely	448	0	0
Ryder	420	0	0
Somerville & Hill	251	0	0

For the erection of new restaurant, grill-room, &c., Queen's-road, Hastings, for Mr. Geo. Gaze. Messrs. Cross & Wells architects:—

Rodda (accepted)	£1,625	0	0

For finishings at the Hastings and St. Leonards public baths and aquarium. Messrs. Cross, Jeffery, Skiller, & Wells, architects:—

Vidler	£8,470	0	0
Hughes	7,493	0	0
Jenkins	7,350	0	0
Rodda (accepted)	7,300	0	0

For the construction of a concrete revetment for the Hastings and St. Leonards Public Baths and Aquarium Company. Messrs. Cross, Jeffery, Skiller, & Wells, architects:—

Vidler	£593	0	0
Rodda	420	0	0
Jenkins	400	0	0
Hughes	350	0	0
Didley (accepted)	330	0	0

For erecting four houses at Denmark-street, Camberwell, for Mr. J. Innes. Messrs. Adams Murphy & Putley, architects:—

Downs & Co. (accepted).

For erecting a warehouse at Bucknell-street, Oxford-street. Mr. N. S. Trebeame, architect:—

Downs & Co. (accepted).

For alterations at 22, Coleman-street, London, for Messrs. Walton & Vivian. Mr. Edwin T. Hall, architect:

Walton (accepted) £700 0 0

For new vicarage, Rolvenden, Kent, for the Rev. J. W. Rumsey, vicar. Messrs. Sydney & Archibald Smith, architects:—

				Allowed for Old Materials.		
Reeves	£1,945	0	0	£46	0	0
Russell	1,936	18	3	76	0	0
Martin (too late)	1,918	0	0	—		
Foad	1,880	0	0	53	0	0
Comport	1,777	0	0	100	0	0
Bingham & Cloke	1,729	0	0	100	0	0

Drainage, East Southsea.—For contract No. 40, Storm Drainage, East Southsea, for the Urban Sanitary Authority of the borough of Portsmouth, Mr. T. B. Hayter's schedule of prices was accepted; also for contract No. 41, Eastern Outfall Sewer.

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The Builder.

VOL. XXXVII. No. 1883. SATURDAY, JUNE 21, 1879.

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The Brazen Gates from Ballawat.

THE PHŒNICIAN LINK.

IF we are to regard the period of the middle Assyrian Empire (B.C. 900-721) as the iron age of that nation, we certainly must give to that sombre material a rich damascene of culture. The empire which the three Assyrian Cæsars carved with their swords may not have shone with all the brilliant gilt of literary and scientific culture, or with that lavish patronage of the arts which marked the Augustan age of the Empire (B.C. 721-625), but it certainly has the merit of being a period when from the studios of Nineveh there went forth to many lands a message of beauty, which oft-times met with a response, and of which this day there remains a faint tingling. Although essentially the creation of the war, and ruled and regulated by prompt sinued military action, this middle empire without its conquests in the more peace- l of art, and side by side with that triple of Egypt, Phœnicia, and Assyria, as n the polity of western Asia, there was in the studios of Nineveh a trinity of ich spread its doctrines far beyond the f its sterner colleague.

ontact between the three art-schools of in the studios and workshops of Assyria, ook place during the middle empire, was ans of spreading, through one of the s of the Triumvirate, the practical Phœnician, the first germs of art West, which in after-time bore rich when tended and nurtured by those new not their origin. The appearance tableau of the surrender of Tyre and rchant princes of the Phœnicians to nesar III., which we described in our notice of these rich monuments,* forms, ere, an initial-plate to a new chapter in mportant as it is as illustrating the his- the empire of Assyria, and recording the h of the conqueror Shalmanesar III., it we pointed out, an interest beyond this ation,—a plate illustrative of the great of civilisation and art. One by one, with labour and research, the students of and archæology are gathering from the aps of the past the links of that golden chain which bound the Persian Gulf to the Piræus. That thin waving thread of the true metal of history which has to be traced amid a dark and tattered robe of fiction and legend is gradually being drawn forth to guide us to the home of art. The historic record of the great Assyrian conqueror which Mr. Rassam has so fortunately rescued from the grave of Ballawat has come to us, not only as a messenger and guide along the tortuous paths of Oriental history twenty-seven centuries ago, but it also acts as our Mentor along the pathway edged by this golden thread of art and culture, and enables us to track its glittering web through the tangled skein of Assyrian and Egyptian civilisation.

The fall of the early empire, which followed shortly upon the death of Tiglath-Pilieser I. (B.C. 1100), resulted, as we pointed out, in the rise of an important confederation of semi-allied states on the land between the Euphrates and the Western Sea. This league, which formed, as it were, the barrier between the Assyrians and the Phœnicians, is not, as its records prove, to be regarded as a confederation of barbarian tribes, who, like the Goths and Huns, delayed the spread of civilisation for awhile. The discoveries at Carchemish, at Ibreez in Karmania, and other places which we have described in our notice of Syrian archæology, show that we must regard this confederation as no mean factor in the Western spread of civilisation and culture. It was the overthrow of this confederation and the opening of the seaboard to the Assyrian host that we see recorded in the inscriptions and on the monuments of Shalmanesar and his father. But the very wars which accomplished this task,—the battles of Karkar, and those around Damascus and other cities of Syria, which broke this league,—were in themselves productive of great results in the peaceful realms of art and culture. The sixth year of the reign of Shalmanesar (B.C. 854) saw the overthrow of the Syrian league, and from the stele erected at Kurkh, near Diarbeker, on the Tigris, we gain the knowledge of the composition of the army of the allies, while at the same time it enables us to see the ethnic composition of the population of Syria in the ninth century before the Christian era.

List of Allied Troops (WAI. III., pl. viii., *lines* 90-95).

King.	State.	Chariots.	Tents.	Men.
Benhadad	Damascus ...	12,000 ...	12,000 ...	20,000
Irkuleni	Hamath	700 ...	700 ...	10,000
Ahab	Israel	2,000 ...	. ...	10,000
,, ...	Geim	... ...	... ...	500
,, ...	Egypt	... ...	... ...	1,000
,, ...	Irkanta	10 ...	... ...	10,000
Matinu-Bahal ...	Usántai	... ...	... ...	20
Adoni-Bahal	Siana	30 ...	... ...	10,000
Gindubuk	Arabia	... 1,000 camels		...
Bâsha, son of Rehûb	Amon	... ...	... ...	...
		14,700	12,700	61,700

The composition of this host clearly indicates the polity of Syria at the time. The three large kingdoms of Damascus, Hamath, and Israel, the latter still retaining some of the power gained during the zenith period of the reign of Solomon, formed the leaders of the confederation. In addition to these states we find a number of tribes sending contingents of men. The people of Arvad or Ardus, and the tribe of the Sizanians, who have Phœnician rulers, but the latter do not appear to be of Semitic origin. The tribes of the Irkantians, the Usantians also, only figure in this confederation, and afterwards vanish from the page. Yet these clans mustered to the number of some twenty thousand men, and must have considerably helped the host which faced the army of Shalmanesar on the banks of the Arunta (Orontes) in B.C. 854. The eastern Hittite state of Carchemish on the Euphrates had been reduced by the battles of the previous reign, and so does not figure in this confederation, neither does Tyre, which probably reserved a cautious neutrality. Turning now to the war panorama of Shalmanesar, we look for illustrative tableaux of this great campaign, and we find much of interest. Starting from Nineveh in the month Iyar (April) of the year B.C. 854, the Assyrian king took the route for Carchemish, where the Hittite king awaited his coming to render tribute and service, and in the brazen plates before us we have a representation of this scene. It resembles in many respects the tributary procession so often represented on this and other monuments. The offerings of Sangara, the ruler of the city, are received by the king, and the usual deputation headed by the military officials who introduce the tribute-bearers. From the inscriptions of Shalmanesar we learn the nature of this tribute, which was poured out before the conqueror king. There were 300 talents of gold, 100 talents of silver, 300 talents of iron, 1,000 lumps of copper, possibly plates to be utilised in the making of these gates, 1,000 woven robes, the dresses of his daughters, 20 talents of blue stone, in lapis-lazuli, 500 oxen, and 500 sheep. Other tribute lists give ivory, both plain and carved, skins of animals, and other objects, all showing that Carchemish, the Kar-Gamis of the Assyrian inscriptions, had become a wealthy emporium on one of the main arteries of Western Asia. It formed, as its position indicates, the point of meeting of at least three trade routes, and hence it rose into commercial importance. From Carchemish the march was continued to Khalman, or Khilbun, the modern Aleppo, which had long been a city of importance in Syria. Here the advancing hosts of Assyria halted, and the warrior king, hoping to gain the favour of the god of the Syrians, offered victims to the god Bin or Rimmon in his shrine at Khalman. Of the ceremonies at Khalman, the receipt of the tribute of its ruler, and of the religious rites performed in the temples of the city, the royal scrolls afford us no illustration, but they have preserved on record the sketch by an accompanying artist of an interesting scene which occurred on the march towards the front. This is the surrender of "the city of Khazaz," a site which is evidently to be identified with the modern village of Azaz or Anzaz, a place

* See p. 532, *ante*.

visited by Niebuhr, and also by Col. Chesney when engaged in the Tigro-Euphrates survey. This city was situated a short distance from the east bank of the river Aprie, a river which has to this day preserved its name in its designation of the Afrin or Ifrin, and lay evidently on the commercial route between Tyre, Khilbun (Aleppo) Carchemish, and Nineveh. In the reign of Shalmanesar's father Assur-nazir-pal, it had been besieged and taken after a gallant resistance. It was then ruled by a monarch named Dibbarna, and its tribute offerings indicate it to have been a city of great wealth. "To Khazas, the city of Dibbarna of the Palinai I approached: gold, silver, and woven and dyed dresses his tribute I received." Such is Assur-nazir-pal's description of his visit and the tribute of the city. In the plate which the artist of Shalmanesar has produced for us we see the surrender of the city to Shalmanesar in B.C. 854. The artist in the scroll before us has evidently sought to convey at least two incidents in the attack on Khazaz,—the siege, and the surrender after the defeat of the forces of Dibbarna. Before the city the Assyrians have built a circular camp, and in the plain between this camp and the city the battle rages, and is vividly depicted by the Assyrian artist. Although a portion of the city has been fired by the darts of the Assyrians, a gallant resistance is made by the Syrian foes, who push down the scaling-ladders of the besiegers and hurl them from the walls. The Assyrian assault is led by the picked body of archers, who advance firing, under cover of large square shields, held by their attendant bearers. In another part of the field we see a series of single combats between Syrian and Assyrian soldiers. Chariots and horses bear down upon the Syrians, and victory rests with the invaders.

Defeated, their city in flames, there is nothing left for the subjects of Dibbarna but surrender to their strong foe. And in another portion of the scroll we see the submission of Dibbarna and his people to the conqueror, Shalmanesar. The artist in depicting the surrender of this city of Khazaz has shown the long line of captives being marshalled into the presence of the great king. The line is headed by the defeated monarch and his family, who are attended by the usual deputation of civil and military officials of the victor king. With humble aspect, dreading his wrath, they come delicately before the victor who stands attended by a brilliant staff of officials, soldiers, and priests. The male captives, who follow the Syrian monarch are nude, and have their hands tied behind them by cords, as are represented the captives in the Egyptian inscriptions. The women and children follow, and the rear is brought up by the Assyrian soldiers carrying spoil and driving the cattle. The faces of the captives in this scroll are most carefully treated, and indicate a marked Semitic type,—the curved nose, the pointed beard, and the arrangement of the hair, all showing them to be a Semitic race. The representation of one child, who follows his mother, is most truthful, and evinces more feeling and tone than the majority of representations in this series. There is a strong indication of careful study in this and other plates of the features of the nations represented. From Khazaz the army moved on across the Aprie (Afrin) in the direction of Karkar, a city under the rule of Irkhuleni, king of Hamath. In the course of this short march the Assyrian armies captured two cities of Irkhuleni, and then arrived under the walls of Karkar. To these warlike deeds of the Assyrian king in the Hittite campaign there is allotted one whole scroll in two friezes, the upper band of sculptures representing the siege and capture of Ada and Parga, two Hittite cities, and the lower the surrender of Karkar. In the upper frieze the Assyrian camp is represented as pitched between the two cities which are being besieged simultaneously. The camp here represented is square or oblong in shape, insected by a broad street, with a gateway at each end. This arrangement resembles much the Roman camp, with the broad *principia* and the two *portæ principalis, dextra* and *sinistra*. The Roman Prætorium has its equivalent in the royal quarter of the camp, which stood on the northern side of the *principia*, adjoining in this example the *porta sinistra*. Here we see the royal pavilion, now empty but still guarded by a spear-man as sentry. The pavilion is of the same type as that always met with on the monuments of this period, being a canopy supported upon four posts or columns, decorated with figures of the Syrian goat. This seems, as it were, to have been the crest of the kings of the middle empire, as it occurs often on the arms and dresses of the king. In another portion of the Prætorium we see the royal *che* engaged in preparing the king's meal. A small portable cuisine stands before him, and an array of metal pots and pans, filled, no doubt, with dainty foods for his lord and master. With a small fan or flap he blows the smouldering embers in a brazier into a ruddy glow, and watches the cooking of the objects before him. The lower or southern portion, adjoining the *porta decumana*, is occupied by the commissariat department, who may be seen engaged in the preparation of the bread for the soldiers' meal. One man is busy grinding corn with a pair of hand stones,—while another, from a sack or corn-bin, is handing him the grain,—he in his turn passing the flour prepared to a companion, who mixes the dough in a trough or basin. The space at the command of the sculptor in these plates did not allow of his depicting all the varied scenes of camp-life with the armies of Assyria, but in his examples before us the artist has certainly been most judicious in his selection of representative scenes. In the example in the lower tier, representing the camp before Karkar, he has shown an almost similar scene, only here the bread for the troops has been baked, and two soldiers are engaged in piling into a great heap the flat hearth-baked cakes. Mr. Rassam brought from Nimród, during this last expedition, an interesting fragment of sculpture, which represents a bivouac of Assyrian soldiers round the camp-fire baking in the embers the flat burnacks or cakes, similar to those made by most of the Eastern nations in the present day. Of the cities besieged by the Assyrians, and here pictured by the royal artist, Parga is the larger and stronger, and evidently gave the Assyrians some trouble, as it necessitated the bringing to the front of a siege train, as here represented by a huge battering-ram of peculiar construction. This engine of war, which is pushed up against the wall of the beleaguered city, is in the shape of a long low wagon, mounted on four wheels. It would appear to be composed of large plates of metal riveted together. The front portion is elevated into a kind of breast-work, and to this is riveted the ram, which appears to consist of a large nozzle of metal, terminating not as most examples, in the head of a ram, but in that of a boar. From the construction of this example, which differs entirely from any of the specimens given on the sculptures, it would appear that this plated projection was a cover for a ram which was worked by men covered by the breastwork. In this cumbrous engine, which has been pushed up against the walls of the city, are six picked archers, who, from this *point d'avantage*, are firing on the besieged, being protected from the return fire by large square shields of leather, held above the breast-work of the car. Covered by their fire a man is guiding with a chain the blows of the engine which batters the walls. Upon the ramparts of the Hittite city archers stand and pour down a heavy fire on the besiegers, whom the artist has represented as attacking the city on either side. The siege on the right hand is carried on by picked bodies of the royal troops, archers advance to the walls, and charioteers scour the plain, breaking the ranks of the opposing Syrians, and trampling beneath their horses' hoofs the dying and dead. The siege of Ada, which occupies the right-hand portion of this scroll, is apparently conducted by the monarch in person. In his royal chariot, accompanied by his armour-bearer and the driver of his chariot, he heads the chariot charge, which bears down the Syrians. Scaling-ladders are against the walls, and under the cover of a heavy fire of the infantry of the line, the bowmen of Assur, the storming party charge the ramparts. In the lower tier of this scroll we see represented the capitulation of the city of Karkar (Arcer) another of the strongholds of Irkhuleni, the king of Hamath. This scene has little interest beyond its historic value, the scene depicted by the artist being a mere repetition of the oft-repeated tribute-scenes.

Ada, Parga, and Karkar had formed bases upon which the gradually retreating Syrians had fallen back, as the hosts of Shalmanesar, only making such opposition as might enable them to gather their forces on the banks of the Orontes, in the rear of Karkar, for the last great effort against the invaders. Karkar may possibly be identified with the village of Kalkis, or Karkis, a short distance from the east bank of the Orontes, and here took place the b which broke for ever the Syrian league which forms a turning-point in the hist the tenth century before the Christian er it is thus described by the Assyrian histori

"With the mighty powers [hands] Assur my lord had given me.

With the mighty weapons which the hero * going before me had furnished I f with them.

From Karkar to Kirzan their defeat I a plished: 14,500 of the soldiers, warriors, my weapons I smote.

Like Rimmon,† a deluge over them I p out; their wounded the face of the land I c to fill.

The whole of their army with my weap struck down; with dead bodies the I covered in that district, and to a des turned it.

Their spirits I crushed and broke. The Orontes with their bodies I choked."

Such is the Assyrian historian's acco this great victory of the Assyrians ove gathering of the clans of the Kbita, an fame of the arms of Assyria spread fa wide over the West, and the distant Co Egypt heard with trembling the news o victory, which opened the Phœnicia-Egy highway to the armies of Assur.

With a rich spoil gathered from the ca the defeated allies, with all the offerings c nations who hastened now to render him ho and with the tributes gathered on the marc Assyrian conqueror returned to Nineveh, to render to the gods, his protectors, the ho of a faithful devotee.

But the glories of this victory were not m those of a military conquest, for by this battle Shalmanesar had completed that task commenced by his grandfather, Ti Adar (B.C. 900), continued by his father, A nazir-pal, and now completed by himself, welding together of the links in the golden of culture and art which coupled the ma Phœnicia to the Athens of Western Asia. task now accomplished had soon produc results in the busy tide of messengers of merce, art, and culture, who swept alon now uninterrupted highway, bearing to d lands messages from the studios of Nin Long ago the hardy sons of the sea, the going Phoinike, had forged for themselves which bound them to the shores of d Greece, and it was this link which was n joined to the Assyrio-Phœnician one, a severence of some three centuries. It was Phœnicians who had borne to the Greek alphabet of letters which the latter had ad and moulded to a language peculiarly their This very alphabet, which, in its modified has handed down to us the glories of the G of old, had been in far remote times o modified, and adopted by those missionari culture from a language totally different their own. That instinct of judicious sele and still more judicious modification of t ventions of others to further his own ends, w his forefathers, on the shores of the Pa Gulf, had shown many centuries before, in adoption of the cuneiform syllabary from Akkadian aborigines of Babylonia, had been abandoned by the cunning Phœni The letters, the arts, the religion, the m stories and legends of nations with whom came in contact were all fish to his net; were all capable of his adapting, modifying rendering suitable to the requirements of customers on the shores of the great sea. his ancestors had borne from the low home on the shores of the Persian Gulf tha rudiments of that alphabet which was remote parent of the one which now tran our article to our readers, so had he gath modified, blended, and rendered suitable t wants the art alphabets of Assyria and Eg The works which he produced under this sy of adaptation he bore to Greece, and t he laid the first grains of seed whic after-time bore rich food when nurtured tended in the fertile soil of the Hellenic m In the epic of Homer, the composition of w we may now with some degree of certa place between the time of the fall of the e and the rise of the middle Assyrian em gives the precedence in the priesthood of art mission to the Sidonians, who figure the πολυδαιδαλοι, or "highly ornamental w

* The war god, Nergal, from whose temple the bu gates come.

† The Assyrian Jupiter Tonans.

From Sidon Paris had borne the embroidered robes in the store of pe. The Homeric writings bring before e cunningly-fashioned silver and bronze of the Sidonioi,—and this city has s the precedence over its sister Tyre. being the case, it naturally indicates that state of things existed in a period pre- to B.C. 900; that is, the rise of the middle ian empire,—a time when Tyre, if not precedence of Sidon, was certainly on a ith it. There is a statement in the writing osephus which places the foundation of as 240 years before the dedication of on's temple. That would give us a date ut the middle of the twelfth century B.C., riod certainly not suitable to the founda- ut very applicable to its rise into promi- as the chief export station from Western The theory of Mouvers, which places the ation of Sidon as not later than the sixteenth y before our era, certainly receives some strongest support from the Babylonian nents, as we may certainly regard it as those colonies the offshoots of the inva- f Syria by the armies of the Semitic ties from Babylonia. If, therefore, we regard the Homeric times of Greece as nporary with the Sidonian prominence in icia, we may place it in the latter part of welfth or the beginning of the eleventh y before the Christian era,—a period the early Assyrian empire was at its , and when there was an unbroken link en the Assyrian capital, Assur, and the of Phœnicia, and consequently a free ission of art and culture. This link was on the fall of the early empire, and was e-united, some two centuries after, by mpaigns which we have just described. , therefore, as we do, how little of origin- here was in the Phœnician,—how he was broker in the world of art,—we may find ese monuments which are now before he middle empire some comparisons with rt of Homeric Greece. Here, on the old of our investigations we are met by culty in the lack of any remains of Greek hich can be ascribed to Homeric times. he exception of the Lion Gate at Mycenæ me of the Schliemann treasure, there is a single monument which can be regarded tem poraneous with the days of Homer. to this one monument, the Lion Gate, rta nly might find a counterpart in an art in the lion group which adorns abbard of the sword of Assur-nazir-pal Nimroud,* or the fountain at Bavian. here is one *chef d'œuvre* of Homeric art described, rich in its poetic feeling, and t for one moment to be regarded as n of the poet's brain. In describing the of Achilles, Homer had before him some object on which to found his poem. It his grand Homeric record that we find a te and unexpected parallel in the brazen at Ballawat. These brazen gates, which erected in the temple at Ballawat, within t ten years after the battle of Karkar, do ertainly fall without the circle of art- rison; and even if such were the case, it ent that similar gates had been erected by n-Pilieser I. (B.C. 1100); and, therefore, we easonably compare them and the other monuments of the period with this *m opus* of Homeric art.

t, as to the manufacture. The gates of anesar III. are entirely of beaten bronze, ted in *repoussé* work ranged in parallel divided by borders decorated with ro- or stars. The only tools, therefore, in use be those which had been at the service of the ric artist,—the hammer, pincers, and the or bed, on which the relievi were beaten n point of workmanship we may well re them as the shield is described,—

> "With a bright and starry border,
> Three-fold thick set round about,
> Downward hung its belt of silver,
> Five the layers of the shield,
> And with skilful hand he sculptured
> Rare devices o'er its field."†

do not as yet meet with any shields of which will coincide with this description h by Homer in the monuments of Assyria, e the examples on the stone sculptures by the Assyrian king or his warriors of sponding character; but we have not to the chain now connecting Phœnicia and its customers with Nineveh far before we meet examples. Among the treasures from Curium, in Cyprus, found by Cesnola,* is a portion of a shield, which has a frieze representing a lion-hunt, and showing that such a *repoussé* mode of decoration in concentric bands was applied to shields by the Phœnician traders who supplied Cyprian warriors. Other examples which will support this theory are to be found in the shields found in the tombs at Veii and Palestrina, where we find the arrangement in concentric bands, with stars or studs as decoration.† The monuments from Ballawat being essentially connected with war and the chase, we shall not expect to find parallels to all the scenes on the shield. This is not to be expected, as in the latter we deal with a distinct civilisation. Still, there is sufficient to be gathered from the former to show that Assyria, with the aid of the modifying Phœnician trader, could, and possibly did, produce such a work of art.

In the sieges of Ada and Parga, and the surrender of Karkar, we find every element of the description of the second Homeric city on the shield:—

> "But before the second city
> Bright in arms two armies lay,
> Evil choice one gave the other,
> Either half the goods to pay
> In that smiling town, or see it
> Given to fire or slaughter. They
> Brook'd it not, but arm'd for ambush.
> Wives beloved and stripling hands
> Guard the walls: off march'd the bands."

In the example of the siege of Ada on the plate described before we find almost every requisite for the scene. The Hittite host has evidently marched forth to wait for the advancing invader in some selected spot near the city. The wives and children, together with the aged who are past the power to wield the sword in defence of the homes and hearths, man the ramparts, and eagerly scan the plain and distant battle-field. But the Assyrians are equally eager for the combat, and here resumes the contrast:—

> "But the host before the ramparts
> Heard the bellowing din from far;
> Mounted each man on his chariot,
> Drove the prancing steeds to war.
> Quick they came, they closed in battle,
> Ranged along the river's bank,
> And they hurl'd the sharp-tipp'd lances,
> Each athwart the other's rank."

Surely this scene and the description of the battle which follows may well be compared with the scenes at and preceding the battle of Karkar. The chariot charge, the strife and tumult, the fury of horrid war, are all to be gathered from the scenes depicted on these brazen scrolls, when placed side by side with the inscriptions which they illustrate. As an example of the value of the Phœnicio-Grecian links which, as it were, show us transition stages, we may notice a silver patera from Amathus, discovered by Gen. Cesnola, pl. xix. Here, treated in the round, we have an almost similar scene to those depicted on the bronze scroll representing the final stage in the Hittite campaign. The Phœnician adapter has blended both Egyptian and Assyrian art in that curious style so often met with in his wares. In this example we see a walled city, defended by armed hosts on the ramparts, against a besieging army. As in the Ballawat examples, scaling-ladders are against the walls, and the attacking host is led by archers, and supported by mounted chariot-chargers. Spearmen and archers hurl their sharp-tipped ("copper tipped") lances at the defenders, and attempt to carry the ramparts by storm. This patera, complex and confused as its decoration is, is evidently an adaptation of the scenes pictured on the Ballawat gates.

Space will not permit us in this notice of these priceless monuments to trace more of the examples; but sufficient has been done to prove that not only do these brazen gates come to us from the grave of Ballawat with a message of the history of a buried empire, but they also come to us with a rich story of art, and, when studied as they deserve, they will truly furnish us with a new chapter as a preface to Homeric art.

In dealing with this Phœnician and Syrian question we have but broached one vein of the rich mine of wealth to which these scrolls prove the "open, sesame!" In a future notice, when dealing with other features of these treasures, we hope to show that not only do they connect us with the cunning traders of Tyre, but they also bring together in the studios of Nineveh and Calah a trinity of art by establishing a close connexion with the æsthetic school of the Nile valley.

ard, Mon. Nin., series i., plate 35.
lstone, *Contemporary Review*, vol. xxiii., 1874.

* Cesnola, pl. xx.
† Archæologia, vol. xli., p. 189.

"ON THE INFLUENCE OF AUTHORITY IN MATTERS OF—— "

"OPINION" is the word which completes the title of the late Sir Cornewall Lewis's celebrated work; let us substitute "Architectural Taste," and it may not be inopportune to develop some considerations that illustrate the theme so modified.

A recent letter of Mr. Oldrid Scott to the *Times* in reference to certain well-ventilated controversies respecting the restorations at the Cathedral of St. Albans incidentally suggests the discussion of principles which we may deal with as independently as though we were no less uninformed about the parties that have been committed to the battle of St. Albans, than the Duke of Wellington is said to have been as to the nationality of the combatants at the battle at Towton. This letter, dated May 20, was chiefly concerned with a question respecting painted ceilings, but it included the following paragraph:—

"I am sorry that Mr. Marks should call our new roof 'an uncouth monster.' In one sense the cathedral itself is a monster, and its covering must be in proportion; but if this very straightforward, high-pitched roof, covered with respectable lead, is, in his opinion, 'uncouth,' so must also be those at Westminster, at Salisbury, at Lincoln; so that, as far as this is concerned, the committee and public may safely retain their peace of mind." The equanimity of the committee,—of any committee,—is in its own keeping and usually well taken care of, but that of the multitudinous and more composite public cannot be taken for granted always precisely on the same grounds. There is a public within the public that will not even shrink from startling the composure of authority, by demurring to the conclusiveness of the most venerated and even venerable precedents when cited indiscriminately. Students of art and architecture will have the conviction that, if worthy students, they,—

> "Have right ill deserved
> The scourge of greatness to be used on them,
> And that same greatness, too, which their own"

conscientious and intelligent appreciation—

> "Hath holp to make so portly."

One at least will not scruple to say that he recognises and recoils from offensive "uncouthness" in the external visible coverings of every one of the examples given, and is convinced that the original architects, at least, could have done better "had they taken more pains." Let us take, in reply to the challenge, and for the sake of varied illustration, the case of Salisbury Cathedral. Here we have the high-pitched roof sufficiently pronounced, and we may also allow it to be "straightforward," if assured that the term does not cover an ambiguity. The time-honoured reason for the existence of the steep pitch,—its aptitude for throwing off snow in a wintry climate,—is unavailable here, for the snow would not be thrown off, but only down into the gutter, where a parapet retains it just where not wanted, dangerously at an organic junction, and on the top of the wall. This combination of parapet and high-pitched roof is so constantly recurring in connexion with the very noblest Gothic architecture, that, by inveterate custom and familiarity, good sense is apt to be befooled and good taste vitiated; and even the brave and the right-minded are sometimes disposed to tenderly palliate the inconsistency, or, what is still more unfortunate, become unconscious of it. It is so constantly before our eyes that we need not be surprised if it is too often accepted at once; and the intermediate stages of enduring first and then pitying are omitted before it is enthusiastically embraced. The good old honest, in the best sense "straightforward," Norman corbel-table was unfortunately deserted when it should have been developed, and architecture, turning its back upon itself, put the cornice virtually within.

But these roofs may be taxed as "uncouth" because inconsequent in yet another respect,—as destitute of any expressed and definite relation to the buttresses. It does not seem difficult to show that they are bound to declare such a relation. A buttress may no doubt be fairly employed merely to stiffen

a wall from interval to interval, and then its breadth would naturally and appropriately exceed its projection. Some very good Gothic architecture, indeed, is not to be absolved from the incongruity (such is the case with St. Joseph's Chapel at Glastonbury) of assigning this proportion to buttresses proper,—to those projections which have the function of resisting the thrust of a vault, a thrust which acts at right angles to the enclosing wall. In the first case, of what we may call a pilaster-buttress, the true function of the member may doubtless be masked, and if the openings are of inconsiderable span, we are not bound, it may be said, to assume that the interior is vaulted and in need of assistance; and we may even indulgently justify the flat buttress as intended to resist pressure from arched openings in the wall-curtain that abut in the direction of the flatness. But these palliations do not avail when, from the magnitude of the structure, and indeed our necessary familiarity with the interior, the fact of a considerable interior vault is "gross, open, and palpable"; and matters become urgent indeed when, as at Salisbury, very important projecting buttresses are associated with and dominate exceptional and subordinate flat buttresses. These superior members, then, boldly and conspicuously assert their summons to a special function as they rise to the level of the parapet,—to the level at which, if anywhere, that function is most responsibly called upon and might be most expressively pronounced, but where it suddenly is lost sight of entirely,—passes beyond ken. For anything that is intimated, the projecting buttresses of the north transept at Salisbury exhaust their usefulness with very unnecessary expenditure of cost and material, and with falsely-disposed material, in supporting the wall which is perforated with windows, but not therefore weak enough to need such help, and in any case not help in this direction.

These buttresses have manifestly no individual relation to the roof, which has every appearance of resting, as indeed it does, a dead weight and lid-like upon the outer walls, or at least upon the inner half of them which is not occupied by the gutter. But all the more fitting were it that the true structural dependence should be allowed a certain expression. The decoration of construction has been much insisted upon as the characteristic of Gothic architecture; but the appropriately frank expression of the main responsibilities of construction is something that must be provided for before the more purely decorative treatment supervenes. Let it be said, then, that such ranks of buttresses which do not carry an indication of the point,—of any point,—at which the arch that they are bound to accommodate takes advantage of their services, must wear something of the aspect of labourers sturdy enough, but leaning idle against a wall. The expression desiderated here is provided in the first bay north-west of the central tower of Salisbury by the flying buttress; but this only makes the absence of some equivalent expression in the other cases more salient to observation. It is unnecessary to remark that the compound buttress in the north-west angle has no appearance worthy of the true dignity of its function, as subserving the stability of the central tower, and is, in fact, an eyesore, which damages unfortunately a point of view most critical for full appreciation of the majestic dignity of the tower and spire.

But to return to the subject of the roof, and its affirmed uncouthness, let us consent to accept the relation of external buttresses and internal vaulting arch to be sufficiently made out. Even so there will among those who so far are indulgent be some who still are offended at a certain uncouthness in the compartments receiving no acknowledgment whatever on the high-pitched and most conspicuous roof. It may be said that in the framing of such a roof as we have admitted, a structural obligation for such distinction does not exist. The office of the buttress is concluded when the thrust of the arch of the vaulted roof is provided for; and the protective covering, the roof shield, exerts no other pressure than by equally distributed downpress. This may be so, though it were not unnatural that the timber-work, the carpentry of a roof-shield of such extent, should be strengthened uniformly from point to point, and moreover that the bearing of these weightier divisions should be utilised, if not for their own advantage, to help the resisting power of the buttresses, by coinciding with them. In any case, the appearance of such coincidence would be expressive, on the same principle as a pinnacle appeals to our consciousness that weight in such a position favours stability, *pondus addit robur*. But whether any true structural dependence comes into question or not, it would be but graceful, if we may be allowed so to express ourselves, for the roof-shield to exhibit some sympathetic recognition of the compartments that it protects. If we look to the organic world for a parallel,—and the justification of architecture is constantly to be sought in such parallels as an ultimate appeal,—we might say that the relation in question is much the same as that between skin and skeleton in the animal creation. By arrangement of stripes or spots or dappled lines we constantly observe how the most sturdy and most delicate adjustments of the interior receive an harmonious visible response without. Nay, our criticism shall be even carried further, and so far from being weakened thereby, will be rather clenched and confirmed. Without hesitation we challenge as uncouth the manner in which the high-pitched roofs of the nave and transept are allowed to bolt against the central tower. As this is managed, there is an absence of any expression externally of the important fact that the tower does not grow up solid from the foundation, but is pierced by wide and lofty arches, north and south and east and west. Critics are fortunately not bound to suggest the alternative treatment that would fully correct the treatment which they may most decisively convict as faulty; and if they indulge themselves with suggestions, it is always on the understanding that they are confessedly at the mercy of the first objector. As the critic is advised at present, and under provocation of a challenge, the conviction is not to be suppressed, that if a cathedral roof acknowledged, however moderately and modestly, the interior divisions of the bays as answerable to the buttresses, a more pronounced marking at the meeting with the tower might be easily and elegantly designed, with the effect that it would be spontaneously accepted as a speaking symbol of an arch beneath. "Like all Wren's steeples," says Fergusson, "that of Bow Church stands well on the ground; for he was never guilty of the absurdity of placing his spires astride on the portico or thrusting them through the roof." The observation is most appropriate, and we well know the architectural hybrids on which it designedly reflects: but the criticism might be understood as not unfairly glancing to strike even the management of the spire of Salisbury, which, to all appearance, thrusts itself up through the roof, and no otherwise than if it were intended to contradict the suggestion that it must needs be perforated by wide-spaced and lofty openings below. It was in obedience to a true feeling for organic combination that the Mediæval architects resolved to bring the lofty and slender campanile into intimate union with the cathedral; the aspiring character of Gothic, of Pointed architecture, lent itself to the adventurous enterprise, if it did not invite it in the first instance. When western towers were applied, there was scarcely an opportunity for the incongruous to intrude; but it is much if we can say that the last success was ever achieved in designing the noblest feature of all, the tower and spire over the crossing, in such a manner as to effect the combination without "uncouthness." It is something, no doubt, that at the re-entering angles of nave and transepts we may usually follow the continued vertical line of the angle of the central tower, and are thus put in possession of its relation to ultimate foundation,—a relation which is somewhat too much masked in the case of the dome of St. Paul's; but still we are ever left, and perhaps on this account the more, to correct, by appeal to memory or the logic of common sense, the mistake which the architectural language, on which we have a right to rely, would lead us into, that the tower below the cathedral roof was unpierced to the foundation.

It is rather hard to be driven to even seem to carp at any drawback to the perfection of noble buildings which inspire such genuine admiration, such pure and elevating enjoyment, and which it must ever be a worthy endeavour of architectural genius to emulate and rival;

> "But let us ponder boldly; 'tis a base
> Abandonment of reason to desert
> Our right of thought;"

and it will be ill for the world,—as ill architecturally as morally,—when the lapses and negligences and shortcomings of Mediæval or of other genius,—and such are the liabilities of genius, however lofty,—shall be allowed wi[th] question as equal in authority to whatev[er] amples it has set of what at once was br[ave] and best. But, perhaps, after all, we mo[st] shall betray less poverty of spirit in a bi[ld] repugnance to recognising a mistake ma[de] the Mediævals than in considering it neces[sary] to seek an apology for our own most worthy [ori]nality in a Mediæval precedent. What is [to] the limit of slavish imitation,—*servile* doc[trine] duly translate the *servum pecus* of Horac[e]: we are to adopt our forefathers' sins wi[th]out any hesitation whatever,—with alacrity,—[or] hesitate, shivering, on the brink of a virtue[,] we can be quite sure that there is no merit[,] originality in the venture, and that we [have] been certainly forestalled in an examp[le] courageous conscientiousness? By the m[ost] coincidence an illustration offers itself to [us] the recently-published Lectures of Sir G[eorge] Scott. It occurs in his remarks on [St. P]"certainly rather complicated" expedie[nt] providing a cone of brickwork interm[ediate] between his inner and outer domes of St. [Paul's] to carry the lantern. The principle, he obs[erves] had been acted upon ages before at St. M[ark's] at Venice, though there, indeed, not onl[y] external dome, but the lantern with its [buttre]ports are all of timber. He proceeds,—"*[I] this Mediæval precedent before us I hardly [think] we need be so squeamish* about the exp[edient] being artificial. We constantly find double [roof]ings to our ancient churches, the vault to b[e] within and the roof without," &c. "I [can]defy an architect now designing a dom[e] experiencing these two difficulties:—(1) [the] artistic difficulty of making the same dom[e] well from within and without; and (2) [the] constructive difficulty of balancing a stee[ple] the top of his dome,—to resist the temp[ta]presented by this simple expedient; s[o] *more so when conscious of having for it a Me[dia]precedent.*"

Now, if an architectural purpose is admi[ra]worthy,—if an expedient which is effectiv[e] simple is further admitted to be the only [ex]dient hitherto contrived or imaginable tha[t] be effective, it is hard, indeed, if a m[an] architect must be liable to qualms of cons[cience] unless he can quiet them by the anodyn[e] precedent, though it may be no nearer [to] own conception than the architecture [of] Mark's is to Early Decorated, or a fram[e] of timber to a brickwork cone.

Considering how vast an accumulati[on] architectural examples and precedents the[re] is now provided with, and with which stu[dy] must be and cannot help being acquain[ted] will be sometimes as difficult for the mo[st] ventive to distinguish between original o[r] tions and merely revived recollections, as f[or] non-inventive to keep their hands from pi[l]—we had almost said, and stealing,—mat[ter] which, with a little spoiling,—to borrow [a] which Sheridan himself stole, but took ca[re] to spoil,—will pass for their own. The [only] need is there that the fullest play shou[ld] given to that faculty of fusing and recastin[g] ancient materials that must and will be [em]ployed, into forms and arrangements whic[h] truly in harmony with modern environ[ment] The world is now assisting, in the French [way] at a revival of the style, or at least the ma[in] that it seems is to be called Jacobean. [The] enthusiasm for the secular employment of G[ood] is declared to be dying out, and by the tin[e] have before us the completed display of [all] of its most extensive efforts, may well be co[nsi]on as dead. Let us hope that its succ[ess], however long or short its reign, will not i[mpo]upon inflicting, on a too long-suffering ge[ne]tion, every variety of inconvenience and [un]couthness that was inflicted upon any of [our] ungracefully and ill-lodged ancestors a cen[tury] or two ago.

Proposed Metropolitan Medical Asso[ci]tion.—It is being urged by some well-kn[own] men that the formation of provident dispens[aries] in various parts of London, as a means of b[ring]ing immediate medical relief within the r[each] of all classes, and easing the overburth[ened] hospitals, is highly desirable, and that a ge[ne]conference of all interested in the que[stion] should be called at an early date to conside[r] expediency of establishing, on a broad and [com]prehensive basis, a central association for [the] promotion and encouragement of the provi[sion] medical system throughout the metropolis; conference will be held at the Cannon-st[reet] Hotel, on this Saturday, the 21st of June.

YORK HOUSE, STRAND.

proposed removal of the water-gate of House by the Metropolitan Board of having directed attention to this last an historic house, it may be interesting together a few notes on the gate and nsion to which it was formerly attached. site bounded on the north by the Strand, east by George-street, and on the west by -street, was anciently occupied by an inn ce originally belonging to the Bishops of h, which was exchanged in 1535 for the of St. Bennett Holme, in Norfolk, and the property of Charles Brandon, Duke lk, who married the sister of Henry VIII. reign of Mary it was purchased by the shop of York, and called York House, name it appears to have subsequently d. The Archbishops of York do not seem kept possession of the house for any of time; for in the reign of Elizabeth it erted to the Crown, who let it to Lord llor Egerton, and afterwards to the Lord , Sir Nicholas Bacon, who doubtless "led ws" here in the manner with which we iliar through Gray's description.

ly after Bacon took up his abode in York his son, Francis, the illustrious Lord n, was born on the 22nd of January, d passed here his infancy and childhood. r years Bacon resided principally at Inn, but he still retained York House, brated here the sixtieth anniversary of h, in company with his friends. In the ear (1621) he was created Viscount St. and published his "Novum Organum." then reached the summit of his ambi- t from this time his glory set for ever. after that joyous celebration at York e was stripped of his offices, disqualified public service, banished beyond the pre- of the Court, subjected to a fine of , and to imprisonment in the Tower the king's pleasure. He was released e Tower after a short detention there, loes not appear to have returned to York although he had a great desire so to do, s he alleges, in a petition dated from bury, he could have "company, phy- conference with my creditors and friends ny debts, and the necessities of my lelps for my studies, and the writings I hand. . . . . It is the house," he con- "wherein my father died, and wherein reathed, and where will I yield up my if so please God, and the king will give e, though I be now by fortune (as the is) like a bear in a monk's hood. At money, no value, shall make me part The royal favourite Buckingham had onging eye upon York House, and its ner was no more to possess it. "If York says Sir Edward Sackville, in a letter , "were gone, the town were yours, your straitest shackles cleared off, beside mfort than the city air only. . . . . If t not speedily with it you may defer the ich is approaching near you, and disap- other aims (which must shortly receive or never), perhaps now yield matter of nt, although you may indeed be as as before." In spite of this, and other warnings, Bacon refused to part with bright, and in May, 1624, an Act of ent was passed, by which York House, estate adjoining, were "assured" to the whom they were granted to Bucking-

ngham is said to have rebuilt York a magnificent style from the designs Jones; but of this there is no direct e. In the Fauntleroy Pennant in the luseum is a drawing of the house, show- water-gate, with three gables behind, in character to those shown on the draw- Van den Wyngrerde (1543) in the Bod- ibrary. It is true that contemporary gs are not always to be relied upon; but icult to suppose, if the drawing in the roy Pennant be authentic, that the aman should have inserted a background d not exist in the time the drawing was

water-gate, until quite recently, has been ascribed to Inigo Jones, and has reatly admired for its bold conception tness of proportion. James Ralph, who t by any means a partial critic, says

k stairs is unquestionably the most perfect piece of building, that does honour to the name of Inigo Jones,—it is planned in so exquisite a taste, formed of such proper and elegant decorations, that nothing can be censured or added. 'Tis at once happy in its situation beyond comparison, and fancied in a style exactly suited to that situation. The rockwork or rustick can never be better introduced than in buildings by the side of the water; and, indeed, 'tis a great question with me whether it ought to be made use of anywhere else."*

Campbell (Vitruvius Britannicus) says, "This gate was erected by the first Duke of Buckingham when Lord High Admiral of England, A.D. 1626, by Inigo Jones," and Batty Langley, in his "Ancient Masonry" (1734), has an illustration of "the Tuscan order by Inigo Jones at York Stairs" in p. 219.

In 1854 Mr. George Bailey, the then curator of the Soane Museum, published in the *Builder* (vol. xii., p. 252) an extract from a MS. account-book formerly belonging to Nicholas Stone, preserved in that museum, in which it is stated that the water-gate at York House was designed and built by Nicholas Stone. In a note communicated to the same journal in 1864 by Mr. Wyatt Papworth (vol. xxii., p. 450) allusion is made to this discovery, and the inference is drawn that we have in it circumstantial evidence that Inigo Jones should no longer have the credit of the design.

A careful examination of the two MS. books formerly belonging to Stone in the Soane Museum reveals the fact that the evidence that Stone designed as well as built York Gate rests not, as might be supposed, upon the handwriting of Stone himself, but upon the testimony of Charles Stoakes, Stone's nephew, who, in a catalogue of "Some of ye most eminentt Works that my uncle, Mr. Nicholas Stone, Senior, did in England, in Holland, and in Scottland," prefacing the account-book, enumerates among other things, "The Water Gate att Yorke House hee desined and built and ye Right-hand Lion hee did fronting ye Thames. Mr. Kearns, a Jarman [*i.e.*, a relation, from *Germanus*, Lat.], by maring [marrying] his Sister, did ye Shee Lion."

It appears that Stone acted as architect, if we credit a subsequent entry in the same book, that "he desined Cornbury House in Oxford Shere hee w^at 33 jorneyes for wh^ch ye Lord Cornbury gave him 1,000*l.* well paid." This was a large sum in those days, and was in all probability about the equivalent to the usual architect's commission. Devonshire House, Piccadilly, which was destroyed by fire in 1733, was rebuilt by Kent at a cost of 20,000*l.*, exclusive of a sum of 1,000*l.* presented to the architect by the duke.†

It is significant, however, that, although the credit of the design of York Gate is claimed by Stoakes for his uncle, no mention is made in the MS. account-books of the circumstance, although there are very minute entries of all transactions entered into by Stone between the years 1630 and 1641. It is, of course, possible that Stone designed the gate between the year 1626 (when York House came into the hands of Buckingham) and the year 1630, when the MS. entries in the account-book commence, but it is remarkable that a man who was so precise as Stone was, judging from the minute details of his accounts, should not have left any memorandum of a work so important as the additions to York House must undoubtedly have been. If Jones rebuilt York House it is inconceivable that he should have left such a picturesque feature as the water-gate to be designed and built by the master-mason who was at that time carrying out his design for the Banqueting House at Whitehall. The probability is that Jones was not so employed, and assuming this we have to overcome the difficulty that the design of the gate has always been attributed to him, and was never questioned until the discovery of the Stoakes memorandum a few years ago. Stoakes's catalogue of his uncle's works is only to be relied upon in so far as it is corroborated by other evidence. Thus he includes in the list of works his uncle "did," as he calls it, the Banqueting-room at Whitehall, the Chapel at St. James's House, and the Stairs and Water Gate at Somerset House, all of which we know to be Inigo Jones's designs, although carried out by Stone.

The large sum received for Cornbury House is somewhat of a stumbling-block, but there seems no reason to believe that the water-gate is not Jones's design, and that it was carried out by Stone in the same manner as the designs for Whitehall and elsewhere. The stone gateway on the east side of Holland House, Kensington, is attributed to Inigo Jones, and was carved by Nicholas Stone, who appears to have been the Forsyth of his day. He was almost exclusively occupied in the designing and setting up of sepulchral monuments, of which he executed a very large number in his time, and although he may have occasionally acted as architect by the desire of a patron, there is no ground for supposing that he practised habitually as an architect, or that he was capable of producing such an unmistakable masterpiece as the water-gate of York House, which bears the stamp of Inigo Jones's heavy hand and marked Palladian proclivities. The arrangement of the plan is remarkable, and the mouldings agree with the few examples of Inigo Jones's works extant in London.

Leigh Hunt in "The Town: its Memorable Characters and Events," remarks,—"The reader who should go down Buckingham-street, and contemplate the spot which Inigo Jones and the trees have beautified, will not fail to be struck with the many different spirits that have passed through this spot,—the romantic Suffolk; the correct Egerton; the earth-moving Bacon; the first Buckingham, with a spirit equal to his fortunes; the second, witty, but selfish, who lavished them away; and all the visitors, of so many different qualities, which these men must have had, crowding or calmly moving to the gate across the water, in quiet or in jollity, clients, philosophers, poets, courtiers, mistresses, gallant masques, the romance of Charles I.'s reign, and the gaudy revelry of Charles II. A little spot remains, with a few trees, and a graceful piece of art, and the river flowing as calmly as meditation."

At York House Buckingham lived until his assassination by Felton, when it became the property of his more notorious son. It was then leased to the Earl of Northumberland, whose son, Algernon, had not yet married the heiress of Suffolk, and received with her the magnificent town-house known as Northumberland House, together with its furniture, pictures, &c., for the annual rent of 350*l.* Under the Protectorate the house was apparently considered public property, and was bestowed on Fairfax as a reward for his services to the Parliamentary cause. The heiress of that nobleman married the Duke of Buckingham, who was extravagant enough to maintain two town-houses within a few yards of each other, and York House thus reverted to its former owners. Towards the close of his life, the duke being in embarrassed circumstances, sold the site of York House for building purposes, and the ground was intersected by streets, and assumed the aspect in which we now see it. Of-alley has disappeared, but George-street, Villiers-street, Duke-street, and Buckingham-street remain to this day, and, with the water-gate, are the sole relics to remind one of the former splendours of the place.

* Critical Review of the Public Buildings of London, p. 49, edition 1734.

† Cunningham's "Handbook of London," p. 12.

FROM THE BANKS OF THE SEINE.

It is not without some degree of reason that the French pride themselves on their power of perfecting those ideas and inventions that reach them from abroad. The instructive value of the recently-organised exhibition of drawings by the old masters has been enhanced by the addition of an excellent feature which we in England would do well to imitate, and which could not fail to please a great many people. MM. Dreyfus and Ephrussi, the active organisers of the exhibition at the Beaux Arts, in connexion with the "Société des Promenades artistiques et scientifiques," founded some two years ago, invited, not long since, M. Philippe Burty, the well-known art-critic, to deliver a peripatetic lecture on the drawings by the French masters. Thanks to the electric light, the exhibition of old masters is open every night till eleven o'clock, and on the evening in question more than 400 guests were present at M. Burty's lecture, such was the success of which that another discourse on the Italian masters is shortly to take place. It can scarcely be expected that, within the limit of a paragraph, M. Burty's able comments can be resumed. From the early illuminators of the fifteenth century down to Prud'hon, the lecturer passed, supplying a mass of amusing information and

anecdote in the lives and processes of each. But the remarks on the artists of the last century were received with the most attention and favour, especially when M. Burty spoke of Watteau, Boucher, and Lancret, held in such discredit a generation since; then, Boucher was looked upon as little else than a *poisson*, and Watteau's famous "Voyage à Cythère" was consigned to a corner of the École des Beaux Arts, where it served as a target for the bread pills of the pupils. Now, however, the public taste (shall we say fashion?) has changed; the slightest sketch or engraved vignette, by a French master of the last century, is paid for at an exaggerated sum; but whether M. Burty is right or wrong in not hesitating to state that Boucher in his style was as great a decorator as Raffaelle, we are not about to discuss. We have chiefly mentioned the success of this peripatetic lecture of M. Burty among the old masters, in order to draw attention to an excellent idea that might, with no small degree of profit, be carried out in our own Burlington House or Grosvenor Gallery Winter Exhibitions. We cannot think, indeed, that such an eminently practical innovation will be lost upon promoters of artistic study.

While speaking of the eighteenth century, many connoisseurs in England will be grieved to hear of the death of a well-known print collector, M. Mahérault, at the age of eighty-four. During the greater part of this long period M. Mahérault has stocked his well-arranged folios with numerous original drawings of the eighteenth-century French masters, and doubtless the Hôtel Drouot will shortly announce, for next season, the sale of the late collector's treasures, among which are known to exist some choice Fragonards, Gravelots, Marilliers, Cochins, Bouchers, Prud'hons, and Moreau le Jeune, of which latter artist M. Mahérault was the pupil.

Thanks to the energy of the Commission for the Formation of an Inventory of the Artistic Treasures of France, founded, it will be remembered, some time since, there is every possibility that the contents of the smallest collections scattered throughout the country will be made known to the Commission. Already the work has produced excellent results. The labours of many of the numerous local artistic and archæological societies have been regulated on a uniform method, and by their aid are being rapidly registered scrupulously all the historical artistic treasures which France possesses, and, so to speak, are thus kept the minutes of all the acquisitions of the past and the present. The volumes of the catalogue already published are, it may be mentioned, liberally sent to all public libraries who apply to the proper authorities, and in this manner the knowledge of the system pursued is propagated far and wide. Is it not time, we would ask, that England should complete a similar catalogue? Is it, we wonder, owing to this energetic campaign that a number of the warehoused treasures of the Louvre are to be shortly displayed? Certain it is that, as was the case a few years since in our National Gallery, the cellars of the Louvre contain many interesting works hidden away from the public gaze. To those familiar with the grand old palace, it is known that various deserted halls at present encumbered with easels and canvasses, are scattered about in more than one direction. Report speaks of the till now sacredly closed *Salle des États* as the future show-room: let us hope so, for from the hasty glance that we have had of this hall, we prophesy that its noble proportions, together with its historic interest, and the treasures it will contain, will render it the most popular annexe of the great collection of the Louvre.

While speaking of the treasures of the French museums, it is worthy of remark that M. Turquet, the Under-Secretary of State to the Minister of Fine Arts, has commissioned a number of artists to reproduce in etching most of the famous pictures of the museums. If these etchings are faithfully executed, and with the power of which the etching-needle as an interpreter of artistic thought is capable, we shall have placed within our reach a valuable addition to our portfolios; but we fear that patronage by the State is likely to interfere with rather than promote the object.

The French papers are now filled with interesting accounts of the Literary Congress at London, and it would be ungracious not to thank M. Pagès of the *National* for the graphic and amusing letters he sends home from the banks of the Thames. In one of these the banquet at the Mansion House was most carefully sketched, but the writer's curiosity was much roused by the so-called "Egyptian Hall." "I do not know why it is so named," he remarks, "for I saw in it nothing Egyptian, except—M. Ferdinand de Lesseps." More than one visitor to the Mansion House has been puzzled by this matter also, but readers of the *Builder* have been told before now that the Egyptian Hall was so called because in its proportions it was made to correspond with the Egyptian Hall described by Vitruvius.

The mention of Vitruvius brings us to the meeting of the seventh session of the Architectural Congress on the 16th inst.; the programme comprising visits to the Municipal Apprentices' School at La Villette; the national manufacture at Sèvres; the Municipal College, Chaptal; and a number of lectures by MM. Hemard, Sedile, Achille Lucas, Hermant, Charles Lucas (the secretary of the Commission), Trelat, and Ravaisson. The congress, by the time this is published, will be drawing to a close, and on Saturday, the 21st, will conclude by the distribution of the medals and a dinner at the Grand Hôtel.

THE RIGHT TO AIR.

IN Mr. Banister Fletcher's recently-published little book on "Light and Air,"* a handy work which we may say, *en passant*, is clearly and concisely written, but which would be more valuable if references were given to the legal decisions quoted in it, the writer points out that some persons consider that there can be no claim for air as distinguished from light. That is to say, that a house-owner cannot bring an action against his neighbour for preventing the flow of air to his house, whilst he has a legal remedy if the light which enters by his windows is obstructed. Mr. Fletcher, however, basing his opinion upon a paper read by Mr. Locock Webb, Q.C., before the Institute of British Architects, seems to consider that there does exist a cause of action for the obstruction of air; at least, this is the conclusion which we draw from this somewhat ambiguous sentence (p. 8), "it will therefore be apparent that the surveyor must not lose sight of the question of air." But since this question of the obstruction of the air of a building is one of such considerable importance, we may fairly give a short space to its discussion, having in view the case of Bryant *v.* Lefevre, recently decided by the Court of Appeal, which is reported in the current numbers of the several law reports (4 L. R., C. P. D., App., p. 172; 48 L. J., C. P. D., App., 380).

We may shortly say, then, that in our judgment, considering the several legal decisions which have to do with this point, a man has no legal right to the air apart from the light. This may seem to many a startling proposition, especially as the air may be considered a more vital element than the light, but that this is the present state of the law we have really very little doubt. Taking the last case, that of Bryant *v.* Lefevre, we find the following sentence in Lord Justice Cotton's judgment:—"Cases to prevent or to claim damages for interference with ancient lights are frequently spoken of as cases of light and air, and the right relied on as a right to the access of light and air. But this is inaccurate. The cases, as a rule, relate solely to the interference with the access of light, and in no case has any injunction been granted to restrain interference with the access of air." Now this is about as definite an expression of opinion from an able judge, and a judge of the Court of Appeal, as it is possible to find, and after it we must receive very overwhelming proofs that the proposition which we have laid down is incorrect before we can consider the law to be otherwise than we have stated. The facts in Bryant *v.* Lefevre were very simple, and they must be noticed as affording examples of the legal doctrine. The plaintiff set out that for more than twenty years before the circumstances complained of he had always had a free access of air to his chimneys, which were on the side of his house next to the building of the defendants, and that about the month of June, 1876, the defendants raised the walls of their house so high, and put stacks of timber on the roof of it, so as to interfere with and prevent the free access of air to the plaintiff's chimneys. Thus a proper draught was prevented, the plaintiff could not fully use his chimneys, and the house was in consequence lesse value. But on the statement of facts the of Appeal came to the conclusion th plaintiff could not recover any da because, though he had a right to t yet it was a right subject to the ri adjoining owners to use their property various ways in which property is com and lawfully used. In other words, Mr. had no indefeasible right to have the a mitted full access to his house, as he woul in the case of light if by the loss of such he would have been substantially injure in such a case the legal presumption of grant cannot arise, because there can be n sibility of preventing the right from aris can be done in the case of a right of l stopping it up. Therefore this last case se put any doubt at rest in regard to the r air. But it does not stand alone, because year 1863, the case of Webb *v.* Bird was d by the Court of Common Pleas, and on by the Exchequer Chamber (10 C. B., N. S 13 C. B., N. S., 841). In that instance Mr was the owner of a windmill, which ha built in 1829, and in 1861 a school-hou been erected twenty-five yards off, by the current of air from that quarter w vented from reaching the mill, and conse its value was lessened. Here, again, the were of opinion that no right to the air The Prescription Act, 2 & 3 Will. IV., c. did not apply, and s. 3 of the same by expressly naming light tacitly excluded lost grant could not be presumed, there common law right to the air, and so the could have no right of action at all aga person who built the school-house. further, two cases, which were deci Mediæval times, were shown by the ju to have no weight, so that we now have this case of Webb *v.* Bird, but the eve important one of Bryant *v.* Lefevre, regard to the increase of building operat

But there is another case to which w refer, because it still further elucidat principle involved. It is the case of Dent Auction Mart Company, 2 L. R., Eq., 238, in 1866 by Lord Hatherley, then Vice-ch Wood. The observation in the judgm which we wish to draw attention is as foll (p. 252) "Another part of the case is this is a staircase lighted in a certain ma windows which, when opened, admit ai defendants are about to shut up these w as in a box with a lid off, by a wall abo or 9 ft. distant and some 45 ft. high, and circumscribed place they propose to pu water-closets. There are difficulties abo case of air as distinguished from that o but the Court has interfered to prevent t obstruction of all circulation of air; a introduction of three water-closets into a c space of this description is, I think, an in ence with air which this Court will recogni ground of nuisance. This is perhaps the ground on which to place the interference Court, although in decrees the words lig air are often inserted together as if the went *pari passu*." Therefore, this jud though not delivered in such precise te that of Lord Justice Cotton, to which w already alluded, comes in substance to th thing, that it is incorrect to suppose th right to light and the right to air rest same foundation, and that persons have rights to both these elements. Witho confirmation of the judgment in Bry Lefevre one might have some doubt whe place complete reliance on the dictum c Hatherley, but coupling them togethe adding also the decision in the Windmi it seems to be obvious that a house-ow no right to air alone. And it should be f pointed out that in Dent *v.* The Auctio Company the main ground of action w prevention of light, and that the question was a wholly subsidiary one.

But it is necessary to point out the general rule, which at present seems to n clearly settled, may have an exception if is an express grant or covenant not to in with the passage of air over neighbourin perty, which may be enforced again grantor or covenantor or against his assign notice. Moreover, there is also a sub point which may yet prove another exce that is, when there has been an uninter flow of air through a definite aperture neighbour's property. After Lord Hath judgment, this even seems to be questio

* Light and Air: a Text-book for Architects and Surveyors. By Banister Fletcher. London: B. T. Batsford. 1879.

ay yet prove a point of some import-
relation to the ventilation of manufac-
workshops. Having, therefore, regard
decisions, and to others subsidiary to
hich we have not touched upon, it is clear
longer to speak of rights to light and
ons for obstructing light and air, and so
oupling these two elements, as has
been done by lawyers, architects, and
, is not only inaccurate, but is an in-
y which should not continue, because it
ding. Loose forms of speech are often
nt and harmless, but when they convey
ons which are not only wrong, but may
njurious consequences, the sooner pre-
n respect to such points arises in
s the better will it be for all parties
ed. Before this last case of Bryant *v.*
it was perhaps not unreasonable to keep
raseology which gave expression to an
very generally current. But after
the judgment of the Court of Appeal,
paring it with the preceding cases, there
o doubt that we must cease to consider
o light and air as one and the same
Fortunately, where buildings interfere
they will, in cities at least, usually sub-
y diminish the amount of light, so that,
instances, the protection of the right
will equally be a protection to the ap-
of the air. But in all cases in which
seek to obtain compensation for a depri-
f the full flow of air, it is obvious that
obtain no aid from the latest decisions
nd in the reports of our law courts.

ARLES BLANC ON THE OLD MASTERS.

eries of drawings by the old masters
ibited at the Paris École des Beaux
nd which has been reviewed in these
, has called forth much criticism from
hen who are considered by the public,
emselves, to be authoritative art-critics.
nt among those whose claims are be-
spute is M. Charles Blanc, who has
an essay on the value of the series now
r the public eye, from an educational
view. We shall not attempt to repro-
essay, but we may fairly give a sum-
this critic's ideas on the characteristics
xhibition. He selects for special notice
s of Leonardo da Vinci, Michelangelo,
, and Prud'hon; and in opening his
he is emphatic respecting the advantages
tudent to be derived from a conscien-
xamination of the six hundred and
one drawings now placed within the
their observations. When the student
re him, says M. Blanc, the figure of a
in the attitude of imploring, such as
e example, attributed to the pencil of
Lippi, he recognises that the hands
from memory have more refinement
than those drawn from nature, the
eing that memory always idealises, and
tails that are not essentially charac-
Nature gives a charm to the human
particularising; memory gives it a cer-
e and dignity, by idealising. It is ex-
y curious to note, in examining these
s, how nature makes one or two attempts
oringing forth a commanding genius.
roducing Leonardo da Vinci she tried
ntice hand at Verrochio; before pro-
Michelangelo she made a rough sketch,
re, in Orcagna, and then in Luca Sig-

ugh Leonardo da Vinci's work bears
ces of his precursors, he is one of the
of masters. He does not speak with a
uscan accent,—his is the universal
e which will be understood in all
s and in all times, as will the work of
tti and of Raffaelle. That which is
Florentine in Da Vinci is the grace,
tness, the ease of his style. He was
meditating over his work; his long
Nature had led him to implant it in his
tion; and while he was talking to his
or pupils he was always sketching
f armed soldiers, warriors on horseback
g for combat, or leading an attack;
n on the same sheet of paper he would
a woman's smile, or the rounded limbs
fant, or a machine of his own invention,
icature. His project for his picture of
loration of the Magi," which remains
ed at Florence, is exceedingly interest-
ing; one can watch the gradual growth upon paper of the scheme of the picture; one can trace each figure, and see how carefully they are followed out. All the changes wrought by the Renaissance are exemplified by Leonardo da Vinci. He invented the poetry of shade, the *chiaroscuro* of the general effect; he can see the changes that painting will undergo in the search for effect, and he paves the way for it. There are in the Ecole des Beaux Arts now three studies of one theme, "Victor placing a Buckler on a Trophy." One of these sketches of Victory is powerfully shaded, and the effect is that of a suddenly acquired gift of giving expression on the part of the artist. In this heroic sketch, Leonardo da Vinci proclaims the eloquence of shadows: he anticipates Correggio; he prophesies Rembrandt; he announces, three centuries beforehand, the coming of Prud'hon.

M. Blanc is evidently an enthusiast on this subject, and he branches off here into an account of two happy hours he spent at Windsor, when the Queen's librarian showed him the portfolios (and allowed him to look over them) containing a number of drawings by Leonardo da Vinci and Michelangelo. He felt, he says, that he was in the presence of the two great men of genius in art. One had probed the deepest secrets of nature, the other had created for himself a special nature borne to a height that was inaccessible to the vulgar mind. Leonardo's drawings represented human physiology with a scientific skill that was incomprehensible in an artist. There were touches in his drawings of human figures like those used by the architect to indicate the workings of the construction, the thickness of certain points, the solidity of this, the adjustment of the other. The human form divine was drawn with that scientific exactitude that is, in itself, an art. Michelangelo's sketches produced an effect of a different kind. The librarian showed M. Blanc, one by one, the drawings that had been made as studies of a *Resurrection*, and these drawings strongly resembled, says M. Blanc, those that Mr. Malcolm has been kind enough to lend, and that are now in the exhibition at the École des Beaux Arts. The Saviour is no longer a god rising from his grave like a phantom draped in a shroud. He is an athletic hero, a Hercules, who has been buried during his sleep, and who wakes up in violent indignation, pushing back the stone from the sepulchre with a blow of his shoulder. "The Fall of Phaëton," of which there is a specimen in Paris, sent from Mr. Malcolm's collection, greatly pleased M. Blanc, and calls forth a remark from him that Michelangelo makes more effect with a pen than with a pencil. In Michelangelo's hand the pen is invaluable,—it defines the outlines and accentuates them, it hollows out the thinnesses of flesh, it veils the nude by defining the muscles, the bones, the tendons. Michelangelo was the precursor of the engraver. M. Blanc is of opinion that Michelangelo's drawings put those of all other artists, with the exception of Leonardo da Vinci, into the shade. Even Raffaelle, he thinks, is weakened by comparison with so terrible a master. And yet Raffaelle's drawings are exquisite, and when one has recovered from the violent impression left by the perusal of the writings of the painter of the Sistine Chapel, it is clear that Raffaelle was the offspring of a luminous and sovereign eclecticism. He was the *resumé* of the Italian Renaissance, and if anything be wanting in him it is "the charm of a single fault." In his care to exaggerate nothing he has hit upon a perfection of style that is at first chilling in its effect, and the delights of which only reach the mind after long study. Luca Signorelli was a Michelangelo in the rough; Raffaelle is a Michelangelo softened, humanised, excellent in all points, discreet in abundance, measured in grandeur, temperate in poetic idea.

Says Charles Blanc, in concluding his pleasant essay, of which we have given the prominent points,—"A gallery of such drawings is worth a museum full of paintings to the historian of art and æsthetics. The Spanish school in its gloomy realism is thoroughly represented by the drawings of Velasquez, of Zurbaran, of Goya; and the museums of Berlin, of Nuremberg, of Munich, of Vienna, could not give a better idea of German art than do the drawings of Dürer, of Balding, of Beham, of Holbein. Colour could add little to the artistic worth of these portraits, which seem to be like masterpieces of Da Vinci's transplanted to Germany. Then there are the inimitable drawings of Rubens, of Vandyck, of Teniers, of Adrian Ostade, of Rembrandt. Rembrandt is a poet in his paintings. He refines and improves and gives interest to everything he touches. That which others would render absurd he renders sublime." Turning to the French school, M. Blanc says emphatically that Prud'hon, Ingres, and Poussin are the only artists whose drawings can be mentioned in the same breath with those of all the great Florentine masters, and he gives Prud'hon the place of honour among the three, commending especially Prud'hon's lightness and grace, by which the severity of Minerva is softened, the sternness of Justice modified. The outlines of his drawings are vague: the eye perceives only the roundness of the figures he draws, the exquisite grace of the attitudes, the beauty of the faces. M. Blanc has seen no more lovely faces in the whole range of his artistic experience than the faces of the Bacchantes who are plucking grapes in company with Cupids and Fauns, as rendered by M. Prud'hon.

And with this tribute to his countryman M. Blanc brings his observations to a close.

THE NEW CANAL.

With the successful completion of the once-reputed impossible Suez Canal still a matter of but yesterday; with the proposal for the opening up of the great African Continent at present under serious consideration; there is every evidence that the nineteenth century, before its close, will mark its passage by the solution of one more great engineering problem, the piercing of the Isthmus of Panama.

Already the subject of innumerable scientific discussions, of serious doubts, but at all times admitted to be of almost imperative necessity, the bold proposal to separate the two Americas and unite the huge basins of the Pacific and the Atlantic Oceans, has at length been brought under practical discussion.

On the 15th of last May the International Congress for the Study of the Inter-oceanic Canal held its first meeting at Paris under the presidency of M. de Lesseps, at the Société de Géographie. England (in the persons of Sir John Stokes* and Sir John Hawkshaw), France, America, Holland, Switzerland, Italy, and several other countries, among these China,—strange to say, not Japan,—were ably represented, and on the various commissions might have been recognised more than one familiar name in the scientific world of the two hemispheres, united under the ever-energetic and earnest engineer of the Suez Canal, M. de Lesseps.

The two Americas, North and South, as a glance at the most elementary map will suffice to show, are connected by a narrow strip of land, the breadth of which at certain points barely exceeds thirty miles,—a narrow wall, which stands between and separates the two enormous oceans, the Atlantic and the Pacific. But narrow as is this strip of land, its existence obliges those ships which sail from Europe to the western coast of America, and inversely, to sail round the whole of South America by Cape Horn, and thus make a voyage of several months through extreme latitudes of heat and cold; in the same manner as the existence of the Isthmus of Suez formerly doubled the distance of India for our ships.

More than once the proposal has been made to pierce the Isthmus of Panama, of which a chain of mountains forms the backbone; but, insignificant as is their height, from their slopes flow, on one side to the Atlantic, on the other to the Pacific, rivers, the sources of which in more than one instance are so near to each other that the rumble of their falls may be heard at the same moment. A simple channel would suffice to unite them, and make the two great Americas two distinct islands; indeed, according to report, this channel has been already several times cut.

Between the Perico, an affluent of the San Juan, and the Raspadura, an affluent of the Atrato, the one a tributary of the Atlantic, the other of the Pacific, Don Raphaël-Antonio de Ceresо and Don Francisco Sea dug one day, to mark out the properties they managed, a ditch, which in the rainy season was filled with a muddy stagnant liquid, which neither of the two basins can claim for itself alone. This is the *canal del prete*, by means of which, on more

* In the meeting of the French Academy of Sciences, on June 9th, Sir John Stokes was elected member of the section of Physics by forty-four votes to four given to Professor Tyndall.

than one occasion, canoes have been able to pass from one ocean to the other. In reality, therefore, the isthmus is already pierced, but the means by which even a canoe can barely pass is hardly open to the commerce of the world.

It has often been asserted that the isthmus is traversed by depressions the altitude of which scarcely exceeds some ten yards or so above the level of the sea. But now this statement is proved to be in no way founded on fact. Numerous studies on the geology and topography of Central America have been commenced, and the country is well known; and it was from this circumstance that seven projects were laid before the International Congress for their consideration. Some proposed a simple canal, others a canal with a system of locks: the latter proposal being soon set aside. For the simple canal, two further questions had to be decided,—whether the canal should be open, or should pass through a tunnel. From the first, it was evident that the former system met with most favour, though its expense was enormous, augmenting by some five millions sterling the cost of the proposed route, traversing the State of Panama, from the Bay of Limon, on the Atlantic, to the roadstead of Panama,—the project which in 1878 was studied by an international commission. This is the project which has been accepted by the Congress, notwithstanding the efforts made by the Americans for the more costly, and to them more advantageous, route known under the name of the Nicaragua project, in which the canal would cut from San Juan del Norte, or Greytown, on the Atlantic, to the Creek of Brito, in the Pacific, traversing the Lake Nicaragua,—a route which would traverse an unhealthy district, one also disturbed by continual political difficulties, and the expense of which would be some twenty-one millions sterling, with a yearly expenditure of more than half a million.

The importance and necessity for this interoceanic canal have been patent for years, it may be said for centuries,—the Portugese in the sixteenth century dreamed of the canal,—to the scientific and commercial world; particularly to the latter when each year increases, by the action of free-trade and the facilities of transport, the carrying trade between the East and the West. We have to thank M. Levasseur, of the French Institute, for the masterly report he presented to the congress at its second meeting. In this remarkable document, shortly to be printed, many interesting particulars were laid before the congress. Thus we learn that in 1876 the trade of those regions which the canal would assist amounted to some fifty-two millions sterling, to which another twenty millions must be added as representing the value of the traffic of the extreme Asiatic East with the United States; in all, therefore, some seventy-two millions' worth of merchandise which would have passed through the canal had it existed. But it is important to learn the amount of tonnage which this traffic represents, as it is on the tonnage that the administration of the future canal will charge and therefore gain. By a series of calculations, M. Levasseur has arrived at the figure of some 4,830,000 tons, and as to this must be added the tonnage of the guano vessels which generally sail to America in ballast, the round sum of 5,000,000 tons may be taken as representing the cube of the merchandise which would be transported by the canal. As it is an established rule that in the course of ten years the general commerce of the world will increase by about 50 per cent. at the least, it may be said that by the time when the canal is completed (we have M. de Lesseps's word for it that this will be in eight years' time) the tonnage of the vessels will rise to some seven millions and a quarter.

The excellent report read by M. Chanel at the same meeting was little but a continuation of M. Levasseur's calculations. In it the financial question was treated. The probable receipts of the canal and its expenses were considered, and the probable profit placed at some forty-two millions of francs (1,680,000*l.*).

Few facts are more clear than the figures placed before its readers by the *New York Herald* of some time since in the discussion of the necessity for the piercing of the Panama Isthmus, when we see the table of distances from New York to several of the great ports of the world by the Cape of Good Hope route, by the Cape Horn route, and by the Isthmus of Panama. From New York to Calcutta by the first of these, the distance is some 17,500 miles; by the second, 23,000; by Panama, 13,400; to San Francisco the distance is some 19,000 miles by the existing Cape Horn route; by Panama, this would be reduced to 5,000 miles.

Such figures as these are sufficient to prove the advantage of the new canal, and are as applicable to the great commercial routes of our English vessels as those of the United States.

The world still works and labours for the inevitable future, to which our century will hand down so many nobly completed enterprises.

SHAFTESBURY HOUSE, ALDERSGATE.

ALDERSGATE Ward was almost completely devastated by the Great Fire of 1666. One of the few buildings that survived that disastrous occurrence has been, since its erection, applied to a great variety of uses and occupations, the last adaptation being now completed; reference is made to Shaftesbury Hall, Aldersgate-street, built by Inigo Jones, and in early times one of the many palaces and residences of nobles and distinguished men that stood within the comparatively small area of what is now Aldersgate Ward. The house, built for the Tuftons, Earls of Thanet, was originally known as Thanet House. John, the second Earl, a descendant of the Toketons, feudal lords in Kent, was probably the first occupier. He died in 1654, and was succeeded by Nicholas, the third earl, who died 1679. These nobles paid heavy penalties for their attachment to the Royal cause; Earl John was mulcted in the sum of 9,000*l.* by the rebel Parliament, and Earl Nicholas was twice committed by Cromwell to the Tower, where he was incarcerated for two years. From the Thanets the house passed into the possession of the celebrated statesman and intriguer, Sir Anthony Ashley Cooper, who, although at one time a Parliamentarian, eventually assisted in the restoration of the monarchy, and as Baron Ashley, of Wimborne St. Giles, Dorset, 1661, founded the Shaftesbury peerage: in 1672 the title of Earl of Shaftesbury was conferred upon him, and in the same year he was made Lord High Chancellor of England. He was the author of the second great charter of freedom, the Habeas Corpus Act. He was also the champion of a Bill to make the judges independent of the Crown. He died in Holland, of gout in the stomach, in 1683. In the course of the two centuries that have transpired since the time of the first Earl of Shaftesbury, the house has had many occupiers, and has been applied to a variety of purposes. Although the buildings fronting the street remain, a large area behind has been cleared and made ready for some other use. Among the buildings removed was a large banqueting-hall, with adjacent rooms and appurtenances. Since it ceased to be an abode of nobles, Shaftesbury Hall has been in succession a tavern, a lying-in hospital for married women, a general dispensary, carriers' warehouses and offices, a middle-class school, and on the ground-floor to the street front, a number of shops and places of business of various kinds. The greater portion of the remaining buildings is now converted into a preaching-hall for the Wesleyan City Circuit, in connexion with which there are school and committee rooms, vestry, library, and other accommodation. The nature of the construction in partitions, floor levels, positions of the rooms in relation to each other, &c., imposed much difficulty in getting sufficient space and head-room for the hall and the organ. The hall consists of two long rooms, proportionately wide, opened by removal of partitions, that join at a right angle, where the minister and choir occupy a platform in sight of the whole congregation. Iron girders were put in to carry the organ, the longer pipes of which are taken through the ceiling and floor to a small room above. Straight pipes would have required that some of them should have pierced the roof of the upper rooms, and have discharged into the open air; this has been obviated by introducing knees in the longer pipes. The organ, which is of excellent tone, has fifty-six notes and seventeen stops; it has been reconstructed satisfactorily by Mr. Northcote, of Camden-town. The general work, in the adaptation of the premises to the new uses to which they are applied, has been executed by Mr. William Hawken, of New-cross. The street front of "Shaftesbury House" remains as it was designed by Inigo Jones, excepting that the cornice has been tampered with, and some unsightly dormers are introduced that are not in the illustration of the front given by Maitland, who pronounces it "a most delightfully fine edifice," and deplores that "the politeness of the... is so far removed hence, that it is hardly... sible this fabric should be admired as it o... or be kept in suitable repair." The new l... have also rather disfigured the front by pa... a part of it; the remainder, left grim a... washed, contrasting strongly with the ... colour of the new paint, and destroying ... continuity of the design.

The ward of Aldersgate has undergo... markable changes since the beginning o... seventeenth century, and has been the th... during that time, of many notable hist... and political events. In 1603 King Jam... of Scotland and I. of England, entered L... by the Alders-gate, conjectured to have ... its name either from its relative antiqui... from the alder-trees that grew in the lo... The gate was at that time on the confines ... northern suburb of the City, and was t... trance from the Great North-road, the L... terminus of which was at the "Bo... Mouth," or "Bull and Mouth," inn, on t... of which the Queen's Hotel, St. Martin... Grand, was built in 1830. The Bull and ... was a coaching-house of renown, and had, ... to 1820, three tiers of galleries round the ... sive quadrangle, used for loading and unlo... the coaches. The gate was an importa... rather pretentious structure, with a large... ing of King James on horseback in a pane... the carriage-way, and others of the pr... Samuel and Jeremiah over the footways. ... Day, the celebrated printer, lived and w... in the rooms over the gatehouse. Inn ... taverns abounded in the district, which ... amongst others, the Falcon and Castle ... Black Horse and the White Horse; the ... Hart; the Red and the Golden Lion; the ... and the Half-moon; the Vine, and the Ros... Rainbow; the Bell, and the Seven Cups... Cock, the Cock and Bottle, and the ... These hostelries were, for the greater ... used for the "entertainment of man and h... although used also as places of carouse... resorted to by famous characters. A n... of these taverns, old writers tell us, were ... large and convenient for the recepti... coaches, wagons, and travellers." Fro... Bell in Aldersgate, Taylor, the "water ... started on his penniless pilgrimage to Sco...

Opposite Shaftesbury House in Alder... street there was another nobleman's mans... Dorchester House, in the occupation of th... quis of Dorchester. Like the mansion o... it changed its name, and became Petre ... as the residence of the Barons Petre. Af... Restoration the mansion and grounds wer... chased, and the name was again alter... London House, for the town residence o... Bishop of London. It had "Pottage Pot... near the southern boundary of the pr... The Albion Hotel, well known from its co... tion and other banquets, its publishers' d... and trade sales, and various festivities, ha... built upon the site of London House, that ... church attached. Before the Great Fire ... were five churches in Aldersgate Ward, bu... two, St. Botolph's and St. Ann's, after... disaster. There were three trades' guild... in the ward,—the Goldsmiths', at the nor... corner of Foster-lane; the Coachmaker... Noble-street; and the Cooks', near St. Ma... le-Grand, that was destroyed by fire, after... by a smaller conflagration. Contemporan... with the occupation of Shaftesbury Hou... Sir A. Ashley-Cooper, first Earl of Shafte... Lauderdale House, between Cherry Tree-cou... Hare-court, was the town residence of s... statesman, and zealous, if not unscru... Royalist, the only scion of the Maitland f... that has achieved the dignity of a dul... as a part of his guerdon for state ser... this was John, Duke of Lauderdale, K.G.,... Commissioner of Scotland, Marquess of M... Baron Petersham and Earl of Guildford, S... It may be supposed that there was fre... discussion of state affairs between... heads of the Shaftesbury and Laud... houses, so close to each other in ... designs and residential locality. Laud... House was subsequently in the occupation ... distiller. To the west of London House w... beautiful mansion of the Earls of Westmo... The Duke of Bretagne had his city m... near St. Botolph's, but every trace of its ... ence has long disappeared, excepting the ... of the district, Little Britain. The Ea... Peterborough had also a mansion in the ... quarter, and Lord Montagu a "superb pal... so also had the Earls of Northumberland,...

a writ of King Edward I. was dated, of the noblemen's mansions in the ward occasional temporary lodging-places of personages. Other lordly mansions were ied by the noble houses of Suffolk; the ons, Earls of Bridgewater; Sir Thomas y, whose house was rebuilt by Sir Nicolas , Lord Keeper under Queen Elizabeth, and ated Bacon House; of Sir Richard Kennet; H. Spelman, of the "Glossarium," that completed by Dugdale, who died in the oan. The "fiery Prince Rupert" resided ech-lane, Barbican, where he was visited olyn the diarist. The "Fortune" Theatre ward Alleyn, who founded Dulwich College, tuated between Whitecross-street and Goldne. A man as illustrious as any of those t lived in Aldersgate Ward without ility of doubt; in 1643 John Milton, who pt a school near St. Bride's Church, re- to "a pretty garden house" in Alders- treet; in Stow's time the district was of fair garden-plots and summer-houses easure"; Bridgewater-square, that takes me from the Earls of Bridgewater, was s for its fruitful orchards; the names y Tree-court and Pear-court are also ative that it was an open and fruity dis- Milton afterwards lived in Holborn and bican. "Paradise Lost" was published le Britain, and it was some time before it find purchasers. The Earl of Dorset t a copy, which he sent to Dryden, who in wledging receipt wrote, "This man cuts us t, and the ancients too." Little Britain he publishing quarter of the time, and a resort for book-worms; it is noticed by Walton, and an interesting description is of it by Washington Irving.

ong other buildings of interest in the ward ne Hospital or Priory, at the north-east of Little Britain, that belonged to the of Cluny in France; the Priory has long pplied to other uses, but there is still a h church in the locality. The so-called kspeare's house," in Aldersgate-street, to be demolished, is an ugly structure, s name an imposture; there is no evidence to connect it with Shakspeare.

A SOUTHWARK WAREHOUSE.

imposing pile of buildings has been d in Southwark Bridge-road for Messrs. Wood, & Co., foreign and colonial brokers, ffee, oil, and sugar importers, drysalters, olesale Italian warehousemen.

building is sufficiently large and lofty to nspicuous object at a considerable dis- The principal front is 138 ft. in length, he height from the pavement to the et is 64 ft. The mean width of the ground pon is about 70 ft. In the rear of the uilding there are a boiler-house, with two Cornish boilers; an engine-house, accoming a compact high-pressure engine of se-power, nominal; and an imposing ey-shaft, with a corbelled cornice: it is 110 ft. in height. The style of the prinelevation may be called Jacobean.

rincipal feature in the façade is a rec- lar tower, of about 130 ft. in height to the At the angles at the top of the tower rbelled turrets, with banded stone roofs. igh-pitched roof of the tower is covered coloured slates in bands, and has three ental louvres on each slope. The ridge mounted by a cresting, and has a *flèche* in ntre. Adjoining the tower, at the south f the frontage, a wagon-way is formed. rch springs from caryatides carved by ames Frampton. This entrance is closed ding-shutter work, 25 ft. high by 15 ft.

elevation is in red brick, with dressings bury stone. Pether's bricks are used for in the arches over the window heads. The pal entrance is enriched with carving. orthern portion of the building is distinct the business premises, although forming a e in the general external design. It con- the manager's residence, and bedroom modation for about fourteen clerks. A lled semicircular oriel thrown out from art of the front is another feature that butes to the effectiveness of the design. rincipal building has six floors, the tower ditional, exclusive of the roof.

basement, which is paved with asphalte, ins a number of store-rooms for olive oil, coffee, sugar, and other goods. It also gives accommodation to a great deal of horizontal shafting and the vertical connexions. The principal walls are 3 ft. thick, and very strong flitch girders are thrown across short spans that carry joists 11 in. by 3 in., placed 1 ft. apart. The wood flooring nearly throughout overhead, is 5 in. by 2 in., with iron tongues. Closely placed iron girders and columns do duty for the upper floors. The ground floor has two large sale-rooms, one 67 ft. by 50 ft., the other 57 ft. by 40 ft.; a clerks' office, 33 ft. by 26 ft.; a principals' or consulting room, 18 ft. square, with lavatory, &c., floored with tesselated pavement in Maw's tiles, of very handsome pattern; also porter's room, waiting-rooms, &c. Adjoining the principals' room are two strong rooms, with hollow walls, iron bound, the recesses filled with sand. These rooms are over-arched with brick and concrete. The first, second, and third floors are devoted almost entirely to warehouses, and the fourth to the confectionary manufacturing department, which has waterproof floors, and a kitchen 42 ft. by 40 ft. This upper floor is lighted by a very large louvre with opening sides. The height is 26 ft. from the floor to the ridge. The roof is of strong queen-post construction. The warehouse floors have been tested to bear more than 8 cwt. to the foot super. There are two stone stairs reaching from bottom to top of the building,—one for customers, the other for workpeople. It has two steam-lifts, one equal to 3 tons. Hydrants are provided for each floor in case of fire. They may draw upon two cisterns, on constant supply, holding 8,000 gallons of water. The communications between the rooms and warehouses are fireproof, by double iron doors sliding on rails and hollow tired wheels at the top, and guided by grooves at the bottom. There are eighty-six of these large heavy doors in the building. They have been supplied and fitted by Messrs. Turner & Co.

The plant and appliances in the building are interesting and curious, and include two large chambers with iron floors, in the tower, for coffee-roasting; long ranges of dust-proof spice-bins; six spice-mills; in the confectionery kitchen, twenty copper-pans, jacketted, for boiling apricots, jellies, &c.; with hot closets and steam-presses for various purposes and processes. Consideration is shown for the comfort of the *employés* of the firm. There are lavatories and latrines on every floor. On one floor there is a dining-room for the workmen, and on another a dining-room for the workwomen. These are not merely places where they may go and sit down to eat cold what food they may have brought with them, but are furnished with ovens, boilers, and such cooking appliances as may be needed. Each of the habitual diners has a locker in which to keep what belongs to him or her. The rooms are warmed on May's patented hot-water system; abundant means for the admission of fresh air are provided by the numerous windows and louvres.

The foundations of the building caused much trouble and anxiety from running sand having been struck. The water met with was laid under contribution in making the concrete, which solidified satisfactorily in the trenches, 20 ft. deep, that were dug for its reception. This operation could not be prosecuted at all times, however, as, during high tides, the water rose in the trenches to a level with the river, and at times two steam-pumps were at work night and day to keep down the water. The foundations for the chimney-shaft are also about 20 ft. deep. The concrete was carried down through the running sand in a casing of puddled piles, until a stratum of firm gravel was reached. There are 4,000 cubic yards of concrete in the foundations of the main building.

The architectural history of this large building is somewhat melancholy. It was designed by Mr. Robert Louis Roumieu, who only lived long enough to struggle through the difficulties presented up to the laying of the first course of footings of the foundations, when he died much respected and lamented. The prosecution of the work then devolved upon the son of the deceased architect, Mr. Reginald St. Aubyn Roumieu, who assumed as a partner his father's first pupil, Mr. Kestevin Hill, and had the advantage of his assistance for only about one year and six months, when that gentleman died also, and Mr. Roumieu was left alone in the supervision of the works in hand, which he has successfully completed, recently, in conjunction with his new partner, Mr. Alfred Aitchison.

The work has been executed by Mr. G. S. Pritchard, contractor; steam-engine, boilers, shafting, steam-lifts, and engineering work generally, were provided by Messrs. May, Brothers; Mr. S. Woods has acted as clerk of the works; and Mr. Geo. Poole as contractor's foreman.

ROADS AND ROADWAYS.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At the last meeting of this Society for the present session, Mr. G. Waller Willcocks read a paper on "Roads and Roadways." He remarked that the highways of a country were the veins through which the life-blood of the body social coursed, and that the commercial activity of a community was as dependent upon its means of communication as was the life of the human frame upon the arterial system. The author confined his paper to roads traversed by vehicles with unflanged wheels, drawn by animal power or traction-engines. Such roads might be divided into two great classes, military highways and commercial highways. The Romans, wherever they went, constructed roads, and in later times we could point to the United States of America as affording an example of the benefits which good internal communications were capable of conferring on young nations. The Greeks did not seem to have given much attention to the formation of roads, and Athens, notwithstanding her magnificent buildings, was a dirty and ill-drained town. Having described the method adopted by the Romans in the formation of their roads, the author quoted several passages from Evelyn's Diary, showing the state of roads on the Continent and in England, and even in London, in the middle of the seventeenth century. Dr. Dionysius Lardner, giving evidence before a committee of the House of Commons in 1836, said:—

"A road, to be theoretically perfect, should be, first-perfectly straight; secondly, perfectly level; thirdly, per, fectly smooth; and, fourthly, perfectly hard. If it possessed all these qualities in absolute perfection, the consequence would be it would require no tractive power at all. An impulse given to a load at one end would carry it to the other with its inertia alone. This is the ideal limit, to which it is the business of a roadmaker to approximate as nearly as he can, all practical circumstances being considered."

The author then proceeded to show how this might be most nearly accomplished, treating first of country roads, and secondly of town-roads or streets.

Country Roads.—Before finally deciding on a line of new road, careful surveys should be made and trial sections taken; in fact, the work required the same amount of care and attention as that necessary to be exercised in the construction of a railway. Frequently, by going round side-lying ground, deep cuttings, heavy embankments, steep gradients, and costly works could be avoided, with the result of a finer road at a less ultimate expense. Sharp bends should be avoided as much as possible, and the curves set out to proper radii. Great attention should be paid to the nature of rivers, streams, water-courses and general drainage of the land. The bridges and culverts should be built large enough to carry off the maximum amount of water without causing any flooding to neighbouring land or any undermining of the bridge foundations by the great scour arising from the increased speed of the flow of water. A road running across a valley often acted as a sort of reservoir embankment, the engineers not having sufficiently regarded the importance of the foregoing points. The surface of the road should always be above the highest water level, so that during a flood the road might always be passable for foot-passengers. To obtain proper drainage in flat countries the level of the road should be raised above that of the surrounding land. Gradients should be rendered as light as possible, not only to ease the traction of carriages, but also to prevent the washing out of the material of the surface, which not only caused great unevenness, but extra expense in maintenance and danger to the traffic. Gradients should not exceed, except under special circumstances, 1 in 30, otherwise a horse would gain no advantage in descending, as it would have as much trouble to keep the carriage back as it had to draw it up the ascent. In fact, the aim of the road-maker should be to make it possible to drive at a good pace with safety and ease down or up any hill. In ascending a long hill there should be no undulations, but the road should rise all the way, except, perhaps, here

and there short lengths on the level. Roads resembled many organic objects in requiring air and light, and therefore it was not advisable to hedge them in too much, but only so that the fences were strong enough for the farmers' protection. In many parts, however, as, for instance, in the Eastern Counties, there were no hedges at all, but, instead, wide and deep ditches on either side of the road. These rendered the roads very dangerous. The road formation (*i.e.*, the ground surface below the structure of the road) should be properly prepared to receive the stones, as any extra amount of metalling was a poor and expensive remedy for compensating any neglect in that respect. However good the metalling, it would be of no avail unless the foundation were fit to receive it. The ground, if soft, should be rendered hard either by rolling or punning*; and if likely to be wet, shallow grips should be cut transversely, at intervals varying from 15 ft. to 40 ft., according to circumstances, filled in with dry work, in order to effectually drain off any water which might otherwise accumulate. The surfaces of roads were frequently burst up after a severe frost, owing to the accumulation of water below; but that would not happen in the case of roads constructed on scientific principles. The importance of drainage could not be overestimated. The soil should never be forced up into the metalling. If the formation were clay it would be advisable to cover it over with a layer of dry earth or cinders. On a railway upon which the author was engaged it was found that in one cutting there was upwards of 10 ft. or 15 ft. of soft peat or bog below the formation. When the line was ballasted the rails continually sank, and the "stuff" oozed through the ballast, which was composed of large clinkers from iron slag-heaps. As the rails sank the ballast was cleaned and more laid down, until there was a thickness of 5 ft. or 6 ft. under the sleepers. This ultimately proved to be the easiest portion of the line to keep in repair. The slag, from its rough angular forms, made an excellent foundation, and was better than fascines or brushwood in such a case. The following extracts were from the specification for a railway by one of the greatest of our late engineers, but they held equally good for the formation of roads:—

"*Cuttings.*—The cuttings shall in all cases, during the progress of the excavation as well as afterwards, be kept perfectly well drained, and any slush or wet stuff shall be disposed of. The bottom of the cuttings, excepting in rock, shall not, in the first instance, be excavated to within 18 in. of the 'formation line,' and any greater thickness shall be left on which, in the opinion of the engineer, may be necessary to prevent the ground at the depth of the formation-surface being cut up or disturbed in any way by the carrying on of the works; and this surface shall not be finally uncovered and formed until such period of the progress of the works, and during such weather, as shall admit of its being perfectly well drained, and altogether secured from being in any way broken up or disturbed by men or horses working over it, or from any other cause, nor unless it can, if required, be covered with ballast within three days of its being formed."

"*Embankments.*—Unless the embankments consist of rock or other materials which, in the opinion of the engineer, do not require such precautions, the surface shall, from the commencement, at all times be kept thoroughly drained; and any hollows arising from a settlement, or from the wear on the temporary roads of the contractor, or other causes, shall immediately be drained and filled up, and every other precaution shall be taken to prevent any surface-water from collecting or soaking in; and before laying on the permanent ballast, the surface shall be carefully trimmed to the required shape and height, and the lumps broken, and all loose materials trodden or broken in; and, generally, all means shall be taken to form a solid smooth surface of the form shown in the cross sections; and all similar precautions shall be taken to prevent the surface being injured. . . . Where the embankment consists of clayey soil, or of any material likely to be injured by the wet soaking in from the ballast, or which will not allow the water to drain freely through, *permanent cross drains* shall be made in the formation surface at every chain, the bottom of such drains being ormed 9 in. in bread th."

Where possible, drains should be made on either side of a highway, and in such a manner that water could readily fall into them from the road. On soft spongy ground a foundation could be made of fascines. Fascines were bundles, from 12 ft. to 20 ft. long, and from 8 in. to 10 in. in diameter, of rods of brushwood, viz., willow, hazel, ash, or the like, the rods not exceeding 2 in. in diameter. The slighter sticks should be inside, and the stouter ones outside the faggots, the thick ends being placed alternately in different directions. Straight rods only should be used, the crooked ones being straightened by cutting them partly through. They should be tightly and strongly bound with willow or other pliable wood, or with iron wire at every 10 in. or 20 in.; on the binding the whole strength of the work was dependent. The fascines were placed on the formation, the first layer being laid transversely, the next longitudinally, and the third transversely to the line of road, fastened to the ground by strong sharpened stakes. Three layers were generally considered sufficient. The fascines would last longer if kept always wet than when alternately wet and dry. The fascines should afterwards be covered with earth or large stones, and then by the metalling. Brushwood about 6 in. deep, unbound, was sometimes used, but could not be so well recommended as fascines. There had been much dispute as to the form of the cross section of the road surface. Some maintained that it should be a convex curve, but that was in many respects open to objection. Where that section was used the bulk of the traffic selected the crown of the road, as that was its flattest part, thus tending to the undue wear of that portion of the surface of the road. Another cross section consisted of two inclined planes, rounded off at the apex, the slope being greater or less according to whether the road was rough or smooth. A slope of 1 in 30 was an average rate of inclination, but it should always be greater than the gradient of the road, so that the water running down the hill might flow away into the side ditches. When a road was on the side of a hill, the military and Indian authorities preferred a cross section with one slope only, and that inclined inwards, the surface and other water flowing away by means of drains under the road. Considerable discussion arose between the partisans of Telford and MacAdam as to the best method of building the superstructure, Telford maintaining that it was necessary to have a rigid foundation, properly constructed of large stones, hand-laid, thereby forming a solid and non-elastic surface; whereas MacAdam contended that it was only requisite to place the metalling directly on the formation, and that elasticity improved the road. The author said he thought that practical experience showed that elasticity was to be avoided in road-making. MacAdam was opposed to the system of mixing a binding of sand or gravel with the broken stone,—a system now largely adopted by road-makers. In selecting material for the construction of his road, the engineer was to a great extent obliged to take such as he could obtain from the locality, and these in a great many cases not always of the best. It would often be found cheaper to use good road metalling, brought from a distance, and costing perhaps three or four times as much as local inferior stone, inasmuch as the subsequent expense of maintenance would be considerably reduced. Stone for the purpose of road metalling should be hard and tough, to bear the strains, blows, and vibrations of heavy carts. It should also be able to withstand all atmospheric influences without the disintegration of its parts. Soft stones caused heavy roads in wet weather, and in summer they produced dust. In selecting granite, great care should be taken to see that the rock was fine and even in quality, as the coarser granites were more easily decomposed. Some feldspathic granites, as those of Devonshire and Cornwall, after decomposition produced a fine china-clay. The more feldspathic granites were not as lasting as the quartzose. Syenite (a granite in which hornblende took the place of mica) was the only granite that could be relied upon. The darker it was in colour the more durable it was. The best stones for road-metalling were found amongst the Trappean rocks. The basalts were well known by their peculiar structure, and also by their dark and compact texture. Green stones were more variable, and not so close-grained. Whinstone (a green stone) was extensively used in the north of England and Ireland, and also in Scotland. In the metamorphic system was found gneiss, which, although of similar constitution as granite, was inferior in quality. The mica was more in layers, and the rock could be quarried out in slabs, hence it could be used for flagging. Mica-schist was composed of mica and quartz, and was utterly unfit for use as road-metalling. The limestones which were crystalline (resembling marble), found in the older formations, viz., the Metamorphic, Silurian, and Carboniferous, were the only limestones which could be recommended. The oolitic limestones were to be condemned, although they might make a good foundation or core if not subjected to wet and frost. Quartz rocks, flints, and silicious materials, although hard, were too brittle to bear heavy traffic, although flints were extensively used in south and south-west of England, where chalk system was so predominant. In suburbs of London, where flint was much in macadamising, the roads during wet were were always in a dirty state, little differ in that respect being noticeable in the thoroughfares, formed of granite metal When the flint-metalled roads were cleansed surface naturally suffered great deteriora owing to the scraping-away of the materials in their construction. In many parts of Engl more especially in the Fens, it was difficu obtain good road-metalling, and there gravel was extensively used, but this made roads very heavy. At Felixstowe, in Suff where all the low-lying district was composed pebbles, with little or no sand, some good r had recently been constructed by Col Tomline. The surfaces of the roads were c posed of pebbles, mingled with chalk. T roads were firm, but naturally not so goo those made of broken stones, as they were affected by wet or frosty weather. The co the construction of a country road of co varied with the prices of the materials requ for use. Quarrying cost from 7d. to 1s. 6d cubic yard; breaking stones cost from 1s to 2s. 3d. per cubic yard; spreading materials cost from 4d. to 6d. per cubic y and to these prices was to be added the co conveyance. As a general rule, it might taken that when materials were obtainab or near the route of the road, the cost v from 1s. to 1s. 6d. per superficial yard (inclu the forming). Maintenance should be thor and complete, and an adequate staff of work should be constantly employed in filling up and holes, keeping the surface and side dit clean, and preventing any accumulation rubbish which might interfere with pr drainage. Mud should never be allowe accumulate. During wet weather roads sh be scraped after heavy showers; there w then be less chance of any unevenness in surface, as hollows would be discovered filled up. But a road should be thoroughl paired when it showed signs of being wor much. The best time of the year for operation was during the wet season, as the new material would have the best ch of binding with the old. The old surfac suitable, should be "picked up" an inch deep, to enable the new material to wor The new metalling should not be thickly la about 2 in. (or one stone deep) being suffici A cubic yard of stone should cover a super rod of surface. But putting on new mat was not altogether what was required. A tion should be given to the formation a proper cross section of the surface. On a of ordinary traffic one man to every three r was generally sufficient to keep the roa proper repair. Picking or "lifting" the face cost from ¼d. to 1d. per superficial y The cost of maintaining a road with cou traffic varied from 10*l.* to 60*l.* per mile. I near populous towns the cost was considera more. Some details of the cost of road-ma in County Antrim (Ireland) and in Ceylon cluded the first portion of Mr. Willcoc voluminous paper, of which first portion foregoing is merely an abstract. Of the se portion of the paper, treating of town roads streets, we will give an abstract next week.

* Some engineers are in favour of punning, others of rolling. Punning binds the particles of earth close together; but rolling, whilst effecting the same object, disturbs the surface.

Election of City Architect, Dublin.—the last monthly meeting of the Corporatio Dublin, the Lord Mayor in the chair, one i of business was the election of a City Archi at a salary of 500*l.* a year. There were e candidates,—Messrs. Oliver, T. Healy, W. Parry, W. G. Doolan, D. J. Freeman, F. W R. S. Lewth, P. Butler, and J. B. Sloane. Carson objected to the appointment being m He did not think they had any business fe City Architect. Mr. Doyle said it was too lat raise the question; but Mr. A. O'Neill said t as chairman of the Finance and Lease Co mittee, he would strongly repudiate the resp sibility of having anything to do with the property unless he was fortified by the ad of a City Architect. A ballot was then tak when there appeared:—For Mr. Freeman, for Mr. Doolan, 14; for Mr. Parry, 1; for Butler, 1. The Lord Mayor declared that Freeman had the majority of votes, and on motion of Mr. French, seconded by Sir Will Carroll, Mr. Freeman was declared duly elec City Architect.

MORNING PERFORMANCE IN A ROMAN AMPHITHEATRE.

Those strangers who visit Northern Italy this will have the opportunity of enjoying the few weeks' existence of one of the most honoured of the traditional institutions of old Roman and Mediæval citadel of Verona; we in our modern theatrical jargon would the "morning performances" in the an Arena. The fate of this favourite in-tion, after so many generations of exist-is now sealed, to make way for the re-tion of the old Roman theatre, the stone nes of which, so many generations ago iderably more than fifty generations), the n provincials crowded on their fête days, tness a very different amusement to that n is now in its last weeks of existence,—un-lighted performance in a temporary re of painted boards, erected in the e of the Arena, of a drama, which, if his-al, is "mounted" with that peculiar dis-d to correctness or artistic consideration stume, of colour, and of scenery, which the Italian stage of the present day, but formance admirably acted in the true old atic style, which, thanks to the "*Conserva-*' is still preserved on the foreign stage.

ron, in the few rare fragments preserved memoirs, the fate of the greater part of is a subject of regret to every literary nt, says that Catullus, Claudian, and speare have done more for Verona than she ver done for herself. Such a sentence,—n from an artistic, rather than a literary of view, is by no means consistent with in a city which, with truth, has been "a gem of art,"—could scarcely with e be passed in the present day, when we ith what zeal, and, in more than one case, what artistic scrupulousness, the city has re-adapting and restoring those justly-us monuments which have for so many ations attracted the stranger, learned and rned, from beyond the Alps.

er the restoration of Fra Giocondo's once iful *Loggia*,—not by any means one of the est results of the renovating zeal of the ipality,—the Ca dei Mercanti, and, above e scrupulous and praiseworthy restoration twelfth-century courtyard of the Palazzo rcato Vecchio, it is now to the old Roman itheatre that the municipality have turned attention, the Amphitheatre of which has spoken as surpassing all those of e. If the work is carried out with the conscientious scrupulousness as the resto-of the Palazzo di Mercato Vecchio above ed to, the future will indeed have to thank verning city bodies of Verona of this last r of the nineteenth century.

d now the Amphitheatre is about to be ed, or rather re-restored, that is, the lower n of the interior. The fact that the old as been able to exist until our days is due to the care with which the monument en in the past watched. As far back as arly years of the thirteenth century, a e, still in existence, shows how one of the tions of the *podestà*, or mayor, consisted spending, during the first six months of lding office, a fixed sum *reparatione et one Arenæ*. In the sixteenth century the s of the interior which had been, in the e of centuries, taken away, were replaced, with so little observation of the methods lans of the ancients that now more com-t antiquaries, and especially the engineers, nd a restoration. The simple but effective n by means of which the Romans prepared heavy downpour of rain into the open l of the Amphitheatre by a system of canals, which still exist on the surface of gher and untouched steps, or rather seats e interior, was entirely overlooked in the nth-century restorations, and the rain and lamp are now beginning to work their al effect on the stout old pile. And so the itheatre is to be handed over to the work-again, and the traditional,—and, let it be not too beautiful,—booth-theatre of the a is doomed to disappear, to the delight, if f the Veronese public, at least to that of nuine appreciators of the noble work of oman days.

storically, the temporary open-air theatre sses no little interest from its associations, ar by year, with the *fêtes* of Easter, the rds, with their rude view of the Amphi-re, have announced for so many generations past, the reopening for the summer of the *baracca-teatro* of the Arena.

The French president, De Brosses, of parliamentary, literary, and historic fame, has left us in his Memoirs some amusing details of his journey through Italy in the last century. In July, 1739, we find him in Verona, and of the Veronesi and the town he gives not a few curious details. Among these, he mentions the booth-theatre of the Arena, the principal places for which cost only ten soldi,—one can still have a seat in the pit for nine sous,—the rest of the audience stood or sat upon the steps of the Amphitheatre, and among the crowd the worthy president noticed not a few ladies, and more priests than he had ever seen in the processions. "There was dancing also," he writes; "one sylphide, as tall as a grenadier, made twenty bounds in succession, and for lightness excels our Camargo, who to her seems to my recollection but a stone." This compliment would show an extraordinary power in the Italian *ballerina*, when we consider the immense popularity in France of the accomplished Camargo. "I was witness," De Brosses continues, "of a strange scene. At a certain point in the representation, a bell having rung, I heard behind me a sudden movement, which, at first thought, I imagined would destroy the Amphitheatre, the more so as I saw the actresses flying from the stage, as also one who, according to her part, was fainting. The real cause for this disturbance was the sounding of the *Angelus* or pardon, and that at its ringing all the spectators had kneeled and turned towards the east; that the actors had done the same on the stage, and all were singing, excellently well, the *Ave Maria;* that completed, the actress who had swooned, made the usual bow after the *Angelus*, returned to her part, and the comedy continued. To really understand how original the whole scene was, one must have been a witness of it."

The same author tells us how he was present at a great fête given in the Arena in honour of the Duchess of Modena, on which occasion there were no less than 30,000 persons in the Amphitheatre. De Brosses, in addition, is very complimentary in his remarks on the Veronese ladies, who, in these days of "beauty-manis," cannot fail to strike the observant stranger. He writes,—"In the central portion of the city, the houses are all adorned with large balconies of beautifully-wrought iron-work, and bearing boxes full of flower-pots and orange and lemon trees; so that one seems to be walking in the gardens of Semiramis, with the danger, however, at the least puff of wind, of seeing these pots showered down upon one's head.* The women of these parts are tall, fine, and blonde, such as we see in the pictures of Paul Veronese, the Venetian women enjoying the reputation of being the most beautiful of all Europe."

Ninety years later, we find Heine, in his *Reisebilder* (of 1828), speaking also of Verona, and the charming faces of the girls and women whom he saw in the picturesque Piazza delle Erbe, the large languid eyes, the graceful figures, so unconsciously dirty. "The women of Verona," he writes, wear over their heads (an elegant custom still in use all over Venetia, and, indeed, all Northern Italy), the black veil brought round over the shoulders, and disposed with such artful carelessness as to set off, rather than conceal, the form of the bust; the servants have their heads dressed with silver pins, while the peasant women wear large straw hats, adorned with flowers. The men's costume differs, however, but little from that of the rest of Europe." But since Heine's days even the broad straw hats have disappeared.

Heine has naturally not forgotten to make mention of the Arena, and there he saw, also, the theatre. "When I entered the Amphitheatre," he concludes, "I found a comedy being acted. On a small stage, erected in the middle of the Arena, was being represented an Italian *burletta*, and the spectators were seated, some on chairs, some on the seats of the old Amphitheatre. I took my place among these latter, and listened to the declamations of *Brighella* and *Meneghino*, from the very same seats on which the Romans so long ago applauded the bloody combats of the gladiators and the wild beasts. Above us extended the blue pavilion of the sky, as lovely and immense as in those distant days; gradually the dusk of the evening crept over the face of nature, and quietly increasing each moment in intensity, one by one the stars came out; *Arlecchino* laughed, *Colombina* despaired, and at last *Pantalone* understood, and the hands of the happy pair were at length united. The people burst into applause, and rapidly dispersed, gay and contented with their afternoon's amusement."

And such a scene one may still enjoy, though literally "for a few weeks only," and on the rare fine afternoons and *festa* days which we have had this melancholy spring, the old seats of the Amphitheatre were crowded, not the least important portion of the audience consisting of the young conscript soldiers in their effective uniforms, artillerymen, cavalry, infantry, and the fluttering picturesque costume of the *bersaglieri*.

It is a temptation too great to be resisted, that of clambering to the highest steps, even at the penalty of only being a witness of the dumb show so far below, for from the upper row of seats, identically the same superb old red Verona stone seats of the antique Amphitheatre, beautified with their fossil ammonites, one enjoys a sight that repays the exertion of the ascent; below one, the simple oval form of the Arena itself, in the midst of which one can see the dumb show still continuing; and far around a perfect panorama,—in the true sense of the word, a view all round the horizon,—of the neighbourhood of Verona, the beautiful Alps, with the snow-clad chain of Monte Baldo, on the other side of which lie the ruffled deep blue waters of Lake Garda, the Euganean hills, near Padua, and the vine-covered slopes of the undulating hills on the north; below, at our feet, the old town with its fourteenth-century spires and quaint houses and narrow streets, and fragments of Roman and Middle-age walls and fortifications, and the hoary cypresses of the beautiful Giardino Giusti.

And as the sun sets and the shadows deepen in the picturesque old street beneath, the evening *Angelus* rings out from the neighbouring church of S. Nicolò, but no longer does it produce the magic effect which so long ago De Brosses described; the performance continues undisturbed till at length the curtain drops, and the spectators pour out from the broad *vomitarii* and disperse through the narrow streets, some to their homes, some to the *cafés* in the Piazza Brà, and not a few to the quaint old *osterie* that congregate, as they have done for centuries, about the neighbourhood of the antique Piazza delle Erbe and the tombs of the Scaligers.

* The ironwork may still be seen in all its beauty, but the flowers and flowerpots are gone.

NOTTINGHAM.

COWPER believed that the "looking back upon our forefathers,"—on their "vast rambling mansions; the Gothic porch, smothered with honeysuckles; their little gardens and high walls, their box hedges, balls of holly, and yew-tree statues,"—would have led to the belief that we seemed to look back upon the "people of another nation." In very considerable degree this remark would apply to the ancient borough of Nottingham. Its ancient history is a record of battles and sieges, of turmoil and tumult. The place of the "dwelling of caves" is unquestionably old. There the occupying Danes were driven out by the Saxon king of Mercia, and the battle on the walls took place before the Conqueror rebuilt the castle. In the struggle between Stephen and Matilda, in the wars in the times of the Plantagenets, and in those between king and Commons, the castle had its uses before after-iconoclasts dismantled it; and the mansion which the Duke of Newcastle built came to grief in 1831, when the mob avenged on the building the opposition of its owner to the first Reform Bill. The ancient convent of the Hospitallers of St. John of Jerusalem; the massive church of St. Mary; the Free Grammar School; the Town-hall, replacing one of timber and plaster,—point, with numerous other erections, to the antiquity of the town; whilst a corporation dating back to time beyond the memory of man eloquently testifies similarly. Its trade is old; customs that were quaint surrounded it; and, down to a generation or two ago, the progression of Nottingham was slow and steady, not to say occasionally checked by the obstructions which dislike to improvements occasionally interposed.

Looking back at Nottingham, only forty-four years ago, we have many tokens of the change it has since known. In the government of the town, then, sheriffs, coroners, bridge-masters, and senior and junior common-councilmen took part, the mayor being also the lord of the manor, and holding courts leet and baron. There were three

parish churches, a chapel-of-ease, and twenty places of worship for Nonconformists. The town was of a literary turn, keeping up its three weekly papers; and having many libraries and newsrooms. Its charitable institutions and philanthropic associations were many; its markets flourishing; and its population of 50,680 was then large amidst those even of the capitals of counties in the Midlands. Its trades included the manufacture of laces, of hosiery, the throwing and dyeing of silk, and bleaching, as well as others of subsidiary rank. Looking a little closer at some of the industrial phases of the town and at its commerce, it may be noted that the six bankers in those days included some no longer known; that there were fourteen bleachers, and 500 persons and firms enrolled in the "bobbin-net" makers' list; the two "coal-masters" were Lord Middleton, at the Old Radforth Colliery, and the owner of the Babbington Colliery. There were four cotton-spinners; lace-thread makers and dealers were almost legion; hosiery was one of the special town trades, as was that also of straw-hat manufacture. At the Trent Waterworks, the now well-known name of Hawksley was that of the engineer. A score of coaches were the means of travel; the carriers were many; and from the Leen Bridge, Three Cranes, and "Hannah Cutt's" wharfs, there was conveyance by water to many of the chief centres.

First in the changes of the Nottingham of to-day from that which has been thus briefly glanced at is the growth of the population, which was 66,621 at the last census, and is now estimated to be fully 100,000. Next, there has been a change in the condition of the governing bodies, and in none of these is this more marked than that of a recent one in the guardians of the poor. Early last year the guardians applied to have their term of office prolonged to three years, and of the 24,500 there were, on a poll, 12,483 votes in favour of the proposal, and a Local Governmental order, in March, 1878, altered the tenure of office from one to three years, so that Nottingham occupies a position of singularity in this respect. There has been a full development in the trade of the town. It still has its lace-manufacture for staple, but, in addition thereto, in large dimensions, the silk and cotton trades exist; whilst in subsidiary but still important dimensions wire-works, dye-works, and breweries are found, with the trades that are common to most large towns. Into surrounding villages the trades have overflown,—Beeston having its silk-mills, Wilford its coal-mine, Burton Joyce its hosiery trade, and Lowdham its gun-wad and paper works. Trade brings with it inevitable effects, and Nottingham prospered: the towers of its churches and chapels, rising high into the ether, show that its gathering-places for the sects have increased in number. Its charitable and educational institutions are in greater abundance. A beautiful arboretum has been added, and alike in situation and in the skill with which it is laid out it is creditable in every way to the great midland town. Nottingham has lost in the interval some of its ancient carriers, but its travel and traffic are contended for by two of the great railway companies, and year after year there have been vast sums spent in the provision of accommodation such as the importance of the town and the extent of its commerce demand.

As to the future of Nottingham, so much cannot be said. Its staple trade is one which does not rest upon the broadest basis. But it is not only on its lace trade that Nottingham rests, for it appears that other of its textile manufactures are widening. Its central position is attracting to it other trades; but as it wants those great mineral industries which cause towns to spring forward by bounds, it is evident that solidity rather than speed will characterise its progress. Moreover, the fact needs to be borne in mind that there are not in the trades with which it is more related those violent fluctuations that are known in the great mineral industries. The latter change their centres very frequently, as ore supplies are shortened, as fuel fields are exhausted, or as changes in the form of demand occur such as that which at the present time is likely so materially to benefit the great depositories of our phosphoric iron ores. There are no changes so marked or emphatic in the great industries on which Nottingham chiefly depends. It is true, as has already been hinted at, that it is a coal-producing county, but its production is limited; it is less than that of its own full needs, in all probability, for the three to four million tons which its forty-six collieries yield would not suffice for all the wants of a large and well-populated county. As time passes, it is true that the aspect of the county of Nottingham changes. The days when "the proud sheriff of Nottingham did cry a full fair play;" and when "bold Robin Hood" sold pots in that city, and dined with that proud official, are gone. The grave of the celebrated outlaw is shown at Kirklees now. Nottingham has lost, practically, its forest of Sherwood, and though it has lost neither its memory of nor liking for the men in Lincoln-green, yet could these revisit their old haunts they would find that the centuries had been periods of change, and that, as the American poet says,—

> "the bitterest foe
> To modern laws has felt their blow,
> Consented to be tax'd and vote
> And put on pantaloons and coat,
> And leave off cattle-stealing."

Laying its account to supply some of the modern needs and some of the whims of fashion, Nottingham has advanced, and will yet advance, in the ranks of towns; but whilst so advancing, and gathering around it many of the accompaniments and industries of urban life, whilst giving itself some of what should be deemed the essentials of towns,—as much needed as good sanitary regulations,—it is to be hoped that it will never forget the past, in which it has at times so proudly figured. Old towns and cities are at a disadvantage in contrast with more modern ones in this respect; it is true that there are accompanying advantages, for age in towns usually brings wealth, but there are the accompanying responsibilities, and the poverty which is so often found therewith. In these respects the ancient town is not an exception; and relying on these and on its natural advantages, it may in the future advance with even greater rapidity than in the bygone centuries.

HOLBORN TOWN-HALL AND DISTRICT BOARD OFFICES.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday last a large number of the members of the Architectural Association visited this building, which is now rapidly approaching completion. The visitors were received by Mr. H. L. Florence, president of the Association, and joint-architect, with his partner, Mr. L. H. Isaacs, of the structure. The site is at the corner of Gray's-inn-road and what was formerly Liquorpond-street, but which, considerably widened, is now known as Clerkenwell-road, and forms, in continuation of Theobald's-road, part of the line of new thoroughfare from New Oxford-street to Bethnal-green. The new building has a frontage of 100 ft. towards Gray's-inn-road, and a return frontage of 124 ft. next Clerkenwell-road. The building commands three thoroughfares, each 60 ft. wide, viz., Theobald's-road, Gray's-inn-road, and Clerkenwell-road, and it is probable that at no very distant date a fourth thoroughfare of like width will converge on this point, viz., the proposed new street from the opposite corner of the Clerkenwell-road to the "Angel" at Islington. This new street has long been wanted, the only available direct route for traffic between Holborn and Islington being the perilous one *vid* Elm-street and the so-called "Mount Pleasant." It will thus be seen that the site is an exceedingly prominent one, and the Holborn District Board of Works are to be congratulated on their desire that their new building shall be worthy of its position. The land was cleared by the Metropolitan Board of Works under the provisions of the Street Improvements Act, 1872, the area being 12,800 ft. superficial. We are informed that the Board asked, as the price for letting on a lease of eighty years, 1s. 6d. per foot superficial, or 960*l.* per annum, and for the fee-simple, twenty years' purchase of this rental, or 19,200*l.* In consideration of the site being required for buildings connected with local administration, the Metropolitan Board consented to reduce the price of the freehold from 19,200*l.* to 18,000*l.*, at which latter sum it was acquired by the District Board. The foundation stone of the new building was laid with some ceremony on the 3rd of August last by Sir James M'Garel-Hogg, M.P., chairman of the Metropolitan Board of Works, as reported in the *Builder* at the time.* On Saturday afternoon last the visitors found, on their arrival at the building, that with commendable forethought (and it is worth mentioning from the fact that it is so seldom done) the whole of the con- and detail drawings had been conveni- arranged on screens for their behoof. Florence gave a *viva-voce* explanation of different uses to which the various parts of building will be devoted. We gathered him that the portion of the ground- towards Gray's Inn-road will contai- public office for the conduct of the ge- business of the Board, and immedi- adjoining will be offices for the Clerk, Surv- and Medical Officer of Health. With the ception of the entrance at the east end of building to the gallery of the public hal- whole of the remainder of the area or ground-floor will be devoted to the pur- of a stone-yard and depôt. This will b- the most part open to the sky, but it will e- under almost the whole of the public hall, the- of which will be supported at intervals by iron columns. The stone-yard will be approa- by a carriageway passing from Clerker- road under the public hall. In the rear o- yard, and detached from the main buil- there have been provided a mortuary, *mortem* room, and disinfecting-chamber- of which accommodation has long felt in the district, The public hall occ- the upper part of the Clerkenwell-road fron- and is 90 ft. long, 45 ft. wide, and 30 ft. It is intended to seat 1,200 persons,—1,0- the floor, and 200 in the gallery before ref- to. The floor is fireproof, being construct- brick arches, turned from cast-iron skew- resting on continuous wrought-iron trans- girders supported at intervals by the cas- columns before mentioned. The ceiling, - will be coved and panelled, is rendered in Ke- cement, the enrichments being in *carton-p-* The joinery and fittings in the public hall w- of American walnut: in the other parts o- building they will be of pitch pine. room for the stowage of chairs and other - ture will be provided in the space betwee- ceiling and the roof of the hall, a shaft - provided on the gallery staircase to faci- the removal or replacement of such furni- The public hall is approached through a - way and entrance-hall at the corner of thei- leading to the principal staircase, 6 ft. - which will be of stone, with balusters of Dc- ware. On the same level as the public h- the Board-room, 48 ft. long by 30 ft. together with a committee-room, lavatory- The *façade* towards Gray's-inn-road is ca- up one story higher than that towards Cle- well-road, in order to provide a suite of r- for the use of the housekeeper. In the - ment of this portion of the building, s- rooms are provided for the preservation o- books, papers, and archives of the Board. - style of architecture employed is Italian, - treated, a prominent feature in the compo- being a clock-tower, 100 feet high, at the - of Gray's-inn-road and Clerkenwell-road. - materials employed in the elevations ar- brick and Portland stone, the doorway - ing the approach to the public hall and bi- room, as also the pilasters to the windows, h- of polished Aberdeen granite of a dark - colour, supplied by Messrs. Manuelle. The w- are being carried out from the drawings under the superintendence of Messrs. Isa- Florence, architects, Verulam-buildings, Gr- inn,—Mr. Isaacs occupying the position of veyor to the Holborn District Board of W- The present contract was taken by Messrs. Br- & Robinson, at the sum of 25,987*l.* It is prob- that the total cost of the buildings, with fittings, and furniture, will be 50,000*l.*, and- thought that they will be finished by Chris- next. Mr. Farrow is the clerk of the w- the contractors' foreman being Mr. Cornish.

* *Builder*, vol. xxxvi., p. 845.

Bristol and Gloucestershire Archa- gical Society.—A meeting will be hel- Cheltenham on July 8th, 9th, and 10th. Tuesday the mayor and corporation will ceive the Society at the Ladies' College; will be paid to the parish church, and a- wards to Leckhampton Court and Church; dinner of the Society will follow; and there- be an evening meeting. On Wednesday Society will make an excursion, which will clude visits to Cleeve, Southam (House Chapel), Sudely Castle, Winchcombe Chu- and Postlip. On Thursday the Society make an excursion to Cubberley, Cowley, stone, Brimpsfield, Birdlip, and the Roman at Witcombe.



THE KNOCHENHAUER-AMTHAUS, HILDESHEIM.——SIXTEENTH CENTURY.

THE "KNOCHENHAUER-AMTHAUS," HILDESHEIM.

THIS most interesting building is situated in the old market square at Hildesheim, and is without doubt one of the most splendid wooden buildings in Europe. The date of its erection is known to be 1529. The word "Knochenhauer-amthaus" would, we suppose, be translated into English by "The Hall of the Butchers' Company," though, perhaps, some of our German readers may be able to supply us with a better translation of this word. The building was in such a terrible condition in the year 1852 that it was necessary either to pull it down or restore it, when a senator of Hildesheim, Herr Rœmer, prevailed upon the Hanoverian Government to purchase and restore it. This has been done with considerable care, as much of the old work being kept as was possible, and the building is now used as the town savings-bank. As will be seen from our view, the building is not entirely of wood, as is the case with many of the Hildesheim houses, but rather suggests the English mode of building, the panels between the "posts" being filled in partly with brick. The cornices are very finely carved, chiefly with foliage. One side of this building is corbelled out over the street, but the opposite consists of a solid stone wall. This gives the gable end rather a disagreeable effect as to its general outline, which is the only defect about this charming building.

NEW POLICE-COURTS AND STATION, BOW STREET.

THE site of this building, which has been secured on a long lease from the Duke of Bedford, is on the east side of Bow-street, facing the Royal Italian Opera-house, and, as may be seen by reference to the plan given in our present number, it possesses the advantage of being in great part detached from neighbouring buildings, having also frontages to Broad-court and Cross-court on the north and east respectively.

The line of frontage to Bow-street is set back from the original line at the northern end, as required by the lessor, with a view t ultimate improvement of the street.

The building consists of a basement and stories above the street level, with an addi story over the central division of the Bow- front.

The courts are placed on the northern p of the ground, secluded as far as may be the noise of street traffic. The principal is on the ground-floor, 40 ft. by 30 ft., and high, exclusive of a large lantern light, rooms for clerks, attorneys, witnesses, &c. Broad-court, at the eastern end of which magistrates' entrance, leading by private sage to the bench, their private rooms library, or consultation-room, being on the floor where is also placed the second 31 ft. by 23 ft., and 18 ft. high, with la over, intended for the hearing of extra and other special cases. Other rooms o floor are appropriated as offices, as well as on the floor above, and the remainder as ments for the court-keeper.

The public entrance is in the splayed to Bow-street and Broad-court, the stai



THE BOW STREET POLICE COURTS.—Mr. John Taylor, Architect.



GROUND PLAN.

SCALE OF FEET

NEW POLICE COURTS AND STATION, BOW-STREET.

to the upper court being open to the waiting-room. Cells, prisoners' waiting-rooms, and gaolers' room are contiguous to the principal court, and a separate staircase for prisoners and police conducts to the court above.

The police station, which occupies the southern portion of the ground, comprises superintendents' offices, with distinct entrance; a reserve or charge room, with inspectors' and other rooms adjoining, and communicating by corridor with cells ranged along the south side of a large quadrangle, which has a van-entrance from Bow-street,—the cell-building attached to the court being connected with that of the station by a covered way, which will also serve as shelter for constables when parading for duty. A room on the east side of the quadrangle is provided with a door to Cross-court, for use when specially required. A mess-room, kitchen, lavatory, bath-room, &c., are located in the basement; a library and large recreation-room on the first floor; and other rooms on this floor and the two upper floors provide sleeping accommodation for 100 policemen.

The front next Bow-street, with its short return to Broad-court, which we illustrate in our present number, will be executed in Portland stone; the other part of the front to Broad-court, will have white Suffolk brick facing with Portland stone dressings.

Internally, with the exception of the courts and a few of the more important rooms on which some slight degree of ornamentation is bestowed, the building has been kept quite plain.

The cells, corridors, and rooms requiring frequent washing, will be paved with Claridge's Seyssel asphalte; the skirtings and portions of the walls will be executed in Keene's cement, and the floors throughout the building, with a few exceptions where brick arching is used, will be of Messrs. Dennett & Co.'s fireproof construction.

Special attention has been paid to the several sanitary arrangements, and the most approved modern appliances will be adopted. The drain and other pipes passing under the quadrangle and van-entrance are contained in a brick-arched subway, so that repairs can be effected without disturbing the paving.

Hot-water pipes will be laid to the courts, the cells attached thereto, the public waiting-room, &c., and warm air provided for the cells of the station.

The architect of the building is Mr. John Taylor, of H.M. Office of Works and Public Buildings; the contractors are Messrs. George Smith & Co., of Pimlico; and it is expected that the work, recently commenced, will be completed within eighteen months, at a total cost of 40,000*l*.

A TOUR ON THE CONTINENT.*

Renaissance Churches. — Among the large number of churches erected during the fifteenth and sixteenth centuries, I will select a few of those which attracted my notice. The grand schemes adopted for many of the Renaissance churches is a striking feature, and the use of domical coverings a rule scarcely departed from. I have already referred to Brunelleschi's dome at Florence; in the same city we find the Church of Santo Spirito, designed by the same architect, though erected after his death. A somewhat unusual plan is here adopted, viz., a Latin cross, with aisles and semicircular chapels all round, and circular dome at the crossing. Sta. Maria Formosa at Venice is a church with barrel-vaulted nave and transepts, domical aisles, and three apses. At Ferrara are a couple of churches with some pretence to notice, viz.: San Francesco and San Benedetto. The former has domical-covered nave-aisles and transepts, square side chapels, and an apse with two chapels on either side. San Benedetto has a nave and apsidal transepts, domical-covered aisles and apsidal side chapels, three eastern apses, a domed lantern at crossing, and the nave (except for a flat cupola) and transepts being barrel-vaulted. The Church of San Sisto Piacenza has a very effective plan, consisting of a barrel-vaulted nave, transepts, and choir, with dome at crossing; transept also at west end, with intersecting dome, and at the end of each of these transepts a chapel on the plan of a Greek cross covered by five cupolas. Each bay of aisle has a domical covering and an apsidal chapel. The choir is square, with an apsidal chapel on either side. The Church of SS. Annunziata, Florence, is rendered imposing by the large rotunda of the choir added to the church by Leone Battista Alberti; this is surrounded by apsidal chapels and crowned with a frescoed dome: it is much to be regretted, however, that owing to the lowness of the arch into the nave this dome loses a great deal of effect, as it cannot be seen unless quite near the rotunda. Bramante now comes upon the scene, and we have the commencement of S. Peter's, according to his design of a Greek cross. Pavia Cathedral is also said to have been designed by him: the fine central octagon is, however, incomplete; there is an apsidal choir and aisles, but only two bays of the nave are built. To Bramante is also attributed the erection of Sta. Maria della Campagna at Piacenza, a church having an effective plan based on a Greek cross; the arms are square-ended and barrel-vaulted; a domed lantern covers the centre, and smaller lanterns the corner chapels. Sta. Maria del' Umiltà at Pistoja is the work of a pupil of Bramante, who is credited with the design. It is a large octagonal building, covered with a dome, and is preceded by a large and effective barrel-vaulted vestibule, having a cupola in the centre. The Madonna della Steccata at Parma is after the model of S. Peter's, a Greek cross with aspidal-ended arms, a domed lantern in the centre, and domed octagonal chapels at angles. Sta. Giustina, Padua, the work of Andrea Briosco, is planned on a grand scale, there being eight cupolas besides the three domical vaults over the nave. It has nave and aisles with lateral chapels, the transepts and choir each terminating in three apses. The exterior of this, as well as so many other extensive churches, presents a dreadfully bare appearance, owing to its incompleteness. Sta. Maria in Carignano at Genoa, commenced in 1555, is another church based on Bramante's original design for S. Peter's, and occupies a commanding height above the sea,—a site worthier of a better exterior. Of the many works of Palladio, the churches of San Giorgio Maggiore and the Redentore at Venice are perhaps best known, the former on account of its prominent position on an island all to itself on the Grand Canal. The cruciform plan, with apsidal transepts and choir, and central dome, make a good interior, though it sadly lacks colour. The Redentore has no aisles, but a barrel-vaulted nave with apsidal-sided flanking chapels, and terminating in a large domed square with canted angles and apsidal-ended arms. Another prominent church in Venice is Sta. Maria della Salute, erected in the middle of the seventeenth century, and consisting of a large domed octagon surrounded by an aisle with chapels, on the east of which is a domed square with an apse on each side.

In the seventeenth and eighteenth centuries we see in Rome, Modena, and elsewhere, several instances of churches constructed in the circular, octagonal, and elliptical forms, as well as on the Greek cross, while Turin and Naples have each an example of a church built at the beginning of this century on the model of the Pantheon. I think I have said sufficient about the arrangement of the Renaissance churches to show that they possess, at any rate, some interest in their planning, if their architecture is not such as we all admire; but I confess, for my own part, that the cleverness and ingenuity often displayed in some of these buildings frequently overcame my prejudice. No doubt the domical treatment is the chief fascination.

Foreign Influence.—Before leaving the subject of Italian churches, I will just refer to one or two exotics not previously noticed. The famous double church of San Francesco Assisi, erected in the thirteenth century, was the work of the German architect Jacopo, and exhibits a decided Northern character; while Milan Cathedral, of the fourteenth century, is said to be the work also of a German, or an Italian architect trained in Germany; certainly it bears little resemblance to Italian work, whether in plan, proportion, or detail. Genoa Cathedral, in some respects, has an affinity to French work; and, lastly, the thirteenth-century church of Sant' Andrea, Vercelli, with its square-ended choir and buttresses, is supposed, with good reason, to be the work of an Englishman, though Mr. Street considers that the exterior shows no trace of any but an Italian hand. As far as I am aware, there is no example of the French *chevet* in Italy, the nearest approach, perhaps, being the choir of Sant' Antonio, Padua.

French Churches.—And now let us briefly glance at the arrangement of the French churches. With a few notable exceptions, we shall find them following one main type, viz., the Latin cross and an apsidal choir: thi… paratively simple plan has its varieties… instance, the choir aisles are frequently … and sometimes the nave aisles; and not o… radiating chapels form a feature of the… alone, but continuous lateral chapels oft… the nave. Hence we have a grandly dev… plan, such as we see at Notre Dame, … Bourges Cathedral, Contances Cathedral, … Cathedral, and Tours Cathedral; or … nave chapels, as at Amiens and Chartres … drals and S. Sernin, Toulouse, the latter … further developed by the addition of … round three sides of each transept. … Nazaire, Carcassone, we have an examp… line of eastern chapels such as I have re… in certain churches at Verona, Venice … Florence; there are three on either side … choir, and these were added to the trass… the fourteenth century: they are sep… from one another by open traceried di… and produce one of the most beautiful ea… I have seen. Bourges Cathedral should b… as having no transepts,—a feature also dis… with in Mantes Cathedral and in a few … churches; while some examples are … without aisles, notably Angers and … Cathedrals, the latter of which has, h… side chapels. Dol Cathedral is notewor… possessing a square east end, while the… drals of Lyons and Vienna have an ea… but the aisles terminating square. … south, too, we observe that the ai… S. Trophime, at Arles, are so reduced i… that they form mere passages. … feature of considerable importance and… effect is the adoption of a lantern at the… ing; this is to be found at Blois S. N… Contances Cathedral, the Abbaye aux H… at Caen, S. Pierre, Lisieux, Evreux, A… and Le Puy Cathedrals, S. Martin d'A… Lyons, and Notre Dame, Dijon. That a… is circular, Caen and Lisieux are squa… Contances, Evreux, Le Puy, and … octagonal. Internal effect is, perhaps… sought, though the lofty lantern to… Contances is very pronounced externally … for a word on those churches which … more or less from the usual type.

French Domical Churches.—First and… most is S. Front, Perigueux, said to be … of S. Mark's, Venice, or built by the same… tect, the plan being that of a Greek cro… mounted by five cupolas. At the west … the remains of an earlier church, over… stands a lofty and picturesque tower. Th… cipal entrance is by the north transept… is preceded by an open arcaded narthex. … transept has a small eastern apsidal … The east arm of the cross used to termina… fourteenth-century choir or apse; but t… evidently been removed, for there is now… apse in the style of the original churc… much more elaborate, and not very satisf… And this leads me to express the greatest … at the wholesale restoration which is bei… ried out here, by which an ancient and… beautiful church has been thoroughly … formed into a brand-new edifice. Happ… old tower has not yet been touched, an… may it stand, adorned as it is by the ch… hand of time, to bear witness and display … test against the mistaken zeal of man.… guex has another domical church, fo… the cathedral, and now called *l'église de …* Only two compartments remain, and th… of considerable span, about 50 ft., and … surmounted by a cupola. As in S. Fro… supporting arches are pointed, and thou… point is barely discernible in some arch… it is quite established, and herein lies a … tion between these and S. Mark's, the ar… the latter being round. Probably wh… *église de la cité* was complete, it was sim… the cathedral at Cahors, which has two d… compartments of about the same span, … apsidal choir with three apsidal chapel… supporting arches again being pointe… Puy Cathedral has a nave divided into si… partments, each surmounted by an oct… cupola; in this case there are aisles an… septs, the latter peculiar, being divide… two parts by a pair of columns suppo… groined soffited gallery, the gable end … nating in two apses. The choir has … square end, but this has been rebuilt … creased light and accommodation. … crossing is a domed octagonal lantern … out of a circular cupola. Owing to the … slope on which the church is buil… entrance is contrived rather ingeniously.

* By Mr. Hampden W. Pratt. See p. 664, *ante*.

ned by a steep street, ending in a long
steps, at the top of which are three
nches. Passing through these you still
steps along a stepped vaulted corridor
ne nave. At the end of this corridor is
oorway, which opens upon a flight of
t and right,—the former leading to the
and the latter to the church, which is
ly entered in the south aisle. It is sup-
owever, that the original intention was
under the whole length of nave, and
church in front of the altar; and it is
sible that such an entrance once existed,
the present is a subsequent alteration.
mind members that the memorial work
te Mr. Sharpe on the "Charente" deals
interesting district in France, somewhat
the domical buildings to which I have
and from the circular which has re-
en sent to members of this Association,
that the committee are waiting for
subscribers.

rault Abbey Church is not unlike An-
although it is one bay or compartment
an the latter, has a choir-aisle and three
f four chapels to the apse. But, sad
e abbey buildings now form an exten-
on! The nave of the church has two
ors inserted to make dormitories for
ners, the ground-floor being their refec-
le the transepts and choir remain for
l, and in a corner of the south transept
d the recumbent figures of Henry II.
queen, Richard I., and the widow of
n, their bones having long since been
nd scattered. S. Ours, at Loches, is
a unique church. It is of twelfth-
date, and consists of a nave in two
mpartments, each of which is covered
fty octagonal conical cupola, open up
ex, and perfectly plain. At the crossing
a tower, which forms an octagonal
rith a circular light at the apex; tran-
h apsidal chapels and a small apsidal
t the west end is another tower, and
is a large square narthex, with some
nesque doorways. The exterior is cer-
ry singular, on account of the two lofty
between the east and west towers,
ken in conjunction with the buildings
ing the castle heights it is picturesque
ing.

's.—Neither in France nor in Italy do
he beautiful cloisters with which we
amiliar in this country. There are,
ess, several interesting examples. They
metimes a position on the north, but
ften on the south side of the church, and
possess arcades of small arches, mostly
from double shafts; and though we
tracery, we have instead finely-sculp-
bitals. On the north side of Le Puy
is an early and massively-treated
ided cloister, one side of which is, I
f the tenth century, the others being
elfth. The round arches spring from
ers, with a detached shaft on each of
sides of the pier; diapered tile-work,
t and dark voussoirs, are the materials
each arch has a head carved on the
; the west side appears to have been
p another story. On the north side of
y Church of S. Pierre, Moissac (near
), is a beautiful twelfth-century cloister,
piers bearing the date 1110. The arches
ded and pointed, and spring alter-
m single and double shafts; at each
in the centre of each side is a square
d pier. All the capitals are beautifully
d with Scriptural subjects, and have
ry inscriptions attached. I do not
e use of the single shaft when it sus-
pital large enough for two, though the
alternation is very effective. This is
one of the most remarkable cloisters I
, and, wonderful to say, it is in excel-
ition, and without sign of restoration.
north side of San Zenone, Verona, is
arly cloister, restored (according to an
n) in 1123, but considered by Mr. Street
least fifty years later in date. The
noulded arches are of brick, round on
and south sides, and pointed on the
west; they spring from coupled marble
sting on a low stone wall. On the
is a large square projection similarly
which once formed the lavatory. This is
instance of a lavatory that I remember
een in France or Italy. On the south
. Trophime, Arles, is a beautiful early
built at different periods, and in splendid preservation. On the north and east sides (twelfth century) there are three bays, each consisting of four round-arched arcades, supported on double columns, with finely-sculptured capitals, the piers between the bays being shafted, and the cloister having a barrel-vault with moulded transverse ribs springing from a moulded cornice, with sculptured corbels. The adjoining church, I may add, is, like a few others in France, barrel-vaulted, and the same way of covering the cloister is a particularly appropriate one. The angle piers are massive and sculptured. On the north side the wall is arcaded, and has fluted pilasters with detached angle-shafts. On the south and west sides (thirteenth century) are fourteen pointed arches, supported alternately on double columns, with sculptured caps and moulded piers taking thrust of groining ribs. These piers have square buttresses carried up to eaves. On the south side there are niches with canopies behind these piers, and at the south-east angle is a well.

On the south side of Montmajor Abbey Church, in the vicinity of Arles, is a massive twelfth-century cloister, each side of which is divided into three bays by heavy fluted piers, each bay having an arcade of four circular arches springing from double shafts with carved caps. This cloister has also a barrel-vault. At Mont S. Michel is one of the most charming cloisters I know,—built between 1220 and 1228, and with exquisite detail. It is, moreover, unique in the arrangement of its arcading, which consists of a series of double arches springing from single shafts, the columns of the inner arches coinciding with the centre of the outer arches. The arches are pointed and boldly moulded; the caps also are moulded, and have a circular abacus. The cornice inside and spandrels of arches are vigorously and beautifully carved; there is a good wall arcade. The whole is now being restored under M. Viollet-le-Duc, and the plaster ceiling is being removed, so as to show the rafters with their curved braces. The most beautiful Mediæval work at Rome is to be found in the thirteenth-century cloister attached to the Lateran Church. Here the arches are circular, and spring from twin shafts, many of which are twisted, and some inlaid with mosaics. The caps are richly carved, and a mosaic frieze is carried round the exterior. The arches have slight mouldings, and on the soffit are two flush quirked beads,—an effective relief to a broad arch. In the centre of the court is a well.

On the north side of the little church of San Matteo, Genoa, is a cloister bearing the date 1310: its plain pointed arches spring from coupled shafts with carved caps of an early French character. A cluster of four shafts takes the place of a pier at the angles. On the north side of the Church of the Augustins, Toulouse (now used as the Museum) is a very good fourteenth-century cloister, with traceried arches springing from double marble shafts, an unusual treatment being the introduction of tracery. The cloisters of the Certosa di Pavia may be mentioned as a rich example of the use of terra-cotta, but I think the adoption of a single and slender marble shaft is scarcely satisfactory, the use of iron ties (a frequent case in Italy) being necessitated. The Campo Santo at Pisa commenced in 1278 is a large rectangular cloister, 415 ft. long and 137 ft. wide; the continuous series of round arches were, however, not filled in with tracery till the fifteenth century. This open tracery is in four divisions, each bay alternating in design; and though it is of a rather hard and cast-iron character, the general effect is pleasing, owing, no doubt, to the size of the cloister, its beautiful frescoes, and the peep one gets of the cathedral. There is just one other cloister I must mention. It is attached to the disused Church of San Gregorio, Venice, and is peculiar, inasmuch as there are no arches; but we find instead slight marble shafts, 10 in. in diameter, and 7 ft. or 8 ft. apart, resting on a low wall, once very elaborately carved in marble, only a portion of which now remains. These columns carry a beam 8 in. deep and 11 in. thick, over each support being a curiously-notched bracket, spreading its bearing right and left. The pent roof has a good moulded and carved plate.

Towers, &c.—Having glanced at the arrangement of some of the churches, baptisteries, and cloisters, I had intended to say a few words about towers, which I suppose have a characteristic treatment in most countries. Italy, for instance, cannot be separated from its *campanili*, some of which are exceedingly striking. At Ravenna we see the oldest form, viz., the round towers. Pisa's celebrated round tower is an Italian landmark, and Giotto's tower at Florence is a charming piece of colour, although I have heard it profanely stigmatised as a gigantic piece of Tunbridge Wells ware. The *campanili* in the North and those of Pisan character, though not possessing very great variety, are, as a rule, of good proportion, and bold in treatment, and show what may be done without the use of the buttress. In France, we find the type of tower and spire with which we are not unfamiliar in this country, and I think I may say that one of the best-managed features of French spires is seen in the treatment of the broach and pinnacles. The low square tower, with which we in this country are acquainted, does not seem to find a place in Italy or France.

To the many beautiful pulpits, pavements, and other characteristic details, I cannot now allude, nor to the charming colour decoration which adorns so many Italian churches, especially the use of such a durable material as the mosaics which have for so many centuries withstood the ravages of time, and remain to-day the most beautiful specimens of permanent decoration which it is possible to employ. So in Ravenna, Venice, Rome, Florence, and Pompeii we must linger long if we would study the work in these golden shrines.

Lessons.—One cannot return from scenes so delightful and work so interesting without having gathered some lessons. From Italian brickwork we have especially much to learn. Some of its detail is most exquisite, and it seems surprising that this great brick country (England) should attempt so comparatively little out of the ordinary way. The use of marble we cannot expect to adopt much, and in some respects this may be an advantage; for the many systems of incrustation which such a valuable material necessitates would introduce us to a kind of construction scarcely to be commended. In many respects the Italian work displays a simplicity of parts, and consequent largeness of scale, which detracts from its appreciation, and this we may learn to avoid. Their groined buildings bear no comparison with the English and French, and their carving is rather disappointing. I refer particularly to capitals, and it seems strange that in a country (noted, by the way, for its figure sculpture) where the column is so largely employed, we should see such poverty of treatment. England, in this respect, must also lay claim to examples far more beautiful and artistic. Another Italian feature, and one that is not satisfactory, is the favourite adoption of a front or façade instead of a good all-round building. We see plenty of this in our modern work; but I think no one, except the stingy client, upholds the shabby-back style. In our churches I think we may be said to pay perhaps more attention to the exterior. The Italian usually reverses this order, and in this I think we have something to learn from one another. I might easily prolong comparisons; for a tour on the Continent opens one's eyes to varieties, defects, and beauties in different countries, each of which may be said to bear a national stamp. This is equally the case with our own country. We have our particular applications of common principles, and are not bound to a hard-and-fast line in these matters. With such freedom, then, let us not abuse it; and, having great opportunities, may we profit by international intercourse, and in so doing, while it will tend to develop our minds and influence our lives, it will assuredly be the means of promoting the happiness and well-being of our fellow-men.

In the discussion which followed,

Mr. R. Phené Spiers proposed a vote of thanks to Mr. Pratt for his interesting paper, which had covered so wide a field that it was difficult to know where to begin the discussion, time being so limited. Mr. Pratt had stated that the church of S. Front, at Perigueux, was supposed to have been a copy of S. Mark's at Venice, and S. Mark's, it should also be remembered, was supposed to be a copy of a church of the same name at Alexandria, which was afterwards destroyed; indeed, a great deal of the material of which S. Mark's was composed was supposed to come from Alexandria. On a close comparison of S. Mark's with S. Front a curious difference would be found between them. The two churches were of the same proportions, and the difference was due to the want of knowledge exhibited in S. Front, Perigueux, of the true construction of the Byzantine vault. Some writers had supposed that both buildings were

designed by the same architect, but the probability was that S. Front was by a French architect who had copied the plan of S. Mark's. The great difference between the two churches was that at S. Front the whole of the arches of the dome were pointed, whereas those of the dome of S. Mark's were round. Unfortunately, and to the irreparable loss of all students of architecture, the church of S. Front had of late years been completely "restored," in such a way as to completely blot out one of the most important chapters in the architectural history of France. If he recollected aright, the arches of the first dome of the nave in the unrestored building were very slightly pointed; but judging from the sketches made by the late Mr. Edmund Sharpe since the restoration, the arches were now distinctly pointed. M. Abadie, the architect for the restoration, probably considered that if the Byzantine architects had possessed the knowledge of modern architects they would never have used round arches, but would have used pointed arches. It was sincerely to be hoped that the tower would be left un-"restored."

Mr. Hugh Stannus seconded the vote of thanks, and by means of sketches in chalk on the blackboard, supplied some "annotations" to one or two points touched upon in Mr. Pratt's paper.

Mr. S. Flint Clarkson said that with reference to the restoration of S. Front, Perigueux, he understood that when M. Abadie undertook the task he found the building so near absolute ruin that it became a question whether the church could be maintained at all without rebuilding. It was decided that it was necessary to rebuild, and that decision having been arrived at, M. Abadie debated the question whether the church should be rebuilt exactly as it was, or whether, in the rebuilding, it should be brought back to the form that he believed it to have taken at some earlier period of its history. He resolved that he would, to the best of his ability, ascertain the original form of the church, and that he would then restore it to that condition and leave it for the instruction of future generations. What he had done he had done with the assuredness that it was the right thing to do.

Mr. E. B. I'Anson said he was glad that allusion had been made in the paper to some matters which were not always sufficiently considered by students, especially those brought up in the Gothic school. One such point was the extreme ingenuity of many of the plans of the Venetian churches,—such ingenuity of planning enabling the most awkward sites in crowded streets to be covered to the utmost possible advantage. Another matter well worthy of study was the brickwork of Italy, which was the finest in the world. Brickwork had of late been studied much more thoroughly than used to be the case, and he thought there was a great future open to its artistic employment if architects would only study it as a material *per se*, instead of running about from Stoke Newington to Walthamstow, and from Walthamstow to Clapham, to "crib" little bits of "Queen Anne" work.

Mr. Thomas Blashill said that Mr. Pratt had very well described what was to be gained by "a tour on the Continent," and he recommended other members of the Association to go over the same ground, or a portion of it, for themselves. His (Mr. Blashill's) advice to young architects was, Go abroad as soon as you can. Many people said,—"Make yourself well acquainted with English architectural works before you try the Continent." That advice was all very well in its way, but the man who was seeking to get the varied education needed for an architect should endeavour, as soon as he had got some acquaintance with English architecture, to take occasional short runs on the Continent. A two or three weeks' ramble in Brittany, Normandy, or Belgium would serve as a commencement. The great value of such papers as Mr. Pratt's was that they acted as incentives to other young architects to go and do something of the same sort themselves.

The vote of thanks was then put and carried, and Mr. Pratt having said a few words in reply, the last meeting of the Association for session 1878-79 was brought to a close by the election of officers for session 1879-80, as recorded by us last week (p. 662).

Newcastle-on-Tyne. — The School Board have requested Mr. Oliver, architect, of the firm of Messrs. Oliver & Leeson, to report upon the proposed enlargement of the extensive Board Schools at Westmoreland-road, in that town.

THE STAMFORD CHURCHES.*

WE mentioned, on page 624, *ante*, Mr. Neale's paper on this subject, and now give some portions of it, in a somewhat condensed form.

Plans of the Churches.—The parish churches of Stamford are five in number; and part of the church of St. Leonard's Priory, and part of the church of St. Paul's. The points of resemblance in the parish churches are,—(1) squareness of plan, short length of nave and aisles in relation to the width,—especially noticeable at St. Mary's, All Saints', and St. George's, a characteristic of well-designed town churches; (2) owing to the extension of the aisles through the whole length of the church, the plan becomes a simple parallelogram,—St. John's and St. Martin's are purely so, and All Saints' was at one time a simple rectangle on plan; (3) wide naves, with comparatively narrow aisles. St. Mary's and All Saints' are especially noticeable in this respect.

Original and Present Form of the Cross Section.—All the five churches are on ancient foundations. The favourite section in the thirteenth-century churches gave one large roof over the nave and aisles, without any clearstory or even a break, but frequently with a change of pitch. This is seen by means of the weather-moulds; for instance, in St. Martin's and St. Mary's. Now, each of the churches has a Perpendicular clearstory, — the latest addition. All the churches, perhaps with the single exception of St. John's, had passed through a succession of other changes before the time came for this final one, which so radically altered the form of the section. . . . . .

Towers and Spires.—There is a chronological sequence in these parts of the Stamford churches which I do not think has been remarked upon at length before. St. George's supplies a plain example on a not very large scale of an Early English unbuttressed tower, of which the most striking peculiarity is the short dimension from east to west, and the much larger dimension from north to south. St. Mary's is a splendid example of a very rich Early English tower, with shafted arcades in every one of its five stages, gracefully buttressed at the angles, and finished with a rich corbel-table, altogether one of the most notable towers in England; open to criticism, of course, but full of charm to those who see it for the first time, and to those who see it every day of their lives. The spire put on this Early English tower is early fourteenth-century work, with statues under canopies at the heads of the broaches, with three stages of crocketed spire-lights, with mouldings at the angles,—a characteristic example of well-developed Decorated. At about the same time the original fabric of St. George's was altered. Then comes an interval of a century, or a little more. The fine, very similar towers of St. John's and St. Martin's were probably erected a little before the middle of the fifteenth century, and All Saints', no doubt, must be dated at about fifteen to twenty years after 1450; for we know that it was erected after a considerable destruction had been wrought by the Lancastrian army in 1461. The designer,—who had to work upon it 150 years after the completion of the other majestic spire, which rises on the hill-side sloping gently from the northern bank of the Welland,—evidently determined to make use of all the resources of his art, and to produce a design which should contrast, at the same time that it harmonised, with the earlier work. The tower was not placed at the central west, like St. George's, St. Mary's, and St. Martin's, but thrown out at the north-west angle. This selection of the site gives proof of a good eye for effect, for the tower, seen above the main mass of the church from the river valley, and from the open space southwards, crowns with its pyramidal form the broad square building beneath it. This may be called the first point of contrast with the other churches, in which the towers appear to join themselves on to the naves, rather than to rise out of the bodies of the structures. As we must not dilate at too great length on the talent of our fifteenth-century brother, I will take it for granted that every one has appreciated the points which I omit to mention, and go on to note the most individual masses of pinnacle rising from the parapet at the base of the spire. At St. Mary's the broaches are slightly low in their angle. The architect of All Saints' noted this weakness, and the way he set his spir the tower is a clear proof that he had rightly his lesson from spreading sh beneath the column of the neck. The lights of St. Mary's are, if one may ven say so without personal risk, a little c and a little large. The architect at All brought his spire lights into such fect relation with the spire, that th never seen until they are looked for. is the crowning glory of architectural when nothing is wanting, and no detail ob and the whole effect is felt to be just wh master who designed it aimed at; wh form, albeit in itself of extreme beauty, itself into undue prominence and destroy and repose,—apparently the simplest of r ments, but in real life all too rare. The windows in the towers of St. John's a Martin's, which are somewhat earlier t Saints', are all arched on the same sys two sub-arches are included under a grea and the bold central monial finds its w wards through the spandrel between the This spandrel is not pierced, and is ke forward in relation to the wall-plane. whole arrangement a great expression o is given to these remarkable windows. architect of All Saints' did not miss the that his predecessors had written in ston needed a grander window for his grander a window wider in itself, much longer deeply moulded, with strong transom a tracery; but he did not forget the vertical in the head and the solid spandrels which come appropriately below the base of the spire. He showed by them that he was to teach with added force to future gene the lesson he had previously learnt hi Stamford. But these general conside however tempting they seem, must be complete, in order that I may describe, I somewhat prosaic fashion, some few deta

The towers at St. John's and St. M resemble each other so much that I thi were probably designed by the same ar The battlemented parapets at St. Mart more elaborate than those at St. John's, latter may have been altered. Bel parapets there are the same enriched the same windows in the belfry stages, case the monial continued to the top arch; in the next stage the windo similar, and in the ringing-chambers th similar square openings, each four-foiled lower stages vary slightly, but this is o the difference of situation. When St. M tower was commenced (*c.* 1450-60) church was standing. The eastern arch tower was kept lower than it should hav in order to bring it well within the limita old nave-roof. The weather-mould o nave-roof remains, as well as a doorway led from the tower on to the old roo lower stage of the tower reaching upw far as the four-foiled windows formed a the main entrance of the church. The this porch was vaulted with moulded ston the vaulting has been destroyed, b springers exist. Similarly vaulted exist also at All Saints' and St. Mary that at St. Mary's was not part of the c design, as at St. Martin's, having been duced in the fifteenth century.

In passing from St. Martin's, in the co Northampton, over the bridge into the of Lincoln, the grand tower and spire Mary's stands before us, long a favouri ject with artists. The tower has not soli walling on its lower stages, as at St. M and St. John's, which stand on level g but, as the hill forms here the foregrou effect a broad base to the tower,—the ar ventured on the omission of a boldly-cons basement, and started elaborate detail a This treatment has, by some critics (Mr Freeman, for instance) been condemned, grant that it is a precedent that cou rarely be followed, for the site is of a ver kind. On the west, where no rising intervenes, the tower is made more solid lower stage, and the plinths, doorway, a tresses deserve careful study. The whole is of the Early English period from the to the corbel-table. Time elapsed whe stage was reached before the spire wa menced. The lower spire-lights have arches, tracery, flowers, and crockets, o Decorated character. The changing sty not as yet demand pinnacles in lieu of broaches, or crockets, on a spire of this

* By Mr. J. Neale, F.S.A., architect. Read at the meeting of the Associated Architectural Societies of Lincolnshire, Northamptonshire, and Leicestershire, held at Stamford.

d importance. The outline of an ordinary nglish broached spire was retained. In enth century, when much of the church uilt, the interior of the lower stage of er was covered with vaulting, so as to more important portal. The vaulting s not of the usual kind; the diagonal very broad arches, with the soffits on ne; and panels sunk from this plane hese characteristic soffits with cusps and This vaulting is similar in design and that in the tower of All Saints, which ver, more elaborate in detail and of workmanship. In the western door- the tower there is a semi-circular arch, ed beneath a pointed arch. This has orrectly described by various writers as alteration. The architect had ventured se a pointed doorway wholly open. At e people were accustomed to see a solid um, and we may well imagine the fear that n pointed arch, without any tympanum, ot the tower down. Therefore the archi- mewhat in sorrow, effected a com- —still keeping his pointed arch, but ing below it a semicircular one, and in the space between the two with r. Some eighty years ago another arch- s inserted, so as to obtain a still greater masonry. In the year 1789 the tower to have shown signs of cracking, and it nded with iron at three stages. Two ere fixed at the junction of the tower e, two just below the belfry sill, and one the ringing-chamber arcade. These re arranged very clumsily. Parts of uided arcading were hacked away to em to pass. They cost 203*l*. A cynical as suggested that the churchwardens ve had relatives among the ironworkers. er should be examined, and these un- pands tested, to see whether they are of terial use; if they are not, they should oved forthwith. Before doing so it e well to fill in thoroughly all the settle- t the various stages with liquid cement, introduce bonding-stones where neces- pecially internally. Then the filling in s removed from the belfry windows, the rches, the western doorway, &c. The ight, with proper care, be made struc- ven more safe than it is now. . . . . paper proceeded to deal with the other the churches, working eastwards from ers. After the fabrics the details came otice, and we extract two of the sum-

s.—The chancel screen of St. John's o have remained *in situ* from the time moval of the rood until the late restora- s was then removed and used to form a The screen is good in design and work- . It is the only Mediæval chancel xisting in any church in the town,—the cimen of ancient wood carving, and thus rtant part of the history of the art of rict. The removal of the screen from its position is to be regretted. I hope that it will be replaced, for æsthetically it e a great improvement to the interior of rch, giving scale and a richness now wanted. There is another screen in d, and a very notable one, still in its position in the chapel of Browne's l. These screens are of about the same d have many points of resemblance in tails. Screens were no doubt carried he chancel arch, and the two arches on h and south of it, at St. Martin's, though estige has now disappeared. The means s to the gallery in the chancel arch are be seen; the staircase is in the north ll. The doorway into the staircase from rch is quite perfect, and the openings in e walls still form odd and picturesque . The same arrangement of a rood e in the aisle wall exists at St. Mary's, north aisle, and at All Saints' in the The sixteenth-century work in the across the north and south aisles of n's is particularly piquant to one's y in these days, when so much work of te has unfortunately disappeared from rches. To observe the way in which rkmen of one age imitate the details, as he general character, of earlier work, is a fascinating employment for an archi- ot, I am afraid, that he feels it to be quite us one when the copyer is a good deal ferior workman, as most frequently ed late in the sixteenth and in the seventeenth century, when the attempt was made to carry out Gothic traceries and carvings.

Painted Glass.—Some of the glass in St. Martin's Church is good in drawing, colour, and detail. It is evident, however, that it is not all by the same artist; three or four different hands are discernible. It was collected from Tatters- hall, Snape, and other places; and seems, by the bye, to lose some of its special interest when this is known. It might, indeed, deceive an antiquary who endeavoured to work out in detail the various schools of art in Mediæval England, as, let us hope, some antiquary will faithfully do some day. If a record in the church stated where the glass was brought from it would be a provision for future students, most valuable in another generation. At St. George's there are some quarries bearing the garter, and the motto, Hony soyt qy mal y pense. They are now collected and arranged in the window on the north side of the chancel, and were no doubt the gift of the family of William Bruges (or Burges), a great benefactor of this church, and the first Garter King-at-Arms. His will was dated February 26th, 1449. On the opposite window are some good specimens of glass; the principal subject is St. Anne teaching the Virgin. Some heads of Perpendicular windows at St. John's are well worth looking at, being fair samples of fifteenth-century glass painting, the only phase of the art represented at all fully at Stamford. At Browne's Hospital it is represented in a very magnificent way. The chapel windows, which are fine four-light windows, are filled with glass worth a pilgrimage to see. This is not the whole of the glass either in that most interesting building, that record in stone of the liberality and kindly feeling of the old world, which has been preserved unaltered in a way which is almost a marvel, and doubled in size of late years by a skilful architect, with- out detracting from its power of carrying us back to the time before Bosworth Field was fought. The glass in the hall is as excellent as that in the chapel. The semi-transparency and the semi-opacity,—the power to temper the strongest sunlight and to transmit the gentle light from an underlighted sky on wintry after- noons,—were good qualities in the material which the artist worked upon in colour, shaped to his will, and surrounded with leadwork, so skilfully that he supplied, in the most perfect way, by that necessary framework, the strong black lines which were required, in order that the painted subjects should cut themselves out of the background, and be sufficiently enriched throughout their surfaces. The gem-like cha- racter of portions of the glass, such as the ruby inlays in the crowns, and the sapphire-like jewels elsewhere, would deserve a lengthened notice; for there is much to remark as to the sections of the glass, the tilting of the planes of it, the occurrence of double glass at certain points, and other refinements. I will by pre- ference turn from these devices of the skilful artisan to some other characteristics, such as the castigated purity of outline, the virile energy of the drawing, the absolute command of rich and glowing colour, and the self-restraint which gives value by mere omission,—all the best characteristics, indeed, of the best examples of the art. I am somewhat startled myself at these strong expressions about work which some may think too small in superficial dimen- sions to be treated to any hearty eulogy. I am, however, inclined to think that, being unable to say anything in favour of most of the modern glass at Stamford, the least that I can do is to make some amends by saying all that I feel, after long study there, of the exquisite work of the times that are past.

Healthy Hastings.—The Medical Officer of Health for Hastings, Mr. Chas. Ashenden, in his May report, says,—The death-rate is 15·33 per thousand of the population (38,780); twenty-one of these deaths occurred amongst visitors, and the total number also includes nine who died in the Infirmary and the Workhouse. He adds,—"The Registrar-General reports the annual birth-rate in England and Wales during the quarter equal to 36·5 per thousand, and the death-rate 25·2. He 'notes' Hastings as show- ing the *lowest death-rate* of fifty towns, viz., 17·5. The difference between the Registrar-General's calculation and my own, as I have before had occasion to remind you, is caused by his mortality returns embracing all the outlying parishes of the Union."

THE ARTISTS' BENEVOLENT FUND.

The seventieth anniversary festival of the Artists' Benevolent Fund was held on Saturday evening last, in the large hall of the Free- masons' Tavern, Mr. George Augustus Sala in the chair. About 150 ladies and gentlemen were present. The Artists' Fund was established in 1810, and received, in 1827, from King George IV., its patron, a charter of incorpora- tion. It has for many years enjoyed the patronage of her Majesty the Queen, who this year, for the fortieth time, sent her annual donation of one hundred guineas. The Fund consists of two separate and distinct branches, "The Artists' *Annuity* Fund," and "The Artists' *Benevolent* Fund." The *Annuity* Fund is raised and wholly supported by the contri- butions of its members for their own relief in sickness or old age; it neither asks for nor receives any support from the public. All artists, whether painters, sculptors, architects, or engravers, are eligible to become members. The Artists' *Benevolent* Fund, on the other hand, is a strictly charitable society, and has for its object the relief of such of the widows and orphans of members of the Artists' Annuity Fund as are left in need. It is supported by the donations and subscriptions of the patrons of the fine arts and artists, and the annual con- tributions of the members of the Annuity Fund. The claims of all widows and orphans who become entitled to its benefits are admitted at once, and without limit as to number. During the past year fifty-six widows and sixteen orphans received annuities, amounting in the whole to 1,176*l*. To each widow 20*l*. per year is paid, and 5*l*. per year is allowed for each orphan under the age of sixteen. The com- mittee would gladly increase these allowances if the support of the public would enable them to do so. Since the institution of the society the sum of 40,445*l*. has been distributed in relieving widows and orphans of artists.

The Chairman, in propo-ing the toast of "The Queen," spoke of her Majesty as the munificent patroness of the Artists' Benevolent Fund. An artist herself, her Majesty had transmitted to her offspring that artistic faculty by which so many of their number were distinguished.

The toast was enthusiastically received, as was the succeeding one, "The Prince and Princess of Wales, and the other Members of the Royal Family."

In proposing the next toast, "The Army and Navy, Militia, and Volunteers," the Chairman said that many great artists had gained renown, and justly so, by illustrating the military exploits of England. Not to mention the works of Benjamin West, Loutherbourg, or John Singleton Copley, we had in the present day, artists like Mr. T. Jones Barker, Mr. Armitage, and Mrs. Butler,—better known, perhaps, as Miss Elizabeth Thompson,—who were all eminent as painters of military subjects. With the toast he coupled the names of General Lord Mark Kerr, Captain Hight (of the Royal Naval Reserve), and Major Adams, who responded for the Army, Navy, and Volunteers respectively.

The Chairman, in proposing the toast of the evening, "Prosperity to the Artists' Benevolent Fund," said that he approached with some degree of tremor the most important business of the evening, and in addressing himself to his task he did so in all truth and sincerity. His object was that which was the object of the illustrious Lord Bacon in pursuing his philoso- phical researches,—fruit. His object,—his design,—was to obtain cash, and he would advise the officers of the Mendicity Society, of the Charity Organisation Society, and of other societies which were endeavouring to stop or control the exercise of Samaritan virtues, to keep a very sharp eye upon him, for he intended to be a beggar, and a sturdy one, in aid of the Artists' Benevolent Fund. He would trouble the company with a few plain words of a business-like nature, in order that he might not be accused, while begging, of attempting to obtain money by false pretences. The Artists' Benevolent Fund was established in the year 1810, and in 1827 it received a royal charter of incorporation from George IV., who was always a very liberal supporter and patron of the fine arts. For many years it had had for its patroness her most gracious Majesty the Queen. The Society, it should be understood, was divided into two distinct and independent sec- tions. There was, firstly, the Artists' Annuity Fund, to which artists, whether painters, sculptors, architects, or engravers were, after

due examination, admitted as subscribers; and then there was the Benevolent, or Widows and Orphans' Fund. The first section was a self-supporting institution, and only subscribing artists could participate in its benefits. The second section was a charity designed to extend assistance to the widows and orphans of artists, and that charity be called upon the company heartily to support by their subscriptions and donations. There was no man in that room who loved art with a sincerer and more thoroughly-devoted affection than he did, and there was no man who had seen with greater pride and gratification the growth, development, and increasing prosperity of so noble and high-minded a profession as that of art. Nothing did him more good than to know that artists were progressing, that their gains were increasing,—that they got thousands where they once got hundreds, and hundreds where they once got fifties, twenties, or tens; and that they were releasing themselves from the bondage of the picture-dealer and the patronage of the pawnbroker. For many once struggling artists such dark days were gone, never, he hoped, to return. He was not unaware that in times gone by the careers of the great painters, of the princes of the pencil, had been splendid. Leonardo da Vinci expired in the arms of Francis I. On the brow of the dying Raffaelle Sanzio was laid the benison of the Supreme Pontiff, and when the great painter had breathed his last his immortal picture of the Transfiguration was placed at the head of his bed, and his ashes were laid in a sepulchre worthy of them,—the Pantheon of Agrippa. Charles V. of Spain, emperor and king, picked up the pencil from the hand of Titian, but ere he had seen the great Venetian he had in Flanders gazed on some of his pictures, and said, "Let Titian be made an earl and knight," and he made him so forthwith. Even the ferocious Henry VIII. could feel admiration for a great painter, for he said that out of seven ploughmen he could make seven lords, although out of seven lords he could not make one Hans Holbein. Sir Peter Paul Rubens rode with twenty gentlemen in his train. Sir Anthony Vandyck immortalised on canvas all that was gallant, reverent, and wise among Englishmen, and all that was graceful and beautiful among Englishwomen. In the Royal Hall at Whitehall the King embraced him and hung the badge of knighthood around his neck; the royal barge conveyed him to his lodging at Blackfriars, where alas! he died,—too soon for friendship, but not for fame,—and his body was entombed in St. Paul's Cathedral, where now slumbered all that was mortal of Reynolds, Turner, Landseer, and other great artists. Such were the princes of the pencil who had passed through the great archway, who had made their stately progress to the Temple of Fame. But there was a *Via Dolorosa* as well as a *Via Triumphalis*. There was a heavy hill to be passed, and, fainting by the wayside, dejected, weary, and worn, were those who had been worsted in the great struggle, — the destitute, despairing, and poverty-stricken professors of art,—for it was not given to all artists to attain wealth, or even a competence, by their calling. In youth they might have had a competence and enjoyed a celebrity which was next door to fame, but that which came to all, disease, stepped in, bringing in its train poverty. The palsied hand refused any longer to obey the inspiration of the mind; the once bright eye was dim and glassy; and the once well-known artist faded into obscurity, and in course of time faded out of life, leaving a poor widow, and perhaps several children, to bewail his loss, but, thank Goodness! to look to the Artists' Benevolent Fund and to a kindred society for compassion and assistance. None were so prosperous, few were so happy, but that they might be exposed at any time to misfortune; and therefore every man, while he had the means,—and every man had the means to do good if he would only exercise a little self-denial,—should do what he could to help his fellow-men. He hoped he had clearly placed before the company the scope and purpose of the admirable institution for which he had been pleading, and that his words had conduced towards touching their hearts and loosening their purse-strings. With the toast he begged to couple the name of Mr. James Fahey, president of the Artists' Annuity Fund. (The toast was enthusiastically received.)

Mr. Fahey, in responding, said he felt highly honoured by the association of his name with the toast of the evening, and he also felt it a great honour to occupy the position of president of the Artists' Annuity Fund, which, as the chairman had stated, enabled artists to make some provision for their wants in sickness and old age.

The Chairman, in proposing the toast of "The Fine Arts," said it was satisfactory to note the present condition of English art. On every side art ideas were becoming more and more prevalent, and we saw art successfully pursued, not alone on the walls of our picture galleries, but in almost every department of industry. The improved state of industrial art was largely due to the influence of the late Prince Consort,—to his acute perception and exquisitely cultivated taste in art, and to his unwearied devotion in connexion with the Exhibition of 1851, from which period dated the vast improvements which had been effected in industrial art generally. The Royal Academy had no doubt done a great deal of good for art, according to its lights and according to its peculiar constitution and the traditions which it had received from the last century; and that which the Royal Academy, through no fault of its own, failed in doing, was being done by the schools of art at South Kensington and elsewhere. With the toast he intended to associate the names of Sir Rutherford Alcock and Mr. Edmund Yates. Sir Rutherford Alcock added to his attainments as a scholar and a diplomatist an exquisite taste and judgment in matters of art. Mr. Yates was also known to possess an admirable taste in art. The journal which he represented was entirely and thoroughly a friend of artists. The journalist was intimately associated with the artist. It was not in his power to make or break him, but it was in his power to assist him in his onward course, and by judicious criticism and judicious praise or blame he might prove to be the artist's best friend.

Sir Rutherford Alcock, in responding, said the only claim he could make to be listened to for one moment in responding to the toast of "The Fine Arts," was that he was a sincere lover of art in every possible form and shape. He believed that nothing more ennobled a nation, nothing offered it a more certain immortality, than perfection in art. Perhaps another reason why he had been unworthily chosen to respond to the toast was that many years ago, when he was in Japan, he became acquainted with the exquisite taste in decorative art possessed by the people of that country, and this taste he had the opportunity of bringing to the knowledge of the British public through the medium of the Exhibition of 1862. That seemed to him at the time to be a small service, but he little thought of the influence it would have. When, a few years afterwards, he returned to Europe, he was surprised to find how popular Japanese art was, not only in London, but in Paris, Vienna, and Berlin. It seemed to have taken possession of the whole of the imaginative mind of Europe by its intrinsic excellence and originality. He was very glad to see the influence it had exerted, and although no nation could make any large advance in art by merely copying the art of other nations, yet the student of the art of other nations would receive suggestions which could not fail to be of the greatest value to him.

Mr. Edmund Yates said he was at a loss to know why he should be singled out to respond for "The Fine Arts" when so able an artist as Mr. Eyre Crowe was present. But he yielded to no one in his reverence for and appreciation of art. He felt quite sure that those artists who had the pleasure of being criticised by the journals would feel that although occasionally they differed from what journalists said of them and their works, it was only because, on such occasions, journalists could not agree with the artists' views of themselves. When the journalist praised the artist and his work, then there was nothing so admirable as criticism; when praise was withheld or blame accorded, then there were no persons so vile as the critics. But as a journalist he assured artists that when the critic was most severe it was only his fun. The critic meant no harm to the artist,—on the contrary, he wished him all possible good. Possibly, as had been suggested, the critics knew little or nothing about what they wrote. In conclusion, Mr. Yates congratulated the company on their chairman, than whom, he said, no one wrote more genially and with greater appreciation of art and artists.

The Chairman next proposed "The Honorary Physicians and Medical Officers," coupled with the name of Dr. Symes Thompson, who briefly responded, testifying to the benificent operat of the Benevolent Fund.

The Secretary (Mr. Lambton Young) announced subscriptions, donations, and cies, amounting in all to about 1,700*l.*, inclu a donation of 105*l.* from her Majesty the Qu a donation of 50*l.* given by the members o Annuity Fund, and legacies of 1,000*l.* bequea by the late Mr. John Johnson, architect, by Miss Creswick (sister of the late Tho Creswick, R.A.), and 50*l.* by Miss Maw-Egl

The remaining toasts were "The Visit coupled with the names of Mr. Alderman Co M.P., M. Gennadius, the Greek *chargé d'affa* and Mr. Eugene Schuyler, United States co general at Birmingham, who severally sponded; "The Chairman," proposed in eloq terms by Dr. B. W. Richardson; and "L Ladies," proposed by Mr. Alderman Cotton.

During the evening a selection of music given under the direction of Mr. Lawler, artistes being Miss Agnes Larkcom, Mac Harriette Lee, Mr. Sidney Tower, and M Cozens (at the pianoforte).

THE SITE FOR THE BERMONDSEY VESTRY HALL.

THE Bermondsey Vestry have decided negotiating for the purchase of a site fo new Vestry-hall, at a cost of 12,000*l.* The originally fixed upon a site in Blue Anchor and when recently this land was offere public sale they bid 6,000*l.* for it, but they outbid, as it now appears, by one of their valuation committee, who purchased it. site now fixed upon is the tan-yard and pre lately in the occupation of Messrs. Barr Sons, which a short time ago was offered to for 12,000*l.*, but it now seems, as was stat the meeting of the Vestry last week, tha Barrow has since informed them that he c sell the freehold land and plant for less 12,500*l.* This demand was rather freely mented upon at the meeting of the vestry Abbott remarking that the action of Mr. B was scarcely business-like. In the firs stance he offered to sell the freehold for 12, and as soon as the committee had come t conclusion that it was a proper site to pla new Vestry-hall upon, he raised the pri 12,500*l.* In the course of the discussion native sites were suggested, but Mr. Willet of the members, observed that by purch the land which was near to the baths and houses, they brought their premises toge and a further advantage was the tidal cu on these premises, which would greatly r the expenditure for water. Mr. Porter remarked that the position was a centra and the value of the tidal culvert wou very great. He regretted, however, tha Barrow should have receded from his pos and hoped the vestry would not accede t last demand. Mr. Priter said the total ar the ground was 9,400 square feet, and, there he did not think the price extravagant. place was central, and doubtless would every requirement. From a considerati the charge, he estimated the buildings o land to be worth 4,000*l.*, and 8,000*l.* was the net cost of the ground. If the vestry to buy a site at all, this, he considered, wa one most available. It was ultimately agre continue the negotiations with Mr. Barro the basis of purchasing the site for 12,000

THE LAST OF TEMPLE BAR.

SATURDAY last saw the removal of the remaining stone of old Temple Bar, unles are to accept the impression entertaine some as correct, that the foundation-sto yet there undisturbed. At all events, the archway and piers adjoining the old buil known as Child's Bank, have been razed t ground within the last few days, and the st forming the structure, duly numbered, been carted away to the Farringdon-road d and placed by the side of the material for the rest of the "Bar," where they will no d remain until the Corporation decide upon site for the re-erection of the old struc which it appears the City authorities con plate. At the north-west corner of the archway, however, on the Strand side, feet below the street level, one stone stil mains, and there seems to be a popular b that this is the foundation-stone. The foot

iately under the spot where the south
id piers stood has been excavated to some
below the street level, and on Monday
s temporarily covered over with wooden
g. We understand that in making the
h good and permanent the Corporation
ow the outlines of the site upon which
ar" stood, uniform with those which are
on the north side.

NDITION OF THE GATEWAY AT BAALBEC.

previous letter from Beyrout I mentioned
ch-needed repair, which should be under-
hortly, to preserve the magnificent gate-
the so-called Temple of the Sun at
c. It will be remembered that the central
f the richly-sculptured architrave was
ed by the shock of an earthquake in
nd subsided several feet, about half its
ickness, in which position it has remained
lled, its great weight being retained in
n solely by the grip of the remaining
ones of the architrave, one of which has
so shifted a few inches horizontally. The
emor of any future earthquake was liable
g the whole of this unstable equilibrium
ground, and Capt. R. Burton, when
at Damascus, very wisely supported this
e relic so as to render the structure
for the present.
oposed either the substitution of light
llars by way of support, or the actual
itation of the stones of the lintel as a by
ns difficult or expensive piece of engi-
, and advocated a subscription being
or the purpose. Since my letter, I have
e opportunity of discussing the matter
n executive officer of the Public Works
ment in India, viz., Capt. Harry C. Fox,
Engineers, who very kindly gave me the
g memorandum on the subject:—

randum as to a method which might be
opted for the restoration to its original
ce of the keystone of the flat arch over
doorway of the Temple of the Sun at
albec.

present condition of the doorway from a
cal point of view is as follows:—The
are built of very large stones placed on
d not bonded into the adjoining walls.
rth jamb appears to retain its original
, and to be as firm as ever it was, but
ith jamb, the stones of which have
damaged, does not seem stable, as far as
judged from the photograph.
lintel is composed of three stones form-
at arch. The side stone over the northern
as slidden on its bed in such a manner that
allowed the keystone to drop out of its
position a vertical distance of about
t the same time, the faces of the stones
jamb and flat arch have preserved their
position with respect to vertical planes,
e of the stones appear to be leaning outward
e faces of the wall in which the doorway
en made. A pillar of roughly squared
as lately been built under the keystone
ent its further subsidence. The lintel
oes not appear to have to sustain more
light load in addition to its own weight.
estore the flat arch of the doorway it
e necessary,—
To raise the key-stone vertically about
its original place.
To restore to its original bed the side
tone which rests on the north jamb, so
is stone might again support the key-
hen the latter had been raised.
e would be but little difficulty in carrying
first operation, which might be conducted
ws:—
top course of stones of the supporting
ould be removed on two opposite sides,
the spaces thus formed below the big
ould be placed timber beams, the ends
ch would project sufficiently to allow of
eams being lifted by screw jacks; the
acks would rest on scaffolding or tempo-
asonry pillars.
weight of the key-stone is probably not
than six tons, and this weight could
e raised by four small bottle screw-jacks,
ould easily be brought from Beyrout, and
ossibly be borrowed from the shipping
port. As soon as the key-stone reached
inal position the supporting pillar should
t up to support it.

It might be necessary to support the lintels during the above operation; and, if so, they could be easily propped by timber struts from the tops of the temporary pillars.

If nothing more than raising the key-stone were done, the appearance of the doorway would be very greatly improved, and the more so if the whole of the doorway were filled with masonry in addition to the pillar which would support the key-stone [but as the soffit* of the lintel is sculptured, it is no doubt desirable that the whole of the soffit should be exposed to view, and to that end operation number two, as specified above, might be undertaken.]

If the key-stone were raised there would be a space of some inches between it and the side lintel stones. The key-stone, however, should be placed to touch the south lintel stone, which has not slipped, and the north stone might then probably be brought up to touch the key-stone by means of traversing screw-jacks, or possibly by wedging it out from the masonry at its end.

It is obvious, however, from the original failure of this arch, that something must be done to retain the three stones of the arch in their proper places; something, in this respect, no doubt, might be effected, after they had been readjusted by 'running' the joints between them and repairing the adjacent masonry with Portland cement, but it would also no doubt be necessary, either to support the lintel by iron girders placed across the opening under the lintel or preferably, as it were, to hang the three lintel stones from a girder placed over them, and itself long enough to have a good bearing on the adjoining walling. The latter arrangement, though perhaps more expensive than the former, would be better, inasmuch as the girder would not hide the sculpture on the soffit of the lintel. The girder should be of cast-iron, and the lintel stones would be hung from it by means of lewis-bolts. The cost of such a work in India would not probably exceed one thousand rupees, say 100*l.*

HARRY C. FOX, Capt. R.E."

There are few travellers, especially antiquaries, who would not wish to see such a work accomplished; and it would be worth while for those interested to get a more detailed report, with dimensions and quantities, from some experienced architect.

Much remains to be done in the way of discovery among these ancient remains, which at present are remarkably deficient in inscriptions. If Mr. Wood would do for Baalbec what he has done for Ephesus, he would add a vast amount of information to our at present but scanty lore of hieropolitan history.

S. P. OLIVER, F.S.A.,
Captain late Royal Artillery.

Off Brindisi.

* The *soffit*, or lower side of the architrave; the under surface of these lintel stones is lavishly enriched with vine wreaths and emblematical figures in relief, and the great object of the restoration would be to preserve the effect of the whole design from beneath.

THE WESTMINSTER CLOCK TOWER.

THE dials and hands of the clock-tower at Westminster are about to undergo a process of restoration, and the necessary preliminary work has just been entered upon. It is now something like twenty years since the hands of the dial of the great clock were examined, and it has for some time past been felt by the Government authorities that they possibly have become corroded, and might at any time fall, the result of which would probably involve considerable damage as well as personal danger. This will be apparent when the dimensions and weight of the hands are taken into consideration. The length of the minute-hands of the several dials, from the central point to the figures, is 14 ft. 6 in., and the length of the hour-hands 8 ft. 2 in.; but in the case of both hands there is an additional length receding beyond the pivot to the extent of some feet, and the hands on the different dials are of great weight.

It has been decided to re-gild and decorate all the dials, and also to make all the necessary repairs in the opal glass. With a view of ascertaining the condition and safety or otherwise of the hands, Mr. Dent, the maker of the clock, accompanied by several scientific and professional gentlemen, made an inspection of them on Tuesday week, and examined them closely. The result is that the hands are to be taken down and removed to Mr. Dent's establishment, where they will be tested, and, if necessary, repaired and restored. The hands of the whole of the dials will not be removed at once, but those on each dial in succession, there being no interference whatever with the working of the clock during the process. The hands on the south dial were removed on the 13th inst., and none of those on the other dials will be disturbed until those belonging to the south dial are replaced.

We understand that for the purpose of re-gilding the dials, Mr. Jones, who is acting as clerk of the works, has invented a new piece of machinery and staging for the workmen to stand upon. This is the first time it has been in use, and we learn that Mr. Jones has patented the invention. The restorations will be carried out under the superintendence of her Majesty's Office of Works.

GREENOCK MUNICIPAL BUILDINGS COMPETITION.

IN spite of the unworthy offer of only 4 per cent. commission to the successful competitor, no fewer than fifty architects have sent in designs for these buildings. The Corporation have called in Mr. Charles Barry, F.S.A., to advise them in the selection of the design to be adopted, and those to receive the two premiums offered.

The disastrous example set by the Corporation of cutting down architects' pay, with all its attendant evils and temptations, is much to be deplored and deprecated.

CITY OF LONDON SCHOOL.

AT a meeting of the Court of Common Council, on the 12th inst., a question was asked as to throwing open for the inspection of the public the exhibition of designs for the suggested new school. Mr. G. M. Felton, the chairman of the school committee, said he had received no notice of this question, but he might say that the committee had not felt themselves justified in throwing open the designs to the public. They belonged to the competitors, who had spent much trouble and pains on them. Without their leave it would be an injustice to them to exhibit the plans. As to the names of competitors being announced, he was surprised to see them in the newspapers; they might be correct or not. In answer to Mr. Edmeston, who asked if it was the intention of the committee, with the consent of the competitors (which he thought it quite unnecessary to seek, as it was not likely they would object), to exhibit the designs. Mr. Felton said that the reference to the committee was to consider the plans. They held that to be their duty; and that it was not their province to throw them open to the public, so that the Press might discuss them, and the Committee be led one way or the other by leading articles. As to the canvassing of competitors, Mr. Felton stated that he could only speak for himself, and he could declare, on his honour, that at no time, directly or indirectly, had he been canvassed by any competitor.

We may hope that now the committee have "considered the plans," and are, therefore, no longer in danger from counsel given by the public and the Press,—the exhibition may be opened without delay, and the fullest criticism of the scheme and designs generally invited before the final decision is come to. We can hardly imagine to ourselves a competitor so utterly crazy as to object. If there should be such a person among the fifty-three, let public notice be given, and let him remove his drawings before the public scrutiny is to be begun. It would then be an interesting problem for the members of the school committee to determine why they were ever sent in. The exhibition should be made for its own sake, apart from the question of the decision. There must be many useful ideas, which, as the authors are willing to put them before the world, would be appreciated by the special public which is to take care of the middle-class education of the future.

Macclesfield School of Art.—The Macclesfield new School of Art and Science has been opened by the senior member for the borough, Mr. W. C. Brocklehurst. The building has cost 5,500*l.*, and is erected on a plot of land given by the corporation. It has yet to be furnished, and this will entail an extra cost of 1,500*l.*

NEW WESLEYAN COLLEGE, BIRMINGHAM, COMPETITION.

FORTY-TWO sets of designs were received, and Mr. Alfred Waterhouse has recommended the following for the premiums in this competition, viz.:—1st, "Ut Migraturus Habita"; 2nd, "Wesleyan"; 3rd, "Speramus." Mr. Waterhouse adds:—

"In making these awards I have compared and weighed the forty-two designs—

1. By the scales of the conditions, ascertaining their general adherence to these conditions, and especially to that of cost.

2. As to their general excellence, fitness for the special objects of the College, and for the site, with its peculiarities of contour and aspect.

3. By the evidence evinced by the drawings of their authors being skilful constructors and artists, and of their ability to carry out the work in a satisfactory way if confided to their care.

I am well aware that it is rare indeed to find any one design pre-eminent in all these respects, and I do not pretend to have done so in the present instance. There is not a design in the room probably that you would wish to see carried out with ut some modification. I must, however, compliment many of the competitors on the excellence of their work, which seems to me far above the average."

The successful competitors are:—1. Messrs. Ball & Goddard, Birmingham (who are appointed architects); 2. Mr. C. O. Ellison, Liverpool; and 3. Messrs. F. & A. Wheeldon, Birmingham, and H. Beck, London.

THE NEW CHURCH OF ALL HALLOWS SOUTHWARK.

LAYING THE MEMORIAL STONE.

A BENEVOLENT old lady, Mrs. Hunt, having left the sum of 10,000*l.* towards the building and endowment of the permanent church of All Hallows, Southwark, the structure has for some months past been in course of erection, from the designs of Mr. George Gilbert Scott, and is now considerably above the ground level. Last week the ceremony of laying the memorial stone took place in the presence of a large body of the clergy and other friends of the undertaking, the ceremony being performed by Earl Beauchamp, Lord Steward of Her Majesty's Household.

The site of the church, which cost upwards of 4,000*l.*, is in Pepper-street, off Union-street, in the immediate vicinity of Gravel-lane, which is, as we well know, one of the most poverty-stricken, woe-begotten, and heathenish spots in Southwark. The style of architecture is the Middle-Pointed Gothic, and the edifice will be one of the largest churches in the metropolis, having seating accommodation for 1,200 persons. The nave and aisles will be 90 ft. in length, and the chancel and sanctuary 60 ft. long, making the entire length of the interior 150 ft., whilst the width of the nave will be 32 ft., and the aisles 17 ft. The nave will be divided from the aisles by arcades of four bays. The chancel will also consist of four bays, and will be 25 ft. in width. A special feature in the church is that the clergy and choir vestries are to be in the basement of the building under the sanctuary, the chancel being approached from thence by a flight of steps on the north and south sides. The chancel aisles will form side chapels, and over one of them will be the organ-chamber.

The contractors for the building are Messrs. Higgs & Hill, of the Lambeth Works.

GATESHEAD INDUSTRIAL SCHOOL.

IT has been found in Gateshead, as in other towns, that there is a class of children which cannot be gathered into the ordinary Board Schools, and the Board, therefore, have availed themselves of powers conferred by the last Education Act to commence the erection of day industrial schools,—a class of school different from the ordinary schools of the Board, and different also from the penal industrial schools. The foundation-stone of this school was laid on the 5th inst., on a site at the Windmill Hills. In these schools children will be taught some industrial pursuit as well as the ordinary elements which form the usual education of day-schools; and, in addition to this, they will be fed and, as it were, live at the schools during the day. The proposed building is intended to accommodate 200 children, comprising an equal number of either sex. The structure will be two stories in height. The arrangements on the ground-floor will comprise the dining-hall, centrally situated, with entrance at either end; boys' ablutories, superintendent's office, workrooms, bathroom, stone staircase to second story, covered playground, and offices on the boys' side; kitchens, scullery, pantries and larders, bathroom and girls' lavatories on the girls' side. A large washhouse and laundry will be erected apart from the main building, and at the end of the female department will be situate a house of four rooms for the use of the school-keeper. The plans provide for a spacious mixed school-room, with three class-rooms upstairs, where also will be provided store-room and private rooms for masters and mistresses. The building will be built of red brick, with stone dressings and slated roofs, and the entrances, corridors, and staircase will be fireproof. Messrs. Oliver & Leeson, Newcastle, are the architects.

FRIEND LABOUR.

Now gaffer labour, drink, carouse,
Deeper and deeper! Join him, spouse!
The nation waits your orgie o'er
To settle down to work once more.
The land, the shop, the ship, the mart,
Stand ready to perform their part.
So let the foaming pot go round,
Give legs of mutton to your hound,
Give to time no thought or sorrow,—
There's always plenty in to-morrow.
Don't number sands while quarts ye drain,
To-morrow's but to-day again.
So sup, my lads, and spend the lot,
Then work for more. Stay! you must not
Gaffer it more; no, ne'er again.
Money and muscle, ye are twain;
But what power's this that looms? The brain?
As lightning makes the thunders roll
And belch and crack from pole to pole,
So doth the brain the earth embrace,
The king of kings, of time, of space.
So money, muscle, brain,—ye three,
Form one almighty trinity;
Let no arch-serpent disunite
The total of your heav'n-born might;
But kindly trample it to death,
Cleanse life of its infectious breath,
Then step together, hand in hand,
Give blessings thick as ocean's sand,
Then Godlike puissance of our land.

CHARLES FITTER.

THE CLAIM OF AN ARCHITECT.

AT the Clerkenwell County Court, on the 13th inst., before Mr. Gordon Whitbread, the judge, Mr. Thomas Charles Sorby, of Bedford-row, architect, sued Mr. Frank C. Scargill, of Luton, Beds, for 7*l.* 18s. 10d., for attending on subpœna on two occasions of arbitration before Mr. I'Anson; with plans, drawing specifications, &c. (5*l.* 5s.); searching for original drawings relating to contract between Mr. Scargill, the defendant, and Mr. Shoppee; attending the office of solicitors relating to the same on two occasions; solicitor's charges against him, &c. Mr. Wakeling, solicitor, who appeared for the plaintiff, stated that the action was brought to recover the sum of 7*l.* 18s. 10d. for attending an arbitration as a witness, and the charges were those sanctioned by the Institute of British Architects. The plaintiff was engaged as architect in the erection of a private residence for the defendant, at a cost of 15,000*l.*, and there were some differences between them and also between the defendant and Mr. Shoppee, the quantity surveyor, against whom defendant commenced an action, which was referred to arbitration, and on the hearing of which the plaintiff was subpœnaed to attend, for which he now claimed his expenses. His honour remarked that Mr. Wakeling had shown no authority for the claim. Mr. Wakeling said it was well known to be the general practice for a witness attending on his subpœna to be paid. The judge: You must show it to be the general practice. Mr. H. Browne, barrister, for the defendant, said if a witness was served with a subpœna, he was entitled to be paid his expenses before attending to give evidence, and if he was not supplied with such expenses he need not come, but if he did come he must claim his expenses before giving his evidence, for he could not do it after. Mr. Wakeling thought plaintiff was enabled to bring his action on his subpœna. His honour thought not. Mr. Browne cited the case of Collins *v.* Godefry, 1 D. P. C., 326, and 1 B. & A., 750, where it is laid down that a witness attending at the trial of a cause on subpœna cannot recover the expenses for compensation for his loss of time in attending, even though he is an atto
so that a witness cannot bring his action,
this case the witness would be paid his exp
in due course. The case was then withdra

CAUTION TO SURVEYORS AND VALUERS.

TUDOR AND ANOTHER *v.* DURRANT.

THIS was an action, in the Exchequer Di
of considerable interest to surveyors and va
and was brought against the defendan
negligence in valuing property on whic
plaintiffs advanced money.

It appeared that in 1877 the plaintiffs, Mr. F. Tudi
a solicitor, and his uncle, a clergyman, had som
money in hand which they wished to invest. In At
that year Mr. Durrant, the defendant, a valuer, intr
a Mr. Ingledew to Mr. F. Tudor (who, it would
acted alone in the investment) as a gentleman w
desirous of raising a loan for the Anglo Transfer
Company, when Mr. Tudor consented, on certain
tions, to make an advance. The business of the co
which was managed by three partners, consisted
manufacture of fur by removing the hair from ski
sticking it upon canvas, and it was carried on in
by one of the partners, Mr. Max Hirsch, at pres
Russell-street, Bermondsey. On the 1st of Septem
agreement was drawn up, by which the plaintiffs con
to advance 500*l.* at 6 per cent. per annum on the m
of these premises, which consisted of two leasehold
and the plant, machinery, and fixtures upon the pr
but the advance was to be conditional upon a
appointed by the plaintiffs, reporting, after a surve
property, that it was worth "at least 800*l.* as a mac
able property," and that the title should be p
deduced. Tudor instructed the defendant to make s
tion of the property, which the latter accordingly
the afternoon of the same day, and sent his report, i
with a bill, to Mr. Tudor on September 6. In hi
the defendant described the property, and annexe
report a schedule of the plant and machinery,
which," he wrote, "you will observe the premi
appropriately fitted, and offer every accommoda
the present business, as also that of a tanner, th
value as they now stand being in my opinion 1
annum. The present staff comprises from eight
twenty hands, five being skilled operatives.
formed the property is held on lease for a t
twenty-one years, from December, 1875, at a re
65*l.* per annum, and I am of opinion the present
together with the plant and machinery, is 700*l.*"
report the plaintiffs advanced the money, 550*l.* in all
Company, and Mr. Durrant was paid 8 guineas, the
of his bill. Before long Mr. Tudor became uneas
the value of the security, and took steps to call
money he had advanced. Max Hirsch left the com
January, 1878, and in March the plaintiffs took proc
against the Company, and, no defence being raised
judgment against them, but were no better off by
The plaintiffs then applied to the defendant to sell t
perty, and, on his failing to do so, put it into the h
Mr. Billingay, to sell by auction. This was accor
done, when the total amount realised by the sale wa
10*l.*, and the gross amount received by the plaintif
all deductions, some 24*l.* The present action w
brought against the defendant, on whose behalf it w
tended that the investment was merely a speculat
on the part of Mr. Tudor, who had been persuaded
Hirsch, and believed that the company was t
flourishing business, and that the high rate of int
6 per cent., showed that the investment was
nature. The small price realised at the sale was at
to the fact that business had become of late very dep
and that the property had not been judiciously disp
and several professional gentlemen who were ca
behalf of Durrant expressed themselves of this o
and thought that Durrant had exercised proper
making his report. One of them, Mr. Nolley, s
bill, who stated that he had had great experience
matters, considered that Durrant had even under-est
the value of the lease.

The Judge, having summed up the case, left it
jury to say whether the defendant had been guil
breach of duty in making his valuation, and if so
amount of loss the plaintiffs had thereby sustained.

The jury returned a verdict for the plaintiffs, d
527*l.*

LIGHT AND AIR CASE.

RICHARDS *v.* SANDON.

THIS was a motion in the Chancery Di
before the Master of the Rolls, to restra
defendant from building so as to obstru
access of light to the plaintiff's hotel, in
street, St. James's. The defendant's bui
were intended to be let out as chambers.

Mr. Davey, Q.C., and Mr. Eyre appeared for the
tiff, and produced a model showing the position o
premises, an inspection of which, they submitted,
show that the plaintiff was entitled to an injunction
the defendant

His lordship observed parenthetically that the
to which modern buildings were carried afforded an
but a happy prospect to dwellers in narrow street
spoke looking at the height of the buildings shown
model, standing in a street only 34 ft. wide.

Mr. Davey said the hotel would simply be ruined
the Court interfered.

Mr. Chitty, Q.C. (with whom was Mr. Rodwell),
defendant, said the plaintiff had seen the plans, a
personally seen the defendant before the building
erected.

Mr. Davey said that some kind of verbal arran
made in the course of conversation was set up
defendant, and denied by the plaintiff.

Mr. Chitty averred that the plaintiff had, at all
acquiesced in what had been done, and in fact he ha
to catch the defendant in a trap. The building
improve the street and the business of the hotel
At all events, the occupants of the chambers
probably dine there.

lship, examining the model, said it certainly to show a *primâ facie* case for the plaintiff, and rther conversation the matter stood over, on the s undertaking not to proceed with his building ced the hotel beyond a line agreed upon.

ABILITY OF LANDLORD TO P TENANT FOR WORKS UNDER THE PUBLIC HEALTH ACT.

CASTLEBERG *v.* KENYON.

ase was heard, on appeal from the of the judge of the Wandsworth County n the Queen's Bench Division of the rt of Justice, on Saturday last, before Chief Justice and Mr. Justice Lush.

laintiff, as stated in our previous report se (see p. 354, *ante*), sued his landlord er money he had been forced to pay e Public Health Acts in the removal of ce caused by defective drainage, &c. raised an important question as to the of landlords and tenants under such ances. By the Act of 1855, 18 & 19 o. 121, the owner is to make good and drainage, and if it appears that the is bad there may be notice to the or occupier" to do it, and if it is not n the occupier is liable to a penalty, and d may do it and charge the owner. In ent case, the notice being given, the to avoid the penalty, did the work, and ght to recover the amount from the who refused to repay him or allow it e rent. The County Court judge dis- the claim, and the tenant thereupon

ention for the defendant, the landlord, was that were to do the work if the owner did not do it, e tenant had no business to do it himself; but d Chief Justice said this was not an honest The owner was ultimately liable, and the occu- able to a penalty meanwhile if the work was not in order to avoid the penalty, as the owner do fit, he did it himself. It was dishonest to e advantage of such an objection in answer to n,—a claim to be reimbursed by the landlord for of work done under legal compulsion for the mprovement of his own property.

ice Lush said the effect of the enactment was, ndlord was ultimately liable for the work, but ant was compellable by penalty to do it in case f the landlord.

rged that, under the Nuisances Removal Act 19 Vict., cap. 121, there was an order neces- is order had not been obtained.

Chief Justice, however, said that the ultimate on the owner, and the tenant was practically to do the work if the landlord would not do n the whole case the judgment of the Court plaintiff, the tenant, that he was entitled to n the landlord the amount he had paid. The e legislation on the subject, they said, was to ultimate liability on the owner, though the d be called upon in the first instance to do the

was, therefore, given for the plaintiff.

E PATENT THERMOGRAPH.

this useful and ingenious invention wkett, of the Leeds Fever Hospital. tructed, as its name implies, for the of obtaining continuous records of the mperatures to which it is subjected.

rmal portion, or that part of the instru- ch is directly influenced by the varia- mperature, consists simply of a hollow tube similar to that in use in the pressure gauge. This is bent into a , and completely filled with a suitable hermetically sealed.

ssure obtained from a fluid expanding influence of varying temperatures is for the purpose of registering those ures, on the principle that any given xpanding will exert a pressure at all portionate to its expansion or hindered .

etallic tube thus filled is found per- sitive for the purpose; this is fixed at o a suitable case, the other or free end ed with an arm to which a lead pencil This arm is carried across the face of ng dial. The dial carries a paper disc ivided by radii into hours and their and further by a number of con- rcles.

ntre of the disc is the zero of the aph, the circumference corresponds to mum range. The concentric circles intermediate degrees. The arm, as erature varies, approaches the centre ference, the lead attached to it mark- ble line, the disc travelling meanwhile our-hand of a clock, making one revolu- velve hours; thus a line is drawn on the disc or dial, the position of which, in reference to the concentric circles, marks the tempera- tures, and, in reference to the radii, marks the times of those temperatures.

This instrument is portable, not liable to get out of order, is uninfluenced by position, and admits of an infinite variety of designs. The one before us is for hot-house purposes, and is contained in a flat perforated metallic case of about 8 in. in diameter, and has a range of 70 degrees.

The inventor informs us that one which he has had in action in his sitting-room chronicles, by the record of temperature, the lighting of the fire and gas, and the opening of the doors and windows, much to the horror and amazement of the domestic in attendance, who, on being directed to open the windows on rising in the morning, is thus confronted with a witness who is ready to convict her of any laxity in the punctual performance of her duties.

Messrs. John Davis & Son, of All Saints Works, Derby, have the working of the patent.

ELTHAM.

THE wooden spire adjacent to the recently rebuilt parish church is now to be removed, and a new stone tower and spire substituted adjoining to and of the same character as the church. The church was rebuilt in 1874-5 by Mr. J. G. Naylar, of Rochester, from the designs of Mr. A. W. Blomfield, at a cost of upwards of 6,000*l*. The plans for the tower and spire are from the pen of the same architect, and Mr. Naylar's tender of 2,677*l*. being the lowest, he is now engaged in removing the old spire preparatory to commencing building the new one. Owing to want of funds, the committee have decided to enter into a contract for the erection of the lower part only at present, at a cost of 1,500*l*., but they hope, before this portion is finished, that funds will flow in sufficient to enable them to complete it. Mr. Naylar has built several other churches in the vicinity within the last few years.

THE ORIGIN OF GAS.

SIR,—In the interesting article on "The Night Lights of Old London" in the *Builder* of April 5, it is stated that the earliest account of the discovery of gas is to be found in the "Philosophical Transactions" for the year 1667. On referring to the volume for that year, I find the paper of Thomas Shirley, describing the discovery, appeared in No. 26, for June 3, 1667, "Printed by T. R., for John Martyn, Printer to the Royal Society, and are to be sold at the Bell, a little without Temple Bar, 1667."

(While I am writing this, the last stones of the old gateway of Wren's work,—Temple Bar,—are being removed, and these last stones belong to the southern abutment, adjoining the old bank of Child & Co., also now pulled down.)

Having occasion to refer to a copy of a very rare little book which I possess, written by Dr. Robert Wittie, entitled "Scarbrough Spaw, or a Description of the Nature and Vertues of the Spaw at Scarbrough, Yorkshire," being the second edition (of which the first appeared in 1660), and a book that caused some amount of criticism at the date of its publication, I was very much interested to find a notice of "a mine of cannel coal (as they call it) which is underneath; and was first discovered by a boy, who in the mine below did let a candle fall into water, where the like bubbling was that took fire."

Thinking this extract a very interesting fact, and worthy of being more widely known, I presume to trouble your readers with its perusal.

T. C. NOBLE.

PAYMENT OF ARCHITECTS.

SIR,—May I be allowed the favour of asking, through the medium of your journal, a question which often troubles me (as well as others of my profession, viz.,—supposing plans, &c., complete, have been prepared for a certain work or works, and after the contract for such works has been duly signed, and the building commenced, that the employer wishes deviations and alterations, and additions from the original plans, &c., which incur new plans of these altered parts, with specifications, &c., is the usual five per cent. upon these extra works to be considered as remunerative to the architect for the plans, &c., for these extra works, which involve the additional trouble in showing and specifying the deviations and omissions, as well as the actual extra work, as the labour in these cases is very considerable? I am making these inquiries with a view to ascertain the fair and honourable way to deal with my employers, while I wish to act in a way not ungenerously to myself.

X. Y. Z.

ARTISANS' DWELLINGS.

SIR,—It appears that additional dwelling-houses are about to be built on the site of the new Bunhill-fields Burial-grounds. It is a monstrous thing that model dwellings for those classes who are compelled by necessity to occupy every available place of abode in this great city, irrespective of its suitability for human habitation, can be built over the crowded graves of past generations, while, at the same time, in every district of the metropolis houses have been pulled down and land cleared for the purpose of building such dwellings.

The speculating builder is allowed to make money at the expense of the public health, and the ingenious contrivances by means of which the largest city in the world is deprived of self-government not only permit of this being done, but absolutely encourage it, by placing such high prices on the land that has been cleared as practically to make it commercially impossible for artisans' dwellings to be built on it. If these dwellings could command the same rent as offices would, there would have been no need for the intervention of Parliament.

If some public pressure is not brought to bear upon the authorities entrusted with the carrying out of the Artisans' Dwellings Act, this unsatisfactory state of things will continue. An effectual way to prevent the recurrence of such mischievous administration would be the establishment of a real system of local government in London.

More than forty years ago, by authority of the Clerkenwell Improvement Act, land was cleared in what is still one of the most crowded parts of the City, and this land is even now lying waste. As Sir Sidney Waterlow pointed out, in appealing to the Court of Common Council, to do something with these waste spaces, this land, if let at a low rental, or sold at a low price for building purposes, would, before this, have given a return in ground-rent and local assessment far in excess of the highest price that could be expected to be obtained for the land to-day.

The whole question calls for investigation, as it is one of vital importance to the whole of the community.

MARK H. JUDGE.

A PRACTICAL PROPOSAL.

HAVING in view the domestic dangers to health arising from imperfect workmanship by plumbers, and the use of improperly so-called "sanitary appliances," the Council of the National Health Society have taken into consideration the most practical means of striking at the root of these serious evils. The conviction that a want of knowledge by working men of the elementary laws and applications of the laws of sanitary science is a chief cause of those defects, has led the committee to the conclusion that great good to the community would ensue from the practical teaching of elementary sanitary science to workmen actually engaged in building our houses. The society proposes to organise a series of lectures and demonstrations to working plumbers. At the close of each series of lectures handsome money prizes would be awarded to those who gave the best evidence of having profited by the teaching. The National Health Society have reason to believe that not only would the lectures be very numerously attended, but that the matter will become one of general discussion in the workshops. Such a movement can hardly fail to be of great public benefit; the committee, therefore, venture to hope that you will kindly lend your powerful aid in making their proposal widely known, with a view to raising at once the requisite funds.

ERNEST HART, Chairman of Council.
F. LANKESTER, Secretary.

44, *Berners-street*.

Technical Education for Plumbers.—The Court of the Plumbers' Company recently appointed a committee, consisting of Mr. George Shaw, the Master, Mr. Digby Seymour, Q.C., and Mr. P. Wilkinson, to consider and report as to the best practical means of extending the utility of the company and elevating the character and educational standard of the workmen engaged in the trade of plumbing. The committee, after inquiry, have recommended that any workman belonging to the trade who produces evidence of having been for fifteen years in good and approved employment as a plumber, and of having done his work to the satisfaction of his master, and who furnishes vouchers of good personal character, should be eligible for admission, free of expense, to the freedom of the company; with its privileges and benefits; and, next, that any workman belonging to the trade, who should produce a certificate of having worked for at least ten years as a plumber under one approved employer, by whom he should be recommended for his skill, proficiency, and good character, should, on passing an examination by the Court as to his knowledge of the principles and practice of the art of plumbing, be entitled to a diploma under the company's seal, testifying, in the language of their ancient charter, dated in 1365, that "he knows how well and lawfully to work and to do his work."

Thetford.—The works for the erection of a new school, in connexion with the Roman Catholic Chapel at Thetford, have been commenced. Mr. B. Pearce is the architect, and Mr. William Hubbard the contractor.

QUANTITIES AND CONTRACTS.

SIR,—I am pleased to see in your issue of the 7th inst. that some notice has been taken by our Scotch brethren of that part of Mr. Honeyman's paper read at the Institute of Architects, relative to the employment of measurers and their *locus standi*.

It may or may not be true that the "average surveyor," in the author's experience of him, could not be expected to command the necessary sum to pay the cost of his errors of measurement, if any; but it is certainly true that it has been more than once within the experience of our English brethren, and I would include our Scotch brethren too, that after the quantities for a building have been prepared with the consent of the client at a rate per cent. previously agreed upon, the proposed building has been abandoned, or has been so modified as to necessitate new plans or an entirely new set of quantities. The "average surveyor," upon the representation of the architect or the client, as it may happen that under the circumstances the charge for the preparation of the quantities should be reduced, has been magnanimous enough to consent to accept considerably less than the sum he would have been legally entitled to receive in payment for his well-earned services had he stood strictly upon the original agreement.

The writer has read Mr. Honeyman's remarks with much interest and benefit, and thinks that good will come of it; he has also seen something of the Glasgow and Edinburgh systems of measurement on the spot, and has compared their merits according to his own lights and for his own instruction. They, like our English system, are not perfect, and future discussion by the Institute will help much to bring out the good and useful parts of either system, so that each may be better understood and appreciated.

N.

Books.

The Highway Acts, 1862-1878, *the Locomotive Acts*, 1861-1878, *with Introduction, Notes, &c.* By ALEXANDER GLEN, M.A. With a Paper on the Construction and Repair of Roads by W. NETHERSOLE, M.I.C.E. London: Knight & Co. 1879.

WHEN a book has reached a fifth edition, criticism is powerless for good or ill, for it has clearly satisfied the public wants, and, bad or good, it has answered the purpose for which it was written. But we may fairly say that this book is a most useful compendium of the matters which it treats. After the legislation of last session, it was necessary to issue another edition, because the passing of the Highways and Locomotives Act, 1878, 41 & 42 Vict., c. 77, has made several important changes in the law. We have no intention here of discussing the policy of the most recent highway legislation; but one thing is very obvious, that steam locomotives on highways are expected to increase. And further, we confess that it seems to us time that these Highway Acts, extending over a period of nearly twenty years, should be consolidated into a single Act. Until that is done, no one in any way concerned with highways can very well dispense with Mr. Glen's most portable volume. But the mere fact that an industrious lawyer can, in seventy-seven pages, give a general introductory outline of the legislation in relation to highways, and in another two hundred pages give the text of the law, shows that such a consolidation is by no means a task of great difficulty, and would be an immense public convenience.

Ten Lectures on Art. By EDWARD J. POYNTER, R.A. London: Chapman & Hall, 1879.

MR. POYNTER has brought into a volume a number of lectures written and delivered by him, mostly when he held the Slade Professorship at University College, headed respectively:—1. Decorative Art; 2. Old and New Art; 3. Systems of Art Education; 4. Hints on the Formation of a Style; 5. The Training of Art Students; 6. On the Study of Nature; 7. Value of Prizes; 8. Objects of Study; 9. Professor Ruskin on Michelangelo; and 10. The Influence of Art on Social Life. It will not be expected that we can agree with Mr. Poynter in all his teaching, and we may hereafter examine at length some of his opinions; but we can nevertheless warmly recommend the book as an interesting and valuable contribution to art literature. Mr. Poynter often writes dogmatically enough, but he protests against it in others. He breaks a lance with Mr. Ruskin on the merits of Michelangelo; in fact, he would run him through with it if he could; and he uses such terms concerning the latter-day doings of Mr. Ruskin as will gladden the hearts of that gentleman's enemies. Milder-mannered men will, perhaps, regret that one Slade Professor finds it necessary to speak so of another Slade Professor, and lament the fallibility of human judgment. It will vex others, too, to hear that our only hope of getting fine workmanship lies in obtaining aid from abroad. "In all matters connected with modelling and metal work," says Mr. Poynter, "the French and other nations excel us on every point; it is well known, indeed, that our most eminent pottery firms and silversmiths employ French workmen. Our plan, therefore, is to establish technical schools under the best foreign teachers that are to be found; and if our manufacturers are not too much under the influence of trade jealousies to allow it, and our mechanics not too conceited to learn, some good may be done." This is a sad admission from the Director for Art in the Government Science and Art Department.

Miscellanea.

Electric Light.—The report of the select committee appointed by the House of Commons to consider the question of lighting by electricity, it is understood, is to the following effect:—That sufficient progress has been made with electricity as a means of lighting to encourage the belief that it has an important future before it, and not only for illuminating purposes, but as a source of power which may be wisely distributed and applied to mechanical purposes. The committee are of opinion that the electric light, even in its present state of development, can be advantageously used in large areas, open or enclosed, such as large halls, squares, or railway stations; but they do not think it has been so far matured as to be able to compete with gas for domestic purposes. They therefore do not recommend any legislation for applying the light to private purposes on the strength of its being practicable for large spaces and buildings, but they do recommend that no legislative restrictions shall be allowed to impede its further development. As to granting authority for adopting the electric light, the committee think there is already in existence sufficient power for applying it to open spaces and large centres; and, mentioning the diversity of views among the witnesses as to whether or not municipal bodies have power under existing statutes to break up streets for the purpose of laying electric light wires, they say that if such power does not exist it should be granted under proper regulations. They consider, however, that the time is not yet ripe for allowing private companies to break up streets in order to supply the electric light, but they advise that municipal authorities should receive all possible help for public lighting by electricity, and that the legislature should be willing to give all reasonable facilities for extending the use of the electric light where proper demand for it arises. They consider further that for lighthouse purposes the electric light has established itself, but they have not been able to satisfy themselves from the evidence that electric lighting is economical as compared with gas.

An Archdeacon on Church Restoration.—The Ven. Archdeacon Hannah, vicar of Brighton, in the course of a "charge" delivered by him at Hastings the other day, said, with reference to the restoration of churches:—

"It is of little use to suggest definite rules on the subject when what we want is not a set of hard rules, but the personal responsibility of practical knowledge, reverence, and care. Perhaps, however, we might lay it down with safety that a careful restoration should aim at reinstating the main features of the church to the latest date of what can be acknowledged as a true and genuine building, sweeping away what is obviously mean and worthless, unworthy concessions to unseemly selfishness and comfort, or the poor expedients of a niggardly repair. We really cannot admit the claim to reverence of unseemly galleries and high-backed square pews. A great square pew is an aggression on the rights of others, which we ought not to maintain merely because it may have suited the habits of our grandfathers, though it has sometimes left a sad legacy in the alienation of the poor. We cannot retain the original pavement if it has been shattered till it has become altogether uneven, damp, and unwholesome. We cannot leave the chancel any longer to the owls and bats, because it may have been, till lately, the indolent custom to conduct the old service in the nave. We cannot rest satisfied with obvious barbarisms such as square-headed wooden frames in Gothic windows, or wooden bars, which have been substituted for ancient stone mullions. We certainly ought not to interfere with a genuine Perpendicular window in an older church, because, whether we admire it or not, it was an honest piece of architectural workmanship, which cannot be said of a wooden sash-window."

Another Theatre.—We understand a plot of land in Northumberland-avenue, adjoining the Grand Hotel, has been let, on which a theatre for Mr. Toole is to be erected. The ground-rent is 5,000*l.* per annum, but the land affords space for shops and other buildings besides the theatre.

A Wages Dispute.—James Moore, Rose Cottage, Kew-road, was summo James Booker and Robert Standen, Richmond Petty Sessions, for the payment of 1*l.* 15s. 6d., arrears of wa work done. The complainant Lucas sta he lived at 1, Orchard-cottages, Mortla and was an excavator. The work do digging out foundations in Sandy-lane had been carried out by him and man. Defendant said he should object summons being taken out in both name had engaged the complainant only, an nothing of the man Standen at all. He the case to be heard, but he certainly to the claim being made in the joint. Complainant said he and Standen ex 33½ yards, for which they presented a the amount claimed, but the defendant to take the bill, and ordered them off mises. They had excavated 28 yar would have finished the work if fendant had allowed them. Robert stated that he had been working with He claimed half the money. Defendan that the work stated had been comple called James Morgan, who was forema labourers. He was certain there w 28 yards excavated. The Bench made for the payment of 28s.,—28 yards at yard. The defendant, in applying for mons against the men for leaving the said they had excavated the easiest port and had left him to get the remainder best he could. Defendant is the manage tensive building operations at Richmond Selwyn Estate, and disputed the claim ciple.—*Mid-Surrey Times*.

Mr. H. Noel Humphreys.—The records the decease of Mr. Henry Noe phreys, which occurred at the close of l at his residence in Westbourne-squar Park. A son of the late Mr. James Hu of Birmingham, he was born in the metropolis in 1809 or the following y received his early education at King E School, Birmingham. Having spent s in artistic studies in Italy, he published work, consisting of illustrations of M Cooke's scenery of Rome and its neighb His next work, which bears date 1840, "British Butterflies and their Transfor he published in partnership with Mr Westwood. This was followed by wor archæological character,—"Illustrat Froissart's Chronicles," "The Parables Lord Illustrated," "The Coins of E "Ancient Coins and Medals," "The Illu Books of the Mediæval Period," the Collector's Manual," the "Coinage British Empire," "Stories by an Archæo and especially "The Art of Illuminatio "The History of the Art of Writing f Hieroglyphic Period down to the Intro of Alphabets." Mr. Humphreys con several papers to our own columns som ago.

Truro Cathedral.—At a recent me the executive committee of the Truro C Fund, Mr. Pearson submitted his plans new cathedral, and it was agreed to rec them to the General Diocesan Committ a suggestion that the first part, consi the nave and transepts, should be com immediately, at a cost not exceeding The plans display the chief points of a ture in the thirteenth century style o tecture, and include a central and two towers. The ground-plan shows the p ultimate erection of a cathedral prope nave, aisles, transepts, and choir, togeth cloisters and cloister court. The spac the choir will be used for vestries, ten chapter-room, &c. It is proposed that of the present church should be worked building, and the south porch of the tra made perceptibly richer, in order to ble the more profuse ornamentation of th aisle wall.

Masonic Female Orphan School, C. It has been resolved to build a more dious school than that in the Burlingto for orphan girls. A site has been obtain prising nine acres, at Donnybrook, fr Earl of Pembroke, on a lease for 200 Messrs. M'Curdy & Mitchell, architect prepared the plans, and the estimated between 9,000*l.* and 10,000*l.* The buildi be constructed to accommodate from se 100 children.

Brick Manufacture.—A process patented, and is now being carried out, obert Pickwell (of Clarke & Pickwell), rineers, Lowgate, Hull, for the manuf white-pressed bricks from common . Red clays abound in and around the white clay which yields the white scarce, and situated at considerable from the town. This process consists or grinding into the common clay a aterial,—chiefly magnesian limestone, has been reduced to an impalpable and powder by being burned and slacked. ture is passed through a series of mixing ding mills, and so completely ground particle of each ingredient is brought contact with each other. This mixen acted upon as it leaves the last mill paratus which reduces it to a fine grain ce running soil, in which state it falls he feeder into the moulds of a powerful ssing machine, is subjected to a heavy and is delivered at the delivery-table e and almost dry-pressed brick, which, nt in the kiln, produces a white brick of lity. The ingredients added to the clay bsorb about 40 per cent. of the moisd in the natural clay, and the grinding se and complete that the mixture is ly and evenly amalgamated. The ffected in the colour of the red clay on nt is due to the presence of the mixe understand the bricks can be made at 20s. to 22s. per 1,000, the sale price of ricks being at the present time 50s. to per 1,000 in Hull, and in London 75s. . The process is said to be ap. to common red clays in any part of ry.

Science Congress.—The following Special Questions as agreed to by the es of three of the departments for at the Manchester Congress :—*Health t.*—1. What are the evils resulting to m the growth, outside the boundaries palities, of suburban districts, without ation and control? 2. What are the s of improving the sanitary condition g houses of the middle classes, and mode of building so as to combine and commercial value? 3. The Water Supply. *Department of Economy s.*—1. What steps should be taken to areholders and the public from mis- nt in joint-stock enterprises? 2. rations in the land laws will be to the advantage of the country? 3. The nd extension of our commercial treaties, are the chief obstacles to the general of free trade? *Art Department.*—1. fects are most suitable for the pictorial of public buildings in this country, whom should the selection rest? 2. ble or desirable to establish regulations provement of street architecture, and evention of the disfigurement of towns ? 3. Is State aid beneficial to art?

"Empress" Ventilator.—This ventipines two important principles. It prong up-current by the revolution of nedean screw, and an up-current is ced by the introduction of a cone inside ans; so that should the ventilator at become fixed from any cause, it will ectually as any ordinary stationary in producing an up-current. The cone in preventing down-blow. The top g a fixture, and the lower part lving, the latter can be made very ter than in the old archimedean venthat it does not require so much wind d keep it in rapid motion. Messrs. Son, of the Euston-road, are the

oundation Stone of the New e Lighthouse will be laid by the Edinburgh, as Elder Brother of the n of the Trinity House, this Saturday, The Prince of Wales and the two young ow cadets at Dartmouth, will accomat the ceremony. The estimated new lighthouse is 70,000*l.*, and it is o light it by electricity. This beacon on some low rocks twelve miles from is 120 years since the present light- t by Smeaton, was erected.

Academy.—Cards have been sent out sident and Council for a *Conversazione* day, July 2nd.

The Strike in the Bristol Building Trade.—This strike, so far as the painters were concerned, virtually terminated on Saturday, owing to the decision given by Mr. R. A. Fisher, judge of the County Court, who had been appointed arbitrator between the master builders and the painters. The representatives of both sides having agreed to abide by his arbitration in the dispute as to whether the men should submit to ½d. per hour reduction, their representatives fully set forth their views to Mr. Fisher on Wednesday, and on Saturday last he sent in his award. It was to the effect that, having heard their respective statements, he had determined that the reduction of wages proposed by the masters by reason of the depressed state of trade and the downward tendency of wages or otherwise, should not be made with respect to the operative painters and their particular industry.——Contrary to expectation, the masons and carpenters, instead of accepting the arbitration offered them by the Bristol Master Builders' Association, after that body had had the decision of the arbitration given against them in their dispute with the painters, have resolved to accept no settlement by arbitration. Both branches have held meetings, at which their representatives unanimously decided to refuse the employers' offer.

The Metropolitan Board and its Water Bills.—It is proposed to settle by legislation the doubts that have arisen as to the power of the Metropolitan Board of Works to pay the expenses which they incurred in promoting the two Bills last year relative to the purchase of the London water companies and the supply of water to the metropolis. Sir James M'Garel-Hogg has introduced a Bill authorising the Board to defray "the expenses incurred by their order in the preparation and promotion of these Bills and preliminary and incidental thereto."

Gilding on Steel.—An old process,—which, however, is by no means universally known,—is as follows :—By shaking a solution of gold leaf in aqua regia with ether, or naphtha, the gold will leave the acids to combine with the other liquid. Polished steel surfaces, such as knives, scissors, &c., on being plunged in this solution, when dry become covered with a coat of gold, which is an excellent preservative from rust. Letters, designs, &c., may be traced by means of a pen, pointed stick, or brush, and as the ether evaporates, the gold will remain fixed.—*The Electrician.*

The Parkes Museum of Hygiene.—The Home Secretary will be influentially supported on June 28th, when opening the Parkes Museum. Among others who will be present we may mention Earl Fortescue, Viscount Cranbrooke, Sir Thomas Watson, Professor Huxley, and the Mayors of Cambridge, Southampton, Salford, and Welshpool. The Museum comprises an area of 3,500 square feet, independent of the library. This space will be quite filled by the day of opening.

Waste Lands, Yorkshire.—Messrs. Dowsett & Woods, who have laid themselves out for the cultivation and sale of "waste lands," have sold 3,146 acres of moor land, part of the Lindholme Hall Estate, with about 40 acres of cultivated land, including parts of the bed of the old river containing warp, for 24,000*l.*

Westminster Industrial Exhibition.—The medal to be given to successful exhibitors has been very well made by Mr. John Pinches, from a design by Mr. J. P. Seddon. It is probably intentional that while the obverse is Gothic in style, the reverse is not.

The Clothworkers' Company and Lady Artists.—The Clothworkers' Company have agreed to establish an exhibition of 20*l.* per annum in connexion with the Female School of Art, Queen's-square, Bloomsbury, subject to review at the close of five years.

The Norfolk and Norwich Hospital.—On Tuesday the Prince of Wales visited Norwich, and laid the foundation-stone of the new Norfolk and Norwich Hospital. The architects, Messrs. Wyatt & Boardman, had the honour of being presented to his Royal Highness.

The Chantrey Bequest.—It is rumoured that one of the landscapes purchased by the Royal Academy, on account of the Chantrey bequest, was not executed in England, which, under the terms of the bequest, would render it ineligible for selection.

The Obelisk.—At the meeting of the Metropolitan Board of Works, on the 13th inst., a report was presented by the Works Committee on the subject of placing sphinxes on each side of the Egyptian obelisk on the Victoria Embankment, also as to proposed additions to the base of the obelisk and pedestal, in order to obviate as much as possible the present insecure appearance of the base; and recommending that a sphinx be placed on each side of the obelisk, each facing it, and that for that purpose the two granite pedestals be removed, reduced in size, and re-erected, as shown by a model submitted with the report; and that a full-sized model of one of the sphinxes and of the proposed additions be made in plaster, coloured to look like bronze, and temporarily placed in position in order that a judgment may be formed of the effect. These recommendations were agreed to.

Ely Chapel.—The ancient chapel of St. Etheldreda, once belonging to the Palace of the Bishops of Ely in Hatton-garden, was purchased by the Fathers of Charity in order that it might be restored to Roman Catholic worship. It has since been restored, and on Monday next (St. Etheldreda's Day) it will be re-dedicated and opened by Cardinal Manning. The Duke of Norfolk has filled the great east window with stained glass.

Village Home for Orphan Girls, Ilford.—On Wednesday last H.R.H. the Duchess of Teck laid the foundation-stones of two new cottages, and formally opened three others recently completed, at Dr. Barnardo's village home for orphan, neglected, and destitute girls at Barkingside, near Ilford, Essex. The Countess of Aberdeen laid the foundation-stone of another cottage.

Albert Hall.—On the 28th inst. Mr. Gye will take the whole of his company, including Madame Patti, his band, and chorus, to Albert Hall, and a great concert may be expected. This will be the first time that the *artistes* of the Royal Italian Opera House have sung as a body at the Albert Hall.

TENDERS

For children's homes, Pontypool Union. Mr. Maurice Deacon, architect. Quantities supplied :—

Jones & Co.	£5,556	0	0 !
Burgoyne	5,173	14	7
Lewis	5,026	15	9
Parfitt	4,049	16	1
D. J. & D. Davies	4,849	14	0
Thomas	4,451	0	0
Welsh	4,374	0	0
Chapman (accepted)	3,159	0	0

For the erection of a house at Mycene-road, Westcombe Park, Blackheath, for Mr. Alexander Currie. Mr. W. C. Banks, architect. Quantities not supplied :—

Staines & Sons	£1,644	0	0
Eaton	1,599	0	0
W. & F. Croaker	1,585	0	0
Sharpe & Everard	1,525	0	0

Accepted for house at Caversham, for the Rev. T. C. Page. Messrs. Cooper, Son, & Millar, architects :—

Higgs (bricklayer, slater, &c.)	£604	10	0
Warwick Bros. (carpenter, &c)	332	0	0
Moffat (plumber, painter, &c.)	115	15	0
Margrett (smith and bellhanger)	51	10	0

For house near Reading, for Mr. R. Deacon. Messrs. Cooper, Son, & Millar, architects :—

Filewood	£1,359	0	0
Wicks	1,272	0	0
Simonds	1,212	0	0
Sheppard	1,175	0	0
Dodd (accepted)	1,168	0	0
Goodall	1,066	0	0

Accepted, for brick and tile works, Calcot, near Reading. Messrs. Cooper, Son, & Millar, architects :—

Wicks (carpenter, &c.)	£112	0	0
Harris (plasterer)	122	0	0
Sumner (plumber, painter, &c.)	118	10	0
Jones (mason)	45	0	0
Pecover (founder, smith, &c.)	23	10	0

For house at Penge, for Mr. Cunningham :—

Maide & Harper	£1,475	0	0
Hockington	1,397	0	0
Smith	1,389	0	0
Somerville & Hill	1,387	0	0
Webb & Perkins	1,354	0	0
Taylor & Sons	1,230	0	0
Beale	1,218	0	0
Raymes	1,196	0	0
Jones	1,020	0	0

For the erection of warehouses on the site of Shaftesbury Hall, Aldersgate-street. Messrs. Taylor & Locke, architects. Quantities by Mr. W. Bradbee :—

Howard	£7,869	0	0
Couder	6,497	0	0
Donne	6,425	0	0
Morter	6,323	0	0
Boyce	6,270	0	0

For building school for 310 children at Cross Keys, for the Risc Schl Board. Messrs. Watkins & Son, architects. Quantities supplied by the architects:—

Harris	£2,025	0	0
Sage	1,925	0	0
James & Son	1,900	0	0
Prichard	1,789	0	0
Cox	1,761	0	0
Williams	1,700	0	0
Rosser	1,695	0	0
Linton	1,680	0	0
Evans	1,623	0	0
Thomas	1,513	0	0
Richards	1,527	0	0
Niles	1,515	0	0
Morgan & Son	1,470	0	0

For the erection of industrial schools at Brampton, Derbyshire, for the Guardians of the Poor of Chesterfield Union. Messrs. Rollinson & Son, architects:—

S. & W. Pattinson	£12,643	0	0
Tomlinson & Son	12,200	0	0
Wright	11,455	0	0
Cropper Bros.	11,300	0	0
Wood	11,230	0	0
Chadwick & Co.	11,000	0	0
Brailsford & Brown	10,821	0	0
Tutin (accepted)	10,667	0	0

For repairs, additions, painting, &c., at 2, Park-square, Regent's Park. Mr. R. Reid, architect.

Clarke & Manoock	£717	0	0
Hatfield	690	0	0
McLachlan & Sons	661	0	0
Foxley	615	0	0

For additions and alterations at Buckhurst, Wokingham, Berks, for Mr. Charles J. Murdoch. Mr. Edward Power, architect:

Toms (accepted)	£1,775	0	0

For building Primitive Methodist chapel, Binbrook, Market Rasen. Mr. J. Wright, architect:—

Kendal	£733	0	0
Wilson & Roebuck	695	0	0
Harrison	625	0	0
Sumpter & Thompson	602	0	0
Doughty	560	0	0
Topham	540	0	0
Fletcher & Brighton	528	0	0
Mackarill	525	5	5
Snowden (accepted)	520	0	0

For repairs to houses, stabling, &c., Haverstock-hill. Mr. R. W. Giblett, architect.—

Gould & Brand	£369	0	0
Steed Bros.	345	0	0
Milledge	340	0	0
White (accepted)	289	0	0
Berrill	265	0	0

For the erection of two villas at Sevenoaks Park. Mr. Edwin T. Hall, architect:—

Eunor, Julian, & Co. (accepted)	£5,070	0	0

For malting-house, Egham, Surrey, for Mr. Abraham Herbert. Mr. J. Butler, architect:—

Williams & Stabler	£1,690	0	0
Lathey, Bros.	1,559	0	0
Nye	1,483	0	0

For three houses in Wakefield-road, Page green, South Tottenham. Mr. W. Hussey, architect:—

Bryen (accepted)	£1,130	0	0

For repairs to No. 7, North-street, Fitzroy-square. Mr. J. Shelley Birch, architect:—

Perkins	£291	0	0
Mawson & Berrecloth	283	0	0
Hindle	185	0	0

For flagging a portion of Cromwell-road, on the Freemen's Estate, Great Grimsby. Mr. J. Henry Maughan, surveyor:—

Waller	£335	0	0
Frith	330	0	0
Brown	316	5	0

For the erection of a block of offices and sale-rooms in Red Lion-court, Watling-street, City. Mr. A. Peebles, architect. Quantities supplied by Mr. W. E. Stoner:—
Morter (accepted).

For the erection of warehouse premises in Bread-street, City. Mr. Alexander Peebles, architect. Quantities by Mr. W. E. Stoner;—
Morter (accepted).

For school-buildings, Hampton-wick, for the Governors of the Hampton Grammar School. Messrs. Kinslake & Mortimer, architects:—

Brass	£7,783	0	0
Pillar	7,593	0	0
Nye	7,580	0	0
Tongue	7,376	0	0
Conder	7,333	0	0
Kirk & Randall	7,221	0	0
Hook & Oldrey	7,2[illegible]	0	0
Hiscock	7,135	0	0
Collingson	6,899	0	0
Hurst	6,807	0	0
Aries	6,718	0	0

For army and navy stores, Regent-street. Mr. A. Bedborough, architect. Quantities by Messrs. Curtis & Sons

	Old Materials.					
Brass	£13,390	0	0	£130	0	0
Dove	13,398	0	0	110	0	0
Sprake & Foreman	12,930	0	0	345	0	0
Coles	12,927	0	0	160	0	0
Mark	11,993	0	0	300	0	0
Chappel	11,663	0	0	311	0	0
Green & King*	11,450	0	0	360	0	0
Braid & Co.	11,188	0	0	110	0	0

* Accepted.

For new tramp-wards and superintendent's rooms at Staines Union. Mr. George Judge, architect. Quantities supplied by Mr. W. H. Brayshaw:—

Boyce (accepted)	£1,937	0	0

Additions to the King Harold public-house. Messrs. Somerville & Hill say their tender was 39*l.*, not 25*l.*, as stated to us.

Chatham.—The Tender of Mr. J. G. Naylar, of Rochester, amounting to 3,143*l.*, has been accepted by the Admiralty for the erection of new schools for the children of the Royal Marines; also a teacher's residence. The excavations and foundations have been executed by the Admiralty, who also provide bricks and stonework for the building, which will make the total cost upwards of 5,000*l.*

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The Builder.

VOL. XXXVII. No. 1899. SATURDAY, JUNE 21, 1879.

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Architectural Treatment of Aspect.

THE question of the aspect of a dwelling-house is one of primary architectural importance. It is intimately connected with the choice of site. In such cases as that of the designing of a mansion to stand within its own grounds, the question of the aspect, or of what in churches is orientation, of the building, is quite ant as is that of pictorial fitness, we apply the latter term to describe produced on the observer by the situa- house, as referred to the landscape, ference to the views to be commanded windows of the apartments.

n places where the choice of site is limited, it may be in the power of the o pay such attention to aspect as will he difference between a comfortable, healthy, dwelling, and one that is one nor the other.

not unfrequent complaint among architectural subjects that the im- estion of aspect has by no means ts full share of practical attention. ugh valuable hints are to be found in books, we very much question ch a thorough discussion of the sub- t of which we propose to indicate the d which is based chiefly on experience hitectural design and domestic habits at all familiar to the English reader, builder.

nce between the value of aspect in nd in Italy of course exists. This has to be taken into account. It is not altogether, a question of degree. ty of the seasons differs in the two although not so absolutely as at first appear to be the case. The summer taly is distinguished from that of ther by its greater duration and regu- by maximum thermometric tempera- ome summers, and some aspects, we a day or two of summer heat in this hich is practically more intolerable linary summer heat of Italy; in conse- great measure, of the want of those against heat which are not generally English people. Again, though our longer, colder, and darker than those he effect in that climate of the *tra-* cold north wind, which rushes down and often snow-covered mountains, be dreaded than is that of the north us. As to the water-bringing winds ntry, they are very trifling in their ffects if compared with the sudden n thrown on the shores of the Mediter- the *sirocco*. Probably the only differ- ence of kind is with regard to the east wind. The noxious effects of this wind, in the United Kingdom, are well known; and, indeed, the pernicious effect of a long-continued east wind it is not easy to exaggerate. In Italy the east wind is not a source of annoyance; the two directions of the atmospheric current which chiefly trouble the serenity of the climate of that peninsula being the sudden chill of the *tramontana*, or *mistral*, and the vaporous heat, and volleying rain, of the *sirocco*.

The aspect which has been recommended as the best in England is the south-east. On the other hand, the south-west has been described as the most unsuitable for a dwelling-room; and that on the two opposite grounds of the late continuance of sunshine in that direction and of the exposure to the most rainy winds. Before either admitting or disputing the truth of this view, it is desirable to consider what is required within a dwelling as well as without. After all, a house has four aspects, though one or more of them may be closed by a blank wall. Our first inquiry should be as to the domestic uses proper to each aspect; and if these be clearly established with regard to a country mansion or building of architectural importance, we shall obtain a guide or set of principles which may be advantageously borne in mind in the designing of even the humblest cottage.

Direct orientaton, such as that which is, within certain limits, the rule of the ecclesiastical architect, is not always possible in a house, and this fact leads to the remark that rules which may be advantageously laid down for a house that stands due north and south, or east and west, will require modification according to every change in the angles of azimuth; but it is easier to speak, in the first instance, of what we may call the square aspect than it is to introduce, at every step of our inquiry, those modifications of statement which vary with every degree of change in the position of the plan as measured by the compass. We wish to bear particularly in mind the facts collected by residence in a large Italian palace, charmingly situated in its own grounds, of which the pictorial site consisted with a square orientation.

The great foe which it is desirable to exclude from an English house is the east wind. It may be questioned whether it is advisable, on sanitary grounds, as well as for what we may call for want of a better word, military reasons, to build a large house with an unpierced wall on either side. But we think few persons who have had the practical opportunity of studying the subject will doubt that, during the cold east winds of which we have sometimes a continuance for as much as an eighth portion of the year, to have few apertures, and those capable of hermetic closure, towards the east, is an arrangement that conduces, in an extraordinary degree, not only to the warmth of a house, but to the general comfort of its inhabitants.

As to rain, on the other hand, the choice of aspect is comparatively unimportant. It is true that most of our rainfall is brought up by westerly winds; but it is hardly the case that the most driving rain comes from that quarter. There is sometimes very persistent and driving rain from the east. From the north, probably, the gusts are most frequent, or, at all events, most fierce, but in the case of thunder showers nothing can be predicted as to aspect. It is, moreover, far more easy to keep rain, however slanting its direction, out of a house, than it is to keep wind. The rapid patter of the hail, or of the large raindrops against the window, even if it have not a certain charm of its own, is certainly not to be regarded as a phenomenon attended by such discomfort as is the searching drought of a black east wind.

Again, our national habits have to be borne in mind. Amongst those of us who are fortunate enough to be able to build, or to inhabit, large country-houses, and to dispose at will of the whole twenty-four hours, the ordinary habits are totally different from those of the Italian nobility. Thus, rising with the dawn is not a usual custom with the English gentry, in the summer. Nine o'clock is regarded as meritoriously early, rather than otherwise, as a breakfast hour. And it is the usual custom of the Englishman in easy circumstances to do nothing in the way of business or serious occupation before breakfast.

With the Italian nobleman or gentleman the case is different. He has to count, he knows, on six weeks or two months of sultry weather, and on, perhaps, six months without any rain, unless it be an occasional thunder-shower. Thus, as a rule, in summer, he passes an hour or two at noon in sequestered repose. On the other hand, the beauty of the morning is so great, the charm of the climate at an early hour is so irresistible, that four a.m. is an ordinary hour for rising in summer, from the king to the lazzarone. And the morning drive, ride, or even walk, brought to a close, perhaps, by six a.m. is often the very cream of the enjoyment of the day.

These facts have led to an application of the eastern aspect, in Italian palaces, in a manner not to be recommended in this country. As we have before said, there is no need carefully to wall out the east wind in Italy. In England that need is felt, and often very severely felt. Thus the advantage of a window that admits the first rays of the sun is appreciated by these early risers. For persons who do not think of rising much before eight, the admission of those rays is in every respect undesirable; and bearing in mind the disuse of window shutters,—a change in the finish of the house originally due to the scamping builder,—which has unfortunately become so prevalent, an eastward-looking bedroom window may involve the loss of valuable hours of refreshing sleep.

It is not only the case that the eastward aspect is desirable for the best bedrooms in Italy, for the sake of the early risers, who form, indeed, the great majority of the population. There is a further great advantage in that aspect in the Italian peninsula. For three-fourths of the

time that the sun is above the horizon, or thereabouts, his direct rays do not strike on the eastern side of a wall built north and south. The consequence is that a room with an eastern aspect is cooler for the greater part of the day than any other. It is cooler than a northern-looking room; on which, in the summer, the direct rays fall in the evening, as well as in the morning. Thus, it is often the case in the more perfectly arranged Italian palaces that the *sala da mangiare*, or dining-room, occupies the east side of the house. In the case which we have more particularly in view (which is that of a very noble building in the plain of Sorrento, which was a favourite summer residence, visited by the Queen of Naples in the days when Nelson was in command of the British fleet in the Mediterranean), the dining-room is placed in the middle of the east side of the house. It runs east and west, being some 30 ft. in length by about half that breadth. In consequence, it has only one window, which occupied the greater part of the east end of the room, and looks down on a small garden, walled off from the rest of the garden grounds which surrounded the palace. Substantial wooden shutters, made with *Persiane*, or Venetian blinds, open or close without this large window. They are intended to be closed before sunrise, and not opened until the sun has got so far to the south that his beams cannot strike on the window. Then they should be opened for the rest of the day, as well as the window itself. The result will be a delicious temperature. In summer the room was used for breakfast, then left for a time closed; and in the afternoon it became available as a cool retreat. In the palace in question there was, however, a choice of summer, as well as of winter, apartments. The centre of the principal floor was occupied by a large room, 60 ft. by 40 ft. and 30 ft. high, which had five windows to the south. These were, of course, closed by shutter-blinds till the sun was off, and by this simple precaution a very agreeable temperature may be maintained for the whole year; the summer never being too oppressive, and the winter not requiring fires. A smaller drawing-room, to the north, opened into this large room by double doors. From a large window, with a projecting balcony, over the *portone* or carriage-entrance into the inner court (round three sides of which the house was built), this room commanded a superb view of the Bay of Naples. The effect of aspect, however, was here to be remarked. Three or four times in the year, so violent a gale, blowing over Vesuvius from the east, and deflected in some extraordinary manner by the mountains on the north of the bay, drove right on this window that no glass of large dimensions could have resisted it without the protection of the *Persiane*, or outer shutters. And in one corner of this room,—or rather where the corner would have been if the room had not been elliptical in shape,—the unusual luxury of a fireplace was hidden behind a screen that formed a portion of the dado when closed. In winter evenings a bright fire of olive wood was very cheerful in this charming apartment.

North, east, and south were thus all appropriated to the services of special apartments, and to the requirements of the various seasons, in this palace. To the west there were also windows, but the family chapel stood on that side of the palace, and a terrace on the roof of the chapel, on to which the windows of the *piano nobile*, or first floor, opened, made this part of the building rather useful for external, than internal, enjoyment of the prospect. In the winter afternoons, when the sloping rays of the sun fell on this terrace, it supplied the place of a winter-garden, or gave an always agreeable playground for the children, to which use the apartments on the west wing were devoted. If the house had been filled with visitors, and all the bedrooms had been made up on the second-floor (which was, no doubt, the original intention of the architect), a suite of seventeen fine rooms, including the great gallery or ball-room, would have been thrown open, one leading into another, on this fine floor.

If we apply the experience of domestic life in such a building as this to the design of a first-class country-house in an English park or self-contained estate, we shall find certain modifications to be demanded by the difference of the climate. In the first place, it would be requisite to provide chimneys and fireplaces for every room, and the whole system of thorough communication from room to room would require reconsideration in consequence. It would become questionable how far such a central apartment as that mentioned on the first-floor would be required by the customs of English life. Such a chamber could only be thoroughly useful in the country as a ball-room, and that fact would probably lead to its close for a great part of the year. Again, as the southern exposure would not be by any means sufficient, with every care, to warm this great apartment in the winter, the heating of it would become a serious problem. It is probable that the Saxon hall,—a vast apartment which gives entrance to the house, and round which smaller apartments very conveniently cluster,—is more appropriate to an English country mansion than the upper gallery or large drawing-room, which is so essential and charming a feature of a well-arranged Italian palace.

Again, in our climate, as before observed, the eastward aspect is neither desired for the principal bedrooms, nor necessary as a retreat from the afternoon heat; while the need of excluding the east wind from the house itself is great. Thus, the dining-room may conveniently occupy the eastern flank of the house. Probably the best arrangement, if the size of the plan suit, is to make that part of the building consist of two rooms, one of twice the length of the other,—rooms which double sliding doors would allow, on occasion, of being converted into one. Of these rooms the southern one, lighted by a large window from the south, would form the library, or the gentleman's morning-room, being square, or nearly so, in plan. The other, in the form of a parallelogram, would be the dining-room, on all occasions except such unusual ones as should require an extraordinary length of dining-table, when the two rooms could be used together. This room would be lighted from the north, and the unbroken side walls would afford ample space for pictures. It might, in some cases, suit the design better to make the length of the dining-room coincide with the east and west line, and to place this important apartment on the north of the house, lighted by three windows on that side, with the east end left blank, where a niche could be built for the sideboard. At all events, the general rule that the dining-room should occupy the north-east angle of the house; that any rooms devoted to study should adjoin it either on the north, if light be required for pictures or purposes of art, or on the south, if a snug morning of literary occupation enter the arrangements of the master, may, we think be safely recommended.

In the same way the south for the main reception-rooms, and the west for a boudoir or small drawing-room, may be regarded as favourable aspects. The great beauty of the English sunsets, especially to be prized by those who are not in the habit of seeing the sun rise, affords a picturesque charm which no architect is justified in shutting out from a fine mansion. As to the meteorological aspect, or the opposition to drifting wind and rain, we have spoken before. The utmost that we feel disposed to allow on this score is the precaution that the windows on this side of the house should not be too large or too numerous. Again, verandahs or sun-blinds allow of the windows being left open during rain, if it is not too cold. The exquisite charm of an oriel window opening to the west, more especially if it be on a site commanding what is the most beautiful of all prospects in England, that of a westward sea, is something not to be lightly lost.

This general idea of arrangement has to be controlled by the question of the principal entrance. In the Italian palace which we have taken as an illustration, the great *portone* was on the north, in the centre of the building, and the carriages passed into the court-yard under the two drawing-rooms that we have described. Nor do we think that a better arrangement can be suggested for a large town-house in any part of Europe. But for a country-house, the matter is different. If the elevation of the site, that is to say its level with regard to the orography and geology of the vicinity, be good, it is a very great desideratum to have the reception-room on the ground-floor. Thus alone, for example, can the greenhouse be introduced as a constitutional feature of the reception-room,—except at unnecessary expense, and with a sharp limitation of the size of the plants cultivated. That important part of an English residence was wanting in the Italian palace. It was wanting there for two reasons. First, the true love of flowers is rarely to be found among the southern races. Intercourse with the higher classes of European society, and with the great world of Paris, or of London, of course tends to check, or to di this want of appreciation of nature. positive hatred of trees is found amongst southern people, and in many places t could name a person adorned with a bou popularly regarded as a fool. In the place, Nature herself has provided a garden in the Plain of Sorrento. The de few in the year in which a glazed conse would be agreeable, or even endurable outer world has always been taken mo association with the dwelling-house in Ita is the case in our climate. Opposite *portone* of the palace we have referr a magnolia rose to the height of a fore laden in its season with superb flowe scent of which was so powerful that i have been undesirable in an enclosed Around this perfumed shrub grew palms mineæ, pepper, and other sub-tropical f vegetable life, the whole being set in orchard of orange trees. With such a garden, available at any moment whe not actually raining, it may be well co that a greenhouse was unnecessary.

The object that we think the designe English house should steadily keep in first to consider how the special particular aspect are suitable to the habits of t whom he builds; and then to arrange hi accordingly. And this principle, if it b hold, the true one, is as applicable on a sm in a cottage, as it is on a large scale in a As between a direct north, or north-eastern aspect for a com, and an outloo contrary points of the heavens, the difference equal to that of the use or a fire, for perhaps four months out of t This consideration points to the utilis the north aspect, where possible, for the on the ground floor, and for corridors, gallery, staircase, or the less importan ments of the house, on the upper Special care should be given to the avoi the east, and next to that of the north for the nurseries, particularly the e nurseries, or for any rooms to be used in illness. A removal to a north room, i stages of convalescence, has often prove a delicate patient. Fires, even if freely not compensate for the chill of a norther And what we are so slow to learn in this co although necessity has been the moth vention in that respect in Italy,—is, far easier to exclude from a house in the undue heat of the summer, than keep out either the boisterous wind north, or the biting blight of the east; events, the uncomfortable effects on tem and on temperament which accompan winds in our island. Whether we hav teen rooms *en suite*, or an entrance a and back parlour, the difference to be the judicious arrangement of the hou regard to aspect is not one easy to over

ANOTHER WORD ON THE "QUANT QUESTION.

THE paper read by Mr. Honeyma Institute the other day on the subject of quantities, and their relation to the d which was followed by a long discuss been the occasion of one or two lette columns since, and has led some oth spondents to ask why it was read at author, an able architect of large pra experience in Glasgow, seems to ha struck with the fact that the Glasgow of estimating for a contract differed fa other, and notably from the London and, penetrated with confidence in the business-like qualities of Scotland over and of Glasgow over the rest of Sco have assumed, rather too hastily perha the Glasgow method must, *ipso facto*, best, the fairest, the most business-like, most economical; and, under this pe he came to London to show us the erro ways. The general talk on the subjec has been raised in connexion with t argues the existence of a good deal of c of thought and of principle in regar subordinate stage in the realising of an tural work.

It is not sufficiently remembered tha ties and the quantity surveyor are no nature of things essential adjuncts to tural practice, and that, in fact, the which these now take is of quite rec

oneyman, indeed, did appear to remember the outset of his paper, for he made the k in so many words, that "the proprietor thing to do with the means which the r may employ to ascertain the value of rk. One builder may measure the work r, another may get some one to measure im; one may have it minutely measured, r may do it roughly, or even guess what ue should be. All the proprietor, or his the architect, wishes, is an offer *bonâ* the execution of the works he has illus- and described." This, as Mr. Honeyman s "the normal relation of the parties in cting"; and it is something to get even mission from an architect who in his sub- t reasoning attaches such a far greater ance to quantities than seems consistent is view of the "normal relation."

e are many architects now practising who ber very well those days of patriarchal ity, as we suppose we must now regard when each of the builders who had been to tender for a large piece of work took own quantities, or had his own man to r, in some rare cases, dispensed with such ng altogether, and satisfied himself with timate which could be made with a very ed eye and clear judgment, assisted by a cessary measurements; and the tenders ued were often by no means the furthest he mark; for, in fact, it is the power of esti- what work will cost which makes a sful contractor,—which made in the first e the initial successes of our Petos and s, our Myerses and Kelks,—as well as the and probity to carry it out thoroughly rds. The contractor with special ability, ith some special means of meeting the lar work in hand, had, therefore, in the antitative era, a more distinct advantage, s, in his talents than he has had since. o not deprecating the change,—merely the fact that the old system may have o advantage of being more likely to give rk to the man best capable of grappling . But, of course, it was inevitable that ding operations, in London especially, to become larger and larger, and the t for quick returns for outlay made time ortant an element in the contract, this tively slow, usually expensive, and very manner of arriving at an estimate give place to something less troublesome s costly. It was, in fact, the desire on t of the contractors to economise, and to e surveyor to do the heavy part of the or all, instead of each spending time or separately in quantity-taking, which led existence and general recognition of the y-surveyor's work as a stage in the s of the building from conception to tion.

ering Mr. Honeyman's once favourite w method, it seems hardly necessary to ich. The surprise, to others (we imagine) l as to ourselves, will have been that n be found to recommend a system which s double measuring, first on the drawings, fterwards on the completed building, keeps the specification, for all we can see, y out of the sight of the builders esti- ng (indeed, makes a specification, as we tand the word, almost an optional matter), ves the proprietor, till the completion of ilding, in doubt as to the precise amount he will have to pay, even if there is not le alteration or addition to the original in the course of the building. What is lvantage of this method, except to a architect who may be stupid at specify- d likes to turn over this irksome part of siness, essentially, to the quantity-sur- we utterly fail to perceive. The dis- age to the proprietor seems too obvious l pointing out; but we may call attention drawback which seems often at least to nected with it, that the builder may not y specification at all,—that he may esti- on a bare statement of "foot run" and and square feet, and that thus the real ion of the architect in regard to the build- a whole hardly comes before him. This must certainly operate, more even than n in London, in putting the stupid builder vel and on an even chance with the clever or the mere sight of the plans and specifica- ust often give to a clever man a hint as to st and most economical way of executing ork shown and described, which could not ly be derived from the tabulation of measurements in a schedule. The advantage of saving 10 to 15 per cent. usually charged for contingencies is an advantage only where the contractors are in the habit of charging for contingencies at that rate, as it would seem that they are in Glasgow, so that the saving is effected by not paying that which need never have been charged at all (for certainly London builders do not include a percentage to that extent for contingencies), and thus the advantage to the proprietor seems an imaginary or abitrary one at the best, more than compensated for by the uncertainty in regard to the amount which he will really have to pay. The result of putting the specification in so entirely subordinate a place seems to us likely to be (as Mr. Honeyman in part admits that it is) very injurious to the younger members of the profession and their clients, as they are thus enabled to evade one of the most important responsibilities of professional work, without going through which no man can really be sure that he understands his own building, and all that he contemplates in it. Indeed, as there has been some talk recently about references to building in Shaksepeare, we might add one more to the quotations to be found in the *Builder* for June 7th, and suggest that Shaksepeare had stated in advance the correct view of the position which the architect might in some cases assume under the Glasgow system, and of the feelings of the proprietor and contractor, when he wrote the words,—

> "What's here? A portrait of a blinking idiot,
> *Presenting me a schedule.*"

To come to the London practice, we have now the cumbersome system of a knot of builders working separately to get at the same result, superseded by a system which either appoints one surveyor to do this work for them all, or, in works of large extent, and where large sums are at stake, two surveyors, named one by the architect on the part of the proprietor, who shall see that the quantities are not taken too full for the interests of the latter; the other named by the contractors to see that their interests are fully considered, and that quantities are not taken too short for their interest in making a remunerative job of the work; but, in fact, working jointly and as the agents of the contractors. The theory of the matter is this: the builders wish to have the quantities taken for them by a surveyor, as a method more economical of time and money than the old system of separate measuring by each contractor. On the supposition that all quantity surveyors were, what most of them are, men of the highest and strictest probity and tried ability, here would be an end of the matter. Human nature, however, being notoriously imperfect, it occurs to the architect that there is not here the same check on over-measuring which competition necessarily produced when each contractor measured for himself; that the surveyor employed by the builders might be capable of measuring high so as to bring on him no responsibility, such a result being also in favour of the contractors. It is the interest of both to have high measure in the quantities, and the architect says on behalf of the proprietor, "I must either have a voice in the selection of the surveyor, or there must be a second surveyor named by myself to take them conjointly, as a safeguard to the interests of my client." Does the architect thereby make himself responsible for the quantities? Mr. Honeyman says yes, and that he ought to accept the responsibility on the part of the client and make the quantities part of the contract. In practice, however, it is nothing of the kind. When the contractors have accepted a certain quantity surveyor, either as named by the architect or agreed upon jointly by themselves, the question of correctness in the quantities then rests between them and the quantity surveyor; they agree that his charge shall be paid out of the first instalment received, and for any serious errors in the quantities which might by possibility be discovered afterwards he would be liable to the contractor and not to the architect, or proprietor. Mr. Honeyman seems to think that, this being the case, the interference of the architect at all is illogical; that it goes either too far or not far enough; that there can be no reason for his interference unless he also makes himself responsible. But the quantity surveyor is in a different position in the matter; he is not necessarily supposed to be bound by the same sense of responsibility and the same code of honour as a professional adviser; he is not (theoretically) supposed, like the professional adviser, to put his client's interests before his own. It would be possible, no doubt, for the architect to enter into collusion with the contractor to raise the cost of a building in order to augment his own commission; and just as there are possibly quantity surveyors who would play into the hands of the contractor as to the quantities, so there may be, here and there, persons bearing the professional title of architect who would play into the hands of the contractor in regard to the estimates and the commission. But the theory, and, as a rule, the fact, of the position of a professional man is that he is by social and professional status placed above the temptation to such iniquitous courses; that the architect is to be trusted to do the best for his client's interests, just as a solicitor is to be trusted to do so, though his own interest might and often does lie in the opposite direction of the advice which he would give to his client. Many considerations have led to the general acceptance by society of the understanding that a professional adviser is by etiquette supposed to be, by his status and professional code of honour, above the temptation to consider any but the true interests of the client who seeks his services. If this were not understood and acted upon, there would be an end of the employment of most of the learned professions, and of the confidence placed in them. There may be no reason in the nature of things why the same confidence should not be placed in those who follow vocations that are not regarded as "professions," or as conferring the same social status as those who pursue them; but there remains the fact that society does not at present take that view.

In cases where an architect supplies quantities himself openly and professedly, he is, of course, bound to guarantee their correctness, and to hold himself responsible to the contractor. The theory about giving the contractor "opportunity to check the quantities," by way of shuffling off the responsibility for them, is untenable; any checking that would be of use to that end would really mean taking the quantities over again. But for this very reason we object entirely to the architect in any case furnishing the quantities, which is only putting himself doubly in a false position; recognising the quantities, which are, in fact, no business of his, and making himself the servant of the contractor; whereas the real and honourable position of the architect, in all matters where both client and contractor are concerned, is, to a considerable extent, that of an arbitrator between the two, doing justice to both. The establishment of a profession of certified surveyors has been suggested, recognised by the Institute, and who would have an ascertained status in every respect, which would put their quantities above suspicion; and this may be worth considering. It seems to be one result of the prominence given to quantities now that some quantity surveyors seem to think they are much more important people than architects, or at least that taking out quantities is just the same thing as architecture. They would, on consideration, see that this is not the case. As Mr. Justice Denman said, in a passage quoted by Mr. Honeyman, "an architect cannot be regarded as a mere caster-up of figures," and though it is not very often that we hear anything very reasonable concerning architects or architecture from the judicial bench, in this matter it seems the Court is with us, and we are certainly with the Court. An architect may be, and, indeed, ought to be, a capable quantity surveyor, but a capable quantity surveyor is not necessarily an architect.

J. B. PAPWORTH.

It is a subject of no small interest to those who are connected with the architectural profession in the present day to go through some of the records of the earlier and less prosperous phase which preceded the rise of the general interest in architecture, and of what may certainly be called, in comparison, the prosperous circumstances of the architectural profession as now existing. It is true that, as we have reason continually to complain, the subject of architecture is not really "understanded of the people" even now, and its professors have a good deal to complain of frequently in regard to misunderstanding and unjust and mistaken criticism. Yet if we compare the present day with any records of the state of things in the latter part of the last and the early part of the present century, we certainly become conscious of a vast change in our favour. Building of the

kind which is called architecture,—building, that is to say, with a more or less artistic purpose,—is now carried on to an extent and at an expenditure which may fairly be called enormous when we contrast it with the record of what was done, and the way in which it was done, but two or three generations since. Nor are the changes since that time merely interesting from this point of view. The difference between the views as to what is to be expected of an architect, the objects at which he should aim, the method of study, in the present as compared with the past, are so great that we seem to be going into another world of experience entirely in reading the memoirs of any one of the men who practised the profession with success in the earlier part of the century. Memoirs of such men are, therefore, useful and interesting contributions to architectural history; they assist in bringing before us a clearer idea of what has been done, and of the direction in which things are tending; and it is desirable that those who have the materials for such records should secure them before they pass entirely into oblivion.

This is the kind of interest which belongs to the small book in which Mr. Wyatt Papworth, with the assistance of one or two friends, has given some account of the professional life of his father, the late Mr. J. B. Papworth.* The book is printed for private circulation: if this restricted form of publication was adopted merely on grounds of good taste, and with the idea that the book could not be of public interest, we should say there is room to doubt the necessity of adopting this view: the architects themselves make now a public sufficiently large to be worth appealing to; but a large number of our readers will probably have seen the book, or, if not, will be interested to hear something about it.

The family of the Papworths have been connected with architecture or building for three generations,—a kind of descent of profession from one generation of the family to another, which was common about the last century. The first member of the family mentioned in the book was a grandfather of Mr. J. B. Papworth, who came from the native place of the family in Huntingdonshire to Westminster; and his son John Papworth, born in 1750, was apprenticed to one of the leading men in the stucco-and-plaster trade or art, whichever the reader likes to call it, then no doubt a more flourishing and more respected form of artistic workmanship than it is now considered, when so much disrepute has been thrown on materials of that kind from the architect's point of view. John Papworth became known as "architect, plasterer, and builder," and had 500 men at work under him, designing a great deal of ornament for Sir W. Chambers's buildings; and, considering the importance attached to plaster in those days, and that most of the best ornament of the best interiors was executed in that material, his work must have formed no bad school for an architect in those classic days. His eldest son Thomas carried on the business; two others became architects, George, who settled in Ireland, and had an extensive practice there, and John, the subject of the present book, who, in a fit of enthusiasm for Michelangelo, subsequently added the patronymic of that great artist to his name, and became known as John Buonarotti Papworth.

Like so many men who have attained eminence as architects in their day, he was the pupil of a man of no reputation, at least now, for the name of Plaw is quite forgotten, though he was recommended as a master by no less a person than Sir W. Chambers. The author gives a list of the books which seem to have constituted his father's architectural library at starting in life; it is a very short one, including Chambers's "Decorative Part of Civil Architecture," and Batty Langley's "Gothic Architecture Improved"; Stuart and Revett, Alberti, and Nicholson, and Brook Taylor's "Perspective," completed the list. It was something to say for the advantage of the architect in those days that he could at least start on his career with a much smaller stock-in-trade, as far as the artistic side of the profession is concerned, than he can at all afford to be content with now; on the other hand, a very much less degree of practical knowledge in regard to construction and materials is made to "do" now, by many an architect of large success, than would have been thought necessary in John Papworth's generation. A very brief autobiographical sketch, the commencement of what was never completed, follows the account of Papworth's earlier life, and gives an account of the circumstance which led to his being brought up to the architectural profession. "At the little theatre in the Haymarket" (which may be seen among Mr. Crace's collection of views of Old London before mentioned in our columns) "there was at that time, 1787, a drop-scene, painted by Michelangelo Rooker, of a Corinthian colonnade and court of a palace. It was very much admired then, and maintained its reputation as long as the theatre existed. It was the first time of his visiting a theatre, and this scene greatly delighted him. As it was the school vacation, he drew it on the next day, and as he was finishing it, Mr. Wilton, sculptor, came in, and was so pleased with it that he took it to Sir W. Chambers; and on the following day he took the boy and all his drawings to Sir William, who was then living in Berners-street." It may be remembered by those who have read Mr. Ferrey's Life of Pugin, that Pugin's first efforts were connected also with theatrical scenes and models. Papworth adds, that he had been in the habit of drawing "the orders" from six years old, but confesses that he thought he adopted a style of drawing that could be accomplished with rule and compasses, in order to avoid unfavourable competition with his brother Thomas, who was then a good sketcher in a free style. There have been not a few architects of older years about whose drawings the same might be said. At the age of fifteen, however, he had acquired much more extended power of drawing and designing, and subsequently owed a good deal to the study of the work done by Sherringham, who had brought over various French decorative artists to carry out the work at Carlton House. His first client, with whom he seems to have been always on terms of great friendship also, was Sir James Wright, with whom he appears to have lived while superintending the erection of a house for his client's son in Essex. He came to town occasionally to attend the Royal Academy, his professed object being to carry his knowledge of perspective further, and it is worth notice that the then Professor of Perspective told him that "the Academy did not profess to enter on the elaborate branches of the subject." It is possible the Academy professor was more in the right than Papworth seems to have thought. Perspective, beyond a certain point, becomes more a matter of science than art.

Like a good many architects of the last and previous generations in this country, Papworth was literary in his tastes, though his first book was strictly and practically professional, being a treatise on "Dry Rot in Buildings"; but he subsequently showed considerable facility in verse-writing (we know not whether we may say poetry), and wrote also a prose story, to accompany a collection of plates by a Viennese artist,—rather an inversion of the usual order of things. He also wrote the descriptions to the plates illustrative of buildings and squares in London, in Ackermann's monthly review called the "Repository of Arts, Literature, Commerce, Manufactures, Fashion, and Politics," a title in itself suggestive of the period when it appeared; a publication claiming to deal with such a list of subjects would never have a chance of being believed in now. Papworth appears also to have had considerable ability as a water-colour artist, and to have made good use of it in drawings which were exhibited at the Academy and elsewhere. The variety of designs to which he turned his attention is illustrated in the list of designs he contributed to Ackermann's "Repository" aforesaid, in a series of papers called "Architectural Hints," including "a cottage ornée, a Gothic hall, a vestibule and staircase, plans of St. Paul's Cathedral and Westminster Abbey, relative to a criticism on their respective merits; a conservatory, a Gothic State bed, a Gothic library, a chimney-piece and grate, footstools, French curtains;" and his connexion with one of his best clients arose out of designs for pocket-handkerchief patterns; and another client, a Mr. Galloway, an engineer, came to him to design the figure-head for the first steamboat, *The Engineer*, which floated on the Thames.*

His connexion with his most distingui client, the King of Wurtemberg, arose thr the secretary of the king's *chargé d'affair* London, through whom he was commissi first to make plans to carry out "an intenti Anglicise some of the royal domains," and sequently to design various palaces for domain, the drawings of which, exhibited i Academy, excited much admiration, of wh letter of Lord Elgin's, which is printed, marked testimony. At the same time he to have equally succeeded in pleasing clients with such things as shop-fronts, o which, for Messrs. Turner & Clarkson, i ventry-street, attracted so much attention customers that they constantly asked "wh up your front?" and always, of course, go name of the *builder* in reply. Another which was considered nearly unique in its was the Rotunda building at Cheltenham when the art section of the Social Science gress met in that room last year, and a subjects connected with architecture were cussed, perhaps no one was aware that a so well known in the profession as that of worth still is, was connected with the ro meeting. In justice to the architect, it s be added that the large room was des simply as a promenade and pump-room, a room for speaking in, a fact which those tried to speak and hear in it found out pai on that occasion.

Among Papworth's more important li labours in connexion with architecture m mentioned his "Essay on the Princip Design in Architecture, with nine new p illustrative of Grecian Architecture," pr to the fourth edition of Sir W. Cham "Civil Architecture," published in 1826. is a very able essay, admirable in its li style, and showing far more freedom conventional and pedantic taste and cism than was usual in his day. His l literary sketches seem to have been numerous, and a pleasant idea is given gaiety and humour as a correspondent letter printed in full (p. 63), in reply request from the Rev. G. Croly as to th meaning of an allegorical design of Papw for one of Ackermann's publications, for Croly had undertaken to write some Parts of his journal and letters from th tinent are very graphic and interesting show the observation of a thoughtful and mind. We are interested, also, in his op upon architectural competitions, which then coming into vogue, and in which the not then, apparently, the pretext of imp lity and anonymity which is now kep though in too many cases little more than text. His remarks struck us as coming larly apropos to some comments we thou right to make only a week or two back, co ing a phase in the life of a more disting architect, and it appears that Mr. Papwort of much the same mind as ourselves subject. Having visited Oxford abou business of the competition for Carfax C and having, according to the then c exhibited his drawings to a committee, also the other competitors, he says in a home, "You will believe me when I sa this sort of vagrant begging for busine soliciting 'the dirty voices of the sco multitude' is very offensive to me. I hate it, and have once or twice been dispo cut the matter very short, and leave it hands of the Fates, who, by the bye, ar very indulgent to those who have not the dent intrepidity to direct or strive to g them. In a few words, I think this competition is very blackguard work. angry at it, even with good chance of suc That appears to us to be the feeling with every one who wishes to preserve entire standing and associations of a gentlemar regard such experiences, and we only wish were more architects nowadays of Papw mind than, we fear, there are. Too oft rule seems to be, "succeed in a competit honestly if you can, but succeed anyhow."

The whole of the record of J. B. Pap impresses us with a great liking and respe its subject. He has not left his name att to any great work, and he lived, though not perhaps know it himself, at a peri unfortunate time for architects and archite

* John B. Papworth, Architect to the King of Wurtemberg: a brief Record of his Life and Works, being a Contribution to the History of Art and of Architecture during the period 1775–1847. By Wyatt Papworth (privately printed). London. 1879.

* The figure-head was a figure of Science inscribing a problem of Euclid on a tablet. Other ornaments and emblems in the vessel were designed by him also.

* The Rev. G. Croly, here mentioned, it may served, was a "great living poet" of his day, a considered by his friends to have proved himself cessful rival to Byron, in a purer and more moral st

ertainly shared the weakness of taste of
wn day more or less, and the style of
n to which he gave himself is necessarily
g of the past. But he filled a consider-
part in that chapter of the history of
sh taste, and filled it well and honourably,
we have to thank his son for putting
her this interesting memoir of a man who
ved to be remembered with esteem.

THE EMPTINESS OF PICTURE GALLERIES.

LIGHTLY cynical story is narrated of one of
uthors of the "Rejected Addresses," who,
being asked to meet an artist at dinner,
d that he did not care to do so as he could
lk art, and artists could talk of nothing
but we fancy now-a-days, at all events,
s are not more "shoppy" than other men,
ir conversation on the whole more weari-
than the ordinary run of people one meets
in Belgravia or Tyburnia. South Ken-
n, of course, is an exceptional quarter, and
ow seems rather to have the advantage of
ighbours in artistic popularity.
the months of May and June, at all events,
Mr. James or Horace Smith, if they happily
living in the present day, would be sadly
it to hold his own in conversation with-
me slight acquaintance at least with the
il subject of art; and they would very
ind that they need know very little about
bject and yet appear to talk exceedingly
a taste for pictorial art being, after all,
re, as Hawthorne says, than a polish upon
rd enamel of an artificial character.
rtheless, at this season of the year, para-
al as it may seem, there is to some of us
ptiness in our many picture-galleries
make the Royal Academy or the Grosvenor
the only spots in gay London where one
nveniently indulge in the luxury of melan-
contemplation; for of all places the "icy
of weariness seems most to haunt great
e-galleries, such as these" and their
r rivals.
h this demon at our elbow we many of us
picture-galleries, to find cold, colourless
ses, without sentiment or without passion;
d ourselves seeking amusement in realistic
entations of still life and easy brush-work
fascinating charms of "texture" and
ion.
Royal Academicians were artful in de-
an addition of a refreshment-room to
picture-galleries, and Sir Coutts Lindsay
a wise and noble fight for his licensed-
ller rights; for the hungry man, and still
he hungry critic, is in no state of mind
m a correct opinion of a picture, which,
er admirable, requires of the spectator a
ender of himself in due proportion with
iracle which has been wrought."
a canvas glow as it may, we must be
ers in the painters' art, our faith must be
or we see little beyond shadows, feeble
paint, and varnish; but after a good
on it becomes easier to help out the
s' meaning with our own vast resources of
ility and imagination. There are few
ments that require a more congenial mood
eir utmost fulfilment than the enjoyment
ek from seeing pictures, nor can painters
bected to comfort the heart in affliction;
, books, and music will do so, but pictures,
; the heart grows dead when the shadow
n us.
ures of a joyful description, like comic
ure, are very often melancholy aids to
y, and pictures representing scenes of the
est sentiment and pathos, rarely raise the
beyond the desire to smile, and in such a
of mind one is apt to doubt whether the
ial art be not altogether a delusion.
faculty of appreciating works of art is
warded to every one, and the mass who
y throng to picture-shows are invariably
pleased with those pictures that are least
ring to be regarded as meritorious.
majority of people who visit picture-
ies are much less critical than cold, and
as little for adding sympathetically to the
's creation by any strength of their own
ey do for the different effect the picture
have upon them at some other moment,
hen they are in a different mood. We do
ten approach pictures with what has been
"a sufficient gifted simplicity of vision"
ow of our adequately appreciating the
revelations that the artist has more or less successfully placed before us, and we turn away carelessly from long and very often well-considered work, or just as often stop and hastily attempt to criticise severely a picture which, with a little more sincere reflection, we might learn to admire or to condemn.

If our picture-galleries were less filled with pictures, and at the same time more crowded with thought, the complaint of the emptiness of picture-galleries would involve many more interesting considerations than the idler is disposed to indulge in at the Royal Academy or the Grosvenor.

As long as we visit our picture-galleries simply to be amused, there will ever be an emptiness about our collections that will torment those who seek to enjoy pictures in an uncongenial mood. Every haunter of picture-galleries, we should imagine, must have experienced the feeling in a greater or less degree; and, to judge by the amusing remarks that some of our acquaintances make after a visit to the Royal Academy, we sincerely believe that a very small minority, in seeing picture-galleries, take real pleasure that has any abiding influence.

The *dilettante* character of the Grosvenor is eminently qualified to afford its visitors the instructive advantage of analysis; and, by attending well to its teaching, a true knowledge of the æsthetic is to be obtained.

The artist and the connoisseur here meet on tolerably equal footing, and the mere passive observer who has visited the Grosvenor leaves the gallery with some addition at least to his stock of beautiful recollections.

After all, a picture gallery that appears to us empty at one moment, may be full of instructive matter and pleasure at another, and it is in our own power to fill the gallery with noble or with degrading thoughts.

There are moments when we are disposed to condemn everything, when some one is always in our way, and perpetually doing wrong to annoy us, and at such times we see in pictures nothing but paint and emptiness, and perhaps we at such moments may not be altogether wrong in thinking that one picture in ten thousand, perhaps, ought to live in the applause of mankind from generation to generation, until the colours fade and blacken out of sight, or the canvas rot entirely away. For the rest, again we quote from Hawthorne, let them be piled away in garrets, just as the tolerable poets are shelved when their little day is over: is a painter more sacred than a poet?

FROM THE BANKS OF THE SEINE.

IN the professional world the event of last week may be considered the meeting of the seventh session of the Architectural Congress, the programme of the papers read at which offered certainly an interest more than usual. On the 16th inst. the Congress, under the patronage of the Société Centrale de l'Architecture, held its opening meeting in the hemicycle of the École des Beaux-Arts, the hemicycle which the name of Delaroche has quite as much rendered famous as those of the many laureates who have been crowned there. The committee formed, under the presidency of M. Jolly, after a few words of congratulation M. Paul Sedille read an interesting notice on "The Life and Works of M. Duc," in which were recalled the numerous undertakings of the late eminent architect, to whom Paris owes the restoration of the Palais de Justice,* and so many other important works. M. Gaston Henard also submitted to the Congress an interesting study on the architect's diploma. On Tuesday morning, as had been announced, a visit was made to the Municipal School of the apprentices of the City (of Paris). Later on in the day M. Achille Lucas presented a valuable paper on Architecture at the *Salon* of 1879. Wednesday was occupied with the discussion of the important question of artistic property in architectural works. Thursday was employed in visiting the National Manufactory and Ceramic School at Sèvres. On Friday, M. Charles Lucas, the energetic secretary, presented an interesting summary of the latest archæological discoveries made by the École de France, at Athens. On the last day of the Congress, Saturday, after a morning visit to the College Chaptal, the medals awarded by the Société Centrale des Architectes were distributed, under the presidency of M. Turquet, Under-Secretary of State to the Ministry of Fine Arts; for domestic architecture, the École de France at Athens; the École des Beaux-Arts; the École des Arts Décoratifs; the private schools of architecture; the schools of apprentices, two foremen respectively gaining the silver and bronze medals; the various workmen employed in the building trade,—a dresser obtaining the silver medal, and a mason the bronze medal;—and finally, the art industries connected with architecture, the silver medal being awarded to an ornamental sculptor. By M. Ravaisson, member of the Academy of Belles Lettres and Inscriptions, and curator of the Musée des Antiques, a valuable address was delivered on the teaching of drawing. With a dinner at the Grand Hôtel, the seventh meeting of the Architectural Congress was closed. It is unfortunate that the amicable spirit of this yearly gathering should have been somewhat injured by the want of unanimity that exists in the Paris architectural world with regard to this "so pompously designated," we learn from the *Architecte* (the organ of the National Society of French Architects), "Architectural Congress." The excellent chronicler of that journal complains of the apparent neglect on the part of the organisers of this yearly meeting to recognise the existence of a crowd of societies of French architects, not alone in France, but abroad. In fact, calling this meeting a congress, he urges, is altogether a misnomer.

On Saturday last the celebration of the fiftieth anniversary of the foundation of the École Centrale des Arts et Manufactures collected in the large hall of the Trocadéro (one of the architects of which, by the way, M. Bourdais, was a pupil of this school) a large crowd of invited guests. The meeting was presided over by the Minister of Agriculture and Commerce, at whose side sat the veteran M. Dumas, the last-surviving founder of the school, surrounded by numerous representatives of foreign nations. Among these latter, not least conspicuous by their striking costume, were the recently-arrived Chinese Commissioners. The pupils and former pupils of the school occupied, in large numbers, the spacious pit, and loudly applauded the interesting, even if somewhat lengthy, addresses, recounting the history and progress of the institution. In the evening a concert and ball, at the Hôtel Continental, further marked the "golden wedding of the École Centrale."

It is a French axiom which would seem to possess no small degree of truth, that "*Quand le bâtiment va, tout va,*"—when the building trade is prosperous everything is prosperous. From the humblest mortar-mixer to the upholsterer putting the last finishing touches to the completed home, there reigns at present in the building trade and its accessories, an activity resembling strikingly that noticeable in England. Since the 15th of last month, we learn from recently-published statistics, more than eighty new houses have been commenced. In one neighbourhood of Paris alone, that of the beautiful Parc Monceaux, it is impossible not to be struck with the immense employment given to the building trade, and more especially in its more ornamental branches, the work produced by which, however, notwithstanding this patronage, we regret to have to say can scarcely claim as formerly the approbation of the fastidious artist. Even under the Empire, when the whole of Paris seemed enveloped in scaffolding, and the Government more than once expressed its pride at having brought to such a position so important a branch of industry, the activity of the building trade was scarcely equal to that at present reigning. The following figures, the responsibility of which must rest with the *République Française*, will serve to show the effect of the somewhat more constitutional, even if smaller, encouragement afforded at present by the City of Paris. In 1867, the culminating point of Hausmannism, the year of the Great Exhibition, 120 millions of kilogrammes of lime and cement, very nearly 120,000 tons, were employed. In that year, and during the three preceding years, the City had expended more than 900 millions of francs (36 millions sterling). To obtain this sum, against all precedent, the signature of the City had been surreptitiously negotiated, and false communal bonds issued to the amount of nearly 19 millions sterling. In 1877, on the contrary, the City of Paris, thanks to an honest and modest loan of 120 millions of francs (nearly five millions sterling), has revived

* See *Builder*, vol. xxxvi., p. 243.

the important building interest. About 101 millions of kilogrammes of lime and cement (about 101,000 tons) have paid town dues. Last year, the Avenue de l'Opéra having been built, and the action of the city reduced to a minimum, the entry diminished to some 80 millions of kilogrammes (about 80,000 tons). In 1869, the City of Paris expended nearly 6 millions sterling in its buildings, and the amount of material employed was about 94,000 tons. During the three first months of the present year, a quarter of this sum has been reached with an almost imperceptible intervention on the part of the City, and alone the result of the activity and vitality of private industry, the symptoms of a prosperity which, if more economical, is at least somewhat more durable than that of the last government.

THE CITY OF LONDON SCHOOL.

THE City of London School was established in the year 1834 under a special Act of Parliament, and is endowed with an annual sum of 900*l.* out of a fund bequeathed to the Corporation in 1442 by John Carpenter, Town Clerk of London in the reign of Henry V., for the purpose, as his will expresses, of "finding and bringing up of four poor men's children, with meat, drink, apparel, learning at the schools, in the universities, &c., until they be preferred, and then others in their places, for ever." This same John Carpenter also "caused with great expense to be curiously painted upon board about the north cloister of Paul's, a monument of Death leading all estates, with the speeches of Death and answers of every state." This was, no doubt, a *Danse Macabre*, or *Todtentanz*, a very popular representation in the Middle Ages, with which we are familiar through the engravings of Holbein and others.

The school fees for each pupil are now 10*l.* 10s. a year, the original charge having been 6*l.* 15s. The general course of instruction includes the English, French, German, Latin, and Greek languages, writing, arithmetic, mathematics, geography, history, and natural science. There are several valuable scholarships attached to the school, among which may be mentioned two exhibitions founded by Sir William Tite of 25*l.* and 20*l.* each.

The school, which is situate in Milk-street, Cheapside, was built from the designs of the late Mr. J. B. Bunning (before his appointment as City Architect), on the site of Honey-lane Market, the first stone of the building having been laid by Lord Brougham on the 21st of October, 1835.

The position of the school is very confined, and the site quite inadequate for modern requirements, the superficial area occupied by the building being only about 9,000 square feet. There are no playgrounds; no sufficient provision for natural science teaching, a branch of education which was almost unknown at the time the school was founded; no luncheon-rooms, and the general arrangements of the school and administrative departments are much below the standard now considered necessary in primary schools. It need scarcely be remarked that the system of tuition in public schools has undergone considerable modification within the last few years, and that a building erected more than forty years ago must of necessity be deficient in many important particulars now considered essential to a school.

From its position it is impossible to extend the present school, the site of which, although unsuitable for educational purposes, has considerably increased in value of late years, and is well adapted for warehouse purposes, being in the midst of the Manchester market; and these considerations being pressed upon the Corporation, the whole question was referred to the School Committee.

After considerable deliberation it was resolved by the Corporation to remove the school from its present site, and to rebuild it upon a site facing the eastern end of the Victoria Embankment, adjoining De Keyser's Royal Hotel. This site is very suitable for the purpose intended, being open upon three sides; the Corporation proposing, for the purpose of developing the ground for building, to construct a street from Tudor-street to the Embankment, together with a cross street running nearly east and west to the north of the school. The site has the disadvantage of being wholly of made ground, which will necessitate the foundations of the building to be erected being carried to a depth of from 20 ft. to 30 ft. below the level of the Embankment. This must, of course, very considerably increase the cost of the proposed building. The Metropolitan District Railway runs under a portion of the site, which is also overlooked on the eastern side by the windows of De Keyser's Royal Hotel. The area of the new site is about 35,000 square feet, or about four times the area of the present site.

On October 3rd, 1878, a report, prepared by the School Committee, consisting of about thirty-six members, who are entrusted with the management of the school, was presented to the Court of Common Council, detailing the steps they had taken for the purpose of carrying out the resolution of the Court for the proposed removal of the school. They reported that they had inspected the site and the new school of the Merchant Taylors' Company at Charterhouse, and Dulwich College School, but had not considered it necessary to inspect any schools at a distance from the metropolis. The value of the new site, which contains about one acre, they estimated, on the authority of the City architect, to be about 75,000*l.* The cost of the necessary buildings for the new school the committee estimated at 50,000*l.* They had then proceeded to instruct the Architect to prepare plans for a school to accommodate 680 boys, together with a residence for the secretary, at a cost not exceeding 50,000*l.* The Architect accordingly prepared two designs, the accommodation in each being very nearly the same, but the disposition somewhat varied, for a building with a large hall, library, and teaching accommodation for 680 boys, which designs are illustrated in the appendix to the report. The general arrangement of the plan may be described as a central internal quadrangle, with a corridor on each side connecting the various departments. In one design the hall is proposed to be placed at the south-west angle of the site, and in the other on the axis of the building, next the Embankment. The Architect, in the report to the committee accompanying his design, estimated the cost of the building only, exclusive of the site, at 100,000*l.*, or about 14*l.* per head. The average cost of the buildings erected by the School Board for London, according to Mr. Robson, is 11*l.* per head.

The Corporation do not appear to have been satisfied with the designs submitted by the School Committee, or they were alarmed at the amount of the estimate; at any rate, the plans were not adopted, and on the 5th of February last the Corporation advertised for designs for a school for 680 boys, without a secretary's residence, upon substantially the same site as that for which designs were prepared by the City architect.

The instructions to architects issued by the School Committee are very carefully drawn, and the requirements are stated with considerable detail and precision. The accommodation required includes 20 class-rooms, each to hold a maximum of 40 boys, with coat-rooms attached, the cubic allowance of air to each boy being a minimum of 140 cubic feet; a hall to hold about 1,000 persons, exclusive of those accommodated in the galleries; a dining-hall for 200 boys, with kitchen over; a lecture-hall for natural science, for 400 boys, with laboratory, apparatus-room, and chemical class-room; playground, with covered playground for gymnasium, &c., library, committee-room, masters' rooms, secretary's office, porters' rooms, &c.

The Corporation proposed to award three premiums of 300*l.*, 200*l.*, and 100*l.* respectively to the authors of the three designs to be selected by them, such designs to become the property of the Corporation, but in the event of the Corporation employing the author of any one of the selected designs as architect the premium would merge into and become part of his commission.

The School Committee announced their intention "to recommend to the Corporation to employ as architect the author of one of the three selected designs, subject to his producing satisfactory evidence of his experience and capacity; but they do not bind themselves to do so, nor to carry into execution any design selected."

In response to their invitation, the Corporation received seventy sets of plans from fifty-three persons, the last day for sending in being the 29th of March last. The drawings were hung in an empty warehouse in Aldermanbury, to which the public was refused admission; and a sub-committee, consisting of about eighteen members, was appointed by the School C mittee from among their number to adjud upon the designs.

In the meantime, the Corporation had pared and brought in a private Act of Pa ment for the purpose of enabling them to re the school from its present site to the prop site upon the Victoria Embankment. The was first introduced in the House of Lords passed through that House as an unopp measure. In the House of Commons, Charity Commissioners presented a pet against the Bill, for the purpose of obtain *locus standi*, and the Bill was in consequ referred to a Select Committee. After hea the evidence of Mr. Robert Vigers (who called by the promoters as to the value of site), Mr. Felton, the chairman of the S Committee, and the Rev. Dr. Abbott, the h master, the Charity Commissioners with their opposition, and the Bill passed thr Committee.

On the 4th June last, the School Comm reported to the Court of Common Council they had selected three designs, which they placed in the following order (the authors' n were not announced, but they are now us sally spoken of, and the authorship assigne not been contradicted), viz.:—

1. "Live and Learn"... Messrs. Davis & Emanu
2. "Simplicity" ..... Mr. Thos. Chatfeild Cla
3. "Playgrounds" ..... Mr. T. E. Knightley.

As is commonly the case with regard to petitions, much dissatisfaction is felt a recommendation of the Committee, and plaints have been made of the manner in the Committee have conducted the inqui being alleged that they have not availed selves of professional assistance, and the n to permit the public to inspect the dra has been much commented upon. As regard last head, this seems in a fair way to be remo Mr. H. Lowman Taylor having given not his intention to move that the several desig placed in the Guildhall, or some other su spot, for the inspection of the members of the poration and the general public, previously t report of the City School Committee being sidered by the Court of Common Council this is done it will probably do much to the irritation which is naturally felt by competitors, and will dissipate the accusa of unfair preference on the part of the mittee, and of canvassing on the part of petitors which have been freely made.

There are rumours afloat that a party i Corporation who are opposed to the remov the school will resist the school being re and the plans will therefore become useles if the plans are carried out, that the succ competitor will not be employed, and tha drawings will be handed over to the City A tect to prepare a fresh design.

It is to be hoped that a powerful and wea body like the Corporation of London wil pursue such an indefensible and objectio course.

It is not, perhaps, too high an estimate t the money actually expended upon each d as 70*l.* upon an average. This would mak total value of the plans sent in, in round n bers, 5,000*l.*; and as the Corporation have the advantage of the whole of these plans, will, if they merely award the premiums wh employing the author of one of the three sel designs, obtain 5,000*l.* of work for an exp ture of 600*l.*

It is not to be supposed that the compet many of whom are men of some eminen their profession, would have competed at the premiums had been the only induce held out to them. They were, no doubt, gr influenced by the prospect of carrying o important work upon one of the most promi sites in London, and they relied upon the faith of the Corporation and the delib promise in the Instructions to Architects tha School Committee would recommend the a of one of the selected designs to carry ou work.

The *City Press* of Wednesday last said:— are informed, on good authority, that when report of the City of London School Comm is brought before the Court of Common Co to-morrow, an amendment will be moved the view of setting aside the decisio the selected plans, on the ground that decision is 'inconsistent with their int merit.'" We were unable to ascertain the r up to the time of going to press.

ENGINEERS IN INDIA.*

TRAVELLING about an Indian district is somewhat arduous for a European. A very young man of strong constitution, rather enjoys the change from place to place. He need have no elaborate furniture at his head-quarters; after the first expense of tents, cart, and horse has been incurred, will live very cheaply without the assistance of his travelling allowance. Moreover, it only pays if he is constantly on the move; and as, in addition, he ranks by sheer seniority in the saddle as a most energetic and zealous engineer, there is every inducement to keep in camp as each third day comes round. After a time, this sort of existence becomes monotonous; and since promotion means little more than leading a similar marching life throughout a larger district of country, the officer is apt to be struck with the strangeness of the professional groove into which he has consided. An Indian district charge of any size, which involves a very small and uncomfortable house, situated near a native town or village, without a European within many miles, is particularly unsuitable to a family life. Families of English residents are totally unable to stand roughing and exposure to the Indian climate. Even those of the better class of natives have to be secluded carefully and the best shelter they can afford, and travel from home and as comfortably as possible. So the district engineer, who is constantly travelling, is therefore just as constantly away from his family. He loses the profits of travelling allowance, having to keep up a proper and very expensive domestic establishment, the management of which is, however, interfered with by travelling everlastingly to scour the country or to inspect the roads. An engineer with a family has great difficulty in rendering the monthly account of bricks. He can only earn the distinction of being an active official by absence from home, leaving his domestic circle to amuse themselves as they best can. In the present state of things, where large works are few and far between, this must be the position of several officers of the Public Works Department. It is undesirability occurring to the same extent in every country, and has in certain cases been found intolerable that engineers have thrown up their appointments rather than continue under the disadvantage. The Public Works Department, therefore, has, barring charge of a few railway stations, and one or two appointments in the Presidencies, only the posts in the secretariat to offer to those engineers so circumstanced as to require to lead what is styled a domestic life. Actual engineering work, to be considerative and least irksome, therefore, in its demands a monastic proclivity in the case of those engaged in its superintendence. The question at once arises whether the system of the Department is in keeping with the age. That an officer should run the gauntlet of a stigma of inefficiency or insouciance because of family ties is really capable of defence. Yet so long as the agency is entirely distrusted, and it is insisted upon that a European engineer must supervise and pay for every work done out of money in every British district of India, without wearing, peripatetic movement will be done, and tranquil employment at home the portion, and the Department present an unbroken field to its secular and regular orders of officers. The difficulty is in part surmounted by the extensive employment of military agency in the Indian Public Works Department. What remains to be noticed forms the substance of a long-held and still-continued argument. It is, that public works ought to be done by what is known as the Civil as distinguished from the Public Works Department? To understand the merits of the controversy, it is necessary to reflect that little more than half this century had passed there were no civil engineers in the service of the Indian Government. That service was entirely composed of two classes of Europeans, divided into members of the naval or military establishment, and those of the covenanted civil service. The rest of the officials in the subordinate employments were of the uncovenanted service, or mere natives. Civil authority, for the most part, fell to the share of the covenanted civilians, but the public works became a sphere appropriated to military engineers specially trained for the peculiar duties to be performed in the East. The civilian magistrate of a district exercises almost all the functions of an English property agent, from the fact of the State owning the fee-simple of the land. Hence civil officers have been in the habit of imitating and often partially superintending those minor works which rank as estate improvements. The border line has never been very distinct, and civilians without any acquaintance with the laws of statics or the strength of materials have attempted bridges and buildings beyond their designing powers. However, a magistrate seldom directs engineering operations personally. He gives general instructions and a grant of money to the native officials under his orders, the main part of whose regular work is collection of the revenue from the peasantry and prosecution of crimes. These underlings employ a class of master-craftsmen, who have that intuitive sense of proportion so often seen displayed by comparativiy uneducated men, and which is as innate and real as the faculty of music. Their constructive ability is heightened and regulated by a practical acquaintance with the execution of work handed down from father to son. All structures for the use of the natives themselves are raised by their operative instrumentality, and it is surprising what these master artisans, whose monthly pay may be only from 12 to 20 rupees, can turn out when under effective observation. The revenue officer is known to have absolute control of funds, and no higher authority to consult except in a merely formal manner as to their application. So that his orders are implicitly carried out, and all he has to do is to ascertain that a work has actually been constructed, to pass the accounts. The revenue officials have also certain powers of exacting compulsory labour on emergencies. On the whole, for short simple roads, and for buildings to be occupied by native members of the administration, and also for small irrigation works and municipal improvements, execution through native foremen directed by the magisterial collectors of revenue, is a cheap method of construction, and amenable to scant objection. The advocates of every kind of district work being placed under a European engineer of the Public Works Department assert that, although the works may be simple, there is no check against peculation, and that the style of work and its cost are left entirely in native hands, with an uncertainty as to its quality. There is little doubt that the natives, when given discretion, do not pay labour with the same regularity as a European, and that small sums are appropriated and relatives provided with petty positions on the works. But if any one will be at the pains to reckon up the probable amount of such *laches* in a year, and place them against the cost of the establishments which would have prevented their occurrence, the difference would probably not be in favour of the change. Where civil revenue officers fail is in attempting rather heavy works with inadequate means. Flimsy edifices and threadbare bridges result, which show the want of professional training. The natives do not venture to dispute a positive order, and thus works are run up without check, in the enthusiasm of an otherwise successful tenure of office, which bring the brief approbation of the distant Board of Revenue, and disparaging comments some years afterwards, when the tents of the Provincial Governor and his secretaries on tour are next pitched in the vicinity. The remedy, of course, is that district civil officials should submit all designs for the scrutiny of a civil engineer or architect possessing local acquaintance, leaving the method of actual construction a question of economy and convenience. The Public Works Department has a totally different way of executing work to that pursued by civil district officials. Its whole organisation is on a European model, and native routine is looked at as slipshod and irregular. The engineers have a fixed staff of college-educated subordinates, very much on the plan of the French *Ponts et Chaussées*. Natives, as a rule, occupy the lowest positions, and there is nothing that a native does which is not presumed to be checked by a European, either in the field or office. The Europeans are themselves overawed by a network of returns and a watchful secretariat. It is well known that a native in the ordinary civil departments is not satisfied with the salary of his appointment, but makes it worth much more by indirect acquisitions. The mode of doing so is kept out of sight, and is often merely the exercise of influence and patronage, which was the reward of political eminence only lately in Great Britain. At any rate, ample opportunity exists in all Indian situations held by natives in the offices of legal and revenue administration for making more than their nominal stipends. So much depends upon custom, and is readily conceded by the population, that the practice can neither be inquired into nor stopped. For example, it is quite possible for a subordinate deputy to draw a travelling allowance, and yet quarter himself upon the people wherever he proceeds, and be put to no expense. But in return for this entertainment the landed classes expect to secure a friendly ear at the Revenue Office, and that their disabilities will be examined with extra care. So again the native contractors and master tradesmen who are entrusted with district works intend to supplement their periodical remuneration by an occasional windfall. But the natives in the Public Works Department, though tolerably well paid, are under such a strict watch, and render such tell-tale accounts, that they can make nothing without the fact being either guessed or known. Consequently they have to be driven to exertion, and take little or no real pride because they derive so little satisfaction from their work. They can nominate no relatives to petty charges, nor can they assume among their countrymen the importance of sole managers of public undertakings. The effect is that every arrangement has a tendency to go wrong through neglect, where the European engineer cannot be constantly present or frequently round. There are many ways in which a native member of a permanent establishment can have his own way with impunity. One of the easiest is to feign stupidity. It is exceedingly difficult to displace on such a ground men who have been trained at a Government institution. Then there is sickness, and the ability to account in the most plausible way for a scarcity of hands and dawdling progress. But very often the native subordinates, though well educated, are really defective in practical art, and quite unable to direct workmen. So that an engineer has frequently several sub-agents whom he is obliged to employ, but who may be neither competent nor attentive. It then comes to this: that if the work is a large bridge or a single line of road of moderate length, or a building which the European engineer can visit every other day, the departmental system is much more regular and efficacious than the management of the collector. But if, on the contrary, the works are of a petty description and very widely scattered, the labour of check and the physical injury to the European constitution caused by incessant exposure to a tropical sun are dearly purchased by any economy or benefit produced. That this is the case is not readily seen in the secretariats, by whose opinion Government is chiefly guided. A secretary directing public works from a desk has to secure that some person in each of the districts is responsible for whatever goes amiss. Once an engineer is placed in charge on the spot, dealing with him becomes a mechanical matter, and if anything in the shape of loss, failure, or short expenditure occurs, which he is unable very fully to explain, he is liable to be handed up to higher authority. Now a capable engineer employed upon a large work which he can go over from end to end with out great fatigue and exposure, or long absence from his ordinary residence, or upon which furnished houses have been built every ten or twelve miles by the foresight of Government, can very seldom fail in explaining casual accidents or unlooked-for difficulties. But when he is made responsible for every little rut in a road and leak in a sluice over a wide district, which it would take three months to go round at the pace of ten miles a day, it is very different. When, again, small losses and instances of disrepair are treated as professional delinquencies, it becomes exceedingly difficult for an engineer to ward off censure. Some civil official has perhaps drawn an unfavourable comparison between a collector's and departmental work on return to head-quarters from a district tour, the smart of which is felt at the secretariat. The engineer has to be asked pointedly when he was last over that corduroy mile of road. If by happy accident a recent visit had been paid, some means of pacification are promptly forthcoming. In the other event, it would need much ingenuity to get the blame saddled on the right horse. So that the position of a district engineer having a number of insignificant works to look after is one of actually much greater anxiety, far more wear and tear on his physical endurance, and discomfort, than if engaged on a single important work involving

* See p. 662, *ante*.

four or five times the expenditure of money. The only safe precedure is to be constantly on the move. The impossibility of being in more than one place at a time can thus always be urged, and is an unanswerable plea, and a sufficient exculpation. The district engineer who is scarcely three or four days in the same neighbourhood, can look with tolerable complacency at occurrences which are not at all relished by another whose less frequent journeys do not furnish the grateful *alibi*. Members of the Public Works Department will be found to assert the superiority of the principle of having every work in the limits of a district in charge of a European. There are persons, again, who consider the mere fact of an educated gentleman travelling about and mixing with the natives an immense factor in the propagation of civilisation, and they would advocate the engineer moving about even if he had a mere trifle to inspect. This is curiously evidenced by the different treatment two individuals would receive in the disposal of their leisure. A sportsman might take two or three days shooting, and be thought all the better of for thus occupying his time. There would be no inquiry as to the interlude in more serious labours. But a reading man who for purposes of study had halted for the same period, would experience little appreciative encouragement. He would probably be set down as wasting time. The idea evidently is that the huntsman is coming in contact with the natives and improving them, whilst the other is merely invigorating his own mind and producing no impression on the native population. But this is a mere relic of the company's system, who governed the country on commercial principles, and of a period before railways, when comparatively few had a knowledge of the interior. At present the main reason for extending the supervision of a European over small district works is that by this means alone can the expenditure on those works most commonly done largely exceed the cost of salaries. District works have so little finish, and are designed upon such an economical scale, that it takes a considerable number to fill up an annual budget respectably. But it may be questioned if there is any absolute reason for an engineer having to undertake every class of work within a certain specific area before he becomes entitled to receive sufficient remuneration for his services, any more than that a judge should be paid so much per judicial sentence. There must at times be a lull in engineering enterprise, while an Indian district always presents some important schemes to investigate and a good deal of scope for land improvement. But to curtail an engineer's breathing-room by exercising pressure through the diary of movements and occupying his time in tedious journeyings, in order to visit works which the natives, when the point is insisted upon, are perfectly competent to manage unaided, seems to approach a misapplication of a European's peculiar powers and qualities. District charges are much more onerous in some parts of India than in others. In Bengal, the North-West provinces, and the Punjab, only the principal lines of road are metalled, the canals are in the hands of a distinct group of engineers, and on both classes of works there are small two or three roomed houses at intervals of about a dozen miles apart, which shelter the travelling engineer from the mid-day heat. The population is often as dense as 400 per square mile, and the districts are not extensive. Twenty or thirty miles take a person from the head-quarters of one district to the principal station in the next adjoining; also in the Bombay presidency the district divisions are not excessively large, and the works consist chiefly of trunk lines of road, or buildings in the forts, towns, and military stations, or marine constructions. It is as the south is reached that the change in the system of collecting the land revenue makes itself felt in a minute interference with almost every acre of the country on the part of the Public Works as well as other agencies of Government. The population dwindles down to 200 per square mile, and the traveller may go 100 miles without coming across a residential community of Europeans. Except on the military roads there is no accommodation provided for an inspecting engineer, the Madras Government, even on the important irrigation canals, grudging the small expense that would be required to erect the houses which, are the foremost items of construction in a work of any magnitude in the North of India. Obviously, to leave Europeans, as a rule, and from year's end to year's end, to locate themselves during the hot and rainy seasons in tents which are, except for very temporary occasions, inadequate shelter, or in flimsy mud-huts they subscribe for, little bigger than tool-sheds, is uneconomical. It prevents them using their best faculties, feeling they have a full command of the country, or preserving undiminished health. Few professional men in Great Britain can imagine what it is to be encamped in the hot weather, directing a public work from a tent. The mornings and nights are endurable enough; but the hot, dry winds and dust of the middle of the day evoke such uncomfortable sensations that enforced repose under blankets is the most suitable manner of spending the greater portion of the hours of midday. The high temperature, coupled with the electric tension of the outdoor air of an Indian midsummer, cause such an oppression as almost to stifle thought and render any clear exercise of the head and hands of the engineer a laboured and forced performance. In a shaded and moistened apartment, however, the conditions are materially altered, and an individual can do a fair amount of work, compared to that of the brief waking periods under canvas. During the cold season, which lasts for half the year in Northern India, tents are very agreeable, and their use is indispensable on cross-country trips of any length and when breaking fresh ground. But they are cumbrous to move about, and ill-suited to hilly or roadless districts. In the Madras Presidency, where it is nearly always hot weather, the mere apology for a cool season only lasting for two months, it is hard work merely inhabiting tents, to say nothing of preparing designs and getting up intricate engineering schemes under the sweltering awning. It comes to this, that when works of novel construction or considerable size have to be undertaken in India, it is desirable to employ a European staff and to protect them from the effects of climate at any reasonable cost. But if the works are small and widely diffused, and such as the natives are able to execute with far greater cheapness and speed than any European, if they only choose, it is of questionable utility to compel Europeans to direct the operations with an expenditure of motor-power that only the youthful can long stand and the restless enjoy. There has never been much attention paid in India to distributing engineering work in proportion to the competency, time, and powers of each member of the department. The first effort has been to perfect a chain of rules and form an inflexible system. This done, item after item of work has been brought within the vortex by simply including it in some one's charge who was bound to observe the departmental regulations, till the whole tone of the Indian works became one of overtasking. Nobody could do all that was expected of them, so that it has been a matter of forbearance or accident when any lengthy period has passed without the engineer actually executing the smaller class of works and repairs getting a reprimand. Till the close of the American War of Secession, public works were being very briskly pushed on in India under the surviving principles of the East India Company. The country was just being opened out, and the comfortable lethargy of palanquins invaded by the road and the railway. It was expected that the natives would rapidly adopt European ways of living, and exchange clay and thatch for stone and brick. Irrigation was to spread fertility, and pay investors 10 per cent. Sanitation was to dispel miasma. So that in every quarter of British territory the engineer was about, and the most stirring personage in his neighbourhood. No official worked longer hours or went into such unvisited corners of the district. At last the more obviously needed works have been completed, and those only have still to be carried out which form the demand of a very advanced country. Yet there is little encouragement to proceed with improvements, because the wealth of the population and the productiveness of the land have not kept pace with the extended facilities of locomotion. They have opened a market, but the first rush of raw produce has been succeeded by a dearth which has caused the failure or decline of many of the best mercantile interests at the presidency towns and inland settlements. At present there is no steady flow of capital to engineering works. Grants are obtained with considerable difficulty, and it is only where some political emergency favours a scheme that it is capable of furnishing high-class employment. The whole structure of native society operates against rapid material expansion. This is at a glance by comparing the native town the European station close beside it. Th is a compact mass of badly-built houses, single storied, and in which there is mor than any other substance used in constr Each room contains its four or five beings, and the whole city may have fro to two hundred thousand inhabitants. article in the possession of the natives rickety appearance, and the problem most is how to live on the smallest p sum. If people are seen talking streets it is almost a certainty that are discussing the price of food. Houses natives are generally built round a small court-yard. They seldom contain any ture, and the walls are about 8 ft. high. several generations of a native family clu ther in the same establishment, so that t no individual independence. The prospe one in the household means that the othe do so much less work. When a man obt Government appointment all his relative to quarter themselves upon his bounty. marriage is the almost absolute rule, a natives, as a body, are not long-lived. ferior cheap garbage on which they li filth of their towns, and the weak constit and indolent habits most of them have inh all conspire to shorten existence. A na extremely old at fifty years of age, and a w at thirty-five. The rate of mortality in like Calcutta is 59 per 1,000. In the Army, where selected men are under Eu care, the rate is as low as 14 per 1,000. several facts produce a great influence native's way of thinking and acting. Th essentially different from those of a Eur The British station is an enormous contr the native town. Neat plastered house structed to admit a flow of the purest a of very large size compared to a native which last is on the scale of one of its sta store-rooms, stand in an ample enclosure. are from four to eight commodious room English house, and the whole are appro to the use of but two adults. The accom dation for 100 European residents covers a ground as a native city of fifty thousand So far from being contented with a subsi the European is striving to obtain a compe He affects some elegance in his furniture ness in his grounds, and cleanliness reigns neighbourhood of the bungalow. The in the European settlements are well and it is, in fact, a complete contra the squalid purlieus which the not only inhabit, but really like. W all do or not, their circumstances p any important assimilation to European as it was at one time expected would through education. Natives cannot be En men. Their brightest time is in the imma of youth. There is no dignified even their days to be provided with substantial fort and intellectual ease. The ambition native is to escape all kinds of labour involve physical exertion and exposu weather, by obtaining a public appoint after leaving school, on a small monthly with a prospective and still smaller pe Natives, however, while their faculties la both clever and industrious. The only thi that they must be allowed to produce resu a different way from Europeans. They bute a given task among a number inst placing it in the hands of a sole person. is of great moment to notice from an engin point of view. Hitherto natives carefully cated as engineers, and who have passed mathematical examinations, have been t on entering the service as if they were peans. In consequence they appear mu fishes out of water. It is impossible to e the same physical endurance in a nativ gineer as in one brought out from Great Br Nor will a native, who will wear out at have the same kind of ambition spurring h effort as the Englishman, who is still i vigour at that not advanced age. Besides the native is not a free agent. He is m the member of a large household whose w he is obliged to consult, and whose slav virtually continues while in employment. that he is continually, work how he may, reduced to mere subsistence level, and h scope to found a career and domestic purely his own. If, therefore, a native i partmentally employed in the higher ran engineering, it is necessary to allot a dimin

, and useless to pay a scale of salary ascends by rapid leaps. But under a native system of government, which keep an engineer in one locality the of his service, while, on the contrary, principles of administration would re- him to a fresh district every three or four an engineer would so establish himself as capable of controlling the same, if not district work than a European. The would collect his relatives together, have most likely males well schooled and the elements of the profession, and then se of them as assistants to himself. The f the family would alone draw pay from ate as engineer; but his duties would be by several relations qualified to help, but names would not necessarily figure on tablishment-rolls. Other dependents of ily, possessing no education, would, notanding this disadvantage, be turned to t. They would be posted to the different as spies on the doings of the subordinate

In this way the native engineer would to exercise a very powerful check on arities of all kinds, and be prepared to fforts with which it would be most diffi- r a European to compete. The Public Department is so constituted as to pre- e formation of this sort of local influence. nt of it most of the native engineers helpless, and are liable to be set down res. But the civil business of the is done by these convenient socialisms, ostensibly only one responsible official with,—the magistrate-collector. It is at the Revenue Department is stronger at of Public Works. Agents intimately ted with a district, and long settled in get work of an ordinary description d with more certainty and less cost than ans, who do not live among the natives, not hear what transpires. But these tions only apply to scattered local works, to costly single projects requiring and organisation. The natives do not much administrative power. They make rd arrangements, and leave chance to est. In these cases to have engineering ficiently carried on, Europeans must be head of affairs. Natives have not had ortunity of acquiring the necessary ex- , and they have neither the perseverance prehensiveness of grasp to control exten- dertakings and meet unexpected diffi- It is just for the reasons that make Engineers in request all the world over e of them are needed in India. But it e recollected that it is not an opulent and will not for long have very many rks to offer. How far it is worth while out and undergo the disadvantages of for the sake of managing petty works professional interest is a personal ques- remains to give a description of the life commonly led by the engineer at stages of his advancement, and of any eatures of native society or India gene- t may have been omitted, but fall under e of those engaged on public works.

EDALS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

welfth ordinary meeting of this Institute he closing meeting of Session 1878-79) d on Monday evening last, Mr. John rd, president, in the chair. There was arge attendance.

ecretary, Mr. William H. White, an- that a large number of books had been d to the library, including one on "The hurch of Melrose," by Mr. F. Pinches, ld receive the Institute silver medal for some drawings submitted by him. also announced that the purchase had ected of about seventy volumes of works from the libraries of the late . Cockerell and Professor Cockerell.

ollowing gentlemen were balloted for, lared to be duly admitted, viz.,—As Mr. J. J. Stevenson, M.A., of Bays- ll; and Mr. Andrew Hetton, of Perth. *rary Associates:* Mr. James Lattey, of ton; Mr. Edwin Freshfield, F.S.A.; Mr. coe, of Harcourt-buildings, Temple; Mr. Howard, Q.C.; the Right Hon. W. H. M.P.; and Mr. Albert George Sande-

. H. Wyatt, honorary secretary, said he regretted to have to announce that the Council had received a letter from the Marquis de Vogüé, stating that in consequence of the illness of a near relative he was unable to leave Paris, but that he had deputed the Comte de Florian, secretary to the French Embassy, to receive the Royal Gold Medal on his behalf.

The Chairman, in presenting the Royal Gold Medal to M. le Comte de Florian, as the representative of the Marquis de Vogüé, said:—Gentlemen,—It is my high privilege as your president to present the Marquis de Vogüé with the Gold Medal annually given by her Majesty the Queen, and necessarily the highest honour in the power of the Royal Institute of British Architects to bestow on any gentleman, be he member of the Institute or not, be he an Englishman or a subject of another and friendly nation. It is right that I should explain how the award was conducted. The Council, on the motion of Mr. James Fergusson, recommended that the medal for the current year be offered to the Marquis de Vogüé, then Ambassador of France at Vienna; their recommendation, which was unanimous, was unanimously accepted by a special meeting of the general body of members, convened on the 10th March last, and the royal assent, shortly afterwards solicited, was graciously accorded in a letter written from Buckingham Palace stating that the Keeper of the Privy Purse, having submitted our award to the Queen, was commanded to notify her Majesty's approval of it. It may perhaps be convenient that I should describe the origin and intention of this royal gift, for though the proceedings connected with it date back no further than about thirty-two years, little is now known of the trouble taken and the interest shown, not only by the President and Council of those days, but by the late Prince Consort, to ensure the success of a distinction both professionally honourable and artistically advantageous. It was in March, 1847, that the Council resolved to humbly request the Queen to permit "the Royal Medal to be conferred on such distinguished architect or man of science of any country as may have designed or executed a building of high merit, or produced a work tending to promote or facilitate the knowledge of architecture or the various branches of science connected therewith"; and with this resolution in his hand the late Earl de Grey, our president, went to the Prince Consort, who authorised him to say that the Prince fully approved of the proposal, and also that the Queen would sanction it. The Prince stated his opinion that the award of the medal should be varied in each succeeding year, that it should be applied as the Council of the Institute might periodically feel to be best for the general welfare of the profession; and a few months later the Prince Consort gave further proofs of the interest he took in the matter. When Mr. Wyon, the late well-known Royal Academician, submitted a design for the reverse of this medal, he was informed that the Prince Consort wished the medal to clearly show that it was the Queen's gift, and he suggested that, on the obverse, the words "Victoria Regina,—Cudi Jussit" should be introduced; indeed, there is preserved in our records a letter from Earl de Grey saying that her Majesty had desired, in giving the medal, to confer benefit upon the profession of British architects in the manner thought best by those who were the most interested and the best informed respecting such a matter. The career of M. de Vogüé has been of a character so in accordance with the modern idea of what a great archæologist ought to be, that I should fail in my duty were I not to trace, as rapidly as possible, the salient events of a life which may be advantageously studied by all men ambitious to explore, for the common good of the world, ancient countries once renowned, but now slightly peopled and little known. M. de Vogüé's first efforts in this direction were made while he was attached to the French Embassy at St. Petersburg, from 1849 to 1851, when he published some essays on the "Ancient Art of Russia"; and it was during the eventful period which preceded the establishment of the Second Empire that he commenced his study of ancient and Mediæval buildings, particularly of those in Eastern Europe, Western Asia, and the neighbouring African shores. In 1853-54 he visited Greece, Syria, and Egypt, the result of which may be seen in his well-known work on the "Churches of the Holy Land," as well as other minor works on the "Semitic Characters." At the close of 1861, M. de Vogüé started to join M. Waddington, his great friend, and now one of the most distinguished ministers in the French Cabinet, who had, six months before, explored parts of Central Syria, and made important discoveries. Together, during the whole of the year 1862, these travellers visited all the country now designated Central Syria, and soon after their return M. de Vogüé published his book on the "Temple of Jerusalem," and commenced the publication, in parts, of that extraordinary and valuable contribution to archæological science, entitled "La Syrie Centrale," being a series of accurate architectural drawings of numerous cities dotting a vast plain, and presenting a chain of monuments illustrative of early Christian construction between the fourth and seventh centuries of our era. In that exploration M. Waddington, who, though a French minister, has carried away honours from our Universities, and is the son of an Englishman, devoted himself to the study and collection of inscriptions, and M. de Vogüé to drawing and architectural research. Sketches for the plates illustrating "La Syrie Centrale" were prepared by the Marquis, assisted by Mr. E. Duthoit, an architect of distinction; and when circumstances permitted, these illustrations were completed on the spot. This was particularly the case for the drawings of Jerusalem, and for many of those of Djebel Semán. Every detail was measured and figured with the utmost minuteness, and photography was sometimes employed to aid the explorers. But apart from M. de Vogüé's literary and artistic fame, he is familiar to English architects as the bearer of a name associated with the Hôtel de Vogüé, a mansion that all of us know and some of us have seen,—a masterpiece of the Renaissance, situated at Dijon, and not the least instructive of those historical monuments for the conservation of which the French have passed statutory enactments enforced to the advantage of all architectural tradition, and to the special honour of their country. That celebrated residence, inhabited by the father of the marquis of whom I am speaking, probably fostered a taste for the arts which, hereditarily transmitted, led the young Melchior de Vogüé to seek occupation for his leisure in lands where the earlier records of history lay, like an open book, to be read by any one who could decipher and understand. The character of these archæological researches was not ignored by the French Government. In 1871 M. de Vogüé was nominated ambassador at Constantinople, where he remained until 1875, and where, while devoting himself to official duty, he could still continue his early study of Oriental art,—study that a few years before had obtained for him the envied distinction of membership of the Academy of "Inscriptions and Belles-Lettres." It now only remains for me to invest the Marquis de Vogüé with the Royal Medal, and in begging him to approach the chair I have but a few remarks of personal address to make. [The Comte de Florian having advanced to the front of the table, the President continued his address as follows.] Sir, I know that I speak the sentiments of the Institute of British Architects when I say that the offer of this medal to you is a sincere attempt to signalise the gratitude which we all feel for the assistance you have rendered us individually and collectively by the publication of the books now lying on this table, and which adorn our library. In former years, a similar token of respect was paid from this chair to Sir Henry Layard, Herr Lepsius, Mr. Fergusson, men not unknown to you; and I may add that while justly proud of a brilliant roll of Gold Medallists, we dare to assert that not the least distinguished among them are your compatriots,—our colleagues,—MM. Hittorf, Texier, Duc, Lesueur, and Viollet-le-Duc, the three first-named of whom are unhappily dead; while among our own countrymen are numbered Cockerell, Barry, Smirke, Pennethorne, and Wyatt. We have invited you, sir, to add lustre to the roll. I present you with the Royal Gold Medal, the gift of the Queen on the recommendation of this Institute, and in so doing I am glad to remember that it is given to an indefatigable traveller and archæologist, an honorary member of our own body, whose literary and scientific successes have been long recognised by the University of Oxford as well as by the Institute of France.

Professor Donaldson said it would be presumptuous in him to endeavour to add anything to the eloquent notice which the President had just read of the labours of the Marquis de Vogüé. The President had by his research laid before the members the various titles which the Marquis

had to their respect and admiration. The Marquis de Vogué was a real archæologist, and, what was more, an architectural archæologist, for he understood particularly well all the necessities of architectural art, and he also understood the peculiar objects which architects endeavoured to effect in buildings suited to modern requirements. They, the British architects, admired him and his illustrious companion, M. Waddington, for the zeal with which they had undertaken their travels in a country which apparently offered very few attractions to men of culture. In the neighbourhood of Damascus the Marquis de Vogüé had found an architecture of the most interesting kind,—an architecture wholly of stone, for no wood was available even for the construction of floors or doors, which were all of stone. In fact, the Marquis de Vogüé had brought to the notice of the learned world what was hitherto regarded as an impracticable architecture, although, at the same time, an architecture of an elevated character. In the neighbourhood of Aleppo he found a similar class of buildings, and he had shown what were the constructions of the early Christians in the East, in the shape of churches, basilicas, and convents. He had further shown great judgment and taste in giving us plans, elevations, and sections of those buildings, showing with what constructive skill they were planned and erected. The drawings had been beautifully executed by his companion, the architect M. Duthoit. It was in the highest degree commendable that a nobleman like the Marquis de Vogué should have voluntarily undergone the hardships and privations of travel in a desolate country in order to illustrate the architecture of a certain period,—an architecture of the existence of which the world was not aware until he made it known. In the works of Antoninus at Baalbec and Palmyra we saw the tradition of the architecture of the Romans carried out with great profusion and efflorescence; but the work of the Marquis de Vogüé had opened to us a new phase of architecture, and a phase well worth studying by the young architect, who might derive from it some new inspiration which might be turned to good account in the work of the present day. He congratulated the Institute upon having bestowed this year's Royal Gold Medal upon the Marquis de Vogué, for the Marquis had done credit to his country and had done good service for architecture.

Mr. Charles Barry said that as he happened to be President when it was proposed to recommend to her Majesty that this year the gold medal should be awarded to the Marquis de Vogué, he might say that perhaps it would enhance the appreciation with which the Marquis would receive the medal when he (the speaker) stated that famous, renowned, and worthy as no doubt the Marquis was, he was not the only worthy one whose name occurred to the Council as deserving the honour. He had, therefore, the credit of not standing alone in his merit, but of being pre-eminent in merit. It would also be gratifying to him to know that the gentleman who proposed his name to the Council, as a fit recipient of the medal, was Mr. James Fergusson, F.R.S., who was unfortunately unable to attend on the present occasion, owing to ill-health. Had he been present, he would have been able to emphasise the claims of the Marquis de Vogüé to the distinction about to be conferred upon him. The honour would be the more esteemed by the Marquis in consideration of the fact that it was conferred upon him at the suggestion of one who was his rival, though a friendly one, in archæological pursuits. The Marquis de Vogüé had carried on his researches under the greatest hardships and privations, and at his own sole cost, purely with the desire of advancing the knowledge of architecture. That the roll of the royal gold medallists had been highly honoured by the addition to it of the name of the Marquis de Vogüé would, he was quite sure, be the feeling of every member of the Institute.

The Comte de Florian, in responding on behalf of the Marquis de Vogüé, said: I am sure M. le Comte de Vogüé, who is prevented by an imperious family circumstance from attending this meeting of your world-renowned association, will deeply feel the honour which her gracious Majesty has been pleased to bestow upon him through the hands of your eminent chairman. He will also regret that he is unable to return thanks to you for this reward,—the proudest object which a scientific and learned man should aim at. In speaking for him, gentlemen as he has courteously asked me to do, I experience the difficulty of a task before which I would shrink most assuredly did it not give me an opportunity of greeting publicly the members of a body with whose history is connected the name of that royal prince who was associated with the best days of your Queen's family happiness and with the great artistical movement which has brought the name of your nation foremost in the pacific struggle for human greatness and progress. It is no slight satisfaction to me, gentlemen, to hear your chairman remind us that M. Waddington, before taking, with your most noble statesman, such an important part in maintaining the peace of the world, has shared the studies and the labours of your new gold medallist. Such labours and such studies are not an unworthy preparation for the task presently incumbent on a minister and a diplomatist. In seeking the secret of past civilisations in the sandy ruins of Central Syria they must have listened to the lessons of history, and learnt from her imperishable voice that nothing is lasting in this world except what is good, righteous, and fine. Let me, gentlemen, assure you that this honour is one not only for the Marquis de Vogué, but also for my country, and I join his name with that of all Frenchmen in thanking her gracious Majesty and your Royal Institute for this much-envied distinction.

The other medals and prizes were then presented by the President, who made a few appropriate remarks to each recipient.

The *Pugin Travelling Studentship*, 1879, was presented to Mr. W. J. N. Milliard, one of eight candidates who had submitted drawings, sketches, and testimonials. A certificate of Honourable Mention was in the same competition awarded to Mr. Frederick Hemmings.

The *Soane Medallion* (with the sum of 50*l.* added under the usual conditions referring to Continental study) was presented to the author of the drawings distinguished by the motto "I strive," —Mr. William R. Lethaby, Barnstaple. There were three other competitors.

Sir William Tite's Prize of 30*l.* (with certificate) was awarded to Mr. C. E. Sayer, author of the drawings submitted under the motto "Green Margins." In the same competition a Medal of Merit was awarded to Mr. Herbert Alexander Pelly, of Mitcham (motto: "*Patientia et Spes*"), and a certificate of Honourable Mention to Mr. Frederic Edwards, of Manchester (motto: "Acanthus"). There were three other competitors.

The *Grissell Gold Medal* was awarded to the author of the drawings submitted under the motto "*Dulce Domum*,"—Mr. G. H. Blagrove. There were three other competitors.

The *Institute Silver Medal* (with five guineas) was presented to the author of the drawings distinguished by the motto "*Labor*,"—Mr. Frederick Pinches. In the same competition a certificate of Honourable Mention was awarded to the author of the drawings distinguished by the motto "Architecture,"—Mr. Sydney Vacher. There were three other competitors.

The Architectural Examination.—The Secretary read the Report of the Council on the Architectural Examination, from which it appeared that in the Preliminary Class, out of nine candidates, four had passed, viz., Mr. William Balcombe, of Brighton; Mr. E. F. H. Nicholson, of Reading; Mr. Henry Rennie, of Sunderland; and Mr. Walter Scott, of Holloway. In the Class of Proficiency, out of eight candidates, seven had passed, but only two of the seven had passed in both sections, Art and Science; three had passed in the section of Art, and two in that of Science. Mr. W. Llewellyn Harford, of Manchester, and Mr. Bruce G. Capel had passed in both sections, and Mr. Capel was recommended by the Council to receive the Ashpitel Prize. Mr. F. G. Goldsmith, of Newport, Mon.; Mr. F. G. Sumners, of Nottingham; and Mr. W. Jacques, of London, had passed in the section of Art; and Mr. T. W. Moss, of Hornsey, and Mr. H. G. Maclachlan, of South Kensington, had passed in the section of Science.

The President then brought the proceedings to a close by announcing that arrangements had been entered into for carrying out without delay the contemplated improvement of the Institute premises, at a cost of about 2,700*l.* He observed that by the outlay of 600*l.* or 700*l.* beyond the 2,000*l.* formerly mentioned as the probable cost, the Council would be able to effect material improvements in the meeting-room, especially in regard to its efficient ventilation. Subscriptions were invited towards defraying the cost of the works, and it was stated that many members had agreed to double their amounts they had at first promised to subscribe.

Mr. Charles Barry remarked that it was desired that the London members should be the main contributors to the Improvement Fund, as to provide a comfortable meeting-place for the country members when they visited London. In that way the London members would be able to show their appreciation of the readiness with which, a year or two ago, the country members agreed to increase their annual subscriptions to the same amount as that paid by the London members.

DRUMMOND'S BANK.

THE new premises at Charing-cross, now being erected for Messrs. Drummond, stand on the site of the former banking-house, and the houses occupied by four adjoining houses in Charing-cross and Spring-gardens. The new building will, therefore, be of considerable size, and will present a highly respectable appearance. Frequenters of the old establishment will at once be sensible of a change in its entrance, which has now been placed at the side instead of in the principal frontage. The access from Spring-gardens from Charing-cross will, we understand, be somewhat widened, and the effect of the short removal of the entrance from the main line of traffic to the comparatively retirement of the side street will, no doubt, afford much comfort to those whom business may take to the new bank. A handsome portico will be here placed, which will add not a little to the dignity of the building.

The whole of the three frontages will be of Portland stone, and the massive columns and pilasters of the porch of red Mansfield stone.

The area of the new building is, roughly speaking, about 100 ft. square, but its irregularity of outline has exercised not a little ingenuity of the architect. The greater part of the basement is occupied by the plate vaults and strong rooms, which have been constructed in the strongest fashion, and are covered with very thick brick arches. The remainder of the basement contains the domestic offices necessary for a partner's residence, but these are so constructed that they may at any time be added to the strong-rooms should such an extension of space become necessary.

The whole of the ground-floor is occupied by the bank offices, which, in pursuance of Messrs. Drummond's old-established system, will consist of several separate apartments, all of handsome proportions, and the height of which will be something over 16 ft. Besides the entrance to the bank and the partner's residence, there will be a third entrance at Charing-cross which will give access to the upper parts of the house, but which will have no communication with the bank proper. Here it is in contemplation to have several sets of chambers, should Messrs. Drummond find the accommodation of the upper floors in excess of their own requirements. The entire area of the ground-floor is covered by a fireproof construction of iron joists bedded in Portland cement concrete of great strength, and as has already been proved by experience, of great fire-resisting properties.

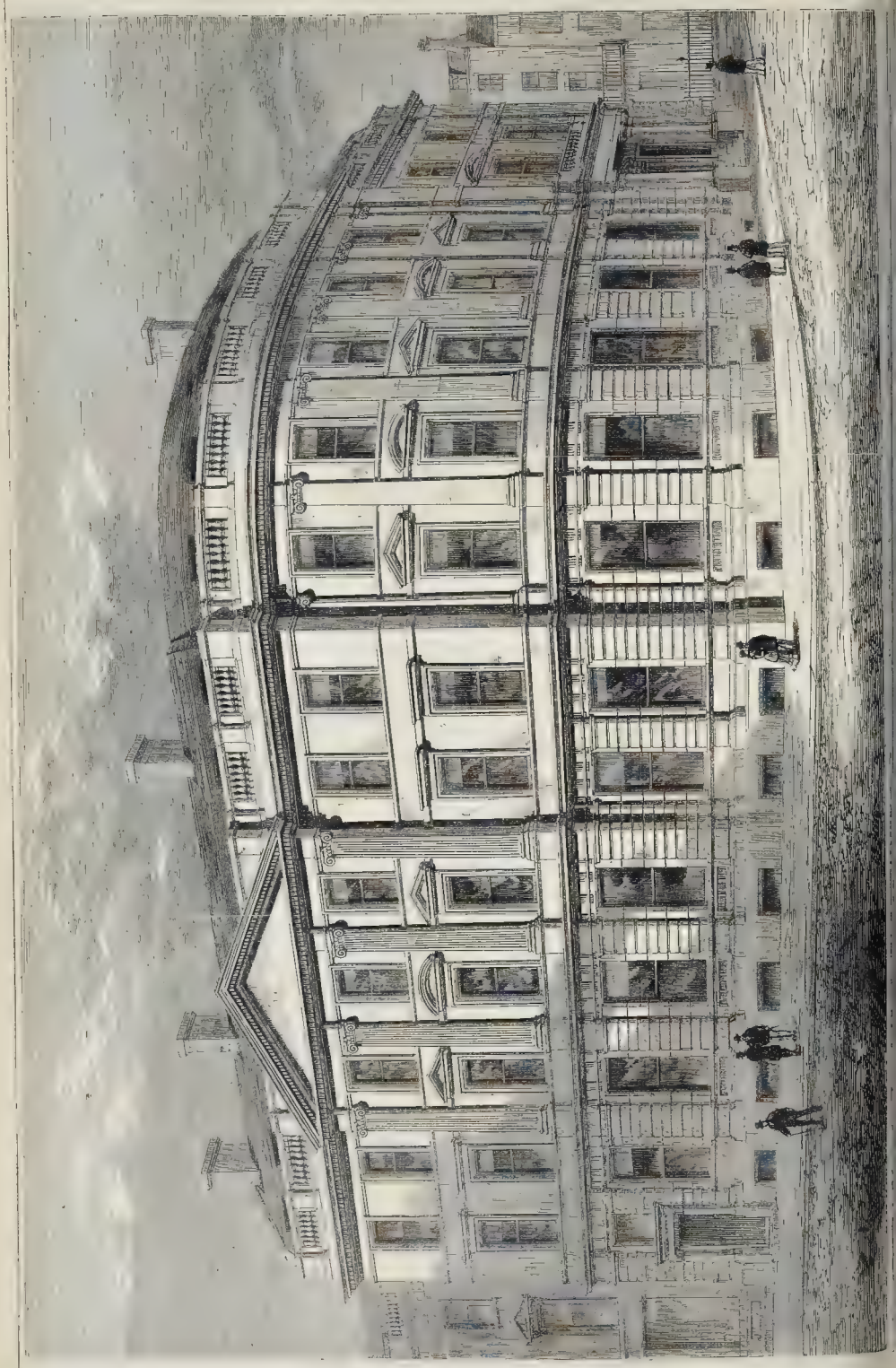
The upper floors of the building will contain an extensive suite of handsome rooms for the use of a partner's residence, and accommodation for at least a dozen resident clerks and a considerable domestic staff.

The foundations were a very serious matter, it being found on excavating that running sand and water existed over the whole area, and tradition assigns this site to a stream, an ancient tributary of the Thames. Nothing has been spared in rendering the foundations absolutely secure, the concrete having been taken down in trenches to the blue clay,—in many instances to a depth of 21 ft. below the undeside of the footings,—and the trenches of the principal walls were 7 ft. wide.*

Mr. Philip C. Hardwick is the architect; and the builders are Messrs. Waller & Sons, of No. 4, Lyall-street, Belgrave-square.

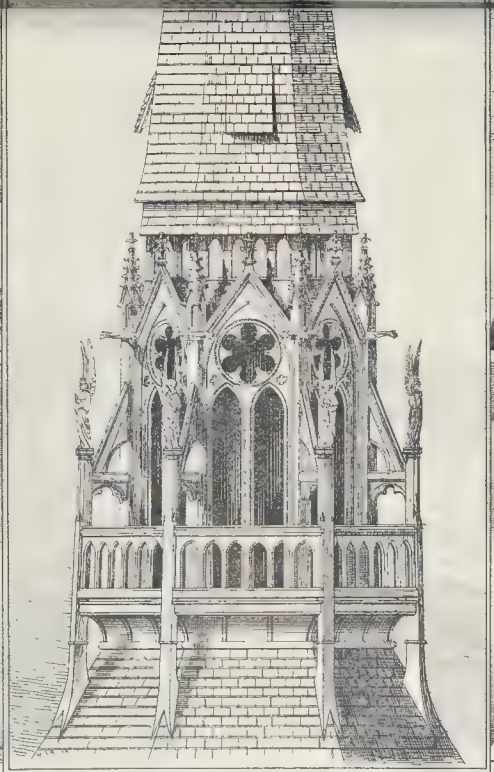
Mr. Thomas Bouch, C.E., the engineer and projector of the Tay Bridge, has received the honour of knighthood.

* We have already given some notice of these difficulties and of the means resorted to to overcome them. See p. *ante*.

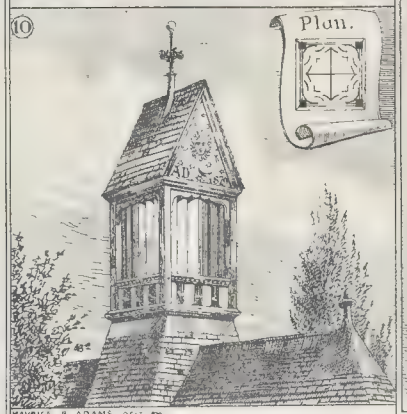



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Plan
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BOYLE'S AIR PUMP VENTILATOR IN TURRET OF CHRIST CHURCH LAMBETH.
(Rev. NEWMAN HALL'S)
13



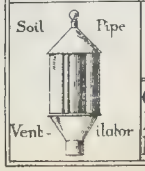








MAVRICE B. ADAMS DES.



ROBERT · BOYLE · & · SON'S

PATENT SELF-ACTING

AIR · PUMP · VENTILATORS ·

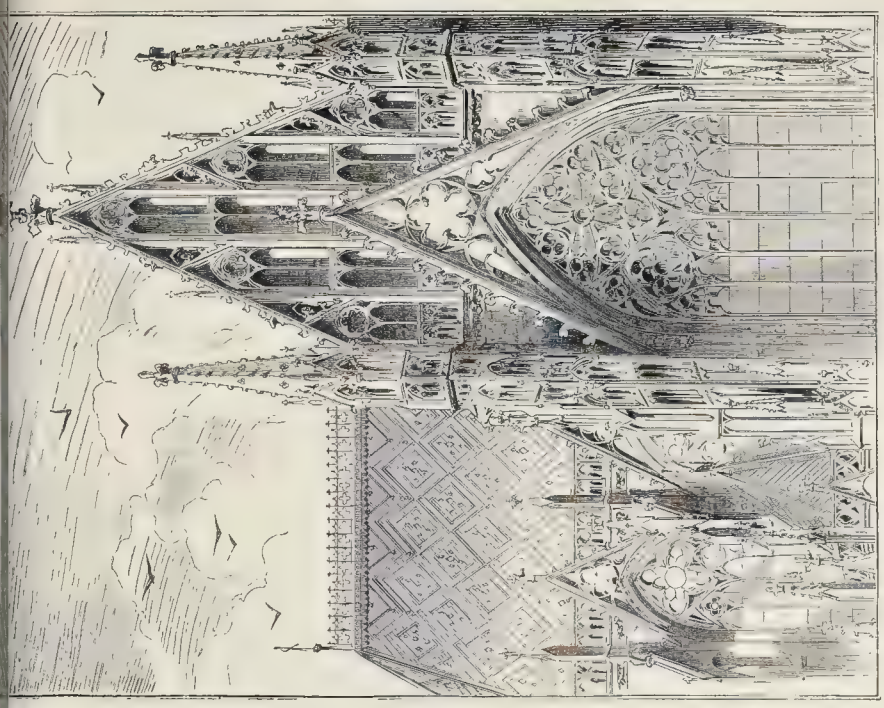
HEAD · OFFICE · GLASGOW

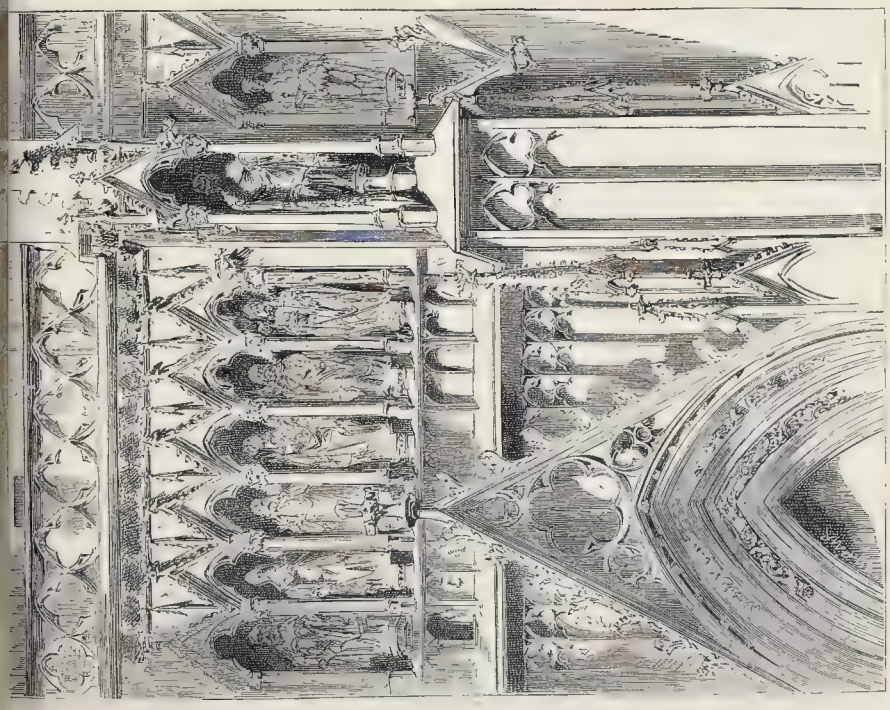
GLASGOW · 10 · Bothwell · Street ·
LONDON · Mansion · House · Buildings
MANCHESTER · Exchange · Arcade

Can · be · made · in · WOOD · and · IRON · to · any · Architectural · Design ; fit · into · Turrets , Towers · &c · They · have · no · Mechanical · movement · and are · entirely · free · from · downdraught · EXAMPLES DESIGNED BY MAVRICE B. ADAMS. A.R.I.B.A

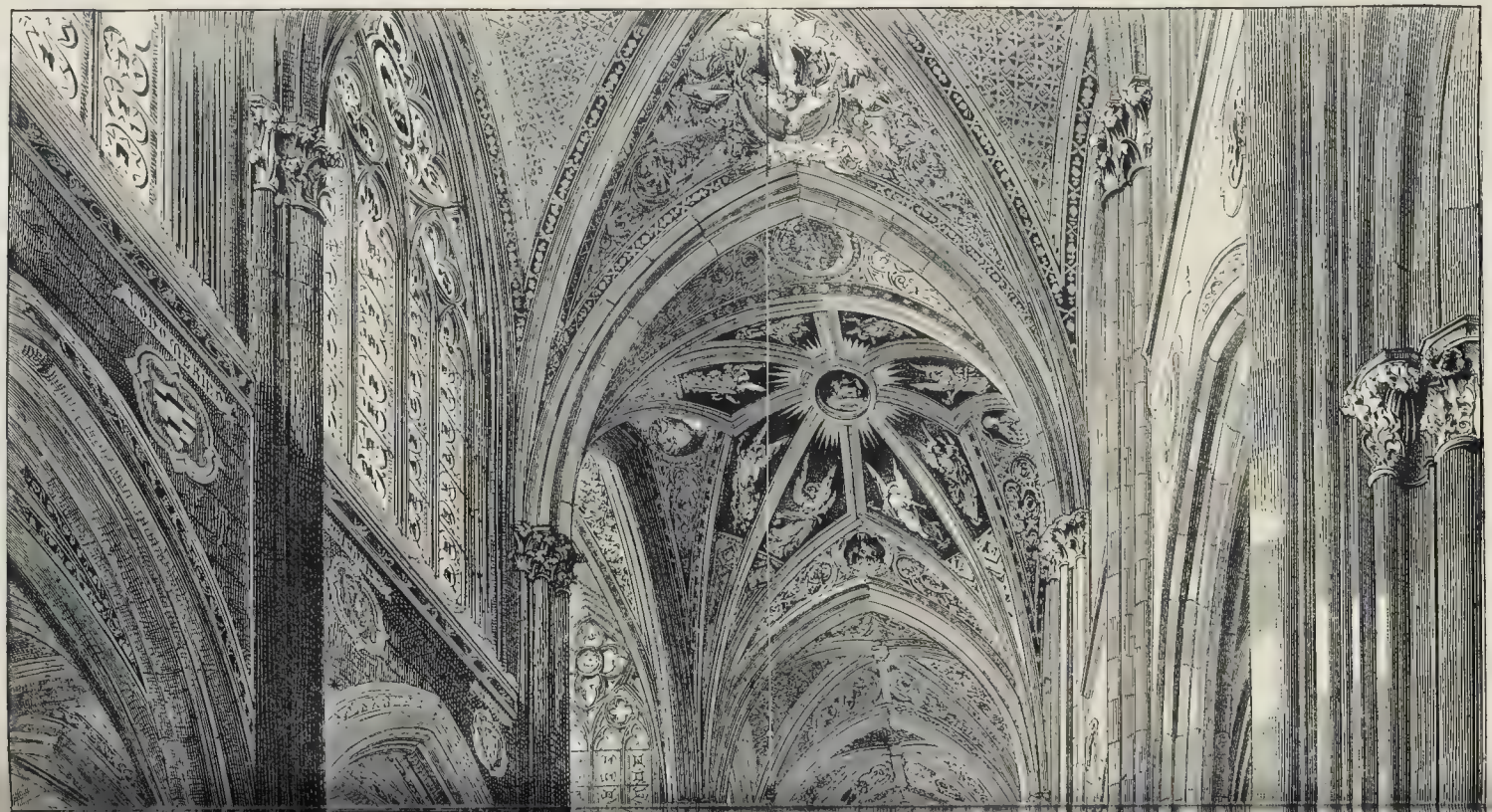


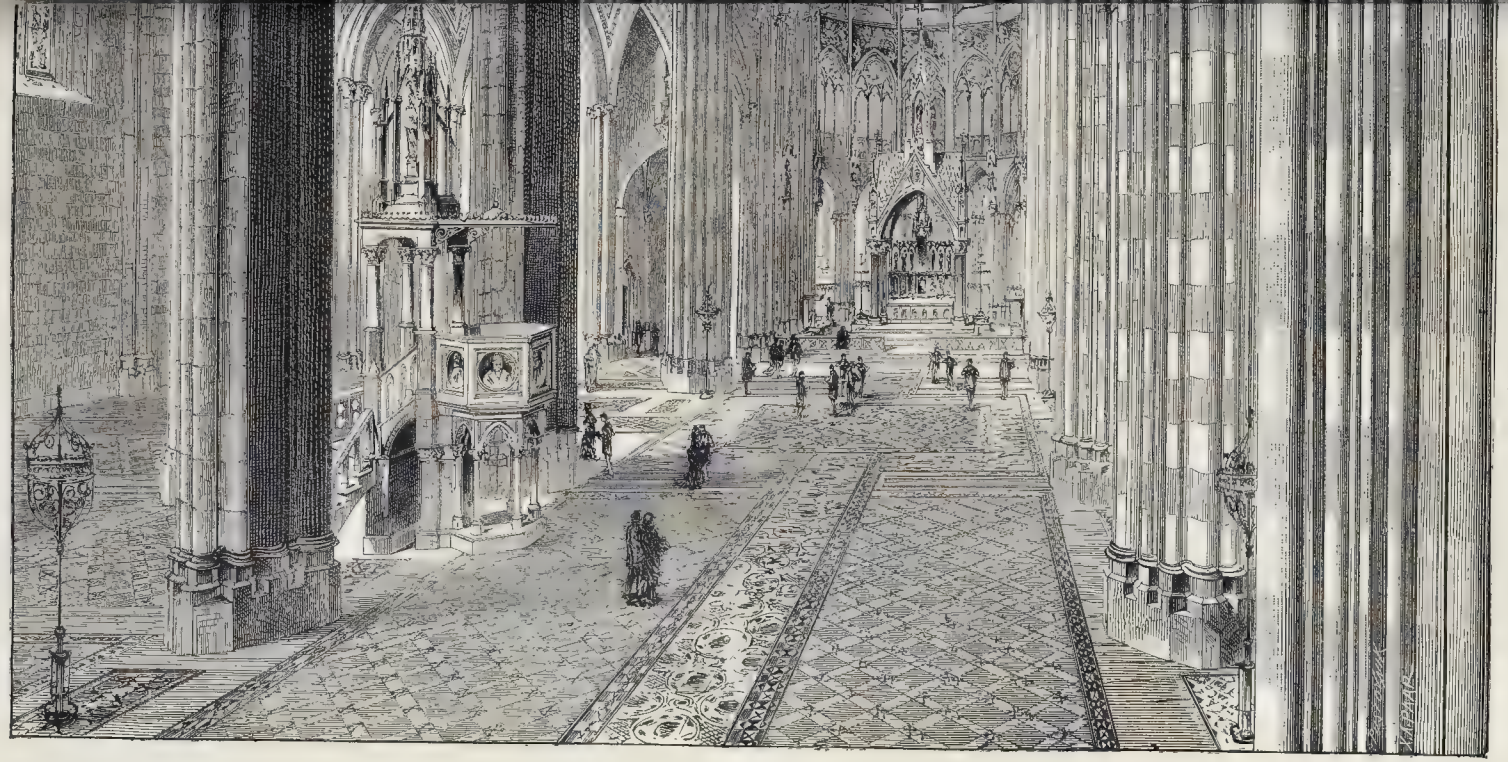
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THE VOTIVE CHURCH, VIENNA.—PARTS OF THE EXTERIOR.





INTERIOR OF THE VOTIVE CHURCH, VIENNA: DEDICATED TO THE SAVIOUR.——LOOKING TOWARDS THE CHANCEL.

HERR HEINRICH FERSTEL, ARCHITECT.

VOTIVE CHURCH IN VIENNA.

utiful church dedicated to our Saviour , in Vienna, of which we present several is to our readers, a work of twenty- labour, and consecrated on the day ver wedding of the Austrian im- r, conveys a solemn meaning. On 18, 1853, a fanatic, the Hungarian n tailor, Libeny, attempted the ion of the Emperor Franz Joseph twenty-three years old), promenading Kärnthnerthor-Bastei, accompanied by -camp, Count O'Donnell. A woman who has remained unknown, just as as never been identified who saved the Emperor Maximilian on the Martins- the Tyrol,—saw how the would-be aised the knife behind the monarch's uttered a cry of horror, in conse- which Franz Joseph turned his head . This movement saved his life. The stead of entering the fleshy parts of fortunately only struck a bone. Count and a Viennese of the name of Etten- ew themselves upon the would-be who made a desperate resistance, but ately overpowered, and had to atone on the gallows. The Emperor re- vered with blood, but on foot, to the se by. The painful dagger wound, ving rise at first to the most serious ions, healed up, without leaving any consequences, in the course of a few

ror caused by this attempt was tem- the joy at the recovery of the To give a permanent expression to l thankfulness, Archduke Maximilian ls the ill-fated Emperor of Mexico) appeal to all the nationalities of which merate Austrian empire is composed for the erection of a commemorative Donations flowed in bountifully, and s later the foundation-stone of the che" was laid in front of what was then chottenthor. Now, in consequence of ding of this part of Vienna, it is in imity to the new University (built by architect), the new Town-hall, Hof- &c., all buildings of the first order d in former volumes of the *Builder*). er of archæological interest it deserves that the foundation-stone is a block of hich was quarried on the Mount of Jerusalem, and is sunk under the ir chapel. Of no less than seventy-five bmitted, that of the young architect, Ferstel (a native of Vienna, and but of age), was selected, the architect the first prize of 1,000 ducats. The been proceeding under this master's for twenty-two years. From the s of this church have proceeded those rvers in stone who were to find such field for their skill on the monumental of modern Vienna. Ferstel's plans ined in their principal points. The gon cupola, however, which was to rise intersection, was, for financial reasons, by a *flèche*, while the four polygonal hich are ensconced so snugly in the ers between the nave and transept were erwards to the design.

Heilandskirche" (the Votive Church is to the Saviour) has a nave and two 273 ft. long, and, including the side 99 ft. wide. The nave is 36 ft. wide, high. It is intersected by a transept ng. The edifice strikes the beholder s proportions than by the manner in e architect has enlarged the spaces, lisposed them in interesting combina- the nave he has effected this by ut further the side walls, by means of wo rows of side chapels have been while the transept almost creates the n of a triple space, caused by the four l corner chapels. The façade, flanked mposing towers 309 ft. high, forming ipal feature of the church, is broken by tals.

te Archduke Maximilian, a man of high taste and culture, had selected the style as the most suitable. Ferstel's ars on the whole the character of the hich has left its impression on the ls of Northern France erected in the g of the thirteenth century. The self- ng character of the whole structure is d with great freedom both in the massive membering of the façade and in the flying buttresses of the sides. The nave especially expresses this decidedly; the façade, nevertheless, is not devoid of such ornamentation as is inseparable from the Gothic style of architecture. The three doors and the gallery running right across above them are richly adorned with statuary. The centre door reaches right into the large circular window, above which rises again the centre openwork gable. In the façades of the transepts a single gigantic window, with charming details, is the striking feature; it is flanked by openwork turrets, and crowned by suitable gables.

These few hints supply only a general outline of the dimensions and arrangement of the edifice of which we give an interior view. A cheerful, variously broken light flows through the spaces, and produces a solemn feeling in the mind. The interior of the Votive Church would appear bare and cold, notwithstanding the playful light of the stained glass, if its walls and column shafts, the harsh tones of whose tints are not yet tempered by the dust of centuries, were not warmed up and enlivened by colour. Polychromy has here come to the assistance of Gothic architecture. At the base of the building an already darkened stone tint prevails, while the vaults are covered, upon a grey or blue ground, with geometrical designs, and the principal panels, as well as the spandrels of the choir, are adorned by mural paintings representing scenes from Holy Writ. In the nave they represent God the Father in Paradise, the genealogical tree of Christ in several panels, the Virgin, and the Saviour; the transept and choir containing several paintings of saints, by Franz Jobst. The vault of the intersection has been painted by Laufberger, the subject chosen being the four Evangelists, venerating along with some angels the Lamb of God. The wall spandrels of the choir contain seven compositions by Führich (his last work) from the history of Noah, executed by Wörndle, and the four elements, as well as the four symbolic animals, by K. Jobst. The spandrels in nave and aisles are adorned by the coats-of-arms of the Austrian provinces, indicating that the building has been erected from the contributions of all the nations of the empire. In the choir, finally, Franz Jobst has represented in a series of compositions the three principal feasts of the church, Christmas, Easter, and Whitsuntide.

Sculpture has, as a glance at the façade will teach us, contributed no less to the beautifying of the church than painting. In the interior, the ante-church and the various chapels show us no fewer than thirty-three statues by Erler, Purkartshofer, Zafouk, Gastlunger, Becher, Glieber, and Fessler. The figure of the angel (above life-size) placed in the inside of the principal door is by Oberecker. The corner chapel to the right contains the first sepulchral monument of the Votive Church, the imposing sarcophagus, adorned with reliefs, erected by Karl and Ferdinand I. to the memory of Count Niklas Salm, who defended Vienna so bravely in 1529 against Soliman II. The monument stood originally in the Dorotheenkirche of Vienna, was moved after the demolition of that church to the estate of Raitz, near Brünn, belonging to the Salm family, and thence, at the instigation of the Vienna Archæological Society, removed to the Votivkirche.

The principal altar has a vaulted canopy, of Istrian stone, resting on four columns of red granite. A pinnacle rises above the point of intersection. The whole is richly adorned by the figure of the Saviour, 6 ft. high, and several smaller statues, with painted single figures by Laufberger, and four glass mosaics in the gables; the front one is a present from Pius IX. Below this baldacchino stands the altar-table, of white Laasch marble, with six pillars of yellow Egyptian marble. The reredos, adorned by pillars, and ornamented in enamel and with wrought decorations, is a good piece of native work in gilt bronze, made by Brix and Anders. Amongst the remaining altars, executed in similar material, but less richly finished, the altar erected by eleven Austrian Arch-duchesses in memory of the silver wedding of the imperial pair deserves notice. The pulpit stands in the last arch to the left, quite free, and is composed, together with its stairs, of the same material as the altars. A most imposing piece of work is the font, wrought of Egyptian marble. The well-wrought railings, mountings of doors, &c., come from the workshops of Wilhelm, Milde, and Gridl. The brass candelabra and the gas chandeliers are *chefs-d'œuvre* of Hollenbach and Hanusch, who have supplied also the greater portion of the altar vessels. The organ, in gilt case, containing sixty-three registers, with over 3,000 pipes, is built by Walker, of Ludwigsburg. The 20,000 square feet of floor are inlaid with encaustic tiles of the Wienerberger Ziegelfabrik.

The principal decoration of the interior consists of seventy-eight windows, of all sizes, and mostly containing figure representations in stained glass, the designs of which originate with eleven Austrian artists, among them Führich, Steinle, Laufberger, Jobst, and Trenkwald. The technical part of this work was executed by the stained-glass works of Geyling of Vienna, Neuhauser of Innsbruck, and Kratzmann of Post. These windows, which cost nearly 30,000*l.*, were founded by the members of the imperial house, the higher aristocracy, the clergy, corporations, towns, and wealthy private persons. One of the windows in one of the choir chapels was presented by the workwomen of the imperial tobacco manufactories. The principal events of the church history of the several crown lands are commemorated by twelve large and thirteen smaller windows.

The cost of building, defrayed, as already mentioned, from voluntary contributions, together with a grant made from the city improvement fund of 80,000*l.*, is about 400,000*l.* This sum does not include the numerous gifts in kind presented for special purposes, such as bells, altars, vestments, church banners, altar vessels, paintings, building material, articles for fitting up, and gratuitous labour.

The Votivkirche will be surrounded on three sides by houses erected in the style of the German Renaissance; facing the entrance, in the centre of ornamental grounds, will be placed the Tegetthoff monument by Kundmann.

The bells of the towers were rung for the first time on December 2, 1873, the twenty-fifth anniversary of the accession of the Emperor Franz Joseph. The church was not consecrated until April 24 last, by Cardinal Prince-Archbishop Kutschker, in the presence of the whole Austrian episcopate. After the consecration the Emperor and Empress attended the first mass celebrated in the building.*

A NEW MUSEUM FOR LONDON.

LONDON is fortunate in possessing many institutions worthy of such a metropolis, in which may be studied the component parts of the earth, the products of every clime, the masterpieces of art, and the handiwork of the craftsman who has utilised the discoveries of the man of science. The geological formation of the globe, from the Sussex Downs to Mont Blanc, has been laid open and classified again and again; botanical research has been aided by well-stored museums; art has long had its national galleries; but hitherto the science of hygiene has lacked these aids to its advancement.

It may, therefore, be assumed that all interested in the progress of knowledge will rejoice to learn that there is a prospect of the deficiency alluded to being adequately met.

As a result of the valuable labours given to the study of hygiene by the late Dr. E. A. Parkes, sufficient enthusiasm has been aroused in gentlemen well known for the interest they take in the national well-being to induce them to voluntarily undertake the onerous task of forming an institution, which shall at once be an appropriate memorial of Dr. Parkes and a worthy addition to the public educational institutions of our country.

The new institution, named the *Parkes Museum of Hygiene*, is to be publicly opened this Saturday, June 28th, by one of her Majesty's Cabinet Ministers, the Right Hon. R. A. Cross, M.P.

Dr. Parkes, recognising as he did that the whole nation is interested in the proper treatment of every one of its members, and for its own sake ought to see that the relations between individuals are not such as in any way to injure the well-being of the community, would have rejoiced to see the Secretary of State for the Home Department occupied in presiding at the inauguration of an institution

* Views of the exterior will be found in previous volume of the *Builder*.

charged with the mission of promoting the study of this important science.

Dr. Parkes, in his "Manual of Practical Hygiene," calls attention to the fact, as others had done before him, "that in many parts of the country the cottages are unfit for human beings. In many of our towns the cupidity of builders runs up houses of the most miserable structure, for which there is, unhappily, no lack of applicants; or masters oblige their men to work in rooms or to follow plans which are most detrimental to health."

As an illustratian of the good that would accrue from a better national sanitary condition, the army, which is regulated by the State, is referred to in the same work as affording unmistakable evidence that, whereas "nothing is so costly as disease, nothing is so remunerative as the outlay which augments health." It is well understood, however, that there are cases in which the State can hardly interfere with effect, and that the growth of sanitary knowledge and the pressure of public opinion can alone cure the evils incident to our imperfect civilisation.

Whether disease will ever disappear altogether we need not here inquire, but it is satisfactory to find the following expression of opinion by Dr. Parkes:—"In the midst of all our weaknesses, and all our many errors, we are certainly gaining knowledge, and that knowledge tells us, in no doubtful terms, that the fate of man is in his own hands. It is undoubtedly true that we can even now literally choose between health and disease; not, perhaps, always individually, for the sins of our fathers may be visited upon us, or the customs of our life and the chains of our civilisation and social customs may gall us, or even our fellow-men may deny us health, or the knowledge which leads to health; but, as a race, man holds his own destiny, and can choose between good and evil; and as time unrolls the scheme of the world, it is not too much to hope that the choice will be for good."

In order to bring about such a consummation it will be necessary for the public to give its support in no ungrudging spirit to the new institution. Although as yet unprovided with an independent building, it already includes a valuable collection of articles and books relating to every branch of hygiene, and occupies an area of 4,000 square feet in rooms generously placed at the service of the committee by the Council of University College.

The collection comprises plans and other drawings of important public works in connexion with architecture and engineering, including those of the Thames Embankment and the whole of the metropolitan system of drainage; many of the sanitary appliances now made in connexion with drainage, ventilation, warming, and lighting; specimens of furnishing on hygienic principles; the nucleus of an extensive food collection; and appliances designed for the protection of life from accidents and diseases to which those following dangerous employments are liable.

The executive committee, who are responsible for the management of the museum, and to whom much credit is due for having brought it to this state of forwardness, consists of the following gentlemen:—Sir W. Jenner, Bart., M.D., K.C.B., F.R.S.; Prof. W. H. Corfield, M.D.; Prof. J. E. Erichsen, F.R.S.; Rogers Field, M. Inst. C.E.; Geo. Godwin, F.R.S.; Professor G. B. W. Kennedy, C.E.; Professor T. Hayter Lewis, F.R.I.B.A.; Mr. J. N. Radcliffe; Prof. Sydney Ringer, M.D.; J. C. Steele, M.D.; Professor A. W. Williamson, F.R.S.; Professor Berkeley Hill; W. R. Gowers, M.D.; and G. V. Poore, M.D.

It is pleasing to be able to state that many of our most eminent public men and women have given their support to the committee, and that her Majesty the Queen has expressed her approval of the work by a contribution of 50*l.* to the funds of the Museum. Several of the learned societies have given their support, and valuable contributions have been made by the Government of the United States and the authorities of the city of Brussels. Mr. T. Twining, the liberal founder of the Economic Museum at Twickenham, has been most active in assisting the committee.

The Museum, with Mr. Mark Judge for curator, is to be open free to the public on Tuesdays, Thursdays, and Saturdays, so as to enable as many as can do so to visit it, and it is to be hoped that the attendance at its inauguration will be such as to inspire confidence in its future development.

ROADS AND ROADWAYS.*

Town Roads or Streets.—In dealing with town roads or streets, the circumstances differed widely from those which had to be borne in mind in respect of country roads. In forming the surface of a new street, the ratepayers looked to the following points, viz.:—1, cost of construction; 2, cost of maintenance; 3, cleanliness; 4, noiselessness; 5, facility with which gas or water pipes could be got at for repair or renewal; and, 6, healthiness. The proprietors of horses, carts, and carriages aimed at a pavement with (1) easy traction; (2) safety and freedom from slipperiness; (3) comfort in travelling without jolting, which would destroy springs and wheel-tires; and (4) a surface which would not be unduly destructive of horses' shoes and hoofs. To some extent these two sets of interests might appear to be in conflict; but it should be remembered that many ratepayers were also owners of horses, and as the trade of a town was so largely dependent on the facilities afforded for the carriage of goods and passengers, it was better to endeavour, as far as possible, to meet all requirements. The great enemies of the town surveyor were the gas and water companies, with their powers to open streets. In town streets it was even more important than in country roads to have a good foundation for the road-surface, as the very best and costliest system of road-surface would fail unless the substructure were firm. In small towns, and in the less busy streets of large towns, macadamised roads were common. They were not, however, suitable for streets with much traffic, on account of the cost and frequency of repairs, and the great expense of scavenging. The "core" or foundation of the road-surface should be (especially when heavy rollers were used) of such a character that the small stones of the macadam might bed into it. If the foundation was too hard to allow of that, the passage of the roller would form a kind of wave in front, and the process would resemble that of rolling out pastry with a rolling-pin. Concrete in cement which would rapidly set and become hard in a short time was, therefore, objectionable, although it was used, under exceptional circumstances, by Mr. (afterwards Sir) John M'Neil, under the superintendence of Mr. Telford, at Highgate Archway in 1829, when Roman cement was laid in the proportion of one of cement to eight of stones and sand. In London and the suburbs the "core" was generally made of brickbats and other hard materials or rubbish. Burnt ballast was also extensively used, but unless very well burnt it would, after a time, resolve itself into mud. The core, which should be consolidated by rolling, and be not less than 6 in. thick, was covered with the broken stone, put on in thin layers (one stone deep), the roller or traffic passing over each layer; this was continued until the metalling was 6 in. deep. In this way the road was made solid during construction, and the macadam was so bound together as to form a sort of mosaic work. Between each layer clean gravel or hoggin was spread in small quantities, and the surface was kept well watered. The gravel tended to fill up any interstices which might exist between the broken stones. In London, the metalling employed was frequently larger than that requisite for making a good road. A ring $2\frac{1}{2}$ in. in diameter was the maximum size through which the metalling should pass, and in reality, a ring 2 in. in diameter was large enough. The stones should not only be angular, but as nearly as possible cubical, and uniform in size. Some authorities, however, argued that when rollers were used, large stones were preferable, but the heavy rollers so often used, instead of pressing the materials into place, crushed the stones and disturbed the foundations and surface. It was better to roll the surface with a light roller frequently than to use a heavy roller less frequently. Five tons were quite sufficient for the weight of a roller, for if it were of greater weight, not only was the road disturbed, but the gas and water mains were liable to be injured. The broken stone used in London (except in some bye and suburban streets where flints were used) came from Aberdeen or Guernsey, the price per cubic yard being about 16s., delivered. The cost of forming a road with such stone was:—

	Per Super.
Excavation, 1 ft. 6 in. deep	
Core of brick-bats and rubbish, 12 in. deep	
Guernsey granite, 6 in. thick, including spreading, rolling, watering, and hoggin	
Total	

The cost of covering a road with a coat of Guernsey granite, including picking, watering, and hoggin, was 1s. 2d. per super. The cost of repairs to macadamised streets in large towns was necessarily high. Mr. Jacques, the surveyor for the St. Martin and Strand districts, informed the author that the road at Charing-cross, below King Charles statue, where there was a steep incline, cost for maintenance when macadamised (it was also paved) as much as 5s. per square yard per annum, without scavenging. Streets such as Parliament-street cost for maintenance when macadamised, from 2s. 3d. to 3s. 6d. per square yard per annum. The smaller streets with little traffic cost about 6d. or less per square yard per annum.

Stone Paving.—Paving with stone was the most ancient system of forming a road surface. Although the most expensive to lay down, it lasted longer than any other kind of road, and that, in the long run, it became the cheapest pavement (asphalte, perhaps, excepted) on account of the noise, accumulation of dirt, and wear and tear to carriages and horses, were serious drawbacks. Under ordinary circumstances it afforded a safe foothold, but the joints between the stones, harbouring mud, rendered it slippery on certain occasions, and expensive to keep clean. When each individual stone presented a smooth surface, a horse had no chance to recover himself should it slip or slide; hence the width of stones should be diminished to 4 in. Formerly the stones were large, and but little attention was given to this point. The setts were never more than 9 in. deep, and that only where the traffic was very heavy, as in the City of London. In other parts of the metropolis the depth of the setts was usually 7 in., and the width 3 in., except at crossings, where the width of the setts was 4 in. The length of the setts should not exceed 12 in. (the average length was about 10 in.), otherwise they were liable to tilt when the weight was on one end only. Stones in the form of a cube were often put down in streets of light non-continuous traffic or in courts, and in such cases they made a very neat and smooth surface. In large towns the setts should be of durable granite or trap, but in small provincial towns local stone (such as limestone or sandstone) might be used. Colonel Haywood, in his report in 1871 to the Commissioners of Sewers for the City of London, says:—

"For public convenience, the hardest, most durable, and therefore the most economical granites are not employed. From time to time, indeed, hard granites and other stones have been tried, but have invariably caused so much dissatisfaction that they had to be removed before the end had been down many years, and the grey or blue granites of Aberdeen, or those of similar character, have almost exclusively been used in the City as meeting the greatest exigencies of the traffic."

The foundation for stone paving should be well prepared. The ground, after being rendered hard by rolling or punning, should be covered with lias lime or cement concrete, or with a hard core from 6 in. to 12 in. thick. The paving stones should be evenly bedded on a layer of sand about 2 in. thick, spread over the concrete or core. The stones should be laid in regular straight, and properly-bonded courses, free from protuberances on the surface, and well rammed to form an even surface. The joints between the setts, which were close, were grouted with lias lime to make the surface solid and impervious to water, after which the whole surface was coated with fine hoggin, when the work was complete. In Manchester, Hull, and other northern towns, the joints were filled in with artificial asphalte. The prices for paving vary with the area and the locality, but in London they were:—

	Per Super. Yard. Setts 9 in. by 3 in.		Setts 7 in. by
	s.	d.	s.
Granite pitching delivered on site, but not laid	17	0	14
Setting the same, including sand	1	6	1
Grouting, including cost of lime and labour	0	5	0
Total	18	11	16

The above figures do not include the cost of excavation nor the concrete foundation. F

* Abstract of a paper by Mr. G. W. Willcocks, C.E., read before the Civil and Mechanical Engineers' Society. (See p. 621, *ante*.)

s per square yard must be added to the prices for setts specially dressed for gs. With a good foundation, and stones orm depth, paving in a street of ordinary would last quite ten years without repairs, the end of that period the stones could n up, re-dressed, and re-laid. The total a pavement was from fifteen to twenty after which the stones could be used for with less traffic, or broken up for m. The paving in the Edgware-road en down about twenty years, and was a very fair condition.

Estimate for Repairs.

	Per Super. Yard. s. d.
ng up old pitching, dressing, and re-ying the same	4 0
ting, including lime and labour	0 4
Total	4 4
ng up and relaying paving, without essing, but including grouting	2 0

lly, it might be said that a granite pave-n the metropolis, well laid on a good con-foundation, would last, with occasional , upwards of twenty years, and at a cost ratepayers of only about 10½d. per square er annum, including in that annual cost t of a new pavement and its maintenance. described in detail the method adopted Metropolitan Board of Works in the of new streets constructed under its tendence, the author proceeded to give of the method of paving pursued in ester, Warrington, Hull, and Exeter.

alte.—The Val de Travers Asphalte Com-whose material was described by the as the best in the market, were still lay-n their rock asphalte extensively in the f London. Val de Travers compressed e paving was first tried in London in needle-street, in 1869; it had never been and had had but few repairs, but it was good condition. Good asphalte became after having been laid for a time, the of the traffic on the surface compressing mponent parts of the material. The wear of the surface was comparatively and was so regular and uniform that and holes rarely occurred if the material on a good foundation. Asphalte paving plicable to provincial towns as well as to ities, for Mr. Cobb, in his report to the Commissioners for the town of Cam-in 1878, says,—"With our light traffic, ms not unreasonable to infer that a ly-laid asphalte road in Cambridge would lf a century, and that with but little " Asphalte was the road surface which early approximated to the ideal road of ardner, and there was no doubt that flat street it was theoretically the perfect roadway, as the friction to es was very slight. It certainly had advantage of not affording a secure d for horses during damp weather, but horses happened to fall there was less of their receiving injury than on stone g or macadam. But, however excellent te paving was for a level street, it could recommended for steep gradients. Colonel od gave 1 in 60 as the limit. Of all pave-asphalte was the most easily cleaned, and ty increased in proportion to its cleanli-Freedom from dust was another of its ages, and that alone was a great boon to men. The noise of traffic on asphalte was an that on stone, but it was greater than n wood, on account of the clatter of the hoofs. Asphalte made, without excep-ne best of footways; it was smooth, clean, easant to walk on. Asphalte, however, not be laid in wet weather; but it was for traffic a few hours after being laid In opening trenches for gas or water in an asphalte roadway a smaller amount face was disturbed than in any other sys-pavement. Asphalte being impervious, ter could accumulate and cause unhealthy ness. Asphalte as laid down comprised arieties, the "compressed," and the d" or "mastic." In the former case the al rock was ground to powder, then heated, cess of water it contained being driven off, which the dry powder was loaded into carts overs and brought upon the work. Then, t the admixture of any foreign ingredients, spread upon a cement concrete foundation 3 in. to 9 in. deep, according to the traffic of the street. It was then, whilst in a heated state, strongly compressed into its place with hot irons into a homogeneous mass, so that, in fact, the original rock was reconstructed. The thickness of the asphalte surface when finished varied from 1⅔ in. to 2¼ in. The Val de Travers Company laid their compressed asphalte in Cheapside and the Poultry, 2¼ in. thick for 16s. 3d. per square yard; in Gracechurch-street, 2¼ in. thick for 15s. 3d. per square yard; and in Wood-street, 2 in. thick for 14s. 3d. per square yard. These prices did not include the cost of excavation and concrete foundation, but related to the asphalte surface only. The company undertook to restore the roadway over openings for gas and water mains, or for other purposes, at 5s. 9d. per square yard, including making good the foundation. The company also guaranteed to maintain the carriageway of Cheapside and the Poultry at 1s. 6d. per square yard, Gracechurch-street at 1s., and Wood-street at 9d. per square yard per annum for fifteen years, and for the first two years free of cost. The compressed asphalte was the only asphalte that could be recommended for carriageways; but the liquid or mastic might be used in courts or for footways. In laying the former, little or no odour was noticeable; but in laying the latter, which had to be prepared on the spot in cauldrons, a very unpleasant odour was perceptible. In the execution of a pavement with the liquid or mastic asphalte, the rock was in the first place ground to powder, then brought to the scene of operations, and placed in cauldrons, together with a small percentage of bitumen as a flux. On the application of heat, the mixture became semi-liquid, when from 40 to 60 per cent. of sandy grit was added. The composition, after being thoroughly mixed, was spread over the concrete foundation in one layer, varying from 1 in. to 1½ in. in thickness.

Wood Paving.—Mr. G. M. Van Nort, Commissioner of Public Works, New York, in answer to a request of the Commissioners of Sewers for the City of London, says, in a letter dated February 10, 1873,—"My experience is that in thoroughfares subjected to heavy traffic, the best of wooden pavements is useless." He also stated that the life of a wooden pavement was not above five years. But since that opinion was given it had been proved that the life of a wooden payment could be considerably lengthened, owing to improvements in the formation of the foundation, and to due regard being paid to the sizes of the blocks and the system of laying. Wood-paving should be laid in streets with a moderate traffic and plenty of sun and air; in confined spaces, such as courts, it soon rotted, and became a source of much unhealthiness. The blocks should be laid on a firm foundation, such as cement or lias lime concrete from 6 in. to 12 in. deep, and as far as possible the surface should be rendered impervious to water. When the substratum was wet the pavement was subjected to rapid decay. Most of the patentees of wood pavements claimed that the elasticity of such road surfaces was a great advantage, but elasticity was, except within certain limits, a questionable quality. The wood should present a perfectly solid and rigid surface. Fir was the wood chiefly employed for paving, the harder woods becoming dangerous on being worn smooth. Colonel Haywood, in one of his reports, attributed the numerous accidents to horses on the ligno-mineral pavement to the use of beech mineralised. The best size for the wood blocks was 3 in. wide, 9 in. long, and from 5 in. to 7 in. deep. Care should be taken that they were cut from the parts nearest the heart of the tree. Although wood absorbed water, its powers of absorption did not affect the travelling over it, provided the surface were kept clean. Wood pavement in itself was not slippery, but was rendered so by the accumulation of dirt. Wood, next to Macadam, was the safest of all pavements. Should a horse slip he had a chance of immediately recovering himself. Some alarmists had asked whether wood pavements would not cause fires to spread from one side of the street to another. The author answered the question with a most emphatic negative. Much of the wood paving hitherto laid down possessed the objectionable feature of having a space left between the butt-ends of each block and between the rows of blocks, extending in some instances to as much as 1 in. in width. The edges of each block were thus exposed to the pressing and concussive action of the traffic, the latter action constantly increasing in its violence as the edges became more and more worn, until the whole structure was weakened in its compactness, and each individual block required renewal. By reason chiefly of the wear and tear of the edges and the vibration thus engendered, the life of a wooden pavement, even when the best quality of wood was used, was considerably shortened, and during its short life it required frequent repairs. Another great objection to the spaces between the blocks was that they harboured to a great degree the droppings of horses, the slime from which, when acted upon by the rain or watering, tended to produce slipperiness to a greater degree than the existence of the spaces tended to reduce it. The component parts of such a wood pavement were bound together either by a process of what might be termed caulking with a naturally disintegrating compound of washed gravel and pitch, or by sand grouting, or by cement run in between the joints. By reason of the vibration caused by these joints not being close, the binding substances were worked up to the surface, and being mixed up with the mud, re-entered the seams or joints. The water from the street was thus permitted to find its way to the foundation, to the detriment of the sanitary condition of the locality. These observations, of course, did not apply to those systems of wood paving which were filled with a substance of equal hardness and durability with the wood. It had been found necessary, in order to overcome the slipperiness of many wood pavements, to strew sand or gravel over the surface, thereby increasing the dust and mud, involving expense, and causing the surface of the pavement to be ground away. The question had been raised whether wood paving was injurious to health. By some it had been maintained that, considering the climate, if all London roadways were paved with wood, marsh fever or ague would become prevalent. It must be admitted that a certain amount of dampness was retained by wood, but it was very doubtful whether such results would follow as those referred to. Wood pavement should, of course, be well cleansed, for otherwise it would retain all sorts of organic filth. The point was referred to in Colonel Haywood's Report (1874) when speaking of cabstands paved with wood. No fear of unhealthiness need be entertained if the subsoil were rendered dry by an impervious coating. The author, in conclusion, described in detail the processes of the Improved Wood Paving Company, Croskey's close-jointed wood pavement, Shiel's composite block paving, the asphaltic wood pavement, Messrs. J. Mowlem & Co.'s pavement, Prosser's wood pavement, and Henson's patent wood pavement.

NORTHERN ARCHITECTURAL ASSOCIATION.

At the annual meeting of the Northern Architectural Association held on the 17th inst., the President (Mr. T. Oliver) delivered his retiring address, in the course of which he said:—It would seem almost remiss in me were I not to refer to the commercial crisis through which we are passing. We may congratulate ourselves, as architects, upon having been so long in feeling its more serious effects, and we may fairly indulge the hope that we shall be amongst the foremost to participate in the beneficial results of a revival. But what may we expect will be the influence of this crisis upon architecture and upon ourselves? Architecture, as an art, may not be greatly affected by it, although revolutions, whether in forms of government, or in religious, political, or social developments, record themselves more permanently in art, such as in architecture, poetry, and music, than in any other manner. But we ourselves may insensibly become influenced. Our loyalty to our profession and to the public may be weakened; our gentlemanly etiquette, amongst ourselves more especially, may become impaired; and the evil spirit of fierce competition may take possession of us, causing us to be sevenfold more reckless than some seem to be at present. Already may be observed the withdrawal of large individual capitalists from extensive building operations; this, however, by reducing building prices, will open the door to those whose united mites rear churches, chapels, hospitals, and the like. Sanitary reform in large country districts will be deferred, and the labourer's cottage will remain unbuilt. But what is withheld in one way will, to some extent be distributed in another; and by this give-and-take principle we may fairly conclude

that business will again right itself satisfactorily. Religion and architecture have always gone hand in hand. Indeed, it has been said that architecture is the handmaid of religion. It is not with any degree of regret that I perceive in the "new departure" from the Gothic of Pugin and Scott the sign of an active living art; for just as it was considered perfect in the fourteenth century, and it passed away, so is it now. Shall it be superseded by Perpendicular Gothic, Romanesque, or the Italian Renaissance? All architecture has been engrafted. As stone took the place of wood, and the rock-cut temples the place of dismal caves, imperceptibly architecture reared its inexplicable and beautiful forms, first upon one civilisation and religion, then upon another, until it culminated in Christian Italian and Mediæval Gothic. Those imbued with the like spirit that inspired our predecessors, may select and combine, and in so doing produce a new and harmonious style of architecture more particularly adapted to our age and to our wants. During the twenty-two years of our official existence as a society, we have only had occasion to approach the corporation of Newcastle on two instances,—one in reference to the conduct of some of the subordinate officials acting surreptitiously as private architects, and afterwards reporting upon and passing their own plans; and latterly upon the important principle involved in the substitution of engineers in the place of architects to design and carry out the large public works required by the municipality. As a matter of principle I do think that engineers should not be required by public bodies to perform the work of architects. It is unbecoming the high dignity of any municipality to advertise for a "Borough Engineer and Town Surveyor," and to afterwards transfer to him the whole of the town's public architecture, leaving all the other engineering and surveying officials just as they were, save in responsibility and a knowledge of their respective duties. The corporation of Newcastle have hitherto been considered the patrons and conservators of architecture. During the eleven years that I had the honour of representing at their councils that far-famed ward, East All Saints, the fostering hand of the corporation was seen and felt on all occasions; and as an evidence of what it was, I may mention a circumstance that occurred a few years ago, when, after being successful in obtaining from the Corporation of Derby a premium for designs for new buildings, I was asked point-blank by a former resident of Newcastle, who happened to be a member of that body at that time, "Are your Corporation as particular as they once were about the architecture of Newcastle?" If I were asked such a question now, what should I have to say? Could I answer it? It is obvious that we must exert ourselves to the utmost to correct this irregular mode of conducting the public business of this truly architectural town,—for if we have not architecture to boast of, what have we?—and perhaps the best way to begin is to demonstrate the practical disadvantage and ultimate costliness of the system to the public, who have the matter in their own hands; or under the present morbid and abnormal influences, architecture may be reduced to mere building, and architects to mere draughtsmen. I cannot allow this opportunity to pass without drawing your attention to a letter, dated so late as June 2, 1879, which appeared in one of the local papers, wherein the writer says that the designs prepared by the engineer cost the ratepayers nothing. If this be satire, it may do; but surely no one, in view of present events, could be so *naïve* as to suppose the writer was in earnest. Mr. Oliver then referred at some length to the question of the Free Library and the Weavers' Tower; and on the subject of plans he said if the matter had been put to competition, he had no hesitation in saying that they might have had a design worthy of an architectural town like Newcastle. It is to be hoped, he continued, that if the Carliol Tower should be removed, the ridiculous ideas of transferring it or recording it by marble mosaics, or engraving a plate like a coffin-plate, will be abandoned. If it must go, let it go, and bury the bad feeling along with it. But if it could be saved, by all means let it be done.

A vote of thanks was accorded to the President for his paper.

The hon. sec. (Mr. W. H. Dunn) then read the annual report, and also the financial statement, showing a balance in hand. The report and statement were adopted, and the following officials were elected:—President, Mr. Oliver; vice-president, Mr. Oswald; hon. treasurer, Mr. Newcombe; hon. sec., Mr. Dunn; and hon. solicitor, Mr. Hodge.

GLASGOW INSTITUTE OF ARCHITECTS.

A MEETING of this Institute was held last week within the chambers of Mr. Wm. MacLean, the secretary, St. Vincent-street. The distribution of prizes took place. The competition was open to draughtsmen and pupils in the office of the members of the Institute and other architects in the principal towns of Scotland. The Institute had offered a gold medal for the best design for a library and reading-room suited for a small town. The president also offered a prize for the best series of drawings illustrating the portico of St. Andrew's Church, with details. For the Institute prize nine sets were submitted. The president stated that the committee appointed to award the prizes reported their opinion that the drawings given in for the prize were not of sufficient merit to justify the medal being awarded, but in order to mark their sense of the measure of labour and care shown, it was agreed to give a reward in books to the author of the best design. With regard to the president's prize, four sets were submitted, viz.:—A Whitford Anderson, in the office of Messrs. James Salmon & Son, I.A.; Wm. Holmes Howie, in the office of Mr. James Boucher, I.A.; B. F. Simpson, in the office of Mr. Wm. Laidless, I.A.; Jas. Wilson, in the office of Messrs. D. M'Kissack & W. G. Rowan, architects. The prize in the competition was awarded to Mr. James Wilson. The book given was Gwilt's "Encyclopædia of Architecture." Mr. John Honeyman adverted to a matter which had engaged the attention of the Council about a year ago, namely, the expediency of establishing a more intimate connexion between the Royal Institute of British Architects and provincial societies. He said he had no doubt that this subject would soon be taken up in earnest by the Institute; and as he, as a member of the Council of the Institute, might be called upon to take an active part in the discussion of the subject, he was anxious to get some expression of the sentiments of the profession in Glasgow. He then explained the nature of the suggestions which had already been made.

The President (Mr. Campbell Douglas), Messrs. Baird, Mr. James Thomson (St. Vincent-street), Mr. H. M'Lure, and others having spoken generally in favour of promoting the unity of the profession, it was resolved that when the Royal Institute submit definite proposals the Glasgow Institute will give them their most favourable consideration. Before separating, the President called attention to the result of the Greenock Corporation inviting competition plans for their new municipal offices at less than the ordinary rate of architects' commission, and even less than they paid for some of their School Board work. The result, however, is that not half of the applicants for particulars sent in designs, and, with some exceptions, these apparently came from young and inexperienced men, and not from the class from whom it would have been desirable to get designs.

THE RESTORATION OF THE SOUTH-WEST ANGLE OF THE DUCAL PALACE, VENICE.

THE following communication from Venice will be read with interest:—

This large Gothic palace, whose construction, was begun in 1309 and finished about 1500, is by its architecture, by the pictures it contains, and by the history of the Great Republic written on its walls, the most interesting building in the world. Mr. Ruskin has described its façade and capitals with touching eloquence, especially that of the fig-tree or south-west angle, representing the planets, the zodiacal signs, and the creation of man.

This angle was threatened by inevitable ruin, caused principally by the oxidation of the iron bars inserted in the Istrian stone of the capitals and arches, which were found all broken, and even by the bad quality of the material itself (the mortar, for instance, was still found fit to mix, though it had been employed some five centuries ago). All these causes,—the inclination suffered by the columns, the slide of the voussoirs of the arcades,—required the demolition of all the parts of the angle, from the capital of the upper story to the foundation (about 12 mètres high), comprehending the two a... pressing on the large capital. Except the c... of the upper story and the group of Ada... Eve, all the other parts will be new. Be... the surfaces of contact of all the piec... molished, there was some lead which had... melted to correct the irregularities of the... but in consequence of its imperfect flowi... pressure was unequally distributed, causi... fracture of nearly all the bases of the co... of the upper story, and necessitatin... renewal of all these in the new work... palace has not suffered the least movemen... this vast demolition, though now 280,00... grammes of the superincumbent weig... supported by the wooden shoring.

The rebuilding has already begun, a... transmit to posterity the memory of a... event, there was put under the base of th... column a small box of lead, enclosed in ... copper, containing an historical docum... parchment, and some gold and silver m... the late Victor Emanuel and our present...

Engineer Forcellini may be proud o... splendid success of his shoring, and event... work in so far as it is completed; and ... hopes the supports will be removed towa... end of this year, I promise to detail the r... tion of this first portion of the palace ... as it will be finished.

GIACOMO BONI, Archi...

A GENERAL GRIEF.

THE following represents the feelings ex... by several correspondents, and doubtle... ticipated in by many of our readers:—

My heart is heavy for the poor dead ... prince, and his bereaved and doubly-w... mother! Poor Empress Eugénie: thre... husbandless, childless! All England shal... sorrow; would that we could lighten it ... Her terrible bereavement is as a private ... every English heart, and makes one long ... some way by which to assure her of the ... sympathy. I do hope every English new... will avail itself of its privilege as a mou... of public opinion to express the deep ... that is felt in every English home for t... eclipse which has come over that other ... the home of England's guest, the now ... but once proudly-placed, Empress of the I... How glad all were when she and her ... were safely refuged on our land. How ... we felt for her in her sad days of early ... hood; and how affectionately we have w... her son grow up to manhood in our midst ... now to think that he is taken from the ... and has shared the fate of so many of En... best and bravest in this wretched war ... generous hearts will tender their sympa... this sorely tried mother:—

> "Hush, friend and foe! and let two lands,
> Sisters in sorrow, link their hands
> Across his grave.
> Forget all else, O France, to-day,
> Save that the exile far away
> Was young and brave."

It seems to stand to reason that a mon... should, by public subscription, be erected, ... at Chislehurst or in St. Paul's, to on... making our quarrel his own, has been s... the service of this country. Proper p... will doubtless move in it at once.

FROM ATHENS.

THE future resting-place of the exc... Olympian antiquities appears to have ... finally fixed, it having been decided to e... local museum on the spot. As we have men... already, the King of Greece is in favour ... project. He also advocates the extens... Olympia of the railway to be constructe... Patras to Pyrgos. All acquainted wit... drawbacks of the Athenian Museum will r... this intelligence with pleasure. For i... most favourable case, the treasures trans... to Athens would have to languish for ye... a second resurrection in provisional dark ... in that museum.

The idea of restoring the celebrated l... Chæronea has already borne good fru... Greek Archæological Society having resol... undertake the work at its own expense. ... German Archæological Institute, by laying ... a round vaulted sepulchre near Meni... Attica, has increased, by another monumen... number of "hero sepulchres," already ... siderably augmented by Schliemann's ex...

s contents (pottery, objects of glass, y, and some gold) correspond in parts with what we already are acquainted esides those of Menidi and Mycenæ, the same epoch, with similar contents, n opened also at Spata (Attica), at Palamedes, near Nauplia; and at the anctuary of Hera.

LE'S AIR-PUMP VENTILATORS.

LEMENTARY plate in our present issue me of the various forms that may be Boyle's self-acting air-pump ventilators, re called, and we have not admitted it aking evidence that they have been act well in a large number of cases. -acting air-pump ventilator of Boyle nufactured by the firm of Robert Boyle Glasgow) deserves the name at first or it by the patentee. The appliance f four distinct series of louvre plates or ms surrounding the central tube or hich act independently of each other. he external air, even when in the motion, impinges upon the outer plates, nce deflected at different angles over al radial plates, and in passing out it the internal chambers, in consequence there is a partial vacuum created, a air-pump action coming into play. Im- y there is a rush of air up the shaft rom the place to be ventilated, so as to he place of the air extracted; and thus obtained a powerful upward current, any down-draught into the apartment. ntilator is perfectly automatic in every requires no attention whatever. By to the illustration it may be seen that ump ventilator can be easily adapted to of architecture, so that it need never ive to the artistic eye on any building it may be placed.

vention has commended itself to persons b scientific eminence, to distinguished ts, sanitarians, and others, in a remark- nner. One correspondent says, "I will instance of the power of the air-pump rs which should be sufficient to satisfy asonable person of their efficiency. Hill's Memorial Church, Christ Church, h (the Rev. Newman Hall's), was venti- Messrs. Boyle & Son, and upon the t, Mr. Paull, the builders, and others d, testing the ventilator during the it was found to be extracting at the 8,000 cubic feet of air per minute, or cubic feet per hour. There was but rate breeze at the time. During the me the experiment lasted there was not atest downdraught experienced, nor was any of the other experiments, of which re several. Three different anemometers ed, of the most improved construction the best makers. The size of the work- of the ventilator was 6 ft. by 9 ft., as I can recollect; the diameter of the ft.; length, about 6 ft." The appear- the ventilator as applied at this church n in the sheet of illustrations. It may be vhile, too, to mention design No. 1, as it is d to bring the air-pump ventilator within ch of all, and the makers propose to sell ntilator about 20 per cent. cheaper than y have hitherto made. This is important itects, as with them the price of a venti- s sometimes a hindrance to its use. Boyle have spared no exertion to bring entilators up to the requirements of cts, and it seems to us they are entitled r support.

RON TRADE OF BARROW AND THE DUKE OF BUCCLEUCH.

ING the last few days the Duke of Buc- has been on a visit to the Furness dis- nd it is stated that his visit is in some nnected with a reduction of the royalty n iron ore in his capacity as lord of the . The decline in the demand and in the f hematite pig-iron has resulted in mini- the profits of manufacturers and in ng down the wages of the workmen. It stated that if a reduction were made in y charges the district would be able to s own, even in the face of the competition east coast. The average royalty charged n ore is 2s. per ton, and there is a prospect being reduced by more than one half.

TIDE-WORK.

LIVERPOOL ENGINEERING SOCIETY.

AT the fortnightly meeting, on the 18th inst., a paper was read by Mr. E. Cornish on "The Management of Tide Work," in which the author described the plant necessary for, and stated the precautions to be taken when, constructing heavy masonry works in a tide-way.

He commenced by stating that an important point was to ascertain the direction from which the heaviest seas came, so that the end of the work in progress may be as much sheltered as possible. Having determined upon the point at which to commence operations, the position of the well for draining the foundation trench should be carefully considered, so that the lines of rails for supplying materials may be brought in conveniently and laid with easy curves. This position having been fixed, the staging should be erected over it, so that the "Goliath" or travelling-crane may be used for sinking the well and fixing the pump. The well should be sunk a considerable distance below the level of the foundations of the work to form a reservoir, for the double purpose of scouring out the "lander" and quickly running off the water from the workings. The necessity of providing a blow lander was pointed out for letting the water into the workings to the level of that outside, to prevent the rising tide from rushing in upon the "green" work, &c. The author recommended the chain-pump for this class of work, having had one working for eighteen months without requiring any repairs, and that it should be driven by a belt in preference to gearing. He next considered the staging, stating that the cost of timber in piles driven was three to four times that of timber erected as runners, &c. In place of the piles being spaced at about 13 ft. centres, he advised the adoption of 20 ft. centres, with double runners, as requiring less labour and being more economical.

THE METROPOLITAN DISTRICT RAILWAY EXTENSION TO ACTON AND EALING.

IN the course of next week the Metropolitan District Railway Company will add another three miles to their system by the opening of the Acton and Ealing extension to join the Great Western line, which has been in course of construction during the last two years. We understand that this extension in a north-west direction is to be opened for traffic on Tuesday next, the 1st of July, when the District Company will be placed in direct communication with the Great Western line. The new extension line, which commences by a junction with the existing line, a short distance westward of the Turnham Green station, proceeds in a north-westerly course across Acton Green, on an embankment about a mile and a half long, being about half the entire length of the line. In continuation to Mill-hill Park and Ealing the line passes through a deep cutting, the material excavated serving for the embankment. There is a considerable amount of bridge and arch work in the construction of the line. Close to Acton Green a brick viaduct of eight arches, with a girder bridge, carries the line over the roadway at an elevation of 19 ft., and from one end of the line to the other there are no fewer than thirteen bridges, some under and others over the several intersecting railways and roads. Close to the boundary of the Acton and Ealing parishes, a short distance from the late Baron Rothschild's residence, the line is carried by a girder bridge over the Richmond section of the South Western line and the Midland line to Earl's Court. This bridge is for the most part on the skew, this portion of it having a span of 109 feet, whilst the span of the square part is 60 feet. Some distance beyond this point the line is again carried over the Brentford section of the South Western line, where it attains its highest level. The line continues on this level until it intersects the Great Western main line, which it crosses over between Ealing Common and Ealing, by a plate girder bridge of three spans. From this point there is a descending gradient, the new line curving direct westward, and joining the Great Western line, on the same level. All the gradients are easy, the severest being 1 in 60.

There are four stations on the line, namely, at Acton-green, Mill-hill Park, Ealing-common, and in the Broadway, Ealing, being a separate station to that of the Great Western Company itself. All the stations are neat and commodious structures, and a special feature is their having dwelling-houses for the station-masters, the sleeping apartments being over, and the living apartments under, the booking-offices. The platforms of the several stations vary in length. The platforms of the Acton-green Station are 300 ft. long and 20 ft. wide, and at this station there is a subway communicating between one platform and the other. This station and the terminal station at Ealing, which is the principal station, are laid with wooden platforms, the platforms of the other stations being laid with asphalte. The Ealing Station has an ornamental iron roof, resting on three longitudinal lattice girders supported by columns. The platforms of this station are 220 ft. long under the roof, the entire length of the platforms, including the open, being 400 ft. The walls of the station are of concrete, divided into bays, similar to those of the Earl's Court and some other of the company's stations.

The line has been constructed from the designs of Mr. J. Wolfe Barry, the company's engineer, Messrs. Lucas & Aird being the contractors.

VALUABLE PROPERTY IN THE AUCTION MARKET.

ON Friday, the 20th inst., Messrs. Fuller, Horsey, Son, & Co. offered for sale the freehold plot of land, being part of the site of St. Dionis Backchurch Church, on the west side of Lime-street, with an entrance from Fenchurch-street. The area of the land is 4,800 superficial feet, exclusive of the portion taken by the Commissioners of Sewers for the widening of Lime-street. The particulars stated that the houses on the south side of the churchyard next Fenchurch-street and Lime-street were proposed to be removed by the Commissioners of Sewers for the widening of those streets, which would greatly increase the value of the site now offered for sale. The ground was said to be available for immediate building operations. As evidence of the present value of land in the locality, the auctioneer (Mr. Fuller) stated that land in the immediate neighbourhood had recently been sold at 11*l.* per foot, and he considered that the site which he now offered was worth 12*l.* per foot. The highest offer made for the property was 39,000*l.*, being at the rate of about 8*l.* per foot, when the auctioneer said it could not be sold at that price, and it was consequently withdrawn.

On the same day Messrs. Farebrother, Ellis, & Co. offered for sale a large range of buildings recently erected in Gracechurch-street, comprising four spacious upper floors, with numerous suites of offices. A considerable portion of the ground-floor is occupied by the Government as a branch post-office, and the annual rental of the property is estimated at 5,090*l.* per annum. It is held under lease from the Skinners' Company, for a term of eighty years from March, 1875, at a ground-rent of 2,325*l.* per annum. The property was described as being situated in the immediate vicinity of the improvements proposed to be effected by the Corporation, under powers granted by the Leadenhall Market and Improvement Bill, which it was stated could not fail to enhance its value. The sum of 28,000*l.* was the highest offer, which was not accepted.

On Tuesday last a sale of shares in several of the metropolitan hotel companies, and also other public companies, was conducted at the Mart, by Messrs. Debenham, Tewson, & Co. The property comprised thirty-six 10*l.* shares, 6*l.* paid up, in the Langham Hotel Company, which were sold at 17*l.* 10s. and 18*l.* per share; also 100 10*l.* shares, fully paid up, in the Westminster Palace Hotel Company, sold for 6*l.* per share. It was stated that the company was established in 1857, and that the dividend for the half-year ending June, 1878, was at the rate of eight per cent. per annum. Forty 10*l.* shares, fully paid, in the Alexandra Hotel Company, realised 8*l.* 10s. per share. This company has been established sixteen years, and it was announced at the sale that the financial year will end on the 30th instant, and that the last year's dividend was five and a half per cent. Fifty 10*l.* shares in the Charing Cross Hotel Company, fully paid up, were sold at 17*l.* per share; and fourteen 5*l.* shares, fully paid up, in the Brighton Hotel Company, realised 4*l.* 5s. per share. Twenty-five 10*l.* shares, fully paid up, in the Alhambra Company, were sold for 8*l.* per share. It was stated in the particulars that of late years the dividends of the Alhambra Company

have ranged between five and twelve and a half per cent. per annum. Fifty 6*l.* per cent. first preference shares of 10*l.* each, fully paid up, in the St. James's Hall Company, were sold for 10*l.* per share. Eighty-five 5*l.* per cent. preference shares of 10*l.* each, fully paid up, in the Brighton Aquarium Company, were sold for 7*l.* per share.

SANITARY STATE OF BLEADON, IN THE AXBRIDGE RURAL SANITARY DISTRICT.

IN the Return of the Registrar-General for the fourth quarter of 1878, fifteen deaths from diphtheria are reported as having occurred in the Burnham sub-district of the Axbridge Union. All these deaths, it is stated in a foot-note, occurred in the parish of Bleadon; and all, except one, were registered as malignant sore throat. The data thus furnished gave occasion for an inquiry by Mr. W. H. Power, who has just now reported.

After a careful inquiry into various possible causes, Mr. Power is compelled to confess his inability to assign a cause for the extensive and intense prevalence of diphtheria in this village. He shows the sanitary condition of the place to be very bad, and says, in conclusion,—"Having regard to the apparent absence in Bleadon of relation between insanitary circumstances and the diphtheria, I have not deemed it necessary to do more than refer briefly to the sanitary shortcomings of the place. But I think the attention of the Sanitary Authority should be directed to such parts of my report as deal with these matters. Especially should attention be given to the want of proper water-supply in certain parts of the village; to the risk of dangerous pollution of the parish and other wells; and to the need that exists for a better and safer method of dealing with excrement."

ARCHITECTS' CHARGES.

SIR,—In answer to the inquiry of "X. Y. Z." in the *Builder* of the 21st inst., he being desirous to ascertain an "honourable way to deal with his employer," I beg to suggest that he would be entitled to charge his client 3½ per cent. upon the value of the works shown upon the original "complete" drawings, personal supervision being omitted, the works not having been carried out, and five per cent. upon the value of the works shown upon the revised or amended drawings; also, in addition, the surveyor's charges for measuring up works and certifying the builder's accounts for extras and omissions on completion of the works. The scale of architects' charges is divided thus:—

Part 1. Preliminary sketches and designs, including survey of site	1½	per cent.
,, 2. General drawings, plans, elevations and sections, specification, and approximate estimate	1½	,,
,, 3. Working and detail drawings	1½	,,
,, 4. Personal supervision and superintendence	1½	,,
Total.....	5	

The above total charge of 5 per cent. does not include clerk of works' wages, but is estimated upon the value of the work executed, including the value of such material and labour as may be supplied by his client. Omitted works after "plans, &c., complete have been prepared and contract signed" should be charged under items 1, 2, and 3. In addition he is entitled to charge his client ½ per cent. for procuring and examining tenders for the works. (?) For arranging with artists, tradesmen, and others, for sculpture, stained glass, and works of a similar class for which he does not furnish the design, but to which he gives a general supervision, 2½ per cent. on the value. He is also entitled to charge his client at per day for alterations in the design, extra labour in attending committee meetings, and arranging disputes with adjoining owners. Travelling and incidental expenses are charged in addition to the above.

I may, perhaps, remind "X. Y. Z." that his client pays for the use only of the drawings, and that they remain his property on the completion of the work, when extras and omissions have to be measured, and bills of particulars supplied by the surveyor to the architect.

If "X. Y. Z." will invest in Hust's "Architectural Surveyor's Handbook" and Molesworth's "Pocket-book of Engineering Formulæ" combined, published by Spon, Charing-cross, he will be able to go into all these matters for himself.

I hope this will not be taking up too much space in your valuable paper, which is, indeed, so valuable to some that they have been heard to exclaim late on Friday evenings, "Oh! I do so love my *Builder*." WILLIAM H. PIPE.

COST OF IMPROVEMENTS IN LONDON.

DIFFICULTIES OF THE ARTISANS' DWELLINGS ACT.

AT the meeting of the Whitechapel District Board of Works, on the 24th inst., Major Munro, representative of the district at the Metropolitan Board of Works, and chairman of the Finance Committee of that Board, said it was now desirable to make public a grave dilemma which for some time past had occasioned great anxiety to the Metropolitan Board, and must eventually prove a very serious matter for the ratepayers. The Artisans' and Labourers' Dwellings Improvement Act of 1875 was passed by the Legislature by acclamation, and under that Act the Royal Mint-street site was cleared nearly four years ago, and yet nothing had been done towards rebuilding on the land for the benefit of the working classes, as was the design of the Act. The land had been put up for sale by public auction, and not a single offer was made. But the Trustees of the Peabody Donation Fund had made a proposal to the Metropolitan Board to purchase the six sites cleared under the Act,—viz., the Bedfordbury, Great Wild-street, Pear Tree-court, Whitecross-street, and Old Pye-street, sites,—at a price based on a rental of 3*d.* per foot super., to be computed at twenty years' purchase; the price for that portion of the Whitechapel and Limehouse site now cleared to be 10,000*l.* If this was accepted it would be equivalent to a loss of 75,654*l.* on the Bedfordbury scheme, of 103,550*l.* on the Great Wild-street scheme, 13,939*l.* on the Pear Tree-court scheme, 338,973*l.* on the Whitecross-street scheme, 58,741*l.* on the Old Pye-street scheme, and 56,604*l.* on the portion of the Whitechapel and Limehouse scheme; or, taking the six areas in their entirety, the Metropolitan Board would lose the large amount of 643,461*l.*, the only set-off to which would be about 81,400*l.*, the value of the recoupment area not compulsorily set apart for artisans' dwellings, which the Board would retain. The Metropolitan Board had not accepted the offer of the Peabody trustees, but asked for a better bid; but the difference in their demand was comparatively trifling, and would do little to reduce the enormous loss to the ratepayers of London. The cost of clearing the six sites was 734,766*l.*, and the offer for them was only 91,300*l.*,—a difference of 643,461*l.* Of course, the fact that the land must be used for the specific purpose of erecting workmen's dwellings operated to immensely decrease its value in the open market. The commercial value of the recoupment area of the various sites, if utilised for general purposes, was estimated by Mr. Vulliamy, the Board's superintending architect, at 496,694*l.*, leaving a difference of 238,072*l.* on the total cost of acquisition. The same officer advised the Metropolitan Board that, in his opinion, the only alternative course to adopt calculated to relieve the Board from difficulty, and to place them in the best commercial position, would be for them to obtain an Act to enable them to erect the buildings. Valuable ground-rents would thus be created, or leases at moderate rack-rentals could be granted, and the whole property would thus become marketable. Major Munro added that he made this statement, the occasion for privacy having now passed, because the facts involved were of the gravest moment to the ratepayers, were a subject of considerable anxiety to the Metropolitan Board, and were suggestive of the tremendous financial difficulties which were the necessary result of carrying into effect the Artisans' and Labourers' Dwellings Improvement Act of 1875,—difficulties the extent of which were surely not contemplated by the Legislature, but which would prove a grievous burden to the ratepayers of London.

WHAT IS A GROUND FLOOR?

AN action has been brought in the Bloomsbury County Court (before Judge Bacon), by a barrister, residing at 37, Albert-street, Mornington-crescent, against the New River Company, to recover the sum of 3*l.* 6*s.*, of which it was alleged that 1*l.* 13*s.* had, during five years and a half past, been unlawfully charged him by the company for a high service.

The plaintiff, in support of his case, relied on the 36th section of the company's private Act of Parliament, 15 & 16 Vic., chap. 160, which is, "that the expression 'high service' in this Act shall mean and be considered as being a delivery of water at an elevation more than 10 ft. above the ground-floor of the dwelling-house or other place supplied."

The facts were that the delivery in question was only 8 ft. above what the plaintiff called his ground-floor, but more than 10 ft. above the level of the road in front of the house, and also more than 10 ft. above the lowest floor in the house, which the plaintiff contended should be and was the basement.

Plans were produced by both sides, and in support of his contention the plaintiff called Mr. R. C. Wright, of 92, High-street, Camden-town, builder, and Mr. Walter Simms, surveyor, manager to Mr. Kemp, of Albany-street, persons of experience, who gave evidence that this was the ordinary way of designating the floors in question. The plaintiff had paid the money not knowing for what he was charged; no particulars of the rates had been given by the company.

The measurements and payment of the money were admitted. The house is approached by a small flight of stone steps, so that the wooden floor (not to confound it with "floor" as used to designate a story) is raised about 3 ft. to 4 ft. above the level of the road. Counsel i company contended that this floor was t termed the entrance-floor, and that b and ground-floor were synonymous, or ex alike the floor resting on the ground be house on the excavation. In support view he relied on the standard dictiona called no witnesses.

The case was argued on the 22nd of M the judge reserved judgment; and on t of June decided in favour of the compan

It may be remarked that, according decision, should an excavation for the story be made any more than 10 ft. d there be any delivery of water at the the road, the company will be entitled t extra for such delivery as a "high servi

This can hardly be the meaning of th

The statement of counsel for the comp which the decision was given was er The ground floor, according to custom floor or story entered from the groun Shops, as a rule, form the ground-flo Gwilt's "Encyclopædia of Architectur "Glossary" gives,—

"*Ground Plan.*—The plan of the st house level with the surface of the grou few steps above it. It is not always th floor, the basement being frequently it."

To any one acquainted with building tions and the wording of specifications, Acts, &c., the reading of the clause in th pany's Act is clearly this:—High servi be considered as being a delivery of wat elevation more than 10 ft. above the of the] ground floor [or story entered fi ground level] of the dwelling-house o place supplied. Ground-floor and grou are terms interchangeably used to desig of the vertical divisions of a building,— of apartments on the same level.

LANDLORD AND TENANT.

CAUTION TO HOUSE-OWNERS.

AT the Brompton County Court las Mr. Whist, the owner of a house in Br sued Mr. Nelson, an architect, for t alleged amount due in accordance w agreement, for dilapidations and other lia in respect to the house in question from M ber to February.

The plaintiff's case was that the ho taken under an agreement, by whi defendant was bound to preserve in goo or make good any damage to furniture (t a furnished house), fixtures, or premis plaintiff covenanting to keep the place in able repair.

On behalf of Mr. Nelson, the defen was shown that soon after he entere possession the servant and family wer ill, and were declared to be suffering fro poisoning; but the plaintiff's man, on be for, declined to take up the floor or em trap of the closet, and a builder was se who did so, when the cause of illness wa to be in the accumulation of sewage fi an opening into a drain, which discharg air into the house.

After hearing all the evidence the jud that the defendant was quite justified employing a builder to take means to stop t and endorsed the payment of 5*l.* on that a He added that people suffering from th of their houses in this way were not bo wait the pleasure of the landlord. He for the defendant on the set-off, and that t into court was a full discharge of liabil to dilapidations.

LIGHT CASE.

WHEELDON *v.* BURROWS.

THIS appeal to the Court of Appeal, Lords Justices James, Baggallay, and Th from a decision of Vice-Chancellor Bacon, a question of general importance as to the in respect of light as between the own adjoining plots of land which were pur by them from a former owner of both the

Mr. Samuel Tetley, who was the owner of so perty in Derby, in the year 1875 put it up for auction in lots. The plaintiff became the purch lot 10, which was conveyed to her in fee simple by dated the 6th of January, 1876, "together with al easements, and appurtenances whatsoever to the sa of land and hereditaments belonging or in anywise taining." The deed contained no express reserva the grant or in respect of the property conveye February, 1876, Tetley sold to the defendant by contract a portion of the property which had not be

ion, and which had formed lot 6 at the auction. joined the plaintiff's lot, and it consisted of a d other buildings, some of the windows in which the plaintiff's land. On the 7th of April, 1876, veyed lot 2 to the defendant in fee by a deed ained general words similar to those contained veyance to the plaintiff. In January, 1878, the ected hoardings on the edge of her land against ant's windows, in order to assert her right to the d use of her land, free from any right of the in respect of light. The defendant thereupon wn the hoardings in order to assert his right to of light to his windows. The action was brought the defendant from committing a trespass by down the hoardings. The defendant, by way of im, asked for an injunction to restrain the from obstructing his light. The defendant at his windows were, at the date of the con- o the plaintiff, apparent continuous easements to the convement enjoyment of the tenement afterwards purchased, and that they were reserved to Tetley, the grantor, and by him granted to the defendant, and that, conse- the plaintiff was not entitled to obstruct them. e-Chancellor held that no right, either expressly ication, was reserved to Tetley in respect of the and that, consequently, the defendant had no spect of them, and the plaintiff was entitled to er land so as to obstruct the windows. The appealed. The Court dismissed the appeal with

HE WAGES AND SUPPLY OF HOUSE PAINTERS.

w weeks ago the Guardians of the Union invited tenders for painting hool buildings at Mitcham, and casual t Vine-street, Leather-lane, according to rification of Mr. Snell, the architect, and a tender from Mr. McArthy, of Dalston, e work at about half the amount of the rest tender, and about one-fourth of the ; on which the Guardians took time to quiries, and found them satisfactory, tender was then accepted. At the of the Board, however, on the 18th inst., was received from Mr. McArthy, asking owed an addition of 35*l.* to the amount nder, on the ground that he was required in his tender by the 20th of May, and informed of its having been accepted 17th of June, whereas he expected to the order to commence work at once, e the time he sent in his tender the of painters had gone up considerably. ver, a guardian, remarked that he much if the wages of painters had gone up, contractor for the works at the Clerken- stry-hall had advertised for painters, e to apply at the Vestry-hall, and although wanted two or three, he was applied wards of 200 painters, and there was a f them standing about the Vestry-hall, its becoming known Mr. Dove, a builder, d engaged one or two, and so did another. d as if the market for painters was well l, and it was not likely that wages had . The application of Mr. McArthy was to the Building Committee. A guardian at the Relief Committee (Clerkenwell) before had an application for out-relief painter, who, when in work, received nour.

CHURCH-BUILDING NEWS.

igh.—A fine new memoriam clock has en placed in the tower of All Saints', Purleigh, near Maldon, the gift of the . Witherby, the vicar. It was made by l-known firm of J. W. Benson, of Lud- ll and Old Bond-street. The clock strikes rs on a tenor bell weighing about 12 cwt., time is shown upon two dials of copper, diameter.

ord St. Mary (Wilts).—On the 11th inst. teresting little church, which has under- storation, was re-opened for public wor- The church is an ancient structure built e, and originally consisted of a nave and l, which are separated by a pointed arch ng from two columns with rudely orna- l capitals of Late Norman character. A aisle was subsequently added. South of ancel is an eastern chapel containing a with a canopy over, supported by two and three columns, in the Italian style, oe having recumbent figures, now broken ne. Hoare, in "Modern Wiltshire" red of Heytesbury), attributes this tomb n Mompesson, who died in 1645. With to the restorations which have just been ted, the roof is almost entirely recast, the s and tiles being new, and the interior ed between the rafters. The walls have -coloured, the stone pavement of the pas- and the chancel has been taken up and replaced with encaustic tiles throughout, and an entirely new floor has been laid down. The woodwork of the tower is entirely new, and the old and cumbrous gallery has been removed, throwing the light of the west window into the church. A large new window has been inserted in the south aisle, and another window has been placed in the east end of the chancel. A new west doorway has been built. The church has been re-seated throughout. A new warming apparatus has been provided, and a commodious vestry built. The architect for the works was Mr. E. H. Lingen-Barker, of Hereford. Mr. Harry Hems, of Exeter, executed the carved work; and Mr. William Balcombe, of Kenilworth, Warwickshire, was the contractor.

DISSENTING CHURCH-BUILDING NEWS.

Salisbury.—The new Congregational church here was opened on the 11th inst. The style adopted by the architects (Messrs. Tarring & Wilkinson, of London) is Early Decorated, the plan comprising nave and apse, with organ-chamber and two vestries (one on each side of the apse), and tower and spire at south-west angle, two entrances in the front and a side entrance to the vestries being provided. The walls of the church are of concrete, faced externally with Swanage stone in drop coursed work, having for dressings, &c., Corsham Down stone, and faced internally with brickwork, which is finished with Portland cement stucco. The ceilings are of plaster, with the main timbers of the roof exposed to view, thus forming panels. The joiners' work is in pitch pine, stained and varnished; the passages and centre of the apse have tiled floors laid to pattern. The large window in the apse is filled with a painted window, by Mr. Drake, of Exeter. The front is in Fisherton-street, and consists of gabled end of nave pierced with larger five-light tracery-head window, having attached columns on jambs, with carved and moulded capitals and moulded bases; under this extends sunk panelling in Bath stone, moulded strings being at the top and bottom of the same, and lower still are three single-light windows. On the left is one of the entrances, and on the right the tower and spire, connected with the nave by a vestibule. In the tower is the second front-entrance. The total internal length of the building is 105 ft. 6 in.; the width, 49 ft. 6 in.; the height of the nave is 50 ft, and the average height of the aisles 20 ft. The arcading of the clearstories is carried on Portland stone columns, with moulded capitals and bases. The tower and spire rise to a total height of 132 ft. to the top of the vane. The works have been carried out under the personal superintendence of the architects as follows:—the foundations to ground-line, by Mr. Tryhorn, at a cost of 403*l.* 10*s.*; the main building boundary walls, &c., by Messrs. Hales & Sons; the heating apparatus by Mr. Grundy, of Hackney, for 98*l.*

NEW MARKETS.

Manchester.—The new wholesale fish-market at Shudehill, erected by the corporation of Manchester, has been opened for business. The building has been erected from the designs (selected in competition) of Messrs. Mangnall & Littlewood. It covers an area of nearly 2,000 square yards, adjoining the old market, and faces New High-street on the one side, Thomas-street on another, and Little Stable-street on the third; on the fourth side is the old market. About 500 yards of the plot are utilised for shops and offices, with frontages to Thomas-street, thus leaving about 1,500 square yards of space for the extension of the market. The interior of the building is constructed in two bays, with avenues in the centre of each. The bays are each 45 ft. in width, and the roof is supported on cast iron columns. The style of architecture adopted is Gothic, of a Continental type. The façade forms a series of four gables, faced with brick and stone, with an entrance in the centre of each. Emblematical figures illustrative of various branches of the fisherman's and the fish merchant's trade adorn the front of the building. The shops are divided only by iron partitions, which can be easily removed so as to throw any number of shops into one. The contract, which was for 15,200*l.*, was let to Messrs. Robt. Neill & Sons.

Liverpool.—The new market-hall at Holywell, Liverpool, was opened on the 10th inst. The necessity of having such a building, instead of having the markets held in the open air, as they have been from time immemorial, has long engaged the attention of the people of Holywell, and the Local Board determined to provide it. The site of the market is in the centre of High-street. The buildings have been erected from the designs of Messrs. Scrivener & Sons, Hanley, —the contractors being Messrs. Hughes & Son, Holywell,—and include a vegetable and butchers' market, to which are attached a fire-engine house and other offices. The vegetable-market is a parallelogram, 65 ft. long by 45 ft. wide, covered with a roof in two spans, with wrought-iron principals and pitch-pine boarding, and lighted by continuous skylights, and contains twenty-eight greengrocers' stalls and five fish-stalls. It communicates by a flight of nine steps with the butchers' market, which is an irregular parallelogram, about 69 ft. long by 48 ft. wide, giving accommodation to twenty-nine butchers' stalls and four shops. A town-hall is proposed in the scheme, and it is hoped that it will be erected by public subscription.

VARIORUM.

Mr. William J. Thoms, F.S.A., has published under the title "Exceptional Longevity" (Norgate, King-street, Covent-garden), a letter to Professor Owen, in which the veteran investigator demolishes a further batch of cases of asserted exceptional longevity, and is able to quote, in support of his views on the subject, a remarkable table on Centenarianism issued by Dr. Taché, the head of the Statistical Department at Ottawa. Mr. Thoms, speaking of the time, labour, and cost which he has himself expended on this inquiry, says feelingly:—"Let no one who has the slightest desire to live in peace and quietness be tempted, under any circumstances, to enter upon the chivalrous task of trying to correct a popular error."——"Flowers and Plants from Nature," by Emile Favart (Monteney, Nottingham), is a folio work now publishing in parts, two of which are before us. Each part contains five plates. The author "has attempted no classification of his groups, and has aimed at no artistic assimilations. He has endeavoured to give, with a pencil of nerve and faithfulness, the variety and tenderness of nature in her freest, least tutelaged, most abandoned moods." And let us add that he has succeeded to a very considerable extent. Draughtsmen in the decorative arts will find the publication very useful. The plates are good "copies," too, for those who are learning to draw, or wish to learn. ——Having purchased the copyright of David Roberts's "Holy Land," Messrs. Cassell, Petter, & Galpin are about to publish the work in monthly parts. Care is being taken to secure an accurate reproduction of the plates, for which purpose the illustrations are being re-drawn from the original folio edition.——The same firm are about to publish a work on Dairy Farming, written by Professor Sheldon, and dealing exhaustively with the subject, contemporaneously with the opening of the International Show at Kilburn.

The Artisans' Dwellings Act Extension Bill.—The Artisans' Dwellings Act Extension Bill seeks to remedy weaknesses in the Act of 1868. It provides for compensation to the owners of property taken possession of, the amount of such compensation to be awarded by the Government assessor or by a jury, as the owner himself may elect,—than which nothing can be fairer. The Bill enables local bodies to deal with the freeholder as well as the leaseholder, and thus to acquire absolute ownership of the sites; and it further empowers them either to erect houses for the accommodation of the working classes, or to let such sites on building leases. In cases where public bodies build the dwellings, such dwelling should be publicly sold within a given period of their erection, as it is undesirable for vestries to be extensive owners of property. If these powers are granted, it will make the task of providing decent house accommodation for the people at least possible; and if this is not then done, it will be in consequence of the apathy of the people themselves. It is to be hoped that the Government will not only not throw any obstacle in the way of the passing of the Bill, but that they will facilitate its passing this session; for theirs will be the responsibility if it is rejected.—*House and Home.*

Miscellanea.

Fossil Forests in America.—In the valley of the east fork of the river which flows through the wonderful Yellowstone National Park of the United States, the group of rocks, known for want of a better designation as the "Volcanic Tertiary," is typically developed, and has a thickness of upwards of 5,000 ft. Its prevailing materials are fragmentary volcanic products which have been apparently redistributed by the agency of water, and now form breccias, conglomerates, and sandstones. These strata contain a great abundance of silicified wood; and in many places trunks of trees, many feet in height and of gigantic proportions, seem to stand in the identical strata in which they grew. Mr. W. H. Holmes gives an account of these forests in the recently-published number of the fifth volume of the "Bulletin of the United States Geological and Geographical Survey." Riding up the smooth river-bed, one has but to look to the right up the cliffs to discover multitudes of the bleached trunks of these ancient forest trees. In some of the steeper portions of the mountain's face rows of upright trunks stand out like the columns of some long-since ruined temple. On the more gentle slopes lower down, but where it is still too steep to support vegetation, save here and there a few pines, the petrified trunks fairly covered the surface, and were at first taken to be the shattered remains of a quite recent forest. Sometimes the trunks were found in a fine state of preservation. Some lying prostrate measured 50 ft. to 60 ft. in length, and not a few of these were 5 ft. or 6 ft. in diameter. One, indeed, was found, on careful measurement, to be 10 ft. in diameter. The woody structure was so well preserved that it could be at once declared that this giant tree was not a conifer.

The Government of London.—Referring to this subject, the correspondent of the *Manchester Guardian* writes:—"We have 39 local governments, most of them vestries, which impose and collect in their separate jurisdictions the School Board rate. London government has a confusion quite peculiar. The School Board division of London is conterminous with the Parliamentary division, and that is the only agreement. Our 39 local governments do not correspond with anything. We have 19 police-districts, and 15 police-court districts; we have 13 county-court districts, and 10 postal districts; the Registrar-General divides us into 37 districts; we are partitioned into 44 surveyors' districts; we have 15 militia districts; we have eight water companies, and consequently have experienced a water famine in one district, while there was an abundant supply in the mains of another company within 100 yards of the district; we have about the same number of gas companies; we have a corporation of Westminster as well as of the City of London; we have confusion of coroner; and, lastly, we have conservators of the Thames, by whose permission we are still drinking the sewage of Oxford."

London Bridge.—The Council of the Royal Institute of British Architects, at a full meeting of their body held on the 23rd inst., unanimously expressed their regret at the nature of the proposal now before Parliament for widening London Bridge. They are convinced that if the width of the bridge must be increased, the right way to do it is by adding what may be required in masonry of exactly the same design as at present, the only objection to which appears to be the cost. They feel sure, however, that it cannot be necessary on the ground of false economy to execute the required work in a manner that must involve the destruction of the original design of the bridge.

Haworth Church.—At a Consistory Court held in the cathedral, Ripon, a faculty was granted to pull down the whole of the fabric of Haworth Church excepting the west tower, and improve and restore the church. Mr. T. Empsall, Dr. Maffey, and Colonel Barras, of Bradford, entered protests against the old church being demolished, and presented a petition; but there being no legal opposition, the faculty was granted.

Newcastle-on-Tyne.—Designs for the proposed new church of St. Luke, Upper Claremont, a district in the parish of St. Andrew, have been prepared by Messrs Oliver & Leeson, and have been approved by the Bishop of Durham and the corporation of Newcastle.

The International Agricultural Exhibition.—The work at Kilburn is progressing well, notwithstanding the weather. The sheds for the sheep and cattle will be ready in ample time; the offices are almost complete, and a very short time will be sufficient for the completion of the members' club, the restaurants, and *café*. Our readers know that the show will be held at Kilburn, upon a piece of ground of about 100 acres lying in the Salusbury-road. The new Salusbury-road Station of the London and North-Western Railway and the Kensal-green Station of the North London Railway are adjacent to the grounds. From the Mansion House, also, visitors may travel by the District Railway. By omnibus the ground may be reached from the Edgware-road Station in a quarter of an hour, from Cheapside or Newgate-street the journey will occupy an hour, and half an hour must be allowed if the omnibus be entered at the Marble Arch. The exhibition opens on Monday, the 30th inst., and will continue during the six following days (Sunday excepted). Every morning butter and cheese making on the English, French, Danish, Swedish, Holstein, and Limberg systems will be shown in working. For this purpose a building 150 ft. in length by 40 ft. in breadth has been prepared. The furniture and upholstery of the Royal box is supplied by Messrs. Jackson & Graham, of Oxford-street. The canvas roofing of the sheds is supplied by Mr. Unite, of Edgware-road, and is insured for 6,000*l*. The total length of sheds is eleven miles and a half. A royal pavilion for her Majesty and the Prince of Wales is also being erected by Mr. Unite.

Society of Arts.—The Council of the Society of Arts have awarded the following medals for papers read during the past session of the Society:—To Mr. Alfred Haviland, M.R.C.S., for his paper on the "Distribution of Disease Popularly Considered"; Mr. John Hollway, for his paper a "New Application of a Process of Rapid Oxidation, by which Sulphides are Utilised as Fuel"; Mr. Conrad W. Cooke, for his paper on "Edison's New Telephone"; Mr. Thomas Wardle, for his paper on the "Wild Silks of India, especially Tussah"; and Dr. Wm. Wallace, F.R.S.E., for his paper on "Gas Illumination." The thanks of the Council were also voted, as follows, for papers read by members of the Council, who could not, therefore receive medals:—To Mr. Hyde Clarke, for his paper on "Railways to Turkey and India"; Dr. George Birdwood, C.S.I., for his papers on "Indian Pottery at the Paris Exhibition," and "Quest and Early European Settlement of India"; Mr. B. Francis Cobb, treasurer of the Society, for his papers on "Some Causes of the Recent Depression in Trade," and "Retrospect and Prospect in Egypt"; and Mr. W. H. Perkin, F.R.S., for his paper on the "History of Alizarin and Allied Colouring Matters, and their Production from Coal Tar."

Rock Drilling by Electricity.—M. Gaston Planté, in his "Recherches sur l'Électricité," mentions a new application of electricity which had not been hitherto published by him, and which is of considerable interest. After describing the process of engraving on glass by electricity that he made known in 1877, and the account of which has been so widely copied by scientific papers, M. Planté goes on to say:—"We have seen that one of the electrodes conducting an electrical current of a certain tension, being brought in contact with glass, in the presence of a saline solution, it acts like a graver or diamond by tracing grooves in the surface of the glass, and even digs into it quite deeply. In spite of its great hardness, rock crystal can also be attacked by the same method; and, if not engraved regularly, it at least cracks into small fragments, and is finally disintegrated." In view of this, M. Planté suggests that the electric current, under conditions analagous to those above described, might be substituted for diamonds in the operation of drilling rocks.—*The Electrician.*

The Isthmus of Panama.—At the concluding sitting of the International Literary Congress, held under the presidency of the Comte Ferdinand de Lesseps, the chairman announced that he had received a letter from his son, stating that the whole of the 2,000,000 francs required for the preliminary expenses of the canal through the Isthmus of Panama had been already obtained, and that, consequently, the works might be commenced immediately.

The Wilberforce Memorial Chu
portion of the new church of St. Mary.
ampton, which is intended to form a m
of the late Bishop Wilberforce, and to
the old parish church, has been cons
The foundation-stone was formally laid
Prince of Wales on August 12th last,
within a year the chancel, chancel-ai
vestries, and one section of the new na
been erected and completed for us
remaining four bays of the old churc
was erected in 1711, with materials taken
ruins of Netley Abbey, will be taken dow
placed as soon as there are funds sufficient
to proceed with the work. For the part
finished the expenses incurred amount t
10,000*l*. Mr. Street is the architect. S
rag-stone has been used for the outer wa
Bath stone dressings, and the latter
stone has been employed in the
generally, though the open tracery of th
screens and other finer work is of C
Down stone. An alabaster pulpit, with
of marble mosaic, has been presented
Rev. H. Robinson, rector of St. Paul's
Leonard's-on-Sea; a brass lectern and
stained-glass windows have also been pr

A Series of Manuscripts.—The Ex
at the new Museum, Rugby, will include
of ancient deeds and charters from th
collection of Mr. R. H. Wood, F.S.A.,
Beginning with a MS. of the Carloving
about 950, there will be a charter of eve
from William the Conqueror to the press
and a great number will be shown of th
reigns down to the end of the thirteen
tury. Many of them are exquisite sp
of the writing of the period, and are, a
standing their great age, in wonderful
vation. The seals of the fourteenth and f
centuries will be well represented. Th
be a fine display of the heraldic seals
epoch, during which the art of seal-en
reached its highest state of excellence
number of curious Papal documents fr
Monastery of Vallambrosa, one bear
early date 1042. The student will
changes that have taken place in wr
each successive age, and he will rema
gradual decadence from the clear and
writing of the time of King John and Hen
to the almost illegible cursive hand of Ja
and Queen Elizabeth. We believe that
plete a chronological series has never
been brought together.

The First Steel Bridge in Ame
Arrangements have been concluded b
D. D. Smith, chief engineer of the Chica
Alton Railway, for constructing the fi
steel bridge in America. Gen. Smith
remembered by his connexion with the
Government Board for Testing the Stre
Iron and Steel experiments which were
on by him several years ago. His res
have at last brought him to the conclusi
steel bridges can be built cheaper th
and be equal in durability. The bridge
erected over the Missouri river on the
and Alton Railway. It will be of five
350 ft. each. The elevation over high
mark will not be less than 80 ft., at which
the light steel rods of the "Howe trus
look like silver cobwebs glimmering in t
shine. For all its frail appearance, the
will have a strength reached by but few e
structures in the world. The total am
steel used in the construction will be
1,500 tons, equivalent to almost doubl
quantity of iron.—*Am. Journal of Indust*

Malton Board of Health.—Last w
adjourned meeting of the Malton Local
of Health was held at the Town-hall,
purpose of appointing some one to th
bined offices of surveyor of roads, inspe
nuisances, and inspector of buildings, re
vacant by the dismissal of Mr. Bu
Ultimately, Mr. John L. Webster, of
aged twenty-five, who is an assistant
office of Mr. Penty, architect and su
York, surveyor to the York Rural S
Authority, was appointed.

Monumental.—A marble statue of th
Sir John Gray, M.P., which has been e
in Sackville-street, Dublin, in remem
chiefly of his services to the citizens of
in obtaining a water supply and superint
the execution of the scheme, but also
political exertions, has been unveiled.
statue is the work of Mr. Farrell, a
sculptor, and is an excellent likeness.

way Refreshments.—We are enabled el rapidly upon our railways, but we have succeeded in inducing the companies to us with good refreshment-saloons or -rooms. At many metropolitan stations no lack of refreshment-bars, sometimes t one station, but often at the same time essary waiting-room is altogether want- t is, however, interesting to read of the ages possessed by the people of other even if we cannot hope to enjoy them, re is something very refreshing in the tion of the "dining-cars" which have y been added to some of the through in Canada. From half-past five until 'clock supper is served in the through of the Grand Trunk Railway, and con- a very good *table d'hôte* served at 3s.

Certainly the *menu* presents a most g array of delicacies, and causes us to in bitter reflections concerning the scald- and soup and the venerable buns that he stock of many of our refreshment-

We do not ask for dining-cars,—they rhaps, come in due time,—but we ought provided with better accommodation for and drinking at the railway-stations.—*al World.*

row Escape of a Liverpool Archi-On the 17th inst., Mr. Charles Wise (of m of Holt & Wise, architects), was d in surveying some machinery recently l in a jigger-loft of one of the warehouses e Sailors' Home, and while in the act of g over the main shaft, some part of his g was caught by the revolving-shaft, to he was dragged. Fortunately there ar it an upright column, to which he until a great deal of his clothing was d from his body, and he was terribly t on one side. Unfortunately he was and his cries for help from the top of a story warehouse, amid the noise and din chinery and the street traffic, were not

He was conveyed to the Royal In- y, but in the course of the evening his s were enabled to remove him to his nce.

h Society for Improving the Condi- of the Labouring Classes.—The thirty- nnual meeting of this Society was held on sday afternoon at Willis's Rooms, St. 's; the Earl of Shaftesbury in the chair. ecretary read the annual report for 1878-79, details of the occupation of dwellings, se of public washhouses, &c. The ts from all sources during the year were l. 11s. 6d., which, with a balance in hand beginning of the year of 467*l.* 19s. 8½d., a total of 7,649*l.* 11s. 2½d. The total ex- ure amounted to 7,173*l.* 16s. 7½d., leaving balance of 475*l.* 14s. 7d. The property ging to the society was estimated as worth 5*l.* 6s. 10d., and the general liabilities ated to 19,937*l.* 4s. 10d., leaving assets to mount of 14,269*l.* 2s.

e Alexandra Orphanage, Hornsey.—Prince and Princess of Wales on Tuesday pened some new buildings at the Alexandra anage, Hornsey,—a branch of the Orphan ing School. The buildings include a new l-room, apartments for teachers, a laundry, e-room, storage, &c. The playground has enlarged, and accommodation is now pro- for 200 children, The building is of red externally. The architect is Mr. Alfred te.

yal Italian Opera.—"Un Ballo in Mas- h" has introduced M. Lassalle, the French one, in a new and very effective part. M. alle's impersonation of the injured husband he great feature of interest in the repre- tion. M. Lassalle plays the part with ty and pathos. Mdlle. Turolla's careful ng and intelligent acting were valuable in part of *Amelia*, and Madame Scalchi, as e, was the representative of the sorceress, a.

ilson & Co.'s Alkaline Composition.—ave tried the sample sent to us of Wilson's position for removing old paint from wood, found it effect that purpose in a shorter , and more effectually than any other ess that has been brought under our notice. he composition in bulk is as effectual as ample sent to us, it will be found a valuable ent by those who require paint to be re- ed.

Australian Timber.—The *Brisbane Courier* says:—Mr. Walter Hill has been sent on a tour of inspection to Frazer Island, where it is reported some valuable timbers flourish, notably the kaurie pine. For some time past the curator of the Botanical Gardens has been giving his attention to the propagation of some of the most valuable of our indigenous timbers, and at Oxley Pocket has formed a nursery of red cedar trees, in which 30,000 plants have been reared, all of which are in a flourishing condition, ranging from 2 ft. to 6 ft. in height. These are intended for distribution, and Mr. Pettigrew has already received 5,000 for his Dundathu estate. Possibly the thought that the red cedar takes from 60 to 100 years to attain its best development may discourage many from attempting its cultivation. The measures that seem demanded of us now, we imagine, should take a more restrictive than reproductive form. There is yet plenty of cedar in some of our forests, as a late telegram, announcing the sweeping out to sea of several million feet in consequence of a freshet in the Mossman, Dainree, and Johnston rivers, assures us. Some enactment is required that shall allow the colony to reap some benefit from its wealth of timber, as well as prevent its wanton waste.

Technical Education for Turners.—The Turners' Company's competition this year will be in respect of turning in wood, stone, iron, steel, brass, and gun-metal. As regards wood, both hard and soft material may be used, but the work must be all hand-turning, produced in the lathe without special rest or tool apparatus. The competition in stone excludes china and pottery, but comprises natural substances such as porphyry, granite, jasper, agate, marble, jet, alabaster, and similar materials. The qualities to be considered will be beauty of original design in shape and colour, or accuracy in copying, skill in overcoming difficulties in regard to material, and originality and novelty. In the iron and steel class the chief award will be adjudged to the best specimen of pure turning. In each instance the first prize will consist of a silver medal and the freedom of the company and of the City of London, and the Baroness Burdett-Coutts and the Court of the company have contributed 100*l.* for other prizes. The exhibition will be at the Mansion House from the 7th to the 9th of October next.

The Thames Valley Drainage. — The Lower Thames Valley Sewage Board resolved last week, by a majority of one, to apply for a provisional order to carry out Lieutenant-Col. Haywood's scheme for the drainage of the Lower Thames Valley. A private Bill for the same object was rejected in the early part of the present session of Parliament. The scheme is estimated to cost 270,000*l.*

Waterloo Road.—The Hospital for Women and Children in the Waterloo-road, Lambeth, is undergoing extensive alterations and improvements. A dramatic entertainment has been recently held at Grosvenor House in aid of the funds. Mr. Ralph Nicholson, of Westminster, is the architect, the works being carried out by Mr. Edward Howard, builder, Upper Baker-street.

Sanitary Appliances and Books, Sydney International Exhibition.—We are requested to intimate that Mr. Wahab, C.E., is about to proceed to Sydney, taking with him a Special Collection of Sanitary Exhibits. It is hoped that the makers of sanitary requisites will support him in giving prominence to this new feature of modern civilisation.

Eddystone Lighthouse.—Stress of weather prevented the laying of the foundation-stone of this structure on Saturday last, as intended. Some particulars of the new lighthouse, and of the one which it is to replace, were recently given by us, together with a view of Smeaton's structure. (See pp. 243, 257, *ante.*)

St. James's, Darlington.—The Ecclesiastical Commissioners have approved of the drawings of Mr. G. G. Hoskins, architect, of Darlington, for a parsonage-house to be built on a site in the Haughton-road, and south of the recently erected church.

Royal Academy.—At a general assembly of Royal Academicians on the 19th inst., Mr. Alma Tadema was elected a full Academician, and Mr. G. H. Boughton and Mr. Hubert Herkomer were admitted Associates.

TENDERS

For enlarging the Home at 35, Eden-grove, Holloway, for the Committee of the London Female Preventive and Reformatory Institution. Mr. W. P. Griffith, [architect. Quantities not supplied:—

Dunford & Langham	£743 0 0
Lidstone	690 0 0
Grover	684 0 0
Pocock	675 0 0
Moreland & Nixon (accepted)	663 0 0

For internal repairs, and for repairing the dwarf walls and railings of the churchyard of St. James, Clerkenwell. Mr. W. P. Griffith, architect:—

Cornwell (accepted)	£202 0 0

For sewers for the Bromley Local Board:

Nowell & Robson	£44,641 5 2
Simmons	44,541 12 6
King	44,260 0 0
Marshall	40,484 8 6
Mackenzie & Co.	40,476 0 0
Hunter	40,005 2 6
Neave & Son	39,553 13 8
Woodham	35,680 0 0
Killingback	34,200 0 0
Barnes	31,600 0 0
Potter (accepted)	29,758 11 0
Geen	29,017 5 0
Young & Williams	28,429 0 0

For alterations and additions to premises in Milford-street, Salisbury, for the Salisbury Coffee Public-house Company (Limited). Mr. Fred Bath, architect:—

Witt & Tryhorn	£300 0 0
Hale & Sons	299 1 5
Young & Sons (accepted)	282 0 0

For new shop-fronts to premises, Market-street, Poultry-cross, and Butcher-row, Salisbury, for Mr. A. M. Melville. Mr. Fred Bath, architect:—

Walker	£300 0 0!
Young & Sons	119 18 9
Harris (accepted)	109 10 0!

For additions to premises, Market-place, Salisbury, for Mr. H. B. Wells. Mr. Fred Bath, architect:—

Hale & Sons	£800 0 0
Tryhorn	767 0 0
Young & Sons (accepted)	739 10 0

For the erection of the Maunder Memorial-hall in Fisherton-street, Salisbury. Mr. Fred Bath, architect. Quantities supplied:—

		Extra for Panelled Framings.
Foley	£1,598 0 0	£101 0 0
Hale & Sons	1,261 0 0	61 0 0
Tryhorn	1,248 0 0	45 15 0
Young & Sons*	1,180 0 0	74 0 0

* Accepted for first portion, £939.

For warehouse, Old Swan Wharf, for Messrs. Knight & Morris. Mr. E. Power, architect. Quantities by Mr. Walter Barnett:—

Rider & Son	£2,682 0 0
Brass	2,537 0 0
Lister	2,540 0 0
Colls & Sons	2,400 0 0
Green	2,385 0 0
Braid & Co.	2,375 0 0
Toms	2,305 0 0
Boyce	2,253 0 0
Fish	2,250 0 0
Andrews	2,242 0 0
Conder	2,193 0 0
Hunt	2,070 0 0
Taylor & Son	2,033 0 0
Greenwood & Sons (accepted)	1,937 0 0

For the Chiswick Main Drainage. Mr. H. C. Smith, engineer:—

	Contract No. 8.	Contract No. 9.
Keeble	£18,000 0 0	£5,000 0 0
Williams, Son, & Wallington	17,880 0 0	4,910 0 0
Mears	17,3 0 0 0	4,740 0 0
Dickenson	17,050 0 0	4,500 0 0
Killingback	16,900 0 0	4,310 0 0
Nowell & Robson (accepted)	15,950 0 0	3,990 0 0

For the erection of additional stables for the Kensington Vestry. Mr. W. Weaver, C.E. architect. Quantities by Mr. W. E. Stoner:—

		Allow for Old Material.
Parkinson	£4,760 0 0	—
Adamson	2,917 0 0	£35 0 0
Hockley	2,835 0 0	70 0 0
Mears	2,8 0 0 0 0	40 0 0
Brass	2,6 0 0 0 0	—
Braid & Co.	2,560 0 0	—
Waters	2,534 0 0	40 0 0
Lucas & Son	2,512 0 0	—
Thorn	2,500 0 0	25 0 0
Wall (accepted)	2,280 0 0	20 0 0

For the erection of a villa residence at Lonsdale-place, Derby, for Mr. Robert Boughton. Mr. Geo. R. Isborn, architect. Quantities supplied:—

Thomson	£1,580 0 0!
Bakewell	1,170 0 0
Jno. Wood	1,120 0 0
Edwd. Wood	1,095 0 0
Dickenson	980 0 0
Walkerdine	950 0 0!

For alterations and additions, &c., to the Finsbury Park Tavern, Seven Sisters-road, for Mr. Hollis. Messrs. Bird & Walters, architects:—

Anley	£1,560 0 0

For addition to brewery, 311, Hackney-road, for Messrs. West & Pegg. Mr. Joseph Harris, architect:—

Anley	£1,050 0 0

For painting works at Royal Hospital for Incurables, West-hill, Putney. Messrs. Searle, Son, & Hayes, architects:—

Pitman & Son (accepted).

For alterations and addition at Buckhurst, Wokingham, Berks, for Mr. Charles Townshend Murdoch. Mr. E. Power, architect. Quantities by Mr. Walter Barnett:—

Watson	£2,400	0	0
Mann	1,935	0	0
Conder	1,921	0	0
Hunt	1,827	0	0
Henderson	1,819	0	0
Boyce	1,783	0	0
Toms (accepted)	1,775	0	0
Braid & Co. (withdrawn)	1,418	0	0

For alterations and additions at Mouflet's Hotel, 24, Newgate-street, for Mr. C. S. Young. Mr. E. Power, architect. Quantities by Mr. W. Barnett:—

Green	£293	0	0
Ramsey	265	0	0
Toms	238	0	0
J. & J. Lister	236	0	0
Mann (accepted)	215	0	0

For warehouse, Bury-street, St. Mary-axe, for Mr. H. J. Fitch Messrs. Hammack & Lambert, architects:—

A. Robinson	£9,447	0	0
Browne & Robinson	9,280	0	0
Brass	8,723	0	0
G. Smith & Co.	8,718	0	0
Ashby, Bros.	8,638	0	0
Nightingale	8,472	0	0
Bangs & Co.	8,432	0	0

For alterations at the Ebor Arms, Stoke Newington, for Messrs. Mann, Crossman, & Paulin. Mr. Ernest Shum, architect:—

Langmead & Way	£645	0	0
Wilson	620	0	0
Braggins	598	0	0

For cottages at Potter's Bar, for Mr. George Paulin. Mr. Ernest Shum, architect:—

Fairhead	£975	0	0
Patman & Co.	938	0	0
Brown	787	0	0
Braggins	745	0	0

For a new beer-house at Southgate, for Messrs. Mann, Crossman, & Paulin. Mr. Ernest Shum, architect:—

Cole	£1,135	0	0
Braggins	1,055	0	0
Brown	927	0	0
Newby (too late).			

For construction of concrete sewers on the Aldrington Estate, near Brighton:—

C. Drake & Co.	£2,400	0	0 !
Oliver	1,890	0	0
Earnshaw	1,705	0	0
Harrison	1,681	0	0
Marshall	1,540	0	0
Hitchcock (accepted)	1,400	0	0 !

For enlarging "Fairlight," Kingston-hill, for Major R. B. Lawes. Mr. F. Boreham, architect:—

Horlock (accepted)	£1,250	0	0

For painting and decorative works at the Gresham Club, King William-street, City. Mr. T. E. Knightley, architect:—

Mann	£520	0	0
Kidgell	387	0	0
Pitman & Son (accepted)	343	0	0

For alterations and additions at and in rear of the Crown Hotel, Lavender-hill, Wandsworth, for Mr. Saml. Bowker. Mr. J. C. North, architect:—

Turtle & Appleton	£488	0	0
Holloway	485	0	0
Newton & Triggs (accepted)	380	0	0

For restoring Little Welnetham Church, Suffolk. Mr. Drayton Wyatt, architect:—
Grimwood & Sons (accepted).

For restoring Cockfield Church, Suffolk. Mr. W. M. Fawcett, architect:—
Grimwood & Sons (accepted).

For the erection of factory premises and stabling at Malden-crescent, Kentish Town, for Mr. Fredk. William Rowney. Messrs. Ebbetts & Cobb, architects. Quantities by Messrs. Hodgson & Mundy:—

Everett & Son	£19,125	0	0
Aitchison & Walker	18,875	0	0
Macey & Sons	18,431	0	0
Nightingale	18,181	0	0
Perkins	17,753	0	0
Longmire & Burge	17,690	0	0
Wagner	17,400	0	0

For repairs, alterations, and decorations to Westminster Chapel, James-street, Buckingham-gate. Messrs. Satchell & Edwards, architects:—

Sprake & Foreman	£3,240	0	0
Phillips & Son	3,055	0	0
Harrison & Wood	2,467	0	0
Belham & Co. (accepted)	2,275	0	0
Sanders (withdrawn)	1,935	0	0

For new c'ass-rooms and alterations to the Congregational Chapel, Andover:—

Beale (accepted)	£434	0	0

For alterations and repairs to the Catherine Wheel, Andover, for the Coffee Public-house Co., Limited. Mr. J. Hillary, architect:—

Beale (accepted)	£319	0	0

For the erection of Ealing College. Mr. W. Willey, architect. Quantities not supplied:—

Hook & Oldrey	£3,789	0	0 !
Waters	3,351	0	0
Penny	2,698	0	0
Temple & Foster	2,450	0	0
Haynes	1,899	0	0 !

For rebuilding No. 239, Tottenham-court-road. Mr. D. R. Dale, architect. Quantities by Mr. J. Vaughan:—

Laurance	£7,997	0	0
Conder	7,793	0	0
Hoare	7,476	0	0
Nightingale	7,182	0	0
Macey (accepted)	6,750	0	0
Hart	6 656	0	0
Wagner	5,800	0	0

For alterations to the Carpenters' Arms Public-house, Kingsland-road:—

Jackson & Todd	£525	0	0
Eaton	515	0	0
Gill	415	0	0
Wheeler	397	0	0

For alterations at the New Inn, No. 9, Bulstrode-street, Marylebone, for Mr. Henry Emanuel:—

Toms (accepted)	£847	0	0

For alterations, repairs, and new shop-front at 8, Philpot-lane, City. Mr. E. Hide, architect:—

Parker & Evans (accepted)	£384	0	0

For alterations, &c., to Newport Villa, Church-road, Norwood, for the Executors of the late Mrs. Davies:—

W. & S. Nottle	£805	0	0
Jinks	493	0	0
Poole	485	0	0
Marriage	465	0	0

Army and Navy Stores, Regent-street.—Messrs. Braid & Co. wish it to be understood that the contractors whose tender was accepted were in truth the lowest when the amount allowed by them for old materials was deducted.

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Mr. Planché's History of Costume.

THE production of a cyclopædia of so large a subject as costume, requiring so much research and illustration, may in itself be well regarded as an achievement of unusual spirit on the part of an author who has long passed the threescore and ten of the Psalmist; but Mr. Planché has gone further ...g proof, gratifying on our own account ... as his, that every one's strength ... period of existence is not necessarily ...and sorrow, for he has now added to ...nailed cyclopædia a history of costume ... more generally, occupying nearly as ...pace as the dictionary portion itself.*

...great and, at first sight, alarming ex- ... the subject, appears more capable of ...on within reasonable limits when re- ...in the light suggested by the author in ...roduction, where he states that all he ...roposes is "to show how few, after all, ...een the important alterations in the ... and arms of mankind during the period ...h we possess any reliable information; ...at, as history is said to repeat itself, so ...shion, notwithstanding its interminable ...rmations." In other words, we are to ...this history as an attempt not to give all ...t variations in costume (manifestly im- ...n any one book by any one man), but ...ce costume to a few typical and con- ...recurring features, and trace the manner ...h these were modified at various times ...der various influences. This is, in fact, ...a sort of philosophy of the history of ...nd our own remarks on the work will be ...directed to endeavouring to follow out ...a, and to trace some exemplifications of ...g principle of dress, or of the disregard of ...inciple, under its often incongruous forms ...expected changes.

Planché selects, as the commencement of ...ory, the period of the Roman empire. Some ...n of the kind was necessary, as the first ...of costume is lost in pre-historic periods; ...t, all the intermediary stages between the ... and a considerably elaborated form of ...e have disappeared. A good deal might ...een made out of Homer, in the way of ...tion, certainly, though with no illustrations to back it; and then there are the Egyptian and Etruscan tomb-paintings, and the sculptures of the great Greek era, in which the female figures at least are all clothed, and the tunics of the Panathenaïc horsemen, concerning which we might have been glad to have Mr. Planché's opinion as to the extent to which these costumes are realistic or are sculpturesque conventions. That the Egyptian granite statues are realistic as far as the material would admit we have very little doubt. However, considering the necessity, as observed, of some choice and limitation, we do not know that Mr. Planché could have done better than select the period when the known world was under one sway,—a period of the highest material civilisation (and dress is essentially connected with civilisation), and trace the successive changes in dress down to modern times. This he has done by a systematic division into centuries, taking, as far as possible, an international survey for each century, so as show the influence of contemporary national costumes upon each other, or the influence of one predominating nation, as *arbiter elegantiarum*, over others, and so on. This seems to us the best way that could have been selected of getting some order into a subject so various and so difficult to combine into a whole.

Looking at the philosophy of dress in regard to its general forms, Mr. Planché quotes from Strutt, in his opening chapter, to the effect that the necessary garments of mankind have never been many; "one adjusted to the body, reaching to the knee or mid-leg for the men, and to the ankle for the women; another, ample enough to cover the whole person in inclement weather. These two, with or without some protection for the feet, comprised the whole of the clothing of many millions of human beings in prehistoric times, and under innumerable names, have, with very few additions, descended, however altered in form and material, to the present day." The typical examples of these at the period selected for commencing the history are, of course, the Roman tunic and toga. This is, however, rather too broad a generalisation, as it appears to us (as the author, in fact, subsequently remarks) that the use of coverings adjusted to the legs forms a special and very important element in dress, and one the use or non-use of which constitutes a very significant feature in costume regarded as an indication of social feelings and habits. As a rule, the highest civilisation shapes the dress most closely and intimately to the body, and makes it more a matter of deliberate purpose and of intricate fitting and fastening; the lowest civilisation is content with throwing on a covering anyhow, in the way least troublesome to put on or take off. Mr. Planché remarks, in fact, that in the Republican days of Rome, when austerity and simplicity of personal *appareil* were among the first virtues, the toga, or what in more general terms one may call the blanket, was the only garment. The further additions, first of the tunic, and then in the one sex of the trowsers, are the result chiefly of more sensitiveness as to the decorum of dress; and the last important element imparted, that of underclothing which can be frequently changed, is a sanitary one, and the full and great importance now attached to it is of comparatively modern date. This portion of dress hardly, of course, comes under the head of costume, which includes only that which can be outwardly seen, and which imparts character and dignity, or the reverse, to the wearer. We mention it here only as an instance of one of the influences which have operated in regulating modern dress.* But as far as the visible component parts of dress are concerned, it is remarkable how generally we find running through all periods and nations the sense that the dignity of dress is proportioned to the length and flow of the principal garment, and the extent to which the legs are covered. In regard to female costume, this feeling seems to have existed very early; it is fully developed in the Parthenon sculptures, where all the women are fully robed in the same frieze where men are shown naked or with very scanty clothing. In modern times we find the length of skirt in woman's dress is almost equally proportioned to the degree of dignity she attaches to herself, or which society attaches to her. The peasant in many countries (not generally in our own) has short skirts, the lady has long ones, and the lady's state-dress becomes a train that trails behind her. M. Yriarte has observed how, in Venice, the courtesan was distinguished from the honourable lady in costume by the short skirts of the former; indeed, in our own country, "light-skirts" is a vulgar expression reflecting on the character of a woman. But the sense of an added dignity and decorum connected with a long upper garment is just as marked in the case of the other sex, though of course a little different in its manifestation. The tunics of the soldiers in archaic Greek sculpture are among the most curious instances of the simplicity of an age of innocence; they seem contrived exactly to be too short for what would now be considered the claims of propriety. In almost all civilised periods, after the legs are covered, a short coat and a great display of length of limb are among the usual characteristics of gay youth, the Mercutios of their period. This is brought out well in Mr. Wallis's picture of Antonio and his friends, in the Society of Water-Colours, where the short jackets and tight hose of the young gallants in the foreground, the youth of a time when youthful licence was carried to an exceptional extent, are contrasted with the long and voluminous gowns of the middle-aged and staid merchant and his friends. In our own day a man who wants to keep up a youthful and jaunty appearance keeps to short coats, as belonging to a *degagé* costume; a man of more

...yclopædia of Costume; or, Dictionary of Dress. ...s Robinson Planché, Somerset Herald. London: ... & Windus. 1879. A review of the first volume ...found in our volume for 1876, pp. 87, 563.

* It is true, there seems to be one species of underclothing suffered to exercise an important effect on the artistic result of the whole costume, since *Punch* has told us that the lady who does not wear chamois leather has only a chance of the attentions of the "second dress maker" in a first-class establishment.

sober habits, or the same man when he wishes to be more ceremonial in his *personnel*, wears a long frock coat. It is not difficult to trace all this back to its origin in certain *a priori* feelings of personal propriety in regard to the covering of certain parts of the body more particularly, which was probably the earliest motive for costume of any kind, as it is now found to be the only one among savages in almost the most uncivilised state, and where climate does not render clothing necessary, and which survives in modern times in the tacit feeling of a greater decorum and reserve attached to a long-skirted coat. We observe, by the way, in connexion with this subject, that the author mentions that the short jackets and tight breeches of the fourteenth century were actually made the object of attack by a contemporary satirist or moralist in France, on the ground of the indelicacy of the costume.

Artistically speaking, there may be said to be two main principles of dress, that which conceals the forms and makes the dress the object, and that which is designed to express and set off the form. The toga style of classic dress belongs to the former description, the latter is nowhere fully carried out in ordinary modern costume except in boy's dress sometimes, and in special costumes for particular objects connected with athletics or theatrical performances, and in some forms of military uniform. In the first case the object is that the dress should hang gracefully and in fine lines and folds, and the body becomes, in fact, a mere frame on which to hang it, unless when in walking the movement of the limbs may be partly rendered by that of the dress. In the second case the object should be that the dress should be designed with a proper regard to, and understanding of, the real points of the human figure, and should emphasise and illustrate these, and not contradict them. To do the latter has been the defect of probably by far the greater majority of the costumes of this type which have been in use; it is notably the case (as we think has been observed before in our columns) with the European gentleman's dress at present,—a dress which ignores the existence of either elbow or knee-joints, or of the difference of design and modelling in both leg and arm above and below those joints. Distinguishing in regard to sex, it may be said the woman's costume almost always belongs most to the first-named class, the object of which is to conceal the figure; while men's costume displays it more or less. This distinction is based upon, while it has perhaps assisted a little to emphasise, the natural and inherent distinction between the character and social disposition of the sexes; the one distinguished by reserve and retirement, and not expected to indulge in any great activity of body; the other in daily habits of active movement or athletic exercise, in which the flowing robe or skirt would be greatly in the way, as it would have been in the days of the Greeks had not their customs permitted the man to discard his garments altogether, with little ceremony, when necessary. As it is, women have (wisely) taken more to bodily exercise lately in ways in which sometimes their dress must be inconvenient enough: our friend *Punch*, who is generally good on dress, furnishes us again with an illustration in his suggestion that the gentlemen should be handicapped (*i.e.*, should wear skirts like the ladies) to make the chances at lawn tennis equal.

We may notice some of the points in the history of costume which are brought before us in turning over consecutively Mr. Planché's interesting pages. The principal forms of Roman dress are familiar to every one. Among the nations whom they conquered, and who were doubtless more or less influenced in costume by the habits and tastes of their conquerors, the Gauls present the curious combination, as it seems to eyes used to classic statues, of a flowing robe something like the toga, with trowsers reaching to the instep and tied there; for the Gauls, though barbarians in comparison with the Romans, were sufficiently advanced in the civilisation of costume to have arrived at trowsers very like the modern article. Apropos of this subject, Mr. Planché gives a page of engravings of specimen figures from "the trowsered nations," including Trojan, Parthian, Phrygian, Sarmatian, and Dacian. The Phrygian is a peculiarly characteristic figure, apparently a male figure, but with long hair, and long tunic reaching to the knees, and sleeves and trowsers with a powdered ornament; the whole effect is very effeminate, and except that the trowsers are much tighter, reminds one a little of Turkish female costume. The materials for the treatment of the subject, during the centuries intervening between the fall of Rome and the rise of Mediæval civilisation are, we may well presume, scanty enough. In the course of the remarks on this part of the history, we meet with an example of the danger of trusting to accepted ideas and illustrations in such matters, in a remark quoted from M. Quicherat by the author, to the effect that we are so accustomed to see Charlemagne represented in imperial robes that probably a representation of him would not be recognised which did not represent him thus; and yet it is historically true that he never wore them in his life. His probable actual costume is represented in an illustration from a mosaic in the Church of St. John Lateran: it is rather that of a soldier than of an emperor.

Our Anglo-Saxon progenitors were simple enough in their dress, and, as in so many other matters of more modern interest, the importation of a more affected and ostentatious taste was due to France. The Danes had previously produced some effect upon the wives and daughters of the Saxon nobility by the gaiety of their attire and a degree of attention to the toilet which was probably new to the ideas of the Saxon ladies, but a marked testimony is borne to the foppery of the Norman conquerors, who were remarkable for their love of finery, personal decoration, and constant changes of fashion. The figures illustrative of the costumes of Anglo-Norman ladies indicate a great richness of effect; they are heavily, almost ponderously draped, with broad and rich ornamental borders, which meander over the heavy folds of the dresses. Their costume retains a great deal of classic effect in its general lines, and is dignified and entirely free from the ugliness and oddity of fancy and caprice which have so often unfortunately distinguished the female dress in this country. One or two of the illustrations of the dress of the Norman noblemen indicate (though we cannot fully realise it in the absence of colour) a still greater richness and costliness of costume, of a very effeminate description, the dress consisting of long and flowing robes by no means *propria que maribus* in our ideas; and the figure represented (p. 50) from Willemin's *Monuments inédits* has something in its style and outline reminding us of some of the Etruscan figures in the tombs at Cervetri and elsewhere. The fashion of wearing the hair long accompanied this taste for rich robes, and was the object of legal enactments to restrain it, which were probably as futile as such enactments almost always have been. The Venetian costume of the twelfth century is also rich in its tendencies; but again we notice that the female costume, like that of the Norman ladies, is remarkably rich, dignified, and tasteful; indeed, the twelfth century seems to have been a very admirable era in regard to ladies' dress; hardly anything could be more suitable for ladies of high rank and dignified manners than these large full draperies, entirely devoid of trickery or attempts to tamper with the figure, or artificially alter or distort it. The dress of the Venetian men of the same period is again somewhat too effeminate, in fact little distinguished from that of the lady, except in a somewhat shorter skirt, coming down, however, nearly to the ankles. It is curious, when we come to think of it, that the Templar knights should have adopted the long robe so well known in representations of their order, covering their armour from neck to heel, and which one would have supposed to be little suitable for active service. Mr. Planché mentions a suggestion in regard to a practical origin of this unmilitary-looking gown, viz., that it was to veil the iron armour from the heat of the Palestine sun, which would have effectually baked a knight in his shell, we may readily imagine: the idea seems a not improbable explanation.

Unfortunately the dignity and common sense of costume did not last the European lady for long, and in the thirteenth century we find evidence of the encroachment of those unnatural vanities of feminine costume which have reappeared over and over again in one or another form. In this century we find, says Mr. Planché, constant allusions to lacing and to the compression of the waists of ladies, "whose unfortunate ambition it was then, as now, to appear more like wasps than women, to the serious injury of their health and the disfigurement of their persons." This was in France: as far as we can gather from Mr. Planché's illustrations, the Italian ladies did not fall into this conde- tion, and, at all events, one of the two of t costumes that are given is even super beauty and dignified effect to those of thei genitors in the preceding century, already tioned.

The middle of the fourteenth ce witnessed a great and unexpected change general character of every-day dress, for no cause can be now traced, in the su substitution of tight dresses for the full which had usually prevailed before this " the fashions of the time of Philip Aug. which had resisted the most important tions in the constitution of the kingdon dynasty, and manners, succumbed without apparent reason in the middle of the re Philip of Valois." The defeat of Fran Crecy was attributed by one of their w to the indignation of Heaven over thei seemly tight dresses, but the conquerors immediately adopted the same fashion, became general throughout Europe. The notes, also, that in this century two fashion of particoloured clothing and of streamers the elbows, were almost universal. In to the tight dresses, Mr. Planché is in fav the theory which ascribes their initiat Spain, for which he gives some reasons. such a kaleidoscope is fashion, that in the century that witnessed the rebukes of mon against the tight clothing, we find, in the of Richard II. an author venting a di against a dress of just the opposite kind,— commons were besotted in excess of a some in wide surcoats reaching to thei some in a garment reaching to their heels before and strutting out at the sides, so the back they make men seem like wome this they call by a ridiculous name, g which, Mr. Planché observes, is the first in of the application of the old Saxon word to the tunic since the diffusion of the N language. It is curious also to notic utterance in the fourteenth century of a which, as Mr. Planché truly says, is comm all ages, that "the vanity of the c people in their dress was so great that impossible to distinguish the rich fro poor." The tendency of dress is, howe level itself in proportion as civilisatio political freedom advance; the rich man nobleman comes to think it a vulgarity to c his riches in his dress; the poor man, educated than before, becomes desirous t as becomingly as his means will allow, w is out of his working clothes; and thu ends tend to meet, on the whole, to the of both.

In the dress of the Italian nobles at t of the fourteenth century long robes se full force for the men; the dress of the la Italy appears to have become somewhat s and also less picturesque; one illustration remarkably resembles the modern morning of a young lady, at very recent date. Th teenth century also witnessed the subst of plate for chain armour,—a change b about, Mr. Planché tells us, by the exc weight of the chain armour, which som so incommoded its inmate as to rend strength nearly useless for combat. reflect on the comparative amount of met must be used in the two kinds of armou of course realise how heavy the older f must have been; but in appearance the armour looks so much more pliant, and co so much less idea of weight or of inconve to the wearer, that it would perhaps, be, prise to most people who have not studi subject, to learn that the plate armor introduced as a matter of practical conve in the first instance. The difficulty of cons ing it so as to be pliant and easy of acco dation to the movements of the limbs must been very great, and have required the and most careful workmanship, and it is e conceive how important a branch of fine c manship the armourers' trade must have be under the circumstances, so that the mos cessful and fine armourer must have been a more important person in the community Poole or Worth in the present day.

The fifteenth century represents the ch what may be called the Mediæval peri dress, and costume seems to follow rath same kind of movement which the archite of the decline did, becoming over-elaborat showy, though there are many offences a good taste in the costume which hav parallel in the architecture. The enormou

dy development of sleeves and sleeve-gs are among these; and the enormously nd disproportioned head-dresses of lace, ed over invisible wire supports. The for novelty and peculiarity of effect s to have been carried to an excess which y cases seems entirely to ignore and con- the practical object of the dress,—as in g pointed shoes, which certainly must been the greatest obstacles to active rianism that ever were invented. It was of extravagances,—very short jackets y long cloaks; everything must go to es in one direction or another; though n this period there is nothing really so so offensive to all common sense and aste as some of the fashions of later uch as the hooped petticoat. "At the f the fifteenth century," Strutt observes, dress of the English was exceedingly el and absurd, insomuch that it was even t to distinguish one sex from the other. aders will remember that this complaint, in the same words, has been made by mporary writers from the days of ." The latter part of the complaint en revived very lately, in reference to ies' assumption of round hats and Ulsters; h, however, there is nothing really un- e as an outdoor dress, but for the fact he male sex had appropriated it first, one certainly prefers to see the of men and women quite distinct in ter. One cannot but observe, how- ow universally there seem to have been in every period who were dissatisfied e existing style of dress, and thought it of nothing but satire. The moral, is, is that no costume which departs much imple first principles of practical con- e and utility in dress can escape appear- icrous from some point of view. Venice, period, as in most others, keeps its pre- ce as the place of dignified and effective costume. Nothing could well surpass the fficial dresses of the Venetian Republic aptuous stateliness and dignity; but they sses essentially for pomp and show, not ryday convenience, and their sumptuous ay be taken as one of the outward indi- how far Venice, in name a Republic, was of real and typical republican charac- s, political or social, being in reality a sm of a caste or clique instead of an ual. Genuine Republicanism has almost bly been adverse to costliness and fancy ume.

sixteenth century did well for the male dress,—badly for the female. The dress ch the well-known figure of Queen Eliza- rnishes a prominent type is one of the worst female costumes ever invented, e it is at variance with all that is most ful and characteristic in the female figure, bstitutes for the flowing lines and graceful of the womanly form straight hard lines harp angles, making the whole dress a s and unnatural cage within which the uman inhabitant is hopelessly imprisoned st. The dress of the men, on the contrary, n no doubt exaggerated in its points in instances, is a very successful combina- of grace and elegance with manly cha- : the flat feathered cap worn picturesquely e on one side of the head is one of the leasing forms of head-dress ever invented; ort cloak and puffed sleeves give a broad- ered appearance of strength, and the legs, umbered by anything save the tightly- hose, appear ready for any exercise ing activity and agility, and a man with a rmed leg (the most effective feature in asculine figure at its best) had the full t of his natural advantages, which he irely loses in the funnel-shaped mo- trowser. The Vandyck dress (as we all it) of the next century is superior in al effect even to this, the whole *ensemble* re thoroughly in keeping, whereas in the of the Stuart period the upper part of the n was a little too much emphasised in com- on with the legs; at the same time the nent of the leg in the cavalier dress is not od; there is a braggadocio air about the costume, and it is by no means so truly tleman's dress as that of the preceding ry. An interesting incident is mentioned uexion with the costume of this period; that es II., whose good sense upon matters of this often takes us by surprise, had invented e time a dress, to which he meant to keep, as in good taste and suitable, in order to discourage extravagance and idle changes of fashion. The court imitated the Royal example, apparently, for about one month, and then what Evelyn called the "Monsieur's vanities" re-established themselves, and we presume the monarch thought it useless to hold out against them. A story was current that the King of France dressed all his lackeys in the same costume to throw ridicule on the English king, but Mr. Planché thinks the fact doubtful, and it seems improbable that the French king should have deliberately insulted his "royal cousin" in a manner so very paltry and ungentlemanly.

Space will not allow us to touch upon the history further, but we may just say one word in regard to a very interesting chapter which is added to the history, upon the varieties of stage costume, which introduces the reader to some curious and now-forgotten eccentricities or absurdities of costume on the English stage. Shakspeare's notion (or that of the stage-manager of the Globe Theatre) of representing the Athenian characters in the "Midsummer Night's Dream" "in Spanish habits" was outdone at a later period of the English stage, when Garrick acted *Macbeth* in a laced coat and knee breeches and silk stockings, to a *Lady Macbeth* whose hooped dress gave her the appearance of a head and body rising out of a small hillock; and *Comus* appeared on the scene in pretty nearly the same dress as the beaux of the day who sat in the boxes opposite to him, only with a girdle of bunches of grapes round his waist to signify his relationships. There is a good deal more that is interesting, curious, and amusing in this theatrical chapter, which is very fully illustrated.

We have to thank the author for a very full, useful, and entertaining book on a subject that is of interest to almost every one, and which is written not only with a rare knowledge of the subject, but with that kind of enthusiasm for it which always recommends a book to the reader, so that we feel as much carried away as the servant in the "Winter's Tale,"—"You would think a smock were a she-angel, he so chaunts to the sleeve-hand, and the work about the square on't."

THE SAFETY OF LONDON BRIDGE.

A DEBT of gratitude is due to the Earl of Carnarvon from all persons who are interested in the architectural beauty of London. All those of us who regard a noble monument as a national heritage, not to be rashly tampered with, will do well to reflect that it is owing to the action of Lord Carnarvon that the doom of this fine bridge has not, as yet, been pronounced by the Legislature.

It would of course be out of place for us to complain of the swift and silent way in which the City authorities have pushed their Bill through the House of Commons, and carried it up to the third reading in the House of Lords. Such complaints would be as idle, and as wide of the mark, as those which were made as to the resistance offered by Lord Carnarvon, at so late a period in the work of legislative destructiveness as the proposal for the third reading. As to that, it can only be said, "Better late than never." But the City fathers, having decided on their course, cannot be blamed for taking the best measures at their disposal for carrying it out. It is a course to which they have long declared their adhesion; and although it appears to us that it is one which contemplates the gain of only a very questionable advantage, at the cost of great disadvantages, and at the risk of still greater, yet we feel that after all that has been said on the subject in these columns and elsewhere, it is idle to make any appeal for reconsideration in the City.

It is, however, matter for very serious remark that not a single member, even of those who may be regarded as representatives of art, of architecture, or of engineering, in the House of Commons, should have anticipated the action of the Earl of Carnarvon. If a Bill were introduced, say by the Metropolitan Board of Works, which should schedule Westminster Abbey as the site for a new pumping-station, the Vandalism might be a shade or two more pronounced; but we see what we may expect from the public watchfulness of private members. But for the protest of the Royal Institute of British Architects, there can hardly be a doubt London Bridge would now be under sentence of death.

That may seem a strong expression, but it is one for which there is full justification. In the first place, the action proposed is of a nature that would entirely ruin the architectural character of the bridge. That, it seems to us, is so far admitted, that it would be waste of time to debate the question now. If any one who possesses vote or interest in the matter has any doubt on this part of the question, we recommend him to go to the expense of taking a trip to Watford, Hertfordshire. There he will see, just before entering the town, the brick bridge constructed by the late Sir Charles Fox, as sub-assistant engineer, under Mr. Buck as resident, and Mr. Robert Stephenson as engineer in chief, for carrying the London and Birmingham Railway over the high road. The bridge was one of simple structure, consisting of brick piers and semi-elliptical arches, with impost, voussoirs, string course, and coping of Bramley Fall stone. But it was a good sample of a style of work that, while plain and unpretending, had an architectural character well suited to the object of the designer. The bridge, moreover, possesses unusual interest from being the first, under the railway system, on which the principle of the skew arch was perfectly wrought out on a great scale.

Necessity has led the London and North-Western Railway Company to widen Watford Bridge. Economy, we suppose, has led them to do so with iron. As to the effect, we only say, "Go and look at it!" and then reconsider the idea of adding iron patchwork to Rennie's noble design.

But defacement is not all; it is not even the worst that is threatened by this ill-advised movement. Of this there is ample evidence. It is that of Sir John Rennie, the architect of the bridge. It is to be found in his autobiography, published in 1875, at pages 172 to 192, especially at page 189. The advice of the engineer as to the site to be chosen for the bridge had been neglected by the City authorities, and the place then actually used for the foundations was one which it was only with the utmost difficulty that the engineering appliances of that day could render at all available. As it was, the margin of stability was so narrow that after the fifth arch was keyed, not only did its crown subside 4 in., but it was found by levelling that the east end of the pier,—that is to say, the down-stream side of the bridge,—"had subsided from 10 in. to 14 in. more than the upper or west end." With this settlement the bridge came to its final bearing,—that is to say, the final bearing of the structure as designed and built by Rennie.

Now we attempt no prediction. We do not pretend to say what will be or what must be. But we think there can be no denial of the assertion that the settlement at which Rennie's bridge stopped is not necessarily that at which a heavier bridge would have stopped or would stop. In a condition of equilibrium so unstable, and for which the section of the bed of the river, as compared with the depth of the points of the piles of the bridge, so fully accounts, he must be a bold man who would venture to say how much additional weight would cause the subsidence to recommence, or how little would set up an action as destructive as that which was arrested, not an hour too soon, in the transept walls of St. Alban's Abbey.

It may be well here to call attention to one of the few disasters which befel one of the most important works of Mr. Robert Stephenson. We refer to the breaking-down of the iron girder bridge at Chester, over the river Dee, when a passenger train was crossing it. Several persons were killed. An inquest was held at Chester, where the greatest excitement pervaded both the Court and the City. Mr. Stephenson, Mr. Bidder, Major-General Sir Charles Pasley, and Mr. Fox (afterwards Sir Charles Fox), were among the scientific witnesses examined. Representatives of the Admiralty and of the Board of Trade officially attended the inquest, and the proceedings on behalf of the railway company were very ably conducted by the late Mr. Timothy Tyrrel.

It resulted from the evidence, beyond any scientific question, that the reason why the bridge broke down under that particular train, after having carried heavier trains in safety was, that an additional coat of 2 in. or 3 in. of gravel had been spread that morning over the ballast of the roadway on the bridge. That comparatively small addition to the weight proved too much for the margin of resistance. We do not enter into the question of the adequacy of the design. The result of the fracture was a change in the formulæ on which all engineers had, up to that time, relied. The point of

interest is, that the bridge being in a state of much less stable equilibrium, when under the stress of a rolling weight, than was indicated by the table on which all the scientific world at that time relied, the addition of so insignificant a burthen (at first sight) as that of a layer of gravel, was the weight that broke the back, not of the camel, but of the bridge.

Now we may say, without fear of contradiction from any impartial man familiar with such matters, whether he be a man of practice or a man of science, that we have, at this moment, far more reason, from the record of actual facts, from knowledge of the change going on in the bottom of the Thames, from knowledge of the way in which the solid clay has been scooped out by the action of the water immediately eastward of the piers of London Bridge, and from knowledge that the London clay, under certain pressure, acts as a semi-fluid, to fear that a given weight would cause the settlement of the piers to recommence, than any engineer had, before the breaking-down of the Dee Bridge, to anticipate that the addition of a few inches of gravel to the ballast on that structure would so strain its resisting-power that it would give way on the passage of the next train. The vibration caused by a train may be more formidable than that caused by a number of carriages, horses, and pedestrians. But the question in each case is rather one of definite weight than of vibration; and in the case of London Bridge a warning has been given which was not afforded to Mr. Stephenson. The foundations have sunk from 10 in. to 14 in. under the actual weight, to which it is now proposed to add a further weight, not provided for by the architect of the bridge, and acting with a leverage upon its structure.

In all cases of testing strength by the imposition of weight, the weight is piled on, little by little, until, often without any warning, fracture occurs. That the foundations of London Bridge would commence to move under a certain additional pressure, is of course undeniable. It is also undeniable that no man can say with any certitude what that additional weight would be. It would be highly objectionable to make the experiment, however gently conducted, even if only by the addition of a ton or two at a time, because, if the movement were set up, there could be no certitude that it would be arrested, even by the removal of the weight.

What, then, can we say of the prudence of weighting the bridge at once with a mass of supplementary ironwork, added for the express purpose of allowing a heavier moving load to come on the arches and piers,—and that a load not contemplated by the engineer of the work? It does not need a man to be an engineer in order to understand that such a procedure is one highly calculated to destroy one of the most useful, as well as one of the architecturally most satisfactory monuments of our country and of the nineteenth century.

We urge those who have the opportunity to bring these considerations under the notice of the Select Committee. We beg the committee to remember that no professional opinion on the matter can be of the weight of that of the engineer of the bridge himself. It is impossible to read the Autobiography of Sir John Rennie without forming a strong opinion as to what he would have said to the present proposal. And if it could be possible for that sound and cautious engineer to rise from his grave, and to say,—"Take care what you are about; I decline any responsibility for the safety of my work if you thus add arbitrary patchwork to its elevation. You will most likely throw it down," even that ought not to have the authority, as a warning not to be trifled with, of the simple record of what actually took place when the weight of the fifth arch first came to its bearing on the piers. If the City wish to pull down the bridge, they had better do so stone by stone, than run the risk of making the whole structure lurch towards the sea.

Japanese Art.—A meeting of persons interested in Japanese art, folk-lore, and literature is to be held in the rooms of the Royal Asiatic Society, Albemarle-street, on this Friday, July 4th, at three p.m. The object is to establish in London a central institution, with the view of bringing into closer communication the admirers and students of Japanese art and literature, to collect, record, and disseminate information relative to Japan, and to encourage residents in Japan and the Japanese to collect such material.

ARCHITECTURE AT THE SALON OF 1879.

THE RESTORATION OF THE ACROPOLIS OF ATHENS AND THE WORK OF THE HISTORIC MONUMENTS COMMISSION.

As with English architects in our own Burlington House Exhibitions, it is with no small degree of justice that the French architects complain of the limited space allotted to their exhibits at the *Salon*, where each year such large concessions are made to the ever-increasing number of paintings. Interesting and valuable as are the careful works contributed yearly among the numerous private efforts by the conscientious students of the School of Rome, the School of Athens, and the Historic Monuments Commission, the attention of the Administration in vain is called each year to the injustice of the treatment of the architectural drawings.

At a time when in these columns the more attractive contents of the Palais de l'Industrie have been examined at some length, and when we were about to consider the interesting architectural drawings in the deserted corner to which they have been relegated, a valuable article has appeared in a recent issue of the *Revue des Deux Mondes*, due to the able pen of a well-known member of the French Institute, M. Eugène Guillaume.

Regarding his consideration of the work of the pupils of the schools at Rome and Paris, and the labours of the Historic Monuments Commission, the article of M. Guillaume deserves particular attention from more than one point of view, especially at a time when the vexed question of the restoration of our monuments of the past has roused so much discussion in England.

It is an honest but somewhat startling admission made almost in the opening sentence of this article, that, perhaps, for the first time in reviewing the *Salon*, the architectural drawings have been considered worthy of special notice, notwithstanding the seniority of architecture over its sister arts, and the important position it has always held in France. At no period, if we are to believe M. Guillaume, have architectural studies embraced so wide a field, while it is impossible not to admit that the writer is justified in claiming for France that in no other country are these studies so well organised. It is not alone the effect of a traditional obligation, but the knowledge of its value as a factor in general progress, the development which the French Government gives to architectural study.

First comes the École des Beaux Arts in its architectural section, which, classical as is its instruction, still remains the parent establishment where every architect, with few exceptions, commences his career. And then the École de Rome, which, especially within the last century, has turned its active attention to the investigation of the monuments of antiquity. In addition to which should be mentioned the important service of the Civil Monuments (*Bâtiments civils*), the Historic Monuments, and the Diocesan Edifices, the services of the Works of the City of Paris. When these important institutions have been mentioned, and due consideration is given to the encouragement afforded to architectural study by the free instruction of the Special School of Architecture (*École spéciale*), and the numerous societies and private institutions, with their respective publications, it will be seen how large an interest is taken in the desire to advance the study of architecture in France.

If architecture is an art it is also a science and an industry; if it has its theories it has also its history and *technique*, and all these elements are closely connected with each other, a fact from which it has arisen that special judges should alone be called upon to consider its work. But in an art so communicative, and the development of which is so considerable, there are transformations and results arrived at, the meaning of which it is within the power of all to understand, and which are, so to speak, public property.

But, as such, the public seem but little disposed to avail themselves of their rights, the architectural drawings are neglected, a fact in no small measure due to the want of consideration given to their position and their hanging; though among these drawings there are exhibited not a few of the most interesting nature, not alone as technical studies, but as sketches from nature.

Architectural drawing, such as it at present exists, is of recent introduction. Increased in effect as it is by a skilful use of water-c which realises a judicious compromise bet geometrical conventionality and pictur truth, this method of architectural draw manship in France may be considered product of the close of the last century, that date a precise outline had been consi sufficient, lightly shaded with Indian in bistre. In the present day, French arc tural drawings, in their smallest details coloured with an exactitude that in realit alone be justified in the representation of chromatic decoration.

Among the works exhibited at the *Sal* architects, the first to claim serious atte are the restorations of historic monur the importance of which cannot be too h considered, as also the often original talen played. To take an edifice in ruins, to m it, and depict it in its least details, excav foundations in search of portions buri time, consult history and local tradition from these data to restore a building, is s in the accomplishment of which takes pa spirit of research and criticism, of know and imagination. It is a work which f architect brings into play all his faculties up all his power; and, thanks to the pr in the present day of our knowledge c past, certainty is rapidly replacing doub hesitation. Never, says M. Guillaume, h theory of architecture been grasped with breadth; never have the periods which t of the builder has traversed, never ha forms which that art has created, been thoroughly mastered. While the great of the Renaissance confined themselves study of classic models, turning their att rather to the proportion of the orders th plans of the Greek and Roman building, present day the question of the transfor of styles is earnestly studied; the plan distribution and decorations of the mon of the past are more particularly consider

In France the French Academy at must be regarded as the home of these s From the very rise of that famous insti Colbert had made it obligatory that the st should produce careful drawings and inv tions of the most famous monuments of and this idea, at first neglected, was revi the Royal Academy of Architecture, p larly between the years 1778 and 179 present, each year, the architectural st who is about to leave the Villa Medici home the restoration of some antique ment. These drawings become the prop the government, which has already comm their publication. The subject may be from, Italy, from Sicily or from Greece. the last few years, these drawings hav exhibited at the *Salon*, and it is to this f owe the Restoration of the Acropolis of A by M. Lambert.

The Acropolis of Athens has often be object of important studies, and since Leroy, to whom France owes the first w Greek architecture, many savants and artists have in their investigations of tho toric ruins gained an honourable name. that the plateau of the hill is cleared *débris*, the moment has seemed a favourab for further researches; for Greek geni M. Guillaume not unaptly remarks, is s and what it embraces is so profound, th limit of an acquaintance with it seems unattainable. And now M. Lambert brought his contingent of hypotheses an coveries. His task has been to recon the monuments of the Acropolis such a existed at the time of Pericles, and he a to have consulted with care both the sp the texts. He has, it is true, added but to the investigations of Penrose on the con of the horizontal lines which form a pr in Attic architecture, nor to the observati M. Choisy on the occasional want of sym to be remarked in the lines of detail, plan of those buildings he studied. It is to the effect of the whole that M. Lambe paid attention, and the most striking feat his restoration is the entire suppression staircase of the Propylæa and the deter tion, for the first time, of the site of the of the Erephorean priestesses. To reje staircase of the Propylæa, to put aside th covery of Beulé, as also what has been t so universally admitted, the existence steps, which, from the platform where th of the Acropolis ended, gave immediate to the gates of the citadel, is a bold ste

t indefensible; it is difficult, however, to
the beautiful staircase which M. Des-
n and M. Boitte restored. M. Lambert's
s are those that M. Bournouf gave in his
on the Acropolis, published in 1877.
ns leave M. Lambert, therefore, to pene-
to the Acropolis by the natural roadway
s restored, and passing on the way the
os such as they existed, restoring the
s of Minerva Brauronia and Minerva
lé, the Parthenon and the Erechtheum, the
its of which in his plan he analyses and
ez. It is in the neighbourhood of the
theum that M. Lambert has placed the
of the Errephors. He appears to have
in the excavations remains of the founda-
between a wall which touches the house
priestesses, and the fortification, can be
a little courtyard, out of which runs a
se now closed, and leading directly to
ot of the rock on that side of the city.
taircase appears to be that known as the
se of Aglaurion. These dispositions cor-
d, according to Pausanias, with the
ns of the priestesses, and the restoration
Lambert may possibly be a discovery.
importance attached by M. Guillaume to
mbert's work is justified by the interest
subject; for what person is there whose
ion is not attracted by the mere mention
Acropolis? M. Lambert, in his con-
ous researches shown by these valuable
areful architectural drawings, restoring a
ment so famous, merits gratitude.
Loviot, who is also a *pensionnaire* of the
h Academy, has sent to the *Salon* a resto-
that of the familiar monument of Lysi-
at Athens; the work is, however, only a
atory study of a well-known model, but
h it possesses no small degree of interest,
g as it does an almost unique example
forms which the Greeks had given to
orinthian order when they created it.
ularly noticeable is the detail of a capital,
its perfect sculpture, and its lightness,
ing the opinion of those who trace the
of the Corinthian order to works of
ht metal. In their masterly rendering
beautiful originals, the drawings of
oviot meet all the requirements of the
t and the archæologist, and in the charm
ir colour would well stand comparison
uch of the work exhibited elsewhere in
lon, and whose chief aim has been to fill
e.
en as a whole, the exhibits sent from
have produced no little influence on the
ss of French architecture, and it is
illaume's opinion, that the works of resto-
that for the last half-century have been
l out with the ancient monuments of
have owed their first inspiration to the
ation of the antique.
atever may be the opinion of some, the
de Rome, about 1830, contained some
nut names. The works of Blouet, Gilbert,
u, Duc, Vaudoyer, changed not alone the
n till then held of antique architecture,
f that of the architecture of France; and
opinions were expressed in the famous
s of M. Vitet which provoked the forma-
f the Commission for the Conservation of
ic Monuments,—not alone to protect, but
tore the remains of ancient architecture in
e. The object proposed was to save these
from ruthless destruction by imperfect
ation; and from 1837 the new organisa-
was complete, and liberal grants awarded
e Government. We are not bound to
that its efforts were always successful.
service of the Historic Monuments Com-
n continues its work, and the spirit of
and Mérimée continues to inspire their
ssors. This year the Exhibition contained
a than twenty projects which are to be
d among the archives of the institution.
g these the most prominent is certainly
estoration of the walls of Guérande by
ul Bœswillwald. It is not that the fortified
of Guérande will be entirely restored, like
of Carcassone and Avignon; the munici-
desire to see only the historic Porte
ichel restored; and the drawings which
eswillwand has made are masterly speci-
of work.
have mentioned that there are no fewer
twenty drawings of the *Monuments Histo-*
, and it is with regret that we have to pass
with mere mention the works of M. Darcy,
is church of Mezières-sur-Brenne; of M.
oy, in his restoration of the church of Quarbec; and the excellent studies of MM. Sauvageot, De Laroque, Dussire, and Lonzier, all showing evidence of research and learning. They belong truly, as M. Guillaume remarks, to an order of labours which is worthy our special esteem; they constitute a portion of the immense monography of the monumental art of France in the Middle Ages.

It is with equal regret that limited space confines us to a but hasty review of M. Chipiez's remarkable and strangely attractive restoration of the storied towers of Assyria, of which the author presents four different types. For the first, the ruins of Kharsabad and Konyoundjick are laid under contribution, and the text of Herodotus, as also that of Diodorus Siculus, each of the seven stories of this tower being of a different colour. A bas-relief from the British Museum has furnished the elements for the second type of tower, with its double winding staircase. According to M. Chipiez, these two examples represent the Assyrian style properly so called. Lord Loftus and Mr. Taylor have brought forward the data in the very ancient ruins of Wartha and of Hour, the city of Abraham. The fourth type is purely Babylonian, as the last vestiges of the so-called Tower of Babel served as the basis of its restoration. The strangely unfamiliar shape of these towers is certainly imposing, and the covering of coloured bricks is no less effective. The drawings of M. Chipiez are excellent specimens of execution, and merit a place in an architectural museum, which M. Guillaume regrets has not yet been formed.

It is an equally practical suggestion that of M. Guillaume, that to each of these drawings should, for the future, be added a notice explaining their nature.* For the proper understanding of their object, to explain those questions which always present themselves in matters of restoration, such documents are indispensable. As it is, M. Lambert's notice on his work is in the library of the École des Beaux Arts; the report of M. Bœswillwand belongs to the bureau of the Historic Monuments Commission; and M. Chipiez has not, as last year, with his interesting study on the lighting of Greek temples, published in the *Revue Archæologique*, a notice on the towers of Assyria.

After the works above enumerated, there is a considerable lapse. The important service of the Diocesan Edifices does not possess its archives like the Historic Monuments Commission, and like the City of Paris; and it is a matter of regret that in this way we are deprived of the results of the excellent work of many conscientious artists whose duties are not alone confined to the restoration and maintenance of the noble buildings confided to their charge.

Among the modern works executed by private means, stands foremost M. Bouwens van der Boyen's able plan for the *Crédit Lyonnais*, built within so short a time upon the Boulevard des Italiens, of which it now forms so conspicuous a feature. Here at the *Salon* we are able to study all the plans and elevations, the skill displayed in which do no little honour to their intelligent architect, particularly the large glazed hall which occupies the centre of the building, reaching as far as the third floor. On the first floor the administration occupy the rooms "decorated in the severe style which is to be observed in England in analogous establishments; green hangings, doors and woodwork in mahogany, and furniture which give to all the rooms a unity and a gravity of aspect which are very remarkable." M. Bouwens van der Boyen has met on all sides with felicitations for the success of his establishment which so exactly, in all its practical and artistic arrangements answers the purposes for which it was intended. It is not the first time that this artist has attracted the attention of the profession; in 1875 he received from the Société Centrale d'Architecture one of its prizes for the design of a private house.

This intervention of the Société Centrale in the general movement of art is an important fact which deserves attention. Its encouragement is not alone afforded to domestic architecture, but to archæology; it awards its medal to the meritorious contractor, to the industrial artist, and to the intelligent workman, and this encouragement shows the active solicitude of the architects in France for all who assist in the elevation and progress of the art they exercise.

In this examination of the architectural drawings at the *Salon* this year, so many of which we have perforce had to pass over in silence, all which the visitor was able to see may be considered as constituting the French school, — a school, as M. Guillaume truly observes, rich in its elements, pedagogic studies, classic studies, historic studies, the application of art to our habitations and to all the exigencies of a civilisation daily progressing, the intervention of the Government, and of collective or private initiative under different forms, each of these manifestations occupies a place in the whole. It has been M. Guillaume's endeavour (and ours in submitting his remarks to English readers) to enumerate the forces of architecture in France; the author promising at a later date to give his impression of the actual character of these works. Was it not necessary, he asks, at first to draw attention to the merit which is hidden beneath the small number of drawings which are exhibited? Was it useless to state how many discoveries and creations may escape the notice of the visitor in the small space in which these drawings are exhibited? Is it not true that a separate room, and special notices inserted in the catalogue, would render the artists a service in explaining their works, and the public in allowing it to understand them? And would not this be so much the more necessary that the architect in calling upon the painter and the sculptor for the decoration of his buildings, should maintain the practice of the art in its highest expression and remain the master of the works?

* Not long since, in an article on the subject of the small space left at the disposition of the architects at Burlington House, the *Builder* proposed that the architects might have a special and detailed catalogue containing professional information.

THE ESTABLISHMENT OF A NATIONAL THEATRE.

THE arrival in London this season of the Comédie Française would almost seem an omen of good portent at a time when the discussion as to the establishment of a National Theatre in England has been again brought before the public. After the example given us by the perfectly-acted *répertoire* of the French theatre, which has been so warmly received, the proposal that we should arrange to possess a company of our own, which might be relied upon as interpreting intelligently our own masterpieces, should not be again allowed to pass unconsidered.

In the Comédie Française, in the mode in which that justly-famed company is organised, in the manner in which its members realise the pieces which they represent, the promoters of the National Theatre have, it is often urged, a model to set before the public of the institution that they are desirous to organise in London; and apart from the patronage of the State, which the French theatre enjoys, there exists but little valid reason why such a similarly organised body of actors and actresses should not be formed in London; indeed, inquiry into the origin, history, and development of the Comédie Française in every way shows the ease with which an English National Theatre might be established.

It is not our intention to enter into details with which the journals have lately made their numerous readers familiar, of the history of the French Theatre, of Louis XIV.'s patronage of Molière, of the reason for the playbills bearing the magic date of 1680, and of the successive changes of residence of the Comédie Française, till their final establishment in their now familiar home in the Rue Richelieu. It is not into a review of the innumerable pieces produced by the *comédiens ordinaires* at various times, *du roi*, *de l'empire*, and *de la nation*, or into a consideration of the long-fought battles of the idealistic and the realistic schools of acting, which ranged the frequenters of the famous Café Procope into two camps, as noisy often as those of which the French Chamber has recently been the scene; it is not into the interesting minor incidents of the Théâtre Français, when Louis Seize court dresses, with hoops and head-dresses, ceased to disfigure Molière's comedies and Corneille's classic tragedies; or when those privileged noblemen, whose position allowed them a chair on the stage, were driven before the curtain; when the pit was at length furnished with seats; or a detailed account of those gorgeous evenings when the Court in all its splendour graced the over-heated and wax-candle belighted theatre with its presence, when two strapping grenadiers kept watch and guard at each end of the foot-

lights, their flint-locked muskets duly loaded and primed; it is not of such incidents in the history of the Comédie Française that we would wish to speak, but rather of the administration of the institution which this summer has gained the applause of our London public. It may not be uninteresting to see by what means, under what regulations, the French theatre has arrived at its present position, and thus merited the well-earned praise it has so long received from all lovers of the drama, who have appreciated the intelligent interpretation of masterpieces familiar by private study.

It was with no small degree of reason that Napoleon I. spoke of the French comedy as the glory of the French nation, the opera merely its vanity; how many happy hours of his once obscure early life in Paris had he passed in the enjoyment of the *comédiens ordinaires du roi*, and their interpretation of the masterpieces that then existed in French drama and comedy? The importance and the influence of this institution the Emperor fully understood, when in later years he had it in his power to legislate for the Comédie Française; it is, indeed, in a decree of his, the famous decree of Moscow of 1812, that we find the existing organisation of the French theatre definitely laid down. This, and two later decrees (April 27, 1850, and November 19, 1859), form at present the whole of the legislative documents which regulate the Comédie Française. With these to quote from, it is needless to refer to the fast receding days of the Grand Monarque, or the royal ordonnance of October 22nd, 1680, which instituted the Comédie. In the decree of 1812 all the previous regulations, ordonnances, and reports successively signed with the flowing signatures of the *surintendants des menus plaisirs* of Louis XIV., Louis XV., and Louis XVI., are resumed and brought together.

It is our hope that, by this slight analysis of the organisation of the French comedy, it may be shown how far from difficult it would be to organise a somewhat similar institution in England. A very little inquiry suffices to show how really unimportant an influence in the success of the undertaking is the Government patronage which, in France, is exercised so widely. It is true that the French theatre is subventioned,—or, as we should say, supported,—by the State yearly to the amount of 240,000 francs (some 9,600*l.*); but with that active private patronage which distinguishes in so marked a manner our country from France,—a fact, doubtless, due to their traditional Government interference,—there is little reason to fear a serious obstacle on this score.

From its first establishment the Comédie Française may be looked upon as a society which, while serving as an amusement to the court, was organised in such a manner as to consider its own benefit. With an administration at its head,—under the supervision of the *surintendant*, in the old *régime*, under that of the Minister of the Interior, or, as we should say, of the Home Department, since the beginning of this century,—the Comédie Française is managed by a committee formed of its own members, with its manager,—technically termed the administrator-general,—as chairman, to whose united consideration the affairs of the institution are submitted previously to being presented to the Minister.

By article 30 of the Moscow decree this committee is formed of six male *sociétaires*, or members of the society, together with a secretary. Each year the manager nominates these members. Their duty is to prepare the budget of the society for presentation to and acceptance by the general assembly of the *sociétaires*; to inspect each portion of the house; to verify the receipts, &c. The treasurer is nominated by this committee, but no person can hold this position without having previously furnished a guarantee in property to the amount of 60,000 francs (2,400*l.*). At the close of each month the receipts and expenses are examined by the committee. From these receipts are taken, first, the rights of the author, then all the expenses, the salaries, and the sum set aside for the retiring pensions.

The general assembly of all the *sociétaires* is convoked by the committee of administration, at the end of the year, to deliberate on the budget of the coming year, and again at the beginning of the year to examine the results of the past twelve months; the general assembly is convoked also whenever any unusual difficulty arises affecting the society, and, indeed, whenever the manager thinks proper.

To the administrative committee falls the control of everything which concerns the formation of the *répertoire*, or list of stock pieces, the time of *débuts*, the reception of new pieces. The manager, on his part, determines the exact distribution of the parts, and with this object prepares a list of all the pieces to be represented, together with the names of the actors and actresses of the society who are to play the duplicates; he distributes the *rôles* according to his knowledge of the powers of the company; and this is done in such a manner as to avoid as far as possible the chance of misunderstandings. Of the regulations concerning the parts and their duplicates it is needless to speak at length.

The stock of plays upon which they intend to rely is decided upon by the administrative committee, to which for this purpose are added two lady *sociétaires* (conformably to the decree of December 9, 1780). Their *répertoire* is prepared in such manner that each *rôle* has its duplicate to replace an absent performer. To attend to the observance of the *répertoire* are added to the committee two *sociétaires*, known as *semainiers* (they are at present termed *suppléants*), and each *sociétaire*, or member of the society, has to assume this position in turn.

The committee see that all beginners shall be heard by the public in their several parts, at least three or four times a month; they also see that actors or actresses on trial shall be allowed the opportunity of showing their advance, and they shall see that the doubles have also the means of appearing before the public. Every month the committee see that some important piece, or two minor pieces, are revived or produced for the first time. On the Saturday of each week the *sociétaires* assemble, and the piece for the next week is fixed upon; all present are permitted to make their observations or objections; but, once the *répertoire* agreed upon, no change can be permitted without ample reason.

As *débutants* the manager engages any actor or actress whose powers he may judge sufficient; after a lengthened trial, if of decided ability, the actor or actress becomes a *pensionnaire* at a fixed salary during a year, after which he or she is admitted, on approbation of the committee, as *sociétaire*, with all its rights.

The *sociétaires*, it may be observed, divide the profits of the association according to certain fixed rules. When the *pensionnaire* is admitted to the society, he or she is allotted a quarter of a share, after two years' admission an eighth part of a share is added. With regard to the shares, there exist twenty-four; one of these is set aside to prepare for unexpected expenses, but which at the end of the year, if not used, is divided among the society*; half a share is set aside to augment the retiring pension fund: half a share is expended on the scenery, decorations, the reparation of the house, &c.; the remaining twenty-two shares being divided among the *sociétaires*, according to their several rights.

With regard to the retiring-pension, each *sociétaire* on reception signs an engagement to serve the society during twenty years, after which time he may at his pleasure retire on the full pension, some 4,000 francs (160*l.*) paid, half from the funds set aside by the society, half from the subvention of the Government. The artiste who continues to play beyond the term receives for each year an additional pension of 200 francs (8*l.*).

In case of inability to fulfil the twenty years' term, the *sociétaire*, by permission of the manager, may retire, receiving in this case a proportional pension.

The reading of new pieces (previously examined by the reader†) takes place before a committee composed of nine persons chosen from among the elder *sociétaires*; the acceptation or refusal of the piece is regulated by the vote of the majority of the committee, which has it also in its power, while approving a piece, to demand its correction in certain points. The share of the author in the receipts,—a third taken off for expenses,—is regulated as follows:—An eighth for a piece in five or four acts; a twelfth for one in three acts; a sixteenth for one in two acts, though an arrangement may be made between the actors and the authors.

* What we in more than one of our Government offices term "the cake."

† At the present moment M. Guillard, the excellent librarian of the Comédie Française, occupies this post, which resembles that attached to every great publishing house.

With respect to the reader's duties (there three readers in all), he is called upon to m the committee, on each piece he reads, a rep summary of the piece, either in its praise o demnation; and here it may be mentione every piece presented to the Théâtre Fr follows regularly in the order in which received. The Comédie seeks authors, wi invidious distinction, and is as equally dis to play the work of the most unknown of au as that of the most popular. Their trouble is unfortunately in the difficulty meet in obtaining such works. At the pr moment, of the 300 pieces annually pres to the Comédie, by unknown authors, w very few exceptions, none are suitable.*

Among the "general dispositions" it w found laid down that the Comédie cann pense giving every night a representation, penalty of paying 500 francs fine to the All disputes of a serious nature, such committee are unable to deal with, are re to a council, composed of three jurisco two advocates, and the lawyer or notary Comédie.

Respecting the pupils for the Co Française, the decree of 1812 bears (in eighty-nine) the express statement that Conservatoire shall be kept eighteen pup nine male and nine female,—whose age not be less than fifteen; these pupils attend all the different classes of declam &c. With this object, independently o professors of the dramatic art, shall be nated two "rehearsers" of tragedy and co —who, in the interval of the classes, shall the pupils. In addition, there is a profes grammar, history, and mythology, in th plication to dramatic art. Every ye pupils are examined by the professo directors of the Conservatoire, and those abilities are proved are afforded the oppor of making their *début*, may be receiv salaried *pensionnaires* during a year, and as *sociétaires*.

Such, hastily analysed, are the general lations by which the Comédie Franç managed, and the means by which it ha enabled to ensure, if not a constant sup talented interpreters,—such, no artificial of education can provide,—at least a s sion of intelligent and competent actor actresses, who delight generation after g tion with the representation of plays have in this manner retained their old and charm, their reputation and their m

It is by care in the conservative preser of its organisation, that the Comédie Fra enjoys the reputation of being "the first t in the world," where are to be seen actor actresses distinguished for all which a education can add to capable and gifted nature.

And we in England, long as we have accustomed to look to France,—so accus that we seem to have in many cases for our own native merits,—possess no M Theatre where we may see intelligently sented, not alone the favourite tragedie comedies that delighted our forefather those modern works which are to delig grandchildren, and the traditions of whic our duty to hand down to them intact public basely allows each stage of the polis to be invaded by the expensively cos and rejected rubbish of the Continent im from the theatres chiefly frequented by volous, and, in most cases, a provincial incapable of appreciating the well-cons and well-interpreted subtleties of the comedy.

In Paris, at least, one may, on the same ing, choose between the certainty of pleased at the Comédie Française or the certainty of being bored at a bou theatre. It is but just that in London the goers should enjoy a like privilege, and exists no solid reason why they should satisfied.

Without the need of Government supp society might with ease be formed and org on all the principles which regulate the Co Française, after a fully-authorised comm had entirely mastered the system by that institution is regulated. The subv

* The author has his right to free entry as soon piece is rehearsed, and preserves this right three after the first representation, for a work in five acts; two years for one of three acts; and one year of two the author of two pieces of five or four a of three of three acts, or four of one act, retains h entry for life.

he Government might be replaced by the aid
a certain number either of wealthy friends
by subscription; an administrative com-
tee being formed, in which the dramatic, the
ary, the artistic, and the practical element
uld be well represented; a manager elected
hairman of this committee; a choice made
stors and actresses, as in the French Comédie,
rst to enter the society as *pensionnaires*, at
xed salary, and admitted, after satisfactory
l, as *sociétaires*, with a share in the society;
amatic school founded; a moderately-sized
tre at first hired, where the *répertoire* which
committee should fix upon should be pre-
ed to the public.

hen we should enjoy again, as did our
ers, the untouched mine of English drama,
le year by year could be produced new
ks to place among the stock plays for the
re; the funds as they came in would, as in
French theatre, be devoted to the salaries
he actors and *employés*; the library,—an
ortant feature,—the costumes and scenery,
other very important features, the decora-
of the house, and so forth.

few seasons' trial would suffice to show
ther the adversaries of the scheme for the
blishment of a "national theatre not wholly
rolled by the prevailing popular taste," are
t or wrong. We could have no better
norial of the visit of the Comédie Française
ngland in 1879 than a sister-establishment
ded on a similar basis.

CHITECTURAL MUSEUMS AND THEIR FUTURE.

must needs have struck, at times at least,
thoughtful few who look broadly at art, how
much there will and must be for the men
artists of the future to do. It is hardly to
magined how much. It will not only be for
future to bring into being and existence
t is not now even so much as thought of,
it will needs be original in method of doing
n a new *modus operandi* in art, in another
hod of artist action, and in a return to the
node of working out any art object, what-
it may be. This alone, if there were no
r difference, would separate sufficiently the
ent from the future. But there will be
than this: the multitude of objects and
ains of the older and past art will be looked
om a wider and more instructive point of
than is at present, perhaps, possible; and
ts, without doubt, will be made to bring
nples of these together, for purposes of
y, far exceeding any we can in these days
for, or, perhaps, imagine. Art, without
bt, will be cultivated, and art objects brought
being, for its and their own sakes, and for
influence such objects are capable of exer-
g over and in the human mind. Nay, might
not go yet further, and affirm with some
ainty, that art in the future, including archi-
ure, will be found to be capable of exercising
influence over existence now unthought of,
thus will elicit sympathy from multitudes
now, as things are, hardly look at it?

e are led to these thoughts, and all but
es, by much which the late eminent archi-
, Sir G. G. Scott, wrote at times, giving ex-
sion to his own thoughts on this subject, and
t the perplexities of art and architecture,
of those whose vocation it is to do the work
bringing them into actual and useful
tence. It may to many seem a very simple
all but obvious thing to get together, into a
gh room, a number of art details, to cata-
e them, and then to make more or less use
hem, by study, or by the copying of them,
er by drawing or by the actual cutting or
ing copies of them in material. But not so.
a subject of no small perplexity and trouble,
leads into inquiries and questionings but
e thought of before. It matters but little
t the "styles" of art or architecture are
which the examples and details have been
gments, or from what countries or what ages
may have come. The subject is equally
and strange, and perplexing, and really
ign to the present state of things. It seems,
adays, so natural, and so much a matter of
se, to copy literally, and line for line, a
hic detail or a Gothic moulding from a
ish church or a cathedral, that no one
ams for a moment of there being anything
ticularly new or strange about it, especially
n such detail or moulding is to be seen on
cathedral or church wall, or even as
drawn on the pages of an illustrated book. But on the walls of a museum,—even a small one,—this feeling of certainty and matter of course is changed in a moment, by a glance, may be, at the opposite wall, whereon some detail from a New World temple or other strange building may happen to hang,—say from Mexico. No one thinks of copying or reproducing this in any way or for any purpose. It is simply looked on as a mere "antiquity," and as a something altogether impossible to make use of or to adapt or fit to any purpose of to-day whatever, so foreign is it, and so utterly has it passed out of use and memory. Take another and more familiar instance, and one which will show how much there may be found that waits for further study, even in comparatively familiar things. On the wall of such museum, however small, there will pretty certainly be found some examples of the marvellous skill of hand and cunning of mind of the antique Greek, say of the golden age of Pericles and of Phidias. No modern architect or draughtsman would be thought to be doing anything strange or out of the way, as we know, by making literal copies of these, be they mouldings, or ornament, or antique-robed figures, and transferring them, as is done daily, into the architecture of a modern building, no matter hardly of what kind or for what purpose. The sole difficulty is to make sufficiently close and accurate copy of them.

But go but a step further, and get but a feeble glimpse at the earlier and more archaic Greek, or, say, Etruscan, and again the hoar antiquity and strangeness, as from another world, of the details, comes before us, and no thought is for a moment entertained of making a copy of or reproducing these for any purpose, in a new structure, whatever it may be intended for. It might be hard to say why this should be so; for the archaic Greek is to the full as impressive and as workable as the more advanced and later. If the Museum collection should happen by happy accident to contain in a glass case an Etruscan vase, with figures and "architecture," it may stand a fair chance of being copied in earthenware, and so made useful and familiar, but no man ever thinks of copying the architecture on it, and forcing it to do duty in the front of a modern house, so dead is it, and so entirely of the past of things mundane! In a museum, three facts come before the student with some force, at times, in spite of himself, and he perhaps comes to wonder how it has come to pass that the special and particular styles, either of art or architecture, have been, as they have, picked out, and brought into daily and household use, and how it is that others have been passed by and neglected. And then, again, knowing where he is, and looking at these foreign and far-off and all-but-forgotten things of the dim past, he looks about for a something of our own,—the simple growth of the country he was born in and lives in.

It may perhaps interest some here to be told that nothing seemed to delight Scott more than the transfer of Ruskin's Venetian Gothic casts from his own possession to the museum. He thought the study of them would throw a fresh light on matters Gothic, especially among the stone-carvers. It is somewhat curious this, inasmuch as in his "Recollections," he says that he never thought the Italian phase of Gothic at all adapted to English use, though the study of it generally is necessary to the perfecting of the revival of English Gothic here. These special copies of Venetian Gothic work, it may be further mentioned, are many of them from the Doge's Palace, and show the method and character of Italian or Venetian Gothic carving in stone, and how the Gothic carvers then and there made use of natural forms, and brought such into active and useful service. But valuable as such details doubtless are, as things to be studied, and drawn from, and copied even in a new and modern building, there is yet more to be found in them than this of the useful and serviceable: it is that of the evidence they in themselves afford of the individuality of the actual stone-cutter and working-man, and his inherent power of work, and of his being, independently of his master, an artist. We but glance at this, though it was in true fact the very soul of the whole idea.

And this brings us at once to our own special style of art and architecture, the Gothic art of England, and that in which Scott was so much interested, and to which he did so much, one way or another. And here, indeed, we come to matters not a little curious and startling, if we but look at them with open and unprejudiced eyes, and on the walls of a museum we are, to a very great extent, able to do this; more so, certainly, than in the very buildings they came from. In the actual buildings they yet serve a purpose; here, in a museum, they wait for it, and it has to be sought after. Sir G. Scott has, in his book of "Recollections," hardly done himself justice. He never cared to travel, even in the Museum, small as it was, through the perplexities and mysteries of the foreign and dead antiquities, through Greece and Rome, still less through yet older and yet stranger antiques; he went straight to his own *English Gothic*, and found all he needed in it. Nay, more even than this: he did not care for "Norman," to use the well-known term. He looked on its fragments as "antiques," not again to be *utilised*. Much might here be said. He even affirmed that we must not have too much of it. A museum of the whole world's architectures, then, Scott did not and would not have founded, or even cared for. His very feeling for Gothic, and a special *phase* of it, was too powerful, and religiously earnest for it.

In Scott's account of his museum experiences he would almost seem to have lost sight of and forgotten much of this, for he could but barely endure the thought of a general or world-wide Museum of Architecture. He thought to confine it to the Middle Age Gothic, and more especially to a special phase of it,—the Middle Gothic, as it has been termed, and thus to centre the mind of the architectural student, and the stone and wood carver, to what he thought the best work. He looked on the Early Gothic as foundational, and, so to speak, as "trial" Gothic; on the Late, or Perpendicular, as debased Gothic, and as containing the elements of decay and extinction; but on the Middle or Decorated Gothic, as the perfected expression of it, and as the point to start from, and as affording the selected forms to go by, and to copy, both as to general form, mouldings, ornament, and details, figure sculpture inclusive. It is, of course, beside the question to inquire as to how far he was right or wrong in this, but it goes far to prove, and to show clearly, what his thoughts and wishes were as to architectural museums, and how far they were as at present embodied. We are here simply stating a few additional facts, and pointing to some of the many difficulties of doing so new a work in an age which, to state the truth fairly, is hardly prepared for it. If any who read should demur to this, let them but note what is done, and now doing, with the "Architecture" in the British Museum.

Many more thoughts crowd on us here, but we must needs suppress them, but would remark the very curious fact of the absence in this book of a life's work,—so long and so active, and so full of experiences,—of all note of the momentous difference there is between the mode of production and "progress," to adopt that expressive word, of Gothic art and architecture as it is told us, even in the Museum collection, in past and instinctively Gothic times, and the present of Gothic "revival," as so called, and of which Scott himself was so distinguished a master and adept. In the present, as all so well know, *precedent* is everything, and the one thing ever needful, and the more accurately and truly copied, the more valuable the resultant work. But was this so in past days, when to copy a thin old detail was a thing unthought of. How, then, did they of that far-off day work? And, then, again, as to the executive workmen, those who with hands somehow or other built all our churches and cathedrals and castles and quaint town-house buildings. Did they, *i.e.*, in past days, ever design anything, as well as execute it? Momentous questions, and hard to answer, and we could well have wished that in this long-life experience, and ever varied study of so many buildings, in so practical a way, they had filled a larger space in this written record of a life's work.

Petersfield.—The charity of Churcher's College is about to be resuscitated. The governors recently held a meeting, at which they accepted the tender of Mr. John Crook, of the York Building Works, Northam, for the erection of the new buildings, and the works will now very soon be commenced. The buildings will stand on an elevated site just outside the town. We understand that eighteen months is the contract time, and that the total cost will be between 11,000*l.* and 12,000*l.* Mr. Crickmay is the architect.

EXCAVATIONS IN OLYMPIA.

DURING the past month the work of excavation which is being carried on at Olympia by the agents and at the expense of the German Government has been pursued with unremitting diligence, and has resulted in making some further valuable additions to the discoveries already announced, including three heads and three torsos in marble, besides some important inscriptions. Much interest is felt in the excavations, undertaken with a view to add to the remains already found of the groups of the pediments belonging to the east of the Temple of Zeus. The head of Kladeos, which was found here in a most excellent state of preservation, is an addition of great importance. It was on the 1st of April that it was discovered among the remains of the late walls at the southern end of the Echo Hall. The neck fits exactly on to the torso found in the first year of the excavations. The face is youthful and beardless. The hair is cut short, and is plastically marked only at the edges. Altogether, the head confirms the view suggested by the posture and form of the body, that that youth who is lying in the right corner of the pediment, leaning on his elbow, and reclining on his stomach, and who is looking up at the meeting of the Olympian heroes represented in the middle of the eastern pediment, must stand for the smaller and, so to speak, more youthful stream; while the broad-flowing Alpheios is personified by an older man, couched in an attitude of dignity. The head, which is looking up with vivacity, but which in expression and form still preserves the characteristics of antiquity, appears, in comparison with the powerful shoulders and the broad-arched breast, rather small. The river-god himself presents to us precisely the type of those Greek youths of the best period of antiquity who used to practise at this place in the most celebrated gymnasium in the world, and train themselves with a view to render their limbs strong and supple. In the rude and simple posture which is given to the figure there is no trace of the dreamy feeling of nature generally visible in the statues of river deities, which are usually placed in an attitude of luxurious ease,—statues which are the works of an age of greater perception and refinement.

Among the numerous recently-discovered fragments of the eastern pediment, we shall only refer to one of the most important. This is the entire left leg of an aged man, seated in a meditative attitude. That such a discovery should have been made in this spot is not a little surprising, since it proves that here, at the eastern end of the Altis, we have found considerable portions of statues belonging to the western pediment. This fact, important as it is in its bearings on the future researches into the *débris* of the western pediment, is to be accounted for by the use to which the colony that was last settled on the eastern side put these remains in the building of their cottages. Before the west front of the temple, on the other hand, we have found limbs and portions of the groups of that pediment freely scattered about, and which had never been employed as building materials, obviously because there was no colony of any extent settled in the neighbourhood. It was in this free state that we found, at the eastern end the larger portion of the massive legs and the right hand of the colossal figure forming the centre of the western pediment. These fragments were found in the ground about 170 mètres distant from the body to which they belonged. It is a very fortunate discovery, for it is only now that we can properly appreciate the astonishing slender figure and the very lofty stature of this colossus. His right hand, which, in the course of putting the statue together again, has, up to the present time not been completely recovered, may afford an important clue towards fully clearing up the real nature and character of this figure. It is the more to be regretted that the fingers of this hand are still wanting, as this defect prevents us as yet from making out the gesture and action of the figure. Several other limbs of figures belonging to the western pediment, as, for instance, the lower part of the leg of one of the old men who are in a recumbent position, a fragment of the body of a centaur who is carrying off a child, &c., have likewise been exhumed from among the ruins of buildings on the eastern side. This is a significant fact which will stimulate us to pursue with energy further researches in this quarter.

Among the remains of metopa we have found a fragment of the helmet of Gergon, and, at the northern end of the Echo portico, a head of Hercules, looking to the right,—an object which is the third of the kind we have found during this spring. The other marble fragments requiring mention on this occasion as being among our most recent discoveries, belong almost all to the Roman period. First, we have, in a very good state of preservation, a head of Faustina the elder, who was the wife of Antoninus Pius. This head, with the neck, fits exactly on to a torso of a woman coming out of the chapel of Herodes Atticus. Next, there is a statue of a female, draped, but without the head. To judge from the spot where this torso was found, it is one of the statues of empresses by Metroon. Finally, we have two torsos of men nude. They were obtained from among the ruins of the walls of a cottage built on the site of the Leonidaion. These torsos seem to have belonged to the class of idealised portrait statues. We must not omit to mention, in addition, a hand, of truly colossal proportions, in Parian marble. From its execution, it seems to have belonged to the best period of Greece. This fragment was obtained from the eastern Byzantine wall. It seems clearly to show that somewhere or other under the soil of Olympia there is bidden another colossal statue in marble, executed in a superior style of workmanship, and for which we must make a search hereafter. Almost in the same spot we found, in a deep stratum of earth, three valuable ancient inscriptions upon bronze, and of considerable length. In the supporting wall belonging to the Byzantine period, and situated to the east, we found a marble pedestal of great length and height. Its purpose was to support the work of art which Mummius, after the defeat of the Achæan league, had reserved from among the plunder for the purpose of dedicating it to Olympian Jove. Judging by its elongated form, this pedestal could not have supported either of the statues of Jupiter mentioned by Pausanias. We have, therefore, here a proof that Mummius, by dedicating additional gifts, endeavoured to wipe out the sad memory of the burning of Corinth. It is remarkable that the dedicatory inscription which is engraved in identical terms on the two sides of the pedestal is, in the one case, written in the alphabet common in the days of Mummius; while, on the other side, it is repeated in characters belonging to a later epoch. The explanation probably is, that perhaps in consequence of some alterations in the laying out of the roads, the statues were eventually placed in a different aspect from what they were originally, and that the inscription was then repeated owing to the older lines being out of sight of an ordinary spectator. Another memorial of the epoch when Greece was under the domination of Rome has been discovered in the south-west angle of the Altis, which has now been completely cleared. In the midst of the numerous elongated pedestals which supported equestrian statues, and of which we here find a very fine row, all standing in the original sites, is a square block of limestone, upon which a Macedonian of Thessalonica, who was a friend of the Romans, had erected a statue of Q. Cæcilius Metellus, the conqueror of Macedonia, "in memory," as the inscription informs us, "of his virtue and of the benevolence with which he had not ceased to treat his (the dedicator's) native city, as well as the rest of the Macedonians and the other Greeks." This same part of the ground would appear to conceal several other memorials of Macedonians. Thus we have found there in addition an inscription of a Macedonian artist hitherto unknown and whose name was Herophon. We have further found there the pedestal of a statue mentioned by Pausanias, that, namely, of Alexander the Great's courier or messenger, Philonides, "who travelled over Asia." Two other pedestals of dedicatory statues, with inscriptions, were found at the same spot. One of them bears the name of the Elean, Antigenes, victor in certain chariot races; the other has the name of Lucius Cæcilius Rufus. Next, towards the south of the Philippeion, comes a pedestal, upon which are drawn five representations of Victory (Nike), surrounded by wreaths of laurel. There are further two pedestals of statues, in honour of generals of the Achæan league, namely one of L. Pompeios Krateros, found to the south of the Heraion, and one of Tib. Claudius Pelops, to the east of the Temple of Jupiter. Lastly, an exceedingly interesting fragment of a decree which appears to refer to the celebration of the Olympic games, and in which mention is ma of the honours that ought to be shown to Roman emperors. In the way of bronze articl besides the daily harvest of small fragments vases, coins, &c., there are this time only limited number of objects to be mention First of all, there is a muscular bronze arm natural size, belonging, probably, to the sta of an Olympic conqueror, erected on the sou east of the Temple of Jupiter; next, we ha the back of a cuirass; and, finally, the hand of a vase, formed of the winged figure c man in a purely Assyrian style. This is second object of this particular type which been disinterred from under the soil of Olym and which is of such curious interest for history of art.

DR. SCHLIEMANN AT TROY.

A LETTER has been published in the *Ger Correspondent* from Dr. Schliemann, gi some particulars of his recent excavations the site of ancient Troy. In the presence Professor Virchow and Director Burnouf, have recently paid a visit to Troy, there w two important discoveries made, consisting objects of personal ornament. The first lot found on the eastern side of the excavati among the ruins of a wall of a Trojan house wi had tumbled down. It comprised the follow objects, all of gold. First, three discs, in form of flowers, measuring each 8·25 centimè in diameter, and being *repoussé* work, simila No. 251 in the Mycenæ collection; second very remarkable ornament for the head. 45 centimètres in length, and the upper por is in the form of a basket, and is studded numerous small rings, which are filled in wi glassy material now of a white colour, originally in all probability blue. Han from this object are ten gold chains, each sisting of 150 links. To each of the links attached a leaf, so that, in all, there are links and an equal number of leaves. At end of each chain hangs an image or idolon. whole lower portion of this head-ornamen well as the ten chains, had, in consequenc the carelessness of a workman, been thr along with the rubbish on to a barrow, in c to be shot out down the side of the hill Virchow's sharp eye discovered it on the ba and rescued it for the benefit of archæolo science. The second lot was found at a d of 33 ft. in the great wall to the north-we the gate. Among the articles of this there is one of great interest, name silver *kella*, which must have been empl in libations or drink-offerings, since adorned with an ornament in *repo* work in the form of an omphaline shield. has likewise a long stem, ornamented with chasing of a tree and terminating in a l ring. With this lot there was further foun number of gold ear-rings, some large, o small; two of the rings had long pend There was also found a mass of silver ear- melted together, and hundreds of silver likewise melted together, and to which a l number of small gold articles had simi been united by the action of fire. Finally were ten gold ornaments, with four sp similar to No. 297 in the Mycenæ collect likewise a mass of gold, pearls, &c. In an spot, along with several beautiful object silver dagger was discovered, the handl which terminates in a cow with long h Dr. Schliemann states that, in spite of a and minute search, vigorously prosecuted the 1st of March, he has failed to find further ornaments of any consequence, an accordingly concludes that he has now exhau Troy. Among other things, however, whic addition to the objects above mentioned, been brought to light in the course of this y excavations, is a long street or lane, whi only 1·42 mètres in width, and which is p with large flat stones.

ARCHITECTURAL SCHOOL, ROYAL ACADEMY.

ADMISSIONS, JULY, 1879.

First-class Students.—Percy Green, W. T. W. G. R. Lewis, and A. T. Kirby.

Second-class Students.—C. P. Leach, A. E. H F. Littlewood, W. Bassett Smith, J. John Jones, Hooper, and C. A. Smith.

Probationers.—C. Marshall, F. W. Richardso Bucknall, E. G. Hardy, B. J. Dickson, J. C. Ham G. Frisch, A. J. Haynes, J. H. Curry, E. A. Woo and J. W. Simpson.

IRISH ARCHITECTURAL REPRESENTATION.

NG published a statement a few weeks specting architectural representation in and the "dead-and-alive" condition of h Institute of Architects, our remarks a reply from Mr. Thomas Drew, an d member of the council of the Irish body. erted the communication without com- vaiting an opportunity that was likely to and which has happened since, enabling scertain the state of matters for our. We have cast about extensively through and suburbs of Dublin, and made in- among architects and engineers of old , some being members of the Irish e, and the conclusions we have formed go ot thoroughly, to corroborate many of ertions made as to the unsatisfactory n of the Irish Institute. The architects n, excepting even the quota of doubtful s of the profession, are said to amount or more times the number set down by w, and many of these are quite willing iate on a proper basis for organisation. the younger members of the profession e anxious to have a representative body e elder brethren, and from what we have it is not unlikely that in the coming steps will be taken to revive the Archi- Association that existed for some time formed useful labour in the same lines rchitectural Association of London. It n a matter of great regret that the ody in Dublin and the Belfast Associa- e not continued, for both certainly com- well, as their proceedings will show. been at all suspected that the council of itute would allow what was considered nt body to dwindle down as it has done, nergetic efforts would have been made the junior association together, even modified conditions, or on a basis to the local circumstances of the To say the social, literary, scientific, vivial charms of Dublin are such as to rchitectural organisation and meetings ficult or impossible in Dublin, is to say ng that will not be generally received. ould it be more difficult for architects to ordinary session in Dublin, than engi- members of other professional bodies ? possesses ten times the attractions of and so proportionately do several other nd large towns, yet the architects of aces, senior and junior, can find sufficient sides attention to social and convivial en so inclined, to do useful labour for the of their profession. We visited the nd libraries, museums, &c., of a few of rned bodies in Dublin, and we found e of wholesome organisation and valu- entific and literary work. We will not ny invidious comparisons, but certainly d-quarters of the architectural profession in at present, and for several months past, t been conspicuous for labour within or come. We speak plainly, and without e, for it is our desire to see a healthy nstitute formed, and in working order. ire to see the affiliation of the pro- l bodies throughout the kingdom with tral one, an affiliation in spirit and pur- r the general good, each city and town same time maintaining its local s intact. No valid excuse can be ad- why Ireland could not support a strong ive Institute. Outside Dublin, in Cork, Derry, Limerick, and other cities and there are a number of respectable archi- ith a fair and increasing practice. Many would doubtless join their brethren in the if a good active council and energetic ry were to be found at head-quarters. are petty jealousies rife and unkindly existing in Dublin, no doubt, among rs of the profession, but in what city and re there not dissatisfied beings, and where e go that we shall not hear and see some ant things ? In wealth or population of no comparison can be drawn between and Dublin; but as regards wealth, at present is rich and prosperous enough, lding speculation and industry promising to make a number of architects feel easy nd their business and treat their clients Indeed, the building industry for many n Dublin and other cities in Ireland may ten down as one of the staple trades in ntry. In Dublin since the decline of several old local manufactures, the building trades have afforded the chief employment of the artizan population. Dublin architects have far more to do than formerly, and of course their numbers have increased. This increase is one reason why they should be associated, for their non-cohesion or separation has led to the cropping-up of evils which might be expected, evils and abuses which are injurious to the profession, and which can never be minimised until a truly representative architectural body exists. The Royal Institute of British Architects can now answer for the professional integrity of its members, though it is possible still for a member to fall, but if he does, he must "fall out" of the ranks of the honoured corps. This standing scrutiny and discipline will be needed in Dublin whenever a real and active living Institute is founded. At present it is asserted that there are some unworthy members of the order,—men calling themselves architects, who accept bye-commissions. A respectable architect, of fair practice in Dublin, offered, some time ago, to give 20*l.* to any one who would come forward and "bell the cat." That the cat was not publicly "belled" was owing to more than one reason, but chiefly to the fact that in no place in Europe is the name of an informer held in such detestation as in Ireland. Architects, too, have always been reluctant to inform, even on an unworthy member of the profession, and let him fall into other person's hands. In the meantime the habitual offender thrives, to the injury of his brethren, and to the disgrace of the profession; and outsiders, never prone to judge leniently, denounce the whole body for the sins of the unworthy few. It is plain, at the same time, though one architect may not inform on another for sins of omission and commission, some sharp means and measures are necessary to bring an offender to book.

It was stated in a building case in the Court of Queen's Bench, Dublin, that the architects in that city accepted bribes. Now, if such an insinuation or charge were made in the London law courts against any of the members of the Royal Institute of British Architects, think of the indignation it would justly provoke, and how soon the false charge would be repelled, and the accuser called upon to substantiate his statement.

When the Council sings dumb, well may the body at large wax indolent and indifferent. We were informed that several respectable builders in Dublin are as anxious to see architecture worthily represented and its interests protected, as are a number of the architects themselves. Some of them, too, would willingly subscribe towards giving a testimonial to the person who would courageously undertake the task, and succeed in bringing to book any architect who was known to be degrading his profession.

The conclusions we have formed may be summarised in a few more words. It appears to us that Dublin at present has not, nor has she had for many months past, a thoroughly representative Institute of Architects. That the Irish capital is well able to support an Irish Institute; and there are no serious impediments in the way for preventing such a body from meeting and holding regular sessions like kindred bodies in the chief cities and towns in Great Britain. That regularly-conducted proceedings, useful work for the benefit of the profession, and a series of well-prepared papers, will always secure fair audiences in Dublin, no matter what may be the other attractions. That architectectural practice in Ireland, particularly in Dublin, demands the formation and maintenance of a truly representative and vigorous Institute, for the conservation of the rights and the correction of the abuses appertaining to the profession.

For the above chief reasons, among other minor ones, a working, representative, and influential architectural body is needed in Dublin, and we should be always glad to record the progress of such an organisation. We have been at some trouble to ascertain the present state of things. We hope our bluntly-expressed, but kindly-meant, remarks will be taken in the spirit in which they are written; for we have no private ends to subserve, our standard being the common-weal, and none other.

Sanitary Association of Scotland.—The fifth annual meeting of this Association was held in Dundee on the 25th ult. We will return to it in our next.

PATENTS.

NOTHING could very well show more characteristically the inherent conservatism of the English nation than the fact that the basis of our existing regulations in regard to grants of patents for inventions is based on a statute passed in the year 1623. Moreover, the Statute of Monopolies (21 James I., c. 3), we may remind our readers, was passed, not to regulate the manner in which inventors should be protected and their ingenuity encouraged, both for their own and the public benefit, but to put an end to intolerable abuses in regard to the granting of monopolies, by which the sovereigns of this country were in the habit of obtaining funds, and by which ordinary necessities of life became commodities in the hands of one or two persons to be disposed of for their sole benefit. In this Act, however, a single clause protects the right of the sovereign to grant patents for "new manufactures not contrary to the law nor mischievous to the State," and, as we have said, it is this section which forms the whole foundation of our modern patent law, so that we regulate the various processes brought into being by the keen ingenuity of the men of the nineteenth century by an Act of Parliament passed, not in the interests of modern inventors or the modern inhabitants of this country, but to curtail the overbearing powers of the Stuart dynasty, and to suppress the Sir Giles Mompessons of the Stuart age.

Further than this a great mass of law has grown forth from this single section, which is scattered about in scores of volumes of law reports, and in some half dozen Acts of Parliament, so that it is impossible to conceive anything more absurd than the present position of the English law of patents, so far, at any rate, as its form is concerned. Thus, even a "Patentee's Manual,"* clearly and concisely written, such as that of Messrs. Johnson, of which the fourth edition now lies before us, runs—including statutes—to over 300 pages; and it is no exaggeration to say that any inventor who desires to be properly informed of the general principles and rules which regulate patents in this country, can scarcely dispense with a single page of this volume. And when we mention this book, we would make two suggestions to the authors, which we venture to think would add to the value of any future editions. The first, not perhaps the least, important of these two, is that in the list of cases cited the date of each decision should be added; the other is that marginal notes should be placed by the side of the text. We have had some experience of legal and technical literature, and we are quite certain that if marginal notes add something to the expense of the publication, they yet cause a book to be held in higher estimation, and form a great convenience to the readers, and consequently increase its sale.

We have said,—to leave Messrs. Johnson's book, and to return to the subject of patents,—that an immense mass of law has grown up since the passing of the Act of James I., which is all of it of more or less importance to the patentee. Let us take one point only by way of example in regard merely to what is a public user. Now, in this matter it would seem to be quite possible to have a clear and certain definition; but instead of that we have to consult a number of cases going as far back as 1798 in order correctly to arrive at a conclusion as to what is or is not a public user. In the case of Carpenter *v.* Smith in which Lord Abinger was the presiding judge, he attempted some kind of definition of the term. Thus he said that "the meaning of these words is this, that a man shall not, by his own private invention, which he keeps locked up in his own breast, or in his own desk, and never communicates it, take away the right which another man has to a patent for the same invention," and he goes on to add at some length to this definition. But when we bear in mind that it may be most important, and, indeed, that it becomes more important every day, for an inventor to know what is or is not a public user, it becomes obvious that this person should be able to lay his hand on a simple and clear definition of the phrase, and not find it necessary to ponder over legal decisions, the result of which meditation may not improbably be to make confusion worse confounded. We could add much more to the same effect, but we may say this also that the confusion of our law in regard to patents

* The Patentee's Manual. By James Johnson and J. Henry Johnson. London, 1879. 4th edition.

necessarily makes the patenting of inventions more expensive by necessitating the use of patent agents and lawyers, in order to prevent the possibility of future litigation. For, after all, the grant of letters patent for inventions should be a simple matter; given a clear rule as to the things for which patents will be granted, there should exist no very great difficulty in acting upon such a rule. But as matters stand at present, we find that the tribunals of this country have been for years gradually extending the operation of the sixth section of the Statute of Monopolies so as to protect modern inventors. The Statute spoke of "any manner of new manufactures," that is, something manufactured, but now, as Lord Westbury said in Ralston v. Smith, "By the large interpretation given to the word 'manufacture,' it not only comprehends productions, but it also comprehends the means of producing them. Therefore, in addition to things produced, it will comprehend a new machine, or a new combination of machinery; it will comprehend a new process, or an improvement of an old process."

We have no objection to such expansion of a statute passed when the ingenious inventions of modern days were wholly undreamt of. But that is no consolation to the humble inventor who is desirous of knowing for what kind of invention he can obtain protection. Compare this with the comparatively clear state of the French law on the subject, which is thus stated by Messrs. Johnson in their useful compendium of foreign patent law which is to be found as an appendix to this manual (p. 364). "Every new discovery or invention in any branch of industry confers upon its author, under the conditions and for the time hereafter mentioned, the exclusive right of working the same for his own benefit." The following cannot be patented:—Pharmaceutical compounds or medicines of any kind, these being governed by special laws and regulations, schemes and projects of credit and finance." Whether it is advisable to create a vast number of monopolies in a vast number of articles, many of a very trumpery kind, is a matter which would require a longer discussion than we can now give to it. For there are certainly many inventions at the present day which have cost their producers very little thought, and are the mere adaptation, by a little care, of some existing articles in different modes. But, at any rate, there can be no question about one matter,—that is, that if we endeavour to foster ingenuity by a system of monopolies in the form of patents, we should make the obtaining of such patents as cheap and as easy a process as possible. As a matter of fact, however, the obtaining of patents for inventions is more expensive and more difficult in Great Britain than in any other country in the world. That this is so can be very soon shown. In this country, on petition for letters patent 5*l.* has to be paid; on the certificate of record of notice to proceed, another 5*l.*; on the warrant of law officers, another 5*l.*; on the sealing of the letters patent, still another 5*l.*; on the specification, again 5*l.*; before the expiration of the third year, 50*l.*; before the expiration of the seventh, 100*l.*; and, finally, there are various small fees which do not always arise. But we have with the above items reached 175*l.* We turn now to the United States, the country whence innumerable most useful and most trivial inventions have come during the last quarter of a century; here we find that, on the application for a patent, fifteen dollars have to be paid, and on the delivery thirty dollars. Let us see what happens across the Channel. In France there is a payment of 1,500 francs, which may be paid in a lump sum or by yearly instalments for fifteen years,—that is to say, 20*l.* in fifteen years is all that is taken from the inventor. If he finds it a useless patent he ceases the payment, and the payment thereupon lapses. Again, the cost of patents in the German empire is not much more costly than in France, because here we find that a fee of thirty marks (shillings) is to be paid on the issue of a patent, and a further fee at the commencement of every second and subsequent year, amounting, in the first instance, to fifty marks (shillings), and increasing by fifty marks per annum for the time of duration of the patent. And it must be borne in mind that though 100*l.* is a small sum to Sir Henry Bessemer or any other large engineer, yet that it is a perfect fortune to the small workman, and if we would foster the ingenuity of our artisans, it seems obviously good policy to enable them to realise the result of their own ingenuity by their own capital, and not make it necessary for them to appeal to the master or the capitalist for assistance to obtain the fruit of their ingenuity. For if they go to a master for help, the master naturally considers the invention, to a large extent, as his own property. There are a large number of other points in regard to this great question of patents to which we would gladly devote some space, but we have said enough for the present to show, without going into any question of principle, how urgent are the needs for a new patent law. We profess to have the most practical Legislature in the world, and we laugh at the scenes in the French Assembly, and congratulate ourselves that we are not ever employed in scheming for place like our friends the Italian politicians. But we find that, in Italy, one of the earliest of the laws after the incorporation of the new kingdom,—viz., in January, 1864,—was a patent law which, in a short space, made the regulations clear; and that in France these matters are chiefly regulated by a modern law of the 5th of July, 1844. Yet here, in England, we are content to read, at the opening of every session, that the Government hoped to do something in the way of patent reform, but yet, when each session comes to an end, we find that we are exactly where we were before,—that we have our patent laws,—laws meant to deal with the innumerable inventions of this century drawn from a statute of the reign of James I., interpreted by dozens of decisions and scores of judicial dicta, which even the ingenious and laborious lawyer can barely master, much less the artisan or the engineer, whose working-hours are spent in his business, and his leisure time in necessary recreation or in finding out some new and ingenious power of mechanism.

A FLOORCLOTH FACTORY IN FRANCE.

THIS has not been, on any grand scale, a very ancient industry in France, or, indeed, anywhere on the Continent, where floorcloths are less extensively used than in England, and smooth-surfaced table-covers also. Within the last quarter of a century, however, a considerable development has taken place, and one factory in the suburbs of Paris turns forth at times specimens 8 yards in width and 150 ft. in length, which are regarded as signal triumphs of skill. The works were originally placed outside the barriers, to avoid the heavy municipal impost upon oils of every description, as well as upon several other articles entering into the process of production; but in course of time they will be enclosed within the new taxing limits, and the buildings are too spacious and valuable to render their removal, on this account, worth the while of the proprietors. The method employed is, various though the results are, an exceedingly simple one,—the spreading of a paste, more or less coarse or fine, mixed with linseed oil and colours, over tissues varying in texture, from the heaviest and roughest canvas to the softest skin or the lightest gauze, whether for covering staircases or lining the immense saloon floors of ocean-going steamers, and painting them in one or two plain tints, for nurses' aprons, or with the hand, added to enrichments of gilding, for table-covers. It was at first found impossible to obtain in France groundwork of sufficient amplitude for the larger spaces required, and no ingenuity of mechanism could totally conceal the seams where different pieces were joined together, so that for a long time recourse was had to the British manufacturer; but this difficulty was ultimately overcome, though only to a certain extent, by the French makers; for the obstacles are well known to the throwing of a shuttle to a distance even of 20 ft., and they can now produce in a single factory all that they require up to a breadth, at any rate, of four yards, or about half of that which is looked upon as perfection in point of size. These huge strips are hung upon vertical poles, like the scenes which are being prepared for a theatre, the manipulation being in both cases, indeed, almost completely similar, — the supporting posts, the rollers, pulleys, and "bridges" to be seen at work among the penetralia of the Grand Opera have a family likeness to the apparatus of the Messrs. Baudouin, behind the railway station at Sceaux. Between each coil, as it is pasted, dried, and slowly drawn away, to be coiled again round another drum at a distant end of the workshop, is a framework of the same height, divided into stages, serving as scaffoldings for the men, whose first task is to coat the material ov with a combination of linseed oil with yell ochre. This is technically called the grou paste, and the preparation of it is a matt demanding considerable judgment. It is carri on in separate workshops, fitted up with elabor machinery, where the oil is, to begin wi boiled in caldrons over intensely hot fires, a mixed, the while, with a certain proportion white lead, or some other chemical age though, for particular purposes, the combin tion is stirred up in iron caldrons, moving rails, by means of a winch, and withdrawn w the utmost care, when a given degree of he has been attained, in order that the conten may not be violently shaken,—a precauti essential at once to the completing of the proce and to the safety of the structure, filled w materials of the most combustible character, which it is carried on. The oil and white lead or its substitute, thus blended,—is allowed cool for a day without being disturbed; it then replaced over the fire, and the operation sometimes thrice repeated, when a series stirrings take place, with little additions of su stance, supposed to be secrets, which are increase the colour-fixing and drying qualit of the paste.

The oils employed come, as a rule, from t North of France, which, for other than fis reasons, are preferred to those of the Bal and other regions abroad. With respect the colours themselves, they are pounded a mixed by steam engines working a series rollers, under which, as the powder passes, it ground, over and over again, turned ov kneaded, as it were, almost to impalpability, s softened by gradual additions of oil. The ochre paste is then poured into buckets, whence t workman spreads it over the surface to covered, with an implement somewhat sembling a rake. Long practice enables him distribute his material to a perfectly ev thickness, and to skim all superfluous lay away, as though he were peeling off a sh from the tightly-stretched canvas. But this not enough. When the paste is so dry that could hardly be any drier, he takes a tool, shape like a razor, but of enormous size, w a scythe-like handle, and, mounting his scaffo literally shears and shaves off every excrescen however minute,—a critical kind of work fo man standing on a narrow plank, so high abo the ground, with such a weight of steel s wood in his hands. Then, with the larg pumice-stones that can be procured, he co tinues his polishing labour, until a sufficie smoothness has been obtained, and the floor, as the French term it, waxed cloth, is ready be removed to the painting or printing sho The patterns are produced in a multiplicity ways. Sometimes they are engraven on wo but generally traced on zinc, framed in wo and planed down to a level with it. The tal upon which the colours are arranged is cover with a stuffed cushion, in a case of waxed clo Formerly, the cushion floated in a vat of wat the fabricators of that time thinking that th secured a more delicate touch of the varie pigments with the little copper "dabs" or plat employed, and that a regular impression w thus secured throughout. But the belief h been abandoned and the elasticity of t cushion or pillow is found, to all intents a purposes, sufficient. The whole of this part the work is full of difficulty. It is no ea thing, in a workshop 60 ft. high, perhaps, manage so vast a surface, awkwardly plac as it must be, with several men engaged up it at once, in producing one pattern, which mu be perfect at every point, and join like t design of a mosaic, without even the intersecti lines of mosaic-work being permitted. T impressions from the zinc or wooden plan spreading out from the centre towards t four sides must, at each of them, co nect by themselves geometrically with t border, or the result will be pronounced clums Moreover, the great surface keeps continuall though slowly, unrolling from above; but befo reaching the ground it is taken hold of betwe a transverse beam of wood and bar of iron, fu nished with an apparatus of chains and block grooves and wheels, along which the hu canvas, now exceedingly stiff and hard manipulation, is gradually moved, until the la yard has been reeled off, and it hange high the air, with all its colours fresh, and ready fe drying. This second drying must not be le complete than that of the foundation oil, ochr and white-lead paste, or else it will peel, crac

warm, or, still more easily, in a damp
But, as such vast surfaces would
encumber the workshop, they are re-
before long, to galleries supplied with
heat. This removal is an affair of
. The colours are still moist; they
at the lightest touch; they are apt to
ther. Consequently, it is impossible to
he floorcloth before carrying it away;
ast undue tension the patterns will seam
and be ruined. It has, therefore, to be
led, so to speak, over a succession of
rollers, turning at a gentle and even
rough a door of enormous height and
into the receptacle known as the
where once more the methods of warm-
he temperature until the extreme drying
reached have to be carried on under the
utious supervision. Steam-power has
rtially introduced to facilitate these
ocesses. The great surfaces thus pro-
e usually, as already said, intended for
ns of first-class passenger steamers, or
ns of ships of war. One manufactured
late emperor's yacht was 120 ft. long
e than a third as wide, though two
artistically made imperceptible, ran
length. The margins are usually imi-
f marqueterie, or marbles, or ornamental
f brilliant tints. Many, however, are
to the colonies, where their coolness
them preferable to carpets, and where
be more easily kept free from dust.
ce itself, where carpets are rapidly
nto vogue, floorcloth is often laid down
ne edges of the room, instead of the
polishing of other days, necessitating
ss variety of length, width, and pattern.
nufacture of these is, of course, com-
ly easy work, but it engages a great
artistic fancy and feeling. In fact,
e a hundred other varieties of these
from varnished table-covers down to
cards; but the class to which reference
made is that which has a more sub-
and household value, and it is growing
material of a large and expanding trade.
rcloth factories of Paris, indeed, though
ld date, are already of the highest
on.

PROGRESS OF OUR COLONIES.

and more the prosperity of England
depend upon her colonies, and hence
istics in relation to our colonial and
ssessions should have a deeper interest
o us. A large portion of our trade is
done with our colonial possessions; we
nufacturing more and more for them;
many we are drawing larger supplies
materials. Increasingly, also, we are
emigrants thither; and as the once wild
the colonies are brought into cultiva-
s by means in some degree of British
nd enterprise, of English instruments,
some degree also with British money,
the result of these we are receiving
portion. Hence it may be fairly said
e fifteenth issue of the Statistical Ab-
n relation to the Colonial and other
ns of the United Kingdom is full of
interest, not only to the dwellers in the
and to their relatives at home, but also
arger number interested in the trades
present. It is worthy of notice how
the populating of some of the colonies
essing. Since 1861, Australia as a whole
bled its population, that increase being
arked in recent years in New Zealand
ensland. To the Cape of Good Hope,
Dominion of Canada, and to the West
slands, as a whole, there is a constant
f population; but Sierra Leone, St.
her, and some other smaller settlements,
falling off in the numbers of the popu-

e revenue, there have been vast strides
of the colonies,—Australia has en-
its 7,766,000*l.* to 17,793,000*l.*; North
has risen from 2,732,000*l.* in sixteen
4,784,000*l.*; and the Cape of Good Hope
7,000*l.* to 2,931,000*l.*; but the Falkland
St. Helena, and a few others show
es in their small revenues. The public
ture has naturally risen with the in-
revenue,—Australia, to 16,170,000*l.*;
America, to 6,685,000*l.*; and the Cape of
ope, to 3,428,000*l.*; but there has been
ension in the expenditure of the Falk-
slands and others having decreased
receipts. The public debt is rapidly rising. The last eleven years embraced in the return have added 35,000,000*l.* to the debt of Australia, and a large amount to that of India; whilst in most of our colonies debt is being added in far too rapid a ratio. At the same time, trade, tested by the tonnage of vessels entering and clearing, has very materially increased. That of Australia has doubled in the fifteen years; India has added over 50 per cent. to its industrial operations; North America and the West India islands a lesser proportion; whilst Hong-Kong has increased in a far more rapid ratio, and to Gibraltar and Malta there is a satisfactory increase. We retain the chief portion of this trade in our own hands, moreover; for, out of the 5,634,000 tons vessels entering and leaving Indian waters, 4,550,571, were British, and out of 7,000,000 tons for Australia, 6,394,000 were also British.

As regards imports, India has added in the fifteen years about 5,000,000*l.* sterling to the value of her imports; Australia, 15,000,000*l.*; North America, 7,000,000*l.*; whilst the additions to the trade of Natal, the Cape of Good Hope, and Malta have been amongst the most satisfactory in ratio. Out of 48,000,000*l.*, India imports 37,000,000*l.* from the United Kingdom, and out of 48,000,000*l.* Australia imports 23,000,000*l.* from us; whilst the bulk of the commerce of the West India Islands, and a large portion of that of North America, is with us.

Of most of the large colonies the trade is, in its export branches, increasing rapidly; and, roughly speaking, it may be said that one-half of the exports are to the United Kingdom. A very large increase in the general exportation of wool has taken place of late,—from 148,240,000 lb. to 424,800,000 lb. in the year,—an exportation to which New South Wales and Victoria are the chief contributors. There is also a growth of the sugar exportations, but not so largely,—from 7,000,000 cwt. to 9,000,000 cwt. India seems chiefly to import cotton manufactures, coal and coke, iron, copper, and brass, and malt liquors; and to export raw cotton, grain, jute, rice, seeds, and tea,—the exportation of the last having in fifteen years been multiplied eightfold. Ceylon takes fair quantities of coal and coke, of rice, cotton manufactures, and haberdashery; and sends out cinnamon, coffee, and oil. New South Wales imports beer and ale, tea, wool, spirits, and sugar; and exports copper, coin, tallow, and wool; and other of the Australian colonies have somewhat similar trades. Canada seems to be importing much more raw cotton, less iron, spirits, and woollen manufactures, and to export less coal, certain kinds of timber, and wool, whilst there is a considerable increase in the exports of agricultural products and the produce of animals.

The banking facilities of Australia and Canada seem to be enlarging, and to be more made use of; there is a growth in the mileage of railways in all the places of which there is any account; but much remains to be done in this respect, as will be understood when it is stated that Natal is credited with only five miles of rail, and the Cape of Good Hope with 404. A new table is added, that of the miles of telegraphic wire in use in certain colonies, from which it appears that India has 17,840 miles; Ceylon, 785 miles; New South Wales, 6,073 miles; Victoria, 2,885 miles; South Australia, 4,061 miles; Western Australia, 1,567 miles; Tasmania, 754; New Zealand, 3,307 miles; Queensland, 5,033 miles; and the Cape of Good Hope, 2,450 miles.

A vast amount of the crown land in the colonies has been latterly sold; but the quantity remaining unalienated is still immense, —1,917,367,000 acres for Australia alone, for instance. Partly in consequence of these sales we have an enlargement of the acreage of land under wheat of about a million and a quarter acres in eleven years, whilst the wheat and the oats produced are yearly larger, and the same remark applies in a lesser degree to potatoes and maize. The horses and horned cattle owned in the Australian colonies are continually increasing in numbers; and, in a less rapid ratio, the sheep and the pigs. It is less satisfactory to turn to the personal statistics, for the birth-rate of Australia seems to decrease; the marriage-rate is less than it was, and the death-rate slightly increased since 1871. But looked at in the total there is a gratifying progress in material things in the colonies, and more especially in the Australian group, which will mark itself satisfactorily in the future.

THE IPSWICH POST-OFFICE COMPETITION.

THE committee appointed to conduct this matter arranged with Mr. Chas. Barry that he should, for the sum of sixty guineas, inclusive of all expenses, proceed to Ipswich, examine the twenty-two plans sent in in competition under certain printed instructions or conditions, and advise the committee which of the competitors

1st. Had complied with such instructions;
2nd. Which of those that had so complied was in h opinion best deserving the premium of 50 guineas offered
3rd. Which of all the plans sent in, under all the circumstances, he could recommend the Corporation to carry out.

Mr. Barry, on the 3rd of June last, reported in writing that he had examined twenty-one of the plans,—one set having been withdrawn,—and carefully considered the instructions issued to architects. After remarking on the discrepancy in the cubical contents of the proposed buildings, as given by the several architects, and on the estimates furnished with the several plans, he proceeds to state that—

"It must be remembered that no option was left to the competitors to make any reduction in the bulk of the building, in order to fit it to the cost prescribed. Each of them, therefore, was at liberty to believe (if he could) that the building might be carried out at the cost named, and competitors were, to a certain extent, justified in doing so by the double assertion practically made by the committee themselves, that a fixed bulk was to be erected for a fixed sum.

It is evident that unless the cost of each design was absolutely tested by builders' tender (which is not practically possible), this belief on the part of the competitors cannot be actually disproved, although I cannot myself believe that any of the designs could be carried out for 6,000*l.* Under such circumstances I cannot advise the committee to insist on absolute compliance with the conditions on these two conflicting points, as it is quite clear that either the accommodation of the building must be largely lessened (which would, I think, be very undesirable), or the outlay must be, of necessity, increased. There will be no injustice thus done by setting aside this condition to those who say they believe that these designs can be executed at or under 6,000*l.*, inasmuch as I think it clear that this could not be done in any case, and I can therefore only advise the committee that those who venture so to say are, in my judgment, mistaken.

Believing, however, that the committee desire me to guide them to some practical issue for which they cannot be held blameable by their colleagues in the corporation, or be chargeable with injustice to the competitors they have invited, I venture to take permission, therefore, to set aside the above conditions, which could not be complied with, and which alone cause difficulty, and address myself to your second reference, viz.:—

Which design of those which comply with all other conditions laid down best merits the premium of 50 guineas.

In my opinion the best design and the one which shows most mastery of architectural treatment, and has much dignity of its own, and which is treated as regards the necessarily differing levels of the floors in the two portions of the building (a very difficult matter for design) in the most satisfactory manner is that under the motto of 'Well Considered,' and to this should, I think, be awarded the premium.

Proceeding in this conviction, I think the treatment of the design I have above-named the most suitable as a basis for the Corporation of the final design, though I feel that if the committee are pleased to adopt this my recommendation, there are some points, both in the design and its internal arrangements, which may be improved, and which may become necessary on further conference with the Post-office authorities, or which may be suggested by those who are to occupy the new rooms in Public Offices."

Acting on this report the committee recommended that the premium of 50 guineas should be awarded to the author of the plans of "Well Considered," and that it be referred to them to confer with that gentleman on his plans, and to obtain specifications and tenders for the erection of the building.

The council adopted these recommendations. The author of the design selected is understood to be Mr. J. Johnson, of Queen Victoria-street London.

THE CHURCHES IN THE CITY OF LONDON.

At the urgent request of many correspondents we republished lately a view given in our pages some five-and-twenty years ago of the twenty-nine churches in the City of London, then threatened with demolition (p. 489, *ante*). We have since been urged to reprint the views we gave at the same time, showing the remainder of the City churches, thrown together in two groups.* We have accordingly done so, and add the particulars which originally accompanied them.

Although we cannot exactly say of the churches of London as of a vast number in leafy England,—

"How beautiful they stand,
Those ancient churches of our native land!
Amid the pasture fields and dark green woods,
Amid the mountain clouds and solitudes;
By rivers broad that rush into the sea;
By little brooks, that with a lisping sound,
Like playful children, run by copse and lea!
Each in its little plot of holy ground,"—

* See vol. xii., pp. 199 and 255.

still they have each a story and a beauty of its own, and well deserve attention.

PLATE A.

No. 1 shows a portion of the Temple Church, the circular portion of which was founded before the year 1185, in which year it was dedicated by Heraclius, patriarch of Jerusalem. The oblong portion now used for service is a beautiful specimen of Lancet, or Early English architecture, of the thirteenth century. The connexion of this church with the Templars, the effigies in the "round," and its story generally, must be known to most of our readers.

No. 2. St. Mary Magdalen's, Old Fish-street-hill, was burned in 1666, and rebuilt by Wren in 1685, for the united parishes of St. Mary and St. Gregory.

No. 3. St. Alphage's, London-wall, was rebuilt in 1777, by Mr. Staines (afterwards knighted), retaining the lower part of the ancient tower, which may be seen inside. Mr. George Dance, jun., is said to have been the architect, but this is uncertain.

No. 4. Allhallows, Barking, is one of the most interesting old buildings in the metropolis, and contains several curious brasses and monuments.

No. 5. The Church of St. Magnus, London Bridge, has one of the best of the City steeples. The body of the church was built by Wren in 1676, but the steeple was not erected until 1705. The old church was one of the earliest victims of the Fire. The present church contains a tablet to Miles Coverdale, under whose direction the first complete printed English version of the Bible was published; and some curious pictures in the vestry-room.

No. 6. St. Bartholomew's the Less, within the precincts of the Hospital, has a curious interior, built by Dance in 1789 (who first destroyed the old building), and restored by the late Mr. Hardwick in 1825.

No. 7. St. Mary's, Aldermanbury, was burned in 1666, and rebuilt by Wren, as we now see it. Here lie the remains of the merciless Judge Jefferys.

No. 8. St. Benet's, Paul's-wharf, suffered like the last in 1666, and was rebuilt by Wren in 1685. Inigo Jones was buried in the old church.

No. 9. Christ Church, Newgate-street, is another of Wren's works, commenced in 1687, and completed in 1704. Here lie the remains of Richard Baxter, the well-known Nonconformist, and the learned Trapp, once its minister, still exhorts his congregation by his tomb,—

> "'Though dead I preach; if ever with ill success
> Living, I strove the important truth to press,
> Your precious, your immortal souls to save,
> Hear me, at least, oh! hear me from the grave."

Nor would we overlook the tablet to John Stock, many years a painter at the Royal dockyards, who left 13,700*l.* for the promotion of religion and virtue, and the advancement of literature.

No. 10. St. Martin's, Ludgate, preserves the memory of the ancient gate. The old church was burnt, and Sir Christopher Wren rebuilt it. The inscription on the front is a palindrome.

No. 11. St. Botolph's, Aldersgate, reminds us of another of the City entrances. It escaped the Fire, but had become unsafe in 1790, and was then for the most part rebuilt, at a cost of about 10,000*l.* The front next Aldersgate-street, merely a screen, is quite modern. Within the church there is a Gothic altar-tomb to the wife of Sir John Packington, 1563; and a cameo bust by Roubiliac to "Elizabeth Smith."

No. 12. St. Margaret's, Lothbury, stands over the ancient Walbrook. Wren rebuilt it after the Fire of 1666. The font is attributed to Grinling Gibbons.

No. 13. St. Peter's, Saffron-hill, is one of Sir Charles Barry's earlier works. It was built by Messrs. Souter, and cost, including schools, below 10,000*l.*

No. 14. St. Bride's, Fleet-street, was founded in very early times, as were most of those already mentioned; and here were buried Wynkyn de Worde and Sir Richard Baker, who wrote the "Chronicles of the Kings of England." The church was rebuilt by Wren between 1680 and 1703. The steeple is second only to that of Bow. It was shortened 8 ft. in 1764, when injured by lightning. Richardson, the author of "Sir Charles Grandison" and other works, lies buried here.

No. 15. St. Lawrence's, Jewry, was commenced in 1671, by Wren; the old church (and there was one here as early as 1293), having been destroyed by the Fire. The details of the façade next King-street deserve examination. There is a memorial of Archdeacon Tillotson, who was buried here in 1694. The vestry-room is handsome, and has some pictures.

No. 16. All Hallows, London-wall, escaped the Fire of 1666, but becoming dilapidated, was taken down, and the present church was built under the direction of Dance, the younger, between July, 1765, and September, 1767. The interior is a good specimen of what to avoid. Belce, the translator of Herodotus, is buried here, and "Mr. John Patience, architect."

No. 17. St. Botolph's, Aldgate, was founded as early as the time of William the Conqueror. It escaped the Fire, but was pulled down in the following century, and the present structure was erected from the designs of George Dance, at the cost of 5,536*l.* 2*s.* 5*d.* There is a monument, with sculptured effigy, to Thomas, Lord Darcy and Sir Nicholas Carew, both beheaded.

No. 18. St. James's, Duke's-place, was built in 1727, in the place of one consecrated in 1622-3.

No. 19. Trinity Church Gough-square, is a modern structure of brick, built by Messrs. Haward & Nixon, from the designs of Mr. John Shaw. It was commenced in October, 1837, and finished in June, 1838. The body of the church is a hexagon, 47 ft. 6 in. in diameter, with an octagonal recess forming the chancel.

No. 20. The Church of St. Catherine Cree, Leadenhall-street, is a very curious structure of mixed style, rebuilt, as it is thought, by Inigo Jones. The old church, wherein Hans Holbein was buried, was pulled down, with the exception of the tower, still standing, in the beginning of the seventeenth century, and the present structure was consecrated by Bishop Laud in 1630-1. There is a monument to Sir Nicholas Throgmorton, 1570; and a tablet to one Richard Spencer, who, having seen great changes,—the Plague and the Fire,—left behind him "a good name, a deare wife, a vertuous example, and three daughters."

No. 21. St. Peter's, in the Tower. The Church of St. Peter-in-Chains is a romance in stone,—a tangible piece of the history of England. Here lie the remains of many who lost their lives for not thinking as those who were in authority did. The church was built at the end of the thirteenth or beginning of the fourteenth century.

No. 22. Wren's greatest work, St. Paul's Cathedral, the crowning glory of the City, has the finest outline, perhaps, of any building in the world.

PLATE B.

No. 1 represents St. Dunstan's-in-the-West, Fleet-street, built by the late Mr. Shaw, between July, 1831, and July, 1833. The old church escaped the Fire of 1666, and with its projecting dial, with two figures of savages the size of life, to strike the quarters, was a curious remnant of old London.

No. 2. St. Giles's, Cripplegate, one of the most interesting buildings in London. Here rest the remains of three notable Johns,—John Fox, John Speed, and John Milton. Cromwell was married here to Elizabeth Boucher. In the churchyard is a portion of old London wall.

No. 3. St. Andrew's-by-the-Wardrobe. This was built by Wren, after the Fire, at the cost of 7,060*l.*, and has some modern monuments by Bacon and Manning.

No. 4. St. Andrew's, Holborn, which escaped the Fire, but becoming ruinous, was taken down in 1686, and rebuilt from the designs of Sir Christopher Wren. The old tower remained in its original state till 1704, when it was repaired and disguised with a facing of stone. Richard Savage was christened here, and in the Register of Burials appears the name of "Chatterton," the luckless boy-poet of Bristol. The east window is filled with stained glass, by Price, of York, 1718.

No. 5. St. Andrew's Undershaft, speaks of May in the olden time. Here annually was raised one of the City poles, until the riot in 1517, which gained for the day on which it happened the title of "Evil May-day." The church stands in Leadenhall-street, and was built at the beginning of the sixteenth century. It well deserves a visit, when the tomb of John Stow must not be overlooked.

No. 6. St. Botolph's, Bishopsgate. The old church here stood till the beginning of the last century, and the present structure, built from the designs of James Gold, was consecrated in 1728.

No. 7. St. Dunstan's-in-the-East, with its curious spire carried on four arched ribs, built by Wren. The body of the church was bu from the designs of Mr. Laing, from 1817 1821, at the cost, it is stated, of 36,000*l.*

No. 8. St. Dionis Backchurch, built by Wr at two different times, after the Great F Notice the syringes in the vestry for the extin tion of fires at a time before Braidwood was.

No. 9. St. James's, Garlick Hithe. T church was also built by Wren, after the F Over the projecting dial is a carved figure St. James. Within there is a picture of "Ascension," by Geddes.

No. 10. St. Bartholomew's-the-Great, Smithfield, a history in stone too long for us tell now. The body of the church, founded Rahere about 1120, is of the Norman sty and, with the monuments and vestiges of priory buildings, will well repay a visit. oriel in the church was probably added Bolton, who was prior from 1506 to 1532, probably built Canonbury House, at Islingt one of the possessions of the priory.

No. 11. St. Mary's-le-Bow, the finest Wren's spires. In connexion with this chur too, we have a long story. A Roman tem probably stood here originally; part of Norman building which succeeded forms crypt of the present structure. In the twe century it was the scene of a serious tum headed by Longbeard; and in 1284 one Duc a goldsmith, was assassinated there. balcony in front of the tower was for the vie of City shows. Near the old church there a shed, built by Edward III., that he and queen might behold the jousts. The doorw below the balcony deserves examination.

No. 12. St. Mary's, Woolnoth, the work Nicholas Hawksmoor. The old church injured by the Fire, repaired under the direct of Wren, and about 1716 taken down. Haw moor has shown much originality in his des Here lies the Rev. John Newton, "once infidel and a libertine."

No. 13. Allhallows-the-Great, in Tham street. The ancient church was burnt in 1 and the present structure was built under direction of Wren in 1683. It is remarkable a carved oak chancel screen.

No. 14. St. Antholin's, which stands at east end of Watling-street. It was rebuil 1682 by Wren, and is noticeable for its spire the oval dome which covers the body of church.

No. 15 indicates St. Stephen's, Walbrook, interior of which has received more praise t any other of Wren's works. It unquestiona has a great charm, although the details ar an indifferent character. An account of church, and some particulars of curious de ments in the vestry, will be found in a prece volume.

No. 16. St. Michael's, Cornhill. The church having been burnt in 1666, Wren built the body of it in 1672; and fifty y afterwards took down and re-erected the to The church is Italian in style, the tower pendicular Gothic. The latter has a h striking outline, but the details will not b examination.

No. 17. St. Olave's, Hart-street, of which gave some particulars in a recent number xii., p. 226, *ante*).

No. 18. St. Stephen's, Coleman-street, has usual story. It was destroyed by the Fire rebuilt under Wren in 1676. There is a pa ing in the vestry-room. Amongst the mo ments in the old church was one to Ma Anthony Munday,—

> "That survaid
> Abstruce antiquities, and o'er them laid
> Such vive and beauteous colours with his pen,
> That (spite of time) those old are new again."

No. 19. St. Vedast's, Foster-lane, which rebuilt after the fire under the direction of W The spire is graceful and clever.

No. 20. St. Augustine's, Watling-street, b in 1683, by Wren. The steeple was not finis until 1695.

No. 21. St. Sepulchre's, Skinner-street, wh retains its ancient tower and beautiful Go porch. The body of the church was restored Wren after the Fire. About 1836 a new and ceiling were formed.

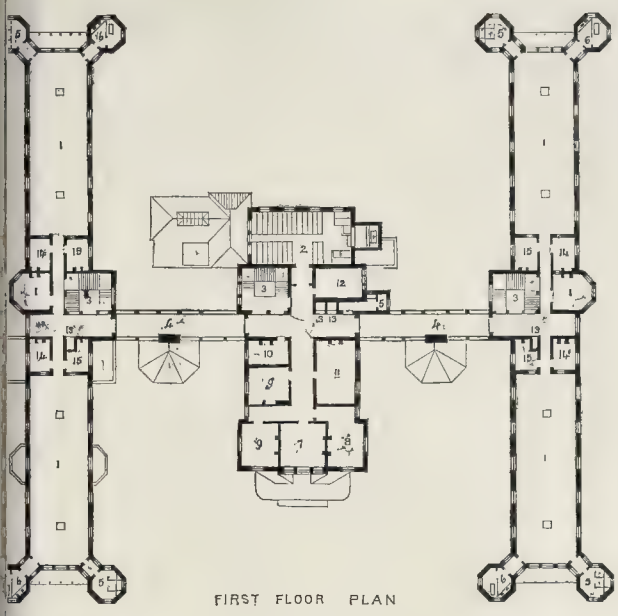
If we add to these St. Bartholomew's, of Exchange, a building by Wren, which was moved from its original position some ye ago, and re-erected in Moor-lane, Fore-str under the direction of Professor Cockerell, shall then have before us the whole of churches which stand within the City boun ries.



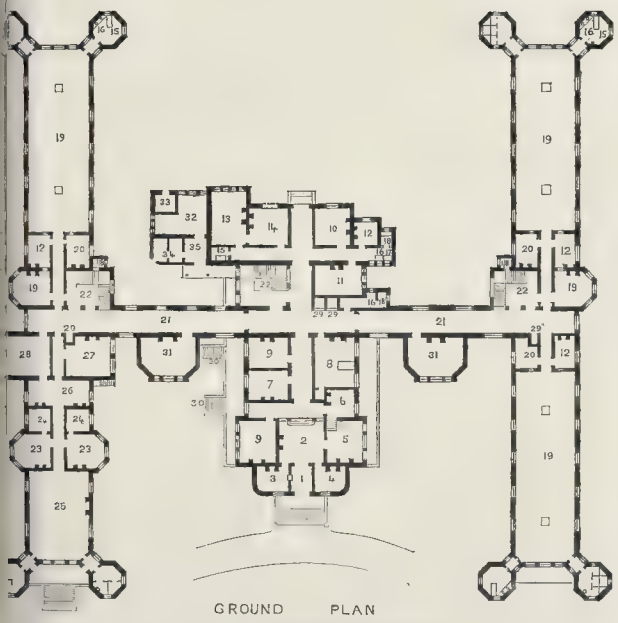




LINCOLN NEW COUNTY HOSPITAL.—Mr. Alexander Graham, Architect.



FIRST FLOOR PLAN



GROUND PLAN

SCALE OF 10 0 10 20 30 40 50 60 70 80 90 FEET

References to First-floor Plan.

ards.	5. Water-closets.	8. Nurses' day-room.
ipel.	6. Baths.	9. Matron.
ircases.	7. Superintendent of Nurses.	10. Chaplain.
vered way.		11. Linenry.
		12. Mattresses.
		13. Lifts.
		14. Nurses' rooms.
		15. Ward sculleries.

References to Ground Plan.

trance-lobby.	10. Eye ward.	20. Ward sculleries.	28. Board-room.
all.	11. Eye ward.	21. Principal corridor.	29. Lifts.
rter.	12. Nurses' rooms.	22. Staircases.	30. Steps to basement.
aiting-room.	13. Operating-room.	23. Consulting-rooms.	31. Day-rooms.
rgery.	14. Operating-ward.	24. Retiring-rooms.	32. Washhouse.
amination-room.	15. Baths.	25. Out-patients' waiting-room.	33. Disinfecting-chamber.
dical Officer's room.	16. Lavatories.		34. Ashes.
cident reception-ward.	17. Sinks.	26. Out-patients' dispensing lobby.	35. Yard.
ouse Surgeon's rooms.	18. Water-closets.		
	19. Wards.	27. Dispensary.	

LINCOLN NEW COUNTY HOSPITAL.—*Plans.*

LINCOLN NEW COUNTY HOSPITAL.

The principal portion of the new hospital was opened for the reception of patients last autumn. It stands on an elevated site of about eight acres, facing nearly due south, having a light soil with a rock foundation, and with a gentle slope from north to south. The group of buildings comprising the present hospital consists of a central or administrative block, and two pavilions, all connected by a corridor, 10 ft. 6 in. wide, on the ground story, and by a covered way of the same width on the first story. The central block is five stories high, having a half basement story sunk 6 ft. below the surface, resting on the solid rock. The pavilions east and west of it are only two stories high, but in consequence of the slope of the ground, are raised 6 ft. above the surface at their lower ends, thereby insuring a free circulation of air below the ground story.

The central block contains, on the ground story, an entrance-hall, 21 ft. square, porter's and receiving-rooms, a surgery and examination-room, a medical officers' consulting-room, to be used as a library, an accident receiving-room, with bath, and rooms for the resident surgeon. In the rear are eye-wards for males and females, an operation-room, and a ward adjoining. On the first story are rooms for the matron and housekeeper, linenry and bedding-room, day-room for nurses, and chapel. On the second story are separate dormitories for day and night nurses, with accommodation for house servants. On the third story are a series of wards for children, with nurses' rooms attached, and the usual ward offices. The basement story comprises the kitchen offices, cellarage, and detached boiler-rooms, all of sufficient capacity to meet the requirements of any future enlargement of the hospital.

The west pavilion is appropriated to female patients, with the exception of the ground-story of the south wing, which forms a complete out-patients' department, with consulting and retiring rooms, board-room, and dispensary. This department is quite distinct from the hospital proper, and with separate ingress and egress. The east pavilion forms the hospital for male patients, the ward arrangements being the same in both cases.

Wide stone staircases of easy ascent are provided in each of the three buildings, all carried up to the topmost stories. There are also hoist lifts in each block, and a separate coal-lift in the central block; also dust-shoots on each floor, speaking-tubes from the various corridors, and electric-bells, all communicating either with the central hall or the kitchen-corridor in the basement story.

The large wards are each 88 ft. by 26 ft. 6 in., the lower ones being 14 ft. high, and the upper ones 16 ft. high. The beds are arranged in pairs between each window, the space between each bed being 5 ft. A nurses' room and scullery are attached to the large wards, with inspection windows commanding all the beds; the sculleries being fitted with small ranges, gas-stoves for use in summer weather, and airing-closets for linen. At the extreme ends of the large wards are octagonal turrets measuring 10 ft. internally each way, and cut off from the wards by lobbies 5 ft. square, with double doors, and a window on each side to secure constant cross-ventilation. One of these turrets contains a bath-closet and lavatory, the other a slop-sink, urinal, and water-closets.

The warming of the wards, rooms, and offices throughout is by open fires, and of the corridors, staircases, and chapel, by hot-water pipes on Perkins's principle. All the wards and principal offices have improved ventilating grates, supplied by Mr. D. O. Boyd, of Maddox-street, those in the large wards being placed in the centre of the floor and cased with terra-cotta. As a provision in case of severe weather, the hot-water pipes are extended to the large wards. The ventilation of the wards and principal rooms is provided for (apart from the windows, which are sash-windows in pairs opening up to the ceiling, the topmost sashes falling inwards) by inlet shafts in the walls carried up from the basement, and terminating in the several rooms about 6 ft. above the floor-line, having zinc purpose-made mouthpieces, with valves for regulating the supply of air to be admitted. Outlets are placed in every room below the ceiling-line, those in the wards having separate shafts carried up between the smoke-flues, and those in all other rooms having Boyle's valves fixed in the chimney-breasts. The gas-burners are provided with large-mouthed outlets in the ceilings, communicating

with shafts carried up the walls and terminating beneath the eaves or continued with the smoke-flues.

The external walls of the entire buildings are of brick, 20 in. thick, with a clear hollow space of 2 in. in the centre. The materials employed are local bricks, with selected facings, and Ancaster stone for all copings, string courses, and other masonry; Luxembourg green slates for the roofs, and fir timber for all joinery, except in the chapel, which is of pitch-pine. The ward floors are of English oak, and the walls are finished in Parian cement and painted. The walls of water-closets, baths, and lavatories are lined to the height of 5 ft. with white tiles. The corridors and passages are paved with tiles on brick arches.

Mr. Alexander Graham, of Carlton-chambers, Regent-street, is the architect, and Messrs. Barnes & Wright, of Lincoln, are the contractors for the entire work.

SOME EXHIBITS AT THE KILBURN SHOW.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

THE International Agricultural Exhibition at Kilburn, opened on Monday last, and to remain open until Monday evening next, will be found well worth visiting by those who are practically engaged in building, inasmuch as amongst the machinery in motion are to be found a large number of wood-working, brickmaking, stone-moulding, and other machines, such as mortar-mills; while in the implement sheds may be seen a large number of contrivances and appliances intended to facilitate the construction and improve the sanitary condition of buildings of all kinds.

Before looking to these, however, we must say one word from another point of view. Probably no country but our own could have erected the same extent of buildings, temporary though they are intended to be, with the same amount of utter and unredeemed ugliness as is here to be found. No horde of savages could have built such an extensive and costly kraal without displaying here and there some slight compliance to the cravings of human nature for the beautiful. A bit of grass and a few flowers, the advertisement of a well-known seedsman, form an oasis in the midst of this dreary agglomeration of planks and canvas, which by force of contrast extort an amount of admiration from visitors wholly unjustified by the weakly effort itself. From this point of view the show is a discredit to the Society.

How some of the heavy exhibits have been got into position is a marvel, considering the present aspect of that part of the show-yard devoted to implements. The heavy rains of the past fortnight have caused the clay surface of the greater portion of this half of the show-yard to become, as it were, completely churned or ploughed up by the traffic of the heavily-laden vehicles bringing machinery and implements for exhibition, until it formed an impassable quagmire, many wagons and lorries containing boilers and engines being hopelessly stuck in the mud up to the naves of the wheels, even on the opening day. So great, indeed, have been the difficulties and dangers attending the getting into position of the exhibits in the implement and machinery sheds, that no fewer than thirty valuable horses belonging to the railway companies had to be killed last week in consequence of injuries received. Some amelioration was effected during the latter end of the week by covering portions of the principal avenues with transverse wooden sleepers placed close together, and by laying down a large quantity of burnt brick ballast. Without further preface we will proceed to draw attention to some of the exhibits which will be of more especial interest to our readers. As the implement and machinery sheds stretch completely across the widest end of the show-yard, —viz., that nearest the main entrance in Salusbury-road,—we will, for the convenience of visitors, refer to the exhibits of which we wish to make mention in the numerical order of the "stands" or show-spaces, merely premising that the numbering of the stands begins in the left-hand corner of the show-yard as the visitor enters from Salusbury-road.

Stands 5 and 522 are allotted to Messrs. Ransomes, Sims, & Head, of Ipswich, who exhibit a number of portable and stationary steam engines and boilers, besides a large collection of new and powerful agricultural implements, fully maintaining the repute of the Orwell Works.

At Stand 18, Messrs. G. Waller & Co., of Holland-street, Southwark, exhibit horizontal and vertical engines, sewage pump, penstock, tide flap, stoneware pipes, Latham's patent sewer ventilator, and other articles,—all of their own manufacture.

Stand 34 is occupied by Messrs. Banner Bros. & Co., who exhibit their well-known ventilating cowls, soil-pipes, and drain-traps.

At Stand 35 Messrs. Ewart & Son, of Euston-road, show their "Empress" and "Prince" ventilators and smoke curves, in various sizes.

Stand 53 is occupied by Messrs. Croggon & Co., of Upper Thames-street, who exhibit, besides their well-known roofing and hair felt, a number of articles in galvanised iron, including pig and cattle troughs, and wire netting for poultry enclosures, &c.

Messrs. J. G. Smeaton & Co., of Fulham, show, at Stand 64, their "Surprise" and "Excellentia" boilers for hot-water circulation.

Stand 73 is occupied by Messrs. Piggott, Brothers, who show rick-cloths, waterproof engine-covers, marquees, &c.

Stands 74 and 700 are occupied by Messrs. Francis Morton & Co. (Limited), of Liverpool, with some notable things in the way of fences and field railings, palisadings, hurdles, and gates, all manufactured by the exhibitors.

At Stand 82, Messrs. Cottam & Co., of Winsley-street, Oxford-street, are well represented by their specialities in stable and cow-house fittings. Some harness brackets exhibited by them embody improvements which ventilate and preserve the shape of the harness. We may also mention this firm's improved wrought-iron hinges and gate fastenings.

Stand 84 is devoted to the exhibits of Messrs. Musgrave & Co. (Limited), of New Bond-street and Belfast. Specially deserving of mention among their stable-fittings are their improved loose box, readily convertible into stalls; their patent "harmless" manger fittings; and their patent cow-house and piggery fittings. This firm appears to devote considerable attention to the efficient drainage and ventilation of stables.

Stand 92 is occupied by Messrs. Treggon & Co., of York Works, Brewery-road, N., who have a goodly array of galvanised iron, cattle, and pig troughs, corn bins, wire netting, cisterns, zinc dormers, corrugated roofing, &c.

At Stand 95, Messrs. Barnards, Bishop, & Barnards, of Norwich, exhibit not only such utilitarian articles as stable and harness-room fittings, cattle fences, sheepfold hurdles, pig and dog troughs, &c., but some highly-wrought iron gates, including those which, at the Paris Exhibition, formed the entrance to the courtyard leading to the apartments of H.R.H. the Prince of Wales.

Stand 135 is occupied by the St. Pancras Ironworks Company, who well sustain their reputation by their patent stable and harness-room fittings. They show a complete stable of seven stalls and two loose boxes; also a large collection of sanitary fittings for cowhouses and piggeries.

At Stand 138, Messrs. Bayliss, Jones, & Bayliss, of Wolverhampton, have a good display of their patent tubular continuous bar and wire fencing for agricultural and other purposes, together with several specialities in the way of hurdles.

Messrs. Picksley, Sims, & Co. (Limited), of Leigh, Lancashire (Stand 188), show some chaff-cutters and a large variety of more strictly agricultural implements and machines.

Messrs. John Fowler & Co., of Leeds (Stand 189) exhibit a large number of steam ploughs and cultivators, one of their specialities being a steam scoop, a very powerful implement intended for excavating large quantities of soil. We hear that it is being employed in Australia in sinking excavations or "dams" as much as 24 ft. deep in the beds of rivers, for holding water during the dry season.

Messrs. Hayes & Son, of Stamford and Peterborough, exhibit (Stand 245) a good collection of wheeled vehicles for common roads. We may specially mention their improved builder's or timber-merchant's van (No. 5,633 in catalogue); their builder's or joiner's spring tip-cart (5,634); and their extra strong contractor's cart (5,636). This firm also exhibits some improved barrows for navvies and brickmakers.

Stands 293 and 414 are occupied by the Pulsometer Engineering Company, who exhibit their well-known Pulsometer or contractor's pump, in various sizes, and, among other things, Perrett's patent rotary cleansing filter (6,9 stated to be capable of filtering from 2,00 3,000 gallons of muddy water per hour, so render it fit for certain manufacturing purp boiler-feeding, swimming-baths, and so on.

Stand 313 is allotted to Messrs. Entwist Kenyon, who exhibit their "instantaneous gr vices (Riley's patent), made in separate fo for engineers and for the joiner's bench.

Messrs. John Warner & Sons, of the Cres Foundry, Cripplegate, occupy Stand 320; t exhibits include a four-arm Cressy Colonia farm windmill-pump; two of Warner's impro patent self-regulating and winding annular wind-engines, for use in pumping, chaff-cutt wood-sawing, &c.; also a number of turbi rams, pumps, and other appliances conne with water supply.

At Stand 323, Messrs. Burney & Co., of L wall, exhibit a number of strong wrought-i cisterns, both galvanised and painted, toge with wrought-iron tank-carts for water, li manure, &c. They also show a numbe wrought-iron cattle-troughs, with "regist safe edge."

Stand 327 includes a number of new a ances, manufactured and exhibited by Mes Voice, Godfrey, & Co., of Broad-street, Bloc bury. The exhibits include Voice's pa "hydrostatic" water-waste preventer (7,6 Its capacity is two gallons, and it is constru to resist 400 ft. pressure of water on the m and can, we are informed, be made to resist pressure above that by lengthening the pip top. The same patentee's hydrostatic sup valve for urinals; his valve-seat-action regulator; and his waste-preventer pan clos are also among the specialities exhibited by firm.

Stand 328 is occupied by Moule's Pat Earth Closet Company, of Garrick-str Covent-garden, who exhibit numerous sp mens of their closets and earth sifters driers, together with Field's patent flush-t (7,709), manufactured by Doulton, of Lambe

The Sanitary Appliances Co. (Stand 2 exhibit varieties of Morrell's earth-closets.

Messrs. Woods, Cocksedge, & Co., of St market (Stands 348 and 401) have a large ar of engines and agricultural machinery appliances, including a road-watering or liq manure cart and a contractor's or local bo cart (8,165).

Messrs. Bellamy & Co., of Byng-street, M wall, exhibit (Stand 353) a large and va collection of wrought-iron water-cisterns oil-tanks, painted and galvanised, together w safety tanks for paraffin or spirit; wrought-i riveted corn-bins; wrought-iron cattle wat troughs,—some of the latter with Bellam registered "Climax" edge; and wrought-i water-cart bodies—all manufactured by exhibitors.

Messrs. Robey & Co., of Lincoln (Stands 4 and 396) exhibit their Robey fixed engines locomotive boilers combined; a self-act circular saw-bench (8,907); and a variety agricultural machinery.

Stand 421 is occupied by Messrs. Waygood Co., of Falmouth-road, Newington, who exhib among other appliances, their steam power p senger and goods lift, which, as we have p viously recorded, has been adopted in seve important new buildings.

Messrs. Tangye Bros. & Holman, of Que Victoria-street (Stand 433), show a number horizontal and vertical engines.

Stand 439 is appropriated to Messrs. Le Gra & Sutcliff, of Magdala Works, Bunhill-row, p prietors of Norton's patent "Abyssinian" Tub wells, who exhibit, in addition to vario specimens of tubes, pumps, and well-drivi apparatus, one or two novelties, foremost among which we may mention their patent tubul pile, which is driven by allowing the weight drop down inside the tube to the lower part the pile, thus bringing the impact of the bl where it will have most effect. A very simp and yet ingenious application of this pile is seen the exhibitors' patent round post-hole ramme which very readily and quickly enable holes be made for scaffold or telegraph poles of t exact size required, without loosening the s by excavation. The post-hole rammer consis of two parts, firstly, of a small tubular pil circular in section, but made square at t top, and pointed at the bottom. This pi is driven into the ground for its full dep (which varies with the size of the pile, whi again varies with the size of the pole required be erected) by hand with an iron rammer wor

le the pile. The top end of this rammer with a square key, so that the rammer a spanner fitting the square top of the d when the latter has been driven to the l depth, a turn or two of the key the pile and enables it to be readily up, leaving a hole into which the pole dropped. This appliance is now being the Royal Engineers in Zululand for the of telegraph-poles. Where it is desired, ubular piles are used as the permanent ions or sockets of telegraph-poles or osts, flagstaffs, tent-poles, lamp-posts, he applicability of the invention to the ection of railway signal-posts is shown f Messrs. Le Grand & Sutcliff's exhibits, ft. signal-post resting in a cast-iron rising from a triangular bed-plate, the ngles of the bed-plate resting upon and to flanged dwarf tubular piles. By this of fixing, no portion of the wood of the buried in the ground. Norton's patent s, with some improvements, are also d at this stand, and are used at the s to the Show.

tand 441, Mr. J. C. R. Okes, of Queen -street, exhibits three of Vosper's patent inder engines; a circular saw-bench; patent gas apparatus (9,602); a model & Robinson's patent sewage filter press; "Victoria" leather belting.

442 is occupied by Messrs. Hayward Co., of Whitecross-street, who exhibit patent hot-air engines for pumping and purposes; Cope & Maxwell's patent rsal" steam pumps; a number of nished horizontal engines; and other neous articles.

446 is appropriated to Mr. Thomas of Merthyr Tydfil, who exhibits his atic self-sustaining" hotel and ware- ft or hoist, together with a dinner-lift tck or bale hoist,—all on the same prin- They are simple in construction, and rorked and managed.

s. Bartram & Powell exhibit, at Stand ir patent "Comet" pump; and, among rticles, Michele & Carrington's cement 9,790).

462 is tenanted by Mr. F. W. Jackson, Kingsbury Ironworks, Ball's-pond, who number of meritorious appliances, in- the "A 1" combined vertical steam- clay and mortar mill, mounted on a platform, and therefore portable. This ment has been specially designed for the ontractors and builders. By the use of disengaging gear, the engine can be independently of the mortar-mill, and ant, such as saw-benches, may be worked t off the fly-wheel. Another speciality at nd is the "Cheap" barrow-hoist, very n construction, and provided with fric- ar, self-acting brake gear, driving &c.

tand 463, Messrs. Western & Co., of re-road, Lambeth, exhibit a stone-mould- planing machine, manufactured by them- They also exhibit one or two other ties, including Hamilton's patent illu- g stall-board, and the same patentee's dal and other pavement and floor-lights. rs. Whitehead & Co., of the Albert Preston (Stand 469), show their new "Albert" brick, tile, and pipe machine which is portable, being mounted on a te, supported by wheels. The action of chine is such that bricks, tiles, or pipes made by the same machine by varying s, and the action of the machine is such e return of the push-plate or piston is at about double the speed at which it es. There are no racks in the machine, lifting-lid to the clay-box, which is filled attendant during the return of the ate. This machine is well adapted for nufacture of perforated bricks, producing we are informed, at the rate of about per day. The machine is very compact mple, and is easy to work. The same hibit a number of specimen bricks and ade with the machine by the Knutaford and Tile Company, all the samples pre- a very clean, smooth, and hard surface. Whitehead & Co. also exhibit their com- "four-process" brick and drain-pipe machine (9,970); the double-process naking machine (9,971); and their im- tile and pipe machines, Nos. 1 and 2 73).

tand 473, Messrs. Wurr & Lewis, of Cam- bridge-road, exhibit a number of combined and single circular and band-sawing machines, saw-benches, &c.; also an improved vertical moulding machine (10,000), and an improved mortar-mill (10,001), with pan 6 ft. diameter.

Stand 474 is devoted to the exhibits of Messrs. Charles Powis, Carter, & Morris, of Millwall, including the "Joiner Universal" (10,007); the "Estate Carpenter" (10,009), suitable for preparing joinery work on estates; a number of saw-benches, moulding, mortising, and band-sawing machines; a new patent vertical moulding machine (10,016); and (10,017) a new patent continuous rotary and self-lubricating brick machine, which grinds, pugs, moulds, and presses plastic clay into double panelled bricks at one operation.

Messrs. F. W. Reynolds & Co., of Southwark (Stand 476), have a very fine show of wood-working and other plant. So numerous are their exhibits that we can only make mention of a few typical ones. No. 10,032 in the Show Catalogue is Messrs. Reynolds's new patent steam power combination circular and band sawing machine, "The Briton." No. 10,037 is their new patent multiple action mortising, boring, core-driving, and tenoning machine, the "Southwark," described and illustrated by us about a month ago (see p. 611, *ante*). We must notice also their self-acting blind lath painting or varnishing machine, Roberts's patent (10,040), capable of painting or varnishing 600 laths per hour on both sides, so that, reckoning 5 ft. as the length of each lath, 6,000 ft. run of lath surface can be painted in one hour, and this without the aid of steam power. The machine is also applicable to the painting of hoop iron, &c. The same firm's double slate-holer, "The Acme" (10,046), will take a 14 in. slate, and is capable of holeing 1,200 per hour without breakage. Messrs. Reynolds's 6 ft. mortar-mill, "The Spécialté" (10,056), is fitted with adjustable rings on the roller shaft so as to allow of the rollers being shifted from time to time in order to equalise the wear of the bottom plates.

Stand 483 is occupied by Messrs. Thomas Robinson & Son, of Rochdale, with their patent stone-dressing machine, for tooling, planing, and moulding stone.

At Stand 506 Messrs. Allen Ransome & Co., of Stanley Works, Chelsea, exhibit, very appropriately, a series of five ingenious machines for making butter-firkins and other casks. The set of machines, worked by steam power and attended by one man and six lads, will, we were informed, produce 250 butter-firkins in ten hours, ready for hooping-up, at a cost for wages of 18s. The particular set of machines exhibited is destined for the manufacture of fish-casks in a large establishment in Boulogne. During the time the Show is open Messrs. A. Ransome & Co. will exhibit, at their works in the King's-road, Chelsea, a large assortment of wood-working machines specially adapted for estate work and for implement-makers, builders, &c.

Messrs. Newton, Chambers, & Co., of the Thorncliffe Iron Works, Sheffield, exhibit in action (Stand 507) two of their patent close and open-fire cooking ranges.

At Stand 511, Messrs. W. Olley & Co., of High-street, Borough, exhibit their patent circular saw-bench (10,387), with drag-motion; and a number of other saw-benches, mortising-machines, joiners' tools, &c.

Stand 531 is occupied by Messrs. Clayton & Shuttleworth, of Lincoln, their exhibits including (among engines, boilers, and agricultural machinery of all kinds) a strong iron frame circular saw-bench, adapted for estate work.

Messrs. Davey, Paxman, & Co., of Colchester (Stand 532) show a number of portable and other engines, and a circular saw-bench.

Stand 543 is tenanted by Messrs. W. Foster & Co. (Limited), of Lincoln, who exhibit three portable steam-engines, thrashing-machines, &c.

At Stand 545, Messrs. Brown & May, of Devizes, show half a dozen portable engines of their own manufacture.

Messrs. Barrows & Stewart, of Banbury, exhibit (Stand 553), with other things, a combined engine, boiler, and mill, with pan 6 ft. diameter, suitable for grinding coprolites, mortar, &c.

Stand 564 is occupied by Messrs. Rownson, Drew, & Co., of Upper Thames-street, who exhibit their "Cyclops" portable forges and power-fans, and other articles.

The Sun Gaslighting and Heating Company, of Southwark-street, exhibit (Stand 568) their "Auto-Pneumatic Gas-making Machine" and automatic street-lamps. The latter are in practical use in (among other places) the suburbs of Colchester.

Messrs. Crossley Brothers, of Manchester, show in motion (Stand 571) five of their now well-known "Otto" silent gas-engines, varying from ½-horse power to 16-horse power nominal. We were informed that the latter gives out about 25-horse power on the pulley, and that it is the largest gas-engine yet produced in the world with a single cylinder. The cost of gas for these engines is stated at 1d. per horse power per hour.

At Stand 650, Messrs. Elliman, Sons, & Co., of Slough, exhibit their embrocation,—useful to all horse-owners.

Stand 668 is that of Messrs. Rosser & Russell, of Charing-cross, who show their "Amateur" lean-to greenhouse and hot-water apparatus suitable for the same.

Stand 670 is occupied by a glass erection showing Rendle's patent system of roof glazing. Mr. Rendle's system has been well tried, without being found wanting. It is to be used at the new Shoreditch Goods Station of the Great Eastern Railway,—a building that will cover ten acres of ground.

Mr. G. E. Pritchett, architect, Bishop's Stortford, shows (Stand 680) specimens of his patented construction of hollow walls and flooring, which consists in a combination of agricultural drain-pipes and concrete.

At Stand 683, Mr. John Matthews, of the Royal Pottery, Weston-super-Mare, exhibits specimens of Poole's patent "bonding-roll" roofing tiles, some agricultural drain-pipes, and a collection of terra-cotta vases, pedestals, fountains, &c., all manufactured by the exhibitor.

Stand 694, that of the Coalbrookdale Company, has for its central feature a large and costly cast-iron fountain. It is between 35 ft. and 40 ft. high, the diamater of the lower basin being 30 ft. It is the gift of Mrs. Margaret Strang Crooks to the town of Kilmarnock. This Company make a large display, their other exhibits including numerous smaller fountains, a number of statues, vases, flower-stands, &c., and several pairs of park gates,—one pair designed by Mr. B. J. Talbert.

At Stand 699, Mr. James Howorth, of Farnworth, exhibits a number of his patent revolving "Archimedian" screw ventilators, in various sizes.

A shed is specially set apart for the exhibition of plans of farm-buildings, but we are unable to speak of these because, for some reason not ascertainable, the shed was not opened to the public on the occasion of our visit on Monday last, although a peep through the windows enabled one to see that the plans were hung and apparently ready for inspection.

During the continuance of the Show, Messrs. Samuel Worssam & Co., of the Oakley Works, King's-road, Chelsea, are exhibiting in operation, at their factory, a complete set of wood-working machines.

We may have more to say next week with reference to the Show.

THE PARKES MUSEUM OF HYGIENE.

On Saturday last this museum, temporarily located in upper rooms at University College Hospital, Gower-street, was publicly opened by the Right Hon. R. A. Cross, Secretary of State for the Home Department. Arriving at the Museum at four o'clock, Mr. Cross, who was accompanied by Lord Cranbrook, the Duke of Northumberland, Cardinal Manning, Sir Thomas Watson, Professor Corfield, Professor Erasmus Wilson, Mr. Edwin Chadwick, C.B., Sir J. Bazalgette, and others, having inspected the museum, a meeting was held in the Botanical Theatre, presided over by Mr. Cross.

Mr. G. V. Poore, M.D., one of the honorary secretaries, read a report detailing the origin of the museum. We give the following passages:—

When Dr. Parkes's lamented death occurred in the spring of 1876, it was strongly felt by his professional and personal friends, as well as by those who had known him officially, that some steps should be taken to perpetuate the memory of a man whose existence had proved of almost unparalleled utility to others.

At a public meeting held under the presidency of Sir William Jenner, on the 18th of June, 1876, it was unanimously resolved that the memorial should take the form of a Museum of Hygiene.

With a view to carrying out this resolution, an executive committee was appointed, and in selecting the members of this committee the fact was not lost sight of that hygiene is a matter which concerns all classes. It was with a view to the thorough representation of hygiene, in all its aspects, that the committee was made to embrace gentlemen of many professions, and we were fortunate in being able to

find in this college not only physicians and surgeons, but professors of hygiene, architecture, engineering, and chemistry, who have all aided in furthering the work.

The first difficulty was in finding a suitable locality for the museum, and the committee desire to express their deep sense of the timely help which has been rendered them by the council of University College, who placed at their disposal the rooms in which the collection is now arranged. Without this help nothing could have been accomplished, for the funds at the disposal of the committee were not sufficient to rent, and still less to erect, a suitable building for the museum. The council of University College have, however, stated that they cannot guarantee a permanent home for the museum, so that it becomes the duty of the Executive Committee to make serious efforts to obtain, by purchase or otherwise, a permanent resting-place for the various articles which they have collected.

In determining what the museum should contain, the committee have tried to limit their endeavours mainly to an attempt to illustrate visually the various subjects which are treated of in Dr. Parkes's book on Practical Hygiene. The articles exhibited are arranged in six groups under the headings of,—1. Engineering and Local Hygiene. 2. Architecture. 3. Furnishing. 4. Clothing. 5. Food. 6. Preservation and Relief. To these must be added a library, which is, perhaps, the most important department of the museum.

The committee gratefully acknowledge the encouragement and support which they have received. . . . .

The committee deem it right to mention specially the very valuable assistance which they have received from Mr. Thomas Twining, of Twickenham. That gentleman has been indefatigable in his efforts for the good of the Museum. To his generosity is mainly due the collection of food articles.

Since its first appointment there have been several changes in the executive committee. Mr. Erichsen has been succeeded in the post of treasurer by Mr. Berkeley Hill, and Professor Russell Reynolds, on his resignation of the chair of medicine in this college, was succeeded by the present professor, Dr. Ringer. As originally constituted, the committee was composed entirely of members of the teaching staff of this college, for the Museum had its origin in a desire to perpetuate the memory of, and do honour to, Dr. Parkes in the institution where he was educated, and where he helped to educate others. Several circumstances have conspired, however, to widen the views of the committee, and their aim now is not to provide a museum which shall be of use merely to the students of one educational establishment, but rather to found a great central institution for the instruction of the public, where not only professional men, but owners of property, employers of labour, manufacturers, artisans, and other persons, both men and women, may study at their leisure the subjects in which they are most interested. For the furtherance of this object the original committee was enlarged by the election of members having no official connexion with this College; and it is gratifying to be able to state that Mr. George Godwin, F.R.S., Mr. Rogers Field, Mr. Netten Radcliffe, and Dr. Steele, of Guy's Hospital, have become the colleagues of the original members.*

At the beginning of the present year, Mr. Mark H. Judge was appointed curator, and his zeal and energy have already proved of great service to the institution.

It is shortly intended to institute for the benefit of artisans practically engaged in sanitary work a series of demonstrations of the uses of hygienic apparatus, under the direction of Professor W. Corfield.

The financial condition of the museum is scarcely satisfactory. Up to the present time the subscriptions amount, in round numbers, to 1,100*l*. The committee has always felt that, if the museum is to be a permanent success, an endowment is absolutely necessary for the payment of a curator, and to meet the necessary annual expenditure. Even in its present position, without any expenditure for rent, rates, or taxes, it is estimated that at least 200*l*. a year will be necessary to render the museum thoroughly efficient; for a museum not properly cared for and properly replenished must soon degenerate into something little better than a lumber-room. With a view to the formation of that endowment fund which is felt to be so necessary, the committee have invested in the names of trustees 600*l*. of the funds subscribed.

Mr. Cross then addressed the meeting. In the course of his remarks he said:—I am here to-day to testify, as far as I can, my hearty agreement with all the objects you have in view. First of all, I agree with the great object you have in testifying to the important benefits which were undoubtedly conferred on his fellow-countrymen by the gentleman whose name this museum bears. It is unnecessary for me to enlarge on the useful and extended sphere of his life, or to allude to the self-sacrifice, which was his standing habit and practice, for his fellow-creatures, but it is sufficient to know that the memorial which has been erected to him under your careful charge is the one memorial which he would have liked. It is a source of gratification that her Majesty the Queen should have testified, in the way she has done, her appreciation of the mode in which you hope to contribute to the health, comfort, and well-being of her subjects. This museum is an institution of infantile growth; but considering the short time the matter has been in hand, it has grown rapidly, and is likely to grow much more. I do not rely so much on the term "hygiene" which you have used, but I prefer the old-fashioned word "health," and when I say health I mean it in its widest sense, which includes social, moral, and physical health. We all have at heart the social, moral, and physical welfare of our fellow-creatures, and we all know that the actual state of health contributes much towards the moral and social well-being of the people. We are in the habit of hearing and saying very hard words about the drunkenness and vice which prevail amongst the poorer classes. I always hear that sort of language with regret, because allowance is not made for the want of education or the physical suffering and degradation of those people. With regard to physical health, you have a large field for your operations, and you want, as far as you can, to bring to bear upon the subject the great scientific knowledge many of you possess. What, as I understand it, you want to do is to get all the scientific knowledge on the matter applied to practical life, for we know that a great amount of the misery and the disease which exists is preventible. One of the objects, then, of this museum is to hunt down disease,—to drive it into a corner and stamp it out. The causes of many diseases are preventible when taken in time, and what you practically want to do is to restore the actual birthright of every citizen,—pure light, pure air, and pure water. If those objects are carried out you will, I am sure, come to the conclusion that the actual physical health of the people will be improved. The difficulties you will have to contend against are carelessness, indifference, ignorance, and selfishness. You will have to rebuke carelessness, to awaken the indifferent, to enlighten the ignorant, and to stamp out that selfishness which is so hurtful. I have stated the objects of this museum, and it is from the beginning to the end of this question that you want reform. It is wanted in the arrangements of the house by the architect and engineer, for in our present system of drainage there is often created the greatest evil. You want reform also in clothing, and in the manner of preparing food, and attention to things which are apparently small will create the greatest amount of domestic happiness. There is no matter so small as not to receive attention at this museum, and which will not have the fullest weight given to it that it deserves. There are thousands of people who live in crowded places,—such places which few of you in this room would venture to go into, and if obliged to live in them for a week would hardly be alive. I now declare this museum open.

The Duke of Northumberland moved the following resolution:—

"That the Parkes Museum, as fulfilling an educational want which has been long felt, is well worthy of public support."

His Grace observed that the education of the people was an important factor in the public health, and he was convinced that such education must proceed from above downwards. The most elaborate and complete appliances would be worse than unavailing where the people were too ignorant to appreciate them He had evidence which justified him in assuming that even surveyors and inspectors of nuisances in small urban and rural districts were often lamentably ignorant of the most rudimentary laws of sanitation.

Mr. Godwin, in seconding the motion, said that the inauguration of the museum and the growth of public opinion generally in favour of sanitary measures afforded great gratification to those who, like his esteemed friend Mr. Chadwick and others, many years ago undertook to endeavour to lead public opinion into the course in which it was now beginning to run. Sanitary reformers were not now scoffed at as they were many years ago when he (the speaker) first entered upon the task of doing what he could to improve the sanitary condition of the people. In those days men of education were to be found who would say that it was ridiculous,—some, even, that it was "flying in the face of Providence," to attempt to save life by any alterations in the condition of the homes of the people or in their manner of living,—that no such means would tend to lengthen life. Such persons were not aware then that persons living, say, at Eastbourne would have double the chance of life that they would have if living in Salford. Nothing disheartened, however, by the scoffs with which they were met, the small band of men who at that time represented the cause of sanitary reform worked on, gradually making their way, accumulating influence, and gaining new adherents, until now the value of sanitary measures was beginning to be recognised. The Act which had been passed by the distinguished chairman of that meeting, although it had been a long time creeping into operation, from[1] variety of circumstances which were to [2] regretted, would, nevertheless, in the long r[un] tend greatly to improve the condition of t[he] labouring classes. But much as had been do[ne] in the direction of improving the dwellings [of] the people, it was but as a drop in the ocea[n]. Overcrowding to a frightful extent still o[b]tinued. He had lately seen a room inhabited [by] four families, each family occupying one corn[er] while a bacholor rented the centre of the roo[m] —a room not calculated to give healthy habit[a]tion to more than two people, yet on the nig[ht] he saw it there were seventeen persons sleepi[ng] in it! As the resolution said, the Park[es] Museum of Hygiene was an institution deservi[ng] the support of the public, and he, as one of t[he] committee, cordially invited the aid of man[u]facturers, inventors, and patentees of sanita[ry] and hygienic appliances in making the muse[um] as complete and representative as possi[ble]. He hoped that some day the Government wo[uld] feel it to be their duty to provide a suitab[le] place for the housing of the museum, and [to] arrange for lectures calculated to promote t[he] health and prosperity of the people. He look[ed] for the day when the troubles of war wo[uld] have ceased, and when statesmen would find [it] to be their highest duty and their greatest j[oy] to endeavour to aid by home measures in pr[o]moting the happiness of the people.

The resolution was unanimously adopted.

Viscount Cranbrook moved the next re[so]lution:—

"That the best thanks of this meeting be accorded to the president and council of University College for [the] assistance they have rendered in the development of [the] Parkes Museum, and for the loan of the Lecture Theatre for the present occasion."

After dwelling on the necessity of beginn[ing] the work of sanitary education with the high[er] classes, he urged the promoters of the muse[um] not to rely upon Government aid, but to c[on]tinue their work in the self-helpful spirit [in] which they had begun it.

Cardinal Manning, in seconding the resoluti[on], quoted from statements made by Mr. Edw[in] Chadwick, C.B., with reference to the health [of] the army, to show what influence proper sa[ni]tary conditions had in diminishing the dea[th] rate. It appeared that in 1858 the death-r[ate] in the army was 27 per 1,000, but the sanit[ary] improvements effected during the last sev[en] teen or eighteen years had reduced the dea[th] rate to 9 per 1,000. In like manner, the dea[th] rate in the Indian army had been reduced fr[om] 60 to 27 per 1,000.

The resolution was carried, and Mr. E. Enfi[eld] replied on behalf of the College.

Professor Hill, having read a list of subscri[p]tions,

Sir Wm. Jenner, in moving a vote of thank[s] to the Home Secretary for presiding, attribu[ted] the dreadful condition in which he found ma[ny] houses of wealthy people either to the owne[rs'] want of faith in sanitary science or to [the] ignorance of those who were employed to car[ry] out sanitary works.

Professor Huxley seconded the motion, wh[ich] was carried.

SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.

THE second annual meeting of this socie[ty] was held on Saturday afternoon last at Willi[s's] Rooms, the Hon. Percy Wyndham, M.P., in t[he] chair.

The Chairman, in opening the proceedin[gs] announced that the secretary had receiv[ed] letters from Sir John Lubbock, Sir Charl[es] Dilke, and Mr. Lecky, stating their concurren[ce] in the objects of the Society; also from M[r.] Samuel Huggins, one of the original promot[ers] of the objects of the Society at Liverpool, w[ho] said he trusted that the Society might be su[c]cessful in their attempt to save the churches [of] the City of London from destruction. Contin[u]ing his remarks, the Chairman said the Socie[ty] had now been in existence rather more th[an] two years, and they were now beginning to s[ee] what their aim ought to be in order to gi[ve] effect to the object they had in view, viz., t[he] preservation of the ancient buildings of th[e] country. That aim ought to be no lower th[an] that of altering the whole standpoint fro[m] which the public viewed the question of resto[ra]tion, so that, instead of, as at present, t[he] burden of proof resting with those who wou[ld] defend an old building from restoration, it shou[ld] rather lie with those who would interfere wi[th]

* The original committee consisted of the following:—Sir William Jenner, bart., K.C.B., F.R.S., chairman; Dr. Corfield, Professor of Hygiene; J. E. Erichsen, esq., F.R.S., Professor of Clinical Surgery, treasurer; A. B. W. Kennedy, esq., C.E., Professor of Engineering; Hayter Lewis, esq., F.S.A., Professor of Architecture; John Marshall, esq., F.R.S., Professor of Surgery; Dr. Russell Reynolds, F.R.S., Professor of Medicine; Dr. Williamson, F.R.S., Professor of Chemistry; and Dr. W. R. Gowers and Dr. G. V. Poore, honorary secretaries.

Society was perfectly aware that restoration must take place, but they contended that building happened to contain work of periods it was going beyond restoration up or level down those portions of it did not happen to be of the particular which most commended itself to the ions of the architect engaged.

William Morris, the hon. secretary, then annual report, which contained the passages:—

ting for their second annual report, the Committee that while they have undoubtedly to congratulociety on the progress made by its principles, of their work is little altered from what it was

be remembered that as so much of that work egative character, is preventive rather than is not easy to show the obvious signs of success some undertakings; while, on the other hand, ittee are apt to see most of the discouraging side ter, because the greater part of their work consisting and advising in cases in which there is nope of direct success, since such schemes have ne far before the Society can know of them. es, those protests cannot be regarded as useless; ees there are some people concerned who will such support as the Society can give them, and worst, their earnest appeal to care and patience ave something of value, and prevent the most hanges; in the mean time, even unsuccessful proare to breed doubt in some minds that have not ought of the subject, and to make those already treat ancient buildings with reverence more disthorough care and forbearance in their practical th them.

these things into consideration, therefore, the s, on the whole, no cause to be disappointed esults of its work since its foundation. It is d the general tone of the public is decidedly urable to its principles than when it was first

to details of the work done during the past s discovered that the business of the Society onerous for the one general committee that ormed, that it became absolutely necessary to mmittees to carry on the work of the Society. ion Committee was formed, which has had before s sifted the cases submitted to the Society a great portion of the year.

ttee, to take notice of the condition of ancient broad, called the Foreign Committee, has also tuted, in accordance with a hope expressed in report, and has begun its work by putting itself unication with archæological societies in France, Italy, Belgium, Holland, &c. Inquiries have a foot respecting the state of ancient buildings also in Spain, where restoration is commencing. pectus of the Society has been translated into rman, Italian, and Dutch, and steps have been tain corresponding members in each of these The committee do not conceal from themselves ties in their way in dealing with the state of a foreign countries; nor is it easy to overrate y for caution in such dealings, but it is hoped orts of the Society to prevent the falsification nts, and the ruin of works of art, may attract broad, and be commented upon in the public that its principles may be spread thereby.

nents have been made for appointing local orrespondents in various parts of the country, pose of obtaining quick and accurate information eatened restoration or demolition of any ancient There are now twenty-two correspondents spread en counties, and it is hoped that before long er will be considerably increased.

the objects the committee have taken in hand servation of the City churches, and in this ey are able, to a certain extent, to report Although St. Dionis Backchurch has been the interesting church of St. Mary-at-Hill, has, in spite of strenuous opposition, been this case much help was afforded by the 'City d Churchyard Society.' Owing however, to the Benefices Act, the City churches are being constructed, and very great vigilance has to be to secure early information of any proposed , and to prevent a surprise. The committee calling attention once more to the loss that , and the country at large, would incur by the of these interesting and handsome buildings, such a rest, both for the eye and the mind, hurry of business London.'

onard Courtney, M.P., in moving the of the report, said it referred to good ne, and indicated a great deal of bad vented. If the Society was not always l in preventing mischief being done in h, the stir it made and the remonit put forth against restoration promany cases had the effect of preventing in adjoining parishes. It was satisto know that the Society was doing its avert the destruction of the City . Certain people, no doubt actuated est of motives, had thought that they good service to the Church as a religious ion by pulling down the disused City and selling the sites, and with the building new churches to meet the f the suburbs. He should be sorry he thought that Churchmen were so pirit that they would desire to build with the means which such destruc- them. If they cared much for the of religion, they would build new where required, with their own . The churches of the City of London narkable as works of art, and formed of architectural structures not inferior to any to be found elsewhere in Christian Europe, except perhaps in Rome itself. To destroy Wren's churches was not only to slight our forefathers, but to damage ourselves and our posterity. On the general question, the speaker said that one reason why the Society objected to the work of architectural restorers was that to restore an ancient building or part of a building by exactly copying in modern masonry the details of the old work was to commit what in a picture or document would be a forgery. There was ample room for the Society to exercise its influence abroad. In France, "restoration" had been carried out to a greater extent and in a worse fashion than in England. In Spain, the work of destruction was just beginning. In the case of those countries the Society would not be able to exert very directly its influence, but in the case of India it was to be hoped that it would be able to prevent the further spoliation by the Public Works Department of those wonderful works of art, the buildings of the Mogul kings. At Agra and Delhi, the Department had been set to workings and had succeeded in completely ossifying and debasing some of the Moslem buildings of those cities.

Mr. G. Cavendish Bentinck, M.P., seconded the adoption of the report, and said that the best way of making the Society successful would be found in each member practising what he preached, and being true to himself. He was afraid that many eminent gentlemen, although avowedly in favour of the objects of the Society (even though they might not be members of it), often had opportunities of doing good of which they did not or would not avail themselves. It was all very well for Mr. Street and Mr. Blomfield to protest against restoration in the case of St. Alban's Abbey, but what did they do when they were themselves called upon to do something of the kind that was being done at St. Alban's? He had just come from the Guards' Chapel at the Wellington Barracks, a very respectable building in its way, of Classic architecture. The inside of the building had now been made to assume the appearance of a Byzantine or bastard Lombard interior. A similar thing had been done at St. Peter's, Eaton-square, a church built by the late Sir Robert Smirke. Many of the members of the Society were members of the Royal Institute of British Architects. He himself was an associate member of the Institute, and he must say that he did not think that it had stood by the principles of the Society as it ought to have done. The Institute was very fond of calling meetings to discuss the subject, but there it stopped.

The motion for the adoption of the report having been put from the chair, it was carried unanimously.

Professor Bryce moved the following resolution:—

"That this meeting, recognising the value of ancient buildings to the student of history, whether general or local, deprecates all alterations in, and restorations of, such buildings which may obliterate their historical character and features."

He observed that of all the arts and sciences which were the handmaids of history,—and in a certain sense history might be said to include and sum up all human arts and sciences,—there was none whose connexion with history was so close as the art and science of architecture. There was no kind of historical evidence so important and so valuable as that afforded by ancient buildings, and therefore he endorsed the remark made by Mr. Courtney that a great deal of so-called architectural restoration was the equivalent in stone of a forged document.

Mr. William Morris, the honorary secretary, seconded the motion, which was unanimously agreed to.

Earl Cowper moved the next resolution, as follows:—

"That the work which the Society has carried out during the past year has been both important and useful, and that in the opinion of this meeting the Society is deserving of continued and energetic support."

In the course of his speech, he observed that it was perfectly abominable that, even in the case of our largest and oldest monuments, a small committee, appointed nobody exactly knew how, should arrogate to themselves the power of doing everything they liked,—pulling down, mutilating, modernising, and restoring. As a Hertfordshire man, he regretted having subscribed to the restoration of St. Alban's Cathedral.

The Rev. Stopford Brooke seconded the resolution, which was carried.

Mr. J. L. Ffytche, F.S.A., in proposing a vote of thanks to the chairman, told the following curious story:—"Walking one fine summer's morning in June down to the Mansion House, on reaching the Poultry I was surprised to see a man on the top of the tower of St. Mildred's Church, hammering away at the stones with a crowbar; so, finding the door open, I went up the stairs of the tower, and said to my friend of the crowbar, 'Why, you are pulling the church down!' 'Ay,' says he; 'it's all to be down and carted away by the end of July.' 'I suppose it's going to be rebuilt elsewhere?' '*Built* anywhere?' No; my master has *bought* it.' 'Who is your master?' 'Don't you know him? Mr. So-and-so, the great contractor.' 'What's he going to do with it?' 'Do with it? Why, he's twenty carts and forty horses to lead it away to his stone-yard, and he's going to grind it up, to make Portland cement!' So I asked him of the crowbar to show me round the church. 'Would your master sell the stones instead of grinding 'em up?' I asked. 'Sell 'em? Yes, he'll sell his soul for money!' So I made an appointment for him to come up to the Langham Hotel next morning, and we agreed about the purchase,—he to deliver the stones at a wharf on the Thames, and they were brought down in barges, and landed at the head of a canal on the east coast of Lincolnshire, and are now lying in a green field near my house, called St. Katherine's Garth, from an old Priory of St. Katherine, which formerly stood there, and which I hope some day to rebuild as a domestic chapel."

THE CITY OF LONDON SCHOOL.

In the account we gave last week of the competition for this building it is stated that on the 4th of June the School Committee reported to the Court of Common Council that they had selected three designs, which they placed in a certain order. This, we are informed, is inaccurate, as the Committee did not report, but only resolved to report, on that date, and on the 18th ult. they met again to consider and sign their report, when they varied the resolution they had arrived at by placing the design "Simplicity" in the third place, and "Playgrounds" in the second place.

The position of the selected designs is, therefore, as follows:—

1. "Live and Learn,"—Messrs. Davis & Emanuel.
2. "Playgrounds,"—Mr. T. E. Knightley.
3. "Simplicity,"—Mr. T. C. Clarke.

It is possible that an anonymous circular addressed to the Common Council, pointing out certain alleged defects in the planning of the first selected design, and urging that "the elements of decision on the plans should rest on the points of which designer has supplied the largest cubical space of air per boy in the class-rooms, whilst securing the smallest cubical area in the whole building," has had something to do with the alteration in the order of the award of the School Committee.

It will be seen by our advertising columns that an influential committee of the competing architects in this case has been formed, in order to ask the Court of Common Council to publicly exhibit the designs before making their award. Competitors are invited to attend a meeting which is to be held at the Cannon-street Hotel on Tuesday next, the 8th inst., at three p.m.

[Since the foregoing was in type we learn that the Committee have determined upon publicly exhibiting the drawings, as will be seen by another advertisement.]

COMPETITION FOR THE CITY OF LONDON SCHOOLS.

With this heading the following printed document has been circulated amongst members of the Court of Common Council, no signature, address, nor date being appended:—"The selection of the best design for the above buildings so far transcends in importance the subordinate question of who may be the author of any special design, both as to the future welfare of the schools and also to the Corporation (considering that the building will last for generations), that the following remarks on the three designs now before the Council are submitted for your judicious consideration. The Common Council will do well not to allow themselves to be hurried to a decision on so large and weighty a matter, however much it may be desired by those now placed first in the competition. There are certain grounds of judgment which should certainly

guide the Council, influencing their selection, and deciding the order of the three designs, and it is for the members of the Corporation to ascertain how far the plan selected as first can justly be held worthy of that position. It may be well to ask if the Corporation, in giving so magnificent a site for the new schools, meant to sacrifice the buildings for a playground, or whether the intention was to have the best class-rooms conveniently arranged, and a playground as large as the site will admit of, as specified by the conditions. One of the leading ideas in any design should be that of keeping the boys entirely distinct, in the working of the schools, from the administrative part of the building. In the design selected for the first place, the boys, in going to the dining-hall, must traverse a long and dark corridor, passing by the whole of the administrative department. A vital point is to arrange the class-rooms and corridors so that the boys, in going to and from their class-rooms need not necessarily meet; and this they must inevitably do in the design selected as the first, as there is but one passage or corridor on each floor of the building, with eight class-rooms debouching thereon, and with someaddi-tional class-rooms even on the second floor. By placing the greater number of class-rooms on the western side of the buildings they are exposed, not only to the noise of a future street, but to the heat and glare of a western sun, whereas if some class-rooms had been planned with a northern and eastern aspect those defects would have been avoided. A great defect of the first design is that in order to provide play-grounds under the ground-floor, the main floor of the building has been thrown up, thereby creating great additional expense in its erection with no adequate object, and in addition an immense gymnasium, about 90 ft. by 50 ft. and 24 ft. high, running from the basement right through the height of the ground floor, has been placed immediately in the rear of the adminis-trative block, and opposite and nearly close to the main entrance, taking away the light and air of the building in one of its most important parts, and rendering the corridor before referred to (which must be largely used) dark and ill-ventilated. A very important point in a build-ing of this character is to place the latrines near but apart from the buildings. In the design selected as the first some are placed in the basement, surely a most undesirable plan, and the others are placed at the extreme north end of the site, not easily available without consider-able exposure. The great principle should be to provide large airy class-rooms with double lighting and natural ventilation, and in any plan selected the head-master should have easy supervision on two floors of class-rooms, with perfect power of classification for junior and senior departments if desired; the great hall, lecture-rooms, and chemistry department, common to the whole school, being placed apart, but in a central position to each series of class-rooms, and approachable from different sides of the building. The elements of decision on the plans, it is submitted, must rest on the points of which designer has supplied the largest cubical space of air per boy in the class-rooms, whilst securing the smallest cubical area in the whole building, without neglecting the other require-ments of the design. Whichever of the three designs meets in the closest way the above points, at the same time giving a building which, by its collegiate character, may endear it to the pupils in after-life (when possibly some go on to the universities), and be worthy of the great Corporation of the City of London, ought, it is respectfully submitted, to be placed first in the competition."

DROITWICH NEW WATERWORKS.

DROITWICH, famous for its saline springs, has at length obtained an abundant supply of pure water for sanitary purposes. For years the borough has suffered indirectly from that to which the town owes its existence,—the im-mense saline beds beneath it, which rendered all private wells brackish, and placed almost insuperable difficulties in the way of obtaining a public supply for the town, suitable for domestic purposes. Years ago Mr. Swinburne was consulted, but no satisfactory source of supply could be discovered, and the matter remained in abeyance until attention was specially directed to the subject, some two or three years ago, by the medical officer of health, Dr. Horace Swete, who also found many of the wells contaminated with sewage matter. Mr. E. Pritchard, C.E., of Westminster and War-wick, was called in, and in conjunction with Dr. Swete, after inspecting the district, fixed upon Tagwell Spring, a small outcrop at the north-western side of Newland-common, as most likely to afford the desired supply if water in sufficient quantity could be found. Examina-tion showed there was here an extensive gathering-ground, including the Smite-hills, to Hindlip, where Mr. Allsop has since tapped water obtained from the same glacial drift of the New Red Sandstone, and is supplying it for domestic purposes to Hendlip Hall.

These facts having been ascertained, steps were taken to gauge the outcrop at Tagwells, and the rainfall. The former was found to be little affected by sudden heavy rainfalls, whilst yielding from 25,000 to 60,000 gallons in the 24 hours; and the rainfall varied from 25 in. to 27 in. per annum, representing 101 tons of water per acre. The engineer began by driving three adits into the drift,—one along each side of the Tagwell slope, and the third into the hill itself. Into these adits perforated pipes were put, and these convey the water to the pumping station at Tagwells. The yield is ascertained to be 123,000 gallons per day, and as 60,000 gallons will provide 15 gallons per head for the existing population, the supply is adequate for all pur-poses, present and prospective.

At Tagwells, a pair of compact horizontal engines, driving direct-acting equilibrium-pumps, have been erected by Messrs. James Taylor & Co., of Birkenhead. Each engine and pump, with 40 lb. of steam, will lift 10,000 gal-lons per hour to the reservoir, 100 ft. above the highest level of the town, and capacious enough to hold three days' supply. The service pipes are fitted with expansion joints, to guard against injury from subsidence of the ground, common in all salt-yielding districts; and altogether some four or five miles of mains have been laid throughout the borough. The contract for all the work, except the engines, was executed by Mr. Law, of Kidderminster.

The works were publicly opened on the 27th ult., by the mayor, Mr. Holyoake, in the presence of several members of the Town Council, the ex-mayor, Mr. Bradley, the town clerk, the borough engineer, and several influential resi-dents. Mr. Pritchard, the engineer, first gave a description of the works, and then Dr. Swete read an analysis of the water, giving the follow-ing results per gallon:—Chlorine, 2·5; total solids, 41·0; and free ammonia, 0·2. The cost of the works has been 9,000*l.*, including 2,500*l.* paid for about half an acre of land for the pumping-station and reservoir, and for driving the adits into the hill; and it is computed that, excluding all water required for public and sanitary purposes, the revenue at 1s. per 1,000 gallons will far exceed the annual cost of the works, including repayment of principal, interest, and a fair allowance for depreciation.

The Mayor, at the opening ceremony, alluded to the great importance of a good water supply to a community, adverted to the inconvenience Droitwich had experienced in the past from not possessing any public waterworks, and ex-pressed an opinion that those they were that day inaugurating, which he characterised as a triumph of geological research and of mechanical engineering, would prove a permanent benefit to the town, and conduce largely to the future progress and development of the town.

The engines and pumps having been started, the mayor, corporation, and visitors inspected the various portions of the works.

PARTS OF THE SOCIETY OF ARTS' REPORT.

THE Report from the Council read at the annual general meeting of the Society of Arts on the 25th of June showed that the affairs of the Society were in a very satisfactory condi-tion. The following extracts will interest many of our readers:—

Artisan Reporters.

"It was announced in the report of the council presented to the Society last year, that H.R.H. the President of the Society had pro-posed to the council that arrangements should be made to procure a series of reports by repre-sentative artisans on the Exhibition then being held in Paris, in the same way as had been done by the Society in 1867. At the time when the last year's report was issued the movement had been but recently begun; during the summer of 1878 it was carried to a successful issue.

As stated in last year's report, a joint co mittee was formed of members of the Ro Commission and of the Society of Arts. T committee held many meetings, and under directions arrangements were made for sel ing a number of men, sending them to Pa and receiving them there. The committee collected funds for the purpose of defraying i expenses of this movement. The result of arrangement was, that 204 artisans were over to Paris, most of whom have sent reports; 57 of these men were sent at expense of the fund; the charges of the ot 147 were defrayed, some by provincial to others by various societies, others thro their employers; whilst a few paid their expenses.

In the arrangements made for the report the committee were greatly assisted by t London, Chatham, and Dover, and the So Eastern Railway Companies, who undertoo carry the men to Paris and back at a redu rate. The London, Brighton, and South Co Railway Company also made similar arran ments, and conveyed some of the later part The arrangements in Paris for the reception the men were made under the special di tions of Sir Philip Cunliffe Owen; two ho were engaged near the Exhibition for t benefit, and some rooms were also set aside the purpose in one of the houses used by staff of the Royal Commission. The men w admitted free to the Exhibition, and were gi every facility for the successful accomplishm of their task. They were also introduced many of the best workshops and manufacto within reach of Paris. In all cases, it is p sant to be able to say that the reporters pressed themselves well satisfied with arrangements made for their reception.

In all, 168 reports were received: some these have already been printed by the to who subscribed to send out the men; and reports, made by the reporters of the Cor makers' Company, have been printed in a v handsome form by a late Master of the Co pany, Mr. C. Sanderson. The other repo were carefully considered by the commit and it was eventually decided to make a sel tion from them, and publish the selected repo in classes, as well as in a single volume. In undertaking the committee have been grea helped by the liberality of Messrs. Eyre Spottiswoode, who have undertaken to pu the reports at cost price; and of Mes Sampson Low, Marston, Searle, and Riving who have undertaken, on being paid a cert sum towards the cost of printing, to pub the reports at their own risk. The repo are now passing through the press, and w appear almost immediately; most of th indeed, are printed, and are only waiting their final corrections."

Owen Jones Prizes.

"The first award of the Prizes established the Owen Jones Memorial Committee has b made during the present year. That Committ presented to the Society the sum of 400*l.*, balance of subscriptions to the Owen Jo Memorial Fund, on the condition that the in rest of this money should be expended in pr to students of the Schools of Art who sho produce the best designs for household furnitu &c., on the principles laid down by Owen Jon The examiners reported that the follow students had sent into the annual competitio the Science and Art Department works sufficient merit to deserve a prize:—John Carr, school of art, Nottingham, design fo lace curtain; Frank Baker, school of art, N tingham, design for a lace curtain; Harry Hitching, school of art, Nottingham, design a wall paper; Arthur J. Sewell, school of Nottingham, design for silk tapestry; Isabe C. Bergin, metropolitan school of art, Dub design for muslin; and I. S. Ingall, school of Barnsley, design for modelling rosettes a ornamental borders.

The prizes consisted in each case of a w bound copy of Owen Jones's "Principles Design," and a Bronze Medal. For this purp a special edition of "The Principles of Desig was prepared, and the council have to ten their thanks to the Institute of British Arc tects for permission to re-publish this wo which was originally a communication made Owen Jones to the Institute. The republicat was under the charge of Mr. Alan S. Cole, whom also the thanks of the council are for the trouble he took in the matter."

Silversmiths' Work.

he beginning of the last session a very fer was made by Mr. E. J. Watherston, ope of improving the present style of nship in the precious metals in this Mr. Watherston placed at the disposal ociety a sum of 100*l.*, to be offered as a the best essay on the art of the silver- The proposal, as was announced in last port, was accepted by the council, and ety's medal added to the prize offered Vatherston. A committee was appointed, drew up a set of conditions for the of competitors. A circular, embodying nditions, was accordingly published in r, 1877, and nearly a year later, in 1878, the date appointed, several essays eived. On one of these, by Mr. Herbert he committee considered that so much and labour had been bestowed that commended the council to award to it ety's silver medal and the money prize by Mr. Watherston. The council have the recommendation, and made the ccordingly. The essay strongly recom- he abolition of the duty upon gold and late, and, further, that hall-marking e voluntary, and not a compulsory pro- It may be added that the Committee Louse of Commons which, after sitting essions has just reported, recommends h duty should be abolished as soon as nue permits, but approves the retention hall-mark. The council have left it to ger to publish his essay or not as he t."

School of Wood-carving.

ommittee of the council, appointed last , after having for some time considered y could best utilise a sum of money to them by the Drapers' Company for notion of some branch of technical edu- letermined that this could best be done ding a school of wood-carving in London, accordance with this resolution, the School of Wood-carving was established rset-street, Oxford-street. It appears fact that this beautiful art, in which our men once excelled, has long been ring amongst us, and that we are further other countries in it than in many epartments of decorative art. Very od wood-carving is now produced in , none of the highest quality, and when itects and decorators require it, they ked to send their commissions abroad. hese circumstances, it certainly appeared council that a very promising field was the labours of the Society, and a most one. It happened that there was in at the time an Italian wood-carver, of rable eminence in the art, Signor Buletti, committee recommended that an ar- ent should be made with him to conduct in wood-carving. The proposal was laid the committee of the court of the s' Company, and was at once approved n. A grant of 155*l.* was accordingly by that committee for the purpose of hing such a class. It was considered r various reasons, that this institution be on a separate basis, and independent Society; and a committee was, there- ormed to carry on the business of the the council undertaking to pay out of ds given them by the Drapers' Company, s for eight students. The committee ed of Lieut.-Col. Donnelly, Mr. R. W. F.S.A., Mr. E. J. Poynter, R.A., Mr. W. son (of Messrs. Gillow's), and the late Neve Foster. To them was afterwards Mr. W. Chapman, a member of the court Drapers' Company, while on the decease Foster, his place was taken by the pre- ecretary of the Society. Under their on premises were engaged in Somerset- Oxford-street, and fitted as workshops, Buletti being installed as instructor. ree students were nominated (one more had been originally intended), and a few students also presented themselves. hool was opened in January last, and the in the care of the Society sufficed to the necessary expenses to the present The council now consider that the school ar established, that it can deal direct with nders, the Drapers' Company, and they therefore expressed to the Drapers' Com- , their hope that the company will continue their subscription to the school, paying it direct to the School Committee."

National Training School for Music.

"During the year a movement of some importance has been on foot with reference to the amalgamation of the National Training School for Music and the Royal Academy of Music. As yet, however, no definite course has been determined upon, and the council are not in a position to state what the results of the movement will probably be. The Training School itself has been going on satisfactorily and steadily. The funds provided have fully paid the expenses, whilst the scholars appointed have, in nearly every instance, justified their appointment. Since the last report, five new scholarships have been founded, one of them through the agency of this Society."

Universal Catalogue of Printed Books.

"In January, 1878, H.R.H. the President of the Society referred to the Council the subject of the cost of producing a catalogue of all books printed in the United Kingdom up to the year 1600. The proposal had been before his Royal Highness for some little time before, and the reference to the council was merely upon the question of the cost of producing such a work, and was not made with any idea that the Society of Arts should bear the expense of so large an undertaking. In consequence of this communication, a committee was appointed by the council, and a number of questions issued to librarians, publishers, and others, seeking information on the subject; the committee also held several meetings, and took the evidence of persons conversant with the subject, amongst others, that of Mr. Bullen, the keeper of the printed books in the British Museum. The conclusion arrived at by the committee was that, before any such task could be attempted, as the preparation of a general catalogue of English-printed books, though stopped at even so early a date as 1600, it would be desirable to print and publish the catalogue already existing in manuscript in the library of the Museum. The value of this catalogue as it now exists is admitted on all hands. Though it is not, of course, a complete catalogue even of English literature, it is the nearest approach to such a work existing, and it must of necessity form the base for the complete catalogue, whenever it may become practical to produce it. It appeared from the evidence of Mr. Bullen that the Museum catalogue would be ready for printing within two years, and the same gentleman gave it as his opinion that it would take five years to print. It was generally agreed by the witnesses that the printing of the British Museum catalogue would be highly desirable, for its own literary value, apart from its use as a book of reference to the contents of the Museum library, and in this opinion the committee cordially concurred. They accordingly reported in this sense to the President, and on receiving the announcement of his approval, they published their proposals, and issued a circular to printers and others, in order to ascertain definite particulars of the probable cost. The committee had also a specimen page prepared in what would probably be the cheapest possible form. This page was sent round with the circular to a large number of printers, and the committee have now under consideration the replies which many of the printers were good enough to send them. They hope shortly to be able to issue a second report, in which they would state farther details of the cost of the undertaking, and what they consider would be the best way of carrying it into effect; in the meantime, they are glad to be able to say that the proposal they have made has met with the unqualified approbation of all the authorities on such questions, and that they have received great encouragement from numerous articles in the public press on the subject. The committee, of course, have no idea that the Society should find funds for printing the catalogue of the Museum, but they hope to be able to lay their proposal before Government in such a form as to induce them to authorise the trustees to undertake this important task."

Memorial Tablets.

"During the year no additional tablets have been set up, but the council have entered into communication with the Corporation of the City of London in the hope that the Corporation would assist the Society so far as regards the erection of memorial tablets within the City itself. They are glad to be able to report that the proposal, after full discussion in the City Lands Committee, was received most favourably, and they have every reason to expect that the Corporation will themselves undertake this portion of the work, thereby relieving the Society of Arts from a considerable part of its self-imposed task in the matter. The council have, of course, undertaken to assist the City committee, and they feel much gratified at the cordial way in which their suggestions were received. When the result is seen of the action taken by the City of London, the council will bring the idea before other large municipalities. By means of these tablets, reminiscences of the most remarkable persons in history will exist throughout the kingdom."

DRYING DAMP BUILDINGS.

It is sometimes of considerable importance that the drying of a new building should be effected in a brief space of time, and sometimes even more so that the means should be at hand for rendering healthy old constructions impregnated by dampness from the soil. M. Ligny has invented an apparatus for this purpose, which is being used in France, and an agency has been established in England. The apparatus for drying includes an ash-pan; a hearth, with rectangular iron fender, about 0·70m. long, by 0·40m. wide, and 0·40m. high (the hearth is filled with coke and furnished with an iron plate, which serves as reflector); and ten tubes of iron plate, of about 1m. to 1·25m. long, capable of being lengthened at will, which are placed vertically in the fire in such a way that the lower extremities, extended in the shape of a funnel, cover the hearth almost entirely. These tubes are held by iron props fixed to the fender of the hearth, and are bent in any direction that may be required by means of a screw-compass.

When the apparatus is once heated, the cold and damp air passing across the fire is discharged of its dampness and projected very hot against the walls.

A small blower may, in case of need, be attached to one of the tubes in order to convey more hot air to a given point, and also to reach certain parts to which the apparatus could not be brought near. For drying old buildings impregnated with damp from the soil, M. Ligny adapts the following plan:—First, to take off all plaster on the walls which are damp and full of saltpetre of the room which is to be done; then carefully to remove all joints to half the thickness of the walls, which is done bit by bit, to prevent any risk of shaking the walls. Wet the walls thus cleared several times, and each time dry them by means of the apparatus, in order to dissolve all the saltpetre existing in the materials, then cleanse the walls with rough brushes. After this clearing, drying, and cleaning has been carefully done, the brickwork not containing any more dampness or saltpetre, it is again heated, and in every part (by means of a brush) covered with a boiling liquid hydrofuge, which is rapidly absorbed.

THE CREMATORY AT WOKING.

An association has been formed in this country for promoting cremation, or the burning of the dead, in England, and the preservation of the dry ashes, instead of, as now, committing the entire body to the earth. This association has actually erected a crematory about three-quarters of a mile from Woking, and on the slope of the rise called Knapp's Hill.

The *Morning Advertiser* says:—The mere building of the crematory is about as simple and as practical as can well be. It consists of two small and slightly ornamental massive brick chambers, — one the furnace, the other the crematory chamber. Both the chambers are of nearly the same size, that is about 8 ft. 6 in. long, 4 ft. wide, and 8 ft. 6 in. high. The furnace-chamber, however, is sunk almost at a level with the floor of the crematory, and is thus nearly out of sight, and it communicates with a tall chimney-shaft in its roof 42 ft. high. About a third of the way up this chimney another smaller furnace is fixed inside it, like the draught-furnaces in the upcast shafts of coal-mines. This secures an enormous rush of air through the tall chimney, and a proportionate intensity of combustion in the furnace below all. A sliding door of fire-brick, cased and framed in iron, cuts off all communication between the crematory and the furnace till the latter is in a

proper state of white heat. Supposing, then, a body to come for cremation, the furnace would be with its fuel,—mainly coke,—glowing white. The coffin would then be placed on the grating of the crematory which covers the ashpit below. The air-tight door at the mouth of the crematory would then be closed, and the sliding-door between it and the furnace withdrawn. The moment this is done the draught drives the whole mass of lambent flame and intensely-heated air into the crematory above named and beneath the coffin, which soon gives way to it, and the body is then consumed to calcined bones,—dry and light, very hard, and as white as chalk. But the hot air and flame which come from the furnace can only pass out of the crematory by going down an air-shaft which passes under it and the furnace as well, and so on up the chimney-shaft, where, as we have said, it passes through another furnace as well, whence it issues at the top,—very hot air certainly, but perfectly free from any taint whatever, if we except slight traces of sulphur coming from the coke of the last furnace in the shaft. The whole thing is, in fact, a smoke-consuming, reducing or reverbatory furnace. Judging from the experience of Gotha, Breslau, and Milan, where these crematories have been erected and are in constant use, the time occupied in the complete consumption of an adult body, coffin and all, is about an hour and a half. The door from the furnace is then shut, and that of the crematory opened, and a draught of air driven through the latter enables the white atoms of bones on the grating to be soon collected, when they are given to some representative relative, either to be deposited in an urn in the crypt of a church, or to be kept as feeling may prompt.

GRESTY & MILLS'S APPARATUS FOR CONNECTING TOGETHER FRAMED WOODWORK.

A NEW invention relating to the connecting together of the parts of doors, windows, and other framed woodwork, which dispenses with the mortise and tenon principle, has been patented by the inventors, Messrs. Gresty & Mills, of Regent's-road, Salford, Manchester.

A piece of woodwork, say, for example, a door, is formed of parts which are tongued and grooved as is usual, but are not mortised nor formed with the usual tenons; such parts are put together and placed upon a travelling-table or frame, and are rapidly and thoroughly connected. The apparatus devised to carry out the object of this invention consists of a travelling-table or frame, such apparatus being formed with parts which are arranged to slide towards and from each other, these movements being preferably effected by means of right and left hand screws connected by a cross shaft and gearing. The two movable parts are provided with clamping-pieces, which are fitted in grooves formed in the sides of these parts, or are otherwise arranged to be adjustable. When the two parts of the table approach each other, by turning the said screws the parts of the door become clamped together, so as to tighten up the joints. Other sliding clamps, actuated by right and left hand-screws, are employed to act in directions at right angles to the clamping-pieces. The table carrying the parts of the door thus firmly clamped together is mounted upon a carriage, or upon carriages, which is or are fitted to slide to and fro upon a bed, and is or are actuated by means of revolving screws, which are geared together, and are actuated by means of cross and open straps, or by means of reversible gearing, so that the said carriage or carriages can be caused to slide to and fro upon the bed. The table is arranged to be raised and lowered upon the carriage or carriages by means of cams or eccentrics, or by screws, or racks and pinions, or other suitable means. Two drill-head stocks are formed or fixed upon each end of the said bed, and upon each head-stock are mounted sliding and adjustable carriages, which are formed to receive the spindles of Archimedian boring-bits, or of drills or borers of a suitable form. The said spindles are fitted to revolve in bearings, and are actuated by means of straps, which receive, or may receive, motion from a drum fitted to revolve below the bed, or in a lower room, or above the machine, as preferred, or the borers are otherwise caused to revolve by any other suitable means.

The borers are arranged so that when the door is brought up to the borers of one head-stock by the traversing of the carriage, the said borers simultaneously bore holes through one of the stiles, a suitable number of holes being at the same time bored into the other rails. When the bores have penetrated the required depth, the movement of the carriage is reversed by suitable means. The carriage now moves towards the other head-stock, and the holes are bored through the other stile. The carriage is again reversed, and the table carrying the door is lowered, wooden pins or dowels being placed in or pushed into the holes. The next double traverse of the carriage to and fro causes the door to pass below the bores, and the outer ends of the pins or dowels to come in contact with the parts projecting from the drill head-stocks, the effect being that the said pins or dowels are forced home into the holes which have been bored as aforesaid. It will be understood that glue may be used as usual.

By the apparatus in question, which is easily worked by a man and a boy, a complete panelled door for an ordinary room can be made in from six to eight minutes, and a pair of sashes in a like time.

Messrs. Gresty & Mills have recently conducted some interesting experiments to test the relative breaking-strength of joinery made by machinery under the mortise-and-tenon method as compared with joinery made on Messrs. Gresty's patent dowel system, when upwards of one hundred professional and practical men were in attendance, and such test being under the superintendence of Mr. J. H. Lynde, C.E., together with several professional and practical men. The mortised-and-tenoned articles were of the first quality, having had for their makers the best English and American firms, five of which were English and four American. A tensile strain to pull was applied to the stiles of the doors and sashes, so as to draw the stiles from the rails. Taking the average strength of the nine doors tested, the relative strength of the dowelled doors is 2·2, or 120 per cent. stronger.

The sashes tested in the same way showed a relative strength of 2·72, or 172 per cent. in favour of the dowelled method.

The second series of tests were to prove the relative strength of doors made on the different principles to resist a strain applied diagonally across the doors. Three English and American machine-made doors on the mortise-and-tenon method were found to be 39 per cent. weaker than three made on the dowel system. The great advantage of the dowel system claimed is that, not only are the doors and sashes very much stronger than the ordinary mortise-and-tenon doors, but that their framework can be sold at a price 30 per cent. cheaper.

STONE MONUMENTS IN LEWIS.

IN the year 1868 I walked to Callernish, or Classerniss, from Stornoway, when I inspected the stone relics there. In the "Archæological Journal," 1874, vol. xxxi., p. 76, Mr. H. F. Church described this monument as consisting of two circles of stones of gneiss, not concentric; an avenue; and a cross row of stones running through the circle, not at right angles to the main avenue. In the centre of the smaller circle is a cist which contained charcoal, wood, and bones. It was covered formerly by a flat stone, now displaced, but the walls are *in situ*. The chief stone of this circle is stated to rise more than 17 ft. above ground. Peat had accumulated to the depth of several feet, and when removed, some years since, the original floor of the avenue,—a causeway of flags on the soil,—was disclosed. The plan in this volume by Mr. A. Carrington shows a stone avenue of nineteen stones extant,—ten on the northern side, and nine on the southern side, north-east of the circle, which is composed of thirteen stones, and the rudder stone in the centre. An arm of four stones east of the circle, and one of five stones west of it, are seen in this plan, with seven stones south of the circle. Of these, five are in a line, and two are displaced. A smaller circle is seen within the large one, which is stated to be 36 ft. in diameter. The diameter of the former is not mentioned.

Mr. Church referred to Mr. D. Wilson's "Prehistoric Annals," pp. 115, 116; Waring's "Stone Monuments," plate 48; Stuart's "Sculptured Stones of Scotland"; and "Archæologia Scotica," for information as to Callernish. Mr. Stuart states (vol. ii., p. 25),—"The circle at Callernish is approached by an avenue; that at Shap had a similar arrangement. The st... at New Grange consists of a long ... formed of upright pillars, leading to a ... chamber formed of similar stones, from ... three recesses branch off, also formed of ... If the cairn were removed, the pillar ... form another Callernish." Mr. Waring ... p. 97, to the monolith of Clach Stein a... in Lewis, and the Clach an Druidean, o... of the Druids, in this isle, 16 ft. hig... "Archæologia Scotica," vol. i., p. 284, co... description of antiquities in the island, in... Classerniss, by Colin McKenzie, who re... the central stone, surrounded by a trench... he was informed a stone bowl was fo... some explorer.

In the "Celtic Druids" (1829) the ... (pp. 54-56) describes the Classerniss relic, ... the accounts of Dr. Borlase; of Tolan... tory of Druids," p. 136; and of Dr. Mac... "Western Islands," vol. i., pp. 184, et se... This latter author states the work to ha... constructed prior to Christianity. The pla... "Celtic Druids," being fig. 1, is incorrect, ... figure No. 2 seems more correct. It show... stone at the north-east end, and twen... stones or cavities in the avenue between ... the circle, which here consists of fourteen ... with one outside and the centre stone. ... other stones are shown, namely, three ar... west, and south of the circle, each con... five stones. In Fergusson's "Rude Ston... ments," p. 259, the Callernish group of c... mentioned as consisting of three or four ... near to one another, of the ordinary for... to 100 ft. in diameter. The principal rel... engraved from a plan by Sir H. Jame... scribed as a circle 42 ft. diameter. In the ... is a tall stone, 17 ft. high, which forms th... stone of a grave of a somewhat cruciform... but, in fact, only the tricameral arran... common in tumuli in Caithness and the ... Scotland. It was apparently covered or... by a little cairn of its own; but this ha... peared, and the tomb was emptied of ... tents anterior to the formation of th... accumulated round the stones, and wh... removed by the late Sir J. Matheson w... grave was discovered. From the centr... a double avenue extends 294 ft., and f... same point southward a single row for... making the length of the avenue 408 ft., ... two arms, which extend east and wes... sure 130 ft. across the whole. This plan ... nineteen stones extant in the north-east ... thirteen to form the circle, and one ... centre; with fifteen other stones, four ... each of the arms, and seven south of the...

The plan in Martin's "Western Isles ... land" is a mere sham as to Classerni... shows a cruciform figure composed of an... of nineteen triangles or stones on each si... one at the end, with a circle of twelve ... and the rudder stone in the centre. Three ... are also shown on the west, east, and sout... of the circle, in a line. Macculloch's ... Classerniss or Callernish occurred betwe... years 1811-21; and it is described in his ... to Sir Walter Scott,—"Western Isles," ... pp. 229, 241. He recognised, erect or r... fallen, forty-eight stones; and origina... believed, there may have been sixty-s... sixty-six stones. The work is called ... people, "Fidvreachie," and he observed ... circles in the vicinity; but his work ... plan. In the 6 in. to a mile Ordnance ... Lewis, the relic and several other circ... discerned readily. According to Macc... the diameter of the Classerniss circle i... north to south, and 62 ft. east to west, con... fourteen uprights, and the centre stone ... high. The plans of Sir H. James and ... Carrington are reliable, and concur with ... sonal inspection, A.D. 1868. At a brief di... from the inn near Classerniss, I vis... curious beehive hut, and several stone ... which appear in the Ordnance Map.

In the "London Archæologia," vol. x... 429 (May 15, 1828), Mr. A. J. Kemp, ... describing the stone avenues extant upon ... moor, observed,—"The eastern terminat... the southern double line of stones is form... a single flat stone, placed perpendicula... end, and standing at right angles with the ... this is precisely the mode in which a ... line of stones appears to be terminated ... Druidical temple described by Borla... extant at Classerniss, in the Isle of Lew... character and arrangement of which it ... be well to compare with these remains." ... reference is to Borlase's "Cornwall," pl...

754, where this relic is stated to consist venue, with nineteen stones on the sides, and the north end, which leads to a circle of stones, with one in the centre, from cumference of which circle, and in a line ne centre, runs a line of four stones, north, and south of this circle. Mr. Martin, in istory of the Hebrides," states that he was ed by a native that this was a place ted for worship in the time of Druidism, hat the chief Druid stood near the big in the centre, whence he harangued the who listened to his oratory.

Borlase observed it was curious that umber of stones in the avenue was nine, and in the circle thirteen, and the ed stones, east, west, and south, twelve, added, "whether these numbers happened so complete by accident or whether (as I imagine) they were intended to express mber of weeks and months in one year, nit to the learned."

Carte, in his "English History," vol. i., suggested that there may be something matical in the number of stones, nineteen, h side of the avenue, and which fact he ed to the great year, or cycle of nineteen and the twelve pillars comprising the he deemed to be an emblem of the Zodiac. se stones are described briefly by the ohn Cameron, in the "Statistical Account tland," A.D. 1845, vol. xiv., as "the entire ns of a Druidical place of worship. They nd on end at the distance of five and six from each other."

e, in his "History of England," vol. i., -6, A.D. 1747, described this relic as the l temple of Apollo, consi-ting of a circle lve high stones, 7 ft. high, 2 ft. broad, ft. distant from each other, with one in ntre, 13 ft. high, and shaped like the of a ship. He refers to its four wings, resent the four principal winds; and the in the avenue 8 ft. wide, nineteen in r, this author deemed to represent the f nineteen years. He refers to another at a quarter of a mile's distance from ne, probably dedicated to the moon, sable to the practice of Delos, where the s of Apollo and Delos were not far r."

H. F. Church observed, "Archæological l," vol. xxxi., p. 76, that "not far from nish are smaller circles, which probably in connexion with it. They present no es of an uncommon character." It is to retted that Sir Walter Scott did not visit rniss during his voyage in 1814. Crossing Cape Wrath to Skye, his ship touched at ll, in the south-east part of Lewis, and alter in his diary has described the church he visited, with its monuments.

noway is now accessible from Skye by r. See Murray's Handbook for Scotland, 0-1, where reference is made to cairns, , and forts at Carloway and elsewhere in . That at Bragar, of unhewn stone, is stories high, with a double wall, bound by which forms a winding staircase round uilding. In the *Builder*, vol. xxxiii., r 1690, I described the relic at New ge in Ireland. C. C.

THE IMPERIAL HOTEL IN THE AUCTION MART.

palatial building on the Holborn Viaduct, corner of the Old Bailey, known as the ial Hotel, and recently erected at a cost, stated, of between 50,000*l.* and 60,000*l.*, ffered for public sale last week at the on Mart, by Messrs. Fox & Bousfield, by ion of the mortgagee, and from the ob- tions made by Mr. Bousfield, the auctioneer, roducing the property, there appears some n for believing that the hotel may ulti- y be converted to other than its present ses. In his opening remarks Mr. Bousfield l that the hotel contained fifty-six bed- ; and that, by an arrangement which had entered into, the purchaser would have ight of taking the furniture in the hotel at um of 8,000*l.*, which was not half the amount the furniture cost only a year or two ago. ded that although the ground-rent payable e Crown,—2,500*l.* a year,—might appear to rge, it must be remembered that the hotel n one of the best situations in the metro- being almost midway between the City he West End, and there was every reason to believe that the rack-rents of the ten shops under the hotel would ultimately cover the ground-rent. He invited biddings by a commencement at 40,000*l.* or 50,000*l.*, but no offer being made the property was withdrawn, the auctioneer stating that it was open for sale by private contract.

ENLARGEMENT OF THE NORTH LONDON CONSUMPTION HOSPITAL.

The North London Hospital for Consumption, situated at Mount Vernon, Hampstead, is about to be considerably enlarged, and in aid of the cost a bazaar was held in the grounds last week. It appears that this hospital admits patients from all parts of the United Kingdom, and more than 80 000 persons have received its benefits. It is stated that the accommodation afforded by the present hospital is so much sought after that there are always more patients waiting on the list than would fill the present building, and in consequence an enlargement has been determined upon, which is to be carried out on a site immediately adjoining the existing structure, and within the grounds, at an estimated cost of 25,000*l.* The designs for the new building have been prepared by Mr. Roger Smith, architect. The intention of the committee is to first build a block, with every modern appliance, for the accommodation of 110 patients, and then to further enlarge as opportunity may offer. Certain of the wards are to be set apart for patients able to contribute towards the cost of their own maintenance, and one lady has contributed 350 guineas for the continued support of one patient in a "memorial" bed, in remembrance of her late father.

THE ARCHITECTURAL ASSOCIATION'S EXCURSION.

Our readers may have already learnt that the Architectural Association intend, on the present occasion, to visit the neighbourhood of Wells.

Mr. James Fowler, of Louth, has consented to conduct the visits, and Mr. E. B. Ferrey has promised to act as guide at the cathedral. The excursion will take place in August, commencing on Monday, the 11th, and ending Saturday, the 16th.

Here is the sketch programme:—Monday,—The Cathedral, Bishop's Palace, &c., Wells. Tuesday,—Crosscombe, Shepton-Mallet, Doulting, West Cranmore, Nunney, and Mells. Wednesday, — Priddy, Cheddar, Axbridge, Rodney-stoke, Westbury, and Wookey. Thursday, — Pylle, Ditcheat, Castle-Cary, Wyke-Champflower, Bruton, Evercreech, and Dinder. Friday,—Pilton, West Pennard, and Glastonbury; and Saturday,—St. Cuthbert's Church, Wells; the Deanery, and Vicar's Close.

NEW THEATRE, GLASGOW.

With reference to the notice of the New Theatre, Glasgow, which appeared in our issue of the 31st of May, we are requested to state that, besides the theatre, large shops and warehouses are in course of erection for the Central Halls Company (Limited), from the designs of Mr. James Thomson, of Glasgow, the whole of the works being executed under his superintendence.

The space reserved for the theatre (about one-third) was at first designed to contain large halls and committee-rooms, but when the directors of the company resolved to have a theatre, Mr. Frank Matcham, having had experience in such structures, was engaged to prepare designs, and to be the consulting architect for this portion of the building.

London and Middlesex Archæological Society.—The members of this society were to meet on Thursday, July 3rd, at the Church of St. Saviour, Southwark, to hear the following papers:—"On the Architectural History of the Priory Church," by Mr. Francis T. Dollman; "On the History of London Bridge prior to the Thirteenth Century," by Mr. Alfred White, F.S.A.; and "The Brandons and their Palace in Southwark, and on other Notabilities connected therewith," by Mr. W. Rendle. They were then to cross London Bridge to the Church of St. Mary-at-Hill, Billingsgate.

LONDON BRIDGE.

Sir,—Now that a committee has been appointed to take evidence as to the alterations to be made in London Bridge, for the furtherance of traffic, suggestions will, of course, abound. In Ray's Proverbs there is one to the effect that "Wise men go over London Bridge and fools go under it"; yet there is one course so very simple that in all proposals for alteration it is probable that the wise men who go over London Bridge will not hit upon it; you may, therefore, think it worth while to propose it.

The overhanging pathways will be an absolute disfigurement, as well as a most unprofessional and unarchitectural expedient. Rennie's bridge has always been admired and talked of as if it were one of the wonders of the world; and certainly it ought to have been, for it cost nearly two millions of money. Thornbury, in "Old and New London," unaccountably puts it at 500,000*l.* only. To disfigure it would be a folly; to pull it down and build another would be wasteful; and to build another bridge lower down, say on the other side of the Tower, would disfigure the river, which would be worse than to disfigure the present bridge, and would impede the traffic and injure the quay accommodation, already much impaired by the Embankment. Old London Bridge lasted from 1176 to 1831,—655 years. It would be truly absurd if the new one should only last fifty years. What, then, is the obvious course to pursue?

Manifestly, it is best, simplest, and easiest, as well as cheapest, to double the width of the present structure, by carrying out the sterlings and piers to the eastward. If they were carried 100 ft. in that direction it would bring them exactly to the site of the western side of the old bridge, and so increase the historical identity. It would again throw open to view the beautiful church of St. Magnus and the Monument, and would form such a place, or piazza if you like that better, at the confluence of Cannon-street, King William-street, Gracechurch-street, and Eastcheap, as would pretty well secure it on the Middlesex side from any glut of traffic for the future.

In doing this, the present roadway need not be stopped for a day. The new piers run out, being once ready, the arches could be thrown across them, and the stone facings and balustrade of the eastern side of the present bridge could be again used to face the eastern side of the widened bridge. The river views and the beauty of the bridge would remain intact, and the land approaches would be simply magnificent, really as grandiose as anything of the kind in Europe. C. A. Ward.

THE EMPTINESS OF PICTURE GALLERIES.

"The population of Great Britain consists of some thirty millions, mostly fools;" so wrote one of that number, and in all probability he spoke the truth, for England is a country which has required some extraordinary geniuses to save it from perdition. How then, sir, can you reasonably expect our art-exhibitions to be exhibitions of intellect? Exhibitions, art-exhibitions, are merely responses to the *thirty millions'* taste. Painters do not paint pictures in order to martyrise themselves, but to live. If, therefore, the public desire evidences of the paint-pot and the paint-brush upon canvas rather than of mind, your complaint of the emptiness of picture exhibitions will have again and again to be repeated. It is the press and the public who are to blame, not the artists. If art-ignorance be elevated to the bench and hold the scales of criticism, what can you expect?

With all our art-gibberish and art-appliances, we are not one whit better in taste than in those days when Canova, being solicited to make a statue for a wealthy Englishman, replied, "Why do you not commission your great compatriot, Flaxman? You English see with your ears instead of your eyes." In no other country in the world have art-impostors so good a time of it as in England. A few writers have only to be won over to their cause, and the success of their nostrums is assured.

Look at the catalogues through the year, how inane in subject,—what a narrow verge of selection! And if, perchance, one does happen to light upon a subject indicating selection by a thinker, you may be tolerably well assured that the picture was not on the line. Think over the names of those artists who have exhibited, really exhibited, evidences of great intellect, and then

inquire what encouragement they received, what was their fate? No, sir, your art-critics and your public, with all their gabble about the history of art, and their outcry for fresh art-educational appliances, have yet to learn that it is the evidence of intellectual superiority which has endowed the greatest works with immortality. It is the degree in which the intellectual element manifests itself in works of art which gives them rank and precedence. Why, Raffaelle and Michelangelo never could paint,—as painting is understood in the paint-pot sense,—half so well as dozens of young "brushers" in the present day, whose works will go into famous collections and never be heard of more in the tide of time, except, perhaps, now and again at Christie's. What is the use of all the caw-me, caw-thee, adulation of which we have so much? Is art life worth living if we are to be for ever behind the past in achievement?

METER.

COMPETITION: WESLEYAN CHAPEL, MATLOCK BANK.

SIR,—Many of your readers doubtless joined in this competition, and will like to know more of the circumstances of the case. There were eighty-five sets of designs received, and the number of meetings held to consider them was not twenty, nor fifteen, nor ten, nor five, nor even two! One meeting only, held in an afternoon, somewhat lengthened into the evening, was all the time given to the difficult task of inspecting and understanding the merits of eighty-five sets of drawings, with an unusually large complement of perspectives, sections, &c. When I say that the accepted architect is *a son of a member of the committee*, there will, I think, appear the explanation. It looks like a sham competition, and the competing architects would do well to make a charge for their trouble, for certainly there was not the ghost of a chance given to them.

DERBYSHIRE PEAK.

ARTISANS' AND LABOURERS' DWELLINGS.

SIR,—In your columns of last week a statement was published relative to the cost to the ratepayers of putting into operation the provisions of the Artisans' and Labourers' Dwellings Act, and from the facts and figures given, it would appear that many persons are under the impression that unless the ground set apart for industrial dwellings is leased or sold at a sum far below its commercial value, such dwellings cannot be erected in anything like sufficient numbers. This view of the matter is only to a certain extent correct. There can be no doubt that the allotment of land for working-class dwellings in our main thoroughfares is a gross mistake, as the land in such situations is required for commercial purposes, and is necessarily of considerable value. Plots in other positions would be more suitable for many reasons, and they could be obtained at one-fourth the value. When new streets are formed, the ground might be taken at a greater depth, and the houses provided before the main thoroughfares are arranged. If this were done the Metropolitan Board of Works would make a better investment for the public, even if the ground in the rear were let at only one-fifth the amount of that in front. But, after all, the ground-rent is a mere trifle, as the following figures will prove. Suppose we take a plot of land, having a frontage of 100 ft. and a depth of 40 ft. This at a ground-rent of 6d. per foot would be 100*l*. Now, on such a plot a building six stories high could be erected, having twenty rooms on each floor, and whether the Metropolitan Board reduced or raised the ground-rent by one-half, viz. 50*l*., the difference in rent on each of the 120 rooms would be under 2d. per week; therefore it is obvious that the ground-rent is not the chief obstacle to the leasing of the land. The fact is, most of our blocks of artisans' dwellings are too expensively built, and too much space is wasted in needless brick walls, passages, staircases, &c.; hence, as a commercial speculation, they can only with difficulty be made to pay a fair return on the capital expended. Then, again, the homes that have been provided up to the present time are not such as meet the requirements of the working classes, particularly as to bed accommodation; and the rent in most cases is far too high, ranging as it does from 6s. to 14s. per week,—prices much beyond what the ordinary working-man can afford to pay. I think the Metropolitan Board or other parties who have ground to let for artisans' dwellings ought to be in possession of carefully-conceived plans, showing the accommodation to be provided and the modes of construction. I may state that this subject has occupied my attention for the last twenty years; and having designed and erected more industrial dwellings than perhaps any other builder in London, I do not speak without knowledge of the whole matter. The result of my experience and close observation is, that with well-arranged plans, in which due care is taken to economise space and material, homes can be provided for the working-classes which would give all needful and decent accommodation, and realise a far better return on capital than can be obtained from most other building operations.

MATTHEW ALLEN.

MORE LONDON BOARD SCHOOLS.

NOTWITHSTANDING that the London School Board has resolved itself into a committee with a view to a reduction of the outlay in the erection of new schools, the Board have invited, and have just received, tenders for the erection of five more schools in different parts of the metropolis, the aggregate minimum cost of which will not be less than about 47,000*l*., that being the amount of the united lowest tenders. The different schools proposed to be erected include one in Cranbrook-road, the lowest tender for which is 14,243*l*.; another in Duncombe-road, Upper Holloway, at a cost of 12,516*l*.; also one in Wenlock-road, Hackney, cost 9,424*l*.; one in Tothill's-road cost 8,271*l*; and another in Glengall-road, cost 1,989*l*.

THE LIGHTING OF WATERLOO ROAD.

THE Lambeth Vestry have entered into an arrangement with the Phœnix Gas Company for the retention of the large lamps, giving a more brilliant and much improved light, which the company erected some months ago in Waterloo-road for experimental purposes. At the last meeting of the Vestry, the Lighting Committee recommended that the lamps in question be retained to the following extent:—Lamps at forty yards apart, and on alternate sides of the way, from Waterloo Bridge to the junction of Stamford-street and York-road; and from that point to the railway station that the lamps be retained at the corners of Ann-street, Agnes-street, Frances-street, and Cross-street; also three others on the east side, between Church-street and Stamford-street; also, two under the railway bridge. The committee considered that these, with the two triple Argand lamps, would be sufficient to secure a much better lighting of the road than before the Phœnix Company made their experiments. It was stated that the proposed improved lighting of the road would come to about 60*l*. a year more. Some opposition was manifested to the recommendation, Mr. Fenton stating that he should strenuously oppose an additional expenditure of 60*l*. a year in the Waterloo-road, to the prejudice of other streets in the parish, but the recommendation was adopted.

LINE OF FRONTAGE UNDER METROPOLITAN MANAGEMENT ACT.

DR. JOHN MAY ANDREWS, of 81, Queen's-crescent, Haverstock-hill, was summoned to the Marylebone Police-court by the St. Pancras Vestry for erecting beyond the general line of buildings in St. John's-gardens, Queen's-crescent, without the consent in writing of the Metropolitan Board of Works, a certain erection, contrary to the statute.

Mr. Ricketts prosecuted for the Vestry, and Mr. Louis Lewis defended.

A building originally stood on the spot, but the defendant increased it to such a size that an inhabitant complained, and the Vestry warned the defendant that he must apply to the Metropolitan Board for permission to erect the building. This he did, and the application was refused, the building being beyond the line of frontage. Notwithstanding this, however, the defendant completed the building.

The defence was that the building did not go beyond the site of the old one, and that it was not in St. John's-gardens, but in an approach-road to it.

Mr. De Rutzen (the magistrate), who visited the spot, held that the defendant built beyond the line of frontage without sent, and that he must pull the building do

On the application of Mr. Lewis the sum was formally adjourned for a month for tim consider whether he would take a case.

WHAT IS A STREET?

ON Saturday last in the Queen's Bench sion of the High Court of Justice (in Ba before the Lord Chief Justice and Mr. J Lush, came on the arguments in a "case" s by Mr. Woolrych, the magistrate at minster Police Court, upon the applicati the Vestry of Chelsea, who had been dissat with the decision of the said magistrate summons heard and determined by him in 1878. It was a summons taken out by Ch Lahee, the Vestry-clerk of St. Luke's, Ch against one Stoddart, a job-master, &c., o Pavilion-road, Sloane-street, Chelsea, for ca certain carriages to stand on the public carr way in that road, and not removing them c called upon by the foreman of the roads o Vestry. The summons was issued under the section of the Metropolis Local Manage Amendment Act, 1862, which extends so the powers of Michael Angelo Taylor's commonly called the Paving Acts (Local).

The contention before the magistrate whether this was a "street" within the me of the 18 & 19 Vic., cap. 20, and if so wh any dedication to the parish and public fered with or qualified the right of the defe to place carriages on the carriage-way. put forward in evidence on behalf of the that they had paved a greater portion road, and that when the traffic in St street was diverted for repairs, &c., Pa road was used for traffic. On the of the defendant, however, it was shown the place had been used as a "mews" time immemorial, and that the owners stables had the right of opening and ke open the stable or coachhouse doors, opened outwards to the extent of about that there were dung-pits above the gr 3 ft. or 4 ft. high and 6 ft. by 4 ft., an sunken pits with flaps; and that when pa the road had been taken up and repaved parish, some of the stable-owners object this action of the Vestry; that only part paving alleged to have been put down Vestry had been so done, the rest being the of the occupiers; that for over twenty they had exercised the right of placing carriages there, and washing them, and few years ago the late Mr. Arnold had da against the Vestry on a similar summons that the same state of things existed thi now. (Mr. Pemberton, solicitor to the Ve No; we have paved it since.) Mr. Woo having viewed the *locus in quo*, as ha Arnold, gave judgment against the Vest the same grounds as that magistrate, but, application of the Vestry, granted a "case the Queen's Bench Division; the delay in it up is not explained.

Mr. Benjamin, Q.C. (instructed by Messrs. Pemberton, solicitors to the Vestry of Che was for the appellant; and Mr. Herschell, with whom was Mr. Safford (instructed Messrs. Doveton, Smyth, & Bristow), fo respondent.

The case stated for the opinion of the C after reciting the sections of 57th Geo. III. Paving Acts, Local), proceeded to comme the 73rd section of the Metropolis Manage Amendment Act, 1862 (25 & 26 Vic., cap. which suppressed certain nuisances ex under the Act of Geo. III., and section 65 old Act was that under which the Vestry ceeded. Having recited the section (wh well known to be very long) the "case" ceeds:—

"Section 93 of the Metropolis Local Management 18 & 19 Vic., cap. 120, confers upon the Vestry the and duties of surveyors of highways; by section the same Act a 'street' is defined; and by section the Amended Act (25 & 26 Vic., cap. 102) the 'street' is intended to apply to and include any any part thereof. Pavilion-road was formerly kno the New-road, and runs from north to south, para and in the rear of the west side of Sloane-street, 1,000 yards in length, and average width about 39 ft. and has been used for many years principally as a me a public thoroughfare, and partially paved by the p on the west side is a flagged footway for passenger and the houses on that side are of the ordinary cha There is a channel or gutter in the middle of the roa the east side there is no flagged footway for passe except opposite a few houses at the north end; h roadway is paved right up to the buildings. Throu

ter part of the frontage on the east side stables or
uses abut on to the street, the gates opening out-
into Pavilion-road about 6 ft., and the occupiers
im time immemorial, claimed the right to open and
on the said gates. Some of the stables have raised
s and others sunken ones. Some of these pits had
xistence long before the Vestry was formed, some
n formed with the sanction of the Vestry."

ing recited at length the evidence given
guments adduced before him, Mr. Wool-
roceeded in the "case" to say:—

as of opioion that the place where the carriage
s a portion of a street within the 18 & 19 Vic. and
Vic. (already mentioned); but I was of opinion
original dedication of the street in front of those
was for purposes connected with stabling and the
of job-masters. It was contended on the part of
ry that there was no sufficient evidence that the
dedication to the public was so qualified; and,
, that even if the occupier of the respondent's
had originally the right which was claimed, it did
ent the Vestry from exercising, with regard to that
f the street, the powers vested in them by 25 & 26
. 102, sec. 73, and by the Paving Acts.
issed the complaint on the grounds:—
t there was no evidence on which I could properly
e the original dedication of the road to the public
ect to the right claimed by the respondent.
t if the original dedication was so qualified, the
bsequently given to the Vestry by 57 Geo. 3 and
Vic., were subject to the above-mentioned right of
piers of respondent's premises.
uestions for the opinion of the Court, therefore,

ether there was evidence upon which I could
decide that the Pavilion-road was dedicated to
ic, subject to the right of the occupier of the re-
t's premises to place carriages upon the portion of
t in front of those premises, and to allow them to
here.
ether, even if the original dedication of the street
ified by such a right on the part of the occupiers
espondent's premises, as is mentioned above, the
s an exercise the powers given them by the Paving
d Metropolis Local Amended Act, with regard to
on of the street in front of the said premises, so
tail that right in cases where, in their judgment,
ience was caused to passengers by the exercise of
t."

Benjamin, in a lengthy address, con-
that this being a public street the owners
houses could have no such right as that
d by them as against the rights of the
He cited many authorities in support
view, among others the statute known
Hans Town Act, which referred to
-street and "other streets being formed,"
contended that the Pavilion-road was
those streets then in course of formation,
more right could be claimed to do this
thing there than in Sloane-street itself.
Herschell, on the other hand, was follow-
line of argument taken at the police-
when
Lord Chief Justice stopped him, and said
burt was unanimously of opinion that
ent must be for the respondent (Mr.
rt). Following the principle laid down
. Woolrych, he was of opinion that this
"street," but dedicated only in part to
blic. The dedication to the public was
onditional, and subject to rights, privi-
and immunities, enjoyed for a great
r of years by those who had used the place
eans to put out their carriages to wash
or keep them out for necessary purposes:
oceeding seemed a somewhat vexatious
the part of the Vestry, and if allowed to
good, there would not be a mews left in
etropolis, nor could they be used for
gitimate purpose for which they were
d.
Justice Lush concurred.
eal dismissed with costs.

BUILDING ACT PROVISIONS.

RGETING FLUES.—JENNINGS v. DUNCAN.

was a case, in the Exchequer Division,
on appeal, by Mr. Cooke, one of the
olitan magistrates, who declined to order
spondent to "render" or "parget" the
a chimney in the new Mission Hall, York-
South-street, Marylebone. The appellant,
a district surveyor, contends that, not
ust the inside of the flue be lined with
of piping, or "rendered," but also that the
or surface towards the room must be
eted," under the Metropolitan Buildings
8 and 19 Vic., cap. 122, sec. 20, sub-sec. 4,
oint turning on the words "inside and
r outside."
Easterman (for the appellant) submitted that this
meant to protect the metropolis from fire, and
r the flames could come there ought to be a layer
"pargeting," which is a composition of cow-dung
rtar. The magistrate seemed to think that it was
if precaution was taken not to set a neighbour's
n fire, but that a person was at liberty to set fire to
if he liked.
Briare (for the respondent) urged that his client had sufficiently complied with the provisions of the Act, and was not compelled to place this unsightly plaster in zigzags up the line of the flue, destroying what was already finished with ornamental bricks.

The Lord Chief Baron said that it seemed to him that the respondent had done all the Act required him to do by lining the inside of the flue with "pargeting." He should, therefore, not be called on to do anything more. The Act only spoke of "back or outside," not "backs or outer sides."

Mr. Justice Stephen was of the same opinion. He would add that this demand seemed made through a desire to keep on foot the provisions of repealed statutes, because they were supposed to afford greater security against fire. Some violence was therefore sought to be done to the provisions of this Act. The earlier Acts, 14 George III. and 7 and 8 Vic., cap. 84, had imposed more stringent obligations on the builders of houses in the matter of "pargeting"; but this Act seemed a good deal narrower, and these obligations were diminished. Whether this was wise or not was quite another question. Appeal dismissed with costs.

Perfectly astounding! The Act says, "The inside of every Flue *and* the Back or Outside, unless forming Part of the Outer Face of an External Wall, must be rendered, pargeted, or lined with Fireproof Piping"; that is, the outside of a flue, when it is in an apartment or in two apartments, for the matter of that, is to be pargeted, as well as the inside; but where the outside of a flue forms part of the outer face of an external wall, as is often the case, it need not be pargeted. How the Lord Chief Baron can justify his assertion that the respondent had done all the Act required of him by pargeting the inside of the flue, when the Act distinctly says that he must parget the outside also, unless it is next the external air, we cannot conceive. A flue has but one outside, although in some cases, as, for example, where a square flue is built up singly in the midst of an apartment, it may have four outer faces, and that outside is to be pargeted, says the Act, excepting any part of it which is so placed as to form part of the outer face of an external wall,—a very necessary requirement, and perfectly understandable as expressed, except under the guidance of judges and magistrates who know nothing about building.

ACTION AS TO BUILDERS' QUANTITIES.

A CASE was tried at the Stourbridge County Court, before Mr. Rupert Kettle and a jury, in which the plaintiff, Mr. D. Hawkins, a quantity surveyor, sued Mr. C. A. Horton, contractor, of Brierley-hill, for 28*l.*, for "taking out quantities." The action has already been tried by his Honour, and a decision given in plaintiff's favour, and a trial before a jury was then applied for by the defendant.

Mr. Stokes (Dudley) appeared for plaintiff, Mr. Hugo Young and Mr. J. S. Smith (instructed by Messrs. Homfray and Holberton) for the defendant, and Mr. Collis watched the case on behalf Mr. Smalman Smith, the architect. The case excited great interest in the building trade, and it occupied the Court several hours.

Mr. Stokes, in opening the case, said that plaintiff was a quantity surveyor at Cheltenham, and he took out quantities for some work which defendant did for Mr. F. Evers, Mr. Smalman Smith being the architect. It was the custom for the quantity surveyor to be paid by the successful contractor, and in this case defendant was quite willing to pay the money, but Mr. Smalman Smith claimed half. That he could make the subject of another action, but his client, he contended, was entitled to the money from the present defendant.

From the evidence in the case it appeared the plaintiff was engaged by the School Board and Burial Board at Stourbridge as clerk of the works for them, and he was allowed by them to do other work. Mr. Smalman Smith was the architect in both these cases. Plaintiff stated that he took out the builder's quantities in the case immediately before the Court, and in other cases, on his own account, and he claimed the usual commission of two per cent. Mr. Smalman Smith, on the other hand, said that he arranged with plaintiff to take out quantities for himself, and that he agreed to give him one per cent. for doing so, and that plaintiff was, so far as this work went, in the position of a clerk to him. There was the strongest possible conflict of evidence between the plaintiff and Mr. Smalman Smith on the point. One of the questions on which stress was laid as against the plaintiff's claim was that he had not endorsed the quantities he took out in the case before the Court. It was stated that where a quantity surveyor took out quantities on his own account, he endorsed them, and made himself personally responsible for them; and that, on the other hand, if there was no quantity surveyor's name on the quantities, the architect mentioned would be responsible. Plaintiff's name was not on the quantities in this case, but he said that he was well known as the quantity surveyor, and that he went into the quantities with defendant, and induced him to reduce his first tender 50*l.* He also said his name was originally on the quantities in other cases in which he got out the quantities for work where Mr. Smith was concerned as architect.

Counsel for the defendant severely cross-examined plaintiff as to his name being originally on the quantities when sent out; and a letter was put into his hands in his own handwriting, in which he asked a builder to give him what Mr. Hugo Young called a false document to support his case. Mr. Young made some exceedingly severe criticisms on plaintiff's conduct and motives, and Mr. Stokes replied, after which his Honour summed up in plaintiff's favour.

The jury could not agree upon their verdict, and they asked if the verdict of the majority could be accepted?

Mr. Stokes said he was willing, but defendant's counsel declined. At last, it being after nine o'clock, Mr. J. S. Smith said, not to prolong the case, he would take the verdict of the majority.

The jury were then summoned into the court again, and declared that four of them were for the defendant and one for the plaintiff. There was some surprise at this announcement, it being supposed that the views of the jury were just the contrary.

RIGHT TO LEVY FOR "SQUARE RATE."

AN action of replevin of a peculiar character, arising out of a dispute between a landlord and his tenants, came before the Judge of the Lambeth County Court last week, in which Mr. Davis, of Brunswick-square, Camberwell, sued Mr. Richard May, of Dulwich, for an illegal distraint, arising out of the following circumstances. The piece of land known as Brunswick-square is some acres in extent, and has for some years past been laid out as an ornamental garden, of which the tenants of the houses surrounding have the use by the payment of two guineas per annum. Until the spring of last year the garden was maintained in a neat condition by the landlord, who paid a gardener for the purpose. Last spring the ground-rents were sold, the defendant, Mr. May, being the purchaser. Immediately after the purchase he discharged the gardener, and since that time he has taken no steps whatever to maintain the garden, the consequence being that the grass is rank and overgrown, the paths unrolled and full of weeds, and the place is now altogether a wilderness rather than a garden. Under these circumstances several of the tenants have objected to pay the rate, on the ground that the defendant has not carried out his part of the contract by maintaining the land as a garden. To enforce his claim, the defendant levied upon the plaintiff's furniture, and the present action was brought to show that he had no legal right to do so.

Mr. Baggallay, barrister, appeared for the plaintiff, and Mr. Harmsworth for the defendant. Mr. Baggallay, in arguing upon the illegality of the distraint, said there was no dispute as to the defendant being the landlord, nor that the money was owing, but so far as the defendant was concerned it was owing only under certain circumstances. Counsel submitted the lease in which the agreement as to the payment of the garden fee was set out. He contended that, although the fee was mentioned in the lease as rent, it was practically a separate payment for, and similar to, an annual sum being paid for a right of way, or for the privilege of hanging clothes to dry. He also urged that, assuming his Honour to hold that this fee was rent, the two demises were separate and distinct, and that a levy could not be made upon one demise for non-payment of the second. The reason why the fee had not been paid was that the garden had not been kept up. If a distraint was to be made it should have been made upon anythiog that was on the ground. The complaint was that the ground had not been kept in an ornamental way, and the tenants naturally objected to pay their two guineas.

The Judge said that was no reason why the money should not be paid. The tenants might as well refuse to pay rent because the landlord did not keep his house in repair. He must hold that this money was rent.

Mr. Baggalay said that even assuming that it was rent, his point was that as there were two separate demises the distraint for the garden could not be levied on the house.

The Judge said that, in his view, the rent was upon the house, and the money paid for the garden a part of that rent.

Mr. Harmsworth said that was so, as there was no option on the part of the tenants. They were obliged to take the house with the garden rate.

Judgment for the defendant.

Brown's Accessible Syphon Trap is made of glazed stoneware, and has a loose lid or cover of the same material forming the upper portion of the trap, this fits into a socket with an inner flange, and should be luted round with tempered clay when in position. If the loose cover is removed, access is at once obtained to the trap and also to the outlet. It has a flat "sole," which affords easy means for fixing to ensure the proper water seal; and some are made with a slanting junction to receive the inlet pipe from the house drain. An upright junction is provided for the purpose of ventilation. It may be usefully adopted.

THE INSTITUTION OF SURVEYORS.

M. LEFÈVRE DE SUCY, president of the Société des Géomètres of France, and of the Provisional International Committee of Surveyors, was entertained at dinner on the 23rd ult. by the President and Council of the Institution of Surveyors in the hall of the Institution, Great George-street, Westminster. The President (Mr. W. Sturge) was supported by the Hon. J. K. Howard, the Hon. C. A. Gore, Mr. G. Ridley, Mr. J. H. Lloyd, Dr. Voelcker, Mr. J. R. Bourne, and other visitors, and by a large representation of the council.

M. Lefèvre, whose health was proposed by the President in very complimentary terms, expressed the pleasure which he felt in accepting the hospitality of his professional brethren in England, and in renewing an acquaintance formed under such agreeable circumstances with the members of the English delegation to the International Congress of Surveyors held in Paris in last July. He concluded by inviting the English members of the International Committee to the meeting to be held in Paris on the 21st of July next, when it is intended to formally constitute the permanent International Committee.

THE ORIGIN OF GAS.

ONE of those remarkable errors which do occasionally happen, even under the best regulations, has occurred in the print of my letter which appeared in the *Builder* of the 21st ult. I shall therefore feel obliged by your allowing me to correct the same, and in doing so simply to observe that the mine was not under Scarborough Spa, and that Wittie's notice is the *first* notice yet found of the discovery of the origin of gas.*

Sherley's description appeared, as I have stated, in No. 26 of the "Philosophical Transactions," dated June 3, 1667. Wittie's description of "Scarborough Spaw" was licensed to be printed January 2?, 166?-7, a few months *earlier* than any account yet known to exist

After describing certain springs, our author says:—"To these He adde the mention of one more, as rare as any before cited, lately found out in the parish of Pemberton, three miles from Wigan, in Lancashire, whereof I have most certain information from several persons of quality and undoubted integrity, some of whom I procured to view it. If a lighted paper be put to the surface of the water where it is seen to bubble up, it takes fire and flames very fiercely, so as it will sooner boyl a piece of meat being hung over it in a pot of water, than our ordinary fire can; and which is rare also, my friend assures me, that when it had been so flaming a good while, he put his hand into the water under the flame, and he could not discern the water to be heated at all; and it will continue so to flame till it be blown out, which is easily done, even by the waft of an hat. This is thought to proceed from a sulphurous vapour that breathes out there from a mine of cannel coal (as they call it) which is underneath; and was first discovered by a boy who, in the mine below, did let a candle fall into water, where the like bubbling was that took fire."

The whole sentence, as printed by Wittie, but which the printer appears to have curtailed, and thereby altered the sense, is, I think, sufficiently interesting for you to preserve.

T. C. NOBLE.

A STANDARD SCALE.

A MASTERPIECE of mechanical skill, which reflects great credit upon the designer and maker, has just been completed. It is the standard pair of scales for the Bureau International pour les Poids et Mésures at Paris, by means of which it is intended to compare all normal kilogrammes of all countries with the original kilogramme in the possession of the above-mentioned Bureau International, and to determine any possible deviations. The demands made on such an instrument must, on the face of it, be of a very exacting nature, and its production was necessarily much delayed in consequence of no member of the commission being in a position to propose a maker fit for such a delicate piece of workmanship, especially as the problem had to be solved, first of all, how to execute practical weighings in a vacuum. Herr Paul Bunge, of Hamburg, has succeeded in constructing such a piece of mechanism, and after he had made a scale of smaller proportions for the Normal-Eichunge Commission at Berlin, which works to the great satisfaction of the commission, the Bureau International resolved to invite the Hamburg maker to produce a larger one for the use of the Bureau, and to charge Dr. Förster, of Berlin, to enter into a contract with Herr Bunge. The latter has executed the delicate instrument in the comparatively short space of time of eight months, and practical men, besides laymen, are said to admire a work of art which is unique among productions of mechanical skill. This is not the place to enlarge upon the ingenious mechanical contrivances which are here for the first time applied. It will serve, however, as an instance of the delicacy of the whole apparatus when we mention that the person carrying out the weighings must manipulate the scales at a distance of 6 ft., as at a shorter range the heat emitted from the human body would affect the instrument.

* One folio, an intermediate one, of the writer's first letter, appears to have miscarried, and the two which reached us making sense, the omission was not observed.

DISSENTING CHURCH-BUILDING NEWS.

Hounslow.—Memorial stones of a new Wesleyan Chapel were laid on the 26th ult., with accommodation for 615. Mr. James Weir is the architect, and Mr. Hiscock, of Hounslow, the builder.

Barnet. — The memorial-stone of a new Wesleyan Chapel was laid on the 30th ult., with sitting accommodation for 1,00?. Mr. James Weir is the architect, and Messrs. Dove, Brothers, are the builders.

Books.

British Mezzotinto Portraits: being a Descriptive Catalogue of these Engravings from the Introduction of the Art to the Early Part of the Present Century; accompanied by Biographical Notes, &c. By JOHN CHALLONER SMITH, B.A., M.R.I.A. London: Henry Sotheran & Co., and J. Noseda. 1878.

THIS is not a book for reading, but a book for collectors, and a very valuable one, which must have involved great labour as well as long acquaintance with the subject. It consists of a list of known portrait works by English mezzotint engravers, giving a brief description of the plate, the name of the subject, and sufficient details in regard to the attitude of the figure, and the accessories and lettering, to render identification easy, information as to the number of states (if more than one) in which the plate is to be met with, and a brief statement as to the date of birth and death, and one or two other particulars in regard to the subject of the portrait. In cases where a copy of the plate is known to be either in the British Museum or in the Sutherland collection, a note to that effect is added for the benefit of readers who may wish to inspect the plate. In the case of portraits of personages of special interest something approaching to a brief biography is given; and a rather longer biographical sketch of each of the engravers included in the book precedes the catalogue of their works.

The works are grouped under engravers' names, which follow alphabetically. The question of this arrangement according to subject is one of some importance, pretty fully discussed in the author's preface. Editors of similar collections or catalogues have in a good many cases grouped the works according to their subject, placing in collocation all the portraits of one particular person. This, in the case of some subjects, results of course in placing together works by different hands and in very different styles. We entirely concur with the author in thinking that the arrangement according to authorship is by far the best; the real interest to the collector or connoisseur is really more in the execution of the engraving than in the history of its subject; and the study of one engraver's works consecutively, as he says, educates the eye as to style and touch more than any other arrangement, and is just as convenient, or more so perhaps, for classification. It must not be supposed that the book contains specimens of the plates, nor, in fact does it tell the reader where to find copies of them except in the cases above mentioned. The use of the book is, that when one has come across or procured a copy of an engraving ascribed to any particular engraver, one can turn to the list under that engraver's name in Mr. Smith's Catalogue, and ascertain the history of the work or its subject, and form some judgment as to its genuine character (if doubtful) by comparison with the description based upon admittedly genuine works.

It was hardly necessary for the author, in order, apparently, to give value to his subject, to disparage historical painting (in his preface) in favour of portraits, and suggest that the former should rather be called fabulous painting. Every one knows what historical painting means, and that it does not pretend to represent the scene precisely as it happened; and every one who cares about or understands paintings or engravings at all is quite sensible of the immense value of good portraits from every point of v without it being necessary to disparage an and perhaps still more important branch c art. And it would have been wiser to omitted the reduced reproductions, by photographic process, of mezzotints which the frontispieces to the two volumes: i process of reduction the texture and qual the original are almost entirely lost throug blending of the shading on the reduced and the reproductions are by no means c lated to recommend or to illustrate fairl qualities of the mezzotint manner of engra But for the practical objects for which the has been produced it will be most useful t section of mankind who collect engravin large and, we fancy, increasing section. idea of the extent of matter contained i book may be formed when we mention th consists of two large volumes, numberin gether nearly 1,000 pages. It is plainly an viceably bound, is printed with good margin beautiful type, and is altogether an impo addition to a reference library.

VARIORUM.

THE rainfall has occupied so much atte lately that the following remarks, from a by Dr. Robert Mann in *Science for All*, for will be considered pertinent:—"Most rain where hilly or elevated coasts are expos the inflow of warm ocean winds, at least prevalent winds drift in from cold, dry re to low-lying, sunny lands. But over and this there are circumstances connected wit sculpturing and exposure of the land, makes the difference very great within narrow limits of territory. Thus, in Cumbe there are places within two miles of each at one of which the average annual rain 47 in. more than it is at the other. The a fall at any one place also differs materia different years, accordingly as warm and or as cold and dry winds have been predom On account of the great diversity which a in the amount of rain deposited on dif parts of the earth, it becomes very difficu ascertain what the sum total over the earth must be. If the amount of water ta thrown up into the air from seas, rivers, ground, and living vegetation could be mea that of course would give a fair estimate o rainfall of the earth, because it may be assumed that all the water which is raise the air as vapour is ultimately thrown again to the ground as rain. Commodore M the distinguished meteorologist of the U States, calculated that about 16 ft. of w assumed to be of the same area as the su of the earth, is evaporated into the air wit year. More recent authorities consider, ever, that this estimate must be large excess of the truth, and that if all the which falls upon the earth were allow accumulate in a basin of the same area r terrestrial surface, it would amount to a d tion of 8 ft. deep at the end of a year. average rainfall of the British Islands appe be something like 36 in. in the year; an average rainfall of London is certainly 25 in., or a little more than 2 ft. in the The annual rainfall in the dryest parts British Islands amounts to about 18 in., a the wettest parts, amongst the mountai Cumberland, it amounts to 189 in. in the The heaviest rainfall known upon the occurs upon the mountain slopes beyond head of the Bay of Bengal, and amounts the average to 610 in., or nearly 51 ft. year. One inch of rain implies a fall of 10 of water upon each acre of ground. The av rainfall of London, therefore, entails a s of 2,525 tons of water in the year to each of ground, or 31,310,000 tons for the metropolis, estimating it at an area of 20 s miles."——The Sixth Annual Report o Nottingham Medical Officer of Health inc a description of the sanitary condition o new borough, and seems to show that con able works are needed in that town.—— Dale, in *Sunday at Home*, gives some partic of Petra, its caves, temples, and tombs:— caves are perfectly dry and are deliciously At a distance from the entrance they are but when glass was not in common us windows most rooms were dark. In the of a cave convenient arrangements for h hold purposes—shelves and the like—are e excavated. I should hardly care to ha pleasanter room to study in than the ca

nem, which is said to have been the f Jerome. Some of the caves at Petra lso very 'desirable residences'—lofty, irly lighted, and the 'repairs' were not o be costly. The east cliff is excavated ntely temples and tombs. The base of ff, to the height of 50 or 60 ft., is left then comes the row of tombs and s cut in the solid rock; these rise to the of 50 or 60 ft., and above them there is the liff again. The fancy of the 'architects' e scope. Bands of colour run along the the cliff, and the columns of one building in deep red stone, and the capitals are ttum of white and violet. The roof of the all is richly decorated by flowing bands stone in various colours. The east cliff s one-third of a mile in length, and the of it is hewn into tombs and temples. st cliff is occupied with "private houses." ond day we were in the city we explored romantic ravine opening on to the n side of the plateau, and filled with oleanders and other shrubs. After a walk of about two miles we reached an latform; on the face of the mountain on at was a rock temple—the Deir—with a 150 ft. in length; the lower columns are h diameter, and about 50 ft. in height. opposite side of the plateau rises another ntaining many excavated chambers. he summit of this cliff there is a magni- view of Mount Hor; the Desert lies , and far away in the north-west we e the southern hills of Judea."

Miscellanea.

Improvements in St. Paul's Church-—Last week an application was made to stram, the Chancellor of the diocese of , at the Consistorial Court, held in St. Cathedral, on the part of the Corpora- the Dean and Chapter of St. Paul's, for ty or licence to make a garden with a and other improvements on a part of rchyard of the cathedral at the north- , south-eastern, and north-western por- o be open to the public. The Rev. Milman, rector of St. Faith the Virgin . Augustin, joint parishes (St. Gre- was also mentioned), appeared, but pposition. He said he merely objected terms of the petition, that the parties stated were seised of the freehold. ng to the *City Press*, the reverend gen- explained to the Chancellor the rights oint parishes he represented, and said an ent had been entered into for the im- ents specified. Mr. Stainer, from the f the City Solicitor, said, in answer to rt, that the improvements were to be out under an Act of last year. The llor doubted whether he could grant the tion to the Corporation without the land churchwardens of the parishes in- l in the matter were joined in the . It was stated that there would be no n, as all parties were agreed, and no alterations were to be made without the of the parties. Dr. Tristram, after some discussion, said the faculty would be , and, of course, there would be no l of human remains, and the improve- would be confined to the specifications ned in the plans prepared. With that anding and the alteration in the petition, granted.

gliola.—Messrs. Bellman & Ivey have d for the new house belonging to the ion of London, Strand, some Scaglioła columns and pilasters, which are excel- ecimens of this manufacture. Those in trance hall are Genoa green, and on the or red Devonshire and Brocatella. They a charming appearance. At Carpen- fall, London Wall, porphyry columns in er hall, and verde antique columns in the hall, with polished Parian capitals, are ling fixed by the same firm. They have nce received the order for the columns in very Hall. These will be of paoneyzetta,) in. high by 2 ft. diameter, and will be n one piece without joint.

Paul's Ecclesiological Society.—The rs of this society will visit St. Alban's on this Saturday, July 5th.

Working Men's Club and Institute Union.—The annual meeting of the Working Men's Club and Institute Union was held on Saturday afternoon, in the College Hall, Westminster, Dean Stanley, president of the Union, in the chair. Mr. Hodgson Pratt, chairman of the council, read the annual report, which stated that nineteen new clubs had been opened in London during the past year, raising the number in the metropolis to ninety-two. A house had been taken at Margate, and comfortably furnished for the use of members of clubs and their families. The council regretted that from want of funds they had been obliged to relinquish many useful projects. Mr. S. Morley, M.P., moved the adoption of the report and the re-election of the officers of the Union. Lord F. Hervey, M.P., seconded the resolution, which was agreed to. Lord Reay moved a resolution affirming that working men's clubs and institutes afforded an important agency for raising the tastes, habits, and general culture of the working classes in this country. The resolution was carried. The Duke of Abercorn presented to a delegate from the Putney Working Men's Club a silver cup, offered as a prize in the swimming contest.

The Heating of Schools.—The magistrates of Berlin a short time ago organised a scientific investigation of the arrangements for the heating and ventilation of the schools in that city. Of the 126 schools examined (in 118 buildings) forty-five had local heating with Dutch tile and iron stoves, fifty-four air heating, twenty-two low-pressure water heating, three mean-pressure water heating, one high-pressure water heating, and one air and water heating. The committee thought the following the chief points to be aimed at:—1. The temperature to be kept at a suitable height (19 deg. C. at the most), without the teacher having constantly to look after it. 2. The temperature of each school-room to be capable of regulation independently of all the others. 3. The temperature to show little difference in different parts of the class, horizontally and vertically. 4. The ventilation to be such that the air admitted be free of dust, noxious gases, and infectious matters, that it give no cause for complaint as regards moisture or temperature, and that it be renewed sufficiently to prevent impurities from breathing of the scholars reaching a limit dangerous to health. The committee came to the conclusion that, as regards ventilation and regular distribution of heat in space, the method of central heating, and especially air heating, is vastly superior to local heating, and that most of the complaints against it are groundless.

Sanitary Investigation and Discussion. The Journeymen Plumbers' Benevolent Association of New York, with a wise appreciation of their own needs and of the tendency of the times, have introduced discussions of practical questions relating to their calling at the weekly meetings of their society, and with excellent results. Unusual interest, says the *Plumber*, has been created among the members, the attendance has improved, and a spirit of inquiry and reflection has been developed among the members, which cannot fail to bring about good results. "The search for truth is always commendable, and nothing promotes it more than thorough and impartial discussion. The great scientific bodies of England,—the Royal Society and the British Association,—had their beginnings in a small way, and yet they have grown wonderfully, and proved to be potent factors of national and international progress. We should like to see societies formed in all our great cities, where architects, engineers, plumbers, health officers, and other persons interested in sanitary construction might meet to discuss matters within their province."

The Bristol Builders' Strike.—On Tuesday a number of carpenters and masons arrived in Bristol from the North of England. They were met at the railway station by the president and officers of the Master Builders' Association. In the evening the carpenters of Bristol held a meeting, and, after reviewing the proceedings of the employers, passed the following resolution:—"That we are still of opinion that our wages are as low as we can expect, considering the relative positions of the various branches in the building trade, and that if the employers still adhere to their demands, we, rather than work for what they offer, will use our utmost endeavours to obtain employment for our members elsewhere."

The "Lewis" in Ancient Times.—As to the use of the "Lewis" in very early times, concerning which we have before now given evidence, the Rev. Francis Redford writes,—The "Lewis" was known to the Romans when occupying this country. A few years ago the east abutment of an ancient bridge over the North Tyne, on the line of the Roman wall, was discovered near to Chollerford, and in close proximity to the remains of the large fortified station, Cilurnum; the facing-stones of the abutment, which are large, some nearly 5 ft. long and 18 in. high, were raised and placed *in situ* by aid of the "Lewis"; and it is remarkable, too, that the holes are just about the same size as are usually made in the present day. The stones have been clamped together by long rods of iron, and run in with lead. The work is probably that of the Emperor Severus. Nearly in the centre of the abutment may be seen a remnant of masonry still more ancient, evidently a central pier of a previous bridge, which there is some reason to believe was built by Agricola. The stones are clamped together, but there are no "Lewis" holes.

Industrial Dwellings and the Death-rate.—It is stated, with reference to the Newcastle Improved Industrial Dwellings Company, that during the eight years their block of dwellings has been open, the average death-rate of the dwellings has not exceeded 12 per 1,000, whilst, during the same period, the average death-rate of the town generally had varied from 29 to 22 per 1,000, that of the neighbouring district of Pandon being even much higher.

Carlisle.—The new banking premises in this city for the Clydesdale Banking Company are now completed. The building is designed in the Early Gothic style, and comprises the bank and its accessories on the ground floor and suites of offices above. The builders are Messrs. C. & J. Armstrong, Carlisle; and the architects Messrs. Hetherington & Oliver, of the same city.

A New Convent.—It is proposed to erect a new convent for ten nuns and six novices, and schools for 200 children, at Lixnaw, Co. Kerry, for Dr. M'Carthy, R.C. Bishop of Kerry. Mr. Dominic J. Coakley, architect, has received instructions to prepare plans for the above.

Ipswich Museum Competition.—It is stated that the design marked "Architect" (Mr. Horace Cheston, of Winchester-buildings), will be adopted. "Economy" and "Bona Fides" were very nearly as strongly supported.

TENDERS

For the erection of a new workhouse at Cardiff. Messrs. James, Seward, & Thomas, architects. Quantities supplied:—

White	£31,900	0	0
Jones & Co.	28,250	0	0
Watkins & Jenkins	29,000	0	0
Bird	28,885	0	0
W. & J. Webb	28,800	0	0
Jones Bros.	28,600	0	0
Vernon & Ewens	28,085	0	0
Baker & Sons	28,000	0	0
Veals	27,695	0	0
Forse & Ashley	27,140	0	0
Shipton	26,585	0	0
Drew	26,881	0	0
Howell & Son	25,995	0	0
D. J. & D. Davies	25,790	0	0
Price	25,750	0	0
Thomas	24,998	0	0
Krauss	24,977	0	0
Warburton	24,179	0	0
Burton (accepted)	23,550	0	0

For new premises, Corporation-street, Birmingham, for Mr. J. Jacobs. Mr. W. H. Ward, architect. Quantities supplied by the architect:—

Whittall	£2,630	0	0
Steel	2,600	0	0
Hartley	2,425	0	0
Garlick	2,411	0	0
Surman & Son	2,337	0	0
Robinson	2,376	0	0
Matthews & Son	2,297	0	0
Horsley Bros. (accepted)	2,233	0	0

For pair of villa residences, on the Gurney Estate, for Mr. T. C. Holford. Mr. J. Holden, architect. Quantities supplied by the architect:—

Palmer	£1,425	0	0
Norton	1,377	0	0
Morter	1,297	0	0
North (accepted)	1,278	0	0
Gregan (too late)			

For house and studio, Hampstead-hill-gardens, for Mr. T. Collier. Messrs. Batterbury & Huxley, architects:—

Manley*	£3,290	0	0

*Exclusive of fence walls and fittings.

For detached villa residence, Hampstead-hill-gardens. Messrs. Batterbury & Huxley, architects:—

Manley	£3,000	0	0

For new wing to the Royal Hospital for Incurables, West-hill, Putney. Messrs. Searle, Son, & Hayes, architects. Quantities by Mr. L. C. Riddett:—

Little	£22,389	0	0
Patrick & Sons	22,300	0	0
Conder	21,970	0	0
Holland & Hannen	21,890	0	0
Brass	21,853	0	0
Dove Bros.	21,725	0	0
Rider & Sons	21,692	0	0
Colls & Sons	21,687	0	0
Shaw	21,174	0	0
Higgs & Hill	20,944	0	0
Goodman (accepted)	19,988	0	0

For building five houses and shops, at West Kensington, for Mr. Bryant. Mr. Little, architect. Quantities supplied:—

Nye	£9,600	0	0
Clemence	7,890	0	0
Smith	7,748	0	0
Dodds & Co.	7,217	0	0
Pickersgill	6,939	0	0
Green	5,797	0	0

For two shops in Great Eastern-road, Stratford, for Mr. J. Hatcher. Mr. J. Hudson, architect. Quantities by Messrs. Franklin & Andrews:—

Little	£1,270	0	0
Morter	1,193	0	0
Mansfield	1,120	0	0
Gentry	1,065	0	0
North Bros.	1,038	0	0
Norton	1,028	0	0

Accepted for new lecture-hall and club premises, &c., in Humberstone-gate, Leicester, for the Leicester Secular Hall Company. Mr. W. Larner Sugden, architect. Quantities supplied by the architect:—

Burdett (Excavator, Bricklayer, &c.)	£829	6	0
Wilson (Carpenter and Joiner)	635	0	0
Austin (Heating)	99	19	0
Lindley (Stonemason)	240	0	0
Hill (Plumber, &c.)	209	10	0

For painting and decorating Wesleyan chapel, Belston-road, Wolverhampton. Mr. Samuel Loxton, architect:—

Tatlow	£388	3	2!
Lewis	345	0	0
Ash & Newbold	220	0	0
Beebee & Son	160	0	0
Stevenson (accepted)	159	15	0!

For additions and new shop-fronts to four houses in Ferdinand-street, Kentish-town. Mr. Griggs, architect:—

Larter & Son	£539	0	0
Gould & Brand	485	0	0
Steed Bros.	425	0	0
T. & B. Shepherd	389	15	0

For repairs and painting to Orphan Working School, Haverstock-hill. Mr. Pite, architect:—

Harper	£714	0	0
Staines & Son	528	0	0
Boden	510	0	0

For proposed residence and studio, Boston-road, Brentford, for Mons. A. Bullin. Messrs. Smithies & Gladman, architects:—

Brunsden	£1,375	0	0
Gibson	1,260	0	0
Beauchamp	1,219	0	0

For erection of detached villa residence, Belmont-road, Leatherhead, for Mr. S. Walker. Messrs. Smithies & Gladman, architects:—

Hickenbotham (accepted)	£1,195	0	0

For the erection of a pair of semi-detached villa residences, Belmont-road, Leatherhead, for Mr. Stephen Walker. Messrs. Smithies & Gladman, architects:—

Hickenbotham (accepted)	£1,145	0	0

For part new front and repairs to Founders' Arms, Holland-street, Blackfriars. Mr. W. C. Banks, architect:—

Sharpe & Everard	£291	0	0

For alterations and additions at 8, Marlborough-road. Mr. E. C. Robins, architect:—

S. & G. L. Mann (accepted)	£728	0	0

For making roads and laying drains, gullies, &c., on Estate at Romford, for the Birkbeck Freehold Land Society. Mr. St. John H. Hancock, architect:—

Pound (accepted)	£2,400	0	0

(Granite curbing extra.)

For rebuilding premises, High-street, Notting-hill, for Mr. Rawley. Mr. G. O. Stanham, architect:—

Mears	£1,900	0	0
Adamson	1,839	0	0
Holland	1,870	0	0
Head	1,863	0	0
Hockley	1,830	0	0
Shapley	1,825	0	0
Bowles	1,699	0	0

For building house and shop, 72, Rye-lane, for Mr. Austin. Mr. Lovett, architect. Quantities not supplied:—

Broadman	£911	8	0
Menard	9 9	0	0
Tyerman	897	10	0
Terry	875	0	0
Linfield	843	0	0
Smith	773	0	0
Buckland	727	0	0

For alterations, &c., at the George, Waterloo-road, for Messrs. Watney & Co. Mr. Bovis, architect:—

Lapthorn	£459	0	0
Taylor	345	0	0
Kenning & Mullens	325	0	0
Hockley	323	0	0
Pinnegar	289	10	0

For alteration and additions to 56, Loudoun-road, St. John's-wood, for Mr. Chaplin. Mr. Bradley, architect:—

Smith	£592	0	0
Drew	574	0	0
Higgs	479	0	0
Landrige	392	0	0
Gould & Brand (accepted)	387	0	0

For house in Manor-road, Barnet, for Mr. W. Justice. Mr. J. Ladds, architect:—

Somerville & Hill	£1,266	0	0
Butler	1,260	0	0
Gould & Brand	1,227	0	0

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F. M.—J. M.—W. D. S. M.—J. S. & T.—W. W. L.—S. L.—Capt. O.—H. & O.—B. & H.—G. E.—G. H. B.—J. W.—Mrs. L. Canon D.—F. & Sons.—L.—J. L. F.—T. W. & Co.—J. C.—T. B.—W. H. J. H.—G. R. I.—G. G. & Sons.—J. C. N.—H. & L.—F. B.—E. S.—C. S.—L. E. W.—M. L.—W. W.—J. W.—S.—H. O. S.—L. U.—J. A.—W. H. F.—J. P. (Cup).—S. P. O.—W. D. S.—T. H. P. D.—T. K. F. (thanks, not desired).—C. W. (best advice on the spot. If the cause be condensation, "plastering on laths and studding" would probably get rid of the annoyance. The presence of sea sand in the mortar sometimes produces the result complained of).

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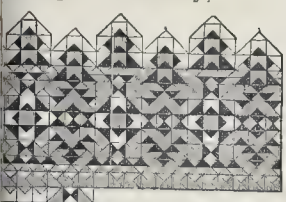
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Sculpture and Buildings,



AFTER all that has been said so often about the importance of sculpture in giving the highest expression to architecture, and the almost natural fitness of architecture as the framework for sculpture, it is surprising how little serious or thoughtful attempt is ever in this country to bring the two arts ...mbination in their highest forms. A ...proportion of our architecture, more ...ly of recent years, is without sculp...ecoration of any kind externally; and ... respect we have certainly rather ...ff than advanced of late. There was a ...en it would hardly have been possible ...uilding so large and important as the ... History Museum, for example, should ...en erected without any external sculp...ther than a few grotesque spouts. During ...riod of architectural taste when town ...d exchanges and museums took the ... Classic porticos, they would not have ...hought complete, when on any large ...ithout their sculpture in the tympanum ...cal of Commerce or of Free Trade, or ...her appropriate abstraction; and though ...fectly true that many or perhaps nearly ...ese sculptural decorations which pleased ...ers and grandfathers were really very ... in interest, and that few care to look ... now, they at all events represent an ... at giving the highest artistic expression ...ilding which is seldom made now; and ... the sculpture were not of the highest ...t was of more interest than mere ...s and capitals by themselves can ... to.

...he consideration of our own neglect in ...ect is the more forced upon us by the ...son with what is, at all events some...lone in France, and is certainly never ...ith us. Three or four years ago, the ...werful thing in sculpture at the Academy ... model of a group executed by one of ...atest French sculptors as an architec...coration, the "Danse," namely, of Car...This year we have a large decorative ...y another of the greatest French sculp...lou; and we hear of the names of the ...n in the art as employed from time to ... decorate with sculpture the works of French architects. Now this is what we do not do in England, even on the now rare occasions when we add sculpture as an important element in the design. The Albert Memorial is an exceptional instance; there sculptors of the highest eminence were invited to execute the angle groups; but the Albert Memorial can hardly be regarded as a building: it is essentially a work of art in which the practical element hardly exists, and even there the sculpture of the bas-reliefs was entrusted to sculptors who made their reputation by what they did there,—one of them, at all events, who more than justified the choice which had selected him while his reputation was still but limited. There are other buildings of comparatively recent date in London, which it is not necessary to specify by name, where sculpture forms an important element in the decoration, and in which no such fortunate result has been attained: in which sculptors of mediocre repute have been engaged, and have produced that most unbearable of all things, mediocre sculpture, which is of no good to any one; the sole advantage of which is, that at a distance it gives a certain glitter and variety to the effect of a building, but which, when more closely studied, has not a single element of interest.

We imagine that the Modern Gothic movement in England has had a good deal to do with this habit of employing stone-carvers rather than sculptors to furnish the sculptural accessories of a building, when these do form a part of the architect's scheme of design. When it became the fashion to reproduce Mediæval architecture, Mediæval sculpture was to be reproduced with it. Now, Mediæval sculpture, however interesting in a certain way, in character and feeling, never was good sculpture from the life-student's point of view; and when its reproduction was demanded, the demand was soon responded to by a class of clever and facile art-workmen or Mediæval carvers who were able to a great extent to catch the turn and trick of Mediæval carving and imitate it, but who could not have produced works which would have gained admittance in our own Royal Academy, moderate as is the standard of sculptural work there for the most part. It is probably owing to this habit of being content with stone-cutting rather than with what can really be termed sculpture that it has come to be almost an understood thing that the highest class of sculptor's work is not wanted on a building; that it is enough if the sculpture has a generally good decorative effect as a part of the whole, without being of sufficiently high class to interest us on its own merits, or to sustain scrutiny or criticism in detail.

It may be said that even so much sculpture as this is better than none at all; but it appears to us that the production of work of this mediocre class adds very little to a building, and that from a sculptor's point of view it is a positive disadvantage, as encouraging mediocrity of work and of feeling. And certainly it is not the principle on which the sculptural decoration of the greatest works of architecture has been carried out. We need only mention the Parthenon,—an instance which occurs to every one whenever the subject of architecture and sculpture in combination is brought up. But that is not really at all an isolated instance. There can be little doubt that in Mediæval buildings the sculpture, *naïve* and deficient as most of it appears to us now, was not so intended; that it was the best procurable at the time and under the circumstances. In Mr. Tadema's splendid piece of architectural painting in this year's Academy, in which the bridge is really the finest and most interesting point, how much would be deducted from the effect if we removed the fine and high-class portrait statues in bronze which fill the niches on the piers of the bridge! And what was done by the Romans and the Greeks in their day, it would seem that the French are doing now. They are employing for the decoration of their buildings sculptors of the first rank, who are giving their best talents to work of this class. In our own country we rarely if ever think of this, and only in the case of some special piece of work which is rather in the nature of ornamental design than of architecture in the ordinary sense of the word. The sculptor of part of the Albert Memorial bas-reliefs, for instance, has imparted to the new fountain in the centre of King's quadrangle at Cambridge sufficient artistic interest and importance to make it worth while for visitors to waylay a Fellow of the College, and get his permission to walk over the grass to look at the fountain more closely; but it is rarely indeed that any sculpture of this class finds place as a decoration to buildings even of the most costly and ambitious type, in this country. Yet why should it not do so?

One obstacle, perhaps, is the habit of always associating sculpture with marble, a very costly material, and one which it can seldom be possible to employ in large quantities, as the decoration of a building. The best and most thoughtful of the rising generation of sculptors are, however, showing an increasing disposition to attach less importance than formerly to mere beauty of material, and to rely more exclusively on the design and feeling of their work, in whatever material executed; indeed, we have more than once heard from a sculptor a decided expression of preference for final execution in terra-cotta over marble, because the material is more flexible, and gives more readily the direct expression of the feeling of the artist in a happy moment of inspiration. This undervaluing of material must not, it is true, be carried too far; a sculptured work into which a high thought has grown is most suitably enshrined in a material of fine texture and surface, and one which is not used for every-day work. But this, perhaps, is a want we need only feel imperatively in the case of a work which forms an important and central design. A canopied fountain or monument in the middle of a square, with a figure in terra-cotta for its central object, would no doubt appear unsuitable; we should

feel that a piece of sculpture so emphasised by situation required a finer material to produce even its suitable decorative effect, considered as apart from its abstract design. But take a façade of a building which affords suitable space and suggestion for sculptural expression, at certain points, and it may surely be conceded that terra-cotta sculpture on a large scale, and by an artist of the highest class, is a perfectly suitable and practicable manner of giving sculptural interest to such a building; and the idea seems all the more suitable in reference to the increased use made of terra-cotta now in the ordinary architectural detail of a building, and which will very likely be carried still further. Terra cotta will not, however, go well with stone; brick is its proper background among building materials. But in the case of a stone building (and we sincerely hope that stone is not permanently to be neglected for brick to the extent which sometimes seems threatened), why may we not have sculpture of a high class executed (where marble cannot be afforded) in hard stone, instead of leaving this, when done, to be done in a mere mediocre and "art-workman" style? We do not believe that any sculptor of genius would despise such a material; and if executed in carefully-selected stone, and to a certain extent protected by its architectural framework, there is no reason why such work should not last for centuries; quite long enough, at all events, to make it well worth doing. This would be the more the case if the sculpture were in bas-relief,—a style of work which has not taken the place in the application of sculpture to modern architecture which it might. We are too fond of statues in the round, standing free or in niches, which offer much greater opportunities for atmospheric destructiveness, hold soot and dirt more, and are less easily cleaned, than work in rather low relief.

There is much complaint of want of patronage of sculpture in this country; many men who could do very thoughtful work are with difficulty struggling on with any small commissions they can get, anxiously looking for chances of public distinction which seem very remote and doubtful in the present state of feeling about sculpture. All this while there are opportunities of applying sculpture to architecture, which are either entirely neglected, or which are placed in the hands of artists of a quite secondary class, men who are merely more or less clever stonecutters. It may be hardly possible, on economic grounds, that the remuneration to a sculptor for work of this kind on a building could generally be quite up to the usual present scale of artists' charges, but we are very much mistaken if there are not those who would be glad of the opportunity of exercising their art in this manner even under this limitation. At all events, it would be desirable to give them, so to speak, the "refusal" of it when the opportunity occurs. The exercise of high-class sculptor's art in such work would afford an outlet for some who cannot find patrons for costly marble figures, and the gain to architecture and to the public appreciation of art would probably be very great. At present the sculptural decorations of our buildings are mostly of no real interest at all. We see in new street buildings now and then attempts at giving variety and speciality of interest by sculpture having some reference to the object of the building. The attempt is highly to be commended, but it does not seem to get into the right hands. The result is generally merely more or less effective stone-cutting, producing that kind of mediocre art which is of no value to any one. We want to tempt sculptors, properly so called, on to the scaffold of the building, and we believe there are those who would be very glad to come, if they were only invited to do so in a proper spirit.

Beaford.—The parish church of Beaford, near Great Torrington, Devon, has been re-opened, after restoration. An entirely new roof has been provided over the nave; in fact, almost a new church has been erected on the lines of the old one, with the exception of retaining the principal walls. A new screen has also been erected, to separate the south aisle from the chancel. The old walls which remain have been supported by buttresses, and the old wooden roof of the south aisle has been restored. All the dressings and the pulpit are of Bath stone. The architect was Mr. Wooler, and the contractors were Messrs. Squires & Chapple, of Bideford, the amount of whose contract was 1,140*l*.

ON THE ORIGIN OF SPECIES—(OF DISTINCTIVE STYLE)—IN ARCHITECTURE.

WHAT Species is in organised nature that is Style in architecture; and when the possibility of a new style is mooted, the question how it may healthily and prosperously originate and develop is our question of the Origin of Species,—a question as interesting in architecture as in natural history. Let us give a little consideration to the analogy. It may be that something is to be learnt by tracing how far the correspondence can be fairly maintained, and whether at last, and where, it may of necessity break down. It is not to be denied that art, with all its richness of existing and recorded monuments, cannot emulate the exuberance of nature. The zoologist and botanist give us species by the thousand that are as absolutely distinguished as our Greek and Gothic styles, but numbers do not make a difference in principles, and it is with principles that we are concerned. Indeed, the more nearly we abide by whatever limited examples are sufficient to illustrate these principles the better. Instead, then, of organised beings at large, let us take animals; and instead of animals generally, let us be content to bear in mind a few of the most familiar species, horses and dogs, with cows and cats in reserve if wanted. In a like intention of concentrating inquiry and exposition, we may leave aside particular reference to Egyptian, Indian, Chinese, or the purely barbarous forms of architecture which have much the same relation to Greek, and Roman, and Gothic architecture as molluscous and articulate animals have to vertebrates. The variable forms of Classic and Mediæval structures have sufficient range, both in number and diversity, to supply us with suggestions as to the nature of the forces that bring a style of architecture to perfection, that develope its capacities of harmony and beauty, its inborn germs of decay and ultimate regeneration in favour of some newly originated style,—some supplanting species.

A naturalist groups individuals into a species in virtue of resemblance in points that are essential to their existence and most important functions; and he draws his strongest line of distinction where he follows the most positive line of difference in nature;—precisely as in art we mark off a primary contrast between trabeation and arcuation as constructive principles. Both artist and naturalist have to disabuse the uninformed, or it may be in the first instance themselves, of some prepossessions; it is found, on the one hand, that a whale is no more a fish than a flying fish is a bird, and, on the other, that a Romanesque church on the Rhine has more affinity to Westminster Abbey than to the Parthenon or the Pantheon.

The grand test of species at last with the naturalist, is the fact that his grouped individuals "bring forth after their kind"; that grapes do not grow on thorns, or figs on thistles; that horses, let us say, do not bring forth cows or dogs propagate a progeny of cats. This characteristic he finds to accompany agreement in all the most important points that come under his observation, and to infallibly imply agreement in many more that are quite withdrawn from his scrutiny and ken; he, therefore, includes in a given species all individuals that might have a common descent. But still within the terms of this restriction, there is liberty for the manifestation of Varieties; that is, of individuals which have very marked distinctive characters which still in no way interfere with the still deeper characterics that attach them indissolubly to their species. The works of Mr. Darwin set forth with marvellous sagacity the influences which contribute to the Origin of Varieties; influences which have large operation in nature as independent of the interference of man, but which, as Mr. Darwin exemplifies, may be wonderfully promoted by human care and well-directed purpose. It is thus that varieties within a species become the commencements of Races,—of pure breeds, as they are sometimes called, within the species; characteristics of a variety become hereditary, and, according to the special values of such characteristics, breeds or races are valued. The King Charles's spaniel and Italian greyhound are dogs no less in species, however inferior in size, than the mastiff, bulldog, or wolfhound; and still, as all who know dogs know, there are no two, however, of the same race and of the greatest possible resemblance, that have not their several individual characteristics. In any case, and whatever the differences in size, shape, and specialty of instinct, a dog knows a dog all the world over, and vindicates the philosophers who assert the relationship.

So far our parallel with art may run on easily enough. We may regard the orders of Greek architecture,—the Doric, Ionic, Corinthian, as highly developed races. The operation of what nature has its place in architecture also, when new motives are introduced at the suggestion of incidental convenience or vagrant fancy, undisciplined imitation, without regard to comprehensive and harmonious modification. To this to have place, the higher human influences must interfere; and good sense, good taste, and genius seize on the capacities for use and susceptibilities for beauty of an intrusive innovation and reduce it to order, to completeness, to maintain its effect by still further exercise of invention. Then is the world the heir of a true organic whole, which responds at once to convenience and to sympathy. Such healthy development is still not at an end, and the individual character which each master of Doric or Ionic architecture impressed upon his particular work, may be taken to correspond to the tendency for races to develop still further secondary and tertiary races from their chief varieties, even as there are terriers and terriers, greyhounds and deerhounds.

Purity of style, then, may be taken as the parallel of purity of race; but in a world where all things are in flux,—where even our appreciation of a present moment only becomes possible by concurrent consciousness of an immediate past and immediately to ensue,—it were a task to take indeed to estimate purity of style by exactness of correspondence with some well-approved antecedent. Individual character will at least be the justifying impress of an individual work, and the opportunity for this is by means restricted, howbeit the limits have to be observed that are imposed by the law of race and by the ulterior and still severer laws of species. Vitruvius, who laid down rules of proportion and even plans for buildings which he implies had been and were to be invariable, set the example which several of even the best original Italian architects too readily imitated of writing specific formulas for the production of architectural dignity or beauty. This would discourage, nay, to forbid, invention and initiative enterprise, which it had been more needful to stimulate; and better to give up all attempt at guiding, rather than not to stimulate at all. The beauty of the exemplars confirmed the error; and so it came to pass in a former period ration that the maxim could be systematically propounded; "look to the books, keep as close as you can to the proportions given, and your work must look well."

Tyranny is the mother of rebellion, and oppressive restriction has to be escaped from at any risk; this is the critical moment for art when the justly provoked and insurgent energies, happily allied with genius, the best may be expected; but otherwise authority is repudiated on the easiest of all terms by those who live loose from formulas to defy consistency. And indeed it is if under such circumstances Art can escape a visitation of developments that bring us to a most unfavourable parallelism,—to the Mongrel. There is no more ready resource than novelty at any price and any risk than parade the denial of all that has been revered and accepted, without any consideration as to whether worthily revered and accepted or not. It cannot be denied that the temptation to paradox are not found to have power upon expert alone, though it is here that the pert are, must we use the term?—the priggish, are wont to disport most rejoicingly their airs of superiority, and do their best to persuade the world or failing that, to convince themselves and each other, that it was reserved for them to proclaim the glory and happiness of the universe—both are to be secured by simply turning the universe and everything severally that it contains, upside down. True eloquence, of fancy, all that would adorn enthusiasm if noble enthusiasm were forthcoming, are secured unhappily by the same temptations, and,—

> "Proud as Apollo on his forked hill
> Sits full-blown Bufo,"—

proud at first of finding that his melodious phrases will charm like the very lyre of Orpheus till he awakens to the consciousness some day that he has at last only been proud of himself collected about him,—like Orpheus,—but as a set of admirers and emulators. Orpheus charmed the rocks and the rivers, the birds and

ut the only other success that we read a more intellectual audience was when nded very low indeed, and even in those his melody failed at last.

nongrel of the naturalist is the mixed of two races, of parents it may be g to equally pure but to different f the same species; the result is still he species, and unfortunately retains lty of bringing forth after its kind, such but it is a corruption of both the races ich it springs. We are much inclined as mongrel some later developments of chitecture, albeit they occur upon Greek

s that pure breeds and pure styles are mongrel style may have any course of degradation before it, like a strain of dogs that descend again from mongrels sides. In architecture the course of tion has usually not been so much due to ous combination of elements of two hat in themselves are pure, as to the on of a style already developed to con- perfection and purity, by relapse. nism intrudes at certain epochs upon urs of civilisation; rudeness, coarseness, place makeshift take the place of high d elaborate adjustments in parts of a ion that at a better period would have mpleted throughout with uniformly xpenditure and laborious study. The arallel to this catastrophe in animated s the degeneracy of the thoroughbred terly unworthy cross.

et in neither case does the degeneracy bly perfected developments launch the on that unmitigated downward course ace predicts in lines which he was not d by the misery of their import, from up to a most artistic if not artificial of his "curious felicity" of expression. th of nature's energies is not so easily shed; the promptings of rude con- , the wild freaks of emancipated fancy, new motives by degrees, bring oblivion ellence that is past while stimulating an for compensation in the future. Saving rence of all who may have set down a opinion, we would plainly ask what else ngrel style is such a conglomeration of ural solecisms as the palace of Diocle- Spalatro; and yet even here we have a of that series of movements which us at last with a newly-originated archi- species,—movements of which more is id. For the mongrel both in nature and mething very different from the Hybrid. rid of the naturalist is the product of the different species. Such production sets mce the law which decides the per- of species; that law of which, let us kly, the origin is as inscrutable in the is the possibility or otherwise of its on in the future. The fertility of such r union is as transitory as exceptional, his fact confirms the severity of the law. ely occurs unless in the instance of the progeny of horse and ass, and the series the first generation, for the fertility of e, if it ever has occurred, has been so t in all ages and countries it has been to with horror and apprehension as a

As an example of an architectural re may perhaps be satisfied with such a tion as Inigo Jones produced, when he a Corinthian portico as a front for the nic cathedral of St. Paul. "The whir- time brings round its revenges," says the f Shakspeare with allusion to the familiar m of such wheels of fortune as we see ture on the front of the cathedral at f Inigo Jones were now to look into the of his own noble Tuscan church of , Covent-garden, he might perhaps be in retorting upon us the charge of g hybridism. There are some who would ise with his sentiments about a trans- n that among other consequences has he carved furniture associated with their devotions to exile in an adjacent butter-

eally interesting branch of our inquiry, r, concerns the process by which a ly admirable style is developed out of s or the corruptions of the past. Such s of hybridism as we have referred to, nearer to an explanation of this than crude theories of Empedocles to a rea- theory of the origin of living species. ilian philosopher propounds, in smooth running verse, a view of the operations of Nature which only gives her credit for some success at last by the chance results of random experiments, by the happy outcome of trials and failures like those of a persevering but most clumsy workman. Modern philosophers simplify their problem of the "survival of the fittest" by taking for granted, to begin with, that all the competitors for existence are more or less fit; and the origin of diversities of species is discussed by them on the tacit assumption that they are to be allowed one species to start with. But Empedocles imagined that, originally, members were produced separately, and fell into combination by chance. Arms, he says, existed lacking shoulders, eyes without orbits, trunks without heads; and no better combinations were rife than creatures with double faces, breasts on both sides, mismatched heads and bodies of men and quadrupeds, and so forth. The philosopher thus ascribed to Nature at her commencement a prevalence of the incongruous which, in the case of art, is rather the characteristic of periods that follow upon the days of most harmonious and successful achievement. Aristotle, indeed, used an architectural illustration to expose the fallacy of ascribing natural organisation to accident after this fashion, while we are taking the liberty to reverse the process, and would illustrate the function of architectural study by the analogy of nature. He says it were as rational a theory to suppose that, in a given building, the stone, as being the heaviest material, settled of itself at the lowest level and became the foundation; bricks came next, and fell automatically into the next position, and that no other reason need be looked for than the lightness of wood that it occupied the topmost place of all, and that so came about a roof.

If we can believe this, he says, we may accept as reasonable that it was only by accident,—as one out of many chances,—that the teeth which are adapted for biting,—the incisors,—are placed in front where they have an opportunity and are required for biting,—and those which are suitable for grinding the food already bitten off,—the molars,—have their place at the rear, and answerably in either jaw. These are among the adjustments which Democritus, — that great name which has become so oddly abused,—was never tired of tracing and admiring in nature, though he did not connect them with the operations of an intelligence. To Socrates and Plato, on the other hand, it appeared so self-evident that the marvels of nature declared the influence and operation of a presiding and designing and governing intelligence, that they did not even entertain the question whether any plausible theory could be constructed that would dispense with it. In short, they assumed,—they assume in their still living and recorded enunciations,—an architect of exhaustless resource in sagacity of design and power of execution. Aristotle was the first to fairly set the two theories face to face, and we have seen which it was that he made short work with.

Now the history of nature,—an important section of the history,—lies before us as we turn the pages and plates of the geologists and the physiologists, and on the other side we refer to a record as richly illustrated, of the structures which man has contrived from age to age for his comfort, his delight, for the expression of his highest aspirations and sympathies. We may well be struck by a parallelism of successive development in both,—of progress from simpler to more complex forms,—and even from those which excite our admiration less, to others that carry us beyond ourselves in admiration. As the ever multiplying army of students extend their ever eager and industrious research, a sequence is ever more and more completely established in the gradual elaborateness of the organism of living beings, and it is, perhaps, not to be wondered at, if even the sagacious are led to the conclusion that we have here an exact analogy to the advance, let us say, of Gothic architecture, from its rudimentary stages to its most triumphant achievements. But the comparison is too flattering to our own efforts, and involves an unfortunate misapprehension of the natural phenomena brought too violently into relation with them. The plates of the geologist may exhibit to us organisms of different degrees of complexity and beauty, but they do not exhibit a succession of failures that are gradually corrected, but ever liable to relapse into failures again. Of every extinct species, we may say, as securely as we say of every existing species, that it is complete in itself,—there is no more reason to assume in one case than the other that it had not its full complement of organs which subserved an harmonious combination of functions, and fitted it for its special place in whatever was its natural environment. Superseded they were in time: such supercession, indeed, which is without example in recorded history as the appearance of an entirely new species, may be called a matter of every day in geological; race after race became extinct, but it cannot be too distinctly recognised that the superseding species are not the old species cobbled, are not tentatives brought a little nearer to a purpose that was missed before, and waiting for still a further improvement. An ass of our own day is an ass, and was an ass to our fathers, not something that ought to have been a horse, or is going to be a horse, only that it is a failure.

But be it frankly confessed, the development of art has a history of which large chapters indeed are occupied by failures, and of which the most honourable chapters record the gradual recovery from failure, by the introduction of one modification of constructive expedient, or of ingenious arrangement, or enrichment and decoration after another. So much is this the case that some of the speculative have even been tempted to write of the history of architecture as if it consisted in this and nothing more. A little steady research is, indeed, all that is needed to enable us to set forth, with no little plausibility, how the ultimate perfection of either Greek or Gothic architecture might have been a growth, every stage of which, without exception, was but a slight advance on what had gone before, was suggested by some contingency that naturally presented itself, and met some requirement that emerged and had to be dealt with as best it might be at the moment. There is very much to this effect in Sir Gilbert Scott's exposition of the development of Gothic arches and Gothic vaulting. Certain it is that if human apprehension were as uniformly alert as it is in the most favourable instances the road would have been short indeed to many a discovery that it has taken centuries to bring about. If every hint had been seized, pursued, evolved to the uttermost, without pause or backsliding,—well,—"chapels had been churches and poor men's cottages princes' palaces,"—only they are not. We go forward, we go back, we go astray, and then we go forward again; and so it is that when our history is written we have too many pages that show only approximations to perfection, to set against the pages of the naturalist who, whether he exhibits a skeleton of an hipparion, a bird with teeth, an exquisite ammonite, or even the relics of—

> "Dragons of the prime,
> That tare each other in their slime,"

is false to himself, if he doubts that each was in full harmony with its environment, slimy and carnivorous as it might be.

Still it is the pride of architecture, as of other human arts, to be able to assert with justice that it has achievements of its own to show which, due allowance made, can fairly be brought into comparison with much that excites our awe and admiration in nature for the apt adjustment of structure to function, for the combination of most varied contrivances and distributions as contributory to one main and harmonious result, to the conciliation of stability with grace, of usefulness with beauty. Only it appears that practically this admirable result has not been obtained by mere desultory snatching at isolated improvements and occasional happy thoughts of merely limited application. When Aristotle, —we must be indulged in citing him again,—repudiates the notion that Nature's organisms result from accidental evolution, he justly says that in such case success must have been exceptional only, and yet where do we find her failures? We are at no loss when called upon to produce examples of failures in architecture, but success has ever been due to the exceptional interference of intelligence of the highest order, and the true perfecting of a style; the origination of what is justifiably regarded as an architectural species is ever the work of genius, which by its analogy to the works and ways of nature is spontaneously greeted as creative. The fossils of the art of architecture, the remains of Roman decadence, or of early Mediævalism, do present to us analogies of the Empedoclean chaos,—members only half developed, lacking requisite association with other members, or still more unluckily combined into false sets, atrophied and hypertrophied in every degree. The salvation of true

art, the reduction of such *chaos* to a *cosmos*, is witnessed, when we are able to discern that at some favoured epoch a truly organising mind was given to the world, whether his name is on record or forgotten, who had the taste, knowledge, courage, and opportunity to cancel the incongruous, recal the unworthily neglected, invent the still unexampled but indispensable complements, reconstitute arrangements, and in virtue of an infallible sense or science of proportion, whichever it may be, educe elegance out of clumsiness, and unite what was at best a rickety, if not disjointed, agglomeration of unfitting and illfitting parts into a consistent, an effective, an admirable whole.

The material upon which such organising energy was employed in days gone by, presented itself in the forms of merest crudity of which the full capabilities had not been recognised; at present the case is considerably altered. Architectural genius has worked most industriously among these stores of suggestion if it has not exhausted them, and materials for novel developments have to be looked for among examples which may well seem to have reached a final culmination. But social existence and its requirements, to which architectural propriety must always have a certain relation, never long remain without change, and therefore never long without disturbing a pre-existing harmony of such relation. It is for the restoration of such harmony that the world makes an appeal to genius; there have been many periods when the harmony was far less in need of the truly master-mind, and herein lies the opportunity for the creative architect of the present,—or if so it must be,—of the future.

In justification of the citations of Aristotle, reference is made to the second book of his "Physics," where those who can spare the time, whether architects who are philosophers, or philosophers with no pretensions to be architects, will find much to interest them.

AS TO THE FOUNDATIONS OF BUILDINGS ON TREACHEROUS SOILS.

THE question of the area of surface which, in different descriptions of soil, should be allowed for the support of a definite weight of structure, is one which we have before now indicated as deserving of much more illustration than is at present easily attainable (see *Builder* for December 1, 1877, *et passim*). The need of more exact rules than are easily to be found has been lately experienced by a gentleman who was requested, ten years ago, to devise plans for the foundation of a large and costly state building in the United States, namely, at Albany, in the State of New York. This gentleman, Mr. W. J. MacAlpine, M.Inst.C.E., not having met with sufficient information to enable him to form any rules for determining the load which may safely be imposed by a structure upon earth of a specific character and condition, was led to go to some expense in instituting experiments for his own guidance under the circumstances mentioned. A paper, detailing the experiments and the results, has been communicated by Mr. MacAlpine to the Institution of Civil Engineers, from which we extract such information as we think may prove of value to our readers.

The building which it was proposed to erect was one, as will be seen, of considerable magnitude and importance. The soil of the spot selected for the site appears to have been unusually treacherous, or, at all events, to have given very good reason for unusual care. The area of the foundation of the building was about 24,000 square feet, but the structure, though combined as a single edifice, covered 120,000 square feet, and was so varied in the weights and pressures on different parts, that it might be rather considered as a group of a dozen of very differently-proportioned buildings. The ground to be covered sloped to the east, at an inclination of forty per 1,000, or one in twenty-five. Excavation and borings showed about 100 ft. of a particular clay, called in the locality "Albany clay," or "blue clay," which contains from 60 to 90 per cent. of alumina, the rest being a fine silicious sand. This rests upon the "Hudson River argillite," a clay slate, which forms the banks of that river for thirty miles of its course. The Albany clay contains many nodules, in the form of rings or discs, of about 1 in. in diameter, consisting of clay highly charged with carbonate of lime. Over the blue clay was a mass of earth, ranging from 1 ft. to 35 ft. deep. This was composed of a mixture of clay and sand, in varying proportions, being in some parts nearly pure sand, and quite porous, and in others almost a semi-fluid. This material occurred in veins of different thicknesses, lying at different levels, both above and below that required for the foundation. One of these veins, which were from 5 ft. to 25 ft. wide, was 200 ft. long, and passed diagonally across the excavation, at a depth of from 6 ft. to 20 ft. below the bottom of the intended foundation. This vein was dug out and replaced with clay and sand, artificially mixed, and rammed in layers, so as to make it resemble, as nearly as possible, the adjacent material. Other veins and strata of viscous matter, sometimes terminating in pockets in the blue clay, were found in the excavations. A well which had been sunk close by, to the depth of 100 ft., was entirely in the blue clay.

The material here found, in its natural condition at midsummer, contained from 27 to 43 per cent. of water. When the samples were thoroughly dried and pulverised, and again allowed freely to absorb water, they absorbed from 39 to 46 per cent. of their weight. The other clay held 40 per cent., and when dried, as the other material had been, and subsequently saturated, absorbed as much as 43 per cent. Thus the mass of the material upon which the building had to stand, in its natural condition, was quite saturated with water. The weight of the clay, if separated from the sand, was 116 lb., and that of the pure sand 80 lb. per cubic foot. The mixed earth varied in weight from 81·5 to 101·4 pounds per cubic foot; and the specific weight showed the respective proportions of argillaceous and silicious matter, and that indicated, to a certain extent, the supporting power of each locality.

The first design for the building, which was made before Mr. MacAlpine was entrusted with the direction of the work, had been for a foundation on piles; and a considerable number of these timbers had been actually procured. The use of piles, or of thick planks laid horizontally, for the support of walls, is common in Albany; but such timber is usually apt to decay within a quarter of a century. Some large buildings, after standing for twenty years, have begun to crack, and to settle, in consequence, it is supposed, of the decay of their wood basis. As might have been anticipated, in situations where the wood was always kept wet, decay did not appear, but where the moisture was drawn off, the wood did not appear to last for more than twelve years. Mr. MacAlpine felt that it was unsafe to entrust the stability of a monumental building to the support of material that was sure sooner or later to decay. Cast-iron piles, of white iron, would, he considered, be reliable for a century or more; but even these would eventually have decayed.

The adoption of the Indian method of sinking shafts and filling them with concrete was also considered, but was not regarded as admissible, as inverted arches could only have been used under part of the structure, and it was deemed advisable to have but one system of support. For the above thoroughly sound professional reasons the architect resolved to adopt the plan of which we have to give some account.

An estimate was formed of the weight of the entire building and its contents, supposing it to be finished according to the designs. We may observe here that a due allowance is made for the force of the wind on either of the façades, and call attention to this as an instance of one of those unforeseen causes for which allowance must be made in the margin that is added to all net calculations of an accurate kind. This weight is stated as 200,000 American tons. It may be explained that the Americans now generally use the round number of 2,000 pounds, instead of 2,240 pounds, for a ton. This secures a considerable advantage in simplifying calculation, though it must be remembered that the English ton is so near the French *millier* or ton (which is equal to 2,204 pounds avoirdupois, or 0·9842 of an English ton) that the metric system is more readily expressed in English than in the American notation. The area of the base of the exterior and court walls, and of the rear walls opposite, was, as before mentioned, 24,000 square feet. This gave a pressure of 6½ tons per square foot on the basement walls. (Such, at least, is the statement of the paper; but the result of the given figures we make to be 8·33 tons per square foot.) The main tower, however, with a weight of 30,000 tons, has an area of 2,508 square which is equal to a pressure of 12 tons square foot upon the foundation-walls. weight brought on the foundation of the div walls was 23½ tons; that on the interior wal the towers, 39 tons; and that on the exterior of the corner towers, 47 tons per linear Thus great differences occur in the pres exercised on the foundations on different of the building,—a weight of 134 tons, might possibly be increased, being calcu per linear foot of the walls of the main to

The exterior walls had a facing of cut gra backed with rubble masonry and brick This weight is averaged at 150 lb. per foot. The floors are supported on iron girders and cross-beams, with brick arche covering. The weight of this part of the st ture is 24 lb. per square foot. The po weight of crowds of people upon the flo taken at 100 lb. per square foot; that of upon the roof at 12½ lb. per square foot that of the pressure of the winds on th walls (resolved into a downward pressure c foundations) at 15 lb. per square foot. these data the various weights and pressur the different parts of the building have calculated, and are mentioned in detail i paper, to which, when it is hereafter pub in the quarterly volume of the Proceedings Institution, we invite the attention of thos dents who want to go more minutely into than it is necessary for us to do for the pu of the present remarks. It is obvious th the usual mode of enlarging the footings walls, and of placing the lowest course o masonry on a bed of concrete, the weight be distributed over an area much larger that given as underlying the direct pr At the same time it will be seen that the w are so great, as well as so varied, th unequal subsidence under any part of the ing would be likely to produce misch effects.

In order to ascertain the weight wh might prove certainly safe to place on th clay in its natural condition, two sets of e ments were made. The mode employed u us as original, ingenious, and very well a to give results which we should call min With the additional precaution of ob the levels from a bench mark so distant could not be possibly affected by the e ment, it is probable that the results mi absolutely taken as giving the compress the given locality; but it strikes us t would have added to the value of the e ments if this additional precaution ha taken.

The machine employed, if so simp appliance may be called by that name, mast of timber 12 in. square, held p dicularly by guys, and supporting a cross to carry the weights used. The first e ments were made upon a square foot foundation. A hole was dug in the bott the excavated part of the blue clay, square at the top, 3 ft. deep, and 14 in. at the bottom. Small stakes were dri the ground, in radial lines from the ce this hole, and the tops were carefully dri the same level, as determined by the appli of a straight-edge. Weights gradually incr from 2,754 lb. to 23,784 lb. were placed framework.

The results of the increase of weigh given by Mr. MacAlpine in a table which every detail, as many as nine columns filled up by the record of fourteen succ observations. The weight of the machine 2,754 lb., caused an immediate settlem 0·288 in., which, at the end of sixteen had increased to 0·9 in. The addition first stone rather more than doubled the sure, and increased the settlement, in an time, to 1·428 in. The second and third weighing together 6,260 lb., caused, in hours, a visible uplift, the settlement incr to 6·180 in. We do not see any notice whether there was any excess or uplift margin of an inch left between the edge timber and that of the bottom of the hole the addition of the fifth stone, making a weight of 17,974 lb., there was an imm settlement noted from 11·556 to 14·844 in uplift followed the addition of the sixt another that of the seventh, stones. F the weight of 23,784 lb., which caused a ment (including one noted uplift) from to 31·2 inches, after a total time of thir hours, caused no further movement in three

, and the weight was, therefore, considered ave found its bearing with that amount of ement.

is observed that after a weight of 20,954 lb. rested for half an hour upon the clay, a er protrusion or creep upwards was noted. highest part of the protrusion was from . to 15 in. from the edge of the pit. Here eraged 0·3 in. high, and sloped off out- ly at an average of 4 ft. from the centre of ole. Mr. MacAlpine calculates that 0·606 cubic foot was then uplifted, which was valent to a displacement of 7·272 in. When ight of 23,784 lb. had been applied, and rested three hours on the clay, the ring had by 0·5 in., showing 1·01 cubic feet of earth d, being equal to a displacement of 12·12 in. r the foot of the mast.

is the inference of the author that the first n due to the pressure was that of com- ion of the material. After the load reached 0 lb. or 8,000 lb., the displaced earth en- oured to escape in a lateral direction, and caused the uplifting of the surrounding ce. The small size of the area under pres- made this escape more easy, and Mr. Mac- e says that if the pit had been deeper, or piston larger, there would have been less nal displacement.

e second set of experiments differed from irst only in the larger size of the area put r pressure. A base of 3 ft. square was ed to the mast, and the weighting and vations carried on as before. The pit was . by 38 in., both at top and bottom, and deep. The stones were put on at intervals hour. In these second experiments no g of the surrounding earth occurred. The ement increased with much regularity, in portion to the increase of the load; and as arth became more compact the proportionate ment diminished. When the pressure per re foot corresponded pretty nearly with of the second observation on the smaller (a little more than a ton on the square foot) ettlement was nearly equal. The outside ure employed in this series of experiments 29,878 lb., giving a weight of 3,320 lb. per e foot. The total settlement then noted, out an hour from the imposition of the t, was 0·825 in. When this is compared the settlement of 0·9 in. after fifteen hours' ure of 2,754 lb. on the smaller area, it will en that the extent of superficial area ed has to be taken into account, as well e actual weight per foot. If a pointed pile been substituted for the square foot of ce, there can be little doubt that, at all s for a certain distance, the descent would been more rapid than was actually the , and a foot square of area is but a point e it is compressed with weights and bulks as those of the building to be erected at y.

e inference drawn from the experiments . MacAlpine is, that the extreme supporting r of the earth on which he experimented less than six tons per square foot, and that ad which might be safely imposed upon the was two tons per square foot. Considering tion to be that of compression only, and not placement also, we deduce from the second the results, that a weight of one ton per e foot actually caused a settlement of in.; and a weight of 30 cwt. per square settlement of 0·83 in., so that a weight of s per square foot would give a settlement least 1·1 in. We do not say that a settle- of this amount, if permanent, would be ing. But it cannot be denied that in the of a building of which some parts are more lofty, and consequently heavy, than s, such a compressibility in the soil on it stood would be a matter of very us concern. We thus find that the original of footings covering 24,000 square feet, sustaining a weight stated, as before men- d, at 6½ tons per square foot, would have very far beyond the limit of safety. With assure of a little under 7 tons per square in the first experiment, a settlement of in. was obtained, and the earth was then ich a state that an additional ton per foot uced an immediate settlement. When what ay call the absolute reliability of foundation small that the imposition of a weight which little more than double the atmospheric ure produces an inch of settlement, without bserved upheaval, it is clear that we are in nce of a practical problem of extreme acy, as well as gravity.

Mr. MacAlpine remarks with perfect justice that it is not so much absolute settlement which is to be apprehended, as a greater yielding in one place than in another. The method which he adopted in the case in question has an interest of its own, independent of the wider question on which his experiments are calculated to throw light. Considering that a change in the hygrometric condition of this particular material would be a direct cause of movement under a sustained pressure, he took steps for maintaining the clay beneath the building in the same condition of moisture. This is somewhat of a novelty in architectural practice, and it will be a matter of much interest to find how far the plan adopted answers the view of the designer. As, in a case of this kind, no news will be good news, we sincerely hope that the present generation, at all events, will have no further light on this particular experiment than that which may result from absence of change. A deep puddle-wall was extended entirely around the foundations, in order to prevent either access or egress of water, and to maintain, as far as possible, the exact proportion of moisture existing in the ground before it was built on. The puddle-wall was carried up to the level of the terrace which surrounds the building. To prevent the accumulation of rain-water within the space thus inclosed, a depth of 6 in. of coarse-screened gravel was spread over its entire area, with the idea that "under the great weight of the building any excess of water on the clay beneath will be forced into this pervious gravel, and flow off through it to the drains which encircle and traverse the foundations." We have here to remark that it appears to us to be a question how far the saturation before described is of a mechanical, and how far of a chemical, character. If the second affinity exist, the mere pressure of the building would probably be of comparatively little avail to prevent absorption. We do not wish to offer any criticism on a work which has evidently been deeply studied by the designer; or on his careful experiments for the guidance of which he has drawn observations which are of such high professional value. That value, however, is even higher, inasmuch as it may show the builder on mixed soils the necessity of positive experiment, as to each particular locality, before he imposes any considerable weight on his foundation, than if it be regarded only as giving a measure of the reliability of the particular material known as "Albany blue clay." And with reference to the more general question, particularly considering the extension which has to be given to the footing courses of the loftier parts of a complex building in order to reduce the vertical pressure on the ground, the question suggests itself whether it would not be safer to provide against the percolation of any rain water into the area, by the use of concrete, of asphalte, or even of puddle (if the area be very large), than to contemplate any squeezing out of water once permitted to enter the ground, by the incumbent weight. The author adds: "The necessity for these provisions will be apparent when it is considered that many of the veins of sand extend to the surface of grounds of much greater elevation than the foundations, and that they communicate with imperfectly-built street sewers and water-pipes; while the main or other porous veins extend beneath the surface to grounds which are much lower. Through these sources the clay under some portion of the structure might be charged with water, while that under an adjacent wall might, at the same time, be drained of much of its natural moisture, and thus entirely destroy the design of a foundation which should everywhere have an equal sustaining power."

We are not informed in the paper what was to be the cost of the "large and costly State building" which forms, or is to form, the new Capitol at Albany. But, as 6,656 cubic yards of concrete would cover the entire area to the depth of 18 in., it is worth inquiry whether the preparation of such a substructure might not be found, under some circumstances, a true economy. It is probable that this idea was duly investigated in the case in question; but we throw out the suggestion for the sake of the thorough discussion of the subject. The cost of the puddle wall would be an appreciable deduction from the cost of the floor of concrete.

Mr. MacAlpine has constructed a third table, which may very well be taken as a normal type by the architect who has to consider the important question of providing foundations of equal resistance for connected walls differing greatly in their weight. He has classified the different walls of his building in seven groups, in which the load per lineal foot rises from 8½ to 47 tons. He then places, in another column, the width of the several walls, rising from 2 ft. to 7 ft. He allows from two to five courses of footings; and an under course of concrete, proportioned to the weight in each case. Thus the walls, which are 2 ft. thick, and which have a weight of 8½ tons per lineal foot, have footing courses of 2 ft. 2 in. and 2 ft. 5 in., and a concrete course of 4 ft. 3 in. wide. The main walls, of 7 ft. thick, having a weight of 47 tons per foot run, have five courses of footings, increasing from 7 ft. 4 in. to 15 ft. 8 in. in width, with a concrete bed of 23 ft. 6 in. wide. It may be remarked, with reference to our former remark as to a concrete platform, that the quantity of this material actually employed must be enough to cover no inconsiderable proportion of the area.

CAST-IRON TOWERS AND THE ARCHITECTURAL THEORY OF LIGHTHOUSE CONSTRUCTION.

We brought before our readers in March last some account of examples of each of those four distinct types of lighthouse which have been built, often under circumstances of extreme difficulty and danger, on reefs or single rocks exposed to the fury of the waves. We have now to call attention to a fifth form of design, which, although, as experience proves, it is quite unfitted for such a site as that occupied by what may be fairly termed the queen of British lighttowers, Skerryvore, may be suitable for erection on a lofty promontory, such as that occupied by the tower of Ardnamurchan.

Considerable difficulty has been experienced by many persons, including manufacturing firms, who have sought for information as to the details of cast-iron lighthouses, in obtaining it. We have the more satisfaction in reproducing some account of the cast-iron lighthouse tower on Gibb's Hill, in the Bermudas, which was erected, in 1845, on a plan similar to that of the tower previously erected, in 1841, by the late Mr. Alexander Gordon, on Morant Point, Jamaica, which is marked F in the illustration of our group of lighthouses.*

Some account of this tower was communicated to the Institution of Civil Engineers on February 12th, 1856, by Mr. Peter Paterson; and the report of the reading and discussion of the paper, in which Mr. Gordon took part, will be found in vol. ix. of the Proceedings of that body.

The base of this lighthouse is at an altitude of 245 ft. above the level of the sea, being situated on the top of an elevation called Gibb's Hill, on the southern point of the Bermudas, in latitude 32° 14′ N., and longitude 64° 50′ W. of Greenwich. The figure of the tower is conical, the height being stated at 105 ft. 9 in., and the lowest and uppermost diameters (which Mr. Paterson has not figured), measuring to scale about 24 ft. and 14 ft. respectively. A cavetto or curved moulding, on the top of the narrowest part of the frustrum of the cone, supports a ring of iron of 20 ft. diameter, which is surrounded by a light iron railing, and forms a gallery round the lantern.

The external shell of the tower is constructed of 135 curved plates of cast-iron, including those for the doorway. These plates appear to measure 8 ft. in height by an average of 4 ft. in width; and they are stated to vary in thickness, from 1 in. at the base to ¾ in. at the top. They have cast-iron flanges, which project 3 in. inwards; and are strengthened at intervals of 12 in. by angular feathers, ⅜ in. thick. The holes for bolting together the flanges were all drilled, 6 in. apart, and the plates are bolted together by square-headed screw bolts, ¾ in. in diameter, with proper nuts and washers.

The centre of the tower is occupied by a hollow column of cast-iron, 18 in. in inside diameter, and ¾ in. thick, cast in nine lengths, each provided with circular flanges, which are bolted to each other and to the floor plates. At 2 ft. above each floor there is a man-hole opening into this column, 26 in. high and 15 in. wide, fitted with wooden doors. Thus the column is used, during the day time, by way of lift, and it also contains the waste-water pipe.

The bottom of the tower, for 20 ft. in height, is filled with concrete; with the exception of a circular well in the middle, of 8 ft. diameter

* See p. 257, *ante*.

faced with brickwork. There are seven floors, exclusive of the lantern floor, each 12 ft. apart. The first and second floors are cased with brickwork, and serve as oil and store rooms. The five upper floors are lined with sheet iron, No. 16 gauge, disposed in panels, with oak pilasters, rails, and skirtings. On the first floor there is a cast-iron kerb, 10 in. wide and 1 in. thick, to which is bolted a ⅜ cast-iron floor-plate. The second floor consists of the radiating cast-iron plates, ⅜ in. thick, bolted to the flanges of the columns, and resting on the brickwork. From the third to the seventh inclusive, the floors are constructed in the same manner, except that they rest on the flanges of the outer plates forming the tower, which they thus connect with the central column. These are all bolted together with ⅝-in. and ¾-in. bolts. The eighth floor, and the footway, each consists of sixteen cast-iron radiating plates, ⅝ in. thick, bolted with ¼-in. bolts. The plates are so arranged as to allow room for the passage of a spiral staircase.

In each floor are five windows, one in the centre of every alternate plate. They are 18 in. square, fitted with strong wooden ports, opening outward, and containing each a plate of polished plate glass, 9½ in. square. There is also a window of the same dimensions in the circular well, making thirty-six windows in all.

The staircase consists of two wrought-iron tringers, 1⅜ in. square, the risers and supports being ⅜ in. thick, and the treads of oak 1¼ in. thick. To each step is fixed an iron baluster, ¾ in. in diameter; on the top of which is fitted a wrought-iron hand-rail, 1⅜ in. wide, and ⅜ in. thick. The staircase rises spirally round the central column from the doorway to the first-floor, and round the outer side of the rooms, close to the casing of the tower itself, from the first to the eighth floor. There are standards and rails round the headways of all the floors. The standards are of wrought-iron, 3 ft. 6 in. in height, and tapering from 2 in. to 1½ in. in diameter. There are five of these standards on the first, and three on each of the other floors.

A wrought-iron ring, in four pieces, 5 in. wide, and ⅜ in. thick, is attached to the eighth floor, and to this the lantern and light room are bolted. The height from the gallery to the top of the lantern is 17 ft., making the total height of 378 ft. 9 in. above high water. The light is visible at a distance of twenty-seven miles. The cost, according to a Parliamentary return, was 7,689*l.*, of which 2,252*l.* was expended in Bermuda. The first parts of the lighthouse were landed in Bermuda about the end of November, 1844, having been previously fitted and erected in the yard of the builders, Messrs. Cottam & Hallen. The last plate of the tower was fixed on the 9th of October, 1845.

From this year's edition of a "Description and List of the Lighthouses of the World," by Alex. G. Findlay, F.R.G.S., published by Laurie, 53, Fleet-street, we ascertain that the lighthouse on Pembroke Point, Falkland Isles (of which we gave the elevation in our group of lighthouses), is a tower 60 ft. high, with white and red bands. The light is at an elevation of 110 ft. above high water. It was established in 1855, and is visible at a distance of fourteen miles. With regard to the Jamaica lighthouses, that at Plum Point, Kingston, is only given by Mr. Findlay as 68 ft. above the level of the sea. Our elevation must, therefore, be that of the Morant Point Lighthouse, in that island, in accordance with the elevation of that tower on Mr. Gordon's design. It is a "white iron tower, 96 ft. high, on the eastern extreme of Jamaica, and was built in 1842; the light is 115 ft. above high water, and is visible at a distance of fifteen miles."

We are happy to be able further to supply some of the details of the designs for the iron lighthouse on the Great Basses rock, Ceylon, from an account given by Mr. William Douglass, M. Inst.C.E.* In a circular relating to lighthouses, lightships, buoys, and beacons, issued by Mr. Alexander Gordon, in 1863, is a remarkably ungainly elevation, entitled "Great Basses." From the middle of a round, battlemented, iron tower, measuring 31 ft. in diameter, and 35 ft. high, rises an iron turret, some 12 ft. in diameter, and 34 ft. high from the top of the battlements to that of the lantern. A half elevation and half section of the tower are shown by Mr. Douglass. It was not erected, but may serve as an example of the details of this class of designs. In July, 1855, the late Mr. Gordon was instructed by the Board of Trade to prepare and submit plans and estimates for a lighthouse on the Great Basses, a dangerous reef lying eighty miles to the eastward of Point de Galle, and six miles from the nearest land, Kirinde; and to consider the relative expense and advantages of stone and iron as materials for constructing the same. The design submitted in consequence is described by Mr. Douglass as that of a cylindrical iron tower, secured within an enlarged basement of masonry or brickwork. The basement was enclosed within an outer casing of cast-iron, 2 in. thick; and both the tower and the casing were sunk in the rock. The basement was to be 30 ft. above the rock. The brickwork inside the cast-iron casing was to be set in bitumen, worked hot, and bonded to the outer shell. In order to prevent salt water remaining in contact with the cast-iron shell at its junction with the rock, it was proposed to provide an outer enclosing ring, or plinth, about 2 ft. high, leaving an annular space, about 1 ft. wide, between the plinth and the casing of the basement, which space was to be filled with heated Trinidad pitch, mixed with sand and small gravel. As each course of plates of the basement and the portion of the tower within it was laid and bolted together, the interior was to be filled up to the same level by large Ceylon bricks, 12 in. by 6 in. by 4 in., set and jointed solid in Trinidad pitch, mixed with an equal quantity of sharp sand, and applied hot. The inside and outside of the ironwork were to be well paid over with the same, and the space between the iron and the brickwork was to be carefully run in at every course of bricks with the same hot bituminous mixture. Accommodation for the keepers was to be provided in and upon the basement, the plateau of which could be covered at pleasure with an awning. The cast-iron shaft, 12 ft. diameter, built of plates 1 in. thick, and lined with thin wrought iron, secured to the internal flanges, was to be surmounted by a lantern and apparatus for a revolving catoptric light, at 120 ft. above high-water. The total cost of the work was estimated at 15,673*l.* 15s., and it was considered that it could be completed in eighteen months.

The substitution of granite for the basement occasioned an addition to the estimate of 4,000*l.*, and to the time requisite, of four years and a half. The employment of a steamer was also decided on, at a further increase of cost, and the estimate finally approved amounted to 33,946*l.*

In March, 1856, the late Mr. W. W. Poingdestre, Assoc. Inst. C.E., having been appointed resident engineer, left England for Ceylon to carry on the operations. The granite base, iron tower, illuminating apparatus, and lantern were prepared in England, and despatched to Galle, where they were landed and stored. It proved, however, that the difficulties of the work had not been properly appreciated. After three years, only a few landings on the rock had been effected, and nothing had been accomplished beyond the erection of a beacon mast, 60 ft. high, with a ball on the top; and the marking out of the site of the proposed lighthouse. In 1863, 40,000*l.* had been expended, and it was estimated that 20,000*l.* per annum for five years would still be required. The work was, in consequence, dropped.

The account of the stone lighthouse designed by Mr. Douglass, which was commenced in March, 1870, and lighted on 10th of March, 1873, at a total cost of 62,039*l.*, with the addition of 9,526*l.* as the cost of the granite for the base, delivered at Ceylon, does not come within the limits of our present task.

The above very costly experience throws a most valuable light on the question of the material which should be selected by the architect for the construction of lighthouses. Without going so far as to say that cast iron is in no case applicable for the erection of a tower, it is certain that in the instance of a tower springing from a rock exposed to the fury of the sea, masonry is the only work on which the architect can with safety rely. On this subject we cannot do better than call attention to the remarks of Mr. Alan Stevenson, engineer to the Board of Northern Lighthouses, in his "Rudimentary Treatise on the History, Construction, and Illumination of Lighthouses," published by Weale in 1850. Mr. Stevenson's high authority, as one of a family of lighthouse builders, the son of the engineer of the Bell Rock and Wolf Rock light-towers, and himself the designer and builder of the Skerryvore, is not less conclusive than his scientific argument. Bearing in mind the constant tremor to which a building of the kind is exposed from the beating of the waves Mr. Stevenson lays down the axiom that it is o the mass and weight of the structure that i stability depends,—not on its mere cohesio Masonry, therefore, so put together as to form t most compact mass, and most closely to resemb a monolith, is beyond all doubt or question th only proper material for a sea-springing ligh tower.

The first person who endeavoured accurate to register the force of the waves was M Thomas Stevenson, a description of who Marine dynamometer is given in the Transactio of the Royal Society of Edinburgh for Januar 1845. During the five summer months of 18 and 1844 the average indications registered different places near Tyree and Skerryvo gave 611 lb. of pressure per square foot surface exposed to the waves. For the wint months, in the same localities, the average pr sure was 2,086 lb. per foot, or three times t summer resistance. The greatest pressu registered at the Bell Rock has been 3,013 l at Skerryvore, 30 per cent. more, or 4,335 l per square foot, has been registered, and in foot-note Mr. Stevenson adds that results high as 6,000 lb. per square foot have since be ascertained.

Thus, taking for the sake of calculation cylinder of granite, 25 ft. in diameter, and 10 high, its weight would be about 380 tons. Sc posing this block to be immersed in water, weight will be diminished by 140 tons, leavi 240 tons. Taking the force of 4,335 lb. p foot on the largest vertical section of this sol we obtain a pressure of 484 tons. This, accor ing to the consent of the best authorities, reduced one half by the cylindrical form of t plan, which throws aside the full impact of t waves. We thus obtain a displacing power 242 tons, against a resistance, from weig alone, of 240 tons. But it is an evident er to suppose the tower to be at the same ti surrounded by water, and exposed to the f force of the waves. Again, the stability of t mass, as against any effort to topple it over, w be regulated by the ratio of its base to height, which was taken at 2½ to 1. In ord therefore, for the waves to be able to overt such a column, the pressure of the sea, insta of being 240 tons, must be 600 tons. W regard to any tendency to slide the tower on basis, the experiments of M. Rondelet (in "L' de Bâtir") show that the friction of a blo of stone sliding on a chiselled floor is equal seven-tenths of its weight, so that we shou have a resistance, from gravity and friction alone, of only 168 tons, or seventy-four tons le than the estimated pressure. Against th excess of force has to be balanced the abutme secured by the sinking of the lower cours into the solid rock, the adhesion of t mortar, and the use of the joggles, ba dovetails, or other appliances by which th masonry is bound together to itself and to t solid rock.

It may thus be taken as an axiom that for lighthouse springing from a rock exposed to t fury of the waves, stone is the only fit materi and the larger the blocks that can be obtain and the greater the specific gravity of the sto the better for the purpose. The granite used Skerryvore is of the weight of 13·62 cubic fe to a ton.

The next consideration is as to form. T first element, the height of the lantern, is to determined by the distance for which it desirable that the light should be visib That ascertained, it follows, from what has be before stated, that the stability of the tow depends (other things being equal) on the l position of its centre of gravity. This indicat the cone as the true form. But as the forces which the several horizontal sections of t tower are exposed decrease in a rapid ra from the bottom upwards, the true form of t entire shaft will be that of a succession conic frustra, so that either a true conic secti or some other geometrical determinable cur will be the proper outline for the tower.

Without going here into mathematical detail, will be well to cite the result of Mr. Stevenson solution of the problem. In the Eddysto tower the radius of the base, at the level high-water of spring-tides, is somewhat le than one-fifth of the height of the tower abo that level. In the Bell Rock the correspondin radius is little more than one-seventh of t height. If the curves of these two towers continued downwards to low-water level, t radius of the Eddystone at that point may

* Proceedings, Inst.C.E., vol. xxxviii., part ii., p. 60.

; about one-fourth, and that of the Bell ower at about one-fifth, of the height. ght of the Eddystone tower, it will be ered, is 68 ft., that of the Bell Rock 00 ft., that of the Skerryvore tower t., measuring the masonry alone in each he greatest area afforded by the Skerry- k allows a radius of 22 ft. at a level of ve high water; and to that dimension, ives a tower slightly more slender than the Bell Rock, Mr. Stevenson conformed s.

nvestigation made by Mr. Stevenson of tive advantages of a simple conical , and of a solid bounded by each of four mathematical curves, is of such value reproduce the results. The economic ge of any proposed tower of given and diameter at base and at top, is con- o be inversely as the mass, and as the f the centre of gravity above its base. represented, taking M to signify mass, distance of centre of gravity from base, fraction $\frac{1}{M\ G}$; and the comparative o advantage of any two towers will be d by $\frac{M\ G}{M^1\ G^1}$, as in the last column of

	Height of Tower. H.	Diameter at Base.	Diameter at Top.	Volume of Solid Tower. M.	Distance of Centre of Gravity from Base. G.	H / G	Economic Advantage. M G / M¹ G¹
	ft.	ft.	ft.	cu. ft.			
o	120	42	16	62·915	41·227	2·911	1·00000
l	120	42	16	62·984	41·336	2·9 3	0 99627
...	120	42	16	63·605	43·400	2·765	0·93963
ie	120	42	16	74·742	42·460	2 826	0·81o 8
...	120	42	16	84·737	43 289	2·773	0·7,725

s very valuable table may be appended ar comparison of the three great Smeaton, Robert Stevenson, and Allan n.

	Height of Tower above first entire course. H.	Contents of Tower.	Diameter at Base.	Diameter at Top.	Distance of Centre of Gravity from Base. G.	H / G
	ft.	cub. ft.	ft.	ft.		
...	68	13·333	26	15	15·92	4·27
	100	28·530	42	15	23 58	4·24
h	1,385	58·58)	42	16	34 95	3·96

ost of the Bell-rock Lighthouse was 9s. 2d., and that of the Skerryvore 12s. 1d.

at once evident from this investigation that cast iron, unless it were in solid s not an appropriate material for the con- of a tower on a spot accessible by the Such a building would rely, not on weight, hesive power. The plates would be liable are if a spar were washed against them wy sea,—a not improbable occurrence. be only as affording a sort of skin for a or brickwork core that the material contemplated. But such a use of it inconsistent with the true form, above o be proper, except on the condition ih tier of plates was to be cast from a pattern,—a condition which would not considerably to the cost at the foundry, d cause endless trouble and delay in the he work together in a confined position. en all was done, the slow, unceasing of the material by the salts of the sea ave only commenced. The material is le, as well as otherwise unsuitable for of structure.

nly advantage possible is that of a cost, and in cases like those of the Red houses we have seen how the mate- be prepared in England, so as to he least amount of labour possible in an ble spot. But the question of permanent y is not less important than that of cost, has yet to be decided, even with re- he Dædalus and Ushruffee open towers. when we see that two works of very proportions, each involving so hard lous a struggle with the elements, have cost so very nearly the same, per foot of height, as the Bell Rock and Skerryvore towers, we have very good reason for the opinion that the minimum of cost consistent with the permanent character of the work has been obtained. The Bell Rock tower cost about 56 per cent. above the estimates, which must be considered as wonderfully close, considering the want of precedent for such a work. But the Great Basses iron tower was in a fair way of costing ten times the original estimate, or more than twice the cost per foot run of the two Stevenson lighthouses, when the work was stopped; if, indeed, it could have been executed at all.

We add, on the authority of Mr J. N. Douglass, that the cost of the original Eddystone tower, containing 13,341 cubic feet, comes out at 2*l.* 19s. 11¼d., or within ¾d. of 3*l.* per cubic foot That of the Bell Rock was 1*l.* 19s. per cubic foot. That of the Great Basses, as built, and containing 47,808 cubic feet, at the low figure of 1*l.* 6s. 7¼d. per cubic foot. The Wolf Rock, another of Mr. Robert Stevenson's towers, cost only 1*l.* 8s. 2¼d. per cubic foot.

FROM THE BANKS OF THE SEINE.

In the professional world, while the several important questions lately discussed at the recent Architectural Congress are receiving more mature consideration, the address delivered at the closing meeting of the congress by M. Ravaisson (curator of the Musée des Antiques), on the "Teaching of Drawing," cannot fail to rouse much serious reflection. The predecessor of the present Minister of Fine Arts had taken active measures to extend the teaching of drawing, and the impulse then given still continues. Architects, as M. Ravaisson observed, might do much to aid this artistic movement; their valuable opinion will certainly be asked. It is in the recent International Exhibition that must be sought the reason for this active Government solicitude in questions touching the teaching of drawing. For a long time France held without opposition the first place in all those industries in which artistic skill was necessary. But it has been impossible for the French not to observe in the last Exhibition of 1878 that foreign nations had made such progress that the preponderance of France in matters of taste and artistic sentiment was seriously menaced, and it has been seen that means must be taken to re-establish the old supremacy. With this object, as M. Ravaisson truly observed, the perfecting of the system of teaching of drawing is necessary, after the example which foreign countries have been able to give to France. Taste, as the eminent member of the Institute observed, is not alone necessary in the director of the workshop, it is as equally indispensable in the workmen and artisans who carry out the conceptions of their employer. It is, therefore, to everybody that an appeal must be made to develop at an early age the sentiment of the beautiful. It is not our intention to enter into M. Ravaisson's interesting address in detail. The *Annales* of the Société Centrale will publish the lecture in entirety. The chief point in M. Ravaisson's discourse consisted in demonstrating the importance of the education of the eye. Michelangelo often repeated to his pupils the phrase now become so familiar, "You must always have your compasses in your eye." To the architect the question of the more universal teaching of drawing is one of the utmost value, not alone in France, it may be observed, but in England, where the effects of an even more widely-spread knowledge of drawing could not fail to produce a salutary influence both on the artistic and the industrial world.

Only a few hours later M. Viollet-le-Duc, in distributing the prizes at a Parisian municipal drawing-school for young girls, urged in no less earnest, even if not so technical, a manner, the importance of the study of drawing. We are indeed happily far from the days to which the eminent artist referred, when the power of drawing was regarded for young ladies as an accomplishment, available alone for the occupation of spare hours. The time has come when drawing must be considered as necessary an acquirement as writing. M. Viollet-le-Duc warmly deprecated the custom of teaching drawing from the flat. From the very first steps, the pupil, he urges, must be taught to see and understand what he sees, at the same time that the hand is trained. Place the pupil before the real object, in order that by observation his intelligence may seize the form and its properties, and endeavour to reproduce what he sees. Rude as are often the first results of such a method, it remains for the teacher to explain to his pupil any difficulties that may arise: in this manner will be cultivated the faculty of observation,—the first quality of the draughtsman. As M. Viollet-le-Duc observed, could such a result be obtained from a study of a graphic model? The power of drawing, and the faculty of observation, the eminent artist further urged was as equally useful to the woman as to the man. He additionally deprecated the mere desire to attain a degree of power sufficient to gain prizes. Satisfaction with this first difficulty overcome, is equivalent to retrograding. In the practice of drawing, perfection is never attained. It is a long and difficult road the end of which is never reached, but in which each day a fresh advance should be marked. He who dares to say "I know how to draw," would be uttering a folly; "I draw" is the sole affirmation which is allowable.

Never within the memory of even respectably aged Parisians have the papers had so much to say about England and the English, as since the recent visit of the Literary Congress and the Comédie Française to the banks of the Thames. For the first time Parisians and French people alike have listened with patience to lengthy descriptions of the house of Shakspeare, Lord Mayor's banquets, of even such essentially un-Parisian subjects as a visit to Oxford, or to Mr. Darwin and the Charterhouse School; while as a last arrival, English residents learn with pleasure of the successful impression produced on the French by Mr. Irving's acting. M. Francisque Sarcey's opinion on that favourite actor is already known. M. Milliet, a young musical author, has recently been despatched by the *National* to watch the success of a certain new opera by a French composer. M. Milliet is not kind in speaking of Covent Garden as the "theatre of the high life," or of the orchestra, which we cannot but think he calumniates when he says that the "violinists play out of tune, introduce fantasies of their own composition, and sometimes change their instruments, taking from their pocket a cornet-à-piston, according to the requirements of the piece." Nor is M. Milliet less kind in referring to the scenery, and he assures his readers that rehearsal is unknown at Covent Garden. "They are very good provincial representations." But the evident professional blindness,—for serious comparison between the Grand Opera in Paris and those in London is scarcely possible,—which appears to have entirely destroyed the critical powers of M. Milliet in operatic matters, is absent when he speaks of Mr. Irving. "Ah!" cries the French critic, "we are wrong to believe that the power of the Théâtre Français exists alone in the Rue Richelieu." That morning only the critic had met Coquelin, the well-known actor, and had asked him if he had been to the Lyceum Theatre. "No, I have not yet been," he replied, nor do I want to go. I know those people [*ces gens-là*], and I know what they can do. The *Hamlet* of the favourite manager of the Lyceum especially pleased M. Milliet, the scenery, the taste, and perfection of the secondary parts; the *Ghost* particularly struck him. After a lengthened panegyric of Mr. Irving, and his artistic power, his absence of affectation and rant, and the charm of Miss Terry, "why do not," he continues, "the *artistes* of the Comédie Française go to the Lyceum?" It is even rumoured that Mr. Irving will shortly be invited over to France; if so, we quote again from our now amiable critic,—"I feel convinced that the Shakspeare of the English will be even more highly spoken of than the Molière of the French Comedy."

On Sunday last, the exhibition of the works of the pupils sent home from the School of Rome was opened at the École des Beaux Arts. Of the pictures, it may be said that only the work of M. Chartron deserves credit on the score of merit; his fellow pupils, both painters and sculptors, exhibiting in their work all the peculiar character of modern medalled French art. Of the architectural drawings it is impossible to speak too highly. Never before, probably, have such conscientious studies been sent home from the Villa Medici. Too high praise cannot be accorded to the drawings of M. Nenot, studies from the Temple of Vesta, at Tivoli, and Pompeii; or of M. Blondel's Temple of Vespasian, the details of the decoration of which are of especial merit. M. Paulin's drawing from the altar of Orsanmichele, at Florence,

is a perfect study, as also is his sketch of the famous Hospital of Pistoja,—casts from the decorative terra-cotta ware of the façade of which form one of the features of the quiet and historic *cour des mûriers* of the École des Beaux Arts. The restoration by M. Paulin of the Temple of Theseus, at Athens, deserves more than usual praise for its care and proof of classical research, the coloured metopes and decorations being treated in a truly masterly manner. M. Loviot's "Restoration of the Parthenon" is also another series of drawings which are indeed invaluable, and the professional and archæological world cannot but congratulate the Government on their possession of these works. The whole system of colouring used in the original temple is displayed by M. Loviot in a masterly manner, in all its original splendour, and with an evident truth that scarcely leaves room for doubt. We wish that the Royal Institute of British Architects could induce the French Government to allow these drawings to be exhibited in London, for the benefit and study of those unable to visit Paris. For the student and the archæologist the week's exhibition in Paris barely suffices.

ARCHITECTURE AT THE SALON OF 1879.

WE had occasion in our last to refer to an able paper contributed by M. Eugène Guillaume to the *Revue des Deux Mondes* on "Architecture at the *Salon* of 1879," and to the promise of the writer to further continue his remarks on this interesting subject. In the current issue of the *Revue* (July 1st) in closing his criticism of the *Salon*, M. Guillaume carries out his promise in a *résumé* of his impressions. As completing the eminent critic's remarks on the present position of architecture in France, we have considered it not uninteresting to lay these remarks before our readers.

In examining the architectural drawings we have referred to the creditable development of archæological study, laying chiefly stress on those meritorious works conspicuous for their special character. Antiquity, the Middle Ages, and the Renaissance are now daily becoming more familiar. The means of investigation are daily multiplied; while not unfrequently different artists explore the same monument, study more closely its forms, to show us, if possible, the building exactly as it formerly existed. The indefatigable labours of these students constantly enrich the domain of archæology and increase our familiarity with the theory of art, while they add in no small degree to our enjoyment of the beautiful.

But what is the practical result of so much learning? The past is being substituted in thought for the present; the facts laid before us by their numbers and importance baffle the imagination, and hinder the liberty of conception by their startling reality. Only a few years since architecture seemed to be running a serious danger; and the period will be marked in the history of art by its architecture, in which the most hybrid elements were brought together, and in which all the styles were hopelessly confounded. In certain countries the geologist points out huge banks of deposited matter, the *débris* of fossils and species still living, which, worn by the waves, and broken and mixed, but still recognisable, form the actual soil of the land. Such was thirty years ago the architecture of France, the result of an ill-digested erudition, shackled by innumerable administrative prescriptions. At the present moment French architecture is freed from all but the recollection of this period, of which it only preserves the valuable mass of documents with which it enriched the profession, and the new liberty accorded to the art has shown itself already in the more varied character of the domestic architecture of the present day.

Painting, sculpture, and architecture, constitute in themselves a society. Turn by turn one of the three sisters exercises over the others a dominant influence, and, as in the history of States, sometimes it is the useful, sometimes the just, sometimes the divine idea which prevails, sometimes the artistic, sometimes the philosophic; and it is the triumph of one of these which gives to society its special character. The same may be observed in the arts; now it is the architectural idea, now the picturesque, now sculpture which takes the authority and rules its sisters. Thus we see in the eleventh, and twelfth, and thirteenth centuries, it is architecture which is queen, the other arts are only subservient to its forms. In the fourteenth century, sculpture breaks down this connexion, and crowds the great public and private edifices with its exuberant luxuriance. In the Renaissance, painting carries the day, disturbs sculpture, and, invading architecture, exacts from it its decorative effects. In the present day it is, in M. Guillaume's opinion, sculpture which takes the upper hand in France; the architect, being more desirous of ornament than of proportion, seeks to increase the value of his work by the aid of the numerous resources at the disposal of the chisel. But the prejudice in favour of painting is so strong, that it may be said to hold the foremost rank in public opinion. In every case it is the most accessible, and even when it has recourse to the study of sculpture it seems to exercise over that art its magic power.

Whatever the faults may be that exist in France, can they be traced to the administrative organisation as it is exercised in that country, or are they the signs of the times? Never, it may be said, have the arts,—which aid each other ceaselessly,—been developed with more independence.

Whatever may be concluded from this fact, the *Salon* does not seem established to allow of truths of such a nature to be stated, since in spite of the number of works exhibited, the means of comparison remain incomplete. The *Salon* cannot be said to be destined to encourage "great art," alone to be produced in great buildings. Such as it is, the *Salon* must be considered as a temporary museum, as a transient gallery in which all the branches of art are, as in the Louvre, welcomed with equal favour. This equality once established, is extended, and the mass of artists consider themselves authorised to claim as a right their place at the Exhibition. Inevitably it must result from this that what is at present only a proposition under discussion will become before long a necessity. For the benefit of the Fine Arts, it will be desirable that at certain intervals shall be held exhibitions of chosen works, in which the Government will exercise its direction, and manifest its elevated views, and protect in matters of art the paramount interests of the State.

It is not our intention to enter with M. Guillaume into his defence of State patronage, but the writer warmly pronounces in favour of the system, citing the superiority of study on the part of France, as shown in the last exhibition of 1878. As M. Guillaume very truly remarks, no effect on French artists seems to have been produced by the great show of the Champ de Mars; and in the *Salon* of this year there is no evidence of the slightest influence of any of the healthy foreign schools which showed so prominently last year in Paris.

It is to this blinding self-satisfaction that may be traced much that is so objectionable in a *Salon* such as each year brings round, with its untiring columns of praise of the painters,—never blame,—from the critics (the *Revue* itself is not free from this fault); an exhibition which propagates its weaknesses by its obligatory award of medals to certain pictures,—pictures that in many cases should be, on the contrary, severely criticised, or at least critically analysed.

Among the architectural drawings at the *Salon* such can scarcely be said to be the case, though the recent exhibition of a large number of sketches for an architectural competition, at the École des Beaux Arts, sadly exposed the paucity of invention on the part of the younger pupils of that famous school. Much as M. Guillaume may claim for modern domestic French architecture its varied character, the Parisian architecture of this Haussmannic epoch, still in active vigour, can scarcely be brought forward as having done more than render the capital a very habitable and strongly-built city, but one which will bear as unmistakably for many a generation its nineteenth-century character, as Nuremberg and many another town of Dürer's country, and the old Italian cities of earlier date, bear the stamp of the beautiful period when they received their still-existing character, which all artists revere so profoundly, and from which they may derive unfailing instruction.

Sculpture in France.—M. Ferry has appointed a commission to report on the creation of a museum of comparative sculpture, as an addition to the art resources of France.

WOOD-WORKING MACHINERY EXHIBITED AT THE KILBURN SHO

BY M. POWIS BALE, M.E.

THE Royal Agricultural Society of Engl in addition to a magnificent display of live st have exhibited at Kilburn one of the finest lections of machinery, connected directly indirectly with agriculture, ever brought gether, and should Mr. Ruskin deign to the Show, we are afraid he must admit Utopian theories are making little progress, that keen competition, combined with str trade depression, and such like evils, co machinery ever to play a more and more minent part in the economy of production. W admitting the great skill brought to bear in design and construction of the purely agr tural machinery shown, which in many insta is turned out in an excellent manner at a vellously low price, it is our province at pre to consider those machines exhibited wh more especially relate to the science of b ing construction in the conversion of wood stone. Amongst the exhibits of agricul houses are to be seen the more or less sim saw-benches that have met our view during last fifteen years, and although the admitt superior "box" system of framing has introduced some eighteen years, the str conservatism of constructing the framin sections,—which has little or nothing to re mend it,—is still more or less pursued.

The most extensive exhibit of saw-mill builders' machinery is that of Messrs. Ch Powis, Carter, & Morris, of London. Amo the machines in motion was a well-desi single vertical spindle irregular mouldin shaping machine. This tool possesses se features of interest, notably the means empl for reversing the rotation of the spindle, ena the operator at all times to work with the of the wood; in lieu of friction or toothed a strap working from a pulley on the cou shaft to an "idler" or "jockey" pulley fix the base of the machine is employed. cutter spindle is so arranged that the " of the driving-belt is supported by the w frame of the machine, instead of by the capc bearings of the spindle only, as in some machines.

A "Joiner Universal" was shown, arra with four cutters to plane 12 in. by 4 in. fitted with a self-acting roller feed. The spindle was divided in the centre, enabling operations of sawing and planing to be ca on separately or simultaneously. The oper of tenoning is in this machine performe means of cutters fitted to revolving discs wood being cramped vertically and p between them. The proportion of the fra and general appearance of this machine is We also noticed a compact combined engine mortar mill, fitted to an iron frame, and mo on wheels; the mill was arranged to be th out of gear should the engine be requir drive other machinery. A powerful travel crane, trying-up, and other machines shown, but the appearance of the exhibits detracted from somewhat by overcrowding

Messrs. Polyblank, of Newton Abbott, bited several of Knowling's patent band-sa machines, on separate standards and comb with circular-saw benches. The novelty cla in this machine is in so arranging the me nical details that when the saw is cantec cutting at an angle, the table shall travel horizontal plane. In most band-sawing maci the table itself is arranged to cant, but in machine under notice the table remains horizontal position, and the main colum mounted at its base on trunnions fitted t foundation-plate; the table is moved in a zontal plane, and the column canted sim neously, by means of a hand-wheel and sc The working tension of the saw is adjuste means of a pivoted arm or bracket, w carries the upper saw-wheel. This is acted a screw, bedded on a spring support, place a fixed rest. Where much bevelled work h be cut, especially of the heavier class, machine should be of considerable value, retaining the table in a horizontal position timber is much more easily manipulated. machines are well proportioned, and the w manship good, which is a pleasing contra some other exhibits.

Messrs. Stark & Co., of Torquay, ex several small combination machines, includi hand-power saw-bench, band-saw, and sharpener combined. In the band-saw mac

nsion to the saw is obtained by means of nstable elliptic spring, the angle of the ble is also capable of being altered whilst ion by means of a steel spring and catch. aw-sharpening machine, of considerable ality of design, was also shown, but the ts on this stand were much marred by r workmanship.

srs. F. W. Reynolds & Co., of London, had e collection of machines, including a le-action hand-power mortising, boring, iving, and tenoning machine, in which eral improvements recently patented by illips. These have already been described *Builder*.

mbined band and circular-sawing machine nged with a counter-shaft attached to the framing; this arrangement, although the advantage of compactness, we do not her care for, as it necessitates running ts on the circular-saw spindle at short , whereby the friction and consequent nd-tear is increased; this is, however, ed as much as possible by adopting the f making the fast and loose pulleys on nter-shaft of varying diameters, so that ot absolutely working the belt runs loose smaller pulley, and the constant strain is nently removed from the belt and bearings. a decidedly advantageous arrangement, s found in practice that when a belt has d its maximum stretching point its dete- n is very rapid. Two separate motions tained from this counter-shaft, enabling the band or circular saw to be worked at The proportion and arrangement of the raming are good; also that of the self- circular-saw bench exhibited. Several smaller tools shown by Messrs. Reynolds re well adapted to builders' requirements, , their patent double slate-holing e, "Crown," malleable iron flooring- and self-acting lath-painting machine.

rs. Wurr & Lewis, of London, have a exhibit, including a compact friction he gear of which is protected from dirt dent by being enclosed in one of the end s of the frame; this is an improvement ordinary plan. The friction-puley is d some inch thick with leather, which is solid. A neat self-acting hand-power ut saw-bench, adapted to the use of g-case makers, was in work; the table g the wood was fitted with a gauge, and d on wheels, the self-acting feed being d in a simple manner by a counter- ng weight.

noticed in some of the band-sawing ma- shown, that the adjustment of the tension saw was obtained by a combination of piral spring and counterweighted lever; son for the adoption of this double plan we presume, that they should cushion her if subject to any undue strain. In f-acting bench shown, the bearings, of there are three sets, are arranged to let the face of the bench, thus making them ccessible for removal or adjustment. A and-saw machine, to be worked either by le or steam, was amongst the other ex-

Jackson, of Ball's-pond, exhibited a ver- ngine and boiler, combined with a clay ortar mill, mounted on a timber frame wheels. It is arranged to drive the mor- l, also a saw-bench, band-saw, and hoist, ired; the general arrangement is good, whole appeared somewhat cumbersome; uld easily be remedied by employing iron of wood in the construction of the car- A compact mortar-mixer, fitted with knives; and a hand-power grinding and mill, were also exhibited by Mr. Jackson.

rs. Hall & Co., of London, exhibited Bowman's patent double-mitre machines, ters, which are arranged in slides, work- gonally at right angles to each other, are d by means of a lever and two toothed which are geared into each other and ocks of corresponding pitch, which are o either cutter-slide. These knives are of cutting the moulding to a required and at the same time mitreing it.

lley & Co., of London, had a number of es in operation, including a hand-power ing sawing and tenoning machine. The o be tenoned was fixed vertically in a cramp with a horizontal traverse, and ssed over two circular saws by means of n-feed, which was arranged with five f speed.

A saw-bench exhibited was fitted with an improved saw-spindle, which is adjustable to any sized hole in the saw. This is secured by a conical collar, which is pressed into the hole of the saw by means of a nut screwed on to the end of the spindle at the back of the conical collar, the larger outside collar being recessed.

Messrs. A. Ransome & Co., of London, exhibited a complete set of machines for making butter-firkins. These are well-designed and constructed, and the firkin is almost entirely made without the aid of manual labour. The wood employed was white poplar, which is first planed and then jointed by four cutters fixed on a revolving conical disc. The staves are then slightly heated and placed in a trussing machine, which consists of a hollow cone-casting made in halves, one half of which opens sideways, the trussing-hoops being placed in grooves recessed in the casting. A platen worked by a lever forces the staves into the truss-hoops. The firkin is chimed and crozed in another machine by means of revolving cutters making some 5,000 revolutions per minute, the firkin at the same time being made to revolve slowly; the length is regulated by an automatic stop-motion. The pieces forming the head are jointed by cutters fitted to a revolving disc, and afterwards bored to receive the dowel-pins by two augers fitted to the same machine. The head is then made circular, and bevelled on its top and bottom sides by means of a concave saw and two flat revolving cutters. The firkin is thus completed.

M. Powis Bale & Co., of London, exhibited a novelty in wood-working machines which attracted much attention. This consisted of a patent hand-power machine for cutting corks and bungs. The corks were shaped by means of a plain steel knife some 2 ft. long, which was fitted on an adjustable slide with a horizontal traverse. The cork is secured between spring centres, and by the action of the horizontal slide working on a camb-lever a rotary motion is imparted to it at the time the steel knife is in operation. The knife is kept constantly sharpened by means of revolving emery-wheels, and is adjusted to cut conical as well as cylindrical corks, the depth of the cut being varied at will by means of a tappet and lever. We were informed a lad can cut with this machine from fifty to seventy gross of corks per day. We also noticed an "Estate Carpenter and Joiner," and a Thompson & Stather's "Patent Grinding and Disintegrating Mill."

Some notes on the stone-working machinery exhibited will follow at an early date.

CONTINUOUS BRAKES.

The debate which took place in the House of Commons recently upon the subject of continuous brakes can hardly fail to appear unsatisfactory to the travelling public. Since the successful introduction of a mechanical appliance which places the control of a train within the power of those who are responsible for its safety in a way that never could have been contemplated in the early days of railways, there has been a growing anxiety on the part of the community to see the system generally adopted. The department which is looked upon as the vehicle for giving such sentiments a practical expression is the Board of Trade, but remarks made by Lord Sandon, who is the representative of that department in the House of Commons, and its mouthpiece, were not of a kind that are likely to meet with general approval. It appears, from the experience of those railway companies who have given the subject of continuous brakes their most serious attention, and who have used them most extensively, that so far from their adoption being an uncompensated source of outlay and expense, their use brings about a positive saving in a direction which was formerly very much beyond their control. Among the larger and more provident companies a fund is set apart as an insurance against the too-frequent occurrence of disastrous accidents. In dealing with these, it is generally found that juries are inclined to take a view more favourable to the just claims of the injured and the relatives of the killed than is consistent with the contentions of the railway boards, who have made many efforts to be relieved of all pecuniary responsibility with regard to their passengers. By the use of the block system of signalling and the continuous brake, it is found that the fund referred to is much more available for dividends than formerly, and as the money thus saved amounts in such a railway as the London and North-Western to many thousands every year, it can be readily understood that there is no inherent objection to the use of brakes. The difficulty hitherto has been that a want of uniformity among the different kinds of brakes employed has been a barrier to the introduction of all legislative authority in the adoption and maintenance of the new system, and that the absence of this executive control admits of an amount of misunderstanding and confusion which is proving itself to be seriously detrimental to the safety of the travelling public. Those who can remember the early days of the railways can hardly have forgotten the battle of the gauges, which has ceased as regards the lines of this country, although it is being waged as fiercely as ever in the colonies. The Great Western Railway is almost the only tangible evidence left of what once formed two opposing camps among the engineers of our great trunk lines; but the champions of the rival gauges could hardly have made a greater commotion than is now going on in the battle of the brakes. In the case of inventions which are on the eve of being generally adopted, in response to a widely expressed demand on the part of such a profitable customer as the whole travelling community, it is unreasonable to suppose that the persons at the head of the great concerns which cater for their wants should be no more than mere disinterested spectators. Even though railway directors may be altogether uninterested in the settlement of the question from a pecuniary point of view, there must still be many who are not in this independent position, who nevertheless are able to exercise considerable influence in the formation of the opinions of railway boards, and who will use every effort in their power to bring this influence to bear upon a settlement that is favourable to themselves. Some such elements are, no doubt, one of the many causes which have hitherto been at work, and which account for delays in coming to a decision which are not only irritating to the general public, but must appear to many to be altogether inexcusable. The President of the Board of Trade avoided making any allusion to this very important factor, and contented himself with pointing out the difficulties to which various railway companies were subjected by having identified themselves with certain systems which appeared to others to have a small chance of being ultimately adopted. Little more was done on behalf of the Board of Trade than to join in a general expression of opinion that sufficient time had elapsed to afford railway companies who are really anxious to adopt a system of continuous brakes an opportunity of coming to a decision, and at the same time the expression of a hope that the pressure of public opinion would be found sufficient for the purpose of making them unanimous before very long.

It appears to us that this question of continuous brakes is really in the same category with many other subjects of equal or at least similar importance connected with the introduction of practical mechanical appliances in which the public are generally interested. The block system of signalling, already referred to, is a case in point, and although it is now being almost universally applied, and with results in the saving of life and plant that amply repay the expense, there is no saying how many years would have been wasted, and how many lives have been lost if it had been in the same position as this question of continuous brakes, and been the subject of rival inventions, all equally anxious to push their way to the front. In the face of such difficulties, the public are surely justified in asking if there is no way of surmounting them in a manner that is consistent with the safety of the community and the rights of inventors. Lord Sandon, as president of a department of Government which has a special function in promoting the welfare of particular industries with a due regard to perfect freedom for the introduction of improvements, plainly stated that he never could see his way to making the adoption of a particular system of continuous brakes imperative upon the railway companies, and in this, no doubt, the majority of sensible persons will cordially agree. The question still remains, is there no way out of the difficulty by which the safety of the public, the freedom for the introduction of improvements, and the interests of inventors may be preserved? There may very possibly be several methods of attaining this desirable result, but the one which

appears to be the most simple, and at the same time the most obvious, was not even suggested by any of the speakers in the debate in the House of Commons the other day. It appears to us that since the Board of Trade are now in possession of information which is amply sufficient for its skilled officers to form a judgment as to what the requirements of a continuous brake should be, they ought at once to base these requirements, not upon the average of brakes which have been brought under their notice, but upon the standard of the best. Without even indicating what particular brake is to be adopted, they might still make their requirements so stringent that in practice no other than the best brake could comply with them, at the same time leaving it open to themselves to add to these requirements and regulations so as to embrace new forms and additional improvements that proved themselves to be additional sources of security to the travelling public. In this way, without inflicting any greater hardship upon less successful inventors than is to be found in the every-day struggle for existence, and the survival of the fittest, they would practically reward the inventors of the best appliances, and leave them all the while open to the stimulus of competition.

WAKEFIELD.

IN one of Dr. Holmes's volumes of "Breakfast-table" chat, the opinion is expressed that there are "provisional races,"—men like the Indians who "exhaled carbonic acid for the use of vegetation, kept down the bears and catamounts," and did other like service for the men who were to succeed them. In like manner there are towns and provisional trade, and one of these, in the writer's opinion, is Wakefield. Its history is not wholly of modern date: it has had distinguished citizens, and has given birth to sons of note; its trade has been large and varied; around it is a fair country, and a wealthy and fruitful one; yet, in spite of these great advantages, its trade seems "provisional,"—that is to say, the trades there do not take the same deep root,—that they change in very considerable degree; and that whilst the town has its tendency to increase, it is not on the lines of the old trades, or in the old directions. The chapel, which was erected four centuries ago; the discovery of coins and Roman relics; the Wachefeld of Domesday; the old church, dating from the time of Henry III., and the battle-grounds near,—all point to the antiquity of Wakefield. Its repute is ancient, even in ballads,—such as that of the outlaw and the "jolly pinder of Wakefield"; whilst some of the old topographers vouch for the extent in the olden times of some of its trades. Leland averred that Wakefield "standeth now al by clothying," whilst in later years malting and corn trades, the iron manufacture, the coal-mines, and other allied industries have taken the place of woollen cloths and yarns. Nor is the trade of the town yet actually defined, though the growth of the coal interests around it are moulding its future to some extent. But to learn how Wakefield has stood the "swellings of Jordan" of change, we must glance at it in the past and in the present.

A little more than twoscore years ago Wakefield was large, opulent, and populous; it was in advance of neighbouring towns, its streets being well paved and lighted with gas, and its water-supply being an efficient one, whilst the newer parts of the town were elegant in appearance. The municipal government of the town was vested in a chief constable, and in commissioners for paving, lighting, and watching. Its position as the chief or central town of the West Riding gave it great advantages. Its two churches were handsome, as were also in a lesser degree the half-dozen places of worship for Dissenters. Its ancient free grammar-school, its preparatory schools, Lancastrian, national, and others, were ample for the needs of its children; whilst almshouses, asylums, libraries, and banks testified to the progressive spirit of many of its inhabitants. Its bankers then were the old firms of Leatham, Tew, & Co., and the Wakefield Banking Company; it manufactured a little cement; dressed and dyed cloth; it had eight scribbling and fulling mills; it spun yarn; had at Cheapside, Westgate, and "Tammy Hall" three stuff manufactories; wool was still largely made and yarn spun, but the manufactories were very small. There was no railway, but the "Harkforward" and eleven other mail coaches partly supplied the need as they dashed from the Strafford's Arms, the Talbot, the Elephant, and other inns. Of carriers, the Deacons, the Wheatcrofts, the Charlesworths, and the Dibbs were noted; whilst the old Halifax contract vessels, the "Fly Boats," to Goole, Hull, and Selby, and the Wakefield contract sloops, did very large duty. The population of the town, which in 1821 was 22,307, had by the end of the following decade risen to 24,538; and it may at once be stated that since that period the growth has been such as to bring it up to 28,069,—so that it is evident that the past rate of increase has not been kept up. One industry has been as yet unnoticed, so that it is needful to add that the coalmasters of rather more than forty years ago were few in number,—the Charlesworths working the Lofthouse Pit; Fentons the Thorne's-lane one; Mr. Field, Place; Messrs. J. & C. Hartley (of Hatfield Colliery), Mr. Rhodes (Haggs's new Colliery), Messrs. J. Smithson & Co. (of Kirkham Colliery), and two others being the whole of those then known.

It is in this industry that the greatest change is noticeable: in the last report of the inspectors of mines, there are forty-six collieries enumerated in the Wakefield district, and four others are given as sinking. Some of those now at work are of large productive capacity, and though Wakefield cannot be said to lie in the centre of the Yorkshire coalfield, yet it is become one of the large centres of production. That increased production of fuel has in the last few years very largely stimulated the trade of the district, and there has been an added impulse given to some of the trades which exist under the old conditions of power-procuration and disposal by water and carrier. The iron trade has not taken the leaps and bounds which the growth of the coal leaps and bounds which the growth of the coal is from causes due to the natural situation of th district. The old trades of the district,—woollen and worsted,—are still in existence, but it is under different conditions, and some of the older establishments work under disadvantages which do not promise their extension in the future. There has been, however, rather an extension of special branches of trade, such as the manufacture of matting and webbing, of certain kinds of machines, whilst the town holds its old repute for malting and some of the industries which usually gather towards large market towns.

There has been town growth,—the provision of a fuller representation and of a better form of government, with the addition to the institutions of a town which can now scarcely be avoided. But it is doubtful whether there is not a more than equivalent growth of some of the evils incident to such growth. It may be that old towns naturally acquire no small amount of poverty, but that in Wakefield seems large, and there is a not inconsiderable amount of the accidents and offences which call into play the forces of relief and law. It is more pleasant to acknowledge the fact that provision is made for this; that the guardians are increasing the accommodation of the workhouse, and that in the Clayton Hospital and Wakefield Dispensary over 300 patients are often under treatment, whilst there is accommodation beyond this. Its School Board finds as yet much to do in "compelling them to come in," whilst the largeness of the number of the cases at the Petty Sessions proves that there is as yet much to do before Wakefield is pure in life and morals; and that for its increased religious and educational appliances there is much to do. And the disclosures that were made in a recent inquiry as to the "fever dens in Thorne's-lane," the verdict of the jury that typhoid fever was caused by "the foul drain running at the back of the houses," by the drinking impure "water contaminated by the said drain," by the overcrowding of the dwellings, and the insufficient and neglected sanitary provision, point to the need of more vigorous action on the part of the corporation. So far as a fuller water supply is concerned, something is being done; but beyond this much work yet remains for the governing body of the town. Of the future of the town much cannot now be said; its situation on the edge of the great coal-field of Yorkshire, on navigable waters, and in a great manufacturing and thickly-populated district; its old-standing trades and its position as an agricultural and county centre, as well as one of railway confluence, should all give it an impetus which only needs the energy of the people to cause it to result in a growth more rapid in the future than in the past. It is true that it is surrounded by towns energetic and industrious, and to enable it keep its place in the ranks, equal energy a industry are needed, whilst there should be dependence upon the "dead past." The visi to Wakefield, looking down upon its wate blackened by barges, its smoky mills, its une houses and antique streets, the clustering of ancient cottages, and the disposal amidst gard and greenery of its newer houses; who he the talk, loud and babulous, in its streets, the noisy assertiveness of the red-faced, col less, dealers,—who at times predominate station and carriage, and whose converse is "beeasts" and of "three for 60l. and a cra off,"—those who see Wakefield in its vari lights must hope for it a more progress future, and in which some of the virtues wh Goldsmith's famous "Vicar" inculcated r be brought more into prominence.

A COLLECTION OF REPORTED CASE RELATING TO ARCHITECTS, SURVEYO AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Procedure in case of Inefficient Work by Buil

WHEN work has been inefficiently done, or executed according to the forms of the contr the person for whom the work is done either deduct the amount from the cont price, and set up this defence if an actio brought for the whole sum, or he may pay whole amount and subsequently bring a c action for non-performance of the contrac Davis *v.* Hedges, 6 L. R., Q. B., 687; 40 L. Q. B., 276 (1871).

[Thus if it is clear, for example, that, in erection of a house, the work has not been perly done, when the time for payment arrived the house-owner may set off a pr diminution of the price against a builder's cl On the other hand, if he has paid the bui and subsequently finds some defect in the w the fact of such previous payment does prevent his claiming damages in respect c defective work.]

Payment of Builder.

When a builder contracts to erect a stru which, when completed, proves to have be badly executed as to be practically of no u the employer, the builder is not entitled to remuneration for his services.—Farnswor Garrard, 1 Camp. 38 (1807).

[This was a decision of Lord Ellenborou Nisi Prius. It is placed, however, in this lection as the principle had, according to Ellenborough, formed the subject of discu among the judges, so that it is entitled to attention than ordinary dicta at jury trials.]

WHEN it is stipulated in an agreement be a builder and a house-owner that in ce events penalties shall be due from the bui to be deducted from the contract price, a sum in respect of such penalties does be due from the builder, the house-owner may the builder the full amount of the con price, and set off the sum due in respect o penalties as payment against any claim extras. — Duckworth *v.* Alison, 1 M. & 412 (1836).

Sums in Nature of Penalties.

WHEN, in an agreement between a bu and an employer, there is a clause tha certain events (*e.g.* the non-completion of work by a specified date) the former shall fo and pay a certain sum or sums to the latter, sum or sums are in this nature not penalties liquidated damages.—Fletcher *v.* Dyke, 2 Rep. 32 (1787); Bonsall *v.* Byrne, 1 Ir. C. L., 537 (1867).

[Liquidated, that is ascertained damag distinguished from penalties, which latte not necessarily the exact sums due in respe breaches of an agreement.]

Death of Architect and House-owner.

THE death of an architect or engineer i course of his work dissolves his contract his employer. If he has undertaken to do work for a certain sum and he dies before

* See pp. 364, 423, 479, 509, 624, and 651, *ante*

g it his representatives can receive nothing, f the payment for the work is divisible, o much as has accrued due at the time of is recoverable. — Stubbs *v.* Holyhead ay Company, 2 L. R., Ex., 311; 36 L. J., 66 (1867).

an example of the last part of the above sition payment at the rate say of 50*l.* per n may be mentioned.]

ERE a building contract has been entered between a builder and a house-owner, and latter dies before the contract is fulfilled, executor or administrator of the house- is bound to pay the sums due to the r, and to allow the contract to be com- d, and the executor or administrator of deceased house-owner can bring an action st the builder if he does not fulfil his act.—Wentworth *v.* Cock, 10 Ad. & E., 42); Cooper *v.* Jarman, 3 L. R., Eq., 98 .).

Agreements to Erect Houses.

EN there is an agreement by a builder to a house, this is a contract which, as a al rule, the courts of equity will not e by a decree of specific performance.— *v.* Wehnert, 25 Beav., 348 (1858).

e observations of Mellish, L. J., in Wilkin- *v.* Clements, 8 L. R., Ch., 96. The al doctrine of equity in connexion with oint is succinctly set out in Watson's "Com- ium of Equity," vol. i., p. 93:—"Equity not in general enforce an agreement to or repair a house (Paxton *v.* Newton, & G., 437; Brace *v.* Wehnert (*supra*); s *v.* Jackson, 1 J. & H., 319; comp. y *v.* Virgin, 3 Ves., 184; Cubitt *v.* Smith, r., N. S., 1123). But if a contract has been rt performed by one party the court will e performance in specie, though of an ment to build by the other party (Price rporation of Penzance, 4 Ha., 506); and in s where A. contracted for the erection of se on his land and died intestate, it was that his heir had an equity to have the built and paid for out of A.'s personal (Holt *v.* Holt, 2 Vern., 322; Lechmere rlisle, 3 P. W., 222; Cooper *v.* Jarman, R., Eq., 98); also where a contract to build pair, &c., forms part of some other contract, stance, to grant a lease, of which the court arily grants specific performance, it will fically execute the latter and grant damages e non-performance of the former (Middle- Greenwood, 2 D. J. & S., 142. See Kay nson, 2 H. & M., 118; Mayor and Corpora- f London *v.* Southgate, 3 W. N., 297; and Lewers *v.* Earl of Shaftesbury, 2 L. R., 270)." It may be pointed out, however, damages for the non-performance of a act can always be obtained, even though doctrines of equity prevent the contract being specifically performed; and the fact in leases if the covenant to repair is not rmed there is always a stated remedy for lessor, as by taking possession of the rty, is the cause of the non-interference of s of equity in cases of non-repair.]

ERE there is an agreement between a er and the owner of land that the builder erect houses on such land, and that the ord will grant leases of separate portions ch land as soon as the houses have been ed thereon and certain other conditions rmed, such agreement is a separable con- , and entitles the builder or the assignee s interest to require leases to be granted m of such plots, even though he may not ble to perform the whole agreement.— inson *v.* Clements, 8 L. R., Ch., 96 (1872). he meaning of this important case may be clearer by an example. Agreement een A, builder, and B, landlord, that A will houses on estate C, divided into plots, D, d F, that A shall be entitled to a lease of D as soon as the houses are built thereon inished ready for occupation. A becomes rupt, having mortgaged his interest in plot which the houses are finished, to G, and able to complete the contract, G is entitled ve a lease of D granted to him.]

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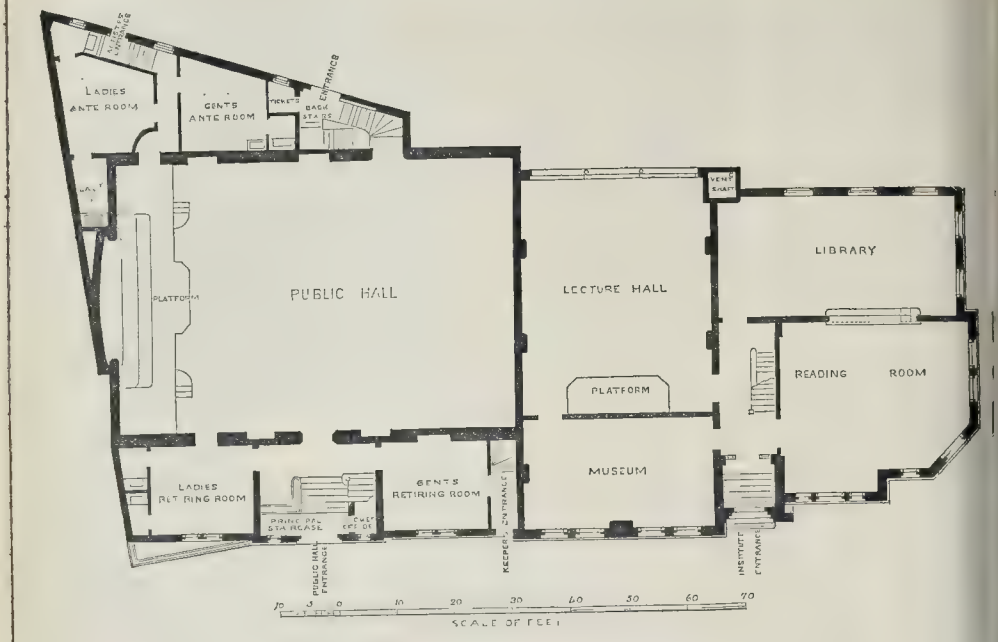
ment for Coating Acid Troughs.—Melt ther one part pitch, one part resin, and one part er of Paris (perfectly dry).—*Electrician.*

AN INDIA-RUBBER MANUFACTORY.

AT Ivry, on the banks of the Seine, about two miles distant from Paris, is situated the great Guibal India-rubber Manufactory, renowned throughout Europe. There is, almost at the very doors of the establishment, a quay, at which coals are delivered for its use, and whence its productions are transported to every quarter of the world. The building itself consists of three floors, enclosing an enormous square space, shut off from the public thoroughfare by a grating of penal aspect, and separated from the river by a spacious court-yard. All over this are scattered small constructions which, if not carefully divided from one another, might, at any moment, through any accident, produce a general conflagration. Here are the stores of spirits, the distilling-shops, the lamp-houses, the "preparatory magazines," and the prodigious accumulations of coal necessary to keep up the furnaces at full heat, by night and by day, and the steam machinery in rapid action as well. Now, India-rubber, as it is called, has entered so largely among the industries and inventions of modern times, that there is scarcely a limit to its practical application, from the buffer of a railway terminus to the pad of a rifle cartridge. Still, the material remains dear in the market, as, in Paris, at the three famous establishments, with one at Montargis, and another at Clermont, where the most singular chemical and mechanical processes are incessantly going on together, to the utter bewilderment of uninitiated strangers, who are at a loss to distinguish between the fabrication of a pump, and that of a pair of shoes. But the manufacture retains its unique importance, nevertheless. Its raw material is obtainable nowhere else than in the New World, where alone this elastic gum is produced, but where its countless uses, in domestic economy, are scarcely known. Of course many treatises upon its properties and applications have been written and published; but these are beyond our purpose, just now, and not less so are the experiments aiming at the cultivation of caoutchouc trees and plants in Algeria, Corsica, and the Southern Provinces of France. These have all failed, and there is not the slightest chance that they ever will succeed. It is a remarkable fact, and one well worth understanding, that, after all, London remains the great and central india-rubber market of the world, notwithstanding the boasted acclimatisation of the elastic gum-plant in France. This acclimatisation, however, has hitherto only reached the stage of experiment. The workers are few, and the harvest is small. The Indians of the Amazon Valley are still our superiors in this respect, as they have been for the last 130 years, a date at which their torches were of this material, and who set us the example of employing it in various forms. They moulded it into the shapes of fruits, birds, four-footed animals, ornaments, playing-balls for children, the human figure, architectural models, and shoes, warranted, as it seems curious to think, not to let in water. The early French travellers perplexed themselves a good deal over this discovery: they found out a method of dissolving the substance in ether, but could not take advantage of their knowledge; and all they could do was to make pipes and funnels of this useful gum.

Meanwhile, in England, it had been recognised as of utility in effacing pencil-scratches,—a trick, indeed, which the illustrious navigator, Magalhaens,—vulgarly known as Magellan,—spoke of as a substitute for the British custom of using for the same purpose dried bread-crumbs. But its employment rapidly extended: it was adopted as an auxiliary material in carriage-springs, for elastic ligatures, for tubes and garden apparatus, for waterproofs, for submarine cable-coverings, for hermetic envelopes of every kind; in fact, it became a kind of almost universal manufacture, though the original "Macintosh" was, of course, not simple india-rubber, but a chemical compound. The French, however, rapidly improved upon these English novelties. They began with garters and staylaces, and rapidly went on to the employment of india-rubber in the fine-arts, or, at any rate, in decorations of rooms, picture-frames, and furniture. It was upon this foundation that was built the vast establishment of the Messieurs Rattier & Guibal, who import the material *en poire*; who put it through every process essential to a manufacture which assumes at this day a thousand forms, and whose imports of the raw, and exports of the manufactured, substance reach in value to upwards of a million sterling a year. They bought their secrets, it is true, in the first place from an American named Goodyear, and in the next, from the Englishman Hancock; but they seized upon these ideas; they substituted the new material in place of whalebone, they vulcanised it, made it hard enough to withstand the blow of a steam-hammer, liquified it, submitted it to every kind of scientific torture, and, at last, converted it into billiard-balls, as they have done at Ivry, with the cushions of billiard-tables into the bargain. Since the process of vulcanisation was invented, neither M. Fritz Solier nor M. Guibal professes that any important discovery has been made in the manipulation and employment of this material. They had hoped, as we have suggested, that it might supplant whalebone, horn, tortoise-shell, steel for pens, and even steel-plates for the armouring of ships of war, as being lighter, and not less invulnerable; but these expectations have not been answered by the event. The composite called, in trade, ebonite, has, it is true, been adapted to a variety of purposes. Exposed to an extreme degree of heat, and subjected to an immensity of pressure, it comes out of a beautiful black, susceptible of a brilliant polish, capable of being struck and stamped into medallions, wrought into chains, and sculptured into decorations for staircases and roofs. The modern employment of this material in electrical machines and printing apparatus is familiar to all, but less so is its value, except as for machinery bands, as an agent in the ornamentation of the small modern mansions with which the suburbs of Paris now superabundantly abound, and which keep the factory we speak of at a perpetual state of high pressure. The processes here would be bewildering, except to an eye accustomed to the whirls, reelings, unreelings, incessant action and counter-action, clippings, and eccentricities of machinery movement, and so forth, that keep the whole apparatus in action. There is, in the first place, the sulphur-mixing room; then the great gallery in which the "paste" is worked to a regular consistency; next, the "shop" wherein the girls perform their special task of smoothing and flattening the sheets prepared for cutting and stitching into endless bands; now the colouring, then the stamping; and all these movements of the manufacture require, so to speak, a great tenderness of manipulation in detail. Sometimes a fabric, almost perfectly white, is required, or one of amber, or one of the natural dark, dead grey, belonging to India-rubber generally; and all these methods involve, at Ivry, a large amount of machinery work, premises warmed and ventilated with particular science and care; and a series of baths, in lamp-black and white-lead, which, the statisticians assure us, are exceedingly injurious to the persons employed. It is a well-known fact that any mirror or looking-glass placed in one of these factories becomes immediately useless; while, so powerful is the chemical action going on, that, without the utmost precautions, the tapestries of this material would cling together and be irremovable, except as a mass of rags. The manufacturers say that they experience considerable difficulty of this kind in the production of fire-hose and garden-tubing, in any extraordinary lengths; but they must have overcome many such obstacles, if we look at the catalogue placed upon the desks in their counting-houses of the necessaries which they are prepared to supply,—gas and water pipes in every possible variety; pump fittings, soft linings for wheels, and, not to continue an enumeration that would extend to the length of an auctioneer's catalogue, seventy-sixty other essentials, supplied from the great Indiarubber firm at Ivry. The modern development of this industry, of course, is one of a comparatively few years' growth; but it is attaining an importance which not even the proprietors at Ivry originally foresaw.

St. Alban's Abbey.—On Saturday last the St. Paul's Ecclesiological Society visited St. Alban's Abbey, when Mr. G. Gilbert Scott gave a short account of the early history of the city of Verulam, and of the more modern city by which it was succeeded; of the martyrdom of St. Alban and his friend, St. Amphibalus; and recounted the architectural history of the Abbey and of the buildings which preceded it. He also described the works now proceeding in the nave, and especially the means by which the walls of the nave had been restored to the perpendicular.



STEPHENSON MEMORIAL HALL.—*Plan of Ground Floor.*

NEW BANKING PREMISES, LUDGATE-HILL.

NEW bank buildings, which have just been erected in Ludgate-hill, for the City and Counties Banking Company (late the Hampshire Bank), have been opened for business. The new bank is situated on the south side of Ludgate-hill, at the entrance to Ludgate-square, and forms one of the first of the new buildings for the widening of this end of the thoroughfare, being set back about 17 ft. from the present line of frontage. The structure is lofty, being upwards of 60 ft. in height, and consists of four stories, in addition to the basement and ground-floor. The lower portion of the elevation is carried up with pilasters in Crosshill stone, resting on massive iron bases. The pilasters are surmounted by capitals, in Portland stone. The upper part of the elevation is of Bath stone. Each floor has a range of three windows, between which are moulded panels.

Internally the building is very strong and substantial, more especially the basement, which contains the strong-rooms and safes. The ceilings of these are 16 in. in thickness. They contain rolled iron joists, with cement concrete interlaced with iron hoop, upon which rest two courses of brick, also interlaced with hoop iron, the whole being covered over with concrete, 4 in. in thickness. The safes are fitted with massive iron doors, furnished by Milner's Safe Manufacturing Company. The ground-floor portion of the building contains the banking-house, an apartment 40 ft. in depth from the Ludgate-hill frontage to the rear. Some portions of the upper parts of the building are intended to be occupied in connexion with the business of the bank, whilst the rest will be let as offices.

The architect is Mr. B. Tabberer, of Coleman-street, City, and the contractor Mr. Mark, of Bell-square.

Thurton.—Thurton Church, Norfolk, is about to undergo thorough restoration. Sir Reginald Proctor Beauchamp, bart., repairs the chancel at his own expense. The architect concerned is Mr. Herbert Green, of Norwich.

THE STEPHENSON MEMORIAL HALL, CHESTERFIELD.

THE Duke of Devonshire has consented to open the Stephenson Memorial Hall, at Chesterfield, on Monday, July 14th. The building, the foundation-stone of which was laid by the Marquis of Hartington, on October 17th, 1877, is situated in Corporation-street, near the railway station, and is in sight of Tapton House, where George Stephenson died. Its cost will be something over 12,000*l*. It has been erected from the designs of Messrs. Smith & Woodhouse, architects, of Manchester.

In its arrangement the building may be divided into two parts, one portion comprising a public hall, the other being devoted to educational purposes. We give a view, and the plan of the ground-floor. The public hall portion consists of a large hall, front and back staircases, gentlemen's and ladies' retiring or cloak rooms, and artistes' ante-room. The large hall measures 68 ft. in length, 46 ft. 6 in. in width, and is 40 ft. high to the ceiling, chairs being provided for 500. The gallery, which runs round three sides, supported on cast-iron brackets, and having a pitch-pine front, has permanent seats for 350. The platform, which extends the full width of the room, will seat eighty performers. Light is admitted through eleven mullioned windows filled in with coloured glass of geometric design, night-lighting being effected by six large gas coronæ suspended from the ceiling, and having 144 lights in all; twelve short pendants, having thirty-six lights, under the gallery; and two brackets, with five lights each, at the back of the platform. A store-room is placed convenient to the hall, so that when required the hall may be cleared of seats.

The whole of the exposed woodwork, except roof-timbers, is of pitch-pine, stained and varnished. The walls are plastered throughout, no decoration being attempted other than plain tints in distemper.

The Institute, or educational portion, the entrance to which is from Corporation-street, contains the following rooms:—On the ground-floor, reading-room, 33 ft. 6 in. long, 25 ft. 3 in. wide; library, 42 ft. long, 21 ft. wide; museum, 32 ft. 6 in. long, 19 ft. wide; and lecture-hall, 40 ft. 6 in. long, and 32 ft. 6 in. wide. On t upper floor, which is reached by a stone st case, are an elementary art-room, 61 ft. le 32 ft. 6 in. wide; advanced-art room, 33 ft. 6 long, 25 ft. 3 in. wide; laboratory, 42 ft. le 21 ft. wide; store-room, 9 ft. square; a lad cloak-room being placed over the library. I the basement, under the museum and lectu hall, are the keeper's-rooms, store-cellar, serv room, and heating-chamber.

With the exception of the keeper's-roo which are provided with open fire-places, whole of the building is warmed by means hot water on the low-pressure system; wrought-iron saddle boilers, of which there two, being in the basement, and the supply-cistern in the tower. The work been successfully carried out by Messrs. Olive Co., of Chesterfield, from plans and instruct prepared by Mr. J. W. Fern, of the same tow

The ventilation, to which much attention been given, is effected by means of lath-a plaster tubes above the ceilings, along wh the impure air is drawn to the large ventilat shaft, by means of a current induced by heat from the boiler fires, which passes al with the smoke up the same shaft. A su furnace is provided for summer use, when heating-apparatus is not required. The fr air is admitted through vertical tubes, and t caused to take an upward course, ther preventing draughts.

The style of architecture is Gothic of simp detail, advantage being taken of the irregu shape of the site and the varying levels of streets to produce a varied and picturesque line. It is faced with red bricks, relieved w stone dressings from the quarries of Sir Jos Whitworth at Darley Dale; the roofs covered with Welsh blue slates, capped w ornamental red ridge tiles.

Messrs. Chadwick & Co., Masborough, are general contractors; Messrs. Edmondson & S of Manchester, supplying the ornamental gla Messrs. J. & H. Patteson, of Manchester, marble, concrete flooring, and wall tiles; Messrs. Ogden & Co., of Manchester, the pendants. The whole of the works have b carried out under the supervision of Mr. E. Mawbey.





ST. JUDE'S CHURCH, SOUTH KENSINGTON.—Mr. Henry Godwin, Architect.

JUDE'S, SOUTH KENSINGTON.

THE NEW TOWER AND SPIRE.

volume for 1870 we gave a view of the 'or St. Jude's, as it was proposed to be taken from the north-west angle. The view is from the south-west, and shows church has been completed. The erec- the tower and spire was deferred for me after the church had been built.* A of gentlemen, however, frequenters of ch, forming themselves into a committee, short time obtained the funds for com- the works. The vicar (Dr. R. W. , the Right Hon. Acton S. Ayrton, the Hon. C. Keith-Falconer, Lord Thesiger, Mr. Herbert C. Saunders, and bert Rawlinson, C.B., were amongst n the committee; the Rev. W. Smale is hon. secretary, and Mr. J. Green as r.

ower is 21 ft. square exclusive of but- and is used as an entrance to the church. ditional means of exit was much needed, nt upon the large congregation the teemed and accomplished vicar has round him.

hurch is arranged for 1,600 sitters, but ily accommodation has to be provided s placed in the passages for many more. eight of the tower and spire is 155 ft. ground, exclusive of the vane. They t of Kentish rag and Box-ground stone. ly, the walls are lined with malms, and ght ornamentation of coloured bricks is ed. The ceiling is of bold timbers, cham- upported by pierced brackets springing rved stone corbels. The timbers are and varnished. The flooring is of a d design, by the architect, formed with s of red, black, yellow, and white.

enders for the work ranged from 4,786*l*, *l*., the lowest being that of Messrs. a, of Putney and Turnham-green, who ried out the work in a very satisfactory The total cost was 3,876*l*., some work ded in the shape of pinnacles at the he spire, and other matters. The vane, s of copper, was supplied by Messrs. eard, & Co., of Wych-street. A clock been set up in the tower by Messrs. s & Reed, and Messrs. Warner, of escent, supplied the bell. The archi- s Mr. Henry Godwin, of Alexander- Brompton.†

this church was first built it stood by the midst of garden ground, and in our it we wrote:—"A fine neighbourhood btless soon spring up around the new and certainly our prediction has been for more than 200 houses have been immediately around the church on the longing to the original freeholder of Col. Gunter, of Wetherby Grange, e, and on that of his brother, Col. unter, let at rentals ranging from 150*l*. per annum each. Some very fine and nally well-built houses have been by Mr. Wm. Radford, immediately nd on the southern side of the church. Pargeter, Wm. Jackson, and others have t some good houses on these estates. e contiguous land belonging to Lord ton and Mr. H. B. Alexander respec- he growth of the neighbourhood has ually extraordinary, many large and lt houses having been erected by Mr. Cullingford and other well-known

perations in this one small district e the extent to which accumulations of r in England are going on. Taking the of houses built around this church since tion at 400, which is under the mark, ir average value as at least 3,000*l*. each, resent roundly, it will be seen, a million uarter of money.

Cochin and Travancore Railway.—gineer-in-chief of this line, Mr. H. W. (formerly of the Great Northern Rail- engaged in getting up the surveys, es, and statistics connected therewith. hin and Travancore Governments have d to subscribe capital to the amount of

* description of the building, which has special was given in the vol. for 1870, pp. 547 and 1042, terior view with plan in the vol. for 1871, page 367. drawing engraved is from a photograph produced s. Bedford Lemere & Co., of the Strand.

PAUL'S CROSS.

"Paul's Cross," the late Dean Millman tells us in his History, "is historically part, and an important part, of the cathedral. As preaching grew more popular, and began more and more to influence the public mind, the cross became the pulpit, not only of the cathedral, but almost of the Church of England." On this account alone, and within a few weeks after the discovery of its foundation site, we purpose to tell our readers something of its history and of the many remarkable events with which its name is associated; although, to go back and repeat all the incidents connected with its existence would very well fill a large volume. Brief as they may be, our notes will be found interesting, if not exhaustive; and such as they are, will be found to give some curious matters, in which the doings of our "good old times" stand most conspicuously forward.

But the actual date of the foundation of Paul's Cross appears to be unknown. Dugdale, curiously enough, gives only a very brief account of the famous pulpit; and had it not been for Sir Henry Ellis incorporating some valuable references in his edition of the "History of St. Paul's," no reader of the original work would suppose the history attached to the cross to be more than that of an ordinary churchyard cross. "That the original occasion of erecting a cross here, and so likewise in all other churchyards, was to put good people passing through such cemeteries in mind to pray for the souls of those whose bodies lay there interred, I am induced to believe, from what an authentic historian (Ingulphus) telleth us, viz., that Godrick, the venerable Abbot of Peterborough, having taken care for the burial of those monks of that monastery which were barbarously murdered by the Danes in that fatal irruption made by them into this nation, anno 870, erected a cross of stone in the same churchyard where they had sepulchre."

The earliest recorded date, however, of the pulpit,—if a pulpit then,—having been made the place of meeting for the citizens of London is the year 1257,—more than 600 years ago. Fabyan, one of our earliest chroniclers, speaks of a very mysterious occurrence,—the finding "in the kynge's warderobe at Wyndesore a bylle or rolle closyed in grene waxe, and not known from whence it shuld comme." Of course, in those times this was a very wonderful find, and a very plausible excuse, seeing that the precious document made grievous charges against the Mayor and Aldermen of London, about which the king (the third Henry) very readily took it into his head to inquire. "He anone sent John Mancell, one of his justycys, into London, and there in ye feest of ye conversyon of Seynt Paule, by the kynge's autoryte, *callyd at Pawlys Cross* a folkmote"; that is to say, a meeting of the citizens, and at which, after no ordinary excitement and more than one meeting, and during which it was a question which side would be victorious, "was rehersyd a fayre and a plessant tale, promysyng to theym that theyr lybertyes should be hoolye and invyolatlye preservyd by the kynge, with many other thinges to the greate comforte of the comon people."

This "little" event, which in reality was a very momentous affair to the citizens, and was only one of the troubles they had to endure in the good old times when the sovereign was always trying to plunder them, was quickly followed by others. Thus, only three years later, Henry "comaunded a folkmoot to be callyd at Pawlys Crosse where he in propere person, with the King of Almayne, the Archbysshop of Canterbury, and many other nobles came where the Kyng commaunded unto the mayre that euerye strypelynge of the age of xij yeres and above shuld before his aldreman be sworne the day folowinge to be trewe to the kynge and to his heyres kynges of Englande, and that the gates of the Cytie were kept with armyd men." And, as if this was not sufficient to commaud obedience from his subjects, the king, on the second Sunday in Lent, in his forty-fifth year, 1262, "comaunded to be red at Pawlys Crosse a bull of the graunte of Pope Urban the iiij of that name as a confyrmation of another bull before purchasyd of his predecessor Alexander the iiij," which was nothing more nor less than the superstitious absolution for him breaking the oath he made to maintain the articles of the "mad Parliament" at Oxford, but with this decisive ultimatum, that any one refusing to acknowledge the justice of this absolution would, without ceremony, be imprisoned. It is thus that Paul's Cross sprang into notoriety, and thus it continued, as we shall see, to the end, as being the most convenient spot for the citizens to meet at. But in order that our readers shall understand that the actual position of the structure was the same as that of which the foundation has been lately found, the old City historian, Stow, says, "about the midst of this churchyard is a pulpit cross of timber *mounted upon steps of stone*, and covered with lead, in which are sermons preached by learned divines every Sunday in the forenoon"; and Dugdale adds,—"standing in the Churchyard *on the north side towards the east end*." And this is confirmed by a quotation by Sir Harris Nicolas from the will of Sir Otho Grandison in 1358, who left, among other legacies, one *to the Cross at the north door of St. Paul's*. The actual site was, by tradition, supposed to be where a fine elm tree once grew, but which died some forty years ago; and it is a satisfaction to know that in this instance tradition was right, for at that place the remains of Paul's Cross have been found.

History does not record another event until 1299, but then that is a pretty good sample of the times. Certain persons went digging for a supposed treasure buried in the church of St. Martin's-le-Grand,—the site of the General Post-office,—"for the whiche dede," says Fabyan, "the deane of Paules, the seconde Sunday of Lent followynge, denounced all theym acursed that were at that dede doinge or consentynge to the same." To be cursed at Paul's Cross in the days of Edward I. was by no means a pleasant business; it was next to, even if not worse than, killing the individual outright. So this simple paragraph does not tell the actual weight of the punishment inflicted.

Our readers may not be aware that the Cathedral and Cross were both identified with what we now call pawnbroking, so long ago as 1361. Dugdale narrates that the good Bishop Northburgh, among other charities, left 1,000 marks, which were to be placed in the cathedral chest, out of which any poor layman might borrow *without interest*, a certain sum upon pledges, which, if not redeemed *at the end of a year*, were to be cried at Paul's Cross by the preacher in his sermon, and if not then bought in within fourteen days, they were to be sold and the profits (above the sum lent) were to be either handed over to the owner or relations, or if none could be found then to go into the chest fund "for the health of his soul," and, as it may be very truly said, a really good purpose in those days, however much abused the system may be in ours.

A few years later, in 1378, or just five centuries ago, a riot took place in West Cheap (now Cheapside) during the time the Bishop of Carlisle was preaching at the cross, and it must have been a serious affair, seeing that one of the sheriffs was, for a time, disgraced for his connexion in the matter. Four years later, we are told, a great tempest tumbled the cross to the ground,—at least, so said Dean Nowell in 1561; but Malcolm very justly remarks that such a tempest as described would also have destroyed half London, but about which we hear nothing. It is possible, however, that some casualty did upset the building, for it is recorded money was appealed for, some years later, to rebuild it with, and that even Bishop Courtney made use of the cash for his own purposes, but whether this is only slander Dean Nowell himself alone probably knew. That it was getting ruinous is very possible, and that it was rebuilt some years later on is a fact.

Of the year 1388, Fox, the martyrologist, in his "Acts and Monuments," gives a very curious note,—a copy of the earliest sermon known, and that preached on Quinquagesima Sunday at Paul's Cross. It was, says he, "a goodlye and famous sermon" by Preacher Wimbeldon, and seems to have created some stir. The same author tells us that six years before this two doctors in divinity were excommunicated at the cross for "hereticical preaching vehemently suspected." To suspect a man at that date was to punish, without much trouble about judge or jury. A few years further on, on Easter-day, 1417, the two wives of Lord Strange and Sir John Tassell, knight, had a dispute during a sermon at St. Dunstan's-in-the-East. Ladies' battles, we suppose, were quite as hot then as now; at all events, their husbands got mixed up in it, and, as a result, suffered. There was much blood spilt before they were

taken to prison, and then the Archbishop caused them to be excommunicated at Paul's Cross and in all the other City churches. That was bad enough one would suppose, but the law *then* was strict, and culprits were made to *feel* for their misdeeds. On the 1st of May, before the prelate, the Lord Mayor, and the citizens,—in fact, it was without doubt a great holiday,—my Lord Strange and his wife did penance. "All their servants should *in their shirts* goe before the parson of Saint Dunstan's from Paul's to Saint Dunstan's, and the lord *bareheaded* with his ladie *barefooted*, Reignold Kenwold, archdeacon of London, following them, and at the hallowing of the church the ladie should fille all the vessells with water and also offer an ornament of ten pound, and the Lord Strange should offer a pire of five pound." What a crush there would be to see a similar sight now! And yet the popular fury was not appeased when lords and ladies were brought to the cross; for in 1458 Bishop Peacock, of Chichester, was himself denounced as a heretic here, and the books he laboured so much upon were burnt before his eyes, although he volunteered a recantation.

Thomas Kempe, the Bishop of London, who died in 1489, was the rebuilder of the cross which stood in Stow's time, Dugdale adding, "as his arms in sundry places of its leaded cover do manifest." Whether it was the old or the new building at which the Bishop of Exeter in 1461 "proved" the title of Edward IV. to the throne we know not, although the date of the rebuilding is set down as five years earlier. Anyhow, it was probably at the new cross that the ill-fated Jane Shore, the heroine of many a questionable biography, suffered for her sins in 1483; for, as Fabyan tells us, "thaine began the longe covert dissymulacon whiche the Lorde Protector had bene so craftly shadowyd to brake out at large"; for at the cross, he with Buckingham and the other lords, by the aid of the preacher, Ralph Shaw, "shewyd openly that the childrene of Kynge Edward the iiij were not legitimate," and following up this shameful attack, he in the following May had poor Jane Shore accused of witchcraft and everything else that was bad. As her history is, unfortunately, a popular one, the following description of what our early chronicler, Hollinshed, thought of the penance she was made to suffer may be of passing interest:—"Goinge before a crosse on Sondaye at procession with a taper in her hande, n the whiche she went in countenance and pace so womanly, and albeit *she was out of al her araye savynge her kyrtell onlye*, yet went she so fayre and lovely, namelye, when the wondryng of the people cast a comelye rud in her chekes (of the whiche she before had most misse) that her great shame wonne her much prayse amongst them that were most amorous of her bodye than anxyous of her soule, and many good folke that hated her lyving, and wer glad to see synne corrected, yet petied they more her penance than reioyced therein when they considered y' the Protector dyd it more of a corrupt mynde than eny vertuous effection." Whether this penance was done by her walking through the streets of London, or standing at Paul's Cross, is not quite clear, but possibly she was made to do both. But such sights then were not uncommon; for some fifteen years later (16th and 23rd July, 1498), on two Sundays Londoners had the satisfaction of seeing no less than a dozen heretics stand at the cross with faggots around them, to remind them in grimness most horrible of the fate they might expect if they mended not their ways.

This brings us to the sixteenth century, and for the next century and a half Paul's Cross was in the height of its popularity. It is impossible to chronicle all the events, but our selection shall be as good an illustration of the times as it is possible to find. From here, in 1502, was publicly announced the marriage contract between James IV. of Scotland and the daughter of Henry VII., when twelve bonfires were set blazing in the streets, and twelve hogsheads of Gascoigne wine given to the populace "to be drunken of all men freelie." The public in the nineteenth century are satisfied with a sight of Royalty (when they get the chance) without having the pleasure of having anything given to drink their health with. And the same year Fabyan tells us "upon the first Sunday of Lent was solemnly accursed at Paul's Cross, Sir Edmond de la Pole, Sir Robert Curzon, and others, and all that them aided again the king."

It was in 1520 that Erasmus and his writings were condemned in "a ridiculous sermon" by a Paul's-cross preacher, and the next year was the penance of one Adrian Dolevyn, who, for publishing heretical opinions, was ordered to bear a faggot, and walk bareheaded, barefooted, and barelegged, from Blackfriars to St. Paul's, and stand before the preacher at the cross during the sermon. But one of the imposing ceremonious businesses took place on the 12th of May, 1521, when, according to a Cottonian MS., Cardinal Wolsey, attended by all the court and clergy, came to St. Paul's, four doctors bearing a canopy of cloth of gold over him; and after he had made oblation before the altar, took his seat on a prepared throne by the cross, around which stood all the chief personages of the realm. "And then the Bishop of Rochester [Fisher] made a sermon by the consent of the whole clergy of England, by commandment of the Pope, against *one Martin Eleutherius* [Luther] and all his works, because he erred sore and spoke against the Holy Faith; and denounced them accorsed which kept any of his books. And there were many burned in the churchyard of his said books during the sermon, which ended, my Lord Cardinal went home to dinner with all the other prelates." But do what they could, it was useless to expect to crush Luther. The Grey Friars' Chronicle tells us that in 1527 Barnes, the Prior of St. Augustine's, Cambridge, with four others, ordered to stand at the cross with faggots and tapers about them, were placed on a high scaffold within the church "because of rayne," not, as we think, for any merciful consideration, but because few persons would have taken the trouble to stand in the rain to look at them; and Bishop Fisher having discoursed, Barnes was taken back to prison. "But," says our record, "he broke away from them and went beyond see unto Luter."

In the following year (1528) another "diabolical damned heretick," a certain John Hig, did penance in this style, so a State paper tells us:—On Palm Sunday he headed the procession to the cathedral, bareheaded, barelegged, shoeless, and carrying a faggot on his shoulder; on Good Friday stood in similar fashion during sermon at the cross; repeated the ceremony on the Sunday in Cheshunt Church; heard mass on his bended knees, and for the rest of his life was ordered to wear the badge of a silken faggot on his sleeve, as an evidence that he deserved burning; and that he was never to leave the diocese of London. But as he recanted, confessing before the public, "I have erroneously and damnably said, affirmed, believed, and taught these damnable and erroneous opinions," and prayed that if he wore the *armorial bearings* assigned him he would never be able to get employ, and so would have to beg, the vicar-general kindly gave him a dispensation as to the silken faggot. And the very same year Humphrey Monmouth, a draper, of London, wrote to Wolsey and the council about Tyndale, that he had heard him preach sermons at St. Dunstan's, Fleet-street, but had not known any evil of him until he heard the bishop say at Paul's Cross that this "Sir William Tyndale had naughtily translated the New Testament!" Poor Tyndale, however, is, after 350 years, to be kindly remembered by the Londoners, and let us hope it will not be far from the scene of his early labours,—St. Dunstan's.

Doing penance was common, and did not, we think, attract large audiences, except when any great personages were the culprits. Here James Baynham, lawyer and martyr, stood with his faggots in 1531, and how he did it is shown by a rude woodcut in Fox's "Book of Martyrs," for poor Baynham was subsequently burnt. Then again in 1533-34, the unfortunate Elizabeth Barton, called "the Holy Maid of Kent," and her accomplices were exposed to the people here while their confession was read, and thence hurried off to execution at Tyburn. And in another four years the famous crucifix, the "Rood of Grace," from Boxley in Kent, which had been supposed to work such wonders, was, on February 14, 1538, exposed by Bishop Fisher at the cross, the people made to understand how grossly they had been deceived, and then the idol was consigned to the flames.

But while all these things were going on locally, a great reaction was taking place, so far as "Bluff King Hal's" prerogative was concerned; and all readers of history know how he crushed the opposition of the Church of Rome to his divorce. Among the State Papers in the Record Office are a number of interesting documents. In one letter, written December, 1533, the king says that he intended "to use the administration of our high autoritie within this our realme as the same may redounde to the utter abo... of the Pope's autoritie to be used or to tak... place within the same; like as we ... do by thordre of Goddes lawes. . . . ... shall schortly be hable to give ... the Pope suche a buffet as he never ... heretofore." If Henry VIII. said he wou... a thing he did it, and so he sent nineteen ... positions to the Council, the third of which ... "That ordre be taken for suche as shall pr... at Paule's Crosse from henceforth shall ... tynually from Sunday to Sunday prech t... and also teche and declare to the people tha... that now calleth himself Pope, with any o... predecessors, is and were but onelie ... bysshopes of Rome, and hath no more aut... and jurisdiction by God's lawe within ... realme than any other foreign bysshop h... which is nothing at all. And that such ant... as he hath claymed heretofore hathe l... onelye by usurpation and sufferance of pr... of this realme, and that the bysshop of L... may be bounde to suffer none other to prec... Paul's Crosse as he will answer but sue ... will preache and set forth the same." A... Sunday after Sunday, bishops preached ... the power of the Pope with a spirit that ... have done King Hal much good. But wha... citizens liked better was the proclamation ... from the cross in 1547 by the Bish... Rochester, that the king had been gracio... pleased to bestow the Grey Friars, Bethlem ... Bartholomew's Hospitals upon them, ... certain lands for the support of those ho... and for the relief, &c., of the City poor for ev... the letters patent being dated January 13, ... Then did the Paul's Cross listeners indeed re...

In 1550, says Stow, Sir Stephen, the o... of St. Catherine Cree Church, in a serm... the cross, denounced as an idol the mayp... the adjoining parish by associating the ... with the church, and our old chronicler, ... lived in the parish, regretfully describes h... neighbours pulled it down and burnt it. A... 1552, when Latimer preached here, he de... that he believed many a person died from ... exposed to the weather in the churchyard ... listening to the sermons, and there is no doub... what Latimer was right. Sometimes, wh... weather was too bad, "the shrowds" were ... use of; but it has not been clearly s... whether this place was a covered gallery o... the church, or belonged to any portion ... inside. It was at the cross on the Nove... following that Bishop Ridley used for th... time the new Common Prayer-book, and ... so long to deliver his sermon that his congre... had to go home by torchlight!

Another spectacle for the citizens w... serious riot which took place at the serm... the 13th of August, 1553. Dr. Bourn... parson of High Ongar, Essex, and the q... chaplain, was the preacher, and he p... Bonner and denounced Ridley. This the ... took offence at, and there was a riot ab... It did not take long to get up a riot in... days. Some one threw a dagger at the pre... but it luckily missed him; but had the ... Mayor and others not been there things ... have proved more serious. Anyway the C... at the Tower at once issued an order th... future the people were to be kept at wo... weekdays and at church on Sundays, and ... more diligence and discretion; and on the f... ing day another order hinted that it ... citizens would not look after the welfa... the City the Lord Mayor had better ... his sword. This was sufficient; for l... Dr. Watson preached, on the 20th, the pre... was surrounded by 200 of the Guard, ... halberts, and we hear nothing further abo... Council order. At the same time it di... stay these kinds of outrages, for on Jun... in the following year, while Dr. Pendleto... preaching, a shot from a gun just misse... head, and went into the wall behind. ... appears to have been a busy year at the ... for in September, Dr. Rodd publicly rec... and, before a very interested audience, rep... that he had ever been married; whi... November 4th, John Harpsfield, the Archd... of London, preached, and struck with a ro... men who, with sheets about them and tap... their hand, did open penance both at the ... and in the church. But of all the v... penances one is mentioned by Pennant, ... tells us that, in 1537, a priest, named New... bore a faggot, "for singing mass with good ... and the diarist Machyn says that in 1556 a ... did penance having two pigs, ready dr... upon his head.

little burlesques appear to have been numerous, for in 1554 some one took a red its head, dressed it up like a priest, fore-feet together as if in the act of with a wafer between its paws, and it on the gallows by Cheapside Cross. op ordered it to be exhibited at Paul's ad the rascal who did the deed being ed accordingly, 20 marks were offered iscovery.

onally there were great musters of the t the cross; for, in February, 1558, re no fewer than sixteen bishops present, a large number of other clerical gentle- the following December was issued lamation forbidding preaching without for, says Hayward, in his "Annals," lpits often serve as drumes and fifes to fury." This caused some trouble; and liest place shut up was Paul's Cross. r, in April, a Dr. Samson being about to ne pulpit, found the door locked and key and when the door was opened by a "the place was very filthy and un- —clearly showing what little attention n payed to the cross during the few reviously. But the preachers during the Elizabeth were quite a contrast to those evious reign. It was on the 4th of June, at the spire of St. Paul's Cathedral was d by lightning, and on the 8th the Bishop m preached, on behalf of its restoration, e cross. A few days later the Dean delivered that celebrated discourse as related. Now this must have been a year, for in the following July it rained ndered so much that the sermons were d at the Grey Friars instead. A few ter, in August, 1573, we find the Bishop on writing to Lord Burghley,—"I do canne to procure fitte men to preache sprosse, but I cannot know their hartes, se tymes have altered opinions. Suche had discreetlie the last year now laboure nge to feede the fancies of the people. rulie, my ll., I have dealte so carefully ne to keep such fanaticall spiritts from se, but the deceiptfull divill, enemie to has so poured out the poison of sedition ddenlie changed these wavering myndes harde to tell whom a man may truste." Bishop Aylmer complained in like one accused being the Dean of Norwich. is date, in addition to the stipend paid cher at the cross, he was provided with at what was called the Shunamite's In 1581 this house was kept by a John an, a draper in Watling-street; and ohard Hooker arrived, wet and weary, came from Oxford to preach at the It was a momentous time for him, for equently married John Churchman's r; and as she did not make him the best s, he had great cause to lament ever come to preach at our Churchyard

95 the cross was "new repaired, painted, tly inclosed with a wall of brick," Bishop preaching a loyal sermon, and music s and bells adding a charm to the event. next year, on Good Friday, when the were at the afternoon sermon, a pre- s brought to the mayor to press 1,000 nich was done before eight o'clock the ght, showing that they were not slow in the royal commands at that date. he Earl of Essex returned from Spain, st, there was a special rejoicing, as is ed by the Carpenters' Company paying "for a forme" at the cross, and "two keep the same," which, we suppose, that the crush for seats necessitated course.

he 14th of November, 1602, Dr. Dawson, bridge, kept on his velvet cap while he at the cross; but when he mentioned een's name took it off, which caused no wonderment even in those times. And n April, 1605, "a cucko flew over the at Paul's Cross and cried out," it of was subsequently referred to as a mes- of warning as regards the Powder Plot. following year, Parker, the preacher, who rded in the State Papers to have been ; cards all night previously, mounted the nd gave forth a terrible invective sermon, set the king about him. In November, pretty scandal delighted the less sober of izens. Lady Markham did penance here hite sheet for marrying her servant, her d being alive. She was also fined 1,000*l.*

And here, on the 11th of April, 1619, Bishop King made a thanksgiving sermon upon the king's recovery.

Our monarchs have not been very lavish of late in their royal progresses, but both Elizabeth and James were always going about among their subjects. The queen went to St. Paul's in 1588 to return thanks for the defeat of the Armada, and heard Dr. Pierce, the Bishop of Salisbury, preach at the cross; while on the 26th of March, 1620, James attended Bishop King's appeal on behalf of the restoration fund. It was a great day in the City, and the engraving of the cross at the time is one of the most interesting prints we know of, because it not only shows us the building, but also the costume of the period. It was, as Stow describes it, octagon in shape, built of wood, surrounded by a brick wall. At the top of the pulpit was a huge cross. It has been frequently engraved. Besides the contemporary print, as published by the Society of Antiquaries, the other views of Paul's Cross we know of are shown in Speed's map of Middlesex, 1627; the curious woodcut on the title of an eight-paged tract, entitled "Three Looks over London; or, Plaine Dealing is a Jewell," 1643,—being the very year of the destruction of the cross; and on the title and last page of a 4to. tract, by Henry Farley, printed in 1621, entitled "St. Paul's Church, her Bill for the Parliament,"—all of which, being contemporary prints, must certainly be, to a certain extent, trustworthy.

We are now drawing our eventful history to a close. The exciting periods of Paul's Cross existence had passed. Still there were some occasional causes of excitement, as in 1625, when Sir Robert Howard, the fifth son of the Earl of Suffolk, was excommunicated here for refusing to answer the charges of crim. con. with Lady Purbeck, the sister of the Duke of Buckingham; in 1629, when in May two libels were found stuck up at the cross, which read,—"Oh, king, or rather no king, for thou hast lost the hearts of thy subjects"; and in May, 1631, when Sir Giles and Dorothy Alington for having illegally married, were first seat to the Fleet Prison, then tried by the Ecclesiastical Commissoners, ordered to do penance at Paul's Cross and at Cambridge, Giles being fined in the modest sum of 12,000*l.*, and Michael Dalton, the father of Dorothy, 2,000*l.* The king, however, subsequently remitted the fines.

A doubt has been expressed whether Charles I. ever visited the cross, but in Howe's continuation of Stow's Annals under date May 29, 1630, recording the birth of Prince Charles (afterwards Charles II.), it is stated that on the next day the king and all his court attended at St. Paul's, and subsequently "went into a roome and heard the sermon at Paules Crosse." And, in confirmation of this, Miss Griffiths has a document endorsed "A coppie of verses made by Dr. Sharpe and Sergeant Hoskins upon the appearance of a starre that day in the sermon time at Paul's Crosse (the kingo's majestie being present),"—the date, however, being June 6th on the endorsement.

There is a letter among the State Papers, dated 1631, wherein the Dean of Norwich describes a pulpit in the Green Yard, Norwich, which was both in build and use similar to the St. Paul's Cross at London.

Soon after this was heard the last sermon at the cross. The precise date has not been recorded, but it must have been about the month of April, 1633; for extensive repairs were being carried out to the exterior of the cathedral, and the preaching was removed into the choir. And it does not appear that it was ever restored to the outside. The cross had, in fact, done its duty; times had wonderfully changed. As Dean Milman remarks, "It was a cross, and a cross was obstinately, irreclaimably popish. Down it went; not a vestige of the splendid work of Bishop Kempe was allowed to remain." The votes of the Long Parliament of the 10th and 11th of September, 1642, for the abolishing of bishops, deans, and chapters, settled the fate of both the church and its cross, and while the one was "utterly shaken in pieces," as Dugdale says, the other was taken down by willing hands ready to destroy anything the use of which their blindness was unable to see; and, as we have said, its very site remained unknown, except by tradition, until the month of April, 1879,—perhaps just 246 years after the last sermon had been preached there.

We have already stated that the preachers of the sermons were provided not only with a stipend, but with a lodging while in the City. As this provision was of a most benevolent kind we think a few notes may not be out of place. They are derived from the most reliable of all sources, the wills of the donors themselves, and they will be found not only interesting, but instructive. In Fox the Martyrologist's time the benefactors are stated to have been a round dozen, and ranged over the reigns of Elizabeth and James I. The earliest, however, is Henry VII., in whose will of 1509 is given a special reward "to the precheour at Paules Crosse for the making of the monition of the anniversarie daie." John Ailmer, the bishop of London, by his will in 1594 gave 300*l.* "for the better maintenance of the sermons at Paules Crosse," and 100*l.* more which he had received in trust from Elizabeth Countess of Shrewsbury for the same purpose. Alderman George Bishop, by deed dated in 1607, and confirmed by will, gave his estate in Shropshire to the Governors of Christ's Hospital in trust to pay 10*l.* yearly for ever "unto and amongst such preachers as shall happen to come and preache at Paules Crosse and are not sufficientlie provided for." William Parker, a native of Walsall, gave 200*l.* in 1613 for the like purpose, and in 1617 Robert Jenkinson, on his death-bed, gave 150*l.* Another benevolent individual, one Roger Jeston, in 1622 gave 5*l.* a year; while Thomas Chapman ordered 1*s.* a week to be paid to such person who should "Keepe sweete and cleane the preaching place at Paules Crosse, and to make it serviceable for the preacher at every sermon," which appears to have been duly done until 1633, for we find "the Vergers of Pawles" complaining to the Deane of the Arches that since the sermons had been removed "from the yard into the quire" they had not received their weekly payment, which they considered they were entitled to notwithstanding that the preaching-place had been transferred. In Stow's Annals it is said that the Corporation of London had, in carrying out the trust of the donors, ordered that "every one that shall preach there may at his pleasure be freely entertained for five dayes space, with sweet and convenient lodgings, fire, candell, and all other necessaries, viz., from Thursday before their appointed day of preaching until Tuesday morning following." And this provision was continued in their hands to administer by special orders of the Parliament in September, 1642, and May, 1643. Malcolm tells us that the fund amounted to 1,770*l.* besides rent-charges of 44*l.* 6*s.* 8*d.*; and that the stipend, formerly 45*s.*, was subsequently reduced to two pounds. After the Fire of 1666 the sermons were preached at St. Catherine Cree Church, then at Guildhall Chapel, and St. Mary-le-Bow, Cheapside, as appears by the Harl. MS. in the British Museum.

We have already alluded to the fact that persons desirous of securing good seats, or any seats at all, at a popular preacher's sermon, had to send one or two servants to keep them. Now we have been so fortunate as to discover a very interesting item in the will of an old citizen of London, not only confirming our assertion, but illustrating the fact of certain questionable practices of paying for these seats in a very marked manner. A John Dunster, who died in 1625, gave to the Dean and Chapter of St. Paul's 100*l.*, upon trust, that they shall, "within the space of one yeare next after my decease," take such steps to prevent in future "the gathering of monie for seates upon the formes at Paules Crosse in the tyme of prayer and sermon," whereby "great disquiett and disturbance is made to audients." And should the said Dean and Chapter fail to carry out the order "for the avoyding of the said gathering for seates, then I give the said sum of 100*l.* to my son John Orlisbeare." Whether the legacy went to St. Paul's or to the testator's relative we have no records to prove, but the note is curiously suggestive of similar transactions in this nineteenth century, where seats are more comfortable, and people more desirous probably of running after a "fashionable" preacher than listening to a more homely and sensible although a less popular and "patronised" disciple of those of yore at Paul's Cross.

Fall in France.—A terrible accident took place on Sunday last at Montmartre. The scaffolding of a house in course of erection fell, carrying with it an unfinished wall, and burying nine workmen in the ruins. Four of the men were killed on the spot, and the remaining five are maimed for life.

LARGE AND SMALL TOWNS.

EVERY part of England and Wales, except the metropolis, is placed by the Public Health Act under a local sanitary authority, either urban or rural. It is with the urban populations only that we are now concerned. The Public Health Act applies to more than 900 towns, varying in population from 1,000 to 500,000. Whether we might prefer to call a place of 1,000 or 2,000 inhabitants a village or a town, it will be more convenient to call every place a town which has an urban sanitary authority under the Public Health Act. The local authorities of towns are either corporations, constituted under the Municipal Corporations Act; Improvement Commissioners, constituted by special Acts of Parliament applied for by the inhabitants of towns; or Local Boards, so called, which are constituted by provisional orders of the Local Government Board, and which are applied for by the inhabitants, and afterwards confirmed by Acts of Parliament.

The business of every local authority consists of two parts, two kinds, or two classes,—the necessary and the convenient. In the first class are included those things which are necessary to the health of the population, such as a supply of water for use, and drains and sewers to carry it out of the town again after use; healthy dwelling-houses and workrooms; wholesome meat; and baths and recreation grounds; indeed, all those things which constitute the sanitary necessities of a town population. In the second class are included those things which are for the convenience of the inhabitants, such as good roads and footways, sufficiently wide and unobstructed, public buildings, markets, abattoirs, the lighting of the streets, police regulations, prisons, and other things which we cannot well do without, although they may not be absolutely necessary; and, *sine qua non*, there is the very important business of providing the means of paying for what is necessary and for what is convenient. Whether the town be large or small the local authority have to attend to all these things, and yet in the application of a Public Health Act to towns there is a great difference in the requirements in that respect between large and small towns. Excepting the metropolis, the Public Health Act applies to all towns, both large and small; but the circumstances of large towns differ much, essentially, from those of smaller towns, and it does not seem possible to do justice to both under one Act. The provisions of the Public Health Act are very useful as far as they go, to the smaller towns, but they do not go far enough for the requirements of these, while in the large towns many of its provisions are not suitable to the circumstances, and some which would be useful are not contained in this Act.

The provisions of an Act which would be very salutary in their application to the smaller towns if applied with the full force which is desirable in the interest of the public health, are stultified by this proviso and that, to make them acceptable to the authorities of the large towns. Nevertheless, these resent the application of the Act, and in their hands it becomes almost a dead letter, or is applied very unwillingly; and the resentment of this interference in sanitary affairs leads to opposition to proposals of the Government in other affairs which would probably be advantageous to the country at large without doing any harm to local interests, and which, but for the major offence, would probably not be opposed by the local authorities. The power and influence of the corporations of large towns are very real and very great, and they are made felt by the Legislature to the disadvantage of the smaller towns, which really need the help of such a law as the Public Health Act, or such as it might be if not trammelled with the necessity of meeting the objections of the authorities of the large towns to its provisions in their full intent and meaning. In the councils of the large towns there is a miserable feeling of hostility to any interference of the central Government in affairs which they consider to belong wholly to them, including sanitary affairs; although it must be said that these are not of merely local bearing, but have influence beyond the local boundaries, and have, indeed, an influence for good or for evil on the general welfare of the country. As long as this feeling of hostility exists it hinders the carrying out of sanitary measures with spirit and with a full recognition of their benefit. The benefit of sanitary works is not palpable, as works of convenience are, although capable of proof, no doubt, and in some instances it has been proved; but generally proof is not sought for,—indeed, it is discouraged, as if those who are able to prove the truth might prove more than would be convenient, or were dishonest, or at least exaggerate their statements in order to make out a case for private ends. How can the health of a town be established or maintained under these circumstances? It would be better to let the large towns go free, and throw the responsibility upon the local authorities of making what laws may seem good to them, rather than continue a semblance of authority on the part of the central government when there is none in reality. The local authorities of the large towns,—or of the largest towns, let us rather say,—are sufficient in, of, and for themselves. They have a complete official organisation, sufficient for all purposes, and they are for local self-government in its entirety, and against any interference, assistance, or advice of the central government or any department of it, whether the head of the department move with the politics of the time or remain permanently in office.

But the case is very different in the small towns. They have not the means, even if they have the will, of carrying out the sanitary business of the town in a manner satisfactory at once to the ratepayers and to the demands of the public health.

Dr. B. W. Richardson says, in his treatise on a "Ministry of Health," that "whenever the question of legislative procedure is brought forward in England, we have to consider in relation to it two distinct orders of mind,—the centralising and the self-governing." But we should rather say that what we have to consider is not distinct orders of mind, but the distinction between the circumstances of the large towns and those of the smaller towns. In the large towns there is a good deal of public spirit, and some emulation amongst them, to establish and maintain a high standard of public health, and it is the pride of place and sense of power which make them impatient of any interference of the central government. The same feeling exists to some extent in the smaller towns also, for towns in their habits follow towns, but in the small towns this feeling has no foundation in reason, and if the example of opposition to the authorities of the large towns were got rid of, there would be, we believe, in the smaller towns little or none of this unreasonable opposition to the legislative procedure referred to.

Should not, then, some of the largest towns,—even as the metropolis already is,—be excluded from the operation of an Act the provisions of which are more suitable to the smaller towns than to them?

The question arises, in the first place, how many and what towns ought to be excluded. It might well be thought on a first consideration of the subject that towns graduate pretty regularly in size and number, from small to large; and if that were so it would be, indeed, difficult to draw any line which should separate the great from the small; but that is not so in fact.

If we take the urban sanitary authorities, stated in Knight's "Local Government Directory for 1879," which, though not accurate, may enable us to arrive at the approximate numbers of people in towns in England and Wales, we find them to be as follow:—Beginning with places of 1,000 inhabitants there are 447 urban populations under 5,000 in number. The aggregate population of these is 1,290,000, and the average 2,884. There are 247 small towns of 5,000, and less than 10,000, inhabitants, the aggregate population of which is 1,673,000, and the average 6,772. There are 170 towns of 10,000 and under 30,000, the aggregate population of which is 2,782,000, and the average 16,336. If we proceed with towns of 30,000, and under 60,000, we find 41 having an aggregate population of 1,700,000, and an average of 41,467. Of 60,000, and under 100,000, there are 11 towns, the aggregate population of which is 835,000, and the average 75,900. From 100,000 to 200,000 there are 11 towns, having an aggregate population of 1,630,000, and an average of 148,300. Above 200,000, there are 5 towns the aggregate population of which is 1,898,000, and the average 379,600.

These include all towns in England and Wales, except the metropolis.

It will be found, beginning with places of 1,000 population, that there is a slowly gradual increase in numbers of population up to about 10,000; then that the population increases in a higher ratio than the number of towns, up to about 30,000; above that number, the incr is quicker; and above 100,000 quicker There are evidently here very extreme circ stances, which do not advance at all gradu but seem to demand consideration in—say t —groups of towns. Of those of more 100,000 population there are sixteen, contai a population of nearly four millions. Of t of less than 100,000, there are 916, containi population of more than 8,000,000. Of th there are 694 towns of less than 10,000 po tion, containing about 3,000,000. Between two extreme divisions of 10,000 and 100 there are 170 towns of from 10,000 to 30, 41 from 30,000 to 60,000; and 11 from 60 to 100,000.

These three great divisions, then, would sta thus:—

1. 694 towns under 10,000 population
2. 222 from 10,000 to 100,000;
3. 16 above 100,000 population.

If, now, the State gave up all interferenc sanitary affairs in these sixteen large town it probable, or even possible, that the statis the public health would derogate from wh is now? It is hardly possible that it coul so, so little is it which is now effected un existing legislation. It would probably be s cient for the Government to procure from large towns a record of events; a perio statement of the sanitary condition of the t from the medical officer; and a statement by engineer of works done and in progress, lea the conduct of the business wholly to the L authorities, both in its inception and acc plishment.

To the towns of the middle division the sent Act might apply as it stands. In the s towns of, say less than 10,000 population, central government should have direct co to this extent, viz., that for a number of to the aggregate population of which amount 100,000 or thereabouts, there should be a m cal officer of health and a superintending e neer, who should be consulting officers. In town there should be a resident engineer, d may be called the surveyor if thought desira although that term will soon become obso for this office, and the more proper term, e neer, substituted; and an inspector, who sh be the representative of the medical officer; inspector and the resident engineer being intimate communication, and being the ex tive officers by whom all sanitary work in town would be done; who would have no oth communication with the local authority, would act under the general instructions of medical officer and the superintending engin

These two would attend the meetings of several Boards in their district; would ad with them as to what, if anything, might necessary to be done; and from these officers all orders would proceed; and t would be responsible to the Local Governm Board that everything which would be d would be necessary to the public health.

The ratepayers could have no better pro tion than that, while the canons of the pu health would be duly observed.

Every one of these officers should be p directly by the central government, and not of the local rates. We are not without ex rience of the results of permissive sanit legislation in small towns, and without su formula of this kind, rigidly adhered to, th is, we think, no hope of making the benefit sanitary work palpable, and unless that done it will never be popular, and until it i it cannot be properly carried out so as to come of real value to the nation.

The question arises in its due place,—w things are necessary to be done to effect object desired? A ministry of health,—is justify its appointment at all,—must be able decide without question what is necessary every case which comes before it. No minis would sanction what is unnecessary, and sanction of that which is necessary would be once a satisfaction and a protection to the ra payers. Whatever would be done would be d well, although in many cases little might required; but the great thing to be brou about is the certainty that that which would done would be necessary, and would produce its operations a full recompense and benefit the ratepayers.

At present the local authority of each sm town think they ought to have local self-gove ment as well as the large towns, and the co sequence is that when anything at all is do there is no certainty that it is necessary, wh

that is so is left undone, the result being
sfactory alike to the ratepayers and to
mands of the public health.
did not intend to touch upon rural sani-
uthorities, but inasmuch as there are many
towns in the rural sanitary districts,
than some of those constituted urban
ts under local boards, and surrounding
or being near them, it would be proper
he rural sanitary authorities should have
ivileges of consulting, unofficially, the
ief sanitary officers we have named, and
ying them for their services on a fixed
of charges. It would not be compulsory
rural authorities to employ them, but it
be very advantageous to them to have
r own neighbourhoods gentlemen of their
cations and authority.
y people have no true conception of the
of things in small towns. They are so
that, acting alone, as they do, the local
ities can do nothing effectually. No
persons at all are really desired, and in
cases none are employed, except those
ppointment of whom is made imperative
Act. Official reports of the needs of the
tants are inconvenient, and the local
ities of these small towns have no suf-
public spirit to demand them, although
re made occasionally to save appearances
ake the Local Government Board believe
omething is being done. Do the inhabi-
of a small town, having outgrown in
rs the sufficiency of the ancient and
l springs of water, and defiled that in the
l beneath their feet, need water, and is it
ed that there ought now to be procured a
nt supply? Does the refuse of that little
they can procure lie about the thresholds
houses for want of drains to carry it off?
he houses, in consequence of both these
in a populous place in a generally dirty
ion? Have speculating builders run up
lly unhealthy houses? Where is the
al remedy for these things? There is
t present with any certain action.

COAL-MINES.

have now lying before us a newly-pub-
work, entitled "Coal-mines Inspection:
story and Results."* It contains a great
f interesting and useful matter trans-
d from the Reports of various Commis-
Acts of Parliament, and other documents.
s a literary work, it will not stand exami-
for the matter collected is put together
without method or system. Starting
he condition of the colliery population
ssly to the present century, we come down
ntemporary events through a mass of
put together, as we have said, without
oper sense of arrangement. For example,
e 74 we find some observations upon the
of explosions which took place in the year
specially with reference to one at the Jarrow
y; then, suddenly, without any break of
raph, we are on the succeeding page told
the way in which, in some cases, women
still employed in underground workings;
the bottom of the page we have reached
bject of strikes. In such books as this,
l arrangement is most important; and
n only attribute the muddled character of
ork to hurry on the part of the writer.
put into a book all the materials which
s done implies much industry on the part
author; and the fact that we are supplied
n index shows that Mr. Boyd does not wish
k the task which he has undertaken.
will endeavour, however, to touch very
upon a point or two which are apparent
nexion with collieries which may interest
aders at the present time, and for these
s no lack of material in this book.
question of inspection is, perhaps, the
noticeable of these, because it shows the
ete change in public opinion which has
place during a comparatively short period
e, and how completely the idea of the
of colliery owners to conduct mines on
own principles and their complete irre-
bility has been broken down. The first
hat inspection was mooted was when Lord
y (now Lord Shaftesbury) brought in a
n 1842 to prohibit the labour of women
ground and to restrict the labour of boys.

*l-mines Inspection: its History and Results. By
Boyd, F.R.G.S. London: W. H. Allen & Co.

One clause made provision for the appointment of two inspectors to visit the mines and make reports thereon. But this was not subterranean inspection, for said Lord Shaftesbury, "as for subterranean inspection it is altogether impossible, and, indeed, if it were possible it would not be safe." The Bill in question became law, and inspectors were appointed in pursuance of the provisions of the Act. But in 1846 a petition was presented to the Government of the day by a number of colliers asking them to appoint inspectors of the underground workings, and on the 16th of June, 1847, Mr. Duncombe introduced a Bill with this object into the House of Commons. It was characterised by the champions of the colliery interests as "most ridiculous," and Mr. Duncombe was for a time unsuccessful in his efforts. But the subject underwent long debate and investigation, and when in July, 1850, Lord Carlisle introduced a Government measure upon the matter, it met with a great deal of opposition. Thus it was characterised by the Marquis of Londonderry, the chief champion of the coal proprietors, "as the most mischievous and unjust measure that could possibly be imagined"; and Lord Brougham, carrying a proper principle in a wrong direction, called it "an unjustifiable interference with the rights of labour." Passed, however, the Bill finally was, and the "Act for the Inspection of Coal-mines in Great Britain" became law on the 14th of August, 1850. By it the principle that it is the duty of the Government to watch over the working of the British coal-mines was firmly established, and it became the basis of all the subsequent legislation on the subject. That it has proved the panacea for the many lamentable accidents which took place in collieries from time to time, as some of its supporters expected, has been clearly proved not to be the case; but that it has been a useful measure no one can possibly doubt, and one which has not only benefited the workers in, but the proprietors of, the mines. For improper working for the sake of economy is almost certain, sooner or later, to end in a great disaster.

"It is an ill wind that blows no one any good," says the proverb, and we may point to the great calamity at the Hartley Colliery, in the beginning of the year 1862, as an illustration of this saying. For it was in consequence of this accident at this pit that an Act was passed by the Government forbidding collieries to be worked without at least two exits. This, indeed, is an instance of the manner in which colliery legislation, as it may be termed, has taken place. It has been all more or less piecemeal in its character. An event here or an event there has caused the attention of the Legislature to be directed to some particular point, and thus an Act of Parliament appears in the statute-book directed to the matter. But glancing back over the past years of the present century, it is impossible not to perceive the rapid strides which the moral and physical well-being of the colliery population of this country has undergone. Women's labour has been stopped and boys' has been restricted, inspection has been acknowledged as a principle, the truck system has been abolished, education has been vastly improved, and co-operation has set in amongst the men. In some respects, we willingly admit, this latter fact has not been in all its aspects satisfactory, for we have seen the miners acting in union often wholly unmindful of the circumstances of the time, the elementary maxims of political economy. But as we say, taking the present century as a whole, no one can doubt that this portion of the English population is in a far happier and more prosperous state than it was eighty years ago, and by so much has the well-being of the country in general been increased.

The Bristol Builders' Strike. — It is reported that the masons on strike are succeeding in sending back to Manchester some of the workmen who have been taken to Bristol by the employers. The men have written to the employers asking if they wish to meet them to consider the present position of the dispute. The members of the Master Builders' Association have replied that if the masons on strike have any new basis on which to suggest a settlement they would be glad for them to submit their views in writing, and if the employers considered it desirable they would arrange an interview between them and the representatives of the men. The men, however, have declined to make any concession, or to change their views as to the position they have taken in the dispute.

SHONE'S PNEUMATIC SEWERAGE SYSTEM.

On Saturday, the Lancashire and Cheshire Association of Sanitary Engineers and Surveyors held their ninth district meeting in the Town-hall, Wrexham, under the presidency of Mr. Edward Pritchard, C.E., vice-president of the Association, upon which occasion the mayor, Mr. Isaac Shone, explained the principle and working of his pneumatic sewerage system and patent ejector.

His Worship proceeded, by the aid of [diadiagrams representing an ideal station, to point out the principal features of his invention as follows:—"The 'ejector' consists of a hollow, closed vessel, of spherical, cylindrical, or other convenient form, so placed as to allow the liquid to flow into it. An air-compressing steam-engine, turbine, or waterwheel, is required to produce the necessary air-pressure, and this engine could be applied to work any number of these ejectors, at any distances away from the engine. Inside the ejector are two small cylinders, each being open at one end, and closed at the other, termed the 'bell' and the 'cup;' the latter is always filled with the sewage. The cup and bell are connected together by a rod, and a small rod passes from the upper one,—the bell,—through a stuffing-box in the cover to a lever which actuates a small slide-valve, governing the action of the automatic piston-valve, so as to alternately admit compressed air to the ejector, and let it escape. When the ejector is nearly full, the liquid, as it rises, encounters the bell, thereby drawing back a small slide-valve, admitting air-pressure to one end of the automatic piston-valve, the outer ends of which act as the motive piston, the middle portion acting as the valve regulating the inlet and the exit of the compressed air. The piston-valve being thus moved over, opens the ports admitting compressed air to the ejector. The compressed air thus entering forces the sewage out through the delivery-pipe, a ball or other valve being placed both at the inlet and outlet, to prevent the back flow of the liquid. The cup and bell arrangement being balanced, and the weight of liquid in the cup being neutral so long as it is submerged, retains its position until the vessel is nearly empty, and the liquid begins to pass below the cup. The dead weight of the liquid in the cup then acting downwards, pulls the cup and bell down, reversing the small slide-valve, and so, shooting the piston-valve over to the opposite side, shuts off the compressed air, and opens the ejector to the exhaust. The compressed air at once rushes out, allowing a fresh charge of the liquid to enter by gravitation, and the action is repeated. It will be seen from this that the apparatus is extremely simple, certain, and positive in its action; and that it is scarcely possible for it, under any circumstances, to get out of order. Large quantities of sewage can be dealt with, and yet the only controlling mechanism consists of a very small piston, making an easy, silent stroke of only 2 in. or 3 in., and not more than once in a minute at the most, by which a practically frictionless, absolutely unwearable and inexhaustible air-piston is applied to the surface of the sewage, searching out and following down the sewage from every corner of the ejector, and this takes the place of the ordinary heavy pump bucket and ram, with its many strokes per minute, all its valves, clacks, and other moving parts,—its great loss of power by friction in the cylinder, glands, &c., its waste in clearances, valve passages, &c., its heavy wear and tear, and its great liability to get out of order. A drawing exhibited represented a section of a sewage-collecting station. The gravitating sewers were shown discharging their contents into a small reservoir, and in order to intercept large floating bodies, such as bungs, sticks, &c., a trap is provided at one end of the reservoir, the floating bodies being kept back by a diaphragm dipping into the sewage, from which they can be removed as occasion requires, through the shaft above. The trap may be considered as a refinement of the system, not actually necessary, as in the practical trials at Wrexham no difficulty has been experienced from these bodies passing through the ejector. An iron pipe, called the 'inlet-pipe,' is provided to convey the sewage from the reservoir into the ejector. Behind the ejector is the 'discharge-pipe' therefrom, through which the sewage would be ejected into the iron 'sealed main sewer,' or to a gravitating

sewer above. The compressed air main is near the top of the figure, and the branch 'air supply-pipe' is in the centre of the ejector chamber. The air escaping from the ejector after each discharge of sewage would pass off by the 'exhaust-air pipe' leading into the reservoir or gravitating sewer, which would be thoroughly ventilated thereby. The sealed main sewer, into which the sewage would be ejected, may lead directly to the outfall, following the irregularities of the ground at any convenient depth,—say 3 ft. below the surface, or into a gravitating sewer. It will be understood, from the foregoing, that complete control is exercised by this system over the gradients of the gravitating sewers, as each 'ejector' district would be so arranged as to extent that the sewers therein would not be of such length as to require deep and expensive cuttings to give them their proper inclinations. Again, it will be seen that the moment the sewage has been discharged from the ejector into the sealed main or gravitating sewer, all communication, both with the street and house sewers, as well as with the atmosphere of the town, is completely severed. By no possibility, therefore, it is maintained, can the smallest volume of sewer gas find its way back from the sealed sewer along the gravitating sewers leading into the ejector. Indeed, exhalation of all kind from the sewage is reduced to its minimum, owing to the good gradients of the sewers leading to the ejector, and as any desirable speed can be given to the expulsion of the sewage into and along the sealed sewer by varying the air-pressure, the sewage will be delivered at the outfall in a fresh condition, and consequently of more value, in a manurial point of view, when applied to land."

SANITARY ASSOCIATION OF SCOTLAND.

THE fifth annual meeting of this Association was held in Dundee on the 25th ult. Mr. William Mackison, Burgh Surveyor, Dundee, the president, occupied the chair, and was re-elected president for the ensuing year. Mr. Fergusson was elected vice-president, and Mr. John Shaw was re-appointed secretary. It was resolved to hold the next annual meeting at Stirling on the third Wednesday in June, 1880.

The President, in the course of an able and interesting address, in which he reviewed the progress and work of the Society, said,—I am not satisfied that the annual meetings are in themselves sufficient to maintain a salutary interest in the requisites of public health amongst the members. I am rather disposed to think that we must organise district quarterly or periodical meetings, such districts being carefully considered, each having a small committee with a chairman or convener to control the business. These meetings need not be confined to one town of any district, but might be held at different convenient places throughout such district, so as to give the greatest possible opportunities to the several members meeting together and discussing questions of sanitary importance; of considering difficulties occurring in the discharge of their duties; and in reading papers bearing on the more efficient and desirable manner of securing the good sanitary condition of their several localities, and of the country at large. Working thus from a number of centres, the operations of the Sanitary Association would be felt to have more of a national character, and be of more practical value than at present; and during this session I sincerely trust that a decided step will be taken in this direction. I have always held that public health is a matter that concerns everybody, and therefore a matter about which every person should be concerned, and should concern himself; and hence when I speak of districts being formed over the whole of Scotland, and these being looked after by different committees, I expect that in every district there will be a large number of gentlemen who take an interest in the good sanitary condition of their locality that will join an Association and take an active part in its work. I am glad that last year the door of admittance was made wide enough to take all such in; and I am sure of this too, that the members will receive with delight an accession to their numbers of all those who are actuated by desires for the furtherance of anything calculated to make our fellow-men more comfortable in their homes, more exempt from disease, more elevated in their habits, and more certain of length of days.

Mr. Kenneth MacLeod read a paper on "The Neglected Powers of the Public Health (Scotland) Act." He observed that the first and greatest neglected power was that shown by many Local Authorities who did not appear to have yet in any way made a move in the adoption of any part of the Act at all. Of 887 Local Authorities, only 645 were reported in the Board of Supervision's return, leaving 242 districts in which no money was expended on sanitary supervision. In 1874 only 658 sanitary inspectors had been appointed; but inspectors of poor in many places had the title, but neither the duties nor the pay, and in these districts the Act was a dead letter. Another neglected power was the erecting of hospitals for the isolation and treatment of patients suffering from infectious diseases. In the year from May, 1874, to May, 1875, seventy-five districts in Scotland reported outlays for hospitals, and only fifteen additional had been reported since. In the county of Lanark, the most populous in Scotland, there were thirty-seven districts in which the powers of the Act ought to be carried out. Five of these districts, with populations numbering from 16,000 to 34,000, composed chiefly of mining and iron-working classes, among whom infectious diseases greatly prevailed, were till recently without hospital accommodation of any kind, and only one had since been provided. Nine districts, with populations numbering from 7,000 to 10,000, were equally deficient. Now the want of these places meant the treatment of small-pox and fever in the small crowded dwellings of the sufferers, and treatment under such circumstances meant the multiplication of centres from which death radiated. Twelve populous districts in the neighbourhood of Glasgow which had no hospital accommodation, placed in contrast with Glasgow which had such accommodation, showed the death-rate in one quarter of a year, and that the quarter when this dreadful disease was at its worst, to have been 3½ per cent. of the total deaths; while in all the other districts which had no hospital accommodation it was higher, and in six of them reached the portentous heights of 23, 24½, 28½, 30, 33, and 34½ per cent. No Local Authority should allow the power conferred upon it to erect hospitals for the treatment of infectious diseases to remain unused. In further illustration of evils arising from neglect in adopting the powers of the Act was that of furnishing proper water-supply in populous districts. The power to obtain that unspeakable blessing had been in the possession of every Local Authority during the past thirteen years, and within all that long period only 129 districts out of 887 had reported outlays on that account. The powers to lay down a proper system of drainage had been neglected to a lamentable extent in many rural districts. Only 130 districts had reported movement in this direction.

Mr. John Shaw, the secretary, gave an address entitled "A Plea for Sanitary Instruction in Schools"; and Mr. G. D. Macdougald, public analyst, Dundee, read a paper on "Sanitary Science and Chemical Analysts."

After some discussion, the meeting terminated, and the members, after visiting the Public Baths, dined together in the Queen's Hotel.

THE DERBY FREE LIBRARY AND MUSEUM.

ON Saturday, the 28th ult., the new Free Library and Museum building, Derby, was formally, and amidst great public rejoicing, presented to the town by Mr. M. T. Bass, M.P., the munificent donor of the entire structure and fittings. The foundation stone of the new building, which stands in the Wardwick, on the site of the old library, was laid in October, 1876, by the donor. The architect of the building is Mr. R. Knill Freeman, of Bolton and Derby, whose designs were selected in competition. The plan is as nearly as possible in a square. The principal entrance is placed in the centre of the main front, and has a spacious hall, opening by a glazed screen and folding doors into a corridor. The room at the end of the corridor to the left of the entrance is intended for use as a ladies' reading-room, and is separated from the general news or reading-room by an open wrought-iron screen. The corresponding room at the other end of the corridor is for students attending the reference reading-room. On the opposite side of the corridor, and occupying the central portion of the building, is placed the lending library, 56 ft. by 24 ft., and carried up to the full height of the building, nearly 40 ft., having a small gallery carried round with bookcases to it. The lighting of this apartment is effected by a lantern in the roof, and additional light procured by the windows between the bookcases at the back. The entrances for the public are near each end of the corridor. The floor of the library within the counter is raised some 1 ft. 4 in. above the other floor, in order to give the librarian and his assistants better facilities for the thorough supervision of the adjoining departments. The division between the library and the main corridor, and also between it and the reading rooms on either side, is of timber, with the upper portions glazed in lead work. At the right of the library is placed the reference reading-room, 56 ft. by 24 ft., having an additional large semicircular bay in the centre of one side, for the use of students. It is lighted by large windows at the side and end, and the artificial lighting is by large globe-lights manufactured by Benhams. The newsroom is placed on the left of the library, and is similar in size and other respects to the reading-room.

A small angle turret is placed at the north side of the building, near the curator's house, having a spiral staircase going from the bottom to the top of the building, and opening on to each story. An entrance to the ground-floor for the librarian's use, is placed on the ground floor, thus giving direct access from his house adjoining.

On the left of the main entrance a small room is provided for a private office for the chairman and secretary.

On the right of the entrance is placed the staircase to the basement. The principal staircase consists of flights of steps opening from the corridor on each side of the hall, and meeting in a central flight from the first to the main landing. It is of Hopton stone, with massive balustrade and massive oak hand-rail, and is of good width and proportion generally. The corridor on the upper floor has been so arranged as to serve as a sculpture-gallery, and is separated from the staircase by an open arcading.

At the end of the upper corridor, to the left of the main staircase, is the curator's room, lighted by a large oriel window. The corresponding room at the other end of the corridor is the committee-room, otherwise called the panelled room.

The museum forms three sides of a square, having ingress and egress at each end of the corridor, thus avoiding any confusion and clashing between people entering and leaving.

With the exception of windows in the circular bays, the whole of the museum is lighted by lanterns and ceiling lights from the top.

The central room at the back of the museum has been arranged to serve as a picture-gallery. The roof is supported on stone corbels at the angles, carved to symbolise the four seasons.

At the north side of the building is placed the house for the curator, and at the south a lodge for the porter, containing, in the basement, the heating arrangements for the museum building.

The style of the building is described as "Jacobean." The front elevation has the entrance-hall carried up as a tower, with octagonal angles, finished with open timber turrets. The central part of the tower is a mass of open timber work. The wings have the roofs hipped back, and the ridges finished with wrought iron ridge-cresting and finials. The space between the tower and wings is arcaded in both stories, but in general treatment is subordinated to the more important parts of the design. Large oriel windows, with splayed angles, are placed in the wings, and a circular one over the main entrance. The exterior of the building is faced with the best Derby pressed bricks, with moulded strings, arches, &c., of Coalville bricks. The dressings, of the windows, turret, &c., are of Stanton stone. Terra cotta is introduced in panels and other places. This has been executed by the Coalville Brick and Tile Company, from designs specially prepared by the architect. All the external timber-work is of oak. The staircases, corridors, steps to front entrance, &c., are of Hopton Wood stone, polished. The roofs are covered with strawberry-coloured Broseley tiles. The glazing of windows and screens in the principal parts is of cathedral glass, of different tints, in lead lights, arranged in geometrical patterns. The internal joiner's work is of yellow deal, painted.

Ventilation has been provided for by the a

pure air in various places, and by a exhaust-shafts to collect and remove ed air. These are carried up into the d terminate in Howorth's ventilators. nd work rooms are placed in the roof ngs. Provision is made in the base- store-rooms, heating-chamber, lava-

lding is set well back from the line of twick, which has been considerably this part, and it is enclosed by a sub- one curb, surmounted with wrought- gs.

eral works have been executed by the firms:—

eral contractors for the building were . Woods & Son, of Blackburn, Derby, h. The ornamental glazing has been done vans, of Birmingham; the decoration, e. Best & Lee, of Manchester; the metal lessrs. Freeman & Collier, of Manches- ating by Mr. Crump, of Derby; the ven- d gas-fitting by Mr. Evans, of Derby; ic and other scientific appliances, by of Derby; the carving by Messrs. Earp, n and Manchester; the marble con- rs in corridors, by Mr. Oppenheim, of ar; and the marble mosaic in the hall, by e, of London and Paris. The bricks plied by Messrs. J. Kent & Co., of he iron girders, by Messrs. Fowke & entilating apparatus for the museum . Handyside & Co.; the iron palisading rand, by Messrs. Handyside & Co.; s by the Derwent Foundry Co.; le chimney-pieces and hearths, by kler, who also executed all the ing and models for plastering. -turning throughout the building has e by Mr. Harrison, St. Mary's-gate; cases, chairs for reading-rooms, and of chairman's room, by Mr. Jones, ace; the oak tables for reading-room supplied by Messrs. Saunders, Abbey- e fitting up of the committee-room, ewspaper-stands, has been executed . Cochrane & Bean; the fitting up of r's room by Messrs. Topham & Ham- he cases in the museum have been made Sage, of London. Mr. Cooling, Mile- ry, Derby, laid out the grounds and he necessary planting.

ole of the works have been carried out lesigns and under the superintendence hitect.

ONGRESS OF THE BRITISH HÆOLOGICAL ASSOCIATION.

hirty-sixth annual meeting of this n will be held in Great Yarmouth day, August 11th, to Wednesday, the sive. The following are the heads of mme:—

August 11th.—Opening meeting at -hall; reception of the President and by the Mayor and Corporation, and by Lord Waveney, president of the of the inaugural address; after which ipal regalia, ancient deeds, charters, will be inspected; under the guidance v. J. J. Raven, D.D., the members and ill then perambulate the town, in- the old town walls, towers, ancient ypts, &c.; a public dinner will be held ar Hotel, at seven o'clock p.m., the in the chair.

Visit Martham, where the church will ed and described; return by train for r the inspection of recent excavations, e to the site of the Roman camp and s; afterwards to Filby Church, then ham, where luncheon will be partaken) p.m., and at 2·30 p.m. the party will o Horning for the inspection of the e Great Abbey at St. Benet's-at-Holm; neeting at Yarmouth.

Visit to Burgh Castle, which will be and described; then Fritton Church, 's Priory, and Haddiscoe Church, and Somerleyton, the residence of Lady after inspecting the hall and grounds, will proceed to Lowestoft, where St. 's Church will be visited; evening at Yarmouth.

Visit Harleston, Wingfield Castle and reception by the President, Lord , at Wingfield Castle; to the Abbey, mham, the "Old Minster," and Roman lixton Hall; afterwards Bungay, and thence, after inspecting churches, &c., to Great Yarmouth; evening meeting.

15th.—Visit to Darsham. The church will be inspected, and then drive to Dunwich, where the ancient ruins, &c., will be inspected and described; leaving there for Blythburgh, where the church and priory ruins will be examined; and at 1·30 p.m. the party will proceed to Southwold. Luncheon will then be partaken of, and the church visited and described. Evening meeting at Yarmouth.

16th.—Yarmouth Day.—Examine the parish church of St. Nicholas and the Benedictine Priory, which will be described and commented on. Afterwards the party will visit the Rows, the ancient toll-house, and other objects of antiquarian interest in the town. After luncheon proceed to Gorleston; visit the church and remains of the priory; returning to the residence of the Mayor at Ferryside, Southtown, for an afternoon reception by the Mayor and Mayoress. Closing meeting at the town-hall at night.

On Monday, the 18th of August, and two following days, the Congress party will take up their quarters at Norwich, where, under the guidance of the Dean of Norwich, the cathedral will be examined and described, and the churches and old buildings, with other places of interest in and about the ancient city, under the guidance of resident clergymen and members of the Norfolk and Norwich Archæological Society, co-operating with the British Archæological Association, will be visited and commented on.

ANOTHER IMPROVEMENT IN FARRINGDON-STREET.

THERE are few streets in the City that have undergone greater transformations during the last quarter of a century or so than Farringdon-street and its neighbourhood. The abominations that existed upon what was once the course of the partially navigable river Fleet and its purlieus have long disappeared, or are fast disappearing. The Congregational Memorial Hall has been built upon what was part of, or very near, the site of the Fleet Prison, of evil memory. Immediately adjoining the Memorial Hall, on the south side thereof, a business house is almost completed that does not discredit the situation, or show incongruity in its rather trying juxtaposition to the loftier and more imposing structure.

The warehouse referred to is to be occupied by Messrs. Alexander Pirie & Sons, of Aberdeen and London, the well-known paper manufacturers. In dimensions the frontage is 54 ft. in length; the height from the ground line to the top of the parapet is 70 ft.; the mean width of the ground built upon is about 70 ft. The style may, for want of a more precise term, be designated City Classical. The front is of red brick, liberally relieved with cornices, strings, and dressings of Portland stone profusely carved. The front is in three bays with four principal pilasters from the ground to the parapet, where they are crowned with carved vases of Portland stone. The central bay, which includes the principal entrance, is extra enriched. The recessed doorway has a segmental head and a pediment filled in with carved work; over this, between the first and second floors, is a circular window, and, above it, a corbelled semicircular balcony projected from the front of the second floor, all this portion of the building being in stone. At each end of the frontage are pairs of oak ten-panelled doors, the central panel horizontal. These doors are square-headed, as are also the three-light windows, which have mullions and transoms, of the first and second floors; the windows of the third floor have segmental heads; the range of the fourth floor, closely coupled, are semicircular; the fifth floor is lighted by dormer windows, the centre one lofty, in stone-work, and decorated. In addition to the enrichments already referred to, the others are, the cornice and entablature between the ground and first floors, the work in stone between the third and fourth floors, with the principal cornice and parapet. As is usual in warehouse construction, the largest quantity of light possible is provided, and the greater part of the area in the principal elevation is accordingly of polished plate glass.

Internally the construction is, as regards the floors, of iron girders supporting joists 11 in. by 3 in., laid 12 in. apart. The rooms are cased and ceiled with match-boarding, and have 2 in. beads in the angles. One special reason for adopting this style of finishing the walls and ceilings may probably be that Messrs. Pirie are large manufacturers of papers of very high qualities that would be injured by the exhalations from plastered walls. There are two flights of stairs from bottom to top of the building; the treads are of teak, 1¼ in. thick, with half-round fronts. The curbed roof is covered with countess slates.

The building has been designed by Mr. George Vickery, architect; Mr. F. Dashwood has acted as clerk of the works, which have been executed by Mr. Laurence, of Wharf-road, City-road, contractor.

VALUE OF CITY PROPERTY.

Two large buildings, recently erected at the corner of Charterhouse-street and Ely-place, consisting of shops, with suites of offices above, were offered for sale at the Auction Mart, last week, by Messrs. Fox & Bousfield. The property is held under lease from the Corporation for eighty years, at a ground-rent of 120*l.* a year; and it was stated that the annual rental of the shops and offices amounted to 600*l.*, leaving a profit rental of 480*l.* per annum. The auctioneer dwelt upon the great value of property in the immediate locality, and pointed to the fact that almost all the land in the neighbourhood, including the Holborn Viaduct surplus land, was now disposed of and built upon, and that no further leases on ground-rents were to be had. Commencing at 2,000*l.*, the sum of 3,000*l.* was reached for the property, at which it stood, when the auctioneer announced that, although very greatly below its value, it must be sold for the sum offered, if there was no further advance, and none being made, the property was knocked down for 3,000*l.*

SUBURBAN BUILDING LAND IN THE AUCTION MARKET.

THE HANWORTH PARK ESTATE.

HANWORTH PARK, situated in the parish of Feltham, on the London and South-Western Railway, and stated to be within about half an hour's ride from the metropolis, is being laid out for building purposes, and about 40 acres of the park, divided into ten lots of building land, were offered for sale by Messrs. Farebrother, Ellis, & Co., on Thursday, the 3rd inst. For the first lot, containing a little over four acres, 1,600*l.* was offered, being at the rate of about 400*l.* per acre. The offer not being accepted the lot was withdrawn, as were also the following lots, for which prices varying from 300*l.* to 400*l.* per acre were offered. The aggregate sum offered for the ten lots was a little over 12,000*l.*

PRIZES, UNIVERSITY COLLEGE, LONDON.

ARCHITECTURE, Professor T. Hayter Lewis, F.R.I.B.A.—Donaldson silver medal, F. Sanders, of Cheshunt. Prize, B. J. Capell, of Weedon.—*Construction, Senior Class.* Donaldson silver medal, R. E. Smith, of Forest-hill. Prize, F. Sanders, of Cheshunt. Certificates, 3. E. Pertwee, of London; 4. B. J. Capell, of Weedon.—*Junior Class.* Prize, A. B. Cottam, of Watford. Certificates, 2. W. Bisiker, of London; 3. W. J. Lauder, of London.

ENGINEERING AND DRAWING, Professor Alex. B. W. Kennedy, M.I.C.E. (Dean of Science).—*Civil Engineering.* Prize, E. C. J. Devis, of Birmingham. Certificate, 2. C. de Verteuil, of Trinidad.—*Mechanical Engineering.* Prize, H. E. Lockhart, of Blackheath. Certificates, 2*. E. C. J. Devis, of Birmingham; 3, *equal*. A. G. Ashcroft, of London, T. W. Weston, of Coalbrookdale.—*Theory of Machines.* Prize, *equal*, T. W. Weston, of Coalbrookdale, *T. M. Teed*,† of London. Certificates, 3. A. G. Ashcroft, of London; 4. A. S. Vowell, of London.—*Surveying.* Prize, W. G. Nottage, of London. Certificates, 2*. H. J. Porter, of Budleigh Salterton; 3*. *H. W. Teed*, of London; 4. H. P. Thomassett, of Walthamstow; 5, *equal*. H. G. Lange, of Trinidad, *T. T. Prentice*, of London.—*Engineering Drawing.* Second year: prize, T. W. Weston, of Coalbrookdale. Certificates, 2. A. S. Vowell, of London; 3. *T. M. Teed*, of London. Third year: certificates, 1. A. G. Ashcroft, of London; 2. John Buchanan, of Dumbarton.

* Obtained number of marks qualifying for a prize.
† Names printed in italics are those of former pupils of University College School.

CITY OF LONDON SCHOOL COMPETITION.

ON Tuesday last the meeting to which we have already referred, comprising more than half of the architects who have sent in designs in this competition, was held at the Cannon-street Hotel, when a resolution was unanimously passed that a memorial be presented to the Court of Common Council expressing satisfaction at the course adopted by the committee in exhibiting the designs, and requesting that the Exhibition might be open *for fourteen days at the least*, and also asking the Court that the various designs might be referred to an independent architect to examine and report on before the final award is made. The meeting was very unanimous, and it was strongly felt that some architect of eminence, whose decision the whole of the competitors would be willing loyally to accept, should report on the designs, more especially as this competition might be a precedent for others.

Mr. Jas. Edmeston has given notice that he will move the following resolution at the Court of Common Council:—

"That before proceeding to determine which design for the City of London School shall be selected for execution, all the designs sent in shall be submitted to the President of the Royal Institute of British Architects, who shall report thereon, distinguishing, in their order of merit, those three designs in which the instructions issued by the committee to competitors have been most efficiently carried out, and that the premiums be awarded accordingly. That for this purpose the mottoes be covered over, and the sets of designs merely distinguished by numbers."

FACTS AS TO THE WATER-SUPPLY QUESTION.

A SILVER medal was awarded by the Society of Arts to Mr. Fredk. Toplis for his paper on "Dividing England and Wales into Watershed Districts," an elaborate essay showing much thought and care. We print a few passages from it which will be found interesting:—

The Quantity of Water necessary.

The quantity actually supplied varies in different towns from 10 to 50, or even 100 gallons per head per day, but there is often a considerable waste. The quantity used in cottages is sometimes as low as two gallons per head, when the water has to be fetched, or five gallons when there is a supply close to the cottage. In larger houses, from ten to twenty gallons per head is used. The average consumption of the manufacturing towns of Lancashire and Yorkshire has been stated by Mr. Bateman to be from sixteen to twenty, or twenty-one gallons, for all purposes.

Experiments made show that not more than ten or eleven gallons per head are actually used for domestic purposes, and the majority of the evidence collected on this subject seems to prove that twenty gallons, or at the most twenty-five gallons, per head per day, ought to be enough for all purposes.

The constant system of supply, properly carried out, is greatly preferable to the intermittent, and will soon, no doubt, become universal. Its introduction has in many towns been attended with a decrease in the quantity supplied, but this does not prove that less is usefully used, if the expression might be allowed, with the constant system than with the intermittent system. The reason for the decreased supply is simply that more care is generally taken to inspect the water-mains and the fittings in the houses, and to see that there is no waste of water. Such, however, is not always the case; as, for instance, in London, where the water companies have in some parts introduced the constant system without any alterations being made in the fittings, the result being that there are cisterns overflowing day and night for weeks together, saturating the soil round the houses. It must be remembered that, while the supply for domestic purposes ought to be sufficient, any waste of water is a disadvantage to the householder and to the community. Under a properly-managed system, the rates, where twenty-five gallons per day is supplied, ought to be less than where the supply is fifty gallons; and if in the latter case half is wasted, it is certainly not true economy to provide fifty gallons per head per day. Again, if the water running to waste enters the sewers, it has in many cases to be pumped up again; and if the sewage is used for irrigation, it is unnecessarily diluted by the waste water, and thus rendered less valuable. If the waste water does not enter the sewer, but penetrates the soil, it produces dampness, leading to discomfort and disease.

The use of meters for domestic as well as for manufacturing supply is sometimes advocated, but it seems to the author unnecessary and unadvisable. If there were a proper system of house inspection, and if the inhabitants in a district were made to understand that waste of water would cause increased cost of supply, and, therefore, increased rates, meters would be unnecessary; and, if introduced, might often lead to an undesirable stinting of the water used in a household. The author, in his calculations, has assumed twenty-five gallons per head per day as the supply required, but thinks that it would be found that twenty gallons would be amply sufficient. He wishes to point out, however, that a much larger quantity than twenty-five gallons per head of the present population is available in each district. Assuming the population of England and Wales, when this scheme is put in operation, to be twenty-seven millions, the quantity required will be 675,000,000 gallons per day; and when this population has doubled, the quantity required, at the rate of twenty-five gallons per head per day, will be 1,350 million gallons per day, or 492,750 million gallons,—say 500,000 million gallons,—per annum.

Quantity of Water available.

The average rainfall throughout England and Wales is generally stated at 32 in. per annum, giving a total fall in the year of more than 27,000,000 million gallons; of this, the quantity given above, as required for a population of 54 millions, is less than 2 per cent. The direct collection of rain by each household for its own consumption has been advocated, but can only be carried out in country districts; and even there rain-water could scarcely be classed as wholesome or palatable, as is shown by the analyses made for the Rivers Pollution Commissioners. The author thinks, however, that, for the use of farming stock and agricultural machinery, rain-water might and should be collected, and has therefore made no allowance for these purposes in estimating the quantity of water required per annum in England and Wales.

In the mountainous districts of the North-west of England and of Wales the rainfall is greatly in excess of the average, and, as the strata are impermeable, a large proportion of it runs off into the rivers and lakes; and the greater part of this water could be utilised, either by making impounding reservoirs, or by drawing off the water from the existing lakes.

In the central part of England, where the ground is of less elevation, and the rainfall not above the average, there is a very large area covered by the trias or New Red Sandstone formation. The Rivers Pollution Commissioners, referring to this, say that there is every reason to believe that vast quantities of hitherto unutilised water of most excellent quality are to be had, at moderate expense, from this very extensive geological formation. The committee appointed by the British Association state, in their second report, that "the area of New Red Sandstone is not less than 10,000 square miles in England and Wales, with an average rainfall of 30 in., of which never less than 10 in. percolates into the ground, which would give an absorption of 1,433,336,000 gallons per square mile per annum." This, over an area of 10,000 square miles, would give 1,433,360 million gallons, which is nearly three times the whole quantity that will be required for England and Wales when the population has doubled. In their third report, in 1877, the committee state that "there is an available daily supply from of not less than 3,600 million gallons per day, remarkably free from organic impurity."

Further to the east is a band of oolitic strata stretching from the north-east of Yorkshire to the south of Dorsetshire. The Rivers Pollution Commissioners say, with reference to this formation, that "the oolites contain vast volumes of magnificent water stored in their pores and fissures; and again, "that the oolites absorb immense quantities of rain-water," and that "it cannot be doubted that a considerable proportion of this could be secured for domestic supply in its pristine condition of purity."

Further east again are the greensands and the chalk, which contain large bodies of water. In the fourth report of the committee of the British Association it is stated that there are 26,687 square miles of permian, trias, oolite, Hastings sand, greensand, and chalk, yielding subterranean waters. That probably four-fifths of this area would yield unpolluted wate would receive not less than from 10 in. to annually, or a quantity, if 6 in. only yielded in wells, of 240,000 gallons per da square mile of surface, and in many dis double this, giving a total in Englan Wales far in excess of that required for dr and manufacturing purposes." 240,000 ga per square mile over an area of four-fif 26,687 square miles, or 21,350 square mile give more than 5,000 million gallons pe The quantity required for a population millions is given above, as 1,350 million g per day.

Further reference will be made to the able supply in giving the details of ea trict; but enough has been said to sho there need be no difficulty in providing and sufficient water supply throughout En and Wales, if only an efficient scheme arranged for utilising the different sour supply.

THE FLOODINGS IN SOUTH LON AND THE HOME SECRETAR.

SANITARY NARRATIVES.

AT an interview which a joint deputa from the Lambeth Vestry and the Wandr Board of Works had with the Home Sec last week, some very grave statements made as to the increasing evils which are su from the constantly recurring floods on the side of the Thames. The object of the de tion was to induce the Government to take steps in the matter, and ask for the appoin of a Royal Commission to inquire into the a inadequacy of the sewers to carry off storm w

Sir H. W. Peek, in introducing the de tion, stated that owing to the defective construction of the Main Drainage sewers o districts of Lambeth and Wandsworth, nea dozens, but hundreds of houses were comp flooded at nearly every great rainfall.

Amongst the speakers was Mr. Mead Wandsworth, who said the whole mat greatly affected the health and comfort large number of the artisan and labouring cl besides other people, that they had resolv do what was possible to bring the matter the notice of the Government. The flo which they complained were getting m every year. In 1877 there were three flood rainfalls, irrespective of the floods arising the overflow of the Thames. In 1878 were in the Wandsworth district 200 flooded; in January 1879, 450; in Ma about the same number; and a short time 440. The medical officer's report on the su stated that in the parish of Battersea, had been flooded last January and Feb nearly all the inhabitants living in the hou flooded were more or less affected by di likely to result from sewage flooding, su typhoid fever. The floods also impregnate houses with deposits of sewage. He that the Wandsworth Board had taken a from the Attorney-General and Mr. E. Cl who recommended them to apply to the Secretary, and they hoped an inquiry wou granted by him.

Several other members of the deputation similar instances of the evil effects of flo the district, and in answer to a question the Home Secretary, Mr. Meaden said the had a correspondence with the Metrop Board of Works on the subject, but coul obtain any relief. Being himself a memb the Metropolitan Board, he had brough matter forward many times. It was treat a matter of expense, but in the Wands district they had carried out local drainage expense of 300,000*l.*, and that had been su mented by about 200,000*l.* more from the pu owners and the public rates.

After some further conversation, the Secretary said they asked him to make inq and to prosecute. He had the power to inquiry, and to prosecute, if he thought fit course, such a state of things ought not to tinue, and in some way or other it ough be remedied. He should not say more tha at present, but should consider the questio

Dundee School of Art.—The annual e tion of works executed by the students o Dundee School of Art has been opened. majority of the exhibitors are day-class p but a few drawings have been contribut the pupils of the evening class.

PENING OF THE BULL POINT LIGHTHOUSE.

new Lighthouse which has been erected
Point, Morthoe, North Devon, was pub-
ghted for the first time on the last day of
nd the lighthouse opened. The money
ed upon the building by the Trinity
exceeds 7,000*l.*, in addition to the light-
and fog-signal. Much discussion and
ondence took place previously to the site
ixed upon, as to whether Morte Stone was
ore suitable spot for the lighthouse. The
Board, however, finally decided that a
use upon Bull Point would not only be
stly, but would be more effective than one
Morte Stone. The contract was placed in
nds of Mr. R. T. Hookway, builder of
rd, and he has completed the work some
efore the time specified in the contract.
uilding consists of a block containing
gs for three keepers and their families, a
gnal-horn, tower, &c.; also an oil-store,
l store, piggeries, and offices. The fog-
which is a very powerful one, is sounded
orked by a pair of caloric engines, manu-
ed by Brown & Co., of New York, but
up and fixed by the fitters from the
wharf. The lantern and light were
factured by Messrs. Chance Bros., of Bir-
am. The light is of the first magnitude,
a six-wick triple flash-light. The tower
Bull Point lighthouse is 30 ft. high, and
p of the lantern is about 20 ft. above the
There is also a low light which shines
h a window of the same tower at a lower
and throws a red line of light along the
ter, clear of the Morte Stone. The whole
works were officially inspected by Mr.
Douglass, engineer, and Mr. T. Matthews,
ant engineer. Mr. George Francis acted
k of the works.

TOWER HIGH-LEVEL BRIDGE AND MR. HENDERSON, C.E.

POPLAR AND GREENWICH STEAM FERRY PROJECT.

NGST the witnesses who have just given
ce against the proposed Tower High-
Bridge is Mr. Henderson, a shipowner,
lso a member of the Institution of Civil
ers. In the course of his evidence, Mr.
rson incidentally stated that he was about
roduce a steam ferry from Poplar to Green-
and that the Thames Conservancy had
ved and passed his plans. He said that
rry was the result of petitions from mer-
and other persons interested in having
cient means of crossing the river for their
lar traffic. Land had been procured on
ides of the river for the project, and the
aches to this would not have any gradient.
served that if the Tower Bridge were to
million, the interest on which would be
l. per annum, he believed two or three
nt steam ferries could be built and main-
for this. He produced a model of his
steamer, and also a model of a new patent
ion for raising a similar steamer to the
f a wharf, for the purpose of loading and
rging cargoes of vehicles, and which is
ed more especially for up-river ferries,
ited to the immediate necessities of the

THE KING'S CROSS THEATRE.

ONGST the sales at the Auction Mart which
taken place within the last few days, the
s-cross Theatre, in Liverpool-street, nearly
ite to the Great Northern and Midland
ay Stations, has been offered for sale,
der of the mortgagees. Mr. Lumley, the
neer, in submitting the property, stated
he theatre, though a small one, had a com-
and handsome interior, and would accom-
te an audience of about 800 persons. It
d on lease for an unexpired term of twenty-
years, at a ground-rent of 9 guineas per
m, and the auctioneer stated that, indepen-
y of the rental derived from it for theatrical
oses, a sum averaging upwards of 50*l.* per
m had been realised on the property during
ast few years by letting it for Sunday ser-
. It was described as a fully licensed
re by the Lord Chamberlain. The sum of
was the first offer made, which was in-
ed to 750*l.*, and there being no further
nce, the auctioneer said it could not be sold for that sum, and must be withdrawn, as a purchaser was ready to give 1,000*l.* for it by private contract, which was considered below its value.

A COLOSSAL STEAM LAUNDRY.

A STEAM laundry of unusually large dimensions is at present in course of erection for Messrs. Spiers & Pond, on a plot of ground on the Battersea Park Estate, a short distance on the south side of Battersea Park, and bounded on the south side by Battersea Park-road. The buildings and grounds cover an area of more than an acre in extent. The principal frontage of the building faces the east, and is 170 ft. in length. The central portion of the elevation is 45 ft. in height, and consists of three floors, with a spacious arched entrance to a large court-yard. This entrance is 10 ft. in width, and 15 ft. in height. What may be termed the wings on each side of the central portion of the elevation have two floors, the whole presenting an imposing frontage. Other blocks, each containing one lofty floor, are erected on the north, south, and west sides respectively, being carried to a depth westward, extending to about the centre of the site, the remaining space on the extreme west side being set apart as a drying-ground, with a separate block at the south-west corner containing the stables. In close proximity to this block stands the engine and boiler house, having a chimney-shaft 70 ft. in height, 7 ft. wide at the base, and 4 ft. at the top. This portion of the building will be fitted with engines and boilers of sufficient power to drive all the machinery required in the various processes of the laundry. A boundary-wall, 7 ft. in height, encloses the buildings and grounds. The materials of the building are yellow brick, with stone window-sills, and Beart's white moulded brick for string courses, window-jambs, arches, and cornices.

The main block on the east side will contain, in the centre, the manager's residence, with clerks' and other offices, whilst another portion of the block will contain a spacious mess-room for the *employées*, together with a bath-room and other domestic conveniences. The blocks forming the laundry proper are those on the north, south, and west sides, and contain on the south side a sorting-room for the reception of articles as they are brought in by the vans. This apartment is 63 ft. in length by 18 ft. in width. Immediately adjoining it is the washing-room, 50 ft. square, with large open louvres in the ceiling for ventilation and the escape of steam. Adjacent to this is the drying-room, 70 ft. by 30 ft. The folding-room and the mangling-room are in the west block, their dimensions being respectively 40 ft. by 30 ft., and 52 ft. by 30 ft. The ironing-room and the packing-room are in the north block. The dimensions of the former are 55 ft. by 25 ft., and of the latter, 40 ft. by 25 ft. As regards the drying-room, it should be stated that in the construction of the building a plan has been carried out by which a flue-pipe, 70 ft. in length, is carried from the boiler, horizontally, immediately along the floor of the drying-room, for the purpose of being utilised in the drying process.

The buildings and works have been designed by Mr. Kemp, architectural engineer. The contractor is Mr. Priddle, of Hounslow; and the building is being carried out under the superintendence of Mr. Warburton, as clerk of works, who also acted in a similar capacity during the erection of the Gaiety Restaurant. The estimated cost of the building and machinery is about 12,000*l.*

Coffee Taverns. — The Anchor Coffee Tavern, the first establishment connected with the Kilburn Coffee Tavern Company, has been formally opened by the Hon. W. Cowper-Temple. It is situated in the High-road, at the junction of Cambridge-road and Canterbury-road. Mr. Joseph Peters (chairman of the company), in introducing Mr. Cowper-Temple, said,—Had the people seen the premises a few weeks before, they would agree with him in the statement that a wonderful deal of work had been got through in a short time. He felt that their thanks were due to their efficient architect, Mr. Heffer; to their energetic contractor, Mr. Dainton; and to the others who had helped to bring about this result. Mr. Cowper-Temple made an agreeable address, and a considerable amount of business is now being done on the premises.

NEW PAROCHIAL INFIRMARY FOR MARYLEBONE.

THE foundation-stone of a new infirmary for the parish of St. Marylebone was laid on Monday by Mr. Edmund Boulnois, the chairman of the Board of Guardians. The site is just off Ladbroke-grove-road, Notting-hill, and is a parallelogram in shape, with its longest sides having frontages to Rackham-street and Treverton-street. The building is being erected by the Guardians, in pursuance of the provisions of the Metropolitan Poor Act, 1867, and under the orders of the Local Government Board. It will contain accommodation for the care and treatment of 760 of the sick poor of the parish. The architects are Messrs. Saxon Snell & Son. A contract has been entered into with Messrs. Wall Bros. for the erection of the building, with all its fittings and engineering works, for 109,000*l.*, and it is anticipated that the total cost, including the price paid for the land and the furniture and fittings, will be at the rate of about 160*l.* per bed.

THE OPERATION OF THE ARTISANS' DWELLINGS ACT.

METROPOLITAN BOARD OF WORKS.

At the meeting of the Metropolitan Board of Works on the 4th inst., the clerk read the following report of the Works and General Purposes Committee:—

"Your committee, under the authority of the general reference by the Board of the 4th October last, with regard to the Whitechapel and Limehouse Artisans' Dwellings Improvement Scheme, have had under consideration a letter, dated the 26th May, 1879, from the trustees of the Peabody Donation Fund, submitting an offer for the portion of land which has been cleared within that area, and also for the sites comprised in the following schemes, namely, Bedfordbury, Great Wild-street, Pear-tree-court, Whitecross-street, and Old Pye-street. The terms and conditions of the offer are as follow:—

That the sum to be paid for the portion of the Whitechapel and Limehouse site be 10,000*l.*; that the remaining sites be taken from time to time, as they are cleared, at a price, based upon threepence per superficial foot, as rent at twenty years' purchase; that each site be paid for one year after it is cleared and in the hands of the trustees. The letter further stipulates that the offer shall be subject to the terms of a contract to be agreed upon, and concludes with the statement that the purchase will involve an outlay on the part of the trustees of about 120,000*l.* for land, and 500,000*l.* for buildings.

Before proceeding to state their views upon this offer, your committee think it well to refer to the steps which have been taken with regard to the portion of land comprised in the Whitechapel and Limehouse scheme. This, as the Board are aware, was cleared in the course of last year, and was, after the form of tender and conditions had been approved by the Home Secretary, freely advertised to be let for the purposes contemplated by the Act. No offers, however, were received for the land, and it being understood that some of the conditions of letting were considered objectionable, your committee subsequently instructed your solicitor to communicate with the counsel of the Home Department, and also with the officers of the companies who require land of this description, with a view to an alteration of the conditions, and in the result certain modifications were agreed to by the Board, and afterwards approved by the Home Secretary. Further advertisements were then issued, inviting tenders upon the modified conditions of letting, but still no offers were received, and ultimately your committee came to the determination to submit the land to public auction. It was accordingly offered at the Auction Mart on the 12th inst., but on that occasion not a single bid was made for it. Under these circumstances it became the duty of your committee to carefully review the position of the matter, and, the offer of the trustees of the Peabody Donation Fund having in the meantime been received, they instructed the Architect of the Board to make a report to them thereon. The Architect accordingly prepared and presented a report, which your committee submit herewith, and a print of which has already been furnished to each member of the Board. From this it will be seen that the loss to the Board, if the offer of the trustees be accepted, is estimated at the large amount of 643,481*l.*, subject, however, to a reduction by about 81,400*l.*, the value of the recoupment area not set apart for Artisans' Dwellings, which the Board will retain. It will also be seen that the Architect estimates the value of the sites, assuming that the whole of them were dealt with by the trustees, at an average price of 4*d.* per superficial foot computed at twenty-two years' purchase, and states that, at this rate, the loss to the Board would be 509,090*l.* upon the six areas. It further appears from the report of the architect that if the Board were in a position to obtain the commercial value of the various sites, the loss would be reduced to the sum of 238,072*l.*

Upon receiving this report, it seemed to your committee that the proper course would be to place the architect in negotiation with the advisers of the trustees, with a view of ascertaining whether they would be willing to increase their offer to the estimate above mentioned, namely, twenty-two years' purchase upon a rental of 4*d.* per superficial foot, and this was accordingly done.

A letter was subsequently received from the Earl of Derby, the chairman of the trust, which your committee also submit, explaining the position of the trustees in the matter, and the reasons which had influenced them in applying for the land, and intimating that if objection were taken to the terms offered as being unduly favourable to the purchasers, they would retire without regret from an undertaking on which they had entered solely from considerations of public utility.

Under these circumstances, and after a careful considera-

tion of the whole of the facts above set forth, it appears to your committee that the time has arrived when the Board should finally decide as to the terms upon which this land shall be disposed of. They greatly regret that the endeavours which have been made to obtain what seems to them a moderate estimate of its value should have been unsuccessful, and that so serious a financial loss should be entailed upon the ratepayers of the metropolis. But it must be borne in mind that the present offer deals with several areas, and that any further delay would, judging from the length of time during which the Whitechapel land has been vacant, in all probability involve a still greater loss. It appears reasonable to assume that as each site is cleared similar difficulties would be experienced in the disposal of it, and your committee are of opinion, therefore, that the only course which the Board can be advised to take is to accept the offer which they now present. Your committee accordingly recommend:—

That the offer contained in the letter of the trustees of the Peabody Donation Fund, dated the 20th of May, 1879, be accepted on the terms and conditions stated in such letter."

Mr. E. Dresser-Rogers, in proposing the reception and adoption of the report, observed that immediately after the passing of Mr. Cross's Act, something like thirty or thirty-one schemes were proposed to the Board. The Board most honestly and most earnestly endeavoured in every possible way to carry out the Act. Having acquired the sites of the unhealthy areas in question, the Board obtained from two or three sources offers for the purchase of the land which were not accepted, and after taking other means to obtain better offers, found itself at a dead-lock on the subject. The trustees of the Peabody Donation Fund had now made an offer for the purchase of some of this land, but on the first blush of the matter that offer seemed so low that most members were disposed to think that the Board could not possibly accept it. But when they came to look into the question fully, the majority of the Works Committee came to the conclusion that the Board would do well to accept the offer. The Legislature having referred this Act to the Board to carry out, it had placed the Board in the position of not being able to refuse this offer so long as they had no better offer before them, and although the loss to the ratepayers would be enormous in consequence, he thought the Board would see that it had no alternative but to adopt the course suggested by the committee.

Mr. Fowler much regretted that he could not approve of the decision of the committee. The aggregate cost to the Board of the schemes now before them had worked out, so the Architect had advised them, including all interests, at about 80,000*l.* per acre, and the proposal of the committee was that they should accept this offer of the Peabody trustees of 3d. per foot, or 10,000*l.* per acre. In other words, for every acre of land dealt with under this Act, the Board was called upon to sacrifice on behalf of the ratepayers no less than 70,000*l.* This was a state of things which, in his opinion, was never contemplated by the Legislature, and to which he thought the Board should not readily submit. The Board had had before them some thirty-one schemes under the Act, and of these thirteen had been confirmed by the Home Secretary. Of the thirteen they were now dealing with six, but taking the other seven, the Architect had estimated that disposing of the land at this price of 3d. per foot the loss would be 514,000*l.* Then there was the remainder of the thirty-one schemes, and if the whole of these were to be dealt with in the same way, the loss to the ratepayers would be between two and three millions sterling. He contended that under the Act the Board was not called upon to make such a woeful sacrifice of the funds of the ratepayers. It appeared to him that a certain portion of these sites might be used for shops, the ground-floors, for instance, and the upper stories as dwellings. By the carrying out of such an idea as this he was of opinion that the cost to be borne by the ratepayers would be considerably lessened. However, before committing itself to the adoption of the proposal of the committee, he thought the Board should appeal to the Home Secretary, and with this view he proposed the following amendment:—

"That the offer of the trustees of the Peabody Donation Fund be not accepted, and that the Board do lay before the Home Secretary a statement of the cost of acquiring the properties for the six improvement schemes and of the action taken by the Board in endeavouring to dispose of the land, and do point out to the Home Secretary the necessity for some amendment of the law so that the object of the Act may be obtained without entailing such a ruinous loss on the ratepayers."

Mr. C. Legg seconded the amendment, and after a long debate, the Board divided, when there appeared, — for the ameadment, 10; against, 24. The amendment was, therefore, lost, and the motion for the adoption of the report, on being put, was declared carried.

DISPARITY IN TENDERS FOR PAINTING AND DECORATION.

SIR,—The constant and often excessive disparity that occurs in tenders for painting and decorative work, and the comments thereon that are found in print, prompt me to address a few words to you upon this very important subject.

The public, when reading of such cases in your weekly list of tenders, are prone to remark, "If the lowest competitor can execute the work for that sum, what an inordinate profit must those competitors require who perhaps ask double the amount."

Now, the causes that create these disparities are chiefly as follow:—

1. The absence of surveyor's quantities, or the measurement in detail of the several surfaces to be dealt with.

2. The wide difference in the estimating capacity of the firms competing.

3. The also wide difference in the ability of the heads of firms, also of the capacities of their staff, quality of workmen, &c.

4. The occasionally very open character in the descriptions of the specifications.

To consider these points *seriatim*.

1. The absence of surveyors' quantities is invariably found to exist where these disparities occur, which proves that surveyors' quantities are the greatest requisite to ensure sound and dependable tendering, and the greatest preventive against unreasonable and sensational estimates.

2. The wide difference in the estimating capacity of firms.

In cases where "quantities are not supplied," the tradesman has three courses open to him:—

A. Either by his estimating clerk or himself measuring the work and pricing it.

B. If not qualified himself to measure work, and not possessing an estimating clerk, to employ a surveyor to do it for him.

C. If not adopting either of the foregoing courses, to walk over the building and form an opinion by making a guess. Now, unfortunately, it is the fact that firms possessing good measuring and pricing ability as estimators, are constantly pitted against other firms of lesser calibre, who have no such qualifications, and, as the object of each competitor is naturally to get the job, the result is that the guesser is usually far below rather than above the mark.

3. The wide difference in the ability of the heads of firms, the capacities of their staff, and quality of the workmen.

It is an incontrovertible fact, that a man may spend both time and money to educate himself to the standard of what a master decorator really ought to be; he may become an ornamentist of a high order as regards form, a grammatist in colour, a scientist in the use and nature of pigments, a man of taste and discrimination from experience; he may accumulate and educate a highly-qualified staff around him, employ the best quality of labour, and execute thoroughly good work at a most reasonable cost; and yet constantly be placed in competition with another calling himself a decorator, who possesses neither knowledge nor staff nor high-class labour, and whose powers of production as regards really good work are positively *nil*.

It may be asked, why the man firstly described does not refuse to compete with his inferior in business production? But the answer is, that competitors seldom know against whom they are competing, and consequently often waste time and money in preparing estimates; whereas, had they known against whom they were in competition, they would have saved time and trouble by a refusal.

4. The very open and indefinite character of the specifications for decorative work.

This, I may observe, is not necessarily the fault of the architect, inasmuch as the client might not have sufficiently decided views of what he required, or the architect might like to a certain extent to leave it open to the skill of the decorator to see what his taste could produce, or many other reasons; but be that as it may, these open descriptions in specifications cause many of the disparities we find in competitive estimates.

I will give two examples of indefinite description which will do for many.

It has often been my experience to be called upon to price the decoration of a cornice from the wording, "and to pick out the enrichments and mouldings in colours and gold"; thus, in this instance, one might say, "I consider two enrichments gilded will be plenty," while, on other hand, the other might not consider f sufficient.

Again, the words "to suitably decorate w lines and stencil decoration, in colours and gol are often met with, with reference either to c ings or panels of woodwork, &c. For this competitor might consider an outlay of 5*l.* intended, and another might equally rightly s pose 10*l.* would barely suffice.

From a careful consideration of the forego facts, I would suggest, as a preventive disparity in tendering, and in the interest sound tendering and encouragement of g work at a possible price:—

1. That quantities should invariably be s plied as a basis for calculation wherever p sible.

2. That firms be invited to compete who of the same comparative standing as regards production of work and the character of lab employed.

3. That where quantities are not supplied t the specification be most scrupulously defin as, for example, in the quoted instance of cornice; although each member could separately be described, still the given num of members gilded and those cut in in col could be quoted, so that an estimator may guided as to how many he may take for in g or colour as regards fixing cost, leaving th relative and separate treatment to be individu settled afterwards.

I trust these few remarks will lead architel surveyors, and the trade to give the subj their serious consideration, for the advant not only of themselves, but also of the publi

ONE WHO IS NOT AFRAID OF FA COMPETITION.

MR. G. CAVENDISH BENTINCK AN VANDALISTIC "RESTORATIONS."

SIR,—The Right Hon. the Judge-Advoc General seems to have spoken with characteri bluntness at the meeting of the Society for Protection of Ancient Buildings (reported in week's *Builder*) as to what he deems inconsistency of certain members of the R Institute of British Architects in permitting committing acts of Vandalistic "restorati Mr. Cavendish-Bentinck is himself an "Hono Associate" of the Institute, and no doubt spoke with a due sense of his own sins of o mission, if credence may be given to an art in the *Dorset County Express* of the 1st in which journal, after stating that the right gentleman is the owner of Branksea Isla says:—

"Branksea Castle is also owned by Mr. Bentinck, he does not reside in it; his reverence for the ancient or, at least, the ancient part thereof, felt to zero whe pulled it down, and all that is now left of what was Branksea Castle is an empty, desolate building, where o bats, and mosquitoes can pursue their flight in pe Various ornaments of value which once adorned the ca are now removed. The bare walls of the basque saloon, where costly tapestries formerly hung, lead or picture what that noble room once was, whilst the br and vacant space where one of the most beautiful piec modern stained glass ever executed served as a win makes every one who is 'shown round' wonder ho lovely a piece of art could have been sold for a fractio its value to a Weymouth solicitor by a gentleman w means as large as its former owners."

Possibly Mr. Bentinck may have a good ans to what is implied by the foregoing paragra

DELTA

INDUSTRIAL DWELLINGS AND THE DEATH-RATE.

SIR,—In your last week's impression I fin paragraph under the above heading, in whic is stated, with reference to the Newcastle proved Industrial Dwellings Company, t during the eight years their block of dwelli has been open, the average death-rate in th has not exceeded 12 per 1,000; whilst dur the same period the average death-rate of town generally has varied from 29 to 22 1,000; that of the neighbouring district Pandon being even much higher. Now, if s a statement be correct, and I have little do that it is, I think you would confer a gr benefit on the public at large, if you m known what are the plans and mode of arran ment of the dwellings which have produ such favourable results; for I fear that in m of the so-called Industrial Dwellings that h been recently erected in London, the morta is nothing like so low as it should be. As several years to come vast sums of money

be expended in the erection of Artisans' ourers' Dwellings, it is of the greatest be that the best plans procurable should d. Our Home Secretary is fully aware quirements of a healthy home; for at ng of the Parkes Museum a few days very justly observed that the causes diseases were preventible, and that s wanted was to restore the actual to of every citizen,—pure light, pure air, water. He also remarked that there usands of people who live in crowded ch as few of his hearers would venture , and that if obliged to live in them k they would hardly come out alive. e Artisans and Labourers' Dwellings Cross has to decide upon the class of t shall be provided for the masses, and I am in hopes that, with the able e of the Metropolitan Board of Works, soon see blocks of dwellings erected best and most approved plans, and ill not only meet the necessities of the classes, but be a credit to all concerned.

MATTHEW ALLEN.

OF FARM BUILDINGS AT THE AGRICULTURAL SHOW.

ferred last week, in our notice of the ural Show at Kilburn, to the fact that ng was set apart for the exhibition of farm buildings.

ss I. (Buildings for Arable Farms above s) a prize of 50*l.* was offered. Twenty- of plans were submitted. Four sets lected as "worthy of commendation," e submitted by Mr. Richard Waite, of Derby (motto "Colonicus"); Mr. A. Clarke, of Simdorne, Shrewsbury ce with Economy"); Messrs. W. J. & scrop, of Stockton-on-Tees ("Utility"); Mr. J. E. Watson, F.R.I.B.A., of New- -Tyne ("Experientia").

ss II. (Buildings for Arable Farms not g 300 acres), a prize of the same value ed. Twenty sets of designs were sub- Two sets were selected as "worthy of ndation," viz., those submitted by Messrs. Dadle, of Gloucester ("The eye of the s necessary to the due economy of n"); and Mr. F. E. Walker, of Scole, "Per Mare per Terram.")

ss III. (Buildings for Dairy Farms above s), a prize of 50*l.* was also offered for set of plans. Fourteen sets were sub- that by Mr. W. A. Keates, of Hanley, shire ("Cheddar"), being selected as of high commendation."

ss IV. (Buildings for Dairy Farms not g 100 acres), a prize of the same value ered. Ten sets of designs were sub- but none of them were selected as of commendation.

ist which has been issued of the authors' and mottoes of the sixty-eight sets of submitted notifies which of the plans en selected as "worthy of commenda- r "worthy of high commendation," but inform us which of the designs selected mendation have carried off the 50*l.* Can it be that no prizes are to be ?

PLANS AT THE KILBURN SHOW.

-The remarks made by a correspondent *Builder* for August 3rd, 1872, when the Agricultural Society obtained fifty-two r labourers' cottages, and awarded no hat "surely out of fifty-two designs ust have been one possessing well-dis- l plans," might be fitly repeated with to the sixty-eight designs sent in for the uildings competition.

ther keeping these drawings locked up fourth day of the Show, and in the me affording no information when they kely to be "on view," and at last making he only class of exhibit in the Show that been awarded any prize, is being treated , must depend in a measure upon the of the plans themselves; but I suggest en if the plans were not perfect (and re plans?), the prizes offered should be d to those the judges think best, in the ay as they are given for stock and im- ts, not because either have arrived at ion, but because they are the best that een offered in competition.

I observe that several well-known architects were among the competitors, and others represent the best buildings undoubtedly on some of the largest landed estates in the country. Clearly, then, there is something wrong somewhere.

BOWLED OUT.

SALEM CHAPEL, DEAN STREET, SOHO.

SIR,—Observing that one of the few now remaining old London chapels, namely, the above, was advertised to be sold by auction a few days ago, I was induced to revisit the building, previously to its possible "conversion into manufacturing or other trade premises," as suggested by the printed particulars. There is nothing much that is architecturally interesting about the place, but it is of large area, well proportioned, and with ample and conveniently-planned accessories. The principal entrance (from Meard's-court) was closed, but there was another available entrance at the back, leading through a small lobby direct into the larger vestry. In this were one or two remains of the old furniture, but the *sacred* look had altogether vanished, inasmuch as, to all intents and purposes, this vestry, and the smaller one adjoining, presented the appearance of ordinary dwelling-rooms, kitchen, &c., being filled with the usual domestic appurtenances. But this was only a mild preparation for the surprise created when the attendant who showed the place, and who said she had known it, on and off, for more than thirty years, threw open the door communicating with the chapel itself. It will scarcely be credited that, intermixed with pews, galleries, pulpit, hymn-books, &c., was a labyrinth of *clothes-lines*, stretched across in all directions from the different vantage-points, and liberally besprinkled (as I may say) with the usual results of the washing-tub hanging up to dry, and peopling the place, as it were, with ghostly forms. Laundry *versus* chapel "Oh, it comes handy for *that*," was the ready answer to an expostulation. "To what base uses may we come at last."

J. D. W.

BUILDING ACT PROVISIONS.

PARGETING FLUES.

SIR,—With reference to the case, Jennings *v.* Duncan, under the above heading, in last week's *Builder*, would some correspondent explain how it is, if the appellant's contention that the exterior surface of every flue towards the room must be pargeted, or rendered, as well as the interior, that the portion of the wall between the ceiling and floor is not customarily so treated?

W. G.

*** If it is not customarily so treated it should be; also where the wooden strings of stairs are placed against the outside of a flue, as is constantly the case; and even more especially in the roof between the ceiling of the topmost floor and the slates or other covering. The disregard of this provision would be full of evil.

THE PROFESSION.

MR. P. G. SMITH begs to enclose an extract from the *Weekly Notes*, June 28th. It is from a list of persons who have applied for liquidation by arrangement with their creditors, and probably appeared in the *London Gazette*, 24th June last:—"Richard Williams, architect and outdoor beerseller, stone merchant and contractor." It seems to show more than ever that there are architects *and* architects.

SUICIDAL RECKLESSNESS OF WORKMEN WITH THEIR PIPES.

YEAR after year explosions of mines take place, the origin of which can be traced to the lucifer match used for lighting the workmen's "cuttys," or the unlocking of the Davy lamps to the like end. A case in point is the recent explosion at the High Blantyre Colliery, Hamilton, N.B., when the deaths of twenty-eight men were added to the 123 lives lost at the same pit two years since. In the hand of one of the suicides was found the tobacco-pipe, and upon removing the body there dropped from his pocket a false key which opened any of the Davy safety-lamps. After this discovery the police made a stricter search of the dead bodies, and in the pockets of nearly every one of the twenty-eight, pipes and matches were found, and three keys that could open the Davy lamps. On one body two nails were found made into a picklock that would open and lock every Davy lamp in the mine; and had the whole of the men been searched, the police are of opinion that nearly every man and boy who escaped the explosion were alike provided with their implements of destruction.

As recently as a fortnight since, one John Maclean, working at the same mine, was tried before the sheriff at Hamilton for unlocking his safety-lamp while at work in order to light his pipe, and this was in the same shaft where the explosion and loss of life occurred in 1877. The reckless fool was called on to pay the full penalty or have three months' imprisonment.

The writer of this well remembers, upon the occasion of a conference at the Society of Arts, Sir Humphrey Davy remarking that he left his lamp in the hands of mechanicians to invent a fastening that none but a master-key could open. Surely it is possible to devise a lock and key that would prevent the miners tampering with their Davys. At present, in the hands of reckless men, it is a misnomer to call it a safety-lamp. On the other hand, legislative measures should make it a penal offence to carry lucifer matches into a pit.

BRICKS IN SINGAPORE.

BRICKS are much wanted just now, and their high price seriously retards building operations. According to the *Singapore Auction Gazette*, the price of small native hand-made at present is about $45 per laxa, while they have been known as low as $10, and a fair average price is $28 to $30. Bricks such as those used in the new Town-hall cost $85 per laxa, and contractors are now asking as high as $92. Both Government and native bricks are made by hand, which somewhat accounts for the miserable articles produced, especially the latter. They neither stand sun nor rain, nor last any time, as may be seen on the 5-foot way on Collyer Quay or Commercial-square. The whole machinery for brickmaking by steam could be set up at an expense of $2 to $3,000, and it is extraordinary that no enterprising person has attempted a manufacture of this kind ere this. The clay on the Balestier plain is of the best description for brick-making, and is close to the Kallang river, so that they might be conveyed away at a small cost; besides, bricks made by steam-power are acknowledged to be better in every way than hand-made, and can be produced at a much less cost. There are in the market some old works on the Balestier plain, where the very best clay is to be found, and where no expense in making foundations would be required. We would recommend any one who has an idea of starting such an enterprise as we have suggested to inspect the part of the country to which we allude.

SCHOOL-BOARD SCHOOLS.

Hexham.—Her Majesty's inspector, having complained of the accommodation and condition of the schools handed over to the School Board, Mr. Thomas Oliver, architect, Newcastle-on-Tyne, was called in to report and prepare plans for their improvement. The alterations and additions proposed have been approved by the Education Department, and the works will be commenced forthwith.

London.—Sir Charles Reed, chairman of the School Board for London, recently opened the new Board School in Graystoke-place, Fetter-lane. This is the first school erected by the Board within the City boundaries. It is built to accommodate 436 children, and its cost has been relatively much greater per head than schools erected by the Board in the suburban districts. The site cost 8,698*l.*, or 20*l.* per head, and the building cost 6,859*l.*, or 15*l.* 14*s.* per head, making a total cost per head of 35*l.* 14*s.*——A new Board School in Portobello-road, Nottinghill, has been opened by the London School Board. It will accommodate 180 boys, 180 girls, and 227 infants, making a total of 587 children. The site has cost 1,600*l.*, and the building has cost 7,000*l.*, making a total of 8,600*l.* Mr. E. R. Robson is the architect of both schools.

The Grand Portal of Strasbourg Cathedral, according to the *Parisian*, is at last finished. The two doors of bronze consist of 1,500 pieces, 650 ornamental-headed nails, 300 rosettes, 98 large lozenge-shaped plates, 14 large figure scenes, 14 half-lozenges with animals, 181 lozenges with plants and foliage, and so forth. The subjects are, of course, from sacred history.

DEVONPORT PUBLIC HALL COMPETITION.

THE Directors having received eighteen designs in competition for this building, engaged the services of Mr. Grüning, of Gresham House, as professional assessor to aid them in making a final selection. Acting upon his report, the first premium has been awarded to the design under motto "Con Amore," by Mr. Samuel Knight, of Cornhill; and the second to "Tamar," by Mr. Moorshead, of Devonport.

We understand Mr. Knight has since received instructions from the Directors to take the necessary steps with a view to carrying his plans into execution.

The selected design is in the Classic style, and comprises a large hall, to seat,—with balcony and gallery,—over 2,000 persons, specially planned also to be adapted for theatrical performances.

PREMIUMS OF THE INSTITUTION OF CIVIL ENGINEERS.

THE Council have awarded the following premiums in respect of original communications submitted during the session 1878-79, for papers read at the ordinary meetings:—

1. A Watt Medal and a Telford Premium to G. F. Deacon, for his paper on "Street Carriage-way Pavements."
2. A Telford Medal and a Telford Premium to J. Bower Mackenzie, for paper on the "Avonmouth Dock."
3. A Watt Medal and a Telford Premium to J. N. Douglass, for paper on the "Electric Light applied to Lighthouse Illumination."
4. A Telford Medal and a Telford Premium to A. Fettiplace Blandy, for paper on "Dock Gates."
5. A Telford Premium to Edward Dobson, for paper on the "Geelong Water Supply, Victoria."
6. A Telford Premium to James Price, for paper on "Movable Bridges."
7. A Telford Premium to J. Evelyn Williams, for paper on the "Whitehaven Harbour and Dock Works."
8. The Manby Premium to J. Purser Griffith, for paper on the "Improvement of the Bar of Dublin Harbour."

CHURCH-BUILDING NEWS.

Little Leigh.—On the 19th ult. the new church of St. Michael and All Angels, Little Leigh, was consecrated by the Bishop of Chester. The new church stands near the site occupied by the old one, Lord Leigh having given land for the enlargement of the burial-ground and for the edifice itself. The church is in the Early English style, and consists of a nave, choir, chancel, and north transept. The walls are faced externally with the best Northwich facing bricks, with ornamental cornices, strings, &c., and terra-cotta dressings. The entrance to the church is through a deeply-recessed doorway or porch at the south-west corner of the building, which leads directly into the nave. The chancel is lighted by a circular window, executed in terra cotta, beneath which, and over the communion-table, is a reredos, composed entirely of brick and terra-cotta, the principal feature of which is a representation of Leonardo da Vinci's celebrated picture of the Lord's Supper. The whole of the works have been carried out by the contractor, Mr. Richard Beckett, of Hartford, from the designs and under the personal superintendence of the architect, Mr. Edmund Kirby, Liverpool.

St. Mary Tavy.—St. Mary Tavy parish church, Devonshire, has been re-opened after restoration. The church is of the Early Perpendicular period. A general reconstruction of the building has taken place, though many features in the old fabric have been preserved. The contractor was Mr. P. Blowey, of Buckland. Mr. J. P. St. Aubyn is the architect. The entire cost will be about 1,300*l.* or 1,400*l.* The belfry has five bells, and the tenor bell has been recast by Messrs. Warner, of London. The whole of the gear has been put in thorough repair, and a chiming apparatus added by Messrs. Hooper & Stokes, of Woodbury. The screen which divides the belfry from the church is of pitch-pine, fitted with opaque glass, by Messrs. Fouracre & Son, of Stonehouse, who have also glazed the whole of the windows with cathedral-tinted glass. Rimington's apparatus for warming with hot air has been provided. The chancel is paved with Maw's encaustic tiles. The seats, which will accommodate from 100 to 150 persons, are open and made of pitch-pine, varnished.

Moor Monkton.—The parish church of Moor Monkton, near York, has been re-opened by the Archbishop of York, after restoration. The whole of the work has been carried out by Messrs. Keswick & Sons, contractors, York; Mr. James Fowler, of Louth, being the architect. The cost has been 1,600*l.* During the last few years the church was found in such a tumble-down condition that it was entirely unfit for public worship. It was, therefore, resolved to have it completely restored. The church is now capable of accommodating 200 worshippers. Everything belonging to the church has been utilised as far as practicable, and it is stated that interference with the ancient design and remains of the seventeenth-century architecture has been studiously avoided by the architect. The chancel fittings have been made from the remains of the ancient sittings; the communion-rails of Archbishop Laud's time have been retained and restored; the seventeenth-century roof has been retained, and the other parts of the building have been made to harmonise. The north wall of the nave has been entirely rebuilt, and the south wall has been retained and restored. The fittings of the nave are entirely new, and of pitch pine. The pulpit is of Caen stone, with marble columns. The aisle and the space in front of the communion-rails are laid with coloured tiles from Minton & Co., Stoke. The font is of the original Norman, subjected to alteration in the seventeenth century.

VARIORUM.

A NEW edition has been published by Mr. Murray of Mr. Samuel Smiles's delightful and valuable little book "Industrial Biography." Besides various alterations in the present edition, an appendix has been added containing further information as to metal implements, Babbage's Calculating Machine, and other matters. No one can read this book without advantage.——"The Municipal Corporations Companion, Diary, Directory, and Year Book of Statistics for 1879" (Waterlow & Sons), contains such an amount of information as to render it indispensable to all who have to do with municipal matters. It does credit to its editor, Mr. J. R. Somers Vine.——As to the "Ventilation and Heating of Schools," the *Lancet* says,—"The question of the heating and ventilation of schools is of great importance, and one which, we fear, is too much neglected in this country. The usual plan adopted is the use of fireplaces arranged either round the sides of the room or in its centre. In some schools hot air or water pipes are used, and in a few hot air is introduced by pulsion, which sends to the classes an uninterrupted current of heated air. Each system has its advantages, open fireplaces being most suitable for medium-sized class-rooms, hot-air pipes for small studies, whilst the system of heating and ventilating by pulsion is most suitable for large school-rooms ranged on the same floor. Unfortunately, very little attention is paid to the suitability of the different systems to the requirements of the building, and so mistakes which are costly to rectify are not unfrequently committed. In a report recently made to the magistrates of Berlin of the arrangements for the heating and ventilating of the schools of that city, the points that the committee consider of most importance are—constancy of temperature and its regular distribution, the power of regulating the temperature in each class-room independently of the others, and the necessity that the hot air introduced should be freed from impurities by previous filtration through water. They believe these points are best secured by a system of central heating by means of a water-heating arrangement in connexion with ventilation by pulsion. The combination of the water-heating arrangement with the system of ventilation by pulsion is absolutely necessary if the class-rooms are widely distributed or on different levels. Nor can too great stress be laid on the efficient filtration of air from particles of dust. The effect of heated air loaded with particles of dust, much of which consists of organic matter in a state of decomposition, driven into the class-rooms at great velocity, is most injurious to the health of teachers and pupils."——The *Engineer* speaks plainly and properly as to the Royal Agricultural Society's bungle at Kilburn:—"A story is narrated of a nobleman who, on arriving at a station, found that his train had gone, and who, upon being told as much, turned to the station-master and desired him to 'bring another.' This is the plan which has been pursued in the show-yard. It was found that four horses could not move a wagon containing, perhaps, two tons of machinery, thereupon some one told some one else to 'bring horses,' and they were brought, to the number of, perhaps, fifteen, and after half an hour's work the wagon was drawn fifty yards and, with the wheels, by no figure of speech, but sober reality, axle deep. Then, as nothing could be done, the horses were taken away, another wagon not yet quite buried, and having accomplished its interment, they proceeded to another, and so on. The result was that the outlet from the sleeper road to which we have before referred, was literally blocked up by half-buried vehicles. No spectacle of the kind has ever before been seen, apart from an Eastern army on the march. Every exhibitor was left to his own resources. Now, had an engineer or even any person endowed with sufficient authority, and possessed of sufficient intelligence, been told off for the duty, he would have provided a timber-road, with certain by-roads up the yard, to be made with short pieces laid end to end, and over these the wagons would have proceeded easily enough. On leaving the branch road, each wagon should have been provided with enough planks to make a track, the planks being laid down in front and taken up behind. The outlay for timber and labour would probably have reached 500*l.* at most, much of this would have been cheerfully disbursed by exhibitors. The authorities, placing their trust in the weather, and taking no precautions against contingencies, the success of the whole undertaking has been imperilled."

The newspaper called the *Week's News*, of which some nine volumes have been published, will cease to appear in its present form after June 21st, arrangements having been made to incorporate it with *Brief*, the well-known weekly organ of the Press, published by Wyman & Sons. *Brief*, which has many features in common with the *Week's News*, is noted for its able summaries of the news of the week, and for the facility with which its contents are carefully edited, epitomised, and classified under separate headings.

Miscellanea.

Japanese Art and Literature.—A numerously-attended meeting of ladies and gentlemen interested in the art, literature, and folk lore of Japan took place on the 4th inst. at the house of the Royal Asiatic Society in Albemarle-street. Sir Rutherford Alcock occupied the chair, and having called upon Mr. Pfoundes to explain the object of the gathering, that gentleman stated that he desired those present to consider the advisability of establishing in London a central institution, in order to bring into closer communication admirers and students of Japanese literature, and kindred subjects, to facilitate the collection, preservation, and dissemination of information relative to Japan; to encourage European residents in the country and the Japanese themselves to collect the materials of such knowledge; to endeavour to enlist the cordial co-operation of scientific and literary societies and of individuals in extending the usefulness of such an institution; to publish proceedings, notes, queries, and other matter, and generally to promote so interesting a branch of research and study as that afforded by a unique a country as Japan. The proposal was supported by the distinguished chairman, Mr. E. J. Reed, M.P., Mr. C. Rogers, Mr. R. Cust, Mr. Stewart Lane, Mr. J. Park Harrison, and Mr. H. A. Freeland; and eventually it was decided that a committee be formed to consider and report upon the matter.

Architects to the Bank of Ireland.—Messrs. Millar and Symes have been elected architects to the Bank of Ireland, the office being vacant by the resignation of the late architect. There were upwards of twenty candidates. The post is worth 300*l.* per annum with percentage on cost of all new banks, and does not necessitate the giving up of other business. Those gentlemen have brought to a successful completion important works in Dublin and in different parts of the country.

The Holborn Union Infirmary, Holloway.—The new infirmary for the Holborn Union, Archway-road, Upper Holloway, was opened on Saturday last by the Right Hon. G. Sclater-Booth, President of the Local Government Board. The building, of which Mr. H. Saxon Snell is the architect, was recently described in the *Builder* (p. 227, *ante*), and our description was accompanied by a view of the building and a plan of the principal floor.

anchester Steel Screws.—Thanks er, steel is taking the place of iron in jections with great advantage. The n of it to the making of screws is arried on by the Manchester Steel mpany, at their Screw Works, Bradford ar Manchester. At these works up- 700 different sorts of screws are made, brass and iron screws with variously- eads, and adapted to every purpose. iality here, however, is the "Patent ointed Steel Wood Screw." The threads at by a new process, and the gimlet- ses these screws to enter the hardest bout a hole having been previously he company use best quality Bessemer ilusively for the production of these he great strength and tenacity of rial rendering the screw very difficult or break. As a matter of fact, steel re capable of sustaining as great a an iron screw two sizes larger in and a saving of something like 20 per ffected by using steel screws over iron ese wood screws are made in all the s, and are very superior to the ordi- ew. The screw-formed letters of the 's advertisement have probably already the attention of many of our readers.

om New Market.—The new vegetable ere, which has just been completed, is e best of its kind in the Pottery dis- The roof is of curvilinear form, of iron, and is supported on twin columns amental capitals. On the crown of the lantern light running the whole length ilding, and affording means of ventila- he area covered is 1,800 square yards, 420 yards are covered by six shops on Queen-street, the total length of in this street being 125 ft. The roof referred to is one large span. The s done on the patent method invented 7. E. Rendle, of Westminster-chambers, The advantage of this system is that ises with the use of putty or other and no painting is required; some rtical tubes take the place of the large vy sash-bars used on the old system. ractors for the brick and stone work rs. J. & R. Inskip, of Longton, Messrs. Smith supplying the iron roof. The will cost 25,000*l.* The whole work has ried out under the superintendence of M. Richards, the borough surveyor, who the building.

ent to a Gas-holder at Dartford.— e iron water-tank in which the gas- oated, from some unexplained cause gave way, the water rushed out, and holder, losing its support, was literally i up, and presented the appearance of a odbox which had been crushed. At once escaped, and, what was remarkable, although no light whatever, it is stated, it to cause combustion. To account t is supposed that in the sudden collapse uch ironwork some of the parts must uck together and produced a spark ed the gas as it made its way out of s in the holder. The statement in the newspapers that the gas-holder oded was erroneous, and calculated to necessary alarm on the part of persons ar gas works.

— A hydraulic passenger-lift has een fitted up by Messrs. R. Way- Co. at Leadenhall House, Leadenhall- and is one of the best of its kind. direct-acting lift, worked from an ator, which is supplied from a set of action hydraulic pumps which are l on the same bedplate with the double forming a very neat and compact nent. The ram is 3¼ in. in diameter. haure is about 700 pounds on the square The lift, when working, is capable of p 60 ft. (the height of the building), ded, in fifteen seconds.

oved Cramps.—A cramp has been l by Mr. H. C. Tucker, of Peterborough, e are disposed to think will recommend the building trade as being a specially or-cramp. The sliding jaw is the great It fastens itself on the bar without e directly the pressure is applied by w. It may be used either as bench or mp, and, being simple in construction, t easily get out of order.

London and Middlesex Archæological Society.—On the 3rd inst., the members of this society met at St. Saviour's Church, Southwark. Lord Talbot de Malahide presided, and the first paper read was on the "Architectural History of the Priory Church," as St. Saviour's was called before the Reformation. It was by Mr. Francis T. Dollman, F.R.I.B.A., who pointed out the noticeable features and monuments of the building, and traced its vicissitudes from epoch to epoch from its second foundation, in 1106, when it was transferred from the secular to the regular clergy, down to our own times. The next paper was on the "Brandons of Southwark and their Palace opposite St. George's Church," by Mr. Rendle, F.R.C.S. Mr. Rendle made some preliminary remarks upon the Southwark of the sixteenth and seventeenth centuries, and on the more noted places from London Bridge to the site of the palace. The Society afterwards crossed London Bridge and visited the church of St. Mary-at-Hill, Billingsgate, of which a short account was given by the rector, the Rev. Arthur Trower, M.A.

Royal Italian Opera. — Following the example of his father, Mr. Gye has left till the close of his season the production of his chief novelty. We could never discover the wisdom of this course, but doubtless experience has justified it or it would not have been followed so long. "Il Re di Lahore," to which we are alluding, has proved a success, and will keep the English operatic stage. It has been produced with seldom-equalled splendour, and the music, though more remarkable for colour than form, so to speak, presents some grand *ensembles*. M. Lassalle, as *Scindia*, especially distinguishes himself.

English Workmen in Russia. — The Russian Imperial Technical Association has presented a memorial to the Minister of the Interior, calling his attention to the influx of foremen from foreign parts, and suggesting that steps should be taken to discover the reasons that lead them to compete so successfully with those of native birth. Throughout the greater part of the country the workmen employed in any trade requiring skill are found largely under the control of foreigners, and the Association estimates in the department of mechanics alone there are as many as 800 Englishmen.

Thames Valley Drainage.—At a public meeting held in Kingston on Wednesday night to discuss the action adopted by the Lower Thames Valley Main Sewerage Board, in re-adopting Colonel Haywood's scheme to establish a sewage farm at East Molesey, it was resolved to memorialise the Local Government Board, setting forth why the Joint Board should not be allowed to exercise borrowing powers, nor raise money for the purchase of land or the erection of works for sewage disposal.

The Surrey County Surveyor.—At a meeting of the Surrey Magistrates last week, the report of the Finance and General Purposes Committee contained a recommendation that the salary of the County Surveyor (Mr. C. H. Howell) be increased to 1,200*l.* per annum, to take effect from Lady-day last.

TENDERS

For cottages at Bouley-street, Poplar. Messrs. J. & S. F. Clarkson, architects:—

Salt	£745	0	0
Sheffield & Prebble	737	0	0
Riddle	670	0	0
Simm	650	0	0
Lewis & Bostock	537	0	0

For villa at Catford Bridge, for Mr. J. Mattinson. Mr. W. Stair, architect:—

Sheffield & Prebble (accepted)	£1,220	0	0

For house at Catford Bridge, for Mr. H. H. Collins. Mr. A. D. Hutchins, architect:—

Durford & Langham	£3,215	0	0
Messom	2,998	0	0
Amer	2,985	0	0
Nightingale	2,963	0	0
Sheffield & Prebble	2,743	0	0

For alterations to Nos. 32 and 34, Chrisp-street, Poplar, for Mr. R. Jones. Mr. J. T. Newman, architect:—

Harris & Wardrop	£325	0	0
Abrahams	297	0	0
Sheffield & Prebble (accepted)	287	0	0

For house at Finchley, for Mr. A. D. Porter. Mr. John Slater, architect:—

Sheffield & Prebble (accepted)	£1,712	0	0

For building pair of villa residences in Penge-lane, Sydenham, for Mr. W. Stimpson:—

Kemp	£710	0	0
Braggins (accepted)	695	0	0

For the undermentioned schools, &c., for the Burton-on-Trent District School Board. Messrs. Giles & Brookhouse, architects. Quantities supplied.—

For schools at Stapenhill, to accommodate 200 girls and 200 infants, in two stories, with outbuildings, &c.:—

Lilley & Son	£2,450	0	0
Edwards	2,400	0	0
Hunter	2,350	0	0
Thompson	2,300	0	0
Mason	2,255	0	0
De Ville	2,155	13	0
Jones	2,154	0	0
Wileman	2,135	0	0
Chamberlain	2,125	0	0
Gallimore	2,050	0	0
Hodges & Wildman (accepted)	2,050	0	0

For schools near Horninglow-road, to accommodate 200 boys, 200 girls, and 200 infants, boundary-walls and offices:—

Thompson	£5,000	0	0
Hunter	4,725	0	0
Mason	4,600	0	0
Wood Bros.	4,580	0	0
Gallimore	4,547	0	0
Hodges & Wildman	4,495	0	0
Wood	4,422	0	0
Chamberlain	4,383	0	0
Maddocks	4,363	0	0
Wileman	4,330	0	0
De Ville (accepted)	4,305	0	0

For extension of infants' school, Victoria-road, for 120 children:—

Edwards	£885	0	0
Hunter	860	0	0
Chamberlain	813	0	0
Hodges & Wildman	800	0	0
Gallimore	800	0	0
Mason	795	0	0
Wood	775	15	0
Maddocks	765	0	0
Wileman	758	0	0
De Ville (accepted)	749	15	0

For new school, for 200 girls, at Wellington-street:—

Lilley & Son	£1,245	0	0
Edwards	1,165	0	0
Hunter	1,100	0	0
Gallimore	1,075	0	0
Mason	1,050	0	0
Wood	1,050	10	0
Chamberlain	1,036	0	0
Hodges & Wildman	1,015	0	0
De Ville	999	10	0
Maddocks	996	0	0
Wileman (accepted)	979	0	0

For the erection of a house, Garway, Herefordshire, for the Right Hon. Richard More O'Ferrall. Mr. Thomas Sutton, architect:—

Kendrick (accepted)	£4,595	16	0

For building two houses and shops in the High-street, Hounslow, for Mr. H. Heath. Mr. R. Rutter, architect:—

Daniels	£1,593	0	0
Hiscock	1,393	0	0
Brunsden	1,355	0	0
Gamage	1,350	0	0

For Masonic hall and club-rooms, Commercial-road, Landport. Mr. E. J. Smith, architect. Quantities by Mr. J. W. Stroud:—

Cooper	£1,979	0	0
Roberts	1,960	0	0
Burbidge	1,890	0	0
Cload	1,880	0	0
Bramble	1,873	0	0
Light	1,841	0	0
Hayter	1,780	0	0
Hyde	1,600	0	0
Taylor	1,580	0	0
Lewis (accepted)	1,540	0	0

For dwelling-house for Mr. J. N. Ritchie, Church-end, Finchley. Mr. James Geo. Buckle, architect:—

Russell	£410	0	0
Cooper	350	0	0
Farthing & Niel (accepted)	305	0	0

For finishing to houses, Pear-tree, Derby, for the Ambergate Brick Company. Mr. George R. Isborn, architect:—

Thompson	£709	0	0
Johnson	574	15	0
Dickenson	485	0	0
Shaw	462	0	0

For new granary at Shad-Thames, Dockhead, Bermondsey, for Mr. G. H. Carbutt. Mr Henry Carpenter, architect. Quantities by Messrs. Wm. Reddall & Son:—

Browne & Robinson	£7,894	0	0
Conder	7,891	0	0
Colls & Sons	7,735	0	0
Morter	7,747	0	0
Wall Bros	7,130	0	0
Dove Bros.	6,945	0	0
Perry & Co.	6,593	0	0
Holland & Hannen	6,525	0	0

For additions and alterations to the Carpenter's Arms, Kingsland-road, for Mr. F. W. Ayres. Messrs. W. Reddall & Son, architects. Quantities supplied:—

Jackson & Todd	£535	0	0
Eaton	515	0	0
Gill (accepted)	470	0	0
Wheeler	397	0	0

For rebuilding the Acton Arms, Kingsland. Mr. W. Scott, architect:—

Stamp & Bowtle	£2,390	0	0
Cocks	2,375	0	0
Heacle	2,097	0	0
Mann	2,063	0	0
Steel Bros.	1,875	0	0
Beale & Co.	1,795	0	0
Tomlin & Chrisp	1,683	0	0
Palmer	1,625	0	0
Sheffield & Prebble (accepted)	1,587	0	0

For house at Finchley, for Mr. H. W. Franklin. Mr. John Slater, architect:—

Sheffield & Prebble (accepted)	£1,720	0	0

For the erection of villa residence, Nightingale-road, Wood-green, for Mr. R. Colyer. Mr. J. P. Johnson, architect. Quantities not supplied :—

Mattock Bros.	£997	0	0
Lidstone & Son	898	0	0
Veller & Hamblin	866	0	0
Wood Bros.	863	0	0
Pecock	853	0	0

For extension of outfall works and settling-tanks, at Llanrwst Mr. Thomas Roberts, engineer :—

Jeffreys	£1,316	17	0 !
Davies	1,123	0	0
B. Jones	1,025	0	0
Bugbird	900	0	0
Owen	898	18	0
Hughes	886	0	0
Jones	840	0	0
Jones & Son*	734	0	0 !

* Accepted, subject to modification.

For additions and alterations at West-end Schools, Aldershott, for the Aldershott School Board. Mr. James Gibson, architect :—

Cranstone	£1,856	0	0
Diamond	1,795	0	0
Sebright	1,583	0	0
Hughes	1,465	0	0
Mesher	1,440	0	0
Garland	1,377	0	0
Martin, Wells, & Co. (accepted)	1,350	0	0

For three houses and an addition to Barry-villa, Barry-road, Peckham-rye, for Mr. Joseph Wood. Mr. C. W. Lovett, architect and surveyor :—

Wood Bros.	£2,680	0	0
Tyerman	2,450	0	0
Acock Bros.	2,275	0	0
Buckland & Co.	2,198	0	0
W. & F. Croaker	2,127	0	0
Eldridge & Gee (accepted)	2,010	0	0

For pulling down and rebuilding house and shop, 72, Rye-lane, Peckham, for Mr. Francis Austin. Mr. C. W. Lovett, architect :—

Boadnam & Co.	£911	8	0
Minard	909	0	0
Tyerman	897	10	0
Terry	875	0	0
Linfield	848	0	0
Smith	773	0	0
Buckland & Co. (accepted)	727	0	0

For four detached villas in Woodchurch-road, West Hampstead. Mr. Banister Fletcher, architect. No quantities supplied :—

Whiteman (accepted).

For detached villa, Canfield-road, West Hampstead. Mr. Banister Fletcher, architect :—

Castle	£1,845	0	0
Wagner (accepted)	1,334	0	0

For eight semi-detached villas, Streatham, for Mr. Robert Yeo. Mr. Banister Fletcher, architect. No quantities supplied :—

Hobbs	£5,775	0	0 !
Mason	4,383	0	0
Hobern (accepted)	3,931	0	0
Prout	3,930	0	0 !

For ten semi-detached villas in Canfield-road, West Hampstead. Mr. Banister Fletcher, architect :—

Castle	£11,789	0	0
Hobern	11,560	0	0
Prout	10,960	0	0
M'Cowan	8,450	0	0

For alterations and repairs at the Lord Raglan, Hammersmith, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect :—

Mansell	£291	0	0
Chamberlain	279	0	0
Hunt	271	0	0
Nye	265	10	0
Lamble (accepted)	262	0	0

For alterations and repairs to the Jews' Orphan Asylum, Whitechapel. Mr. Charles J. Jones, architect :—

Toms (accepted)	£1,970	0	0

For the erection of two pairs of small villa residences in the Ladbroke-road, Epsom, for Messrs. Williams & Blomfield. Mr. A. F. Williams, architect :—

Walker (accepted)	£1,600	0	0

For building two villa residences, Upper Tyson-road, Forest-hill, for Messrs. Bailey & Co. Messrs. Waterson, architects :—

Warman	£1,793	0	0
Macey	1,740	0	0
Braggins (accepted)	1,720	0	0

For building two villa residences, Upper Tyson-road, for Messrs. Bailey & Co. Messrs. Waterson, architects :—

Warman	£1,930	0	0
Macey	1,880	0	0
Braggins (accepted)	1,850	0	0

For Sunday schools, Bromley, Kent. Mr. John Sulman, architect :—

	If Pitch-Pine.
Cox	£3 350 ..... £150
Staines	3,284 136
Amand	3,260 65
Crossley	3,181 57
Grubb	3,079 113
Bowyer	3,070 118
Tibbet	3,050 60
Smith	2,999 100
Taylor & Son	2,920 107

For works of water supply and sewerage, for the Llanrwst Sanitary Authority. Mr. Thomas Roberts, engineer :—

	Trefriw.			Dolwyddelin.			Penmachno.		
S. P. Owen ...	£2,218	7	3	£2,278	17	9	£2,630	13	3
Davies	2,172	8	7	1,956	4	2	2,112	2	0
Bugbird	2,057	0	0	1,930	5	0	1,642	0	0
Hughes	1,846	0	0	1,869	0	0	1,889	0	0
J. B. Jones ...	1,862	0	0	1,871	0	0	1,636	0	0
R. Jones	—			—			1,600	0	0
Parry	1,923	0	0	—			—		
O. E. Owen*	1,527	0	0	1,518	0	0	1,530	0	0

* Accepted.

For No. 8, City Warehouses, corner of Fore-street and Cripplegate-buildings, for M. de Costa Andrade Mr. G. Somers Clarke, architect. Quantities by Mr. Charles G. Maylard and Mr. James Schofield :—

Haward Bros.	£36,115	0	0
Baker	33,535	0	0
Lucas Bros.	33,497	0	0
Smith & Co.	33,195	0	0
Brass	31,442	0	0
Holland & Hannen	31,437	0	0
Manley (accepted)	30,875	0	0

For the erection of Schools, St. Clement's-road, Nottinghill (Chelsea Division). Mr. E. R. Robson, architect. Quantities by Messrs. Gardiner, Son, & Theobald :—

Wall Bros.	£7,579	0	0
Thompson	6,871	0	0
Lathey Bros.	6,865	0	0
Rankin	6,700	0	0
Higgs & Hill	6,684	0	0
Williams & Son	6,638	0	0
Pritchard	6,523	0	0
Tongue	6,499	0	0
Hook & Oldrey	6,425	0	0
C. Wall	6,097	0	0

For building a factory, for Messrs. Mullon Bros., Penn-street, Hoxton. Mr. Henry Lovegrove, architect :—

Martin	£2,977	0	0
Browne & Robinson	2,870	0	0
Tarrant	2,484	0	0
Bangs	2,468	0	0
Stimpson	2,465	0	0
Woodward	2,435	0	0
Nightingale	2,376	0	0
Grover	2,244	0	0
Scrivener	2,231	0	0

For the erection of a depôt, for Messrs. Carter, Paterson, & Co., Penge. Mr. Wm. Eve, architect :—

Hubble & Trott	£3,391	0	0
Abraham	3,390	0	0
Sheffield & Prebble	2,851	0	0
Rowe	2,848	0	0
Colls & Sons	2,780	0	0
Hunt	2,767	0	0
Harris & Wardrop (accepted)	2,765	0	0

For the erection of a warehouse, Upper Thames-street. Mr. William Wimble, architect :—

Brass	£4,399	0	0
Hoare & Son	4,315	0	0
Ashby & Horner	4,185	0	0
Falkner	4,147	0	0
Scrivener & Co.	3,934	0	0
Croaker	3,889	0	0
Crabb	3,798	0	0
Morter	3,753	0	0

TO CORRESPONDENTS.

C. H. L. (it depends on the wording of the first notice and the t... that elapsed before the second work was commenced).—S. S. ... J. D. W.—H. S. S. & Son.—T. H. P. D & Co.—H. M.—C. F.—T. ... B. A. H.—G. N. L.—S. & P.—R. W.—W. G.—Viator.—W. B.—S. ... —R. H.—W. R.—W. K.—J. W. M.—H & O.—F. W.—S. A. ... —F. B C. & Co.—S. H.—B. F.—J. G.—C. W. L—J. B. R.—T. ... J. S.—S. R. L.—W. P.—J. M'D. & Son

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We are compelled to decline pointing out books and gi... addresses.

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The Builder.

VOL. XXXVII. No 1902. SATURDAY, JULY 19, 1879.

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The Architectural Restoration Question in Italy.

THE burning question of Architectural Restoration has been recently debated, not only in England. In that country to which we have to look as the cradle of, at all events, ecclesiastical architecture, the same difficulties recur with which we have here to deal; in fact, they there occur on a larger scale. The Italian buildings of hoar antiquity, as to which the question of restoration or of ruin from time to time demands a solution, are numerous, more ancient, and more ...t, compared to either the area of ...try or the requirements of the popu...ian is the case in the United King... it is thus a matter of no small ... for the English architect to be able ... to the eloquent language in which ...nt meeting of the College of Engineers ...itects at Milan, this subject was treated ...or T. V. Paravicini, with more imme...erence to the Church of Santa Maria ...azie in Milan. We give, of course, ...e ideas than the exact language brought ...e College.

...sence of a building interesting to the ...te archæologist, or the historian, which ... decayed so far that a partial, if not a ...struction seems to be imminent, it is ... that the first impulse of the architect ...e to apply the best method of practical ... to avert the threatened danger. But in ...y of each particular case, special diffi... will be found to spring up. Like spectres, ...n the yawning cracks that disfigure the ... walls, they seem to cry, "Do not rashly ...hese venerable crevices, clothed with ... which thousands of generations of ... and of lichens have succeeded one ...! They tell you my history. They say ...se walls have survived the splendour ...ls, the growth and decay of populations, ...rse of events. These ornaments, on ... you look as decayed, are the mute wit...of the patient and loving labour of artists ...nt their lives in executing them, before ...emselves returned to the dust. Under ...dow of this tottering wall the weary has ...rest, the mighty has found peace; the ...f love, and the complaints of sorrow, ...een breathed; the evil doer has found ...ury, and the virtuous has found shelter. ...sacrilegious! Respect the form which the ... power of centuries has given me! Do not mutilate me! Do not change me! Respect me!"

Who can turn a deaf ear to such an appeal? The question of restoration always has been, and always will be, one of the most difficult properly to solve; especially when the building which it is sought to restore is not exactly similar in all its parts; when it has been built at different times, or in different styles; and, moreover, when it exhibits any errors or disconnexions in point of construction, which it becomes absolutely necessary to remedy.

The Church of Sta. Maria delle Grazie, in Milan, which was the immediate subject brought under the notice of the College of Engineers and Architects, is an instance of a building constructed at different epochs, in different styles, and marked by such anomalies, both in structure and in ornamentation, as demand the serious attention of the artist, the architect, the engineer, and the archæologist, how to save it from the opposing perils of utter ruin, and of ill-considered restoration.

The church, as it exists at this time, presents two distinct constructions, which are but ill-joined to one another. Of these the first is in the Transition style that obtained between the decline of Mediæval art and the rise of the art of the Renaissance; the second is in the Renaissance style. Each of these portions of the building is imperfect, full of incertitude, and marked by doubtful touches of modification or of restoration. The church belongs to the Dominican monks, who, when invited by the citizens of Milan to establish themselves in the city, first installed themselves at S. Vittorello all' Olmo, without the Porta Vercellina. Not finding that locality suitable, they asked and obtained from the Abbot of S. Ambrogio a piece of land held on lease by the General Gaspare Vimercato, which was used as the winter quarters of the troops. The General not only gave the Dominicans a palace of his own, adjoining these quarters, and guaranteed the payment of the rent secured by the lease; but further undertook to build, at his own expense, the church and convent. The unusual spectacle followed, of a dispute between the founder, Vimercato, who wished to erect a noble building for the sake of his own reputation, and Father Jacopo Sestio, of Milan, the superintendent of the building, who insisted on an unadorned simplicity of structure that should be in accordance with the professed humility of the order.

The work was commenced in 1465, on the design, it is thought, of Guiniforte Solari. It was not finished by the time of the death of Vimercato, in 1467. In his will the latter left 6,000 scudi for the purpose of continuing the building, which he recommended to the care of his personal friend, Lodovico Maria Sforza.

In 1482, by the aid of the Duke Galeazzo Maria, the roof and the pavement were completed. The building, as attributed to Solari, had the form of a Latin cross, divided into three naves by two rows of monolithic columns, with capitals somewhat roughly sculptured, in the Renaissance style. The arches were pointed, and the vaults groined, in spite of the demand of Padre Sestio that the building should be covered with a plain wooden roof. The exterior is simply ornamented by terra cotta mouldings round the openings for the windows, and in parts by strips of white chalk interposed in the brickwork.

Lodovico il Moro, on assuming the reins of government, whether in order to carry out fully the pious intentions of the founder, or owing to his passion for attaching his own name to the most important structures in the dukedom, ordered the rebuilding of the church with greater splendour, and more in accordance with the taste of the day. On the 29th of March, 1492, Lodovico Maria Sforza, with the aid of the Archbishop Antonio Arcimboldi, and with the accustomed splendid ceremonial, laid the first stone of the new building. The reconstruction commenced with the demolition of the Cappella Maggiore, and of the apse, as constructed by Solari. It proceeded slowly, for want of funds, until the death, on Jan. 2, 1497, of the Duchess Beatrice d'Este, aroused the devotional piety of Ludovico Sforza, and induced him to increase the income of the convent. It is probably to this epoch that we must attribute the erection of the magnificent courtyard of the sacristy, which at the present day, by an act of Vandalism, is in great part walled up, in order to derive profit from its rent. The events of 1499 again interfered with the rebuilding of the church, so that the reconstruction was confined to the great chapel and the apses, and even these were far from being completed.

In considering minutely and carefully the mode in which these two portions of the church have been connected, so many variations, errors, and corrections are to be remarked that it is impossible to refer them either to hurry or to economy. Thus, in examining the construction of the walls, the *terra cotta* enrichments, the cornices and decorative work, it is plainly to be seen, not only that due diligence was exercised by the builders, but that there was considerable care used to exclude any undue haste or undue economy in the execution.

Whoever were the architects who laboured on this rich and imposing structure, which, in spite of its various defects, does not fail to command the admiration of intelligent persons, and to be a work deserving high commendation, the question now most pressing is that of the mode of restoration. It is required to satisfy two orders of requisites; those of a static and constructive character, and those which are artistic and archæological. On one hand we have to insure the safety of the edifice; on the other hand we must avoid introducing the least alteration in the form which has been assumed in consequence of successive modifications, and which may be regarded as displaying a chronicle of this important monument.

In this part of the inquiry arise the following questions.

In the restoration of 1598 the cupola was strengthened by shapeless blocks of granite placed under the architrave of the cornice of the cubic part of the building, on those sides of the cupola where support was wanting; and for further security, on the side towards the street, and on that which is opposite to it, two brick pilasters were added, which rise from the vault of the apsides to the cornice in question, and which abruptly cut into the ornamentation of these two sides. Should these blocks and these pilasters be removed, or no? In the first case it would be necessary to consider how the safety of the cupola is to be insured. In the second, what ornamentation must be adopted that shall harmonise with that of the remainder of the building?

In the second place is it possible to preserve the last bay of the flank of the church, which was evidently a late addition to the original plan, and which now serves as the side entrance to the Cappella Maggiore? If it is to be preserved, ought it to be decorated in harmony with the old part of the flank, or with that part built by Il Moro, to which it more naturally belongs? And in any case, how is it possible to reconcile the projection of the flank, built by Solari, with the cubical part of the Cappella Maggiore without making the want of harmony still more distressingly apparent?

Other questions may occur as to the way of obviating the blots of the mode of joining the pointed portion of the interior with that part of the same which is in the style of the Renaissance; how to deal with the lower part of the façade, spoiled as it is by the introduction of two vulgar little doors; how to supply the defective part of the cornice of the cupola. But some of these questions may be of easy solution, while others, in the opinion of the reporter, are altogether the reverse. Signor Paravicini therefore concludes by requesting the College of Engineers and Architects of Milan to nominate a commission which, taking into due account the many difficulties that beset the restoration of this important church, shall study the mode of meeting all the exigencies of a structural, an archæological, and an artistic nature.

This proposal has a further importance in this country, beyond that which attaches to the preservation of a single monument, however ancient, noble, or interesting. Signor Paravicini has had the merit of putting in a very clear light the knot of that question which has been of late so angrily discussed in not a few English journals. Certain critics, taking, as they conceive, the high-art stand-point, have of late been very mistaken in the abuse with which they have bespattered the work of the restorer, among ourselves. We are among the first to admit that there are restorers and restorers,—restorations and restorations. We yield to none in the reverence with which we would guard the faintest relic of slightest touch of one of those master names of human art,—in whichever branch his native genius found expression,—whether it be a chalk sketch of Titian, full of burlesque malignity though it be, or a carved chair which has been the throne of Shakspeare. But we cannot too distinctly point out that preservation, in each particular branch of art, has its special conditions. The sketch may be glazed, and exposed, without risk of damage, to view; while safe from the destructive curiosity of the uneducated finger,—the organ of touch with which so many untaught persons seek to convey to their own minds the chief points to admire in an engraving, a book, or even an object in the round. The historic piece of furniture,—speaking, as it may well do, with a more direct voice to the imagination than even the paper touched by the crayon or the pen of a great artist,—cannot be thus protected. It can hardly be kept under glass. In that state it would be only an object at which to stare. In a room, tenderly guarded, reverently kept free from dust,—unprofaned by the weight of the chance visitor, as it is respected by the good feeling of those who know what it is,—the chair, or the desk, or the table of one of the chief literary or histrionic celebrities of the last three hundred years appeals to the imagination as few other objects can do. In the long twilight of the Midsummer nights, or in the early dusk of winter owl-light, an imagination even less fervid than that of Blake might give objective form to the great figures of the mighty immortals, sitting, as they so often did on those very boards, in a pose of characteristic meditation.

That, however, is a digression. What we have to say is, that as the crayon drawing demands a different mode of protection from the painting, the painting from the coin, or from the statue, each of these from the wood-carving, or the object adorned with wood-carvings; so does the conservation of architectural monuments depend on conditions proper to architecture as distinguished from those proper to ornamental art. Again, these conditions differ according to the nature of the building itself. A granite obelisk, supposing it to be commemorative of events, not in the history of the Pharaoh of the oppression, but, like the Arch of Titus, of those within the range of our own history, would demand, and ought to receive, a kind of care which would not be applicable to the façade of Westminster Abbey, or to the roof of Henry VII.'s Chapel. Questions here arise, as in the case debated at Milan, in which action is going on, and, unless arrested, will settle the question itself once for all. Such was the case, before cited, of the transept of St. Alban's Abbey. And it must also be remembered that most of those questions which have arisen in this country of late as to restoration have included an element which has not been mentioned by Signor Paravicini, although, no doubt, it was not absent from his consideration. Indeed, it may have appeared to have been one of too obvious and necessary a nature to require much remark. We refer to the character of our chief ecclesiastical monuments at places of worship. When we glance on the long list of upwards of 5,000 buildings,—abbeys, convents, priories, chantries, and the like, which were destroyed by the act of Henry VIII.,—the ruins of some of which yet attest a former splendour,—we ought to feel very thankful for the protection afforded by the public utility of these buildings. Thus, Tewkesbury Abbey church, with its unrivalled round-headed western window, would, no doubt, have shared the fate of other buildings once ruled by the Abbot, had it not been utilised as the parish church of Tewkesbury. We may mention, in passing, that this church contains a very remarkable relic, an organ, surmounted, not by the royal arms, but by the mace of the Speaker of the House of Commons, and said to owe its position in the abbey church in some way to Oliver Cromwell. This protection afforded by the public conscience of the nation to many of our noblest buildings has a converse side. The ritual use protected the structure; the structure, in its turn, protects the ritual use. Thus in any question of church restoration we have to remember that when we are not prepared to set apart a building for monumental purposes alone, replacing its position as a parish church by a new building, the convenience of public worship must be studied by any architect who has to pass a judgment on a question of restoration or repairs.

Thus, then, with our churches,—first, maintenance of the structure itself; and secondly, maintenance of the structure as adapted to its proper use, may be taken as conditions precedent to the third, and scarcely less important object, of maintenance of the historic form and features of the building, from the pavement to the roof, from the rich hues of the window jewelry, to the curves of the moulding of the battlements. We owe it to Signor Paravacini that the great difficulties that may at times occur between the preservation of the whole, and the preservation of the parts unchanged, has been so well brought under notice. We have yet to look forward to the time when, as educated men begin to understand the self-contained difficulties with which the architect has to struggle, they will appreciate at its due value the undistinguishing howl against "restoration," of which we have heard so much of late.

Furniture.—At the Yorkshire Fine Art and Industrial Exhibition, Mr. W. Snowdon, of Rochdale, makes some figure amongst the exhibitors of furniture. He shows a white oak fire-place buffet, with dado furniture. Adjacent are a couple of dining-room chairs, in white oak, elaborately carved and upholstered in morocco, with gold embossings. The adjoining section contains one of Mr. Snowdon's handsome bedroom suites in sycamore and walnut, with gold enrichments. The workmanship seems very good.

CITY OF LONDON SCHOOL COMPETITI

THE committee of the City of London Sc have done wisely in admitting public spection of the designs sent in; for in important competitions, when (as so o happens) complaints are circulated that ju has not been done, or that serious mistakes been made, the fullest publicity is the answer to such charges if they are unfoun and is, in any case, a declaration of good f and freedom from any intention of unfair tiality. This latter charge, however, no sens person, we take it, would bring against school committee. Competitors who are un cessful sometimes partially lose their heads, see unfair motives in everything that is d But whether or not the committee have attempted to do what they are not qualified is another question.

The problem presented by the condition the competition is not an easy one, and mi no doubt, be susceptible of various soluti but there are one or two points which naturally fixed by the conditions laid d One of them certainly is that the large between which and the numerous class-ro communication is to be provided without classes interfering with each other, must be ce in the plan. We do not see how the condit are to be properly fulfilled otherwise; and far as we have been able to observe, no one has departed from this principle, and placed large hall at one side of the plan, has succe in producing a satisfactory plan; on the o hand, the temptation to make an imposing f towards the Embankment and the river i course, considerable, and it is partly, no do this ambition which has brought the large to the front in some designs, advantageously the elevation, but by no means so for the p Other competitors have looked for a front fea in the dining-hall, with its large wind which comes very suitably as a first-floor fea in the Embankment front. Equally it seem us *de rigueur* that the administrative portio the building must be on the ground-floor of Embankment front. The entrance is necessa in this front, the secretary's office must be n the entrance, the rest of the administra department must be near the secretary. plan, therefore, is settled in its main feature far; and the class-rooms, requiring good li must be on the west and north sides looking o the new street and the playground area, as east side is encumbered by the Royal H buildings shutting off a great deal of li The details are susceptible of many modifi tions; but as far as this main grouping is c cerned, it appears to us that no practical arc tect could hesitate.

Some general considerations as to the st and treatment of a school building of this cl suggest themselves, considerations which h not been present certainly to the authors e of what may be called, from certain points view, some of the best designs. It should borne in mind that such a school is not ess tially, in its working, a public building. Intern convenience of arrangement, with inter-co munication for its every day occupants, is really important characteristic; for except rare occasions of prize giving or "speech day the outside public have little or nothing to with the building, which is essentially a priva one. This consideration should influence bo design and plan: a very grandiose character such a building is inappropriate; it is really large domestic building, and should be treat accordingly, leaning more towards the picto esque than to the palatial character. For t same reason large and important entranc and entrance-halls are unsuitable, or at le unnecessary; they waste space in provision what is very rarely wanted, and is of seconda importance. The large hall is not to be treat as a public hall; it is mainly for the use of t school. Some competitors have treated t design as if it were a municipal building, a planned the hall and its approaches as if it we a hall for public meetings, which is quite u suitable. All that is required is that on t occasions when a portion of the public a admitted or invited, they should have convenie and sufficient access, but there is no need of b vestibules and crush-rooms.

This being the philosophy of the matter, l us see how the leading plans in the competitio have put it into practice, commencing with t three which have been selected for premi tion.

e three designs which have gained vour in the eyes of the committee ld have no hesitation in saying that and Learn," to which (as already the first premium has been awarded, est; whether it is the best out of the fifty-three is quite another matter. ge hall is made architecturally the ternal feature, not brought up to the t with only a low building before it; it ith its longer side parallel to the Em- at, and the bulk of the class-rooms are ories, in a long wing running up the e of the site, thus forming with the l a figure of L. This is certainly not a of meeting the problem of communi- tween the class-rooms and the hall, as the traffic to one end of the hall, and long passage of approach from the lass-rooms. The hall is amply provided ors, two at the west end and three on side, but the larger number of doors where they are not wanted, and will be use, and the plan does not, as a good ld do, suggest at once the subdivision ; a proportion of the boys may be to use the side doors of the hall, would not naturally or of necessity d there will be crowding at certain the corridors and staircase. The ural appearance of the building is enaissance of a French type, rather ike; a style not out of keeping with a here is nothing remarkable about it, pleasingly grouped and treated. As id, we cannot regard the plan as a ry solution of the problem in regard to rouping; and some of the requirements ded to in rather a rough-and-ready For instance, instead of the ante-room which some competitors have taken uble in arranging for each class-room, merely a wooden screen or partition off part of the room; not a very finished way of planning. None of ted competitors have managed this the plan satisfactorily. "Live and gets a large and lofty gymnasium in e under the great hall (the floor of kept very high), and this is one of the gs in his plan, as it provides for the playground required without infringing open space of the external play-

grounds," the second premium design, d on a better principle in regard to the lass-rooms, the former being placed in re of the back portion of the block, north and south, and the class-rooms in blocks on each side of it. This plan s a playground under the hall, which nclude, therefore, has appeared an e feature to the judges. The style may ribed as Elizabethan, with a bearing the Classic than the Gothic element yle of compromise. The detail is good, ral appearance a little heavy. The as expended a great deal of space in a rance-hall, which might have been turned account. The class-rooms are the ape for lighting, having the longer side angles to the window-wall, so that the hest from the window will be insuf- lighted. Where a room for such a can only be lighted from one side, it e so shaped as to bring every one the light as can be conveniently

licity": is a Gothic design of plain and pe, with geometric tracery in the prin- dow-heads. The plan cannot be said ll a good one for the purpose. The large rought to the extreme front, forming of a quadrangle, round which the rest uildings are grouped. Architecturally, od enough, as far as effect is concerned, ake our stand on a central hall as the ue position. The class-rooms are open me objection as in the last, of having f the room turned to the light instead de. Some parts of the plan surprise little: for example, the arrangement of 's offices and water-closets in the the space under the large hall, lighted ilasted only into the cloister, and with a count of the very undesirable usury of bor- ght. Where the unfortunate secretary light enough in his private office to do without gas it is difficult to see. The is unobtrusively picturesque externally, confess ourselves utterly at a loss to understand the reason for the selection of the plan for especial commendation.

We may observe that all the three premiated plans have central entrances,—an arrangement the wisdom of which we much doubt. It almost necessarily entails a certain separation and breaking up of the administrative department, which should be as closely compact as possible.

Let us now look at some of the less fortunate designs, which are collected in a warehouse in Aldermanbury; those, at least, whose authors have consented to a public tribunal, which some have declined. We omit noticing designs which are at once manifestly unsuitable, and which have no feature suggesting special comment, and we do not follow the order of hanging in any way, as at the time our first notes were made a good many of the most elaborate designs were still shut out from criticism, awaiting the consent thereto of their authors. Among those which were then open to comment, we may first mention, as certainly one of the cleverest designs in the collection, that entitled,—

"Move": This is a design in Geometric Gothic of a domestic type, *i.e.*, with little tracery, which is confined to windows of the most important apartments, the rest being mullioned lights. The entrance is at the angle next the hotel, and marked by a large powerful-looking tower forming a large mass, the obvious object of which is to dominate the hotel; the tower looks, however, a little stumpy, and would be better, architecturally speaking, for a lantern on the top of it. The great hall, an oblong apartment, is in the centre parallel to the embankment, and the west end of it, with a large traceried window, shows effectively over the lower class-room buildings. The class-rooms are placed west and north, the latter on two stories. The access from them to the large hall is well and rather effectively managed by short corridors between the areas for lighting which surround the hall; it makes a good deal of corridor space, but it is an arrangement very well calculated to keep the classes from confusion and crowding in passing to and from the hall. The administration department is in the front block on the ground-floor, exceedingly well arranged, the secretary next the entrance, the library and committee-rooms in the centre, the head-masters' rooms at the south-west angle so as to be equally near the administration and the class-rooms. Each class-room has a lobby and cloak-room adjoining. The common room (over the headmaster's rooms) is also very well placed for communication, and would be a charming room, with its oriels giving a view up and down the river. The top lights for drawing-classes are introduced in the one-story class-rooms on the west. On the whole this strikes us as a most able plan; and the exterior design, though a little heavy in detail, and capable of improvement, is picturesque in general effect, and looks like a school. The author, by the way, seems to have forgotten the covered playground specified in the conditions. On the other hand, he has studied the composition of the building more than is usual, giving on the block-plan the points of view from which to obtain the best combinations.

"Our Boys," has a very pleasing Late Gothic design, but the plan is rambling and very unpractical.

"Practical" (in small letters*) is noticeable on similar grounds, for a very well-drawn perspective of a picturesque building in the style which is a kind of cross between Jacobean and Elizabethan, with heavy and picturesque oriel windows. The author's claim to his motto is hardly borne out by the fact that he has filled up the ends of his principal front corridor with water-closets, terminating the vista each way, and through which the corridor is partly lighted. The things done in competition under the name of "practical" are certainly extraordinary. In the main, the plan can only be considered tolerable; the interest of the set consists entirely in the design and draughtsmanship.

"As the Twig is bent the Tree inclines."—This is a rather fine building, but the author has been looking at it too much from that point of view. He brings the entrance to the main hall up to a large entrance vestibule, spacious and effectively planned, but, like some others of the competitors, he forgets that the great hall in such a building is not to be treated as a public meeting-room. It will, on a few occasions in the year, become so, perhaps, but its main use is for the school, not for the public; and to provide very easy public access, and be comparatively indifferent to the access from the interior part of the school (as in this case), is to put the accidental before the essential. The plan could not possibly be recommended as a school plan, though it would be an effective and suitable one for municipal buildings.

"Palmam qui meruit ferat" has a picturesque and pleasing design, but the front as well as the plan has the mistake of the last-named set,—it is too like a town-hall. The author has, independently of this, put himself quite out of court by contravening the instructions of the committee in making the latrines a part of the main building, and opening into them out of the class-room corridors.

"L" merits a word for the admirable and suitable effect of his design as shown in the perspective view,—a quadrangle with a low side (one story) towards the front, Jacobean details with mullioned windows. The plan, and indeed the elevations also, suggest inexperience, but the general appearance of the perspective design is most picturesque and appropriate, perhaps more so, in regard to exterior, than any other drawing in the collection.

"Practical" (in large capitals), a weak design in Geometric Gothic, but which we cannot resist noticing, to point the moral of "Practical" the second time. Here is a building, an essential condition of which is access to the main hall from all the class-rooms, and here is a competitor calling himself practical who puts the hall at the south-east angle, and runs out the bulk of the class-rooms in a long gallery extending far beyond the main block at the north-west angle.

"Compactness."—This is not undeserving of its name. The plan is in many points very good in detail, and the design, Geometric Gothic (brick, with stone mullions and dressings), is in very good taste, and shows considerable refinement. The mistake of this plan is, again, the position of the great hall, which is brought to the front parallel to the Embankment. The access from the class-rooms to it is fairly managed, all things considered, but the whole scheme embodied in the instructions points, as we said, so plainly to a central position of the main hall as the key of the plan, that it is surprising that any architect who could turn out so good a design as this should not have perceived that such an arrangement as he has adopted was only making difficulties and defects in his plan. The wish to get the large hall in front seems to have been his stumbling-block. The hall is also turned the wrong way about. The dais should have been at the end nearest the position of the head-master's room and the library on the floor below. As arranged, the head-master would have a Sabbath-day's journey from his room before he could appear as *deus ex machinâ* on the platform.

"Concentration."—This is a clever though a very peculiar plan, and certainly deserves attention. The author has adopted the system of doing away with any corridor between the class-rooms and the central hall, and making them open right into it, thus obtaining, nominally at all events, an equal accommodation with others on a smaller area. On the ground floor, however, it seems to be little more than nominal, as the outer margin all round the hall is really an aisle divided off by columns and not available for seating, and it appears to us that the result would be a too intimate inter-communication between all parts of the school, to the detriment of quiet, and of the separation of departments, which is desirable. Upstairs the advantage is more apparent, and the drawbacks less so. We should be very cautious before recommending such a plan for adoption; but it is certainly a clever and original experiment. The design, a modified Elizabethan, looks very well in the admirably executed water-colour perspective. The interior of the hall is effective, but could hardly be acoustically satisfactory.

"Facta non verba," a Late Gothic design with a dignified central tower, the whole suitable in character and expression to the purpose of the building. A point in the plan is the grouping of the class-rooms in projecting bays of two rooms width, with a space between, so that each class-room has a side window (for ventilation) as well as the main windows. It may be questioned, however, whether this loss of space should be incurred for an object which, with a proper system of ventilation, should be attained by other means.

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* There are three sets of drawings with this motto, which we can only distinguish by describing the lettering.

The access from class-rooms to main hall is well arranged for.

"Blackfriars."—This is one of the plans in which the assembly-hall has been treated in theatre form, and this feature has influenced a large portion of the plan. The hall is central, the prosceniun wall (if we may so speak) being next the front corridor, and the semicircular auditorium towards the playground, and around this run on each story corridors from which the class-rooms open, forming a series of small blocks radiating from a centre, in a manner, perhaps, a little too much resembling an approved form of prison plan, and architecturally producing a bad effect towards the playground side, the appearance of which, however, might very well be improved without altering the plan in any main feature. For practical purposes, we are decidedly in favour of the theatre form for the assembly-hall, and this arrangement of the class-rooms round it has great merit, both in suitability and simplicity of plan, and as a piece of arrangement does credit to the originality and practical sense of the designer. These qualities are, unfortunately, less conspicuous in the arrangement of the front part of the building, which is spoiled by the stumbling-block of the central entrance; the door leading into the centre of the platform of the assembly-hall, for instance, immediately opposite the outer entrance door, is absurd, and there are other bad mistakes. The design is cold and uninteresting, and looks too like a railway hotel. The principal feature of the plan, however, makes it worth special attention in spite of these faults.

Under the same title, and by the same author, is another plan, showing an oblong central hall, parallel to the Embankment, with a main entrance near the south-west angle, and the administration department shut off from the rest by a door at each end of the administration corridor. This part of the plan is very good; but the class-rooms are rather scattered, and the position and access to the dining-hall not good.

"Royal Academy": a Classic design of some dignity; a portico in the centre, an order of pilasters carried through two stories, Palladian fashion, at the sides; cupolas at the angles. The plan shows the large hall in a central position with the longer axis north and south. The access from the class-rooms is well arranged, but the class-rooms are placed the wrong way for lighting, as in some other plans. The administration department is in front, and, as in so many others of the designs, is split in two by the entrance. The dining-hall is rather inconveniently placed in the extreme north-east angle; the boys in the class-rooms at the opposite extremity would get an appetite for dinner by the long walk.

"John Carpenter, Founder": a rather pleasing design, though a little "gimcrack" in general effect. The various features which characterised the transition from Gothic to Renaissance in England are now becoming so mingled and variously combined that we want two or three new names for the varieties of architecture thus generated; neither "Elizabethan," nor "Jacobean," nor "Queen Anne," describes or includes them all. We may perhaps term this the mullion-and-pot variety: the windows being mullioned *à la* Gothic, the cornice crowned with wreathed pots *à la* Renaissance. The plan has a central large hall (north and south), and dining-room behind: this portion of it resembles several other plans; the specialities are an octagon entrance, agreeable as far as effect is concerned, but knocking an immense hole in the middle of the administration department: the basement is entirely made into playground or gymnasium, including a large swimming-bath, an admirable addition which we wonder that no other competitor, as far as we noticed, has thought of suggesting. Some parts of this playground basement would, however, be rather insufficiently lighted.

"La Vie durante": Palladian architecture with a cupola in the centre of a perfectly symmetrical front; too municipal in appearance, but designed in good taste and with thorough knowledge of the rather frigid style of architecture selected. The plan embodies somewhat the same idea as that shown in "Concentration," described above; but carried out with more consistency and simplicity. The large hall, placed centrally and parallel to the embankment front, becomes, in fact, on this plan, a kind of *salle des pas perdus*. The main-entrance vestibule and the subsidiary boys' entrance-porch lead right into the central hall, and from this all the class-rooms open round, each of them divided, however, from the centre hall by a small lobby flanked on either side by the hat and coat closets. Behind the main hall a large staircase connects the school portion with the masters' common room, and over this with the dining-hall, the latter partly carried on piers, leaving space under it for a covered playground. The plan could hardly be carried out better and more symmetrically, granting that this treatment of the main hall as a common passage to the whole of the school would not interfere with its practical use for some of the purposes for which it is required; but that is just what appears to us to be nearly inevitable. The plan is nevertheless a really clever one, the drawings beautifully executed, and the whole highly creditable to the author.

"Plan" shows a large and fine perspective view of a picturesque building in which mullions, pilasters, circular-headed windows, and mansarde roofs are combined into a rather incongruous but effective whole, suitable in architectural expression. "An Old Scholar" sends a fine and elaborate set of drawings of a building in Gothic Perpendicular style, rich and effective in treatment. In both these cases, however, the merit is all in the elevations and perspectives.

"Practical" (in small capitals): of course an unpractical design, with a large and costly centre tower and spire, and a great deal of space wasted in a cloistered court, purely for effect. The large hall is in the rear of the court, running east and west parallel to it. The intercommunication between class-rooms and other portions is fairly maintained, but there is a want of purpose in the plan, with a good many weak points. The design, nineteenth-century Gothic with French leanings, is in many ways admirable, both in detail and in general treatment, though we hardly think it in keeping with the *genius loci*.

These are the plans, among those exhibited, which seem most to call for special comment. A great deal of very clever work has been done and thrown away, as usual in such cases, and we cannot express ourselves as satisfied with the result. Even as regards "Live and Learn," it is certainly not the best plan among the competitors, though it is the best of the three selected, and has probably a claim to one of the premiums. We should have little hesitation in saying that the best plan of those submitted is "Move"; in fact, it is one of the cleverest plans we have seen, and the architectural treatment is above the average, and is peculiarly suitable in character to the purpose of the building. We presume that there must have been some decided technical reason for turning out such a plan in favour of those selected. At the same time, we may add that we are convinced of the entire *bonâ fides* of the committee in wishing to select rightly, and we have reason to believe that very exceptional trouble has been taken to secure a thorough examination of the designs in a systematic manner. Admitting this, however, a committee such as this is not competent of itself to do justice in a competition of this character, and the members of it ought most certainly to have called in some independent eminent architect to assist them in the selection.

A memorial, praying that they will even now do this, is about to be presented to the Common Council, and is already signed by the following, as amongst the competitors, nineteen of them being members of the Royal Institute of British Architects:—

J. & S. Flint Clarkson, John P. Seddon, Thomas Arnold, J. Douglass Mathews, Thos. Blashill, Robert Walker, Fredk. Wm. Tarring, Lacy W. Ridge, J. M. Hay, Thomas Oliver, R. Stark Wilkinson, Chas. Henman, Thomas Harris, Jno. Belcher, Thos. W. Aldwinckle, Wm. Ashdown, Wm. Henman, Wm. Ward Lee, T. W. Cutler, Henry S. Legg, Edwd. Clark, Thos. Goodchild, J. Lewis Holmes, T. Roger Smith, Arthur Billing, Thos. E. Collcutt, Edwd. C. Robins, Robert Aldridge, E. R. Hewitt, James T. Walford.

One further remark suggests itself, viz.,—that it is a great pity that in this, as in so many similar cases, the opportunity for public criticism has been deferred till the choice was made, so that the criticism loses its chief value. If the examination and comments of architectural critics, especially, are to go for anything, why not give opportunity for them at a stage of the proceedings when suggestions might have some practical effect, instead of admitting them only when the choice is made, and then asking them merely to say whether they think it a good or a bad one?

THE NEW COLLECTIONS AT FLORE

WHEN the Government of Italy, in 1864, transferred to Florence, that city resolved reviving its ancient glories, and beco worthy of being entitled the Italian capita the result, however, Rome, the natural m polis of the peninsula, regained that hist distinction, and the Florentines were appointed. But this did not deter them following out the project of two new mus upon a scale consonant with their tradit fame in that respect, and, although the ta bringing together, in the course of a few y a genuine artistic and antiquarian colle was a difficult, and even a hazardous one, undertaken, and has been crowned with plete success. The obstacles alluded to many and serious. Italian archæologists been warned by the forged coinages of Parthian and Sassassinide dynasties, v had recently flooded the market from T and the false Assyrian monuments which ultimately proved to have been fabricat Diabekir. Mere money could not carry o idea. No amount of it would supply the of large experience, or of, so to speak, a antiquarian scent. Still, the examples c Pinacothek and Glyptothek, at Munich, encouraging, and it was remembered also South Kensington had secured the finest trations of the Italian Renaissance, while, Metropolitan Museum of New York it doubtedly the best collection existing of quities from Cyprus, gathered by G Cesnola, with the choicest of the jewels stones, archaically engraved, belonging t celebrated treasury at Curium. The at was therefore made, and Florence pos two fresh collections comparable, in respects, with the Pitti and Uffizi them Tuscany, in fact, notwithstanding war spoliations, has never ceased to be rich relics of art; nearly every family pre heir-looms of this character. Its ch abound with them; and of these many tho are now in the trust of the Florentine m pality. Not a few ancient and scarcely-inh palaces were ransacked, beneath the ro which, in neglected corners, spun over cobwebs, were discovered rare specime furniture, ornamented with graceful meta and carving, and wall-pictures concealed be repeated coatings of house-painter's Those, especially, of the Grand Dukes, th perial Poggio, and the Pratelini, were found with this kind of opulence,—pictures, br bedsteads, old marbles, porcelain, and go silver plate. Then, the custodians of the collections lent their aid. The Uffizi, stance, had long been encumbered, th want of space. Many of its most precio tents,—281 pictures, and 29 statues them,—were stowed away out of sight, in or cellars; and these have, for the first been brought into the light of day. some of the more antique Italian cities,— Cortona, Chiusa, and Perugia,—consent part with examples of their most che treasures; but no very large contrib could, of course, be expected from source as these. A richer field was opened by comm with speculative collectors whenever freshl were explored or excavations made, unt Government asserted a right of priority i purchases. In addition, the sculptor San made a present of his "cabinet" to th National Museum, a course which was diately adopted by the representativ numerous historical houses, as well as w amateurs, Signor Vagnonvilla giving his set of vases from Greece. But perhap most abundant harvest was reaped fro convents, just recently suppressed by an the Italian Legislature. From these we quired, in multitudes, pictures that had a their chapels, and sculptures that had dec the tombs of princely and noble perso Some of the most authentic specimens Lucca della Robbia were brought fro famous monastery of Vallombrosa. In after the dispersion of the dynasties during so long a period, divided the rule Peninsula, the King of Italy found hi among all the sovereigns of Europe, the on possessed the greatest number of historic laces, in each of which the accumulations turies were stored. They could not possi inhabited by the royal family, even for a

gh, in the year; they could not, without mous cost, be maintained in solitary w show, a few excepted, at Turin, Milan, Rome, and Florence itself. The others ven over, more or less, to the munici; that of Poggio Imperiale was converted academy for teaching the Tuscan dialect, galleries being turned over to the new i. The "Adonis" of Michelangelo had however, been transferred to the Hall of maphrodite in the Uffizi. The churches, id their tribute, and, in the general work nstruction going on, found themselves r more rich in treasures of this kind d been imagined. Exquisite pictures covered in cloistered nooks, seen of none except sacristans or bell-ringers; somedden in the sacristies themselves, or in d lumber-rooms. It was thus that the al bas-reliefs executed by Lucca della and Donatello for the organ-loft of St. f the Flowers were rescued from the y in which they had been concealed ever ey were taken down to make way for decorations on the occasion of the marthe Grand Duke Ferdinand III. towards l of the seventeenth century. They d in a sort of contractor's shed, but ce more been restored to light, and are d to be among the finest productions of Tuscan masters.

he whole of the new collections are not ne roof. By the side of the National have grown up two other institutions,—uscan Museum and the Museum of St. The former has been created with a tinct and useful purpose. The archaeof Tuscany, it ought to be known, revolt the sense in which the term "Etruscan" only applied. They do not admit that of any inventive people, ancient or can be adequately represented by a vases, however varied or characteristic, they assign to Etruria work which manielongs in its conception to Corinth or This eclecticism, however, has not prechem from furnishing a "cabinet" of ble value, containing, with the rest, the and the Pallas of Arezzo; the statue of vul, vulgarly labelled "The Orator," dis.D. 1556, beneath the waters of Lake ene, and a crowd of bronzes, mirrors, black pottery of Chiusa, sarcophagi d with human figures, and Greek and work, conspicuously separated from the acknowledged Etruscan. This collecoriginally placed in the gallery that he Pitti with the Uffizi palace; but it overflowed those limits, and invaded i itself. The fresh discoveries almost de in the rich soil beneath the Tyrrhees necessitated a removal, which took the disused convent of St. Onofrio, d on account of a fresco attributed to in his youth. There, too, were de the Egyptian galleries of Rosellini, the of Champollion, with the matchless is vase," so named after the unwearying r, who burrowed for it in the depths of an marshes, and found it at last near It was classically called "the crater of s," and is reputed to be the largest remarkable of all archaic vases decoith figures in black. Close to it is a gus, in Carrara marble, adorned with s in high relief, representing battles Greeks and Amazons, dug up at the ancient Tarquinia, only four years there is no catalogue of the collection The third, to which reference has been that of St. Mark, a convent of great and a high historical reputation, within alls lived Fra Angelico and Fra Barto- Its cloisters, its refectories, its chapels, cells, still retain the frescoes worked m by the genius of the Dominican of whom Ghirlandajo was one. It was allery in itself, but, being appropriated State, was forthwith converted into a and it is believed that such an assemold missals is nowhere else to be found. regretted, of course, that these treasures distributed in three different buildings; Florentines are already taking thought question of either fitting up one of their palaces to receive them altogether, or ch might be better,—erecting a new , expressly adapted and dedicated to pose. While thus bent on collecting, it hoped the authorities will not omit to oper encouragement to production.

MR. POYNTER'S LECTURES UPON ART.*

STUDENTS have been naturally curious to fathom the æsthetic views of the Director of the Art Department of the kingdom. Mr. Poynter has given them the means of gratifying that curiosity by publishing Twelve Lectures upon Art. It is a legitimate curiosity, for whatever merits a man possesses as a painter, it is the grasp of principles, correct principles, which alone qualifies him as an efficient teacher and director.

Mr. Poynter is right when he says that it is much easier to write about art than to practise it,—that is, if he merely mean that it is easier to write *anyhow* about art than to practise it,—but if, on the contrary, he means to say that it is easier to write *correctly* about art than to practise it, we entirely differ from him. The lectures under review refute to some extent his own assertion. We also know that whilst there have been many great painters, sculptors, and architects, there has not as yet been a single successful and reliable expositor of the theory of the Fine Arts. In fact, notwithstanding the progress which has been made towards scientific exactness in every other department of human inquiry, the theory of the Fine Arts stands at this very day on about the same footing as astrology did to science. And, strange to say, the scientific acumen of the age is so obtuse in regard to this matter that it rather pats the rhapsodical art-mystic on the back for writing as wide of his mark as the alchemist did of chemistry.

Our author avers that example is better than precept to the student of the fine arts. This is a mistake; and if in his position the only alternative left him were to choose between the two, he ought to desire a thorough command of *precept*. Mr. Poynter has not been driven to so hard-and-fast an alternative, but it has been demanded of him, in virtue of his official position, that he should be theoretical as well as practical, and therefore he cannot consistently with his duty lay *precept* aside to give himself over to *example* in painting. Otherwise, as it stands to reason, the examples which he contributes to the Academy walls and elsewhere need not have been supplemented with any other title than R.A. Mr. Poynter, somehow or other, appears strangely to forget, both in his preface and at the conclusion of his lectures, the *raison d'être* of his Directorship of the Art Department; for, as its director, the promulgation of correct precept is his duty, and the object of the Art Department was not to invite foreigners over wholesale for our instruction, but to render us independent of foreign influence and aid in the art manufactures; whereas he himself repudiates the function of preceptor, and confesses that the Art Department is inadequate to effect the end for which it was designed.

"Example is better than precept" is, as an adage, only meant to have a special application to those who make great professions without performance. It has no reference to precept in a scientific and wider sense. The libraries of the world testify to the value men have set upon precept; and it is through the precepts contained in them that good example has been rendered possible. Moreover, Mr. Poynter's theory that example is better than precept, in the sense in which he uses it, is utterly controverted by facts, for never had any nation such a wealth of art-example as this, and of example far excelling any which even Mr. Poynter is likely to give us. The world has been ransacked for it, and the cry from South Kensington and Trafalgar-square is ever for more, and yet, as our Director confesses, without effect. "Example" has been developed to the full, whereas "precept" has not yet reached its exact or scientific stage; that is to say, we have it not; though from the fragments in the works of Vitruvius and of Leonardo da Vinci we must feel that, in the great periods of art, theory had attained to a scientific exactness of which we have not at present the least conception. Precept is imperfect, and the importance of organisation in the development of taste, and of an enlightened demand, are overlooked. These are the three points requiring the earnest attention of all those who desire to raise the status of art in this country. According to political economists, an enlightened demand should be the prime mover upon which all good things in art await. To imagine that a taste for wood-carving, for example, can be forced merely by establishing a Wood-carving Academy is to misread the teachings of history. Wood-carving flourished in England when there was a demand for it, and goes out, just as line-engraving does, because there is not.

If Mr. Poynter does not believe in the efficacy of precept, we cannot conceive what induced him to publish his lectures, more especially that one which he himself considers "obsolete," though he ought not to require to be reminded that correct principles, correct precepts, are never "obsolete." At all events, having given his precepts to the world, they are open to criticism, and we think we shall be able to show that it is not *easier* to write *correctly* upon art than to paint good pictures.

Imprimis, almost the very first paragraph of the first lecture is a statement which assumes the form of a general principle, though it will not for a moment bear looking into, and should have been one of those "too dangerous generalisations" which we are told were expunged,—

"The qualities of mind required to produce a work of art are two,—the power of design and the power of imitation."

Now, there are two arts which are not imitative,—viz., architecture and music,—and to which, consequently, this formula will not apply. After this Mr. Poynter runs head-on to the old fallacy that *fitness* constitutes beauty,—the hack fallacy, indeed, of writers upon art, though Haydon, years since, saw that it would not hold water. Perhaps Mr. Poynter considers that he holds a brief for the dogmas of South Kensington? Beauty is merely an accident of *fitness*, or everything in nature which is adapted to its purpose would be beautiful, as we know it is not. The hippopotamus, the rhinoceros, the orang-outang, the gorilla, the pelican, &c., are all admirably *fitted* for their several purposes, but are by no means beautiful. Everything in nature is not intended to be beautiful; there must be contrariety, or even the beautiful would no longer interest us. That the form of *some* ships and of the plough, which Mr. Poynter cites as instances, should please us is merely accidental; beauty is not a necessary correlate of fitness, otherwise the paddle-box, the smoke-stack, the derrick, the barge, all admirably fitted to their purpose, would also be beautiful. The beautiful consists not in fitness, but in a certain appositeness to our own nature which some things which are fitted to their purpose have, and others have not. It is astonishing to find this fallacy of fitness thrust forward over and over again, when every minute's experience should prevent it. Farther on Mr. Poynter says, "the ugliness of the toad is proverbial"! Who made it? Is it not fitted to its purpose? And then he immediately falls foul of the engineers for having made a toad of a railway bridge *fit* but proverbially ugly. Why were not the toad and the railway bridge beautiful? Their *fitness* is undeniable.

Then, again, the word "truth" is used over and over again to the confusion of the reader, till he is compelled to inquire, "What is truth?" There is truth of fact and truth of principle,—two distinctly different things. This confusion of ideas which follows the use of the word "truth" would be averted if writers would inculcate the pursuit of "the right"; for this is really what they mean when they would inculcate "a love of truth." What is right? That should be the question which should preface all our other inquiries.

Mr. Poynter's remarks on the proclivities of "shoddy" in matters of taste, or rather of vulgarity in matters of taste, exhibit an even tenor of common sense; as also for the most part do his lectures upon Old and New Art and the Systems of Art Education; and the reader would do well to carefully note what he says upon the institution of "Scholarships in Italy in the Old Time and in France in the Present Day." It will be a great gain to the Fine Arts in England when we shall rouse ourselves to adopt it.

We entirely differ from our author, however, in his advocacy of the use of the "stump" in preference to the "point." It has always begotten a loose and careless manner. It encourages the student to attempt to run before he can walk. It is far better as a discipline to ascend from particulars to generals. It is true that a fine work of art must exhibit both general form and detail, but the careers of the great artists, as well as of the great scientific men, have always at the commencement of their careers shown a loving care for detail, for facts, before they proceeded to generals. Some of the

* Chapman & Hall.

finest art-studies by the greatest men were made with the silver point. Further on in his lecture on the value of prizes, he quotes Reynolds upon this point:—"A lively and what is called a masterly handling of the chalk or pencil are, it must be confessed, captivating qualities to young minds, and become, of course, the objects of their ambition. They endeavour to imitate these dazzling excellencies, which they will find no great labour in attaining. After much time spent in these frivolous pursuits, the difficulty will be to retreat; but it will then be too late, and there is scarce an instance of return to scrupulous labour after the mind has been debauched and deceived by this fallacious mastery." *Per contra*, we entirely agree with the following, a passage which would considerably enlighten the proprietors of private colleges and schools as to the right method of teaching drawing:—"There is no such thing as teaching landscape painting; I cannot consent to consider it as a separate art; teach a student to draw and paint, and he will paint landscape or figures according as his inclination to one or the other dictates."

We would also have the general reader and the student ponder over what Mr. Poynter states about the universality of the genius of the greatest artists, from page 210 to 214. And we also cordially sympathise with him in his antagonism to the opinions of Ruskin in chapter ix., though we may lament some of the expressions used. The following passage, too, goes to the root of our national inferiority in matters of taste:—

"That feeling of love for good work for its own sake, and of pleasure in bringing it to perfection, which is the most certain evidence of a genuine artistic spirit, was not in former times the property of a few individuals of superior gifts and education; it was the common property of all handicraftsmen, whether possessed of original talent or not." . . . . "That such a state of national sentiment has existed in the world is, however, indubitable. We have the evidence of everything that the Greeks have handed down to us from the best times of their art, that, amongst them at least, nothing short of perfection was tolerated; nay more, that they were possessed of a critical faculty which would seem to have surpassed our own, so that their trained and cultivated perceptions were satisfied with nothing less than a subtlety of form and proportion, the advantages of which to our coarser senses seem inappreciable. Nor is it only in their more important works that this perfection is to be found, or in the decoration of such things as our modern cant calls art objects; the evidence of their instinctive love of beauty and perfection of workmanship is equally to be seen in their more trifling productions. The Greeks in their art did not aim merely at adornment; they aimed, above everything, at completeness and consistency, while their natural instincts, heightened by cultivation, supplied them with ever-varying forms of that beauty which can be appreciated by the eye, but of which description can convey no idea. We may safely say that everything they produced was a work of art, because they never tolerated anything short of perfection in workmanship; and we cannot but believe that the noblest spirit of rivalry in art animated the whole people, from the highest to the lowest."

It is only when Mr. Poynter ventures out of his depth into general principles that he flounders; when his feet touch the ground, the general reader and the student may follow him with pleasure and profit.

The Sale of City Churches.—The return presented to the House of Commons of the number of churches pulled down or condemned under the Union of Benefices Act (1860), with a statement of the sums realised by the sale of sites and what has been done with the proceeds shows that the following sums were realised by the sales:—St. Benet, Gracechurch-street, 23,894*l.* 4s.; St. Mary Somerset, Upper Thames-street, 10,241*l.*; St. Mildred, Poultry, 49,550*l.* 14s. 6d.; St. Martin, Outwich, 37,631*l.* 8s. 9d.; St. James's, Aldgate, 6,601*l.* 12s. 2d.; St. Antholin, Queen Victoria-street, 44,990*l.* 12s. 9d.; St. Michael, Queenhithe, 10,541*l.* 14s. 7d.; All Hallows, Bread-street, 32,214*l.* 11s. 10d.; All Hallows, Staining-lane, 12,418*l.* 3s. 4d. Total, 228,324*l.* 1s. 11d. Besides the above, there are the parochial endowments, the value of which is not stated, but which are more or less definitely accounted for.

STONE-WORKING MACHINERY AT KILBURN: EXHIBITION OF THE ROYAL AGRICULTURAL SOCIETY.

BY M. POWIS BALE, M.E.

CONSIDERABLE attention has been given by engineers of late years to the conversion of stone by mechanical means, and it is admitted on all hands that hand-labour is expensive and the result oftentimes unsatisfactory. Although skilled workmen will probably always be more or less employed in the production of the intricate forms of stone ornamentation, yet the plainer and simpler ones that are used in building construction in quantities, such as sills, copings, landings, flags, kerbs, and such like, can be produced by machinery at less cost and with much greater accuracy and sharpness of profile than by manual labour. Although ample scope is left for inventors in this direction, a number of machines have already been introduced with more or less success; the exhibits at Kilburn, however, consisted of two only.

Messrs. Western & Co., London, exhibited in operation a patent stone-moulding and planing machine, adapted for working freestones of all kinds; a similar machine was shown at the recent International Exhibition in Paris, but several modifications in the mode of operating have since then been introduced. The stone to be worked is mounted on a table arranged with a horizontal screw traverse motion. The cutters, of which six sets are used at the same time, consist of plain bars of steel of taper section; these are fitted in stationary tool-holders, and arranged to project one beyond another, so that the stone is operated on by each in rotation, any outline of moulding being obtained by adjusting the cutters to form the profile required. The improvement lately introduced consists in making the cutter-box reversible, thus allowing a separate series of tools to be brought into action. The cutter-box is mounted on a slotted quadrant, and arranged to move round by means of a worm and worm-wheel. After the moulding is formed by the roughing-cutter, the outline is finished by means of some three or four scraping cuts given by a thin steel cutter formed to the profile of the moulding desired. This cutter is mounted in a separate vertical tool-box, following the roughing-cutter, and we noticed that in lieu of a steel cutter of, say some $\frac{3}{8}$ in. in thickness, a thin blade of steel about $\frac{1}{16}$ in. thick, packed on either side by plates of wrought iron, was employed, thus obviating the necessity of constant sharpening. We examined a number of specimens moulded by this machine in Alabaster, York, Robin Hood, Longridge, and Mansfield stones, in which the mouldings were well developed, and the outline clear and unbroken. The *modus operandi* of this machine is of the simplest, and on the whole it has much to commend it.

Messrs. Robinson & Son, of Rochdale, exhibited in motion one of Brearley & Marsden's patent stone-dressing machines for tooling, planing, and moulding. The stone to be worked is fixed on a table arranged with a horizontal rack traverse motion, similar to an ordinary planing-machine for iron. An eccentric shaft revolves transversely over the stone, and delivers an irregular eccentric motion through arms to two sets of cutters, which vary in number according to the width of the stone worked. These cutter-arms are mounted in a swinging quadrant frame, the roughing cutters being in front, and the finishing cutters at the back of the quadrant. After the front set of cutters have roughed out the work, the quadrant is swung round, and the back set of finishing cutters are brought into action. The quadrant frame carrying the tools is adjustable vertically either by belt or hand. The eccentric shaft is speeded to make 200 revolutions per minute. The roughing-cutters are adjustable, are of steel, and are formed with corrugated edges; the back or finishing cutters are plain, and being made of sheet steel, of about 18-gauge, require no sharpening. The advantages claimed for this machine by the inventors are that from the peculiarity of the irregular eccentric motion, although the whole width of the stone is worked, only one cutter strikes the stone at the same time, thus lessening the pressure and strain on the machine and stone, rendering the latter less liable to breakage. The machine is well constructed, and the general details are well worked out; but considering the number of cutters employed, we should imagine some little difficulty would be experienced in keeping them all to the same adjustment. The samples stone worked were well turned out of hand.

Although scarcely coming under the head stone-working machinery, we purpose notici briefly some other labour-saving machines hibited, which are directly connected w building construction either in winning converting the raw material.

The Ingersoll Rock Drill Company, Lond exhibited several of their well-known drills operation; and Messrs. Hathorn & Co., London, showed also some drills in work granite, which possessed considerable orig ality of design. In these drills all the va motions are contained in a small cylindrical b and the valves are moved by steam and with tappets, the movement of the piston cutting the steam, controlling them. The drill is forwards into the stone by means of a le against which the piston rubs, at the same t lifting a spring, which, on being released, fo the drill forward. All the working parts ar steel. We also inspected a miniature drill m of phosphor-bronze, which is intended to used in cracking large granite blocks, a num of small holes being in the first place dril and the stone afterwards split by mean wedges. These drills were driven by an compressor of 9½ in. bore by 10 in. stroke, general arrangement of the air-cylinder good.

A numerous selection of stone-breakers w in work.

Mr. Marsden, of Leeds, exhibited an proved patent "Blake" machine, arra with an improved drawback motion and exp ing toggles, the bearings of which were ma steel. The cubing jaws are made in sect and reversible; the bearings of anti-fric metal.

Messrs. Broadbent & Son, of Stalybr also showed in work a "Blake" machi massive construction, and fitted with an proved drawback motion, consisting of a si arrangement of levers for pulling the crus jaws back, in lieu of the ordinary plan of a s spring embedded in india-rubber, which ir first instance absorbs some power in its pression. The crushing-jaws are fitted removable and reversible faces of chilled iron; the eccentric shaft is of steel. We a quantity of hard Groby granite put thr this machine with satisfactory results.

The Dunston Engine Company, of Gateshead-on-Tyne, exhibited one of their Archer's pa stone-breakers. In this machine, whic simple in construction, the stone is crush the combination of a lever-jaw and roller. roller is of chilled cast iron, arranged with rugations at right angles. An attachmen also be fitted for pulverising purposes.

Mr. Gimson, of Stalybridge, showed duplex stone or ore breaker. In this machi rocking lever is arranged vertically on a centre at its lower end, the rocking m being obtained by an eccentric operating o upper end. A movable crushing-jaw is arra on either side of the lever, and connected it by loose toggles kept in position by an ad able rod. When in work the rocking moti the lever imparts an alternate motion t crushing-jaws. By adjusting the jaws different sizes of stone can be broken a same time.

The Savile-street Foundry Company, field, exhibited in action one of Hall's p multiple-action stone-breakers. In this ma the crushing-jaws are divided, either half worked by a separate eccentric attached main eccentric shaft, each eccentric operat separate connecting-rod and set of tog they are also arranged to balance each when in motion, thus reducing the strain o machine and consequent power requir drive. One jaw only operates on the st the same time; but the double connecting employed, travel through twice the space single rods employed in most machines. crushing-jaws are withdrawn after each by operating one on the other by mea coupling the rods of the jaws by a cross mounted on a stud at the end of the ma The main framing and general details o machine are of lighter construction th usually employed, the makers claiming through the balancing of the moving excess of metal is not required. The st which the machine was operating was fro Croft Stone Quarry, Leicester.

In concluding our notes on the wood stone working machinery exhibited, we

at two points more especially struck us; s the utter want of originality displayed e exhibitors of wood-working machinery, e other was the great contrast in the al and workmanship employed. As s the first we may better illustrate our g by mentioning that we noticed some zen combination machines of the hand- saw-bench and band-saw class, which ed more or less to have been deliberately from one or another even to small me- al details, and an intelligent foreigner readily be pardoned if he concluded they ll made by the same man. We may well y should this be? Have we such a of designers that the makers cannot vary their monotonous outlines, or are they to hide their original inventive lights oushels and "rest and be thankful" on hen's ideas? At the same time, it cannot ied that whatever outlay in time and is incurred in improving and beautifying ign of even a simple machine is amply by a steady increase of trade and reputa- d the most conspicuous successes in a ry point of view have been scored by ouses that have ever borne this in mind. afraid that, through excessive competi- e tendency is ever to produce something and as long as buyers are found willing t their money in this so-called cheap ery, so long will articles be produced either do credit to their makers nor give tion to their purchasers; and this is one we take it, that a considerable amount has been diverted from this country to ources, English manufacture being now synonym for quality it once was.

easing contrast is afforded, however, by f the agricultural machinery exhibited rn, which, even down to the smallest in its construction, appears to have been and well thought out. Again, the of the work displayed in some of the orking machinery was miserably de- —inferior castings, the use of cast iron of wrought or malleable iron, or seamy t iron for spindles in lieu of a finer iron or steel,—thus, for the sake, we , of saving a few shillings in the original damaging seriously both the appearance working powers of the tool produced. whole, however, the Exhibition contained o admire and instruct, and, as Shake- as it, the "best men are moulded out of

GEORGE STUBBS.

GE STUBBS occupies a unique position English painters, for he is essentially a animal painter. But if the works of sts of more recent times who have made ention of animals their chief study are ed, it will be evident that they have y drawn animals from a picturesque han a scientific point of view. The late win Landseer, who ranks as the greatest odern animal painters, showed his dogs horses in an essentially picturesque . Thus his horses, though most life-like, erally grouped so as to bring before the r ideas far removed from those sug- by a delineation of a horse for the sake ructure. The playfulness of a mare and l; the sturdy cob being shod at the all have connected with them many leas than are shown in drawings whose import is to depict the anatomy of the hilst engaged in some vigorous move- We do not mean to aver that Stubbs was scientific, and nothing more, in his treat- animals. What we wish to make clear whilst painting animals with wonderful nd naturalness, his aim was scientific y, and the delineation of the structure of rather than animals in picturesque suggesting almost human feelings. nsidering how fine an artist George was, we are thankful that Mr. Mayer, rpool, has added to the services which he eady done to the cause of English art by ing a short monograph on this able . It is the third of three small bio- s which are published in a single ; but the notes on the lives of Thomas nd William Upcott will not have so nterest for the general reader as the sketch of the life and career of Stubbs. Dodd and Upcott, both remarkable as connoisseurs and collectors, are chiefly curious as studies of human nature; whereas Stubbs has obtained for himself, among English artists, a unique and high position,—a position, indeed, which is scarcely fully appreciated by many real lovers of art. Thus the remarks which we find about him in the late Mr. Redgrave's "Biographical Dictionary of Artists of the English School," are of the crudest and, in some respects, most ludicrous kind. "Very little," he begins, "is known of his early life than that he was an earnest anatomical student, and about 1754 visited Italy." And we say that some part of the notice is ludicrous because Mr. Redgrave thus concludes his remarks:—"He had resided there [in Upper Somerset-street] for forty years, and during that time had been a strict water-drinker, *yet* he lived to enjoy eighty-two years of vigorous life." Certainly, if a good many more artists had been "strict water-drinkers" their lives would have been happier and more useful, and to state that Stubbs lived to over eighty years of age, in spite of his habitual beverage, is the oddest bit of artistic criticism which we have encountered for a long time.

Let us give a few details concerning this remarkable artist. He was born in Liverpool, August 24, 1724, his father being a currier and leather-dresser. Till he was nearly twenty years of age he lived at Liverpool in his mother's house, when he began to move more about the country, going to Wigan, then to Leeds, and thence to York, where he began a regular study of anatomy. In the year 1754 he went to Italy, was there some time, and on his return to England remained mostly in Yorkshire until 1758 or 1759, when he set up his home in London. In 1780 he was elected an Associate of the Royal Academy, and in the next year a full Academician; but on account of a quarrel he was never admitted, though he always claimed the right of being considered an R.A., and in 1805 the list of Royal Academicians contains the name of Stubbs. As to the merits of the quarrel with the Academy, it is really now not worth while to speak, for it is one of those matters which are without interest or profit to the reader of to-day.

It was soon after his return from Italy that Stubbs began his great work on the anatomy of the horse; though long before this, soon after he reached the age of twenty, he had been preparing himself for some such task as this, and for the accurate delineation of animals, by a regular study of anatomy, dissecting human and animal subjects when he was at York. Upon the Anatomy of the Horse he worked for more than eighteen months, but it took seven or eight years before the work actually appeared. It was published in 1766. The reason of this delay was the fact that all the celebrated engravers of the day declined to engrave Stubbs's drawings, but the only result was, that "with characteristic resolution," as Mr. Mayer says, he set to work to do his own engraving. But this work had to be done as additional to his regular occupation of painting, upon which Stubbs had to depend for his livelihood, so that the engraving had, for the most part, to be done early in the morning, or in the evening hours, after his regular day's work was put away. This, indeed, was strictly scientific work in its aim, because in these plates there was no attempt beyond a complete accuracy in pointing out the structure of the horse. But with this careful education and training in perhaps the most important part of the animal painter's art, it is not to be wondered that his pictures were most true to nature, and somewhat severe in their style. For example, two pictures which Stubbs painted for the Marquis of Rockingham, a Lion devouring a Stag and a Lion devouring a Horse, are essentially works meant to show with strict truth and vigour the forms of animals strung to a high pitch of muscular exertion, and in the exercise of their utmost power.

On the other hand, it must not be supposed that Stubbs was solely scientific, because accuracy was after all only the leading principle of his art. Thus, in his picture of the Fall of Phaëton, his talent as a vigorous and powerful as well as scientific painter are very apparent, and it was so highly thought of by Sir Joshua Reynolds that he took it in place of one which he had expressly commissioned Stubbs to paint for him. In this short notice we cannot enter more into details regarding the many works,—portraits of racehorses, portraits of his contemporaries, or miniatures,—upon which, with undiminished vigour he was engaged almost to the last hour of his life. For he was full of energy to his dying moments, and the very day before his death he took a walk of eight or nine miles. At three a.m. of the following day he awoke well, but was seized with a sudden pain; he dressed himself, went down-stairs, and died in his arm-chair, sitting alone. Such was the characteristic end of a man who throughout his life had been somewhat reserved in his nature, and most self-reliant. Stubbs will for a long time hold a deservedly high place in the branch of art which he chose, and will be a conspicuous example of thoroughness and resolution in the tasks of his life.

* oirs of Thomas Dodd, William Upcott, and Stubbs, R.A. Printed for Joseph Mayer, F.S.A., arples & Co. (Limited). Liverpool; 1879.

CANONBURY TOWER.

To gossip about old places, and to exhibit a lively interest in an old date cut in stone and let into a solid wall of fine red brick, many will deem to be a craze; but those who have once caught the true flavour of antiquity, and learned what it is to extract its essence of humanity from the heart of an old stone, can very well afford to laugh in turn at those who take it for an axiom that the dying present is infinitely of more value than the dead past. As the dead are "the greater number," they ought, in a Parliamentary country, to govern the thoughts of men, if not the country; for the latter function the difficulty would be to collect the votes.

However, absurd as the proposition may seem, at first sight, the dead to a very considerable extent do practically govern the earth. The living generation has, in youth, been shaped by the dead one. It is true that the visible links are now below the earth, and lie out of the sun; but one glance inward reveals a web and network of ties, bringing the past into such close union with the present, that they are as absolutely one, as if the dead were still alive and breathing. Love set deep in the soul refuses to admit that death's dull shadow quenches it. Intellect finds that the spirit of the great still rules the thoughts of living men. Libraries, which the Egyptians considered to be a pharmacopœia for diseases of the mind are no less the chartularies of the treasure left us by the wise dead, whose silent oracles are yet instinct with life.

Let no man talk of trifles. The origin of life is so small that no microscope in aid of human sight can reach it; yet life is a principle so wide-reaching that I am not sure whether, to a mind of just perception, that gluten and cased pulp of life—a snail, be not absolutely a greater thing than chimborazo.

A man of mean soul, but with an intellect of genius, not long ago trampled Europe, ruled France, and threatened England. He was the demi-god of his day, and his forces seemed superhuman and of kin with the elements. While he administered, princes trembled at his nod. Power and Napoleon were synonymous. What did he say at St. Helena? "Chance is the only legitimate king of this world." Oh, the demigod of Imperialism! The kingly voices, the battle proclamations ushered in by "suns of Austerlitz," dwindle here to the puling accent of the sick-room. The great man grows into the "little Pagod." The mighty sword retires to the invisible dimension of its own point, and the biggest of conquerors,—spite of his page of history all to himself,—is again, what he began as, a trifle. Dante, dead four centuries, is now a hundredfold less a trifle than he. It is not given to man properly to say what is a trifle; so let us return to gossip and the carved stone we started from, which is in Canonbury tower; and providing that we can amuse ourselves innocently let no too-wise wiseacre chide us for trifling.

The carved stone, then, with its date 1362, has been cavilled at as not being contemporaneous with the erection of the original building, because Arabic figures were not in use till long after that period. I am not going to weary the reader with an endeavour to digest satisfactorily the antiquarian dust-apple of Edom, as to the exact period at which Arabic numerals became commonly used in this country. A hundred and twenty years later they were used. From Caxton's "Mirror of the World," the date 1480 is given in Arabic numerals; so without taking it for granted that this embedded stone might have formed part of the original edifice, and have been preserved in the new one memorially as we see it, it will serve to carry us back a long way into "hoar antiquity," for five centuries are

linked by it to the spot where stands the fine old ivied tower of Canonbury.

It was thought that Canonbury was so called from its being part of the possessions of the canons of St. Paul's, as they have a prebend of Islington or Isledon. It is the eleventh stall on the north side of the choir in St. Paul's Cathedral; but this is an error, for it was held by one Green, in the service of King Edward the Confessor, with licence to sell, and falling finally into the hands of the Berners, was sold by Ralph de Berners to the Prior of St. Bartholomew's, West Smithfield. In passing, it may be mentioned that that large district adjacent, and called Barnsbury, or (until of late years built over), Barnsbury Fields, derives its name from Berners, or Barnersbury, the bury or manor-house of the Berners family,—just as Bedfordbury, Coventgarden, takes its name from the manor or bury of the Earls of Bedford, and this name of Bernersbury is older than that of Canonbury, and has been handed down traditionally for more than 500 years, a confirmation grant of Henry III. to the Priory being dated 1253. It was from the prior and canons of Smithfield, not of St. Paul's, that Canonbury took its name.

The greater part of the old mansion was built in the reign of Henry VIII., by Prior Bolton, a great builder in his time, whose rebus of a bird-bolt through a tun is still visible in several places about the tower and mansion. Ben Jonson speaks of it as "of Prior Bolton and his bolt and ton," and there is the Bolt-in-Tun in Fleet-street, a booking-office with the same device, an inn belonging to the Whitefriars, as far back as 1443, and designated in a grant as "Hospitium vocatum, *Le Bolt en ton.*"—[Cunningham, *sub voce.*] This point has never received the attention it ought, for we thus get the device long before the time of Prior Bolton. Was Prior Bolton's father or grandfather a foundling, a Romulus, of Fleet-street, who came by chance to be the potboy of the aforesaid inn, and took the name thence, whilst his little son or grandson sang as chorister to the canons of Rayhere, and by talent rose in that Church, open to all, to be the Prior of St. Bartholomew's and Canonbury's fair domain? He was cited to convocation 1509 (1st of Henry VIII.), and died 1532. Weaver and the accurate Stow, of beloved memory, both make a mistake, and call him the last prior. He was not; he was the last but one. A portrait of him and others used to hang in the church, and afterwards got by foul methods into Sir Robert Cotton's library, with the following distich:—

"Gulielmus Bolton precibus succurite vestris,
Qualis erat pater hic, homus hec, et ceters monstrant."
[Nichols, p. 7.]

"Here Bolton lies, oh! aid him with your prayer.
What man he was his church and works declare."

There is dignity in the phrase, and it reminds one somewhat of Milnes's fine epitaph or epigram on Wren. At the Dissolution, Canonbury fell to Thomas, Lord Cromwell, 1539. He concerted the union of Anne of Cleves with King Henry. She was divorced and Cromwell lost his head. She escaped with a handsome jointure, and "the Flanders mare" was turned out to grass in Canonbury paddocks. Then it passed to the Dudleys. In 1549 it was mortgaged by the Earl to John Yorke, Merchant Taylor, of London, for 6,660*l.*, redeemed, and at the attainder of John Dudley, 1553, reverted to the crown, and Queen Mary gave it to the rich Sir John Spencer, citizen and clothworker, of London, Lord Mayor, 1594.

There is a letter written from Twickenham Park, by Lord Bacon to this Mr. Alderman Spencer, which is the first link of connexion extant between Bacon and Canonbury, and therefore interesting to those who think him, as I do, the greatest English philosopher, not excepting for one instant Sir Isaac Newton. Sir Francis is the pride of England, although, owing to the geometrical definiteness of his discoveries, Sir Isaac has become the boast of the world. Newton lifted astrology into a science, but Bacon was a second Solomon with a new hemisphere tacked on to the old one known to the great Hebrew king.

John Spencer was no mean man, but quite worth our while to linger over in this haunted spot while we gather a fact or two concerning him. By opening at the Bridge-house granaries he saved the great city from a famine. He suppressed the riots of the apprentices, and some of the riots against the Dutch and French strangers, and even with humility but great firmness opposed the queen herself, who desired to take into her service the City Recorder. There is a curious picture of the times connected with this "rich Spencer" and Canonbury House, which in any good account of Canonbury should not be lost sight of.

It is extracted from a rare pamphlet published in 1651, entitled "The Vanity of the Lives and Passions of Men," by Dr. Papillon Gent. In Elizabeth's day a pirate of Dunkirk with twelve of his mates, plotted to carry off Sir John Spencer, and came with his shallop boldly across the sea, anchored in Barking Creek by night, and with six men ambushed in Islington ditches to seize Sir John as he returned to Canonbury from Crosby-place. Extraordinary business kept Sir John at St. Helen's that night, and he slept safely under the chimes of the City spires, and lulled by the hourly cries of the street watch. The kidnappers lay out breeding rheumatism, side-stitch, and pleurisies, we may hope, in the wet ditches beyond Hoxton by Colebrook, but Sir John, whom they hoped to have had ransomed at 50,000*l.*,—a black night's work,—came not, and they skulked back to Barking Creek, and so with the first tide put off for Dunkirk again, where some professional bolus-maker perhaps injured the constitution of several of the crew in clumsy effort to remove the ill effects of the Islington malaria.

Well, Sir John died, full of years and honours, and was buried in great state in sweet St. Helen's Church, where effigies of himself and lady, large as life, may still be seen, or might not long ago (for we must always speak thus advisedly in an age when bishops have taken to pulling churches down), in a chapel by themselves, under a Latin inscription, not too pompous, setting forth their titles and those of their daughter, Lady Elizabeth Compton.

This lady fled from Canonbury, by the bye, in a baker's basket, to marry Lord Compton, clandestinely, and was discarded for so doing by her father. When a child was born to the disobedient couple, Queen Elizabeth, commiserating, undertook to be mediatrix. She told their tale, suppressing names, and asked the great citizen to stand godfather. Flattered by the royal condescension, he not only acceded, but said he would adopt the child as his successor, and so he did, and the daughter was happily reconciled, and came again in triumph back to Canonbury. Yet even this legend of fairyland was not one of unmixed joy. The black hoof of Abrimaz touched it, and the caudle-cup smacked of wormwood to Elizabeth Compton; for my Lord, at Sir John's death, in succeeding to the huge property, went off his head for awhile with pecuniary joy. He became at the same stroke very rich and a poor creature. The reconciliation story is traditional, not historical; but here again I prefer, as it is a pleasant tale, to enjoy it rather than to challenge it, because it cannot be fired at or photographed like the dome of St. Paul's. I have no sympathy with Niebuhr, and Romulus to me is still the bantling fed on wolf's milk. Believe it or not, dear sceptical reader, no one can gainsay that the tradition has become historical, and I see in it the prototype of the buck-basket episode of the *Merry Wives*,—here a father, there a husband, eluded by a basket. Your own nose, excellent reader, is not a thing assured. It will not be yours seven years hence if science says truly that the whole body changes every seven years; then why should you poke it into ambiguous places, and endeavour to establish certainty, specially in negation, with a proboscis which is itself subject to a septennial fluctuation? As the French say of war, "It has nothing certain but its uncertainty"; so is it with us in the battle of our life. One man's word for assurance is another man's synonym for presumptuous impudence.

Lady Elizabeth Compton's letter to her husband, her "sweet life," demanding many thousands of pounds of him to pay her debts, buy furniture, together with 6,000*l.* for jewels, and 4,000*l.* for a pearl necklace, has been often reprinted for the delight of ladies at its reasonableness, and is worth reading, though much too long for reproduction here. This letter was probably written from Canonbury House. Those who wish to see it may refer to Nelson's "History of Islington," p. 234, where it is given in full.

C. A. WARD.

French Enterprise in Africa.—The French Minister of Public Works has urged the appointment of a Commission to consider the question of uniting Algeria and Senegal and Soudan with railways.

THE MERRIE ARCHERS OF FINSBURY

IN these days, when archery is so favour a pastime with our country cousins, female well as male, and when every county, and alm every neighbourhood, has its archery club, a words about the stout archers of London in olden time may not be void of interest.

The skill of the English yeomen, as displa in shooting with the bow and arrow, has ba proverbial from an early date, although exact date of the first use of the long bow is recorded with certainty. The Anglo-Saxons the Danes, however, we know were acquainted with it, for they practised it for sake of food and also occasionally for amu ment. The Normans used the bow m especially as a weapon of war, and accordin in the eyes of chivalry the archer's craft considered an essential part of every Engl gentleman's education. It, however, fell gradua into disuse, and from the reign of Richard down to that of Edward III. we read but li of archers and archery. Yet the art must have been practised in England, for otherw the victories gained by our soldiers in French wars would not have been ascribed the old chroniclers to the skill of the English the use of the long bow. From and a Edward's days the practice of archery was m encouraged by the court and the wealthier nob the sons of whose tenantry were commande exercise themselves by shooting at targe "Butts" were consequently set up for the of the yeomanry at convenient places in neighbourhood of our principal towns.

But it was reserved for an accident in the r of Henry VIII. to revive the practice of arche in all its splendour, and to invest it with a po larity which it had not known for a century, in fact, since the days of Crecy and Poict What the edicts of successive monarchs of rival houses of York and Lancaster could effect, now prohibiting all other sports ex archery, and at another time compelling ev youth to furnish himself with the necess implements for its practice, was at once brou about in the early and brighter days of "F King Hal" by the publication, through the m agency of the printing-press, of the bal and traditional stories which told of the outlaw of Sherwood Forest. Thenceforw Robin Hood and Maid Marian figured as panions in the May dances on every vil green from the Tweed to the Thames, archery once more became popular,—ind grew almost universal. The king, who himself no mean bowman, seeing that suc pastime was likely to exercise the health strength of his people, and to keep them in humour, did his best to encourage the am ment. He founded, as Charles Knight tell in his "Old London," in honour of St. Ge (the patron saint of Merrye England) fraternity called by his name, composed body of skilled archers, who were authorise "exercise shooting at all manner of marks butts . . . . as well in the city as the suburbs, in all other places." And in order to encou the sport further, the king proclaimed bef hand that no one was to be severely punis or even apprehended, who accidentally k another by his arrow, if before shooting he c out, "Stand fast."

Hall gives us in his Chronicles an accou the gallant state in which the king and courtiers went out on "Maying excursions the neighbourhood of Greenwich Park, tow Blackheath and "Shooter's Hill," whose n still keeps such royal sports in remembra "His grace, being young, and not willing t idle, rose very early in the morning to f may or green boughs, himself fresh and ri apparelled, and clothed, with all his knig squires, and gentlemen, in white satin, an his guard and yeomen of the crown in w sarcenet. And so went every man with his and arrows shooting to the wood, and so reps again to the court, every man with a g bough in his cap; and at his return, many h ing of his going a-Maying, were desirous to him shoot; for at that time his grace sho strong and as great a length as any of guard."

Again, whilst keeping his court at Win Castle, the king ordered various arc matches to be got up, and invited all best archers of the day to come forward, to show their prowess in the Great P

when almost all had shot away their
nd some had struck very near the bull's.
king noticed one of his body guard,
arlow, who had yet to shoot. "Win
," cried the king, "and thou shalt be
r all these archers." Barlow did shoot,
the prize; and the king, on learning
lived in Shoreditch,—then a pleasant
a village,—named him in jest "Duke"
place. The name stuck to Barlow, and
in a sense hereditary, for his sons
suit, and became bold and cunning
and an annual archery gathering at
h long kept up the memory of the
e affair. So late as the year 1583, we
local festival kept up with great magni-
On the 17th of September in that year
: — "The citizens set forth at their
rge a shooting match with much state,
e' of Shoreditch and all his nobility
ers marching through the city of
to the shooting-place. And first he
mmons to all his 'Marquises,' 'Earls,'
ons,' with all their trains of archery in
at the City of London, to be in readiness
pany him into the field, every one with
w and four shafts, on the aforesaid day,
him in Smithfield. And so they did.
ke' with his company set forth from
t Taylors' Hall. There repaired unto
hose that were appointed for conducting
erson to the place of meeting, as true
nd a multitude of good archers in their
nder his own ensign, who, with sound of
, drums, and other instruments, passed
road-street, where the Duke dwelt,
Moorfields to Finsbury, and from thence
field. There was also the Marquis
. . . . and the Marquis of Clerkenwell,
nters, who wound their horns; and the
Pancridge (St. Pancras), and the
of Islington, and the Marquis of
(Hoxton), and the Marquis of Shakel-
d other such nobility, with all their
making a surprising show. For they
in very great pomp, oddly habited,
several places and chief streets of
The number of archers that now shot
0. The number of them that accom-
ne archers as whifflers, and those that
them with bills, was 4,000, besides pages
shmen. Their attire was very gorgeous,
many wearing chains of gold."
ie Duke of Shoreditch was not the only
of this mock aristocracy of the middle
f London. In the far East was another
land of archers, who met at Mile-end,
se head was a still greater man than
e himself, for he was styled "Prince"
Coming one day to see the perfor-
of this band with the long bow, the
s so pleased that he took them under
al patronage, and facetiously confirmed
r a mock charter as "the famous order
ats of Prince Arthur's Round Table";
h that time forward when his quick eye
id an archer good in any one of his
he added his name as a knight of that
us order. It is satisfactory to know
se two rival bands of archers were on
s of terms, and that they frequently
ed outward signs of courtesy and friend-
The reason, perhaps, is not far to seek,
r domains lay wide apart; there was
ce of mutual trespasses, and therefore
s no clashing of interests between the
of the northern and of the eastern

udor era was very naturally the golden
archery, but, alas! it was almost as
it was brilliant. The introduction of
der had driven the bow from the field,
the growth of the City began to absorb,
er another, all the open spaces in its
available for the pursuit of the archer's
. Even before the last Tudor had paid
ot of nature individuals had begun
ely to plant hedges and to cut awkward
across the open fields between Moorgate
ington. The hedges and ditches were
ed by the lovers of the bow, but all in
The king's council and the lord mayor
ermen were called in to decide on the
of this alleged abridgment of the rights
Londoners; but in the end the aggressors
the day by sheer force of persistency.
herefore, complains bitterly, in 1598, of
ly ancient exercises of the citizens in
bow as almost "clean left off and for-
foretelling that such disuse of noble
r sports will only lead to the filling of bowling-alleys and dice-houses in the City, and so to the spread of immorality.

From some cause or other the fields obtained a short respite. James I. appointed a commission to "view and survey on such grounds next adjoining to the city of London and the suburbs within two miles compass, and to reduce the same into such order and state for the archers as they were in the beginning of the reign of Henry VIII., and to cause the banks, ditches, and quicksets to be made plain and re-formed."

At this time the great grounds of London were the Finsbury-fields, reaching from the Moor Gate itself right into the open country. The only buildings outside the City walls were a few shops on the left hand, which formed a sort of avenue, in which bows and other articles for gay archers were sold. That avenue was afterwards Grub-street, and is now called Milton-street. Beyond the end of this avenue the open fields were dotted in every direction with the archer's marks, pillars of wood or stone supporting targets, and surmounted by all sorts of fanciful emblems, such as birds, beasts, or serpents. Charles Knight tells us that the shortest distance at which the young Londoners shot their shafts was nine-score yards, and the longest more than double. But even this showed a great falling off from the days of Henry VIII., when no one was allowed to shoot at a mark distant less than eleven-score yards. The shooting, however, continued to degenerate even more in this respect; for in 1737 the greatest distance shot was but eight-score and the least about three-score yards. The targets had long become standing "butts" for the satirists of the age, who never tired of attacking the effeminacy of the modern heirs of the Duke of Shoreditch. The result was what might have been expected. Passing out of credit, the sport went out of fashion also; the shadowy dukedom of Shoreditch became a thing of the past, and archery died fairly out. In vain did Charles I. and more than one of his successors issue "commissions" in the hope of reviving the sport, for its followers dwindled away; and the year 1780 saw the very last expiring meeting of the once "merry archers of Finsbury."

The French word for archery is "*artillerie*"; and the Artillery Company of London, although its members no longer shoot with the long bow, claim to be regarded as the modern representatives of the ancient bowmen and archers of whom we have given a short sketch above. The Company still prefix the word "Royal" to their name; and the Prince of Wales is their colonel, in the room of Bluff King Hal. But their claim to this distinction is practically disputed by the members of the London Toxopholite Society, who regard as their founder Sir Ashton Lever, a worthy knight who lived in Leicester-fields, and whose name is immortalised as the collector of the Leverian Museum. A few of the old Finsbury archers joined the new society at its establishment in 1781; but the former body never reappeared, so that they may fairly be said to have been absorbed in their successors. The first shooting-grounds of the Toxopholites were the gardens between the Leicester-fields and Soho; but, though the Prince of Wales was their patron, they were driven from thence to Canonbury, Highbury, Blackheath, Dulwich, Bayswater, and other suburban spots, until at last, on the formation of the Regent's Park, they obtained a long lease of those grounds near the Botanical Gardens, in the "Inner Circle," where they still flourish. To this association all the archery societies scattered up and down the country look up as their parent.

We will close this brief sketch with a few remarks on archery from the pen of the Earl of Wilton. "In the present day, archery is largely practised, but only as a pastime, in which both sexes join with equal ardour, and perhaps with not unequal skill; but the butts are now placed at distances so much shorter (than formerly) that no comparison of skill could be instituted between the archers of our own day and those of the last century. Archery can now be looked upon only as a pleasant diversion, giving health and strength, and having the advantage of bringing the two sexes together in an elegant social pursuit. But even now it is an exclusively English sport, for I do not find upon the Continent any accounts of archery meetings, such as are annually held in this country in different localities. In this respect it is strictly national, indicating the love of out-door amusements and pursuits, which is one essential characteristic of the whole English people."

THE "ÉCOLE CENTRALE DES ARTS ET MANUFACTURES."

On Saturday, the 21st ult., was celebrated the great hall of the Trocadéro Palace, at Paris —as we have already announced,—the fiftieth anniversary of the foundation of the École Centrale des Arts et Manufactures. The importance of this institution, which may be considered as the great industrial school of France, and the significance of the ceremony of the 21st., presided over by the Minister of Commerce, have induced us to lay before our readers some account of this interesting school, originally an emanation of private initiative, but which now holds so important a position among the great institutions of France.

One alone of the original founders of the school, the eminent chemist, M. J. B. Dumas, is still living, and on the occasion of the Trocadéro *fête* he proudly recounted to a large audience the successful labours of the Institute, at the birth of which he had assisted half a century ago.

With the aid of the address delivered on that occasion, and of an important work recently published on the "History of the École Centrale"* (by M. Charles de Comberousse), it may not be uninteresting to enter into some details connected with this practical institution, to the excellent training of which may we not in England in great part owe much of the serious competition that France so pitilessly wages against us?

It was in 1829 that three *savants*, young men then, MM. Dumas, Olivier, and Peclet, conceived the idea of founding the École Centrale, M. Lavallée generously furnishing the funds, and becoming director of the establishment installed in the quiet quarter of the Marais, in the noble old Hôtel de Juigné, which it still occupies, but which it will soon abandon for a new resting-place in closer proximity to its friendly helpmate, the Conservatoire des Arts et Métiers. It is a quiet and suggestive home that the school has occupied for many years, alone disturbed by the historic recollections that float over the superb old seventeenth-century mansion which, in its time, has been occupied by not a few famous personages. Notwithstanding the grandiose façade and courtyards, and the noble staircase and the ghostly remains of sculpture and painting that time has left, tradition has not even handed down the name of the architect of the Hôtel de Juigné, once the admiration of every Parisian and stranger; in turn occupied by more than one enriched *parvenu*, the well-known Marshal Villeroi, the elegant Camargo, of eighteenth-century opera reputation, succeeded,—strange contrast,—by Monseigneur Leclerc de Juigné, archbishop of Paris. It was a quiet neighbourhood that M. Lavallée had chosen, within a few steps of the house where Mdme. de Sévigné penned so many of her affectionate letters, almost within sight of the deserted and cool arcades of the picturesque Place Royale,—a house in which, by the way, the then rising author of "Ruy Blas" and "Hernani" lived,—and but a short distance from the quaint Hôtel Soubise; a quarter which, like our own Bloomsbury-square, in the seventeenth century, had been the fashionable home of the aristocracy.

It was, as we have above stated, in the old Hôtel de Juigné that the École Centrale was installed. At the time of the foundation of the school, in 1829, the national industry, favoured by several years of peace, had commenced rapidly to develop itself in France. But to struggle against competition, each day becoming more formidable, the possession of skilful workmen was not sufficient; intelligent engineers were wanting, such as the École Polytechnique furnished for the Government.

The École Centrale filled a gap in the system of education. As its founders said in their first prospectus, which has remained the programme of the school, "the different classes form in reality but one. Industrial science is one; every manufacturer should know it entirely, under penalty of being inferior to the competitor who presents himself better armed than he. Arts, at first sight of the most different nature, have analogous operations to perform, and often employ widely differing means. The general education of the École Centrale teaches its pupils to introduce into each industry those perfected methods which other nations possess. It tends consequently to introduce into the workshop

* Published by Gauthier-Villars.

and the manufactory a perfection of processes and mechanism which ensures successful advance and progress." The idea was a just one, and it has since borne ample fruit.

It must not be imagined, however, that the first days of the school were exempt from difficulties. The founders had to combat delays of so discouraging a nature that had they not possessed an unshakeable faith in the utility and future of their enterprise, it could never have survived. Out of 150 pupils who entered the school in November, 1829, and who were so soon dispersed by the revolution of 1830, the *émeutes*, and the cholera, twenty-six alone came out with brevets of capacity. The first professors who had associated themselves with the school displayed a praiseworthy devotion. For many years they were contented with the smallest return for their labours, and it is due to the existence of this sincere devotion, that these courageous men, abandoned to their own resources, succeeded, after seventeen years of incessant efforts, in entering at last a period of peaceful work and fixed remuneration. The school then possessed an ample number of pupils, daily increasing; the enterprise became a successful "business," and in 1855 brought in more than 4,000*l.* profit yearly.

After having thus legitimately reaped the advantage of his labours, M. Lavallée might have sold, at a considerable advantage, the establishment he had founded. But his ambition was nobler: preferring that the institution should not lose its public character, he offered it gratuitously to the Government, and in 1857 the École Centrale des Arts et Manufactures passed under the protection of the State, which wisely continued without change the primitive constitution under which it was established and had prospered.

From this constitution the founders and their successors have never for an instant swerved, observing religiously the principle originally laid down, of the importance of the universality of the instructions necessary for the civil engineer. M. de Comberousse, the author of the work to which we have already referred, has very clearly stated in brief the system:—"To pass through the school is to be ready for every contingency, to be able to meet every difficulty; it is to be able to be at need agriculturist, metallurgist, constructor, or professor; it is to be able to go to-morrow to the most distant part of the world to set up a machine or build a house; to be the brain capable of creating everything, of directing everything, is the proper *rôle* of the engineer, and it is that which the École wishes to give its pupils. It has been said that the school teaches too much. This is to some extent true; the courses of lessons are numerous, but in the existing situation of industry, with the terrible competition of foreign countries, the pupils of the school must know everything, be ready for every emergency when they are brought face to face with the trials of practical life."

In the Institute of France, in the Senate, in the Chamber of Deputies, and in many of the branches of the State, there is more than one pupil of the École Central to be found; but the Universal Exhibition of last year was a triumph for the School, no fewer than 841 pupils having taken part in the Exhibition, and having obtained no less than 340 recompenses. These simple facts, together with many others, which were brought before the public at the fiftieth anniversary of the School, do no little honour to the Institution, which the Minister of Commerce on that occasion promised warmly to support, earning a thunder of applause when he informed the audience of the preparations that had been made for the removal of the École to their new quarters, at present being built.

In these changes let us hope for the safety of so noble and praiseworthy an Institution that no transformation will deprive the School of its broadness of instruction, and its power for good among the working community, which in the present day forms so important a factor in the prosperity of every civilised country.

The Soho Bazaar, with some shops and other buildings in connexion with it, is to be offered for sale at the Auction Mart, by Messrs. Farebrother, Ellis, Clark, & Co., on Wednesday, the 23rd inst. It includes altogether an area of 31,882 superficial feet, or nearly three-quarters of an acre, and the present rentals amount to nearly 7,700*l.* per annum. It is seldom such a site in such a position comes into the market.

EDINBURGH.

THE movement for incorporating the nave in the scheme of restoration of St. Giles's Cathedral has now taken definite form, and the Lord Advocate is to introduce a Bill into Parliament providing for the removal of the congregation of West St. Giles's to a new church to be provided in the neighbourhood. The operations in the south transept are being carried on as steadily as the nature of the work will admit of. This, as already stated, does not embrace the exterior; and we notice that the south and east doorways have been built up in a perfunctory manner.

A movement has been set on foot for the erection of a monument to John Knox in Edinburgh, and committees have been formed both in London and Scotland to promote the movement. The only memorial of the great Reformer which exists in Edinburgh is a small flat stone, to the south of the cathedral, over his burial-place, bearing the initials "I. K." in bronze. It is amusing to see the puzzled looks of visitors when this is pointed out to them by the city guides as Scotland's tribute to the memory of him she professes to revere. To Knox has been attributed the destruction of most of the cathedrals and abbeys in Scotland, the remains of which testify to their magnificence and beauty; but the documents quoted by Dr. Hill Burton, in his recently published History of Scotland, fix the stigma in quite a different quarter, and the devastation of Melrose, Kelso, Jedburgh, &c., is clearly traceable to the explicit injunctions of the Defender of the Faith.

The great central spire of the new cathedral has turned out most satisfactorily. In making this feature of the building so emphatic, Sir Gilbert Scott exhibited his superior appreciation of the capabilities of the site. It is now one of the most conspicuous objects in the city, and, as seen from various points of view, it combines most happily with the surroundings, appearing sometimes in the most unexpected positions. No one appears to have anticipated that it would stand directly in the centre of the line of Princes-street, and form a marked feature in the long vista from the Calton Hill westward. As seen from Corstorphine's Hill, it groups well with Donaldson's Hospital, and, indeed, in every view, save one, the effect is fine. The full bulk of the building is seen filling up the west end of Maitland-street, and from the east end of that street the tower and spire do not combine well with the choir and transepts; but this effect will doubtless be obviated when the west towers are erected, as they will obviate the abrupt stilted effect of the dominating feature, and bring it into combination with the body of the building.

Since our last notice, the Established and Free Churches at Mayfield have been opened. As we hinted, the former is not quite satisfactory as regards exterior effect, and it is not made more attractive by the erection of two hideous iron ventilators placed on the roof. The interior is, however, more satisfactory; the details are such as may usually be found in Presbyterian churches. It consists of nave, aisles, and transept, and was designed by Messrs. Hardie, architects. The Mayfield Free Church is a very satisfactory production, both without and within, and is, perhaps, the most thorough of the Presbyterian churches in the city. Every detail has been carefully studied by Mr. Blanc, the architect, and combines in producing a feeling of completeness not generally found in similar buildings. The windows have been filled in with grisaille glass of a very pleasing kind by Mr. David Small. This glass is much preferable to the crude, strongly-coloured, carpet-like patterns, which have hitherto found favour in churches of this description.

Some time ago a number of adherents of the United Presbyterian Church formed themselves into a distinct congregation upon the basis of total abstinence from alcoholic drinks, the governing motive being the use of unfermented wine in the communion. This congregation meets in the Odd Fellows' Hall, Forrest-road, but they have now secured a site for a church at Argyle-place, Grange, and have called upon several architects to submit designs for the building. The choice of the Building Committee has fallen upon Mr. Mactavish, clerk of works, a member of the congregation, and operations have commenced. The site is a good one, isolated on all sides, and facing the vista of Warrader-road to the west. The plan embraces nave and transepts with galleries, tower s spire at the north-west angle, and hall weekly meetings to the south. Provision been made for the introduction of an org gallery behind the pulpit, should such required in the future. Accommodation is p vided for a congregation of 800, and the will be about 5,000*l.* The style adopte Gothic after the manner practised about fo years ago.

Another United Presbyterian church is course of erection at Rosehall-place, Dalke road, from the designs of Messrs. Sutherlan Walker. The scheme does not embrace a s and the building is treated in a simple phas thirteenth-century Gothic.

We understand that Mr. David Robertson been asked to submit plans for the New Un Presbyterian Church at Morningside, a site which has been secured in the vicinity of present building. The estimated cost of new church is about 8,000*l.*

It is said that the United Presbyterians h by purchasing the West-end Theatre for purpose of converting it into a synod secured a white elephant. So substantial the fixtures of the theatre that much labour required to remove them; and to get som these away it was found necessary to pull d considerable portions of the walls. In vicinity a site has been secured, facing Lothian-road, for a new Board School, at a of 5,000*l.*, and the building is now in prog It is to be Gothic in style, and is designe Mr. Wilson, architect for the Board, at a co 5,000*l.*

An extensive addition is being made to buildings of the Caledonian Insurance pany in George-street, from the design Messrs. MacGibbon & Ross. The original b ing was designed by the late Mr. David Ba and was a mere fragment, consisting of a ment supporting four detached Corinthian lars, and a horizontal frieze and cornice. proportions were elegant, and the problem solved by the architects seemed simple enc viz., to adopt the detail, and carry out the sumed intention of the original designer they have chosen to make their own mark the building by introducing a projecting c of two attached columns, with an arched way of strongly-pronounced Renaissance racter quite out of keeping with the remai In the rear of the building a general office, square, and lighted by a dome, is to be ere The upper portion of the building, consistin two stories and an attic, is to be appropr to hotel purposes.

THE INDUSTRIAL EXHIBITION, BER

IT has been remarked by a popular Ge writer that there are a great many Berl gifted with a kind of double nature with re to their relation to their native town. admire Berlin and everything appertaining its peculiarities and characteristics, when are far away from it, and among stran But no sooner returned to Berlin, everyt becomes mean and inferior. They find with anything and everything, even in conversation with foreigners who may taken a liking to the German capital, and they manage somehow to generate a dislik their native town both abroad and at home

Supposing we place such a child of B before the Falls of Schaffhausen, say, an will tell you that they are most beautiful in the same breath he will assert that sluice of the canal running through Berlin so bad either, and that at a time when water-elder at its banks is in full bloom, sets in that spot are of a most surprising s dour. If you lead him into the, in every excellent Industrial Exhibition,—which has brought about by him (the Berlin indus that is), by his own unaided efforts,—he think in the first place of the great Internati Exhibitions of London and Paris and Vie he will remember how he was told at the P delphia Exhibition that German industry c no longer compete with those of its neighbo

Although he may be compelled, subsequ by the aid of his own eyes, to convince hi of the contrary, he will,—if he cannot find with anything else, — extremely regret this is merely an industrial display, and there has not been at the same time an ex tion of Berlin art. It cannot be denied that works of such painters as Menzel, Ric

ner, Meyerheim, Gantz, Begas, Knaus, the two Heydens, Wieder, Thumann, ow, not to mention the sculptors, would by themselves a very respectable show. this is merely an industrial exhibition. rtunately, this inborn trait of doubting, ising, fault-finding, of the class of Berlinese ave been describing, is, strangely enough, gious, which seems to spread also to non-nese, and thus appears to give some sem-e of truth to the criticism of our Berlin d.

at this only by the way. Our purpose is to ly a rapid sketch of an exhibition which many excellent features. In the West end e city, not far from the Thiergarten and the gsplatz, crossed by the large brick arches e Metropolitan Railway of Berlin, in course onstruction, there is a space of moderate encompassed by a yellow hoarding marked ome red and blue lines, and a few pavilions arved wood at the entrances. The low ding is inscribed with black letters, "Ber- Gewerbe-Ausstellung." Above the board-rise a few flagstaffs and the wooden roofs of os galleries and kiosques. If it had not known what this accumulation of wooden tures was intended for, it might have been re for baths, or a gymnasium, or a circus. here is nothing presumptuous, or showy, or tatious about the whole exhibition. The nger finds here no imposing buildings, no palace, no Trocadéro, the various kiosques fountains of which were bought and carried s elegant works of art, worthy to be pre-d, after they had done duty in their first e of erection. The Berlin Industrial Exhi-n may be called an exhibition in huts, or , or shanties. But it is a courageous and torious undertaking in the present unfavour-times, that the capital of the German ire, that the at present heavily-tried indus-classes, should have united, if only to show t the city is able to perform in the sphere of strial work alone. One especially meritor-s feature about the exhibition is, that it was ut completed at the time of its opening, a seldom accomplished in such displays.

e exhibition is not the first of the kind in has seen within her walls. It owes its ence to the efforts of men who took part in Berlin Industrial Exhibition of 1849, as well n the Architectural Exhibition of 1874. ough the initiative taken by those men, who ed a provisional committee, about 800 in manufacturers and others were induced ive their support to the proposed under-ng. A central committee was next ap-ted, consisting of twenty members, and h them devolved all the necessary prepara-s. The exhibition was divided into fifteen ps, each group presided over by a sub-mittee. The promoters claimed support n neither Government nor municipality. By r own unaided efforts a guarantee fund of 00*l.* was subscribed; and, once started, the me soon gained adherents; so that, when exhibition opened, about 2,000 exhibitors part in it. The Government granted the of the site; the Berlin municipality volun-y contributed the gas and water pipes, as as a sum for laying out the grounds. rything else was provided by the under-rs of the exhibition, which, we are happy ate, promises already, at the time of writing, e a financial success.

he enclosed space of the exhibition comprises area of about 15 acres, of which 6 acres are t on and about 5 acres used exclusively for ibition purposes. The exhibition building sists of three long galleries, three others rsecting them, while the high arches of the way already mentioned form a sort of back-e to the structure, twenty-six of them ter-ously interwoven with the galleries and ised for the purposes of the exhibition.

t is not our intention to give a description in ail of the various branches of industry repre-ted, or to describe fully the objects exhibited. idea may be formed of the eagerness with ch the scheme was taken up when once fairly rted when we state that the building is mmed, and that long before the expiry of the n of application for space more than three es the number for which space could be pro-ed applied for admittance. As an instance the avidity with which space was at the last ment asked for, it may be mentioned that of 6,000 shops in Berlin working in wood, only ety-four exhibitors could be admitted. We pose treating briefly of such branches of the exhibition only as may be likely to interest our readers.

An important branch, architectural ornamentation, had, for reasons of economy, only a limited scope for display. The products of the wood-working industries, however, of art pottery, as well as the goldsmith's and silversmith's art, and of the manufacturer of articles in bronze, fill large and handsome rooms. Two of them, the manufacture of porcelain and metal work, occupy places of honour, close to the principal entrance. In the latter, especially in silversmith's work, Berlin has earned considerable renown at various international exhibitions, emerging from the competition with an Elkington in London and a Christofle in Paris not without credit. In the present exhibition of Berlin may be seen works of art, now mostly in the possession of princely personages, which attracted general attention at those exhibitions.

It has been remarked that the real type of the Berlin Philistine is fast disappearing, and that he is at present slowly but surely changing into a geological petrifaction. But that he should not go down to Hades unremembered, he has left behind him a lasting memento to remind future generations of Berliners of his pre-existence. This is the Berlin stove of Dutch tiles, as it, greatly in request in winter and rather in the way and an annoyance in summer, is to be found in the corner of almost every room in the German capital. But if we look at it in the Berlin exhibition, we notice that it is being transformed into something more in accordance with an improved modern taste. The plain, unadorned stove, almost ugly in its simplicity and virgin white, while still preserving its weighty massiveness, is giving way to forms of more æsthetic value, and is assuming various hues. In this respect Berlin art-pottery has a very wide field.

If it were permissible to speak of predestination in that branch of industry, it might be said that Berlin is the place to bring art-pottery to a high state of perfection. The German capital possesses now a great number of elegant buildings in terra cotta, although, in the face of the preference, still very great, for stucco and zinc ornamentation, the more useful material clay is not yet utilised to the extent it deserves to be employed. Did not the Romans ornament the Campagna of their metropolis with products of clay, the charms of which have resisted the gnawing tooth of thousands of years? Why should the Campagna di Berlino be ashamed of similar ornamentation? The exhibits in this branch of the Berlin exhibition show that the material and means for its use are ample, and that "art" is worthily represented by many disciples whose works fully demonstrate that modest, and for that reason too much neglected, clay may be far more artistically employed than gaudy stucco.

We can only speak in general terms in these columns of an exhibition which, while it strongly appeals to us, for more reasons than one, is yet not near enough to attract from our readers the attention it deserves. The reason of this is that we can only judge it, as it were, from a distance. Yet, as we have already hinted, the exhibition, if it was started with the object of relieving to some extent the defeat German industry suffered at Philadelphia, has fulfilled its purpose. Besides the branches of art-pottery and metal-work we have referred to, the display of porcelain, faïence, majolica, and all the other products of the potter's art alone, not to mention other branches of industry in which Berlin is renowned, would go far to attain this end. Berlin has made a great effort, and has succeeded. Indeed, we could not characterise better the success which has attended the exhibition than by permitting the typical Berlin critic whom we introduced to the notice of our readers at the beginning of this article to speak for himself on an exhibition which is eminently his own concern. His dictum is:—"If we only had known that we could manage such a thing so well, we should have made it still more beautiful!" Let us hope that the next time the industrial classes of the German capital unite in a similar exhibition, they may do so under more favourable auspices, and at a time when a commercial depression without parallel will be remembered only like something resembling a nightmare of which we are happily delivered.

"Another Improvement in Farringdon-street."—We are asked to state that Mr. R. Wheeler acted as clerk of works at the above.

THE NEW "PAVILLON DE MARSAN," TUILERIES, PARIS.

The old Pavillon de Marsan, with other parts of the Tuileries, was burned in May, 1871, and at the same time shaken to its very foundations by the explosion of the large quantity of powder that had been accumulated there. This pavilion was constructed in the reign of Louis XIV. by the architect Levau, upon the model, as nearly as possible, of the "Pavillon de Flore," the work of Androuet de Cerceau. The Pavillon de Marsan has now risen from its ruins, and is very nearly completed, from the designs of the eminent architect of the Louvre, M. Lefuel, Member of the Institute. His work is rich, without being overloaded. In order to look upon the pavilion as we have represented it, the reader should stand with his back to the railing of the statue of Jeanne d'Arc, upon the Place des Pyramides. From that point he will take in two façades, that of the Rue de Rivoli giving to the left, and that of the Gardens nearly facing him.

The two façades each present a principal projecting mass, which juts out slightly. From the level of the ground to the ridge of the roof the pavilion has a height of 141 ft., divided into four stories if we consider only its exterior aspect, but into three times that number, including the basement and the stories of the roof, if we reckon the superposed divisions of the building. The façade towards the Rue de Rivoli is the most simple; it is composed of a ground-story, with large arched windows, with casements and crowns; in front of these windows is a balcony with wrought balustrades, supported by consoles with lions' heads, and projecting some distance above the trottoir of the Rue de Rivoli. The first story of this façade is pierced by but four windows; a richly-adorned niche, which is to receive a statue, occupies the place of the central window. This first story is surmounted by a second, above which runs a sumptuous entablature, which serves as a base to a decorative subject, composed of a rich attic story with elliptic windows, a large open pediment, carrying another, smaller, but complete pediment, resting on a base pierced by three bull's-eyes, and surmounted by a group sculptured by M. Crauk, representing the Arts and Industry. Below the entablature is a pretty group by Barrias, forming a pendant to that of the Pavillon de Flore, by Carpeaux, and personifying maternal education.

The western façade (towards the Gardens) is richer in ornamentation than the northern one. The windows of the ground-story all open on to balconies of ample proportions; in the first story, the three windows of the projection are separated from each other by columns. Above these is a second series of windows; then the attic, and the pediment of the same character as those of the Rue de Rivoli façade. At the elevation of the attic, above the entablature upon which it rises, statues continue and terminate the decorative motifs commenced by the columns of the first and second divisions of the edifice.

The building is covered by a high roof in the form of a truncated pyramid of lead and slate, with the hips and ridges of lead, richly worked. Under this vast roof there are four series of apartments lighted by dormer windows, which appear very small from below, but which in reality are sufficiently large to admit ample light. The chimneys, finally, which rise above the roof, are those of the old châteaux of the Renaissance, of a monumental aspect, at the same time strongly built and lightly ornamented.

The illustration we give renders it unnecessary to supply fuller details of the architecture of this pavilion, which terminates on this side the long line of buildings erected from the Place du Louvre to the Jardin des Tuileries. The Pavillon de Marsan and the wing which prolongs it in the Rue de Rivoli, a wing which has been considerably increased in depth by the new buildings of the Place du Carrousel, are intended to receive the Cour des Comptes, at present located in the Palais Royal. The offices and halls of the court are approached by two large flights of stone stairs leading to a grand vestibule. The latter gives access on the one side to a great vaulted hall, styled that of the "Pas-Perdus," of a length of 78 ft. and a width of 39 ft.; on the other, to the assembly-hall, 69 ft. by 33 ft. Corridors and staircases in the interior serve the numerous offices of the presidents, vice-presidents, and lower officers of the court.

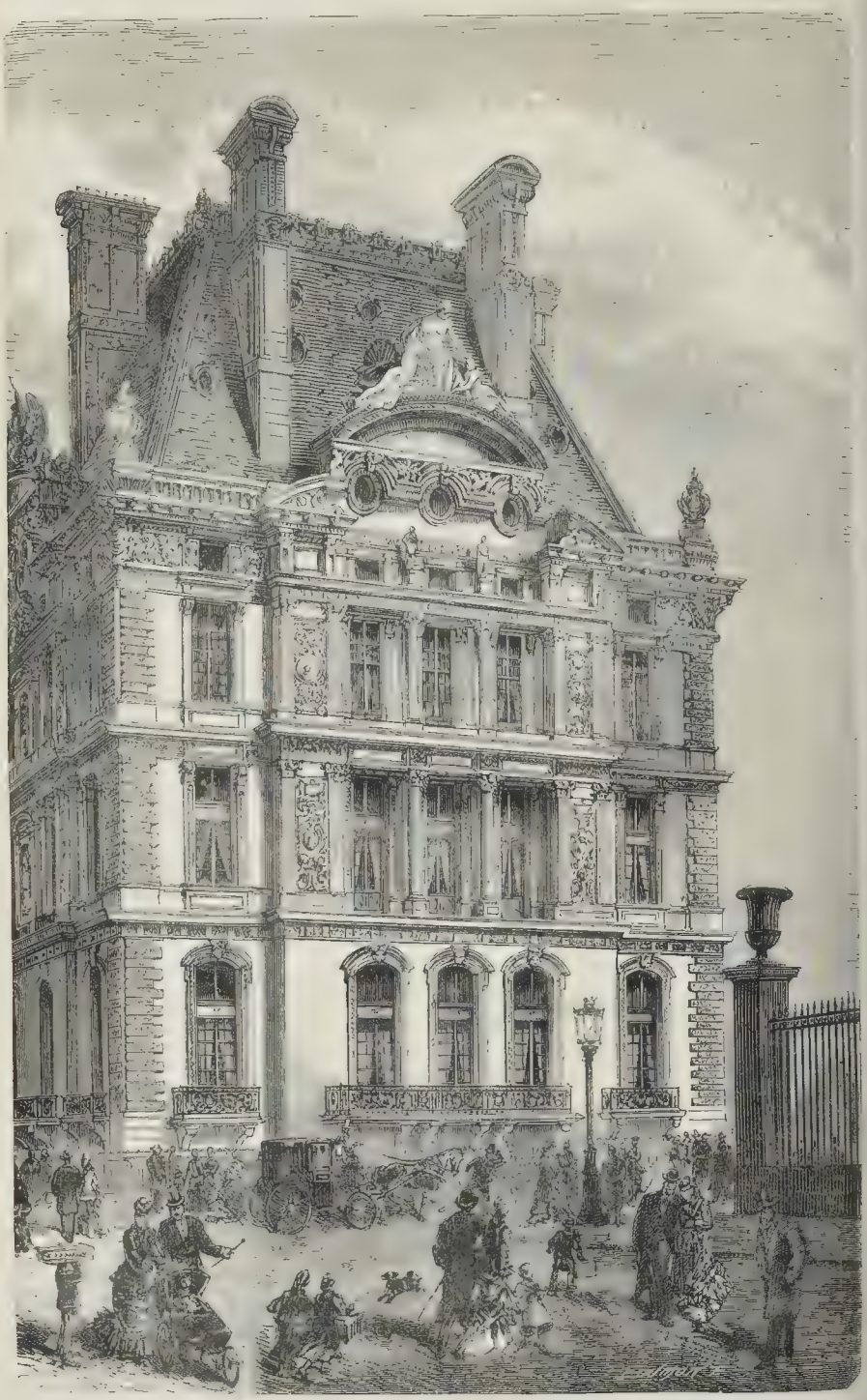
REREDOS, ST. MARK'S CHURCH, HAMILTON TERRACE.

THE parish church of St. Mark, Hamilton-terrace, St. John's-wood, finely situated not only on a gently rising ground, but on a higher level than the roadways on two sides of the site, whence it can be seen to great advantage, was opened in 1847, having been erected from the designs and under the superintendence of Messrs. Cundy & Son, in the Early Decorated period of English Gothic architecture, of which style it affords a good specimen. It is built of Kentish rag, with stone dressings, and has a richly-decorated and well-proportioned western tower and spire, some 170 ft. in height. A well-recessed doorway gives access to the very spacious church, which is of one span, with galleries on three sides supported by slender iron columns and girders. North and south porches near the west end afforded access to the galleries as well as to the ground floor. There was a small chancel and vestry-room at the east end of the building. During the last few years the crowded state of the church has rendered it expedient to increase the accommodation and the means of ingress and egress, both in the body and in the galleries; and at the same time it was felt desirable, both by the vicar and the congregation, to improve the quality of the service. Accordingly, by the help of munificent donations, many works have been undertaken, not only in substantial alterations, but in improvements and decorations. The depth of the chancel has been materially increased in order to afford accommodation for a surpliced choir in place of the performers who formerly sat in front of the organ in the western gallery; a large organ-chamber has been formed on the north side of the chancel, and vestries, furnished with all the usual accessories of modern requirements, have been erected for the use of the clergy and the choir. Additional north and south porches, with staircases, have been added for the convenience and safety of the congregation. Tall crocketed pinnacles have been added to the many well-developed buttresses along the side of the church, and a pierced battlement between them, affording a greater richness to the high and before somewhat bare walls, which, not being relieved by aisles, had depended chiefly upon the traceries of the windows for decorative effect. These works have been carried out from the designs and under the superintendence of Messrs. Benjamin Ferrey, F.S.A., and Son. The inscription, "This Stone was laid 23rd June, 1877, by H.R.H. the Prince Leopold, K.G. R. Duckworth, M.A., vicar. J. H. Good, H. Cotton, Churchwardens," was engraved on the usual "first stone" placed at the east end of the chancel, and records the commencement of the alterations and decorations, the reredos being the crowning feature, now just completed, and of which the illustration gives a good idea. These new buildings, which were consecrated on the 20th of July, 1878, have given an effect of greater dignity and completeness to the eastern end of the structure.

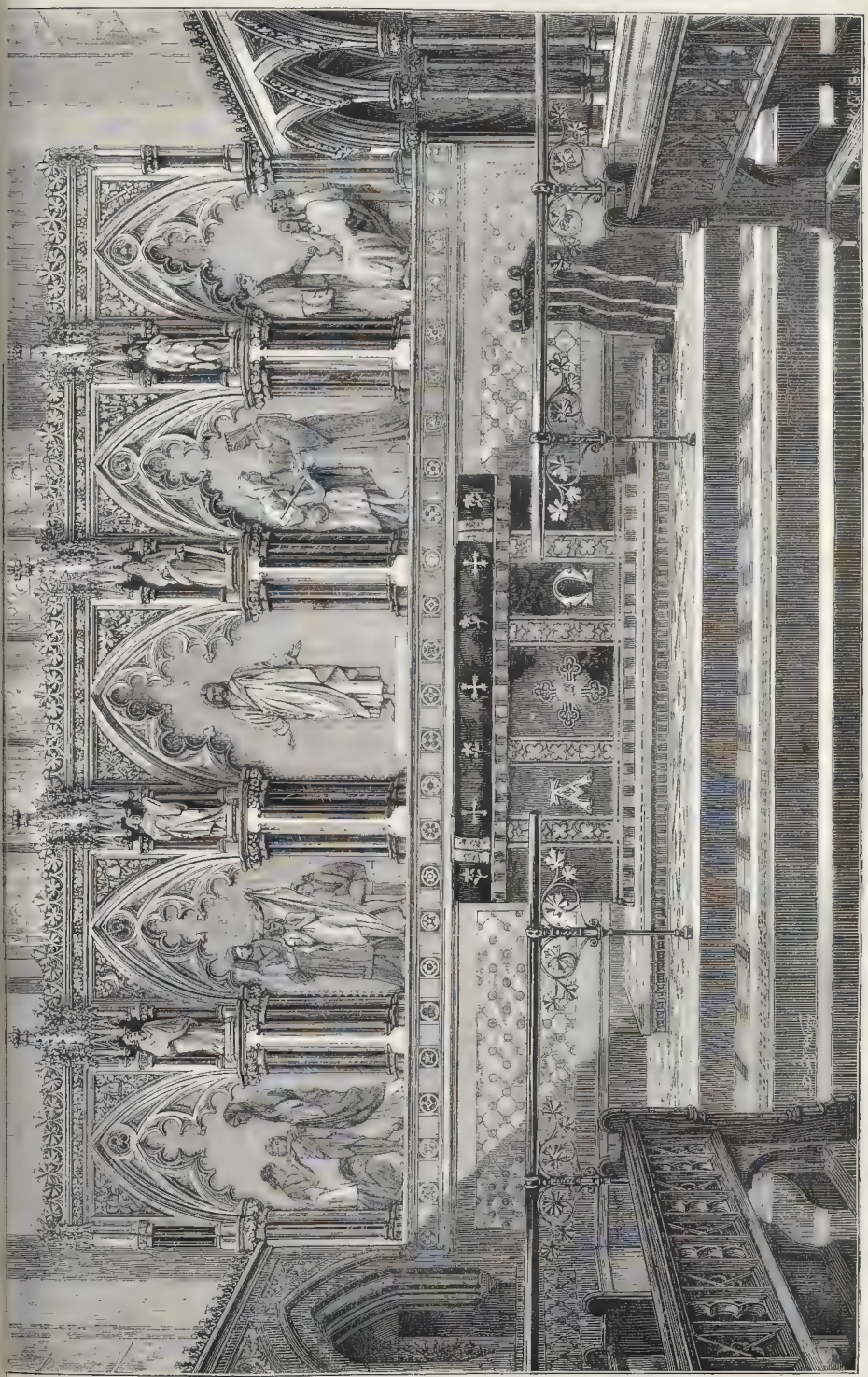
To the interior very much more has been done. Referring to the body of the edifice, in the first instance it may be stated that the whole of the plaster work between the rafters, with its blue ground on which gilt paper stars had been, more or less, securely fastened, in accordance with the prevailing taste for decoration of from forty to fifty years since, and supposed to represent the starry firmament, has been replaced by pine-wood boarding between moulded ribs, and varnished, presenting a bright and cheerful aspect; while the old trussed principals, having been formerly stained, have been cleaned, and present a marked contrast between the old and new works. The gallery fronts had been painted white, and parts of it gilt. This has been cleaned off, and each of the upright boards in the trefoiled panelling of the front framing has been lightened in effect by a "flower slip" perforation, after designs supplied by Mr. E. B. Ferrey. A pleasing effect has thus been produced in a portion of a building which is usually overpoweringly heavy. The former low pews or seats, having stall-ends wrought into trefoil heads and stained oak, have been retained, but the doors have been removed. The whole of the proceeds of the new appropriated sittings are devoted to the maintenance of the surpliced choir. Several of the windows had already been filled with stained glass as memorials; now the centre one on the north side, being a tall two-light traceried window, has been filled with a representation of the meeting of Joseph and his Brethren, executed by Messrs. Lavers & Barraud, being the gift of Charles Drayson, esq., in memory of his only brother. The glass in the large west window, consisting of four lights with trefoiled tracery in the head, is the work of Messrs. Clayton & Bell, and represents the history of St. Mark, while in the lower compartments is depicted the "Nunc Dimittis." It was the gift of the late Mr. John Carlon. The necessary painting of the walls of the church remains to be done, and by the trustees of the church. The font, placed as usual near the western entrance, has been replaced by one of a richer design and beauty, the gift of Mrs. Bartley, in memory of three infant daughters. It is octagonal in form, each face of the basin being a square, the panels in which are filled chiefly with ornamental foliage representing roses, the phœnix with maple-leaves, lilies, the dove with olive-leaves, poppies, the lamb and ivy-leaves, passion-flowers, and the emblem of the Trinity, with leaves and berries around it. The basin stands on a shaft of Irish dark-green marble, having around it colonnettes of red alabaster, with carved caps of oak-leaves and acorns, and with moulded bases. These colonnettes rise from a deep plain stone plinth, having a projecting step on one side, with a wide marginal pavement of glazed coloured tiles. These sculptures are carved with judgment and skill, highly to the credit of Messrs. Underwood & Sons, of Buckhurst Hill, who also designed the work.

The chancel, as already stated, has been materially lengthened, and now affords more suitable accommodation for choral services. The former east window of five lights has been retained with its stained glass, representing our Lord and the four Evangelists, executed by Mr. W. Wailes, of Newcastle-upon-Tyne, which is said to have been prepared for, and to have found a place in, the Exhibition of the Works of Industry of All Nations, 1851, and was acquired by subscriptions. This glass, though perhaps fairly good for its time, is now far behind the expectations of the present day. It has, therefore, been decided to supersede it by an entirely new window, much enlarged in size, and of a design which will better accord with that of the reredos. The glass, representing the *Te Deum*, will be the work of Messrs. Clayton & Bell, and is to be placed as a memorial, being the gift of three members of the congregation. Below this window is the reredos, which extends the whole width of the chancel, being 22 ft. in length and about 12 ft. in height. It consists mainly of a dado 4 ft. 10 in. high, and above it an arcading of five divisions, each having elaborate foiled tracery, delicately carved. Above the piers are niches with carved canopies, supported on colonnettes of green Kilkenny marble, covering white alabaster statuettes, well detailed, the whole surmounted and completed by a cornice and brattishing of vine-leaves, all delicately carved in Caen stone; and interwoven in the work are the Scriptural symbols of the suffering,—the dice, spear, and crown of thorns. The dado commences at the pavement with a plinth of red Dumfries stone; above it the surface is enriched with inlaid work of lozenges of Devon alabaster separated by dots of dove-coloured marble, all surrounded by a plain border of a light-toned grey stone. Above this is a broad capping of dark Ipplepen marble, inlaid with designs arranged in squares and circles of rich marble mosaic work, the upper mouldings forming a ledge from which the reredos proper commences. Colonnettes of red Devon marble, on green Connemara marble bases, carrying the arched perforated tracery, form, with Caen stone piers, divisions separating the compartments or panels. These spaces are filled with paintings by Mr. Edward Armitage, R.A., a member of the congregation, who has exercised great generosity, enabling the vicar to conjoin high art with the excellencies of practical workmanship. In the centre panel is a figure of the Redeemer; while subjects representing works of Charity and Mercy occupy the four side panels. These paintings have been executed on enamelled slate of about 1½ in. in thickness, and to prevent any chance of damage from damp they are kept clear of the wall; the stonework of the reredos having been ingeniously arranged to allow of the slabs being let down into their places behind the perforated tracery. The background of the subjects is a diaper composed of light-coloured gilt crosses and circlets on a light-toned ground, as in paintings of the early Continental schools. In the centre panel is the figure of the Redeemer, clothed in a white robe, with the arms slightly extended, conveying the words of the inscription at his feet:—"Inasmuch as ye have done it unto one of the least of these ye have done it unto me." There is also another inscription cut on the projection of the marble capping to the dado, stating that this panel is "In memory of Alexander Eugene Mackay, M.D., R.N., Inspector-General of Hospitals and Fleets, who died March 10th, 1877, aged 55 years. This painting is placed by the medical officers of the Royal Navy as a tribute of respect for his high character and blameless life." The subject of the painting on the right-hand, looking at the reredos, is "A stranger, and ye took me in." This has a similarly placed inscription, stating that it is "In memory of Henry John Bartley, born August 26th, 1826, died November 22nd, 1873." The next one, "Sick, and ye visited me," is placed "In memory of Rosie Trendell, who died May 17th, 1877, aged 18 years. 'She being made perfect in a short time fulfilled a long time.'—Wisdom iv. 13." On the left-hand side comes the subject, "Naked, and ye clothed me"; and lastly, "I was an hungred, and ye gave me meat." The design for this subject was suggested to the artist by an incident stated to have occurred during the Madras famine, which was raging at the time the artist was at work. The hungry are being fed with rice, and one is eagerly scraping up with the hands that which has fallen at the feet of the donor of the food. It will be unnecessary to describe the composition of each subject, as the illustration is sufficiently explanatory; but a few remarks on the colouring and general design, in the words of a brother artist, printed in the local *Parish Magazine* of October, 1878, may be usefully quoted:—"In estimating the merits of Mr. Armitage's pictures, it would be as well to take a glance at the nature of the undertaking,—at the scope and liberty of treatment which an artist may claim who resolves to decorate a sacred edifice. It is a task which men have been striving at for centuries, and it has followed, as was inevitable, that individual impulse has become fettered by conventional and popular examples,—that certain types have been created any deviation from which would strike some people as non-ecclesiastical; others, as daring and dangerous innovations. It is a great credit to Mr. Armitage that he has originated a very appropriate subject for altar decoration without at the same time departing from certain conventionalities inherent in his task"; and he continues, "nor is the artistic treatment of these pictures behindhand of the initial idea. The design has all the precision and severity demanded by an architectural sitting, and the colouring has been most happily chosen with a view to enhance the richness of a gold background. The central picture necessarily entailed a treatment of white draperies, and, to vary and relieve monotony, the painter has skilfully introduced a dark stripe. The two pictures on the left are, so to speak, symphonies in grey, blue, and red, and blue, green, red, white, and pale blue, upon their field of gold. Those to the right present, perhaps, the finer harmonies in colour. In the first is green, grey, and white, with a single touch of gold; in the second is grey, red, white, and amber, producing, with the gold, a rich and subdued effect." Another writer, whose description of these fine works of art has been contributed to a journal in a foreign land, fairly comments on the style in which they are painted by the artist. "They exhibit," he writes, "a peculiar phase of English art as ruled by North Italian ideas combined with the realism of the Düsseldorf school. The figures in all the panels have that slenderness of form and rigidity of drapery, which is such a characteristic of the spiritualised treatment of Giotto and Cimabue; all the fleshy robustness of the later masters of Italian and Flemish art is wanting, and there is seen, as it were, only ideals of humanity clothed with visible forms. Although thin and somewhat attenuated, none of Mr. Armitage's creations are conceived in that weird shrunk type which has recently prevailed in the *soi-disant* 'pre-Raffaellite' designs."

Before leaving this reredos, it should be further mentioned that the four statuettes representing Moses, Isaiah, David, and John the Baptist, carved in white alabaster, are the special gift of the Misses Smith, and that Mr. George Smith, F.S.A., and family have contributed fully three-fifths of the cost of this interesting architectural work, the design and execution of



THE NEW "PAVILLON DE MARSAN," TUILERIES, PARIS.——M. LEFUEL, ARCHITECT.



REREDOS, ST. MARK'S CHURCH, HAMILTON TERRACE, ST. JOHN'S WOOD.—DESIGNED AND EXECUTED BY MESSRS. J. UNDERWOOD & SONS.

…due to the taste and skill of Messrs. J. …od & Sons, of Buckhurst Hill, Essex, …may be mentioned, have also carved the …alabaster pulpit at Holy Trinity church, …-road, Paddington. To these gentlemen …ne the credence-table formed in the north …has a deep hood-moulding of Devon…abaster, with slab and sides, the back …rmed of a panel of Giallo antico inlaid …rbles, pietra-dura work, representing a …h lilies, passion-flowers, vine, and wheat, …atical of the Passion. This is also the …Mrs. Bartley, already twice mentioned. …this credence-table is a three-light …fitted with stained glass, the work of …Clayton & Bell, representing the healing …mpotent man at the Beautiful Gate of …ple. It was inserted as a thank-offering …e late Mr. J. H. Goetze, and Mrs. …. On the opposite side of the chancel is …three-light window, the glass of which …e gift of Mr. and Mrs. George Smith; …sents Our Lord seated in the house of …ho is humbly kneeling at His feet, in …-light, and Martha in the other side…ow, with outstretched hand and a pitcher …er left arm, is protesting against the …of Mary from her duties. In the com…ts of the tracery are angels bearing …of the Passion. This glass is the work …Alexander Booker, of Wells-street, and …merit in design as well as execution. …wing is excellent, and the colouring, …rich, is so skilfully subdued in tone …sent an harmonious whole, reminding …forcibly than is usual with painted glass …arcely ever attained merits of old work. …e hand has painted the St. Cecilia in …bil light of the window in the chancel …and it appropriately faces the organ. …this glass window the wall is pierced …sedilia, but as these are shortly to be …, it will be well to notice that this side …hancel will be fitted up with three …rmed of alabaster, separated only by …pillars carrying arches and groined …completed by a cresting under the …carrying round that of the reredos, but …ewhat lower level. This work will be …d up to the choir seats, and will include …door of oak, leading into the vestry, …ith new panelled wainscoting behind …seats, are all to have enriched "linen …panellings. Above the seats to the …sks the walls will be decorated with …work, finishing at the chancel arch. …north side the wall is, through the …ce of Mr. J. H. Good, completed, …the credence-table and the organ…by an arcading of light and coloured …, finished with a carved cornice and …corresponding with that on the opposite …e greater portion of the expense of the …the south side will be borne by Mr. …mith and his family.

…this description some idea may be …f the ultimate richness in decoration …art of the edifice, especially when the …n-coloured walls are adorned with …ork patterns, and the present plain …wagon-headed roof, which is divided …ls with moulded ribs, having bosses at …stices, is likewise adorned with medal…rich colours. The scheme for these …is under consideration.

…mmunion-table, of carved oak, is raised …steps, the pavings of which are deco…patterns of glazed tiles of Messrs. Maw's …ture, from the designs of Mr. Benj. …In the chancel floor between the choir…red and yellow patterned tiles, which …ne pavement to the first chancel, have …ded. These choir-seats were designed …erley; they are of oak, of substantial …ure, and enriched with appropriate …. They are the gift of Mr. J. H. Good, …been for many years the vicar's …rden. This pavement is raised by …ne steps above the floor of the church; …rth end of them is the pulpit; at the …double prayer-desk. This is of Caen …ry richly carved; the front is formed …ated arching in the lower part, which, …aster colonnettes, supports a diapered …n which is laid a slab of Greek red …ncompassed by an alabaster border of a …vn colour. This desk has a Latin in…recording that it, with its two stall …Caen stone, backed with carved oak, …gift of the present esteemed vicar. …n stone pulpit is raised sufficiently high by a few steps ascending from the chancel, so that the occupants of the galleries can see, as well as hear, the preacher; in fact, there is no difficulty as to seeing either the preacher or the reader from any part of the edifice; for as the church is one room, without pillars or arches, there can be no complaint on that score; and as to hearing, this church appears to be one of the few examples of a room wherein all can hear alike well, and is without an echo. It would be a happy circumstance could architects foretell the acoustical results of their designs; some slight unintentional difference in construction or material in two apartments intended to have the same happy result in the properties of sound will mar the best expectations of the architect; how much more, then, two entirely differing designs. This pulpit, designed by Mr. J. H. Good, has six panels, filled in with mosaics by Dr. Salviati, after designs by Messrs. Clayton & Bell, representing the four Evangelists, St. Peter, and St. Paul; while the panels at the side of the steps are of inlaid marbles, designed and executed by Mr. Underwood. The brass hand-rail is of good wrought and cast work, having at the bottom a lion, admirably adapted from one at the foot of a staircase in the Doge's Palace at Venice, the typical emblem of the patron saint of this church as well as of Venice. The whole was presented in 1873 by a family in the congregation, in memory of their father. The brass eagle lectern was another presentation made by Mr. Good. It is of the same pattern as that presented by the Princess of Wales to Sandringham Church, and was executed by Messrs. Hart, of Wych-street.

The organ, placed on the north side, is now considered to be, as to quality, one of the finest church organs in this country. The old one, by Messrs. Gray & Davison, which was originally placed in the western gallery, has been not only greatly enlarged, but entirely re-constructed by Messrs. Walker & Son, at a necessarily large cost, under the direction of the parish church-warden, Mr. J. E. Street, of Clifton-hill. It now contains fifty-two stops and has three manuals. The chamber, built out purposely for this instrument, is 19 ft. by 16 ft. and 23 ft. high to the roof plate; these dimensions will, without entering into further details, enable a lover of organs to form a conception of the size of this grand instrument. The lower portion of the front, which is 12 ft. 6 in. wide, is of panelled oak, having above the manuals a coving to support the row of small pipes nearly filling in the arched opening above; these pipes are formed of the spotted metal now in vogue, and will be so left. The side arch is filled in with similar pipes, of a larger size, the under portion by pine-wood framework, the gift of the vicar, the panels of which are perforated with designs to accord with those of the gallery front; they are best seen in connexion with it by those persons sitting at the lower end and opposite side of the church.

Any one who may be induced by the illustration and this description to visit the church to see the paintings and other art works and judge for themselves, or may attend the services, should notice the method of ventilation adopted by the designers of the edifice. In each of the sloping cills of the windows, on the inside and much above the heads of the congregation, is a small flap, which on being raised admits a current of fresh air into the building. This would appear to be on the same principle as the one lately advocated by Mr. Tobin with great advantage to the comfort of crowded audiences wherever it has been introduced. Eight fair-sized ventilators in the boarded ceiling convey away the heated atmosphere. A low temperature hot-water apparatus, placed under all the pavements, is provided for warmth in cold weather.

Besides the workers already mentioned in this undertaking, the names should be noticed of Messrs. Goddard Brothers, of Farnham and Dorking, as the builders for the recent additions; while Messrs. Myring Bros., of Blenheim-terrace and Ealing, executed the alterations to the gallery fronts. The congregation are also most deeply indebted, it is almost unnecessary to add, to their worthy vicar, the Rev. Canon Duckworth, for the promotion and constant supervision of these great improvements, and the exercise of much judicious taste during the operations.

Architectural Books.—Mr. Quaritch, of Piccadilly, is offering for sale a number of books from the library of the late Prof. Cockerell, R.A.

THE MOSQUE OF CORDOVA.

In my letter, which appeared in the *Builder* of the 24th of May, p. 582, I drew attention to certain features of the original plan of the mosque of Cordova, and to the alterations and enlargements of two subsequent periods. In the plan now published, these are indicated. It will be noticed that the original mosque was on a very grand scale compared with other mosques of that period, and therefore it may be of interest to refer to some of these.* First of all should be considered the mosque of Kairwân, in Moorish Africa, the city of the Emir Musa, one of the conquerors of Spain. A plan of this mosque is given by Mr. E. Rae in his "Country of the Moors," together with a most interesting description. The mosque, like that at Cordova, underwent successive changes and enlargements. It was founded by the Emir Okhbah between 667 and 677; it was razed (excepting the Mihrab), and rebuilt by Hassan-ibn-Nouman in 691, and again in 727, and in 777 it was pulled down and rebuilt; and, lastly, in 827 it was again razed and reconstructed,—still, however, preserving Okhbah's Mihrab, and thus it still exists. It has eight aisles, extending north and south, and eighteen aisles (each about 14 ft. wide), running east and west; the principal aisle, leading to the Mihrab, being, as at Cordova, wider than any of the others. On the west side is the great court, about 300 ft. by 240 ft., with a double aisle all round it, with double arches (one over the other) on the west side, similar to those at Cordova. The internal pillars are of rich marble, with Corinthian capitals.

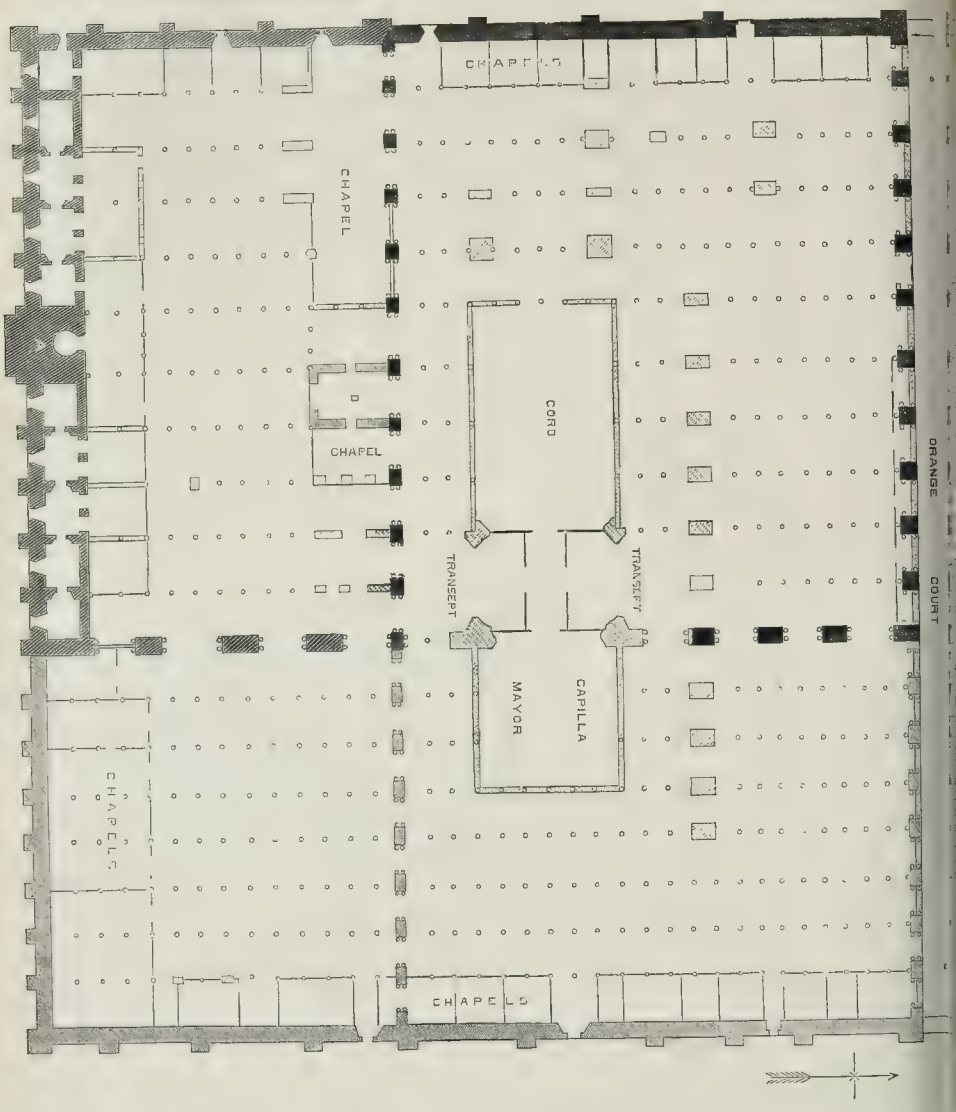
From Kairwân issued forth to conquer Spain the Emir Musa and Tarik, and after the battle of Guadelete, in 711, Cordova fell; and when Musa was summoned to Damascus, his son Abd-del-Aziz became governor, and another son the governor of Kairwân. At once a portion of the Christian basilica was altered into a mosque, and in 786 the present building was commenced by Abdu-r-râhman I., who determined it should equal the finest mosques in the East. He evidently followed, with this intention, the original type of the mosque of Kairwân, though he exceeded it immensely in size. The successive enlargements of Hakem II. in 961-67, and of Al-Massour in 981-1001, rendered, without doubt, the mosque of Cordova, on the whole, the most magnificent building of the Eastern world.

In one point, however, it (as did the mosque of Seville) fails in grandeur when comparing it with that at Kairwân and those at Cairo, viz., in its outer or cloister court, which is small in comparison with the vast building, and is only surrounded by one aisle, of a rather poor character, probably built by Abdu-r-râhman III. in 912-61. Now at Cairo, in the oldest mosques, the *double* cloister round the great court forms a very grand feature, and especially grand are the cloisters of the mosque of Ahmed-ebn-Touloon, built in 879. There are fifteen and thirteen arches respectively on the northern and eastern and western sides, forming aisles each about 20 ft. wide. A similar cloister exists at the mosque of Sultan el Hâkem (dating about 1000); and at the mosque of Amrou, of about the same period, the cloisters form three aisles on the north and south sides, and one on the west side.

These mosques, although their cloister-courts are so fine, are not themselves on such a grand scale as those of Cordova and Kairwân. The mosque of the Touloon has seventeen aisles from north to south, and five aisles from west to east; that of Amrou has six aisles from west to east, and in it are used old Roman columns and capitals of various sorts and sizes, while the former is built in a beautiful pointed style quite unlike the Cordovan work.

In one very important particular the mosque of Cordova now falls short when comparing it with the previously-mentioned mosques, for its ancient painted roofs have been destroyed, and hideous plaster semicircular ceilings (with sky-lights!) have been substituted for them, interfering most fatally with the original design. At what date these were put up, and the interior altered, seems uncertain; possibly it was done comparatively recently, for Gwilt, in the 1854 edition of his Encyclopædia, says, "the ceilings are of wood painted"; and further goes on to say,

* The walls, engraved solid show work of Abdu-r-râhman I., A.D. 786-793; dark parts, Hakem II., A.D. 961-967; lighter parts, Al-mussour, A.D. 988-1001; parts dotted, Christian insertions.



A. MIHRAB. B. CHAPEL OF VILLAVICIOSA.

THE MOSQUE OF CORDOVA, SPAIN.

"the decorations throughout are in stucco, painted of various colours decorated with legends and occasionally gilt like the churches of the Lower Empire." Now, alas! nothing of the sort is to be seen, the whole interior, excepting a portion of the southern part, is covered with whitewash and yellowwash, the only portions remaining intact, save for the fading of the colours through age, are the beautiful Mihrab (A) and the adjoining mosaic covered chapels.

At Kairwân it seems that the ancient coloured roofs remain, and at Cairo, in some instances, the ancient decoration exists in a very perfect state, notably in the thirteenth-century mosque and tomb of Sultan Kaloon, and in the mosque of El Ghorée, where the colouring of the woodwork is of the most beautiful and harmonious tones, harmonising with the marbles of the columns and with the rich white marble pavement inlaid with red and green and other coloured precious marbles in the "opus Alexandrinum" style. At Cordova a similar pavement is said to have existed, or to still exist under the common red brick pavement. We may judge, therefore, how glorious a building both in its scale and decoration the mosque of Cordova must have been up to the fall of the Moslem power.*

R. H. CARPENTER.

A GLANCE AT LLANDUDNO.

To those who have for any considerable length of time seen nothing more lively than the ordinary close towns of North Wales, the sight of Llandudno is like a sunbeam in winter. Its English aspect, and some of the graces of architecture, unite with the pure atmosphere and the various natural features of sublimity and beauty around in buoying up the spir the visitor; and suggest that it must be tr city of refuge to the escaped denizens o large towns. It seemed to me like a cle and brightened bit of London brought t seaside for the benefit of its health.

In the following remarks, penned durin after a very brief visit, I meddle not wi geological, botanical, or ornithological st tions, or its ancient remains, but confine u to its general aspect and capabilities.

Enthroned as it is amid romantic and sul spectacles of nature, and scenes steepe beauty, surrounding a semicircular bay bet two headlands, something like modern Al dria on the peninsula of Pharos, it appea me capable of becoming not only a firs watering-place, but a great city for pere residence. The lines have fallen to it in a r worthy of Art's choicest gifts, and where a rare opportunity, in concert with natu

* I cannot give a scale with the accompanying plan; none is given with Murray's, and we had to take that to work on. The aisles which run north and south are each about 30 ft. wide.

ng some of the most celebrated of architec-
icenes; which it will, if it rise to the silent
of the ocean and the mountains around.
ng as is Llandudno, however, it has
y made some mistakes, on which it may
eful to comment. There is, in the first
too much cement and too little stone and
visible, and consequently too little variety
our. And with an imposing display of
as and entablatures, there is not as much
ality as could be wished; or, in other words,
is too much sameness of design, which
ony of colour renders more apparent. To
may be added, the churches are Early
h, or some past-century Gothic, instead of
eenth-century Gothic, the century we are
sent in.
e, too, are some of the worst disfigurements
towns of another kind, which have a dis-
ating effect upon the eye. One is the
d gable-end left on almost every block of
g, with brick toothings and fire-places in
pation of a future next house. Another,
ission of architectural features at the back
house, causing that part to be not much
sightly than the gable-end, and without
keeping with the front. Approaching
udno from behind, where some back slums
ngregated, the aspect of the town is that
eries of bricklaying and building yards,
calculated to give an unfavourable im-
on of the place. This, an evil anywhere,
cially objectionable in a holiday place like
udno. If the ancient Greeks in their
es finished each seen and unseen part, be-
the gods are everywhere, we may surely
ome attention to parts that are seen by
gods and men. We ought also to construct
allest houses as substantially as the
t; as they undergo the same wear and
the elements, and have usually less gentle
es. This has not been done at Llandudno.
ther mistake is the absence of classification
d by the rather startling spectacle on the
my visit, of the carcass of a sheep dis-
g itself in a window of a palatial-looking
houses. A further mistake is that due
ng has not been taken from older cities
have become diseased for want of lungs
shape of open spaces; which are not only
le in a sanitary point of view, but highly
nt and convenient, without being planted
ed in, as sites for memorial statues and
ments.
the greatest mistake that has been made
ndudno, and which forms the head and
of its offending, is the abutting of the
pal feature of it, the crescent, immediately
brink of the ocean, instead of linking it
rmediate natural features. I doubt not
unders had ample precedent in other sea-
laces for putting the terrace where it is;
is nevertheless a mistake. A long line of
street-houses is too conventional an object
ch a scene, and abutting so closely upon
blimest object on earth,—the ocean; and
itive eye would half-wish that old Nep-
with a blow of his trident, would drive it
long further back, and break it into de-
l houses or groups, and dot the restored
margin with some choice morsels of
ecture, half hidden in foliage. As it is,
oxical as it may seem, the lofty terrace, if
s not dwarf it, takes something of sub-
from the sea itself, which certainly looks
finer at Penmaenmawr, and at Beaumaris
olwyn Bays, than at Llandudno.
s mistake can hardly be rectified. Most
s, however, may be, and Llandudno has
nly time to amend her ways, but to show
orld how a city should be built, and set in
roundings; which it should be worth her
to do in a pecuniary point of view, as I
me money spent on rendering a watering-
an abridgment of all that is delightful in
ecture is well invested. In ancient times
as sailed to Cnidos with no other object
to gaze on the Venus of that place. The
s, it is true, was by Praxitiles, but its
e of attraction shows what may be hoped
the presence of fine works of art; which
d the more attract invalids and others,
se they are good for health, through the
ant entertainment they afford the mind,
o, aiding to the Hygeian appliances of the
, which is in accordance with Lord Bacon's
mendation to invalids, in his Essay on
h, of a poem or a prospect, and studies
fill the mind with splendid and illustrious
ts.
ore is yet time for this; but as the child is father to the man, the sooner it is commenced the better, and the infant town be trained in the way it should go.

To make it really a pleasant place to its inhabitants and attractive to visitors, it must be formed more on the model of some ancient cities like Chester than on new ones like Birkenhead, which evidently has had influence on Llandudno, and which, with its long and broad streets stretching each way to the visible horizon, is not a comfortable-looking town. Such streets have a dreary look unless relieved by great buildings or projecting features, as in some main streets of London, Edinburgh, and Dublin; and do not wind themselves round the hearts of the people like those of Chester, or the High-street of Oxford. Many American cities, I believe, are similarly faulty.

Far be it from me to recommend narrow or tortuous streets. I would have a sufficiency of broad and straight ones for thorough ventilation. But I well know that it is less by such means that the air will be preserved pure, than by abstaining from polluting it, by sending refuse matter into the bowels of the earth to return pestilential exhalations.

To recur to the city just named. The Cestrians, as a rule, are strongly attached to their city, and "drag at each remove a lengthening chain" when compelled to leave it; which is not surprising. There are delightful nooks and corners in it that are worth all the grandeur of renovated Paris. In Chester, and on its outskirts, are localities which remind one of Byron's description of the last residence of Petrarch:—

> "Of that complexion which seems made
> For those who their mortality have felt,
> And sought a refuge from their hopes decay'd."

The Rows of Chester, though unique, are highly suggestive; and it seems to me surprising that the Row-principle, holding out the advantage, as it does, of two heights of shops, and great power and beauty of light and shade, has not long ago been adopted in new towns, or new districts of old ones; which it might be without any deficiency of light in the principal shops, the one defect of the Chester Rows.

A smaller specimen of a cheerful place, eminently calculated to attach its people to it, is Ruthin, in the vale of Clwyd, which has some spots and houses quite romantic and joyous. It covers a small hill, the crowning table-land of which is barely sufficient for the central market-square, in which there are not two houses alike in design or colour, and from which all the streets radiate, and descend, save one leading to the old castle, which is level.

But to return to Llandudno: that town unless guided by a pre-conceived and drawn-out plan, which is as necessary to a city as to a house, will become a labyrinth. It should grow from some dominating edifice as its nucleus, which will give the keynote to both public and private buildings. This edifice should doubtless be a place of worship, as it is in cathedral cities. For the rest, every house built, however humble, and every shop should increase the attractiveness of the place, and be different in design from all others, as its occupants must differ in character. Every public building, too, should have its distinct and proper character according to its destination. With all buildings abundance of openwork sheltering features should be interwoven; nor should skyline be uncared for by the authorities.

Whatever the architectural style, a town should be such that an enlightened traveller passing through it should recognise or feel the same unity and variety of form and colour he saw without in nature; and perceive in it nature's architectural antitypes and analogical resemblances. Like the scenery he left, it should be picturesque, *i.e.*, present material for a picture. Moreover, in a congregation of houses called a town, where nature to a great extent is necessarily excluded, all the graces of architecture, sculpture, &c., should be brought to compensate; which it is pleasing to think they are capable of doing. In forming a city, we engage in no vain struggle as we should in contending with nature on her own ground. In art we have a spiritual leverage, as it were, which gives us the advantage over material creation. Real architecture alone breathes a music like the music of the spheres.

> "There *is* a pleasure in the pathless woods."

But to most cultivated people there is more pleasure in the crowded streets of a beautiful city, full of all that art can contribute to its embellishment, and a pleasure in the highest degree refining and elevating. We consider educational institutions of various kinds as all-important in a city; but we may make the whole place an educational institution by composing it of fine architecture and sculpture; which have the advantage of being incessant in their operations on the mind and character of their beholders. Poetry, when not read, lies inactive, as does music when unplayed; but architecture, painting, and sculpture are always operating on the minds of those about them. Ideal and portrait statues people the place they are in with a higher population,—a sort of spiritual aristocracy,—which, however degenerate the times, maintain their purity, and refine the living. A noble and solemn architectural pile, with its heaven-pointing spire, may have even a religious influence; and on the minds of people who never enter it.

I suggested above that money would be well invested in rendering Llandudno a beautiful town. Let me add that money alone will not do it. A city can only grow really beautiful from the beautiful art-loving mind within it, of which it becomes the material exponent.

> "The soul is form and doth the body make."

All that can be done towards breathing into it this soul is to cultivate the natural taste of the people by the establishment of art-appliances, and galleries of painting, sculpture, and architecture. Let me suggest these; and also that grand invention of the nineteenth century, the Free Public Library, than which, in the centre of a town, I believe no more powerful engine could be devised by man, not only for cultivating the intellect, but for emptying the haunts of vicious indulgence of every kind. Let me suggest also a Botanic and Zoological Garden capable of unlimited extension, which, with the marine parades and drives and mountain-walks, should render People's Parks unnecessary, and would make Llandudno as attractive and pleasant in winter as in summer, to which it appears the climate presents no bar.

There is no insurmountable obstacle to its rivalling Florence or Naples. It has natural scenes, as great and inspiring: we might, in the spirit of Wordsworth's reference to the Cumbrian, ask—

> "What was the great Parnassus' self to thee,
> Mount Snowdon?"

This is the more important, inasmuch as Llandudno may be regarded as a sort of leaven introduced into Wales, upon the towns and architecture of which, whether it exhibit an example of genuine beauty or of affectation, it will have an immense influence, till it leavens, as it were, the whole lump. Hitherto the Welsh Muses, so rife in all times, have done nothing for Welsh architecture. Nor has the grand scenery had the influence it ought to have had. For example, the beautiful Bay of Beaumaris, the subject of fine poems, is nowhere reflected in the town seated on its banks.

In conclusion, let us hope that no mistake will interfere with Llandudno's prime mission to preserve and shed around the balm of health. At present, while into the mind of the visitor

> "The visible scene enters unawares,
> With all its solemn imagery,"

the fresh air, as uncontaminated as the scenery, enters into his lungs,—a commodity which the growth of towns, with their various sources of pneumatic deterioration, is every day rendering more scarce. Few imagine how far the foul air of these manufactories of it is blown by the wind, to the pollution of spots deemed pure; or how many rural districts themselves, where everything conducive to health might naturally be expected, have become hot-beds of disease. Let this fresh air be let alone. The town may be so devised that, instead of being a plague-spot on the earth, it may be more healthful than the purest rural district, inasmuch as it will be dryer and warmer; so that in future time, instead of people going out from town to country to sleep, they will be led to do the reverse,—a great advantage to the commercial population.

If Llandudno fail in this, its people, surrounded by the purest air in the world, the chief essential of health, will be in a predicament something like that of Tantalus in the infernal regions.

SAMUEL HUGGINS.

Suffolk-Street Galleries.—The Society of British Artists has decided to open the present exhibition every evening from seven to ten o'clock, commencing on Monday, the 21st inst.

THE BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY AT CHELTENHAM.

THE three days' meeting of this society at Cheltenham commenced on Tuesday, the 8th inst. The council and some of the members of the society having been entertained at luncheon by the Mayor of Cheltenham at the Plough Hotel, the annual business meeting was held in the Ladies' College, Mr. C. J. Thomas, the retiring president, occupying the chair. The secretary (Mr. P. Hallett) read the fourth annual report of the council, which stated that at present there were 506 subscribing members, as against 498 last year. During the year twenty-two losses had occurred through death or resignation, and twenty-eight new members had been elected. With regard to finance, many subscriptions were still outstanding,—some of the arrears, indeed, "having a more ancient date than appears to be fitting, even in an archæological society"; but the current account nevertheless shows a balance in favour of the society of 225*l.* odd, from which amount, however, would have to be deducted the cost of producing the annual volume. Since last year's annual meeting at Bristol, in accordance with a resolution then come to, the whole of the life-subscriptions, amounting to 414*l.*, have been invested in Consols, and it is intended that the principal of this investment shall, as heretofore, be untouched by current expenditure. During the past year the council has established correspondence relations between the society and many of the more important archæological associations of the country. The acquisition of a large number of the volumes of "Proceedings" of the several societies referred to, together with other books and objects of interest presented by individual donors, has forced upon the council the question of a permanent place of deposit for its books and antiquities in general,—the question, in short, of the beginning of a Museum and Library. In concluding their report, the council nominated the Rev. W. Bazeley, honorary general secretary, to act in conjunction with the present general secretary of the society.

The report was unanimously adopted, on the motion of the Mayor of Cheltenham, seconded by the Baron de Ferrières; and on the motion of Col. Basevi, the officers and council were elected.

Mr. Gambier Parry, president of the society for the current year, then read his inaugural address, in the course of which he said,—The town in which you have chosen to meet offers you but little for your purpose beyond its pleasantness, convenience, and hospitality. In the very centre of the vale which gave the Saxon origin to the Romans' title of Dobuni to those who inhabited it, this town possesses nothing to remind you of either of them. The old Chelt is but a pigmy rivulet to give the modern name to so important a place. Probably many inhabitants have never heard of it, and most know not when they cross it. Antiquaries might have expected, from the strong salt of those famous wells which have been the origin of its fame and popularity, that its name might rather have been Cheltenwych than Cheltenham; but in those old days when Droitwich obtained that significant name, India, not yet being an English possession, had not disordered that number of constitutions which required the drastic purgation of Cheltenham salts. Health and population have followed in the train, and the happy sequence of a healthy mind in a healthy body has found its best development, in this place, of some of the most valuable educational establishments in England. If cities were left to the wisdom and the mercies of archæological societies to build, they might possibly fall under the censure of being more quaint than convenient; but one thing we should do in our reverence for the beauty and durability of those ancient days, we should build our cities with at least some desire to secure the reverence of futurity. Ages hence, when England will have long since become a peaceful country of flocks and herds and simple life—freed from the slaveries of vulgar wealth and social pride: no longer torn and wearied by the mania of competition, or disturbed by the agonies of commerce and politics—the learned and quiet-hearted antiquary of those days, wandering over the country, in the midst of which we sit here to-day, will come upon a vast area of heaps and mounds: the natural and sole relics of a great town that was built of brick and plaster. He will meditate on the truth of the old Saxon origin of its name from "Clay," into which its ignoble materials have again melted in shapeless heaps. Like Marius weeping over the ruins of Carthage, he will sit on a huge green hillock (the only existing record of what was once that famous hostelry, the Queen's Hotel), and, sighing out the name of Cheltenham, his eyes will wander over the silent scenery. On the west, a great mound which represents what once was Lansdown; on the east, another, where rose in ancient times the courts and towers of the famous College; before him are the long ridges which mark the sites of the Old Well-walk, the High-street, and the Promenade—the dykes and embankments of the ancient railroad, long since consigned to rust and ignominy by easier atmospheric modes of transit; and, as far as his eyes can reach, stretch out the woody slopes and grass-grown mounds where stood the ancient Pittville. "Sic transit gloria!" Its venerable inhabitants had long since wandered to Colorado and Manitoba, and had left their home to the pasturage of flocks, to silence, and to time. And as he meditates on the rise and fall of that great city,—its fretted life and surging crowds, of mingled wealth and poverty,—he will give it the tribute of a tear; for, poor and valueless as its body was, its soul was good,—for the immortal honour of its history was in its noble foundations for learning and religion, and in the lives of its scholars who have adorned the annals of their country. But to turn from the ideal archæology of the future to our own, we are here in the midst of a country of great historical interest and importance. The learned and indefatigable Leland, whom Henry VIII. honoured with the title of his Majesty's "Antiquarian," in spite of the difficulties of travelling in his time, and consequently also of forming a broad topographical view, quickly declared that Gloucestershire was properly not one county, but three,—the hills, the vales, and the forest. The Romans had taken the right and simpler view, and regarding the line of the Severn as the natural and strategic division of the country, all south-east of it was included in Britannia prima, and all north-west in Britannia secunda, for the facility of civil and military government. The fact that the capital of the one was London, and of the other Caerleon, accounts for the early importance of Gloucester, first as the strong frontier town, and afterwards as the great arsenal between the two, chosen for the combined advantages of its fertile valley, its accessibility by water, and the natural strength of its military position. The hills above the city soon became their favourite resort, and they built their villas in the secluded combs, or on the breezy brows and ridges, as their taste might be. Those hills, like the scenery round their own Italian mountain homes, were in those days covered with an evergreen growth of wild boxtree and juniper, fern and yew. But many other things, besides domestic pleasures and military advantage, made this county a favourite resort. Their four great roads met near Corinium, but a short hour's ride from the brows of these hills leading by the great Fossway to the extreme North of Britain, by the Ickneild way towards London, and the nearest way to the great military depôts of Verulam and Colchester in the east. The Irmin-street led to Gloucester and Caerleon, and the Acman-street southwards to Bath. The Roman's telephone was the trumpet, and his telegraph the beacon. The trumpet-signals were scarcely within hearing from the legions encamped at Gloucester, even when the wind blew sharp from the N.W.; but the Beacon-hill of Painswick was the telegraph station for the whole valley, and far beyond it. Among other things of utmost value to the Roman inhabitants were the iron ore of the Forest and the salt of Droitwich, within easy reach right and left as they looked down from the camp and villas on the hills. The variety of building material for which this county is famous contributed still further to the advantages of their life. It supplied not only all they needed for the construction, but also for the rich ornamentation of their houses. The deep red of one forest-stone, the grey of another, the orange of the ochre-pits, the white of Painswick, the blue of the lias and the yellow of the common oolite, and all the added colours of time for his fresco-painting; and clay, burnt black, red, or brown, made such a choice of materials for architect, painter, and mosaicist, as few if any other neighbourhoods in Roman Britain could equal. Those scenes and subjects of long-past time are still ope to the archæologist; for the pages o antiquity will bear many turnings, an its ashes will bear burning again for fres metal like the old cinder-heaps of Roma iron diggings in the Forest of Dean. . . . . But I must draw in this panorama and com nearer home. The greatest works of men hav been done in troublous times. Even the art of peace have flourished most when the worl has been alert with intrigue and war. It ma have been in the intervals of troubled time that those peaceful arts have been known an greeted by men wearied with the passion o destruction. It may have been in quiet nook and refuges of the world that the poet and th artist have laboured; but had the atmospher of their age been asleep with lassitude and in difference, their powers, too, would have lai dormant. They, the very lovers of peace an contemplation, would have dozed inactive, unin spired, but for the stir of events and the energ of men. Though for a while the waves seem lulled and the air seemed clear, it was that forc of moving life, which, like electricity, pervade the very air they breathed, which gave th motive, the dramatic action and incident, th very vital spark itself to the fire of their ur conscious genius. Thus was it that when all wa astir with violence, uncertainty, and change those immortal works of art and poetry wer produced which shine like stars in the storm sky, and like angels of consolation among the sighs and sorrows of the Middle Ages. Th annals of this county are not adorned with th name of any early poet; but its works of earl art, which are chiefly those of architecture an of those arts which cluster round it, are admi able. But we have the notice of one of th earliest recorded portrait-galleries, in the con versation between the Abbot of Gloucester an King Edward II., who, when on a visit to th Abbey, remarked with admiration the portrai of his predecessors which adorned the gre hall. Whereupon the abbot adroitly asked th king for his; but Edward only replied that h hoped soon to see himself in a better place,—a strange hope somewhat awkwardly gratifie In relation to this, it is a remarkable circum stance that the best-preserved portrait of an King of England in the Middle Ages is that o this very King Edward II. It is his effig carved in alabaster beneath the beautif canopy of his monument in Gloucester Cath dral. The Puritan mania which wrecke all else that was beautiful and valuable wit in reach in that great church spared this. . . . The village of Kempley is situated on the e treme north-west boundary of this county, an lies much out of the way of ordinary traffi The old church has nothing about its exteri especially to attract the occasional traveller, b its interior is most remarkable. A few yea ago the clergyman of the parish, after lon continued labour with his own hands, and litt else than a common knife, laid bare one of th most, if not the most, complete work of art i its kind and date in England. The chancel i entered from the nave by a good Norman arc elaborately painted with ornamental patterns its own period. The chancel is entirely cover with figure-subjects painted in tempera. Th barrel roof, which is of masonry, has in th centre a large figure of Christ in majesty, sur rounded by sacred figures and symbols, th chief of which are the Blessed Virgin, St. Pete and the seven golden candlesticks. The easter wall, above and on each side of the window, h figures and other ornamentation upon it. Th patterns on the jambs of the small windows the chancel walls are very good. But the mo effective feature of the work is on each si wall, on which are painted the figures of th Twelve Apostles seated under canopies. Th whole work is contemporaneous, and of the sam style as the architecture, which may be dat at about 1120. It was in admirable preserv tion, and the tempera having a dead surfac the whole was plainly visible. With a view its preservation it was, soon after I first saw covered with varnish; but nothing could be mo lamentable than the result. One of the greate values of tempera or fresco for painting on wal among cross lights, is that on account of the mât surface they are equally well seen from a directions. What is wanted for their preserv tion is something that will bind the thin film painting to the wall without destroying its des ness of surface. I venture to mention this wi so much detail because such works are rar and are exciting an increasing interest. Th

of varnish is to destroy all quietude of and the glare is made worse by the and undulating surface of the old wall. arnishes, too, are astringent, and would rather than secure the tender film of a. There is another spot which I y recommend to your notice. It is at eme opposite border of the county from y. I speak of the parish and church of nd. From its retired position, it might observation. When I visited it, about years ago, grand old elms swept across d, and fine timber in the fields made a oreground to the hills which swept down e high-up parish of Campden. The cot- ere all in their old-fashioned condition; s-grown mill, and quiet old Gothic par- with grisaille glass still in some of its ed windows; the stream left to wander he road, and passed by stepping-stones; manor-house of many gables, humbled age to the condition of a farm; the ot churchyard, of which a sacred reve- or its quietude was the best apology for lect; and, finally, the old church itself, alls well worn by age and storms, and with the mellow lichen and fresh moss, perfect picture of lovely and tranquil equeness. It was a scene of perfect simplicity, and contentment, to touch the of the true antiquary, where, remote he fretfulness of busy life, he could undisturbed, and linger in the full flow quiet and contemplative humour. ole atmosphere of the place beamed ll that charm which antiquity could beauty. I believe that the church is touched. In the interior the remains eats and tiles,—the unusual feature of projecting over the seats against the -were rare specimens of their kind. ere frescoes on the walls, but they have efaced and lime-washed. The old em- ed cope which had served its purpose in days was then doing duty as an altar- The sancte-bell cot over the gable of the a perfect model. But, alas! the scene ged. Although the church retains its , the charm which surrounded it is no The old mill is modernised, the old is cut down, the stream wanders about e,—the village is marred by ruthless nity. The breath of modernism is like st of a furnace; and the discomfited ry, in the full emotion of his affectionate sighs out the old words (with an English esis), "Ehen fugaces,"—"Lost to me, lost —"Labuntur anni!" We are here in Chel- surrounded by a country full of historic . Few parts of England have been the f such stirring events as that which lies our sight. . . . It would be great omis- I were to close this address without at note of some valuable literary produc- f late years which have adorned and d the annals of this county. One of s the "History of Sadeley Castle," by Dent,—a work of great industry and t, full of historic incident, and completed t stint of costly type and beautiful tions. Another with which this county onoured, by an author from another, s "History of Fairford Church," by ev. James Gerald Joyce, vicar of fieldsaye. His work is one of those mines eology which, like others of first class, able, not merely for local interest, but that extensive study, width of heart, and yes, could collect to illustrate and em- it. I must add my own humble testi- o that of the accomplished author, that and old windows of that church were of English work. Although Van Dyck, tainted with what English art had been his day (when it was all but *nil*), may aid, in off-hand conversation, that those vs were the work of Albert Dürer, and, gh such a tradition may demand the of age, and the apology for it may be ey were the production of his early years, onfident that they are no more the work t great artist than of that other great o attributed them to him. Glass-paint- s not only a fashion, but a passion of the th century. The architecture of the day nverted buildings into lanterns, because eapness of glass had made it possible to e and instruct the eyes of the multitude he finest productions of artists' work, at ls. 6d. to 2s. a superficial foot. There many establishments of glass-painters in England at that time; Stowe, in his survey of London, mentions several. Others are well known elsewhere, and Mr. Joyce records the account of others, and even the contracts made by them for their works. The testimony borne by the art of those Fairford windows induces the belief that they were the production of one or other of those establishments. There are evidences, indeed, that Flemings were at least among the executants of those windows, but no hands from the school of Wolgemuth, such as those of the young Albert Dürer were, ever drew those quiet draperies. The glass was principally foreign, — but the hands which designed and used it were English in the main, and Flemish under English influence. . . . . The study of what our fellow men have done in times gone by opens to us a field of study and contemplation equalled by none other. If the studies of the historian and the antiquary seem dry, the fault is in the mind that makes them so. Most true it is that both heart and intellect are fed upon the stores of that continuous stream of life which has flowed on from age to age, and has left along its banks the scattered pearls of human experience. The whole value of the past to us is in the use we make of it. Geology has a counterpart in the world of intelligence and life. Deeper and deeper as the shaft is driven, richer and more inexhaustible are the treasures of research. We are beings of high powers and great destiny; and the subjects of our study and the objects of our pursuit are precious or valueless, just as they minister well or ill to the purpose of our being. Our life is equally private and public. All that is known is on the surface of our life; all that is unknown lies beneath. But, known or unknown, they are and can be ever no more than lifeless facts and prosy chronicles till touched by the fire of human thought and sympathies. Facts accumulated into mountains are useless to us till we can assimilate them. Treasure is of no profit till it can pass into currency. You need to breathe and live on the fresh free air which blows over the wide field of life and things gone by, not only to fill your minds with knowledge, and store you with treasures of resource, but rather to freshen your motive and brace your heart for good work upon the world, the times, the men around you. It would be a melancholy system of dry morality and cold philosophy that merely filled the mind with matter, and ignored the heart and soul of humanity. The value of archæology, whether for the instruction of our youth or the pursuit of our maturer years, lies not in the pedantic knowledge of antiquity, but in the thought-felt and heart-felt realisation of its life.

On the motion of Sir Brook Kay, seconded by Sir John Maclean, a vote of thanks was given to Mr. Gambier Parry for his able address.

A visit was then paid to the parish church of Cheltenham, and to Leckhampton. Mr. Middleton acted as guide to the parish church, drawing attention to various peculiarities and points of interest in the building. The extraordinary thickness of the old Norman wall at the west end was pointed to as strong evidence that originally a Norman aisle existed on that side of the church. He also pointed to one of the old marks of consecration made by the bishop in consecrating the church, which it was formerly the custom for bishops to make.

Mr. Gambier Parry, having been appealed to in regard to the east window, said he wished to mention an interesting fact. He had said in his inaugural address that that county was famous for its buildings, and no doubt it was from the enormous resource which the local building stone gave that there was at Gloucester a school of masons. Professor Willis, at the meeting of the Archæological Institute, showed by references to deeds and to the architecture of the cathedral that there was no doubt the Perpendicular style originated in Gloucester. He, however, wished to add that the great peculiarity was that it began in the middle of the period which terminated in that entirely different style, the Decorated, the real fact being that the window before them was precisely the type of that style which was invented at Gloucester, and which turned the Decorated into the Perpendicular. They would perceive all the elements and feeling of the Perpendicular style in the upper part, but not a single Perpendicular line ran through.

At Leckhampton Church the visitors were received by Canon Trye, the rector, who explained many points of interest connected with the church. The tomb of Sir John and Lady Gifford, with their recumbent effigies, near the chancel, was examined with interest. The date of its execution was estimated by Sir W. Guise as between 1520 and 1550. The party next proceeded to Leckhampton Court, first noticing in the churchyard an effigy of a vestmented priest, which had been found in the course of some excavations near. In the garden behind Leckhampton Court Canon Trye drew attention to a picturesque doorway, bearing the date 1582, which is supposed to be the date of the building of the Court.

The annual dinner of the society took place afterwards at the Plough Hotel, Mr. Gambier Parry, the president, in the chair.

An evening meeting was held in the Ladies' College at eight o'clock, the President in the chair, when the first paper read was by Mr. H. S. Gael, on "Bishop Hooper's Visitation, 1551-2." The next paper was by Mr. C. J. H. Middleton, on the Church of the Blessed Virgin Mary, Cheltenham. After noticing the manor of Cheltenham as very early a royal possession, so described in the Doomsday Book, and the existence of a Saxon priory here, he proceeded,—That there was a church here in very early times is shown by the mention in Doomsday Book of priests who were supported by an endowment of land. The Reinbald mentioned was dean of the Collegiate Church of Cirencester. Henry I. gave a mill and some land worth 24*l.* a year to the endowment, and in 1133 he presented the rectory to the Abbey of Cirencester. It was then further enriched by large gifts of land from various nobles. Besides two richly-endowed chantries in the church itself, it had chapelries at Arle, Hatherley, and Charlton Kings, the latter of which still exists, and is now the parish church. Like the mother church at Cheltenham, it is dedicated to the Blessed Virgin Mary, and was not only originally similar in plan, but it had gone through the same changes in the addition of wide aisles which project north and south as far as the ends of the transepts. In 1415 the rectory came into the possession of the Nunnery of Sion, near Isleworth, and continued to be so till it was seized by Henry VIII. From that time until within the last few years the incumbent has only been a curate, and for most of the time not even a perpetual curate. After the Reformation the tithes were let on lease and farmed by various persons. The following extract is from a letter from J. Stubbes, in 1663, on the state and maintenance of the cure of Cheltenham and Charlton Kings: "Rectoria de Cheltenham cu capella de Charlton R'g' eidem annexat com.' Glouc'r." 40th Eliz. (1597) 27th Feb., the premises were granted to Francis Bacon, esq. (afterwards Lord Bacon) for 40*l.* under the rent of 75*l.* 13*s.* 4*d.*, under these exceptions and covenants, except the advowson of the church and chapel. "The lessee to find two fit and discreet chaplains and two deacons to celebrate divine service, and also to find bread and wine for the sacrament, and ropes and bells." After the death of Lord Bacon the impropriation came into the hands of Sir Baptist Hicks, who delegated the presentation to Jesus College, Oxford, under the restriction that they should always nominate a Fellow of Jesus College, an M.A., of two years' standing, who was to hold no other benefice, and to be and remain unmarried. There was a succession of more than twenty of these Welch bachelor curates. The stipend was 40*l.* a year. The church now existing was built at various periods, and owing to the windows having been inserted at a variety of dates, it is impossible in every part to decide what is the precise date of the plain masonry in the walls. The oldest existing part of the church is the lower part of the tower and part of the west nave wall, with its broad buttresses and billet-mould string. This belongs to the period of transition from Norman to Early English, about A.D. 1150. The points distinctly Norman are the cushion caps in the western tower arch and the abaci of the north and south arches. These abaci are merely strings, as the arches do not spring from beyond the line of the impost, a very common peculiarity of early work, probably a survival of classical precedent. The points that mark the transition to Early English are the pointed shape of the arches, the moulding of the east and west arches, and the carving on the caps. The work is somewhat rude both in design and execution, as we see especially in the east or sanctuary arch, where the abacus is square in plan and quite unmoulded, and the mouldings of the arch do not seem to fit upon it. The south cap of this arch

is rather richly carved with heads and foliage,—one representing a queen and martyr. The head is crowned, and she holds a palm branch in her hand. The tower is groined with a simple quadripartite vault, the ribs plainly chamfered. There are carved heads at the top of the wall ribs. The only other place besides the tower where any of this transitional work remains is to be seen outside the west end of the nave, where the original broad flat buttresses with the billet-mould string have survived all the later alterations. It is interesting to note that this string is exactly the same in detail as that round the upper part of the western turrets at Bishop's Cleeve Church. The whole tower and spire appear to have been built in three stages, with some interval between each. The first, including the four tower arches inside, about 1150. The second stage, up to the main offset, about 1200; and the third, including the spire, not long before the year 1300. The spire, which is a very graceful one, is octagonal, with plain brooches and rolls at the angles. The height of the whole is 167 ft. A good many feet of the top of the spire have been repeatedly rebuilt, and unfortunately the original lines were not carried out at the last rebuilding. There is a small priests' door in its usual place in the south chancel wall.

A paper by Mr. N. S. Ellis, "On a few biographical Notices of some Gloucestershire Tenants named in Doomsday Book," was next read by Sir John Maclean.

On Wednesday, the 9th, a party of over 100 of the members of the society and their friends left the Plough Hotel in carriages and breaks shortly after ten o'clock, amidst a downpour of rain. Arrived at Southam House the visitors were received by the Misses Sergison, the present tenants of this ancient residence of the De la Bere family. Those ladies accompanied the visitors in their inspection of the mansion, pointing out many objects of special interest in the quaint old panelled rooms, which are filled with paintings and numberless objects of antiquarian interest, including portraits of Edward VI., Sir Jno. Overbury, Lord Ellenborough, and others. Mounting the gallery of the dining-hall, Mr. Gael read a short account of Southam House, which he said had been often considered the most ancient domestic residence in the county, but it was a slight mistake. It was built in 1501.

The party next visited the neighbouring chapel of Southam, which, built about the year 1140, was used as a place of worship at the Reformation, and then degenerated into a barn. In 1861 its original sacred character was discovered, and it was repaired and restored by Edward Earl of Ellenborough.

Cleeve Church was next visited. Mr. John Middleton described the structure with considerable minuteness. He observed that the archdeacon had no right of visitation at Cleeve, but only the bishop. The door of the church was a beautiful Norman specimen, though two of the pillars had been taken away, and most likely, being marble, they were sold on account of the value of the material. The Norman pinnacles of the church were most unusual. The tower was quite modern, and probably had been rebuilt from the foundation. The porch was interesting on account of the old Norman groining. The interior presented a curious aspect, and it would seem from the arrangement that it consisted of two parts, one to the westward of the rood-screen, a parish church, and the other to the eastward of the screen, a collegiate church.

Through rural lanes the party drove on by Gotherington to Sudeley Castle, where they were cordially received by Mr. and Mrs. Dent, and entertained at luncheon, and where Mr. Wilfrid Cripps gave an interesting sketch of the history of Sudeley Castle. The party then strolled about the extensive grounds and gardens, and passed in small parties through the various rooms and passages of the castle, filled with art-treasures and historical mementoes of great interest. The chapel adjoining the castle was next inspected. It was in the centre of this building that Katherine Parr was interred. The building was a ruin when the Sudeley estate came into the possession of Mr. Dent, and he had it, with the castle, completely restored.

Returning from Sudeley, Winchcombe Church was visited, the restored edifice having its main features pointed out and described. The party then set out for Cheltenham, where in the evening there was a *conversazione* at the Ladies' College. Mr. Thompson gave some details of the Poyntz family. He said the restoration of Iron Acton Church, which was now going on, had revived an interest in the eminent family of Poyntz, whose monuments were in that church. The family held the manor of Iron Acton from the reign of Edward III. to the reign of Charles II. Sir Robert Poyntz built the celebrated preaching-cross at Iron Acton and the church, but Mr. Thompson did not consider, looking at the question archæologically, he could have built the tower of the church. Professor Rolleston read a paper, illustrated by drawings, on the earliest inhabitants of that part of the country, and Mr. Witts read a paper on Roman camps.

The final meeting was held at the Corn Exchange, on Thursday morning, and shortly afterwards a large party started for the Roman villa at Witcombe, thence to the British village and camp at Birdlip, where lunch was provided, and then back to Cheltenham by Elkstone, where Mr. Knight read a paper on the Church. The Rev. W. W. Liddell officiated as guide at Cowley, and the Rev. C. Wilson at Cubberley, and so this most successful meeting was brought to a close.

OBITUARY.

Mr. J. W. Gough.—The *Calcutta Englishman* announces the death, at Darbhanga, of Mr. J. W. Gough, architect. He died of cholera, and was seized with the illness in his office on Friday, the 23rd of May, and died the same afternoon. The journal we have mentioned says,—"The rajah has lost in Mr. Gough a valuable servant, and the cause of architecture in India has itself suffered a considerable loss. All his work was characterised by boldness in design, accuracy in detail, and care in construction. So thoroughly alive was the rajah to Mr. Gough's exceptional worth, that, we are told, he had just concluded an arrangement on the most liberal terms with him to stay on in his service after the estate passes out of Government management."

Mr. F. R. Lee.—Mr. F. R. Lee, R.A., died recently at Vleesch Farm, Cape Colony, aged eighty-one. He began as an amateur, and continued his study when he was serving as a young officer in the 56th Regiment, and, on leaving the army on account of weak health, he entered as a student at the Academy in 1818. Born at Barnstaple, his pictures were for many years taken from the rich pastoral and river scenery of Devon, in several of which the cattle were painted by his friend Sidney Cooper, who survives him, and in one, "The Cover Side," painted in 1839, just after he was made a full Academician, the dog's figure and game were painted by Sir Edwin Landseer. This, with three other works, is in the National Gallery, the bequest of Mr. Vernon and Mr. Jacob Bell. He retired as an honorary Academician in 1871.

LORD BEACONSFIELD AT THE WESTMINSTER INDUSTRIAL EXHIBITION.

On Saturday last the Prime Minister distributed the prizes to the successful exhibitors at the Westminster Industrial Exhibition. The prizes were three gold medals, sixty-three silver medals, and 150 bronze medals. It may be mentioned that upwards of 80,000 people have visited the Exhibition since it was opened a few weeks ago.

Lord Beaconsfield, in the course of his address, said:—"Unquestionably guilds and systems of apprenticeship are not adapted to the manners of this age; but, in allowing them to become obsolete or in terminating them, society and the State have made a great mistake in not affording at the same time a substitute for them. At the present moment there is a very general,—a very prevalent,—feeling in this country that some effort should be made by which technical education should be secured, and I have seen with great pleasure that the great City Companies have felt that they could not more wisely or more beneficially exercise a portion, a part of their considerable wealth than in cultivating that technical skill and securing that technical education which, in fact, is prominently connected with their origin and duty; but it is a great mistake to suppose, if there are any who indulge in the idea, that principles which are applicable to the fine arts are not,—though they may not be in the same degree,—applicable to arts of utility. The same appositeness is necessary, the same fitness and finish; and what is most important, both in the fine arts and in arts of design, is that the best material should be used. I feel, therefore, that if an institution like the present,—I treat it as an institution,—is to be sustained nourished, the attention of the working cla must be called to technical education; greatest inducement must be given them complete that education, and to understand t in the best material and in the best workm ship they alone can maintain that superior which was once, and I hope will be again, pride of this country. But, at the same ti I do not wish it to be supposed that I on that excellence to be merely mechani Whether they be arts of utility or arts design, it is impossible to attain excelle unless there is feeling; and however ski may be the manipulation, without feeling will not accomplish your purpose. Th may be taste and even genius in the fa of a button or the construction of a buc Let me, before I present these medals my friends,—let us take, before I sit down, general view of our situation. We have year 2,000 exhibitors; we have a remarka demonstration of feeling for the fine arts articles as numerous being sent to this Exhi tion as there are of those mechanical prod tions which might have been supposed, a matter of course, would have taken entirely lead under that head. Let me remind you c more with regard to these works of art, t though you must court criticism you must be daunted by it. There are works,—there more than one work,—exhibited in places in Exhibition which indicate a very fine feel and even a predisposition for the fine arts. me remind you of this, that one of the great of English artists, one whose fame after m years, ranks still high, was once as one of yo selves. It was when Sir Francis Chantrey carving a common piece of furniture that att tion to him was drawn by his work by a c noisseur of great fortune and great taste skill. He opened to him a great career. He came Sir Francis Chantrey, made a great fort and a great fame. He is now well remembe but there are many of you who, when you through many a gallery, stop before his w and admire them, without knowing, perh that Chantrey was one of yourselves."

ART-UNION OF LONDON PRIZES.

THE following are the remaining works lected by the principal prizeholders. From

Royal Academy.—The Waterhen's Haunt, Alfred Bréanski, 120*l.*; Loading Sand in Langston Harbour W. Wyllie, 100*l.*; Under Repair, F. A. Winkfield, Touches of Sweet Harmony, W. Anstey Dolland, In the Pine Woods of Gogarddan, Charles Earle, On the Banks of the Tiber, Charles Earle, 40*l.*; Fee Geese, A. M. Rossi, 40*l.*; At Shere, J. M. Barber, A Hedge-row, Early Spring, R. W. Fraser, 30*l.*; C enough to Toss, S. W. Lee, 30*l.*; A Day Dream, Geor F. Terrell, 30*l.*; "I'm so Happy," M. Ellen Staples, Summer-time, Linnie Watt, 20*l.*

Society of British Artists.—Eagle's Crag in Borrow James Peel, 200*l.*; A Summer Afternoon,—on a Sc River, W. W. Calfyn, 60*l.*; "On her Way from Fray L. C. Henley, 50*l.*; Sunny Hours in Sunny Places, W. Bartlett, 45*l.*; On the River Lowther, Westmorel W. H. W. Foster, 45*l.*; Scene on the Ouse, Isl Sussex, C. Gibbs, 45*l.*; A Farm at Pirbright, Sur L. Rivers, 45*l.*; My Birthday Gift, J. C. Waite, A Summons to Surrender, C. Cattermole, 35*l.*; Tin Abbey, Monmouth, C. Pearson and T. F. Wainwri. 30*l.*; The Keeper's Boy, Edward Holmes, 20*l.*; D. Castle, Mrs. Dawbarn, 25*l.*; The Undercliff, near I church, J. Godet, 25*l.*; Loading up, H. S. Melville, Past Castle, Berwickshire, H. Panton, 25*l.*; The Path the River, A. Verey, 25*l.*; On the Wiley, Wilts, V. James Peel, 200*l.*; A Summer Afternoon,—on a Sc River, W. W. Calfyn, 60*l.*; "On her Way from Fray L. C. Henley, 50*l.*; Sunny Hours in Sunny Places, W. Bartlett, 45*l.*; On the River Lowther, Westmorel W. H. W. Foster, 45*l.*; Scene on the Ouse, Isl Sussex, C. Gibbs, 45*l.*; A Farm at Pirbright, Sur L. Rivers, 45*l.*; My Birthday Gift, J. C. Waite, A Summons to Surrender, C. Cattermole, 35*l.*; Tin Abbey, Monmouth, C. Pearson and T. F. Wainwri. 30*l.*; The Keeper's Boy, Edward Holmes, 20*l.*; D. Castle, Mrs. Dawbarn, 25*l.*; The Undercliff, near I church, J. Godet, 25*l.*; Loading up, H. S. Melville, Past Castle, Berwickshire, H. Panton, 25*l.*; The Path the River, A. Verey, 25*l.*; On the Wiley, Wilts, V. Near the Hartz Mountains, W. Nabert, 30*l.*; The De Bridge in the Tyrol, O. Von Kameke, 30*l.*; A Quiet I Dell, E. Holmes, 25*l.*; Castletown, Isle of Man, J. Croxford, 20*l.*; at Capel Curig, G. Wells, 20*l.*

Society of Painters in Water-colours.—Study of a Lob Boat, Collingwood Smith, 30*l.*; The Auld Kirk, D. Holland, G. H. Andrews, 20*l.*

Institute of Painters in Water Colours.—Near Killert Devon, J. H. Mole, 35*l.*; Near South Brent, Devon, J. Mole, 35*l.*

General Exhibition of Water-Colours.—Evening Li Strathyre, J. J. Bannatyne, 40*l.*

Exhibition in the Royal Albert Hall.—The Sentinel the Glen, C. Potter, 60*l.*; The Gamblers, after Meisso (plaque), L. Hall, 40*l.*; On the Llugwy, near Capel Cu J. Godet, 26*l.* 5*s.*

ARD FOR SANITARY INVENTION.

Duke of Northumberland presided on th inst. at the anniversary meeting Sanitary Institute of Great Britain, was held in the theatre of the Royal ion, Albemarle-street. The annual was delivered by Mr. G. J. Symonds, on "Water Economy." During the the prize medal and certificates awarded tain inventions shown at the Stafford ion were presented. The Richardsonian dal was awarded to the Silicate Paint y for "Griffiths's patent white,"—a non- us substitute for white lead,—the chair- marking, as he handed the special medal Thomas Griffiths, F.C.S., that his was st beneficial discovery ever made for ting the dreadful suffering caused by the lead paints. Mr. Symons, in the first his address, explained the circumstances combined to render the small areas in the m on which upwards of 75 in. of rain nually of great national importance. all these districts of heavy rain were s of hard rocks, of steep slopes, and of population. The first of these conditions l the permanency of the physical geo- of the district,—the rocks being too o be washed away,—and, therefore, the ency of the rainfall; the second lessened ation, and sent the water rapidly into the s or lakes; and the third tended to insure rity of the effluent water. Mr. E. Chad- C.B., in moving a vote of thanks to mons for his address, said the future of ture would depend largely upon a proper ion of the supply of water in a way to t the evils arising from an excess or ncy. For the health of the people, also, most desirable that a department should tablished to superintend drainage and supply. Mr. George Palmer, M.P., who ed the motion, thought it might be desi- hat a board, represented in Parliament, be created to have charge of all matters re- to the collection and distribution of water. he dinner of the Institute which followed eeting, Dr. Corfield, in proposing "The n of the Successful Exhibitors," coupled the name of Mr. Thomas Griffiths. Dr. d said that those whose health he had the to propose knew that their inventions horoughly appreciated, not only by the ry Institute, but also by the public lly, whose welfare would be improved by roduction of many of the appliances to medals had been awarded. With regard Griffiths, who had obtained the special for an exhibit of pre-eminent merit, he nite sure that the paint produced was one was calculated to prevent the many evil now caused by the use of lead in the facture of paints.

Thomas Griffiths, in reply, said that he ed the Institute most heartily for the dis- shed honour which had been conferred his firm, and upon himself by the presenta- f the Richardsonian medal, but that, ving as it was to receive such a special of merit, that award was as nothing in rison to the satisfaction he felt at having nstrumental in saving the lives and pre- g the health of so many of his fellow res. He was glad to say that his endea- to produce a complete substitute for the ious white and red leads used so univer- n houses and ships, had been appreciated, uly by the English, but also by foreign naments, whose demands for his patent had shown that they were quite alive to dvantages of sanitary reforms, more ially when such could be combined with my. The new zinc, or, as it was now ally known in the market, "Griffiths' t White," would do even more work than oisonous carbonate of lead, and could be ced at quite as cheap a rate per ton. At ame time, it had a covering power or y" of more than double that of carbonate d, or oxide of zinc, and, therefore, con- rs, even supposing they had no sympathy the cause of sanitary progress, would not acrificing economy by the use of his. The Silicate Paint Company was now all in its power to supplant lead pigments e energetic introduction of non-poisonous s, and to show that it was in earnest in the , he would mention that it had already upwards of 25,000*l.* in the erection of new works on the banks of the Thames. These works were producing 100 tons per week of purely sanitary paints, which he hoped would do much to diminish the suffering daily caused by the use of pigments containing salts of lead, arsenic, or other poisonous ingredients.

FREE EXHIBITION OF PICTURES IN SOUTH LONDON.

Mr. W. Rossiter, honorary secretary of the Working Men's College, writes,—"It is proposed to open a free exhibition of pictures, drawings, photographs, &c., during the vacation of the Working Men's College, in August and September, when the spacious rooms will be otherwise unused, if owners of such works of art will lend them for this purpose in sufficient number. Every care will be taken of them, and they will be fully insured against loss by fire. South London is quite destitute of any museum or art-gallery, and it is believed that the inhabitants of the poor and crowded neighbourhood of Lambeth would value such a collection as it is desired to make. Will you kindly allow me to ask in your columns for help in carrying out the proposed exhibition?

143, *Upper Kennington-lane.*"

PARLIAMENTARY JOTTINGS.

The Horticultural Gardens.—In the House of Commons on the 10th inst., Mr. R. Yorke asked the Chancellor of the Exchequer whether it was true that her Majesty's Commissioners for the Exhibition of 1851 had commenced a suit in Chancery against the Royal Horticultural Society, with the view of recovering possession of the gardens at South Kensington now in the occupation of that society; whether it was the fact that this proceeding, if carried into effect, would extinguish the liability of her Majesty's Commissioners to pay the holders of the Horticultural Society's debentures 10*s.* in the pound in 1892, provided her Majesty's Commissioners should at that date decline to renew the society's lease; and whether, if the facts be as stated, her Majesty's Commissioners proposed to make any compensation to the debenture-holders for the security now held by them which it was thus proposed to extinguish?—The Chancellor of the Exchequer, in reply, stated that the Commissioners for the Exhibition of 1851 had commenced a suit in Chancery against the Royal Horticultural Society with the view of recovering possession of the gardens at South Kensington now in the occupation of that society. The Commissioners never had been, and never could be, under any liability to pay over to the holders of the society's debentures 10*s.* in the pound in 1892, because that was contingent upon the society performing the covenants of the agreement, which had not been the case. The debenture-holders had no lien upon the property comprised in the trust-deed, and the Commissioners, as trustees of the public, did not propose to make them any compensation.

River Conservancy Bill.—In the House of Commons, on the 14th inst., Mr. Sclater-Booth, president of the Local Government Board, said he was sorry to state that the Government thought that they would not be able to proceed with the Bill this session.

Artisans' and Labourers' Dwellings Act, 1875.—In answer to Mr. Fawcett, Sir J. McGarel Hogg, chairman of the Metropolitan Board of Works, said:—It is impossible to say what will be the entire cost to the metropolitan ratepayers of carrying out the Artisans' and Labourers' Dwellings Act, as there are many cases before the Board in respect of which schemes have not yet been prepared nor estimates made. Up to the present time, of fourteen schemes approved by Parliament, the loss on the six sites referred to will be 562,051*l.*, while that on the remaining eight is estimated at 514,409*l.*, assuming that the prices received for land equal, and do not exceed, those already offered. The whole matter is under consideration by a committee of the Board, who propose to make a representation to the Secretary of State, with a view to an amendment of the Act.

The Indian Museum.—Mr. Grant Duff asked the Under-Secretary of State for India whether it was true that it was intended to break up and disperse the museum which was collected by the East India Company and was transferred from the Company to the Crown when the change of Government occurred? In reply, Mr. E. Stanhope said:—It has been decided by the Secretary of State in Council to remove the collections now in the East India Museum at South Kensington. The distribution of these collections has not yet been determined on, and is the subject of investigation by a committee in communication with the authorities at the British Museum, South Kensington, and Kew Gardens. The main object which is expected to be gained by this step is the increased utility of the collections to the public. The Economic Section, for instance, could be maintained and perfected with great public advantage in the experienced hands of Sir Joseph Hooker at Kew, where he already has a far better collection of similar objects; while as regards the Zoological, Ethnological, and Art collections, their transfer to departments where they will be more generally seen and appreciated seems better than to retain them in a museum which, somehow or other, does not attract visitors. I may add that it will have the additional advantage of causing an ultimate saving to the Indian revenues of 9,000*l.* a year.

The Board of Works in Ireland.—Colonel Colthurst asked the Secretary of the Treasury whether it was the intention of the Government to carry into effect the recommendations (which had now been before them for twelve months) of Lord Crichton's Committee of Inquiry into the Board of Works in Ireland, as regards the salaries of the staff; and whether there was any reason for delaying further the decision on that part of the report which dealt with the special cases of hardship in the office establishment directed to be inquired into by Colonel Stanley's letter of the 7th of January, 1878. In reply, Sir H. Selwin-Ibbetson said the Treasury had hoped to be able to deal with the cases referred to before now, but on considering the main questions dealt with by the Committee, it appeared that they involved a consideration of certain of the duties of the Local Government Board, and of the relation of that Department to the Board of Works. It is thought that a better distribution of duties may be made between the two than that which now exists, but it has not been possible during the session to give sufficient time to the subject to arrange details of the scheme, and it is intended to postpone further action till the autumn. Meanwhile, with such a scheme in contemplation, it is not a favourable moment for readjusting the salaries of an establishment which may be seriously affected by it.

THE VENTILATION OF DWELLING-HOUSES AND FARM BUILDINGS.

At a meeting of the Boroughbridge Agricultural Society on the 5th inst., Mr. Leadman read a paper on this subject. In the course of it he said:—In stables, besides the impurities caused by the horses' respiration, there are the ammoniacal vapours arising from the bedding and the floor of the stall, while cow-houses are, perhaps, the most neglected of all. There is frequently no attempt at ventilation; they are often very dirty with collections of manure and bedding standing by the week together; cobble floors, and the interstices soaked with liquid filth, giving out ammonia and other gases. There is another way in which farm buildings have their air vitiated. Generally speaking, they are ranged round that focus of filth called the feld-yard. The fermenting masses of manure and other decomposing material evolve foul gases, impregnating the air which enters the buildings whose doors communicate with the fold-yard. Reform and reconstruction of this part of the farmstead is sadly needed. Fortunately they are mostly in districts thinly inhabited, and where the foul gases are speedily diluted, or they would inflict terrible mischief. After drawing attention to the consequence of inhaling air rendered impure, he asked what could be done by way of remedy. Supposing the house is an old one, much can be effected without pulling it down, and often at little cost. Provision must be made for the entrance of pure air, free from all danger from any effluvia, and for the exit of foul air, without producing draughts. To achieve this there are innumerable ventilators, some of marvellous construction, each with its own special advantage, but I prefer the simplest contrivances, leaving the complex ones to those who care to bother with them, simply mentioning that revolving fans, sunlights, &c., are only suitable for large buildings. In bedrooms, 1,200 cubic feet of space

should be allowed for each person, if possible, while the same plans of ventilation will apply, and their use will make rooms available for sleeping purposes whose cubic space is limited. Stables and cowhouses require a threefold ventilation, ground ventilation, so as to always keep a dry floor (the free use of perforated bricks about 3 in. above the level of the floor will effect this), introduction of air beneath the animal's nose to dilute, as soon as possible, the impurities of respiration (which may be done by inserting a perforated brick under the manger), and a good outlet tube for the egress of foul air. Where no chambers or lofts are above, louvred openings may be made along the ridges of the roof. Cobble floors being objectionable, bricks laid in and grouted with gas-tar and quicklime should be substituted. The floor should slope slightly so as to hold no wet. Drains opening into stables should be avoided; top gutters are much better. The floors of both stables and cowhouses should be swilled twice every week, manure should never be allowed to remain, and the bedding, if the weather will allow, should be dried in the open air every day, unless a fresh bed is given each night. It has been estimated that by improved ventilation in every house in the kingdom the mortality from consumption could be reduced by at least two-thirds. Surely, is not this a grand field for hygienic work?

THE PROPOSED WIDENING OF LONDON BRIDGE.

THE House of Lords' Select Committee on this Bill decided unanimously on Friday that it was inexpedient that the measure should be further proceeded with. The committee consisted of Lord Carnarvon (chairman), the Lord Privy Seal, the Duke of Richmond and Gordon, the Earl Somers, the Earl of Morley, Viscount Cardwell, Lord De Lisle and Dudley, and Lord Winmarleigh. A large number of witnesses was called both for and against, those for the promoters of the Bill (the Corporation of London) including Mr. Cockerell (coal merchant), Mr. Church (manager of the General Omnibus Company), Mr. Horace Jones (the City Architect), Mr. C. H. Gregory, Sir Edward Watkin, Alderman Sir James Clarke Lawrence, Mr. W. H. Barlow, F.R.S., Mr. E. M. Barry, Mr. Charles Barry, Mr. J. P. Knight, &c. Evidence was given in opposition to the measure by Colonel Fraser (Commissioner of City Police), Sir Henry Peek, Mr. Poynter, R.A., Mr. Norman Shaw, R.A., Mr. Newton (of the British Museum), Mr. Watts, R.A., Mr. Millais, R.A., Mr. Street, R.A., Sir Coutts Lindsay, Mr. Armstead, Mr. Burton (director of the National Gallery), Mr. Vulliamy, Mr. Rennie (grandson of the architect of the bridge), Mr. Fergusson, Mr. Penrose, Mr. Scott Russell, Sir Frederick Leighton (president of the Royal Academy), &c. The inquiry was private, only counsel, witnesses, and those officially concerned in the case being admitted,—surely an unusual course?

THE CENTRAL FRUIT AND VEGETABLE MARKET.

AT the last meeting of the Court of Common Council, the markets committee presented their report, submitting for the approval of the court plans for the new fruit and vegetable market, at an estimated cost of 115,000*l*. Several speakers opposed the adoption of the report, predicting that the new market would be a failure; and Mr. J. S. Scott characterised the design proposed for adoption as a "mean, contemptible thing" that would be unworthy of the merest tyro that ever entered an architect's office. In the end, however, the motion for the adoption of the report was carried, and it was referred back to the committee for execution.

The plans have been prepared by the City Architect, Mr. Horace Jones, and the site adjoins the Central Meat and Poultry Markets at Smithfield. The market will have a frontage on four streets or roads,—viz., Charterhouse-street, Western-roadway, New Southern-roadway, and Farringdon-road. The main floor of the market will be as nearly as possible level with the other markets, so that the entire range will be readily approachable the one from the other. There will be three principal entrances, on the east, north, and south. The plans show an area of nearly 44,000 ft. devoted to wholesale market purposes, surrounded by forty-one shops, fronting the several streets, which can be used for retail and other purposes, and these occupy an area of some 16,800 ft. The general or market area is approached not only by the three main or vehicular entrances, but by two entrances for foot-passengers. The market will consist of a series of shops, thirty-three in number, having in front pitching-stands for goods and wagon-stands, the whole being approached by a roadway having a width of 18 ft. always clear for vehicular traffic. In the middle of the market area is a further arrangement of pitching-stands, with an area of about 4,400 ft., including gangways. In roofing the market the floor will be kept as clear and open as possible, the detached main roof supports or columns being thirty-seven in number, and the clear span of the roofs is 45 ft. The roofs will be of a light iron construction, with a range of glass louvres at the plate and ridge levels, affording an ample amount of light and air, so requisite for a market of this character. The height of this roof will be 28 ft. to the level of the plate, and 45 ft. to the ridge of the louvres. There will be a roadway approach to the basement, which will be suitable for market and railway purposes. The general appearance of the building externally will be as similar in character to the other markets as the less expensive nature of the works will allow. The cost of the superstructure is estimated at 115,000*l*., but the land and approaches will cost in addition 175,937*l*., according to the estimate.

THE VALUE OF LARCH AS A WOOD FOR USE.

UNDER the title, "On the Best Timber for Paving and Building Purposes" (Hardwicke & Bogue), Mr. J. Wheeler has brought together various statements showing the value of larch. "It is 'remarkable," he says, "that though this timber seems to have fallen into disuse, or been forgotten for many years, it was known to and much prized by the Romans, for we find Pliny speaking of its 'incorruptible nature' and in allusion to its difficulty of combustion, comparing it to a stone rather than wood. The belief entertained by the ancients that larch could not be set on fire arose probably from the fact that it burns without flame, and so sluggishly, that unless constantly watched it will soon become extinguished. This property of non-combustion, united with so much strength and durability, should recommend this timber above all others for the interior work of houses. Readers of Cæsar's Commentaries will find larch there alluded to as the *igni impenetrabile lignum*, as well as the *Larix robusta*.

The famous plantation of larch on the estate of the Duke of Athol is well known. It is related that the original plants were brought over, with some orange-trees and other exotics, from Italy; but having pined and died under hot-house treatment, they were throw out over a waste slope, where a few seeds surviving found congenial soil, and sprang up with great rapidity. This attracted the attention of the duke, who immediately had a large area planted with larch, and lived to bear testimony to its superiority, even at twenty years old, over other woods of a much greater age.

Although larch can be traced in England for a couple of hundred years, it is not till within the last fifty or sixty that its exceptional properties are beginning to be recognised. We say beginning advisedly, for there is a reserve of qualities inherent in home-grown larch as yet not fully known, which make its timber superior to that of any other tree in cases where durability, strength, and resistance under exposed conditions are required.

The great durability of larch has attracted the notice of many eminent botanists. In the 'Dendrologie' of Professor Koch, of the Berlin University, we find it dwelt upon, as also its power of resistance to moisture, and the toughness of its fibre, which nevertheless does not diminish its value as a material for furniture, as the wood takes so fine a polish as to be equal in appearance to the best satin wood.

The exceptional merit which this wood possesses of being equally sound whether exposed to the air, or buried beneath the ground is well known among Continental nations; the French use it for water-pipes, the Swiss for vine-props, having found that above or below ground its strength remains unimpaired, while renewed crops of vines flourish and fade. Indeed, we learn on the authority of Malesherbes so highly is it prized in the Swiss cantons that 'a piece of larch wood costs double the price of a of oak of the same dimensions.'"

Mr. Wheeler at the commencement of pamphlet cites "an early article of the *Bu* on the subject," to which he affords no refer to prove that no thought was given to quality of the wood that should be use street paving. If he had looked farthe would have seen the expression of our re more than once, that wood had been often for paving quite unfitted for the purpose.

THEATRE BUILDING.

THE Alexandra Theatre, Liverpool, the f dation stone of which was laid by Mdlle. Ti in 1866, has just closed for an entire alter and reconstruction of the interior. Mr. Phipps, F.S.A., of London, is the architec gaged, Messrs. Jones & Sons, Liverpool the builders' work, and Messrs. Jackson & S of London, the ornamental plaster-work. alterations will occupy about three months.

The plans for the alterations to the Haym are now being prepared for Mr. Bancroft b same architect.

LIGHT CASES.

COLES *v.* FRANKLIN.

THIS was an application to the Master of Rolls for an injunction to restrain the defend from erecting a large block of buildings vacant piece of land in front of his hou Cross-street, Saffron-hill, by which a no windows in his house would be blocked There had been a hoarding round the groun twenty-five years, in which a man kept his c It was alleged that if the block of build were erected as proposed, the ancient ligh the plaintiff would be entirely destroyed, especially those of his kitchen, which wa important part of his house, as he kept a co house.

The plan, as submitted, showed that the new would be 70 ft. high, but it was now stated that it be only 40 ft., which would bring the chimney-tops level of the top windows in the house of the plaintiff. lowest window in the plaintiff's house was 9 ft. abo ground, and, as the land slanted, there was an ext light.

The defendant contended that as he had got a bu lease from the City, he had a perfect right to build, Act by which the improvements were carried out private one.

The Master of the Rolls said that he would mak usual order, that the buildings be not raised ab certain point, and that would have the effect of serving ancient lights. No Act of Parliament obt by the City of London could close up ancient light the defendant in the meantime could find out that h right, he could come back and ask the order to be charged on cause shown.

Order accordingly.

DOIG *v.* GAME.

This was an application (before Vice-C cellor Sir Charles Hall) for the continuanc an interim injunction to restrain the defen from adding another story to his new build now in course of erection in Nicholas-lane, beyond what it was originally.

The plaintiff contended that his light and air w suffer were the building to be erected, as the lane w narrow, and his property adjoined it in Cannon-st The defendant was now prepared to refrain from pu the additional floor on the house opposite that ca plaintiff, but would carry it up on the adjoining buildings. The defendant desired to put a coping o top of the walls of the house in question to preserve from getting destroyed by the rain. The plaintiff only seventeen months of his lease to run, and as defendant had purchased all the adjoining property house would then be obtained by the defendant, suc floor carried up.

The Vice-Chancellor said he would continue the in tion for a week as against the house in question, so the defendant would be able to cover over the walls then his Lordship would determine the course he w follow.

COMPENSATION CASE.

EAST AND OWEN *v.* METROPOLITAN AND ST. JOHN'S WOOD RAILWAY.

THIS case was concluded at the Middle Sheriffs' Court, Red Lion-square, on the 1 inst., before Mr. Mellor, Q.C., as Assessor, a special jury. The principal point in the c was a claim in respect to damage which mi arise when the railway passed through the l in question, and Sir H. James (for the compa took an objection, on cited cases, that suc claim could not be entertained. After a cussion a verdict by consent for 600*l*. recorded for the land, the legal question to subsequently decided.

BUILDING ACT PROVISIONS: PARGETING FLUES.

JENNINGS *v.* DUNCAN.

—The report of this case may, I think, e builders to resist pargetting the outsides es, although the Act of Parliament (with e deference to the Chief Justice) says it be done. For many years past it has been stom to have the outer surfaces of all pargetted from the undersides of joists to p lines of skirtings, and from the under- of topmost ceilings to the level of the slates t the walls are being carried up, the cost insignificant, and the saving of future le and expense important.

at smoke frequently finds its way out d the skirting-board is the experience of ners of house-property; tenants become ed, have fear of the premises being on the skirting-board has to be taken down, paint, and decoration damaged, and ren- or pargetting, after all, has to be done. not, therefore, do it in the first instance, void vexatious expense?—taking care that cept intact, and not destroyed by the car- r fixing his short joists or turning-pieces, iner driving in his plugs, or the bellhanger ating it. I ask compliance with this rule, ay that, on grounds of economy, builders ind their account in its observance; but if met with opposition, I will enforce the paragraph of Rule 17, section 20, and will no woodwork of any description nearer to than 2 in., unless the outer surface is ered or pargetted, and will apply this rule sts, rafters, slating battens, floor-boards, skirtings, and stair-strings, so important, belief, is the external surface-rendering e protection of the fabric against fire.

T. E. KNIGHTLEY.

—To show how consonant with common sense is the decision, it is only necessary to consider the in- and inequality that the usual interpretation gives. he great object of the Act is to ensure protection fire, and yet the Act would be made to say that, gh it considered it unnecessary to parge the outer face side of a wall, it is necessary to parge the other side. hat the building owner, by putting flues in a party- compels the adjoining owner either to plaster the wall, art thereof, on his side, or to have the disfigurement parging following the line of the flue.

hat, although the risk of fire is at least equal, he is ed from the necessity, and need not plaster or disfigure e of the wall.

conclusion, therefore, I think, must be, that the e of the Act had no such intention; but, of course, gh they had not, they may have improperly worded use (of course the wording might be more distinct), think it can fairly be read as meaning only the insides te.

a plan of a wall having a flue thereon, and would ost persons avoid the use of the word "front" of a because it might mean the outside? You would then e of the sides being the right and left, and the side he room: all these are then included in the word ," but the fourth side is really the back of the flue; will be seen why the framers made it special; e, unless specially mentioned, it might have been ered the charge for the work might have been d by the adjoining owner.

ay mention the decision given is in accord with what ing been the common practice as to warehouses, and ill surprise some of your readers.

BANISTER FLETCHER.

We cannot claim to understand the whole e above, but as Mr. Fletcher is a district yor, we think it right to let him express opinion. The fact remains the same. Act says the outside of a flue, as well as the e, is, with certain exceptions, to be rendered rgetted, and unless that can be railed off ond, it is of no use talking of any hardships y entail. The duty of judges, magistrates, district surveyors is to administer the Act.

DRAINAGE AT CROSBY.

SPECIAL meeting of the Great Crosby l Board was held on the 9th inst. (Mr. man in the chair) to consider a report pre- l by Mr. T. Mellard Reade, the engineer e Board, with reference to reconstructing mouth of the outlet sewer of the district, the best way of dealing with the subject rally.

e report set forth that, in consequence of inroads of the sea, the original line of pipes on the foreshore had become letely detached from the line of the r, and Mr. Reade made various recom- dations with regard to it. The estimated of the first portion of the work was 2., and if it was decided to reconstruct additional part, the extra cost would 140*l.*, in all 1,774*l.* A motion that the neer be requested to obtain estimates for the reconstruction of the stone outlet as per plan, and that the Little Crosby Board be informed of the condition of the outlet, and the cost of reconstructing it, and be requested to contribute towards the expense; that the Great Crosby drainage be turned into the new outlet by the use of earthenware pipes, from the point indicated in the plan; and that estimates be obtained for the same, was carried by the casting vote of the chairman.

COST OF WOOD-PAVING BLOCKS.

THE following is a list of tenders delivered for supply of 700,000 best Swedish yellow deal-wood paving blocks, 9 in. by 6 in. and 3 in., for paving the roadways of Sloane-street and Sloane-square, for the Vestry of the Parish of Chelsea. Mr. Stayton, surveyor to the Vestry:—

Beadle, Brothers	£7	7	0	per 1,000
Calder, Brothers	6	15	0	,,
Improved Wood Paving Co....	6	7	6	,,
Knight	6	7	6	,,
Lloyd & Co.	6	2	0	,,
Waterman & Co.	5	18	10	,,
Asphalte Wood Paving Co.*...	5	16	0	,,

* Accepted.

MASTERS AND MEN.

Wigan.—The strike of operative plumbers at Wigan, which began on May 1 last, is at an end: the men resuming work at 7½d. per hour, a week to consist of fifty-four and a half hours.

The London Engineering Trade.—On Monday afternoon a meeting of about 1,000 engineers was held in the Winchester Music-hall, Southwark-bridge-road, Mr. Fletcher in the chair, to consider a proposition that the men on strike should go in to work at their old rate of wages. The meeting was convened by circular to give the non-society men especially an opportunity of stating whether or not they would go in. Mr. Alfred E. Tucker said that now that the Society could not give the men their full income it was for the men to say whether they would continue the struggle or not. They should now only be able to get a reduced amount of pay; but still, if the men on strike now succumbed, the whole of the trade in London would suffer by a reduction of wages. Mr. Gooch moved, and Mr. Harrison seconded, the following resolution:—"That the men now engaged in this struggle do proceed to make the best terms they can with the employers." Mr. Hume proposed, and Mr. Dickson seconded, the following amendment:—"That the men now engaged in this struggle do persist in their resistance to a reduction in their former rate of wages." The amendment was carried with about twenty dissentients, and then, put as a substantive motion, it was passed amid cheers. The meeting is stated to have been about equally composed of men on strike and those not on strike.

STREET ACCIDENTS.

THE great increase of accidents, resulting from reckless and careless driving, appear to me to be of so alarming a character as to require prompt legislative remedies, and I suggest a *Street Accident Act*, 1879.

1. All drivers of railway vans, cabs, carts, and other vehicles, should have certificates of competency, and should be of the full age of twenty-five years. At present lads and striplings of seventeen, eighteen, nineteen, and twenty are to be seen driving heavy railway-vans.

2. That a limit of speed of seven miles per hour, on public highways, reduced in turning corners at right angles to three and a half miles per hour, should be the maximum rate of speed allowed.

3. That drivers, of carts, carriages, and other vehicles have no exclusive claim to the road, but share this privilege in common with foot-passengers.

4. That a public prosecutor give notice to all cab proprietors and railway companies that proceedings will follow whenever the above rules are infringed.

I am assured by a general accident company that the risks of railway travelling bear no kind of comparison with the risks and dangers of the streets.

VIATOR.

Potters' Machinery at Hanley.—An interesting exhibition of machinery for potters' use has taken place at Hanley, under the auspices of Mr. William Boulton, of Burslem.

Books.

Popular Dictionary of Architecture and the Allied Arts. With numerous Illustrations from all Styles of Architecture. By W. J. AUDSLEY and G. A. AUDSLEY. Liverpool: Published by the Authors.

IF this work is really to be carried through on the scale indicated in the first volume, it is no doubt a spirited undertaking for a private publication. But it appears to us to be too voluminous for a popular work. We have here a large volume of nearly 300 pages, which only gets us down to "aqueduct," and seems to include so many heterogeneous subjects that we can hardly distinguish any principle of selection. When we get, within a few pages, "animated" (used as if it were a technical term in art), "antæ," "ante," and "anti" (the Latin and Greek prepositions), "ante-cabinet," "anthropomorphism," "antiquo-modern," "antimony yellow," &c. &c., it is difficult to understand why the authors stopped at any word at all, and why they did not at once advertise it as a universal dictionary. NOR is it very clear for whom it is intended. It is called a "popular dictionary," but is further stated on the title-page to be "a work of reference for the architect, builder, sculptor, decorative artist, and general student." Readers of this class hardly require an explanation of "angle-column" and "angle-buttress," which really are not technical terms requiring separate treatment from "column" and "buttress," but literary compounds the meaning of which is self-evident. In some places the authors seem to have invented words on purpose for their dictionary; at all events, we never heard of "Alhambresque" as a term signifying the style of ornamentation introduced in the Alhambra, and regard such a derivation of nomenclature of a style from a single building, however important, as entirely untenable. We might as well have "Parthenonesque,—the style of sculpture introduced by Phidias in the Parthenon." The heading preceding this, "Alexandrium opus," is a phrase that does not properly exist, and would be bad Latin if it did: the correct phrase is "opus Alexandrinum." The article on "apse" is a very good one, very well illustrated with typical examples of the various forms of apsidal termination on plan. When, at the commencement of the article "Anglo-Saxon," Mr. Parker is quoted to the effect that "it is not decided whether any specimens of the architecture of the Anglo Saxons still remain," as a reason why the student should leave the subject to antiquaries as a barren study, we can only say that if Mr. Parker really said so, it is so much the worse for his reputation as an archæologist, and it would be interesting to know to what race of builders he does assign Barnack and Earl's Barton, as they could not have grown of themselves, and it will hardly be contended that they could be Norman. The article "Antæ" is not up to date, and does not give the real philosophy of the feature, which in the purest Greek buildings, such as the Parthenon, is really the end of the wall treated in a way to give it a certain expression, for which reason the Greek anta does not diminish upwards at all; while in the Parthenon the fronts of the antæ actually lean outwards, the upper part overhanging the base, in order to correct the optical effect of diminution which the opposite diminishing line of the column would have produced. This fact, so important in its illustration of the way in which the Greek architect regarded the anta, is not in Stuart & Revett, who are not authorities in regard to refinements of Greek architecture; it was one of Penrose's discoveries.

The Amateur Pottery and Glass Painter; with Directions for Gilding, Chasing, Burnishing, Bronzing, and Ground-laying. By E. CAMPBELL HANCOCK. Illustrated. London: Chapman & Hall. Worcester: Hancock & Son.

THIS little book is reprinted "by special permission of the Department of Science and Art, South Kensington." It contains full and very clearly-expressed directions for overcoming the principal technical difficulties of painting on porcelain and on glass, the latter including the various processes which go to make what is generally called stained glass, *i.e.*, the use of pot-metal put together mosaic-wise, as well as of enamel-painting and other processes of dealing with the surface of the glass, the combination of these with the mosaic method being recommended, perhaps rightly, as the best for

the amateur. We should have wished, however, to have seen in a book published with the imprimatur of "the Department," some general advice to the student as to what to paint and what not to paint in the methods here treated of. A good deal of what is done by amateurs (not to say professional artists) of this class on porcelain is what had much better not be done at all, because it never can be done well. Our advice to people wishing for instruction as to painting landscapes on porcelain would simply be "Don't attempt it." Nature can never be represented in these stubborn materials, which require so much humouring, and will never give the blendings and gradations necessary for even an approach to the atmospheric effect of nature. But in the present treatise not only is this ignored, and no warning of the kind offered to the reader, but he is, on the contrary, encouraged by the bad example of a horrid chromo-lithographed landscape intended to represent the effect that may be produced on porcelain, pervaded by unwholesome sickly colours, such as one is thankful to feel do not exist anywhere in nature. The student would be much better employed in any humbler practical handicraft than in libelling scenery in this way. What can be done with good effect on porcelain are conventional ornamental designs based on flowers and fruits, or perhaps even the realistic representation of these, though here again our Fantins and Angells would probably protest, that nothing but the most delicate and pliant materials can hope to represent the delicacy of nature. However, a nearer approach to nature in these details can be made upon porcelain than to nature as a whole. The most suitable of all, for the best effect, are comparatively flat and somewhat conventionalised designs, introducing the figure with a decorative setting. But let porcelain and glass painters leave landscape alone.

The Strength of Materials. By WILLIAM KENT, M.E. New York: Van Nostrand. London: Trübner & Co.

Voussoir Arches applied to Stone Bridges, Tunnels, Domels, and Groined Arches. By W. CAIN, C.E. (Same publishers.)

THESE two small works are "reprinted from Van Nostrand's Magazine," published in New York. Mr. Kent's treatise is on a subject which he tells us he has made his hobby for some years back; and though he is obviously and admittedly indebted to testers on this side of the Atlantic for a good many of the facts on which his conclusions are based, he seems to have come to some conclusions on the basis of his own practice, different from those which are generally received here, or at all events, supplementing them in some points which are worth consideration. He is specially interested in the relation of the shape and size of the specimen of material tested to the results, and suggests that the influence of these conditions has not always been sufficiently taken into account in judging of the strength of materials by test. He gives, for instance, diagrams of two shapes of iron for testing tensile strain, in one of which the test is concentrated, by the mode of holding the specimen in the clips, upon the centre portion of its length; in the other, a considerable length is left between the points of clipping for the strain to act upon; these he calls respectively short and long specimens. All his experience leads him to the opinion that the short pieces, which represent the kind of form most commonly employed in tension tests, give a higher result than the long form, whereas the latter represents more correctly the circumstances under which such tension usually operates in materials in use. The main point against the "short" specimens the author considers to be that in testing no accurate measurement can be made of their extension before rupture, as a means of comparison of ductility. Another idea in regard to testing, which will be new, at all events to some of those concerned in such operations, is in regard to the influence of time, that is, of the rate at which the increase of testing power is applied, upon resistance. On this head we may quote one of the author's examples:—

"Two pieces of ordinary merchant iron, 1 in. square, taken from the same bar, were tested by bending stress. They were placed on supports 22 in. apart, and the pressure applied by a screw and registered by a platform scale. One was tested as rapidly as possible, the pressure and deflection being read and recorded at every 20 lb. or 40 lb., about one hour being occupied by the whole test. A deflection of 5¼ in. was caused by a load of 2,350 lb. The other was tested very slowly, and was 'rested' frequently under strain, for intervals of from twelve to forty-eight hours, the whole test requiring more than three weeks' time. A load of 2,640 lb. caused a deflection of less than 3 in."

This is certainly a striking difference in result, and suggests a new source of incorrectness to be guarded against in testing. It is curious that a second example given, one of testing for tensile strength, seems to indicate that in this class of test the trial is more severe with the more slowly applied power. Many other tensile tests on ductile metals gave invariably similar results, those where the tests were quickly applied invariably sustaining a much heavier pull before breakage. There are many more facts and experiments of interest and importance given in this small and compact little book, well worth the attention of testers of materials.

Mr. Cain's treatise is a discussion of the theory affecting the stability and strength of stone or brick arches, the aim being "to make an advance in the theory, by considering the effect of the compressibility of the material in a theoretical manner." It is not easy to select any point for special reference; we can recommend the treatise to the notice of engineers and constructors generally as containing a great deal of thoughtful examination of the subject.

Miscellanea.

The Prince Imperial.—One of the latest and most characteristic acts of benevolence in the young Prince was evinced in his sending 10*l.* towards the fund being raised on behalf of the widow of the late Thomas Wright, F.S.A., left penniless and blind. It was sent in the most cordial and graceful manner, with an apology for the smallness of the donation. In Mr. Wright the Prince recognised the translator of his father's "Life of Julius Cæsar." This was admirably done; and it is said that such were the powers of Mr. Wright, that he gave daily to the printer two sheets, or thirty-two pages (?). Not one of our most eminent literary writers has greater claims on the gratitude of the nation; yet Mrs. Wright has not been allowed a penny by the Government, although strong and persuasive reasons have been submitted to the Premier, by some of our best men, the colleagues of Thomas Wright. He was allowed a pension (granted, we think, by Mr. Gladstone), and it was expected it would have been continued to the afflicted widow.—*Chatham Observer.*

Alost Hotel de Ville.—In Alost, Belgium, the beautiful tower of the Hôtel de Ville, which was erected in the twelfth century, has just been destroyed by fire. On Sunday week, on the occasion of a city festival, it was arranged that there should be an illumination, and the tower was to be lighted up with Bengal fire. The city authorities further permitted an extensive piece of fireworks to be fixed on the tower and let off there. After this fatal piece of pyrotechnic art had been discharged, the tower itself was discovered to be in flames. The fire brigade was at once on the spot and succeeded to all appearances in extinguishing the conflagration before much damage was done. At two o'clock in the morning, however, after the crowds had gone home, the fire broke out again and made such rapid progress that, before any effective assistance could be rendered, it had gained entire mastery of the structure, and was not quenched before it had left it a complete ruin.

A New Thoroughfare.—The new street from Worship-street to Sun-street, rendered necessary by the closing of the latter thoroughfare by the Great Eastern Railway Company, and which has been constructed by the Metropolitan Board of Works at the joint expense of the Board and the Vestry of Shoreditch, was opened last week by representatives of the Shoreditch Vestry (no member of the Metropolitan Board being present). The street is 40 ft. wide throughout. The cost is said to be about 130,000*l.*, which it is hoped will be recouped to some extent by the sale of building sites.

Monumental.—A brass tablet to the memory of General the Right Honourable Sir Thos. M. Biddulph, K.C.B., has just been placed in Holy Trinity Church, Windsor, subscribed for by the officers of the 1st Life Guards, in which regiment the late General served for twenty-six years. It is mounted on black Belgian marble, and measures 6 ft. 10 in. by 3 ft. 4 in. The work has been executed by Messrs. Matthews & Sons, of 377, Oxford-street, London.

A Brave Young Englishman.—The So Australian papers mention an incident wh may be usefully noted here. On an afternoon May last, Dr. Parker, of Port Lincoln, was at to start upon a fishing excursion with Mr. C Inderwick, who had recently arrived in colony. Through carelessness or oversi Dr. Parker found himself launched alone in boat with but one oar. This he used for s time, but perceiving that Mr. Inderwick was re to join him, he endeavoured to turn the b which by this time had drifted out into the t way. His efforts were unsuccessful. The h headed out into the gulf in spite of his exerti and his friends became alarmed. The troo of the place immediately procured assistan and proceeded to obtain a boat. But it s became apparent that the tide would bear Parker beyond the reach of this assistance; it was at this critical moment that Mr. In wick bravely went to the rescue. Seizing friend's second oar, he plunged into the wa and struck out for the boat. When Mr. In wick reached the tideway a full half separated him from the object of his exerti Intense excitement prevailed among the lookers. For a time the swimmer had a to battle with the tide, and he showed signs of exhaustion that the worst feared. Mr. Inderwick, however, pro equal to the strain, and at the point which he reached the boat, the tide, accor to seafaring men, was running so stron that a very few seconds would have suffice render rescue impossible. The doctor and gallant young rescuer received very hearty gratulations upon reaching the shore, from crowd which had by that time assembled. M of our readers will feel additionally interes when we mention that Mr. Inderwick is the of the eminent and much-esteemed Q.C. of name.

Destruction of Bricks.—An outrage w is suspected to have a "trade" origin has perpetrated at Brightside on a plot of encl land belonging to the Sheffield Gas Light C pany on which bricks are manufactured by Joseph Scott, of Oughtibridge. An enorm number of bricks had been made, and a 20,000 were laid on the "flats" and under to dry. On Saturday, when the men left w everything appeared as usual, but on their g to the place on Monday it was found that whole of the soft bricks had been trample and utterly spoiled. The perpetrators of outrage had also collected all the planks boards which lay about, taken the woo covering from one of the kilns, also t wheelbarrows, and set them on fire. Then t seem to have gone to another kiln, which charged with bricks in the course of b burnt. Here they set fire to the three woo uprights on the outside, the effect being when the kiln is emptied the arch will fal Neither Mr. Scott nor any of his work belonged to the Union, and it is believed this is the secret of the mischief.—*Shef Telegraph.*

Stables, Rufford Abbey.—The stable Rufford Abbey, Notts., have been undergo restoration and refitting and re-arranging in nally. The stables were erected by Geo Earl of Shrewsbury, in the reign of Henry V The building is quadrangular, and was origin entered by three archways, but the one to north is now blocked up. The blended arm Talbot and Savile are over each archway. edifice has evidently been well cared for, time had begun to work its ravages on the derous oak roof and tiles, and some of the were beginning to give way. The basem story has been retained, and the general de of the old building copied, saving that the nice and roof are more ornamental. In interior the ceilings of the stables and boxes ornamented in the Tudor style. The iron is principally supplied by the St. Pancras Company, and the fittings by the said Comp and Musgraves, of Belfast. Mr. John Birch London, is the architect.

Plaster and Gilding.—Mr. F. Grimsley St. Giles's, Oxford, has prepared some casts of fruit and foliage very suitable as dr ing studies. Mr. Grimsley has sent us a of a piece of wild briony, gilded, and claim have overcome any difficulty previously ex rienced in gilding plaster of Paris. It seem bear washing, and the appearance of it is v good.

nham Beeches.—At the last meeting of urt of Common Council, the City Lands ittee presented a report on the reference 26th ult. on the letter of Mr. Francis Heath, and recommending the purchase, he powers of the Open Spaces Act, 1878, pen and waste lands known as Burnham and the manor of Allerd, with the hereon, the purchase-money to be paid the Grain Duty Fund. Mr. Hart, the n of the City Lands Committee, in the adoption of the report, said the ould recollect that, at their previous , it was referred to his committee to the desirability of purchasing the site nam Beeches for the purpose of preserv- and as an open space to the public. Alto- here were 529 acres, and the price at which e offered to the Corporation was 12,000*l.*, ion to which there would be the value of ber on the land, estimated at another 175 acres were enclosed land and free- here were some difficulties in the way of ng enclosed land by the Corporation, the which was, that the land could not be out of the grain dues, and the Corpora- nces were not in a condition to warrant aking such a purchase. Therefore the ee came to the conclusion that they ly deal with the remainder of the land. tely it became known that the Corpo- were likely to purchase the property, he was sorry to say, were made, to oney out of the transaction, the re- ng that the committee could not pur- e open space without the freehold s. In this difficulty Sir Henry Peek ward, and consented at once to enter ontract to purchase the whole of the at 12,000*l.*, allowing the Corporation the whole of the open space at a most e price. The Corporation would get cres for 6,000*l.* Sir Henry Peek would retain the remainiog 175 acres. This ve the Corporation their land at a cost 16*l.* per acre, a sum much less than the he land in Epping Forest. Sir Henry nself would pay 35*l.* per acre for the retained. The only question which, se circumstances, would remain open ost of the timber. This, on the open s estimated at 2,600*l.* Thus it would Corporation from 8,000*l.* to 9,000*l.* in hrow open to the public for ever this he report was adopted.

orary Buildings under the Metro- Building Act.—At the last meeting tropolitan Board of Works, Mr. Fowler nd Mr. E. Dresser Rogers seconded :— e Superintending Architect do prepare and pre- Board a return of all the buildings *now existing* opolis with respect to which the provisions of Act have not been complied with, but which have oned by the Board as temporary erections ; the e fixed in each case for such structures to be rem.in ; and the number of those for which the xpired but which still remain standing ; that ttached to the return a copy of all directions or the subject issued to the owners of such tem- ctures, to the district surveyors, or to the District Boards ; and that the Superintending o also report what method he has adopted for cord of such structures, and for notifying to the expiration of the time for which the struc- allowed by the Board."

he discussion, the motion was put, and 4 votes against 8. This decision is to ted.

Royal Hospital for Incurables, —The Prince of Wales last week laid dation-stone of the new wing of the spital for Incurables, West-hill, Putney. wing will afford accommodation for , and in addition will comprise a spa- ombly-room, dining and day rooms for female patients, together with kitchen r offices. The estimated cost of the ommodation is 20,000*l.* Messrs. Searle, ayes, of London, are the architects.

Public Hall, Sutton.—This hall was July 10, by Sir Trevor Lawrence and . Peek, members for Mid-Surrey, and a want which has been felt for the nty years. The building has been y a company incorporated in November, h a capital of 4,000*l.*, and has cost It is built in the domestic style of ne's time, and seats 700. Mr. Hum- the builder, and Mr. Low, of Staines, tect.

Timber for the Royal Agricultural Kilburn was supplied by Messrs. Nicks Gloucester.

The Casson Continuous Feed Saw Bench. This saw-bench has an advantage of its own, and claims to be able to cut all kinds of deals and battens, no matter how much twisted or crooked they may be. This it is enabled to do owing to the principle embodied in its construction (a principle also embodied in most rope feed benches), of pressing the wood to be sawn against the fence at one point, and that as near the teeth of the saw as possible. Messrs. John McDowall & Sons, of Johnstone, who are the manufacturers of it, say that the average executive power of the saw thus secured is 75 per cent. over and above any bench having only an intermittent rope feed, speed of saw, feed, and driving-power in both benches being equal. No extra manual labour is required either physically or numerically, as the bench, when in motion, is purely self-acting, and can be worked by one sawyer and his assistant.

Packing Screws.—A correspondent writes : "I am glad to see you have mentioned the productions of the Manchester Steel Screw Company, but I think you might fairly have added to your account that all their screws are packed in neat cardboard boxes, which is an important feature just now, seeing there has been so much correspondence of late with reference to the American mode of packing hardware. I may mention that they have always packed their goods in that way."

Morrell's Closets.—The right designation for these closets, mentioned as at the Kilburn Show, is "Cinder-Sifting Ash Closets." They are quite distinct from *earth* closets. The dust from house-ashes is made use of in lieu of earth by an arrangement connected with and attached to the closet.

Surveyorship.—Mr. John T. Eayrs, borough engineer and surveyor, Newcastle-under-Lyme, has been appointed surveyor of West Bromwich, out of 142 applicants.

TENDERS

For building five houses and shops, at West Kensington, for Mr. Thomas Bryant. Mr. F. C. Kettle, architect. Quantities supplied :—

Nye	£9,698	0	0
Clemence	7,800	0	0
Smith	7,743	0	0
Dodds & Robb	7,217	0	0
Pickersgill	6,939	0	0
Green (accepted)	5,797	10	0

For rebuilding the Red Lion publichouse, in Cowcross-street, for Mr. F. Ede. Messrs. Isaacs & Florence, architects. Quantities by Mr. L. C. Riddett :—

Scrivener & Co.	£4,178	0	0
Kirk & Randall	4,143	0	0
Macey & Son	4,069	0	0
Conder	4,001	0	0
Browne & Robinson	3,910	0	0
Simpson & Son	3,899	0	0
Jarrett	3,799	0	0
Patman & Fotheringham	3,785	0	0
Hook & Oldrey (accepted)	3,589	0	0

For pulling down and rebuilding premises, 194, High-street, Peckham. Mr. Sextus Dyball, architect. Quantities supplied by Mr. W. E. Stoner :—

Kirk (accepted)	£3,275	0	0

For the restoration of St. Mary's Church, Higham Gobion, Ampthill, Bedfordshire. Messrs. Benton & Wood, architects. Quantities supplied by Mr. G. Sparrow Harrison :—

Ropkins	£1,418	0	0
Twelvetrees	1,328	0	0
Raves	1,044	5	0
Parmenter	1,033	0	0

For the restoration of St. James's Church, West Tilbury, Essex. Mr. W. Benton and Mr. G. S. Harrison, architects :—

Gumbrell	£1,142	0	0
Blake	1,082	0	0
Middleton	1,007	2	0
Middleton (revised, accepted)	905	0	0
For Oak Stalls, &c.			
Young	137	0	0
Howard	130	0	0

For a pair of villa residences, for the Epsom Estate Company, Limited. Mr. H. Smith, architect :—
Deal, accepted.

For stabling, at West-hill, Epsom, exclusive of stable fittings, for Mr. G. Alder. Mr. H. Smith, architect :—

Fyke (accepted)	£435	0	0

For alterations and decorations to Ashley House, Epsom, for Mr. G. White. Mr. H. Smith, architect :—

Burdett & Sons	£1,124	0	0
Colls	874	0	0
High	870	0	0
Waller (accepted)	695	0	0

For new roads, sewers, and surface water drains, for Mr. Thomas Dence, at New Southgate, Middlesex :—

Keeble	£945	0	0
Bloomfield	839	0	0
Dunmore	817	0	0
Harris	815	0	0
Jackson	777	0	0
Pizzey	775	9	0
Richardson (accepted)	750	0	0

For infirmary and probation wards, at Norwood Industrial Schools, for the Guardians of the Lambeth Union. Messrs. Coe & Robinson, architects. Quantities by Mr. J. Scott :—

W. & E. Castle	£9,544	0	0
Stephenson	8,965	0	0
Nightingale	8,843	0	0
Shepherd	8,650	0	0
Jones & Co.	8,650	0	0
Tibbet & Adams	8,520	0	0
Chapple	8,379	0	0
Bowyer	8,369	0	0
Shapley (accepted)	8,135	0	0

For rebuilding the Bricklayers' Arms, North-street, Marylebone, for Messrs. Taylor, Walker, & Co. Mr. A. E. Hughes, architect :—

Johnston	£2,257	0	0

For rebuilding the Portland Arms, Great Portland-street, for Mr. C. Cockburn. Mr. A. E. Hughes, architect :—

Simpson & Son	£3,100	0	0
Perkins	3,100	0	0
Williams & Son	3,053	0	0

For alterations to, and redecorating, No. 23, Wimpole-street, for Mr. M. C. Rogers. Mr. A. E. Hughes, architect :—

Williams & Son	£1,415	0	0
Burningham & Co.	1,399	0	0
Perkins	1,365	0	0

For the erection of ten cottages, Romaney-road, Lower Norwood, for Mr. Blow. Mr. E. Carritt, architect :—

Syme & Duncan	£3,879	0	0
Hollidge & Stuart	3,395	0	0
Bowyer	3,150	0	0
Ward & Son	3,067	0	0
Coulter	2,285	0	0

For new roads, sewers, and surface-water drains, for the British Land Company, Limited, on their estate at Walthamstow Park, Essex. Mr. H. B. Michell, surveyor :—

Crockett	£2,879	0	0
Kulingback	2,794	0	0
Acock	3,440	0	0
Peill	2,350	0	0
Keeble	2,300	0	0
Dunmore	2,203	0	0
Pizzey	2,100	0	0
Harris	2,000	0	0
Richardson	1,950	0	0
Wilson	1,899	0	0
Jackson	1,886	0	0
Bloomfield (accepted)	1,575	0	0

For new roads and sewers, for the British Land Company, Limited, on their estate, at Wandsworth-common. Mr. H. B. Michell, surveyor :—

Keeble	£2,557	0	0
Jackson	2,500	0	0
Pizzey	2,337	0	0
Kulingback	2,324	0	0
Crockett	2,302	0	0
Harris	2,259	0	0
Blackmore	2,243	0	0
M'Kenzie & Co.	2,240	0	0
Thompson & Son	2,177	0	0
B. & G. Neal	2,131	0	0
Dunmore	2,035	0	0
Peill	1,950	0	0
Acock (accepted)	1,920	0	0

For the erection of the principal elevation and main wing of Jervis-street Hospital, Dublin. Mr. C. Geoghegan, architect. Quantities by Messrs. Dudgeon, Brothers :—

Roberts	£34,400	0	0
Hammond	32,200	0	0
Murphy	31,700	0	0
Toole	31,500	0	0
Cockburn & Son	31,000	0	0
Meade	29,390	0	0

For enlarging the water-course in the marshes at Ryde, and lining same with concrete. Mr. F. Newman, borough engineer. Quantities supplied :—

Jolliffe	£1,375	0	0
Saunders	1,197	0	0
Meader (accepted)	1,000	0	0
Bulstrode	965	18	5

For reseating Ashford Church, Mr. T. E. Williams, architect :—

Gaskin & Co.	£1,493	0	0
Colls & Sons	1,377	0	0
Adcock	1,187	0	0
Thompson (accepted)	849	0	0

For sea-wall, embankment, &c., at Ryde, for the extension of Esplanade and formation of pleasure-grounds, &c. Mr. F. Newman, engineer. Quantities supplied :—

Perry & Co.	21,475	0	0
Jolliffe	19,450	0	0
Meader	16,490	0	0
Coker	16,171	10	0
Saunders	14,990	0	0
Smith	13,876	8	9
Hill & Co. (accepted)	12,975	0	0
Meats, Bros.	9,000	0	0

For house for Mr. H. Batley, Oak-hill-road, Putney. Mr. Wm. Young, architect. Quantities by Mr. C. Stanger :—

Pain	£1,486	0	0
Avis & Co.	1,454	0	0
Williams	1,208	0	0
Green & King	1,176	0	0

For alterations and additions to Lincoln Union Workhouse, Lincoln. Messrs. Watkins & Scorer, architects. Quantities supplied :—

	Quarters.	Alterations.
D. Taylor	£4,588	£7,657
Robinson	4,296	7,480
H. Taylor	4,470	7,250
Martin & Sims	4,488	7,000
Walter & Heusman	4,150	6,700
Baines	4,390	6,284
Warburton	3,769	6,680
Close & Co. (accepted)	3,944	6,378
Chadwick & Co.	5,700	4,100

For the erection of a detached house, in Holly Park, Crouch-hill, for Mr. W. Brander. Messrs. W. Waymouth & Son, architects. Quantities by Messrs. Burr & Till:—

Dove, Brothers	£3,275	0	0
Harper	2,899	0	0
Harris & Wardrop	2,897	0	0
Sheffield & Prebble	2,887	0	0
Wilkins & Son	2,874	0	0
Shurmur	2,844	0	0
Richardson, Brothers	2,798	0	0
Smith & Son (accepted)	2,589	0	0

For alterations at the Ship, Vauxhall Bridge-road, for Mr. Purchase. Mr. H. J. Newton, architect:—

King & Son	£830	0	0
Hatchman	825	0	0
Grimwood & Son	693	0	0
Anley	678	0	0
Taylor	657	0	0
Lamble	633	0	0
Wagner	590	0	0
Godden (accepted)	585	0	0

For warehouse, Upper Thames-street and Boss-court. Mr. W. Wimble, architect:—

Brass	£4,399	0	0
Hoare & Son	4,315	0	0
Ashby & Horner	4,185	0	0
Falkner	4,147	0	0
Scrivener	3,934	0	0
Crosker	3,889	0	0
Crabb	3,798	0	0
Morter	3,753	0	0

Accepted for the erection of four cottages, on the Canterbury-road, Folkestone, exclusive of bricks, slates, drain-pipes, and ironwork. Mr. Burgess J. Reeve, architect:—

Reason (carpenter and joiner)	£280	0	0
Philpots (excavator, bricklayer, &c.)	98	0	0
Garland (plasterer)	93	0	0
Mempes (plumber, glazier, &c.)	30	0	0

For alterations and repairs to Nursery Cottage, Folkestone, for Mr. D. Brockman. Mr. Burgess J. Reeve, architect:—

Dunks	£193	0	0
Petts & Son	164	11	0
Hoad (accepted)	145	0	0

For works, East Smithfield, for Messrs. Hoare & Co.:—

		Weeks.
Clarke & Bracey	£4,663	25
Clemence	4,500	16
Browne & Robinson	4,417	28
Trollope & Sons (accepted)	4 242	14
Outhwaite	4,178	25

For building two houses, in Mansford-street, Bethnal-green-road, for Mr. Whalley. Mr. W. Brown, architect. Quantities supplied:—

Cocks & Co.	£1,398	0	0
Joye	1,295	0	0
Howard	1,235	0	0
Goodman	970	0	0

For the Portland-place mansions, London, exclusive of fittings and hydraulic lift, for Mr. Lionel Lawson. Mr. C. J. Phipps, architect. Quantities by Mr. G. R. Tasker:—

Haigh & Co.	£18,750	0	0
Merritt & Ashby	17,927	0	0
Browne & Robinson	17,800	0	0
Brass	17,357	0	0
Patman & Fotheringham	17,097	0	0
Dove, Brothers	15,945	0	0
Manley (accepted)	15,787	0	0
Scrivener & Co. (withdrawn)	15,196	0	0
Fittings to Baths and W.C.s.			
Smeaton & Sons (accepted)	215	0	0
Concrete Floors and Stairs.			
Drake (accepted)	781	0	0

Accepted for the reconstruction of the Alexandra Theatre, Liverpool. Mr. C. J. Phipps, architect:—

Jones & Sons (general building)	£2,830	0	0
Bell (painting and decorating)	700	0	0
Jackson & Sons (fibrous plaster)	550	0	0
Mears (stage and machinery)	400	0	0
Dawnay (iron girders)	250	0	0
Urquhart & Adamson (upholstery)	225	0	0
Bucknall (gasfitting)	85	0	0

For alterations and additions to shop in the High-street, Folkestone, for Mr. Spencer. Mr. Burgess J. Reeve, architect:—

Slade	£250	0	0
Cambourne	180	0	0
Hoad	180	0	0
Brooks	170	16	0
Petts & Son (accepted)	165	0	0

TO CORRESPONDENTS.

F. C. K.—I. & F.—F.—J. W. S.—H. F. D.—D. B.—H. J. N.—B J. E.—W. E. R.—R. W. & Son.—W. W. & Son.—J. B.—G. S. H.—T. E. K.—C. J. F.—H. N. K.—W. G. S.—C. H.—J. C.—A. D. & Co.—J. L. K.—M. & S.—W. R. W.—J. H. S.—H. B. M.—E. F.—H. & O.—C. G.—F. N.—W. J. A.—O. F.—J. B. O.—R. W.—S. M.—A. E. H.—S. D. (should have sent list)—R. P. P. (scheme has been already mentioned in the *Builder*).—A. H. T. (next week)—H. G. (next week.)

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Bath Stone of Best Quality.
RANDELL, SAUNDERS, & CO. (Limited),
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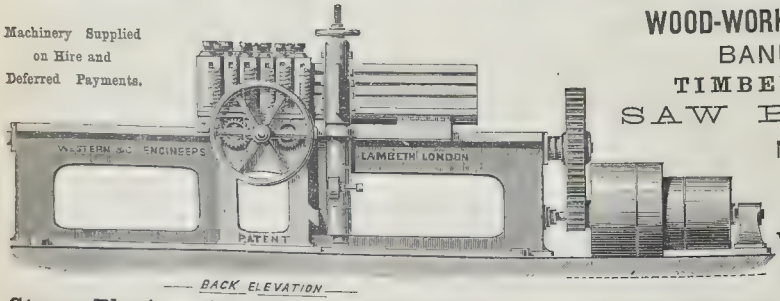
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xt emitted from the Human Body as an Element to be regarded in arranging the Ventilation and Warming of Buildings.



QUESTION of primary importance to the architect, and especially to the architect who is entrusted with the designs for any important public building, is that of the heating power of the inmates and occupants of such buildings; that is to say, of the amount of heat which, under ordi- cumstances, escapes from the average al during any given period of time. vious that no arrangements for either ilation or the warming of an important can be even theoretically perfect in nce of clear knowledge on this point. nd of coal of an average quality will give the process of combustion, rather more 000 British units of heat, each such unit e amount of heat necessary to raise the ture of one pound of water 1° Fahren- eat. To effect this combustion, 140 cubic tmospheric air, weighing 11 lb., will be , and the temperature of this quantity it were kept free from any disturbing g influences, would be raised as much Fahr. by the combustion, or say from 2° Fahr. Of course, it never occurs that pt quantity of air is thus applied; but a comparison is thus obtained. eat liberated by the respiration of an human being in twenty-four hours will l to be very nearly equivalent to that liberated by the combustion of a pound c 350 cubic feet of atmospheric air are by Professor Huxley to be the quantity ses through the lungs of an ordinary al in twenty-four hours. This quantity, , is independent of the unmeasured, very important, amount of respira- t takes place through the skin. Mr. enton calculates that an assemblage of sons will, in two hours, give off as much as is contained in a hundred-weight of n addition to 17 gallons of water in the vapour. If the quantity of carbon here d as consumed in the process of respira- ompared with the prescribed amount of es required by the military dietaries lly when we remember that this com- goes on more slowly during sleep than in rse of the day), it will be seen that ton's estimate does not err on the side s. Thus we obtain rather more than its of heat as due to the pulmonary con- n of carbon in twenty-four hours, or to the aëration of the arterial blood which takes place in the lungs.

As to the heat which has been produced in the chemical action indicated by the escape of watery vapour in the breath or from the skin, the calculation is more doubtful, owing to the fact that we are not aware of the form in which the elements of this vapour were taken into the animal system. Thus they might have entered as water, or again as elements of those hydrocarbons which we are in the habit of consuming, such as fat or as alcohol. The formation of some thirteen ounces of water from its constituent elements, oxygen and hydrogen, would of course produce an amount of heat greater than that which would be occasioned by the mere passage of an equal quantity of water through the system. In the former case some 5,700 units of heat would be produced. Taking into account the unmeasured degree of heat produced by the dermal respiration, it will thus be seen that the equivalent of a pound of coal is as close to a measure of the heating power of a man, in twenty-four hours, as can be at present pointed out. That is to say, that twenty-four persons in one hour would liberate an amount of heat equal to that which would be produced by the consumption of a pound of coal in that time.

Taking this convenient unit, it becomes possible to calculate with considerable exactitude the allowance that should be made in the construction and ventilation of ball-rooms, assembly-rooms, churches, and other public buildings, for the heating of the air by the natural warmth of the persons whom it is proposed to accommodate. We shall also be able to speak with considerable exactitude as to the difference of temperature that arises in small unventilated bedrooms, and as to the practical cause of that horror of ventilation which we find so general among our cottage population.

We have before seen that the quantity of atmospheric air required for the combustion of a pound of coal is 140 cubic feet, while that which passes through the human lungs in twenty-four hours is more than double that quantity, being 350 cubic feet; the former quantity weighing, in round numbers, 11 lb., the latter 27 lb. The heat liberated we have taken roundly at 14,000 British thermal units. The coefficient of the specific heat of air is given by Mr. D. K. Clark, in his valuable "Manual" (p. 385), as 0·2377. These figures will be found to indicate an elevation of the temperature of 350 cubic feet of air by 88° Fahrenheit as the result of the entire combustion; and if this were regularly carried on for twenty-four hours, and if no heat were lost by radiation, conduction, or any other means, the temperature of that volume of air would steadily rise by 3·66° Fahrenheit per hour. If now we ascertain the degree of dilution which the size and the ventilation of the apartments allow to the expired air, we shall find the bases of our problem to be laid down. But we purposely avoid any attempt at exactitude; and we recommend those of our friends who make use of our units to form their own calculations. The approximate amount of 14,000 British units of heat may, we assume, be safely taken. The specific heat of atmospheric air is a figure easily to be verified. The volume of air through which the heat has to be distributed each investigator may calculate for himself.

We thus find that if we allow a sleeping-apartment of the cubical contents of 1,000 cubic feet for two inmates, and suppose that there is absolutely no ventilation, in eight hours 9,333 British units of heat will have been emitted, and will have gone to raise the temperature of a fraction over 80 lb. of air. It will be seen at once that the resulting heat would be intolerable. Practically such a condition never occurs, because rooms are never really air-tight, and as the internal temperature rises, the escape of the heated air, and its replacement by the external atmosphere, become more and more active. But it will be seen how powerful a calorific agent is at work. And it will readily be understood how the desire for warmth, which is one of the most unfailing instincts of higher animal life, including that of man, naturally overpowers those sanitary conditions which appeal rather to the intelligence than to the feelings.

For the mighty influence of use and of habit must be borne in mind. We may take a case that is directly in point. Suppose a church to hold 500 persons, and that during a given service the doors have been shut, and the ventilation has been left to take care of itself. The effect on the temperature of the church, supposing the service to last an hour and a half, will have been equal to that produced by the combustion of rather more than 30 lb. of coal within the building, no chimney being supposed to carry off any of the heat or carbonic acid gas generated. The actual rise of temperature will depend on the two elements of the cubical contents of the church and the activity of ventilation. The latter, it is true, may be so managed as properly to control both the vitiation and the heating of the air. But we are supposing the ventilation to be imperfect. To the persons within the church the inconvenience occasioned by the deterioration of the air they breathe will be very gradual, and will probably go on increasing for a considerable time before any but those of them who are most delicately organised perceive it. When they quit the building the congregation at once become sensible of a difference in the external air as compared with that they are leaving. But the place must have been overcrowded or under-ventilated to a considerable extent if they become conscious of the fact before quitting their seats. If, on the other hand, we now suppose a fresh congregation to enter, as the first goes out, the degree of heating and of vitiation, which had so gradually been attained as to be almost imperceptible to the persons who caused it, will strike powerfully on the senses of the incomers. This is an experience which is common to almost every one. But it

s not so common for persons to draw from it the true lesson. It is one to be worked out in numbers of attendants, cubic feet of building, degrees of the thermometer, and volume of ventilating movement. As such we commend it to the very careful attention of the architect.

If we now regard the mode in which the air, when thus heated by the caloric liberated from the inmates of a building, tends to find its own thermometrical level, we shall be at once struck with the powerful agency that is at the disposal of the scientific builder.

The pressure at which it is usually calculated that gas for illuminative purposes should issue from the burner is stated to be that of half an inch of water. With this pressure the issue of the jet has a considerable degree of violence, as is more particularly to be noted in the case of fish-tail burners, where the spread of the flame is due to the pressure, and thus to the velocity, at which the gas issues from the orifice of the burner. Now a difference in pressure of more than half an inch of water exists between two atmospheric strata that are 50 ft. apart in vertical distance. If we consult any barometric table constructed for hypsometric purposes (that is to say, for indicating level above the sea by the reading of the barometer), we shall find that a fall of 1 in. of mercury roughly indicates a rise of some 900 ft. in altitude. We say roughly, not from absence of exact figures in the tables, but from the fact that there are two distinct causes of variation, one of which is easy to calculate, while the other is less reducible to rule. At the same spot, as is well known, the reading of the barometer varies from time to time. This variation constitutes the uncertain element. But taking the barometer to be steady, the difference in level indicated by a difference between two simultaneous readings occurs in a ratio dependent on the absolute level of those readings; that is to say, on the height of the stations above the sea. Thus the difference between the readings of 29 in. and 30 in. is tabulated at 883 ft. But that between 29 in. and 28 in. is equal to 914 ft., and the fall from 28 in. to 27 in. of mercury gives a difference in level of 938 ft. Thus we have to regard both the ordinary local reading and the variable daily reading of the barometer with much care when we come to calculations as to levels.

Taking, however, the first tabular indication which we have cited, that of 1 in. of mercury indicating a rise or fall of 883 ft. in level, it will be found more convenient to reduce the vertical measurement to round numbers. On so doing, we find that a difference in level of 100 ft. will give a difference of 0·113 in. in the height of the mercurial column, or a difference of 1·260 in. in the column of a water barometer; so that 50 ft. difference of level may very well be taken, on an average, as equal to half an inch of barometric pressure measured by a column of water,—the relation of the 1·260 in. per 100 ft. varying as we approach the top or the bottom of the vertical distance.

Thus, the architect who intends to make arrangements for the ventilation of a large building,—whether he construct a shaft for that purpose, or whether, as in some of the noble common rooms at Oxford (we can take the dining-room of New College,—if memory serves aright,—for an example), the lower boards of a coved wooden ceiling are pierced, and the heated air, escaping through them, finds its way between the outer roof and the inner ceiling, to a louvred lantern,—has, in the first instance, this power of barometric pressure to aid him. That is to say, that in a building 50 ft. high there will be a less resistance to the issue of a column of air from an aperture at the top than from an equal aperture at the bottom (other things being alike), which is equal to that of a column of half an inch of water. This is only one part of the power at the command of the architect, but it is a very essential one, and one which it is highly important that he should be able accurately to measure.

The other element of power at his command is thermal. Barometric and thermic action may be made either to assist or to counteract one another. Too often the latter is the case. We cannot too much insist on the necessity for a perfect understanding on the part of the architect of the laws of these two causes of movement,—and that not only in general principle, but in numeric exactitude. We are, perhaps, apt to regard the efforts of scientific men to place useful knowledge in the hands of those who require it as dealing too much with what is elementary. But two things are, or may be, intended by that word. Elementary knowledge, to be real knowledge, must be exact. Exactitude is as requisite in the A B C of science as it is in any of the subsequent processes. But to have what is called a general idea,—which may be enough to allow a man to talk on a subject, but which altogether fails to guide him when questions of number, of measure, or of weight have to be decided,—is often spoken of as an elementary acquaintance with a subject. It is, in point of fact, an elementary ignorance.

Fifty feet of elevation, in round numbers, we have seen to give a barometric force equal to that indicated by the pressure of a column of half an inch of water. We now have to inquire what unit of heat may be taken as equivalent to, or as comparable with, this unit of barometric pressure. If more exact numbers are preferred, we have shown what corrections come into play to modify the rough rule of an inch of water pressure per 100 ft. of atmospheric pressure, that is to say, of vertical height.

The volume, density, and pressure of air at various temperatures is tabulated by Mr. D. K. Clark at p. 351 of his "Manual for Mechanical Engineers." The density or weight of 1 cubic foot of atmospheric air, at a temperature of 32, is given at ·080,728, which is the figure of which we have previously made use; but the corresponding barometric pressure is stated at 13·86 pounds per square inch, so that to bring this table into exact acordance with that from which we have previously quoted the relations of height to barometrical pressure, the former must be supposed to be based on observations made at the height of about 2,000 ft. above the level of the sea. We call attention to this fact as illustrating the manner in which the path of a scientific writer is beset by difficulties, and how inaccuracy may arise in the exact citation of the best authorities, if such authorities are independent of one another. A pressure of 30 in. of mercury, which the barometric table assumes to be normal for the sea-level, is that which, according to the thermometric table, is equal to the pressure of a given weight of air having a constant volume at a temperature of 73° Fahrenheit. We shall not occupy our space with a reduction of the two tables to the same terms, but are satisfied with calling the attention of the reader to this slight element of discrepancy.

The rise of temperature from 62° to 70° Fahrenheit, according to Mr. D. K. Clark's table, is equivalent to an increase of pressure per square inch, from 14·70 to 14·92 lb. This is equal to ·0275 lb. per square inch pressure, per degree of Fahrenheit, in increment or decrement. Taking the rough rule that a foot of water is equal to an inch of mercury in barometric balance, and allowing 30 in. of mercury to represent 15 lb. per square inch of pressure (which will be found more useful than any more elaborate formula), we find the increase of a degree in the temperature of the air to be equal to ·055 in. of mercury, or to ·66 in. of water, as barometric pressure. Thus allowing for the escape of heat, we may take the Fahrenheit degree as the approximate equivalent of the half an inch of water, or of the 50 ft. of vertical elevation.

It is evident from these figures (of which we have indicated the authorities with the express intention of inducing our readers to make calculations for themselves) that the thermic power at the disposal of the architect is very much more readily available for the purposes of ventilation than the barometric power. At the same time, the essential importance of the latter is not easy to be overrated. It is an indispensable element to take into account. While impetus is given to the circulating volume by thermic force, the direction of the motion must be impressed on the circulation by barometric force, or by equivalent mechanical means. Here is the key to the structural question of the proper height of chimneys. If artificial means are asked for the production of a current of air, as by a fan, or other mechanical apparatus, the emission may be so far under the control of the architect that he may lead his flues where he will. But if he relies on the two natural motors of thermic and barometric pressure, woe will betide him if he neglects to give due attention to the latter. He may thus not only neutralise the action of the thermic force, but even set it to work in the wrong direction. It is the neglect of these primary principles which is the efficient cause of smoky chimneys.

Another element has to be regarded w may affect the movement of the ventil circulation, especially when the baron conditions are neglected. That is, the pre of the wind on the apertures by which vitiated air escapes. In this, as in the ca the thermic force, what is, properly regard power at the disposal of the ventilator, is allowed to act as an impediment instead aid. Thus, if a vertical shaft be constr with an open and unprotected top, the eff a strong current of wind is to keep back escape of air from that tube; and so read this perceptible, that, in an ill-constr chimney, blasts of wind without are accompanied with puffs of smoke within dwelling.

The pressure of the wind, accordin Smeaton's experiments, rises from ·005 lb square foot, with the hardly perceptible m of a mile per hour, to 31·490 lb. per s foot in a hurricane of eighty miles per Other observers have estimated the for a hurricane of 100 miles per hour, Smeaton took at 49·2 lb. per square and later authorities as high as 62 lb square foot. A pressure of 55 lb. per s foot has been actually registered at Glasgow observatory. Professor Airy has that a pressure of 80 lb. per square foo be obtained. The great storm of 170 estimated as travelling at the rate of five miles per hour; and the resultant sure was calculated by Smeaton at 9·98 and by later authorities as 10·1 lb. per s foot of the surface exposed to its fury. T equal to ·07 lb. per square inch, or to 0·1 of mercury, or 1·68 inch of water in barometric column.

Thus the effect of a storm of unusual vio supposing it to be directly exerted in preve the escape of a ventilating column of air, be about equal to the barometric value chimney of 170 ft. in height. This, howe dealing with one element alone. W supposing the movement to be so sluggis the thermic force can be neglected. But it force which it is, usually speaking, most in the power of the ventilator to regulate a good volumetric discharge, driven elevated temperature, and directed by a chimney, the proportionate check offere even the fiercest hurricane is compara small. For it has to be measured, not on the barometric height, but by the velocity of the column of escaping air. that velocity may be increased, almo *libitum*, by the application of artificial h is clear that the architect has little to fea the wind as an enemy to ventilation, if he what he is about. We may take another tunity to show how he may make a wind, instead of an obstruction, an assistt ventilation.

It follows from the laws which we attempted in some degree to elucidate, t the hands of the wise master-builder causes which frequently impede ventilati at all events, lead to great inconvenience be converted into the very motor power well-regulated ventilating current. Th course, will by no means be new to m our readers, more especially to those of who are at home in the well-digested s of mine ventilation on which the yield coal-fields so closely depends. The point we venture to think novel, is the inquir the radiant heat produced by the proc animal respiration, as affording, in po fact, an element of ventilating power. estimate of that heating power which we offered is, of course, approximate only. however, founded on the best scientific as yet attainable. And it is enough to an interesting means of comparison in th of thermometric observations on buildings taining many persons, especially when the ill-ventilated. In these, and in the op cases, much information may be collect noting, in addition to the elements of cubi tents, number of persons, and flow of venti column, the actual temperature of the an and of the issuing air. In an arrangement for the purpose of this investigation, the tect would find a very valuable field of Meantime, the rough rule that from twenty persons assembled in a building there is libe in an hour an amount of heat equal to tha duced by the combustion of a pound of co one that may afford food for very prof meditation.

ARCHÆOLOGICAL TREASURES OF FRANCE.

TH the yearly return of the season when rovincial archæological societies meet in orner of Great Britain, many interesting os of the labours of which have been ered in these pages, what artistic or ological student can have failed, on read- e series of discoveries which each year's gs bring to light, to regret the want of a and order which allow these, and similar s elsewhere, to be buried in the bulky, if accessible, tomes of the *Times* or the r, or scattered through the various local ls of the United Kingdom?

vain the methodical student,—fervent r, perhaps, of the Index Society,—may destroy his weekly numbers as they e, or purchase double copies of his journal, trictly classify his archæological gather- he task is too huge for unaided comple- s each year the bulk of matter increases. n France, where the study of local archæo- eceives no less attention than with us, a ntion reaches us that may not be unworthy nsideration of our numerous readers ted in the rich archæology of our country. suggestion which we would heartily wish up in England, in order to systematise present entirely unconnected labours of ous societies, and which could not fail to a more suitable share of attention to their le appreciated labours.

long since, we had occasion to refer to uccessful results obtained by the Com- n nominated for the purpose of forming nventory of the artistic treasures of ."[1] Nearly thirty years ago, at the time first Great Exhibition of 1851, the pro- f forming this inventory of the artistic es of France, existing in the museums, es, and other public monuments, was ed at a congress of learned societies; a gue, in which the treasures were to be ed and summarily described, in order to te future research. But the amount of and labour which such an immense task ed was only too apparent to those even interested in the success of the project, this fact must be attributed the failure first proposal. Five years ago, M. de ièvres presented to the Minister of Fine renewal of the project, which this time met mmediate attention and encouragement. mmission was formed, among the mem- f which were the curators of the Louvre veral other important national museums, brarians of the Bibliothèque Nationale, ty of Paris, and several literary and art- . On its first meeting, the Commission ined on the rules to be followed in the ion of their inventory; it was imme- settled that a mere mention of each in the inventory was not sufficient, but ise description, in which the origin, his- and any other information connected with bject should, after due examination, be lly set forth. For the present, it has been ained that the inventory shall be strictly ict to national property. Such, however, ot the original project; it had been in- d to insert, with the permission of the objects of art preserved, even in private

But the proposal has been rejected, rcel last year, at a congress of provincial d societies, having explained the difficulty loguing objects in the possession of pri- ndividuals. "They are objects which may hands, and even disappear without a left but a regret." Should the proposal, er, meet with approbation from private ors, there exists little reason why such an n should not yet be made to the work of mmission; and what an interesting addi- uch a catalogue could not fail to be, is atly being proved in the valuable collec- which, more in England than in France, early bequeathed to the nation: such ions as that lately left by Mr. Henderson, se hands, as in those of many another ate, existed hidden treasures of an interest wn except to a few acquaintances. In volumes, those devoted to the contents of rivate collections we might predict with would be the most valuable for reference; sive supplements following the change of ship of each of the catalogued objects.

was further determined that to the capital inal inventory should be devoted. As the tory of each museum or church is published it is indexed, and in this manner at any future date the order may be easily re-arranged; the MS. "copy" is examined, and the proofs corrected by those members of the Commission who may choose to take upon themselves this duty; although all responsibility rests with the Commission, each portion is signed by its respective author. Such being the first determination of the Commission, a circular was addressed severally to the curators of all provincial museums and public collections, to all the presidents of the learned societies, to the keepers of the records, the prefects and mayors of each town and city in the country. The curators of the museums were requested to send, in addition to their printed catalogues, any written notes or private remarks in connexion with the establishment under their charge. These catalogues on their receipt, it may be observed, are examined and classified, after which the inspectors of the commission put themselves in communication with the curator, whose personal opinions and observations are additionally made use of.

The plan thus put into working order, it was with no small degree of reason that M. de Chennevières urged the necessity and importance of the work being actively carried out,—"The treasures of the provinces are not sufficiently appreciated, as they are not sufficiently known. The inventory which we project, as it is prepared, will be published and placed within the power of all to purchase and refer to. In visiting any town, the student will be sure to find, by previous consultation of such an inventory, objects worthy his notice. In this manner public attention will be more generally drawn to local and little-known collections of inestimable value."

From the keeper of the records is asked a copy (where possible) of all documents concerning the origin, the cost, donors, and successive transmission of all artistic objects at present in possession of the Government; the mayors of all towns are additionally requested to aid as far as lies within their power the work of the Commission.

As a further addition to these documents, a memorandum distributed at the time, contained the instructions relating to the formation of the inventory and notes to be sent to the Commission, a very necessary measure to ensure uniformity in the classification. For the cataloguing of pictures, a description of subject, size, history, method of possession, and classification according to school, or the material in which produced; for sculpture, whether antique, middle age, Renaissance, or modern; enamels, gems, gold and silver work, glass, bronze, ivory, furniture, stuff, embroidery, tapestry, and so forth,—all follow the same rule in being catalogued, as also descriptions of artistic merit, or treating of artistic personages. In the inventory of the contents of cathedrals and churches, a plan of a typical cathedral, with each of its features plainly marked, and a table explaining the order to be followed in describing the situation of each object, ensures exact uniformity in description. In this latter instance, too great praise cannot be awarded to the Commission for their thoughtfulness, when we consider how sadly guide-books serve to puzzle the student in his search for any object according to the directions of his printed *cicerone*.

In June, 1877, under the presidency of Marshal MacMahon, the Commission was definitely organised; and, in July of that year, M. de Chennevières was able to terminate his report, with a statement of the progress of the Commission. "From all sides we receive help and support; relations have been established with all the provinces; and we are now certain that nothing can arrest the rapid and regular progress of a publication of which the whole of France is the *collaborateur*."

It is now four years since the work was undertaken. It has already produced four volumes, two of which are devoted to the religious monuments of Paris; comprising the inventory of not a few of its famous churches, among which are Saint-Germain l'Auxerrois, Saint-Germain des Prés, Saint Severin, and Notre Dame. The two other volumes contain the monography of several provincial museums, the most important of which is that of Orleans. Each inventory commences with a slight historical sketch of the church or museum about to be described, and to each is attached an index.*

The Commission has recently undergone some important modifications, which, it is hoped, will increase the value of its labours. The new elements which have been lately introduced may serve to correct many existing defects; on many points the original rules can scarcely be modified or improved, though much will probably be done to increase the value of the inventory as a work of reference.

Foremost among these we would venture to suggest the addition of an index, by means of which the student might be able to refer to specimens of any special art; the metal-worker, for example, be enabled, by reference to the index, to be directed to specimens of that work of different periods and countries; the same with the goldsmith, the modeller, the carver, or the jeweller, among other art-workers and designers.

Could such a catalogue or inventory be formed in England, what a host of treasures should we find we possessed, the knowledge of the existence of which is at present confined to a few? What a noble work of study for the art-worker, the archæologist, and the literary student would such volumes become? What an encyclopædia for constant reference? What a field for subsequent illustration, when in course of time a complete inventory had been formed?

What Belgium some time since so successfully carried out,—what France is at present rapidly forming,—England should possess, and when Europe is thus inventoried, what more valuable handbook will the traveller need to refer to before starting on his journey than the note-book in which he will have jotted down "the things of note," that the tour he may thus map out will enable him to inspect, in church, in castle, in abbey, cathedral, or museum?

[1] At the commencement of each volume are to be found the reports, from the perusal of which we owe much of the information contained in this article. For those who may wish to purchase the volumes we may observe that there are three editions, one on ordinary paper, the volume costing 9 francs, one on vellum paper (15 francs) and one on Dutch (30 francs). Two volumes are now ready. Each of the *fascicules* costs respectively 3, 5, and 10 francs. The publishers are Messrs. E. Plon et Cie., Rue Garancière, No. 10: Paris.

SCOTT AND WORDSWORTH ON HIGHLAND SCENERY.

No thoughtful visitor to any of the current exhibitions can fail to be struck with the hold which landscapes now have over the public taste, nor to recognise how large a part of modern art is occupied by the portrayal of scenery. And if something more than a mere passing thought is given to this fact, it can hardly be doubted that the mind of the public was in this respect greatly influenced by the writings of Scott and Wordsworth. If we may assume this to be true, it becomes of considerable interest to note the method of treatment which these two great poets adopted in their depiction of landscape beauty, and especially of mountain beauty. That the assumption we have made is not without foundation may be seen in a remark which Lockhart makes in his life of Scott; for he relates how, after the publication of the "Lady of the Lake," "crowds set off to view the scenery of Loch Katrine, till then comparatively unknown." And the hundreds of tourists who still gaze with interest upon Ellen's Isle and the "silver strand" prove that the impetus given by Scott at first to the visiting of the Highlands in no way diminishes as time goes on, and that his most enduring monuments are the crags of Ben Venue and the waters of Loch Katrine. Indeed, Scott is quite, in popular consideration, the poet of the Highlands; and, for poetical descriptions of mountain scenery, most men turn to his pages. So that for one reader of Wordsworth for this purpose there are ten of Scott; though, if these two great poets are compared in their general poetic treatment of Highland scenery, it becomes more and more clear that the true poet of the Highlands is Wordsworth, so far as the description, and the real appreciation of mountain and loch, are concerned. In saying this, it is by no means necessary to depreciate the many merits of Scott as a vigorous and imaginative teller of a poetic romance; indeed, the spirited story-teller must necessarily, in order to be such, want the characteristics which are essential for the writer of meditative or purely thoughtful verse. To linger over the beauty of each tuft of heather and each drooping birch would at once stop the rapid run of the events of the romance.

The cardinal point of difference, however, between the treatment of Highland scenery by Scott and Wordsworth lies chiefly in this, that the former regards it entirely as secondary to the plot of the narrative, and looks upon it

merely as an embellishment for the main events of his tale. Whereas Wordsworth makes the landscape for the time being the main object of his poetry, and considers it, if not superior at any rate as equal to the human beings whom he brings before the reader,—

"Happy is he who lives to understand
Not human nature only, but explores
All natures . . . . . .
Up from the creeping plant to sovereign man."

These lines from the "Excursion" thus form the key in some respect to the difference which exists in the treatment of mountain scenery by the English and Scottish poet. But there are other distinct characteristics of these two mountain poets in this particular besides the fact that the one makes the description of scenery of primary and the other of secondary importance. Scott paints with a broad and vigorous touch, with a constant use of striking but ill-chosen metaphors and illustrations. He rarely descends into details, but having portrayed the outlines, he leaves the rest to the imagination of the reader. He shows himself the passing observer rather than the student and the lover of mountain scenery. Yet the consequence of this general sketchiness of description is, on the whole, one of the secrets of Scott's successes. The thoughtful observer of each particular trait of the landscape beauties of Loch Katrine fills in the details for himself, and the mere passer by, when he reads "The Lady of the Lake," is carried away by the vigour of the verse and the general boldness of the outlines, so that he does not stay to inquire into their truth. But Wordsworth, on the other hand, can be at once broad and accurate in his treatment of landscape, though the chief characteristic of his work must be considered in its completeness of detail, whether directly or by suggestion. At times he descends into the minutest details and ponders over the rippling burn, the red berries of the rowan tree, and the purple ling, with a perfectly loving care and completeness. He looks for suggestions, and he seeks for the inspiration of the mountain and the lake. This mosaic-like minuteness in some degree has repelled popular readers from Wordsworth's descriptions, or has been hastily passed over, whilst it has, though opening out nature's beauties more completely to careful students, produced literary imitations which under the guise of poetry are little better than prose, such as Clough's description in the Bothie of Tober-na-Vuorlich of the river, and its basin "10 ft. wide and 18 ft. long." But such minute description, whilst it certainly has done and is doing much to cause mountain scenery to be studied thoroughly and completely, and to show that each part of the large mountain, and the spreading lake, are worthy of equal observation with the general mass of the hills, and the general tints of the landscape, is certain, from time to time, to cause the descriptions to become both commonplace and utterly puerile. For it is easier to keep up to a comparatively high level in general description of scenery than it is when the details of the landscape are the subject of the poem. The distinction here drawn between the characteristics of Scott's and Wordsworth's treatment of Highland scenery is still further borne out by Scott's own poor opinion of his own power of landscape description, strange as it may seem to his ardent admirers. "To me," he writes in his autobiographical fragment, "the wandering over the field of Bannockburn was the source of more exquisite pleasure than gazing upon the celebrated landscape from the battlements of Stirling Castle. . . . . If I have since been able in poetry to trace with some success the principles of the latter (the picturesque in landscape as distinguished from the picturesque in action), it has always been with reference to its general and leading features, or under some alliance with moral feeling; and even this proficiency has cost me study." It is not difficult to find upon opening the "Lady of the Lake" examples of Scott's manner of describing by general features only, and of his use of ill-chosen metaphors, which placed side by side with any piece of Wordsworth's descriptions of Highland scenery bring out very strikingly the wide difference in this respect between these two poets. Thus:—

"The western waves of ebbing day
Roll'd o'er the glen their level way,
Each [illegible] peak, each flinty spire
Was [illegible] in floods of living fire,
But not a setting beam could glow
Within the dark ravines below,
Where twined the path in shadow hid
Round many a rocky pyramid."

Here all the epithets are distinctly general, and the whole ends with an illustration completely inapplicable to Highland scenery. A pyramid gives the idea of mathematical regularity and precision, whereas irregularity and broken heights are the characteristics of the mountains beneath which Loch Katrine lies. Again, later on, this lake beneath the rays of the setting sun is described as being

"One burnish'd sheet of living gold."

A man might live for a century on Loch Katrine's banks without seeing it look like a sheet of living gold, even if one knew what the writer meant by the words "living" gold; and these are but two examples from many which are at hand. Some of our readers may remember how Dorothy Wordsworth has described in her own simple way how she and her brother, when travelling in the Highlands in 1803, noticed the fair Highland maid at the Falls of Inversnaid, which caused Wordsworth to write one of his best known poems, that "To a Highland Girl." These are the features of the landscape among which the maiden stands:—

"And these gray rocks; this household lawn;
These trees a vail just half withdrawn;
This fall of water that doth make
A murmur near the silent lake;
This little bay, a quiet road
That holds in shelter thy abode;
In truth together do ye seem
Like something fashion'd in a dream."

This is quite in Wordsworth's best manner. There is great pointedness without undue detail. The antithesis of the epithets brings out their complete application to the subject of the poem, and, without being too minute, both the epithets and the several lines bring before the mind a perfectly real picture of one of those miniature landscapes where the burn loses itself in the loch which are so unique and so beautiful a feature of Highland scenery. There is also in these, as in nearly all Wordsworth's descriptive lines, what can only be described as a feeling for the landscape which is utterly wanting in Scott, and which is a distinct point of difference. It is a quality which can hardly be accurately defined, but it is one which shows a kind of reflection in the mind of the poet of the features of the landscape, and which shows also a certain sensitiveness to the forms of nature. Indeed, it is just this sensitiveness which Scott does not possess. Again, the description of the mountain ash in the sixth book of the "Excursion" cannot be overlooked by any one who has once remarked this noticeable tree of Scotch scenery, affording too, as it does, an example of the characteristics of which we have just spoken:—

"The mountain ash
No eye can overlook, when 'mid a grove
Of yet unfaded trees she lifts her head
Deck'd with autumnal berries that outshine
Spring's richest blossoms; and ye may have mark'd
By a brook-side or solitary tarn
How she her station doth adorn; the pool
Glows at her feet, and all the gloomy rocks
Are brighten'd round her."

As we have said, the weak side of this kind of description is the baldness and excessive minuteness from which from time to time the poet cannot escape. But setting this aside, there can be no doubt that in Wordsworth we see the real poet of the scenery of the Highlands, and indeed of the British mountain scenery in general, rather than in Scott, who is the great and immortal story-teller of the North. Yet whilst comparing these two remarkable men in regard to one particular subject it must not be supposed that we desire to weigh them in the balance in the general scale of poetry. But it is certainly interesting when we are rapidly approaching the season for mountain rambles to study the striking difference which exists between Scott's and Wordsworth's treatment of mountain scenery, both in form and in thought. Neither can such a study fail to produce suggestions closely connected with the depiction of natural beauties, whether of mountain or lake, and to cause a greater appreciation of the landscape-painter's work.

Sheffield Society of Artists.—The second annual exhibition of pictures under the auspices of this society was opened on the 18th inst., in the School of Art. The *Sheffield Independent* states that several of the most important contributions to the exhibition are from artists who are not members of the society. Mr. William Poole is the president of the society this year.

BRIDGNORTH.

It may fairly be said that England, [illegible] whole, is but little visited by its own pe[illegible] there are some parts, it is true enough, w[illegible] strangers do much congregate, such a[illegible] lake district and certain portions of the [illegible] coast. But its cathedral towns are vi[illegible] much more by Americans than by Eng[illegible] men, unless the latter happen to be in a [illegible] ticular locality for some reasons unconn[illegible] with the mere scenery of the place. Much known are those portions of the country, of very charming scenes, where one ma[illegible] more secluded and more quiet than hundre[illegible] miles away amongst the valleys of Switzer[illegible] or on the sides of the Italian lakes. One district is the Severn Valley,—a characte[illegible] cally English landscape, but both in s[illegible] and autumn full of delightful scenery. W[illegible] there is water, there, it may be said, as a [illegible] is some kind of natural beauty, and the w[illegible] of the Severn is no exception to this rul[illegible] the Severn, with its rapid steams, its sh[illegible] pools, is the centre of two lines of sloping [illegible] very rich in all kinds of tree and wildfl[illegible] On its grassy banks the oak in June is bri[illegible] in its delicate green foliage, and the elm[illegible] and the large-leaved chestnut stand in con[illegible] side by side. Indeed, the whole valley o[illegible] Severn was once a portion of some of the [illegible] noted English Mediæval forests: there wa[illegible] great forest of Wyre, near to where the to[illegible] Bewdley stands, as Leland has it in a dog[illegible] line:—

"Fair-seated Bewdley, a delightful town,
Which Wyre's tall oaks with shady branches cr[illegible]

Higher up the stream came the forest of M[illegible] a vast tract which now only exists in an[illegible] legends and in local names. And whe[illegible] arrive at the forest of Morfe we are brou[illegible] the town of Bridgnorth, the Ehrenbreitst[illegible] England; and even now, in many respect[illegible] most striking of English towns. It is tru[illegible] have no height crowned, as at Durham, b[illegible] noble Norman cathedral which overhang[illegible] Wear, but we have a town equally finely situ[illegible] and surrounded with country infinitely mor[illegible] turesque than that overlooked by the city [illegible] Cuthbert; for Bridgnorth stands on a rock[illegible] montory more than 180 ft. above the Severn[illegible] on the extremity of this precipice once w[illegible] castle of Bridgnorth. From the top of the [illegible] eastern bank of the Severn, from what is k[illegible] locally as Hermitage Hill, is to be seen [illegible] the most striking views in England,—a [illegible] and well-wooded foreground slopes to the S[illegible] and on the opposite bank are the houses o[illegible] lower town, and clinging to the rocks abov[illegible] more houses, and on the top stands th[illegible] town,—the single piece of ruin which mark[illegible] position of the old castle of Bridgnorth, a[illegible] the right the square tower of St. Leo[illegible] Church and the gables of the Grammar Sc[illegible] whilst beyond, the misty outlines of the W[illegible] land Hills break the skyline. The histo[illegible] Bridgnorth is a story of war; for no to[illegible] Mediæval days could be situated as Bridg[illegible] was without being a coveted prize and a de[illegible] stronghold in every internal war. A bridg[illegible] here built, it is said, by the Saxons ove[illegible] Severn, and when this was destroyed, a ne[illegible] was erected, from which the town too[illegible] name. Founded by Ethelfleda, daughte[illegible] Alfred the Great, and enlarged by the vig[illegible] and warlike Robert de Belesme, Earl of Sh[illegible] bury, who rebuilt the castle about 1098, w[illegible] it besieged by Henry I. in 1102, and [illegible] surrender handed over to Hugh de Mort[illegible] who, in 1155, after his rebellion against H[illegible] II., surrendered the castle into his sover[illegible] hands. Other stirring incidents occur i[illegible] history, till, in 1646, it was the scene of a s[illegible] siege by the Parliamentary armies, who, a[illegible] remarkable struggle, succeeded in capturin[illegible] church, and finally obtained the surrend[illegible] the garrison of the castle; of this castle, [illegible] have said, only one block or piece of ruin[illegible] remains, but it is enough to suggest t[illegible] sympathetic onlooker the scenes of which i[illegible] once been the centre; the easily defended [illegible] commanding the passage of the Severn[illegible] oaks of Morfe hiding the southern windi[illegible] "Sabrina fair," and the fertile country [illegible] Bridgnorth dominated to the north. The [illegible] street,—the High-street of Bridgnorth,—[illegible] very fayre street," as Leland calls it i[illegible] "Itinerary," is still very noteworthy. Wh[illegible] wrote (*temp.* Henry VIII.) the streets "[illegible] galleried, as in Chester"; these galleri[illegible] rows have now disappeared, but there

n numerous old black and white houses
me modern ones of a similar character
n this style to keep up the antique nature
town. In the centre of the High-street
a black and white market-house, raised
r pillars, so that the basement floor is on
t with the first floors of the surrounding
. This structure is one which we hope
ng remain intact, because it carries the
back very vividly to times in which
horth was not a mere country town,
fortress of great strength, the mistress
important district of England. We
already mentioned the old church of
onard, a building erected of the red
one which underlies the surface through-
is part of Shropshire. It was restored
welve years ago, but its size, its situation
old gables of the school-house, looking
he valley of the Severn from the
lawns which surround it, place it in
gh keeping with the character and
of the town. From the fact, too, that
horth does not perceptibly increase in
is possible to grasp its former character
asily, because when one sees a town such
ster lying in a flat and uninteresting
y, with walls still existing, but forming a
ternal ceinture, it is not possible to take
of the place, so to speak, as a whole.
ith Bridgnorth it is different: the
sqeness of the surrounding country,
vern flowing down, with "glassy, cool,
cent wave," as when Milton wrote of it,
rch and the ruins on the stolid rock, and
mparatively small town which crowns
mmit, bring before the mind's eye the
fortress of the past, and we forget the
market-town of to-day, and remember
e natural stronghold made more for-
e by military art, and frequented in
val times by many kings. "In March,
King John was again at Bridgnorth,
im a noble retinue such as none but
fortress could have sufficed to accommo-
Such is one example of the estimation
h Bridgnorth was held four centuries
"Comus" was performed at Ludlow

ENT REMAINS IN COLORADO, U.S.

tenth annual report of the United States
ogal and Geographical Survey of the
ories, conducted by Dr. Hayden, the U.S.
st, contains, like former volumes, very
nt contributions to archæology.* The
report by Mr. W. H. Holmes em-
the result of surveys over about 6,000
miles of the Pacific slope of the Colorado
s of the adjoining territories. This land,
now a semi-desert, owing to its inter-
by deep cañons, formerly supported a
us population "totally distinct from the
o population who hold it now, and in
aspects superior to them."
ruins described are principally those of
structures, and are abundant in the
of water. They may be classed as (1)
or agricultural settlements; (2) cave
gs; (3) cliff houses or fortresses, the
eing places of refuge or defence.
form, the parallelogram and circle pre-
ble, and a considerable degree of architec-
kill is displayed. Where the conformation
ground permits, the squares are *perfect*
and the circles *perfect* circles. The
part of the ordinary structures are
or rectangular; while attached to each
and sometimes without indications of
ous buildings, are circular ruins frequently
ling towers. These are the most pre-
structures, being often as much as 40 ft.
eter, and in many cases having double
e walls. They are solidly built of hewn
dressed on the outside to the curve,
jointed, and laid in mortar.
he larger towers the space between the
walls is invariably divided by heavy
n-walls into a number of apartments,
circular depression, or *estufa*,† occupies
tre of the enclosure.
ems evident, from the extraordinary form
e structures and the unusual care shown

hington: Government Printing Office. 1878.
fa is a Spanish word, signifying "sweat-house,"
ll-house (now applied to the hot chambers in which
and Portuguese wines are matured). In the in-
pueblos of to-day, the author informs us, there are
und rooms, frequently circular, used for religious
council-chambers. It is stated that in Mexico the
nclosures also served defensive purposes.

in their construction, that they were not designed for the ordinary uses of dwelling or defence. It has been observed that, among nearly all the ancient tribes of North America, the grandest and most elaborate works of art were the offspring of their superstitions, and it does not seem at all improbable that these great towers had a religious origin.

In the inhabited pueblos of to-day there are underground rooms, frequently circular, used as council-chambers as well as for the performance of the mysterious rites of their religion. Similar chambers occur, according to Lieutenant Simpson,* in all the ruined cities of New Mexico, but having single walls of no great height or thickness. It is stated by Squier and Davis † that in Mexico the sacred enclosures were also used for defensive purposes, and it certainly seems probable that these curious structures served both as temples and fortifications, and that the apartments between the walls were the receptacles of sacred or valuable property."

Besides the architectural remains, stone weapons and ornaments, painted and carved inscriptions, pottery and human remains were met with, and examples are figured, but there is nothing to show that metals were used.

Evidence of great antiquity is seen in the extensive weathering of the rocks which has taken place, and sometimes in the growth of trees 300 or 400 years old, which deeply embed worked stone in their roots or sides; but no guess at their approximate age is made in this work. It is inferred, however, from the comparative freshness of the cliff-houses, that these are newer, and were built towards the close of a long occupation.

The remains are by no means cyclopean, and seem to indicate that they were the dwellings of a small race. The masonry is neatly joined, and appears to have been dressed with stone implements, but no single stone is larger than could easily be lifted by one workman. The cave dwellings are shallow and irregular apartments, or rather nests, communicating by apertures which would not allow a person of large stature to pass. What they possess of picturesqueness and grandeur is due to the now frequently inaccessible positions in which they are placed, and to the overhanging ledges caused by uneven weathering of the rocks. Thus the engraving, pl. xxxii., of a cave town on the Rio Mancos resembles a great ruined castle with overhanging copings and cornices, perched on a craggy height. The openings of the caves were walled up with masonry, except a small door-like orifice.

Plate xxxiv. presents a view of one of the fortress towers, of which there are many noticed, and may be taken as a typical example. It consisted of a central tower 25 ft. in diameter, with walls 21 in. thick, and this was surrounded by an outer wall, with a space between them divided into ten chambers, the total diameter being 43 ft. It is surmised that the outer wall had no windows or doors within reach from the ground, but that ingress was through apertures high up, and reached by ladders, the small openings, 6 ft. from the ground, that do exist in the central tower being indoor communications. Abundant traces of ruined dwellings surround the fort. Another tower is larger and triple walled, and is environed with low lines of rubble, marking the positions of crowded rectangular dwellings attached to it.

The next plates illustrate cliff-houses of the Mancos. These are located in grooves left by the weathering of a bed of shale between layers of sandstone, and vary according to the accidents of their position. One range is limited by the rock structure to about 4 ft. in height and 6 ft. or 8 ft. depth, and placed some 40 ft. above the river. From appearances it would seem impossible to assign to it any great antiquity. Another group described occurs within 100 ft. of the top of a cliff 900 ft. high, and consists of two tiers 30 ft. apart, set in niches. The lower house occupies the entire niche, and is 60 ft. long and 15 ft. deep in the deepest part, and 13 ft. or 14 ft. high, the front wall being flush with the precipice. It is divided into chambers, the arrangement of which is both complicated and curious. The main feature is a circular chamber or *estufa*, whose only entrance seems to have been by a narrow tube-like passage, 22 in. high by 30 in. wide and 20 ft. long. The object of such precautions the author believes to be the desire to render a sacred chamber as free as possible from profane intrusion. The upper tier is only accessible by a stairway of niches cut in the sloping face of the rock. The stairs lead to the doorway, and there is no standing room outside the walls. An immense arched rock roofs in and projects 15 or 20 ft. beyond the building; above and below, as well as at each side, the cliffs are almost vertical, the only approach being by the stairs, so that the position is one of unparalleled security. Beans and corn and evidence of fire were found in the upper house, and rush matting and vegetable tissue in the lower. An even more perfect two-storied house, photographed by Mr. Jackson in 1874, in a nearly equally inaccessible position, is illustrated.

* Expedition to the Navajo Country, p. 78, &c. See also Mr. Jackson's Report.
† Ancient Monuments of the Mississippi Valley, p. 102.

One of the most important groups of ruins, forming "the most imposing pile of masonry yet found in Colorado," is situated near a spring known as "Aztec Springs," which seems to have finally ceased only a few years ago. It is estimated to contain 1,500,000 solid feet of stonework, all of which had been carried more than a mile from its outcrop, and covers an area of about 480,000 square feet. It consists of two houses, one a little higher up the slope than the other. The upper one has double walls 26 in. thick, still in places 12 ft. to 15 ft. in height, with a space of 7 ft. between them, and it is conjectured that they were formerly at least as high again. It is rectangular, measuring 80 ft. by 100 ft., and is surrounded by a network of fallen walls, comprising, as usual, a well-defined circular *estufa*. The lower house is simply a large court, 200 ft. by 180 ft., also enclosing an *estufa*, and with eight small equal chambers extending along its northern length.

The survey of the ruins situated in this area was hurried, and is by no means to be taken as an exhaustive one; indeed, whole series are said to have been passed without even a halt.

The rock-inscriptions which are figured are assigned for the most part to the cliff-builders, and this with every appearance of probability. They seem to record events, and are chiefly made up of extraordinary and perhaps symbolical portrayals of the human figure. The pottery is superior in composition and surface-finish to much that is made by the town-building tribes of to-day. Fragments are found in immense quantities in the neighbourhood of the ruins,—mostly of bowls, handled cups, and ladles, more rarely of jugs and vases. No wheel was used in their production, nor any implement, except for modelling the surface into ornament. It is thin and light, and few specimens are unornamented either with painting or sculpture. The painted vessels were thinly coated with "some mineral solution that gives a beautiful enamel-like surface, not greatly inferior in hardness to the vitreous glazing of our potters." Upon this surface the colour is laid, apparently with a brush. In one or two cases the indented ware has a light gray surface coating, that on the broken edges has quite a perceptible thickness." Restoration of a number of the vessels are given on plates xliv. and xlv., and one cannot but be struck with the almost elegance of form and the richness of their ornamentation. One bowl with a scroll-pattern is peculiarly Greek-looking, and many indicate a considerable amount of care and skill, hardly to have been expected, to judge them by the rudeness of the rock-cut inscriptions, and in a race totally unacquainted with metal.

The *résumé* of the author's conclusions is, in his own words:—

"My conclusions in reference to the history of the ancient inhabitants of this region, as drawn from my observations among the ruins, briefly outlined, are as follows:—

The ancient peoples of the San Juan country were doubtless the ancestors of the present pueblo tribes of New Mexico and Arizona. A comparison of the ancient with the modern architecture and a consideration of the geographical relations of the ancient and modern pueblos lead very decidedly to this conclusion. They have at one time or another occupied a very extensive area, which includes the greater part of the drainage of the Rio Colorado. Their occupation of this region dates back very many centuries, as attested by the extent of the remains and their advanced state of decay.

The final abandonment of the cliff and cave dwellings has occurred at a comparatively recent date, certainly subsequently to the Spanish conquest.

The lowland remains, the extensive pueblos and great towers, are generally in a very much

more advanced state of ruin than the cliff defences. It is possible that the latter owe their construction to events that immediately preceded the expulsion of the pueblo tribes from this region.

The cliff-builders were probably not greatly superior to the modern pueblos in any of the arts, and I doubt if they could boast of a state of civilisation equally advanced.

It should be remembered that, up to this time, no excavations whatever have been made among these ruins, and I feel as if more information should be obtained before attempting to draw other than very general conclusions. It seems to me probable that a rich reward awaits the fortunate archæologist who shall be able to thoroughly investigate the historical records that lie buried in the masses of ruins, the unexplored caves, and the still mysterious burial-places of the south-west."

The second report contained in this volume, by Mr. William H. Jackson, will be noticed in a future number. J. S. G.

OLD ARCHITECTS IN OLD GARDENS.

THE Hanging Gardens of Babylon, the Terrace Gardens of Rome, the Winter Gardens of Russia,—all historic gardens, indeed,—have been more or less associated with architecture and the builder's art. Wherever, in fact, they have been laid out on any formal, or scientific, or magnificent plan, the employment of stone, or marble, or the ornamental materials dug from rarer quarries, has been found essential; so that, in preparing an open space, natural or artificial, level with the common ground, or raised above it for luxury and pleasure, the one science has, in every age, been associated with the other. This is a truth pointed out everywhere,—in the Scriptural records, and by the monuments of antiquity; in the most ancient parks of China, belonging to unknown dates; as at Fontainebleau and at Peterhof; as in the "pleasaunces" of Charlemagne at Aix-la-Chapelle; in the traditions of Alcinous, as in those of Nero. Sculpture and painting, no doubt, have also lent their aid to the service of the gardener; but from the time when, according to the most venerable lore upon this subject, Nebuchadnezzar, to satisfy a wife who sighed for the Median hills and forests, and wearied of the monotonous Babylonian plain, reared his huge truncated pyramid, and covered its surface with verdure, to those of Chatsworth, the architect has invariably been called in. Nothing approaching to the glories,—altogether imaginary, however,—which inspired the genius of John Martin, has been attempted in modern days; but the pride of Semiramis led her to emulate them upon a reduced scale, and the palace of Alexander was enriched by columns, around which were trailed mimic vines, bearing grape-clusters of solid gold. And so with the parks that surrounded the celebrated royal residences of Khosrou, with those of the Persians and the Arabs, including the Sultan Aboul, who clothed his palm-trees in cases of gilded copper. The Moors erected their alcazars amid flower-planted arcades, painted in vermilion, gold, and blue; and the Imperial gardens of Constantinople were divided by porphyry parapets one from another. An even more prodigal taste, in this direction, is to be recognised in the Mogul Gardens of Agra, Delhi, and Kashmir, of Oude, and the capital of Ispahan. The first conquerors who entered Mexico discovered vast parks enriched with sculptures, balustrades, basins, and conduits composed of, or lined with, various brilliantly-coloured stones, many of which were not produced by the quarries of the country itself; while, as to the Greeks and Romans, a garden without a temple, a colonnade, a cupola, or a recessed niche, was never contemplated. Marble is not less necessary than earth, said Cicero. The grounds encompassing the ruins of Hadrian's Villa, at Tivoli, exhibit remains which prove the importance attributed to the one art in relation to the other. Unfortunately, the imitators of later epochs exaggerated and degraded this style, as shown by the Pompadour fashions, towards the close of the eighteenth century, when sham grottoes, columns in unmeaning clusters, miniature pyramids, and colossal vases deformed the most exquisite sites. A nobler spirit presided over the superb pleasure-grounds in which the Emperor Justinian, the Caliphs of Bagdad, the Dukes of Genoa, and the Florentine Medici, in their different days and generations, alike delighted. It was not, therefore, the caprice of any particular era; it has been the instinct of mankind from the commencement to link architecture with gardening. A taste which can be followed through Persia and Assyria, Greece and Rome, India and China, to France, England, modern Italy, and even Russia, is not of an age, but of all time. The celebrated gardens of Isola Bella, in the Lago Maggiore, would not exist were it not for the arches which, with their foundations deep down below the water, and coated with a bituminous cement, uphold them. It was more or less from suggestions supplied by the ancient examples that the gardens known as those of Charlemagne, at Aix-la-Chapelle; of Kroll, at Berlin; of Greenwich and St. James's, designed by the Frenchman Le Notre; of Kensington, Esher, and Claremont, were planned, though a distinct originality attached to the floating islets, covered with the most brilliant and often artificially-covered vegetation, and sprinkled with little architectural fancies, on the lakes of Mexico, and of Cuzco, in Peru. We see the same antique influence, transformed, yet still vital, everywhere, in the new gardens at Vienna, as in those of Ghent, of the Luxembourg, Palais Royal, Versailles, Chantilly, and Malmaison: they have all been "built" as well as cultivated. Precisely so, again, with those of the Aldobrandi and Pamphili at Rome; while, in Spain, that of the Alhambra would lose nearly all its characteristics were it not for the exuberant prodigality of the Saracenic architects; for the Alhambra "gardens" are rather "courts" than anything else, exactly as are those of the palaces that border the Ganges,—parallelogrammic enclosures paved with marble, cooled by fountains, very scant of flowers or verdure, and relying for their splendour principally upon those mosaics and tesselations in the manipulation of which their Moorish artists stood unrivalled.

If the European fashion has not quite followed the Asiatic, it has often gone very near to it, as in the great elliptical colonnade encircling the lake at Monceau, the double balustraded staircase and Medici fountain of the Luxembourg, the arcades and bronze Eurydice of the Palais Royal, the Temple and cloister in the Garden of the Innocents, and the marble kiosks of the Tuileries. Keeping the retrospect, however, more especially in view, we find this architectural ambition at work, naturally enough, at Cordova, Toledo, Valencia, Seville, and Granada, where the Oriental tradition was strictly adhered to. The third and greatest of the Abdulrahmans, indeed, has the credit of constructing in the grounds surrounding his palace at Zahra,—relics of which attest its magnificence,—a pavilion of marble enclosing a miniature lake of quicksilver, which, by a secret machinery, was kept in a state of continual commotion, resembling waves in a storm. But, throughout the East it will be found that those who designed these luxurious retreats, rarely thought of walking in them. Therefore they erected bellevues, alcoves, little temple-shaped sanctuaries without walls, arcades furnished with seats, or, as at Rome, towers, such as have been reproduced, in modern times, at Genoa and Naples. It was in Italy, indeed, that this style assumed its highest splendour, and longest survived. No garden of the sixteenth century was regarded as complete without a certain display of architectural pomp. "The architect," said one of those who laid out the pleasure-grounds of the Aldobrandi and Pamphili palaces already alluded to, "who built the house should make his re-appearance in the garden." And an Eastern writer seems to echo him when he asserts "wherever there is a palm there should be a minaret," while, wherever there is a beautiful sea or river prospect, his translator adds, there ought to be a belvedere. The Chinese, from the most remote epochs, caught, in their quaint way, at this idea, and have never looked upon a garden as perfect, unless built over with bridges, grottoes, cascade-arches, miniature pagodas, artificial rocks, and pavilions. Travellers smile at these grotesques; but, on the outskirts of Paris, in the very centre of the very newest civilisation, we have them reproduced,—imitation tombs and ruins, caverns, arches of brick and stone, and gigantic iron gates opening upon nowhere. The Jews almost always erected a tower in the middle of their gardens, and, relative to those encircling the mythical splendours of Adhoya, their buildings are spoken of far more emphatically than any of the rest. The thirteenth Louis of France had probably heard of this tradition when he, in ing on constructing, in the midst of his "p dise" at Chinon, Mehun-sur-Yèvres, a "Ca of Beauty," with, sprinkled about it, rest tions of the Chapel of Amboise and the to of the cardinals in Rouen Cathedral. In part of England, long ago, an effort was m to resist this "stone-work" taste; and "School of Kent," as it was contemptuo termed, proscribed all avenues terminatin marble alcoves or Grecian temples, all terra balustrades, fountains, vases, statues, artistic sculptural and architectural decor whatsoever, leaving only blazing bank flowers, dark clumps of trees, and sweeps of lawn. But the steady force of fas with the impulse of measureless epochs be it, overswept this local and partial protest, evinced at St. Germain, Meudon, Sceaux, St. Cloud,—all comparatively fresh from Mint, yet with something of the antique st upon them; as at Chatsworth, Alton To Warwick and Kimbolton Castles, in the T days; Hampton Court, Longleat, Audley and Blenheim. The Dutch, it may be sai their punctiliousness and, so to speak, repudiated the architect in the garden nantly; yet who, if not Vanbrugh, conf that flights of steps, balusters and piers, to by vases and copings, Italian or Gothic, e buildings, arches over sunk paths, F pavilions, Italian loggias, Georgian belvec and even rustic cottages and sham ruins, add adornments to a garden landscape?

THE LATEST LIGHT AS TO RAILW DIVIDENDS.

THE fall which has occurred in the pric the home railways, coincident with the di tion in dividends already declared or anno (with the brilliant exception of the Metrop line) is a matter deserving careful atte There are two points of view from which ways are regarded, or may be regarded, b public; namely, the speculative and the tific. With the first we have no concern, a to point out that it has been speculative i ment, or the origination, for speculative poses, of schemes for lines not really need the country, to which all, or nearly all, m misfortunes, of a financial character, m either directly or indirectly traced. On other hand, it requires a certain amount o knowledge which is proper to the expert to any sound opinion on facts; while, as we too often lamented, it appears to be a s policy on the part of most railway manag allow only the smallest number possible of to be communicated to the shareholders. our belief that this is a mistaken policy. it is that which is now prevalent; and eve efforts of the Board of Trade to obtain ade information have been hitherto in vain.

Commencing with the Metropolitan Rai of which the half-yearly meeting was held o 16th of July, it is worthy of note that the expenditure on capital account, which sta the "Index to our Railway System" as 8,851 at the end of 1877, was given by the cha as 8,709,547*l.* at the end of last half. Owing to the sale of surplus property and good management the capital account stands actually at 260,000*l.* less than it d 1872. Here is a matter for the highest p and a nucleus of prosperity that well de imitation. To earn the gross incon 268,702*l.*, the sum of 94,120*l.* had bee pended, being a working cost of little ov per cent. of revenue. Thus, although receipts for the first quarter of 1879 show decrease of 2,319*l.*, the Metropolitan has sented to its shareholders an honest divide 5 per cent. out of a net earning of 5¼ per c

The increase of the capital of the Bri line for the six months has been 334,862*l.* gross revenue showed a decrease of 30,24 compared with the corresponding half of and the working expenses show an increa 420*l.*, while 14,681*l.* is required for addit interest. A deterioration at the rate of 90, a year on a revenue of 1,917,369*l.* (tha 1877) is not a feature of a very alarming in a period of general depression. But t loss of gross earnings of 30,000*l.* shoul accompanied by an actual increase of wo expenses is an ugly feature which den explanation. The best that can be said it is, that it appears to be an evidence fair mode of keeping the revenue acc

in any way watered by the aid of unavowledged capital.

South-Eastern directors, in the reports communicated to the newspapers, are silent on the subject of the increase of capital. The increase in gross revenue has been 44,325*l.*, and in working charges 8,942*l.*, in the half-year so that only 1*l.* has been saved where 5*l.* of revenue has been earned. The increase of capital, according to the "Index to our Railway System," has been 117,543*l.* in 1878; the decrease of receipts for the first quarter of the present year, according to the same authority, was 23,083*l.* The gross income for the half-year was 1,066,069*l.* There has been an evident effort to keep down working costs (possibly by reducing the number of trains), and the parallel thus afforded to the Brighton line is an evidence of the good management of both these larger lines during a period of depression.

The third number of Mr. Fleming's "Index to Railway System" is unusually valuable for the information which it reproduces from the returns of the companies themselves.* Thus, while the analyses of the Board of Trade returns come down to the end of 1877, the incomes of principal companies are returned as late as the first quarter of 1879. A total decrease of 426,692*l.* is shown on the income of seven lines for thirteen weeks, and of four other nine weeks; so that we may take it that our railways are now earning about two millions a year less than they did in 1878, at an increased proportionate outlay. The greatest decrease of gross income in the quarter has been that of the North-Eastern, viz., 111,384*l.* The greatest increase, that of the Great Western, 31,298*l.* The only other increase with the exception of one of less than 1,000*l.* is that of Metropolitan District) has been 15,031*l.* The Great Eastern, a line which it is already admitted will pay no dividend on the ordinary stock for the half-year. It is probable that the receipts, thus added to the receipts of these two lines may represent the diversion of mineral traffic to that extent from the London and North-Western, which took 88,821*l.* less in the quarter. As to this, farther light will be perhaps attainable when we come to see the increase or decrease of the respective working expenses. We think that the indication of the late quarter to which Mr. Fleming has brought down his information is due to the pains that he has taken in the matter. It is unnecessary to add that so valuable this work is to all persons who take any intelligent interest in railway property.

* Index to our Railway System and our Leading Railways: a comprehensive Analysis of Railway Property. 1879. Third number. By William Fleming. London: Longmans & Co. 1879.

FROM THE BANKS OF THE SEINE.

The three principal subjects of interest of Paris must undoubtedly be consisted of the interment of the Prince Imperial, the grand review of Sunday, and—the weather, I am writing from the banks of the Seine it would be well not at least to refer to the place they have been held, in different degrees, in public estimation.

Of professional interests, even in the midst of gloom, of pleasure, and discontent, receive no less consideration, and the observant stranger who has not have been tempted to the capital for the purpose of any military fête at Longchamps could not fail to notice many changes in Paris, even since Napoleon's visit to the Exhibition. In every direction on scaffold-poles meet the eye, to right and left, in every quarter, and within the last few months many a quiet market-garden and long-turbed corner have been "Aladdinised" into towering houses and mansions. Little wonder need there be when the kind aid of statistics proves that no fewer than 3,995 new houses were built in Paris in 1878; the demolitions reaching the respectable figure of 1,998, showing an increase of some 1,997 new dwellings-houses in the capital; and the monthly reports for the present year show no diminution in the successful advance of the building trade. Paris is doing its best to merit the reputation it has long held of being "the capital of Europe"; and I hope that London may equally remember that if Talleyrand so complimented his native city he remarked of London that it was the capital of the globe.

Paris and London have this season been drawn much more into contact than they have been for many a generation, by the successful visit of the French Comedy and the recent generous *fête* at the Albert Hall in favour of the French Hospital; so it is no surprise to see in the advertisement-sheets of most of the journals here the announcement of "the Royal London Panorama," to be situated "in one of the finest quarters of the English capital," and "the like of which does not exist in the United Kingdom." M. Gerôme (who, it will be remembered, is a foreign member of the Royal Academy) and M. Boulanger, with several collaborateurs, have accepted "the artistic patronage of this creation," which from all accounts, is to be amusingly French from commencement to end, and, under the direction of "a talented architect, a pupil of the École des Beaux Arts," the façade is to be adorned with groups and statues, the genius of England from the prow of a vessel decreeing palms to the heroes whose names are to be carved on the façade.

Although the so-called Coliseum in the Regent's Park, and its neighbour, the Diorama, are well remembered by old Londoners, the former chiefly for its unhappy connexion with John Braham (the father of Lady Waldegrave, whose death is deeply deplored on the banks of the Seine by many here who remember her in the society of London and Paris), the latter by its views of Paris, among other familiar Continental scenes, and notwithstanding the lingering success of the Panorama of Leicester-square, and its skilful representation of our famous naval achievements, there may be still in the present day an opening for the speculation of such well-known artists as Gerôme and Boulanger showing on the banks of the Thames their method of panoramically amusing Londoners.

Exhibitions succeed each other in Paris with a rapidity which is not a little puzzling, but which does no small degree of credit to the power of organisation of the professional world of Paris. The doors of the *Salon* barely closed, we see announced for the 24th inst. the inauguration of the Exhibition of Sciences applied to Industry, to be held in the Palais de l'Industrie, and to be open till November. The programme which is so far published holds out an interesting promise, and the opening day is expected with no little impatience.

While the latest invention of science, the practical use of the electric light, is enabling the workmen to continue their work uninterruptedly night and day at this Exhibition, an echo reaches us from the world of nearly a hundred years ago,—a discovery among the dusty packages that lined the upper shelves of the library, alas! now for ever closed, of the dear old Théâtre Italien. The library of the Conservatoire purchased in April last a large number of musical scores, and among a lot knocked down to the librarian for a couple of shillings has been found an autograph score of Giuseppe Haydn, entitled "La Vera Costanza," a three-act opera which has never yet seen light. The score, written almost entirely by the hand of the famous composer, bears at the end in his own writing, "Fine dell' Opera. Laus Deo, 1785."

A few days ago Paris saw its numerous parti-coloured hoardings adorned with an attractive yellow bill announcing the sale of the Château de Menars for July 16, and certainly it must have startled more than one reader to see so tempting a property, with its five hundred hectares (some 1,250 acres) of land, put up at so reasonable a rate as 500,000 francs (20,000*l.*); and the matrimonial difficulties of the Prince de Bauffremont, it may be stated in a few words, are the cause of this veritably princely mansion having come into the market. Menars, though not one of the oldest, is one of the most imposing of the many picturesque châteaux of the Loire, familiar to the professional world. Only the other day we saw sold, after some spirited bidding, at Madame Musard's sale in Paris, the well-known work on the Châteaux of the Loire. Built, it is said, by Mansart, Menars was given by Louis XV. to Madame de Pompadour, and hence it is that with the property is acquired the right to the marquisate. After the Revolution, Napoleon presented Menars to Victor, Duc de Belluno, in whose hands the château remained till his death; the subsequent owners of the château it is of little interest to mention. The fortunate purchaser of this old family mansion, whether he claim the marquisate or not, may indeed be envied his possession, though he will have had to rely almost entirely on the picturesque, even if legal, enumeration of the charms of the château as set forth in the large bills already referred to Doubtless more than one meditative American must have been attracted by the announcement of that bill with its rough enumeration of the property, leaving ample room for the romantic imagination of the innumerable undescribed charms of an abandoned château, built at a period at present even more appreciated in France than in England. Fortunately for hesitating purchasers (difficulties, it appears, having been thrown in the way of inspection), the Paris *Globe* some days since informed its readers very opportunely that the château of Menars has never been really abandoned. The fortunate purchaser will find distributed over the château, in the taste of the century to which it belongs, a whole allegorical and mythological army of decorations; emperors and goddesses; Cæsar and Aurora, Titus and Flora, Vespasian and Zephyr, Marcus Aurelius and Abundance; the divinity of the place, represented under the features of Madame de Pompadour, showering down upon her favourites flowers and riches with all the grace that belongs to the period when Couston and Coysevox exercised so skilfully their industrious chisels.

The historical dates of the end of the last century have within the last few days been showered down rather plentifully on the public in connexion with the anniversary of the fall of the Bastille, but surely in no stranger manner than in an incident of the sale of the Château of Menars. We have spoken of this historic château and its collection of interesting statues, the sale of which gathered together not a small crowd of would-be purchasers at the Tribunal, the property being eventually knocked down to M. Waltel, a municipal councillor, for the sum of 920,000 francs (about 37,000*l.*). But just as the adjudication was made, a courier from the Minister of Fine Arts suddenly appeared, claiming in the name of the Government the famous statues,—a collection of *chefs d'œuvre*,—which adorn the gardens of the château; the Minister declaring that "he opposed himself formally to the sale of these statues, precious objects of art, and of great value, which were carried off from the museums of the State in 1792, and placed at Menars, without their having, however, ceased to be the property of the Government." We shall soon, we may suppose, hear more of this amusing and really national incident, which the law courts will have shortly to decide.

An interesting link with the close of the last century has been recently snapped in the announcement of the death, at the age of ninety-three, of Mme. la Marquise de Bonnay, widow of the Marquis de Bonnay who presided over the famous Assemblée Nationale of 1789.

Since we are speaking of ladies, it may not be uninteresting to some readers to learn, on the authority of the *Gazette des Femmes*, that no fewer than 876 lady artists exhibited at the last *Salon*; in sculpture there were 31 exhibitors; in portrait and figure, 138; in painting on porcelain, faïence, and enamel, 277; in water-colour and *gouache*, 112; the remainder being divided among miniature, fruit-pieces, pastel, and engraving, there being some 21 lady engravers and lithographers. And let it not be believed that the greater part of the exhibitors are amateurs. Seventy-three have been recompensed (without mentioning Rosa Bonheur, who is decorated with the Legion of Honour), there are 14 first, 19 second, and 39 third medals, with numerous honourable mentions,—an encouraging piece of statistics.

By the vote of the National Assembly, which decided not long since on the return of the French Chambers to the capital, the municipality of Paris have been sadly put out; the Senate will occupy the Palace of the Luxembourg, where the Prefect and his officials have been installed for some years past, and which they were to occupy until the Hôtel-de-Ville was ready to receive them. In a recent meeting held by the Municipal Council was discussed the question of the temporary establishment of the Prefecture in the Pavillon de Flore, one of the wings of the Tuileries, that at the opposite end to the Pavillon de Marsan, a view of which appeared in the *Builder* on the 19th inst.; M. Viollet-le-Duc laying before the Council a report on the proposal, which it is feared will cost at least 40,000*l.*, if not more. The municipal councillors are in despair at the difficulties of raising such a sum, one member proposing to ask the Government to aid them, another having very pertinently demanded the reason of the

delay in the re-erection of the Hôtel de Ville. The director of the works being called upon to reply, explained that the delays arose "from different causes." The architect (M. Bailly) having wished to build a monument (we quote the director's words), complete from an artistic point of view, and really worthy of the city of Paris, serious study has been necessary. But now that the different causes of delay have been remedied, the Council may rest assured that the Hôtel de Ville will be completed in the course of the year 1881. With this explanation the Council returned to the discussion of their temporary installation at the Tuileries.

A COLLECTION OF REPORTED CASES RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

Liability for Execution of Works.

A HOUSEOWNER who orders work to be executed from which, in the natural course of things, injurious consequences to his neighbour must be expected to arise, unless means are adopted by which such consequences may be prevented, is responsible for such consequences, even if he has entrusted the work to a contractor or other independent person, and even if he has adverted to the necessary precautionary measures in engaging such contractor.—Bower *v.* Peate, 1 L. R., Q. B. D., 321, 45 L. J., Q. B. D., 416 (1876).

[This case enunciates an important principle in regard to building operations. Thus, if, as in Bower *v.* Peate, the adjoining house ought to have been underpinned, and from an omission to do so by the contractor, it was injured, the house-owner who employed the contractor is liable in damages. But if a contractor is entrusted with work from which no injurious consequences can arise, if executed with due care, then the contractor alone is liable. For example, if a workman of a builder engaged in erecting a house were to knock a ladder over on to a passer-by, the contractor, and not the householder, would be liable for damages to the injured person. The above case seems also to show that a house-owner should obtain from a contractor an indemnity against any damage caused by work done in the execution of the contract.]

Liability of Trustees of a Building Fund.

AN agreement between a builder and the trustees of a building fund may be so framed as to limit the liability of such trustees under such agreement to the period during which they remain trustees. The agreement may also be framed so as to except such trustees from any personal liability, and to bind them only to the extent of the fund.—Williams *v.* Hathaway, L. R., 6 Ch. D., 544 (1877).

[Compare this case with Furnivall *v.* Coombes, 5 Man. & G., 736. These cases should warn builders to be careful how they enter into contract with persons, such as the holders of a fund for the erection of a church, who have only a certain sum at their disposal; and, on the other hand, serve equally as examples to such trustees to divest themselves of all personal liability, and to bind only the fund of which they are the holders.]

Agreement to let Land on Building Leases.

WHERE a landowner engages to let land to a builder on building leases, and to lend him a certain sum to assist him in the erection of a certain number of houses, to be repaid by a certain date, on the security of the houses to be erected, and the landowner, when some of the houses have been built and some of the money advanced, requests the builder not to continue his operations, and the builder desists, the landowner is entitled to recover back the amount so lent, though he has not advanced the whole sum which he agreed to do.—James *v.* Cotton, 7 Bingham, 266 (1831).

Approval of Buildings.

WHERE there exists a covenant or agreement by the purchaser of a piece of land that no building shall be erected thereon which has not been approved by the original owner of the land or by his agent, and the builder erects a structure without such approval, he will be ordered to pay damages for so doing.—Kilbey *v.* Haviland, 24 L. T., N. S., 353; 19 W. R., 698 (1871).

[It is important to notice that in this case the owner of the land observed that a building was being erected without approval, soon after its commencement, and the builder was duly and properly warned in regard to it more than once. The Court was subsequently asked to grant an injunction ordering that the house (which had been completed) should be pulled down. But though the Court possessed the authority to do this, it would not exercise this power, but would only order the builder to pay damages. Therefore it is clear that the uniformity or general style of the whole range of building was marred, and consequently it is obvious that if a builder commences a structure without its having been approved, the Court should be asked for an injunction to restrain the continuance of the building operations at the earliest moment, if the plans have not been approved.]

Failure to Complete Building Contract.

IF a builder, being unable to complete his contract, enters into an agreement to give up the contract and to receive a sum down, and to be paid for so much of the work as is done according to the valuation of a third party, and such agreement is acted upon, he cannot subsequently have this agreement set aside.—Ormes *v.* Beadel, 30 L. J., Ch., 1 (1861).

Determination of Third Person not an Award.

WHERE by an agreement between the builder and a house-owner the right of one of the parties to have or do a particular thing is made to depend on the determination of a third person, this is not a submission to arbitration, nor is the determination an award.—Wadsworth *v.* Smith, 6 L. R., Q. B., 332; 40 L. J., Q. B., 118 (1871).

[But where there is an agreement that any dispute about a particular thing shall be inquired of and determined by a person named, this may in effect be a submission to arbitration. Thus an architect's certificate falls within the principle of the above case, unless, even though in the form of a certificate, it is a decision upon a disputed point.]

Subject Matter of Tender.

A PROPOSAL to receive tenders for certain things to be sold (specifying no limitation or qualification) and an acceptance (also specifying no limitation or qualification) constitutes a contract to include the whole of such things.—Venn *v.* Commissioners of Public Works, 32 Beavan, 490 (1863).

[This case, which arose out of the sale of the stone contained in old Westminster Bridge, lays down as a principle an important rule in regard to the sale of old materials of a building, and has never since its decision been questioned.]

Bay Windows.

A BAY window is a building, and not a mere projection from a main building.—Lord Manners *v.* Johnson, 1 L. R., Ch. D., 673 (1875).

[Compare this decision with the previous and similar one of Western *v.* Macdermott, L. R. 1, Eq., 499.]

Weekly Accounts.

PAROL evidence is admissible to show that certain words in a contract have a peculiar signification in the building trade. "Weekly accounts of work" mean accounts of day-work only, and not extra work capable of being measured.—Myers *v.* Sarl, 30 L. J., Q. B., 9 (1860).

[In relation to this phrase, "weekly accounts of work," it should be borne in mind that customs vary, and therefore it does not follow that this phrase has this actual meaning at the present time.]

"Rebuilding" House.

A COVENANT or agreement "to rebuild" a house or any other building in a substantial and workmanlike manner does not involve the obligation to erect the new house in the same manner, and in the same style and shape, and with the same elevation, as the old building, though it must be placed on the same site.—Low *v.* Innes, 4 De G., J., & S., 286 (1864).

The Phrase "Present Style."

THE phrase employed in relation to the internal fittings of a house, "to be handsomely decorated according to the present style," is vague and uncertain to enable a court of equ to enforce an agreement in which it occurs far as this phrase is concerned.—Taylor *v.* P ington, 7 De G., M., & G., 328 (1855).

Contract with a Corporation.

WHEN an architect or contractor enters a contract with a corporation, such contract not be binding on the corporation unless i under seal.—Hunt *v.* The Wimbledon L Board, L. R., C. P. D., App.; 48 L. J., C. P App., 207 (1878).

[This case more immediately turned on tion 85 of the Public Health Act, 1848 (11 Vict., c. 63), and section 174 of the P Health Act, 1875 (38 & 39 Vict., c. 54); b is also the latest authority for the above ge proposition. It is noticeable particularly showing the necessity for architects to stan strict legal principles in dealings with p bodies such as Local Boards. Because further stated by the Court of Appeal th their opinion, even if the architect's are used by a corporation, which acts for its own benefit, but as trustees f certain portion of the public, such a cor tion would not be liable, on the ground th had benefited by the work, as would be the generally speaking if similar facts existed contract between an architect and a pr individual.]

Rights and Liabilities of Architects and Buil so far as they are set forth by the French C

"Si l'édifice construit à prix fixé, péri tout ou en partie par la vice de la construc même par la vice du sol, les architectes entrepreneurs en sont responsables pendan ans."—*Code Civil*, livre iii., title viii., s. 17

"If an edifice constructed at a given perish wholly or partially through the fault of its construction, even by the badness foundation, the architects and the contra are responsible for it for ten years."

"Lorsqu'un architect ou un entrepeneur chargé de la construction à forfait d'un ment, d'après un plan arrêté et convenu av propriétaire du sol, il ne peut demander au augmentation de prix, ni sous le prétex l'augmentation de la maind'œuvre ou des r riaux, ni sous celui de changemens ou d'aug tations faits sur ce plan, si ces changemen augmentations n'ont pas été autorisés par et le prix convenu avecle propriétaire."—S.

"Where an architect or contractor is cha with the construction of a building by con according to a plan agreed upon and arra with the owner of the soil, he can deman increase of price, neither under pretext o increase of the workmanship or the mate nor under that of alterations in, or augm tions to, such plan, if these have not been a rised by writing, and the price agreed with the proprietor."

COLOGNE CATHEDRAL.

THE yearly report (the thirty-seventh) rec presented by the cathedral architect, Herr baumeister Voigtel, to the Association fo Restoration and Completion of Cologne C dral, in every other way highly satisfac contains the equally welcome statement the two towers will be completed in the 1880. The contributions during the past (1878) having come in bountifully, the a tect has been able to push the works on rapidly, and there is now every probability the estimated time of completion will be At this stage of the restoration, therefo short statement of what has been done prove interesting. The total of the received since the movement for completin cathedral was practically taken up in amounts to 379,748*l.*, the total expenses i same period having been 378,614*l.*

The works since the last report (1877) been confined to the erection of the stone s of the towers and the restoration of the pa the southern tower built in the Middle A The spires of the two towers were half fini in May of this year, the time when the re on the progress of the work in 1878 was pared. As the cubic contents of the mat for the stone pyramids are continually creasing, their completion in 1880, as alr remarked, may therefore be assumed as cer After, in the winter of 1877-78, the base of

* See pp. 384, 421, 479, 509, 624, 651, and 770, *ante*.

ern tower had been replaced, and the on of the scaffolding (160 ft. high) on the rn and southern sides of the south tower en completed in the spring of 1878, the of removing the pinnacles, mouldings, and y was begun. It was soon found that the ction wrought by the tooth of time had so complete, especially on the western that the idea of partly restoring those was abandoned. All the ornamentation t side of the tower,—including the pin-, finials, window mouldings and ribs, as as the mouldings, tracery, mullions, and of the piers,—has been taken out; the material employed being the hard Obern-n stone, on account of its great resistance influences of the atmosphere, in prefer-o the original material, Drachenfels stone. igh the work thus entailed in the southern is very tedious and involves great expense, undness of the piers is by no means im-. The smooth facing-blocks have offered reater resistance to the exposure of three ries. It was necessary to dress their sur-a depth of 0 8 in., until the sound stone et with, which slight reduction, however, o moment in walls of a thickness of nearly

the beginning of May, 1879, after the on of the centering, the vaulting in the -story of the southern tower was com-d, with the arrangement intended for g up the bells. When this is com-, the erection of the new clock, con-ed by Mannhardt, of Munich, in the tory of the south tower, will be pro-d with. The new clock will strike the and quarters on the large old bells hung belfry, as well as on the smaller bells in terior of the cathedral, and will indicate me on two large dials fixed in the ante- and in the church.

plastic ornamentation of the cathedral ceived an addition in 1878 by the placing ge figures with baldachinos and consoles ante-church between the western towers. liefs, as well as the small seated figures nts in the soffits of the side entrances in rthern portal, are so far completed that will be mounted in the course of this er. The forty-eight pinnacles, in French one, for crowning the baldachinos over ge figures at the columns of the nave, nexecuted in the Middle Ages, have se been taken in hand, and they are now placed.

work of raising the new bells of the ral was carried out, without the least nt, in the time from the 13th of July to h of August, 1878. The "Emperor" Bell ibed in the *Builder* of June 5, 1875), ing 27 tons (not 25 tons, as previously), was placed in position in the new iron , 180 ft. above the cathedral floor, on the f August. The stability of the new was amply demonstrated in a series of transmission of percussions being per-le neither upon the iron beams of the ucture nor the outer walls of the south The five cathedral bells, weighing er about 50 tons, sent forth their joyous gain, for the first time since the taking of the old wooden belfry, on the occasion unveiling of the statue of King Friedrich lm III., on September 26, 1878 (see the of May 31, 1879).

ides the execution of the stonework for ires and the gigantic finials, the comple-at an early date of the towers depends ally upon the erection of the last three of the scaffolding. The latter elaborate ures, placed at a height of nearly 500 ft. the pavement, and consequently subjected e pressure of the wind to an increased , must be of an exceptionally careful and construction and execution. As the erec-f scaffolding at such heights can be pro-l with, as we know from experience, n fine and perfectly calm weather, the r months from March to September can be safely employed in such works. The lt task, therefore, of completing the fifth ix stages of the scaffolding will take up mmer, while for 1880, after the erection seventh and eighth stages, is reserved the g of the tops of the spires.

Favre, the contractor for the St. Gothard , died on Saturday last (according to a telegram), of apoplexy of the heart.

A CURIOUS TOMB IN HAMPSTEAD.

In the south-east corner of the parish churchyard of Hampstead, in the north of London, stands a large family mausoleum, to which a singular history is attached. It appears that some seventy or eighty years ago, when the district of Pimlico was little more than an open field, there lived in it a certain Mr. Henry Lewer, who was largely connected with some mercantile house in the City, and was equally wealthy and respected. He was also a man of taste, and one whose commercial instincts and habits taught him to look forward with a discerning eye to the future.

It is recorded in the annals of Hampstead that one fine summer afternoon, many years before his death, this Mr. Lewer took a long walk from Pimlico, through Marylebone-fields and St. John's Wood, up to Hampstead, and sat himself down to rest on a tombstone under one of the yew-trees in the churchyard, and that whilst there he was so struck with the beauty of the spot and the fineness of the view, embracing as it did, and still does, the whole panorama of the Surrey Hills from Caterham to Guildford, that he resolved, if he could not become a resident of Hampstead in his lifetime he would make it his last resting-place when dead. Accordingly, having feasted his eyes with the beauty of the spot until the sun began to set, he went home, sent for his solicitor, and made his will. In this he declared his desire, wherever he should die, to be buried in no other place but Hampstead, and in one particular corner of the churchyard. He also immediately arranged for the purchase of a square plot of ground, on which he placed a mausoleum which he erected for himself and his family, and there and then appointed a body of trustees to carry out his desire, and to see that his tomb was kept up and carefully repaired from time to time, settling the interest of a sum in the public funds by way of an endowment for it.

The mausoleum is a heavy square structure of Portland stone, very massive and very plain, utterly devoid of ornament, and as prosaic as can well be imagined. It consists of three tiers of solid masonry, rising one above another, and bearing inscriptions on their sides. There is not a "holy text" nor a pious verse, nor an emblem of hope or of immortality,—or of mortality either. All is plain business and matter-of-fact; a type, doubtless, of the mind of the founder. Along the upper face runs the following legend:—"This tomb and vault was built by Henry Lewer, esq., of Pimlico, as a place of rest for the mortal remains of himself and as many of his family as it will contain, till it should please Almighty God to call them to life immortal. The whole is endowed and provided for in trust in the Three per Cent. Reduced Annuities, the 2nd of May, 1817. The two eldest of the family, with the rector of the parish, are the trustees. See the Parish Registers."

In front of the lower stage or compartment, again we read:—"Sacred to Posterity: Henry Lewer, esq., the founder, died the 19th of April, 1819, aged sixty-seven." Then follow the names of five of the founder's sons, and also of several grandsons, together with their wives; the whole amounting to about twelve entries. Along with them, the inscription records the death of a faithful servant of the Lewer family, Maria Coulland, housekeeper to the third son of the founder. And on the south side of the monument there is a notice of the death of Mr. William Lewer, of the parish of St. George, Hanover-square, who died in 1798; and of Anne, his widow, who died in 1812. These were probably the parents of the founder.

The last member of the Lewers, who died at Hamburg three years ago, was brought over to be buried here. His name is thus recorded on the mausoleum:—"Edward North Lewer, fifth son of the founder, died May 7, 1876, aged eighty." On the occasion of this gentleman's interment there was a funeral dinner at one of the principal taverns in Hampstead, the "William the Fourth," at which the only two survivors of the Lewers, and about a dozen of their friends sat down to a pleasant and substantial repast. There were no tears or sobs or wailings for the departed; but, if the truth must be told, there was much pleasant and agreeable conversation; and a song or two were sung, if we are not mistaken, by the old parish clerk, who had officiated at the funerals of all the Lewers in succession. It appears that this dinner is provided for in the written instructions of the founder, and that it is regularly paid for out of the endowment in the "Three per Cent. Annuities," above mentioned. The dinner bill, with the little etceteras of wine and dessert, amounted to just 20*l*.

The mausoleum since that date has been once more cleaned up and furbished; and when the last two Lewers are dead and consigned to its care, the vault will be closed, and the "trust" will be declared at an end. Meantime the grave has been fenced in with wire, and planted round with cypresses and other evergreens and shrubs, which, it is said, were sent over from Hamburg for that special purpose.

WELL WALK, HAMPSTEAD.

This interesting spot, which has recently suffered severely at the hands of the trustees of the Wells Charity, is about to be still further despoiled. It is proposed to pull down the old Assembly-room, now the head quarters of the 3rd Middlesex Volunteers, and the interesting house adjoining, and to form a new road out of the east side of Well-walk.

The Assembly-room is built upon a portion of the waste land lying about and encompassing the Wells, which was granted in 1698 by the Hon. Susanna Noel, relict of the Hon. Baptist Noel, and mother of Baptist, Earl of Gainsborough, in trust for the poor of the parish of Hampstead. The charity apprentices poor children; the income in 1812 was 92*l*. per annum, and the trustees had at that time a sum of 1,100*l*. in the Three per Cents. The Assembly-room was converted into a chapel about the year 1733, according to Mr. Wm. Howitt, in his "Northern Heights of London." The same author says "There is a charming little grove in Well-walk, with a bench at the end, whereon I last saw poor Keats, the sun setting, sobbing his dying breath into a pocket-handkerchief, glancing parting looks towards the quiet landscape he had loved so well." Leigh Hunt, too, in his autobiography, mentions Well-walk in connexion with Keats, of whom he relates, "As we were sitting on the bench, in Well-walk, near the Heath,—the one against the wall,—he told me with unaccustomed tears in his eyes, that his heart was breaking. Then, and till his death, he believed that the Reviewers had destroyed his fame."

Keats's seat has been preserved, but the appearance of the Walk has been already greatly changed, as may be seen by comparing its present aspect with the engraving from a photograph taken expressly for the work in "Howitt's Northern Heights," page 54. What will be its appearance when the improvements in contemplation are carried out, and the Walk is filled with neat stuccoed villas, it is impossible to say, but few people will probably be able to realise that it was here that Keats put into words his incomparable "Ode to the Nightingale."

THE DRAINAGE OF MUNICH.

As a recent meeting, specially convened, of the Town Council of Munich, the subject of the construction of the necessary drainage works for the Bavarian capital, which have become imperatively necessary, was brought forward for discussion. It should be remarked that, like all sanitary reforms involving increased local taxation, the execution of a scheme for draining the city has hitherto met with considerable opposition from more than one quarter. The reporter, Bürgermeister Dr. Erhardt, in introducing the subject, made some very sensible and practical observations. He dwelt on the extremely important aspect of the question with regard to the cleanliness and health of the town, as well as on the financial sacrifices that would have to be made to secure improvement in that respect. England, he pointed out, preferred the removal of sewage by flushing. This example had been followed by many towns of Germany; the city of Munich entertaining the plan of canalisation as early as 1874. When the Bavarian capital was visited by cholera, in 1872, it was acknowledged that sanitary measures of a radical nature must be adopted. The health of the population was the main point, the questions of expense and of farming being secondary matters. The scheme of Mr. Gordon, C.E., of Frankfurt on the Main, which advocates the removal of the sewage by flushing, combined with irrigation works, was not approved of by the Munich Medical Association. It was true

that the expenses would be heavy. But what had been accepted in practical England, in Paris, Liège, and many large towns of Germany, showed that the drains of a town ought to be so constructed as to serve for the removal of the sewage by flushing. Although Munich was better in reality than by repute, it was not one of the healthiest towns. It would be disastrous to wait for the Philosophers' Stone to drop from heaven. The plague, after the lapse of centuries, was again knocking at the gates of Europe. Let this be a warning to do everything possible from a sanitary point of view. Dr. Erhardt finally earnestly recommended the acceptance of Mr. Gordon's scheme. In the discussion which followed it was asked whether another, less expensive, mode of carrying off the sewage could not be suggested. Other matters, quite as pressing, required attention, and the execution of the project would raise the municipal rates to double their present amount. Practical men considered the irrigation question not yet ripe for discussion, and it would be unwise to attempt the solution of a problem the cost of which could not be foreseen. Another speaker pleaded energetically for Mr. Gordon's project; while a third advocated the drainage scheme, with the retention of the cesspool system. The city was as healthy as any other, and sewage works cost enormous sums. In replying to these and similar objections, Dr. Erhardt pointed out especially that drains of some sort must be constructed; the matter was too urgent, and could not be postponed much longer. Authorities had pronounced for it. The speaker said he would be perfectly satisfied if he succeeded in reducing the mortality by drainage by only three per cent., although it would be impossible to banish typhus and cholera altogether. He mentioned the case of Hamburg, where before the drainage the death-rate by typhus was 49 per 1,000, while since the completion of the canalisation of the city it had fallen to 29 per 1,000. The Society of Architects and Engineers had estimated the cost of construction at 2,000,000*l.*, Herr Baurath at only a fourth that sum. Such men as Dr. Betz spoke strongly against the objections frequently raised against drainage works, urging that sewage gases or sewage itself could have no deleterious or noxious influence either upon the atmosphere or the soil. The fact was the Association had made up their minds on Mr. Gordon's project before it was even published by that engineer. On the whole, the opinion of a single expert knowing the subject well was the best. If, for financial reasons, nothing was done now, everything would have to be done shortly and all at once. After an animated debate, extending over three hours, the council resolved, by a majority of nineteen votes against eight, not to postpone the matter, but to discuss the details of Mr. Gordon's scheme at their next meeting. A very wise resolution, and one, we trust, that will bear fruit.

PRESERVING WALL PAINTINGS AT CANTERBURY.

SOME very interesting wall paintings in the dining-hall of the Kingsbridge Hospital, the resting-place of the poorer pilgrims to Canterbury, have just been brought to light. When the whitewash was being cleared off from the walls, fragments of paintings representing the murder of Becket were found on the north end wall. The huge fireplace which had been built against this wall was thereupon removed. This laid bare paintings of rare beauty, containing in the central portion a vesica enclosing a life-size picture of our Saviour seated upon a throne. The emblems of the four evangelists surround the vesica, each enclosed in a circle. A great part of St. Luke had been cut away to allow the flue to pass through the wall. All the other parts are in good preservation. Immediately beneath the vesica is another painting about 4 ft. high,—our Saviour and the Apostles at the Supper; Jesus giving the sop to Judas. The before-mentioned painting of Becket's Murder is on the eastern side of the central subject, and is of a later date than the very fine work it adjoins, and inferior to it in execution. On the western side was a painting, now much destroyed, apparently showing Henry II. doing penance at the shrine of Becket.

In the reign of James I. a coat of distemper $\frac{1}{16}$ in. thick, was put over the whole of the wall. The royal arms were painted over the early paintings, and above those arms the arms of George Abbott, archbishop from 1611 to 1633, appear enclosed in scrollwork. The greater part of the royal arms fell off when the chimney was taken down. The archbishop's arms will be retained, so as to supply to those who know the tale a piquant bit of gossip in years to come. The story of the varying fortunes of the thirteenth-century building in which these examples of ancient English art have been so strangely preserved is a longish one, not to be told effectively without references to kindred foundations of Mediæval date in other places of pilgrimage. A little disquisition of that sort should be a pleasant task for Mr. James Neale, F.S.A., the architect engaged in restoring the building to its ancient condition.

The method pursued for the preservation of the paintings has been somewhat hazardous, but extremely successful as far as can yet be seen. The wall is of chalk, roughly plastered over. Upon this rough plaster is a thin coating, about $\frac{1}{8}$ in. thick, of finer plaster, and upon this the subjects are painted. What was once rough plaster next to the chalk wall was, when examined, found to be loose sand, only held in its place by the hard skin of plaster under the painting, and not held in anywhere by that, for holes had been made in the surface, and the sand ran out through them. Boards were placed against the painting and the sand encouraged to run out by gentle tapping. Copper and slate dowels were then let into the wall in a number of positions under the larger cavities. The chalk of the wall was thoroughly saturated with water driven in from a large garden syringe. Then the cavities were packed with old Portland cement, and cleansed flint road-drift, nearly in a semi-liquid state, applied in very small quantities at a time. This has solidified round the dowels, making thus the most thorough attachment to the wall in all positions. The incrustations of smoke and dirt were then attacked, spirits of wine and water, applied with a fine syringe, moistened the whole, and the costings were taken off in small flakes. A somewhat similar process was employed by Mr. Neale in repairing the paintings in St. Gabriel's chapel in the crypt of the cathedral, placed by the Dean and Chapter under his charge. The specially interesting character of these will come into much notice shortly as a paper is to be read on the subject before the Royal Institute of British Architects next session, and the Kent Archæological Society is to publish reduced copies in their Transactions. The Society and the Dean and Chapter deserve a good word for putting copies as perfect as skill could make them, in the Cathedral library. All other custodians of perishing work should imitate the example without delay.

MESSRS. PETTY, WOOD, & CO.'S NEW WAREHOUSES, SOUTHWARK BRIDGE ROAD.

IN our present issue we give a view of the warehouses recently erected for Messrs. Petty, Wood, & Co., and already fully described in our pages.* We repeat briefly a few of the particulars. The principal front is 138 ft. in length, and the height from the pavement to the parapet is 64 ft. In the rear of the main building there are a boiler-house, with two large Cornish boilers; an engine-house, accommodating a compact high-pressure engine of 40-horse power, nominal; and a chimney-shaft, about 110 ft. in height. A principal feature in the façade is a rectangular tower, of about 130 ft. in height to the apex. Adjoining the tower, at the south end of the frontage, a wagon-way is formed, closed by folding-shutter work, 25 ft. high by 15 ft. wide. The elevation is in red brick, with dressings of Tisbury stone. Pether's bricks are used for relief in the arches over the window-heads. The northern portion of the building is distinct from the business premises, although forming a feature in the general external design. It contains the manager's residence, and bedroom accommodation for about fourteen clerks. The ground-floor has two large sale-rooms, one 67 ft. by 50 ft., the other 57 ft. by 40 ft.; a clerk's office, 33 ft. by 26 ft.; a principals' or consulting room, 18 ft. square, with lavatory, &c. Adjoining the principals' room are two strong-rooms, with hollow walls, iron-bound, the recesses filled with sand. These rooms are over-arched with brick and concrete. The first, second, and third floors are devoted almost entirely to warehouses, and fourth to the confectionery manufacturing partment, which has waterproof floors, ar kitchen, 42 ft. by 40 ft.

The works have been executed by Mr. G Pritchard, and Messrs. Roumieu & Aitch were the architects.

* See p. 631, *ante*.

THE BARONESS BURDETT COUT DRINKING FOUNTAIN AT BETHNA GREEN.

IT transpired at the meeting of the Beth green Vestry last week that the Baroness dett Coutts is willing to erect a drinking-fou in the district. A report from the Works mittee stated that Mr. Lee, architect, had before them plans of the drinking-fou which they proposed to have erected on triangular piece of ground at the junctio Baroness and Hackney roads. It was poi out at the meeting that the space has be receptacle for rubbish, and is also used for air gatherings and preaching. The comm recommended that the offer be accepted the recommendation was adopted.

THE FOUNTAIN AT THE TOWN-HA VIENNA.

RAPHAEL DONNER, the "Austrian Phidia he has been called, was appreciated only his death (it occurred in 1741, at Vienna), died in poverty, and his admirable works se to sink into oblivion with him, until a grateful generation endeavoured to rescue from the limbo of forgetfulness, and to h him as he deserved to have been honour his lifetime. This labour of resuscitatio not yet been completed; every now and works of the master hitherto unknown ar covered, and it will be easily understood great efforts are being made to bring to everything that the sculptor of the exq fountain in the Neue Markt (New Mark Vienna has produced. An excellent produ to which little regard has yet been paid which is itself sufficient to give him a reput is the fountain (of which we publish an tration) in the court of the Rathhaus of Vi Wipplinger Strasse. The composition sents "Andromeda and Perseus." It is exe in soft metal, and has a height of 8 ft. 4 in. width of 5 ft.

WROUGHT-IRON GATES, LEATHERSELLERS' HALL, LONDO

THESE gates were manufactured by M Gardner, at their works, 112, St. Martin's under the direction of Messrs. Wils Aldwinckle, the architects and surveyors Company.

They are 13 ft. 3 in. high, and 6 ft. 6 in. The special feature in them is that the entirely hand-wrought, without the u castings, or aid of machinery, or any mecha appliance whatever. To give some idea o amount of work entailed in their manufa it will suffice to say that there are 360 we them, over 500 pieces, and more than rivets and bolts. The design is Elizabetha

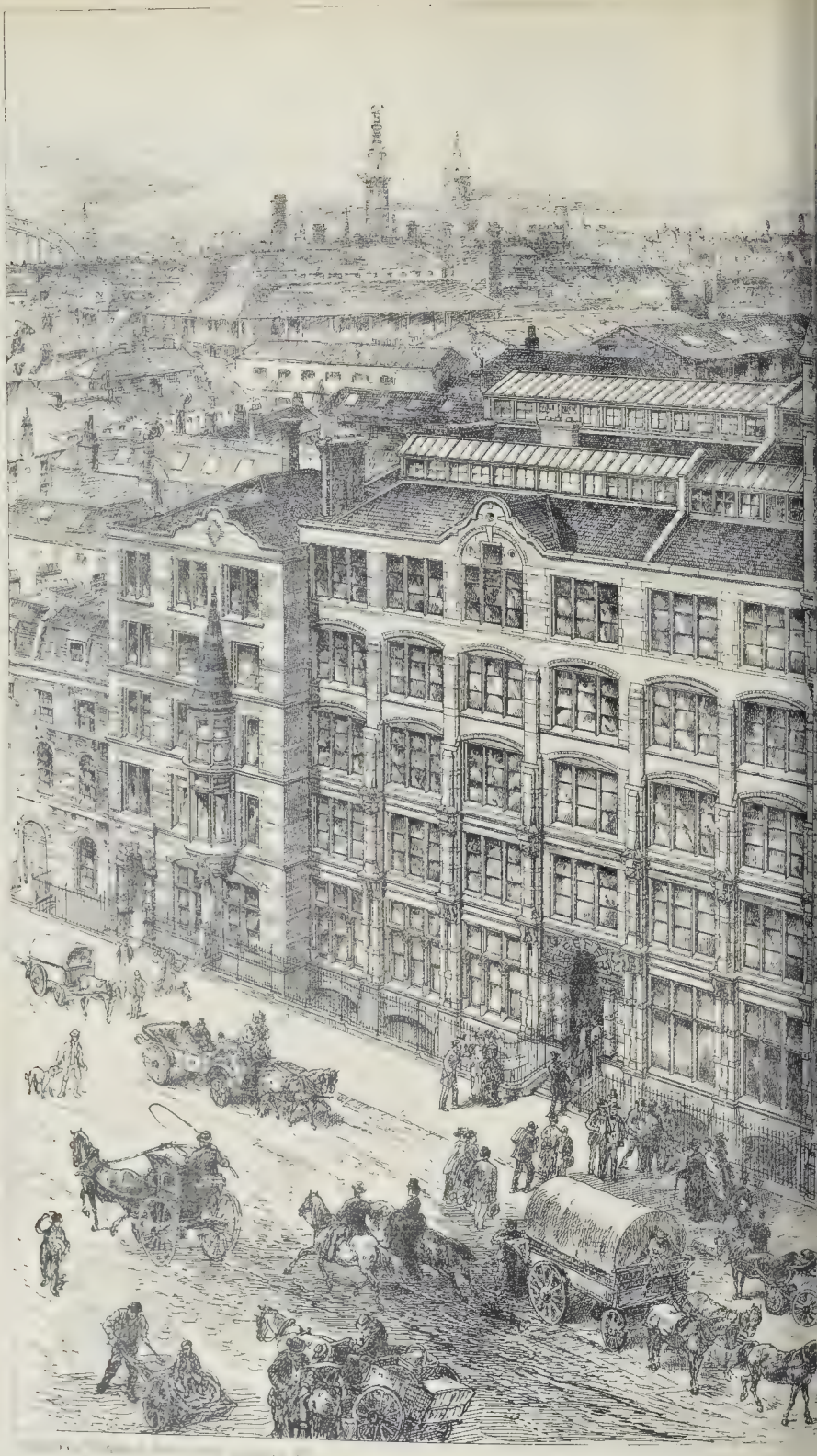
The grille includes a fine specimen *poussé* work in iron. The arms of the and of the City, introduced in the panels gates, as well as the foliage, were also mered up from flat sheets of iron. The cy of the Company, "L.C.," is introduced the arms. In the middle rail is the mot the Company "*Soli Deo Honor et Gloria.*"

The gates and grille are backed with glass, which is separately hinged, so as easily cleaned. The Hall is in St. Helen's

THE READING NEW TOWN HALL

THE preliminary work, preparatory to erection of the new Town-hall and p library at Reading, has been entered upon. funds collected, amounting to nearly 20, are to be handed over to the building comm and another 10,000*l.* the Town Council made themselves responsible for. About 4 will be required, including an additional su the erection of a laboratory in connexion the School of Science.

The execution of the works has been entr to Mr. Chappell, and on Monday the con was signed.



MESSRS. PETTY, WOOD, & CO.'S NEW WAREHOUSES IN SOUTHWARK



HE LATE MR. R. L. ROUMIEU, AND MESSRS. ROUMIEU & AITCHISON, ARCHITECTS.



THE FOUNTAIN AT THE TOWN HALL, VIENNA.—RAPHAEL DONNER, SCULPTOR.



WROUGHT-IRON GATES, LEATHERSELLERS' HALL, LONDON.

ENCE OF A WITNESS (UNCALLED) IN E MATTER OF LONDON BRIDGE.

sure you there is very excellent service committed ridge."—*Capt. Fluellen.*

ve may judge by the remarkable differ- which are frequently observable between ch which we have heard from even a ed speaker and a report of it which has e benefit of his revision, it is not only the tised who, after they sit down, are dis- by reflections that something was uttered ld better have been suppressed, much was ifferently expressed, and oh! how many anities lost of happy allusion and effective

The miseries of a witness at the close examination deserve still more tender seration, as he bethinks himself how he might have exposed the deliberate resentations of his replies, and turned les on his tormentor by pungent repartee. is, therefore, much to comfort a witness as been so confident of his mastery of a as to anticipate with some interest an nity of helping on a desirable movement nething more than a mere declaration of nion, when he finds that what he has most rt is so powerfully supported by others s assistance is dispensed with. And then ways open to him to say his say in some form, and even to put it before a wider through a more public channel. The ttee of the Lords on the Bill respecting dening of London Bridge sat privately; e matter is one of public discussion as public interest, and the project which fore it on its trial,—the model which I nost called the *corpus delicti*,—is too well and so far is public property for public nt.

ne question how to widen London Bridge, ous question has been moved, seconded, pported by very high authorities,—Is ny necessity for such widening at all? ent, the bridge accommodates two lines d and two lines of slow rolling traffic, ition to the footways on either side. tways are, doubtless, sometimes incon- ly crowded, especially on the eastern r about fifteen minutes at a time after ival of heavy trains at the London Bridge , with passengers to whom any progress must be tedious after movement through t the rate of fifty miles an hour. But all traverse the bridge, and reach the extremity at most only three minutes an if it were quite free. There is no y at this point that deserves serious ration; the men of business may well one crumpled roseleaf here, for there ay more and more uncomfortable for encounter on the footways of Fen- street, Gracechurch-street, and the alleys St. Michael's of Cornhill. As regards ffic on wheels, the case as stated for the ncy of the bridge seems to stand thus. from enforced stoppage, all the traffic required to pass over the bridge can pass following on in continuous stream, without no train of vehicles, quick or slow, need waiting; but the contingencies of stop- cross traffic at the approaches are very indeed. Setting aside such accidents of horses,—here the complainants must e question of paving and scavenging,— vance of a block is even more frequent horoughfares of the City elsewhere than e bridge. It must be so of necessity eavy vehicles have to slowly cross streets ht angle, or to cross from one side to , and even to draw up for required of their freights.

the width of London Bridge is not in the progress of vehicles over it is for a time, as in any case it must be, by and inevitable causes,—inevitable and rtain degree, in any case, irremediable To take the most favourable instance, y wagon will pass from the approach, o the near side of the bridge, and will e bridge again by a turning on the near st us say, will come down Gracechurch- cross over on the eastern side, and turn d for Tooley-street. Even by this simplest t has to cross, and crossing it impedes the f Cornhill, Leadenhall-street, Lombard- nd Fenchurch-street, Cannon-street and ap; and not only so far as this traffic passes west, but as, quite within its right, how- barrassingly, it turns sharp round corners rth or south, the more traffic the bridge invites the worse will this intermediate interruption be. But it will be quite as frequent a case that the course of our beer-laden dray will not be, cannot be, so simple; and let a bridge be as wide as it may, that traffic which comes upon it on one side will be bound to quit it to proceed in the reverse direction, and thus at one end or the other must cross the direct axis of the bridge, and be unwelcome to all that travels or is on the way to travel along it. No increase of width for parallel lines of traffic upon the bridge will get over this difficulty after quitting it; the discharging lines of traffic must become a network,—network for which even Dr. Johnson's definition is too simple,—"anything reticulated or decussated with interstices between the intersections." Eastcheap, Gracechurch-street, and King William-street and Cannon-street, are interchanging traffic quick and slow with each other, independently of the bridge altogether; and the traffic to and from the bridge is passing directly and transversely to and from the single point where the bridge has its last abutment. If the four lines of traffic were increased to six, there would be a still more complex problem for the police, who perform their present duties with difficulty, but marvellous efficiency, to unplait a still more complex interlacement,—to unplait and replait it, for even this is what the case demands.

We seem, then, to be thrown in the first instance, upon the possible resource of widening the approaches. The passage of the bridge is in much the same position as the exit from a theatre on a tempestuous night, or from a crowded church or chapel on a fine day; only that in these latter examples all would be well if those who are once clear of the passages *would* move on,—would not dawdle with umbrellas, wait till cabs came to them spontaneously, or stand in groups and gossip,—whereas, in the case of the bridge, we have to desire that the external obstructions *could* move on. There is too much reason to believe that the widening of the approaches, at even one end of the bridge, is out of the question. It might not have been so twenty years ago; but at present, from the value of the businesses, leases and ground, it would be an affair of millions. As our own space here has a certain value, we cannot occupy more of it by setting forth in detail how if even that were possible which is not, it would still be ineffectual. The pressure which stimulates the clamour for a widening,—whether a widening of the bridge or of the approaches, is however all the same, a serious reality; the distress of the patient is manifest,—manifest even by his very ignorant demonstrations of impatience;—and if his constitution will not bear the loss of blood, if he cannot with safety be called upon to suffer an excessively copious bleeding financially,—an heroic remedy of another kind is to be thought of.

The surgical analogy suggests, not inaptly, the capital operation of John Hunter for the relief of a threatened fatal widening (*aneurismus*) of the popliteal artery. He boldly relieved the oppression of the main channel of communication, by not enlarging the channel, but reducing the inflow at the threatened point, and dispersing it,—in fact, by constriction; and he was justified in his expectation that the obstructed current would find its way round by other ducts. What seems to be required, in short, is another roadway across the Thames, below London Bridge, which would convey a vast amount of traffic directly across which now has to concentrate upon a single point only to be again dispersed, and in its dispersion, as in its concentration, to be at once obstructive and obstructed. There are men of unquestionable skill and experience who pledge themselves that an iron bridge of a single span, and 100 ft. high at least, may be constructed at some point about Wapping, under excellent conditions of access, and as regards finance, with a certainty that the result would be as lucrative as the improved approaches to London Bridge have turned out to the City. Until this project has had full justice done to it it would be premature to discuss others; and as to any other projects which can be brought forward, I relieve my own mind at least when I declare my conviction that what plans have hitherto been mooted of widening either London Bridge or its approaches are not merely premature, but preposterous.

When considerations as to practicability of plans have been duly weighed and fairly appreciated, and such a conclusion arrived at, it may seem superfluous to deal with that one of them which was promoted by the City on grounds of so flimsy a texture, as compared with the economical, as æsthetic sentiment. This may or may not be so; but it would be illiberal and unfair to assume that any wealthy and presumably enlightened corporation is indisposed to assign value to the graces in comparison with the grossnesses of life,—that they will not sympathise up to a certain point with a hero who also was a burgher, in the sentiment,—

> "Life, life, my friend,
> May bear a not unornamental course
> Wherever it may flow; it was not meant
> By him that on the back the burden bound,
> That cares, though public, critical, and grave,
> Should so incase us and incrust as shuts
> The gate on all that's beautiful below.
> This was not meant,—and me may not befal."

—May not befal London, so long as St. Paul's remains on London's highest ground, and is a symbol visible to all eyes as London is approached, of aspirations at least which embellish and dignify the most honourable success in the hive of industry to which it is central. The city of London may boast of two structures which are worthy of all that such a metropolis may aspire to be,—St. Paul's Cathedral and London Bridge; and the later of these, as dating in what some of the older of us will not relinquish our right to refer to as our own time, has even peculiar claims to our proud regard. A proposal to destroy London Bridge, —destroyed it may be as effectually by disfigurement as by pulling it down,—for the convenience of wharf or warehouse, or railway station, can scarcely be less repugnant than a suggestion that St. Paul's obstructs the access to Cheapside, and that regrets for its demolition may be easily soothed by calculation of the price per square foot which would be realised for its site at the Auction Mart.

London Bridge is remarkable as a solution of that problem which is ever held up as the test of genius in constructive art, the reconciliation of engineering skill with beauty in result. And the beauty which is thus signally realised is of an elevated class; it is on a level with the demands of the occasion. It has often been compared, in the general character of the sweep of its arches, with the Ponte della Trinità at Florence, one of the very few bridges of Europe that deserve to be mentioned with it on the same page. This bridge also is beautiful in itself, and has the further merit, like London Bridge, of being distinguished by a beauty which is in harmony with the city that it adorns, and the river that it spans. But it need not be said that the characteristic beauty is different. The bridge over the larger and broader and busier Thames, is appropriately massive, majestic, simple in adornment, large in its parts; it is expressive of power in the composure of perfect rest, sustaining and subserving the daily transit of a population that, in so many respects, stands alone and unrivalled in the world, or, if we should be modest, let us say that hopes and intends to do so. It has an imposing air of refined sobriety,—it is dignified, noble. This result was certainly achieved by a true artistic sense of the proportions which were appropriate to the occasion, in span and height of arches, elevation and outline of piers, in gradation of magnitudes among voussoirs and masonry generally. Ornament, as ornament, is eschewed, in deference to the predominant serviceable; and yet is the serviceable so treated as to convey a recognition of refined finish, which affects us with precisely that feeling of agreeableness which is required to temper severity and enliven utility.

It is, perhaps, not worth while to lay much stress on the possible injury to the bridge, æsthetically, by a considerable extension of width, as presented to passengers passing over it. At the same time, the possibility is not to be set aside as futile, though it need not be insisted upon as cancelling material advantages on the other side, supposing such to exist. An exaggeration of breadth, relatively to length, is a change that must always be perilous when there is no objection to be taken to existing proportions. A more serious and decided jeopardy for beauty would be involved by a change which should make such an addition to the arches, up and down stream, as to give them the look less of arches proper than of sections of tunnels. This effect would be liable to ensue if one change were made, that on its own ground, stands high in the competition of undesirables, —if the bridge were widened by an extension in granite like the present, upon exactly the same design. It may be presumed that the engineers would not reject this plan as too difficult for

them to execute with safety and success. But assuredly the bridge, as seen by the multitudes from the river, and from the quays on any view, and on an oblique view especially, would be the same bridge no longer. The space below the arch would be darkened, the impression of its loftiness would be reduced, and the view clear through would be lost from many of the best points of view. However, the interest of this discussion is happily now only theoretical, and we are at liberty to pass on.

A very different proposal, which found its way through the Parliamentary defiles without molestation as far as the verge of the final reading in the Lord's House, had for its basis an extension of the roadway with no change in the foundations, by what were best described by a Germanism as an *On-hang* of iron. This scheme was not only embodied more or less distinctly in the Bill, now happily defunct, but visibly in a good-sized model, which gave it all fair play; in which it presented itself with that self-confidence which is equivalent to self-praise, and in this case had the proverbial fate of self-praise, of being no recommendation. By this scheme masonry was superimposed upon the projections of the piers, forming abutment for the spring of an iron arch at some distance above the granite arch, and not corresponding with it in line of sweep; this framed beam showed as carrying a partially overhanging footway above, with a light open balustrade. Engineers had differences of opinion as to the judiciousness of the weight of this iron being thrown precisely where it would exert its downpress, and also as to the chances of amicable behaviour of stone and metal as exhibited, and under contrasted liabilities to expansion and contraction at the points of attachment generally. But this is a discussion that is apart. We have chosen to concern ourselves here with a question of æsthetics, with an argument which assumes that the interests of beauty are for the time at least the predominant,—the supreme interests. And assuredly these are very seriously at stake when a structure of stone, which is of allowed and unimpeachable beauty as it stands, is threatened with a metallic addition in closest association.

We understand how lively is the appreciation of such danger by palliations that have been suggested, adventurously or in desperation, by some who had not the unkindest feeling towards the scheme on its merits. One of these, which the English language was called upon to lend itself to expressing, was that the iron might be skilfully painted to simulate granite; and another that the incongruousness of the combination might be masked by the iron receiving such superficial extension as to hide the stone entirely.

The scheme is dead and gone, thanks to "care and valour" which hail like Captain Fluellen from the principality; in fact, to the vigilance and energy of Lord Carnarvon; it is gone beyond chance of revival, thanks to the unanimity of a committee which certainly did not decide without giving attention to a cloud of witnesses; but it is well that some notes should be made of the considerations at issue, even while we are still under the agitation of a narrow escape.

Such things have been, it may be conceded, as additions in a new style being made to earlier buildings, and the world being satisfied to abide by and even rejoice in the change. We would not willingly spare the porches which at Peterborough are set even unconformably in front of a cathedral of contrasted style. But as these porches are to the cathedral behind, such assuredly was not the proposed iron addition to the magnificent structure which it was proposed to be stuck on to. We are far less satisfied with the Perpendicular lining which conceals the Norman choir of Gloucester Cathedral,—but even here the intrusion is still of stone upon stone; while at Winchester the alterations were managed with such art and skill, that the new work happily blended with the old and the result was an improvement.

It were hard to say that iron construction can under no circumstances whatever be harmoniously combined with stone; no other principle is involved in such a union abstractedly than we see consistent with the association of stone and brick; but approval of such association waits upon success. In what precise manner architectural genius will achieve this, it is not for me to divine, nor on the present occasion even to conjecture. In any case, it will certainly be found that such harmony only consists with one or other material being decidedly subordinated, not, as in the luckless model, in both being committed to direct antagonism, each exhibited as subserving precisely the same functions as if in ostentatious rivalry. Even so the most artistic skill will be required to make it evident that while each material is restricted to its special and appropriate office, there is still a definite sympathy between them. Let me without offence illustrate this by the example of Westminster Bridge. Here the predominance is given unequivocally to the material iron, and stone is employed only for the piers; the laws of subordination and propriety are so far duly observed; but I own to a certain sense of discordance between the piers and the arches, which is not of necessity; it is not due to colour alone, though this is somewhat and is unfortunate when colour in stone is at choice; but it is even more in treatment of form and surface that I miss such a relation as would conduce to easy transition,—would, in fact, take advantage of contrast as music of a discord, by including in it a preparation for a heightened concord to ensue.

This may serve as an example of the problem that architecture must solve if ever the association of iron and stone is to be other than Mezentian,—a union of the living and the dead, a mongrel or a monstrous abomination, such an attachment as that by which Byron translates Horace's illustration of an incongruity in art,—

"A maid of honour with a mermaid's tail."

Sooth to say, the design put forward did make a certain attempt to fuse and incorporate the unnaturally connected systems; but it was by interference with the broader features of the piers, by frittering divisions and by objectionable ornaments, that painfully suggested the treatment of the railway bridge across Ludgate-hill; treatment which we were promised would reconcile us to the ruin of the grand approach to St. Paul's.

However, the scheme is no more, and we can afford to part with the subject in good humour. Even its advocates may have got over their disappointment at the last moment, and now may join in a smile at the importance which was ascribed to a chance of getting rid of the annoyance of dust on the bridge by an open balustrade. One witness,—though this, indeed, was not included in evidence,—expressed his surprise at the inconvenience being even detected, as from what he had seen of a recent report of civic festivities, the citizens seemed to him either quite unconscious when dust was being thrown in their eyes, or even to like it; while another, who professed to think that the dust settled the question, assuredly only did so in order to drag in his quotation,—

"Hi motus animorum, atque hæc certamina tanta,
Pulveris exigui jactu compressa quiescent."

W. WATKISS LLOYD.

ADVICE TO YOUNG ENGINEERS.

ENGINEERS' CLUB OF PHILADELPHIA.

THE President of this Society, Mr. Thos. C. Clarke, took for the subject of his last address the "Future of American Engineering," and made some statements, and gave some advice, which, as they are just as pertinent here as there, we have pleasure in printing:—

The numbers of our profession are increased every year by hundreds of graduates from the technical and scientific schools, and by others who rise from the ranks of the great army of labour to become its leaders. All of them expect to make engineering, in some of its various branches, the profession and occupation of their lives; and all are interested to know whether there will be room and work for all. One's first demand of his profession is that it shall give him an honest living. His next strongest wish is to find an opportunity to execute some work that shall fully call out his abilities, and give him some measure of that fame which we all prize. Finally, he ought to wish to "pay the debt which every man owes to his profession" by making some permanent addition to knowledge, either in engineering itself or in some of its kindred sciences. If a man succeeds in but one of these three things he may be thankful; if in all, he may justly claim the title of an "eminent engineer."

The broadest, and at the same time most concise definition of engineering, is "scientific construction." If this be true, engineers have existed from the days when the early kings
Egypt reared the first pyramids, a thous
years before Abraham was born, down to
generation which has seen the achievement
Stephenson, of Morse, and of Eads. But w
engineers have lived and laboured for so lo
time, it is only of late years that they h
become a distinct guild and profession.
name was first applied to the makers of cer
aqueducts, dykes, jetties, and other hydra
constructions. Then, it was extended to
makers of railways, and now, it takes in a m
wider range of operations. It will be attem
to show that on the breadth and inclusive
of this classification depends the solution of
problem of the future success of our profes

The first question is,—What preparation
education will best make a man a scientific
structor? A great deal of discussion has t
place during the last year or two on the ed
tion of engineers. It is not intended to enl
upon this here. Suffice it to say, that we
all now agreed that education is of two k
that derived from books, and that obtained
actual practice and from contact with men,
tells us what to do, the other how to d
Both kinds are absolutely necessary. The
of the first kind an engineer has, or, in
words, the broader and deeper the founda
of his knowledge are laid, the more readily
intelligently will he acquire the second, and
more satisfactory will be the results of
practice. But in order that his learning m
of practical use to him, he must also
experience.

The young engineer of the present day c
to his work with a much better preparation
those of the generation before him. He
not, however, make the mistake of supp
that the eminent engineers of a past genera
who never enjoyed the privileges of the sch
were deficient in scientific knowledge.
had it, but they got it from actual experi
and went beyond the books of their day
were in many cases the original discoverer
investigators, the fruits of whose labour
school-boy can now enjoy. The weak poi
the old system was, that while it produced
great men, yet the average did not stand as
as now; and the expenditure of much c
had to be entrusted to ignorant persons, w
blunders led to enormous waste, and
names are now happily forgotten, together
their mistakes. The young engineer of
present day should also remember that no
in the past, there is but one road to su
He who wishes to command must first lea
obey. He must show his superior officers
he is perfectly reliable and faithful. A mar
has his mind occupied with the direction of
interests appreciates fully the wisdom o
saying, "Never do yourself what you ca
any one else to do for you." But this cann
carried out unless he feels perfectly sure
his assistants will not deceive him, that
will report things exactly as they are, and
carry out his instructions to the letter. A
young man has shown that he can alwa
depended upon, he will soon be promoted
higher rank, where the orders are more ge
and where more is left to his discretion
judgment. If to faithfulness and energ
adds good judgment, and to good judg
tact, and the power of managing and contr
men, he may rest assured that before very
he will have gained the first requisi
material success. He will probably find
soon an opportunity will offer to carry out
work which will ensure him a measure of
tation. Finally, his early scientific tra
having taught him to observe facts, and
deductions therefrom, he will probably, s
or later, make some contribution to sci
Even if not a writer, he will furnish some
material of which books are made.

We have thus briefly traced the career
successful engineer in the present conditi
the profession, or rather in the immediate
But it will be said: "The ranks are alread
crowded. More and more men are comi
every day. Although we admit the tru
Webster's saying, 'there is always room a
top,' yet what shall *we* do who are men of
moderate abilities? We do not ask nor e
the great prizes of the profession, but we c
help thinking that in America engineers
less esteemed and less paid than in any
civilised country of the world. Will w
better or worse off in the future? Are we
up grade or down?" These are very pert
questions, and a true answer would be o

st interest. I will endeavour to give you ews, always bearing in mind the modest h of the old surveyor, "His hind-sight was than his fore-sight."

has been previously stated that on the th and inclusiveness of the classification ineers depends the solution of the problem ir future success. If we bear in mind hile an engineer is, unfortunately, not s a scientific constructor, yet a scientific uctor *must* be an engineer, we shall see umerous are the paths open to us to follow w soon the crowd will be relieved. Let how the number of these paths has in- d during the last half-century.

ore the year 1828, an engineer meant a ho knew how to make canals and water- . But when George Stephenson created dern railway, an engineer soon came to a man who could build railroads. The uction of the 85,000 miles of railroads in nited States, costing over 4,500,000,000 s, has naturally given employment to the t number of engineers. After these roads opened for use, they still continued to y many engineers in taking care of them perating them. Within the last dozen the substitution of iron for wood, first in y bridges and viaducts, and afterwards in ures of all kinds, has developed another f special engineers, who, being of a push- nd energetic disposition, have, perhaps, olised rather more than their share of attention. The development of our l wealth, in which it is estimated that 400,000,000 dollars have been invested the last thirty years, may be seen ed in the list of the Society of Mining ers, which numbers 734 members.

n we have the engineers of the water- drainage, sewerage, and of the streets and ures of our large cities. The City of is now expending some 5,000,000 in its improved sewerage, surpassing, in respects, even the gigantic works of n itself. Mr. Chesbrough, city engineer cago, was once introduced to one of the ean engineering societies as that daring er who had raised a city of 300,000 people up in the air above its original position. to the preceding class we have the sani- ngineers, specialists whose duty it is to scientific principles to the construction of wellings, too long left in the hands of nt plumbers and builders. Then we have onourable body of architects, who all to be engineers, *i.e.*, scientific construc- or, if they are not, so much the worse ir buildings.

great gas companies now almost always men of scientific attainments as their ers, the result of whose labours may be ther in the increase of dividends than in er price of gas. But another school of ists is coming on whose labours will all this,—the electric engineers, whose s already enabled us to light our work- nore brilliantly and at less cost than the gineers have been able to do it. The of electric engineering includes not only st fields of electric lighting and of the ph, but all means of transmitting signals erhaps, of power. Another class of ists has an enormous future before it in untry,—I mean agricultural engineers, a separate body, have existed for some in England. When one considers the savings that are capable of being made application of correct scientific principles actice to farming operations, which are ne so loosely and by rule of thumb, who t say that here is not a great opening for ers in the near future? Then there is a f engineers whose services are more and demand every year,—I mean the engi- employed by large contractors. Some ablest men in England are contractors' ers.

will observe that for a man to succeed in these newer branches of our profession it be much more than a mere surveyor or r and measurer of masonry and earth- He must be, first and foremost, a anical engineer, as it is termed. He must tand dynamics as well as statics, and be practically familiar with the construc- machinery and machine tools. In Europe can attain eminence as a civil engineer not well versed in the mechanical part of fession. Hence, we find them constantly upon to design, construct, and report upon paper-mills, cotton-factories, sugar-machinery, iron and steel works and such things, which in this country are entrusted to manufacturers rather than to engineers. I do not mean to say that this country is behind others in mechanical engineering,—the names of Fritz and Griffen, of Sellers and Holly, forbid that; but I do mean to say that if the American engineers, as a class, were better versed in the mechanical part of their profession, they would not see themselves laid on the shelf by the capitalists who throw away their money on Keeley motors.

It was one of the traditions of the elder school of engineers that they should carefully abstain from taking part in matters of business. Architects and civil engineers were formerly either government officials or, as professional men, they held the same social position, which they feared would be lowered if they became business men, skilled in prices and sharp at a bargain. This was merely a survival of the old feeling of contempt which the governing classes,—the men of the sword,—felt for the men of affairs. The effect of this mischievous tradition has descended to our own day, with unhappy results to the profession. I need scarcely tell you that an engineer is only half fitted for his work unless he is able to hire men and buy materials and execute his own designs, if occasion calls for it. It may seldom be necessary for him to do it, but the ability of so doing makes him a better judge of the value of a contractor's work, and a far safer estimator of the probable cost of public works. European engineers profess to be able to do this, and this is one reason why they command their five per cent. commission on the cost of their works, and attain wealth and position, while, in this country, engineers are too often paid the salaries of second-rate clerks.

BUILDINGS FOR HARVESTING AND DRYING CORN.

THE exceptionally wet and cold seasons that of late years have sadly upset the farmers of Great Britain, and which have had a great share in bringing about its present depressed state, should have led the various agricultural clubs, in London and the counties, to have inquired if architects, engineers, and builders could not devise some plan to save corn and grass from the ruinous swampy condition such weather leads to.

A dip in the British Museum Library has disclosed some particulars of the availability of buildings, as drying barns, to ripen corn and grass, and which, when once erected, will enable agriculturists to reap and to mow, regardless of fine weather for garnering.

Amongst other reliable works which we could call attention to is Garnett's "Tours in Scotland," the author of which, as secretary to the Royal Institution of London, at the latter end of the eighteenth century, inquired, by personal travel, into the state of agriculture in the Highlands of Scotland. He visited Inverary Castle, the seat of the Argyle family, where the money laid out by successive Dukes of Argyle, from 1745 to 1800, in improving and building on the estate, amounted to 250,000*l*.

At a farm called Glen Shira, about two miles distant from the town of Inverary, the secretary to the Royal Institution came upon the duke's drying-barns, buildings found to be very useful in so wet a climate as the Highlands, for by means of these barns hay may be made or corn dried during the heaviest rains. This was not a mere experiment, but a veritable fact proved year after year.

The building in question stands across a valley, and is of circular form, so contrived as to cause a draught of air even in calm weather, there being open arches opposite to each other throughout the whole building. [After the principle, perhaps, of the drying-sheds at Vauxhall, where cakes of whiting are packed after being moulded.] The drying-barn is divided into two stories, and the upper one is used for drying; the lower one consisting of cow-houses and other conveniences. The floor of the upper story is made of small boards or battens about 1 in. distance from each other to receive the benefit of the air below. There are likewise openings in the sides of the walls at convenient heights to receive the hay and corn from the carts. On this floor the grass is laid soon after it is cut; a few hands serve to turn it over for two or three days, when it is found perfectly dry and of finer flavour than hay dried by the hot sun.

In this story are jointed frames of wood, suspended from the roof at convenient distances from each other. These frames have a number of sharp-pointed pegs on each side of them, inclining upwards, upon each of which a sheaf of corn is hung to dry.

The frames, by means of joints, are lowered down to receive the corn, and when the drying is finished they are moved up again, to be out of the way.

So fully convinced of the utility of this mode of drying was the spirited landlord, that he fitted up several small barns for that purpose on different parts of his estate. The barns have several small beams running parallel to each other across the breadth of the room; from these are suspended a great number of long poles filled with pegs, on which the sheaves of corn are hung. The corn in the West Highlands is often cut down before it is ripe, and can scarcely ever be well dried by exposure in the open fields.

Dr. Smith, in his "Agricultural Survey of Argyleshire," gives a particular description, with a plan, of these drying-barns; and as their erection cannot be of very heavy expense, there is time now to build and save the thousands of acres of corn which otherwise appear doomed for ploughing up.

Great improvements in the original drying-barns might soon be effected by the building world, aided by engineering skill; drying-fans, or even the fans used at Indian bungalows, might expedite the ripening of the harvest, under cover of suitable buildings.

Some years ago, the *Builder* brought this question of artificial drying prominently before its readers. Some time afterwards an invention for effecting it was perfected, and has been employed satisfactorily, the expense being the only objection.

THE EXCAVATIONS FOR CHILD'S NEW BANK BUILDINGS.

ANCIENT UNDERGROUND STRUCTURES.

THE prediction that in getting out the foundations for Messrs. Child's new bank buildings some structures and remains of an interesting historical character would be met with has already been verified, although the excavations at present have been carried out only to a limited extent. For the new building an area of about 15,000 superficial feet is being excavated to a depth of 18 ft. below the level of Fleet-street, and this involves the removal of about 204,000 cubic feet, consisting for the most part of massive underground brickwork. Brick walls running both east and west, and north and south, 4 ft. and 5 ft. in thickness, have been met with; and at the rear of the site under excavation, and immediately adjoining the old building—now demolished—known as "The Devil's Tavern," a wall has been found, 7 ft. in thickness. Each side of this wall consists of brick, and the central portion, which can be traced running from south to north as far as the site of Temple Bar, is of flint and chalk, leading to the suggestion that it is a portion of old London Wall. Close to this 7-ft. wall, in excavating the earthwork, a number of skulls and other human remains, including a skeleton in an almost complete state, were met with. Several of the skulls and other portions of the remains thus discovered have been preserved, and are under the care of Mr. Munday, who is superintending the excavations as foreman of the works to Messrs. G. Smith & Son, the contractors for the new building.

Perhaps the most interesting underground structures which have been met with during the progress of the works are those which have been discovered near the Fleet-street frontage, immediately under the site of the old bank buildings, and also at the east end, running from Fleet-street southwards. The first-named discovery consists of a number of Gothic arches, of fire-stone. These arches spring from octagonal piers, and are four in number, built at right angles to each other. To the east of these, and in connexion with them, on the same underground floor level, is what may be termed a vaulted corridor running in a southerly direction several yards from Fleet-street. This discovery came upon the workmen by surprise, and was unexpectedly made after they had come to what they considered the extreme depth of the cellar floor level. The vaulted

corridor was, however, found to be several feet lower than the cellar floor just named. The Gothic stone arches are to a great extent filled in with brickwork, which it is manifest was executed at a much later period than the building of the arches themselves. What may have been their original purpose or design will perhaps form a study for those interested in archæology, but taken in connexion with the human remains found at the rear of the intended new bank buildings, it is not unreasonable to assume that the arches in question may have formed the crypt of some religious house long before Child's old bank was erected on the site.

M. DORÉ'S NEW PICTURES.

THE "Ascension" and "Ecce Homo," added to the Gallery in Bond-street, give us little pleasure. In both these pictures M. Doré has succeeded in covering much fresh canvas, but not in conveying any new ideas. Of the "Ascension" we are forced to say that it is bad in colour and worse in form. The clouds are neither those of heaven nor of earth, nor are they clouds of smoke, but rather like the white steam vapour blown from a locomotive or a ship of the Cunard line. The Saviour, in a "Transfiguration" attitude, rises as from amongst a crowd of goggle-eyed female angels, mostly ungraceful and ill-drawn, with an abundant allowance of marabout wing-apparatus. In the far distance is a sea, bluer than the sky, from which it ought technically to borrow its colour. If this be an ascent to glory it must be the glory "*de la belle France*," and not that of Heaven triumphing over Death and Sorrow. The design is meanly conceived, and the method of execution more ignoble still than the design. It is positively immoral to degrade thus a scene that to many simple-minded persons is lofty, glorious, and devotional. That group by the shore of the preternaturally blue sea represents the Apostles, but they have their backs to us, and Christ His back to them. Why this arrangement? Purely that He may look impressive to the British public who have paid their shilling and come to see the Exhibition. The "Ecce Homo" is a little better painted, but still unworthy and undevotional. It shows a great flight, not of imagination, but of steps leading up to a building, which these same steps render of almost impossible construction. The colossal crowd at the bottom is being kept back by a couple of soldiers; one head is well foreshortened, but some of the figures stand high enough to be on the heads of the others nearly, and this seems past explanation. The vulgarity of the cloud is totally un-Eastern. At the top of the flight another crowd is issuing from the judgment-hall; but not a single figure of grace is shown as they fill an ill-designed Roman portico; and perched up high behind, on a throne over the heads of all and right in front of the entrance, is Pontius Pilate. The Saviour, in a red garment, is descending alone with a crown of thorns and a glory round the head. The figure ought to be accompanied by guards. Pilate went forth, and Jesus followed wearing the crown of thorns, "*et purpureum vestimentum*," and a purple robe, which is scarcely M. Doré's colour; "*et dicit eis Ecce Homo*," "and Pilate saith unto them, 'Behold the Man'"; but Pilate is sitting at the back far away, and could say nothing of the kind. In fact, M. Doré has taken no trouble whatever to realise the situation. The picture is without form or colour or chiaroscuro, and these are the three things that constitute a picture. When Michelangelo refused to paint devotionally he excused himself, saying he painted difficulties, and that that was the path to exalt the soul; for "good painting is of itself noble and devotional." It is a pity M. Doré cannot be got to see this, for he is a remarkable man and has shown versatility and power, but he has tried to do too much. Milton, Dante, the Bible, Cervantes, and Rabelais he has successively attacked and maimed. Any one of them would take a greater man than he is a lifetime to treat justly. He degrades what he professes to illustrate. We say this with pain; but it is time some one spoke out.

WOLVERHAMPTON PARK COMPETITION.

IN reply to an advertisement from the Wolverhampton Council inviting plans, specifications, and detailed estimates for laying out the interior portion of the Park, at an expenditure not exceeding 5,000*l.*, the first and second successful competitors to be entitled to a premium of 50*l.* and 25*l.* respectively, twenty-seven designs were received, and immediately placed in the council chamber for public inspection. The borough surveyor was instructed to consider them, and report whether they complied with the general conditions. His report was submitted to a special meeting of the committee on the 13th of June ult., and as a result, three designs, viz.—"Spe labor levis," "Al Fresco," and "Fortuna Sequatur," were selected for further consideration and a detailed report.

At a subsequent special meeting of the committee on the 20th of June, a further report from the borough surveyor was presented on the three mentioned designs (and on the one under the motto of "Sylvander" at the request of the chairman). After examination of the plans, and upon a division of seven votes to two, it was resolved "That the first premium of 50*l.* be awarded to the author of the design 'Spe labor levis,' and that his design be accepted as the one to be carried out if all the conditions stipulated are complied with. That the second premium of 25*l.* be awarded to the author of the design 'Fortuna Sequatur.'"

The committee found that Mr. R. H. Vertegans, of Edgbaston, is the author of "Spe labor levis," and Messrs. W. Barrow & Sons, of Derby, are authors of "Fortuna Sequatur." Mr. Vertegans's tender for the execution of the works included in his specification has since been accepted.

Messrs. J. Law & Son are to form the roads.

SPELTHORNE SANATORIUM, BEDFONT.

THE sanatorium, which has been established under the initiation of Miss Helena Antrobus, is taking a satisfactory shape. The premises adopted for the institution, and named the Spelthorne Sanatorium, were opened on the 1st of January last for the reception of inmates. The house is arranged for the accommodation of twenty patients, and a staff, consisting of a lady and an assistant lady superintendent, and a working matron. A large room on the ground-floor is used as a class and work room, and there are convenient kitchen and other domestic offices. A short distance from the house a range of buildings has been converted into a commodious laundry, fitted with all the necessary appliances, and intended not only to do the washing of the sanatorium, but, by taking in washing, materially to assist the funds. The expense of adapting and furnishing the house and laundry has been very great, and the public are asked to assist. The committee see before them a large field for work, and hope, if liberally supported by the public, to introduce several kinds of lucrative and useful employment, thus interesting the patients and developing their capacities. The house is provided with kitchen and flower-garden, a large paddock with outbuildings for poultry, and various other conveniences, inclosed in four acres of land, and the whole, owing to unusual and most fortunate circumstances, has been obtained for the very moderate rental of 100 guineas. An iron chapel has been erected, and the sanatorium was opened with a service in it, on the 1st of January. No patient is received for a shorter term than twelve months, as the committee are advised, and as it has been proved by experience, that shorter periods are futile to accomplish any permanent cure. It is a good work, and we cordially desire its prosperity.

ROYAL HORTICULTURAL SOCIETY.

A SCHEME has been proposed by Mr. Samuel Jennings for the erection of a public gallery and promenade, on the plan of similar buildings on the Continent. The designs and estimates have been prepared and submitted by Messrs. John & John Belcher, architects to the Council of the Royal Horticultural Society. The gallery consists of a covered promenade running from Exhibition-road to Queen's-gate, nearly midway between Kensington and Brompton roads. Shops are arranged on each side, intended partly for the sale of fruit and flowers, and partly for works of art.

In answer to Mr. Reginald Yorke on Monday evening last, the Chancellor of the Exchequer stated that plans for the utilisation of the ground now occupied by the gardens of the Royal Horticultural Society at South Kensington were under the consideration of Her Majesty's Commissioners of 1851, and that the decision arrived at would, no doubt, be in accordance with the original design of employing the estate for the promotion of science and art.

NORTH LONDON COLLEGIATE SCHOO FOR GIRLS.

THE North London Collegiate School and Camden School for Girls are the titles of upper and lower schools founded by Miss Bu and carried on by her independently for wards of twenty years. They were made p manent institutions some few years ago by voluntary surrender of her proprietorship certain trustees for carrying on the same un her management.

The great success attending these schools girls' higher education has led to their furt development, and the Charity Commission have authorised a scheme projected by Brewers' Company for the erection of perman buildings for both the upper and lower scho each of which is to accommodate 400 pupils, to be erected on distinct sites. The plans both schools have been prepared by the ar tect to the trustees, Mr. E. C. Robins, F.S A contract was entered into with Messrs. Manl Rogers for the conversion of the late Governes Institution in the Prince of Wales-road, Ken Town, to the purposes of the Lower or Cam school, at a cost of 7,500*l.* Like the fort building (of which very little is left), it i the Tudor style, and faced with Kentish rag Bath stone dressings. On the ground-floor vision is made for the class-rooms, drawing science schools, and the gymnasium. In basement are two spacious cloak-rooms, k tories, &c., dining-room, kitchen, and offices. This building was completed tw months ago.

The North London Collegiate School, w was opened by the Prince and Princes Wales on the 18th inst., will entail an expe ture of some 15,000*l.* The old school-hous Sandall-road will be partially removed, an additional story and a new front will be a to the remainder. The ground is now cov with the new buildings, which will give ac modation for upwards of 400 girls. The p ciple adopted in the classification of the p is that of separate classes of thirty pupi distinct class-rooms, five of which open int great hall on the ground-floor level, and fiv the gallery level. The examination-hall is not only for collective purposes, but aff space for the withdrawal of pupils from of the class-rooms as occasion may require. this hall the annual prizes will be distribu which hitherto has had to take place in rooms. The Clothworkers' Company have g 2,500*l.* towards the erection of this hall, a has been named the Clothworkers' Hall in sequence. A colonnade of Mansfield stone and arches sustains the gallery. The who the interior walling is lined with red bricks stone dressings, except where the pine occurs. The exposed timbers of the roof the panelled boarding are stained and varnis The dining-room, kitchen, cooking-school, an mestic offices are in the basement, as well a cloak-rooms, &c. Over the board-room in th building is the science lecture-room, whil teachers' and music rooms and servants de tories occupy the remaining upper part o right wing. The drawing-school and class-rooms are on the second-floor of the building, flanking the great hall. The gy sium is in the garden in the rear. The war and ventilation has been carefully studied. builders are Messrs. Adamson & Sons, of Pu Memorial-stones were laid in June last The organ has been presented by the p and the stained glass by the architect. cost of the school, including the land and buildings upon it, will be 20,000*l.*

Very favourable opinions as to the he qualities of the hall were expressed on day of opening.

SCAFFOLDING AT SOUTH KENSING

At the rear of the Patent Museum, in C well-road, South Kensington, is to be see extensive scaffold, erected for the new lib and courts, now being built by Messrs. Pe Co., of Stratford, for the Science and Department. This scaffold is upon wh known as Moffatt & Batt's patent system, and rings taking the place of scaffold-p The scaffold in question is some 300 ft. long will be carried up about 70 ft. It prese neat and novel appearance, and is well w the notice of builders and contractors. present instance will afford a good test as t utility of this patent system.

)YDON HIGH SCHOOL FOR GIRLS.

r week the memorial-stone of the new ng in course of erection in Wellesley-road aid by the Archbishop of Canterbury, esence of the Chairman and Council Girls' Public Day School Company, the s of the pupils, and others interested in ovement.

building is intended for the reception of upils. The architect to the building is harles Henman; the builder is Mr. Wm. ge; and the clerk of the works is Mr. Clark.

amount of the contract for the building 00l. The stone, which is a fine specimen erhead red granite, was cut from a rough and polished at Mr. J. Stephens's steam ry works, Croydon. The trowel, which rovided by Mr. Henman, the architect, sed by his Grace, was designed by Mr. lter Lonsdale, the ivory handle being sur- ed by three figures, girls, representing g, writing, and mathematics, and round it were carvings of books inscribed with ojects taught in the school.

site of the building overlooks the grounds Whitgift School. It has an area of about quarters of an acre, the frontage being . and the depth 222 ft., of which the ngs will occupy 126 ft. by 54 ft., leaving space for an excellent playground.

account of the fact that a portion of the ad been used as a gravel pit (and after- filled in with made earth), it was neces- n parts, to take the foundations to a con- ole depth; in doing this, every particle of earth has been removed from the area of ildings, and clean fresh gravel filled in . Partly owing to this, partly in order raise the buildings too high, and partly score of expense, the lowest floor has kept about 4 ft. below the level of the So as to obviate all chance of dampness, will be an asphalted pathway 4 ft. wide the building, sloping from it towards a which will rapidly carry off the rain

This channel will be met by a turfed of easy gradient, starting about 16 ft. the buildings; so they will not appear to ied, nor will the access of light and air to vest story (which has a height of 10 ft. eded in the smallest degree. Neverthe- ere are are no class-rooms at this level, it divided into cloak and dressing rooms, lava- music-rooms, a luncheon-room, kitchen, and offices in connexion therewith, a spare &c. The next story has a height of 12 ft., ntains four class-rooms, each 24 ft. by one 29 ft. by 20 ft., and one 19 ft. ft.; there is also an office for the head- ss, with a waiting-room adjoining for s. The chief entrance is on this floor, and the porch that the Archbishop laid the ial-stone. A corridor 9 ft. wide runs h the whole of this story; at each end of the staircases (10 ft. wide), giving access floor above, on which is the assembly- 30 ft. by 30 ft., with a gallery at one end rd additional accommodation, and for g-classes. This room will be 22 ft. high, panelled and moulded ceiling. On this here will be two class-rooms 24 ft. by one 29 ft. by 20 ft., and one 19 ft. by each having a height of 12 ft. Included buildings are a studio with north top-light, dence of five rooms for the head-mistress, ervants' rooms. The materials are red and pale buff terra cotta, with brown tiles roofs.

E STREET GATES AND BARS IN LONDON.

are glad to learn that the St. Pancras have entered upon a crusade against the gates and bars in their portion of the polis. At their last meeting a motion rought forward to the effect that in the n of the Vestry it is desirable that the and bars across the streets should be ed, and the thoroughfares made free to all, at it be referred to the General Purposes ittee to consider as to the best means to ken to accomplish the object. It was urged that the removal of the street bars be a great public benefit; that the bars a great obstruction to the public, and that bam-court-road and Hampstead-road were y affected by the existence of these bars side streets. One of the members observed that the removal of the gate in Woburn-place would open out a direct communication between Hampstead and Highgate to Holborn and Great Queen-street, and Lincoln's-inn-fields, the Law Courts, the Strand, and Fleet-street. The motion was adopted.

DURHAM CASTLE.

It having transpired that alterations are about to be made in the Upper Hall of Durham Castle, which alterations, it is alleged, will materially injure the building, a special meeting of the Durham and Northumberland Archæological and Architectural Society was convened by the President (the Rev. Canon Greenwell, F.S.A.), "to take such steps as might be thought desirable to avert, if possible, so deplorable a catastrophe." The President occupied the chair, and said that he had taken upon himself, as president of the society, to call that meeting. He directed the attention of those present to the deplorable destruction of the old Chapter-house at Durham, and which had been so much condemned. It must have been done by the authority of some one; but when inquiry was instituted, the blame was generally thrown from one person to another. This served to show how dangerous it was to trust to the chapter of accidents to prevent a work of destruction of this kind. He had felt it his duty to call them together to take some steps, if thought desirable, to prevent a destruction almost equal, in an historical sense, to that of the destruction of the Chapter-house. He was sorry that the necessity had arisen for such a meeting being held, as they naturally supposed that the ancient castle, the former residence of the Bishops of Durham, would of all places be the last to be interfered with in the way of destroying its historical features. It was the great palace of the former bishops of Durham, and was used as a place of protection and a barrier to Scotch invasion. It was a public building in the same sense as Windsor Castle, and was transferred to the University in trust to be made use of as a university and in trust to be preserved in order, and not to be treated as a piece of private property and swept away, but well preserved for centuries yet to come, as a great historical and architectural monument. First one place and then another had been swept away by learned bodies, so that they need not be surprised that injury to the architectural features of the castle were contemplated by the University of Durham. The upper hall of the castle was erected over the grand hall, and it was built under the direction of that great ecclesiastical builder, Bishop Pudsey, to whom we are indebted for some of the best pieces of architecture of the latter part of the twelfth century. The great hall was the common room, and was approached by a piece of Norman architecture in the shape of an arch. The second or upper hall was above this room, and for architectural beauty there was nothing in England like it, and no building to be compared to it for the very beautiful arrangement of the arcades around each side. Some time during the past century it was divided by a wooden partition for the use of the bishop and his officers. It has since been used as rooms for students, and it remained in that condition up to the present alterations. The other day his friend Mr. Rogers mentioned that something was going on in the Norman gallery, and he went and examined the place. He also looked at the plans, and saw that the alterations meant the entire destruction of the hall. It was proposed in the plans to run a passage along the centre of the building, rooms on each side, so that it was intended to split up the gallery into bits, and each student would have a portion of the arcade in his room. This would have been detrimental to the building and very dangerous as regards the preservation, because when portions of these were enclosed in students' rooms they were in danger of being damaged. Students were generally young men who cared little or nothing about architectural features. According to the plans there was absolute destruction intended, and he could not conceive how it was possible that any body of men could have dreamed of doing this damage. They had broken through an old wall that had stood for 700 years, which was certainly more or less decayed, simply to provide four more rooms for students. The wall was perforated by four flues for fires. This was a material destruction, and he apprehended the greatest danger from it, as the perforation might in a few years bring the old walls down altogether. They also proposed to open out two windows from the arcade. The arcade consisted of two blank arches on each side, and these were to be perforated, which would destroy those features which they wished to retain. Therefore he thought he was not wrong when he said the whole thing would be destroyed, and that no person would have been able to see the effect of that beautiful hall, which would be entirely injured by the perforations. Of course it might be said that old buildings must be used up as the exigencies of the times required. It was far from him to say that buildings could be preserved as they were. They must be altered from time to time to meet the purposes of the age. But here he saw nothing to justify this interference with such a grand specimen of architecture, even supposing that fifty additional rooms were to be obtained. The University possessed property on the Palace-green, Dun Cow-lane, and the Bailey, and surely, he thought, they could provide accommodation for an increased number of students in some of those places.

After some remarks by Mr. C. H. Fowler, Mr. W. H. D. Longstaffe, and others, the meeting adjourned to the Norman gallery of the Castle, where a number of workmen were engaged in the work of alteration.

Mr. Booth proposed, and Mr. Heath seconded, the following resolution:—

"That this Society has heard with extreme regret of the alterations in progress in the Norman gallery within the Castle of Durham; that any alteration which would have the effect of interfering with the Norman arcade, or of enclosing it from view, would be most deplorable; and this Society desires to express an earnest hope that such an alteration will not be made. The Society is glad to have received a communication from the Master of the University College that the work has been temporarily suspended for re-consideration, yet think it desirable that this resolution should be forwarded to the Warden and Senate of the University, with the strong opinion of the Society that the entire upper hall lighted by the arcade should be cleared of the existing lath and plaster divisions, and thrown into one room, which would both show the proportions and original character of the hall, and also materially lessen the probability of accidents from fire."

The resolution was carried unanimously.

THE INDIAN MUSEUM.

Mr. W. H. Gregory, in a letter to the *Times*, pleads that the archæological collections of this museum be not immured in the regions of Nox and Erebus in the cellars of the British Museum, where they will be in company with other Indian archæological works which have undergone a similar condemnation for many a long day. He proposes that a portion of the space now occupied by the Indian Museum should remain assigned to the archæological and art objects contained in it. "To these should be added those specimens now stowed away in the British Museum, and also the fine collection of photographs illustrating the monuments of India, which are, I believe, at present in the Indian Library at Downing-street, and which are rarely resorted to owing to difficulty of access and want of proper room to study and to copy. To these should be added the coins of India, of which the British Museum authorities might select such specimens as they require, giving in return to the Indian Museum electrotypes of their Indian coins. To the authorities of the Kensington Museum I would intrust the custody of the new museum, which would only involve the expense of a few attendants. There then remains the expense of the director. This is all the outlay which would be at present required, as cases are already provided. But by far the most important recommendation which I can make is the appointment of a consultative body, whether it be called a committee or a trust, to advise and strengthen the hands of the director. Can there be a doubt that with men on this trust (I take a few names at random from among the many which suggest themselves) such as Sir Henry Rawlinson, Mr. Grote, Mr. Fergusson, Sir Edward Clive Bailey, Mr. Grant Duff, the new Indian Museum of Archæology and Art would become the resort of those who interest themselves in the literature and antiquities of this great portion of the Eastern world, and that they would act in concert with and encourage their fellow-workers in India?"

In answer to Mr. Percy Wyndham in the House of Commons on Monday night, Mr. E. Stanhope said:—"I hope that the hon. member for the Elgin Burghs will have an opportunity before the close of the session of bringing on his motion in reference to the Indian Museum. Before that time no definite steps will have been

taken for the removal of the collections. . . . . The question of a contribution from Imperial funds towards the support of an Indian Museum has been more than once considered between the India Office and the Treasury, but without any result."

RECLAMATION OF BRADING HARBOUR, ISLE OF WIGHT.

A CORRESPONDENT writes to say that the arduous work of reclaiming Brading Harbour, which has been carried on with unremitting diligence during the last two or three years, has now terminated successfully, and an immense tract of what we hope will be ere long arable land added to the island. Mr. Saunders has had many difficulties to contend with; but it was only to be expected that, with all modern appliances at his command, he would at least be as successful as his great predecessor in the same work two centuries ago, Sir Hugh Myddelton, of New River fame.

The *Isle of Wight Advertiser* says,—"The water is shut out of Brading Harbour! The company to this time have expended some 80,000*l.*, and have as a return for the investment about 700 acres of land, which it is estimated will, in some five to seven years, fully recoup the outlay. In addition, they have already constructed a railway to their quay, and have all preparations made for laying a line of rails across the site of the late harbour to Bembridge. What are the sources of profit that must arise from this new development of so lovely a district as that of Bembridge, it needs no words to enforce. The neighbourhood, although full of opportunities for the most profitable development, has, by its peculiarly isolated position, remained an unknown spot to the world, not excluding that part of its inhabitants who are found on the Isle of Wight, of whom not a tenth part have ever visited it." In addition, a large trade in connexion with the railway and the quays may be anticipated, returning, as we hope, well-merited profit to those who have embarked their capital in the venture, as also a gratifying reward to the designer, who has been the almost unremitting superintendent of the work during its long and toilsome process.

ARCHÆOLOGICAL SOCIETIES.

Sussex.—The annual excursion of the Sussex Archæological Society has been fixed for the 14th prox. Brighton will be the *rendezvous*. The members will meet in the Museum, and visits will probably be made to Ovingdean Manor House and Church, Rottingdean, and such other of the secluded villages in the district as time may permit. The oldest church in Brighton, St. Nicholas, will not be passed without notice.

Bedfordshire.—The annual excursion of the Bedfordshire Architectural and Archæological Society took place on the 15th inst., to Leicester, where the members were received by Mr. A. H. Paget, a member of the local Society, who acted as guide. The excursionists visited the remains of the Newarke and Trinity Hospital. The church of St. Mary in the castle would alone have repaid the exertions of the day. The story of its successive changes, down to the recent restoration under Sir Gilbert Scott, was traced by Mr. Paget and the vicar, Canon Broughton. The next church on the route, scarcely less interesting, was St. Nicholas, bearing external evidence of having been largely indebted in its construction to Roman remains found in its immediate neighbourhood. Here also (says the *Bedfordshire Times*) the incumbent, the Rev. T. W. Owen, assisted in extracting the history of the structure from the Saxon or early Norman clearstory windows lately brought to light in the process of restoration (similar to those found in Turvey church), and the various Norman features still remaining in the tower (where some herring-bone work may be also seen), and in the north side of the nave from which the aisle has disappeared; the old wall, nevertheless, is retained, with its arches and other openings filled up. In close proximity to the churchyard stands the famous "Jewry wall," one of the most remarkable specimens of Roman architecture now to be seen in this country. On the east or exposed side, it is pierced by a series of four massive arches, with a central niche or recess of brickwork turned in a mass of rubble, banded at intervals by courses of quarry tiles. These articles are respectively 11, 12, 13, and 14 ft. high (the soil below the present level of the street having been excavated to their base) and 14, 6, and 11 ft. broad. From the relative position of other Roman buildings, traces of which have been from time to time discovered, it is believed that this wall formed some part of a cluster of edifices extending from this spot towards the river, and forming a portion of the town of Ratæ or Roman Leicester. The afternoon was devoted to the inspection of the church of St. Martin, the history of which has been written by Mr. T. North, one of the hon. secretaries of the Leicestershire Society. Other objects of interest examined were the Guildhall, the Town Library, the mayor's parlour, the church of All Saints (of which it is said by the Rev. G. A. Poole, in his papers on the "Churches of Leicester, 1854," "that it would afford more hints than all the rest for a town church of moderate pretensions") and St. Margaret's, which contains the tombs of Penny, abbot of Leicester, and of Newcombe, the early bell-founder, and whose tower holds one of the finest peals of ten bells in the kingdom. An hour was spent in a cursory glance at the Museum.

Surrey.—The Surrey Archæological Society has just held its annual country meeting. Lord Hylton acted as president for the day, and entertained the excursionists at Merstham. The party afterwards visited Merstham Church, which they found to have been restored more than once since their former visit. The carriages then proceeded to Chaldon Church, where a paper on its architecture was read by Mr. Nevill, F.S.A., followed by Mr. J. G. Waller with a description of the wall-painting. Chipstead Church was next visited, where Major Heales, F.S.A., commented on the history of the building. Thence the party went to Gatton Hall, by the kind permission of Mr. Robert McCalmont; and at Gatton Church, Canon Cazenove, the rural dean, called attention to the woodwork brought from Flanders. The meeting ended by a collation at the Reigate Public Hall, at which Lord Hylton presided.

The Archæological Institute.—Taunton has been selected as the place of meeting for this year's meeting of the Royal Archæological Institute. The congress will commence on Tuesday, August 5, and will close on Tuesday, the 12th. The programme includes visits to Dunster Castle, Quantoxhead, Bridgwater, Ilminster, Montacute House, Bishop's Lydeard, Barrington Court, Norton Fitzwarren, Staple Fitzpayne, Kingston, Cannington, Cothelstone, Fairfield, St. Audries, Wells Cathedral, and Glastonbury Abbey; and on three evenings there will be *conversaziones* and receptions in the Castle or the town-hall of Taunton. The churches and Castle of Taunton will also be inspected by the members, and will form the subjects of papers.

WATER SUPPLY FOR LIVERPOOL.

THE Liverpool Corporation, after having had under discussion for more than two years past their future supply of water, appear at length to have finally decided upon a scheme, for which there is every reason to believe application will be made to Parliament during the session of 1880. They have in turn had under their consideration no fewer than five different projects, namely, one for a supply from Bleasdell, a district situated between Preston and Lancaster; three others for a supply from lakes Windermere, Ullswater, and Haweswater, in Westmoreland and Cumberland respectively; and, lastly, their attention has been almost exclusively directed to a supply from the waters of Vyrnwy in Wales. It is the last-named project which will in all probability be adopted. According to a statement made by the chairman of the water committee, at the meeting of the Town Council last week, the Bleasdell, Ullswater, and Windermere projects have been definitely abandoned, the Haweswater and Vyrnwy schemes only being entertained. Speaking on behalf of the committee, he said they had decided to recommend the council to adopt the Vyrnwy scheme, although he admitted that some members of the committee were in favour of the Haweswater project. In the outset, he observed that the waters in the two districts were equally pure, and he then proceeded to state the reasons which had induced the committee to fix upon the Vyrnwy undertaking, the estimated cost of which he said was 1,500,000*l.* He incidentally observed that it was a portion of a scheme originally designed by Mr. Bateman for the supply of London. Adverting to the works which w be necessary in carrying out the project, he they would include an embankment 372 y long, and 80 ft. high, which would form a five miles and a half long, and 60 ft. deep, the larger portion of the area. Shafts had sunk on the site of the proposed embankn and the hard slate rocks of the district been found within a few feet of the surface tunnel two miles and a half long would co the water into the Hermant Valley, and that point there would be an aqueduct to Pre near Liverpool, the pipe-line of which woul sixty-eight miles long, and crossing the r part of the Mersey above Warrington, not from the point where it joins the Ir The scheme, he observed, was far being beset with engineering difficulties, could be carried out in two years time than the Haweswater project. added that both in the Vyrnwy and Ha water projects it would be necessary remove a church and churchyard, but could be done in such a way as to avoid annoyance to the surviving relatives of who had been buried there. At Haweswat would be necessary to form a tunnel four long, through the hard rock of the district, w the aqueduct line would be twenty miles lo than that required in carrying out the Vy scheme. The pipe line, moreover, of the Ha water project would have to cross three rive the Lune, the Wyre, and the Ribble, at points under great pressure, and finally Haweswater scheme would cost a quarter million more than the Vyrnwy scheme, adoption of which was strongly recommende Mr. Hawksley and Mr. Bateman, the emi water engineers. He added that the comm strongly urged the purchase of the gathe ground, as had been done in the Thirl district by the Manchester Corporation.

In the discussion which followed it was ag that one of the two schemes must be ado the only objection urged against the Vy project as compared with Haweswater that the colour of the Vyrnwy water was n clear as that of Haweswater, but in answ this it was urged that the filter beds w make the former water equally clear. general feeling of the council appeared to favour of the committee's recommendation the discussion was adjourned for a fortnig order that the members of the council m pay a visit to the Vyrnwy district, and at adjourned meeting it is understood that o the two schemes will be finally adopted.

WATER SUPPLY.

Manchester and Liverpool.—The report of deputation from the Liverpool Water C mittee which waited upon the Manche Water Committee recently has been iss The object of the deputation was to ascer if the Manchester Corporation were disposed enter into an agreement with the Corporati Liverpool either for a supply from the Thirl aqueduct for a term of years, or for joint a in the construction of an aqueduct from Lake District. In reply to the question the deputation, the Manchester committee st that they could not undertake to deliver w on the 1st of January, 1886, and that they not prepared to pledge themselves to any on which they would guarantee the deliver to expedite the execution of their works wit some inducement to do so. Without, howe pledging themselves to any date of comme ment, the Manchester committee expre their willingness to negotiate with the Li pool Corporation either for a permanent su of water for Liverpool, or a supply for a pe upon a fixed annual payment, and they stated that, subject to the application b made before the completion of the first in ment of the works, they were prepared to a that Liverpool was entitled to a supply u the 81st section of the Manchester Corpora Waterworks Act, 1879. The committee h reported to the Liverpool Town Council, expr ing their opinion that it is not advisable rely on the Manchester scheme, and t recommend that a supply should be obta from the river Vyrnwy, in Montgomerysh We give under another heading some particu of the proposed supply.

Wakefield.—The Wakefield Corporation h decided to promote a Bill in the next session

ment for empowering the Council to a supply for the borough and neighbour- rom the Rishworth Moors, near Ripponden, West Riding of the County of York, and struct the necessary conduits, reservoirs, her works in connexion therewith. The are estimated to cost 160,000*l.*, and the e has been prepared by Mr. Filliter, the er to the Waterworks Committee.

l.—The Waterworks Committee of the Council of Kingston-upon-Hull on the ast. proceeded with Mr. Bateman, C.E., to orks of the Newington Waterworks Com- They then went to Spring Head, where nspected the machinery and the various suggested for the proposed new adit; terwards by way of Kirkella, Willerby, elgate and the mill-dam springs to Cot- m. The engineer and committee subse- y proceeded to Driffield, and inspected the streams in that locality, including Naffer- k. The committee have requested their r (Mr. D. Maxwell) to furnish Mr. Bate- ith particulars of the other sources of the requesting him to report as to the feasi- and desirability of going to those sources future supply of Hull.

HE CITY OF LONDON SCHOOL COMPETITION.

he 18th inst. a special meeting of the of Common Council was held, when, on eption of a report of the City of London Committee, submitting three designs for posed new buildings for the school on toria Embankment, Mr. W. Hudson pre- a petition from thirty-one of the archi- ho had submitted designs for the school. ayer of the petition has already been n our pages. The consideration of the and petition was adjourned. It may be ned that Mr. Robert Walker, one of the tion who attended in support of the , replied to a number of questions ed to him by various members of the One of the cross-examiners was Mr. , who asked whether the petitioners, in in their designs under the terms of ertisement, really believed that experts e called in to advise the Corporation decision was arrived at? Mr. Walker's as in the affirmative, and Mr. Lawley fol- with the rejoinder, "Then I don't believe f course, Mr. Lawley was called upon to w the remark, but he did so with a very ice.

Deputy Burnell gave notice of the follow- tion for Thursday, 24th:—

this Court deeply regrets that a member in his en putting a question to a gentleman at the bar of , should have forgotten not only his dignity by a , but the duty which he, in common with every of the Court, owes to his lordship, frankly to obey ip and promote freedom of debate, regularity of e, and a loyal regard to the rights of individuals, Court desires to disclaim any sympathy with the on intended by the remarks of that member."

e same meeting the petition (presented 18th instant) of various architects who bmitted designs was to be considered, r with Mr. James Edmeston's motion as :—

before proceeding to determine which design for of London School shall be selected for execution, signs sent in shall be submitted to the President oyal Institute of British Architects, who shall hereon, distinguishing, in their order of merit, ee designs in which the instructions issued by the e to competitors have been most efficiently carried that the premiums be awarded accordingly. That urpose the mottoes be covered over and the sets merely distinguished by numbers."

ERS' BENEVOLENT INSTITUTION.

thirty-second annual meeting of this tion was held on Thursday afternoon at Rooms, Mr. Edward Conder, president, hair. In the report, read by the Secre- ajor Bratton, the Committee point out peratively necessary it is that new sub- s should be found to take the place of he Institution has lost by death. They re appeal to all connected with the build- erests for their aid in support of the tion. After thanking Mr. Conder for nerous liberality and energetic efforts the year of his presidency, the report that seven pensioners were elected during st year, and two widows of pensioners come entitled to be placed on the pensioners, under Rule III. Notwithstanding the exceptionally severe winter, and the great age of most of the female pensioners, not one of them had succumbed, but the committee regretted to announce that six male pensioners had been cut off, all of them, however, at an advanced age, the youngest being seventy-six and the oldest ninety years of age. The deceased pensioners had been receiving the benefits of the Institution for periods ranging from six to fourteen years, the average being ten years. In conclusion, the report announced that the annual dinner will be held at the Freemasons' Tavern, on November 6th next.

The balance-sheet showed a total income of 2,743*l.* 14s., including 671*l.* 14s. 3d. balance from last year, 794*l.* 18s. annual subscriptions, 552*l.* 3s. 6d. donations, 80*l.* profits of annual ball, 612*l.* dividends on Consols. The sum paid to pensioners was 1,332*l.* 19s.; 200*l.* had been devoted to the purchase of Consols; and a balance of 846*l.* 10s. 7d. remained at the bankers.

The report and balance-sheet were unanimously adopted, on the motion of Mr. Thomas Stirling, seconded by Mr. T. F. Rider, the chairman congratulating the Institution upon the satisfactory nature of the report, and expressing satisfaction that the prevailing depression had not particularly, if at all, affected the building trade.

Votes of thanks were given to the President, Vice-presidents, and Trustees; to the Treasurer (Mr. George Plucknett), who was re-elected; to the Committee; to the honorary secretary for the ball (Mr. F. W. Keeble); to the honorary auditors (Messrs. J. H. Hunter, J. Cruttenden, and R. J. Ward), who were re-elected; and to the secretary, Major Bratton (on the motion of Mr. G. B. New, seconded by Mr. Jeremiah Long, of Brighton). Mr. F. J. Dove was unanimously elected president for the ensuing year.

IMPORTANT TO BUYERS OF HOUSES.

On the 15th inst., in the Exchequer Division, the case of Loseby *v.* Carr was disposed of.

It appeared that a Mr. Howell built four houses adjoining each other in the Rookery-road, on the Belvedere Estate, in Kent. The main drains of Nos. 7 and 8 were laid to carry the sewage from these two houses into the main drains of Nos. 5 and 6, and thence into a cesspool. In April, 1874, Howell conveyed Nos. 7 and 8 with their appurtenances to the plaintiff, and in June, 1874, Nos. 5 and 6 to the defendant. Up to the date of the conveyance to the defendant, Nos. 7 and 8 had never been occupied or the drains used. Subsequently, the defendant disputing the right of the plaintiff to use the drains of Nos. 5 and 6, this action was brought by the plaintiff to establish his right.

Mr. Harrison, Q.C., stated that, owing to the great rainfall of the present year, the sewage had actually been washed back into the basement story of the defendant's houses.

His lordship held, at the conclusion of the plaintiff's case, that as the drains of Nos. 7 and 8 had not been used up to the date of the conveyance to the plaintiff, the right to drain into the main drains of Nos. 5 and 6 was not in existence at that date. It therefore did not pass to the plaintiff by the conveyance to him by Howell of Nos. 7 and 8. The learned Baron remarked that it was like "giving a kick to a dead dog," commenting on the case of "Pyer *v.* Carter," 1 H. and N., 916, relied on by the learned counsel for the plaintiff, and which has been much discussed in several other courts. This case did not come within that, and, if it did, the latter had been overruled in a recent case in the Court of Appeal.

FINES FOR BAD BUILDING.

Building without mortar seems to be a favourite practice amongst a certain class in the trade at Tottenham. Only a short time ago a builder was heavily fined for building with a compound of rubbish instead of mortar, and on Monday last three more were summoned before the magistrates at Edmonton for similar offences. James Wheeler, a builder, of Woodberry-villas, Seven-Sisters-road, was summoned at the instance of the Tottenham Local Board for wilfully using certain mortar in the erection of new buildings in Templeton-road which had not been approved of by the Local Board. Mr. De Pape, the surveyor to the Local Board, produced samples of the mortar used, which he had taken from the joints of the brickwork, in the presence of the defendant, and which mortar, he said, was utterly unfit for the purpose, containing straw, shavings, feathers, grass, and other rubbish. It was contended by the defendant's solicitor that the surveyor to the estate had passed the mortar, and that that was sufficient, as large advances were made to the defendant as the builder of the houses. The magistrates, however, took another view of the case, and fined the defendant 5*l.* in respect of each of seven houses built with this "mortar," making the aggregate amount of the fines 40*l.*, in addition to costs. Another builder named Arthur Jukes was fined 20*l.* for a similar offence in respect of four houses in Tewkesbury-road; and William Waller, also a builder, was fined 5*l.* in respect of a house similarly built in Templeton-road. The magistrates intimated that they would be sent to prison for fourteen days in default of payment; but their solicitor, Mr. Fowler, gave notice of appeal to the Quarter Sessions. The Local Board have since resolved to take further steps in the matter.

RESPONSIBILITIES OF LANDLORDS.

ANDERSON AND ANOTHER *v.* OPPENHEIMER.

In this case, tried in the Queen's Bench Division, before Mr. Justice Field, the plaintiffs, who carry on business on the basement of a house in Queen Victoria-street, City, brought the action to recover from the owner the damage done to their property by the irruption of a quantity of water from one of the upper pipes of the building, in the following circumstances:—The building is let out in floors or "flats" to various tenants, and the plaintiffs are tenants of the ground floor and basement, at a rent of 800*l.* a year, under a lease granted in 1872 by the owner, the defendant, with a covenant for quiet enjoyment of the demised premises, "without any interruption from the lessor," the defendant. The house had been built by the defendant in 1871, and the water-supply to the different floors was effected by means of a cistern at the top of the house, supplied with water by the New River Company, and the water was distributed to each floor by means of a service-pipe, connected with the cistern, and into which, on each floor, there was a branch service-pipe, for the supply of the tenants of the floor, each floor having its own branch service-pipe for the purpose. The cistern was filled daily by the company, and the defendant paid the rate, but, by arrangement with the tenants, receiving from the plaintiffs half the sum paid. The cistern is not demised to any of the tenants. The injury to the plaintiffs' stock in respect of which the action was brought arose from the sudden bursting of the brauch pipe of the first floor, the water from which passed down into the basement, where the plaintiffs kept their stock. The pipe was not open to the view, and there was no evidence of any previous patent defect. The jury found that the pipes were reasonably fit and proper for the purpose for which they were to be used, and that the defendant had not been guilty of any want of care in keeping the pipe as it was. Upon these findings the learned Judge entered the verdict for the defendant as to so much of the claim as alleged as cause of action arising from the alleged negligence of the defendant in these respects; but the plaintiffs also claimed in respect of the defendant's covenant for quiet enjoyment. On that point the Judge had taken time for consideration, and now

The Judge gave judgment finally for the defendant, adhering to his opinion on the first ground of action, and giving his opinion on the other point as follows:—The flow of water into the plaintiff's warehouse to the extent proved was such an interference with the plaintiff's possession as to have amounted to an interruption within the meaning of the covenant, and if the interruption had been caused by any wilful act of the defendant, or had been the probable consequence of any act done by him after the demise, I should have held that there was a breach of the covenant. But in the present case the water, though in a sense brought into the cistern by the defendant, he being the person who contracted with the company for the supply, yet was brought for the necessary enjoyment of the plaintiffs and at their request, and therefore was an act contemplated before and necessary to their enjoyment of the premises, and not an interruption of it; and the only wilful act of the defendant was the fixing of the pipes by which the water was distributed, and this was done before the demise, and was an act in contemplation, and not in interruption of the enjoyment. It is unnecessary to say whether, if the defendant had carelessly fixed insufficient pipes or failed to keep them in good repair, such acts would have amounted to a breach of the covenant; for the jury have found that he was guilty of no such negligence. No doubt the plaintiffs have sustained serious loss, from no fault of theirs; but unless I can see my way, in accordance with law, to throw the loss upon the defendant, the burden must fall where the law leaves it, and it is another added to that class of cases in which losses happen for which there is no legal redress.

Judgment for the defendant.

TESTIMONIALS AND LOCAL BODIES.

SIR,—Allow me, through your columns, to draw attention to the senseless practice followed by some corporations and other local bodies in stipulating that original testimonials must accompany applications for appointments. I have twice been applied to within the past month for reproductions of testimonials granted to assistants, owing to the originals being in the hands of Boards, to whom they had been sent in consequence of this condition, and kept so long as to be unavailable for other applications. Surely copies of testimonials should suffice in the first instance, and the originals could still be inspected, if thought desirable, at the personal interview with selected candidates which usually precedes the definite appointment. Besides the trouble caused to former employers by this practice, there is an obvious objection to parting, even temporarily, with testimonials, arising from the risk of accidental loss of documents which, as in the case of a deceased employer, cannot be made good. I know of no valid reason for the practice complained of.

C. E.

FARM PLANS AT THE KILBURN SHOW.

SIR,—Will you allow me space to say that I fully endorse the action of the Society in not awarding any prize to any of the plans of farm buildings? It should be borne in mind by competitors that this is an affair different from nearly all other competitions they may have been engaged in. A design for, say a church, town-hall, school, or mansion, is examined by a committee or by a professional referee, and award given accordingly, but the examination given is of quite a different character to that which should be, and no doubt was given to the above farm-plans, for in the former case the elevation is of much greater relative importance, and in the planning, if a room is not put in the best place, or of not the most suitable size, or the main dimensions of the building not exactly as they should be, the evil of it is not brought so clearly before those who have to use the buildings, as is the case in a set of farm-buildings. In this case, matters that are not considered by many competitors of much importance, say size of stable doors, height of mangers, aspect of wagon hovel, details of drains (in the latter item several of the plans showed gross want of thought), positions of supporting columns, &c., are, if not properly done, a daily source of annoyance, and in many cases of serious pecuniary loss to the farmer. Whereas, failings in details of a town-hall, mansion, &c., are not brought so vividly before the users of these buildings, and if they were, could be in most cases very much modified by them. And when we ascend from details to principles, the difference is still great, but as the discussion of this would require more space to deal with it than you could probably spare, I will merely say, in conclusion, that this competition is more akin to that, for, say a builder's complete establishment, ironworks, or, in short, for any manufactory where economy of time and money in the working of it is a *sine qud non*, and until a competitor can put himself mentally in the position of a manufacturer who is wanting the best plan for his factory, totally regardless of precedent or of any consideration beyond the best and cheapest way to manufacture his goods, he will never be likely to succeed as a planner of farm buildings.

It may be news to many to be told that the planning of farm buildings is a mine but very little worked.

SALT.

SIR,—The Farm Buildings Competition of the Royal Agricultural Society has proved another striking instance of competitions, and tends to show how little chance competitors have of obtaining any remuneration for the time and money spent in perfecting their plans. The very meagre report issued by the judges in speaking of the plans says:—"That although as a whole they display much architectural power and, in many instances, considerable practical knowledge of farming requirements, there are none that combine superior arrangement of detail with that economy of cost which is so essential." As the competition was ostensibly arranged to provide a set of plans in each class which should be considered models, it certainly seems strange that from amongst sixty-nine competitors, including members of the Institute, the judges could not select one or two worthy of a prize, even though the cost might be greater than they considered necessary, and in their report suggest any alteration which would tend, in their opinion, to reduce the expense and improve the arrangement; for, as matters now stand, there is no immediate prospect of obtaining from the Royal Agricultural Society their idea of a model set of farm buildings. I would suggest that the 200*l.* be offered to the judges for what they consider a suitable arrangement in each class, to prevent competitors being again asked to spend their time and money for nought.

ARCHITECTUS.

POSTS IN THE GROUND.

SIR,—With reference to my namesake's letter on the generally inappreciated larch, it cannot be too generally known that larch posts let into ground should always be inverted. Few with a shadow of experience are ignorant of the fact that "between wind and water" does the first symptom of decay appear. The why and wherefore is palpable. Nature so arranges the pores of the wood that moisture from the soil is, by capillary attraction, carried up to the branches. Some quarter of a century since, having read something of it, I let two into the ground, small end downward, that small end being about 8 in. diameter; two posts, the butt-end of each having roots left on, with arrangement for growing flowers. About 18 in. of each was embedded in the clay soil, which, with some 12 in. of mould at the surface, made the 2 ft. 6 in. below ground.

Some years after alterations enforced removal, when, to my surprise, I found that neither saw nor hatchet could act in preparing the semi-putrescent logs for firing. Let me say that the changed nature extended only to the surface of the soil. I do not for a moment doubt that other wood than larch would be equally hardened by similar treatment.

In the ordinary mode of "biggest end downward" evaporation of moisture from the wood goes on at the surface of the soil,—hence decay.

C. A. WHEELER.

PEKIN, IN CHINA.

A CORRESPONDENT of the *Hong Kong Daily Press*, who has recently paid a visit to the Chinese capital, says:—

There are perhaps few cities in the world laid out upon a finer plan than the northern capital of China. The streets are in many instances as wide as Regent-street, and cut each other generally at right angles. They are lined with shops, a large number of which are extremely handsome, their entire façades being richly carved and gilded from top to bottom. Instead of the hanging boards which in other Chinese cities announce to the passer-by the nature of the goods retailed, the shops here have tall upright posts, sometimes rising from the roof, sometimes standing on the ground, overlaid with gilding and bright colours. Other varieties of decorative art abound on all sides, some of the shops being painted to represent a most elaborate mosaic, the design and execution being rich and beautiful in the extreme. Everybody has seen an ornamental screen or centre table, inlaid with exquisite patterns and every shade of tint. Imagine this workmanship transferred in all its wealth and splendour to the front of an ordinary shop, where in Europe there would be nothing but stone or brick, and you will have some idea of the decorations which attract the eye and gratify the taste in the crowded thoroughfares of this strange town. The paths are sunk in some places 2 ft. or 3 ft. below the level of the roads, along which pass in an almost unbroken stream strings of camels, mules, and carts. In the latter vehicles are frequently to be seen brilliantly tricked-out ladies with their cheeks and eyes bedaubed with coarse Magenta paint; mandarins,—only the very highest of whom are permitted the privilege of sedans,—and occasionally a living Buddha, in the form of some Lama priest of rank, dressed from head to foot in gleaming yellow silk. Now, to judge from the above description, one might easily conclude that Pekin was a very wonderful and gorgeous place. But this would be a very great mistake. Hitherto we have only looked at one side of the glowing Oriental scene. Side by side with the flaunting golden shops are squalid, filthy houses, rotting slowly and uncared for. Heaps of filth stand seething here and there; the thoroughfares, broad and straight as they are, which we have spoken of hitherto for convenience sak streets, are a mere irregular collection of and ditches, along which we walk now thr piles of dust, now beside stagnant pud noisome, putrid, and green. In dry wea Pekin is a gigantic dust-bin; during the r it is a whirling cesspool. The foreign houses in Pekin are, I believe, confined e sively to the enormous compound occupie the British legation.

MASTERS AND MEN.

Forest of Dean Ironworkers.—Notices been given by Messrs. Crawshay, ironmas Forest of Dean, by which a number of men will be discharged at the expiration of tracts. Notice has also been given to th mainder of their furnacemen of a 5 per drop, with the alternative of suspending o tions.

Sheffield.—The dispute in the Sheffield b ing trade is now practically at an end. O 17th inst. a meeting of carpenters and jo was held to receive the report of the dele who had been making a canvas of the empl to get their signatures to the old working The delegates reported that they had rec the signature of nearly every employer the solicited, amongst them being the principal in the town. A resolution was adopted o the strike from that night, allowing the m go to work at all shops where their rule rate of wages had been agreed to.

Chainmakers' Wages.—The chain and makers of Cradley Heath district have s the following notice on their employers:— chain and trace makers beg respectful inform you that they will require the 4 price for any work they may make afte 2nd of August next." Things have been be a long while in the chain trade, and it is that there are at present hundreds of the people striving hard for the pittance of 6 week.

Bristol.—It is reported that the master bu of Bristol are now obtaining the servic London masons used to the working of stone, to take the place of the men on s some masons introduced from the North being accustomed to this class of work. stonemasons offered to submit their rul further consideration if the employers not enforce the reduction of a halfpenn hour in their wages, but allow them to s work at the old rate of payment. The m replied that the only basis on which they negotiate with the workmen would be th the outset they should accept the redu If they admitted the necessity of the redu the employers would then be prepared to arrangements for an interview with the sentatives of the workmen. The men, how refused to submit to the reduction. The has now lasted more than two months.

PROVINCIAL NEWS.

Ryde (I.W.).—A meeting of the Ryde Council was held on the 15th inst., to co the tenders for the extension of the Espla and the construction of the new promena Apley. There were eight tenders for the that of Messrs. Perry & Co., Tredegar W Bow, being the highest—21,475*l.* The l was that of Messrs. Meats, Bros., of Nottin whose tender was 9,000*l.* The surveyor several practical members of the council that this must be a mistake, as, after car going through the quanti ies, they did no how the work could possibl be carried o less than 12,000*l.* or 13,000*l.* The S Improvement Committee, under these ci stances, recommended the council to acce next lowest tender, that of Messrs. Hill & of Stokes Bay Works, Gosport, whose t was 12,975*l.* This firm constructed the fo Spithead, and have carried out a numb Government contracts. Mr. Futcher mov an amendment that the lowest tender b cepted. Councillor Ellery, in supportin amendment, spoke of the wide differenc contractors' tenders as they appeared i *Builder*. The amendment was lost by 6 and Messrs. Hill's tender was accepted. wards of nine acres of the shore will closed, and the carriage-drive of the Espl will be continued out to Apley Point. then wind round a miniature lake of th water, back to the present Esplanade.

k.—New business premises on Foss Bridge, for Messrs. Whitehead & Co., are now aching completion. The building is built ick, in the Italian style, boldly treated stone dressings. The building has been ted by Mr. J. Morley, architect, Bradford, he work has been carried out under the intendence of Mr. J. Mande. The follow- e the contractors for the different works:— s. Walker, Brothers, bricklayers, with Mr. r as stonemason and Mr. W. Hessey as r; Mr. Dennison, joiner; Mr. Bousfield, ork; Mr. Ward, plasterer; and Messrs. H. Scaife, painters, all of York; and Mr. , plumber, Bradford.

FROM SCOTLAND.

ashiels.—On the 17th inst. the Galashiels Council met to consider what steps should en in the matter of the pollution of the l. It was agreed that a survey be made town, preparatory to getting competitive for a drainage scheme.

ngow.—The new floating baths, designed r. James M'Cunn, and intended to be d off Fort Matilda, Greenock, were ed at Port Glasgow on the 18th inst.

ntisland.—At a meeting of the Burntisland Council on the 18th inst., a report by s. J. & A. Leslie, civil engineers, was sub- d as to the effect of depositing ballast on ast foreshore, and the means to be adopted eventing its being washed away by the For the retention of the ballast in future, s. Leslie recommend the erection of a vater, 1,450 ft. along the line of low- mark, which is the town's boundary, ng an area of 13¼ acres, and which might 750*l.*

STAINED GLASS.

dingley (*Leeds*).—The east window in St. el's Church has been filled with stained llustrative of some of the principal events Passion of our Lord. The subjects chosen e four chief openings are as follow:— st bearing the Cross," the "Crucifixion," Resurrection," and "Christ meeting Mary he Resurrection," the "Ascension," as lminating event, being reserved for the larger tracery lights. The work is exe- n the style of the fifteenth century, and en designed and painted by Powell, Bros., the superintendence of Mr. C. Fowler, ect, Leeds.

eshall. — A new stained-glass window st been placed in the north aisle of St. Church, at the back of the choir-stall, or G. D. Skingley, in memory of his late The window is divided into three lights, e subject illustrated is the "Sermon on ount," the text being "Blessed are the heart, for they shall see God."

.—Two stained-glass windows have been ted and placed, one in St. Thomas's and ier in Holy Trinity churches, in memory late Ven. Archdeacon Morgan. The one v contains twelve Scriptural representa- hree in each light. The upper portion other illustrates an angelic choir, and the ver divisions Scripture subjects, such as Good Shepherd." The windows are by . Ward & Hughes.

rborough.—The clergymen who have been ed to holy orders by the Bishop of Peter- h during the ten years of his episcopate laced a stained-glass window in the pri- apel of the Bishop's Palace. The window, is in two lights, is illustrative of Psalm 6,—"He that goeth forth and weepeth, precious seed, shall doubtless come with rejoicing, bringing his sheaves with The window is the work of the well- firm of Lavers, Barraud, & Westlake, n.

Messrs. Harvey & Davids' Sale, at lart, last week, amongst the various ties sold was a freehold and leasehold situate in Artillery-passage and Fryingley, Spitalfields, for which there was a d competition, in spite of the uncertainty the exact boundary of the freehold and old portions, which Mr. Davids, the neer, very properly pointed out. The amount realised, 6,682*l.*, showed that ties divided into small lots are fetching rices at the present moment.

CHURCH-BUILDING NEWS.

Pickering.—St. Peter's church, Pickering, Yorkshire, has been restored and re-opened. Consisting of spacious nave, north and south aisles, transepts to north and south chancel, and tower with spire, the church's dilapidation had become so serious that it was dangerous to the congregation. Attention was first given to the Norman tower, the architect (Mr. J. S. Crowther, of Manchester) pronouncing it in a very unsafe condition. The foundations were taken out, and the greater part of the structure rebuilt. Then the foundations of the north wall and chancel were made good. The north transept was found to be so decayed that nothing short of rebuilding would serve, and this also was done. The chancel, which was in an almost equally bad state, has been restored at the cost of the Ecclesiastical Commissioners, the work including a new open roof of Riga oak. From the west end the old gallery and vestry have been removed. The high-backed pews have been replaced by open stalls of oak. With the exception of the old stained-glass east window, which it was not necessary to disturb, and whose five lights are filled with figures of our Saviour and the four Evangelists, the windows were of a very plain description. Several new stained-glass windows have been erected in the church. The two transept windows, by Clayton & Bell, have been erected by James and Thomas Mitchelson, in memory of their father and mother. A window in the centre of the north aisle (by Shrigley & Hunt, of Lancaster), in memory of Eliza Cole, is illustrative of the parable of the Good Samaritan.

Tresco.—The new church of St. Nicholas at Tresco, Scilly, has just been opened. The dimensions of the building are 81 ft. by 22 ft. in length, width at the transept 48 ft. by 24 ft., and the seating accommodation is for 250 persons. The church is cruciform in shape, and is surmounted by a small square tower, which stands on the south-east side. The roof is vaulted, and of pitch pine, and the whole of it, as indeed the entire main fabric of the church, has been executed by workmen on the Tresco Estate. The east window, which consists of three lights, was designed and executed by Mr. Kempe, of London. Beneath the window has been erected a reredos, the gift of Colonel Smith-Dorrien. It is made of Cornish marble, and is the workmanship of Mr. Bradbury, of Penzance. The pulpit is the gift of Mrs. Smith-Dorrien, and is of carved woodwork, with a stone pedestal. The font is of Cornish marble, supported by small granite columns. Mr. Dorrien-Smith has given valuable assistance in the building of the church; and, indeed, the original design was prepared by him.

Stowe.—The church of St. John the Baptist, Stowe, has been re-opened, after restoration. The work now done has opened out the tower to the nave, the western gallery being removed, an arcade with new aisle being formed on the south side. The arcade consists of three arches. The plaster ceiling has been removed, and the present timbers, though of a rough character, have been exposed to view, and carved bosses, corbels, and pendants added, whilst the whole underside has been boarded upon the rafters. A vestry or sacristy, with heating-chamber underneath, has been added on the north-east side, divided from the aisle by a wooden screen, the whole being warmed by hot-water apparatus. The church has been reseated throughout. All is plain deal, unstained and varnished. The pulpit, reading-desk, and font have been restored and refitted. The accommodation in the church as now completed is greater than when the old galleries existed. The stone-work has been dressed and pointed inside, but outside the old stones have been used without dressing off or disturbing the old gray coating. The architects under whose direction the work has been designed and carried out, as also that previously done in the chancel, are Messrs. W. G. Habershon & Fawckner, London; the builder being Mr. Whittingham, Newport, Salop.

Llanbadarn Fawr (*Wales*).—On the 1st inst., Mr. Seddon inspected the works done to the tower and north and south transepts of this church, and reported that the whole had been executed in a workmanlike manner, to his satisfaction. It was resolved that the contract for the seats under the tower be let to Messrs. Roderick Williams & Son, for 170*l.* Also, it was agreed that a chamber, 10 ft. deep, be excavated at the north-east corner of the tower, and a drain therefrom to the road. Fittings are still required. The lovers of ecclesiastical antiquity are requested to lend a helping hand to complete this undertaking, by sending contributions.

Halifax.—The restoration of Halifax parish church is approaching completion, and the 7th of October is definitely fixed for the opening.

Bristol.—The church of St. Werburgh, which formerly stood at the top of Small-street, and which was pulled down to be re-erected in Mina-road, Baptist-mills, will be completed in about two months. The length of the new church is 79 ft., being 19 ft. longer than the old one, but the breadth is the same, namely, 59 ft. It consists of a nave, north and south aisles, chancel, organ-chamber on the south side of the chancel, vestry on the north side, western porch, and tower. The only difference in the plans of the old and new churches is that the latter has a chancel which the old one had not, and that there is an alteration in the position of the turret, which was originally on the north-west angle of the tower, but it is now placed on the south-west angle. The chancel is 20 ft. wide and 25 ft. long. The roof is of pitch-pine. The main ribs are supported by the figures of angels carved in wood. The nave will be seated with pitch-pine open benches to accommodate 650 worshippers, which is greatly in excess of the old building. The windows of the nave are five-light windows cusped, of two designs alternating. The exterior of the building is of free-stone; the roof is covered with Broseley tiles. The whole of the monuments from the old church are being re-erected.

Aston.—Aston Church, Birmingham, is now in course of enlargement and restoration. The church at present provides accommodation for nearly 500 people. The enlargement will provide 800 additional seats. This will be done by extending the nave and aisles in an eastward direction to about the end of the present chancel, and the addition of the present vestry under the tower. The roof and clear-story windows will be raised to a suitable height, a new chancel will be erected, with an organ-chamber on the north side, and the present chancel re-erected, together with the monuments it now contains in their present relative positions on the south side; and a new vestry will be built. The cost of the work is estimated at between 8,000*l.* and 10,000*l.* The first section of the work, which is now in progress, consists of the extension of the nave and aisles, and is estimated to cost 4,000*l.* The work is being done by Mr. Davies, of Watery-lane.

Hampton Wick.—The alterations to St. John's Church, Hampton Wick, are now completed. A pulpit has been erected, to correspond with the new seats, which are of pitch-pine. The whole of the work has been executed by Mr. John Hurst, contractor, Teddington, from the designs of Mr. R. T. Elsam, architect, Hampton Wick.

Winderton.—The new church which has been erected in the village of Winderton, in the parish of Brailes, has been consecrated by the Bishop of Worcester. The architect is Mr. William Smith, of London, and the builder was Mr. Attwood, of Brailes.

DISSENTING CHURCH-BUILDING NEWS.

Kirkcaldy.—A new "Original Secession" church has recently been opened at Kirkcaldy. The church is situated on rising ground in St. Clair-street, is built in the Gothic style of architecture, and is seated to accommodate 200 persons. The total cost is estimated at 850*l.* The sole contractors for the work were Messrs. Fraser & Son, builders, Pathhead.

Willington Quay.—The foundation-stones of a new Wesleyan chapel were laid, on the 16th inst., at Rosehill, Willington Quay. The new building will be of brick, with stone dressings. The length inside will be 44 ft. and the breadth 31 ft. There will be a school-room underneath the chapel, and each will be capable of accommodating about 300 persons. Mr. James Grant, of St. Anthony's, is the contractor and builder, and the undertaking will be superintended by Mr. R. Davidson, trustee's secretary, as clerk of the works. The total cost will be 800*l.*

Askern.—The new Wesleyan chapel at Askern has been opened. The contract for the erection of the chapel was let to Mr. John Parry, of Castleford. The chapel is in the Early English style, and is calculated to seat 400 hearers. Behind the chapel are a vestry, two class-rooms, and a school-room capable of accommodating 100 children. The heating apparatus has been supplied by Messrs. Truswell and Holden, of Sheffield. The cost of the erection and fittings (exclusive of the site) will be about 1,600*l.*

Books.

The Law and Practice as to Particulars and Conditions of Sale, with Notes and Forms. By R. H. COLE. London, 1879.

THE title of this little work is misleading, for it is in reality nothing more than a small handbook, less than 100 pages in extent, of conditions of sale. If it were what its name purports we should not mention it here, but being, as we say, no more than a handbook, it will be of use to a good many of our readers who may wish to know something of the subject of which it treats. Any one who has a difficult question in connexion with sales of land or houses will probably ultimately save money by consulting his lawyer; but, on the other hand, the man who only requires to find out some point of no great difficulty or importance will most likely save six and eightpence if he possesses this handbook.

The Abbey Church of Melrose, Scotland. Illustrated by FREDK. PINCHES, Architect, A.I.B.A. Shaw & Son, Fetter-lane, London.

IN the year 1878 Mr. Pinches spent upwards of three months at Melrose making measured drawings of the remains, most of which were submitted in competition for the Silver Medal of the Royal Institute of British Architects, and were successful in obtaining it. While engaged on the work, it was suggested to him by numerous visitors to the Abbey, that, as there were no measured drawings extant, it would be very desirable for him to publish his. This he has done, believing that measured drawings of this interesting ruin would be acceptable to many who would otherwise be unable to enjoy a careful study of the building. The work consists of ten large photo-lithographic plates, comprising general drawings of the Abbey Church, numerous details and perspective sketches, with twenty pages of historical and architectural descriptive text. It makes a handsome volume, and shows that Mr. Pinches possesses considerable skill in draughtsmanship. The remains range in date between the years 1322 and 1510. Thanks to Sir Walter Scott, the ruins of Melrose Abbey Church have been heard of wherever the English language is spoken, and elsewhere besides.

Cottages: How to Arrange and Build Them to insure Comfort, Economy, and Health; with Hints on Fittings and Furniture. By a Sanitary Reformer. London: Bemrose & Sons.

THIS, which is designed to be a popular book of information and suggestion on the subject of which it treats, would have been more directly useful and more likely to be read if the advice and information contained in it had been given in a more condensed form, and less spun out with reflections and quotations which are sometimes hardly to the point and add nothing to the value of the book in any way. A book on a practical subject such as this can hardly be too condensed and too plain and matter-of-fact in style. Apart from this objection, which would be of little comparative consequence except that it must diminish the usefulness of the book to some extent, there seems to be a good deal of information contained in it in regard to the more obvious requisites of health and convenience, and making the most of space and material, in cottages and small houses; and a number of plans are given for suggestion and comparison. There are also some hints as to inexpensive methods of making cottage rooms a little ornamental and interesting, as they may very well be made at little cost of money, though not without some expenditure of trouble and consideration. It would have been better to have omitted the elevations to the cottages,—they are not good. It is impossible economically to make buildings of this class ornamental or artistic; it must be sufficient to make them neat and suitable looking. The barge-boards and other excrescences added by way of cheap ornament only make such buildings look flimsy and pretentious.

VARIORUM.

THE attention of all those of our readers who take interest in survey, and more especially in hydrographic survey, will be awakened by the review of Herr Brugsch's "Egypt," in the present number of the *Edinburgh Review*. We referred to the great interest of the work, in an architectural point of view, at the time of its publication; and the last number of the *Quarterly* contained a review highly laudatory of the volumes. The present number of the blue and buff, however, turns the reverse of the medal; and, while rendering no stinted praise to the picturesque portions of the work, joins issue most stoutly as to Herr Brugsch's geographical views. The Reviewer has consulted and compared a series of maps of Northern Egypt, the first of which is attached to the geography of Ptolemy,—a work written in the second century of our era; while the last is a chart published by the English Admiralty in 1858. These maps show a steady growth of the delta to the north, the difference between the position of the coast-line in Ptolemy's map and in that of Admiral Spratt being no less than forty-one miles. At this rate of increase it becomes evident that the statements of Herodotus as to the accessibility of Memphis from the sea in his time are probably exact. The issue joined between the Reviewer and Herr Brugsch is simply whether the latter, in taking the great French survey of 1807 as the basis of the map published with his book, has not represented a state of things which was merely a transient phase in the constant transformations of the delta which occurred at the commencement of the present century, as existing at the time of the exodus. The subject cannot fail to excite discussion, and it is one as to which we do not see that any difference of opinion can be ultimately admissible. When we find the German author, referring to a narrow cordon of sand shown on his map, saying,—"It was on this narrow tongue of land, bounded on the one side by the Mediterranean Sea, on the other by the lagoons of weeds, between the entrance to the Khirot, or the gulf, on the east, and the Sanctuary of Baal Zephon on the west, that the great catastrophe took place"; while the Reviewer says that the position thus indicated "must have been at the bottom of the Mediterranean, and from eighty to a hundred miles north of the coast of the delta, at the time of the exodus," it is clear that the question is not one of literary criticism, but of hydrographic action, and of the authenticity of maps.——*House and Home*, a penny journal referring to sanitary house construction, overcrowding, domestic economy, and so on, is likely to do useful service by carrying information on these points down to lower and wider strata of the social pyramid than have been yet approached.——*Fraser*, under Principal Tulloch, starts afresh this month, opening with a pleasant sketch of what it has done and what it will hope to do. It includes the first portion of a story, "Mary Anerley," which promises well.——We understand that Mr. Richard Anderson, F.C.S., whose paper on Lightning Conductors attracted attention last year at the meeting of the British Association, has nearly ready for publication an extended treatise, which will discuss, both historically and practically, the whole subject of protection from lightning.——It is proposed to publish by subscription "Selections from the Records of the City of Oxford, with Extracts from other Documents illustrating the Municipal History: from Henry VIII. to Elizabeth [1509—1603]." The work will be edited, by authority of the Corporation of the City of Oxford, by Mr. Wm. H. Turner, of the Bodleian Library; under the direction of Mr. Robert S. Hawkins, town clerk. The chief interest of these records lies in the full and vivid pictures which they give of the struggles between the city and the university. The dissensions arising from the charter of Henry VIII. obtained by Cardinal Wolsey for increasing the power of the university, and its ultimate rejection; the contest of the citizens in maintaining their Court Leet, and the final reference of all matters in dispute to the Privy Council, with the orders thereon; the discommoning and excommunicating of the mayors and bailiffs by the university, and the proceedings of the former in endeavouring to assert their privileges, are all duly and fully recorded.——The *Sanitary Record* says,—"Attention has lately been called to the want of proper ventilation in the underground tunnels of the Metropolitan Railway, and it is suggested that a very salutary lesson might be derived by the directors, after an inspection of the Liverpool Lime-street tunnel, of the Mont Cenis Railway tunnel, or of any second-rate colliery. One gentleman, by way of illustration, gives his experience while lately travelling between Edgware-road and King's-cross stations. He describes the condition of the atmosphere to have been so poisoni that, although a mining engineer, he was alm suffocated; was obliged to be assisted out of t train at an intermediate station, taken t chemist's shop close by, and be supplied w some restorative. The chemist admitted t he had often twenty similar applications i day." We have ourselves called attention to matter more than once. Something should n certainly be done to cure this much-complai of evil.——The *American Bookseller*, for Ju includes a valuable Index (monthly) to Cur Periodical Literature, Proceedings of Socie and Government Publications, for which we glad to see good use has been made of our pages.

Miscellanea.

The Chair of Fine Art, Edinburgh Although the deed of foundation for the Wat Gordon Chair has not yet been form communicated to the Senatus Academi arrangements are being made for having Professorship brought into operation with unnecessary delay. The bequest, w amounts to a little over 11,000*l.*, cannot, h ever be fully realised for six months to co so that the proposed class cannot be ope before the session of 1880. The condit which the testator, the late Mr. H. Watson has attached to the foundation, vide, the *Scotsman* believes) that the appo ment of the professor shall be vested in University Court, together with the p dent of the Royal Scottish Academy, and a course of instruction shall be given in history and theory of the Fine Arts and o topics connected with the subject. Of 11,000*l.* bequeathed, 1,000*l.* will be retained the University Court for application in nexion with the Chair; and the revenue ac ing from the remainder of the endowment, w is expected to be between 400*l.* and 500*l.* a will form the salary of the Professor, in addi of course, to his class fees. As to the stud all that is stipulated is that prize-takers at Life School, not exceeding six in number, be entitled to attend the classes without ment of fees. The professorship will, i probability, be offered to one of the Sc Academicians.

Dr. Schliemann, writing from Troy (M Minor) to a friend in Indianapolis, says, "I h that there is no lady in the world who c have made me so happy as Mrs. Sophia Sc mann, whom I married ten years ago from affection, and because, though she then knew her native tongue, the modern Greek showed a great enthusiasm for Homer archæology. Since that time she has perfe mastered nearly all the European langua learned nearly all the Homeric poems by h and constantly assists me with fervent ze all my undertakings; nay, the French ed of my Mycenæ is dedicated to her, and fully deserves it. You say my work has been profitable to me; but if, as you say, read my Mycenæ, you ought to know th work from pure love for science, and that I away to the Greek people the immense treas found by me and my wife at Mycenæ. . . Believe me we have nearly all our mone America, and if we buy a home in Indiana it is with the intention to remove thither so or later. We spend the value of palaces in scientific explorations, but are content and ha in a modest little cottage."

A Sanitary Reformer's "Te Deu ought now (says the *Hampshire Independen* be sung in Winchester. The twenty years against cesspools is brought to a close b announcement from the Town Council that are prepared to receive applications for necting with the main drainage. It is a illustration of the excellent adage, — "P verantia omnia vincit."

Tower (High Level) Bridge (Metrop Bill.—The Select Committee on this Bi newed its sittings on Monday, when the C man (Lord H. Lennox) announced that, in unanimous opinion of the Committee, the amble of the Bill had not been proved. Bill is therefore thrown out.

St. Mark's Church, Hamilton-terra We are asked to say that the execution of six mosaic panels in the pulpit should have ascribed to the Venice and Murano Mosaic C pany, instead of to Dr. Salviati.

Electric Light still burns brightly on ictoria Embankment, although extin- d on the Holborn Viaduct. At the meet- the Metropolitan Board of Works on the nst., the Works and General Purposes ttee reported on an offer by the French oal Society to supply twenty additional at a charge of 3d. per light per hour for ole sixty lights, provided that the Board give them a contract for twelve months he expiration of their present contract; commended that a proposal be made to iety to place eight or ten of such addi- lights upon Waterloo Bridge; that the of St. Martin's-in-the-Fields be asked to ate with the Board with a view to the g being extended along Northumber- venue; and that, subject to the Board enabled to make these arrangements, er of the French Society be accepted. sser Rogers, in moving the adoption of port, said that in December, 1878, the ommenced its experiment on the Em- nt, when twenty lights were provided t of 6d. per light per hour. After awhile rge was reduced to 5d. per light per For nearly nine months the Embank- ad been lighted by this means without ure or hitch of any kind whatever. The of lamps had been increased from to forty, and so marked was the pro- hat had been achieved, that it was now hat they could maintain the light on one having a radius of over two miles and a The company was now prepared to reduce ge to 3d. per lamp per hour. The report opted.

Extension at Great Grimsby.—ion Dock, opened by the Prince of Wales day, is the most recently-constructed of of docks constructed by the Manchester, d, and Lincolnshire Railway, and it con- e Old with the Royal Dock. The rail- mpany have expended in the construc- docks at this port the large sum of 00l. The whole area covered by these works is 71¼ acres, and there is, be- nother dock in course of construction area of 26 acres, while it is proposed to timber dock which will extend over a 19 acres. It is in contemplation, too, im from the Humber 203 acres more r the purpose of further dock ex- The proceedings of the day included eiling of a statue of the late Prince (who laid the foundation of the Royal 1749), given by Sir E. W. Watkin. The which is of bronze and of heroic size, is a of that which was executed for the y Mr. W. Theed, and which was erected g a few years after the Prince's death.

h of Mr. Charles Landseer, R.A.—rles Landseer, R.A., died on Tuesday at his residence in St. John's Wood, in y-first year. He was the elder brother dwin Landseer. He first exhibited at al Academy in 1828, and he was a con- to the present year's exhibition. He pted an Associate in 1837, and eight terwards he became an Academician. e Keepership of the Academy became y the resignation of Mr. Jones in 1851, les Landseer obtained the appointment, e continued to hold until his failing compelled his resignation, about six o.

ew Exhibition.—An Exhibition and of Machinery, Implements, Utensils, ings used in brewing, malting, distil- e-pressing, and in the making or manu- of aërated waters, cordials, syrups, erry, cigars, tobaccos, pipes, &c., also implements, utensils, machinery, and cessories necessary for the business of d victualler, is to be held in the Agri- Hall, London, commencing on Monday, of September.

Ordnance Survey.—In the House of s, on Monday, Mr. Gerard Noel, First ioner of Works, replying to Mr. Rowley d:—"Satisfactory progress is being ith the Ordnance Survey of England les on the 25-inch scale. Eighteen have been surveyed, rapid progress is ade with thirteen others, and six have been partially surveyed. With the county of Worcester, I fear some ne must elapse before the survey of nty can be commenced."

Darenth Asylum.—The managers of the Metropolitan Asylums Board paid their first annual visit last week to a new work which they have commenced, in the endeavour to utilise a hitherto waste force, by the education and industrial training of pauper imbecile children. A temporary asylum was established under Sir E. H. Currie's committee, and there the pauper imbecile children drawn from workhouses and asylums were classified, taught, and trained, under Miss Stephens. The asylum at Darenth, built on the hill overlooking the valleys of the rivers Thames and Darenth, was completed last year from designs by Messrs. A. & C. Harston, and accommodates 700 children, and on Saturday 420 of them were seen. The visitors were taken over the asylum by Dr. Fletcher Beach, the medical officer, and by Mr. and Mrs. Gower, the administrative officers. While all were pleased with the general construction of the building, the system of open corridors,—insisted upon, it was stated, by the Local Government Board because an inspector had seen it in Berlin,—was generally regarded as altogether unsuitable to a building on a Kentish hill. The asylum is a working institution in all respects, and is independent of sewerage, water, and gas companies, for it utilises the sewage, makes its own gas, pumps its own water, and grows part of its own food.

Porcelain at Liverpool.—The prizes offered by Mr. P. H. Rathbone, late president of the Liverpool Art Club, for the best specimens of painting on porcelain, of which an exhibition will commence next week at the Club-room, have just been awarded. M. S. Arnoux, of Stoke-upon-Trent, was consulted as to the merits of the various specimens submitted, and he has awarded to Mr. W. J. Audsley, of Liverpool, the first prize for a specimen of large Venetian glass, numbered 4 in the catalogue; and the second to Mrs. Richard Williams, of Wrexham, for a pair of vases, marked No. 77 in the catalogue. No. 7 in the catalogue, a specimen of work from Miss Marian Gemmell, Ainsley-road, London, has been highly commended. There are altogether 174 works catalogued.

Brompton Hospital for Consumption.—The Prince of Wales last week laid the foundation-stone of a new building for the Hospital for Consumption and Diseases of the Chest, Brompton. The extra building is situated opposite the hospital of which it forms an extension, in the Fulham-road, and will contain accommodation for 137 beds. Mr. T. H. Wyatt is the architect, Messrs. Higgs & Hill, of South Lambeth, being the builders.

Tramways.—This last week Mr. John T. Simpson, contractor, of Newcastle-upon-Tyne, completed his contract with the Newcastle Corporation for the laying down of seven miles and a half of tramways in that town. The system adopted was Kincaid's, of London, and the engineer was Mr. A. M. Fowler, late borough engineer of Salford.

Compensation.—An American lady who is now travelling in Italy—happy creature!—writes to a friend, according to the *Parisian*, from Venice:—"The architecture is singular, but ices and sherbets cost next to nothing."

Art Exhibition in Munich.—The International Art Exhibition in Munich was opened on the 19th inst., by Prince Luitpold, who was commissioned by King Louis to preside at the inauguration.

TENDERS

For alterations and additions to the Duke of Edinburgh, Queen's-road, Bayswater. Messrs. Bird & Walters, architects:—

Nightingale	£2,415 0 0
Williams & Son	2,360 0 0
Godden	2,320 0 0
Hockley	2,090 0 0
Anley	1,997 0 0
Brown & Son	1,948 0 0
Mark	1,930 0 0

For alterations and additions to the Queen public-house, Neate-street, Camberwell, for Messrs. Watney & Co. Mr. C. W. Bovis, architect:—

Hedgley	£1,140 0 0
Hockley	1,114 0 0
Anley	1,017 0 0
Taylor	967 0 0
Grimwood & Sons	968 0 0
Steele, Brothers	870 0 0

For alterations to the Prince of Wales, Kentish-town, for Mr. Dyson:—

Gould & Brand	£165 0 0
Somerville & Hill (accepted)	148 0 0

For the erection of a villa residence on Haverstock-hill, for Mr. B. Brooks. Mr. R. E. Tyler, architect:—

Somerville & Hill (accepted)	£800 0 0

For alterations and additions to the Carpenters' Arms, Princess-street, Edgware-road, for Mr. H. Gordon. Mr. J. O. Cocks, architect:—

Eaton	£930 0 0
Hockley	838 10 0
Reames	800 0 0
Slater	759 0 0
Ellis	733 0 0
Mark	670 0 0
Beech	665 0 0
Forster	605 0 0
Vaughan	560 0 0
Harris (accepted)	558 0 0

For the completion of schools, Drummond-street, Hampstead-road. Messrs. Tarring & Wilkinson, architects:—

		Extra for Lift.
Scrivener & White	£937 0 0	£40 10 0
Veitch & Close	893 0 0	50 0 0
Bywater, Brothers	867 0 0	45 0 0

For first portion of Art School, Kennington, for the City Committee of Technical Education. Messrs. Tarring & Wilkinson, architects:—

Bucknall (accepted)	£593 0 0

For the erection of a dwelling-house in Fisherton-street, Salisbury, for Mr. G. J. M. Main. Mr. Frederick Bath, architect. Quantities supplied:—

Dolman	£1,299 0 0
Hale & Sons	1,297 7 9
Adey	1,274 0 0
Tryhorn	1,159 0 0
Harris (accepted)	1,154 15 0

For alterations to residence at the Castle Brewery, Salisbury, for Messrs. Penn, Heath, & Waters. Mr. Frederick Bath, architect:—

Barber	£142 5 0
Young & Sons	130 0 0
Tryhorn (accepted)	88 10 0

For additions to the Birdcage, Melton Mowbray. Mr. R. W. Johnson, architect, Melton:—

Barnes	£630 0 0
Glover	560 0 0
Hensman	550 10 0
Hayes	502 10 0

For forming new streets at eastern end of Melton Mowbray. Mr. R. W. Johnson, architect:—

Brown	£316 16 6
Hensman	625 10 0
Shaw	515 0 0
Barnes	510 0 0

For additional stabling at Cold Overton Hall. Mr. R. W. Johnson, architect:—

Hayes	£800 0 0
Halliday	525 0 0

For farm-steading at Edmundthorpe. Mr. R. W. Johnson, architect:—

Cotton & Co.	£2,520 0 0
Halliday	2,288 0 0

For addition to premises at Toft, Lincolnshire. Mr. R. W. Johnson, architect:—

Thompson	£1,559 0 0
Halliday	1,270 0 0
Story & Son	997 0 0

For the erection of a Coffee Tavern and Working Men's Club, Crouch End, Hornsey. Mr. Edward J. Paine, architect. Quantities supplied:—

Harper	£1,676 0 0
Bamford	1,649 0 0
Holmes & Son	1,639 0 0
Ebbage	1,500 0 0
Axford	1,468 0 0
Beck (too late)	1,412 0 0
Maitock, Brothers	1,316 0 0
Kerry	1,315 0 0

For the erection of new beer, malt, and hop stores, for Messrs. Green & Clarkson, Burton-on-Trent. Messrs. Scamell & Colyer, architects. Quantities by Messrs. Curtis & Son:—

	Buildings.	Ironwork.
Lilley	£2,700 0 0	£421 0 0
Dakin	2,651 0 0	415 0 0
Low	2 046 0 0	376 0 0
Chamberlain	1,998 0 0	410 0 0
Maddocks (accepted)	1,973 0 0	
Wiseman	1,936 0 0	
Handyside	——	403 0 0
Thornewill & Warham	—— (acceptd)	339 10 0

For new Presbytery, for the Rev. Canon O'Sullivan, adjoining the Catholic Chapel, Solihull, Warwickshire. Messrs. Joseph A. Hansom & Son, architects:—

Deebank (accepted)	£1,017 0 0

For repairs, decoration, &c., to Roydon Hall, Kent, for Lady George Gordon Lennox. Mr. A. E. F. Spratt, architect:

Punnett & Sons (accepted)	£732 0 0

For extension of schools, Harwood-road, Chelsea, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Manley	£4,852 0 0
Wood	4,715 0 0
Cox	4,570 0 0
Wall, Brothers	4,550 0 0
Shepherd	4,500 0 0
Ashby, Brothers	4,498 0 0
Lawrence	4,445 0 0
Bangs & Co.	4,430 0 0
Hobson	4,375 0 0
Higgs & Hill	4,344 0 0
Hook & Oldrey (accepted)	4,333 0 0

For building spinning-mills for Mr. J. Dawson, Manchester. Mr. Fredk. Kay, architect. Quantities by Mr. W. Hofmann Wood:—

Atkinson	£3,799 0 0
Johnson	3,750 0 0
Gill	3,748 19 0
Webster	3,745 0 0
Hall	3,730 0 0
Wilkinson & Co. (accepted)	3,705 18 0

For the erection of new Board School buildings, Buckingham. Mr. E. H. Lingen-Barker, architect:—

Hawkins	£2,500 0 0
Cooper	2,461 0 0
Coleman, Brothers	2,385 0 0
Balcombe	2,317 0 0
Holton	2,150 0 0
Malshall & Boyse	2,100 0 0
Munday	2,000 0 0
Tibbetts	1,999 0 0

For alterations, additions, and decorations at Westbourne-grove Chapel. Mr M. M. Glover, architect:—

Woodward	£280 0 0
Staines & Son	274 0 0
Bowles	271 0 0
Dixon, Roberts, & Lawrence	251 1 7½
Hook & Oldrey	232 0 0
Parker	222 0 0
Temple & Foster	210 0 0

For the erection of new schools, Gloucester-grove, East Chelsea, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Hunt	£6,974 0 0
Boyce	6,953 0 0
Holson	6,896 0 0
Higgs & Hill	6,894 0 0
Aichison & Walker	6,844 0 0
Hook & Oldrey	6,792 0 0
Kirk & Randall	6,775 0 0
Wall	6,599 0 0
Grover	6,484 0 0

For additions and alterations to Waterloo-street Schools, Chelsea Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Rankin	£5,200 0 0
Higgs & Hill	5,194 0 0
Scrivener & Co.	5,111 0 0
Thompson	4,928 0 0
Hobson	4,901 0 0
Jerrard	4,864 0 0
Tongue	4,846 0 0
Williams, Son, & Wallington	4,844 0 0
Hook & Oldrey	4,781 0 0
Tyerman	4,693 0 0

For alterations and additions to Holmwood House, Haverstock-hill. Mr. William Murray, architect:—

White	£1,035 0 0
Wall, Brothers	1,025 0 0
Hook & Oldrey	950 0 0
Julian & Co.	950 0 0
Revised Estimates.	
Hook & Oldrey	882 0 0
Julian & Co.	845 0 0

For new shop and dwelling-house, St. Martin's-street, Leicester-square, for Messrs. Fladgate, Smith, & Fladgate. Messrs. Quilter & Hardcastle, architects:—

Wall	£1,999 0 0
Hook & Oldrey	1,949 0 0
Turrell	1,935 0 0
Brass	1,793 0 0
Nightingale	1,752 0 0
Battley	1,695 0 0

For painting, &c., Nightingale-street Schools, for the School Board for London. Mr. E. R. Robson, architect. Quantities not supplied:—

Mark	£350 0 0
Petchy	319 0 4
Wall, Brothers	310 0 0
Grover	298 0 0
Hook & Oldrey (accepted)	295 0 0

For the making of a filter bed, the construction of a small covered reservoir, a quantity of pipe-laying, 100 yards of tunnelling 6 ft. square, &c., for the Pemberton Local Board, near Wigan. Mr. George Heaton, engineer:—

Gaskell	£2,013 5 4!
Eckersley & Jones	1,984 5 6
Middlehurst	1,757 0 0
Noel	1,660 0 0
Winnard	1,533 10 11
M'Guire	1,509 19 2
Fotherley & Sons	1,4-3 19 5
King	1,465 10 [illegible]
Braddock & Matthews	1,461 3 3
Johnson	1,442 5 3
Taylor & Duckworth	1,268 6 7
Cunliffe (accepted)	1,060 0 0!

For outfall sewer for the manor of Aston Local Board. Mr. Wm. Humber, engineer:—

Young & Co.	£13,801 13 10
Palmer	13,205 16 5
Hilton	13,118 17 5½
Bell	13,113 11 5
Nelson & Co. (accepted)	12,639 0 0

For new pavilion and other works at Stockwell Fever Hospital. Messrs. T. H. & M. T. Wyatt, architects. Quantities by Messrs. George Lansdown & Harris:—

Tibbett & Adams	£7,990 0 0
Chappell	7,933 0 0
Jones & Co.	7,760 0 0
Howard & Dorrell	7,489 0 0
Higgs & Hill	7,280 0 0
Nightinga'e	7,083 0 0
Tongue	6,643 0 0
Sawyer	6,489 0 0
Warren	4,775 0 0

For building three cottages in Warwick-street, Vauxhall, for Mr. John Jeffree:—

Whitby (accepted)	£770 0 0

For building two semi-detached cottages at Send Heath, Woking, Surrey, for Mr. W. Sedgley:—

Whitby (accepted)	£260 0 0

For completing premises, No. 8, Harrington-gardens, Gloucester-road, South Kensington, for the London Mortgage Company (Limited). Mr. W. Wimble, architect. Quantities by Mr. W. E. Stoner:—

Moreland & Nixon	£3,200 0 0
Conder	2,795 0 0
Scrivener & Co.	2,715 0 0
Braid	2,622 0 0
Wilson & Eaton	2,610 0 0
Lawrance	2,597 0 0
Faulkner	2,547 0 0
Nightingale	2,547 0 0
Ashby & Horner	2,543 0 0

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All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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AND 23, JEWIN STREET, E.C.

The Builder.

VOL. XXXVII. No 1904. SATURDAY, AUGUST 2, 1879.

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The Utilisation of Cleared Areas in London.

RECENT legislation has complicated rather than simplified the question of the residential accommodation to be provided for artisans and labourers in the heart of London, and indeed in others of our great centres of population. It is one of extreme importance, regarded from more points of view than one. It is not one that can be safely left to settle itself.

difficulties that oppose its summary
nt in any way are so great, that it is
going to the root of the matter, and by
ing not only the amount and nature,
the origin of these difficulties, that any
be held out of our seeing our way out
od.

e who is familiarly acquainted with
tal capitals can doubt that much of the
which now exists with regard to the
of suitable dwellings for that large
our population to whom every shilling
ject, has been very much enhanced by
e of independence and hatred of any
e official interference which form such
characteristics of the English people.
s and towns have grown almost with
cked growth of the forest. The quaint
ity of plan which characterises our
s contrasted with our Roman, towns
instance, Norwich as contrasted with
er) has evidently arisen from the habit
g alongside of any existing road, lane,
without taking thought how future
s they were successively built, might
modated. Thus angles and blocks of all
ve been allowed to grow up until,
e evil becomes too crying, and the
feeling insists on their removal,
ight, in the first place, have cost
nothing, involves the expenditure of
many thousands of pounds. And thus,
e, has it been with the habitations of
n poor. A mighty transformation is in
f silent operation, owing primarily to
great fact of the increase of population.
provement of any kind out of the ques-
e we as great haters of innovation as
r forefathers when they took as their
motto *nolumus leges Anglia mutari*,
nge would still have effected itself, in
our utmost efforts to resist it. It is,
, rather the case that when the pressure
n any portion of the social system by
ver sleeping force, increase of number,
intolerable, we usually set ourselves to
redress it. Our usual method, good or
t may prove, is to do so by legislation.
rk, if directed by the highest wisdom, and guided by the purest patriotism, can at best be only tentative and questionable. But as it happens to be the case that there are 656 voices that have a right to be heard as to every word of the drafting of any new law, in the first place, to say nothing of a smaller revising body in the senate, no one knows,—and no one is responsible,—how any new law will act. In point of fact, the first result of new legislation is usually legal dispute; next, very likely, conflict of judicial opinion; and then a new recourse to the legislature. Meantime, when physical need presses,—as in the case of people wanting house-room,—difficulties, of course, thicken around us.

The over-crowding of many parts of our cities has reached, as is well known, a state in which it has become a serious menace to the public health. This state of danger has been the natural outcome of letting things alone. Centuries ago, perhaps, some well-to-do citizen, who was a magnate (however small might be his proportionate bulk as compared to the masters of millions among ourselves) reared a house in the suburbs of London, in which his grandchildren clustered around his knee,—a substantial, comfortable house, which he thought might perpetuate his name and shelter his descendants, from generation to generation. Little could Alderman Whittington, or any father of the City in days far more recent than his, anticipate how the ever-rising tide of population would eddy round his gables, lap against the edge of his garden, pen in his view, overshadow his windows, and at last so far surround him with barriers of brick, and roof him with a canopy of smoke, that a move towards the country would become imperative,—first for the summer, then for the greater part of the year, finally as a settled abode. The old house would at first be retained for its business convenience, and the upper parts would be let. Year after year the same causes, operating in the same direction, would cause the old mansion to sink lower and lower in the scale of respectability. Subletting would exert its evil influence, and thus by degrees what was the Pleasaunce of the reign of Charles or of James degenerates into the rookery of the reign of Victoria. Then comes the great devouring dragon of the railway. Acres are required for stations where the ground is meted out by square feet, and inhabitants have been packed plane above plane; and the railway surveyor on the one hand, and the sanitary surveyor on the other, sweep from the heart of the latter their abodes, which, with very much of misery, extortion, and destruction of human life, are still found the common shelter of thousands of the labouring classes.

What is to become of the latter? That is the question before us. That unhealthy houses are pulled down is, in itself, a good. And whether it be a good or an evil, it is a fact, and one of very large proportions. But this is only half the problem. What is to become of the ousted thousands? A bad lodging is a great evil,—but no lodging is a greater. In a climate like ours, the extreme of misery is involved in giving, as the proverb has it, the key of the field, on a sudden to an industrious family.

Here comes in that question which has not yet been looked fully in the face. It is the question of the relation of cost of site to the character of residences to be erected on that site. And in regarding this, it must be admitted that there is very much, both in our laws which regulate building, and in the habits of our population, in all classes, to make this question assume a much more aggravated form in London than it takes, for instance, in Rome or in Paris.

Thus we are now told, and no doubt truly told, that the Metropolitan Board of Works have, in pursuance of the provisions of the Artisans' Dwellings Acts, lately cleared six sites, at a cost of 80,000*l.* per acre. One of these sites, in the neighbourhood of Whitecross-street, occupying about three acres, will involve the Board, it is calculated, in a loss of no less than 337,000*l.* The number of persons whom it is desired to accommodate on that site is rather less than 4,000, so that the cost of site alone comes to over 82*l.* per head, or 420*l.* for a family of five. Three acres of land are equal to 14,520 square yards. To house 4,000 persons on that area allows 3·62 square yards each. If we allow the accommodation to be arranged in three stories, and subtract the small allowance of one-fifth of the area for paths, courts, and open spaces, we arrive at the allowance of 8·712 square yards per each person. This is equal to 78·4 square feet; and if the rooms be taken at 9 ft. high in the clear, we have a cubic space of 705·6 cubic feet per inhabitant; a space containing just about twice the quantity of air that passes through the lungs of the individual in twenty-four hours.

Now, at the price of 80,000*l.* per acre, allowing for access, each square yard built over costs per site value more than 20*l.* We said before that there was a ground area allowance of 3·62 yards, which was increased by the expedient of successive floors, but which costs, in the first instance, 72·4*l.* per unit of population. Taking the three floors, this cost is reduced to 24·1*l.* per head. 700 cubic feet of building-room, if we take it at the price of 10d. per cubic foot, will cost 29 3*l.* So that, in round numbers, the cost of site amounts to five-sixths of the cost of building, and it is only by confining the allowance per inhabitant to a very narrow space that the proportion is kept so low; and for the Whitecross-street site the cost has to be increased from 80,000*l.* to 120,000*l.* per acre, if the figures we have cited are correct.

Now the question very seriously arises,—Is it desirable to devote to the purpose of residences in which (next to health) cheapness is the first requisite, sites which must unavoidably double the cost of the houses? It may be said that the sites are sold lower,—even as low as 10,000*l.* an acre; a price which would reduce the above calculated cost of site to one-eighth of the figures given. But then the loss falls somewhere, and has to be met by some portion of the public

In the case of such sales as are said to have taken place at the lower figures, seven-eighths of the actual cost falls on the ratepayers. We are not now concerned to inquire whether this is just or unjust. We are only pointing out the facts. But it is another thing to ask whether the arrangement proposed is really one that makes the best of the land for all parties.

If we consider the buildings reared on the ground in question to be solid and substantial structures, after the plan of those grand monastic edifices in Italy which group together hundreds of monks under one roof, or series of roofs, and which resist the fary of the elements, the tooth of time, and even the shock of earthquakes, for centuries, we shall find the cost per cubic foot of accommodation to be increased, and that to a considerable amount. But even apart from this, what an effect will be produced on the sanitary state of the immediate neighbourhood of those buildings simply by the respiration of the inhabitants, without making allowance for the effect of all the other processes of the vital chemistry on the consumption, or the deterioration, of the air! The atmosphere of the new houses, to the height of 30 ft., when the inhabitants are there, contains, if unventilated, its own bulk of air only one-half diluted from that which has escaped from the lungs of the inmates. The equivalent is 2,800,000 cubic feet of air, containing 2½ per cent. of carbonic acid, or 25 parts in 1,000; one part of carbonic acid in 1,000 is the utmost that can be present without sanitary mischief. To keep the space in hygienic security, then, we require a ventilation capable of removing 70,000,000 (seventy millions) of cubic feet in the twenty-four hours, or nearly 3,000,000 cubic feet per hour. Without going more minutely into the figures, it is obvious that there is, on the one hand, a necessity for a degree of ventilation which cannot be left to take care of itself, and, on the other hand, that the 70,000 cubic feet of carbonic acid gas swept from the building, in however diluted or undiluted a condition, is a contribution of perceptible magnitude to the air which has to be breathed by the residents in the less densely peopled parts of the metropolis that surround these sources of animal heat.

On the other hand, the interest of money at 5 per cent. on the cost of site will amount to 24s. per head per annum. And if the space afforded per inhabitant be increased (as we may be sure would be demanded sooner or later), that tax will proportionately increase. But for 24s. a year a railway company would give a very fair amount of passenger accommodation. It will remain to be discussed whether it would not be, in the long run, cheaper, as well as better in other respects, to build villages for working people where land can be reasonably acquired, and to make the holding of a railway annual ticket a part of the agreement for rent.

The question does not exclusively depend on the cost of acquiring the site. In order to arrive at a satisfactory solution, we must ascertain what is the true value of the site; that is to say, what can be made of it if we were to make the best possible use of it. Now take a case such as that of a house in some of the least barren sites. We have one house in our mind, recently built, in which the ground-floor let for 1,500*l.*, the first-floor for 1,000*l.*, and the second floor for 500*l.* a year,—in all, 3,000*l.*, besides attics and cellars. We have not the exact dimensions of the plan. But as the whole of the ground-floor constitutes one room (with the exception of the passage to the staircase),—which is, or was, some little time ago, at all events, utilised for the purposes of a bank,—we should think that the area can hardly exceed 70 ft. by 30 ft., being equal to 2,100 square feet. If we take that area, and reckon the building, for the three specified floors, as 40 ft. high, we have a cubic quantity of 84,000 cubic feet, which, at 1s. a foot would cost 4,200*l.* Let us take the cost, however, at 7,000*l.* Eight per cent. on that sum is 560*l.* per annum. Now if we double that rental, and suppose that either the actual accommodation or the price is proportionately higher than the estimate proposed, we still have a margin of 1,880*l.* per annum for the site, or an earning at the rate of 2·68*l.* per square yard per annum. At 25 years' purchase this would give a value of 66*l.* per square yard, or more than 300,000*l.* per acre. We do not give those figures as exact. It would not be admissible to do so, without the permission of the owner of the property which we have in view. But the rents of the three floors are, or were a year or two ago, facts within our knowledge. The dimensions are hardly very wide of the mark. Allow any margin that may be wished, the one fact of the renting of a single room for the large sum of 1,500*l.* a year,—without prejudice to large rentals for the first and second floors over it,—is one to be carefully examined before it is decided to sell City land at one-seventh of its cost price, in order to cover it with houses for the artisans.

Our readers may remember that when the site of St. Mildred's Church was purchased, in consequence of the widening of the main line of thoroughfare through the Poultry, the cost amounted to within a fraction of 100,000*l.* per acre. The exact figures quoted, which we extracted from the daily papers at the time (the date was July 11, 1872), gave the sum of 46,105*l.* for an area of 2,293 square yards. This is so close to the price now said to have been paid for the site cleared by the Metropolitan Board of Works at Whitecross-street, as to give some ground for the allowance of 100,000*l.* per acre as a resistance price for a densely-populated City site. If we may rely on the published statements, it would seem that the ground-rents of what we may be allowed to call rookery property may be taken as equal to that to be derived from office property of the most valuable character, owing to its central position. At all events, we cannot err in saying that there are, or have been, parts of London covered with buildings which, for sanitary purposes, it is necessary to clear away, but for which the large price of 100,000*l.* per acre, or about twenty guineas per superficial yard, must be paid in case o compulsory purchase.

Now certainly the wise step to take, on the part of the purchasers, or of their professional advisers, should be to ascertain what is the best use that can be made of the land so acquired. In the cases of which we speak it is, of course, too late to do this in the first instance; that is to say, it is too late to attempt to strike a balance of profit and loss, before commencing the work of demolition. It may, of course, have been the case that the evil was so crying as to demand a remedy, whatever were the cost. On the particular case referred to we offer no opinion whether such was or was not the case, but we admit that such a case is possible.

At all events, these three acres are cleared. Now comes the question, what ought to be done to cover them with buildings; and it seems to us that the first step to be taken, in order to arrive at the right reply to that question, is to ascertain for what purpose the position is best suited. Is it most desirable for offices, for shops, for warehouses, or for residences? For whichever of these purposes the site is most appropriate, the highest return may be expected from such an application. The site should be devoted to that purpose. In certain localities, for instance, offices will let at much higher rates than in others. And so on of other descriptions of building accommodation.

When the possible returns from the site are ascertained, such returns should be compared with the possible residential returns. As to this, the only fact that we see at the moment to be prominent, is that the Peabody Trustees are willing to pay 10,000*l.* per acre for sites for industrial dwellings. It is a large price; and we suppose may be taken as a maximum price for residential purposes of that class. At the same time it is possible (not to say probable) that a much higher price might be obtained for some other use of the land. This, then, is the next matter to ascertain, and that not only in a casual or hap-hazard way, but in a systematic mode, that will bear full investigation, and that will throw light on all future questions of the acquisition or the disposition of urban sites.

Then comes the question of the cost of industrial dwellings, independently of the price of site. As to this, there must be a great deal of valuable information now accessible. We invite those who are in command of this information to communicate as much as they can for the public service. It is highly important that we should be able to point to certain normal rules for regulating the cost of accommodation per head. In cases of the kind, the cost of actual buildings, the mode in which they are filled,—whether eagerly sought for or the contrary,—and the accommodation afforded per inmate, are matters which it is most important to know. When different plans have been adopted, the architect should be enabled to compare one with another. The object that we have in view is to be able to arrive at reliable formulæ of general utility. Thus, as every building may be calculated according to its cubic contents, we to arrive at normal prices for each of t sides of the cube. Floors, for example, cost so much per square yard; roof much; walls, taking exterior and in together, so much. In this case of wall cost will vary according to the height, as w according to the area, of the building. T three stories are erected, the outer walls be thicker than if only two stories were req and as we ascend to a fourth, a fifth, or a plane, the thickness of the walls in the stories ought progressively to increase. with increase of height we have decrease cost of roof, and increase in the cost of wa cost of floor remaining proportionately the It is easy to see that this will be the case. what we are now urging is, that these m should be so definitely wrought out t half an hour or less a competent estimator be able to point out the best financial re a certain plan, as compared with any othe

The large monastic establishments c country have been so thoroughly swept that it is difficult now to tell in what m the old ecclesiastical builders utilised the ing materials of their localities for the h of a large number of occupants who live certain extent, in common. But in Rot Naples, and in many parts of Italy and we have examples of conventual buildings style which we should like to see at all tried in England. One great feature o large many-celled convents (which we liken to beehives, if they were the hon like amount of industry) is the thickness walls. In Italy that is a necessary fea all structures, owing to the need of so b as to resist a moderate shock of earthqua would strike the English builder that t would be disproportionately great; t would be much cheaper, for instance, t 100 inmates in twenty little huts of slate with large spans for windows, such as rising by thousands around the centres o lation created by the cotton industry, would be to house them in one building, as being of a considerable height, would much more substantial walls. What now asking for is the means of taking th from the general idea that this or the is the cheapest, to the exact rule th point out, taking building materials at prices, and allowing equal accommodatio each of the two calculations will result. this in our minds, the question of the site will at once admit of a distinct s But it is only by one of two methods solution can be made anything but Either such calculations as we suggest carefully and elaborately made in each the requisite calculations must be made all, accepted as normal by the profess made available in the shape of con formulæ. The important question of th application of urban sites can only be p dealt with by those who possess accurate ledge of the nature we have ventu indicate.

ENGLISH MINSTERS.

The Precentor of Chicester has condens two small and convenient volumes* th stance of the large mass of information in to conventual buildings and convento which many years of enthusiastic study subject have enabled him to collect. T volume contains an introductory sketch rise and the development of the con and cathedral buildings of the Middle Ag sidered from an architectural point of vi more in regard to the general plan and teristics of the buildings than as illus architectural detail: this is followed by descriptions of the cathedrals of Engl Wales, in many cases illustrated by plans second volume contains an historical sk the rise of the various monastic order distinctive peculiarities in manner of l and in habits of life, and some general tion of conventual life in detail as it existed: this is followed by "The Student's Monasticon," a list of all t ventual establishments of which any exist, with a statement of their date of founder's names, and annual revenue whe points are on record, and occasionally

* Church Work and Life in English Mine Mackenzie E. C. Walcott, B.D., F.S.A., Pre Chichester. London: Chatto & Windus. 1879.

cks on the architectural peculiarities of the ing. To this volume is appended also a litho- ied map, giving the names and approximate of all English minsters known to have been istence in 1530; and a remarkable idea gives of the prevalence of the monastic nt in the country before the raid of VIII.

ether the book is as well done in all points ight have been wished, whether more st might not have been imparted to the ot, may perhaps be questioned; but if al readers are not repelled by the rather arian flavour of a good deal of the book, it ain that the publication of a work giving a small compass trustworthy information he actual meaning and object of the various of a great conventual building, and the r in which life was therein carried on, to be a very important assistance towards omotion of a better general understanding diæval architecture and of Mediæval life resented in its architecture. There have a good many popular books published Gothic detail and nomenclature, some hich were greatly in popular favour earlier time of the Gothic revival, and hese the nonprofessional enthusiast could an still) equip himself with a fair know- of the characteristics of the architecture he distinguishing features of its various

At present, we fear even this extent of dge of Mediæval architecture is at a nt, and the enthusiasm of amateur archi- al students, where it exists at all, is wasted *niaiseries* of the pot-and-garland style. e part of the subject which, at all events, and never was, properly realised by the l mind, is the actual nature of the plan rangement of the great Mediæval build- and their practical relation to the life was carried on in them. To most, even educated persons who have artistic tastes, ic architecture" is a cathedral, and a ral is a building with buttresses and ed windows, transepts, and a tower or ne or more. But so few people realise is great church, which is in some cases all that is left of the establishment to it belonged, or is all that prominently s the eye, did not originally stand alone way; that it was part of a large set ldings forming the dwelling-place of a ous community, and planned in a most al manner for suiting their needs and ting the carrying on of the regular of their life; and that the cathedral, ed in this light, assumes far more signifi- n relation to social history, and occupies different position, architecturally, as the ating feature of a great group of habita- nd their adjuncts, than when it is merely at as a big church, differing only in size andeur from the Mediæval parish church. group of buildings, which was the most rthy development of Mediæval architec- was planned in a remarkably practical and with an admirable, almost unstudied, of the utilitarian with the picturesque. entral court or cloister (*claustrum*,—the ire), with its covered passage all round, he happiest method of at once giving access from one part of the establishment her, and at the same time leaving space and light, but in addition to this its on and quietness, shut in as it was by rrounding buildings, provided the most able circumstances for the prosecution of ly studies and labours of the inmates. For vaulted galleries, with their series of ed windows, producing to our eyes so ful an effect, were not mere passages, they served that purpose; they were enes of daily reading, transcribing, and occupations carried on between the hours rices and meals. The "studious cloister's which seems now so appropriate a place e indulgence of a quiet day-dream in a t of escape from the rattle of nineteenth- y life, was, in the days when its stone ns and tracery were still fresh and sharp, ene of a busy and strictly regulated indus- rried on in silence, but not in indolence or ence. In the alley next the church (under ictine rule) "the monks, according to seniority, sat upon mats along the bench in the alley, the president sitting at the nd, and a prior near the lower church- Opposite to them in the windows sat nators, writers, and transcribers of music. window was glazed, and in the recesses were little pews or private studies wainscoted round with screens. . . . . Aumries or cupboards on the church-wall held great store of ancient MSS. of doctors of the Church, profane authors, and the works of holy men." In the west alley the school of the novices was kept. This kind of use of the cloister arcade could not of course have been considered a practical method of architectural planning if the arcade were to be used as a public passage by others at the same time. But here, where there was no such thing as a public, where only the regular inmates were to be provided for, and where these all came to their work and left it at the same time, and by fixed routine, there was nothing unpractical in the arrangement. The east alley of the cloister was mostly used as a passage only, from the dormitory stairs to the church; but this passage was also what would be called in a modern plan the administrative lobby, forming as it did the communication between the choir and the chapter-house, the latter always opening from about the centre of this east passage, or, perhaps, a little north of the centre, its position depending partly on the depth of the church transept, from which it was usually separated only by a narrow passage (slype). South of the chapter-house various offices opened out of the east cloister; sometimes also the fratry or common room, or the winter-hall, "which always looked out upon a garden or green, and was provided with a fire, where those afflicted with rheums, or chilled with sharp winds, might warm their limbs; whither the acolyte came for his light, and whence the chanter bore off his parchments dried." This part of the ground-floor arrangement, however, varied more in various establishments than in almost any other; sometimes, as at Chester, it is one large vaulted apartment, probably in this case used as storage or cellarage. This cathedral and Canterbury, it may be observed, are examples of the arrangement of the conventual buildings on the north instead of the south side of the church,—a departure from the usual rule, which was probably only made owing to some peculiarities of site. The dormitory, however, was most generally above these south-east buildings of the cloister; whatever the irregularities of the ground-floor plan might be, the position of the dormitory on the upper floor was more constant than that of almost any other apartment, because it was desirable that it should have near communication with the choir, which was very commonly reached under cover by a gallery leading across the end of the chapter-house, or by some other contrivance connecting it with a stair-turret in the church. The dormitory was also in general directly connected in another direction with that important sanitary appendage the latrines, as they would now be termed, called, in Mediæval description, the *secretior domus, necessarium*, or otherwise by an apparently half-slang name, "gong." This was always, when possible, placed over a running stream, so that the monks were habitual and deliberate offenders, in advance, against the decree which prohibits the pollution of rivers.*

When we turn round into the south alley, on the opposite side of the cloister court to the church, we come on the dining and cooking department. With the same practical sense which distinguishes the whole arrangements of the buildings, the refectory and kitchens are kept far away from the church, so that there may be no annoyance there from smells or noise. The kitchen was usually a little back from the cloister court, or behind the refectory, in which there was a serving-window from the kitchen. Mr. Walcott thus describes the refectory:—"The floor was strewn with hay or rushes; the lighting in winter was brilliant; the walls were wainscoted; at one end was the great almery, or cupboard for plate, and another for table-cloths, salt-cellars, bowls, basins, and ewers. The fare was served by a covered way or through the dresser-window from the kitchen; near it was the covey or pantry, from which the poor scholars, called children of the almonry, received their portion from the table of the novices. At the east end, under some sacred picture or sculpture of the Doom or Last Supper, and raised upon a platform (*daïs*) stood the high table (*mensa capitalis*). Above it was the little gilded bell (*scylla*), which the president rang for the dishes to be brought in. At the lower end, opposite the high table, was a screen pierced with doors in the west wall, opening into the cellarage of the beer and wine, and into the butteries and pantry, from which the bread, butter, and cheese were served. Near it were the larders, and scullery for washing platters and trenchers, and the room where the fish were washed. The novices sat on the south side, between the high table and pulpit."

Such a description as this is very significant in regard to our estimate of the nature of mediæval convent life. Those who are accustomed to look back upon this period of social history purely from a sentimental point of view, should notice how completely practical and business-like are these arrangements for the everyday *ménage* of a large establishment; no modern hotel service could be more so, taking into account the different habits and requirements of the two periods. The weak point of the conventual restaurant system was the lavatory, the limited size and simple arrangement of which (consisting merely of a trough of water in some part of the refectory corridor) are characteristic of a period when cleanliness was regarded as a very small part of godliness, if not absolutely opposed to it. Besides these various accommodations for the residents of the convent, there were those provided for the purposes of hospitality, the guest-house (one or more), the almonry, and the infirmary, the positions of which varied much, at least in the Benedictine establishments of which we have now mainly been speaking; in the Cistercian convents the arrangements were more fixed and invariable, and the portions appropriated to non-residents were kept mainly towards the west side of the enclosure. In the more complicated and varied Benedictine establishments the positions of these buildings seem to have been ruled to some extent, as one would naturally expect, by the consideration of proximity to the entrance-gate of the convent, the placing of which would depend a good deal upon the nature of the ground and the position which the public road or the town occupied in regard to the conventual buildings. The most usual and marked distinction between the Cistercian and Benedictine plans lay in the fact that the former had frequently no cloister walks, only the open court, and nearly always the refectory at right angles to the south side of the court instead of parallel with it. Among the other subsidiary buildings in connexion with the establishment were, of course, the gate-house, so many examples of which remain, sometimes in cases where nearly every other part of the buildings has been completely ruined, and Mr. Walcott enumerates the slaughter-house, the furnace, the kiln, lodgings, schools, and (usually near the infirmary) the shaving-house; the house for bleeding, "so welcome that an abbot was beloved who allowed the indulgence at fixed times," and the bath-house. The curious taste for bleeding as a luxury of life is explained naturally enough, when one thinks of the physical effects of a life spent mostly within the same walls, and with little or no active exercise, and at the same time feeding, on the whole, very well; for there is plenty of evidence, of course that the average monk, during at all events the greater portion of the Mediæval period, was little of an ascetic in regard to the table, though the idea of him as essentially a gluttonous man and a wine-bibber is probably only correct in regard to the later periods of monasticism. Nevertheless, Mr. Walcott mentions that in 1124 the monks of Winchester memorialised the king to restore their commons to the old number of thirteen (does this mean thirteen courses?), the bishops having reduced them to ten, but that they got the very unexpected answer from his majesty,—"I have but three myself, and you, my lord" (to the bishop), "will see that these monks have no more." This anecdote is quoted in the same paragraph in which Mr. Walcott, who is given to sentimentalising over monastic life, observes that at the meal "their hearts were set on their heavenly home, and their attention centred on the lection," a reflection which he immediately proceeds to demonstrate the absurdity of by the mere facts which he states in the rest of the paragraph. In spite of his "sentiments," however, the author is very successful in bringing the real facts of the monastic life before us, and his statements are, we have no doubt, based upon careful study of records of the period.

* It would seem as if the position of the dormitory, in some instances at a distance from the choir, as at Worcester, was influenced by this sanitary (or, as we should think, unsanitary) reason for getting the latrines near the river. The night services, of course, rendered proximity to the choir an object whenever no serious practical obstacle intervened.

We have pleasure in quoting the following graphic passage, in which he attempts to give us a look into a convent in the full tide of its daily life:—

"Let us enter and observe the busy world within. See painting of tesselated pavements and burning of the colours at the kiln, the stained glass, carved work in wood and stone, the illuminated pages of the church books, the compositors' and transcripts of the scribes, the compiling and repairs of the fabric, the practice of medicine and surgery. We shall find that none of the officers are idle. The chamberlain is sorting his sheep and cat skins and lambs' and kids' skins and quality the bales of robes, *halduc*, or frieze for the sisters' bedsteads. There are the bathhouses, the barber's rastra-house for shaving, the sartory of the tailors, and the circumstance of the superintendent and the wages of servants to be made to be inspected and the wages of servants to be paid; hay and straw are wanted for the latrines (the gongs), rushes for floors, and oil or lard for greasing the boots. The kitchener is busy over the plates of herbs or pulse, and the wood cooks fish stews, or gives out broken food for the poor, beer, pepper, and cumin for savoury sauces; cheesecakes, wafers, and rissoles, or the less palatable bags and dripping. The refectorar sees that all the tables, the hall and the cloister are duly laid, the unruly or shy poor, or the better treated at the board of the prior, who carves it all, terror in the scourge. Such dainty deserts, with claret and wine home-grown in the vineyard; what triumphs of the bakery in miches, simnels, gastels, and wafers (*nebulæ*); what wonderful dishes the Pitanciar could set forth on great festival's; these were made of rice and mead, loads of crawfish, meat brayed in a mortar, portorels, eel-broth, pottage (crannoch). 'hissell' and 'taillia.' The cellarer is taking stock of his store of provisions, his battery (*bottleria*), the bear-cellars, the malt-house, and the bread-room; the brew and baking houses. If it be Lent, he will give honey to sweeten the hard pulse, and if the precentor requires it, the best of ale, galls, gum, and copperas for his ink. He also presides at the turn, - a small orifice in the cellarage through which a cup of wine or beer is passed to a weary monk. The infirmarer is visiting the sick and aged, or laying out cupping-glass and candle for bleeding; he sees that each has a young compasion to cheer him in his sickness, to sit with him in sorrow, or to read to all to ease from his cares. The almoner gives the dole to the infirm, the orphan, and the [illegible] at the outer gates within by superintend the laving down of new matting in the parlour, on the benches of the misericord, and up the dormitory stairs. The officer of the precinct, with his keys at his waist, bids kind welcome to friends or parents who come as visitors of the monks. The hostellar at the gate with courtesy receives the guests in the parlour and then conducts them to their rooms in the guest-house."

There follow some more details, and a more minute description of the furniture and arrangements of the dormitory, the chapter-house, and the refectory, which we have not space to quote. The foregoing paragraph collects together into one view a great many details of the internal business of the convent, which it is interesting to picture to ourselves in operation. And over all this daily business carried on in the apartments and passages of the convent there towers the great church, the *raison d'être* of the whole, the symbol of the professed aim of the whole establishment, the aspiration after something higher than earth can afford,—an aspiration with which many of the details given here and elsewhere in Mr. Walcott's book seem somewhat incongruous, with an incongruity of which the writer seems to be most simply and innocently unconscious. "*Naturam expellas furcâ, tamen usque recurret,*" and the average monk was obviously no exception; like most other men, he was a creature with a great deal of human nature in him, which sometimes came out in ways that are not recorded in Mr. Walcott's tolerably frank but strictly ecclesiastical pages. And one may reasonably imagine that even the church itself was in its way a kind of sublime plaything, a means for the cooped-up spirit to break away from its confinement and indulge in some larger intellectual interest and excitement than the daily round of convent life afforded. How much interest in watching the slow daily progress of the western or central towers, the completion of which had been omitted a generation or two before for want of funds, and which are now being carried up in the new and more ornate manner which has superseded that which prevailed when the older brethren were novices. And there is to be a new west front, for visitors to the convent are full of the glory of the new front which has been erected by the brethren of the rival establishment at the other side of the county, and that will never do; we must cut them out; and John de Somewhere-or-other has the orders to contrive a new front which will reduce the ambitious rival convent to secondariness and mortification; and so the house "for the glory of God" becomes the medium for the indulgence of rival ambition, not to say of a certain degree of malice and uncharitableness, as it has been not unfrequently before and since; such is human nature.

Concerning the more purely architectural portion of Mr. Walcott's book there is no occasion for saying much. The few details given as to characteristics and changes of style in Gothic architecture deal only with what is well known, and is so much more fully given in other pages that they seem almost superfluous; and it might, perhaps, have been better to have omitted speaking of architectural detail entirely, as what is said here can only be regarded as either too much or far too little. But we must protest against the positive statement, as if they were admitted facts, of what are in fact little more than ecclesiological fancies in regard to the symbolism of church planning and church architecture generally. We quote one paragraph in justification of our criticism. After saying that it is impossible to appreciate the harmonious adjustment of the parts of a large church without acquaintance with its symbolism, Mr. Walcott proceeds to say that the fundamental rules which guided the architect in his design were the employment of two geometrical figures, the aureole or oval and the triangle, the former being the representation of rays of light emanating from the standing figure of our Lord, "also portrayed by the groups of chapels round an apse" (!):—

"The oval made by the intersection of two arcs of a circle drawn at 102° gave the length and breadth of the church; a series of equilateral triangles, raised on a ground line or base, determined the height of the different stages of the elevation, the aisles, the vaulting of the middle alley, the tower and spire. The triplicity patent in the three main branches of the cross, the nave, choir, and transept, in the three divisions of the length, into nave, choir, and presbytery; of the height vertically in (1) base or ground story, (2) blind, and (3) clearstories, of the breadth into three collateral alleys, may be detected by a careful observer in the grouping of the shafts, and of ribs on the vault."

A "careful observer," in Mr. Walcott's sense, is probably an observer who is determined to see symbolism in everything. No one otherwise disposed would follow his reasoning. The first statement in the sentence is at once contradicted by facts, as, if it were true, every cathedral would have the same proportion of length and breadth, and the proportion of height to width would be the same in all if the superposition of equilateral triangles had really governed it. The triple height in the stories resulted in the most natural manner from the introduction of a clearstory for light, and the architectural necessity of treating expressively the intermediate portion of the wall above the main arcade, and partly blocked by the aisle roof. The three-aisled arrangement was impressed on the Mediæval church by the prior influence of the Roman basilica, from which its main form was derived, and the exigencies of vaulting; and as to the triplicity in shafts or vaulting ribs, it exists, in the sense in which Mr. Walcott supposes it, only in his symbolical imagination. Mr. W. P. Griffith and others have shown pretty clearly the use made by some of the old architects, Pagan as well as Christian, of the triangle, square, and other geometrical figures, but it is equally obvious that the practice had seldom anything to do with symbolism. Still more unfounded is the remark on the next page, that the outlines of the spire "resembled hands joined in prayer." Some Mediæval sentimentalist may have left such a comparison on record, but the mistake which clerical symbolists make in these matters is in supposing that every symbolism which they find attached by some Mediæval writer to this or that feature was so intended originally; whereas, a great deal of this symbolism was invented after the fact, and the architectural origination of the supposed symbolism was due to quite other causes, artistic or practical. Mr. Walcott should stick to his last. He has made a speciality of the study of monastic life and manners, and the arrangement of monastic buildings, and on that he is an authority, but he is not an authority on points which concern architectural history and architectural design and construction. It is exactly because we think his book calculated to be very useful in giving the public clearer ideas in regard to our great Mediæval establishments, and because we wish it to be read, that we feel we cannot recommend it without at the same time pointing out plainly the groundlessness from an architectural point of view of such fancies as we have referred to; which, however, form no integral or important part of the book.

Dorchester Surveyorship.—Mr. W. Thomas, C.E., late of the City Surveyor's Office, Manchester, and the Borough Surveyor's Office, Rochdale, has been elected the Borough Surveyor of Dorchester. There were 210 applicants for the office.

AN EXHIBITION OF THE SCIENCE APPLIED TO INDUSTRY.

Though the Champ de Mars and the T cadéro still remain picturesquely encumb with the remains of the great world's sho last year, Paris has been preparing within last few months for another exhibition. N serious an undertaking as that which M. K energetically carried through in spite of poli and commercial difficulties, but an exhib which it is expected will effect its sha benefit upon the industrial and scientific w and be, in fact, as the director, M. Nicole well put it, "an ingenious corollary of the Exhibition of 1878."

Critics and croakers have not been wa who have augured certain failure, but the re so far obtained have shown these long-he gentlemen to be entirely in error. There been more applications for space on the p the exhibitors than it has been possible to su and more exhibits consequently than ther been room to display, notwithstanding tha municipality have generously added se annexes to the Palais de l'Industrie; the therefore, every reason to believe that the bition,—which was opened there on the 2 July, under the presidency of M. Jules S who occupied two hours pleasantly in exam the exhibits,—will attract a large numb visitors during the four months it is to re open.

The desire to be actual witnesses o efforts of industry and science as shown exhibition, has entered now into our daily v Science and industry have within this ce been daily more firmly knit together; and to their united action that we owe so ma the great inventions that have marked th few generations. Industry unceasingly le on, never seeking a moment's repose, and day a new step is made on the road to an approaching future of perfection. It for the workers to hesitate as they ask selves what use is to be made of al wealth of invention which they heap industriously; anxiously as the thoughtfu ask in what manner these sources of rich they are daily added to, are to be utilised for the future to decide, and much that seem to us in the present day to be crud the existence of which may even be regr our grandchildren will understand and uti we have not yet been able to do. Each step made by the sons of science as they w every corner of the globe opens out new and yet those whose labours bring them such workers feel that they are only upon the limits of the great field to b quered; it is the earnest desire of the wishers to progress that each step fo may be insured, nail-driven, clenched hence it is that are held from time to these exhibitions,—examinations of the pr made during a certain period.

As our progress is almost daily mark some new invention or perfection of an ex comfort or aid, the producer seeks an tunity of laying his work before the pu not a more important element, the profes world, anxious to avail itself of each im ment applied to industry, and hence the priate title of this exhibition now open Palais de l'Industrie, the "International bition of Sciences applied to Industry" great credit does M. Nicole, the indefat director, deserve for the energy with all has been prepared. The task he had him may be understood when it is recalle on the last day of June the public were adm in the Palais de l'Industrie the works formed the *Salon;* nor was the palace h over to M. Nicole until July 10th, be which date and the 24th the whole c present exhibition was arranged. The the galleries, and the annexes have all bee pared and laid out with important ex large engines-houses, kiosks, &c.; and gaps existed on the opening-day wer rather to the exhibitors than to the direct

The Exhibition is the pursuance o realisation of a programme which it w endeavour of M. Nicole to carry out in th of the Havre Maritime Exhibition of 18 that held at Paris in 1875; the new Exh is therefore, it will be seen, no mere show but the realisation of a long-studied and laid down plan, in the management of experience is not wanting.

The exhibition bears a scientific and an

racter, and endeavours to place before
ic the most recent scientific inventions,
new and important feature will be in-
in a Commission of Scientific Inquiry,
to furnish a technical report, and at
e time to examine the scientific appli-
the data and the conceptions on which
re based. It will state whether the
s employed are in accordance with the
f science; if they are beneficially em-
if they offer a desirable efficacity,
, and security; if the products, in fine,
heir ends, from a point of view of the
often neglected,—of physiology and
This commission, formed of a number
ious *savants*, of members of the Insti-
great engineers, will endeavour, in fact,
each inventor the true importance of his
, the value of the laws and forces he
ed and made use of, will endeavour to
it improvements where possible, and
mmitted. The immense service such
sion may render are apparent, and will
give a novelty to the recently-opened
n, which in other particulars it may
want.

mirable aim of the Exhibition cannot
clearly set forth than by quoting the
M. Nicole, the director, on the forma-
he Exhibition, which he desires to be
d, as we have already stated, in the
a corollary of the great Exhibition of
, which, in spite of its size and compre-
ess, enabled only a sketch of each sec-
set before the public. The Exhibition
n has chosen one single group, that of
strial Application of the Sciences, and
avoured to develop this group in all its
nd exhibit them in such a manner as to
apparent to the public and the pro-

rogramme of the Exhibition presents a
hod of classification, which thoroughly
ith its title and its aims. Thus each
f industry, instead of being classed at
s is usually the case, is placed under
ce to which it is tributary. Heating
ting, for example, have been placed
oup of "Applied Physics"; perfumery,
work, &c., in that of "Applied Che-
These instances will suffice to show
inality of the classification which is
to each and all of the branches of

rst group comprises prehistoric know-
nthropology, sociology, education and
n of man, an excellent point of
; the second group is that of applied
with its various classes of electricity,
phy, &c.; the third, applied chemistry,
classes, among which ceramics and
ke a conspicuous part; the fourth,
s applied to industry, in twelve classes,
, tools, &c.; the fifth, mechanics applied
otion, in six classes, various vehicles,
n, aërial locomotion, &c.; the sixth,
pplied sciences, in fifteen classes, agri-
urgery and hygiene, &c.; the seventh,
tical, astronomical, and meteorological
in five classes, mathematical instru-
c.; the eighth, applied geology and
logy, in five classes; the ninth, printed
ts and manuscripts connected with the
n. This group is subdivided into two
the first comprises the printed works
uscripts and their catalogue; the second
s the replies made by the exhibitors
r addressed to them, and which, after
nentaries of the scientific Commission,
we have above referred, will be inserted
extenso or in part, in the catalogue.
n forms the special exhibition of the
, and certainly will form, from its
a decided and instructive novelty; we
this group as only a promise, for on the
day no traces were to be observed of
ress in this attractive feature. First,
to be the reproduction of a glacier,
yards in height, with an interior grotto
will be figured the different terrestrial
s also the fossils belonging to each;
, the reproduction on a large scale of a
ic habitation, of the dwelling of a
savage, and, as a contrast, a model
the present day, built with all the con-
n possible from a hygienic, comfortable,
rious point of view; thirdly, a map in
Europe at the tertiary epoch; fourthly,
lioramic view of the site now occupied
ity of Paris, at a period previously to
arance of man; and, lastly, a dioramic
view of the same site at the cave epoch. The eleventh and last group is devoted to a retrospective exhibition of works of art and industry belonging to amateurs; as also temporary horticultural shows, &c.

With such a programme, the Exhibition offers indeed, as M. Nicole has observed, a vast field for study and observation; at the same time it will enable the producers to show, in a more accessible manner than the last Great Exhibition, not only the discoveries, the inventions, and practical applications which have within the last few years given such an alarming impetus to industry, but also those which only recently have been perfected and improved. The engineer, the architect, the builder, the mechanician, and the manufacturer will be able to know and compare the results of their labours and researches, and by this means augment and improve their respective productions; while the public, whose attention will be more concentrated than is possible in the Great Exhibitions, will be able to give a longer and more profitable examination to the numerous exhibits.

In a memorable speech, pronounced in 1816 at the annual meeting of the five academies, the great Cuvier was able to state, in speaking of the advance of science and its intimate bonds of union with society at large, "Science has attained everything; all the arts are subservient to it; industry has recognised it as its regulating power; it has served and protected man in every state through which he has advanced, and it has interlaced itself in the most intimate and most visible manner in all the bearings of society."

That was the opinion of a great scientific man at the commencement of this century: what would be now his opinion? More than ever would he say that industry is subservient to science. The sciences are the chief sources of our practical discoveries, and to show this in a manner which will be apparent both to the eyes and to the mind, is the aim the attainment of which has been the endeavour of the organisers of the Exhibition now open in Paris.

THE COST OF PRODUCTION.

One of the chief industrial difficulties of the present time is that of reducing the cost of the production of any given article. When the demand for any class of goods falls off, prices begin to fall also, and the great question is, how to reduce the cost of production so as not only to stimulate a flagging demand, but also to still preserve a proportion of profit out of the lesser price? There are some of the items of that cost which can rarely be lowered; some which are usually increased, even in times of limited production; and others which may be reduced, and to which there is generally a full resort. Where the interest involved is spread over a lessened production it will be seen that the interest on capital is proportionally heavier,—this, therefore, is one of the items which usually are enlarged; wages are generally decreased, though with natural reluctance on the part of the recipients, and often only after industrial war; but there is also a class of constituents of the item of the cost of production which do not generally decrease, but which might fittingly be called on to bear part of the strain that dull times throw upon industries and trades. In the cost of stone for building purposes there are two or three items forming the bulk:—First, the comparatively constant one of the rent paid to the owner of the quarry whence the stone is hewn, or its equivalent; secondly, the cost of the labour involved in the quarrying and dressing the stone; thirdly, the cost of transport to the needful place; and fourthly, the profit of the speculative worker or capitalist. In periods of dull trade the second and fourth of these items of cost are almost invariably brought down to a very considerable extent, but the remaining two items of cost are very little influenced. It needs to be borne in mind that the landowner and the railway company reap only an indirect benefit in prosperous times, the benefit accruing from the enlarged production and transportation; but even remembering this, it is doubtful whether the incidence of dull times is equally distributed over the chief items of cost,—equal, that is, in proportion to the benefit derived and to the extent of labour that is needful to enable them to reap that benefit during periods both prosperous and the reverse. The question is an important one, and worth considering a little in detail.

Taking the iron trade for an illustration. The items of cost include the production of raw materials, the labour involved in the smelting, the transportation, and the interest on capital, as well as, under the latter head, the proportion of depreciation, and a number of other standing charges. In the cost of materials we have the fluctuating amounts paid for the labour needed to mine ironstone and coal, and to quarry limestone or other flux; the cost of the needful stores, also varying; and the generally certain and constant sums paid as royalties on the iron, coal, and lime. The labour involved in the work of smelting the ironstone into pig iron fluctuates in price; and in one or two recent instances there have been reductions in the rates of carriage, the interest on the capital involved remaining nominally the same, though not always received or charged. Taking a few figures roughly to illustrate the position, it may be said that six years ago pig iron in one of the chief producing districts was sold in the market at 6*l.* per ton. In the same market at the present time it is sold for less than 4*l.* 13*s.* per ton. Roughly, it may be said that coke has fallen in price in fully the same proportion that pig iron has; ironstone has fallen, though certainly not to the same extent; and limestone has also shrunk in value. The labour involved in procuring that coal (or rather one of the chief kinds of that labour) is now paid only about one-half of what it was six years ago, and there is an equivalent reduction in the cost of labour requisite to convert the coal into coke. Similarly with iron-miners. In the Cleveland iron-mines the net earnings of the men in 1873 might be set down at about seven shillings per day; they are now probably barely four shillings, so that there has been a full proportion of the dull times thrown upon labour in this department. The railway company which serves the great district has recognised the claims of the iron-masters to help, and has reduced the rates for the carriage of iron-making materials 15 per cent. The stores needed to supply the mines are lower in price, and practically the only unreduced items of the cost of production are the "standing charges" and the royalties paid. It is evident that the former cannot be modified in the bulk. The capital which is lent or sunk in blast furnaces is so placed because the lender arranges to lend it at a lower rate than that which the borrower expects to earn by it; and there are other items forming the particular portion of the cost which cannot be touched. It is true that "rates and taxes" are becoming "gross as a mountain," that they have increased rapidly of late, and that they need to be diminished. Certainly an attention of the large ratepayers to this item of their expenditure is needful, and would be rewarded in all probability by the diminution of that branch of often wastefully-spent money. But as a whole the capital charges may be said to be unassailable. It is doubtful whether the same ought to be said of the remaining head of item of cost, the other royalties, or payments under some kindred name, to the landowner by the speculative capitalist.

There is, it may be remarked, a tendency to increase in these charges. In periods of prosperity, new royalties are opened at increased amounts; and in the industry which has been named it may fairly be said that the iron royalties are nearly double what they were when the iron trade of the Cleveland district was being opened out. In the adjoining coal district of Durham it may also be said that recent royalty-rents are double what they were a few years ago, though it is to be borne in mind that it is these highly-rented royalties which are the first to be lessened in yield of pits when dulness in the demand begins to show itself. But it is apparent that there is a need for relief beyond that thus indirectly gained,—certainly if the landowner is to bear any part of the pressure arising from the dulness in the trade. It is true that it has been many times remarked that he does not receive any additional benefit from the briskness of the demand beyond that springing from an enlarged pit yield, and a consequential increase of the quantity of mineral for which his royalty is paid. But it is to be said, in reply, that he usually incurs no risk; and without recurring to the old argument of "unearned increment," it may be fairly pointed out that he gives no labour for the royalty-rent; and only allows of the enterprising searcher after minerals to carry on his operations under the conditions of, "Heads I win, tails you lose." That is to say, if minerals are found,

the landowner gains on their working; if they are not found, the loss is entirely that of the would-be worker, not of the owner of the estate. The latter, moreover, reaps an indirect benefit by the increased value of the remaining portion of the estate, or of that near the mines; for the working of minerals attracts population, and the result is often that agricultural land becomes higher-priced building ground.

It has been said, and the suggestion seems a not unfair one, that the payment to the landowner might be very fairly regulated by a sliding scale, rising and falling with the price of the mineral or its product. It is evident that if coal can afford to pay a royalty to the landowner of 6d. per ton when it sells at the pit at 6s. per ton, it could have allowed of the payment of a larger sum when coal sold for from 15s. to 1l. per ton. Similarly with iron, when pig-iron sold at 6l. per ton, the payment of 6d. or 8d. on every ton of ironstone was a very small matter; but the "grasshopper becomes a burden" by the payment of the same royalty when the price of iron is less than a third of what it was six years ago. And though it might be difficult to hit upon a scale which would fully meet the case, yet the difficulties are not insurmountable, and in fairness to those concerned in the other items of the cost of production, it may be said that in this or in some kindred way it is needful that they should be encountered and surmounted. If the capitalist is to have a less interest on his capital, and the labourer a lower payment for his labour, it is tolerably clear that there is some justice in the remark that the receiver of the royalty might be called upon also to yield for the common benefit some portion of that to which he is legally entitled. Without that yielding, there is diminished production and lower amounts paid to the owners of the royalties; but with that yielding, the lesser sum might be fully recouped by the preservation and extension of the yield.

ZULULAND AND ITS ART TEACHINGS.

The origin of the *names* of places and towns in the many yet savage and uncivilised nations of the world, as discovered by Englishmen in their various colonising efforts, would be a very curious subject of inquiry, and would be found, we think, to elicit much that would be new and striking, as would, without doubt, be the knowledge of the precise character of the unborrowed *art*, and even fine art, which these nations have for many ages practised unknown to the rest of the world. Many such there have been and are, but none of them more curious and worthy of examination than that of Natal and the country round about, and with the people of which we are now at war. This takes us to the very origin, at times, of art as it comes from the *mind* untutored, and *hand* of man, rude and empty. It evidences, too, the fact of the inherent power of art and the love of forms and colours in the human mind, and shows how there would seem to be a power inherent in human nature to produce artistic forms out of any and all the materials to be come at by dint of digging and delving and otherwise, each country inventing forms and combinations peculiar to itself. We cannot but think that a few thoughts about the art and individuality of Natal may possess some interest.

But first as to the name of the country and people with whom we are now warring. In the year of grace 1486 Bartholomew Diaz sailed from Portugal to find a new way to the East Indies. He passed the Cape of Good Hope in a storm without seeing it, and then getting as far as the Great Fish River, and hearing nothing of the way to India or anything about it, he returned, and thus discovered and saw the famous Cape,—the most southern point of Africa. Curious to say, through the troubles and tempests which he had encountered, he named it Cabo Tormentoso, or Cape of Storms. But the king on his return took a more hopeful view of the stormy cape, and thought he saw in it an indication of the way to India, and so called it Cabo de Buena Esperanza, or the Cape of Good Hope. He was followed by Vasco de Gama, who, five years after the discovery of America by Columbus, reached the Cape, and opened up communications with the primeval inhabitants. Sailing thence he discovered and named Natal, and its strange inhabitants, as also Kaffraria and Zululand. Natal was discovered on Christmas Day, and was thence called Tierra de Natal, or the Land of the Nativity. By the early navigators the natives of South-Eastern Africa were called Kaffirs, a term derived from the Arabic, and signifying "unbeliever," *i.e.* in the creed of Mahomet. The true proper native names of the countries, says an old writer, being unknown, these were appropriated to them by their discoverers.

We but allude to these suggestive namings of things and places in passing and from the fact of their singularity, and because they and native names are but rare in the maps of Southern Africa, where all the new and freshly-given names are but too familiar,—*e.g.*, Worcester, George, Albany, and so on, very much thus being without doubt lost in an historical and antiquarian point of view. The native names lost, much that must needs have been suggestive in them is lost too. It is to this antiquarian view of this South African land that we would call a moment's attention, and to the peculiar *art*, and even fine art, which its rude inhabitants produce, and then to perhaps a yet more striking point of interest to which it leads, and *may* throw light on. Building at least, if not a rude architecture, is peculiar and native to the place, and the ornamental art with which it is at times decorated is special to the race of men who practise it, and would seem to be indigenous and unborrowed, and thus to possess a peculiar interest at a time when all we see about us in more advanced and educated communities is, for the most part, more or less borrowed from the past and from elsewhere.

It is to be noted in the first place, and it is curious, that before any building is commenced a general idea of the whole village, so to phrase it, has to be looked to and a general attention given to very many needful things,—as a fountain, or stream for water supply, pasturage sufficient for cattle, patches of ground for corn, and other food, and such a site for the kraal (a Dutch word) as shall be dry, and one wherein pits may be dug to deposit grain, and not too much exposed to cold and driving storms. A site being thus found and determined on, a circle is drawn on the ground sufficiently large to enclose both the huts, or dwellings, and the cattle-pen. Some of these circles are of large size, sufficiently large, indeed, to,—as the king's kraal,—enclose many acres of land, and thus to hold some thousands of cattle. These circles are commonly staked, or wattled in with wood, but where this is scanty, stones, or even earthworks are used. This being so, may not, we may here ask, some of the "stone circles" found all the world over have, after all, had some such origin as this,—failing a religious one? A subject worth note in so primitive a continent as Africa, and where so much yet remains as it has been for ages, without internal change,—the old world in the midst of a new. The ground being thus penned or walled in with its double row of stakes or stones, and with its enclosed cleared circle, the next thing is the house or hut building itself. This hut, of which there are many, is built of wattles, held up in the centre by two or more posts, or uprights, and covered with thatch or coarse grass. It is hemispherical in form, and from 12 ft. to 15 ft. in diameter, and about 6 ft. high. A single low opening at its lower side does duty as both door and window. Near to the centre is the fireplace, a basin-like hollow scooped out in the earth, with an elevated rim of moulded clay. Round this primitive hearth it is that the life of the native is passed when at home. In addition to this there are, of course, in this primitive home all the usual rude articles of furniture, of wood, metal, and rough earthenware, and woven fabrics; and on these it is that much of the artistic ingenuity of its occupants is expended, and which offers perpetually occasions and opportunities for it. This "ornamentation" in itself forming a sort of art-language quite as peculiar and characteristic as the spoken language itself, and as well worthy of attentive study. It would be difficult, indeed, to find a place better worth searching if the express object of that search be to discover what it is that man in an untaught state can do and here does in the production of new and otherwise untried forms and combinations. We are, of course, here alluding to the genuine and primitive *native* art itself, and not to anything done, even by native hands, from borrowed sources,—as from the Dutch or ourselves. It is in the unalloyed and purely native instinctive art that the real interest will be found, and it is in that light alone that we are here looking at the productions of this primitive people, going back, it may be, to a remote pa thus to the very origin of an art of a spec certain kind.

This characteristic, then, of a distan and one which becomes more and more cant the more we look at it, is the sp and peculiarisy of the common art of the of it, and, if we may say it, of the workmen of it. If but the details of th monest and most ordinary of objects i use are carefully examined it will be that they are indigenous and unbo and are the result of the hand and powers of the people themselves,—tradit so, if you will,—and as passing from fa son through many many generations; b for all that, the Zulu native's own, and a out of his own mind and by his own Many of the forms and details to be f the common objects round and about hi this as plainly and evidently as do t Etruria the mental and hand power Etruscan workman. It is a long distan tainly, from the land of the Kaffir to that Etruscan of old; but the individuali unborrowed power of work of both ar striking and remarkable, and serve to h our interest in the work now going o world, though in so distant a part of it; cause, it may be, a little regret that it so near and so certain; for, as the nati and artist can even now, and still mor future, buy so readily from a foreign sou that he needs he will cease to make for h and think for himself artistically, that is

Our main object in putting togethe few notes has been to awaken a little i in this really brave people beyond wha volved in their mere destruction, and to a hope that some effort will be made together some illustrative specimens primitive art and building, and thus to our but too scanty knowledge of origin unborrowed and native art and buildin to say architecture, that being perhaps what too hard a word for what is found. must have been, and yet may be, ample for this, and it would be difficult to see better trophy of our military and oth cesses could be, than the getting tog really good and sufficiently exhaustive co of the mental and hand art and art-w the people whom we have subdued, and, t them, of the vast extent of the earth's which they yet occupy, and have occup so long a time. We forbear details, but just add that an additional interest may in this when it is considered that very m the life, and of the special ways of life untutored men finds illustration in the books of Bible history, and that what is said of Patriarchal ways and modes of far more closely and truthfully exempli the vast and all but unknown count Africa, as it yet is, and amidst their peop tribes, than is now to be found in Asia, that is, and much as there is to be yet disc in it.

CARDIFF AND ITS TRADE.

It is a matter of opinion whether Ca entitled to the name of the "beautifu that is seated by the sea," but it often some of the thoughts which the poem of fellow on the seaport which his boyhood knew contain. It has known a rapid de ment, and it may in the future know on greater. Few towns have known in th half-century so great a growth as Cardi few have in it the elements of greater g In 1801, the population of Cardiff and L united was 3,000 persons, and from that the increase has been by bounds. Wh Cardiff in 1834, when the first era of was showing its effects?—for a compar what it was then with what it now is will us very materially to appreciate the ra the causes of its progress. At that date described as "an ancient and respe borough town and seaport." Its walls then "an interesting object," the ra being shrub-planted, and a "terrace extending the whole length. Cardiff was well-built and compact, was lighted with g had "upon the whole, a peculiarly neat a ance." Its government was in the han the constable of the castle and two b twelve aldermen, and twelve capital burg A court-leet was yearly held, and a debt-rec court, "presided over by the bailiff," was

h fortnight. A prison had been "recently d," and a neat theatre in Crockherb-Town lworth note. From the "good harbour") tons of iron and 160,000 tons of coals yearly sent. There were extensive tin , and productive collieries; vessels "up- of 300 tons burden are now admitted up town by means of a ship canal;" and the is of Bute was constructing a dock which be "of incalculable benefit to the trade habitants of Cardiff." There was only urch for the two parishes, several chapels issenters, and a good free school. As to and commerce, it may be said that there nly one banker,—that only five firms are as coalowners and merchants, and that onmasters were the "iron kings,"—the hays of Cyfartha and Hirwain, the Fother- f Aberdare, the Guests of Dowlais, and bson, Forman, & Co., of the Pennydarran . There were a few nail and tin-plate s on a small scale, and the usual variety les which gather in small seaport towns, ere was little indication of the vast mineral ries that were to grow. The gas-works t Hayes, the custom-house had two tide- s; four coaches left the coach-office and tels daily; there were three carriers by nd several by water, including the then e *Nautilus* steam-packet, which sailed to Bristol. In these facts there are the s in which is enclosed the Cardiff of two ears ago.

industries have been, during the interval, uses of the growth of Cardiff,—the coal on trades, though others have in some degree contributed to that development. n trade of Wales is now largely dependent oreign ores, but in spite of this there is very considerable production of argilla- carbonate and brown hematite ores in Wales,—that production in a recent year close upon half a million tons, the esti- value of which was 247,920*l*. There are n the Glamorgan and Monmouth districts sixty-two blast-furnaces built, but more alf of these are out of blast. And of the puddling furnaces which represented the tive capacity of the rolling-mills, no small r are idle. The days of ironworking are over, and the vast iron trade of Wales, ped in a wonderful manner by the "iron " of the past, is dying,—or, rather, it is place to the newer and the more enduring ail trade. The Dowlais, the Ebbw Vale, e Rhymney Iron companies have all e producers of steel, and they have all in degree contributed to the development of . But more than the iron trade or its or, the steel manufacture, the coal trade en the source of the wealth of Cardiff, its growth. We have seen what it was more than twoscore years ago. In the Wales district there are in Glamorgan- no less than 251 collieries; whilst the western district encloses in Monmouth- 192. In a compact basin, the rich ams of South Wales enclose, indeed, l of all the available coal in Great n, and there it is that as the rich s have been tapped the output of coal own, and from Cardiff, as the chief port oment, the exports have swollen almost . And at the present time the coal ship- of Cardiff approach five millions tons —an immense amount—the great bulk of is exported, but beyond which the vast roducing valleys that stretch inland from orts produce, for there is a very large ty produced for railway transport to a. Naturally with that vast growth of oal trade other industries have been d in Cardiff, but coal-export is still the lling trade of the great Welsh port. Its moreover, has been in this respect, even seven years of famine that have followed ven years of plenty in the coal trade—an sing one; and with that growth Cardiff, pulations and its institutions have grown almost unexampled degree.

ead of the few thousand people, we have that it had less than fifty years ago, its ation at the time of the last census was ; and, in addition to its great shipping it numbers tinworks and cloth-weaving gst its chief industries. Yearly 12,000 s enter and leave the port,—their tonnage about 3,000,000 tons; it owns 170 vessels, fly steamers,—of 50,000 tons, as well as a fishing-boats; and it adds occasionally, h not largely, from its own ship-yards to the merchant fleets. Naturally with that growth of population and of industry there has been a growth of institutions, of town organisations, and of the associations which are the result or the accompaniment of the swelling of the numbers of the people. Probably no greater proof of this growth need be named the than fact that the guardians have just decided to expend over 23,500*l*. in the erection of a new workhouse, and this, despite the fact that there are often in the present retreat for the very poor over 370 persons. Over the criminal part of the population efficient oversight should be given by a borough police force, ninety strong; but the extent of that criminality is in a measure indicated when it is added that the cases of drunkenness alone number nearly 1,000 yearly, and that in the borough of about 7,000 acres there are 167 public-houses and 115 beer-houses. There are, however, numbers of institutions combating the effects of excessive drinking; although Wales is the head-quarters of certain forms of dissent, the Church has grown with the growth of Cardiff; Methodism, in its many forms, is well represented, and most of the "orthodox" form of belief have local habitations as well as names and followers there. The notable Infirmary and Dispensary does something in the mitigation of suffering, for its walls hold forty to sixty sufferers. And it may be said here that Cardiff has, quarterly, about 450 deaths; that the marriages are from 270 to 300 in the three months; and that the births average in the same period 800 to 1,000. In the associations which philanthropists enter, and which labour enters into, the great port of South Wales has its full share, —the Welsh being proved to be as "clubbable" as long ago the English were esteemed; and whilst these flourish, it is almost needless to say that the Eisteddfod is not forgotten. The poor-law statistics showed that Cardiff has enlarged its pauperism with its wealth, for it has 646 indoor and 2,878 outdoor paupers; but both in regard to the proportion of outdoor paupers to the whole, and of paupers to the community, the Cardiff district occupies a favourable position amongst the unions of South Wales,—though not the most favourable position,—and it is satisfactory to notice that the most recent changes in these respects have been for the better.

Turning, now, from these dry statistics, it may be questioned whether the great port of South Wales has attained its full growth. It is evident that the iron industry, pure and simple, can only be looked upon as decaying, but we have seen that there is now a development of the industry which succeeds it, and this though it is not so beneficial in the numerical strength of workmen employed, will partially counter-balance the loss. But the strength of Cardiff is in its shipping trade, and in its coal shipments especially. As time passes, the coal seams at profitably workable depths are being exhausted in some parts of the kingdom, but South Wales is as yet only opening out its coal seams, and in all human probability it will not only maintain, but increase its output of coal. It is not to be forgotten that Cardiff does not now enjoy such a monopoly of the coal trade as it once did, for Newport is increasing rapidly its shipments, and is likely so to do as larger docks are made for it. But the position of Cardiff and the fact that it has at command a large portion of the coalfields of South Wales, that it has very complete facilities of shipment, and that it has built up a vast commerce, are all in its favour. It enjoys the advantage of very cheap labour, and the freshness of its coalfields makes the cost of production much less than it is in some districts. Hence the statement may be fairly made that these are the elements of further growth in Cardiff; and if it devotes its energy to the development of that branch of trade for which it is naturally fitted, its abundant commercial vitality, its full trading facilities, and the fact that it is served by more than one of the great railway systems give ground for the belief that in the future Cardiff will make its past a stepping-stone to something greater.

New Church.—The church of St. Anthony, between Globe-road and James-street, Mile-end-road,—the second of the three churches to be built within six miles of the city of London, pursuant to the provisions of Lady Slaney's Estate Act, 1869,—was consecrated on the 30th ult. by the Bishop of London.

THE CULTIVATION OF DRAMATIC ART.

THERE cannot exist in the minds of reasoning beings a doubt that the stage exercises an influence for good or evil on the public. It addresses itself to every class, to every condition and every character of man; chiefly, indeed, to the more independent,—that portion, in fact, of the population which it would be most important to enlighten, to instruct, and to influence, since it forms the more active and militant portion of the nation.

It is not to be supposed, however, that it is the intention of those desirous to establish a national theatre, through which the popular prevailing taste may be in some manner controlled, to convert the theatre into a lecture-room, in which are to be delivered serious courses on the necessity for reform in politics and morality. The theatre, above all things, must be an effective source of instruction, which reaches us through a high degree of pleasure. It must not be imagined of the promoters of such a theatre that they seek to correct the vices of human nature, lance in hand in a Don Quixote-like manner. They are not of the reformers who would wish to purify society by one crushing blow. All that they desire is, that the existence of the ill being acknowledged, some means may be adopted to ameliorate its effects as far as possible. No project of such a nature can be perfect; but it is impossible for those interested in the present and the future of the English drama not to perceive that its existing condition menaces not alone theatrical institutions as mere speculations, but must end by annihilating dramatic art in this country,—at least, in its highest forms.

In the interests of the profession, and in those of a public desirous for the maintenance of old traditions, a proposal has been put forward to found a theatre,—a national theatre, "not wholly controlled by the popular taste," but the establishment of such an institution would not alone meet the object pursued by its originators. With the formation of a national theatre must be founded a dramatic school on sound principles, without which, in vain the promoters of the scheme of a National Theatre may expect their project to be firmly established.

From what source are to be drawn the elements and interpreters of a traditional art when the few talented living approvers of the scheme shall have passed away? In the proposal for the supply of a great city with pure water, its installation in our midst is not sufficient,—the source must be carefully watched, and the means of supply ensured. It is not a little curious to compare the remarks of the celebrated French actor, Lekain (the contemporary and almost rival of our own Garrick), on the subject of the threatened decadence of the dramatic art of his day, with the tone which now may be so constantly met in the English press and intelligently expressed public opinion. In 1756 Lekain presented a memorial to the *Premiers Gentilshommes de la Chambre*, stating the necessity for the establishment of a "school for the formation of pupils who might exercise the art of declamation in tragedy, and learn the means by which a good comedian is formed."

If we take seriously into consideration, continued the experienced tragedian (the memorial is written above the familiar names of Lekain, Preville, and Bellecourt), the art of exercising the talent of comedian, it will be recognised without difficulty that the provincial theatres, in which the mass of our actors learn the first notions of their profession, are no longer now what they were formally, a valuable militia, from which might be drawn the best elements for the capital. Experience shows that the young people of both sexes look on the talent of declamation as a purely accessory art to the recently introduced *opéra comique*, Lekain continues; but might not these remarks in the present day equally apply to the introduction of the dress society comedy where declamation is looked upon as indeed "poor form," and when the genuine old stock-pieces are deserted for the easier success of fifty-shilling suited and milliner-dressed heroes and heroines of the fashionable comedy? And continuing his remarks (it is not a little curious to observe how precisely Lekain seems speaking of the existing position of the art), it results from this, he says, that the ease of the success obtained, the hope of rapidly acquired fortune, cause the young actors and actresses to neglect the essential portions of their art, even the cul-

tivation of a correct pronunciation of their own language. Intelligent conceptions and harmony, the traditions of the great masters of the past, gaiety, well-delivered diction, and naturalness, are all insensibly lost in the oblivion of an ill-cultivated art.

It is true that Lekain is referring to the then prevalent fashion of the Italian Opéra Comique, an art neither French nor Italian, but his remarks equally well apply to the recent introduction into our country of innumerable "adaptations" from questionable French works, and the popularity of *opéra bouffe*. Let us, however, hope, as did Lekain, that this "delirium," as he terms it, is only like the overflow of a river, which by degrees returns to its natural bed, leaving only on its banks a few traces of its passage.

Admitting this possibility, Lekain very naturally draws attention to the death or retirement of those who might serve as models and teachers for the younger generations. If in the ordinary course of events, he remarks, from want of a school, from want of good models, we would sustain an art, perhaps the only one in which we are still superior to all the nations of Europe, steps must be taken to provide for this necessity; and then follows a scheme of, and regulations for, the formation of a dramatic school, regulations signed, as we have above stated, by the three trusted names of Lekain, Bellecourt, and Preville. The formation of a library, a note adds, would be also an essential object,—a library well chosen rather than numerous, one prepared at little expense, but the use of which would daily be proved. A few economies would annually increase the collection, which would in time become precious, especially by the addition of faithful translations of foreign dramatic productions which have acquired a merited celebrity.

Such may be considered as among the first stones laid of the future institution of the Conservatoire. The amusing and trustworthy memoirs of Bachaumont state that Lekain and Preville obtained the privilege to found their School of Declamation, of which they were nominated professors, but no trace is to be seen of the opening of the establishment; in later years, however, the founders of the Conservatoire did not neglect to adopt more than one of the excellent regulations proposed by Lekain.

It was only in 1786 that the École de Déclamation was added to the École Royal de Chant, and it was in this school that Talma received his technical instruction. After traversing the stormy period of the Revolution, the Conservatoire was constituted by Napoleon; in 1828 the class of declamation was suppressed, but two years later reconstituted; in 1831 again suppressed, it was definitely restored in 1836 under the name of "the class of dramatic studies," the last ministerial regulation dating from November 22nd, 1850. It must be remembered that the section of dramatic declamation is only a portion of the Conservatoire of Music and Declamation. In the following regulations concerning the pupils of that special section we have, therefore, omitted intentionally any but obligatory reference to the musical pupils.

The Conservatoire is placed under the authority of a director, who regulates the work of the institution, and presides over all the committees, in which his voice is preponderant. The administration is additionally composed of a secretary, a treasurer, a superintendent of the classes, and a head librarian.

There are three classes of dramatic declamation held by authorised professors; each professor gives two lessons weekly, all the pupils of the declamation course being obliged to be present at the lessons of each professor. There is also a teacher of dancing and a fencing-master for those pupils destined for the stage.

Into the requirements and salaries of the professors it is needless to enter; their competency is ensured by excellent precautions, and only fully authorised professors and graduates are admitted after lengthy trial to definite duties.

There exists a committee whose duties consist in a careful watch over the respective musical and dramatic studies of the pupils. In the regulation of the musical classes it may be observed that the instruction of the male pupils is entirely separate from that of the female pupils, whose mothers are allowed to be present at the lessons, but in the lyric and dramatic declamation classes this is not the case.

No aspirant to the classes of the Conservatoire can be admitted if he is less than nine years of age or more than twenty-two, unless in very exceptional cases. The aspirants are examined and admitted by the several committees nominated for this purpose. Twice a year these examinations of admission are held. After their first hearing, the pupils are only admitted provisionally, their definite admission being alone pronounced after the half-yearly examination which follows their first appearance. Once definitely admitted, the pupil possesses the right to remain in the classes at least a year. Foreign aspirants, it may be observed, are admitted with a special authorisation of the French Minister of the Interior (the Secretary of the Home Department), when they immediately enjoy the same rights and are submitted to the same regulations and duties as the other pupils.

By no means one of the least conspicuous features of this free and generous technical university is the *pensionnat*, with its ten male pupils destined for lyric studies, and ten female pupils, and eight pensions each of 800 francs (32*l.*) for eight pupils of both sexes who follow the classes of dramatic declamation. These pupils are fed, clothed, and kept entirely at the expense of the State. Admission to the privilege of this "scholarship" is alone accorded after examination and trial of six months; and each pupil to whom a pension is accorded contracts the engagement, at the expiration of his studies, to appear at one of the theatres supported by the State.

All the classes are examined by the respective committees in the month of December and the month of June, in order to ascertain the result and progress of the pupils; the classes have also their *concours* or competitive examinations, and every pupil after two years' study who has not been admitted to compete, from want of ability, is deprived of his right to continue in the Conservatoire; a pupil who having competed three times has obtained no prize or mention is subject to the same penalty. These competitions are judged by competent juries, specially appointed, and great is the excitement in the world of music and the drama as the first week in August approaches with its trials, its triumphs, and its failures.

With a mention of the excellent musical and dramatic library of the Conservatoire (the collection of musical instruments forms not the least among the many interesting museums of Paris) we may conclude this analysis of the constitution of the Conservatoire, or rather the dramatic section of that great institution, as it is laid down in the regulations to which we have above referred.

THE NEW MORGUE IN PARIS.

This building, the general dead-house of the French capital, or receptacle for the bodies of persons found murdered, slain by suicide, or killed by accident, has been for several years in course of construction, and is at length completed. From time to time some descriptive sketches of it have appeared, but none of any comprehensive character; yet the subject of public mortuaries is a large and important one, and it is especially interesting on account of the latest illustration afforded by the municipality of Paris. Up to a very recent time the Parisian Morgue was the reproach of Europe. Even our own police and workhouse mortuaries were decent in comparison with it. A hideous, low-roofed, double-chambered building, wherein the dead were divided from the living by a partition of glass. An exhibition of corpses reclined on slanting slates, with water dripping on them through leaden pipes from cisterns above, and all the rabble of the town, children included, as spectators, has been replaced by the most perfect structure of its kind existing in any part of the world. It is situated at the eastern extremity of that Parisian quarter which is historically known as "the City,"—a long, low edifice, surrounded by iron railings, and designed by M. Gilbert, a member of the Institute, whose plans were laid for completion a goodly while ago, though they have only just now been brought to a close. The cost of the whole has at length been assessed at rather less than 20,000*l.*, a price without precedent for a mortuary. The definition of a Morgue is, of course, a building in which are exposed for recognition the bodies of unknown persons, whatever the causes of their deaths. The old structure, erected in the City, on the right bank of the lesser stream of the Seine, near the bridge of St. Michael, was long regarded as at once inadequate to its purpose, as wanting in all those attributes of art which might be claimed both by reverence for the d and by any public edifice in the metropol France. The demolition, therefore, was decr as was also a transfer of the site, though was again fixed at the eastern end of the C behind the square which encloses the preci of Notre Dame. It is some years since the structure was commenced, but only a few we since the entirety of its arrangements were fir dedicated to the objects for which they designed. In fact, some portions had t taken down, after nearly the whole had pronounced perfect, the reason being that architect had to employ a foundation tained upon piles, owing to the soft and character of the soil beneath, and the neces closeness of the edifice to the cu of the river, which, at this point, is both and rapid. Thus, without those precaut the Morgue might have been endangere any accident happening to a warehouse exactly in its rear, or by any sudden wa the stream which it, almost literally, overhan In the construction, again, of a deadhouse so large a scale, various difficulties had met, which were not in reality confronted a outset, and which have necessitated impo alterations up to the present time; for exa the exigencies of ventilation, owing to accumulation of deadly gases given fort the decaying remains, were underrated protests of the architect notwithstanding; there were mistakes of arrangement in "Hall of Autopsy," or "Post-Mortem Exa tion" Chamber; thirdly, there were num obstacles, not easily encountered, in prov for a decent, and yet thorough display of unknown dead, many of whom, howeve spite of all opportunities of identificatio nameless to the grave. To provide the and supreme necessity, in such a place, are huge coke-furnaces and chimneys, in tion to heated air-chambers beneath the pavement. But for the Post-Mortem an posure Halls these are found to be insuffi and are supplemented by large open sash-fr in the high-pitched roof, as well as by spa unglazed windows in the walls. Still, the sphere is always fœtid, sickening, and repu to any except the accustomed sense. moreover, there is a perennial supply of from immense reservoirs, aided, if neces from the main service of the City, so that n every conceivable peril, from pest or conta is guarded against. The Parisian Mo indeed, from being the reproach of Euro one sense, has come to be its reproa another.

Viewed from the front, or land side structure presents a long, low elevation of different heights, perfectly plain through the central building, of one story, descen on either side to a lower level, and thenc tending in two long windowless wings, o by iron gates. There are five doors and windows on this façade. Towards the are shown a vast blank wall, a prison structure surmounting it; the same gr gates, and a series of low windows, resem those of a penitentiary. But the unseen of the structure are not the most unimpor It is built parallel with one of the main se of Paris,—gigantic works, Roman in their ception and development; and into this sp sewers open from the post-mortem cham from the "exposure" chamber, from the l tories, and from every other part of the b ing where any special processes may be g forward. The elaboration of the entire st ture is remarkable. No corpse is permi to leave it by the same way that it ca there is one passage set apart for "the ar of the dead," and another for "the depar of the dead." The interior, too, is divided subdivided with extraordinary minuteness. first, and, perhaps, largest apartment, is devoted to the reception of the body; nex this is that in which the bodies are laid ou identification; thirdly, there is a chamber fi up for those which have not been reclai and are given over for sepulture. Near is another for autopsy processes, where s are deemed desirable. Then we have a r for washing, a room for drying, and a room exhibiting the garments of the hapless c tures whose obsequies are celebrated in transitory tomb, with, in addition, ano somewhat similar to the Black Museum Scotland-yard, wherein their watches, mo

s, trinkets, and trifles, all and sundry, ring possible identification after interment, eposited for a certain term of years, after they are sold for the benefit of the poor. ben these, and opening on some of them, public hall, formerly a scandal of Paris, nich children congregated, yelling forth disappointment when no body of sui- or murdered victim, or mutilated way- crushed beneath the wheels of a e or a block of stone from a freshly- palace of the Quartier Saint-Germain, o be seen, for their entertainment, laid a the dripping, sloping slab, and rushing with the angry cry, "*Il n'y a pas de morts aujourd'hui!*"—"There are no dead to-day!" It s well for the progress of manners in the h capital that exhibitions of this character ot, in the future, be permitted. But this is l. There is an enormous furnace whence ir is continually poured into the dead, ting, and fumigating chambers, and, at a temperature, into the public hall, clothes- , and passages through which the corpses and go. Especial provisions, too, are ary for the general entrance-hall, the f court in which, on particular occasions, ain number of magistrates assemble, for ke of instituting investigations that may med necessary to justice, and the office of gistrar, whose ghastly duty it is to record ronicle all that takes place in these head- rs of Parisian despair and misery,—records published in detail, though the general s are annually given with the other es of the municipality. Again, there is n for "the night-watcher," during whose f duty, indeed, the majority of "subjects" ought in, some from the streets, a few from of murderous fame,—most, however, from er, upon which it was a strange law, until years ago, to give a greater reward for covery of a dead body than for the rescue ing one. This man is about the best paid establishment, since he, under the super- of the police, has to superintend his nts while they strip the corpses, search for means of identification or property, way their clothing, and remove them to the customary processes on the morrow. gain, this is not all. The Morgue has ables, its equipages, and its horses,— ally black, to bring inmates from distant rs of the town, or from below the more bridges. Perhaps, now that its arrange- after numerous modifications, which have arily been a work of time, are declared ough" from beginning to end, the example s structure will be studied in other ies than France,—in other capitals than Possibly, if tradition says aright, it is needed there than elsewhere; but no great polis, whatever the repute of its social ter may be, can possibly exist without and commodious mortuaries.

OM THE BANKS OF THE SEINE.

banks of the Seine, or, perhaps more cor- speaking, the quays of that river, supply ief subjects of interest this week, but er to give the first place to the direful nusual rise of the waters, which has y inspired serious fears among the river- r whether to the competition for the Prix ne in the familiar Palais des Beaux Arts, tands almost reflected in the now muddy g stream, or to the opening of the Indus- ppliances Exhibition at the Palais de l'In- e, somewhat out of the line of reflection, difficult to decide; all of these subjects ccupied the attention of the public quite ich as that of those more specially in- ed in each.

For the Prix de Rome, always the event, a week, but of the season, the crowd on esday in the École was as large and as cteristic as usual, but the general opinion s in finding the competition this year idly weak. The subject chosen is, of , classic and academic, the "Death of sthenes," as Plutarch in his "Lives" has bed it; but though there were the ary number of competitors (there are ft will be remembered), and the usual as of secluded study,—the students were , by the way, for the first time this year ne generous bequest of Dubosc, the old , to which we referred in these pages two years since,—the school cannot boast of having among its students a genius in embryo. Very properly this feeble result has roused the old and burning question of "State patronage," but, much as it may be desired by some, there is unfortunately little possibility of the matter being yet looked into.

On Saturday, at twelve o'clock, the jury, to the decision of which had been confided the award of the *Prix de Rome*, met at the École des Beaux-Arts, all the members of the Academy of Painting being present. After a discussion, which lasted until four o'clock, the jury awarded the *Prix de Rome* to M. Alfred Bramtot, a pupil a M. Bouguereau; the first second *grand prix* (a monetary recompense) to M. Bulaud; and the second second *grand prix* to M. Emile Pichot. It is noticeable that these two latter students are each only twenty-one years of age.

Scarcely has the *Salon* closed,—it is only three weeks ago,—and the Palais de l'Industrie is opened again with the Exhibition of Science applied to Industry, of which mention is made on another page. The very morning after the *Salon* closed, we remember seeing a whole cart-load of frames and canvasses being dragged from the doors of the Palais de l'Industrie, and only a day or two ago might have been seen blocking up one of the approaches to the Palais the huge head of M. Bartoldi's American "Liberty," which formed so conspicuous a feature of the last year's Exhibition, and which is to grace, in a more practical manner, one of the annexes of that of this season.

On Thursday M. Jules Simon opened the Exhibition with a simplicity of ceremony which, considering the importance of the Exhibition, does no small credit to the director, M. Nicole, and the Commission. We advise every one, whether interested or not in technical and professional matters, who is thinking of going abroad this autumn, not to lose an opportunity of visiting it.

But whether the traveller would do well to fly from the banks of the Seine to those of the Isar, to the recently opened Munich Exhibition, it is difficult to say; if he goes to admire the French school,—which there was a talk some time since would not be represented,—he will only meet old friends; for the French, with characteristic modesty, prefer to rest their artistic fame on works already familiar. Thirty-five of the pictures which the Government bought at the last *Salon* will be exhibited at Munich, among which may be mentioned those of Duez (the St. Cuthbert), Henner, Salmson, Laurens, and Melingue; in addition, thirty-one old friends, several of whom have encountered the fogs of the banks of the Thames) from the Luxembourg Gallery, respectively by Rosa Bonheur, Bréton, Hebert, &c., together with a number of other independent Parisian painters.

Speaking of French painters, their number, already very large, has been within a short time increased by an important addition,—a familiar name in our exhibitions,—the Hamburg painter, M. Heilbuth (who already has a picture at the Luxembourg), has naturalised himself a Frenchman, after having lived twenty years in France, which he only quitted for the banks of the Thames at the time of the Franco-Prussian war.

Among other news which reaches us connected with Germany we learn from the Paris *Globe* that the works of the portal of Strasburg Cathedral are terminated. The sculptures are exact copies of those which existed previously to the revolution of 1793, when they were destroyed. The works of the wings of the portal have been executed by the sculptor Chertier, at Paris; they are in copper *repoussé*. The wings are of wood, some 6½ mètres high, each wing being divided into six parts; on them are figured the Prophets, Evangelists, and Martyrs, and other Biblical subjects, all the figures and groups being adorned with graceful compositions of vine-tendrils and hops. On the 1st of July the whole was uncovered, and now the public may admire and criticise.

The death of Mr. Charles Landseer is referred to casually in the French journals. They could scarcely be expected to know much of him either as a painter or as a social celebrity, as which he perhaps merits more notice than as a painter. With the death of Mr. Charles Landseer pass away many old Academy traditions. Mr. Landseer was probably what they term here the "dean" of the Academy. He was born but six years after the death of Reynolds; and his father, Mr. John Landseer, the well-known archæologist and engraver, who died, it seems to us, but the other day, must have well remembered seeing,—for unfortunately he could not hear,—the stately Sir Joshua Reynolds on the occasion of his delivering his last lecture at the Royal Academy at Somerset House.

THE NEW CANAL.

Thanks to the active energy of M. de Lesseps, not a day has been lost since the meeting of the Paris Geographical Congress some weeks back, which determined the question and many of the details of the Panama Canal, which is to separate the two Americas. M. de Lesseps has within a few days visited, in company with Mr. Appleton, a number of French cities, in each of which an enthusiastic welcome has been given to the projector of the Suez Canal, who has now come forward as so active a promoter of the new American canal, which he promises the engineering world will be completed before six years' time. On the 14th inst. M. de Lesseps was received by the Geographical Society of Rouen, and the lecture delivered by the eminent engineer was more than once interrupted by the enthusiastic applause of the large assembly. M. de Lesseps happily possesses the power of expressing his thoughts ably and with facility; his style is simple; and, above all, his statements are set forth with a clearness and confidence that leave no room for doubt. It is to this fact that is due the immense popularity of M. de Lesseps and the confidence with which his predictions are accepted.

The enterprise is to commence very shortly, the scientific congress having agreed that in the first week in August a subscription is to be opened. The commission has estimated the maximum of the expense at a milliard of francs (40 millions sterling), and 36,000 workmen are to be employed during the five or six years that the works last. Fortunately, as M. de Lesseps gracefully remarked at Rouen, the piercing of the Isthmus of Panama will not be so difficult as that of the Isthmus of Suez, owing to the bonds of friendship and the recollections of old brotherhood that exist between France and America; and it is, doubtless, as a compliment to that country that M. de Lesseps's little daughter, a child of six years of age, will, by means of electricity, demolish the first obstacle of the Isthmus, as did, if we remember rightly, the daughter of President Hayes, the famous passage of Hell Gate, near New York.

It may be imagined in the midst of what applause M. de Lesseps announced in his speech at Rouen a few days back, that he invited the company present to meet him again three years' hence, on the day of the first voyage by a French punt through the new canal. Everything augurs for the best in the new enterprise, which it may be imagined M. de Lesseps would earnestly desire to see terminated; indeed, his admirers express such hope in his energy that they openly announced the only possibility of his succumbing when some further project,—perhaps the opening up of the great African Continent, in which he takes so active an interest,—shall have completed the trio of the noble enterprises of a life devoted so generously for the benefit of future generations.

But M. de Lesseps is not the only aged enthusiast in France who has aided by his powerful influence the work of the new canal, so typical an enterprise of this teeming century. At a recent solemn masonic meeting of the French and Scotch lodge, Clemente Amitié, held in Paris on the occasion of the fourth anniversary of the initiation of M. Littré, the illustrious Academician, a meeting, honoured by the presence among many other notabilities of M. Gambetta, M. Ferry, and M. de Lesseps, M. Littré, prevented by illness from attending the ceremony, addressed to his "brothers" a letter of excuse, not alone expressing a formal regret, but containing a glowing glorification of modern industry, and particularly of the great enterprise of the piercing of the Isthmus of Panama.

What was but the other day, as the veteran Academician remarked, but a bold initiative, a mere projected scheme, became a hope when the learned explorers to whom was entrusted the duty of studying the circumstances and conditions of the several projects put forward, returned, not without however more than one valuable life having been sacrificed in the dangerous exploration, and now the project is almost realised. The plans are accepted, the financial combinations have already commenced,

and soon will be struck the first blows which will unite two oceans, by an enterprise, one of the glories of the close of the nineteenth century, a great project, simple in its conception, laborious in its execution, beneficial for ever in its results.

Christopher Columbus, adventuring into the unknown immensity of the Atlantic, believed by that road to gain the East Indies, but his advance was barred by the long stretch of the Americas from pole to pole, with their narrow strip of land connecting the two halves and effectually opposing a barrier to further progress westwards.

But the man of modern times can no longer hear the sound of the waves of two oceans beating on shores so near, and yet so far separated without his active intelligence imagining in what manner the obstacles may be cut through. To conceive and carry out enterprises of such magnitude, savants, geologists, and engineers, aided by all the powerful army of modern machinery and immense capital, are absolutely necessary.

Science and industry in concert, undertake to change, in a given place, the system of the terrestrial globe. The man of the present day brings unhesitatingly to bear his active hand, and, turning the sense of a fine Latin verse, he has the right to believe himself engendered for the whole human race (*toti genitum se credere mundo*), to feel himself capable of embracing the whole system of his home, and modify it according to his views and profit.

When the first Montgolfière rose into the air in Paris, in the presence of an astonished crowd, an old lady of quality cried,—"They will discover when I am dead the secret of avoiding death." That secret has not been found; but modern science has advanced, and daily advances more rapidly into the workshop of nature and her processes, and extracts from it powers which multiply indefinitely the means at our disposal, so insignificant in our origin, so potent in the present day.

Society becomes each year richer, and each year presents itself to the thoughtful as a growing difficulty, the best employment of these riches. In the international disorder in which at present is plunged so many nations of the world, when it would be desirable that the real benefits, such as we possess, should not be compromised lightly. Everything which serves to shackle selfish or ill-regulated impulses in rulers, or in people, should be looked upon with satisfaction; and nothing gives greater promise to the needs of security than these gigantic and cosmopolitan enterprises, which, appealing to the world at large, render the community a service that is incalculable.

Recognised as powers which must be taken into consideration, they establish beneficial neutralities which circumscribe the battle-fields of the world, and impose limits on the spread of their terrible destruction. It would almost seem as if the genius of the present hour had deliberately placed in contrast the double spectacle of the great wars and great enterprises of which we are now witnesses, like the Jupiter of the Iliad seizing his golden scales to weigh the destinies of the heroes, as if that genius had taken its shining scales to weigh out before the world the work of conquest and of labour.

But the other day the cannon roared along the Balkans; for religion, for panslavism, for aggrandisement, Russia had drawn her sword, and, after her victory, Russia binds up her wounds and looks hopefully forward to the day when they will be cicatrised.

And now an expedition is being prepared resolutely to attack the Isthmus of Panama. Whatever may be the unforeseen difficulties and obstacles met with, we may rest assured that they will be overcome; and commerce will avail itself of a new highway which nature had till now refused it, and increasing prosperity will follow in this great track traced by our engineers. Must we be astonished if the genius of the hour shows with pride the two scales of its golden balance?

This warm and glowing letter of M. Littré has met in France with universal applause, and cannot fail in other countries than his own to supply ample matter for the consideration of the thoughtful. It is in this particular that such noble and durable enterprises, of interest to the world at large, deserve so much more consideration than is at present given to them, and in which they are so often set aside for pettier and more selfish aims. It has, with reason, been remarked that the future lies in the hands of the engineer, and each day tends more to prove the truth of this fact in the interest we are called upon to devote to the examination of fresh projects which but a quarter of a century since seemed of apparently impossible completion. It is for the Governments of the world, instead of shackling the international action of the thoughtful and the practical, whose common patriotism consists in the advance of intelligence and prosperity for the world at large, to aid each other in this great work which it is the duty of each of us individually to help on and remit as worthy trustees to future generations.

SOME FEATURES OF ANCIENT ENGINEERING.*

Modern research among the ruins of antiquity is steadily relegating to the old civilisation many things that we formerly thought belonged only to modern times. Almost all the *materies* of our present civilisation originated among the ancients, the peculiar distinction of modern times being the wider and more rapid diffusion of our inheritance from the past and the working it over into new forms. The various textile fabrics of cotton, linen, silk, and wool that we now use, for example, were perfectly well known to the Egyptians of 4,000 years ago; but the cotton-gin, the power-loom, and the steam-engine have increased their forms and variety, and put them in the hands of every one. We find the same thing true of engineering science. Canals, artificial harbours, stone bridges, aqueducts, drainage systems, high-class roads, involving cuttings, embankments and tunnels, and stone, brick, and wooden building construction of all varieties existed then as now; but the modern engineering methods differ widely from those employed by the ancients. The ancient harbour of Ostia, a magnificent work, protected from the sea triremes and craft well adapted for navigation in the Mediterranean, while the stone docks of Liverpool harbour the ocean steamer and the enormous ironclad man-of-war. The substructure of the modern railroad is very much the same as the old Roman military road, but in our hands its scope and efficiency have been vastly increased. A recent engineering achievement, the transport of an Egyptian obelisk from Alexandria to London, and its erection on the Thames embankment, illustrates very well, I think, our indebtedness to antiquity, and not less our progress. That we should, in this nineteenth century, re-erect, with pomp and ceremony, a monument set up in Egypt ages ago, is the strongest kind of a compliment to the ancients. It may well be doubted whether our successors of twenty-five centuries hence will think any of our efforts of this kind worth carrying 4,000 miles and re-erecting. Of the manner in which it was accomplished,—the iron caisson-like boat, so admirably designed; the ease with which it was swung on its iron trunnions and placed on its pedestal,—we may justly feel proud; still the fact remains that the *fait accompli*, the end reached, was the same as that of its original designer. How the Egyptians raised their obeliaks we do not yet know, beyond the fact that they were familiar with the simple machines, the inclined plane, &c.; understood the use of cordage, and had command of unlimited manual labour in the shape of captives taken in war.

We should naturally expect to find the constructive uses of the simpler building materials, stone, brick, and wood, highly developed among the ancients, and this we find to be the case. In this direction I shall consider, first, the structures found in Western Asia.

The earliest civilisation in this region of which we have any records was the Chaldean, and was central in the lower part of the Tigris-Euphrates valley. This region is alluvial in character, with no stone, but abundance of clay, and was subject to frequent inundation. The building material, consequently, was mainly brick, and the important structures were built on platforms raised above the general level of the plain. The temple at Mughier was built with parallel sides of 98 ft. and 133 ft. in length, and about 40 ft. high. The material used was small sun-dried brick, laid in bitumen, faced with kiln-dried brick. The bricks of the upper story were laid in a cement of lime and ashes. The bricks used in this and similar structures were stamped with the name of the king. In the uppermost story glazed tiles and copper na have been discovered. The temple of A Shahrein (these, of course, are modern name rests on a platform of beaten clay, cased with massive wall of sandstone and limestone, 20 thick in places. From the platform to t summit of the first story extends a mark staircase, composed of small polished bloc 22 in. by 13 in. by 4½ in., fastened by copp bolts to the bed of sun-dried bricks, on whi the staircase rests.

Of these edifices Rawlinson says,—"No bui ings in the world, not even the pyramids, more deficient in external ornament. The b tresses and air-holes, that alone break the u formity of the walls, are intended for utili only." A brick burial-vault at Mugheir interesting, as exhibiting what we may cal rudimentary arch. The vault is of sun-dr brick, laid in mud, 7 ft. long, 3 ft. 7 in. wi and 5 ft. high. The sides slope gently outwa as they ascend until the springing line is reach when the successive layers of brick are push towards each other until they meet.

The Chaldean ascendency in the East las from about 2200 to 1500 B.C., after which t the Assyrians became masters of the situati remaining so until about 650 B.C. The cen of activity now advanced to the upper port to the upper portion of the Tigris-Euphra valley. At Nineveh, according to Diodorus, wall surrounding the city was 100 ft. high, so broad that three chariots might drive aro side by side. Xenophon, who passed close on his famous retreat with the ten thousa puts the height at 150 ft. and the width at 5 The actual greatest height of the ruins present is 46 ft., and from the immense mas *débris*, the computation of Diodorus is proba not far from the truth. The width of crumbled mass is from 100 ft. to 200 ft. construction seems to have been as follows to a certain height (50 ft. according to Xenop the walls were composed of neatly hewn blo of fossiliferous limestone, smoothed and polis on the outside. Above this the material sun-dried bricks. The grand halls of the syrian palaces constituted their principal feat In the palace of Esarhaddon, the son of S nacherib, the hall was intended to pass all predecessors. Its length was to be 165 ft., breadth 62 ft., making an area of over 10, square feet. The builder appears to have b unable to roof the hall, and was obliged divide it by a wall down the middle, wh though he broke it in an unusual way, and it some distance from the ends of the ap ment, still had the actual effect of subdivid the room. The method of roofing these pal is not certainly known; some investigators hol that brick vaulting was used, while others th that wooden beams were employed. Oth again, imagine that the portions near the w only were covered, leaving the centre open light and air.

The masonry at Khorsabad was of three kin That of the palace mound, forming a portion the outer defence, was composed entirely stone, square hewn, of great size, laid dry backed with brick. The bond is made up stretchers, alternating with double headers; re-inforced corner and the bonding of the st into the brick backing are points worthy notice. The stones measure from 2 yards yards in length, 3 ft. in width, and 5 ft. to 6 in height. The rest of the defences were inferior character. The material was stone, not so carefully hewn. Stone only was u the lowest course being rough rubble wo above this were two courses of carefully squa stones, about 1 ft. long and 6 in. wide, places end, care being taken to break joints.

Although the ancient architectural constr tion was mainly trabeate in its nature, the notion that the round arch was of Roman the pointed arch of Gothic origin has been di pated by the spade of the Eastern archæolog I have already spoken of the elementary a of the Chaldeans, but the Assyrians used true arch. All the Assyrian arches hith unearthed are of brick. Round arches are fo both in crude and kiln-dried material, the br in every case having the proper wedge-sha section, with curved extrados and intra These arches are almost wholly found in un ground construction, as drains, &c., the grea span hitherto discovered being 15 ft. They mostly semicircular. The only pointed a found by Mr. Layard is in a drain under N.W. Palace of Nimrud, and is very peculiar its construction. The bricks used are ordin

* By Mr. George Burnham, Jun., C.E., read at a meeting of the Philadelphia Engineering Club, U.S.

ngular bricks. The arch is keyed with two
s of bricks, with their beds horizontal. The
ir joints are, of course, slightly wedge-
d.

e faults of Assyrian construction are not
teresting than its merits. Although there
lenty of stone at hand, they used sun-dried
, merely faced with stone, because they
arned a certain style in the alluvial Baby-
and having brought it with them to a
y far less fitted for it, they raised in
ratively hilly Assyria the type of build-
at was the natural outgrowth of the flat,
ess plain that was their primitive abode.
arthen platforms upon which they built
nevitably have bulged and settled sooner
r; the problem of the retaining wall that
oubles the engineer proved fatal to many
ssyrian constructor. Hence, while the
e buildings of Egypt stand to-day, the
an palaces are almost shapeless ruins.
he Assyrian king so frequently destroyed
lace of his predecessor, and built afresh,
ably due to the rapid decay of the edifice
than a mere desire to excel his fore-
. That they found no difficulty in trans-
g large stones is evidenced by their bas

A bas relief at Koyunjik shows a boat
with such freight proceeding down a
The lower part of the craft is made of
d skins, to which are lashed logs for the
g.

colossal human-headed bulls, of such
nt occurrence in Assyrian art, and which
d many tons, were placed on the top of
al platforms, from 30 ft. to 80 ft. high.
he fact that they finished the detail of the
before transport shows that they were
ly confident of their ability to move it
t mishap. The bas-reliefs illustrate in
at detailed manner the way in which this
fected. The colossus was placed on a
wooden sledge, and was cased with a net-
f spars, crossing at right angles, lashed
intersections. In this casing the figure
arefully wedged, to prevent any motion.
pes were attached to the top of the
and were held taut by parties of
rs on either side. Besides these, wooden
r props were applied lower down, also
parties of men. The front of the sledge
rved upward, to enable it to rise easily
the wooden rollers continually placed
it. The motive power was applied by
cables, to which gangs of men were
d by straps passing over one shoulder
der the other, and fastened to the main
—an arrangement enabling them to use
eight and strength to the best advan-
The cables were fastened to the sledge at
rojecting pins or trunnions by a knot of
r construction. To start the mass a
ooden lever was applied behind. To get
benefit of the lever, ropes were fastened
upper end, which could not otherwise
een reached. An Egyptian sculpture
t Bersheh shows a colossal statue in
of transport, the means employed being
milar to the foregoing. On the knees of
re stands a man, probably beating time
ving out the words of a song. At the
f the sledge a man is pouring something
vase, perhaps grease. Platoons of sol-
ccompany the march. A number of men
dineated carrying water (or possibly
and unknown implements. Task-masters
iefs of men follow. We have seen that
yrians, who came into power 1150 B.C.,
he brick arch, but we find that it existed
t as early as 1510 B.C. The stone arch
there, constructed about 600 B.C.
last rulers of Western Asia, before the
of Alexander, were the Persians, from
C. to 333 B.C. These Aryian Persians
follow their Semitic predecessors in all
chitectural forms, but originated a style
suggestive of the Greek, using the
very largely.

rious edifice, belonging probably to the
chæmenian times, is a square tower,
ed of large blocks of marble cut with
exactness, and joined together without
ortar or cement of any kind. The build-
36 ft. high and 24 ft. square. The door-
not at the bottom, but half-way up, and
ave been reached by a flight of steps.
st interesting feature, however, from our
f view, is the roof, which consists of four
slabs of stone, reaching entirely across
ide to side, and measuring about 24 ft. in
6 ft. in width, and from 18 in. to 3 ft. in
thickness. The slabs are cut to slope each way from the diagonal lines, and were originally clamped together in a very careful manner by iron clamps.

I shall pass by Egyptian stonework, not because it is less worthy of notice than that of Western Asia, being, on the contrary, much more remarkable, but because for that very reason it has been more generally discussed, and you are doubtless familiar with its general character. As to the mechanical methods used, however, a few words may be of interest. In blocks of very great length, as the columns at Fateereh, which are about 60 ft. long and 8 ft. 6 in. in diameter, certain pieces of stone were left projecting from the sides, like the trunnions of a gun, to which the ropes were attached. The largest of the obelisks, which is at the temple of Karnak, weighs about 297 tons, and was brought about 138 miles from the quarry to where it now stands, and those taken to Heliopolis passed over a space of about 800 miles. The method employed was the same as that already described in the case of the colossus. The skill of the Egyptians was not confined to the mere moving of great weights. Their knowledge of mechanism is shown in the erection of the obelisks and in the position of large stones raised to a considerable height and adjusted with the utmost precision; sometimes in places where the space will not admit of the use of the inclined plane. Some of the most remarkable are the lintels and roofing stones of the large temples, the lofty doorway leading into the great hall at Karnak being covered with sandstone blocks 40 ft. 10 in. long and 5 ft. 2 in. square. In one of the quarries of Siene is a granite obelisk which, having been broken in the centre after it was finished, was left in the exact spot where it was separated from the rock. From the dimensions of the quarry, and the situation of the stone, it must have been lifted bodily, as was the case also with the other stones taken from the same quarry.

The use of the canal for irrigation, water supply, and inland navigation was developed in the East at a very early date. Rain was infrequent, and while there was plenty of water in the rivers, the very existence of the people depended upon their ability to conduct it to their lands. Innumerable mounds, in regions now desolate, show how large a population they sustained. Huge dams were thrown across the Tigris in various places, one of which (the Awai) still remains, seriously impeding the navigation of the river. It is formed of large masses of squared stones united together by iron clamps.

In the tract of land lying between the river Zab and the Tigris near their junction, in which was situated the important town of Calah, a tract which was partly alluvial, but more generally of secondary formation, hard gravel, sandstone, and conglomerate, are the remains of a canal, undoubtedly Assyrian. The first portion of this canal is tunnel-work, the remainder being open cutting. Its total length is about twenty-five miles.

The great Egyptian canal, from Bubastis (the modern Bebays) on the Nile, to the Gulf of Suez, anticipated the great work of our times, —the Suez Canal. The present canal, indeed, follows the course of its ancient predecessor for some distance at the Suez end. Herodotus says it was commenced by Neco (about 610 B.C.), and that it was four days' journey in length, and broad enough to admit two triremes abreast. At the mouth of the canal were sluices, by which it could be opened or closed according to circumstances. Though filled with sand, its direction is still easily traced, running nearly east, about thirty-three miles from Bubastis, and then S.S.E. sixty-three miles more to the extremity of the Arabian Gulf. The date assigned by Herodotus for this work is probably much too recent, as monuments of Rameses II. (1350 B.C.) are found on its banks.

Among the most famous feats of ancient military engineering were the canal and bridge of Xerxes. On account of a former disaster to his fleet in rounding Mount Athos (a stormy promontory resembling our Cape Hatteras in this particular, and which Greek sailors still dread to pass), Xerxes determined to cut through the peninsula by a canal twelve furlongs across, the neck of the peninsula being [comparatively level. The work was done by the neighbouring peoples, each nationality doing a certain portion. Herodotus, who seems to have been an historian, with considerable engineering sense, says:—"The sides fell in continually, as could not but happen, since they made the width no greater at the top than it was required to be at the bottom. The Phœnicians, however, showed their usual skill by making the part assigned to them twice as wide at the top as it was required to be at the bottom." The other work that I have mentioned was a pontoon bridge across the Hellespont, from Abydos to Sestos, for the transport of his enormous army. The channel at this point is about one mile and a half broad. A storm having destroyed the first bridge, Xerxes gave orders that the Hellespont should receive 300 lashes, and that a pair of fetters should be cast into it. Herodotus says that the lashers uttered these words while scourging the Hellespont:—"Thou bitter water, thy lord lays on thee this punishment because thou hast wronged him without a cause, having suffered no evil at thy hands; verily, King Xerxes will cross thee whether thou wilt or no. Well dost thou deserve that no man should honour thee with sacrifice, for thou art in truth a treacherous and unsavoury river." While this interesting ceremony was in progress, he likewise commanded that the overseers (engineers?) should lose their heads,—a fate that should reconcile the engineer of to-day to his lot. The work was finally completed as follows,—I quote from the historian again:—"They joined together triremes and penteconters, 360 to support the bridge on the side towards the Euxine (Black) Sea, and 314 to sustain the other, placed at right angles to the sea, and in the direction of the Hellespont channel, relieving, by these means, the tension of the shore cables. Having joined the vessels, they moored them with anchors of unusual size. . . . . A gap was left in the penteconters in no fewer than three places, to afford passage for passing boats. When all this was done, the cables were made taut on the shore by the help of wooden capstans; this time, instead of using the two materials separately, they assigned to each bridge six cables, two of white flax and four of papyrus. Both cables were of the same size and quality, but the flaxen were the heavier, weighing not less than a talent to the cubit. When the bridge was complete, trunks of trees were sawn into planks and placed side by side upon the tightened cables, and fastened upon the top. This done, brushwood was brought and arranged upon the planks, after which earth was brought and heaped upon the brushwood, and the whole trodden down into a solid mass. Lastly, a bulwark was set up on either side of this causeway, of such a height as to prevent the sumpter beasts and the horses from seeing over it and taking fright at the water."

I shall treat very briefly of the Roman works, as these are well known. The Cloaca Maxima, or great sewer of Rome, ascribed to the last three kings, *i. e.*, about 520 B.C., is still preserved for a distance of 1,000 ft., and still conducts the drainage from the Capitoline and Palatine hills to the Tiber. It is probable that the Etruscans were the designers of this and other early Roman works, as this remarkable nation was already far advanced in civilisation when the Romans were ignorant rusties. An arched vault of tufa, with arches of travertine inserted into it at intervals of 10 ft., covers the canal, which is about 20 ft. wide. The original height was 12 ft., now reduced to from 6 ft. to 7 ft., by silting, in spite of frequent cleanings. To prevent inundations or reclaim arable lands lakes and marshes were drained by works called *emissaria*. These were either open or covered, and involved in some instances a considerable amount of tunnel-work.

The drainage of Lacus Fucinas, which was subject to dangerous inundations, was planned by Cæsar, but not executed until the time of Claudius (9 B.C.—54 A.D.), The whole basin was laid dry, this being effected by a shaft cut through the solid rock from the lake to the river Levis (now Garigliano), which discharges into the Mediterranean. The tunnel was 15,000 Roman feet in length, 9 ft. wide, and 14 ft. high. Vertical shafts were sunk for the removal of the *débris*, and inclined shafts for the ascent or descent of the workmen. The solidarity of the Roman empire allowed the construction of roads that would not have been possible in disconnected Greece. The nature of the ground was almost wholly disregarded as influencing the alignment of the road. Mountains were cut or tunnelled, depressions filled, deep valleys or rapid streams spanned by bridges of bold design.

Of tunnels I will mention the so-called Grotto of Posilippo, near Naples, which is still used. It is 2,300 ft. long by 20$\frac{1}{10}$ ft. wide, arched at

both ends, with spans of 81 ft. and 84 ft. The material pierced is solid rock.

The Via Appia, below the village of Ariccia, runs for some distance on an embankment faced with freestone, with massive balustrades and seats on both sides. Arched culverts occur at intervals. The roads were either strewn with sand or gravel, or paved with solid stones. In the latter case polygonal stones, usually basalt, were used. The raised footways, when they occur, were generally made of the softer common tufa. The middle of the road was crowned for drainage. Add rails and cross-ties to this section, and suppose the grade to have been within certain limits, and you will see at once how closely we approach the ancients in one respect, and how widely we differ from them in another regard. If we except our iron framing (for they understood wooden framing, and reached a point in stonework to which we have never attained), our predecessors originated the constructive forms which we have so greatly extended, and use in such a different manner.

LOCHMABEN TOWN HALL.

An appropriate addition has just been made to the new Town-hall of Lochmaben. Some time since ex-Provost Dinwoodie and Mr. Cruickshanks (of Broomhill) suggested to some local gentlemen that the Bruce window in the Town-hall would be much improved by the substitution of ornamental for the plain-glass side windows. The proposal was heartily entered into, and the requisite money provided by donations. Mr. Ballantine, of Edinburgh, was entrusted with the commission, and completed it last week. The glass is ornamented in a style in keeping with the Bruce window. In the centre of the left window is a representation of the patron saint of the burgh, "St. Magdalene," with the inscription, "*Burgi de Lochmaben, commune villæ est.*" The centre piece of the right window contains the "scales," the inscription being "*Post nubila phœbus*,"—within one scale *Suum*, and in the other *Cuique*. The gentlemen who have interested themselves in this matter have done so well that they are now expected to take up the proposal to insert a 'Wallace window" in the other end of the hall.

THE JEWISH SYNAGOGUE, RUE DES TOURNELLES, PARIS.

The large and highly-decorated Synagogue in the Rue des Tournelles, Paris, covers an area of about 1,930 mètres; the façade (severe in character), measuring 22 mètres in extent, is decorated with sculptured emblems of the Jewish faith, such as branches of palm, sacred trumpets, as also Hebrew inscriptions: it is surmounted by a semicircular frontal, at the top of which are placed the tables of the law. The sculpture is due to MM. Germain and Watrinelle, the masonry being confided to a society called the "Entreprise." The interior is composed of a large central nave (conducting to the sanctuary), which is reserved for men, as also the two sides underneath the first gallery, and capable of seating over 600 persons. The two galleries, which are reached by stone staircases leading from the vestibule, are capable of containing between 600 and 700 people, and one reserved for the female portion of the congregation, the lower one for regular attendants, and the upper one for school children and passing worshippers. The synagogue is lighted by means of large circular windows on the top and sides of the vaulted roof. The decorations are completed by Jewish emblems, and by a series of quotations, in Hebrew, from the Holy Scriptures, designed and arranged by the learned Orientalist, M. Rollet; these decorations, in light bronze, stand out, in quiet relief, on a ground of soft and sober colour, producing a very harmonious effect. The total cost of construction, including the apartment of the chief rabbi of France (for it is here he resides), amounted to the round sum of 40,000*l.*, out of this must be reckoned between 2,000*l.* and 3,000*l.* for the furniture, and 10,000*l.* for the ironwork supplied by Eiffel & Co. Our information has been obtained through the kindness of M. Varcollier, the architect, who is official architect for the Fourth Arrondissement of Paris. We give a view of the Interior, and will illustrate the Exterior in an early number. In noticing this synagogue we are tempted to quote from George Eliot's last work, and say that the Jews in France, as elsewhere, have exhibited "a feeling of race and a sense of corporate existence unique in their intensity."

MESSRS. DOULTON & CO.'S FACTORY ON THE ALBERT EMBANKMENT, LAMBETH.

The firm of Doulton & Co. was established upwards of sixty years ago, when the use of stoneware pottery was comparatively limited, being confined to articles for domestic uses, such as pitchers, bottles, jugs, pans, filters, &c., together with ink and blacking bottles, and vessels used in chemical manufacture; whereas, at the present time, this industry is so important that there is now scarcely a trade in which the use of stoneware in some form is not required.

The introduction of drain-pipes in stoneware some thirty years ago by this firm created quite a revolution in all sanitary arrangements, each year adding new purposes to which these are applied, Messrs. Doulton's factories alone turning out annually upwards of 1,200 miles of pipes, from 3 in. to 30 in. in diameter.

As each demand has arisen, this firm has applied itself to meet it, in most instances taking the initiative, factory being added to factory until at last have sprung up, in different parts of the country, no fewer than eight large works, in which are produced every kind of pottery from the most utilitarian to the most artistic, the latest of these buildings being the remarkable pile which forms the subject of our illustration. It consists of two large blocks and a fine chimney-shaft erected on a blue Staffordshire brick foundation, faced with Fareham red bricks, with red and buff terra-cotta dressings. The use of terra-cotta as a building material is steadily on the increase, as the numerous and important works carried out with it in London alone amply testify. Its great advantages are scarcely yet fully recognised by architects; its closeness of texture and impervious nature, when properly made and burnt, render it very suitable for our variable climate, as well as for the atmospheres loaded with acids so often met with in many of our manufacturing centres, which act so destructively upon almost all kinds of stone, and more especially so when carving and ornament are attempted.

The buildings themselves are nine stories in height, and are designed in the modern Gothic style, freely treated and enriched with mouldings and foliation. Interspersed with the terra-cotta are columns, panels, bosses, &c., of salt-glazed coloured stone ware, known as "Doulton ware." This "Doulton ware" is one of the late additions to the manufactures. Commenced in 1870, by two or three artists from the Lambeth School of Art, it has gone on increasing till some 100 or more students are employed by the firm in this branch alone. At first it was confined to vases, mugs, &c., but at present every conceivable kind of ornament is worked out in it with much skill and taste, and the buildings which we now illustrate prove that architecture itself may be enlivened by its rich, yet unobstrusive colourings. It is used for internal as well as external decorations; some beautiful balusters are being at the present time prepared for the staircase of one of the public buildings in London.

Amongst the other novelties is the introduction of hand-painted tiles as name and address panels. The name is usually left the natural colour of the clay as it comes from the kiln, the background being filled in with diaper work or other patterns in any colouring desired, and being executed on tiles of any sizes, straight or curved spaces may be covered, and the painting, being under the glaze, is permanent.

The buildings are erected in two blocks. The first block has a spacious show-room on the ground-floor, and is entered through a vestibule from the projecting porch which abuts on the Albert Embankment, the porch being supported on large columns in "Doulton ware." A portion of the first floor is also used as a show-room, and as a library and reading-room, in which references can be made to matters of interest pertaining to sanitary and other like work. The engine-room and boiler-house are situated in the basement. The remaining stories of this block are devoted to the extensive requirements necessary for the manufacture of sanitary fittings of every kind. Water-closets and lavatories are here shown with all the latest improvements in full working order.

The second block is devoted entirely to manufacture of terra cotta and the Lambe faience and Doulton impasto, the latter being the last introductions in art-ware brou out by this firm. The Doulton ware (the ot branch in their art-manufactures) requir entirely different manipulation, is carried on the High-street premises. The engine and boi house and the large clay-room and stores occ the ground floors. The entrance and m staircase are placed in the tower, which prope forms the central feature of the elevation of t block, and gives access to the various wo shops and also to the studios at the top of building. These studios are replete with ev convenience, and have attached to them cl rooms, dining-room, and museum for the us the artists employed. The central compartme of this block are devoted to drying-rooms o plan specially designed and used by Mes Doulton's firm, which enables them to prod their works with much greater rapidity than hitherto been attempted, and renders them some extent independent of our varying clim

The chimney-shaft adjoining (which is shown in the view) is built to carry off smoke from several new kilns erected in nexion with the second block. It is built solid concrete, 10 ft. thick and 25 ft. squ laid on the Thames gravel 17 ft. below ground-line; the solid brick foundations on concrete are 7 ft. deep and 17 ft. 8 in. squ the shaft itself is square on plan, with a circu chimney of 9 in. brickwork carried up inside the first 50 ft. in firebrick. This shaft is in diameter for 150 ft., diminishing in the 50 ft. to 5 ft. 3 in. diameter, and is the parallel to the top. Of the hollow span corners one is formed into a staircase of c munication with the gallery near the top means of foot-irons, 2 ft. long, laid so as to spirally one turn in every 6 ft.; a 4½-in. space is left between the inner and o shafts. The total height above the top of concrete is 233 ft. The red brick shaft al the second weathering of the base shows 87 ft. of clear brickwork, diminishing from 12 ft. sq to 9 ft. square under the corbels of the balust gallery; the terra-cotta shaft showing al the gallery is 31 ft. high. Two copper light conductor-bands are connected with four br carried completely round the top of the sh and these have two points above the balustrad and two points above the top of the chimney

The plans of the respective blocks essenti differ, in consequence of the widely diver requirements of each, but it was from the determined that the exterior of each build should not only harmonise with the other, also with the building at the corner of H street, illustrated in our issue of December 1876.

The instructions given to Messrs. Warin Nicholson, of Parliament-street, who have ac as architects for Messrs. Doulton in t numerous buildings for the past thirty ye were to utilise, as far as possible, the terra-c details, already designed by Messrs. Wilkinso Tarring, of Basinghall-street, then partly m factured for the new studio in High-str already mentioned.

Mr. J. Prim was responsible for the machin Messrs. Doulton supplied all the materials th selves; and Mr. Jno. Phillips, C.E., carried the works without the intervention of a tractor until near their completion, when present clerk of works, Mr. Wilkins, was manently put upon the staff. The ironwork supplied by Messrs. Matt. T. Shaw & Co.

Altogether, this group of buildings forms of the most prominent features on the south of the Thames, and is certainly one of attractions of the Albert Embankment.

Messrs. Doulton are the owners of the vac lands between the Princes-street drawdock the Embankment; we may, therefore, f expect that Lambeth may calculate upon furt improvements one day, the well-known en prise of Messrs. Doulton having already don much to add to the material prosperity of parish.

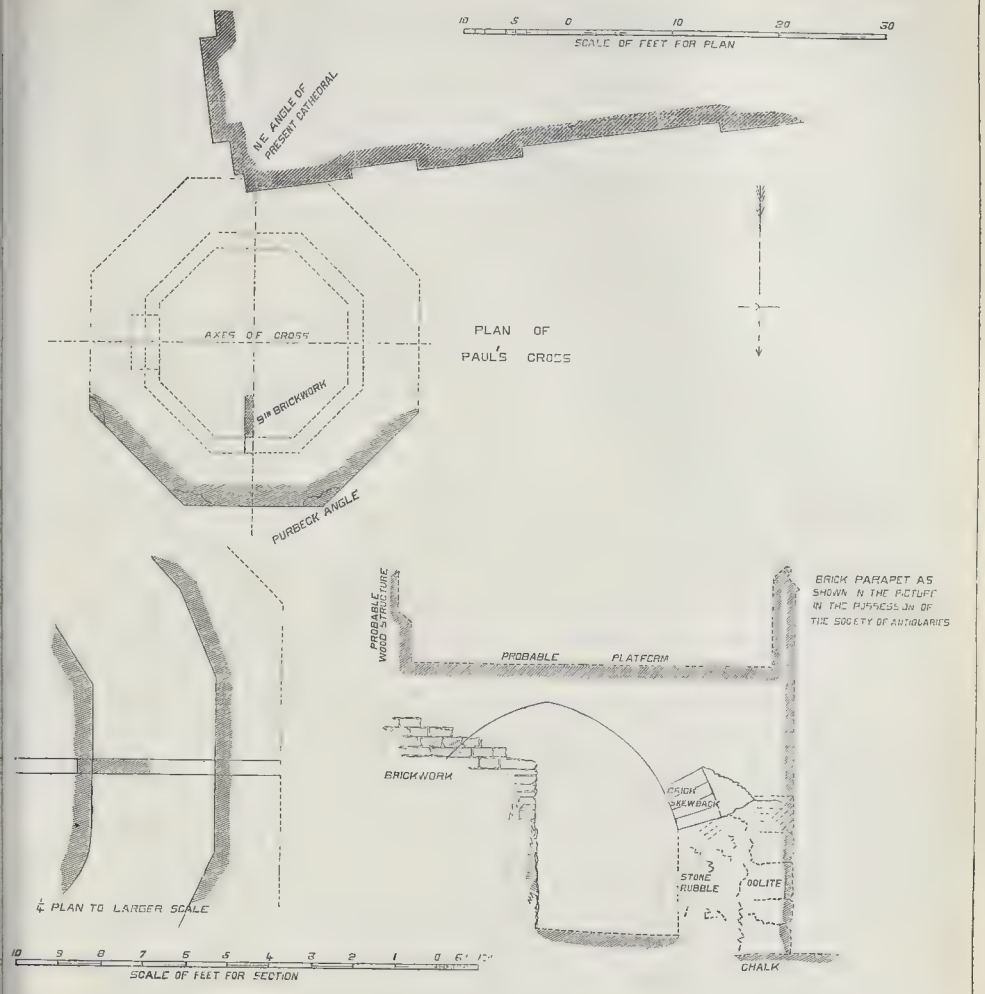
A New Railway Bridge.—A marvel engineering has just been thrown open to tra This is the new railway bridge over the Limf (Jutland). The bridge rests upon seven pi which reach through boggy soil for 110 before meeting with firm ground. In the cen is a swing bridge, only closed when trains signalled; otherwise it is constantly open permit of the passage of ships.



THE JEWISH SYNAGOGUE, RUE DES TOURNELLES, PARIS.—M. Varcollier, Architect.



MESSRS. DOULTON & CO.'S FACTORY ON THE ALBERT EMBANKMENT, LAMBETH.—Messrs. Waring & Nicholson, and Mr. J. Stark Wilkinson, Architects.



PAUL'S CROSS.

Particulars of Foundations discovered March 31st, 1879, by Mr. F. C. Penrose, *Fabric Surveyor.*

HE REMAINS OF PAUL'S CROSS.

—Your interesting historical account of Cross (see p. 777, *ante*) allows me to think ou would be glad to have some particulars remains themselves. For this purpose I ne accompanying drawing, with description ed.

size of the octagon from angle to angle) ft., and the north wall of the old cathe- which was parallel to the southern side of oss, was about 30 ft. distant from it.

I also take this opportunity of mention- e great pleasure I have had in reading ost philosophical article on the "Develop- f Architectural Species" which appeared same number. F. C. Penrose.

We have gladly published the plan and sent by Mr. Penrose; the lines dotted ose which are supplied by measurement. glad to see that Mr. Penrose has marked ently on the pavement the position of the

The ground at this end of the cathedral en laid out as a garden, and will be ly opened to the public. A portion of the ancient building can be seen. This formed the extreme south-east internal angle of the lower church, which extended underneath the greater part of the cathedral choir, and was called St. Faith's Church. The four eastern bays, of which this angle formed a part, however, were not originally built as St. Faith's Church, but as "Jesus Chapel." This was added to St. Faith's Church at the time of the Reformation. This relic, which Mr. Penrose has admirably preserved, was discovered on the 14th of May last.

A RETROSPECT.

Mr. Editor,—As in the Golden Age, which, Tennyson says, "lies ever at our door," and which consists in the enjoyment of "possible" happiness we overlook or forget to profit by, so we often spend days in foreign lands in the minutest inspection of buildings, churches, and museums, whilst we neglect or give a very cursory glance at many an interesting and grand old edifice in our own City well worth a pilgrimage from the West End. Improvements in the City are going on, though very slowly, still surely; and for none can English people be more grateful than for those which St. Paul's is undergoing, and which are causing the cathedral to assume an aspect more consonant with its importance as the second great ecclesiastical building of the world, and the chief public monument of the metropolis.

For years, to lovers of art, and even to the ordinary lover of nicety, the *entourage*, with its unkempt "yard," mutilated statue of Queen Anne, and rust-eaten railings, was a positive eyesore, that repelled instead of inviting the passer-by. But now every inch of ground is being improved and beautified, and hopes are held out that the interior of the building may in time vie with its more gorgeous rivals abroad. Already the glitter of the gold ornamentation is emerging from the gloom of the roof, and frescoes and other paintings will, it is hinted, adorn the bare, denuded walls and dome, and give, let us hope, some of our greatest painters the opportunity of handing down to posterity enduring monuments of the talents they hold from the Creator.

Not only the cathedral, but the ground around it is so rich in historical recollections that one lingers ere entering, and recently an additional feature has been added. Peeping down a cavity a few stone steps are seen to lead to a remnant of the church burnt by the Great Fire of 1666. In another part, on the paving-stones, admirably arranged by the care of Mr. Penrose, some lines have been cut in the garden, of an octagon form, to mark out the spot where once stood the famous Paul's Cross. It was in the northern part of the churchyard at the east end, and was used for religious, secular, and profane purposes. You have so recently and so well told its story that I may not now recur to it. The last sermon preached here in the presence of a sovereign was in 1633, and then down it went. Preachers sometimes came up from the university. A kind of inn, called the "Shunamites' House," was kept by the church for the reception of such preachers, and at one period they were allowed 4s. for a sermon, with meat, candles, fire, and lodgings, for five days.

Busy and thronged as the spot seems now, yet, according to Bishop Earle, in his "*Microcosmographia* (1629), it was then even more bustling still. "Paul's Walk," he says, "is the land's epitome, or you may cal it the lesser Ile of Great Brittaine. It is more than this, it is the world's mass, which you may here discerne in its perfectest motion, justling and turning. It is a heap of stones and men, with a vast confusion of languages, and were the steeple not sanctified nothing liker Babel. It is the great exchange of all discourse, and no business whatsoever but is here stirring and afoot." In fact, before the Great Fire, St. Paul's Churchyard was the most celebrated mart for books, and booksellers had shops at all the entrances of the Cathedral; even the church was intruded on, the chantry and other chapels diverted from their ancient purposes; some used as receptacles for stones and lumber, another for a school, another for a glazier, the windows in general broken. Parts of the vaults underneath occupied by a carpenter, the remainder held by the bishop, dean and chapter, and minor canons; one vault that ought to have been used as a burial-place was converted into a wine-cellar, and a way had been cut into it through the wall of the building itself. The irreverence common to the building seems to have penetrated to the inside, and we read an odd note on the choristers, who seem to have been very naughty boys indeed. It is in a manuscript preserved in the archives of St. Paul's, 1598, and runs thus:—"We think it a verye necessarye thing that every quorister should bring with him to church a Testament in English, and torne to every chapter as it is daily read, or some other good and goodly prayer-booke, rather than spend their time in talke and hunting after spur-money, whereon they have set their whole mind, and do often abuse dyvers if they do not bestow somewhat on them" (spur-money was an exaction from people who entered the cathedral booted and spurred). The gentlemen of the quire were peremptory in their demand, and threatened imprisonment in the choir for the night to all who refused them a pecuniary gift. "In the upper quire, where the comon [communion] table doth stand, there is met unreverende people walking with their *hattes on their hedde* commonly all the service tyme, no man reproving them for it." "It is a great disorder in the church that porters, butchers, water-bearers, and who not, be suffered in special service time to carry and recarry, no man gainsaying them."

High time, indeed, for the Great Fire of London to sweep away the corruption of ages. Yet for a moment, ere reading Evelyn's magnificent description, so vivid and so life-like, the olden days pass before us. The early struggles of the see from its foundation in 610; the last words of the grim Norman conqueror, who concluded the Charter, confirming its privileges with the words,—"For I will that the church in all things be as free as I would my soul should be at the day of Judgment," till the picture seems to culminate in the magnificent pageantry of the wedding of Prince Arthur and Katharine of Aragon. The streets were one scene of splendour, but nothing to the interior of the cathedral, where "the young bride of eighteen and her bridegroom of fifteen, both arrayed in white satin, were married by the Archbishop of Canterbury, assisted by nineteen bishops and abbots mitred. "Wonderful," says Stow, "was it to behold the riches of apparel worne that day. There also was the maior in a gown of crimson velvet, and his brethren in scarlet; the bride's train held by the queen's sister and a 100 ladies in costly apparel following."

Strange contrast to the scene on the 4th of September, 1666. Everywhere raging as a vast volcano flames were rising in crimson fury to the skies. "The streets in ashes. The stones of Paules flew like granados, ye melting lead running down the streets in a stream, the very pavements glowing with fiery redness, so no horse or man was able to tread on them, and the demolition had stopped all passages, so no help could be applied. The eastern wind drove still more impetuously the flames forward. Nothing but ye Almighty power God was able to stop them, for vaine was the help of man."

Then from out this destruction, like a phœnix, a fairer city rises, and to that great and good man, Sir Christopher Wren, was it given to complete, in thirty-five years, one of the noblest monuments of any age, and he is, as Virgil says ("*quique sui memores alios fecere merendo*"), of those who have insured their remembrance by their deserts,—those who have embalmed their memories by benefits conferred upon the human race.

This and much more passes through my mind as I gaze upon the remnant of the old building so tenderly guarded in the little pit-hole by Mr. Penrose.

C.

MOUNT STUART HOUSE, BUTE.

The mansion-house of Mount Stuart,—the patrimonial residence of the Marquis of Bute,—which was erected in 1718 for the second Earl of Bute, was destroyed by fire about two years ago, and upon the site a new mansion is to be erected of unusual magnificence. The noble Marquis has embraced the opportunity of giving play to his well-known proclivity for Gothic architecture, and has called to his aid Mr. Robert Anderson, A.R.S.A., who, both in practice and theory, has shown his fitness for the work to be entrusted to him.

The style adopted is of the Edwardian period, and ample means and abundance of space have been placed at the disposal of the architect, and he has made a liberal use of the resources at his command.

The design shows a pile of buildings 120 ft. square, and each façade will be a reflex of the internal arrangements, and present a different aspect to the spectator. The main entrance to the building is placed at an angle, and gives admittance into an outer lobby 22 ft. square, an ascent of a few steps leads through folding-doors to an inner lobby, with a richly-panelled ceiling and wainscotted walls, and having a great fireplace in front of the entrance-door. A large arched doorway to the right opens upon the great central hall, 60 ft. square, and surrounded by a Gothic arcade or cloister on all sides. The hall rises to the first-floor, and is covered by a vaulted roof, and lighted by three Pointed windows on each side. The lower arcade is also vaulted, and over the vaulting is a corridor with coupled arched openings looking into the hall. This corridor is reached by the principal staircase, having a vaulted ceiling supported on a moulded central column. To the right and left of the hall are placed the dining and drawing rooms, each measuring 58 ft. by 22 ft. The latter looks out upon the gardens, and has at one end a minor drawing-room, communicating with a conservatory; and from the opposite end of the great drawing-room access is obtained to the library. Access is obtained to the dining-room from the hall, through an ante-room, and at the opposite end is a service-room in communication with the kitchen.

The kitchen and offices are placed in the basement, though certain of the old out-buildings may be retained as auxilliary accommodation for servants.

On the first floor there are spacious sitting-rooms for Lord and Lady Bute, the remainder being allotted to bed-rooms, as is also the third flat, which is reached by independent staircases. Over the great staircase is a billiard-room measuring 31 ft. by 25 ft.

The external walls are to be double, with a vacant space of 1 ft. in breadth between with a view to prevent damp in this rather moist locality, and which may be taken advantage of for purposes of ventilation. The exterior walls of the first and second floors are to be built of a reddish-coloured sandstone, and the upper story is to be formed of brick, with oak frames. The skyline is diversified by high-pitched roofs and dormers, and by the angle turrets which buttress the vaulted roof of the great staircase and the gables of the billiard-room.

Above the second floor there is a stone balustrade in front of an open gallery, which is carried round the house, and on the garden front the roof projects over the gallery and is supported on light iron pillars rising from the balustrade. Other effective features are the corbelled oriel windows of the apartments appropriated to the lord and lady of the manor and the balconies of the drawing-rooms.

Operations have been commenced with the foundations, and an effort is to be made to have a portion of the mansion fit for occupation in two years' time; but several years more must elapse before the building is completed.

VIGNOLES'S PERMANENT WAY FOR TRAMWAYS.

Mr. Henry Vignoles, Mem. Inst. C.E., having had many months' experience upon the steam tramways of Paris, was led to the conclusion that the greatest difficulty to be encountered was the instability of the permanent way, and that, before the use of steam or other locomotive power could succeed on tramways, a much more efficient road must be adopted. He had likewise had to inspect some of the London tramways lately, and became of opinion that even for horse traction, the present system of permanent way generally adopted is very defective and not sufficiently durable, and that, when renewals are required, they can only be carried out at a great expense. He has accordingly devised and patented a system which deserves investigation.

The rail has a grooved head with a plate vertical web, held firmly by two bolts (with nuts and spring washers) to each chair, and the chairs are fastened securely to cross sleepers placed at intervals of about 3 ft., the bolt-holes in the chairs being made oval to allow the free expansion and contraction of the rails. But the form of rail can be varied with the same kind of chair, by having, for instance, a small flange at the bottom of the web on the inside of the rail, with one $\frac{3}{4}$ in. bolt instead of two of $\frac{5}{8}$ in.; by reducing the height of the rail to 5 in., and by increasing the thickness of the web to $\frac{7}{16}$. In order to secure an accurate gauge, he considers the use of cross sleepers absolutely necessary; it is of the greatest importance for tramways, where the flanges of the car-wheels are required to run freely in the groove of the rail. But the cross sleepers are placed so much below the surface of the ground, embedded as they should be in concrete, that, practically, they will last thirty years or more, and they interfere in no way with the paving above.

Companies about to lay down tramways should look into this system.

Artisans and Labourers' Dwelling Company.—A special meeting of the shareholders of the above company was held on Wednesday, at the Westminster Palace Hotel (the chair being occupied by the Hon. E. Ashley, M.P.) to consider a resolution to repeal the existing articles of association of the company and to adopt certain other articles, and also to consider a resolution increasing the capital of the company by the sum of 250,000*l*. Mr. Baxter Langley, the late chairman of the company, was present, by virtue of his right as a shareholder, and also Mr. Swindlehurst, the late secretary. The discussion upon the various amendments in the articles of association lasted nearly four hours, and upon the article giving the directors power to decline the transfer of shares to any person, a poll was demanded, resulting as follows:—In favour of the clause, 152 votes, representing 1,[illegible] shareholders; against 47, representing 523 shareholders. The resolution for the adoption of the new articles was then put and agreed to unanimously.—The Chairman then moved the following resolution:—"That the capital of the company be increased by the sum of 250,000*l*., in 25,000 preference shares of 10*l*. each, carrying a non-cumulative preferential dividend of 4*l*. per centum per annum, and that the directors be, and they are hereby authorised to issue such shares, from time to time, to such persons as they deem fit, and without first offering them *pro rata* to existing members." Mr. Phillips seconded the resolution, which, after some discussion, was agreed to.

THE CITY OF LONDON SCHOOL COMPETITION.

the meeting of the Court of Common il on the 24th ult., the Court proceeded to er the petition (presented on the 18th ult.) rious architects who submitted designs, ng that the Court would be pleased to refer veral designs to some independent eminent ect, with instructions to examine the and to report on their merits, before a election and decision.

petitioners were again admitted to the the Court, and Mr. Robert Walker once submitted to a lively cross-examination mbers. The petitioners were not pre- to say that the committee had not selected st design for the purpose; they had not ato that; it would have been presumptuous m to do so. They did not allege that the ttee had been unfair in their selection; hat sufficient professional advice had not aken. They expected that an expert have been called in to advise. Mr. y, the principal clerk in the office of the rchitect, did not come to the subject with m mind,—having been engaged on the rchitect's designs for the building; and ld not be considered so eminent a member profession as to be entitled to sit in ent in such a competition. Compliance he petition was moved, and a debate d.

G. M. Felton, the chairman of the School ttee, said that if the motion was carried months' work of the committee would be y thrown away. Sir Charles Reed, the an of the London School Board, was on mmittee, and he ought to know something internal necessities of a school. Dr. , the head-master, had been present at meeting, and he had a letter with him r. Abbott which stated that for his work st design had been chosen. A practical had also assisted the other members. st say that, for his part, he would sooner ne opinions of these gentlemen than that architect. The City Architect being they had gone, of course, to Mr. Murray, t in command. That gentleman did not hem, they had sought him. The com- did not seem willing to defer to Mr. ; but the Court would remember that ns for markets, prepared by Mr. Murray, ently been accepted, without discussion. markets would involve an outlay of ., and the schools were estimated, by the of the selected design, only at 51,000*l.* art had not instructed the Committee to an expert. If they looked back at the of the school, they would see that in hen it was put up in Milk-street, thirty itive designs had been sent in. The ttee, at their first meeting, reduced that to twenty; and at their second meeting hree, and signed the report. In the instance, months had been taken by the ttee to do what had been done, and finally ed in the course of twenty days in the The committee, indeed, had now been e careful, as the old school building had n a success. He thought, for his own hat the old committee had been the acticians. In the present case the com- had not expected to satisfy everybody. ad fifty-three architects before them, and e school, so that fifty-two architects must ppointed, and not only fifty-two archi- but their friends. The Court should and, however, that if the resolution now hem were adopted, he and his committee accept it as a vote of censure.

e voting the motion was negatived, and ision very loudly applauded.

committee then presented their report, ing three designs for the proposed new gs, and recommending the adoption of a in the Early French Renaissance style, estimated cost of 51,000*l.*, excluding

The report stated, "With respect to igns, it was resolved to obtain them by ompetition, offering three premiums. ree architects sent in designs. We l the use of the warehouse, 17, Alder- y, for their display, and, after numerous gs,—Mr. A. Murray being in attendance absence of the City Architect) to give tion on any technical questions that might the number was reduced to six. It was lt necessary to consider very carefully bective merits of these six designs, as regards more especially: 1, ventilation; 2, warming; 3, foundations; 4, drainage and sanitary arrangements; 5, lighting; 6, the effect of the proposed buildings on the lights of the Royal Hotel; 7, avoidance of the gas mains; 8, compliance of the competitors with the 'instructions'; 9, specification of materials as to their suitability and effect; 10, superficial areas of open and covered playgrounds; 11, height of walls and roof fronting the Embankment road; 12, proximity of the proposed buildings to the underground railway; 13, staircases; 14, cubical contents of the proposed buildings; 15, whether the respective estimates might be relied on as reasonably accurate. After full consideration of the proceedings of the sub-committee, we beg to recommend,—That the design marked 'Live and Learn' is the best. That we be authorised to draw upon the City's cash for the sum of 300*l.* to be paid to the author of such design, it being understood that if he be eventually employed to superintend the erection of the buildings, the premium will merge into and become part of his commission as architect. That we be empowered to proceed forthwith with the erection of the buildings, and to take all necessary steps incidental thereto. That we have authority to employ the author of the said design to superintend the work, should such employment seem to us, after further consideration and inquiry, desirable."

The design "Playground" was recommended for the 200*l.* premium, and "Simplicity" for 100*l.* as the third best.

The amendment of Mr. Edmeston, F.R.I.B.A., was then brought on,—

> "That before proceeding to determine which design shall be selected for execution, all the designs sent in shall be submitted to the President of the Royal Institute of British Architects, who shall report thereon, distinguishing, in their order of merit, those three designs in which the instructions issued by the committee to competitors have been most efficiently carried out, and that the premiums be awarded accordingly."

Mr. Edmeston urged the necessity of further consideration. The decision was of much importance, the credit of the Corporation being involved; a model building, perfect as a whole and in its parts, ought to be erected, and no pains and expense should be spared at this stage. They were only the trustees for the public, who looked for efficient performance of their duty. Of course he should be sorry to say or imply that the committee had not acted for the best, — but grappling with a whole design of a large building was a heavy responsibility for them. Since the exhibition of designs had been open there had been much good criticism published; and it did not confirm the committee's judgment. For instance, the *Builder*, the leading architectural journal, had given the first place very pointedly to a design which the committee had not put among the first three. The committee had discredited their own decision,—for, after their selection was made and announced, they had ranked the designs differently. Could they be sure that they had not missed the best design, and would, if rightly guided, be ready to alter their decision again? The failure of a committee's judgment in the case of the present school building ought really to serve as a warning. To get the best building he considered the matter of prime importance, but the competitors had also a real claim to be considered. They had spent at the least 5,000*l.* or 6,000*l.* on their designs, and were only to receive 300*l.* (as the first 300*l.* was to merge); they had a right to ask that the best advice should be obtained before the court came to a decision.

Discussion followed, involving some amount of criticism of the proposed building in which dark corridors, and cloak-rooms forming part of class-rooms in violation of instructions, &c., were mentioned. The resolution was amended into,—"That the report be agreed to, and that it be referred back for execution, but with instructions to the committee to obtain estimates, and submit the same to this court before proceeding with the work." This was carried.

Thus ends another unsatisfactory public competition. As usual, the committee had pledged themselves publicly to a certain course, and could hardly be expected to allow themselves to be outvoted. Perhaps the other architect-members of the Common Council might, however, have said a good word for Mr. Edmeston's very reasonable proposal. The competitors seem to have done their best *after the mischief was done*; and Mr. Walker deserves a word of praise from us for fighting so vigorously what is really the battle of the whole profession.

The mottoes of the other three designs,—of the six selected by the committee,—have not yet been mentioned. They are,—"Move," to which in our review (page 792, *ante*) we gave a preference; "L"; and "Palmam qui meruit ferat."

THE ROMAN VILLA AT WITCOMB.

In the course of some notes read at the recent meeting of the Bristol and Gloucestershire Archæological Society, the Rev. W. Bazeley, rector of Matson, said:—Let me now direct your attention to the buildings themselves. We are standing in a large court, open to the south and enclosed on the other three sides. The principal entrance to the villa appears to have been by a flight of steps leading into a large reception-room (atrium) about the centre of the north side. On the west were the baths, and another building, which I shall briefly describe. On the east were a large number of chambers, some of them subterranean, which were probably occupied by the horses and servants. At the south-east corner there was a large hall with carved columns, which probably served for a hall of justice, or some similar purpose. These remains were discovered in 1818. In February of that year some workmen digging up an ash tree found three large stones forming a doorway. Excavations were commenced, and a room was discovered 19 ft. 7½ in. by 13 ft. 7 in. Traces of this may still be seen in the north-west corner of the building. It was evidently used as a domestic temple, as there was a cistern in the middle for ablutions, three recesses for statues and the base of an altar. A sacrificial axe, and large quantities of bones of animals, were found in a passage leading from this room towards the hill, and also several coins of the Lower Empire, dating from A.D. 300 to 400. These give us some idea of the time when this villa was inhabited. It was probably built in the reign of Constantine, and destroyed during the troubles which preceded the departure of the Romans.

A few words about the building on the west side, supposed by Lysons, with very good reason, to be a system of bathing-rooms. The entrance to these, now blocked up, was from the court in which we stand. The visitor would first pass through a passage or vestibule, where the servants would be in attendance. He would then enter a room 19 ft. 8 in. by 17 ft. 4 in., with a mosaic pavement, ornamented with figures of fish or sea monsters. This would be the frigidarium, or cold bath. The height of the doorway shows that there could have been no water in the room itself; but there were baptisteria, or cold baths, in recesses on the east and south sides. Connected with this room was the apodyterium, or dressing-room, with its pavement divided into octagonal compartments. The flue-tiles, which conducted the hot air from the hypocaust, or heating-room, below, are still in position. The stucco, which covered the walls to the depth of 2 in., was nearly all destroyed before the thatched roof was put up. The bather who did not care for a plunge in the cold baths would pass by a side doorway into the tepidarium, or warm bath-room, which always lay between the frigidarium and caldarium, or hot bath. This room has been covered up again; but the sudatorium, or sweating-room, with its mosaic pavement, and the hot-water bath, are in a good state of preservation. On the west side may be seen the arrangements for conducting and heating the water, and higher up the hill the cold water-tank, with the lead pipe *in situ*.

Much of the building yet remains to be explored, and it is hoped that at some future time, with Lady Cromie's permission, more of these interesting remains will be disclosed to view, and carefully protected from injury. Sir William Hicks sent most of the relics to the British Museum, where, doubtless, they may be seen by the curious at the present time."

Anonymous Munificence.—At the recent meeting of the governors of the Chelsea Hospital for Women, the Earl of St. Germans (the president) received at the hands of the Rev. Canon Fleming (one of the board of management) an anonymous donation of 1,000*l.* towards providing furniture for the new hospital. In the spirit of true charity it is given on the express condition "that no name is mentioned."

RECENT DISCOVERIES IN ASSYRIA AND BABYLONIA.

This was the subject of a lecture given on Wednesday afternoon last in the Lecture Theatre of the Royal School of Mines, Jermyn-street, by Mr. W. St. Chad Boscawen. Half a century ago, said the lecturer, Nineveh was but little more than a myth,—a name drifted hither and thither over the sandy plains of Mesopotamia. The Arab whose flocks daily wandered over the grave-mounds of the buried palaces of such mighty hero kings as Sargon, Sennacherib, and the warrior Assurbanipal or Sardanapalus knew nought of the treasure that lay buried beneath his feet. Now and then some Moslem grave-digger, in preparing the last resting-place of his departed relative, would strike upon a mass of stone carved or inscribed with unknown forms or inexplicable characters. Such relics of the buried city received but scant attention at the hands of their discoverer, and usually were broken up to pave a road, or else burnt in a lime-kiln. The utter oblivion which had fallen upon Nineveh may, indeed, be regarded as its greatest protector. Silently the crumbling walls of those vast edifices had buried the treasures which were yet remaining, and her own decay had wrapped the dead city in a shroud sombre in hue, unattractive to the vulgar; and thus wrapped in the mantle of centuries she lay awaiting a resurrection at the hands of those who would respect her monuments, and venerate the kings to whom she owed her being. Stricken sore by that fell blow which, in B.C. 625, had rendered her a heap of ruins,—her palaces the food of flames, her temples desecrated and wrecked by rebel hordes of Medes and Persians,—a vandal race who knew not Assur, she lay for centuries hidden from the world, a buried city. The world grew old, and that city slept, unknown, unsought, untold. The retreating 10,000 had past her by a ruin; then Arab and Moslem had come; a modern city had grown up on the further side of the river which once had laved her palaces. No record remained above the surface to tell her resting-place. A Moslem saint became the occupier of the one recorded grave. The palaces of Sennacherib and his faithful son Essarhaddon were but a few feet below the foundation of the mosque raised to mark the tomb of Jonah. But in the year 1849 of our era, nearly twenty-five centuries after that sad year when Nineveh fell before the rebel avalanche which swept down upon her from the Eastern mountains of Persia, Media, and Elam, there came to Mosul one who knew the story of Nineveh. Sacred writings and Classic story had kindled in his mind a yearning for some trace of the city which had once been the metropolis of the East,—the home of such Scripture familiar personages as Sargon and Sennacherib. A long tour amid the ruins of the Classic nations had raised in the mind of Austen Layard a true reverence for antiquity; and it was but natural that he should be seized with a desire to draw back the sandy veil which shrouded Nineveh, and lay bare the treasures which it covered. In rapid sequence, as if by magic aid, Layard and his workmen brought forth from the graves of Nineveh priceless treasures of art: winged bulls and lions, rich sculptured slabs, and splendid works in bronze and ivory,—all indicative of a long-buried civilisation,—were rescued from these barren and desolate places. Archæologists saw in the sculptured remains a new chapter in the history of art. In the decorations of the rich palaces now open before them they saw forms, whose presence in Greek art could find no explanation, presented to their view as products of the studios of Nineveh. The richly-chased and moulded brazen vessels, the thrones and altars of the same material, all indicated that there, under the patronage of the kings of nations, had flourished a highly-developed school of metal-workers. Rich carvings in ivory and crystal, polished cedar, and *lapis lazuli*, all spoke of the riches and wealth which once had formed the treasures of the royal House of Assur. Amid this blaze of rich art-treasure there were some relics unattractive to the eye, broken and covered with dust and scilia, which could yield to none their claim to be regarded as the most priceless records of a buried empire. These broken fragments are leaves from the histories of Assyria,—these are the quartos, octavos, and even diamond works which formed the great historic library of Assyria. In the Palace of Sennacherib Mr. Layard discovered a number of these valuable records, which had been broken and scattered by the hands of the spoilers. Upon the huge winged bulls which flanked the royal portals, the walls, and even pavements of the lengthy corridors and halls of the royal house,—nay, even deep down in the very foundation course in obscure recesses in the thickness of the walls were inscriptions which threw new light upon the annals of Assyria's kings. The discoveries which Sir A. H. Layard made in the mounds of Koyunjik restored to us the palace of Sennacherib, and a rich series of sculptures from the walls are now in the British Museum. These interesting examples of a style of mural decoration peculiar to Assyria form, as it were, the folio plates to illustrate the texts written upon the cylinders and terra-cottas, the slabs and the bulls which were found in the palace. The western portion of the city was the royal quarter, and the wall is hewn in two parts by mounds which mark the ruins of palaces. The northern one is known by the name of Koyunjik; the southern one derives its name from the mosque which crowns it, and which is supposed to be erected over the tomb of the prophet Jonah. From this site, after a short series of excavations carried on amidst opposition and difficulties which only a native of the district could have overcome, Mr. Rassam was able to penetrate into the surface of this forbidden ground, and to rescue sufficient relics to prove that here had stood the palace homes of Essarhaddon and Sennacherib. The acute diplomacy of Mr. Rassam, an able lieutenant of Sir A. H. Layard, and on whom the mantle of the rescuer of Nineveh has fallen, was the means of proving the existence of buried edifices under the Nebby Yunus, and it is to be hoped that he may see the time when that mound will receive the full attention which it merits. Northwards of the Nebby Yunus mound stands the king's palace mound of Nineveh, its true acropolis, on which stood at least two palaces and the celebrated Temple of Venus, the patroness of the city of Nineveh. The south-east edifice, which crowned the higher portion of the mound, was the great royal abode which had been erected by Sennacherib. It was this palace which Mr. Rassam first penetrated into, and from which he rescued a large number of sculptures and other treasure, and, in addition, a rich collection of Assyrian texts. On the other extremity of this oval-shaped mound stood the garden palace, the home of the warrior king Assurbanipal, the Sardanapalus of the Greeks. The story of the discovery of this palace, and the recovery of such splendid relics as those which formed the decorations of the Lion Hunt Room, now to be seen in the basement saloon of the British Museum, is one of the most interesting in the annals of Assyrian explorations. When political work caused Sir A. H. Layard to give up the work of exploration which he had so nobly begun and so successfully carried out, the trustees of the British Museum placed the work in the hands of Mr. Rassam, who had now served his apprenticeship with Mr. Layard, and it is to his perseverance that we owe the discovery of this finest of Assyrian palaces. The northern end of the Koyunjik mound had not at that time (1851) been tapped, and as it did not present such marked external indications of buried edifices as the south-west portion, it had not attracted the attention of Mr. Layard. Mr. Rassam was anxious, however, to attempt a slight exploration of this extremity. For days his men toiled on, and at first the work had to be carried on at night, owing to the jealousy of other explorers, but no trace of the desired edifice had been found. The work was about being abandoned; the long trench which had been cut into the interior gave no indications of having penetrated any edifice; when, lo! the earthen walls tottered and fell, and to the eyes of the astonished and almost bewildered diggers, there lay exposed to view a series of sculptures which far surpassed anything which yet had been extracted from the ruins. Visitors who inspect the Assyrian collection in our national Museum will remember that magnificent series of sculptures which represent the great Assyrian hero Assurbanipal engaged in a series of combats with the lions. As examples of Assyrian art, these works certainly form the *chefs d'œuvre* of the studios of Nineveh. Note, for example, a scene which has received the praise of more than one modern artist. In one large slab we see the king in his chariot, attended by his armour-bearer, awaiting the approach of the king of beasts, who is being released from a huge wooden cage. The amount of animation and of feeling which the artist has managed to throw into this sculptur tableau is wonderful. The king is all attentic watching the approach of the beast, w emerges slowly, stupified half by rage and h by fear from his confinement, but still we see him a worthy rival for the hero king w schooled his arm for the carnage of battle combat with the king of beasts. In other b reliefs of this series, we see depicted varic incidents in these combats, which took place the royal park or paradise, which lay to t north-west of the city, between the palace a the great gate. After an appreciative not of the labours of the late Mr. Geo Smith, whose name, he said, would ever identified as that of the discoverer of celebrated Creation tablets, the lecturer p ceededto describe the brazen gates from Bal wat, of which a full description has alrea appeared in the *Builder* (pp. 531, 673, an In conclusion, the lecturer said:—"What been done during the last few years to show bearing of such discoveries on every branch research is but an index to what might be do Babylon is but tapped. What do we know the history of Nebuchadnezzar? With exception of one mutilated fragment of sc twenty lines, not one word. The discoveries the mound of Ballawat is an indication of w a hundred other mounds may produce. texts from the library of Assurbanipal h shown us the birthplace of Greek mytholo the studios of Nineveh have shown us the or of much in Greek art. But we must remember the mythology, the art, the religion of Assyria but the outcome of a much older and more pr tive one, namely that of Babylonia. What we know of Babylonian art,—of Babylon religion? True, we have copies of many te from the libraries of Babylon, from the be shelves of the library of Assurbanipal, surely we would rather have the first editi which may still remain buried beneath grave-mounds of such primitive cities as Ur, home of Abraham; Euch, or Waska, cities the tetrapolis of Nimrod. It is our dut search for them. We owe much in this pre age to Greek culture and civilisation, but link which binds us to Athens is but one in long chain which joins Cyprus to Greece, Greece to Phœnicia, Phœnicia to Nineveh, Nineveh to Babylon. It is our duty as a na who pride ourselves on our culture and civi tion to take pride in art and science, to fo that golden thread of culture which binds u the remote past. We are what we are bec the past has made us so, and we never thoroughly understand the present unless fathom the past. The field of Assyrian search is a neutral one,—one in which e branch of research can meet. The cla scholar cannot but see with pleasure Assyrian and Babylonian versions of t legends which have so oft beguiled mind, and filled his mind with adm tion of the glorious Greek. The dev student of Holy Scripture will find my passages in the inscriptions, both histor and religious, to aid him in his studies. He nought to fear and much to learn. The ar the anthropologist, the antiquary, can all food in this rich pasture, and each can aid other, each may bear away with him some fact, some new theory, and all can aid in one great task, our proper study,—the stud mankind. I appeal thus for the science of Assy logy, from a feeling of true love for it myself can only say that, let any of my hearers feel the fascination of passing beyond the veil which divides the present from the pas read inscriptions, autobiographies, which centuries have been mute and silent,—to that as one works one is rescuing some mi hero from the oblivion of a long buried and placing him in all his true colours be the people of a critical century, to feel each word deciphered, each phrase solved, triumph in the field of science, a victory in cause of truth,—then, I say, if I could fascinate you as Assyriology has fascin myself and many others, I should not lack or find a deficiency of labourers, where each can help to rescue empires from under the of ages."

Mr. Edmond Beales, M.A., in proposing a of thanks to Mr. Boscawen for his interes lecture, said that some of the lecturer's fri feeling convinced that he would be abl prosecute his researches much more effect on the banks of the Tigris, proposed to fo committee and to raise a fund to equip

awen for a sojourn in Assyria and Baby-, without in any way desiring to clash with was being done by the British Museum ritics.

r. Alexander Grant seconded the motion, referred in terms of high commendation to Boscawen's labours as an Assyriologist in oxion with the Society of Biblical Archæo- —which society, he said, seemed to be the body which was doing anything to promote tudy of Assyriology. So well known were ecturer's labours (in conjunction with those r. Lepage Renouf) that in America he was n of as Professor Boscawen. It was to be t that, failing action on the part of the ersities of Oxford and Cambridge, the ersity of London would take some steps to a chair of Assyriology. London would far the most preferable locality for such a owing to the presence of the British am collections.

Boscawen, in reply, said that it cer- was his desire to visit the sites he had oned, and others, notebook in hand, in to endeavour to trace out certain very sting problems in Assyriology.

Thomas Tyler, M.A., moved, and Dr. Cull ded, a vote of thanks to Major Mercier hairman), after which

Hormazd Rassam said that although he ted very much that he had been compelled ign the conduct of the work for the British m, yet, if he were going out again, he should ask that Mr. Boscawen might accompany The British Museum authorities were ontinuing the work to a limited extent, ould be glad to do more if the means were

N: ITS ARTS AND MANUFACTURES.

NIPON (JAPAN) INSTITUTE.

permission of the Society of Arts, a meet- der the auspices of this Institute, now in of being established, was held on Wed- y evening, in the hall of the Society, street, Adelphi, to hear from Mr. C. ides some suggestive facts about Japan. bjects of the Institute are thus described prospectus:—"To bring into communi- students, inquirers, and admirers of the terature, language, folk-lore, &c., of ; to collect, record, and disseminate atic and interesting information relative an; to encourage the foreigners resident an, and Japanese especially, to collect aterial; to enlist the cordial co-operation ntific, literary, and artistic societies, intelligent ladies and gentlemen in ex- g the sphere of usefulness of the Institu- to publish queries, notes, proceedings, her interesting matter; and to otherwise ate this branch of research and study, o neglected, and its hidden wealth of re as yet so little known."

Rutherford Alcock occupied the chair, opening the proceedings said that Japan ated one of the few original schools of d of decorative art more especially, e world had produced, and that, as all d cultivated the study of art would was a very rare claim to admiration and . The Japanese were unrivalled for their and china ware generally and for their work; for their productions were erised not only by perfection of work- p, but by an exquisite perception of for art; and we in this country could thought, fail to profit very largely by dy of the principles on which they

When, in 1862, he first introduced to owledge of the English public,—and he he might say the European public,— the examples of the rare ability of the se in industrial art, he little thought that return to Europe a few years later he find that the Japanese wares had beaten he market the best productions of Vienna, nd London, both because of their cheap- d their artistic beauty. The originality ources of the people were shown by their ions in the way of paper. The walls houses were papered, and their wall- were characterised by infinite variety ceeding beauty. In papers for other s,—for writing, for bank-note printing, pocket-handkerchiefs, for instance,—the ions of the Japanese were far before England in respect of delicacy, beauty, the same time, tenacity.

Mr. Pfoundes said it was not his purpose to give a formal lecture, but merely, in perhaps a somewhat discursive way, to allude to some of the points connected with Japan, its people, and its industries, which would best repay attention and research. He confessed himself an enthusiastic admirer of everything Japanese, —he meant, of course, all that pertained to Japan of the old period. There was so much of interest to be learned about Japan that he was quite sure the Institute would be supported by the people of this country. The Institute was at present under the wing of the Asiatic Society, of which it was proposed to make it a branch. One of the first things that the new organisation should do would be to collect and catalogue European books relating to Japan. In the rough and incomplete catalogue he had already made, there were mentioned two thousand books on the country, its people, or its industries, published since the issue of Marco Polo's book. It is true that many of the authors of those books based their statements on those made in their predecessors' works. Next after the collection of European books on Japan would be the collection of native books. Although there were only comparatively few Europeans who could read such books themselves, adequate translations of the most interesting of them, or of portions of them, would be of great interest and value. To the anthropologist, the study of the origin of the Japanese people would be of much interest, and it would be useful to glean from Japanese literature and tradition what the people themselves believed on the subject. The geography of the country, again, was a very large subject, and one on which a great deal of information was probably hidden away in the libraries of Spain and Portugal, owing to the comparatively early intercourse of those countries with the Orient. The folk-lore of the Japanese afforded another most interesting field of study. As a long resident amongst the people, and as one who had lived amongst them as one of themselves, assuming the native dress and habits, as far as possible, he could only say that he could never wish to live amidst a better conducted population. The ancient religion of the people, and the exotic Buddhism, and their bearing upon one another and upon the habits of the people, would also afford an interesting subject for study. The alphabet and written language were essentially those of China, with some modifications, but the proposal which had been made to Romanise the alphabetic characters was to be deprecated, however desirable it might be that intelligent natives of Japan should familiarise themselves with European languages. The pastimes of the Japanese was another interesting field of study. The people of Japan had no games corresponding to those played by us with cards, and none of their games seemed to provoke that avaracious and mercenary desire to worst an opponent which sometimes characterised card-players in this country. The architecture, drama, and music of Japan were other fields among many others in which profitable and pleasant study might be made. Incidentally, it was worth noticing that whilst in some of our large towns the establishment of free libraries was strongly opposed, every Japanese village had its free circulating library, and it was a very common thing to see men going from house to house changing the books. In conclusion, Mr. Pfoundes said it would be seen how much there was in Japan, its manners, customs, institutions, arts, industries, folklore, &c., to repay study.

A discussion then ensued as to the best means of establishing and furthering the work of the proposed Institute, in the course of which

Mr. E. J. Reed, M.P., said it was quite evident that Japan was a comparatively unworked mine, and by a thoroughly well-organised and business-like society much would no doubt be accomplished, and it was probable that the Japanese Government would materially interest itself in promoting the work of the Institute, if the latter were able to enlist the active and hearty co-operation of really representative men. It was not to be desired that the subject should be taken as the theme of a few gossipy lectures, and that then all interest in it should be allowed to evaporate. The proposed society should be so organised as to make its object one that should be constantly and seriously pursued. Mr. Pfoundes had a profound knowledge of, and was brimful of enthusiasm for, things Japanese, but he would require to be supported by men of business aptitude and capacity as well as those of literary tastes. The influence of Japanese art was making itself felt throughout Europe.

Mr. Hyde Clarke said that looking at the great commercial interests involved in our intercourse with Japan, the proposed Institute was capable of doing a very great amount of good. It was greatly to be regretted that in this country there was no practical school to which the mind of the public was directed for the promotion of Oriental languages and studies amongst business men. The establishment of a high school for Oriental languages, on the model of the one in Paris, would cost very little, and would be of incalculable benefit to the commercial community.

Mr. H. W. Freeland agreed that it was not desirable that the study of Japan and the Japanese, their arts and industries, should be a mere passing whim of dilettantism, but that it should be set about in real earnest. Whether the proposed Institute should be a branch or section of the Asiatic Society, or an independent institution, was a question; and perhaps it might be desirable to join China with Japan for the purposes of the Institute.

Mr. Forbes Robertson said that the Chinese and Japanese people were probably destined to play a very important part in the future economy of the world; and it should not be forgotten, however, that while Europe and America were likely to be affected by intercourse with Japan and China, those countries would be in turn more or less affected by contact with Europeans and Americans.

Lord Alfred Churchill, on behalf of the Council of the Society of Arts, offered the Institute the use of their rooms for lectures, &c., and suggested that possibly Mr. Pfoundes would attain his object by arranging for his other lectures on Japanese topics to be held under the auspices of the Colonial and Foreign Section of the Society of Arts.

Mr. Pfoundes, in reply said it was his desire to enlist the sympathy and help of practical business-like men, but he deprecated the idea of coupling China and the Chinese with Japan and the Japanese. It was true that the Chinese and Japanese had a classical literature in common, but there was so much not in common between the two nations that any attempt to include the two within the scope of the society must end in failure.

We may add that the following committee has been appointed to act, with Mr. Pfoundes as secretary, in the organisation of the society, viz., Sir Rutherford Alcock, Mr. Hyde Clarke, Mr. B. Francis Cobb, Mr. Frank Dillon, Mr. Robt. K. Douglas, Mr. Aug. W. Franks; Mr. J. Leighton, F.S.A.; Mr. E. J. Reed, M.P.; Mr. W. S. W. Vaux, F.R.S.; Mr. E. B. Tylor, and Mr. H. Trueman Wood.

Economy of Good Farm Buildings.—Mr. Finlay Dun urges that "with more specific instructions and restrictions as to cost," the Royal Agricultural Society should again offer the unawarded prizes competed for by the sixty-eight sets of designs of farm buildings exhibited at Kilburn. "There are still," he says, "thousands of acres throughout Great Britain of which it is impossible to make the best, on account of indequate, awkward, or inconvenient buildings. Many of the newer homesteads, although erected at great and unnecessary cost, are badly arranged. Practical utility is sometimes sacrificed to architectural display. Useless buildings often encumber the plan. The judicious combination of covered yards for feeding beasts, and open yards for younger stock, is often overlooked. Cheap covering for a part of the rickyard seldom receives sufficient attention, even on model farms. It is, however, difficult to over-estimate the advantage and economy of good buildings, especially where mixed or dairy farming is carried on. In inspecting several well-constructed and centrally-situated farm buildings recently finished, on farms varying from 400 to 600 acres, the tenants, unsolicited, assure me that the new buildings enable them to dispense with a pair of horses and a cattle man, effecting a saving of about 120*l.* a year, whilst greater economy is also attained in food and supervision. Many landlords would endeavour to equip their property with suitable farm buildings, if they were provided with well-considered, economical plans and instructions, which would enable them to put up substantial, commodious, and labour-saving homesteads at a cost not exceeding 5*l.* or 6*l.* per acre."

SUFFOLK INSTITUTE OF ARCHÆOLOGY.

An excursion to Aspall, Kenton, and Debenham, was made under the auspices of this society on the 18th. ult. At Aspall, Canon Chevallier, the rector, read a paper on the history of the locality, and the Rev. W. H. Sewell followed with a paper on the subject of church hour-glasses.

At Kenton, the Rev. R. Lawrence, the vicar, read a paper on the parish and church. The latter, dedicated to All Saints, after having been for many years in a very dilapidated state, was, in the year 1872, by the exertions of the last vicar, the Rev. W. H. White, re-roofed, re-seated, and restored to its present condition, all the old features, however, being as far as possible, preserved. There is no record of the date of the building of the church. The south door seems to belong to the period of transition from the Norman to the Early English style, the latter part of the twelfth century, whilst other parts of the church are of later date, the south porch being the latest, except the south aisle. It consists of a nave and chancel and tower at the west end, and a south porch built of flint, with a small aisle of brick on the south side of the nave, not extending the whole length of the nave, but only from the east end of it to the east wall of the porch, from which there is a door opening into it.

From Kenton Church the excursionists went to Kenton Hall, the residence of Mr. Robert Symonds. It is a very interesting red-brick mansion, dating about 1500. It is surrounded by a double moat, the outer moat inclosing five acres of land.

The next place visited was Crowe's Hall, Debenham, belonging to Lord Henniker. This hall is much of the same character as Kenton Hall, but somewhat older.

Thence the party went to Debenham, where the vicar, the Rev. C. J. Cornish, read a paper, of which we extract the following passages:—Debenham, or Depbenham, as it was of old time named, is the head of the Woodbridge Valley, and down to it run the spurs of all the highlands from which the streams that feed the first beginning of the Woodbridge River take their rise. On the extreme end of one of these spurs the church is built, and as the spur slopes, so does the church. It is built downward, and in an eastward direction. It is not alone in this. Kenton Church, though the chancel in the late restoration has been raised, is built in the same way. Monk Soham Church is built so, too; and that church, even when restored, retained its chancel at a lower level than the nave. This feature can at once be seen here. From the moment that you step inside the porch you see a gradual descent of the pavement, and descending as you go, you step down into the church, and from the church to the chancel. It is true that the floor of the nave is level, but that is an effect of the rebenching. The old pavement, though it was not noticed till too late, was on a gradual slope into the chancel, and a comparison of the bases of the half pillars at the east and west end of the nave shows that originally the floor was meant to slope eastward. Mr. Cornish then passed on to consider the church in detail, beginning with the tower. He was assured that it was undoubtedly Saxon, though its higher windows had been inserted to match a later church. As a proof of this he took the two lower south windows, the long and short quoin stones, the absence of buttresses, the herringbone work on the north side, and finally the arch entering the church, like the four arches in Godalming Church, evidently Saxon of a very early date, and devoid of all ornament, so that it almost resembles a Roman arch. It is mentioned in Domesday Book that "in Debenham are two churches," and he assumed that the tower was the relic of one of these,—possibly the chancel was too, for at its rebuilding, last year, an old stone slab under one of the north windows was found bearing evident marks of Saxon moulding. There is likewise a stone of gryphean marble, with piercing for a font stand, which could not belong to the present Tudor font, but which is perfectly compatible with the theory of a former Saxon font, the Saxons, though never using marble for pavement, yet working it in as pedestals for their fonts. An interesting indirect testimony to Saxon Christians in Debenham is recorded in Page's "History of Suffolk." Oswy, Alderman of East Anglia, and Leofrida, his wife, on the occasion of their son Alwin entering Ely as a monk, granted lands in Debenham to Ely Monastery, and the Ely Chapter to this day are patrons of the neighbouring church of Winston, the vicar of which has, as part of his glebe, two fields in Debenham parish. Passing next to the chancel, Mr. Cornish pointed out the difference in the external and internal shape of the doorway, and of the external and internal moulding over the north windows, the similarity between the stonework of the door arch into the chancel and of the chancel arch, and, again, of the capital of the doorway, and of the capital of the piscina. Further, he pointed to the difference between the chancel arch and the arches of the church, and yet the similarity between the capitals of the chancel arch and those of the arches of the church, while the old stalls and screen remaining in the chancel are evidently of a date later than some of the stonework. What is the conclusion? That this chancel belonged to a church of an earlier architectural date than the present nave, and had undergone a change, certainly once, possibly more than once, before the present nave was built. The recent restoration has brought to light many interesting points bearing upon this. It became necessary to re-roof the chancel and to pull down the south wall; in doing this the old wall was found quite unlike the nave roof, and of a decidedly earlier date, and the remains of an old squint on the south side against the present rood staircase. Further, just above the line of the windows it was seen that masonry of a later date had been added, and this on both sides, to raise the wall some feet above a former level. Exactly at this point in the wall of the south side was found half of an old chancel arch capital corresponding with the ring on the present arch pillars, and clearly of an early English date. It must have belonged to the old chancel arch before it was raised, and have been part of the original chancel. But the floor, as well as the walls and arch, had been raised. A comparison of the stone course outside with the interior so convinced him (Mr. Cornish) of this, that he determined last year to make a slight excavation. Accordingly, near the chancel door, he took down 2 ft., and there found a complete layer of cement, on which a floor had been laid. He found also a few tiles which exactly corresponded with the cement marks. Over this was a bedding of fine sand, about 6 in. deep, similar to what, on restoring the nave, was found in it. Built up on this old floor was a low wall on which the stalls of the later restoration, when the walls were raised, must have been placed. Until quite lately one of these stalls remained in its old state, and the old wood rail which served as the backs for the others was found when the square pews were removed. Under these old pews were found some old glass and ornamental tiles, the latter smaller and more delicate than those which fitted the lower pavement, and he concluded that they belonged to the second and raised floor put in at the time the stalls were erected. These the late Rev. Dr. Lee, of Thorndon, pronounced to be of the date of Edward III. Dr. Lee was so kind as to take the most perfect of them that he might make a drawing of what the floor originally must have been. The sudden death of the rev. gentleman, and the removal of his family, had, he (Mr. Cornish) feared, occasioned their loss. Similar tiles were to be seen in Norwich Museum and at St. Mary's Abbey, York, these last being brought there from the ruins of Fountains Abbey. It was the opinion of Mr. Colling, the architect who restored the chancel, that the south windows had their tracery inserted at that time, and that previously they had been simply double lancets of the same date as the single lancets in the north wall. His opinion also was that at the time the chancel was raised there was a different nave to the present, the architecture of which is of much later date. Under the piscina were found some old coins of one of the Edwards, and a few pieces of Early English stained glass were found in the windows, quite distinct in character from any still to be seen in the nave. From the chancel Mr. Cornish returned to the western porch, the Galilee, and the parvise, and pointed out there again relics of decorated work, part of a church built later than the chancel and yet not so late as some portion, at all events, of the nave. He mentioned the circumstances which led him to infer that, as in the time when the present chancel arch was first built, the rage, which caused almost everywhere old churches to be pulled down that the new style might be introduced, made itself felt here, so that the old Saxon nave gave way (as did Edward the Confessor's Chapel at Westminster) to an Ear English church, so in later times there w raised in the place of this church of the Dec rated style with which the chancel South wi dows were made to correspond, and to whi the higher tower windows were adapted, which possibly the nave pillars and arch remain, but of which the Galilee porch a parvise are undoubtedly an original and inc pendent remnant. To three points in this p tion of the building he drew attention,—1st, t defaced images over the west door, probably our Lord on the cross, with the Blessed Virg and St. John on each side. It was here that the service of the adoration of the rood used pre-Reformation times on Palm Sunday, t procession must have made its third stati before it entered on its fourth and last, name before the rood in the church. 2nd, t opening admitting a view of the nave fr the tower, clearly of the same character a squint, evidently from its structure not one the old Saxon external windows, but seemin for the use of the attendant in the chm porch, either that he might ring the *sanc* bell at the time of the elevation of the host, at all events, to enable him to see the ele tion. 3rd. The church bells, eight in numb which rung out in the same key as, and wh notes will remind every Eton man of, the b in Windsor Castle. As to the nave, it would for the members of the Archæological Soci to say how far his theory was correct tha was at least of two styles,—the Decorated the Perpendicular. The mouldings of the shi of the piers were like the Decorated examp given by Bloxam, and the carving of capitals was confirmatory of his point. On other hand, the clearstory, with its roof windows, and the windows of the side ai are unmistakably Perpendicular, and to this north door and the doorway over the entra to the rood-loft and the rood-beam itself r clearly point. It was possible that when Decorated church existed, its aisles were no large as now, but it might be that the w received at a later time their Perpendicu windows, and we have three witnesses in th aisles, which are by no means safely to be r lected. The stained glass which rema though so fragmentary, was most of it Perp dicular, and pointing back to the time of He VII. The other two witnesses were the of brickwork in the north and south walls, the exquisite flintwork on some of the north buttresses,—both architectural features ra seen in churches anterior to the time Henry VII.

EXHIBITION OF SANITARY APPLIANC

In connexion with the annual meeting of British Medical Association, which this ye to take place in the Queen's College, Cork, f the 5th to the 8th of August, there will be an Exhibition of Sanitary and Hygienic Ap ances, the new plant-houses, botanical lect room, laboratory, &c., having been set apart the purpose.

An address on Public Health will be deliv by Dr. Andrew Fergus, President of the Fac of Physicians and Surgeons, Glasgow; and various meetings and discussions in this dep ment, to which the public will be admitted, be conducted as far as possible in conne with the Sanitary Exhibition, which will inc the following departments:—

1, Drainage, sanitary appliances, and disp of refuse; 2, water supply, filtration, and purification; 3, food, clothing, disinfection, life-saving apparatus; 4, sanitary buil appliances, plans and models, ventilation, ing, lighting, and consumption of smoke disposal of the dead; and 6, sanitary litera

The Late Paris Exhibition.—The de lition of the palace in the Champ de Mar Paris will probably be commenced next mo and finished towards the end of the year. *Morning Post* says that, according to the arra ments definitely concluded, the whole of site at present occupied by the building wi placed at the disposal of the Engineer C The park will be preserved and transfor into a large square, in the midst of which Pavilion of the City of Paris, forming a mas and the Chinese Pavilion, changed int refreshment-room, will be placed. The co laying out this square and its annexes is mated to be at least 80,000 francs.

THE PALACE OF SOA-IERANA,

SOUTH OF ANTANNANARIVO, THE CAPITAL OF MADAGASCAR.

Soa-ierana is a locality without the southern burb of Antannanarivo. The name Soa-ierana s given to the site by Radama I., in 1824, when aansed a considerable conical hill to be levelled, reby forming a circular plateau to hold large ional assemblies or *kabarys* (as they are led by the Hovas), Soa-ierana signifying "a ce well suited for inquiry." This circular eting-ground is surrounded by an avenue of common wild fig-tree called "aviavy." In centre of this ground was commenced a ace, but the king died before it was gether completed in 1828. An adjoining was likewise to be cut down, so as to rove the prospect of the palace, as well as form a good road of approach. This scheme wise was never completed,—*L'homme propose, Dieu dispose.*" This last-mentioned hill named *Ambohidzanahary*, "the hill of the d," and the gigantic trenches and excava- s cut through its solid rock by the forced ur of the tribes employed are standing iences of the herculean, yet fruitless, efforts le to level the immense mass.

he wooden palace of Soa-ierana stands well, manding an extensive panoramic view to south over the level and fruitful plains of rina, with the volcanic peaks of the distant aratra mountains in the extreme distance. he north-east rise the bold rocks on which capital stands.

Mons. Le Gros, an adventurer from Mauri- was architect and builder. Immense ur was expended on the building, particu- y in conveying timber from the forests, a ance of at least fifty miles, over a rough ntry without roads, or without what we ld call roads. Many hundreds of the finest s that could be found adapted to the pur- were felled, roughly stripped of their aches and bark, and then dragged the dis- e stated above, by ten, twenty, thirty, or y men, to each piece of timber, as the case ired, the track being here and there almost passable." About sixty carpenters and ap- tices were employed for four years upon the s, besides smiths and stoneworkers. The Rev. — Ellis gives a graphic description of transport of timber, as he saw it as late 864, for the then queen's new palace, as ws :—

Chiefs went away with their men in num- from ten to fifty, or more, to the forests n, east, or south, to a distance of thirty or miles; and when they had felled the trees btained the required amount and kind of er, the bringing or dragging it over hill and y, up steep, rugged, and precipitous places, e the ascent is difficult, often appeared to he severest work the slaves ever had to rm. The largest trees, stripped of all their shes, are dragged by ropes. Sometimes rs are used, but not always. The heavier of planks, made out of a tree split by es down the centre, and reduced by the et, are carried by two or four men on their ders, and the lighter planks by single men. ere is a large number of planks to be con- d, the noble or chief goes with his men, ow his own loyalty, and also to encourage , I believe,—much to the satisfaction of the rers. I have seen the people thus employed ir encampments in the forest, or in hamlets e they have been halting on the road. I gone along with them when they were out, and have met or passed them on their ; but never saw them either dragging rrying their timber without great com- ation, as I noticed some of them lame or re, and often stretched on the roadside exhausted. Two things, however, always ed some alleviation. The men were often panied by their wives, who carried the e cooking utensils and the sleeping-mats, metimes helped to drag the load. Another I have often seen with pleasure among aggage,—a Malagasy *lokanga*, a kind of guitar, and at night, sometimes, when ling near their halting-places I have seen ht from their encampment, and heard the s of their simple music, I have rejoiced hey possessed such a solace amidst their

To the large trees the people attach or strongly-twisted creepers to both ends, roceed in one or two rows, pulling with ir might, and singing or shouting as they I have sometimes seen more than 100 men dragging a single tree past my house, keeping time with the *lokanga* played on the way before them, while a young chief has every now and then jumped upon the log, and by shouts and gesticulations urged them on. Sometimes the chief walks first, but more frequently he brings up the rear."

The building itself is about 125 ft. long in front and 100 ft. in depth. The structure is entirely of wood, finished on the outside in diagonal panels, resembling in appearance the style of building frequently seen in South America. It consists of a centre and two wings, the roof of which is highly-pitched and covered with wooden shingles, "*bardeaux.*" There are about forty principal rooms on the ground floor and first story, besides a large number of attics and store-rooms. A broad balcony and verandah is carried round the whole extent of the building, about 5 ft. in width, protected with iron and wood railing; this verandah is supported by wooden uprights, the spaces between being horizontally arched. There are two principal entrances, south-east and north-west, and two others opposite to these. The kitchen and offices, &c., are beneath the ground level, are distant 200 ft. from the main building, and approached by a subterranean passage. The ascent to the first-floor is by a curiously designed winding staircase, of very broad and shallow steps, twisting right and left. An iron chain, supported by wooden posts, surrounds the whole at a distance of 40 ft.

The principal fault in the building is its want of elevation, the structure being too low for its extent, and several of its rooms, otherwise spacious and noble, appear paltry and quite out of keeping with the other parts, for want of 6 ft. or 8 ft. of additional height. It is, however, wonderful to find such an edifice at all of that date, fifty years ago, when Madagascar had advanced so little in civilisation. At the present time, half a century later, we read of churches and public buildings built according to European ideas. S. P. Oliver, Captain.

STAINED-GLASS WINDOWS, CITY TEMPLE.

In our recent article on the City Temple (see *Builder* for September 21, 1878), a description was given of the stained-glass windows placed in that church since its first opening in 1874, along with details having reference to the history and the completion of the building.

Since that account appeared in our columns, the work of beautifying the church has been continued. On the west side of the building, on the ground-floor, two stained-glass memorial windows have been placed. The subject of the one is the parable of the Sower, a full-sized figure in the act of scattering the seed, with perspective background. The American and British coats-of-arms are above it in the circular spandrel, and beneath it is a label with the text, "Behold, there went out a sower to sow." The memorial is to perpetuate the memory of the Rev. James Richards, D.D., an eminent American divine, who died suddenly in the streets of Edinburgh, in July, 1875. It is placed there as a filial memorial by Mr. John Richards, who with his family are members of the City Temple congregation.

The second window is illustrative of the parable of the Pharisee and the Publican. The interior of the temple is shown in the foreground; the publican in reverential attitude is smiting his breast, saying, "Lord, be merciful to me a sinner," while in the background is the richly-clad figure of the Pharisee, praying the prayer of self-righteousness. The figure subjects are surrounded by an elaborate detail of a similar character to that of the window adjoining, above described. The window, which is labelled, "Two men went up into the Temple to pray," has been presented by Messrs. Phillips, of Baker-street; the inscription underneath, describing the object of the donors, reads thus:—"To commemorate the completion of the twenty-fifth year of the ministry of the Rev. Joseph Parker, D.D., who was ordained at Banbury, on November 8th, 1853; called to Manchester on June 10th, 1858, and elected pastor of this church on June 23rd, 1869."

Three memorial windows of a martyrological character have just been placed in the north gallery, and facing the Viaduct and Smithfield, that place of suffering of English martyrs, many of whom "lived unknown till persecution dragged them into fame, and chased them up to heaven." Each window is filled with a typical figure, holding the Cross, the Stake, and the Crown, respectively. They are upon a deep blue background, have architectural surroundings suitable to the building, and illustrate the texts, (1) "Whoso will come after me, let him take up his cross, and follow me"; (2) "Blessed is the man that endureth temptation: for when he is tried, he shall receive the crown of life, which the Lord hath promised to them that love him"; (3) "For he that shall save his life shall lose it; but he that shall lose his life for my sake and the gospel's, the same shall save it." These three windows have been erected at the expense of Mr. Henry Hudston, of London.

The whole of the windows are by Messrs. Phillips, and are executed, like those we mentioned in our previous notice of the City Temple, from cartoons by Mr. W. Heusman.

THE INTENDED NEW NATIONAL GALLERY.

A "supplementary estimate," laid before the House of Commons on Saturday last, including an "estimate of the amount required in the year ending March 31st, 1880, for a payment to Mr. Edward M. Barry, R.A., in full satisfaction of his claims upon her Majesty's Government in connexion with the preparation of plans for the erection of a New National Gallery, 5,000*l.*," has led to some inquiries. These we can best answer by printing the note which accompanied the estimate:—"Sketch plans of a new National Gallery were prepared by Mr. Barry, under orders from the First Commissioner of Works, and were delivered to the Office of Works in 1869, but they have been carried out to the extent of only about one-sixth of the whole. As *there is no present intention of rebuilding the gallery*,* it is necessary to pay Mr. Barry for so much of his plans as relates to work that has not been executed, payment for the other portions of them having been covered by the commission received by Mr. Barry upon the cost of the works of enlargement effected in 1870 and succeeding years. It has been stipulated that, in the event of Mr. Barry's being hereafter employed upon works connected with the gallery, the whole or part of the sum of 5,000*l.* now proposed to be paid to him is to be deducted, under certain conditions, from the payments that may have to be made to him in respect of such further employment."

THE PAVING OF CHANCERY-LANE, AND THE MASTER OF THE ROLLS.

The Master of the Rolls and those associated with him in the business of the Courts are making an effort to have wood paving laid down in Chancery-lane. At the last meeting of the Strand Board of Works the Clerk submitted a memorial signed by the Master of the Rolls himself, and the other officers employed in the public offices in Chancery-lane, setting forth that their work was impeded by the fact of the noise arising there, and praying the Board to substitute wood for the stone paving in Chancery-lane, to remedy the evil complained of. There was also a resolution to the same effect from the Vestry of the Liberty of the Rolls, which had likewise been forwarded to the Clerk. The two communications were referred to the Works Committee.

Progress of the Severn Bridge.—The engineers (Messrs. G. W. Keeling and G. Wells Owen) report that the Hamilton's Windsor Iron Company have nearly completed the works comprised in their contract. The works were much delayed during the winter by the inclement weather, and also by the scaffolding being carried away by the high tides in April; but by aid of the electric light the contractors were enabled to carry on the work by night. This very much accelerated the erection of the scaffolding and iron work of the last 312 ft. span, which is now practically complete. The 132 ft. span on the north shore has also been erected, and the swing-bridge engines and machinery completed. The whole structure of the Severn Bridge will be finished next month. The whole of the railway will probably be ready for inspection in September, and may be opened for traffic in October.

* The italics are ours.

ARCHITECT-MASTERS OF CITY COMPANIES.

The swan-upping banquet of the Dyers' Company was given at the Star and Garter, Richmond, on Tuesday last. The Prime Warden, Mr. E. Cookworthy Robins, F.S.A., presided, and pleasant speeches were made by Mr. Beresford Hope, M.P.; Mr. Hepworth Dixon, F.S.A.; Mr. Bramwell, F.R.S.; the Rev. B. Webb; Miss Chessar; and others. The Prime Warden discharged his duties fluently and efficiently. The number of architects who are now Masters or Prime-Wardens (according to the term used) is noticeable. Thus we can name, speaking from memory, Mr. J. C. Shoppee (Barber's Company), Mr. F. Chancellor (Coachmakers'), Mr. J. Clarke (Bakers'), Mr. Robins (Dyers', as already mentioned), Mr. G. Aitchison (Founders'), Mr. J. W. Penfold (Horners'), and Mr. Edwin Nash (Merchant Taylors'); without mentioning the Upper Warden of the Farriers', Mr. T. H. Watson, and the Renter Warden of the Masons', Mr. H. H. Burnell.

THE LIMEHOUSE NEW TOWN-HALL.

At the last meeting of the Limehouse Vestry a report was presented upon the reduced tenders for the erection of the new town-hall and parochial offices, in which the Vestry were recommended to accept the tender of Mr. Johnson, whose tender was nearly approximate to the amount in the hands of the officers for the erection of the building in question. A motion that Mr. Johnson's tender be accepted was moved and seconded, Mr. Whitford, the seconder, suggesting that the motion should be amended in order that one or two matters which had been discussed, might be carried out. If this were done the building when ready would be an ornament to the parish, and satisfactory to the ratepayers. The suggestion was complied with, and several members of the Vestry supported the recommendation. Mr. Rollinson, however, opposed the whole scheme as being quite unnecessary, but the resolution as amended was carried, with Mr. Rollinson only as a dissentient, and Mr. Johnson will shortly enter upon the work as contractor for the building.

THE LATE INTERNATIONAL AGRICULTURAL EXHIBITION.

SALE OF THE BUILDING MATERIALS.

During the last three weeks, the building materials used in the erection of the sheds, hoardings, horse-boxes, and other structures, for the late International Agricultural Exhibition at Kilburn, have been in course of sale by auction, and the sale was brought to a close on Tuesday evening. The days fixed for the sale were the first two days in each week, commencing on Monday, the 14th of July. This arrangement was adopted in order to give purchasers the opportunity of clearing their several lots during the remaining days of each week. The aggregate number of lots disposed of during the six days' sale were about 3,000, consisting of flooring-boards, battens, scantlings, panelled doors, sashes, iron hurdles, and a miscellaneous lot of other iron work. The iron hurdles included in the sale were upwards of 2,000 in number, and were sold in lots of thirty-six each. Preliminary to the sale the several buildings had been taken down, and piled up on the ground in lots, the timber varying from 500 to 1,000 running feet in each lot, which was sold at so much per foot run, and the total number of feet sold during the six days was estimated at upwards of 2,000,000, the hoarding alone enclosing the ground being more than two miles in length. There was a large attendance of buyers at each day's sale, consisting for the most part of contractors and parties connected with building. The aggregate proceeds of the six days' sale amounted to upwards of 6,000*l*. Several of the buildings which had been erected on the ground were not included in the sale, and will be taken down and reserved for future use. These consist of the materials of the different buildings belonging to the Society, which are from year to year erected on the grounds where the annual meetings are held. They include, amongst others, the principal entrances, and the buildings and offices used by the stewards, judges, engineers, committees, and other parties connected with the Society.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.

The third half-yearly meeting of this association was held in Hull, on Wednesday, the 23rd ult., when representatives from the local associations of London, Manchester, Liverpool, Leeds, Birmingham, Leicester, Nottingham, Wigan, Warrington, Lancaster, Wakefield, Bradford, Hull, Huddersfield, Runcorn, Bolton, Lincoln, and Doncaster were present. Letters of apology were read for non-attendance from Preston, Walsall, Wolverhampton, Edinburgh, and other towns.

The half-yearly report was read and approved. It stated that the building trade in all its branches throughout the country was in a very depressed condition, and, in consequence, a general reduction of wages had taken place as well as an increase of the working hours, with a view to reduce the cost of building. The effect of such change, it was hoped, would to some extent stem the tide of depression, and ere long effect a return to prosperity such as the building trade enjoyed some years back.

A return was submitted to the members, showing the state of trade, the supply of labour, and the current rate of wages in about ninety towns.

After the meeting the Council of the Association were entertained at dinner by the members of the Hull Master Builders' Association, at which the mayor of Hull presided.

NORWICH STEAM LAUNDRY AND PUBLIC BATHS.

Buildings for a new steam laundry and public baths, erected by joint-stock enterprise, are approaching completion at Norwich. The site of the buildings is at the bottom of Nelson-street, Dereham-road. The laundry is a red-brick building. A pair of iron gates open into a bleaching-ground of about an acre, bounded on the roadside by an ornamental wall, and on the opposite side by the river. Alongside it to the north, parallel with the road and river, stand the laundry and bath-house, with a wide space between the two. The floor of the laundry has been carried out on a level with the road, so that as there is a considerable slope from the road to the river, the building, supported on brick tiers and iron pillars, stands high and dry, while the space beneath is utilised for stables, wagon lodges, &c. A short flight of steps from the bleaching-ground leads to the main entrance, through which is a large room with an even, finely-cemented floor, having in one corner a compartment for the accountant, and the greater part of the remainder of the area being enclosed by lofty stained and varnished pitch-pine partitions. Inside this enclosed area, called the receiving and sorting room, is a series of lockers for the reception of linen of each description when sorted. By the side of this room is a walled-in compartment containing one of Bradford's patent washing-machines and other apparatus connected with shafting, so as to be worked by steam. This is a special and separate department for the cleansing of foul linen and for the washing of garments belonging to families who have had illness in their houses. When the linen has been sorted, it is passed on to the washhouse, containing four washing-machines, worked by a steam-engine. When the articles of linen have passed through one of these revolving-machines, which will be without any injury to the fabrics, they are run through india-rubber rollers on the top of the machines to take out the surplus water, and then handed to women at troughs alongside the walls to be finished and "rinsed." The next process is putting the wet garments into a hydro, a circular concave machine, with net-like sides, which, revolving with extraordinary rapidity, drives out the water by centrifugal force. From the hydro, the garments are taken to the drying-room. This room contains a large hot closet fitted with "drying-horses." But between this drying-room and the washing-room is a small place having a steam-coil along its floor. This is the drying-room for lace curtains, muslin, and other articles which require particular care. As soon as the garments are dry they are passed into the adjoining mangling, calendering, and ironing room. A spacious and comfortable dining-hall has been placed under the laundry opposite the residence of the superintendent. The laundry has been built by Mr. Wilkins; the carpentering has been done by Mr. Wilkin; and the plumbing, glazing, and painting, by Mr. G. Pope, of St. Giles's. Messrs. Riches & Watts are the engineers for the company; and Mr. E. Boardman the architect.

The Bath Company are completing a covered swimming-bath, 75 ft. long by 25 ft. wide, and 3 ft. deep at one end and 6 ft. at the other. It has brick and cement sides and a cement bottom. When completed it will be well lighted, fitted along one side with a large number of berths 4 ft. square, and be provided at one end with three special dressing-rooms with lavatories, &c. River bathing will be made more pleasant, both by attention to the bed of the stream and by the provisions of good accommodation in the way of berths. The floor of the river has been dredged, so as to give a clean hard bottom. For 110 ft. alongside the river, first, second, and third class lodges or berths are being constructed abutting upon the covered swimming-bath. Mr. Wilkin is constructing the baths, under the direction of Mr. Boardman.

PROPOSED NATIONAL WATER-SUPPLY EXHIBITION.

It is announced that an exhibition of plans, diagrams, models, apparatus, and all appliances illustrative of the various subjects that have to be considered in planning water-supplies, and the domestic arrangements for making them in the best way available, will be held at the Alexandra Palace forthwith. The committee includes some well-known names.

It is believed that a great deal of useful information may be spread by an exhibition of plans, diagrams, models, apparatus, &c., relating to the supply of water for domestic and other uses, in a way that instruction may be conveyed without the trouble of reading books; and that those who wish to improve the water-supplies of their own districts may thus readily learn what is the scope of the subjects that have to be considered.

WATERWORKS.

According to Colonel Bolton's report, Lambeth Waterworks are now supplying about 5,000 houses on the constant plan. They are also introducing Deacon's system of water-waste meters in the above-named district for detecting waste, which, if it proves successful, will probably be applied in other portions of the district to which the constant supply will be gradually extended. The water-pipes and fittings in all new houses are fixed in conformity with the Board of Trade rules and regulations so as to be ready to receive constant supply when the division of the district in which they are built is brought under it. The company propose to give, on and after the 1st day of January, 1880, a constant supply of water throughout a large district. All the companies are moving in the matter, and giving constant supply under the provisions of the Metropolis Water Act, 1871, in a portion of their districts except the Southwark and Vauxhall and Grand Junction Companies. The Act provides power to compel the companies to give constant supply as and when the public authorities may see fit to demand it; but no company is compelled to give such constant supply if it can be shown by them that after the expiration of two months, from the time of service to the requisition, more than one-fifth of the premises in such district are not provided with the proper fittings, in accordance with the regulations made under the above-mentioned Act.

The number of miles of streets which contain mains constantly charged, and upon which hydrants for fire purposes could at once be fixed in each district of the metropolis, is as follows —Kent, 85 miles; New River, 201; East London, 85; Southwark and Vauxhall, 112; West Middlesex, 70; Grand Junction, 41; Lambeth, 79; Chelsea, 56, making a total length of 721 miles. The water companies are ready to affix hydrants thereon when required by the authorities. The total number of hydrants erected is at present 4,812, of which 2,958 are for private purposes, 554 for street watering, 825 for public use, and 475 in Government establishments.

Land at Sudbury. — Messrs. Harvey Davids submitted to auction part of the Alpheton Park Estate, Sudbury, on the 24th ult., when the plots realised prices ranging from 300*l*. to 1,200*l*. per acre.

THE LONDON BRIDGE BILLS.

has been calculated by one who ought to
, that something like 60,000*l.* has been
by the advocates and opponents of the
e Bills just now thrown out. The project
dening with iron London Bridge collapsed
the head of the City police, Col. Fraser, stated
ience that the widening was not needed, and
increase difficulties rather than remove
The whisper reaches us that the bridge
rities now propose to remove the stone
ıet on each side, and substitute an iron
g springing from the cornice, which they
e they can do without troubling Parlia-

NDON BRIDGE (WIDENING) BILL.

—In a recent paragraph on this matter,
hentioned that I had been called to give
ıce by the promoters of the Bill. This
hent, if left unexplained, might give rise
conception of my opinion on the scheme
ied, which, though of little importance,
ld be glad to remove. I write, therefore,
you to allow me to state that I was sum-
l, to my surprise, on the morning of the
hen the committee met, and after I had
ed my disapproval of the design. I ex-
d clearly this disapproval in my evidence
the committee, as may be seen by those
are to take the trouble to peruse it. As-
g the engineering evidence to have been
t, and that a wider bridge is required,
not prepared to say that no change of
could, under any circumstances, be per-
l; but I stated that I should be very sorry
the bridge touched at all, unless under
necessity; and after Col. Fraser's and
aywood's evidence on this point, the com-
had, I think, no option but to reject the

reference was made before the committee
petition of the Institute, I may state that
ur in the opinion given therein, on general
ls; but it should be remembered that all
ots were not known to the Institute, and
, I think, be found inconvenient if that
should be too ready to offer, unasked,
l on matters upon which responsible pro-
al advisers are already engaged, and the
stances and difficulties of which are not
efore it. EDWARD M. BARRY.

WIDENING OF LONDON BRIDGE.

—Deep and real is the feeling of relief
ned by the announcement that the widen-
Rennie's masterpiece by outrigged iron-
s no longer under contemplation. How-
hat will in no sense relieve the traffic,
ng,—which I am not yet prepared to
—that a widened bridge will be less
d than it is under present conditions.
this juncture of the controversy, one
of adding to its capacity for transit
to have been overlooked, viz., to throw
tway on either side into roadway, and to
the footways on a raised platform on
side, high enough to enable cabs,
ht and not lofty vehicles, to pass
eath.
e raised foot-bridges could be made a
reater convenience by crossing the road-
approaching the bridge, and so enabling
gers to descend to any side of a street
night desire. Of course there would be a
ascent where the roadway of street
ch had to be crossed, but as regards
, such as the height of the parapets and
obable sightliness, or the reverse, the
al to be used, and its ultimate colour,
ere not those who would condemn all
als alike, and place taste above con-
ce?
ink an iron tent-like roof to keep off sun
, and a close high parapet to keep off the
nd deter loungers from staring into the
and a smooth floor of cement or some
al which would pass off the wet and
not admit gusts of wind from below,
be so contrived as to look not entirely
tly. The vertical weight of such an erec-
ed not injure the bridge, because the
supporting it could be as numerous as
l, and its pressure would be uniform
hout, and not concentrated on the piers or
ecial points. Further, there need be no
nging at all, as all might be kept within the present parapet, and a line drawn vertically from its inner side.

When the bridge is built further down the Thames my proposed erection could be removed; but I believe many would regret the loss of a sheltered passage over the draughty river.

I. I. W.

STATUES IN WESTMINSTER ABBEY.

SIR,—I have read with dismay that two additional statues are to be added to the mass in Westminster Abbey, one for Lord Lawrence and the other for the Prince Imperial. I care not how many more monuments to the illustrious dead are proposed provided the building can contain them without detriment to its proportions, and also that they are placed there by a committee of sufficiently clever architects, who would know what kind of monument to place in it; but when I have gone to the Abbey church, and have endeavoured to take in and enjoy as a study, say only one bay of its matchless beauty, I have been quite unable to do so from the glaring white marble effigies and representations that destroy every inch of the building; for although most of the upper parts are clear of them, the eye cannot divest itself of their prominent whiteness. Now, it is against the introduction of more such monuments that I ask you to raise your powerful voice and to urge that on so important,—nay, national,—question, an architectural committee should be empowered to decide, and that it should not rest with one ecclesiastic (clever though he be) to sanction the further disfigurement of perhaps England's grandest ecclesiastical edifice with monuments such as those which, however good in themselves, have disfigured all our grandest cathedrals and abbeys throughout the land, through not being architecturally appropriate. I fear no good can be done; but you, Mr. Editor, will perhaps know in what quarter to make representation. A MUSICIAN.

ILL-BUILT HOUSES.

SIR,—May I be permitted through the medium of your widely-read columns to utter a timely warning to intending purchasers of the showy and attractively built houses of the "Jerry" type which abound in the suburbs of London, and to recount my experience with one of this class as illustrative of the serious consequences which are likely to arise from having anything to do with houses which have not been previously thoroughly examined and overhauled by a competent surveyor?

About eighteen months since I purchased a house, then in course of erection, upon one of the best estates of Stoke Newington, and thought myself fortunate in securing good tenants, who entered into possession almost as soon as the house could be finished for occupation. On the occasion, however, of my calling for the second quarter's rent, I was informed that the house was beginning to crack; whereupon I called upon the estate surveyor, asking him to personally inspect and report to me if anything serious was to be apprehended. A few days later the Metropolitan Board of Works served me with a notice to rebuild or tie up this "dangerous structure," followed by a summons to appear at the Police Court for not obeying their orders *instanter*. I accordingly shored up the flank wall to prevent further visits and to make things safe, and in the meantime proceeded to find out by inquiries how serious the matter was likely to be. I first of all asked the district surveyor upon what sort of foundation the base stood, and his reply was, "The houses are mostly alike, and upon sand"; and the estate surveyor's answer to the same query was, "Upon three or four feet of concrete." I was therefore not a little surprised to learn from the builders who were executing the repairs for me (confirmed by personal inspection) that the foundations and footings were as follows:—At the angle of the house below the entrance, where the chief subsidence has taken place, from the ground level down to the footings, there were some 5 ft. of brickwork; the poorest materials had been employed, and many of the common "place" bricks which were in the pier were quite soft to the touch, and pulping out under the pressure of the main wall. The concrete, of inferior description, was only 18 in. deep. Further along the flank wall the footings were but 14 in. wide, and only 2 ft. from the ground level upon 12 in. of concrete, while at the further end, adjoining the out-houses, the concrete diminished to 9 in., with still narrower footings. On a close examination, this part of the wall was found to be resting upon nothing more substantial than various strata of oyster-shells, crockery, shavings, and decayed vegetable refuse, so that it is no matter for surprise that this side of the house from end to end is sunken, and is strongly suggestive of an uneasy deck.

Although this is in a district famous for its fine sandy soil, there are no traces at 8 ft. depth of the presence of any such valuable commodity. I have written to the district surveyor, but I obtain in reply nothing more satisfactory than a curt acknowledgment of my letter. I not only lose respectable tenants, who are determined not to re-enter the house, but the whole expense of repairs and loss of rent, together with endless worry rest upon me because of the difficulty in fixing responsibility. While I should be glad to learn if I have any remedy, and against whom I should proceed, I think I have solid reasons for hoping that the monetary loss should fall not upon the innocent buyer, but upon him who is directly or indirectly to blame for all the fault. Yet who is to fix the responsibility, and where is my remedy outside a court of law, are the questions that still trouble me. A. H. L.

APPROPRIATION OF THE HORTICULTURAL GARDENS.

SIR,—I venture as an inhabitant of South Kensington to put forward a plan with two objects in view, presuming the land now appropriated by the Horticultural Society is to be surrendered to the Commissioners of the 1851 Exhibition.

The first object would be to make as much return for the property as possible without damaging the existing estate.

With this view I suggest that a row of houses should be built on the now vacant ground in Prince's and Queen's gate. These houses should occupy 200 ft. in depth,—that is, 100 ft. for the house and 100 ft. for a garden common to the row. These houses should be of a substantial and a good architectural character, not less than 40 ft. frontage. These houses ought to command high prices, say 15,000*l.* each. The row should end at the high red brick building in Prince's-gate. This building should form the end to a street running at right angles to Prince's and Queen's gate, and parallel with the back of the Natural History Museum.

The rest of the ground should be kept as a garden, with a wide broad road from the back of the Natural History Museum to the Albert Hall. The new houses running down to this road should not be allowed to have walls to the garden, but an ornamental iron grille. Every open space must nowadays be jealously watched for fear it should be enclosed. This ground, though in the hands of the Commissioners, has really been paid for by the public, and in no way could the public be better repaid than by having the use of this open space, especially as access to the land is being gradually increased by the underground railway.

This, I think, would fulfil the two objects,—money getting and public advantages. B.

OPENING OF THE GROSVENOR GALLERY ON SUNDAYS.

SIR,—Through the kindness of Sir Coutts Lindsay, the proprietor and director of the Grosvenor Gallery, the members of the Sunday Society were on Sunday favoured with admission to the Summer Exhibition, between the hours of six and half-past eight p.m., and nearly 500 have availed themselves of the privilege.

Next Sunday the Gallery will be opened to the public, free, by tickets which will be issued by the Society to all persons making written application, and sending stamped and addressed envelope, for reply, to the Honorary Secretary, 19, Charing-cross, S.W.

A special catalogue has been published by the Society, price 4*d.*; this must be obtained before Sunday as no catalogues will then be on sale.

We beg you, by publishing this letter, to give publicity to Sir Coutts Lindsay's generous endeavour to add to the few opportunities now possessed by the people for the study of art on their one leisure day.—We are, &c.,

HENRY THOMPSON, President of the Sunday Society.
W. H. COBFIELD, Chairman of Committee.
FREDK. LONG, Treasurer.
MARK H. JUDGE, Honorary Secretary.

THE OAK.

SIR,—A friend having told me that he has within the last twenty-five years seen an English oak tree, the trunk of which measured 100 ft. long, and I, having great doubts of an English oak ever attaining such a height, will you kindly allow me to ask your numerous correspondents whether it has ever been known, and, if so, in what county the tree grew? H. DARE.

STREET ACCIDENTS.

Sir,—Earl Beauchamp, in reply to a question in the House of Lords, appealed to statistics to prove that these had rather diminished than increased. His statement, however, simply shows how valueless "statistics" are in certain cases,—notably, in the present one; for the number of unrecorded accidents is to the recorded as about twenty to one,—in many cases compromised or settled by the parties aggrieved, and no further notice is taken.

Scrutator.

DEFILED BATH-ROOMS.

Sir,—I shall be glad if you will allow an outsider to protest against what he thinks an unworthy habit on the part of certain architects, that of placing the watercloset in the bath-room. He noticed a case at Hampstead the other day, where some very fine houses showed this far from refreshing association, which he had not seen before except in certain Scotch hotels and houses. The grouping, in the same small room, of the sewer and the bath is such a bizarre, and is such a very objectionable plan, that it is to be hoped it is rather owing to an odd sense of fitness on the part of certain architects than to any growing sanitary "notion" of the time. The bare idea of a healthy creature going to enjoy his bath in the same cell (for it is never a room) with a watercloset, one would have thought too strong for the nerves of the present æsthetic race of architects, who are, no doubt, responsible for the very fine houses in which he saw this plan carried out. Of all countries in the world, one would expect to meet a thing of this sort least in England, where people happily have, usually, strict notions as to cleanliness.

V. R.

STONE AND GRANITE *versus* CEMENT.

Sir,—Reading Mr. Huggins's communication in the *Builder*, p. 808, "A Glance at Llandudno," I was much struck by the following remark,—"There is, in the first place, too much cement, and too little stone and brick visible."

I have noticed, especially of late, in my travels, particularly in new-made towns such as Llandudno and all the numerous towns, although surrounded by the best granite, limestone (Anglesea marble), and stone quarries, known sometimes as "Welsh granite," syenite, &c., yet the fault in all these towns is "too much cement and too little stone visible." The difference in cost, I should say, would be very little indeed, but the value of a building made, for instance, with Anglesea marble or limestone for the quoins, sills, lintels, &c., and the Welsh granite from any of the quarries between Penmaenmawr and Portmadoc for filling up the spaces as compared with buildings with the coating of cements, &c., there is no comparison. The former once erected in a good workmanlike manner, never again requires mending, painting, or anything else; in fact, if, in one, two, or three hundred years hence, these stone buildings be taken down and rebuilt, the material and the workmanship will be as valuable as at the first cost and time of production.

In Dublin I find in the outskirts some buildings built in this style, commonly styled as "irregular ashlar," or in courses. I prefer the irregular,—for instance, like the Cambrian Railway Station built at Barmouth, or Dr. Williams's school at Dolgelley. There are also the church and several chapels as well as the town-halls and other public buildings, as well as private houses, built in the towns and counties of Carnarvon and Merioneth, where good specimens of this class of workmanship are found; but still, although in the neighbourhood of the very mountains and near the quarries, yet we find "too much cement and too little stone."

I wish to whisper into the minds of our architects and builders, for the benefit of the future generations, as well as for the benefit of the working-class of the present generation, that the money spent is not money thrown away by using "more stone and less cement," and the variety of colour will be more elaborate and lasting than the work of any painter or designer of plaster or cement. It would be well for capitalists and men of freehold property before they build themselves, or grant leases to build, to ask the question,—Will it not be better for the public, my heirs, and the next generation to say, "No more mud houses" (cement)? Then our masons, joiners, quarrymen, and their families would have plenty to do; and having enough to do means creating a demand for everything else that gives a stimulant to trade, and enables the generation to bring up their families to habits of industry and culture: and if at last obliged to emigrate to foreign countries for a living, they will be no disgrace to the "Island of the Seas."

W. S. S.

METROPOLITAN BUILDING ACT: PARGETTING FLUES.

JENNINGS *v.* DUNCAN.

Sir,—Referring to the letters that have appeared in the *Builder*, it appears to me that until the magistrate's decision in this case has been overruled, district surveyors, except in certain cases, cannot insist upon the outside of a flue being rendered. With regard to the meaning of the outside of the flue, must it not include the right, left, back, front, or any other side except the inside?

Your correspondent, Mr. Fletcher, suggests that this meaning may give injustice or inequality in certain cases, but in the one he mentions the Act itself suggests the remedy, as the owner can line the flue with fire-proof piping which will prevent the disfigurement alluded to. The only objection to this is the expense, which in a question of protection from fire should hardly be considered.

The magistrate's decision seems, however, by inference to be supported by Sec. 20, Rule 17, Sub-rule 3, which Mr. Knightley draws attention to, for if we read this rule in connexion with Sec. 20, Rule 4, it qualifies the rendering the outside of flues. The words of the Act are:—"No timber or woodwork shall be placed within 2 in. from the face (or outside) of the brickwork or stonework about any chimney or flue if less than 8½ in. thick, unless the face of such brickwork or stonework is rendered."

If the woodwork is placed further than 2 in. from the face or outside, it fairly implies that the face or outside need not be rendered.

Again, supposing the brickwork or stonework about a flue to be more than 8½ in., would the outside then have to be rendered? Would it not be unnecessary and in some cases absurd to do so? The universal application of the rendering of the outside of a flue can therefore hardly be intended.

The practice of having the outside of all flues pargetted from "the underside of joist to the top of skirting," as alluded to by Mr. Knightley, is clearly supported by the Act, if the brickwork is less than 8½ in. thick, and the decision of the magistrate referred to does not appear to touch this case.

Builders frequently evade this provision by keeping the joists away from the wall 2 in., but they are still bound to render behind the wood skirting and floors.

With regard to the rendering the outside of a flue from "level of the topmost ceiling to the level of the slates," it is a question how far this can be enforced after the decision of the above case, Jennings *v.* Duncan, except "for the depth of the ceiling joists and the rafters," and by keeping these away 2 in. from the face the Act is evaded.

This discussion will do good if it induce builders to acquiesce in rendering the outside of all flues where woodwork is fixed against the face of same, and possibly another decision may make it clearer as to whether the Act requires the "outside of a flue," if in the roof, to be rendered.

George Lansdown, District Surveyor.

COMPENSATION CASE.

BIGNELL *v.* THE METROPOLITAN BOARD OF WORKS.

In this case, which occupied the day at Guildhall, Westminster, and was heard before Mr. Farrer, the high bailiff, and a special jury, Mr. Bignell, the proprietor of the Argyll Rooms, in Windmill-street, Haymarket, claimed 12,487*l.* for several freehold houses in Windmill-street and one in Denman-street, required for the Piccadilly improvements. One of the houses was a licensed beer-house. The claim as presented was resisted by the Metropolitan Board of Works as an inflated one, and if sanctioned would make the proposed public improvements very costly.

Mr. Meadows White, Q.C. (with him Mr. Richard Harris), appeared for the claimant; Mr. Philbrick, Q.C., and Mr. Biron for the Board.

The jury before hearing the evidence made a personal inspection of the property in dispute.

Mr. Meadows White said the neighbourhood was improving and property increasing in value, and estimated the sum to be awarded as between 10,000*l.* and 11,000*l.*

Evidence was given on both sides.

On the part of the claimant, Mr. Podmore, surveyor, put the value, with the usual allowance of ten per cent., at 12,487*l.*; Mr. Galsworthy, 10,598*l.*; Mr. Farmer, 10,283*l.*; and Mr. Alderman Ellis, 10,492*l.* For the Board the surveyors were all under 7,000*l.* Mr. Driver's value was 6,968*l.*; Mr. Reid, 6,930*l.*; and Mr. Isaac, 6,966*l.*

Mr. Philbrick, on the conclusion of the evidence, complained of the large amount claimed by Mr. Bignell, who had been deprived of his license for the Argyll Rooms, by putting such inflated figures before the Court. Mr. Bignell was present and not called. Mr. Philbrick invited the jury to estimate the value at a sum under 7,000*l.*

Mr. Meadows White complained on his [illegible] of the prejudice sought to be raised ag[ainst] Mr. Bignell, because he had been refused a [new] licence. He claimed a full compensation for [the] valuable property in question.

The High Bailiff summed up the evidence and told the jury to give a fair compensation for the property irrespective of the pa[rties] before the Court.

The Jury gave a verdict, with the ten per c[ent.] of 8,250*l.*

AN ARCHITECT'S CLAIM.

ELLISON *v.* DOUGLAS TOWN COMMISSIONERS

On the 17th ult., at Douglas, Isle of [Man] before Deemster Drinkwater and a special [jury] the action of Mr. Christopher Obee Ellison, [of] Liverpool, architect, against the Douglas Town Commissioners, was commenced.

Mr. Ellison claims from the Commissioners the sum of 3,000*l.* as compensation for his [plans] for a marine promenade for Douglas, and a [new] street through the centre of the town, which improvements were carried out on plans which Mr. Ellison alleges he is the original and author.

After reading the declaration, and getting through some preliminary business, Mr. C[harles] lius Sherlock, architect, Liverpool; Mr. [John] Hornblower, architect, Liverpool; and William Radford, civil engineer, of Manchester were examined on behalf of Mr. Ellison. The evidence, which occupied the whole of the day, had reference principally to the customs charges made by architects and engineers works carried out on their plans. At the [con]clusion of their evidence the court adjourned.

SURVEYORS' CHARGES.

HOLDEN & SON *v.* GRAVE & LINDLEY.

In this cause, which was an action tried in the Manchester Summer Assizes before Mr. Justice Lush, to recover the amount of a [bill] count of 177*l.* for work done, Mr. Edwards, and Mr. Coventry appeared for the plaintiffs and Mr. C. Russell, Q.C., and Mr. Jordan for defendants.

The plaintiffs are land surveyors and valuers in Manchester, and the defendants, Mr. [Alder]man Grave and Mr. Lindley, are the owners property in Collyhurst. It appeared that the Lancashire and Yorkshire Railway Company required a portion of this property, which is described as vacant land, about three-quarters of an acre in extent, for the extension of their lines, and an arbitration took place to decide the price which should be paid for it. The plaintiffs were engaged by the defendants in connexion with that arbitration, and for the services rendered they sent in a bill amounting to [£]. The bill was taxed, and the award made by the official who taxed it was that it should be reduced to 30 guineas. The defendants have paid into court the sum of 60 guineas, which they considered ample remuneration for the plaintiffs' services. The plaintiffs and other witnesses having given evidence as to the work done,

Mr. Russell addressed the jury for the defendants. He said it was only because they considered that the charges which the plaintiffs had made were grossly exaggerated that the defendants felt bound to bring the matter into court.

After Mr. Alderman Grave and two gentlemen engaged in a similar business to that of the defendants had been examined,

Sir Joseph Heron, Town Clerk of Manchester was called. He said he was in court without idea of giving evidence in this case. He had examined the bill in dispute, and it was the first time he had seen so curious a document. No lawyer would make out such a bill. When a lawyer charged 6*s.* 8*d.*, it appeared to be the practice of surveyors to charge a guinea. He should think the plaintiffs would be well paid if they received sixty guineas.

In cross-examination by Mr. Edwards, Sir Joseph Heron said that, having been extensively concerned in arbitrations as to land and property in connexion with the Corporation, he considered the charges they had had to [pay] were most extravagant. He alluded to the surveyors' charges. The Corporation had felt that the charges made were most unreasonable and unjustifiable. He knew the plaintiff, Mr. Holden, who was as great a cormorant as any of them. He had never heard of such

nat in dispute being presented to the bration.

verdict was returned for the defendants, ury expressing the opinion that the sum of guineas paid into Court was sufficient neration for the services rendered by the iffs.

e case of Green *v.* Grave & Lindley, which tated to be of a somewhat similar nature e above action, was withdrawn.

WAGES DISPUTE AT BIRKENHEAD.

TAGGART *v.* HARKNESS.

the Birkenhead Police-court, on the 23rd before Mr. C. S. Samuell, deputy stipendiary, m Taggart, a joiner, summoned Messrs. ness & Son, joiners and builders, Birken- for 2s. 9d., being four and a half hours' for work done on the 9th of July, and o claimed 5s. as compensation for dismissal their service without the usual notice.

peared that the complainant entered the employ of endants on the 1st of July, and continued to work Clarendon Hotel the remainder of the week. On owing Monday he was unable to go to his work in tence of illness, but he recommenced on Tuesday on. He worked three-quarters of a day on Wednes- the Clarendon Hotel, where he was fixing up a , but when half-past five o'clock arrived the job was ed, and the counter was screwed in its place arily without any brackets or supports being placed eath. On the morning of Thursday, the 9th inst., arkness saw the complainant when coming to work, d him that he should not pay him his wages for the ng day, and gave him to understand that his services e longer required. The rules of the Wirral Branch Liverpool Master Builders' Association were pro- and Rule 7 stated that before discharging a work- o hours' notice must always be given, and that the nust expire at the end of the day.

lefence was that the complainant was not entitled s. 9d., in consequence of not having done the work per manner, and that he was justifiably dismissed. ses were called to prove that the complainant was over the work in question than he should have been, Secretary of the Wirral Branch of the Master s' Association stated that he considered the work y the complainant on the Wednesday referred to work for three-quarters of a day.

Magistrate said that so far as his experience went, en invariably did their work slowly, and it would be to decide what was a fair day's work. He thought, r, that the complainant was entitled to the 2s. 9d., ld see no reason why the defendant should have it. He also was of opinion that the dismissal of mplainant was not justifiable, and the defendant o have given him a day's notice. The magistrate dered that the amount claimed should be paid, with

ELD LOCAL BOARD SURVEYORSHIP.

—It may possibly be a satisfaction (?) to of your readers to learn that this appoint- recently advertised in your journal, has lled up. There were 120 applicants, some m, to my knowledge, professional men of standing; but the Enfield Board, with ar-sighted wisdom for which country s are generally remarkable, have elected a *uilder and contractor*, at a salary of 280*l.* mum, altogether disregarding the merits , many of whom have spent years of their n the study and practical carrying out of y works of all descriptions.

ly, Mr. Editor, it is time these election were ended. C. E.

CHURCH-BUILDING NEWS.

stock.—St. Andrew's Church, Whitchurch, ock, has been re-opened, after restoration, the direction of Mr. Elliot, architect, uth, and Messrs. Hayward, architects, , the builders being Messrs. Blatchford & The tower arch has been opened up, and ed with an ornamental iron screen which ly surrounded some monuments of the ly family in the chancel. The church en rescated and tiled throughout, and the l has been fitted with oak stalls, with the pulpit and the lectern harmonise. antry, belonging to the Courtenays, Earls von, has had a screen added to it by esent Earl. It is made of oak and cedar. ginally belonged to Moretonhampstead h. The ancient font, of Polyphant stone, g the arms of St. George and St. Andrew, s. The new work for the altar has been l out by Mr. Sleeman; the stained glass pplied by Messrs. Fouracre & Watson; he railed screen has been restored by ay.

t's.—The parish church of Brailes has e-opened, after restoration. The new open re executed in oak. A new carved oak on a stone base, is placed against the pier of the chancel-arch, and a brass lectern has been provided. The sacrarium has been laid with Minton's tiles, and several of the patterns are reproduced from fragments which were found in the church. All the old plaster and whitewash has been removed from the walls, and the old stone has been cleared and re-pointed. The large five-light window in the tower has been filled with painted glass by Messrs. Ward & Hughes, of London, at the cost of Mr. Wincott, of Brailes, as a memorial to his wife. The west window of the south aisle is also filled with glass by the same firm. Two of the clearstory windows on the south side are filled with painted glass by Messrs. A. L. Moore, of London. The church is warmed by Perkins's system of hot-water pipes. In the tower there is a peal of six bells, which have been partly re-cast by Messrs. Blews & Son, of Birmingham, and entirely re-hung. The general works have been carried out by Mr. Attwood, of Brailes, from the designs and under the direction of the architect, Mr. William Smith, of London, with Mr. E. J. Munt as resident superintendent.

SCHOOL-BOARD SCHOOLS.

Sowerby Bridge.—On the 8th ult. the Board School, in Tuel-lane, Sowerby Bridge, was opened by the Warley School Board. The school is built to accommodate 236 infants, and consists of a large room, 45 ft. by 26 ft.; No 1 class-room, 22 ft. by 17 ft.; and No. 2 class-room, 18 ft. by 19 ft., all very lofty and well lighted. In addition, there are the usual conveniences, such as master's office, lavatories, cloak-rooms, &c. The work has been carried out under the superintendence of the architects, Messrs. Utley & Gray, Halifax.

Rotherham.—At the meeting of the Rotherham School Board, on the 10th ult., seven tenders for the erection of the Blackburn Infant School, and a similar number for the building of a house and school at Kimberworth, were considered. The Board decided to accept the tender of Mr. Secles, Rotherham, for the erection, at Kimberworth, at 1,906*l.*, and that of Messrs. Saul & Snell, Rotherham, for the building of the infant school at Blackburn, for 695*l.*, each subject to the approval of the Education Department.

Gateshead. — The extensive new schools recently erected by the Gateshead School Board at Sunderland-road from the designs of Mr. Thomas Oliver, of the firm of Messrs. Oliver & Leeson, Newcastle-on-Tyne, were formally opened on the 10th inst. Accommodation is provided for 1,100 children at a cost of between 7,000*l.* and 8,000*l.* The total cost, inclusive of site, furnishing, and all fees, will amount to exactly 10*l.* per place.

SCHOOL BUILDING NEWS.

Thornton. — New Wesleyan Sunday Schools have been commenced at Thornton. The estimated cost is 1,400*l.*, the contractors being:—Masonry, Messrs. Robinson & Fielding, Thornton; joinery, Mr. John Patchett, Clayton; slaters, Messrs. Hill & Nelson, Little Horton; painting and decorating, Messrs. Varley & Roebuck, Thornton; and plastering, Mr. Thos. Craven, Thornton.

Warwick.—The new buildings in the Myton-road, erected by the Governors of the King's School, were opened on the 1st inst. The structure has been built by Mr. G. F. Smith, of Milverton, from the designs of Mr. Cundall, of Leamington.

Faversham.—The new buildings erected by the governors of Queen Elizabeth's Grammar School, Faversham, have been opened. The site of the schools is now in St. Ann's-road, adjacent to the London, Chatham, and Dover Railway. Accommodation has been provided for sixty day scholars, forty boarders, the head masters and assistant masters, and the domestics. The sleeping accommodation is on the upper floors. One dormitory for twenty boys is placed on each floor; both dormitories are divided into twenty cubicles each, with a corridor running down the centre. The divisions of the cubicles are of wood, about 7 ft. high, the size of the cubicles being 8 ft. 3 in. by 7 ft., a window being provided for each. Externally the buildings are treated in a modification of the Queen Anne style, the walls built of yellow stock bricks with red brick dressings, the roofs being covered with red tiles. The cost of the buildings will be about 5,700*l.* Mr. Lewis Shrubsole has been sole contractor, and Mr. T. Ware has acted as clerk of the works. The architect is Mr. James Ledingham, of Bradford, whose designs were selected in competition.

Edinburgh.—New school buildings in connexion with St. Cuthbert's parish church have been erected on a site within the churchyard grounds. The block has a frontage of 92 ft., and is designed in the old Scotch style. It consists of two lofty floors, having at the angles corbelled turrets with conical roofs and finials. At the north-east corner the staircase is corbelled out into a circular shape, and rises in the form of a tower to the height of 65 ft. The interior accommodation includes, on the ground floor, a large well-lighted hall, 56 ft. long by 27 ft. wide, and 17 ft. in height, which communicates by means of sliding doors with another room, 30 ft. long by 18 ft. wide. These will be used as school-rooms, or for any other cognate purpose. The total cost will be about 2,000*l.* The building has been erected from plans furnished by Messrs. M'Gibbon & Ross.

VARIORUM.

"Our readers need scarcely be told," says a writer in the *Magazine of Art*, "that the great difference between a foreign and an English art-education lies in the fact that, whereas the student in our country works in a Government school under the intermittent teaching of a number of first-class artists of many minds, or else engages the private services of a tenth-rate painter, whose profession is that of copyist and teacher, the foreign art-student passes from the class of an academy to the care of some leading artist of his country and time, part of whose ambition it is to found a school, it may be, and at any rate to hand down the traditions, habits, and *technique* which he has himself successfully observed to the young talents whose future triumphs will each and all add a specially noble glory to his own renown. It is not sufficient for a French master, for instance, to succeed in the few great pictures which he can achieve in his own lifetime; he wishes, in addition, to bear a part in the living history of his country's art, to pass on for further development some view of nature, some little piece of technical science which he has himself developed from the teaching of his own early instructor. Nor would a *débutant* on first exhibiting be received with much respect unless he announced himself as the pupil of such or such an artist. The technical difficulties of painting are well known to be so enormous that a self-taught artist must needs waste half his youth in puzzling out what his master could tell him in an hour; besides which the discipline of learning is considered necessary for the right prosecution of scientific and legitimate art. No French painter, therefore, exhibits at the *Salon* without the addition of his master's name to his own; he may be a well-known and successful artist, but he appears in the catalogue at the same time as a pupil."——The *Leisure Hour* says as to Sheffield files:—"The making of files is carried on to a large extent in Sheffield. A file is first forged from the best steel at the anvil to the shape required, the forging being facilitated by the use of hard steel moulds, into which the glowing metal is hammered. The files are then ground, after which they pass to the cutters, who cut their teeth, the metal being as yet soft. This is rather an interesting process. The file-cutter sits at a low bench fronting the light, and bends attentively over his work. In the right hand he holds a hammer, and in the left a cutting-chisel, or punch. The file to be cut is held fast to the bench by means of straps passing over it and under the feet of the worker. Every blow of the hammer cuts a tooth, and not only cuts it, but by dexterous manipulation of the tool, gives it a curve slightly out of the perpendicular. How many teeth a file-cutter cuts for sixpence we cannot say, but that this sort of dentistry is not very lucrative may be gathered from the fact that a round file may have twenty rows of cuts, with about a hundred teeth in the space of an inch, and shall be covered all over with teeth, and be sold retail for sixpence when all is done. When their teeth are cut the files are tempered and hardened to the greatest degree; they are then cleaned, lacquered, and finally packed in paper, free from moisture, and manufactured for the purpose. Being thus effectually protected from rust, they are ready for the home or foreign market. As file-cutting can be done anywhere, and can be carried on almost without capital, there are numbers of men who follow this trade in their cottage homes in the villages

of the outskirts, most of them receiving work from the employers in the town."——After nearly two years spent in its preparation, a new work on ferns, written by Mr. James Britten, F.L.S., with fac-simile coloured plates painted from nature by Mr. D. Blair, F.L.S., will be published shortly in monthly parts by Messrs. Cassell, Petter, Galpin, & Co., under the title of "European Ferns."——The *Garden* (edited by Mr. W. Robinson) continues its weekly issue of coloured representations of flowers. 190 have been given. They are admirably executed, and each is usually worth more than the cost of the number containing it. The paper in other respects maintains its good character.

Miscellanea.

The Artisans' Dwellings Act.—In the House of Commons, on the 23rd ult., Mr. Fawcett asked the Chairman of the Metropolitan Board of Works, in reference to his statement that a committee of the Board had been appointed to consider what amendments should be introduced into the Artisans' Dwellings Act, with the view of diminishing the cost of carrying out that Act in the metropolis, when the report of that committee would be presented to the Home Secretary; and whether, as the cost to the metropolitan ratepayers of clearing six sites would be 562,061*l.*, he could undertake that the other sites which had been cleared should not be disposed of until the report of the committee had been laid before the Home Secretary and it had been ascertained whether it was his intention to propose to amend the Act of 1875. In reply, Sir J. M'Garel-Hogg said,—I trust that the Metropolitan Board of Works will be in a position to make a representation to the Secretary of State on the subject of amendments of the Artisans' and Labourers' Dwellings Act in the course of a week or two. With regard to the further disposal of sites, I may remind the hon. member that of the six sites referred to by him, only part of one has up to this time been actually cleared, and the Board are only now acquiring the interests in the remainder of the fourteen which I alluded to in my reply of the 14th inst.—The Home Secretary said the question whether anything could be done to lessen the expense of carrying out the Artisans' Dwellings Act had been under his consideration for some time, and he hoped to introduce a short Bill to effect some amendment.

East India Public Works.—The select committee of the House of Commons appointed to inquire into the East India Public Works question have reported to the House. The report, which is of great length, contains a narrative of the whole history of public works in India, the controversy of recent years between the Indian Government and the Secretary of State in Council, and the causes for limiting the amount put down in the Indian budget for public works. It goes on (says the *Times*) to endorse the action of the Secretary of State, to approve the restrictions which are proposed, to approve the reduction in the public works establishment, and also to approve the new system of accounts, under which productive public works in India will be shown in an account separate and distinct from other public works, and the money expended in their construction will be treated as capital expenditure whenever derived from loans or current Indian revenue.

The Stratford Martyrs' Memorial, Stratford, was to be unveiled by the Earl of Shaftesbury on, this, Saturday, August 2nd. It is intended to commemorate eighteen of the Reformation Martyrs who suffered death in this neighbourhood. The design was furnished by Mr. J. Newman, architect, and its construction has been entrusted to Messrs. H. Johnson & Co., Ditchling, Sussex.

Exeter School.—The corner stone of the new buildings, now being erected from Mr. Butterfield's design, at a cost of about 15,000*l.*, at Victoria Park, St. Leonard's, was laid by the Lord Bishop of Exeter, on Wednesday last. On the same day the annual prizes were distributed at the schoolroom in High-street.

"Notes on Building Construction."—In our review of this work (p. 646, *ante*), the publishers' name was inadvertantly omitted, and we have received several letters, in consequence, asking for it. The reply is Messrs. Rivington & Co.

Royal Indian Engineering College, Cooper's Hill.—On the 25th ult. Lord Cranbrook, the Secretary of State for India, presided at the distribution of prizes to students of the Royal Indian Engineering College, Cooper's-hill. Colonel C. Chesney, the president, briefly reviewed the principal events affecting the institution during the past year, and said that although the standard of qualifications had been raised during the year, all the students, with one exception, had succeeded in coming up to it. The prizes presented, Lord Cranbrook addressed the students, saying it was only by continually watching scientific progress and taking advantage of that which others reveal that the greatest successes were achieved, that there was no period of their life in which they could cease to learn. He wished, he said, to say something with respect to the natives who would be associated with some of them. A great deal had been said recently about the natives by those who, perhaps, had not very thoroughly studied the subject. He was not going into the great question as to how far it was desirable, in the interest of India and of England, that native agency should be employed; yet he would say that, so far as it was possible, it was most desirable, in the interest of economy and in the interest of the country itself, that the natives should look forward to a career under the Government of India.

Lifting a Railway Station.—Some time ago Mr. C. W. Whalley, contractor, of Chepstow, succeeded by means of screw-jacks in lifting Chepstow Railway Station about 2 ft., and building it up under, to obviate the inconvenience arising from the platforms being so much below the carriages. That undertaking proving so successful, it was determined to raise the station at Port Talbot, near Neath, in the same way. Mr. Whalley obtained the contract, and about a fortnight ago he succeeded in lifting the building on the down platform. On Monday he was again successful in raising the building on the up platform. The plan adopted was:—The building was firmly braced together, all the doors and windows strutted, and large pieces of timber, called "needles," were put through the foundations, and under the ends of each "needle" a screw-jack was placed with a man at each; and at a signal from Mr. Whalley, each man gave a simultaneous turn, and the building steadily and slowly rose. This was repeated until the desired height was reached, when it was built up from under, and the platform raised up to it. Both buildings were raised without the least mishap, or even breaking a square of glass. Mr. Whalley is preparing to remove the building he has just lifted five yards, to give room for another line of rails.

The London Engineers' Strike.—On the 28th ult. a meeting of London engineers, composed both of men on strike and those in employment, was held at the Rising Sun, Blackfriars-road, to consider the present condition of affairs in relation to the resistance to a 7½ per cent. reduction in wages. It transpired, in the course of the discussion, that the non-society men were only getting 7s. 6d. a week now, with 1s. for each child, and the society men 13s. 9d., with the same allowance for children. After much discussion, it was resolved, — "That, taking into consideration the numerous promises of extended support we have received from our friends who are in employment, and especially from the trade societies, we consider it advisable to continue our struggle, as we have hitherto done, and we hereby pledge ourselves to do so until our supporters cease to aid us, when we will consider what measures we should adopt."

Crystal Palace School of Art.—The scholarships, &c., in connexion with the ladies' division of the Crystal Palace Company's School of Art and Science have been awarded as follows:—Silver medal for painting in water-colours, Miss E. M. Jennings; certificate to Miss E. Mary Grose (Mr. Edward Goodall's students). Silver medal for water-colour painting from the life, Miss E. K. Hitchcock; certificate to Miss E. M. Smith, of Forest-hill (Mr. Frederick Smallfield's students). Silver medal for drawing from the antique, Miss E. K. Hitchcock; certificate to Miss H. M. Pendleton, of Sydenham (Mr. O. Von Glehn's students). Certificate for modelling in clay, Miss F. Mead (Mr. C. Vincelst's student). The scholarship in art was adjudged to Miss E. M. Smith. Mr. Thomas Woolner, R.A., and Mr. Edward Duncan, were the judges.

The Employment of Natives in the Indian Civil Service.—In future it will no longer be necessary for native Indians to come to this country in order to obtain employment in the Civil Service. The local Governments are empowered to nominate a certain number every year, and the number of candidates selected in this country for similar employment will be correspondingly diminished. The natives candidates are not to be more than twenty-five years of age on their first nomination, except in cases of special merit or ability, proved in the service of the Government or in the practice of a profession. The number of nominations not, in ordinary, to exceed one-fifth of the number of Europeans appointed to the covenanted Civil Service in the same year; but in the present and two following years it may amount to two in excess of the regular proportion. Natives appointed in the ordinary way are to serve on probation for two years and pass such examinations as are provided for them, but the nomination of persons over twenty-five years of age may be confirmed without such a period of probation. The native civil servants are, as a rule, to be employed only in their own provinces, but on this point a discretion is vested in the Governor-General. Finally the local Governments with whom the appointments originally rest are furnished with a power of disqualifying their nominees for further employment with the previous sanction of the Governor-General.—*Times.*

The St. Paul's Ecclesiological Society On Saturday last the members of this society visited the Abbey Church of Waltham Holy Cross, under the conduct of Mr. G. H. Birch, who read a paper, mainly from his own notes and those of Mr. William Burges, describing in detail the existing fabric, which he showed to be only the nave of the ancient structure, the chancel and transepts, with the central tower having been thrown down at the Reformation, while the nave, like that of the Abbey of St. Alban's, was utilised as the parish church. He showed that antiquaries were not agreed as to whether the Norman arches which divide the nave from the side aisles, and the clearstory and triforium above, were or were not actually the work of Tosti and Harold, the latter of whom is said to have formerly lain in the old and lately demolished chancel. He also commented at considerable length upon the lady-chapel on the south side, the flat roof, the windows, and other features of the church, which has been restored of late years. Mr. De Grey Birch, of the British Museum, exhibited some fac-similie casts of the old monastic seals of Waltham Abbey in the days of its splendour, and also read an interesting account of the legend of the first foundation of the Abbey.

"Owen Jones" Prizes, 1879.—The competition was instituted in 1878 by the council of the Society of Arts, as trustees of a sum of 400*l.*, presented to them by the Owen Jones Memorial Committee, being the balance of the subscriptions to that fund, upon trust to expend the interest thereof in prizes to "students of the Schools of Art who in annual competition produce the best designs for household furniture, carpets, wall-papers, and hangings, damask, chintzes, &c., regulated by the principles laid down by Owen Jones." Each prize consists of a bound copy of Owen Jones' "Principles of Design," a Bronze Medal, and such a sum of money as the fund admits of. The prizes are awarded on the results of the annual competition of the Science and Art Department. The following is the result of the competition for the present year:—

1. T. W. Bradburn, School of Art, Coalbrookdale. Design for a Mosaic.
2. Mary Denley, St. Mary's School of Art, Westminster, S.W.,—Design for a Carpet.
3. Joseph Castle, School of Art, Grammar School, Manchester,—Design for a Chintz.

Picture Buying.—It is stated on pretty good authority that Mr. Agnew gave Mr. Mudie 800 guineas for his portrait of Mr. Gladstone before it went to Burlington House, where now is. After again changing ownership it has been bought by a well-known dealer for the Duke of Westminster at the price of 4,000 guineas.

The Midland Land and Investment Corporation (Limited).—At a meeting of the Board, on July 24th, an interim dividend was declared for the half-year ending June 30 last, at the rate of 15 per cent. per annum, payable on August 1st, free of income-tax.

Edison and the Electric Light.—A ondent of the *Times* describes a visit y about thirty or forty journalists of ork to Mr. Edison, at his seat, Menlo New Jersey. After inspecting his new - chemical telephone, with which he to establish a "telephonic exchange" in h, they "were marched the length of the barn-like structure, where they found standing by the side of his new generator, r the electric light. This concern is about gh, and looks like two stove-pipes stand- end with a piece of iron across their tops them down, and another great piece of nderneath to hold them up. The stove- are closely wound with fine copper wire, haft revolves like lightning through the neath." "Will it do the work you have nticipating?" he was asked. "Yes," he , confidently; "I can, with that generator, six lights to one-horse power, and those cost me only one-third as much as the at to the manufacturer of three similar . I claim that this solves the problem." ld be mentioned (adds the writer) that e obstacle which Edison meets with at to the complete practical success of the b light is the high price of platinum for ndescent coil.

Victoria Hall, Exeter.—The directors Victoria Hall Company, having come into ion of the building, have taken advantage pportunity it afforded them to carry out much-needed improvements. These are early finished. The character of the of the great hall has been completely d. The vastness of the orchestra has lieved by the introduction of a summer nd the eye ranging along the walls ests upon representations of some most charming scenery to be found in hire. They are painted in distemper by dgery. The largest of these pictures is of the estuary of the Exe from Wood- ommon, painted on the wall at the back gallery, and measuring 36 ft. by 20 ft. centre of each panel along the side-walls placed large oval pictures, 9 ft. long by in. wide. The subjects chosen for illus- comprise the old quay and tower at , designed by Stanfield; a scene in Leigh Bridestowe, a grand study of fine on the edge of a still pool; the Falls Lyd, Dartmoor; the Castle Rock, Lynton, set; Sharp Tor Rock, on the Teign; Falls, another scene on the Lyd; the on the Lyd, near Lydford Bridge; then ll-known Lydford Bridge itself; a sunset, ugh sea, near Ilfracombe; Fingle Bridge; ver the side-door, in a circular cartoon, or, Dartmoor.

losed International Permanent Ex- n at the Crystal Palace.—Last week ng was held in Paris for the organisa- an International Permanent Exhibition rystal Palace, Sydenham, London, Mr. Duprat presided. About 400 manufac- and tradesmen attended. Mr. Duprat he attention of his audience to the utility vantages of such an exhibition. Mr. d'Agiout, the promoter of the scheme, plained the basis upon which the exhibi- s to be founded, and proposed to create ission of Parisian manufacturers to the exhibition. After some discussion ls, Messrs. Leopold Meunier, Guschard, raux, Delettrez, Phesmac, and Jovay, ected members of the commission. After f thanks to Mr. D'Agiout, who, with his resources, has secured already a space than 8,000 mètres in the Palace for his d exhibition, and a vote of approbation scheme, the meeting separated. The of the Commission are 29, Rue St. ne,

erhithe Baths and Washhouses.— mmissioners have recently invited de- m several architects for the new build- be erected at the corner of Deptford oad and Gomm-road, Rotherhithe. Four lesigns were submitted, from which the sioners have selected those of Messrs. Elkington & Son, of 95, Cannon-street.

ing Town-hall and Free Library.— ndation-stone of the new public buildings ected at Reading, at an estimated cost t 44,000*l.*, is to be laid with Masonic , on the 14th of October, by the Earl of on.

The Nail Trade.—For nearly five-and-twenty years the hand nail forgers of the East Worcestershire side of the Black Country have been waging fierce but unequal warfare against steam machinery. By dint of incessant toil from early morning to a late hour at night, aided by his wife and children, even to the wee bairn just able to toll the handle of the primitive bellows, has the nailer managed through all this long period to maintain, though with steadily losing ground, a place in the combat. It is not surprising that under such circumstances the social condition of the nail-makers should have for years past been growing from bad to worse. Dark, cheerless homes, haunted ever by the shadows of poverty and ignorance, the scenes of unrelaxing but ill-rewarded toil, these abodes of the nailers have long possessed an unenviable notoriety as presenting the industrial life of the Black Country in one of its darkest phases. Of late years the nail trade has been in a state of almost chronic disturbance, and just now (says the *Staffordshire Advertiser*) its condition is truly lamentable. There is the utmost discontent amongst the nailers, who declare that upon present earnings it is impossible for them to live, and some of the leading spirits amongst them are now agitating for a general strike.

An Abandoned Church.—A serious case of neglect with regard to a church is reported from Kent. At Lidsing, a hamlet within a few miles of Maidstone, the parochial chapelry is annexed to the living of Gillingham, a living which is valued at between 500*l.* and 600*l.* per annum. Many years since a small but commodious church was built at Lidsing, and an income was attached to it of about 140*l.* a year, public worship being conducted by a curate, under the then vicar of Gillingham, once a week, and interments were made in the burying-ground adjoining the church. Some five years ago, however, the services were abruptly discontinued, and the church has remained closed and neglected ever since. It is now in a most desolate state. The roof and walls are in a state of entire dilapidation, the pews have been partially destroyed by tramps, gipsies, and others; the pulpit is nowhere to be seen; the font is smashed to atoms; and the bell has disappeared; while the burial-ground is also in utter disorder.

Harmer's Patent Egyptian Clay Paint Dissolver.—The object of this paint-dissolver is to soften and remove old hard dry paint, or paint and varnish; also, any rust or corrosion on iron, steel, or other metals. We have tried it on a door, and the result is most satisfactory: the wood is as clean as if it had never been painted. It is also recommended for removing all stains and discolouring from marble chimney-pieces, statuary, or carved work. We have no hesitation in recommending the material.

Pooley's Patent Self-indicating Railway Weighbridge.—This weighbridge computes automatically the weight, in tons, hundred-weights, and quarters, of every load placed upon or passing over it. It is entirely without springs, and not liable to derangement or error. It indicates weight instantaneously, and almost without vibration. The cotton-bale weighing-machine, patented by the same firm, Messrs. Pooley & Son, is another very useful invention.

Mr. J. B. Ladbrooke.—The death is announced of Mr. John Berney Ladbrooke, a landscape painter of the Norwich School. He was born in 1803, and was a son of Robert Ladbrooke, painter and drawing-master, of Norwich, and a nephew of John Crome ("Old Crome"), whose pupil he became after having received rudimentary instruction from his father.

TENDERS

The Holloway College, Egham.—The contract for the building of the Holloway College, Egham, has been signed by Mr. John Thompson, Peterborough, for the sum of 257,000*l.*

For additions to the Buckland schools, Portsmouth, providing accommodation for 80 children, and additional latrines, &c., for the Portsmouth School Board. Mr. Archibald Ford, architect:—

Barton	£1,000	0	0
Tutt	934	0	0
Cooper	888	0	0
Light (accepted)	820	0	0

For internal fittings, &c., at Dorset-buildings, Salisbury-square. Messrs. Searle, Son, & Hayes, architects:—

Mills	£2-8	0	0
Shurmur	243	0	0
Axford	236	0	0
Emery	225	0	0

For additions to the Cottage Grove schools, Portsmouth, providing accommodation for 70 boys, for the Portsmouth School Board. Mr. Archibald Ford, architect:—

Barton	£581	0	0
Burbidge	555	0	0
Cooper	524	0	0
Light Bros.	518	0	0
White	486	0	0
Earwaker (accepted)	485	0	0

For the erection of a shop and residence at West Croydon. Mr. J. Anthony Trythall, architect:—

Hyde	£503	0	0
Legg (accepted)	495	0	0

For Stockwell Fever Hospital:—

Sawyer (accepted)	6,489	0	0

For the erection of corn stores, office, &c., North-street, Guildford, [for Mr. William Baker. Mr. Henry Peak, architect. Quantities supplied:—

Nye	£996	0	0
Moon (accepted)	985	13	0

For the erection of new show-rooms, warehouses, &c., No. 26, High-street, Guildford, for Mr. W. H. Vickeridge. Mr. Henry Peak, architect. Quantities supplied:—

Swayne	£1,975	10	0
Mason	1,759	0	0
Strudwick	1,751	15	0
T. Swayne	1,720	0	0
Nye	1,715	0	0
Moon	1,659	0	0
Clark	1,650	0	0
Garnett (accepted)	1,639	0	0

For various alterations and reparations to the Horse and Groom, North-street, Guildford, for Mr. F. A. Crook. Mr. Henry Peak, architect:—

Garnett	£118	0	0
Clark (accepted)	115	17	0

For cleaning and painting works at Christ's Hospital, Newgate-street. Mr. H. S. Legg, architect:—

Pitman & Son	£700	0	0
Harrisson & Wood	690	0	0
Shaw	675	0	0
Patman & Fotheringham	658	0	0
Haywood & Son (accepted)	627	0	0

For new South Parade schools, for 750 children, at Great Grimsby, for the Great Grimsby School Board, including playgrounds and boundary-walls, caretaker's house, &c. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Ives & Sons	£5,758	0	0
Smith	5,392	0	0
Jackson & Son	5,250	0	0
Richardson	5,219	0	0
Snowden	5,210	0	0
Willins & Roebuck	4,859	0	0
Jolland & Chapman	4,785	0	0
Topham	4,760	0	0
Riggall & Hewins (accepted)	4,755	0	0

For new Fisher Lads' Institute, Great Grimsby. Mr. Charles Bell, architect.:—

Smith	£3,750	0	0
Waller	3,327	0	0
Willins & Roebuck	3,125	0	0
Snowden	2,995	0	0
Brown	2,988	0	0
Topham	2,908	0	0
Riggall & Hewins (accepted)	2,900	0	0

For new Wesleyan Chapel, Leigh, Essex. Mr. Charles Bell, architect:—

Steward	£875	0	0
Everett (accepted)	820	0	0

For new Wesleyan Chapel, Sutton-at-Hove, Dartford. Mr. Charles Bell, architect:—

Sharp & Son (accepted)	£500	0	0

For the erection of Sunday schools for the Clapton Wesleyan Chapel. Mr. Charles Bell, architect:—

Shurmur (accepted)	£1,698	0	0

For the erection and partial completion of two shops in the High-road, Clapton, for Mr. J. Wilman. Mr. Joseph J. Stiles, architect:—

Shurmur (accepted)	£1,774	0	0

For pulling down and rebuilding the Lemon Tree Beer-house, Kew-road, Richmond, Surrey, for Mr. Wm. Gomm. Mr. Edwd. Monson, jun., architect. Quantities supplied:—

Steere	£1,050	0	0
Brunsdem	897	0	0
Beauchamp	839	0	0
Dorey	819	0	0
Nye (accepted)	793	0	0

For the erection of mission-room and temperance club-house in the Steyne, Acton, for the Rev. C. M. Harvey, Rector of Acton. Mr. Edwd. Monson, jun., architect. Quantities supplied:—

Baker	£1,833	0	0
Nye	1,800	0	0
W. Hunt, jun. (accepted)	1,625	0	0
Beauchamp (withdrawn)	1,606	0	0

For new counter for the Zetland Arms, Bute-street, Brompton, for Mr. Putnam. Mr. H. J. Newton, architect:—

Hellings	£163	10	0
Warne	165	0	0
Heath (accepted)	161	0	0
Gasfitting.			
Hodge & Co. (accepted)	70	0	0

For the restoration of the parish church, Wattisfield, Suffolk. Messrs. Satchell & Edwards, architects:—
Cawley & Adams (roofing).
Ward & Brooke (remainder).

For new premises at the Quay, Bristol, for Mr. M. Dunlop:—

Contract No. 1.

Howell & Son	£1,952	0	0
Gay	1,922	0	0
Wilkins & Sons	1,900	0	0
Stephens & Bastow	1,893	0	0
Davis	1,879	0	0
Church (accepted)	1,793	10	0

Contract No. 2.

Stephenson	£16,405	0	0
Gay	14,479	0	0
Wilkins & Hill	13,860	0	0
Davis	13,839	0	0
Church	13,725	0	0
Stephens & Bastow	12,999	0	0
Forse & Ashbey	12,861	0	0
Brock & Bruce	12,830	0	0
Veale	12,695	0	0
Crocker	12,531	0	0
Howell & Son	11,995	0	0
Wilkins & Sons (accepted)	11,900	0	0

For the erection of new class-rooms, vestry, lecture-hall, &c., to Middlegate Church, Great Yarmouth. Mr. J. T. Bottle, architect:—

Bricklayer, Mason, Plasterer, Slater, &c.

Wright	£1,405	0	0
Leggett	1,395	0	0
Howes (accepted)	1,385	0	0

Carpenter, Plumber, Glazier, and Painter.

Cooper (accepted)	1,155	0	0

For works to be done in making roads, building culvert and other works, on the estate at East Molesey, Surrey, the property of the late Mr. George Edmonds. Mr. W. Forbes Ashdown, engineer. Quantities supplied:—

Carpenter	£916	6	7
Hurst	730	0	0
Wheatly	720	0	0
Neal	639	0	0
Ford & Norris	630	0	0

For the erection of new schools and offices at Campbell-street, Maida-hill, in the Marylebone Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. C. W. Brooks:—

Peto Bros.	£6,587	0	0
Grover	6,573	0	0
Boyce	6,484	0	0
Higgs & Hill	6,444	0	0
Kirk & Randall	6,354	0	0
Scrivener & Co.	6,348	0	0
Hook & Oldrey	6,323	0	0
Wall Bros.	6,276	0	0
Tongue	6,226	0	0

For additions and alterations to schools and offices at Alexis-street, in the Southwark Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Hook & Oldrey	£2,776	0	0
Hobson	2,765	0	0
Brass	2,737	0	0
Jerrard	2,639	0	0
Grover	2,583	0	0
Pritchard	2,579	0	0
Shepherd	2,571	0	0
Kirk & Randall	2,495	0	0
Cox	2,456	0	0

For Aylesbury town sewerage:—

	Section 4.			Section 5.			Section 6.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Rowland Bros.	2,522	6	8	3,454	9	3	3,584	2	0
Taylor & Grist	2,634	17	3	1,906	3	4	2,298	17	10
Dodds & Co.	1,789	5	4	2,168	16	0	2,000	7	2
Dover, Bros., & Co.	1,483	9	6	1,659	16	3	1,445	15	6
Cooper	1,150	0	*0	1,744	10	*0	1,519	16	0
Smith							1,487	15	*0
Prayne Bros.	996	2	10	1,246	12	10	1,124	17	10

* Accepted.

For residences at Boupell Park Estate, Streatham, for the British Mutual Investment Company (Limited). Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Bangs & Co.	£8,935	0	0
Greenl	8,740	0	0
Sharman	8,440	0	0
Priestley	8,470	0	0
Hook & Oldrey	8,234	0	0
Downs	7,990	0	0
J. & C. Bowyer (accepted)	7,890	0	0

For alterations in the Clerk's department, Hackney Town-hall. Mr. J. Lovegrove, architect:—

Wooding	£247	10	0
Wood	241	0	0
High	237	10	0
Harper	215	0	0
Shurmur (accepted)	205	10	0

For the erection of New Southgate vicarage. Mr. A. R. Barker, architect. Quantities supplied:—

	House.	Garden Walls.
Dove Bros.	£2,575	£100
Pocock	2,450	93
Patman & Co.	2,228	107
Lobb	2,150	130
Prout	2,071	77

For alterations and extension of the Old King's Head, at the corner of Euston and Hampstead roads, for Mr. C. Deakin. Messrs. John Saville & Sons, architects:—

Braid	£1,500	0	0
Titmss	1,290	0	0
Fawkes	1,230	0	0
King	1,198	0	0
Smith	1,191	0	0
Grimwood & Son	1,177	0	0
Temple & Foster	1,130	0	0
Royal (accepted)	1,080	0	0

For the erection of mission school and offices at Plimsoll-road, Highbury, for the Methodist Free Church Mission. Mr. G. F. Boreham, architect:—

S. & G. L. Mann	£2,402	0	0
Searle	2,358	0	0
Dove Bros.	2,165	0	0
Sawyer	2,160	0	0
L. H. & R. Roberts	2,143	0	0
Sergeant	2,095	0	0
Horlock	1,587	0	0

Stockwell Fever Hospital.—Messrs. Tibbitt & Adams say their tender was 7,098*l.*, not 7,990*l.*

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1905. SATURDAY, AUGUST 9, 1879.

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Mixed and Homogeneous Architecture.

IN the course of the very admirable paper by Mr. Watkiss Lloyd on the now-abandoned spoliation of London Bridge, for which we were glad to find space the other day, even though fortunately out of date, there occurred some remarks on the combination of stone and iron which might very well suggest some further consideration of a subject which architectural designers have not hitherto dealt with very systematically, either in practice or in theory: we mean the combination in one architectural design of materials of different classes; a combination, of which we constantly see examples; so constantly, indeed, tern architecture, that our attention is called to it except by the contrast d by an occasional building which aims pletely homogeneous effect, and seems d as a protest against the prevalent s of mixed architecture.

ourse we do not include in this subject plication of materials, such as tiles or d marbles, to the walls of a building, and obviously with a view to decorative We are speaking of cases in which the construction of a building is carried out ore than one class of materials. And ses may all be classed under two heads: namely, in which the two (or more) ls made use of are constructively of me nature and have the same relation tical and dynamical conditions, as e kind of combination known as with stone dressings"; and those in the separate materials used belong to ly different classes, where one is best ed in compression and the other in , one crystalline and the other fibrous, atural material and the other an artificial nd. The most marked contrast of this e, perhaps, the very one of which our ondent in the paper referred to spoke o much dislike, that of stone and iron. nd timber is another. To an engineer, as ering is at present carried on, the question h simpler than it is from the architect's f view, as it is only a question of the al harmonising of materials of different nical properties, and acted upon differently weather and by change of temperature; the appearance is nothing to him so long as the structural combination is sound. From the architect's point of view there comes in the additional and very important question whether the two materials harmonise in effect and expression,—whether they do not involve an æsthetic contradiction and discord which outweigh the promised structural advantage of the combination. As in so many other subjects in which engineers and architects may both feel interest, either side has a tendency to dwell too exclusively on the part of the problem which specially interests him, and to ignore the other part of it.

Taking the first of the two classes of compound building, that where dressings of a superior material are employed on a shell built of a cheaper material, we cannot help observing, when we come to think of it, what a completely modern architectural expedient this is. There are numberless examples, of course, in Roman and Renaissance architecture, of buildings covered entirely with a material which may nevertheless be removed without affecting the structural stability of the fabric. Roman architecture, in fact, essentially consisted of this method, being architecture affixed to a core, as one may say. This is, of course, architectural lying on a great scale; but it is falsehood carried out consistently, thoroughly, and with dignity. It shows a recognition of the fact that homogeneous construction is an essential of architectural dignity, and a thing to be imitated, even if not truly carried out in reality. The idea of frankly showing the compound character of the materials, and of practically saying to the spectator, "We could not or would not undertake the cost of a good material throughout, but we have put it on at all the edges and prominent places," is an essentially modern one. The Mediæval builders unhappily adopted the Roman method not infrequently, and showed an external face of bonded masonry where there was only rubble at the back, and they did not even (as the Romans always did) make the structure really sound and stable. But the system of "dressing" was only employed by the Mediævals in cases where they had a mass of materials at hand quite suitable for rough wall-building, but impracticable for fine work and arrises; that is to say, in the chalk districts, where flint pebbles existed in abundance, and in some other wild parts of the country where materials of a rubble nature were abundant, and where carriage of anything better was costly. Here there was a real and practical reason for that kind of compound building, which should only be regarded as a makeshift when nothing better can be done. The Elizabethan period brought the compound system into full force, and brick and stone dressings acquired a place as a sort of architectural style, to be again largely reproduced in the mock Elizabethan of our own day. Then we imported from Italy the idea of brick and stone used in layers or bands (only that there it was brick and marble); and accordingly we have seen numerous buildings which were in one sense reproductions of English and French Gothic, but to which a character quite different from and far inferior to that of true Gothic was imparted by this parti-coloured fashion of building.

It was just as well that these experiments were tried, though they have been tried rather too largely; they gave some variety to modern building, and having tried them we know what can or cannot be done with them. But in fact, combinations of this kind are affectations of architecture, and are alien to the highest dignity and expression of the art. It is the attribute of all architecture of the most truthful and spontaneous type to use the materials which are practically the most convenient and accessible in the way best suited to those materials; to find out what can be done with them, and to suit the style and design to the exigencies of the case. The architect of "brick and dressings" really chooses a style of treatment which cannot be adequately carried out in brick, and then patches it up with another material. There is always an element of vulgarity in this, of which we become conscious at once when we compare buildings of this class with the purely brick buildings to be found in Belgium and other brick-building localities, or contrast the pleasing simplicity and repose of the brick-built cloisters of Queen's College at Cambridge, for instance, with the flaunting effect of some the modern brick and stone combinations in recent additions to some of the University buildings. There is here no practical question involved; a building can be as well built of brick as of stone, and the material has its own style of treatment, different from stone. It is this latter point which seems to be missed in many of the brick houses built in the most recent fashionable style, and which have the merit of showing that brick can be used alone even for buildings of an ornate character; but in a great many of them the detail is only borrowed from stone detail. In a building of great size and importance, the economical employment of compound materials is almost fatal to the effect of the structure. It was a most ill-judged parsimony on the part of Government which decreed that the return fronts of the great legal building now in course of erection should be of brick, an expedient which would go far to spoil even the finest and most dignified structure. Imagine what the Houses of Parliament would suffer in total effect if built with brick return faces. One has only to endeavour to realise the effect to understand completely what an architectural depreciation is involved in such a treatment of a building of the highest class. But either for humble or ambitious buildings the compound system acts badly, though in opposite ways: it destroys simplicity in the one and dignity in the other. The attempt to make a cheap building handsome by a few additions of superior material, and that to render a great building economical by cutting out some of the best

material to be replaced by one less costly, are equally mistakes. Let the humble building retain its homely material and expression; let the great building be expressed throughout in material worthy of the occasion. Patchwork is fatal in either case to the best architectural effect.

There is, however, a system of combination of material in a different way and for a different object from those above named, which is quite legitimate, and might have been more employed than it has been; that is, the employment of a different material in two different stages or stories of a building, in order to obtain masses of contrasted tone or colour. This has, in fact, been very seldom deliberately tried, but it might be a source of effect very pleasing indeed in some cases, more especially where combination with the prevalent tones of a landscape is an object. This is a different thing from cutting up a building into stripes of varied materials, which is destructive of repose. A ground-floor story of one tone, and a superstructure of another tone or tint, in stone or brick, may be tried with good effect, especially where the lower and upper portions of the structure are to be seen against different backgrounds. Where this effect of variety of tone is the object, the contrast of two different bricks, or of two different stones, is better than the contrast of brick and stone, which would be too harsh, and introduces textures and tones too much at variance with each other to harmonise. But apart from this, and where structural expression is rather the object, we should suggest that the construction of a building partly in a cheaper material for economical reasons, is far better carried out by massing the materials in different stages than by combining them in detail. We might have, for instance, a plain stone podium carrying a handsome brick superstructure; or a concrete ground-story with a brick superstructure; and by such a combination even an additional effect of stability may be obtained. The saving in cost of material would be as great by making the whole of one story brick and the other of stone, as by making the whole of a front in stone and the whole of the flanks in brick; it is only a question of horizontal or vertical arrangement, and how vastly superior from an architectural point of view is the former arrangement it is hardly necessary to observe; it seems so obvious when we once think of it, that it is extraordinary it has not been adopted before by architects who were under orders to economise in the material of large buildings.

The question of the combination in one structure of materials of an entirely different class in regard to their components and the nature of their resistance to strain, is one which affects architectural design much more vitally than that of the employment of materials with the same functional capabilities, and with merely differences of texture, of chemical composition, and of colour. However contrasted brick and stone are in character and effect as building materials, they are constructionally used on the same principles and by the same general method in bonded courses and in voussoirs. But when it comes to stone and iron, and stone and timber, the combination is made under very different conditions. The one class of materials resists compression best, the other resists tension and cross-strain best; and, consequently, the joint employment of such opposite classes of materials has generally arisen in reference to the roofing of buildings, or, at all events, to the bridging over of space between supports. As long as we have to do with the vertical walling only, and with vertical pressures, our masonry or brickwork does all we want in the readiest and most natural manner; when we come to cover in the space, to bridge over the gap between the walls, there comes the rub,—"hoc opus, hic labor est." We are speaking now, of course, of the history of architectural development regarded as a whole and in a comprehensive view. Building is really covering in a space, and the method of covering in has been the great problem of all builders, and that which more than anything else has decided the character of the architecture; and on the whole that critical judgment may be maintained as correct which has ruled that the noblest and most complete architectural styles are those which have achieved the covering of the buildings with the same materials that are used in the construction of the walls. This is the great glory of the Mediæval builders, and the absence of it the one weak point of the Greek builders. Precisely how the Greeks covered in their buildings we cannot now say, but we know that it must have been with a material, at least as far as the working part of the construction was concerned, different from that of the walls. There was no such material within their reach but timber,—a comparatively perishable one, and for the introduction of this perishable material they now pay the penalty in the only half-preserved state of their beautiful buildings, preventing us from realising what their effect, as totally complete, might have been; while the Pantheon, with its solid masonic covering, shows every prospect of still lasting for centuries, and gives us the whole, internally and externally, which its builder designed and carried out. So with our Mediæval cathedrals; it needs only a glance to see how far superior in architectural effect and expression are those with vaulted roofs to those in which the vault has never been carried out, in which a timber cradling is stretched from wall to wall, breaking harshly the line of the stone construction, and introducing a perishable and inflammable element.

There are, however, many cases in which the combination of timber with stone or brick becomes practically a necessity, and in which it is rather a source of the picturesque than an architectural weakness. But there must be cases in which the highest and most dignified effects of architecture are not aimed at, and in which the masonic structure is treated as the base or *appui* for the timber structure. The cathedral, with its lofty walls and stone arcades, is feebly terminated by the anti-climax of a timber roof. The country parish church, semi-rustic in character, with low thick walls, from which springs a high timber roof, exhibits a combination perfectly suitable in character; it is in great part really a timber structure, with a masonry basement or footing for the timber. So also a timber bridge across piers of masonry appears suitable enough, on a small scale, or even on a tolerably large one: the mass of the timber harmonises not ill with the mass of the stone. The great point is, that the latter should appear as manifestly intended, and prepared as a seat for the timber, not as if a stone bridge had been intended, and a wooden one placed as a *pis aller*, which is always destructive of architectural fitness. It is this want of purpose which renders peculiarly unsatisfactory some of our timber-roofed cathedrals, where all the preparation for stone vaulting is seen, both in design and construction, but the intended culmination of the stone structure has never been accomplished.

But the union of material, in a manner architecturally satisfactory, is a much more difficult affair when we come to deal with iron in combination with what are more strictly called building materials. The contrast between stone and iron is much more essential and more marked than between stone and timber; for the double reason that iron, in the state in which it is used for constructive purposes, is an artificial and not a natural material, and that it is one which must necessarily be used in much more thin and slender proportions, and therefore offering a much stronger contrast of architectural character in regard to stonework or brickwork, than is the case with timber; and, in fact, it is difficult to see how it can be used in combination with stone, with satisfactory effect, in any manner in which it forms an equally important and integral part of the structural element of an edifice, of whatever kind. Its use, unfortunately too frequent, as a concealed support for stone construction which could not be adequately stable without such support, is of course the "*anathema maranatha*" of modern building. The employment of concealed columns and beams in the support of the superstructure over the wide openings of shop-fronts has become a typical example of the very worst sort of building monstrosity, such as it is generally supposed that no architect worthy of the name cares to lend himself to at all. Yet, so far from this architectural falsity being abandoned, it appears that it is even beginning to take, and that in the hands of so-called architects, an even more pronounced and uncouth form than ever. In new buildings in the City we have more than once noticed lately (and we could give precise name and locality if it were worth while) such a thing as this,—a large and ornate building occupying a position at an angle of a street, with stone ornamental detail of a class which almost presupposes the hand of an architectural designer or draughtsman in the wo
in which it has been an object to round off
corner, and to obtain at the same point a w
window or door on the ground story; and t
is accomplished by a low-pitched or segmen
arch circular on plan, executed in stone, s
hanging over the void of the door or window
an arch such as could not by any possibi
bear even its own weight, but which appears
bear the superstructure, really carried, by d
of artful dodging, by an iron beam forming
chord of the arc on plan. We do not, as a r
care to confound æsthetic with moral deficienc
but really there is in such an expedient as t
something which touches even the moral par
our nature, and makes us feel that we c
hardly trust, in any important matter, even
the moral rectitude or uprightness of a per
capable of such a proceeding. Passing o
such enormities, however, let us consider how
and in what way, we can honestly use stone
iron in anything which can be called architectu
combination. We have the three different ty
of such combination, in which (1) the iron
struction carries the masonry construction
(2) the reverse is the case, or (3) the maso
construction carries iron only as an ornamen
finish. The first, on abstract grounds, ma
said to be always more or less bad; at all eve
the highest architectural expression is impos
under such conditions, though it is someti
more or less forced upon us by demands for
union of conditions which are really inc
patible. People insist on having a three-a
church, perhaps, and on having supports w
will not interrupt any one's view, and iron i
only resource. Here the mistake is really
those who insist, for sentimental reasons,
form of building radically unsuited to
practical end they have in view. Under
circumstances, the best that can be done
make the iron supports as bold and simp
character as can well be, to give them, at
as far as possible, the appearance of capab
to support the superstructure, with which
tenuity of iron is so sadly at variance. In
a case, brick is a better superstructure t
than stone; like iron, it is not a natu
existent material, but one on which the sm
fire has passed, and it is less at variance
iron than is the natural tone and surfac
hewn stone. Cases occur, again, in wareh
building, in which there seems no choice b
use iron as the support of brick superstruc
in the form of beams and girders. Here
cannot but think that the rolled or wro
beam, with its visible flanges expressiv
strength, is a more architecturally satisfac
form than the box-girder, with its face flush
the wall, attempting to escape un-not
Showing the flanges, and corbelling the b
slightly off them, a certain character and
cular appearance is given to the construc
much more satisfactory than can be give
the view of the mere outer skin of the
girder. Some of the contemporary Fr
architects have shown a great deal of
taste and judgment in the treatment of b
ings of this class, in a manner at once tru
and architectural, as far as the latter qu
can be attained under the circumstances.

The cases in which the masonry constru
carries the iron are most frequently thos
bridges, either railway bridges or road
over rivers. When the supports and the w
structure are not of iron, as they most us
are in railway viaducts, the combinatio
masonry and iron in this way is now almos
recognised method of constructing large
bridges, and that almost always fine ob
even when not over-well designed, the ar
bridge of masonry, seems to be tacitly rega
as a thing of the past, except on a small s
And with the loss of the homogeneous ar
bridge there seems to have gone all the
grandeur of a great bridge,—regarded
piece of architecture. It seems almost
possible to harmonise the iron cantilever
the masonry abutment, and instead of the g
sweep of the solid arch, we have the thin
of the ironwork, rendered still thinner i
pearance by the contact with the necess
heavy mass of the abutments. In that
pretentious and (architecturally) worst-desi
of bridges at Blackfriars, the attempt has
made to give to the iron part of the construc
a solidity corresponding with that of the st
by a false arch or plating intended to look
the main working portion of the cantilever,
in reality a blind. This is only making
matter worse. The best method to meet

ilty is to treat the stone abutment as y and plainly as possible; to put no filigree uents or carvings upon it, but let it appear in treatment and shape as what it is, viz., *nt d'appui* upon which to hang the iron- and treat the latter as frankly and realisti- as possible. To attempt to combine them ne whole by masking in any way the con- ive lines of the ironwork, and then orna- ng iron and stone in such a manner as to them seem one design, will always prove ure which will disgust every architect and artist by its flimsiness and vulgarity. ed as we have suggested, a combined stone ron bridge would represent the real rela- f the two parts of the structure, the stone the permanent pier or abutment, the he less permanent part of the structure, le, when time and decay rendered it neces- of being removed and replaced by a fresh or cantilever,—an operation which may ly be found necessary with some of our iron and stone bridges sooner than some ippers of iron anticipate at present.

combination of iron with stone for merely ental purposes is a much simpler affair; namental treatment of iron, as such, is ll understood now by architects and the ronfounders as it ever has been. Our im- on is that the less ornamental ironwork s as a permanent or fixed part of the ure, the better for its truly architectural ornamental character, if such a character ned at. The ornamental iron balconies of the French are so fond in street architec- nd which they contrive to attach to the ry design, often in a very elegant and suit- manner, have, nevertheless, a rather con- ory kind of effect, and give a certain us appearance to a street architecture largely employs them. Perhaps the best ctural use of iron with a purely orna- intent is in light spirelets or finials e of being gilded. But even so it is an ment to be indulged in sparingly.

gist of the matter lies in the question constructive combination of iron with r, more dignified, and more permanent als. We very much doubt whether, in lation, iron will permanently take the in great constructions of the future, it is assumed that it will by many

Even practically, it must not be for- that it is an artificial material, not a one, not long tried (comparatively ng), subject to many kinds of decay often reacherous in their operation, and exceed- affected by weather and temperature. ll these practical drawbacks, is it certain will so long hold out against the disen- g effect of the almost unrivalled ugliness t of its constructional forms. On this oint there can be no two opinions as to eterious effect with which it has operated odern architecture. Let any one stand thwark Bridge and look one way at the lassic simplicity of London Bridge, with uite arches looking as if,—granting the y of the foundations,—they might stand for ever; and then the other way to the iars structure with its sham iron arches tbic pillars and capitals carrying nothing, may reasonably doubt if iron has been great gift to modern construction after if any practical advantage in economy ht and space which it may claim can counterbalance the æsthetic hideousness ich it has furnished the excuse and the inity.

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ral Decorations, Manchester Town —It will be remembered that, some time r. Ford Madox Brown was selected, along r. F. Shields, to decorate the series of in the walls of the Great Hall in the new pal palace of Manchester. Mr. Madox has just commenced with Panel No. 2, selected as his subject "The Baptism vin." His hero (says the *Manchester*) is that Edwin who was king of Nor- ia and Deïra, and whose career attracted y the pen of Wordsworth, whose descrip- Bishop Paulinus has been utilised for the s of art by Mr. Madox Brown, but also the late Alexander Smith. Manchester a part of the kingdom of Deïra. Mr. Brown, we learn from a brief expla- notice which has been issued officially, to have adopted, for the most part, the ve of the Venerable Bede as his guide.

DONATELLO.

There can be no question that the bas-reliefs by Donatello, which have recently been added to the collection of sculpture at South Kensington, are of great interest and value as works of art, and no small addition to those works of the Florentine artist which we are fortunate enough to possess. In fact, London is peculiarly rich in specimens of Donatello's powers, so that a student is able to gain a very considerable insight into the qualities of this sculptor without taking a journey to Italy for the purpose. And we would, *en passant*, endeavour to impress upon any one who reads this paper how comparatively easy it is in London to gain some slight knowledge, at any rate, of the works of the Italian masters, Michelangelo, Donatello, and Ghiberti, so that when the time comes for a visit to Rome or Florence the marbles which are there to be seen can be appreciated much more thoroughly than if no attention has been previously given to the Italian originals and copies at home. Unfortunately, speaking generally, it is extraordinarily common for persons to go to foreign countries without in any way having prepared their minds to appreciate the treasures which are to be found, it may be in the Louvre, it may be in the galleries of the Tuscan capital.

But to return to our subject. It is hardly possible to deny that the work to which we have already alluded will not throw fresh light upon Donatello's capacities as a sculptor in the minds of English students, because it differs in one respect, at any rate, from those of this master, which are probably familiar to a good many of our readers. For it must be borne in mind that it is essentially monumental in character, and as such seems well worthy of study by our English sculptors. In brief, it is an oblong marble sarcophagus, or coffin, roughly speaking some 6 ft. in length and 2 ft. 6 in. in breadth. In modern times it has been put to the somewhat base use of a water-trough, and it is easy to understand how it might be unnoticed by ignorant peasants and labourers until lighted upon by an able connoisseur. When we consider how utterly careless, and, indeed, ignorant, most country people are of artistic or archæological treasures which are to be found near their homes, it is not surprising that this very noticeable specimen of the artistic powers of a great Italian sculptor should have remained neglected year after year. At present but the front and two ends remain, and it is more particularly the front which deserves notice and attention. There lies extended at full length upon a couch a woman peacefully dead. She is no mean person, for she is crowned with a coronet as of fleurs-de-lys, while the glory round her head shows that she has, in the estimation of the artist, passed into the numbers of the saints. Indeed, the inscription placed upon the work by the authorities of South Kensington states that this is an altar or shrine of a female saint. She is dressed in long robes, fastened at the neck with a brooch, and at the waist with a girdle, whilst her hands are crossed as in a peaceful prayer. Her head presses in the soft pillow, the yielding nature of which is executed with marvellous technical skill. It is hardly necessary to say that the work is in relief,—very low relief indeed, a class of work which affords scope for the exercise of the highest skill and refinement of which a sculptor is capable, and of which, unfortunately, we in these days see few or no examples. The eyes are closed, and the face, very delicate and refined, is turned somewhat to the spectator; it is in human but in sweet repose. Her long and silk-like hair flows in soft tresses over the pillow, again showing unrivalled perfection of execution. On the other hand, a careful critic might be disposed to cavil at the coarseness of the feet, and at a certain awkwardness in the turn of the neck. For it should be remarked that the artist has endeavoured to place the front of the saint, as it were, towards the spectator, whilst, at the same time, the couch appears rather to be in a horizontal position. Thus a certain archaicness of character is given to a work which in other respects has nothing archaic about it. For its prevailing characteristics are great breadth and simplicity united, as we have already had occasion to point out, with wonderful executive beauty, whilst it is inspired with an essential human and natural spirit. It is in no sense ideal; though the form is that of a beautiful woman, it is a perfectly natural beauty, not of the most refined or most remarkable kind, but simply there lies before us a handsome woman in a peaceful death. One is, indeed, at once reminded of the story which Vasari tells of Donatello, how he showed to his friend Filippo Brunelleschi a "Crucifixion" upon which he had spent much labour. When his friend saw it he said that it seemed as if he had placed a peasant on the cross, and not a body such as that of Christ, which was most beautiful (*delicatissimo*), and in every part the most perfect seen upon earth. And Brunelleschi himself, in his turn, toiled many months to execute his ideas, and when Donatello saw the result of his friend's labour, he exclaimed, "*A te è conceduto fare i Cristi ed a me le contadini.*" It is the same with this female saint. She is not in form ideal; she is beautiful with very ordinary human beauty; so that she exemplifies a characteristic of Donatello, of which we may, if we like, believe he himself was perfectly aware. Compare the angels in the bas-relief of "Christ at the Sepulchre,"—one crying like a child, another pressing Christ's left side, and compare the strong, manly, and exhausted form of Christ himself, and we see the unideal character of Donatello's sculpture, —a characteristic placed in marked relief in the story of his and Brunelleschi's "Crucifixion." But, again, this same new work brings up before us more of Donatello's characteristics. We need hardly remind our readers that Donatello, or Donato, as he was called by his contemporaries, was born at Florence in the year 1382, and died in December, 1468, but it will be clearer by these dates that he was a predecessor of Michelangelo and his school. Thus whilst he is in some respects a forerunner of that school, he is in all respects more simple in his treatment of his subjects than his great Florentine successor. Indeed, simplicity is one of the marks of Donatello; yet, as we have pointed out, as in the pillow and as in the fastenings of the saint's couch, and as in the long locks of her hair, he becomes often very realistic in his treatment. But he has also none of that desire to display his power even of the gigantesqueness, if we may use the word, which so distinguishes Michelangelo and those who endeavoured to follow in his steps, and which ultimately degenerated into such exaggerated realism. Donatello, indeed, is often antique in his simplicity and breadth, yet more human than the Greeks. All these marks of this fine sculptor are, as it seems to us, noticeable in this new work, so that, although previously we were fortunate enough to possess other remarkable works from his chisel, the new acquisition will tend to make Donatello more known to and more appreciated by English students of sculpture.

But the ends of this tomb, though much less important than the front, should not be passed by without notice. At one side is an angel, with hair blown back by the wind, passing rapidly through a field of flowers; it may be, indeed, an illusion to the angel of death gathering in the flowers in bloom. At the other end is also an angel, bearing a censer, accompanied by boys. But the work in these smaller reliefs is by no means so distinct now as the effigy in the front, and they are, therefore, not only less interesting in themselves, but by no means so capable of being observed with the minuteness of the dead woman. For the front is undoubtedly in a fine state of preservation, and the beautiful softness and roundness of the outlines, especially of the face and neck, are still markedly apparent; and whilst thus displaying these noticeable qualities the work does not degenerate into effeminacy or weakness, there is an absence of severity of treatment, but, notwithstanding, there is no undue sensuousness. Certainly we moderns have much to learn from such an artist as Donatello, for in some respects his works are an admirable guide for the sculptor of to-day, whether we regard his technical execution or his fulfilment of his subject. For technical excellence and care are shown in every part of his compositions, and in the manner of treating his subject he is essentially natural, and keeps carefully within the due bounds of his art. He attempts no great imaginative effort, and, on the other hand, he is free from an undue realism, so that when we say he is an admirable guide and model for the sculptor of the nineteenth century we in some respects point out the kind of place which he occupies among his brother artists. Especially is his unobtrusive naturalness most worthy of mention,—a naturalness which was

well touched on by the writer of one of his epitaphs:—

"Renduto ha vita a' marmi, affetto ed atto,
Che più, se non parlar, può dar natura."

Again, it is a naturalness which is not a mere imitation such as we see in too many modern works, and which, as Taine has pointed out in his "Philosophie de l'Art," is thoroughly repugnant to the true artist. And if we were to dwell for a space it would be possible to say much of the great care and skill exhibited in these bas-reliefs, which, in the lowness of their relief, become almost pictures depending very largely upon the light and shade of the composition, and thus showing that none but the master's own hand could have wrought them to perfection. Each and all, then, of the several characteristics of Donatello to which we have adverted seem to be conspicuous in the work which has lately come into the possession of the English people, and a careful study of it cannot fail at once to enlarge the beholder's taste, and to bring before him more clearly in his own mind the remarkable place held by this great sculptor, not the least of that constellation of magnificent artists which belong to, and will ever remain indissolubly linked with, the capital of Tuscany.

AT GRANGE-OVER-SANDS.

A PLACE TO BUY.

On the borders of the English Switzerland, the land of Windermere and Derwentwater, Scawfell and Helvellyn, lies a district smaller in extent and less frequented by tourists and with natural features on a somewhat smaller scale, but rich in picturesque beauty to all who can appreciate the charm of wooded hills, grey cliffs, and lake-like estuaries. The district in question consists partly of a triangular-shaped peninsula, dividing Morecambe Bay into the two branches known respectively as Lancaster and Ulverston Sands, and partly of a small sub-alpine region extending for a few miles along the eastern shore of Windermere Lake. The ancient name of this somewhat secluded district,—a name dating from Romano-British times,—is Cartmel, and in the most picturesque portion of it, sheltered by the hills of Yewbarrow and Blawith on the one side, and washed by the waters of Morecambe Bay on the other, there has sprung up within the last few years the little watering-place of Grange-over-Sands. At the opening of the Furness Railway twenty years ago t was a mere hamlet, with some half-dozen private residences, and about the same number of lodging-houses. Since that time it has considerably developed: shops have been established, and a first-class hotel is opened; gas has been supplied by a company and water by a local Board; an ugly tidal swamp has been turned into a public garden, and the various minor appliances required in a place of general resort have gradually grown up and accumulated.

One chief reason for Grange having an existence at all as a resort for visitors is its peculiar character geologically. It stands upon a long narrow strip of carboniferous limestone stretching between the silurian strata and the sea, and which, like all parts of the mountain limestone formation, is full of crevices and fissures, through which all surface moisture gradually sinks into channels at an unknown depth underground. Consequently, while the close proximity of the silurian hills gives a picturesque character to the locality beyond what is generally found in limestone districts, the dryness of the subsoil and the sheltered situation produce a climate peculiarly suited to tender throats and lungs, and entirely free from the damp and miasma, the existence of which invalids so often discover to their cost in the central Lake country.

The exceptionally mild climate of Grange naturally produces an exceptionally luxuriant vegetation, extending down the hill slopes to the very edge of the salt water. The elm, from the thinness of the soil, is conspicuous by its absence, and the oak, from the same reason, though growing up straight and tall, and unbent by the sea breeze, scarcely attains the same dimensions as in Warwickshire; but the beech and larch are frequently of magnificent proportions, and the wild holly approaches the height of a forest tree. One peculiarity of the beech woods is that, in consequence of the rocky character of the ground, the underwood is not choked by the fallen leaves, as it often is in the soft soil of the chalk districts. Brambles, ferns, clematis, and wild flowers grow just as freely under the shade of the beech trees as in any other situation. The same thing applies to larches and pines.

As garden shrubs, the arbutus flourishes as freely as at Killarney, and the bay-tree is as hardy as the common laurel is in the climate of London; myrtles grow in the open air, and the fuchsia stands about nine winters out of ten without dying down to the roots. In very mild winters the scarlet geranium does the same. There have been dark rumours that the maiden-hair of Cornwall (*Ardiantum capillus veneris*) is to be found in favoured spots, but this is one of those profound secrets which the true botanist, with Freemason-like tenacity, rigidly keeps from the profane outer world. In all mountain districts the objects of interest are of nature's handiwork rather than man's, but the locality which we describe is not without its attractions to the archæologist and the architect. The ruins of Furness Abbey are within easy reach in one direction, and Kendal, with its five-aisled church and its castle, where Catherine Parr was born, is still nearer on the other. In the heart of the district itself stands the fine cruciform church of Cartmel, unique in character in many ways, and there are two or three specimens of the towers which it was necessary to build in Mediæval times, on this particular part of the coast, as a defence against Irish and Scandinavian pirates. An interesting excursion may also be made to Levens Hall, with its Queen Anne gardens and its annual radish feast, and the churches of Heversham and Beetham are not without interest.

Taken as a whole, there are few parts of England which present such a combination of varied matters of interest, and which will so well repay a visit to them, as the country round Grange-over-Sands. We have been led to say all this just now by the sight of particulars that have reached us of an important sale which is to take place here at the beginning of September, if not privately arranged before, including a commodious mansion just now erected from the plans of Mr. Eli Cox, architect, with fine grounds, an adjoining freehold farm, and some well-wooded grounds and pasture land for building on. It is called the Brown Robin Estate, and some of our readers might find it worth looking at.

CUSTOMS OF THE TRADE.

There are probably few things upon which there exists a greater amount of popular misapprehension than the regard to customs of trade. Even those who by considerable business experience might fairly be expected to understand with accuracy the meaning of the term have the vaguest possible ideas as to what constitutes its elements. In consequence, litigation and disputes are constantly arising out of this misapprehension, and facts, too, which are supposed to be conclusive because they amount to customs of trade, are found, when analysed, not to have all the necessary properties of a legal and binding custom.

Nor is this misunderstanding confined to one trade or profession; it exists among the highest and the lowest, among tradesmen and merchants. It will be found in relation to all sorts of matters, sometimes merely personal, sometimes very general, but, as we have said, there it is working no little mischief. One not unimportant case upon this subject was not so very long ago decided by the House of Lords, and had relation to the meaning of the word "necessaries" in relation to an apprentice to a trainer of racehorses. The actual question in dispute in that case has no particular interest for the readers of the *Builder*, but it affords a suggestive example of what we have just said that misapprehensions in relations to customs of trade exist in every profession and business, and are constantly producing litigation. For, in that particular instance, it was contended that the word "necessaries" had a restricted meaning by a custom of the trade among trainers of racehorses; but when it came to be analysed it was found to be based on no tangible and valid grounds.

Again, in many trades, for example, such as those of decorators, all sorts of habits may be found to be upheld as customs, which are probably nothing more than the practice of a few firms. One firm will urge that it is the custom of the trade to pay the painters' travelling expenses, even in town, whilst another will say it is the custom of the trade to do exactly the reverse. Now this again is no more than a single instance, but it shows how it is possi for practices, and no more than practices, grow up in the estimation of some into bind and valid customs, and to produce, it may serious injustice towards third parties.

What, then, is a valid custom of the trad Elementary question though this may seem is one which every business man should be a to answer fully. A custom of the trade m not be a mere practice in a profession or bu ness; it must be an invariable usage, in wh the exceptions must be so few and far betw as to be no more than exceptions to a univer practice. Bearing this definition in mind, that a chief element in a valid custom is c tainty, it behoves all men of business to most careful, whether they are called as witnes in a law-suit or are chief actors in some trans tion, that they do not assert and set up tha practice which exists in their own firm o that of perhaps one other, is a custom of trade. For by so doing it may turn out t they are deceiving both themselves and oth not intentionally, but through misapprehen of the chief element in a valid custom.

Another point which is not to be forgot is that every custom to be valid must reasonable; and by valid we mean one wh will bear the searching analysis of a cour law. For that is the real test of every cust and one which most customs, too, have so or later to undergo. Now, so far from this being present in the minds of many who that such-and-such a practice is a custom of trade, it too often happens that they are m the impression that even if a practice is reasonable, yet, being a trade custom, this la fact takes away any of the evil which may from its being unreasonable, and makes it in spite of this inherent vice; whereas, so from this being the case, the contrary happ and though a custom may be proved, as saying goes, "up to the hilt," yet, being distin unreasonable, the law will not allow it to be sidered as valid.

This, as we have said, is one very impor consideration, but it does not come so freque into play as the question of what may be ter the "universality" of a practice; for thi after all, the chief stumbling-block in regar practices becoming of so universal a chara as to become valid and binding, and we can to say that nine-tenths of the practices w many professional persons consider to be b ing and legal customs are, upon examinat found to be wanting in the general chara which makes them binding. We might poin the vexed question of quantities, in regar which our readers will remember, during last twelve months, to have seen various trials reported in our pages, in which the q tion has arisen whether it is a universal binding custom for architects to have the q tities taken out by surveyors. But we no intention of going into details in rea to custom: what we have been desirou pointing out is the fact that much pop misapprehension exists in regard to what do not constitute valid trade customs, and "the wish is father to the thought" a g deal too often, and that much mischief arise consequence. When a person knows as a that a practice is really universal, that it very few exceptions, or when he knows tha far as his experience goes, the practice universal, he may fairly say and act upon belief that the practice is a binding custo the trade; on the other hand, if it is on mere practice of which he can recall a number of exceptions, he will only do him and others harm if he believes or if he ins that this practice is a valid custom. elements of a true custom are so simple they should be graven on the mind of ev professional man.

Liverpool Engineering Society.—Wednesday, the 30th ult., a party of the mem of the Liverpool Engineering Society, by kind permission of Mr. F. W. Webb, C.E., vis the Crewe Works of the London and No Western Railway. The party left Liverpoo the eleven a.m. train. At the offices of the w at Crewe they were met by the manager, Worsdell, who conducted the party through works, and pointed out and explained the ferent processes of steel-making, &c., objects of interest, from the pig iron sta in thousands of tons to the highly-finis locomotive.

THE STEEL MANUFACTURE.

ST as the ages of stone and bronze gave
so the later age of iron seems now giving
to steel. On railways the change is
t complete; in marine construction it is
ienced; and in the construction of bridges it
lready made very great progress; whilst
e subsidiary iron industries the term is
ning a misnomer, and steel is taking the
of the less enduring metal. It is true
he "steel" which is so largely used might
re fittingly called in many instances ingot
ut over malleable iron it possesses many
tages, whilst it is yearly growing less in
and as the price descends so the area of
e of the more enduring metal widens at
st of that which is the less durable. It
arkable to observe the growth of the steel
facture in recent years, not only in Great
n but in most of the manufacturing coun-
f the world; and in most instances, so far
be learned, it is at the expense of the
ble iron trade. It is only a few years
nce the production of steel was limited to
thousand tons yearly, which was chiefly
ed at Sheffield, but since the introduction
Bessemer process, the steel trade has
revolutionised, and the growth of the
ction has been startlingly large. It is
ly certain that at the present day the
ction of Bessemer steel in Great Britain
is about 850,000 tons yearly; in the
States it has rapidly risen to about
0 tons yearly; and France, Belgium, and
ny are the chief of the other contributors
world's production of Bessemer steel.
that trade has been growing up, there has
rown up the production of steel by the
ns-Martin open-hearth system, by which
ix years ago barely 81,000 tons were
ed in the two great centres of Great
and the United States, whilst at the
time the output of these two nations
is over 200,000 tons. In the two great
facturing countries of Great Britain and
ited States we have a production of steel
se two processes alone of over 1,750,000
nually, whilst beyond this, there is the
d production by the older crucible
s of manufacture, and the production in
aining centres of the trade. Concurrently
is growth, the malleable iron trade has
off, and the prospects of the two seem
diverse. Nor has the growth of the
ade yet reached its maximum, whilst
trade, as we have known it, must wane
rival waxes greater. It is evident that
a growth in the demand for steel rails,
he substitution of steel plates for iron
n ship-building is only just commencing.
railway world the use of steel for rails,
tance, has been proved to have been
tal, and to be cheaper than the use of
at this needs to be demonstrated in the
ction of vessels, for though it is believed
teel plates in merchant vessels are
than are those of iron, carrying
being borne in mind in the com-
, yet this needs to be demonstrated,
does the belief that they are no
able to corrosion. In bridge work the
steel is growing with tolerable rapidity,
miscellaneous uses it is also advancing.
production becomes greater there is a
ing of the cost, and hence the area of
is able to be enlarged by the material
ut to service in places where its higher
ted as a prohibition. Moreover, attempts
g made to use in the steel manufacture
heaper ores in which the presence of
orus has hitherto acted as a preventive of
se for the steel manufacture. It is
d that a means of cheaply and expedi-
evolving that vitiating element has now
iscovered, and with full proof of this
ill be a very great reduction in the cost
nufacture, and with that reduction a
enlargement of the area in which steel
and a further contraction of the area
use of iron. The introduction of the
er process brought down the price of
ery remarkably, as is tolerably well
; but it is not so well known that during
few years there has been as remarkable
in the price of the metal. Taking
er steel rails as an instance, it may be
at in 1873 they were quoted at 15*l.* 10s.
, and that in 1875, after the intensity of
d had passed away, they were still quoted
10s. per ton. At the present time the rate may be said to be, on an average, about 5*l.* per ton, and it is well known that a contract was recently entered into by one of the chief railway companies for a supply at 10s. per ton less than the rate named. In part only is this very material reduction in the cost due to the enlarged output. In a very considerable degree it is due to the economies that have been effected in the process of manufacture, more especially by the adoption of the direct process. With these economies, and with the larger demand and larger facilities of production, a very remarkable reduction in the price has been brought about, and the form of the demand for metals has been changed to a very large extent.

This reduction is more of a national benefit than at first sight appears. There is an immense saving in coal in the steel trade when contrasted with the iron trade,—that is to say, that the production of a given quantity of steel is effected with a much less expenditure of fuel than the production of a like quantity of iron, and hence the gain is double, for the steel is the more enduring metal. We produce, therefore, steel with a less expenditure of that power which our fuel supplies contain, and we in the use of that steel obtain a fuller measure of benefit or service than we could from a like quantity of iron. At the same time there is always, in changes such as are taking place in the metallurgical world, suffering to some section of the community, and in this instance it is the puddlers and the iron makers who suffer, and the change appears to be slowly driving them out of the field of metallurgical labour. It is evident that at the present time the change will continue, for we have seen that the area of the use of steel is being enlarged slowly. With that use in shipbuilding there would be as marked an advance as there was when the utility and cheapness of steel rails on railways was proved, and with it there would, of course, be a use, not only of steel plates, but of steel angles, bolts, and other subsidiary if important branches. It is evident, therefore, that, both by the Siemens-Martin and by the Bessemer processes, there is at the present ample room for and the extension is now rapidly going on; and though for some use there appears no probability of the banishment of iron, yet there is no doubt that its use will be much more limited than it has been, and thus it may be said that the substitution of steel for iron is in progress, and that the age of iron is following in the track of those of stone and bronze.

FROM THE BANKS OF THE SEINE.

Paris will before long have lost one of its once most familiar features; for there is little doubt left that the Senate will ratify the vote so unanimously passed by the Chamber of Deputies for the demolition of the ruins of the Tuileries. The resolution has been somewhat sudden, though the question of the rapidly-crumbling and picturesque palace has more than once attracted public attention within the last few years, at one time it being proposed to found a museum on the site, at another to instal there the superb National Library; but now, in spite of the coalition of the Royalists who still hope for a palace for their sovereign; in spite of the architects who have so often expressed a desire to restore the palace; in spite of those art-lovers who would wish the central pavilion left standing a picturesque ruin in the midst of trees and flowers, the Tuileries are to be demolished, and a "French garden" (not a *jardin anglais*) formed on their site. It may be urged by those who favour its removal that little or nothing previously to the fire of May, 1871, remained of the palace that Philibert De l'Orme built for Catherine de Medici; for the successive changes and additions made under Henri Quatre by Du Cerceau, and still more by Levau and his relation and pupil, Dorbay, under Louis XIV., had sufficiently destroyed the original plan of De l'Orme. But the later work of the first Napoleon, and of Louis Philippe, removed what little remained of the palace which it had been the intention of the fanatical daughter of Lorenzo the Magnificent to make a royal residence. As for the historical recollections of the Tuileries, they will only have one more addition made to their number by the destruction of the old walls within which so many scenes connected with the history of France in the last three centuries were enacted; three centuries of successive absolute monarchy, revolution, empire, restoration, constitutional monarchy, and republic.

And so passes away another relic of the work of Philibert De l'Orme, that ingenious artist of the sixteenth century, a fragment only of whose masterpiece, the Château d'Anet, reposes in the court of the École des Beaux Arts; only within a few weeks, the vestiges of his own quiet house which he had planned so skilfully for himself in the tranquil Rue de la Cerisaie, have been swept away.

But while thus the architects of the past are so cruelly treated at the hands of the present generation, the architects of the future are diligently being trained, but not in the old school of De l'Orme's day, as was easily observable even to the unprofessional eye, in the works of the competitors for the Grand Prix de Rome in architecture, exhibited last Saturday at the École des Beaux Arts. The subject chosen for this year was "a conservatoire, music and declamation for a large capital." In all the ten drawings, each of immense size, so striking a resemblance was noticeable in elevation to M. Garnier's New Opera-house, that it was positively not a little difficult to distinguish one competitor's work from that of his brother pupil. It remains to be seen what the jury say on Tuesday of these drawings, in other respects remarkable efforts of science and draughtsmanship.

As for the competition for the Grand Prix de Rome in sculpture, the subject for which had been "Tobias curing the Blindness of his Father," after a lengthy discussion, the much-coveted honour has been awarded to M. Fagel, a pupil of M. Cavelier. And so with the lately-decided prizes of the Conservatoire of Music and Declamation, the youthful studious portion of artistic Paris settles down for another year's hard labour for future success and glory. It is to be hoped the words of the Minister of Fine Arts, recently pronounced at the distribution of the recompenses to the Salon laureates, when he warned his hearers against the search after the realistic, will dwell in their memory. "An artistic epoch," he said, "is in peril when the ideal is not cultivated, and the processes of execution are on the decline; art then falls into conventionalism, and in this manner naturalism is the preservation against its errors. Art encourages by itself the artist; it is, so to speak, its own recompense; sculpture, how rarely does it enrich those who practise it? For those few who succeed, how many are there who suffer, but who, notwithstanding, urged on by a disinterested impulse, pursue their course, led by this star, which is their sole guide?"

Decidedly among the events of the artistic week in Paris, the re-opening of the Théâtre Français has taken no small place; the more so as during the two months that "Molière's troupe" has been absent seeking fresh laurels on the banks of the Thames their house has been entirely re-painted and decorated, after having been untouched for more than sixty years. To attempt to describe one-tenth of the wonders which met the eye of President Grévy on his visit the day previous to the re-opening would be impossible in the space of a paragraph; the description of the newly-painted ceiling by M. Mazerolle (already known to the world for his ceiling at the Monnaie Theatre at Brussels), with its allegorical representations of Molière, Corneille, and Racine, surrounded by the famous creations of their pens, not omitting Regnard, Marivaux, Beaumarchais, and Voltaire, would require more space than is at our disposal, while as for the gallery of historic busts and portraits in the green-room and the crush-room, and scattered about in the lobbies and staircases, they would require a separate article to enumerate. Alone one corner of the house has been left untouched, the actors' and actresses' respective *loges* or dressing-rooms, the decoration and renovation of which have, with excellent taste, been left entirely at the disposition of their several occupants.

There will be little wonder that artistic suggestions are favourably considered in headquarters here in Paris, when it is mentioned that the present Prefect of the Seine, M. Ferdinand Hérold, is son of the well-known composer, Hérold, author of that delightful old favourite, "Zampa," and the melodious "Pré aux Clercs."

The British Association.—During the meeting at Sheffield, which will commence on the 20th inst., there will be an important exhibition of scientific apparatus and specimens, both in the temporary museum and at one of the *soirées*.

THE LATE GOTTFRIED SEMPER, OF VIENNA, ARCHITECT.

The following appears in the last published number of the "Transactions" of the Royal Institute of British Architects:—

"Our honorary secretary has called my attention to the sad loss we have just suffered in the death of our distinguished honorary and corresponding member, Professor Gottfried Semper, at Rome. As he was an intimate friend of mine, I venture to offer this brief notice of him. It is an early tribute to one for whom I had a sincere personal regard, and whose talents I greatly admired. The first reference that we have of him in the records of this Institute appears in the 'Essay on the Polychromy of Greek Architecture,' published in the first volumes of our Transactions, 1836, and which was a summary of Dr. Kugler's elaborate work on that subject. In the introduction to that paper the following words occur:—'Herr Semper has very recently expressed himself in terms still more decisive (than those of M. Hittorff), in his preliminary observations on the 'Painted Architecture and Sculpture of the Ancients,'* and on the strength of his own researches in Greece; he assures us that he has discovered a complete coating of colour upon all,—even the most remarkable monuments of Pericles; and he has announced shortly the publication of those monuments, restored according to one uniform system, with their proper colours. He has also, since his return from Greece, exhibited at Berlin, in different societies, a considerable portion of his restorations, which are certainly very ingenious, and which are said to have excited among the younger portion of his countrymen a degree of enthusiasm,—the forms of Greek architecture now appearing for the first time to become intelligible, and to present, as a whole, a lively perception of the motive which gave birth to them.' Such was the notice of his researches by Kugler in 1835.

Gottfried Semper was born on the 29th of November, 1803, at Altona, on the Elbe, at that time the second city of Denmark. In accordance with the wishes of his father, he first studied law at the University of Göttingen, from 1822 to 1825 himself wishing to become an artillery-man; but from 1826 he devoted himself to art, and pursued his studies at Munich, under Gartner, and stayed three years at Paris with Gau, for whom he ever entertained the highest respect. He then visited Italy and Greece, and returned with his portfolios rich with the studies of ancient monuments. In 1834 he published his short but suggestive essay on the 'Painted Architecture and Sculpture of the Ancients,' in 8vo.,† at his native town, and alluded to by Kugler. His talents then seem to have been appreciated in Dresden, where he was invited to go as Professor of Architecture, in 1834, on the recommendation of Schinkel, and there he erected his beautiful theatre, completed in 1841 and burned down in 1869. It was published in a folio work at Brunswick in 1849. An inspection of this exquisite volume‡ in our library will show the refined and pure taste with which he carried out the cinque-cento style of Italy, and combined in his plan, with considerable intelligence, all the requisite technical adaptations of that important class of buildings; and this became justly the foundation of his European reputation. He was the architect of the splendid synagogue in that city, and designed all the fittings and even the sacred vessels. He built the Female Hospital and the Oppenheim Palace, and other buildings, as the Gothic fountain in the Post-Platz and the Villa Rosa; and in 1847 he began the new museum. In all these he yielded to the passion for coloured decoration, which he introduced profusely, thus realising the dreams of his early years. He was the architect of the King of Saxony, who bestowed upon him many personal favours. However, in the unfortunate political disturbances, which took place in Dresden in 1849, he allowed an irrepressible political and democratic feeling against kingly rule to overpower his better judgment. He forgot the grateful allegiance he owed to the sovereign, and he took part with the insurgents, whom he assisted with his professional talents, having prepared (as it was said at the time) a plan of Dresden, with the indications of the spots where barricades should be put up to oppose the royal troops.

This unfortunate burst of personal feelings was the commencement of a sad violent struggle for years with misfortune. He was obliged to fly, leaving his family in Germany, going for a short period to Paris, the scene of his early studies, and coming over to England as a place of refuge and possible employment and precarious means of subsistence. In 1852 he joined the Department of Practical Art at the South Kensington Museum, to teach the principles of decoration as applied to metals of all kinds, and began a treatise on the subject, which it is to be feared he never finished. He designed the certificate for the Art Department; he also designed the Wellington car, which bore the remains of the illustrious duke to their resting-place in St. Paul's Cathedral. It was conceived in the spirit of the Imperial carpentum on the Roman coins, and was covered with bronze work. In 1153 he made a rough sketch for erecting buildings on the present site of the South Kensington Museum, for which he was paid by the Prince Consort, and it is still to be found in the Museum. For this subject the Prince invited and received designs from other architects.

After passing a few dreary years with his family in England, there was offered for his acceptance, at Zurich, the professorship of architecture in the University; and he erected there in the upper town a large building for the Polytechnic Schools, as well as the town hospital, and likewise the town-hall at Winterhalter. I know not whether it was his teaching which influenced the taste of the subsequent architecture of the town, but I cannot forbear seizing this opportunity to notice the railway station built since his time, and well worthy the attention of the traveller. The interior halls especially are conceived upon the style of the Thermæ of the Romans, and similar to them in largeness of conception as to plan, and admirable for the decorative features. Some of the buildings in the streets and squares by recent architects are equal to the finest commercial erections in Paris or London, and superior in taste.

Semper represented Switzerland, as its Commissioner, at the Paris International Exhibition in 1867; and he designed and constructed the Swiss building containing the pictures and other art-productions of that country. He took the opportunity of carrying out his theory of ancient polychromy by painting the exterior a bright red colour. By a strange combination of circumstances he who, in 1849, fled as an exile from Dresden, was, in 1870, employed as architect to rebuild there the theatre he had erected in 1841, and which had been burned down in 1869. He, however, only occasionally inspected the progress of its erection, which was carried out by his son. How striking to see the power of genius, which could outlive the passions and prejudices of the past, and replace the fugitive in the distinguished and honourable position he had held twenty years before!

In 1869 he made a design for the Exchange at Vienna, and in 1870 was called thither to make a selection from sets of drawings sent in competition for a new museum in that city. He chose one by the architect Hasenauer, and, having suggested important improvements, he was associated with the author to carry out the revised project. He also designed and erected the new theatre in conjunction with his colleague Hasenauer, and made material additions to the Hof Burg, the imperial residence.

His latter years were not happy at Vienna, and, as he was much afflicted by asthma, he went to Italy, living alternately at Venice and Rome. After the struggles and successes of half a century of active artistic life, there is something very touching to contemplate a veteran architect seeking the softening influences of the Italian atmosphere to alleviate the sufferings of disease. We may imagine him at Venice, reclining on one of the benches under the columned arcade of the ducal palace, contemplating the works of those great masters with whom he is worthy to be associated in our memory; or we may figure him to ourselves seated on a marble fragment in the Forum of Rome's palmy days, ruminating on its past imperial greatness. Thus he might well fill up moments and hours not occupied by more serious thoughts of his approaching end. Among these might doubtless be revived delightful memories of youthful studies, and he might contempl the rich intellectual results and inferences, wh his large experience had stored up. And let hope that, in this harvest of thought and refl tion, he may have left us some precious resr to delight and instruct us, and make us bet appreciate what has been effected by th great men of old,—by what inspirations th were guided, and how we might be (as he w possessed of noble ideas, and be able to prod (as they were) works that may be the adm tion of future ages. Surrounded by such as ciations, Semper breathed his last at Rome the 77th year of his age, on the 15th of M last. We must sympathise, then, with the gr artist, who returned to pass the last days of existence among the monuments and scene his early emotions: leaving his ashes in the of a country that nourished the art to which had devoted the thoughts, intents, and labo of his eventful and lengthened existence.

Thos. L. Donaldson

* Semper's work, "Ueber Polychromie und ihren Ursprung," 8vo., Braunschweig, 1851, is in the Institute Library.

† "Vorläufige bemerkungen über bemalte architektur und plastik bei den Alten," 8vo., Altona, 1834.

‡ "Das provisorische hoftheater zu Dresden," folio, Braunschweig, 1849.

FLOWER LORE.

This interesting topic is constantly treate the daily, hebdomadal, and monthly press; sooner is one paper completed than anot begins, yet the subject has a freshness al it so inherently perennial that it never ge wearisome or stale. A little book with title has appeared anonymously at Belfast, contains much that to most general rea will be new, so that we propose to cull from and whilst adding a little of our own, hop augment the swarm of papers by one that s not prove unreadable. The Roman cl marked their festivals by the flowers bloomed. The snowdrop lighted the tape the Virgin Mother, and the blue bell stoo the festival of St. George. All white flo were specially devoted to the Virgin Mar the snowdrop, the lily, the cuckoo-flo the white iris, &c. Here also we come ac the fabled fancies that had become at to flowers, as with the *rose of Jericho*, "rose plant in Jericho" of Ecclesiasticus pilgrims believe of this plant that in the "Fl to Egypt," wherever the Holy Family re there sprang this beautiful flower. At Chr birth it blossomed, and at His resurrection cl but re-opened wide at Easter-tide, and cyclept the *Resurrection Flower*.

There has been much variation in the selected for use at the celebration of P Sunday. At Rome Goëthe says they bear palms; elsewhere olive branches are freque substituted. In the Alps they use bough holly, and in the sadder North the willow co with its egg-washed gosling-coloured cat In Brittany they use the box. The Swedes h a fancy that Christ was scourged with a ro *dwarf birch*, then a stately tree, but since ill event it has dwindled and stunted do wards. They call it *Good Friday's Rod*.

The Spaniards found the *Passion-flowe* South America. Bosia, probably from Mexican Jesuit teachers, called it "*Flor de cinco llagas*," or "Flower of the five Wound Even the scientific name, *Passiflora carula* tinged with the same idea.

Analogous to the substitutes for the p branch to suit the produce of the count which the festival is celebrated, it seems f Didron that the forbidden fruit, as exhibite old frescoes, has gone through precisely same changes. In Spain it may be an ora in Greece an olive, in Italy a bunch of gra in Brittany an apple. This reminds one of Irish priest's sermon, wherein he heavily nounced "the wicked apple," cause of all woe. Overtaking Pat, after sermon, on the home, "Well, Pat," said the priest, "what you think of the wretched apple?" "Och! riverence, I can't tell how bad a fruit the a might be at all, at all; but to me the real chief in Paradise seemed to lie in the pair."

Delightful, mad fancies and superstitions connected with flowers, and so mingled are t sometimes by incantation of thought, as to f facts backwards into mysteries. When one how science, with its modern unmannerli and irreverence, which it calls method, tram like a hippopotamus in a tulip-bed towards causes, and misses them, one begins to reg the old poetry of unreason, or at any rat prefer it.

The rowan-tree keeps the witch away, even now in the Highland glen its pres attests where a village has been. The ni

of India is very like it, and the same
lty is ascribed to it; Lancashire lasses will
u only with a rowan stick.

"For when you work with rowan wood,
Witches no evil do, but good."

e dwarf elder (*Sambucus ebulus*) will only
, it is said, where blood has fallen either in
e or by murder. Now let us observe a fact
ing backward into an old mystery. The
lood drawn in the Civil War was on Wor-
rshire ground, and on that spot now grows
mbucus. The Welsh call it "plant of the
of man"; and in other places, probably
Eastern counties, it goes by the name of
wort or *Danes' blood;* for the country side
ave it that wherever the Dane fought there
rooked blackberried tree would spring.
d-leaved sorrel grows on Tara-hill, where
8" the Irish rebels fell, and red poppies
oticed to spring in unusual abundance on
st ploughing after the fight at Waterloo.
we say the cornflower blue grew from
rench bodies, and the red poppy from the
ish line?

bees haunt certain plants much more than
, and it is asserted that the bee does not
the nectar extracted from different
s so that masses of blossom have more
ction for him than single blooms have, but
an hardly keep it separate in the hive one
arcely accept this assertion. Followers of
r ought hereafter to taste the different
efore the honey mixes to see if any differ-
in flavour can be detected. Honeys of
stus, Hybla, and Narbonea have different
rs, that may arise from the great pre-
nance of a particular blossom in the
y, and not from selection specially made
e bee. We have no time to say much
upon this very interesting point, but
y mention that there is a chapter for
dies, in the book above named, on the
age of Flowers, an art in which Sir
s Browne says the heathens knew better
o read than all Christians, for they
thence suck a rare divinity which we
. Lady Mary Wortley's specimen of a
h Flower letter is absurd. We think *clove*
in it for three lines of print; if so, you might
volume before you had exhausted three
worth of pot herbs.

thought succeeds to odd thought end-
on this entertaining topic. Culture,
edicine, are all involved in its intricate
k, and even weather lore, is intimately
ted with the kingdom of Flora. The
ral gardener has surer prognostic of the
r for the next four hours than all the
ological Boards of England and America
rnish. They may indicate the general
ver a large area, but he alone can tell
Hampstead or Chertsey whether, in your
the next two hours, you shall carry an
la or not. He knows the fine day by the
expansion of the flowers, and many
ose their petals against the coming rain.
f them, after long dry weather in the
r, will droop and flag before the wind
hat is to bring up rain. Other plants
cks, and, like the goat's-beard, close at
the mouse-ear closes at half-past two,
s-ear shuts at three. They call prince's
r-o'clock flower, because it opens then in
a. The evening primrose opens with a
g noise at sunset, and closes with the
f day. The dandelion flower closes when
s heat is intense, and about nine o'clock
its petals towards the centre. Linnæus
merated forty-six flowers that exhibit
ity of this sort, and makes three classes
h. The meteoric flowers that close or
according to the cloudiness, moisture, or
e of the atmosphere. Tropical flowers
expansion varies with the length of the
d equinoxial flowers that open and shut
lly. The hollow sound of forests when
d roars in the woods gives presage
ms and rain, and nautical hints of
e value to a coasting-vessel may be
d from the close observation of marine
Astute people, or those who inhabit
ose much of the sweetest human inter-
with Nature by the vaunted civilisation
-life. In this respect the rustic and the
savage interpret her much better; and
ght interpretation of nature be the aim of
conian philosophy, the rustic and savage
rer to science than the busy towns-
who read many books, and think they
a vantage-ground of wisdom. Nature
n cipher the secrets of her working, and
hangs the key up where nothing but simplicity can find it. Science, with its eye introverted, and puffed up with its facts, can see nothing frequently but the theorems of its own invention. Her soul is alien to the soul in Nature, so that the analogies of the one cannot serve in any way as key or explanation to the other. So much for flowers! whose beauty surpasses the investiture of kings, whose precious colours and forms of grace are the pattern-book of artists, whose juices contain a balsamic ichor restorative of health, whose delight to the sight constitutes one-half the fairyland of childhood, whose spontaneous springing up is the perpetual reminder to the pensive and the poet of God's free gifts and grace, and whose last humane benevolence strews the corse of the adult and sage, and remains there crowning, when the friends of life perforce turn homeward slowly from the last sad act when the curtain falls.

C. A. Ward.

A COMMON-SENSE VIEW OF ARCHITECTURAL RESTORATION.

On the restoration question all are agreed that a truly representative building in the Gothic style, or in a combination of the styles of various periods, all, or nearly all, of them evidencing high artistic and constructive skill, should be carefully preserved. The reasons become the stronger when the building, whether it be an abbey, parish church, or cathedral, is associated with many important events in the national history. It is not the architectural features alone of any edifice, however great, that impress men's minds, but the belongings of its foundations and subsequent history, and the lives and actions of the potent minds whose careers are inseparably connected therewith.

We know much of certain great ecclesiastics and laymen, and of the important events in which they figured for a portion of their lives, and we also know of buildings they erected, or enlarged and improved. Could we identify the architects of some of our great buildings as readily as we can their founders or improvers, doubtless our pleasure would be greater, and our desire for a judicious and painstaking restoration of such buildings would be more keen. As a structure of the Renaissance, all enlightened minds are interested in the future preservation of St. Paul's Cathedral. To talk of its restoration is yet too soon, but a day must come when its columns and capitals, its architraves and entablatures, with their well-chiselled and still sharply-defined profiles, must crumble. Two more centuries of time's grinding process, assisted by the stone-disintegrating atmosphere of London,—yea, one more century,—will tell an unmistakable tale that may be anticipated. Festoons will moulder and drop, foliage and mouldings will decay, and cherubs, once fat and laughing, will grow ragged and take wing, particle by particle, on all winds. Would Englishmen in the future be doing honour to Sir Christopher Wren by folding their arms and looking contentedly on while the melting away process continued uninterrupted?

Will pointing and cementing masonry alone save a building from ruin? Can carvings and mouldings be preserved intact in the atmosphere of London and other of our great manufacturing cities and towns?—and if not, what then? There is but one rational answer,—we should preserve our historic buildings of note as long as possible, but we should not preserve them by keeping them in a state of crumbling ruin, through any amount of mere sentiment. A restoration or replacement of parts must be always taking place in architectural work. Decay is inevitable; it is a law of nature, and art is amenable to it. Preservation as applied to works of art is, after all, but a comparative term, and in architecture restoration is replacement, and it may be a preservative reproduction by imitation of the original work. But hold! A passage has just fallen under our eye as we finished the preceding sentence, and it will be pertinent to quote it here. It occurs in a treatise on Gothic architecture, written exactly fifty years ago by a Mr. Thomas Bell, for the production of which a prize was given by the Royal Irish Academy. What does Mr. Bell write anent restoration a half a century ago, in the early days of the Gothic Revival?

"More than once in the course of this essay I have condemned the practice of endeavouring to restore a ruin long dilapidated to its pristine state. The objection, however, does by no means apply to those occasional renovations by which only any vestige of our ancient buildings have come down to us. As the constant succession of prayer and praise, and the wholesome doctrine from time to time delivered in these churches, keep alive our devotion, and renew in our minds a sense of dependence on our Creator, —or, as the necessary recruits of food and sustenance from day to day, to our exhausted frame, prolong our existence,—so these occasional repairs and renovations have preserved to us memorials of the piety of our ancestors, which otherwise would now be little else than so many heaps of rubbish. Never should they, from false economy, have been suffered to become ruins, as long as a sense of religion is deemed necessary to the happiness of man and the well-being of society. As antiquaries, we may admire ruins much, but as Christians it is certainly our duty to prevent our churches from becoming such. Devotion and veneration for what is ancient both combine for their preservation."

The above remarks are to the point, and the advice given needs only to be supplemented by the following caution:—Consult the best authorities when about commencing important works of architectural restoration or preservation.

Men have erred in all ages, and we cannot adopt a hard-and-fast line for our present policy at least. Works of reparation, as well as additions, were always, more or less, proceeding in connexion with most of our ecclesiastical buildings for centuries. The architects and workmen of the twelfth century could not remonstrate with those of the fourteenth, nor the latter with those of still later times. Yet, if the dead could speak, doubtless many of them would frame a good case against the living who were interfering with their long-executed and loving work. The last years of the nineteenth century have not brought the dead to life, but have produced counsel to plead their many-sided cause, and an interminable case it is likely to be if any body of men attempt or hope to be able to argue it out. The Society for the Protection of Ancient Buildings are powerless to produce corroborative evidence in support of the extreme charges. History is dead against them, and all obstructives to architectural restoration, and those who would condemn the respectable and efficient architect of to-day for doing absolutely needed works of restoration, must be prepared to have the tables turned on them in respect to the restorers of the past. Who, then, are to apportion the blame that belongs to the architectural sinners of the last century who interfered, by restorations and additions, with the work of their predecessors? Will our sticklers for doing nothing, before condemning the nineteenth-century practitioners, try and judge architectural restoration from a sixteenth, fifteenth, fourteenth, or thirteenth century standpoint, or from all the points in succession? If the do-nothing policy had taken deep root in the British Islands in the past, there would be very little left to enlist the sympathies of antiquaries, archæologists, architects, and others in the present day. In writing of St. Patrick's Cathedral, Dublin, upwards of half a century ago, Mr. Bell gives an anecdote worth remembering on the part of antiquaries and restorers, or anti-restorers. Speaking of the original south transept, he says,—"The architecture of it, like that of a similar portion of Christ Church [Cathedral], exhibits a mixture of circular and pointed arches. It is ornamented with some corbel heads, which I had often regarded with admiration, as superior to anything I could conceive of that age. I was expressing my sentiments on this subject one day in conversation with Mr. John Smyth, an eminent sculptor [son of Edward Smyth, the still more eminent one], who, after giving me a hearing, began to laugh at my mistake. 'Those heads,' said he, 'of whose merit you speak in such exaggerated terms, were my own work. I was one day erecting a monument in the cathedral, when a stucco-man employed in the Chapter-room begged I would model one of the corbels he was then at work on. I accordingly acceded to his request, and the result was the two heads which have excited so much of your attention as being the work of ancient artists. Many professed antiquaries,' continued he, 'have been led astray in a similar manner, and by means equally simple.' 'But there are two or three heads in the great aisle of the nave equally curious in their style: they

certainly,' I rejoined, 'are not modern.' 'Of their antiquity either,' answered Mr. Smyth, 'I cannot say much. The heads truly owe their origin to former times; but I must acknowledge that my profane hands have contributed to their regeneration. I was finishing the little tablet monument of Mr. Boardman, when Dr. Handcock requested that I would touch with my chisel "the mutilated countenance of yonder gentlemen," pointing to the stone heads. The plastic stones, as if in obedience to this wish,—like the fabled palace of Aladdin,—assumed their present form; though I ought, perhaps, to be ashamed of my presumption, in thus attempting to restore the antique.'" Mr. Bell adds that he records this anecdote "lest any future antiquary should be led into a similar error when such an easy explanation would be beyond his reach."

How many sculptors or stone carvers in the past may not have done work similar to what Smyth was asked to do. The "mutilated countenances" of saints, kings, nobles, and cherubs have doubtless been often touched up, and chancels and lady-chapels, &c., rebuilt, altered, and restored in connexion with several cathedrals and churches through successive centuries.

Ecclesiastical architects and builders centuries ago, as well as now, worked according to the lights of their time, though far less controlled in their action than those of our own day, when the world is full of censors who have acquired a talent to criticise works they have no genius to create. The nineteenth-century architect of professional experience must not be allowed less liberty of action than his distinguished predecessors of the thirteenth or fifteenth centuries. The reparations and additions of mediæval architects have been the means of handing us down examples of different styles of an architecture which we prize, but the do-nothing policy, if successful, could have no other effect than transmitting to our posterity our national monuments and great ecclesiastical buildings in a state of utter ruin. Better the most radical form of architectural restoration than a passive system of so-called protection or preservation, which would ultimately preserve for our country nothing but shapeless masses of stone and hillocks of dust, mingling once more with the soil, and becoming "of the earth, earthy." C. H. C.

THE MOSQUE OF CORDOVA.

I read with much interest the remarks printed on p. 807, relating to the mosque at Cordova, and also investigated the plan engraved so fully, but regretted to find it without a scale; explained by a note that a plan in Murray's Handbook had been worked upon, and that "the aisles are each about 20 ft. wide," showing that the two-foot rule had not been used on the spot.

I refer to these points more especially, well remembering that when the writer of the article "Cordova" was at work for "The Dictionary of Architecture," he was sorely puzzled at the discrepancies of the various authorities. A small plan of the mosque is given in the text, which it is stated "is taken from Girault de Prangey, 'Architecture des Arabes,' fol., Paris, 1839—41; the building is also engraved in the 'Antiguedades Arabes,' published by the Royal Academy, fol., Madrid, 1780; in Laborde, 'Voyage Pittoresque,' fol., Paris, 1807; and in Murphy's 'Arabian Antiquities,' fol., London, 1813,—all expensive works, which do not always agree with each other, or even have plates consistent with their text. The edifice is also described at length by Girault de Prangey, 'Essai sur l'Architecture des Arabes et des Mores, en Espagne, en Sicile, et en Barbarie,' 8vo., Paris, 1841." To this account I can add that these plans may be considered to have been superseded by one given in the magnificent folio work published by the Spanish Government, entitled "Monumentos Arquitectonicos de Espana," Madrid, 1859, &c. Mr. Fergusson, in his "Illustrated Handbook of Architecture," 8vo., London, 1855, i. 453, gives another plan taken from a work by "G. Le Normand," but not mentioned; and in a note he remarks, "Notwithstanding the number of plans published of this edifice, it is extremely difficult to ascertain its exact dimensions. Murphy, in his text, makes them 620 by 440, whereas the scale of his plans shows 570 by 405. Le Normand's two plans differ considerably from one another. The above is about the mean." The *patio*, I may add, is about 200 ft. wide (or deep) according to Murphy. De Prangey, on page 26 of his "Essai," gives a number of dimensions from an ancient writer, but as these are in *coudées*, or arm-lengths, no accurate calculation can be made. Before closing these remarks, I would refer others interested in the matter, to the tenth volume of your valuable journal for 1852, where, on page 39, towards the end of "Notes of an Architect in Spain," written by our esteemed friend the late J. B. Waring, he states that the Mosque is "an oblong 394 feet by 356 feet," which dimensions are therefore far less than those above given. "The columns," he states, "are contributions from various places; 115 out of the lot (about 900) came from Nismes and the south of France; others were pillaged from ancient Roman temples, &c., in Spain, and from Africa as well; some were presented. They are of divers marbles, porphyry, and verd antique being most common. They are unequal in design, and generally very dumpy. The capitals have little architectural merit, numerous as they are; and the whole building has rather a heavy than a light appearance, the double arches adding to that effect. I expected a surprise, and met with a disappointment. Strange, it certainly is, but the whole interior is so low that its vastness fails to impress one, the general height not being 40 feet."

As to the roofing, the article in the "Dictionary," states that "Murphy saw the original wooden roof above the plaster work of the modern arches or light vaulting in brickwork, sometimes called the cupolas, introduced 1713-23 by Valle Ledesma"; and also that the first-built portion with the "carved and painted work, formed of the wood called *alerce*," was "cleaned and restored in 1816 by Patricio Furiel": probably in one of the above-named books the later works or repairs would be noticed. The description in Gwilt's "Encyclopædia," referred to, appears to be from Murphy's publication.

I could have concluded these remarks by giving the dimensions from the plan in the Spanish work, but a copy being not very accessible to me at this time, it would be more agreeable to find that some English student or traveller had taken more definite dimensions and would supply them to you.

Wyatt Papworth.

IMPROVEMENTS IN BISHOPSGATE.

DASHWOOD HOUSE.

All quarters of the City of London proper have undergone in the course of the last fifty years great changes in structures and the character of their occupation, and no districts more remarkably than Bishopsgate Within and Without. The successive changes have been from churches, companies' halls, convents, and other public buildings, to residences of the nobility and gentry, with "fair and spacious gardens" attached to them; then to places of business, for the storage, sale, and distribution of goods of divers kinds, wholesale and retail. These are in turn being displaced by railways and railway stations, and by large piles of buildings, in which suites of offices, various in extent of accommodation, are provided.

This district is rich in historical reminiscences. Sir Thomas Gresham had his mansion in it, perpetuated in "Gresham House," one of the imposing masses of building of the character just indicated. It is worth recalling that Sir Thomas, *circa* 1563, proposed to the mayor and aldermen of the City to build a "Britain's Bourse," provided they would find a site. The site, in 1565, was purchased for the marvellously small sum, viewed in the light of present prices, of 3,737*l.* 0*s.* 6*d.*, raised by contributions of public bodies and subscriptions. Sir Thomas's "Bourse," afterwards the Royal Exchange, was destroyed by the Great Fire of 1666, and a second building was erected in its stead, Mr. Jerman, architect, and opened in 1669. That, in turn, was superseded by the present Exchange, from the designs of the late Sir William Tite, that dates from about the middle of the current century.

Sir Paul Pindar, an eminent merchant, and a liberal patron of architecture, who died 1650, had also a mansion near the city confines in Bishopsgate. His memorial tablet is fixed in St. Botolph's Church; his mansion was nearly opposite the church. This church, a somewhat rude specimen of architecture, escaped the fire of 1666, but became much dilapidated, and r rebuilt from the designs of Dance, sen 1726-29. Edward Alleyn, player, the foun of the "College of God's Gift, Dulwich," baptised in St. Botolph's Church. Alle amongst many other good works, founded al houses in Lamb's-alley, Bishopsgate-street.

Amongst other notabilities of old Bishopsg all will remember Crosby Hall, for a tim royal palace, St. Helen's Priory, and the Inn, one of the first places in London in wl theatrical performances were given. In time of Charles I. Old Broad-street was on the most fashionable quarters in London his time Lords Weston and Dover had resid there. Devonshire Chambers, in Bishopsg street, a large block of new buildings for and offices, perpetuates Devonshire House. Queen Elizabeth's time, Gilbert Talbot, Ea Shrewsbury, and many other of the nobility gentry, lived in the district. A building different character was a factory in Venetian glass was manufactured by Venet The factory became the Pinners' or Pinma Hall, and was afterwards converted int Dissenting chapel. The Excise Office located in Old Broad-street from 1768 1848, when it was removed to Somerset H Early in this century Sir Astley Cooper, great surgeon, who was then attached to G Hospital, resided in Broad-street, quite ne Dashwood House. From this quarter Astley, who died A.D. 1841, removed to Spr gardens.

One of the most notable of the recent improvements in Bishopsgate-street, thoug very extensive, is Southsea-chambers, opposite Great St. Helen's. It is from designs of Messrs. Francis, architects, Pal ston-buildings, Old Broad-street. It has floors from the street level, and is divided four bays by three-quarter columns of pol red granite. The central bay has a p columns, with panelled stonework between the roof there are dormers having carved fronts. The friezes, strings, entablature, cornice, are of stone, relieved by carving in excellent proportions.

Another great pile of new buildings, des for office purposes, in Bishopsgate, ha erected upon the site of "Dashwood Ho and is rapidly approaching completion. "House" is supposed to have derived its from its having been the family residence descendants of Alderman Sir Samuel Dashw Lord Mayor of London, who, in 1702, g grand and costly banquet and entertainme Queen Anne, in the Guildhall. Sarah, dau of Sir Samuel, married Fulke-Greville, the Baron Brooke, of the family of the Earls B and Warwick.

Three years ago a large area of land between Bishopsgate Churchyard and Broad-street was covered by a number buildings, with gardens and courtyards, incl Dashwood House,—a fine City mansion o olden time,—the temporary residence, it been stated, of the ill-fated Lady Jane In their later years of existence the buil referred to have been occupied as offices o Ottoman Bank; the Swedish Consul; M Scott, Bell, & Co.; and other merchant great change has now come over the lo by the erection on the cleared ground of the largest buildings of its kind in the C London. In one sense the site is well ad for the uses to which the building is applied; but the building is somewhat o sight. The building is in close proximity t Bank of England, the Royal and Stock Excha Lloyd's, the Baltic, and other places of mercial importance and resort, and is close t Great Eastern, Metropolitan, and North Lo Railway stations.

The new structure, which is of a sort of G in style, has two principal elevations, one looking Bishopsgate-gardens, the othe Alderman's-walk, a public thoroughfare, unfortunately comparatively narrow. garden front is seen from Bishopsgat greater advantage, although a conside space intervenes. The fronts are of picke malms, relieved by terra-cotta ornamental and stone coursings and dressings libe introduced.

There are four entrances to the building principal entrance being from New Broad-st but considerably recessed from the street It is immediately adjoining the Metropo Station; another is from Alderman's-walk; two others are from the passage thr

opsgate-gardens. The Broad-street entrance Gothic archway in granite. The doorway into a glazed arcade, with mosaic paving. principal materials in the construction of ntrance from Bishopsgate-gardens are red grey Aberdeen granite, polished. It has red columns and pilasters and carved from which an arch springs; it has carved y in the tympanum, and over the arch a d and pierced gable and finial, with a very que gargoyle on each side.

e building is a somewhat irregular quad- e, and has a basement, ground, first, d, and third floors; the whole of the modation provided is designed for offices. rridors are ornamented with a tiled dado lly designed for the building, and executed ssrs. Minton. The floors of the corridors ed. The architect is Mr. R. B. Marsh.

chief portion of the land upon which the ng is erected is the glebe of St. Botolph, opsgate, of which the Rev. W. Rogers, M.A., or.

W. Brass, of Old-street, was the con- c. The ironwork, in girders, &c., has been ed by Messrs. Cochrane & Co., and the cotta by Messrs. Doulton & Co., of Lam-

NOTES FROM BIRMINGHAM.

hoarding in front of the new Municipal gs, or Council-house, as it is now called, ently been removed, and the pavement adway are being laid out. Half a dozen " have been placed on the piers of the ade over the portico, and are the subject h adverse and sarcastic criticism. These ced sitting on their haunches, with their s stiffly upright, and having a heavy f hair depending like a necklace round necks. The intermediate animals look t before them, but those on the angles eir heads slightly turned. No meaning, c or otherwise, has been assigned for animals. They certainly have a very us appearance, and a good opportunity display of high-class memorial sculpture en misused. The building itself is a ghly good monumental structure, though by an excess of carved ornament on its , the lines of which are very familiar to velled student.

front of Sir Josiah Mason's College is ce, and the glass in, and it is announced e institution will be open to receive s in October of next year. Several f science are to be filled, each having a ipend, besides fees, of 250*l.* a year. The g itself is, next to King Edward's the most imposing Gothic edifice in the

pen space at the back of the Town-hall occupied by a memorial fountain, erected r of the thrice Mayor, and now junior Mr. Joseph Chamberlain. Most men, how- ccessful, must be content to hope for nous honours, but the honourable gentle- friends,—and they are many in the a,—have subscribed some 3,000*l.* privately memorial, and the foundations are now n.

works in connexion with the restoration and ment of the Free Public Library and the on of the Midland Institute are progress- he old buildings in Paradise-street, which the Museum of Arms, are being demo- preparatory to rebuilding on the site a d lofty structure in which the new e to the class-rooms and the magnificent theatre at the back will be situated. portunity which the disastrous fire has or a remodelling of the plans of the Free , and a consequent enlargement by the n of the museum and art gallery, has been d by the Council, and the whole space is evoted to the library, at a cost for the g of 32,000*l.*

demolition of the very old houses and n the north side of Ann-street and west hall-street has been followed by the n of extensive premises for the Worcester unty Bank, and the Scottish Provident ce Office. The architects for these gs, which are faced with Bath stone, ed Runcorn and granite pillars, have ined to minimise their mere surface nt, and to place some eighteen life-sized in their elevations, the niches for which w being built. The style is Italian. A nd extensive block of offices is also going up on the opposite side of Newhall-street, and adjoining the Union Club.

The Town Hall is undergoing renovation in anticipation of the Musical Festival to be given within it during the coming month.

For several weeks past the roadway in Paradise-street, from Easy-row to Hill-street, and now from Hill-street to the site of the old post-office in New-street, has been "*up*," to the great loss of the shopkeepers and others. Last year that portion of the roadway of New-street lying between High-street and the old post-office was up during several weeks for the purpose of relaying the wood-pavement, which originally consisted of wood blocks on crossed boarding on a bed of sand, the wood cemented together with asphalte. This was found to wear badly into *pot-holes*, and in renewing it the two thicknesses of inch boarding under the blocks is left out, together with the asphalte, and a bed of lias lime concrete, 9 in. thick, receives the wood blocks direct, which are grouted together with lime. The second portion is being laid on the same plan as the first, and the opportunity is taken of renewing the timbers under the lines of tramway, which, originally 4 in. by 4 in., are now 9 in. by 4 in. It was observed by the writer one hot afternoon in July last year that the metal in one line rose 2 in. above the surface of the road, to the great danger of the vehicular traffic. This was remedied by taking up the metals and cutting off a portion. The same thing occurred in a less degree this summer, and it is hoped the additional strength of timber to which the lines are now secured will prevent this result, although it does seem that with a sufficient allowance in length for expansion this ought not to occur. Anyhow, it is most sincerely to be hoped that the new roadway will be lasting, or a return to Macadam, repairable in a night, may be looked for.

Great activity prevails in all the departments of municipal work in which sanitary arrangements are effected. The great sanitary work of forming Corporation-street from New-street, opposite Stephenson-place to Aston, through an insanitary area, is making progress. The street is already formed, and houses and shops are in course of erection at New-street end, and the opening will shortly be complete to Cherry-street, and then to Ball-street. The demolition of old property where required, and reparation to a decent habitable condition where not required for the new street, are going on. The Government have taken a large site near the Old-square on which to build new county courts, much to the disgust of property-owners about Waterloo-street, the site of the present courts.

Another considerable site has been taken by the Household Stores Association, who propose to remove their business there from Cannon-street, and the recently reorganised Fire Brigade will have their new premises in Upper Priory. Several other traders have taken land, and the prospects of success, financially as well as sanitarily, are very promising. A new building for the Medical Institute is going up in Edmund-street, in which terra-cotta of the very dark red kind is largely used, for which the builder has had to wait a great length of time. It is very much against the use of terra-cotta,—however desirable that may be,—that the delay in getting it made should be so great, and makers would be attending to their own interests who would shorten the period in producing it.

A new waterworks station at Selly Oak, belonging to the Corporation, is just completed and opened, at a cost of about 36,000*l.*, and giving a supply of two million gallons a day. This station is intended to supply a high-water service to the highest parts of the town, and the engines will give a total lift of 390 ft. above the surface. There are now five deep wells belonging to the Corporation. The old well at Aston gives steadily three million gallons a day. The quality of the water is throughout excellent.

New sewerage works, just outside the town, at Solihull, have recently been completed. They consist of a sewage farm of 15 acres, and about 3½ miles of sewers. Provision is made for a population of 7,000, and the cost is between 6,000*l.* and 7,000*l.*

New buildings for a lunatic asylum are in course of erection for Birmingham at Rubery Hill, about six miles from the town, on the Bristol-road. The contract is taken by Mr. White, of Swansea, at about 75,000*l.*; several local contractors tendered, but it is understood the lowest next above Mr. White asked some 15,000*l.* more. What is to be done with the present asylum at Winson Green when the new one is complete report sayeth not; but it is one of the most distressing signs of the times that immense structures for the confinement in useless idleness of considerable numbers of our fellow creatures should be provided, and that fit candidates can be found in abundance to occupy them.

Estimates have been delivered some time since for new offices, free library, baths, &c., for the Local Board at Aston, but the amount of the tenders appears to be more than the members feel justified in expending, and so the job hangs undecided.

The Corporation has recently acquired power to deal with disused burial-grounds in the town, and they have begun their work by altering the dilapidated and disgusting burial-grounds of St. Martin and St. Bartholomew in Park-street. New ornamental entrances and iron railings on stone-coped walls enclose the grounds, which will be provided with conveniences, and laid out as playgrounds for children.

The twenty-fourth school belonging to the Birmingham School Board has just been completed, and two others, making twenty-six in all, will shortly be opened, when it is hoped the accommodation will be fully equal to the demand, even if strict compulsion is resorted to. Taking them altogether, these schools are about the finest in the country. They have been costly, doubtless, but, wherever they are built, they add greatly to the attractiveness of the neighbourhood, and the ratepayers are, for the most part, perfectly satisfied with their outlay. It is to be hoped that another generation will arise who will bless the present for the wisdom of their investment.

One of the signs of the times is the gradual dying out of the use of the flannel jacket as an article of wearing apparel amongst workmen in the building trade. Thirty years ago, no carpenter or joiner certainly would have been met, during working hours at least, without this piece of uniform, but now it is nowhere to be seen. Our workmen have got above that. Uniforms are now mostly relegated to destroyers and men-slayers, who march up and down in pride with their weapons of destruction; but the man who creates or who produces, discards any distinctive badge, and is frequently to be seen in the heterogeneous habiliments of the common idler, and oftentimes ashamed of his tools. But the flannel jacket was very comfortable to work in in cold weather.

E. G.

THE VICTORIA DOCK EXTENSION

At the half-yearly meeting of the proprietors of the London and St. Katharine Docks Company, last week, the works which have for some years been going forward in the large extension of the Victoria Dock, about 500 acres in extent, were alluded to. The report stated that the extension had been impeded by the long winter and subsequent broken weather; but that the railway tunnel between the Custom-house and Silvertown had been opened for public traffic, and every effort was being made to secure the early completion of the works. The chairman, adverting to the subject, said that the work was now approaching completion, and there was every reason to hope that the time was not far distant when they would have the extension dock opened. He observed that probably no work of such magnitude had ever been carried forward in any other country with so few drawbacks, and certainly none affording equal accommodation, at the same cost.

Grosvenor House.—The Duke of Westminster is desirous that designers, artisans, and the like, employed in any branch of art applied to productive industry, should have the opportunity of inspecting Grosvenor House, with its works of art, daily, including Sundays, during the months of August and September, 1879, from two p.m. to six p.m. He regrets that, for want of room, he cannot extend the admission beyond the persons specified. A number of tickets of admission have been placed in the hands of the Secretary of the Society of Arts for distribution among persons answering to the above description, who can obtain tickets on application at the Society's house, by bringing with them a paper containing their names, addresses, and occupations.

ESSEX ARCHÆOLOGICAL SOCIETY.

On the 29th ult. this Society had its annual excursion, Southend being the starting-point. There was a considerable attendance of members, together with a sprinkling of ladies, and every one evidently thoroughly enjoyed the drives along the umbrageous country roads, and the contemplation of the pastoral and finely-timbered Rochford Hundred. The places visited were Porters, near Southend, Prittlewell Church and Priory, Rochford Church and Hall, and the churches of Ashingdon and Canewdon.

The proceedings of the day commenced with a business meeting at the Royal Hotel, Southend, Mr. G. Alan Lowndes, the president of the society, in the chair.

The secretary (Mr. H. W. King) read the twenty-seventh annual report of the Council, which stated that the society continues prosperous. Notwithstanding a few casual and almost inevitable annual losses, the number of members has slightly increased. The treasurer's financial statement showed that on the 30th of June there was a balance of 218*l.* 13*s.* in favour of the society, and there was an available balance of 193*l.* 10*s.*, beyond all liabilities, for the expenses of the museum and for publishing, &c., for the current year. The society possesses also 100*l.* Metropolitan Consolidated 3½ per cent. stock, and a sum of 24*l.* 8*s.* 6*d.* invested in the Savings Bank on account of life compositions. For some years past the general management of the museum has been entrusted to a committee, composed of seven members of the Corporation of Colchester, and as many of the society, six of whom are on the Council, who meet monthly. Yearly the museum has continued to be enriched by donations, chiefly of Colchester and Essex antiquities. This rapid increase has rendered necessary a re-arrangement of the contents, and, under the supervision of the hon. curator (Mr. C. Gunner), the objects have been classified and better arranged for examination. According to the sub-curator's report, there have been this year 16,514 visitors to the museum, which is daily open to free inspection.

Mr. G. E. Pritchett, F.S.A., proposed, and Mr. J. Littler seconded, the adoption of the report, which was carried.

The Rev. E. J. Hill proposed "That the best thanks of this meeting be given to the president, vice-presidents, council, and officers for their services during the past year, and that they be re-elected." Mr. Benton seconded the resolution, which was carried.

The Chairman announced that the place of meeting next year would be Saffron Walden.

The business part of the meeting being now concluded, Mr. King, at the request of the chairman, gave a general sketch of the archæological history of the Rochford Hundred. According to the *Chelmsford Chronicle*, he commenced with the church of Thundersley, which he described as a perfect gem. Going a little further east he described Hadleigh Church, which he considered to be the most interesting church in that part of the county. It was a perfect Norman structure, from east to west, and had been comparatively little altered. This very interesting specimen of Romanesque had a circular apse, and the chancel was divided from the nave by a plain semicircular arch. A lancet window had been inserted in the north wall, and a Decorated window in the chancel, about the time of Edward I. or Edward II. On the north and south sides, too, there were very fair specimens of windows in the Perpendicular style. He was sorry that they were not going to visit the singularly interesting church of Eastwood. In the west end of that church there was a remarkable structure of oak, mostly pegged together, and there was an interesting tub-shaped Early English font. Shopland Church, also, was a very interesting structure. There was a transition Norman font, very square, and an interesting brass of the Sergeant-at-Arms of Edward III. Little Wakering Church had a tower of fine Early English work. The armorial bearings upon this tower fixed the date of its construction with absolute certainty as *circa* 1420. There were some interesting points about Great Wakering Church, the tall lancet windows in the tower being well worthy of notice, especially the window of a room over the west porch, which he supposed to have been a muniment-room. South Fambridge had a new and very ugly church, some forty or fifty years old, or perhaps a little older. It had, however, a very good Early English font-basin, sculptured with vine-leaves. Passing on to Ashingdon Church, he said that some of the most competent archæologists in the kingdom had decided that its tower was the veritable one built by King Canute in commemoration of his great victory over Edmund Ironside. The internal construction of the church was very remarkable, and was different to anything he had seen in the neighbourhood. It had been cased, unquestionably, in the Decorated period. The church of Leigh belonged to the late Perpendicular period, and had nothing particularly striking about it with the exception of the tower. In the early towers of Essex only rubble or rough stones were found. But, about the fifteenth century, when the country became richer, and it was comparatively easy to obtain ragstone from Kent by water carriage, very fine Perpendicular towers began to be built. The whole Essex coast was very rich in these towers. Prittlewell Church, which was built of this stone, in his opinion rivalled the towers of the West of England. The ragstone tower which was most remote from the water was that of South Weald. At Rochford Church bricks had been used, although it was near to water carriage. In the interior of the county, bricks or old rubble were generally found. Following the line of the Crouch nearly all the churches were of ragstone. Rettendon and Runwell churches, both of which had fine stone towers, were very near to the river. Going on to Brightlingsea and up the Colne, all the fine ragstone towers were built in places easily accessible from the water. Hockley had, he said, been thought to be the site of the great battle between Canute and Edmund Ironside, but that had been proved not to be so. The church of that place was a very fine transition Norman structure, and,—what was very rare in this county,—it had an octangular tower, and the church contained some exceptionally good sculptured capitals. Alluding to Canewdon Church, Mr. King said he had pronounced upon its date as of the time of Henry V. solely from the armorial bearings which he had found there of the Totham family. The latest date to which he could bring that family was 1393, and he should like to know whether the lines of the nave and of the mouldings were consistent with so early a date. Reverting to Prittlewell Church, he said the tower must have been finished about 1469, as he had two wills dated about that time in which bequests were made with regard to the pinnacles. South Benfleet Church Mr. King characterised as the most dignified structure in that part of the county. The way in which the nave was elevated, the clearstory, and the raising of the chancel several feet above the nave, were exceedingly interesting, and the timbered porch was, with the one exception of Margaretting, perhaps the finest in Essex. Rayleigh Church, like the church of Shenfield, was worthy attention from the very singular circumstance that timber arches were there used, one arcade of the chancel being of fine old oak, which had stood remarkably well. The fine brick porch was grand, the light and shade got out of the mouldings being very striking indeed.

On the conclusion of Mr. King's remarks, the party took to the breaks and drove to the first point of the excursion, Porters, near Southend, the property of Sir F. W. Heygate, bart.,—and the residence of Lady Charlotte Bacon, the last of the historic house of Harley. This house was in existence in 1592, when it was the residence of one Humphrey Brown, and Mr. King thinks there are indications that the house was erected between 1567 and 1580. Some fine wainscoting in the large hall is manifestly much earlier than this period, and Mr. C. F. Hayward, F.S.A., seemed inclined to think that the house itself was of earlier date than that attributed to it. Porters is a fine old house and a pleasant residence.

The party next proceeded to Prittlewell, the fine church of which was one of the chief points of interest visited during the day. Here, Mr. King, as on several other occasions during the day, gave some description of the church, so also did Mr. Hayward. The fine stained glass which formerly adorned the windows has almost entirely disappeared. Mr. Hayward's idea is that a Norman church formerly occupied the site of the present building, and he bases this belief upon the fact that there are the remains of round arches in the south aisle which were cut into in the architectural period which succeeded the Norman.

The party next proceeded to Prittlewell Priory, the residence of Mr. J. Farley Leith, M.P. The house is to all intents and purposes a modern erection, but there are some remains of cloisters.

Rochford Hall was next driven to. Wit the time-worn walls of this mansion some the early years of the ill-fated Anne Bole were passed. Mr. Benton produced a p which had been prepared by one of his frien designed to show the original lines and exte of the house. From this and other indicatio it would seem that there now merely remain part of one quadrangle, and an attempt wh was made some years ago to spoil into mode isation a fine specimen of early sixteenth-cent domestic architecture succeeded perfectly. Th were formerly eight towers, containing bowe which were reached by spiral staircases, and o of these was pointed out as being that in wh was situated Ann Boleyn's bower, or boudoir we should say now. The walls of the house very thick, measuring about 3 ft., and th are indications that it was formerly surroun by a wide moat. The building is supposed have been erected between 1525 and 1528, Sir Thomas Boleyn, although Mr. Hayw thinks it possible that it may have been b somewhat later, and entertains doubts whet the house was ever finished. He assigns t the central date of *circâ* 1500. He explai that he came to these conclusions in s measure by reason of the correspondes between some of the work to be found here that of Layer Marney tower. He descri the original plan of the building as "excessiv magnificent."

Rochford Church, which stands opposite the Hall, was next visited. It is supposed have been built by Humphrey Bohun, Ear Hereford, Essex, and Northampton. Mr. observed that until the quite recent restora of the church, there existed evidence that Earl was the founder of the church in the sh of some of the grandest decorated glass which he was acquainted. This glass had however, disappeared. He expressed a that if it were still in existence, it might forthcoming. Some part of the church is in late Perpendicular style, and this portion is posed to have been erected by the Ear Ormond who died in 1515, but the tower earlier date.

The party then drove to Ashingdon. On t arrival a pleasant surprise awaited them in shape of a luncheon which had been prepa for them on the lawn at Ashingdon Hall, property of Mr. Alfred White, F.S.A. A m was then made to the church, the princ interest attaching to which is that it is upon part of the site of the great battle be alluded to, and that it stands within the trenchment of King Canute's camp. The Sa chronicle states that, in commemoration of victory, Canute built a church of stone and upon the spot where that victory was gai The work of the tower is stone and lime glomerate. Some discussion took place in church between Mr. White, F.S.A., who ch pioned the view that the present tower is built by Canute, and Messrs. Hayward and Chancellor. Mr. Hayward was of opinion various architectural reasons, that the chu was not any older than it appeared to be on exterior. If it were of the age ascribed t he hardly thought it would be in so good a dition. He had very grave doubts, and was in the least convinced that the building any older than the Decorated period. T was nothing very peculiar in the constructio the church itself; the roof was evidently so and he should like to see the whitewash cle off it. Mr. Chancellor considered that the to was not a day older than the year 1400. White contended that the position of Ashing was extremely good for obtaining stone, an thought there could not be a doubt that greater part of the walls of the tower built in the time of Canute. There was decay in walls of that kind, for when they put together with plenty of lime, no destruc took place. He described the old idea that Saxons built solely with wood as a stumbl block, as, in point of fact, they used stone as the Normans did afterwards. Mr. Chanc remarked that there was actually a piec moulding of a later date worked into a pa the building. The only really early point a the church was the doorway, which was bably built in afterwards. The original ch probably settled, and was in consequence pu down and rebuilt.

The party were then conducted to Canew Church, the last point in the day's excurs Externally, this church is an apparently Perpendicular building; but inside it has

Hayward pointed out, a somewhat different acter, and the arches are poor in every way. church contains a very fine Georgian pulpit, cherubs' heads and other carved orna- ation.

THE ANNUAL MEETING AND EXCURSION OF THE KENT ARCHÆOLOGIAL SOCIETY.

Wednesday and Thursday of last week xcursion began at Ham-street Station at 'clock in the morning. A drive of about ty-five miles, with frequent halts to inspect hes and other buildings, was made through tile land of rich green pasture, scanty and cottages of timber and tile-hanging ed with wonderfully yellow lichen. Papers, hes, and an excellent temporary museum the night eventful for New Romney. Its ottages were crowded by such a demand ds as has not been known for generations. econd day's excursion took the form of a rom Appledore Station to Appledore again, sing the most interesting portion of "the corner of the globe." The annual meeting lace at the first halt, on Wednesday, in the ng-room of the new Orlestone Rectory,—a of the modern type, with very red window- , red wall surfaces, red tiles, big red eys, little panes and very white sashes,— sant object when it comes to be surrounded es and greenery. Earl Amherst took the and the Rev. W. A. S. Robertson, the ry secretary, who did great things all h for the success of the excursion, read nual report and managed the form of ss. Fifty-seven new members have been during the last twelve months, a good on even for the strongest of the county es. Sir Walter Stirling's speech on the called attention to the number of the ionists,—about 200,—as evincing a desire y for the protection of our ancient monu- but also for the continuance of the well-established methods of archæolo- esearch. He, for his part, did not the ppreciate the really hard work of this ion, because it was undertaken in a spirit by preference under the smiles of n and the smiles of the ladies. The by the Bishop of Dover dealt with story of Romney Marsh from Roman in a pleasant discursive way. He re- d that he might incur the imputation hardiness in sounding the first note of e to a region which some had feared ould not find very full of interest. He agree with them. He doubted not they ight on some things well worth seeing, hey might fail to find in some richer and ully stocked hunting-ground of antiqua- esearch. Strictly speaking, Romney embraces more than the eastern Kentish s with which they had to do. The f this "*altum pelagus et mare velivolum*," stretched out beneath the far-reaching arc from Hythe to Fairlight, was owned as by Sussex as by Kent. Romney Marsh: lid it mean? "Rumenea, large or watery said Hasted, following in the track of rde and Sumner. For his own part, he ed to hold, *medio tutissimus*, to a part of history between the Kelt and the Saxon, the "Insula Romanorum" of Holinshed. it was always "Ey," or "Island," as part district is still "Oxn-ey," the Isle of the xen which still pasture in its fields, and were aven on its pagan altars,—Ey, or Isle, of mans. The geological result was obvious, an unpractised eye. None could doubt e old "*mare velivolum*" reached up the valley beyond Newenden. So far back . 893, about 1,000 years ago, "the Danish " as Lambarde calls them, towed up imen Mouth a fleet of no less than 250 In the still earlier Roman days, Limen was doubtless a broad estuary under e heights, guarded by the Roman cas- of Studfall. Afterwards, when the or, as it was now the fashion to call he Englishman, landed in Thanet, and a fresh page in our island annals, ame of its old Roman masters might ave lingered among the low oozy islands. onward through centuries the name of man "Ey," or island region, clung to the The gradual conquest of the sea by land arked by a few decisive battle dates,—as, e two disastrous tempests in the reigns of d I. and III. (1287 and 1334). The first destroyed Old Winchelsea; the second opened out a new bed for the river Limen or Rother, so effectually that the king made a present to the monks of Canterbury of part of the old dried-up channel as land worth the having. Other epochs, more uncertain as to exact date, were signalised by the substitution of Hythe for West Hythe, as a port, and of New Romney for Old Romney. Which was the first Marsh village he forbore to guess; but it had been suggested that the ruined walls of Hope Church mark the earliest church site, and that its name testifies to the pious hope of its founders that the newly-gained lands might never fall a victim to the sea. If church buildings were always, as now, a sign of population, there could have been no lack of Marshmen in the days of yore. To the churches still in use must be added no less than four others at New Romney alone, and the ruins or sites of churches, at Midley, Blackmanstone, Orgarswick, Eastbridge, West Hythe, and Broomhill. But this abundance of churches, and the existence of a large church like that of Ivychurch, with only 280 people at the present time, did not necessarily imply a much larger population than at present. In what we are pleased to call the "dark ages" men were apt to build and endow churches, whether simply *ad majorem Dei gloriam*, or possibly by way of atonement for a misspent life, without reckoning so many square feet of area to be fitted with so many seats. In conclusion, he asked, Are any of you artists as well as archæologists? Our Kentish Holland lacks its Cuyp and Wouvermans; but Mr. Champneys, in his able word-and-pencil sketches, has shown what a painter might here achieve. I have more than once felt myself stirred to admire the poetry of a marsh landscape. The sun, let us say, is hastening to its settling over Fairlight, and the shadows are slowly lengthening out Hythewards. A gentle evening breeze rustles peacefully among the flags along the dyke side. The blue sky overhead was never more blue. Where are we? Is this Kent? Or have we dropped down somewhere on the Campagna, outside the walls of Rome? For lack of a ruined aqueduct, your eye rests on the grey walls of Hope or Eastbridge, or the solitary arch of Midley. On one side rises a tall landmark across the plain,—the Campanile of Lydd. On the other, stretches far away the long ridge of the Alban and Sabine hills, which folk hereabout call Lympne and Aldington. Then comes creaking along the road to Ostia (New Romney) a heavy wagon, drawn by the wide-horned, mild-eyed, melancholy oxen, which every Roman artist knows so well. Thus fancy lends her ready aid in support of my honest theory as to the meaning of the name, Romney Marsh.

A local type is followed in the main in all the nine churches visited in the two days. Western towers, with comparatively wide aisles to the naves; chancels as wide as the naves, and usually with wide aisles on both sides, would describe one after another, if the necessary exceptions were noted. The towers are opened into the churches by wide fine arches; the chancel arches, when they are not omitted altogether, are usually carried on piers which project but slightly from the north and south walls. Thus, from the west wall of the tower to the east wall of the chancel the effect is frequently that of a very long nave. Vaulting does not exist in any considerable quantity except in the tower of Lydd,—a very rich specimen of the lierne vaulting, and something, very notable in its own way. *Norman* foundations are the rule, and Norman doorways remain, frequently three to a church, many of them in very perfect preservation. The west doorway of New Romney is the grandest example, and has a profusion of orders with enriched ornamentation. The arcades are more frequently of Early Decorated than of any other date, but there are good specimens to be found of every period. The Norman at New Romney is especially noticeable for its richness and the original character of the detail.

Checking off the beauties of the churches point by point is sometimes as tedious to the reader as it is laborious to the writer, and therefore summaries may give place to the mention of a few special features when a very important general one has been named, and the reader is made aware of the fact that habits of "restoration" deplored so pathetically where they are prevalent have not yet reached this quiet corner of England. Tall rubbishing seats of the last century, painted white, worm-eaten, rotten, and mouldy, very damp floors, leaky roofs, and prodigious whitewash remain to testify the good deeds of our fathers and grandfathers. Hasted does not do full justice to Ruckinge when he is moved to say "that it lies obscurely, is a truly unpleasant place, has narrow and miry roads, with dispersed dwellings, inhabited by a poor sort of people." Ruckinge affords a good example of the prevalent roof, strongly bracketed tie-beam, octagon shaft in the centre with moulded capital and base; bracer projecting on all four sides of the capital, on the east and west to support the ridge, on the north and south to stiffen the rafters; any one of the churches may be considered unlucky if it cannot afford an example of a roof of this form. A timber porch on the north aisle has specially pretty barge-boards. The windows of Newchurch Church, of about 1320, particularly the three-light windows, would be notable anywhere for variety and quality of design; the large circles, generally sexfoiled, in the heads are in good relation to the lights below, which does not often happen in windows of this class. The wooden screen between the church and the tower, dated 1686, has characteristic turned balusters put very closely together, and the happiest example met with in the journey of the class of woodwork which, failing to be beautiful, we are all agreed to call quaint. Old Romney Church has the finest font, a square bowl supported by a central octagon, and four angle shafts. The angle shafts have unique carved capitals and moulded bases, Decorated, late in the style.

The temporary museum at New Romney was brought together in the Assembly Room, arranged by Mr. Walker, the mayor of the town, who also lent a large number of objects. The collection comprised early printed books, illuminated manuscripts, costumes, archives, regalia, tapestry, needlework, brasses, and Mr. James Neale's interesting *fac similes* of the recently discovered Canterbury paintings.* The papers on the origin of the name of Romney, on the town and port, and on the municipal records, carried on the evening until it was too late to read the paper prepared by Mr. Scott Robertson on the lost churches of New Romney. A nave of seven bays and proportionate dimensions everywhere else give to Lydd absolute grandeur. A very rich wooden screen, now stored at the side of the chancel, originally formed the rood-screen. The number of the brasses is worth a note, and a hint to the custodians that they should be securely fixed against the walls, so as to guard against accident and "enlightened curiosity." The leaden font, and the octagonal wooden steeple,—detached from the church,—are oddities. Snargate has a continuous nave and chancel, without any break or chancel arch. There are indications of a rood-screen, now destroyed. The desecrated chapel at Horne's Place, now a barn, is an excellent example of a small work in Late Decorated, designed and executed in the best manner, both as to proportion and detail, resulting in a pleasingly refined expression, which ought to be caught and transferred to paper by some laborious student on the look-out for some unhackneyed subject.

An elaborately carved chair of the Perpendicular date, which strangely enough has migrated to Kennardington from York Minster, and a fine wooden chimneypiece, recovered from a destroyed house at Edmonton, give interest to the recently-erected parsonage just by Kennardington Church. The church itself is a summary, in some sort, of the features of the locality now and aforetime. The quaint west tower of the existing church is attached to what was merely the south aisle, but now forms the whole parish church. The nave was destroyed in the sixteenth century. Since that date, no outburst of church-building or church-restoring energy has swept across the peaceful pastures of Romney Marsh.

Obituary.—Mr. Robert Caldwell, builder, Inverness, lately died. He commenced his business career in life as an apprentice with his uncle, Mr. Thomas Caldwell, builder, Edinburgh. This was about the year 1822, and in 1828 he commenced operations as builder in Wick. He built Glentruim House, Cantray House, and several other mansions in the neighbourhood of Inverness. He subsequently engaged in the timber trade, and bought hundreds of acres of growing timber in Inverness-shire, Ross-shire, and neighbouring counties.

* See *Builder*, page 828, *ante*.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

The annual meeting of this Association was held on the 31st ult. in the theatre of the Institution of Civil Engineers, Great George-street, Westminster. The chair was first occupied by Mr. James Lemon, C.E., of Southampton.

Mr. Jones, the honorary secretary, read the report of the council, which stated that the meetings held during the year at Liverpool, Derby, and Wrexham had been completely successful.

The result of the voting for the election of president for the ensuing year was a tie, each of the candidates, Mr. E. Pritchard, of Warwick, and Mr. G. F. Deacon, of Liverpool, having received thirty-one votes, and it was ultimately resolved that new voting-papers should be sent out to the members, and that Mr. Deacon, of Liverpool, who was president last year, should be invited to retain the office until the result of the voting was known. Mr. Deacon then took the chair, and on doing so said that, as he had not anticipated that he should be asked to take it, he was not prepared with an address.

Mr. James Shoolbred, B.A., read a paper on electric lighting and its application to public illumination by municipal and other bodies. Dealing first with the question of expense, he gave estimates showing that under three electric light systems, the Gramme A machine, the Siemens medium machine with the small-sized Siemens lamp, and the Jablochkoff system, besides the first outlay, the working expenses per hour of the system first-named were for one light, 1s. 6d.; for two lights, 2s. 1d.; for three lights, 2s. 7d.; and for five lights, 3s. per hour; for the second, 1s. 7½d., 2s. 4d., 2s. 10d., and 3s. 9d.; and for the third, for six lights, 2s. 5d., and for twenty lights, 5s. 5d. per hour. Another point discussed in the paper was as to the wholesomeness and pleasantness of the electric light as compared with gaslight. The electric light gave off nitrous acid, and gas gave off sulphurous acid, both of which were objectionable in almost the same degree; but by experiment it had been shown that only about five grains of nitrous acid were given off in one hour by the electric light, with an illuminating power of 1,000 standard candles, whereas twenty grains of sulphurous acid were the result of the combustion of 100 cubic feet of gas, the illuminating value of which would be four standard candles.

Several other papers were read, including one on sluices and penstocks by Mr. M. B. Smith, and one on separate systems of sewerage by Mr. Lewis Angell.

FROM SCOTLAND.

River Pollution.—On the 31st ult., Sheriff-Substitute Hallard heard counsel on the revised record in the action, at the instance of the Provost, Magistrates, and Council of Portobello, against the Edinburgh Corporation, in reference to the pollution of the Figgate Burn. The court was petitioned under the Rivers Pollution Prevention Act, 1876, to ordain the defenders to abstain from polluting the stream in question, which, it is alleged, they are at present doing to the extent of about 450,000 gallons of sewage per day. On the other hand, the defenders submit that the Powburn was used for conveying the sewage of Morningside for more than forty years before the passing of the Act, and that the stream also receives the sewage of Liberton and Duddingston. After hearing counsel, the sheriff indicated that he should find that the averment in the petition, as it stood, was not relevant, and appoint the petitioners to state whether, at the date of the passing of the Rivers Pollution Prevention Act, the stream in question was not mainly used as a sewer, in which event it would not come within the operation of the Act.

An Engineering Feat.—A feat in railway engineering has just been successfully accomplished on the Highland Railway over the river Lossie, near Elgin, which, though wanting in the element of vastness, presents some points of interest. The work to be done was the removal of an old wooden bridge and substituting in its place an iron one. The contractors for the work were Messrs. Alex. Shanks & Son, engineers, Dens Iron Works, Arbroath; and the arrangements were carried out under the personal superintendence of their manager, Mr. J. G. Lyon, and Mr. Murdoch Paterson, the railway company's engineer. The bridge is about 100 ft. long, and consists of two spans of about 50 ft. each. The whole structure weighs about 40 tons. The bridge, which is of wrought iron, was completed on the 24th ult., when it left Arbroath for Elgin, and the work of demolition and reconstruction commenced after the passing of the last train for Forres at half-past eight p.m. on Saturday night, and was continued, almost without interruption, until four a.m. on Monday morning, July 28, at which time the whole of the old bridge had been removed, the new bridge placed in position, and the whole of the permanent way laid. When the first train, due at six a.m., came up on Monday morning, all was in readiness, and the traffic has since been carried on uninterruptedly.

Glasgow Asylum for the Blind.—Early in 1878 the managers of this institution invited architects to submit plans for the construction of new buildings. Those prepared by Mr. Wm. Landless, architect, Glasgow, were chosen, the estimated cost of which will be about 21,000*l*, exclusive of fittings. The foundation-stone was laid on Tuesday, the 5th inst. The frontage to Castle-street is 230 ft., to St. Mungo's burying-ground, 207 ft.; to Vicar's-alley 205 ft.; and to the north, 135 ft. There will be shops in that part fronting Castle-street, with warehouse accommodation above. The main entrance in the centre of the building leads to a court, from which all the departments are reached, and is flanked by two towers. South of this is the private entrance to the school, and still farther south is the entrance to the stair in the tower, which leads to that portion which is intended to be let. The tower at the angle of Castle-street with the burying-ground is hexagonal in form, and will be 110 ft. high, surmounted with gables and turrets. To the north of St. Mungo's burying-ground will stand the school building, containing, on the ground-floor, school-room, 46 ft. by 31 ft., 18 ft. high to ceiling; teachers' and visitors' rooms; kitchen, 24 ft. by 22 ft., with 18 ft. ceiling, having large scullery, &c.; boys' dining-hall, 22 ft. by 19 ft.; serving-room and lavatory on the same level. On *entresol*, girls' dining-hall, 22 ft. by 19 ft.; serving-room, and lavatory; also servants' accommodation, &c. On the first-floor are placed superintendent's and matron's houses (the first consisting of five rooms and kitchen, the latter of parlour and bedroom). Accommodation is also provided for parlour boarders, knitting, recreation, music, and teachers' rooms. Dormitories, 13 ft. high to the ceiling, occupy the whole of the two upper floors, the girls being located to the west and the boys to the east. Each dormitory has baths, lavatories, matrons' rooms, crib and sick rooms, &c. The boys reach their dormitory from the north and the girls from the south court, each by separate stairs.

THE PRIVATE CHAPEL OF HIS GRACE THE DUKE OF WESTMINSTER AT EATON HALL, CHESHIRE.

The chapel attached to Eaton Hall, the residence of His Grace the Duke of Westminster, is being rapidly completed from the designs of Mr. Waterhouse, A.R.A. We give a view of it.

It stands almost detached from the main building, with which it is connected, however, by a corridor; part of this appears in our drawing, on the extreme right.

The plan consists of a chancel, terminated with a western apse, and furnished with a vestry on the south side, above which is a lofty organ-chamber. On the south side of the vestry stands the tower, the ground story of which is arranged as an inner vestry for the use of the chaplain. The nave, with ante-chapel and south-east turret, completes the scheme. This turret-staircase rises from the courtyard below to the ante-chapel; another story brings the visitor to the gallery above; and a third to the roof above the vaulting of the nave. Here a passage is formed between the vault and the external roof, lighted by dormer windows, which leads through a door in a larger dormer, and across a bridge to the upper stages of the tower. There is also a small staircase leading from the vestry to the organ-chamber.

Externally, the tower, with its bridge thrown across to the chapel parapet, forms the most prominent feature. The chapel windows are filled with tracery, simple in form and richly moulded, with shafted jambs both without and within. The windows generally are of two lights, while the large window, of four lights, forms a noticeable feature in the east end. Internally the ante-chapel stretches across the east end. It has a door at ea extremity,—one on the south-east leading dire to the garden, and the other opening into t corridor by which the chapel is connected wi the house. The ante-chapel is covered with groined roof of oak, and the floor is paved w. black marble and encaustic tiles.

Between the ante-chapel and the chapel is handsome stone screen, in three compartmen corresponding with the three bays of the form In the centre is the door, and on either ha arched openings, divided by central shaf carrying two arches within a large enclos arch. Above is a corbelled projection, carry the parapet of the gallery.

The nave, of five bays, which, with the r of the chapel, has a stone groined roof, has c windows on the one side; on the other panels corresponding to the windows of t lights opposite. These panels are filled w mosaic work. The nave benches, which placed after the manner usual in parish church are of walnut, with ends filled with tracery carving. The font, of alabaster, stands at north-east corner of the nave, immediately front of the screen between the chapel and ante-chapel. It has a moulded bowl, suppor by a cluster of shafts, which rise from a moul base. At the entrance to the choir is a d screen of alabaster, divided into square pan filled with pierced foliage, very delicat carved. The pulpit is formed by a continua of the screen, and is semi-octagonal on plan.

Two bays are allotted to the choir, on south side of which is the organ. Here ic piers carry arches almost to the soffit of groining, and within them is arranged the org gallery, which projects a little beyond the of the piers, and is of rich panelling groining, all of walnut. Beneath the galler arranged the organist's place and the entra to the vestry, which are contrived in the c position of the wooden screen.

The compartments opposite these lofty arc are panels filled with mosaic, as in the n The choir-benches, of walnut, have their e enriched with tracery and carving, the princ standards carrying figures of angels bea musical instruments.

The apse has five windows, of two lig similar to those in the nave, but with w cusping, and is surrounded below the wind sills by a deeply-recessed wall arcade, afford recesses for sedilia and credence.

All the windows are being filled with stai glass, illustrating the "Te Deum Laudam executed by Messrs. Heaton, Butler, & Ba after drawings by Mr. F. J. Shields.

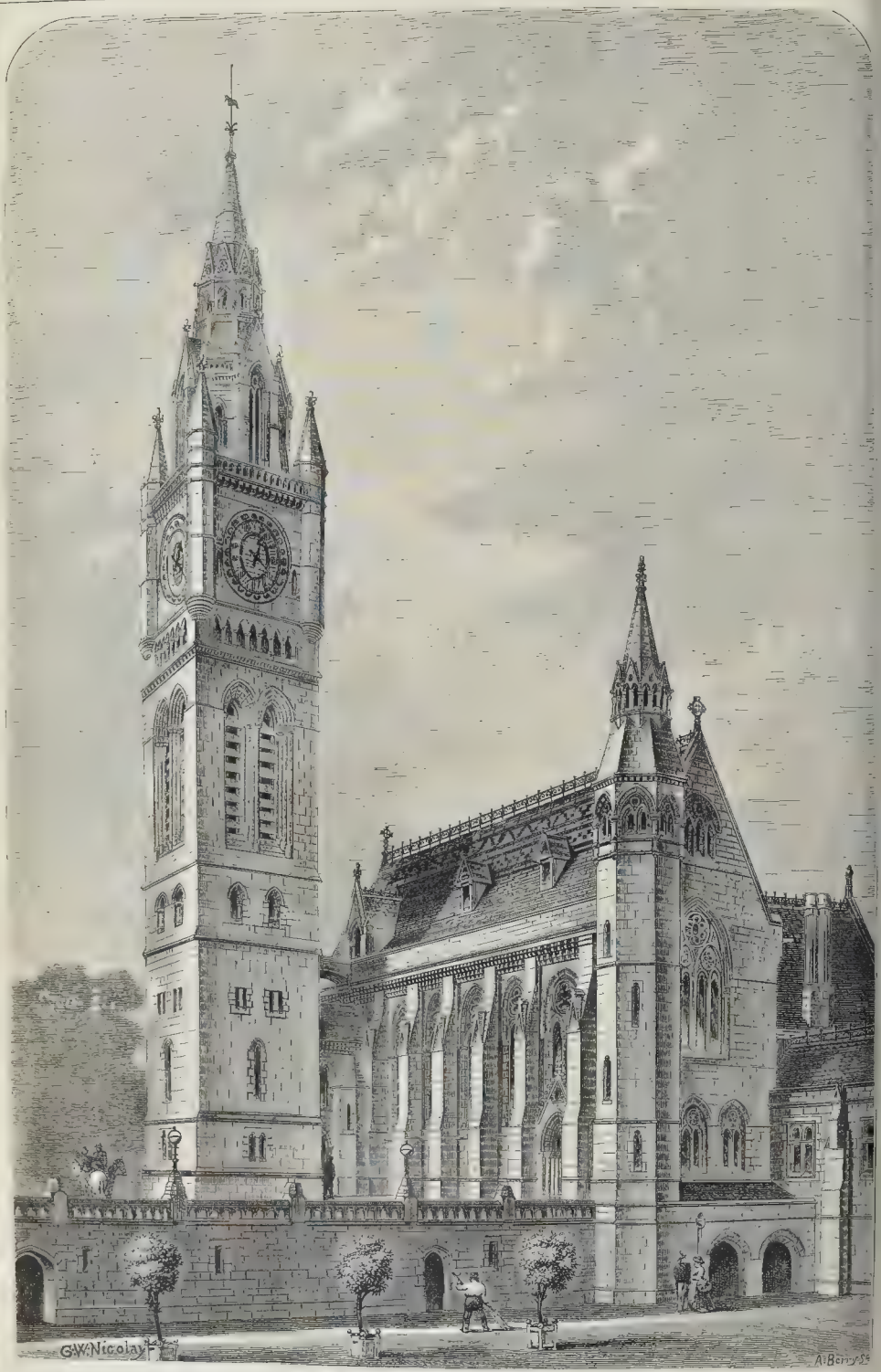
The reredos is an elaborate structure in th compartments, the centre having an arc opening, containing a Latin cross, and mounted by a high-pitched gable, with croc and finial. Those on each side are arcade two divisions. The mouldings of the arc as well as of the jambs between the cluste shafts, are adorned with carved foliage.

floor of the chapel is to be composed of bl marble and antique tiles.

In the tower is hung a peal of twenty-ei bells, cast by M. Van Aerschodt, of Louvain. tenor is inscribed with a legend recording w they were cast, and for whom. The clock carillon machinery are in the stage below. clock has four dials, of gilt mosaic, and has b manufactured by Messrs. Gillett & Bland, Croydon.

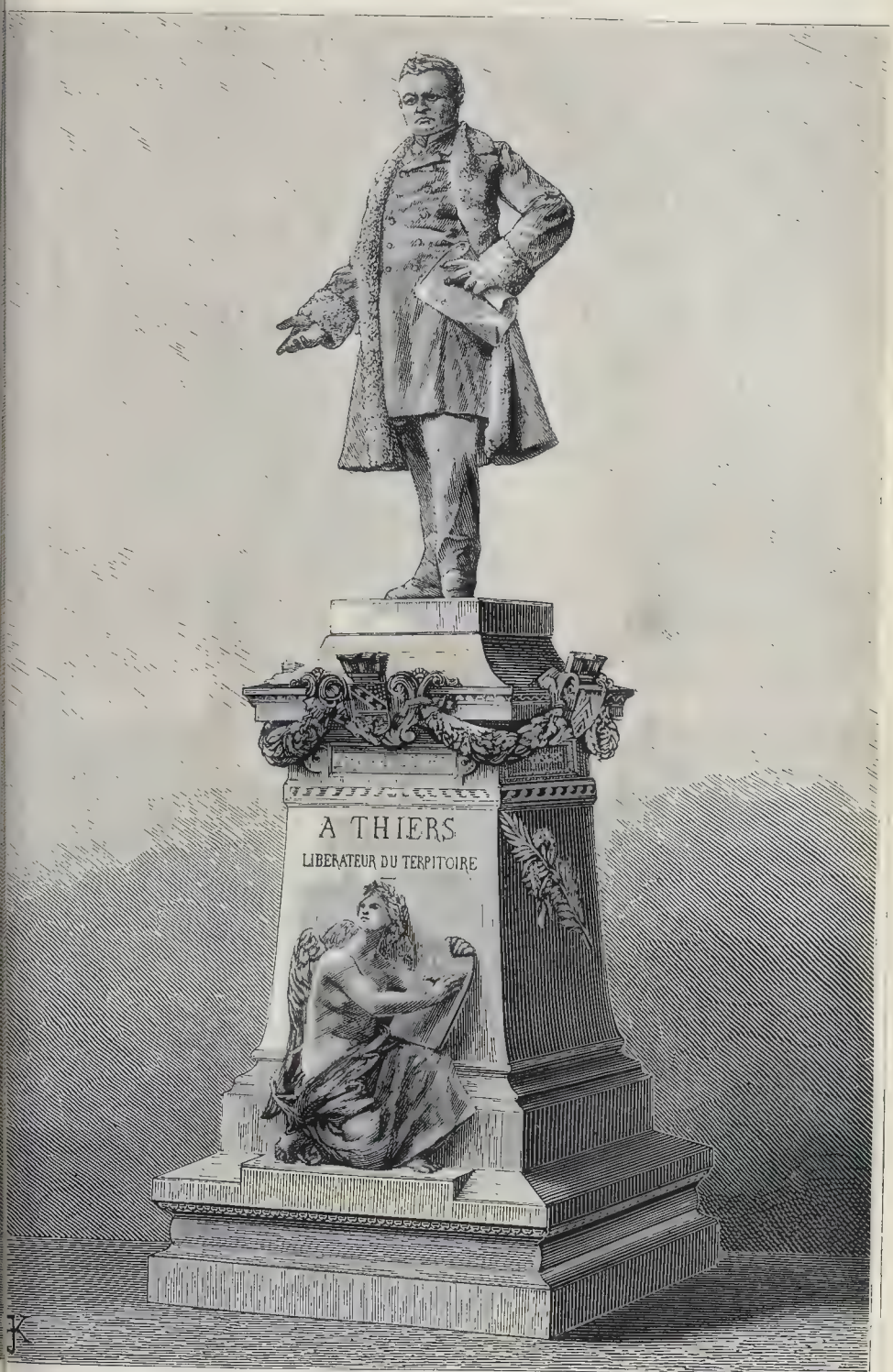
The contractor for the works at Eaton Messrs. George Smith & Co., Mr. Oldrieve be clerk of the works.

Royal Scottish Society of Arts.—A meeting of this society in Edinburgh, on 28th ult., reports of committees were submit on communications previously read to the socie On Mr. John Sang's "Method of Adjusting Sizes of Branching Water Pipes," it was repor that the method proposed for solving the prob was an ingenious application of a principle whi though known and made use of in hydra engineering for many years, had not, so far the committee was aware, been applied for above purpose. The paper was recommend to the favourable consideration of the Pr Committee. The same committee, reporting Mr. Peebles's method of ascertaining the c sumption of gas, stated that it contained m than the germ of a new and more accurate p of measuring and regulating the consumpt of gas, and they had no doubt it would, in hands, assume more perfect shape.



THE PRIVATE CHAPEL OF HIS GRACE THE DUKE OF WESTMINSTER, AT EATON HALL, CHESHIRE.

Mr. Waterhouse, A.R.A., Architect.



STATUE OF THE LATE M. THIERS, ERECTED IN NANCY, FRANCE.—M. Guilbert, Sculptor.

THE MONUMENT OF M. THIERS.

e monument of M. Thiers which was un-
ed on Sunday last, in the presence of an
nse and enthusiastic crowd of people,
s in the open space in front of the railway
n in Nancy, now called "Place Thiers."
funds for the erection of the monument
raised by public subscription; the design
to M. Guilbert, who carried off the prize
hich seventy-five sculptors competed.
statue, in bronze, measures 3 mètres
ntimètres in height, and weighs 1,800 lb.
ate president of the Republic is repre-
d in a standing position, wearing an over-
ined with fur, in which he travelled dnring
gorous winter 1870-1871, and in spite of
reat age, from one capital of Europe to
er to demand, at least, some little sympathy
s stricken country. In his right-hand he
the treaty of peace, while the left seems
licate that polite but firm refusal which
Belfort. The pedestal of the monument
fura granite; on the summit is a garland
ves in bronze, with the arms of the four
tments in which the subscriptions were
, viz., Meurthe-et-Moselle, La Meuse,
mes, and Vosges. At the base, the genius
tory, likewise in bronze, is engraving
her tablets, the memorable date of the
ation of Nancy by the German troops,—
August, 1873. The monument when
d in Paris was exhibited on the premises
e founders, MM. Dagrin & Casse, Rue
leyme, and there visited by Madme. Thiers,
Dosne, M. Grévy (president of the
blic), the ministers, ambassadors, and other
lities, who further availed themselves of
portunity to visit the show-rooms of the
ishment, where some of the finest and
f the most delicate bronzes in Paris are
seen. The amount awarded to M. Guilbert
town of Nancy for the execution of the
nent (slightly altered from the original
) was 1,800*l*. Our engraving is from a
graph kindly placed at our disposal by the
istrators of the "Voltaire," sole pro-
rs of the right of reproducing the monu-
n photography.
statue is noticeable for the absence of
pectacles, which tends to harden the
sion of the face.

MAIDSTONE NEW BRIDGE.

new three-arched bridge which spans
dway at Maidstone side by side with the
ucture of five arches (soon to disappear)
pened on Wednesday last. In 1874 the
idge was found to be in a state of dis-
; and the desirability of replacing it by a
nd more commodious structure became
nt. The total cost of a new bridge and
proaches was estimated at 32,000*l*., and
ardens of the Rochester Bridge having
ted to contribute 16,000*l*., the Corporation
l to undertake the work. The Maidstone
Act was passed in 1877; and on the 24th
ber, in that year, the first pile of the new
was laid by the Mayor (Mr. G. Youngman).
seph Bazalgette furnished the designs for
w bridge, which it was decided should be
f stone. The proposal to employ stone in
nce to iron occasioned considerable con-
y; but stone eventually carried the day,
pearance and durability being the chief
in its favour. The contract for the work
aken by Mr. Webster, of London. The
t of the contract was 22,300*l*. Under the
ision of Messrs. Law & Chatterton (engi-
and Mr. Smethurst (clerk of the works),
rk has proceeded up to the present time.
nation of the bridge is north of the old
om which it is separated by only a few
There has thus been no interruption of
The new bridge directly faces the High-
The roadway on the bridge is 24 ft.
nd the paths on each side are 8 ft. wide.
are two massive piers and two abutments,
n of the centre arch being 54 ft., and of
t and west arches 47 ft. 6 in. The dentil
above the arches adds greatly to the
ance of the structure, in the building of
granite, and, to a great extent, Kentish
one, have been employed. The parapet
nd the wing walls on each side are built
stone, with a granite cornice. With
to the approaches it was found necessary
back several feet some buildings on the
Borough side from the bridge as far as the shop occupied by Mr. Lambert. After considerable difficulty the whole of the property needed was purchased by arbitration, the amounts awarded being so far in excess of the sum anticipated that the total cost of the bridge and the West Borough approach will amount to about 50,000*l*. The Rochester Bridge Wardens some time ago declined to make any further contribution to the work, but it is not impossible that that decision may not be adhered to. Several shops and buildings have been erected in room of the houses demolished; and it is intended that pavements 12 ft. wide shall be put down on each side of the roadway here. They have not, however, been commenced yet. It was also considered necessary that an improved approach to the Fair Meadow and wharfs adjoining should be provided, and it was resolved to carry out the work at a cost of 4,700*l*. This work is now rapidly advancing, and the roadway needing to be raised in places to a height of several feet, massive concrete arches have been made.

The foundations of the piers and abutments consist of beds of concrete, 5 ft. in thickness. The concrete employed was of the best description, having a strong gauging of cement; and great care was taken to prevent its being carried away by the pumping operations or by the currents. In order to consolidate it thoroughly, vertical posts of sound Memel timber, 12 in. square, were embedded in the concrete. To tie these upright posts together, two horizontal "walings," 12 in. by 6 in., were securely bolted to these posts, one at the level of the top of the concrete, and one at 12 ft. 6 in. above the Ordnance datum. The space between these "walings" was filled in with planking, the edges of which were sawn true so as to make a tight joint.

The abutments are constructed of granite ashlar facing, backed with concrete, the latter not being quite so strong as that used for the foundations. The masonry is composed of horizontal courses of headers and stretchers of granite alternately, the headers being about 3 ft. in length and 2 ft. in width, and the stretchers about 4 ft. 6 in. in length and 1 ft. 9 in. in width. The vertical height for the courses averages 2 ft. The backing is of concrete, brought up with masonry, course by course. The ashlar masonry is of the best close-grained granite. The blocks of stone are about 4 ft. long, 2 ft. high, and 2 ft. thick, and they were prepared at the quarries at Penhryn and at Par, in Cornwall. Nicks for the passage of the grout were cut in all the vertical joints of this ashlar work, and slate dowels or joggles, 2 in. square and 4 in. in length were also used here and there. The moulded course of the abutment is fine hammer-dressed. Four bronze shields, two having the borough arms, and two the county arms, will be fixed in the face of the abutments on each side. The piers are also constructed of ashlar masonry, backed with concrete. Every alternate header is carried through the pier from face to face, and the stones of the cutwaters are secured by slate joggles.

As it was desirable that the whole of the three arches might be carried over simultaneously, the abutments and piers were carried up together. In each pier and abutment a drain of stoneware pipe, 6 in. in diameter, was formed, the joints being made with Portland cement, and circular holes, 6 in. in diameter, were cut through the ashlar granite facing, to form outlets to these drains.

The centres of each arch consisted of eight ribs of wrought iron, which were supported on transverse sills of sound elm timber, formed as toothed wedges. The vertical posts of the coffer-dams were carried up, and in each side arch a row of piles was driven, and in the middle arch two rows of piles, which were braced with diagonal braces, and surmounted by longitudinal sills.

The span of the centre arch is 54 ft., the two side arches being 47 ft 6 in. The arches are flat segments, and, together with the skewbacks, are of granite. The stones forming the arches weigh from 2 tons to 5 tons each, and were brought from Cornwall. The skewbacks of the abutments and piers are composed of stones about 4 ft. on their beds, measuring across the axis of the bridge. The voussoirs or arch-stones are about 3 ft. in width, measuring lengthwise over the bridge, and about 4 ft. measuring across the bridge. They overlap the stones in the adjoining courses about 18 in. They are dressed perfectly smooth and true, according to their respective positions, the soffit being truly formed to the curvature of the intrados, and the sides worked so that a parallel joint is left between each course of arch-stones ⅝ in. thick, and truly perpendicular to the tangent to the intrados of the arch at that point. Vertical strips of lead, ⅝ in. thick, 2 in. in width, and the whole depth of the stones in length, were introduced in setting the stones, one at a distance of 6 in. from each end of each stone.

The caps over the cutwaters of the piers are of granite. The outside spandrel walls between the extrados of the arches and the cornice are faced with the best Kentish rag-stone backed with concrete. The rag-stone facing is built in horizontal courses averaging 7 in. in thickness, and having about four bond-stones tailing at least 7 in. beyond the adjoining stone in each superficial yard of work. Moreover, the whole of the stones are nobbled truly square and free from broken corners, so as to insure an appearance of perfect squareness in the vertical and horizontal joints without the assistance of pointing. All the stones are bedded solid in mortar, and well backed up with scabels or spawls. The joints, also, are thoroughly flushed up with mortar. Finely-dressed granite has been used for the cornice, plinth, and coping. The stones are set with the thinnest joints possible, and the coping-stones are secured with a slate-joggle at each joint 1½ in. square and 3 in. in length. The parapet between the plinth and the coping is of Kentish rag-stone, similar to that already described, and having six through-stones to every superficial yard of work.

When the arches had been completed, the whole surface of the extrados and skewbacks was covered with a coat of the best asphalte ½ in. in thickness, and turned up 3 in. in height against the outer spandrel walls. The surface of the skewbacks has been made up with fine concrete, so as to incline in every direction towards the drain-pipes built into the piers and abutments. On the completion of the asphalte, the inner spandrel walls were built, being composed of bricks, which were used in a humid state, the mortar being used sufficiently thin in the interior of the work to enable the joints to be flushed full without grouting. These walls were capped with a course of Bradford foundation landings, 9 in. in thickness and 3 ft. in width, bedded in mortar so as to project equally on each side of the spandrel walls. The whole surface over the inner spandrel walls was then covered with a floor of Bradford foundation landings, 9 in. in thickness, and 3 ft. in width, bedded in mortar so as to project equally on each side of the spandrel walls. The outer margins of this floor correspond with the outer sides of the inner spandrel walls. The spandrel walls were then carried up to receive the inner edge of the foot paving, which consists of the best granite paving, 7 in. thick, picked true on the upper surface, joints, and edges, and on so much of the beds as rest upon the cornice course and the spandrel walls. These stones are in one length of 8 ft. 1 in., and are laid with a fall of 2 in. towards the roadway, and are solidly bedded in mortar.

The wing walls and retaining walls are constructed of concrete, faced with rag stone, and are built to a height of 3 ft. 6 in. from the pathway. The filling is composed of dry hard material, and is carefully punned for a thickness of 3 ft. behind the walls and abutments, and the remaining portion is formed in layers not exceeding 14 in., each layer being consolidated by rolling before the next was deposited, the filling having been brought up to the formation level and consolidated, the surface of the roadway being of broken granite. Over the entire surface of the Bradford foundation landings covering the bridge, a bed of concrete, 6 in. in thickness in the middle and 4 in. at the sides, has been spread; and the thickness of the broken granite over this will be 9 in. in the middle and 7½ in. at the sides, thus giving to the surface of the road a camber of 3 in. in its cross section. The other portions of roadway are to be formed of 12 in. of broken granite.

A fuller account of the bridge will be found in the *Maidstone and Kentish Journal*.

The Arts Association of Newcastle-upon-Tyne.—The general committee of this society have just held their annual meeting. The financial report, considering these times of depression, was satisfactory. Artists are already preparing for the next exhibition of pictures for sale, which will be opened on the 30th inst.

THE ROYAL ARCHÆOLOGICAL INSTITUTE AT TAUNTON.

The annual congress of this Institute commenced on Tuesday at Taunton, under the presidency of the Bishop of Bath and Wells The weather was most unpropitious.

At one o'clock the members were received in the Shire Hall by the Mayor (Mr. M. Myers), and an address of welcome from the corporation was read by the Town Clerk (Mr. Meyler), and a similar address was read by the Rev. Canon Meade on behalf of the Somersetshire Archæological Society. Both of these addresses were briefly replied to by Lord Talbot de Malahide.

The Bishop of Bath and Wells then proceeded to deliver his inaugural address as president of the meeting. In the course of it he said,—Archæological science in one aspect of it, seeks merely to satisfy a natural curiosity. We come upon an ancient camp. We see the huge earthworks which denote a purpose resolutely and laboriously carried out. It is impossible to see them without wishing to know who raised them and why they were raised. Somebody thinks that most likely an old windmill stood there. Popular mythology ascribes them to the devil. Archæological science comes to the rescue, and tells us the truth, which lies between these two extremes of prosaic ignorance and mythological imagination. We come upon a building,—a church, a castle, a dwelling-house,—unlike the buildings with which we are familiar. One of the first instincts of our nature prompts the inquiry,—When was that church, that castle, that quaint-looking house built? And archæology is ready with its answer, usually marvellously precise and accurate. Thus far, then, archæological science merely gratifies a natural curiosity. But it has a far higher and wider range. It marches proudly by the side of history, and is her fellow-labourer in tracing the progress of man from the infancy to the manhood of his race. I take it that the three main branches of archæological, as of historical, discovery are the religious, the political, and the intellectual condition of mankind in different parts of the world and in different ages of existence. Whatever throws light upon these is of intense interest. To take a glance at them in the order in which I have named them as they are illustrated by archæology:—1. What a strong light is thrown upon the religious history of the English people by the cathedrals, the parish churches, and the abbeys of England. In the grandeur of our religious buildings, in the architectural conception of them, in the enormous outlay of money and labour expended upon them, we see at once the place which the Church and its sublime verities held in the minds of the nation. It was no feeble faith, no uncertain sentiment, no hesitating devotion, which set in motion such a mass of intellect and such a power of work as brought those buildings to their glorious completion. Then, again, by their light, aided by those charters and chronicles in which archæology disporteth herself, we can interpret a peculiar phase of the religion of the Middle Ages, when architecture became a religion, and a kindred phase in which the great builders conceived they were performing a great personal service to the saint to whom the building was dedicated, and whose private property, so to speak, they conceived it to be. How distinctly engraved, again, are the variations of religious creed in different sections of the Christian community which are seen in the various edifices for the worship of God, from the grand simplicity of the cathedrals of the twelfth and thirteenth centuries to the gorgeous Jesuit churches, with their developed exaltation of the Blessed Virgin, and their exhibition of fervid,—I had almost said ferocious,—hatred of heresy; and from these, again, with their sumptuous decorations, to the square nudity of an Ebenezer or Bethlehem chapel. . . . . 2. If we turn to the political side of archæological revelations, they are as important and as manifold as those just glanced at; and when I say political, I mean all that relates to man as a citizen of this nether world, including his social life and his general civilisation, as well as what we generally call political institutions. Take, for example, the earthworks or camps for which our country is so remarkable, and which I think would well merit an archæological session devoted to them. As we look upon them perched upon their commanding heights, nearly inaccessible, and commanding a view of the whole surrounding country, capable of communicating with each other instantaneously by a system of beacons, and enclosing sufficient space to feed many head of cattle, what a picture is set before us at once of the conditions of the people! The idea of constant danger, either from the attacks of neighbouring tribes, expert at cattle-lifting or prompt to revenge real or fancied injuries, or from foreign invaders, rises at once before one's mind. One can see the naked or half-naked savages driving their cattle before them to the place of safety, and like the Zulu of to-day, having nothing else to lose and nothing to carry with him. One thinks of a people without houses, or towns, or roads, or arts, and yet one catches a glimpse of that love of country, and that unflinching steadiness of purpose to defend and hold one's own, which will eventually develop into freedom at home and independence of the foreigner abroad. Or look, again, at Dunster Castle, with the little vassal town which lies tranquilly at its feet. How naturally one constructs a state of society in which a security which was not given by the law was grasped by the warrior clad in iron and entrenched within his castle walls. Or, to take another view, how do the relative positions of castle and town suggest the idea of an oppressive domination of force, gradually relaxing into a friendly protection of the weak by the strong; and if you were to go closely into details, you would see every change in the external aspect of the castle and in the conditions of the approaches to it, indicating a corresponding change in the social conditions of English life, and making the decrease of the power of the individual in exact proportion to the increase of the authority of the law. The same idea suggests itself with some variations when we come across the splendid mansions of the Tudor period,—Montacute, or Brympton, or Barrington Court. We see a totally different state of society represented to us. We see the home no longer a mere place of refuge, but a place of quiet luxury. Long galleries for recreation, spacious halls for hospitality, pleasure-gardens, drawing-rooms, libraries even, and the other provisions of an advancing civilisation tell us of the growing wealth, the growing security, and the growing polish of English life. It would be easy to apply the same line of reasoning to our monasteries and abbeys, to our guildhalls, to the ancient town-halls of our boroughs, to the ancient symbols of civic power and authority, to the decoration of our churches, to the monuments of the dead, and to read in each of them no mean contribution towards the great end of historical inquiries, that of putting us in possession of the real condition of the people at the different epochs treated by the historian. 3. The light thrown by archæology upon the literary or intellectual condition of the people is no less important. It is obvious how much the remains of works of art, manuscripts, inscriptions, coins, and so on, must illustrate the mental progress of a nation. It needs not a work like Copernicus's famous astronomical clock at Strasburg, or the wonderful paintings of the different schools collected in the galleries of Dresden or Munich, to mark the growth of human intellect and scientific knowledge. If our eyes are open, and we know how to reason from what we see, we shall be able from far meaner materials to form a correct estimate of the intellectual condition of a people by the various works which they have left behind them. . . . . I have left myself no time to touch upon two other heads of archæological science, which I must therefore content myself with barely indicating. The one is the nomenclature of the county, and the other the heraldic history of its families, extant and extinct. Every single name of a place, or river, or hill has a history to tell us if we could but rightly interpret it. It would tell us the people who first named it, or the circumstances under which it was given, or some event of national or domestic history connected with it. The "cleaves" and the "hursts," the "bys" and the "wicks," and the "hams" and the "tons," the "burys" and the "worths," have already been compelled to yield their evidence; but how very many names still maintain an obstinate silence? He would do a good service who would give us a really good onomasticon of the names in the county, marking their different forms, and the form in which the earliest mention of this is found, and the time of such mention. Good family history and pedigrees resting on facts, not on heraldic fiction, are also always valuable. Places and families reflect a mutual interest upon each other, and families which have flourished for centuries on the same land or have contribut to the public good,—men eminent in science, literature, or arms, or law, or politics,—deser to have a permanent record in the annals their native country.

On the motion of Lord de Malahide, a vo of thanks was given to the Bishop for his quent address.

At two o'clock the members and friends the Institute lunched with the Mayor and C poration at the London Hotel, and subsequent made a perambulation of the town, visiting castle, remains of the priory, and St. M Magdalene and St. James's churches. So account of the history and structure of t Castle was given by the Rev. W. Hunt. T site of the Castle of Taunton, or the town on t Tone, is that upon which, about the year 7 Ina, king of the West Saxons, erected a defi sive structure, probably of wood and earth. castle of Taunton and the rich manor of Taun Dean were given by the favour of Saxon roya to the bishops of Winchester, whose dioc then comprised the whole of the south-west England. The oldest parts of the exist massive walls of the castle were erected in time of King Henry I., by William Gyffa Bishop of Winchester. Subsequent additi were made, and Bishop Horne, about the ye 1577, added the great hall, which holds a pre-eminence as the scene, in 1685, of Jud Jeffrey's "bloody assize," and which was u as the court-house for county assizes until middle of the present century. In the Gr Rebellion, the castle, under the command Admiral Blake, a native of Bridgwater, a cessfully resisted a siege by the royal forc and was dismantled, after the Restoration, the centre of a disaffected neighbourho Having been separated from the See of W chester, it recently passed through the hands several owners, and has now, by purcha become the property of the Somersetsh Archæological and Natural History Socie while a handsome and commodious court-hou with judges' lodgings, has been erected another part of the town. Bishop Gyffa before referred to, founded, about the year 11 the priory of Taunton, dedicated to SS. Pe and Paul, for black canons, or canons regular the Order of St. Augustine. Or perhaps, si that indefatigable antiquary, the late Hugo, has stated there was a monastic es blishment here in Saxon times, he only founded it. A large Mediæval barn is all t now remains of the buildings of this once r monastery. It is situated in Priory-fields, ab five minutes' walk from Canon-street.

St. Mary Magdalene's and St. Jame churches were next visited. At a very ea period they were both of them chapels app dant to the priory, and St. James's contin such till the Reformation; while St. Mar expanded into a vicarage, the priory taking great tithes, and supplying a vicar to perfo the services. Both have Perpendicular towe

In the evening, at half-past eight, the A quarian section opened in Taunton Castle-h when Dr. Pring read the first part of his pa on "Some Evidences of the Occupation of Ancient Site of Taunton by the Britons and Romans." The Architectural Section was t opened, and Sir Charles Anderson read a sh paper "On Towers."

We shall give further particulars of the me ing next week.

A Question for Archæologists.—*American Bookseller* says,—Everybody is quainted with Gérome's picture "Pollice Ver in which the fair dames in the audience dem the death of the gladiator, by turning t thumbs downward, but it may not be known all who have admired the picture that accuracy is made the subject of a lively disp between the artist and some of his critics. fall the *Librarian*, of Philadelphia, had article claiming that the popular signal manding the death of a gladiator was with thumb extended from the upraised fist, not by a uniform turning of the thumbs do ward, as represented by Gérome. Lately elaborate pamphlet in defence of the artist appeared in Paris, containing not only a repl the *Librarian* by M. Gérome himself, but a c pilation of various authorities in his supp In the current number of the *Librarian*, Philadelphia critic returns to the subject, contends that these authorities strengt rather than impair his views.

ATE OF THE BUILDING TRADES THROUGHOUT THE COUNTRY.

E National Association of Master Builders reat Britain, in their third half-yearly t, just now issued, and to which we referred ir last, have presented a statement of the worked, the rate of wages, with the of trade and supply of labour in the us branches as ascertained from the prin- towns of England and Scotland. We nt it, as it will interest a section of our rs who might not be able otherwise to .

he following are particulars of the altera- that have taken place in the various s, given alphabetically :—

ton District.—In May the masons' wages reduced from 9¾d. to 9d. per hour; the layers' from 9½d. to 9d.; the plasterers' s were reduced to 8½d. per hour, and the increased from 48½ to 52 per week. The ers are reduced from 8¾d. to 8d. per hour, he hours increased from 48½ to 52. In ary the painters' wages were reduced 8d. to 7d. per hour. Labourers have been d ¾d. to 1d. per hour. The Bolton Asso- n has introduced the hour system into all hes, except slaters.

ckburn.—The masons, after a strike of weeks, agreed to reduction from 36s. per to 8¼d. per hour. The bricklayers agreed duction of 3s. per week. The carpenters iners agreed to a reduction from 8½d. to er hour. The slaters have agreed to a ion from 36s. per week to 8¼d. per hour. inters have been reduced ¼d. per hour.

tol.—All the branches are on strike, notice uction of ½d. per hour having been given vember last to all skilled operatives and *employés pro rata*. The joiners' shops filled, and the employers are gradually their shops in every branch of the

row-in-Furness.—In February the em- s gave six months' notice to the masons robable reduction of wages and alteration es. The bricklayers' wages are altered 39s. per week to 8¼d. per hour. In April ages of carpenters and joiners were d from 8d. to 7½d. per hour. The plas- and slaters altered to 7½d. per hour, d of 38s. per week. The plumbers have reduced ½d. per hour, and bricklayers' ers from 28s. to 24s. per week.

sley.—After a strike of masons, brick- and labourers, the bricklayers have to receive 7¾d. and the labourers 5¼d. ur for 50 per week.

ingham.—The winter hours have been d as follows:—in December and January urs are from 7 a.m. to 4.30 p.m., with hour for dinner, but three weeks before ber 1st, from 7 a.m. to 5 p.m., and three after January 31st, from 7 a.m. to 5 p.m.; aining one hour during the dark months.

lford.—The employers gave notice to the s, bricklayers, and joiners to pay by the and the masons agreed to 8d. per hour. ners have also agreed, but with a slight ion as to notice being given previously to ge.

ntry.—Notice was given to the brick- six months ago, for an alteration in the rules. The matter was referred to arbi- , and a reduction to 8¼d. per hour agreed om 1st of June last. The plasterers will ve to fall in with this arrangement.

diff.—The plasterers and slaters, at the of the employers, made a voluntary on of from 8d. to 7½d. per hour from the pril.

leith.—The wages in this town have been d 2d. per hour since the last report, and ndard rate of wages is from 6d. to 7d.

aster.—The masons accepted a reduction 8d. to 7d. per hour, and an increase of om 49½ to 54 hours per week. The brick- on March 1st struck against a reduction er hour, and an increase of 4½ hours per but the shops have all been filled with rs, and the strike is dying out. The have agreed to a reduction of 1d. per r 54 hours per week.

y.—The employers gave notice to all the es of a reduction of ½d. per hour, to nto operation in April last. The men, howing some opposition, accepted the

burgh and Leith.—The masons in this , are accepting work at any wages offered, the standard rate being 6d. to 6½d. per hour. The bricklayers are reduced to 7d., and the carpenters and joiners to 6½d. per hour. The plasterers have been reduced to 7d.; there is great depression in all branches of the building trade, and the supply of labour is greatly in excess of the demand in every branch.

Huddersfield.—The masons are on strike at present against an increase of the hours, but the shops are nearly all filled with workmen from other places. The carpenters and joiners have been reduced ¾d. per hour, which the men have accepted after arbitration. The masons' hours in winter are 44½ per week, instead of 47, as stated in the tabular statement.

Hull.—The masons' wages were reduced ½d. per hour on the 1st of March. The bricklayers have been reduced 2s. per week; and the carpenters, joiners, and plasterers, 1d. per hour, from the 1st of January.

Halifax.—The masons' wages have been reduced 2s. per week; and the carpenters and joiners ¾d. per hour.

Kidderminster.—The masons have agreed to a reduction of ¾d. per hour, with an increase of two hours per week, making 56½ hours. The bricklayers have been reduced ¼d. per hour, and the walking distance increased from 1 mile to 1½ mile. A code of rules has also been agreed to. The plasterers have had notice of a reduction of ½d. per hour.

Liverpool.—Since the last report the two branches of the building trade which were working only 49 hours, have had their time increased to 55 hours. All the branches are now working the same hours, and the wages have been reduced ¾d. per hour.

Lincoln.—A reduction of ½d. per hour has taken place in all the branches of the trade, which has been accepted by the operatives.

Leicester.—Notice has been given to the masons for a reduction from 9d. to 8d. per hour, and an alteration in the rules. The bricklayers received the same notice, but they refused the employers' terms, and went out on strike, but there is ample labour offered at 7d. and 7½d. per hour. Notice was given in January to the carpenters and joiners to reduce the wages from 7¾d. to 6¾d. The matter was referred to an arbitrator, who divided the difference, giving his award for a reduction of ½d. per hour. The plasterers have had notice of a reduction of 1d. per hour. The plumbers had notice of a reduction, but it was afterwards withdrawn, on condition that certain rules were altered. Masons' labourers have had notice of a reduction of ½d. per hour. Bricklayers' labourers are out on strike, but ample labour is offered at 5d. per hour.

Lancaster.—Notice has been given to the carpenters and joiners to increase the working hours from 54 to 56½ per week. This was to come into operation on July 12th.

Leeds.—The masons, plasterers, and labourers have agreed to a reduction of ½d. per hour, and that six months' notice be given (but not to expire on any given date) for any further alteration in the rules. The joiners in December had notice to reduce their wages from 8d. to 7½d. per hour, without any alteration in the rules, and to increase the time to 50 hours per week, which came into operation on the 30th of June. The joiners were therefore locked out on the 2nd of July, but have since returned to work at the reduction.

Manchester.—Notice has been given to the operatives to reduce the joiners' wages to 8d. per hour, and to increase the number of hours from 52 to 54 per week. The plumbers have also had the same notice given to them, and these notices expire the 1st of December. The painters have had notice of a reduction of ¾d. per hour, which comes into operation on the 1st of September.

Macclesfield.—The masons' hours have been increased from 49½ to 54½ per week.

Northwich.—The masons' rules have been revised, increasing the hours and reducing the wages by ½d. per hour. A new rule is introduced providing for inferior workmen being paid at such rate as may be agreed upon between employer and *employé*.

Northampton.—The employers gave the plasterers notice that they would not recognise the arbitrary rule of the plasterers with respect to apprentices. The employers also gave notice to reduce the wages of the bricklayers, carpenters, joiners, plasterers, and painters ½d. per hour. The men went out on strike, but at the end of May they resumed work at the reduced wages.

Preston.—Notice has been given to carpenters and joiners to increase the working-hours from 49½ to 55 per week, and to be paid at the rate of 7d. per hour. This was to come into operation on the 26th of July.

St. Helen's.—The masons have had their hours of labour increased and their wages advanced ¼d. per hour. This advance was given to put them on the same terms as the masons are now receiving in Liverpool. The hours of the bricklayers, carpenters, joiners, and plasterers have been increased one hour per week and reduced ¾d. per hour in their wages. The slaters' time has been increased one hour per week. The plumbers and painters have had their time increased one hour per week, and their wages reduced ¼d. per hour. The labourers have been reduced ¾d. per hour.

Scarborough.—The stonemasons have agreed to a reduction from 8¼d. to 8d. per hour, which came into operation on the 1st of April.

South Shields.—The masons, bricklayers, and plasterers have been reduced 6d. per day. Carpenters and joiners have been reduced from 7½d. to 6¾d. per hour. The plumbers have been reduced ¼d. per hour.

Whitehaven.—The masons had a reduction in January of ¼d. per hour, and the carpenters and joiners 3s. per week.

Wakefield.—Masons' wages have been altered from 36s. per week to 8d. per hour. Bricklayers from 33s. per week to 7½d. per hour. Slaters have been reduced 1½d. per hour. The hour system is now adopted in all branches in this town.

West Bromwich.—In February fourteen days' notice was given to the bricklayers of a reduction of ¼d. per hour, which was accepted. The carpenters and joiners afterwards gave notice of an increase of ¼d. per hour, which was to come into operation on the 1st of June, but was refused. The bricklayers' labourers were reduced ¾d. per hour.

Wigan.—The masons' wages were reduced from 36s. per week of 48½ hours, to 8d. per hour for 54½ hours per week. The men in this branch went out on strike, but afterwards accepted the employers' terms. The employers gave the bricklayers notice of an extension of hours from 49½ to 54½ per week, and to reduce the wages from 9d. to 8d. The matter was referred to an arbitrator, who decided upon 54½ hours per week, at 8½d. per hour. The carpenters, joiners, and plasterers having had notice of a reduction of 1d. per hour and an increase of hours to 54½ per week, went out on strike for fourteen days, and then returned to work at 7½d. per hour, with the increased hours of labour. The plumbers having had notice of a reduction from 8d. to 7d. and an increase of hours, left their work, but have since returned to work on the employers' terms. The painters refusal of an increase of hours was referred to an arbitrator, who decided they should work 54½ hours, at 7¼d. per hour, to which the operatives objected, but in a few days returned to work on the terms of the award. The labourers have been reduced ¾d. per hour.

Warrington.—The employers gave notice to make a uniform number of hours, viz., 54½ hours per week, and they have reduced the masons' wages from 9d. to 8½d. per hour; bricklayers' wages, from 9d. to 8d. per hour; carpenters' wages, 8d. to 7½d. per hour; plasterers' wages, 8½d. to 7½d. per hour; painters' wages, 7½d. to 7d. per hour; and bricklayers' labourers' wages, 6d. to 5½d. per hour; and the men are working at these rates."

The Royal Horticultural Gardens.—The Royal Horticultural Society does not, it appears, intend to leave the Chancery suit, by which the Royal Commissioners of the Exhibition of 1851 seek to eject the Society from the South Kensington Gardens, undefended. That suit the Commissioners were asked by their committee to sanction at their meeting, held at Marlborough House. The general grounds on which the Royal Horticultural Society will defend the suit are that it was their own expenditure, consisting of 50,000*l.* advanced by the debenture holders, and 25,000*l.* from their own funds, in all 75,000*l.*, which, in a great measure, gave the land its present value, though the buildings and other permanent works erected by the Society on the property were rented from the Royal, Commissioners; and that the money was spent under the supervision of an expenses committee, of which the Commissioners appointed a majority of the members.

CHURCH-BUILDING NEWS.

London.—The new church of St. Anthony, situated between Globe-road and James-street, Mile-end-road, has been consecrated by the Bishop of London. The new church is in the style of the early part of the thirteenth century, and the object of the architect, Mr. Ewan Christian, has been to provide a simple, substantial, well-lighted, comfortable building. It is warmed with hot air by Haden's method. The superstructure is of the ordinary yellow stock bricks, dressed with stone, the walls being covered with plaster inside. The extreme length outside is 125 ft., and the width 65 ft. The nave and chancel are of the same width, and open from end to end without any intervening arch, a dwarf screen wall dividing the raised chancel floor from the nave. The aisles are divided from the nave by an arcade of four arches, the shafts being of grey Pennant stone, and the caps and bases of Bath stone. A series of sixteen single lancet windows on each side in the clerestory, a large east window, and a row of windows in an open vestibule at the west end, give abundance of light. The roof is of pitch-pine, the chancel-roof alone being boarded and decorated. There is accommodation for 700 worshippers, and the seats are all free and open. Adjoining the church is a "parish room," which can be used for a Sunday school and for meetings of the congregation. The cost of this supplement to the church has been defrayed by the Grocers' Company, who, as patrons, have also added 100*l.* a year to the endowment, in lieu of a rectory. The company further will defray the cost of an organ, Communion plate, &c., and the interior fittings of the church. A heavy expenditure had to be incurred in laying the foundations, about 1,400*l.* being spent on work below ground; the superstructure of the church has cost 6,900*l.*, exclusive of lighting, heating, and contingent expenses, and the parish-room and class-room have added 1,400*l.* to the expense.

Oundle.—Jesus Church, Oundle, was consecrated on the 29th ult. It is a gift to the parish by the late Mr. J. D. Watts Russel, of Biggin Hall. The church is built on a site covering 1,017 square yards, and stands at the junction of four roads,—viz., Benefield-road, West-street, Mill-lane, and Stoke-road. The plan is cruciform, the eastern and western arms being longer than the north and south, while rectangular projections at each corner give on the floor a space, almost square, available for seats. Four columns of red Hollington stone carry arches, from which spring the central lantern, growing from a square into an octagon, finished with a domical ceiling at a height of 50 ft. from the floor, and lighted by a range of sixteen small clearstory windows. The style adopted is First Pointed, of the plainest and simplest character. The walls are built chiefly of a stone from the old buildings which formerly stood on the site, with dressings of Casterton. The roofs, except that of the lantern, are open-timbered, and the whole, including the external conical roof of the lantern, are covered with stone slates. Internally, what little stone has been used, except the columns already mentioned, is Corsham Down. The arches of the walls are all of brick, plastered, and a certain amount of coloured decoration in distemper has been employed. The contractor was Mr. H. Clipsham, of Nowell, near Newark; the architect being Mr. A. W. Blomfield, of London. Messrs. Campbell & Smith, of London, carried out the coloured decoration, and also executed the simple outline glass of the east window. [We gave a view and plan of the church in last year's volume of the *Builder*, pp. 432, 433.]

Westleigh.—It is proposed to restore the parish church of Westleigh, a village adjacent to Instow. The oldest portion of the church is believed to date back as far as 1320. The architect for the restoration is Mr. J. F. Gould, of Barnstaple; Mr. Hancock is the contractor, and his estimate is 495*l.* The original characteristics of the building will be preserved as far as possible, especially the noteworthy oak carving, some of which, however, is stated to be past all renovation.

Over Haddon.—The foundation stone of a new church at Over Haddon, Derbyshire, was laid on the 26th ult. The church, it is estimated, will cost 2,000*l.*, and will accommodate about 100 persons. Mr. Cockbain is the architect, and Messrs. Hill, of Tideswell, are the contractors.

Newton Bromswold.—The parish church of Newton Bromswold, near Rushden, Northamptonshire, has been re-opened, after restoration. The Rev. Robert Baker acted as architect, and the contractors were Messrs. Green & Hull, of Wellingborough.

Eldon.—On the 22nd ult. the Bishop of Durham consecrated a new church which has been erected for the lately-formed ecclesiastical district of St. Mark's, at Eldon-lane, about two miles south-east of Bishop Auckland. By the sinking of deeper shafts during the past few years to the seams of coking-coal which underlie the household seams originally wrought in this locality, and known in the old days of the Stockton and Darlington Railway as "Tees Wallsend," a great addition has been made to the industrial operations carried on at Auckland Park, South Durham, and Adelaide collieries, and it is to provide for the largely-increased population drawn in consequence into the valley lying between the three collieries that the church has been built. The new church is a stone building, Gothic in style, the seats, pulpit, &c., being all of pitch pine, and will afford accommodation for 359 persons. The total cost is estimated at 3,000*l.*

Braunston.—A faculty has been granted by Chancellor Wales for certain alterations and new works at Braunston parish church. The works will include the decoration in colour of the chancel walls. Mr. Butterfield is the architect concerned.

Borstal.—The new church of St. Matthew, Borstal, near Rochester, was consecrated on the 21st ult. The architect of the church is Mr. F. Luck, Mr. Alderman J. G. Naylar being the builder.

Dartington.—Dartington Church, dedicated to St. Mary, is being rebuilt. Dartington is a mile or two from Totnes; the old church has been entirely taken down, and a new one is being erected some half a mile away from the old site. The former church was of Perpendicular character. Designs for the new edifice having been obtained from Mr. Pearson, A.R.A., the contract was taken by Mr. Jonathan Marshall, builder, of Plymouth, and is now well advanced. In taking down the old church, much of the more perfect materials has been retained, the window tracery, the granite copings, the nave and chancel arcades, the roof and other parts, and other portions of the old work, are being re-used in the new edifice. This latter is in the Perpendicular style, and consists of naves, aisle, chancel, a north-east vestry, and a western tower. The walls are of local limestone, the dressings of Bath stone. In an exterior niche, over the eastern window, will be a sculptured figure of the patron saint, the Virgin Mary. The principal entrance to the church is the south-west porch, which has a stone groined roof. The carved work and the sculptures have been entrusted to Mr. Harry Hems. Mr. J. Babb is the clerk of works.

DISSENTING CHURCH-BUILDING NEWS.

Driffield.—The foundation stone, corner stones, and memorial stones were laid on July 23, of the Wesleyan Methodist new chapel, Driffield. Internally the chapel will be 90 ft. long, 58 ft. wide, and 42 ft. high from floor to centre part of ceiling. There will be a gallery all round, five seats deep at the sides and pulpit end, and eight seats deep in the front gallery. The area or space in clear of the gallery fronts will be 54 ft. by 29 ft. The accommodation will be as follows:—adult sittings in pews, ground floor, 166; galleries, 466; free seats in aisles, &c., 555; total, 1,187. 20 in. are allowed for each sitting, and the pews are 34 in. wide on the ground floor, and 32 in. in the galleries. Transversely the chapel will be divided into three widths, as nave and aisles; the nave being 32 ft. wide, and separated from the aisles by coupled cast-iron columns carrying semicircular arches o timber work to support the roof and ceiling,—all being finished internally with plaster mouldings and panels, &c. The organ and choir are to be placed in the gallery behind the pulpit, and there will be a staircase on each side of the same, communicating with the side and end galleries and the vestries and class-rooms in rear of the chapel. There will be seven such rooms altogether, and all necessary conveniences, &c. Mr. H. J. Paull is the architect, and the contractors are Mr. F. Sweeting, Hull, for the masonry; Mr. M. Gage, Driffield, brickwork; Mr. John Barnes, Beverley, the joinery; Mr. J. Snowden, Ossett, the plumbing and glazing; and Messrs. Bagshaw & Son, Batley, the ironwork. The contracts amount 5,100*l.*

Portobello.—The foundation-stone of the n church intended for the accommodation of Ba street U.P. congregation was laid on the 3 ult. The new church, which has been design by Messrs. Stewart & Menzies, Edinburg occupies a commanding site at the junction Windsor-place with High-street. In plan it ta the form of a truncated cross, 61 ft. long and 66 wide at the transepts. Behind the church will a hall capable of seating about 200, vestry, a other conveniences. The gable of the chu facing High-street is flanked on one side b tower, with angle buttresses, and spire rising the height of upwards of 130 ft., at the corr of Windsor-place and High-street. The st adopted is Early Decorated. The princip entrance is by a doorway in the centre of gable facing High-street, with a deeply-recess two-light window on each side for lighting corridor, and having the arches filled up w tracery and surmounted by gablets with carv finials. The upper portion of the gable faci High-street is pierced by two large windo with mullions and tracery, above which is ornamental circular window, the gable bei finished with a cross. Internally, the chu will be seated for 760 in area and gallery; additional galleries, containing 120 sittings, c at any time be erected in the transepts. T building is estimated to cost about 5,200*l.*

Waltham Abbey.—The Wesleyan chapel h has been enlarged and extended on the grou formerly occupied by the minister's residen Two class-rooms and a school-room are to erected. The cost of the whole work is es mated at 450*l.* Mr. John Bentley is the build

Newtongrange.—Plans have been approved working contracts settled for the erection o new Free Church here, to accommodate persons. The style chosen is Gothic.

South Shields.—On the 23rd ult. the foun tion-stone of the new Presbyterian church St. Paul, Westoe-lane, was laid by Miss Re head, daughter of the mayor. About two ye ago the congregation worshipping in the Eg street Presbyterian Church appointed a Bu ing Committee to take measures for the erect of a new place of worship, the old build having become inconveniently small. building operations were commenced about t months ago, and it is expected that the chu will be completed in November next.

Armagh.—A new Presbyterian church been opened in Armagh. The style is Decorat The exterior walls are built of square blocks Armagh marble, with dressings of Dungann sandstone. The church consists of a nave aisles, and accommodation has been provi for upwards of 830 persons. Galleries placed against the walls on the three sides, these are seated to hold 350 persons, while can be accommodated on the ground floor. nave consists of six bays, and is 50 ft. in wid including the aisles, and 60 ft. in height to ridge. Owing to the inclination of the grou towards the Mall, the principal entrances approached by a flight of twelve steps, wh extend the whole length of the principal façad A basement is formed below the church, this will be utilised as a sexton's residen At the corner of Russell-street, a mass pinnacled tower rises 100 ft. high to the bel Above this the spire terminates at a height 185 ft. in a copper finial. The church will heated by hot-water pipes, supplied by Mes Musgrave & Co. The lighting, which is means of sunlights and brackets, was execu by Mr. William M'Neill, Belfast. The raili and lamps have been manufactured by Mes Riddel & Co. The carving, of which there large quantity, has been done by Mr. Ha Hems, Exeter. Messrs. J. & J. Guiler, Belfa the builders, have executed the works, from designs of Messrs. Young & Mackenzie, Belfa architects. The entire cost of the building been about 10,000*l.*

Tranmere.—On the 24th ult. a new Primit Methodist Chapel was opened in Holt-ro Tranmere. The chapel, which is from designs of Mr. Richard Owens, of Breck-ro Liverpool, is built of brick, in the Italian st with Stourton stone dressings. There is gallery in the interior at the sides and one e and the place will accommodate about worshippers. The cost has been about 2,20 of which sum 200*l.* was paid for the land. is intended to build a Sunday school at back of the church, and this, it is expect will involve a further outlay of 1,000*l.*

TORM WATER SEWERS FOR THE SUBURBS.

METROPOLITAN BOARD OF WORKS.

the meeting of this Board on the 1st inst., y important report was presented by the s and General Purposes Committee on the ution of the Board of the 19th July, 1878, ring it to the committee to consider and t upon the question of obtaining legislation a view to providing a remedy for floodings rainfall. The committee state that they felt it their duty to review the whole ion, and they have, in consultation with ngineer (Sir Joseph Bazalgette), given to ir most anxious and careful consideration. learn that a large amount of relief can be ded for the serious floodings which are now equently taking place in some of the dis- of the metropolis, by the carrying out of sion works at a cost of about 750,000*l.* ngineer had laid before the committee a f works which he proposes, at an estimated of 708,000*l.*, and which are as follows:—

ucting storm relief line for the Ranelagh King's Scholars' Pond Sewers	£196,000
ucting storm relief line for the Ratcliffe way and Limekiln Dock Sewers, omitting extension sewer to relieve the Eastern ties Railway Sewer included in estimate of November, 1878	56,000
line for high level sewer at Hackney ...	52,000
epting sewer from Putney to Clapham ...	170,000
relief to high level at High-street, Clapham, Effra-creek	70,000
ord storm overflow	14,000
ewer from Deptford to Lea-bridge	30,000
nto relieve low-lying ground at Walworth sewer to relieve Holloway and Kentish-	60,000
	64,000
	£708,000

appeared to the committee most desirable no time should be lost in affording to the ots affected the relief which is so urgently d, and having satisfied themselves that works suggested are such as might be rly carried out by the Board under their ut powers, they submitted the following mmendation for adoption by the Board:—

at the engineer having reported that a large amount f can be provided for floodings from rainfall by the g out of certain extension works at a cost of *l.*, application be made to Parliament to include in ard's Money Bill for the year 1880 power to borrow mount for the construction of the extension works d to."

E. Dresser Rogers, in moving the adoption the report, said that the rainfall which the politan main drainage system was planned ry away was calculated at a quarter of an er day of twenty-four hours, and it was ally conceded, at the time when this sub- as before the Board, that any system that led for such a rainfall would be quite factory and sufficient. That calculation dopted by the Board, and until the years 1878, and 1879, the main drainage system, e purpose of carrying away the whole of ainfall, proved sufficient. But since the drainage works had been completed, the of the circumstances of the metropolis ndergone a complete and an extraordinary e, and a change that could never have anticipated over twenty years ago. In ar 1856, when the Board was established, were under 300,000 houses in the metro- but at the present time there were con- bly over 500,000. In 1856 there were 1,000 miles of streets, while now there over 1,500 miles. Twenty years ago a arge portion of what was now called the polis consisted of open fields, and when in fell upon the surface it was absorbed he ground; while since then, and even at esent time, 40 ft. thoroughfares were con- y being constructed with non-absorbing es, and with stone-paved footways and aved channels and water-tables, which ed the rainfall immediately into the . The quantity of sewage had also vastly sed; at the present time, the quantity owed into the sewers on the north side of er was from 92,000,000 to 100,000,000 a per day, and on the south side 60,000,000 00,000 gallons per day. The committee opinion that this expenditure of 750,000*l.*, gested by the engineer, would bring about elioration of the condition of those who ffered so severely in the past. Fortu- , the Board already had a sum in hand of 150,000*l.*, which would enable it to do ing at once. Next year they would have o Parliament for power to raise the whole nd the result, he believed, would be that they would be able to prevent a recurrence of these disastrous floodings from rainfall for the future.

The recommendation was adopted *nem. con.*, and it was subsequently resolved:—

"That there being at present available for main drainage purposes an unexpended balance of about 150,000*l.*, a line of sewer be forthwith constructed from Wandsworth to Vauxhall, and that the engineer be instructed to prepare the plans and specifications for the execution of the work."

In the course of the discussion it was stated that the effect of these works would not be to add to the quantity of sewage discharged into the river. The only result would be that the storm waters would flow much more rapidly into the river, instead of remaining tide-locked in the sewers and in the basements of the houses whenever an exceptional rainfall occurred.

SALE OF BUILDING LAND AT STREATHAM.

The Bedford Park Estate, Streatham, was sold by auction last week at the Mart, by Messrs. Fox & Bousfield. It has an area of 60 acres. The estate was said to be in close proximity to three railway stations, with a frontage to the high road, which was for the most part occupied by mansions, private houses, and shops, forming what was known as the old village of Streatham, and including Bedford House, Old Bedford House, and Bedford Terrace, at present producing a rental of 1,500*l.* a year, together with the park, consisting of meadow land and plantations, containing upwards of 50 acres, ripe for being laid out as building sites. Mr. Bousfield, the auctioneer, in introducing the property, stated at the outset that it was for absolute sale, and would be sold in its entirety by order of the trustees, who were not empowered to sell it in any other way. They would have preferred to cut it up, and sell it in building plots, when they could have obtained a maximum price for it, but they were obliged to sell it as a whole. The purchaser would be entitled to the whole of the timber on the estate. In estimating the value of the property he said that he calculated the annual net value of the mansions and other buildings on the estate at 1,000*l.*, after deducting expenses, even at the present low rate of letting, which, at twenty years' purchase, amounted to 20,000*l.* Then, as to the land, it was well known that building-land in Streatham was worth at least 1,000*l.* an acre, and situated as this land was it was worth much more. At the lowest estimate he considered the property well worth 100,000*l.*

The property was put up at 30,000*l.*, and the biddings having brought it up to 46,000*l.*, there were no further offers, on which the auctioneer observed that the property now stood at little more than the value of the buildings already erected, with their grounds, for their present rentals did not by any means represent their real value, and the rents must inevitably be very much raised after the present leases, several of which had only a few years to run, expired. At the present price, therefore, the purchaser would have the fifty acres of unbuilt land for nothing. The property must, however, be sold. After this intimation the bidding went up to 47,500*l.*, and there being no further offer it was sold at that price.

NEW TOWN-HALL AT CHORLEY.

A new town-hall has just been erected at Chorley, in Lancashire, and was formally opened on Saturday last, with much ceremony, by the Right Hon. Col. Stanley, Secretary of State for War. Chorley is distant about nine miles from Preston, on the main road between the last-named town and Manchester, and until within the last decade was one of the smallest of the Lancashire manufacturing towns. Its population has, however, rapidly increased within the last few years, owing to the extension of its cotton manufactures and the erection of several additional mills, until at length a new town-hall for conducting the general public business of the town has been found necessary. The new building is entirely of stone, with boasted face, Yorkshire parpoints, and dressings of rubbed Longridge stone. The building has its main frontage to Market-street, the principal street in the town, and is surmounted by a lofty clock-tower, containing bells and chimes. It has an ornamental entrance, which is surmounted by the Chorley coat of arms. The entrance leads into a vestibule, containing niches for statuary. The several floors of the building combine a post-office, a board-room, and offices for the transaction of the public business of the town; also a butter-market, a great hall for public meetings, and on another floor are several spacious apartments, one of which is furnished with two billiard-tables. The market is in the basement of the building. The ground-floor contains the post-office, fronting Market-street, together with the offices of the clerk to the commissioners, the town surveyor, and the general offices for the clerks, in addition to the board-room, an apartment measuring 30 ft. by 32 ft. On the first-floor is the public hall, attached to which are several cloak-rooms. The hall is 100 ft. long by 58 ft. wide, and 36 ft. high; it will seat an audience of 900. At one end is an orchestra, which will seat an additional 200, whilst at the rear on each side are retiring and dressing rooms. The walls and ceiling are decorated, the latter being in panels. The hall is lighted by fifteen chandeliers, containing 405 lights. Immediately adjoining the great hall is a refreshment-room. The second floor, containing the billiard-rooms, is approached by a winding staircase, whilst a further ascent by the staircase leads to the clock tower.

The cost of the building, exclusive of the land and furnishing, but inclusive of a clock and chimes, supplied by Messrs. Gillett & Bland, at a cost of about 800*l.*, amounts to about 24,000*l.*

The contractors for the stonework and slating were Messrs. Gabbutt & Son, of Liverpool; for the carpenter and joiner's work, Messrs. Gillett & Son; plasterers', Messrs. Whalley & Son; plumbing and painting, &c., Mr. T. Fletcher; all of Chorley. The ironwork was by Mr. Geo. Fletcher, of Wolverhampton; and the heating by Mr. Charles Seward, of Preston. The polished brass pendants and lights for the principal rooms were supplied by Messrs. Richardson & Ellson, of London.

The architects were Messrs. Ladds & Powell, of London; and the clerk of the works was Mr. Henry Winfield.

The acoustic properties of the large hall are considered good.

ARTISTS AND FOUNDERS.

Mr. George Aitchison, F.R.I.B.A., Master of the Founders' Company, presided at a Court dinner of the company on the 1st inst. at the Star and Garter, Richmond. Among those present were the newly-elected liveryman, Sir Frederick Leighton, President of the Royal Academy; Mr. Marks, R.A.; Mr. Whichcord, President of the Royal Institute of British Architects; and Mr. E. C. Robins, Master of the Dyers' Company. Mr. Aitchison proposed "The health of the new liveryman, Sir Frederick Leighton," who, in responding, expressed his lively sense of the honour done him in admitting him into the ranks of the Ancient Company of Founders, and said he believed it was customary to select individuals whose lives and pursuits were linked by some sympathy with the mystery and craft to which they were about to be admitted. He knew no company which from this point of view could take a more comprehensive sweep than that over which the Master presided,—he knew none which could penetrate and influence the lives of men more wldely than the Founders' Company. Assuredly there were none which struck into the lives of men more dramatically or stirringly. To the founders craft we owed the brazen tongue which invited us to almost all the salient acts of life,—whether those acts were grave or gay, whether they were poetic or prosaic, whether men went to dinner or to the grave, whether they were taken to the font or went to the altar, whether they passed to the workhouse or ascended a throne,—bells, merry bells, sad bells, cynically indifferent bells, accompanied them with their voices. The stateliest and most ambitious edifices raised by the art in which the Master had made himself a name had been devised to lift up to the sky these noisy-tongued products of the founder's art. And who but the founder solved in the last resort the great problems of international life? In this barbarous world was not the final court of appeal the cannon's mouth? But artists owed to the founders a more gracious boon,—for it had been their privilege in days reaching far back beyond historic times to fill the world with innumerable forms of loveliness.

The power to do this was a privilege, but it involved a responsibility which it would be difficult to overrate; it carried with it its corollary,—the power to propagate ugliness, a power too frequently and too fatally exercised. He believed that this corporation was not unaware of this responsibility, and of its dangers, and he knew no one more fitted to keep this consciousness alive than the devoted and ardent student of beauty who filled the chair. It was with great pleasure, Sir Frederick added, that he had learned the intention of the Founders' Company to offer prizes for the furtherance of the study of beauty in connexion with its products. He need hardly say that this circumstance enhanced very considerably the great gratification he felt at being honoured by the admission into their ancient and distinguished brotherhood.

THE OPERATION OF THE ARTISANS' DWELLINGS ACT.

At the last meeting of the Poplar District Board of Works, on a circular letter being read from the Bermondsey Vestry, calling attention to the serious sacrifice to the ratepayers involved in the carrying out of this Act, and inviting agitation for its amendment, the Chairman (Mr. E. R. Cook, of the Metropolitan Board of Works) said he would suggest that this letter be referred to the General Purposes Committee for consideration. There was no doubt that the Act ought to be carried out, if the provisions could be modified in such a way as to make them reasonably workable. There were two distinct objects in view in the Act. One was to get rid of property which had been allowed, from the neglect of the owners, to fall into such a state of dilapidation as to create a nuisance prejudicial to the common weal. The other object was to construct dwellings for artisans in the metropolis. Now, as far as he was personally concerned, he fully and thoroughly agreed with the proposal to pull down unhealthy dwellings, and places which had been allowed to fall into a condition unfit for human habitation; but the machinery which the Act had provided for dealing with these dwellings was defective, because when the property was taken from the owners who had allowed it to fall into disrepair, it was done by a special instrument,—an arbitrator,—and the property was valued as if it were good; and the Metropolitan Board had been obliged to pay the owners of these wretched places sums equal to what they would get were the property of a high class and in a good state of repair. That was a monstrous state of things, because if the property required to be pulled down, it was because it was a nuisance, and dangerous to health. If we paid the owner as if his property were good, he, who was the origin of the fault, did not suffer, but gained, and it was the inhabitants of London who had to pay the penalty and bear a serious addition to their burdens. If Parliament, in its wisdom, still thought it necessary that the demolition of houses of this character should be concurrent with the provision of property for the residence of a similar class, power should be given to the Metropolitan Board to erect such dwellings in a suitable locality, and not necessarily in the same neighbourhood. What could be a greater mistake than the compulsory allotment of valuable frontages in the new West-end street to the erection of workmen's dwellings? To compel workmen to reside there was to compel them to reside where they did not want to be, and where they must depreciate the value of the surrounding property. The ratepayers of London should set to work to procure such an amendment of the Act as would remedy the evils which he had pointed out, otherwise it was not too much to say that the Artisans' Dwellings Act would be the financial ruin of the metropolis.

At a special meeting of the City United Wards Club on the 30th ult., Mr. Bonnewell detailed the history of the Artisans and Labourers' Dwellings Improvement Act, which, he said, was extremely defective. At the present time the Act held out a premium to dishonest men. A man had simply to neglect his property, and let it get into a state of sixes and sevens, to extract as much money out of it as possible, and do nothing in return, and the result would be that his property would be presented as an unsanitary property. Then a scheme would be prepared, and the premises would be condemned and taken. The compensation allowed in such cases was most unfair, for a man was not paid what the property was worth in itself, but what he could get out of it. So that if a man could show he made a thousand a year out of a miserable freehold, he would get from 20 to 25 per cent. allowed him. The Act worked unfairly towards those who did their duty by their property, and favourably towards those who neglected it. The neglectful man would get a consideration for the pulling down of his property, and the conscientious man who performed his duty would have to bear his share of that compensation. He hoped the Act would be repealed, for no amendments would cure it. He moved,—

"That this club, being of opinion that the Artisans and Labourers' Dwellings Act, 1875, is inherently bad in principle, inasmuch as it offers a direct incentive to owners of property to produce those very evils it was intended to destroy, thus inflicting great hardship upon the poor, and enormously increasing the burden of local taxation upon the ratepayers, desires to draw the attention of the Government to its defects, in the hope that they will devise a speedy and satisfactory amendment of the Act in the ensuing session."

Mr. J. Newbon seconded, and the motion was carried.

The Mile End Old Town Vestry, on the 29th ult., passed the following resolution,—

"That it is, in the opinion of this Vestry, highly necessary that the Act which results in the provision of dwellings for artisans out of funds provided by Metropolitan ratepayers at such a serious sacrifice as half a million of money should be amended without delay, and that no further schemes be proceeded with under the Act until the law is so amended as effectually to prevent a similar loss and waste of money in future."

In the House of Commons, on the 31st ult., in answer to Mr. Fawcett, Sir J. McGarel-Hogg said:—No sites have yet been cleared under the Artisans' Act except a portion of the Whitechapel and Limehouse area, which has already been sold with five others to the trustees of the Peabody fund. Some time must necessarily elapse before the removal of buildings from any of the sites not yet disposed of, and, assuming that the Bill of the Home Secretary is brought in and passed this session, I can readily undertake that no further sale of sites shall be made before the House has had an opportunity of considering the measure.

Brighton.—At a meeting of the Brighton Town Council on the 1st inst., it was decided to defer the further consideration of a scheme for applying this Act to some of the poorer quarters of the town, which scheme has been before them time after time for some months past. It appears that, after considering the cost of acquiring the properties within the condemned areas, the Sanitary Committee resolved that an effort should be made to limit the amount of the charges of surveyors and solicitors employed by owners of property for which, in cases of compulsory purchase, local authorities are liable, and, the Home Secretary having promised the House of Commons to bring in a Bill this session for lessening the expense of carrying out the Act, they determined to defer consideration of the matter until such a Bill had been introduced.

IMPROVED INDUSTRIAL DWELLINGS COMPANY.

The report presented at the thirty-second half-yearly meeting of members of this company (Alderman Sir S. H. Waterlow, M.P., chairman) on Thursday, states that the whole of the capital is subscribed, viz., 250,000*l.* stock fully paid, and 250,000*l.* in shares of 10*l.* each.

The loans received from the Public Works Loan Commissioners amount to 178,000*l.*, and the applications for additional loans, amounting to 65,000*l.*, in respect of the buildings now being erected, have been made, of which 13,800*l.* will shortly be received. The total expenditure on capital account is now 563,799*l.* 13*s.* The capital expended on works in progress, and wholly unproductive, has averaged about 60,000*l.* during the half-year, in addition to which an average of about 55,000*l.* has been only partly productive. The rents, &c., amount to 24,674*l.* 17*s.* 7*d.*, and dividends on investments and other items, amounting to 4·2*l.* 15*s.* 10*d.*, make the total income for the half-year 24,537*l.* 13*s.* 5*d.* The total expenditure has been 13,734*l.* 11*s.* 2*d.*, leaving a divisible profit of 10,803*l.* 2*s.* 3*d.*, which, added to the balance, 116*l.* 16*s.* 9*d.*, brought forward from the last half-year, gives a total of 10,919*l.* 19*s.*, available for dividend. The directors recommend the payment of the usual dividend at the rate of 5 per cent. per annum, free of income tax, which will absorb 9,682*l.* 3*s.* 8*d.*; that 1,000*l.* be added to the reserve fund for the equalisation of dividends, which will then amount to 34,500*l.*, and that 237*l.* 15*s.* 4*d.* remaining be carried forward to the next half-year's account. The completion of the dwellings at the Chelsea, Highbury, and Bethnal-green estates has been greatly delayed by the unfavourable weather which has so long prevailed. Towards the end of the half year, 104 tenements were brought into revenue at Chelsea, 70 have been brought in at Highbury, and 90 at Bethnal-green. The remainder at Chelsea and Highbury will be completed in a few weeks, and 120 at the Bethnal-green estate will be ready at about the end of October, at which time the 40 dwellings at Brett-road Hackney, will be also completed. It is hoped that portion of the Deptford estate will be ready for occupati before the end of the year. Plans for building on t estates at Mansford-street, Bethnal-green, and Darw street, Walworth, have been prepared, and the buildin will be proceeded with at the earliest possible mome At the Bethnal-green estate additional dwellings have be commenced to accommodate 160 families. The to number of dwellings in occupation and in course of erectic including those for which the plans have been approved 3,717, for the accommodation of about 18,000 persons. T number of persons resident in dwellings now under t control of the company is about 14,000.

ARCHÆOLOGICAL SOCIETIES.

Bucks.—The members of the Bucks Archa logical Society had their annual excursion the 24th ult., St. Alban's being the place selecte Arrived there, the Abbey, of course, claim first attention, and the party were conduct over it by the clerk to the restoration work Mr. Chapple, who pointed out the various objec of interest, and gave a sketch of the history the edifice, referring to the discovery of t remains of the shrine of the patron saint, well as describing the numerous architectu beauties and curiosities of the old portion the building, and the progress of the restor portion. This occupied the party till dinn time, after which the annual meeting was he the Archdeacon of Buckingham presiding, wh Mr. G. G. Du Pré was appointed president the ensuing year, and the other officers elected. The next attraction was the site the ancient Roman city of Verulam; and, af a brief inspection of St. Michael's, the membe returned to Aylesbury.

Berkshire.—A large party of the members this society had a pleasant excursion to H field and St. Alban's on the 30th ult. Arriv at Hatfield House, the Rev. J. M. Guildi recounted the history of the building. Hatfi was, he said, a place of great antiquity, havi formerly been one of the manors of the Sax Kings of Mercia; and it was probably occup by Offa, founder of St. Alban's, from 790–7 Edgar gave the manor to the Monastery of E Henry I., the founder of Reading Abbey, 1109 converted the Monastery of Ely into cathedral of a bishopric, and in consequen Hatfield became an episcopal palace, owing which it was called Bishop's Hatfield. In 14 in the reign of Henry VII., the palace w rebuilt by John Morton, Bishop of Ely, afterwards Archbishop of Canterbury, L Chancellor and Cardinal, in the style they saw. Morton built the great tower of Cant bury Cathedral, and was altogether a ve munificent prelate. In 1606 James I., havi taken a great fancy to the palace of Theobal near Cheshunt, asked Sir Robert Cecil, Sec tary of State, to exchange Theobald's for H field; and thus it came into the hands of Cecil family. The present mansion was oc pleted by Sir Robert Cecil in 1601, having be five years in building, and it was said that was his own architect, and employed through village artisans. The house was a splen specimen of Jacobean architecture, and, comparing it with Bramshill, they would that it was a complete specimen of the sty Though Mr. Albury did not agree with him, could not help thinking that Sir Robert Ce put his plans before Inigo Jones, who had th just returned from Italy, in the suite of Earl of Arundel. Sir William Cope thou the same artist built both Bramshill and Ha field. Hatfield was left at two o'clock, an run of ten minutes brought the party to Alban's, where they proceeded to luncheon, a afterwards visited the Abbey, under the gu ance of Mr. John Chapple.

Newcastle.—At the monthly meeting of t Newcastle Society of Antiquaries, on the 30 ult., Mr. W. H. D. Longstaffe (Gateshead) re a paper on Escombe Church. The Rev. Bruce said it was desirable that Mr. Longstaff paper should be printed in the "Transactions the Society."

The Brompton Oratory.—The Lond correspondent of the *Freeman's Journal* says "I am afraid there is no prospect that the bu ing of the new church for the London Oratori will be actually commenced for some time come. The plans, as I hear, have now be finally settled, but questions still remain open to the materials to be employed in the erecti and as these necessarily affect prices a tenders, some delay is the inevitable co sequence."

PARLIAMENTARY JOTTINGS.

...rkmen's Compensation Bill.—In the House ...rds, on the 31st ult., on the order of the ...r the resumption of the adjourned debate ... motion for the second reading of this Bill ... called, Earl De-la-Warr said that the Bill ...f the greatest importance to the working ...s of this country. The object of the Bill ...o make companies and corporate bodies ...mployed workmen in mines or on railways, ...other occupations, liable for accidents to ...orkmen through negligence of their fellow- ...nts. He believed that the principle of the ...as good, and its details might be con- ...d and amended in committee. The Lord ...ellor quite agreed that the subject dealt ...y the Bill was one of very great importance. ...apied the attention of a great proportion ... working-classes of this country, but it also ...ed the very close attention of the great ...yers of labour of the country, and it was, ...r, one of such very great difficulty that ... word in a measure dealing with it should ...refully considered. The Government had ...uced in the other House a Bill founded on ...port of the select committee which had ...d into the subject. The Bill of the ...earl was founded on the report of an ...dual member of the committee, which was ...d, and the questions involved in them ...not be properly discussed until the House ...th Bills before them. The best course ... be to defer the consideration of them ...ext session.—Lord Norton said that work- ...ad certainly a grievance to complain of in ...tter, and expressed the hope that it would ...e removed by legislation.—Earl De-la- ...accepted the suggestion of the Lord ...ellor, and the order for the second reading ...scharged and the Bill withdrawn.

... Indian Museum. — In the House of ...ons on the 31st ult., Mr. Grant Duff ...—

...h having regard alike to the traditions of our rule ... and to the expediency of establishing at an early ...y the joint action of the mother country, its colo- ... dependencies, an institution in which the produc- ... all those colonies and dependencies should be ...ly represented, it is undesirable that the Indian ..., collected at great cost by the East India Com- ...d taken over by the Crown, should now be broken ...distributed."

...n, member, having sketched the his- ...f the Indian Museum and the various ...s for erecting a new building in London, ...é last and worst of the various plans ...had been suggested was to disperse the ...on, and send the *disjecta membra* to Kew, ...ritish Museum, and South Kensington. ...ught it altogether improper that those ..., bought by Indian money or presented ...ians and Anglo-Indians for the express ...s of increasing the knowledge of India, ... be given away to institutions which, ...r valuable they might be, had no more ... connexion with India than they had ...atagonia or Kamtschatka. It would be ...y less injurious, while it would be more ...le, to sell the whole collection. The ...hich now found favour with many persons ...ed in the subject was that a convenient ...ld be obtained near that house,—namely, ... Indian Museum should be built on the ... of the Board of Control, extending back ... Embankment, having a street running ...t; and that on the other side of the ...hould be built the new Colonial Museum, ...onnected with the Indian Museum by a ..., the Indian Museum remaining under ...trol of the India Office, and the Colonial ...m being placed under the control of the ...l Office or of the representatives of the ... They ought to have a place, not only ...le to members of Parliament, but to ...espectable person in the country, where ...e information could be obtained with ... to our Indian and Colonial possessions. ...or later he believed that such an institu- ...ould be established. Mr. W. Egerton ...d the motion, which was supported by ...wcett, Dr. Lyon Playfair (who said he ...d the Indian Museum might be continued ...ducted well for a sum of 2,000*l.*, instead ...absurd sum of 7,500*l.*, which its manage- ...present cost), Mr. Beresford Hope, Sir ...olebrook, Sir G. Bowyer, Mr. Foster, Sir ...ubbock, Sir G. Campbell, and Mr. E. ... Eventually, on a promise from Mr. ...e that the matter should be considered, ...ion was withdrawn.

... Science and Art Department.—In the ... of Commons on the 2nd inst., in Committee of Supply, on the vote of 322,409*l.* for the Science and Art Department, Lord G. Hamilton explained the progress which had been made in the scheme for establishing a new national Science and Art Museum on the site of Leinster House, Kildare-street, Dublin, which had been acquired from the Royal Agricultural Society of Ireland at an expense of 25,000*l.*, besides an allowance for temporary offices until their new buildings were ready. The Government intended to erect a large building in that central position which he hoped would be worthy of the progress of the arts, and to transfer to it the various collections of the Royal Irish Academy and other science and art museums in Dublin. In this way, by increasing the accommodation at the command of the various institutions, and by the appointment of a Board of Visitors who would make annual reports in connexion with the Science and Art Department, he had no doubt a good deal would be done gradually to develop science and art instruction in Ireland. During the last year the report was not unsatisfactory. There had been an increase in the national library, a considerable addition had been made to the Natural History Museum, and there was an increase of 20,000 in the number of visitors. A committee of three gentlemen had been appointed to select what was most valuable in Mr. Foley's collection of models, and the Treasury had allowed the sum of 500*l.* for transferring them to Ireland. The sum of between 3,000*l.* and 4,000*l.* would have been required for removing the whole collection.—The vote was agreed to.

Water Supply of London.—In reply to Mr. Fawcett, the Chancellor of the Exchequer said he would be very glad, if the progress of public business permitted, to fix Monday or Tuesday next for the discussion of the hon. gentleman's motion on the subject of the water supply of London.

Survey of England and Wales.—In the House of Commons, on the 5th inst., Mr. O. Morgan asked the First Commissioner of Works whether his attention had been called to the recent report of the Select Committee on Land Titles and Transfer, and particularly to the urgent recommendation therein contained, "that the important work of surveying and publishing the survey of England and Wales, both on the 25 in. to a mile and the 6 in. to a mile scale, should be proceeded with and completed with the least possible delay"; and whether he could hold out any hope that such recommendation would be acted upon and carried out. In reply, Mr. G. Noel said he could not at the present moment state whether the recommendation of the Select Committee would be carried out.

WATER SUPPLY.

London.—At a public meeting held in Exeter Hall on Wednesday evening, Mr. Thomson Hankey, M.P., in the chair, it was resolved, on the motion of Sir Charles Dilke, seconded by Mr. John Holms, M.P., "That the present water supply of London is unsatisfactory, both in the quality of the water and in the cost." It was further resolved, on the motion of Dr. Lyon Playfair, "That the evils of the present water supply cannot be remedied except by creating a new authority and administration by Act of Parliament"; and, on the motion of Mr. Bateman, C.E., "That, with a view to urging this policy upon Her Majesty's Government, it is expedient to form central committees in the ten metropolitan boroughs, by which the subject may be pressed upon the vestries, and brought before Parliament by petitions."

Liverpool.—The consideration by the Liverpool Town Council of the report of the Water Committee was resumed on the 29th ult. The committee recommend that a new supply should be obtained from the Vyrnwy river, in Montgomeryshire, while a section of the council are in favour of Haweswater. The council divided, when the report of the committee was adopted by thirty-six votes to eight.

Westminster Industrial Exhibition.—On Saturday last the certificates of commendation adjudged to exhibitors at the Westminster Industrial Exhibition were distributed by the Hon. Mrs. J. G. Talbot. The ceremony was the complement of the distribution of prizes, consisting of three gold medals, sixty-three in silver, and 150 in bronze, three weeks previously by the Earl of Beaconsfield. The exhibition will close this Saturday, the 9th inst.

SUNDERLAND FREE LIBRARY AND MUSEUM.

The Museum of the Borough of Sunderland, in the wing of the Athenæum building, has been closed for some weeks past, in order to facilitate the packing and removal of the contents from the present building to the New Free Library and Museum buildings, at the north-west corner of Sunderland Park, which are rapidly approaching completion. Some particulars concerning the new buildings are given by the *Newcastle Courant*. They are situated in the Borough-road, and have now so far approached completion that it is expected they will be opened to the public at the latter end of this year. The foundation-stone was laid on the 24th of September, 1877, by the mayor (Ald. Storey), in the presence of General Grant, ex-president of the United States. The principal front is nearly 200 ft. long. The style is Classic, and the elevation of the Borough-road is ornamented by stone columns, a central dome, and pavilion roof. The principal entrance, under the central dome, opens into a spacious entrance-hall, 48 ft. long by 35 ft. wide. On the ground-floor is the museum, 75 ft. long and 35 ft. wide, and a curator's room, 20 ft. by 15 ft. A gallery is formed around the walls and museum on a level with the first-floor rooms. This gallery is reached from the museum by a circular staircase. The library, 65 ft. long and 35 ft. wide, is also on the ground-floor. Adjoining the library are the librarian's and ladies' rooms. The first-floor is reached by a stone staircase, and on this floor are two large rooms, one for the Science and Art Classes, which will be divided into three by curtains, and lighted from the roof, which is open-timbered. The other room is a committee-room. On the second-floor in the second block of the buildings are three rooms for the hall-keeper. The heating is by a high-pressure hot-water apparatus, by Mackenzie & Moncur, of Edinburgh. Mr. R. Allison, of Whitburn, is the contractor for the whole of the works. Messrs. J. & T. Tillman are the architects.

A winter garden is being erected on the south side of the museum and library. The roof is constructed of curved T-iron ribs, supported at intervals on metal columns, and glazed with rough plate-glass. There is a dome in the centre.

ART EXHIBITIONS.

Darwen.—An "Art Treasures" Exhibition was opened at Darwen by the Marquis of Hartington on the 24th ult. The exhibition is the second of the kind that has been held in Darwen, but it has been organised on a much more extensive scale than the first, which took place eleven years ago. The pictures, about 1,400 in number, include productions by J. M. W. Turner, Sir E. Landseer, David Roberts, Copley Fielding, Cox, Thomas Faed, J. E. Millais, Holman Hunt, J. Martin, R. Ansdell, R. Redgrave, J. C. Horsley, S. Prout, J. D. Harding, John Linnell, Sydney Cooper, W. P. Frith, E. M. Ward, H. O'Neil, Miss Elmore, Mrs. Butler (Miss Thompson), J. D. Watson, Andrew Maccallum, Corot, Ary Scheffer, Briton Rivière, and Edouard Frère. There are also several works of sculpture by John Bell, Theed, Mr. and Mrs. Thorneycroft, Adams, and others. The Marquis of Hartington, in the course of a brief address, said,—

"No doubt it is the duty of the rich, and of those who are blessed with leisure, to lead the way in the promotion of art education, and in the cultivation of taste in this country, as well as in other things. But it has never been forgotten that a national taste for art can never be developed by the taste of a few rich men, or even by the splendid genius of a few artists. A national taste can only grow up by being instilled in the minds and imaginations of the children and of the young. It must be instilled rather by the eye than by the ear. By being constantly surrounded by objects of art and beauty, the taste can not only be stimulated, but also educated."

Chester.—The Chester Loan Art Exhibition opens in the New King's School on the 11th inst., and will remain open about a month.

York.—The Yorkshire Fine Art and Industrial Exhibition, which has now been open to the public for several months, has been visited by between 200,000 and 300,000 persons. It has yet to remain open for three months.

"POSTS IN THE GROUND."

Sir,—Antipr-trescent, not pr-trescent, should have been the word used. Perhaps vi-trescent may have been nigher the mark for the astounding form assumed by the subterranean portion of the inverted larch posts, which, I fully believe, had become imperishable. C. A. W.

TRURO CATHEDRAL.

The new cathedral at Truro is to be proceeded with as quickly as circumstances will allow. At a meeting of the diocesan committee, held at Truro on Monday last, the plans submitted by Mr. Pearson, A.R.A., were accepted. Possession of some houses has to be obtained, and the work of clearing the site will probably commence soon after Christmas. The question of beginning with the choir or the nave was debated, but a large majority favoured the building of the choir first. The estimated cost of this is 35,000*l.*, and 10,000*l.* for additional land. About 12,000*l.* is now in hand, and a total altogether of nearly 33,000*l.* is promised.

Mr. Pearson, in his report to the executive committee, said that the design was simple in its character, the details almost everywhere being of a plain description, and when they are not so the enrichment is confined to prominent features, such as the porches, and these he had considered it necessary to decorate to give point and a sense of finish and completeness to the design. The old south aisle of the present Cathedral he proposed to preserve, with the exception of one bay at its western end, but not to restore the decayed stonework, unless funds especially for the purpose are provided. The gable end of the old porch he also proposed to preserve, but this would require to be rebuilt, for it could not be kept in its present position. With reference to the general design, as he much preferred the especially English arrangement of a central tower and two western towers for a cathedral, he had adopted it in this instance, and had endeavoured in every respect to impart to the design the style and character of a cathedral. He had carefully avoided every feature which in any way had a character belonging to a parish church, feeling that it would be altogether out of place. In calculating the cost, he had been guided by his own experience in the building of large churches, and by detailed particulars he had been kindly supplied with of the building of the new cathedral in Edinburgh, and he estimated that the choir, with its aisles and substructure, and the connexion with the south aisle of the present cathedral, would cost about 35,000*l.*; that the transepts up to the ridge of the roof would cost an additional sum of 20,000*l.*; and that the remainder of the church, which would include the nave and aisles, and the lower divisions of the western towers, the baptistery and the porches, would cost about 40,000*l.* The choir division and transepts would accommodate 1,300 or 1,400 people. In making these estimates he had assumed that the stone for the exterior dressings would be a free-working stone, and for the inside work a stone little, if anything, harder than Bath stone.

NOTES FROM IRELAND.

Limerick.—At a meeting of the Urban Sanitary Board, on the 29th ult., a letter was read from the Local Government Board in reference to the sanitary state of the city. The Board gave details of the charges which they had advanced to show that there was a default on the part of the sanitary board. These were,—Failing to introduce the pail system or some other efficient mode for the removal of refuse matter from certain premises, [an insufficient water supply, the want of a disinfecting chamber, and other matters. It was agreed to refer the communication to the executive sanitary officer to report upon.

Dublin.—On the 20th ult. the Most Rev. Dr. M'Cabe formally opened the new wing which completes the design of the St. Vincent de Paul Male Orphanage, at Glasnevin. The new wing will give house-room for fifty additional orphans, and follows and completes the original design of the building. It is of punched limestone, with chiselled granite quoins and dressings. It contains upon the ground floor, with waiting-rooms, a refectory, 50 ft. by 21 ft.; on the first-floor, accommodation for the Christian Brothers; and on the second floor, a dormitory, 50 ft. by 29 ft., with lavatories and bath-rooms. A central staircase, of Dalkey granite, rises from stage to stage. The building has been designed by Mr. John L. Robinson, architect, Dublin, the contractors being Messrs. Meade.——New buildings are in course of erection for the High Park Magdalen Asylum, from plans prepared by Messrs. O'Neill & Byrne, architects. They will comprise ironing-rooms, wash-rooms, dormitories, and infirmary. The structure will be three stories high, with two wings, and the entire length will be about 100 ft. by some 35 ft. in width, the height being about 45 ft. Accommodation will be provided for 250 or 300 inmates. The cost of the structure when fully completed will probably be about 9,000*l.*

Carlow. — The foundation-stone was lately laid of a new wing to Carlow Lay College, to accommodate eighty students. Mr. Haigue, of Dublin, is the architect. The new wing is to be erected at the southern end of the present building. It will have a principal elevation 68 ft. long and 40 ft. high, and will contain a refectory, study-hall, dormitories, bath-room, and lavatory. It will be connected with the old building by a closed cloister, 80 ft. long and 16 ft. wide, which will form a play-hall for the pupils. This cloister and the whole building will be heated with hot water, and provided with bath-rooms, lavatories, and other sanitary arrangements.

COLONIAL WOODS.

Messrs. James Smith & Co., in their last wood circular, say:—"Of yellow pine, three parcels from St. John have been sold at about 1d. per inch, and a stored parcel from Quebec, of good fair average quality and 60 ft. average, has been sold at 1s. 1d. per foot; also 18-inch prime, now landing, ex *Birmingham*, at 1s. 8d. per foot, with waney board at 1s. 10d. per foot; and ex *Electric Light*, waney board at 1s. 7d. per foot. The import has been light, and importers are holding prime quality for better prices, but common wood is difficult to place. Red pine is slightly firmer. Oak has been sold at 2s. 2d. per foot for prime quality, and at 2s. per foot for medium quality, ex *Birmingham*; common wood is unsaleable. Small elm, rather weathered, has been disposed of at 1s. per foot. Ash is slow of sale. Black walnut has been sold at low prices, but it is in small request. Birch has been sold freely at 1s. 3d. to 1s. 3½d. for St. John's. Quebec pine deals move off freely, and prices are slightly firmer; second quality has been sold at from 10*l.* 10s. to 13*l.* per standard, according to specification; and third quality at from 6*l.* 15s. to 7*l.* 15s. per standard. Lower Ports pine deals realised from 5*l.* 10s. to 8*l.* per standard. N.B. and N.S. spruce deals are supposed to have touched their lowest possible price this month, and sales have been made at from 5*l.* 8s. 9d. to 5*l.* 13s. 9d. per standard for St. John's, 5*l.* 5s. to 5*l.* 10s. for Richibucto, Miramichi, &c. At the auction sale last week the cargo ex *Gloire*, from St. John, realised 5*l.* 11s. 3d. per standard. Spruce palings are being sold at from 2*l.* 10s. to 3*l.* 10s. per 1,200 pieces, according to dimensions; a cargo from Newfoundland 42 in. by ⅝ in., was sold at 2*l.* 2s. 6d. per 1,200 pieces.

LIABILITY OF BUILDERS FOR PAVING APPORTIONMENTS.

SEVENOAKS LOCAL BOARD *v.* GRIMWADE.

At the Sevenoaks Petty Sessions on the 25th ult., Mr. William Grimwade was summoned by the Sevenoaks Local Board for the sum of 55*l.* 3s. 4d., apportionment of expenses of repairs done to Granville-road.

Mr. Douglas Kingsford, instructed by Mr. Carnell, Clerk to the Board, said the claim was in respect of property on the west as well as the east side of the road. He called Mr. Titcombe, builder, who said that he hired some of the land on the east side from Mr. Grimwade.

Defendant was called, and he said that the land from the Iron Church to the Railway Tavern was his, but the other portion was not conveyed to him yet, although he was in contract with Mr. Cree for the purchase, which should have been completed by June, 1877.

Mr. Philbrick (for the defendant) contended that the land on the east side belonged to Mr. Cree, and therefore that his client was not liable. He did not receive any rent for the land.

Mr. Kingsford contended that the defendant was clearly liable, as he had had ample time and opportunity for completing the purchase, and Mr. Titcomb had been authorised by defendant to use the property. He was the owner within the meaning of the 4th section of the Public Health Act, as he would receive the rents if there were any, and was the owner for the time being.

Mr. Philbrick said that Mr. Cree was the only person who could give a legal discharge for the land. He submitted that defendant was not the owner.

The Bench, however, made an order, and granted a case for a superior court upon the point raised, as to whether Mr Grimwade, being under contract for the purchase, was liable.

HEIGHT OF THE OAK.

Sir,—I have had great experience in selecting and measuring oak trees, and can assure your correspondent that an English oak has never attained the height of 100 ft. in the trunk.

F. Dashwood.

COMPENSATION CASES.

COLE *v.* METROPOLITAN BOARD OF WORKS.

This case, heard in the Surrey Sessions-hous Newington-causeway, on the 19th ult., befo Mr. Under-Sheriff Abbott and a jury, involve a claim made by Mr. S. N. Cole, described as dealer in works of art, and a plumber and dec rator, by way of compensation at the hands the Metropolitan Board of Works, in respect their requiring his house and premises on th north side of Church-street, Camberwell, part and parcel of the local improvements no on the *tapis*. Mr. Cole claimed the sum 2,240*l.* The Board offered him 800*l.*, which refused. Hence the proceedings.

Mr. H. Jarvis, district surveyor of the pari of Camberwell, gave evidence to the value the premises, followed by Mr. E. Stimson, A. E. Taylor, and Mr. Virgo Buckland.

For the Board, Mr. Robert Reid, of Gre Marlborough-street, was called, as were al Mr. Samuel Walker and Mr. George Lane, su veyors and estate agents.

The jury awarded 1,100*l.*, being 850*l.* co pensation for lease, and 250*l.* for trade dama

ALLBEARY *v.* METROPOLITAN BOARD OF WORKS.

This was a claim (before Under-Sher Burchell and a special jury) for 500*l.*, two rooms and the damage by severance the house adjoining the Crown Coffee-hou 192, St. John-street-road, near the Angel, h by Joseph Allbeary for eight years and half, which rooms were required for public improvements now being made at Isli ton. Under his lease the plaintiff had t additional rooms, which he let out at 6s. night, and at the time of the Cattle Sh realised a large sum. There was a claim for loss of customers to the coffee-house occupied the rooms. It was contended that the lease could be terminated yearly, the ad tional profit rental could not be claimed, that the claim had been exaggerated. jury, after consultation out of court, asses the compensation at 225*l.*

Liverpool.—On the 23rd ult., an inquiry held before Mr. Aston, Q.C., and a jury, i the amount to be paid by the West De Local Board as compensation to the N Hebrew Congregation in respect of a portion their burial ground, &c., which the board pose to take for the widening of Green-lane.

Mr. James, barrister, who appeared for the congr tion, said the board, by virtue of a provisional order, proposed acquiring ninety-seven yards of the Jewish bu ground, belonging to the New Hebrew Congrega worshipping in the Hope-place Synagogue. The im improvement would cut in two the site of the pre mortuary chapel, and the congregation found it neces to purchase about 2,000 yards of an adjoining field which to rebuild a chapel, and in which to inter bo Had it not been for the action of the Local Board, t would have been plenty of room in the old burying gr for interments for something like twenty years to come. The value of the land taken from the congrega by the defendants was estimated at 8s. per yard. addition to that the claimants were entitled to be paid expenses consequent on the removal of the bodies w lay interred under the land acquired by the board, which would have to be taken up and reburied in other portion of the old cemetery. The congrega were also entitled to what it would cost them for re ing a new mortuary chapel exactly similar to that w was being displaced, and the expense attending this would be the main contention in the issue. The amount of the claim was 750*l.*

Mr. Segar, barrister, who appeared for the board, th that this was an exaggerated claim.

After hearing witnesses, the jury assessed the com sation at 491*l.* 12s. 8d.

LANDLORD AND TENANT.

ENTRY ON PREMISES TO REPAIR.

STOCKER *v.* THE PLANET BUILDING SOCIETY.

This appeal (Court of Appeal), from an or of the Master of the Rolls, raised a question some interest as to the right of a lessor to e upon the premises for the purpose of effect repairs against the will of the lessee.

The plaintiff was lessee from the defendants of ho at Cubitt-town. The lease contained the usual cove to repair and paint, and a power of re-entry for brea any covenant; but no power to the lessors to do re upon the lessee's default. The lessors, who held u a lease from a superior landlord, which was liable to feiture if the houses were not kept in proper repair, given the lessee repeated notices to execute certain rep On the refusal of the lessee, who alleged that the ho were in good repair, the defendants gave him no that they intended to do the repairs themselves, an charge the lessee with the cost. Some of the houses sublet to weekly tenants, from whom the lessors obta leave to enter for the purpose of executing the repa Others were unoccupied. The lessors having entered erected scaffolding in order to stop up holes in the r the lessee commenced an action to restrain the les from trespassing upon the premises. The Master of

eing of opinion that the plaintiff had a right to is property in his own way, and that the entry of ors was, in the absence of express power for that in the lease, a trespass, granted an injunction. his order the defendants now appealed.

Lordships affirmed the order of the Master of the bserving that as the defendants, when they granted se to the plaintiff, had not reserved any right to pon the property, they had no more right there y other stranger. There was clearly no excuse for e defendants had done in taking the law into their ids, and committing a trespass upon the plaintiff's r. As to the risk of forfeiture, the dilapidations d to be so slight, and the repairs required of such g nature, that a jury would not be likely to pay tention to any action by the defendants against the for breach of his covenant to repair. The quest be dismissed, with costs.

ATIONAL COMPETITION PRIZE INGS AND PAINTINGS, SOUTH KENSINGTON.

annual exhibition of the works of s of the Schools of Art throughout the y is now opened to the public in the hall (first story) of the galleries to the of the Royal Horticultural Society's , the entrance to which is on the west the Exhibition-road, South Kensington. hibition this year consists of about 1,100 selected from about 14,200 sent up 45 schools for the annual examination h Kensington. The subjects of the com- are,—Figure Drawing and Modelling, g in Oil and Water Colours, and Design, lly as applied to manufactures. The awarded are 10 gold medals, 45 silver 77 bronze medals, and 168 prizes of The committee of adjudicators included E. J. Poynter, R.A., L. Alma-Tadema, . E. Hodgson, A.R.A., G. Leslie, A.R.A., nsep, A.R.A., J. E. Boehm, A.R.A., G. on, J. J. Stevenson, and William Morris nodelling applied to structural forms, medal has been awarded to Andrew , of the Westminster School of Art, for column decorated with twisting branches, , &c. This work also carries off the first fered by the Plasterers' Company this

e of the recent proceedings against Mr. he head master of the Westminster Art ience Schools, the number of awards to ents in those schools has an unpleasant

much to be regretted that a more le gallery could not have been found se works. A visit entails a tiresome

ELD LOCAL BOARD SURVEYOR-SHIP.

Permit me, through the medium of your , to add a few remarks on this matter. read the letter which appeared in your e of the *Builder*, signed "C. E." I am me opinion, that it is quite time some- as done to put a stop to local boards ng inefficient persons to the office of . I think it is very unfair to the s of the profession, who have spent studying the various branches of sani- neering for the welfare of humanity, rown out by uninformed and inexpe- men, who snatch every opportunity that elf to push themselves forward as can- when utterly incapable of performing se required from a local board surveyor. nd trust the time is not far distant mbers of local boards will have found s to their advantage to appoint com- ersons to superintend and carry out the ments of their towns.

NOT A CANDIDATE.

While fully sympathising with the t of your correspondent "C. E." in to the election of a surveyor to the ocal Board, I think he has missed the int of the grievance.

Boards are undoubtedly to blame for such inconsistent appointments as they ly do, but is not Parliament much more for allowing the qualification necessary ning a seat on a local board to remain an absurdly low standard that any obody," with more money than brains, position which enables him to use his in behalf of a *protégé* of his own, to usion of practical men who would really to their appointment?

e the cause, and the effect will cease.

C. S. C.

AN ASSOCIATION OF ARTIST-WORKMEN.

SIR,—It would tend to raise the status of that higher class of working-men who desire to attain excellence in workmanship if they were to be associated and form a guild under the above title of association, or that of Institute of Artist-Workmen.

Such an institution would soon fathom the intellectual needs of the class as well as the most favourable conditions for the development of the highest kind of work. I do not mean that the body should be entirely composed of fine-art workmen, but of the best workmen in the highest crafts, so that the highest tone might be preserved with reference to workmanship in general.

The election of members would be vested in the committee, and it would be the committee's duty, in the interests of workmanship, that the best craftsmen should be elected. The members should be entitled to use an affix expressing membership.

One of the objects of the institute should be to send out travellers, some of the most intelligent of the body, to ascertain what new methods are being introduced into foreign manufactures, and the progress and character of workmanship abroad.

W. CAVE THOMAS.

TRUTH TO FACT IN ART.

SIR,—Has it ever occurred to those simple-minded individuals who are constantly railing against "shams," and insisting on "truth to nature" in art, that it is impossible to be "true," literally "true to fact," even in the linear arrangement of a picture? Have the advocates of "literalness" ever considered that a perspective representation does not render the objective and literal condition of external things, but instead, the illusions of sense? We represent objects not as they really are, but only as they appear to us. How astonished the advocates of "literal truth to objective existence at any price" would be if they were to see their own dogma rigidly carried out in a picture; as, for instance, in the representation of a street of the same width, with houses, lamp-posts, and figures of the same dimensions in the distance as in the foreground, as they really are in nature. Artists of these debased times only represent the appearance, the "sham," which the laws of vision foist upon us; though when Japanese and Chinese art has been sufficiently studied, we may revert to the simple truthfulness of the willow pattern. But how the new school of truth-loving artists will represent the sun, moon, and stars in their actual relative magnitudes I am at a loss to guess.

METER.

THE COST OF THE LONDON SCHOOL BOARD SCHOOLS.

SIR,—As one result of the pressure of the Education Department and of public opinion, the London School Board, at their last meeting, decided that the cost of school buildings, inclusive of extras and architects' expenses, should be reduced to 10*l.* per child; but that in order to effect this reduction, it would be necessary to omit for the future the following items, viz.: (*a*) All covered playgrounds; (*b*) all wall plastering; (*c*) cement dados and skirtings; (*d*) window finishings; (*e*) all [handrails to staircases; (*f*) seats in playgrounds; (*g*) gymnastic apparatus; (*h*) drinking-fountains and filters; (*i*) casings to girders, and corbels under girders; (*j*) extraction-flues for ventilation where open fires are used; (*k*) all mouldings and ornaments inside and out.

This is a very sweeping excision of much that is useful, and, indeed, desirable, in a school. It is difficult to imagine what will be the general character of a building where all "mouldings and ornaments, inside and out," are omitted, and the want of all handrails to staircases is likely to lead to some very interesting results, so far as the children are concerned. Again, the proposal to omit the extraction-flues simply means, in plain English, that the schools are to be without ventilation. Thus it would appear that the future schools of the London School Board are to be imperfectly finished, and deficient in many necessary points, because the Board are unable to erect well-appointed buildings at the stipulated cost of 10*l.* per child.

But, sir, I would ask, is this really an impossibility? Cannot good school buildings be erected which shall comprise most of the items now proposed to be omitted (a few are unnecessary), and yet not exceed 10*l.* per child?

This is a question for members of the architectural profession to answer. In a letter you kindly inserted some short time since, I endeavoured to show from statistics that good and efficient school buildings have been erected for the London School Board by "outside architects" at an average cost of even less than 8*l.* per child. That letter has never been answered; the statements contained therein have never been disputed; and in the face of the present public dissatisfaction at the increasing burden of School Board rates, it is of vital importance that it should be fully understood that the London School Board have been erecting schools at an unnecessary cost, and propose now to reduce that expenditure by unnecessary curtailments.

THOS. W. ALDWINCKLE.

COMPETITIONS.

Gloucester County Asylum. — Designs have been received in competition for the second County Asylum. The designs marked "Experience," "Utilitas," "Glory of Glwenn," "Sunshine all Day," "Notanda est Via," and "Spectemur Agendo," are well spoken of.

Gateshead.—At a meeting of the Gateshead Board of Guardians on the 22nd ult., the question of the proposed new workhouse buildings was discussed. Mr. Alderman Hindmarsh thought it desirable, before the Board decided on having a new workhouse, to ascertain, by offering a premium to architects for plans, whether the old workhouse could be so altered as to provide the increased accommodation they required. This, perhaps, could be done at a comparatively small cost; but a new workhouse would necessitate an expenditure of 60,000*l.* or 70,000*l.* He, therefore, gave notice that at the next meeting of the Board, he would move "That subject to the approval of the Local Government Board, an advertisement be inserted in the local papers, offering a premium of 25*l.* for the best and most practical plan for enlarging the present workhouse to make it available to meet the present and future demand for increased accommodation."

Greenock Municipal Buildings.—At the meeting of the Greenock Town Council on Tuesday, Provost Lyle stated that Mr. Barry, architect, London, who had been engaged to adjudicate on the fifty competitive designs for the new Corporation Buildings, had intimated that by the end of this week he would place those he had selected for favourable consideration in the hands of the Council. The cost of the buildings is estimated at 80,000*l.*

MONUMENTAL.

Geneva.—It is expected (says a *Times* correspondent) that the Brunswick Mausoleum in the Place des Alpes, the building of which was begun three years ago, will be completed before the end of September. The late duke directed in his will that the mausoleum should be constructed on the model of the La Scala monument at Verona, and that the sarcophagus containing his remains should be surrounded by six of his ancestors of glorious memory. These statues were successfully mounted on their pedestals of red granite a few days since. They are all of white marble, and represent Henry the Lion and Otho the Child (sculptured by Schoenwerk of Paris); Ernest the Confessor and Augustus the Learned, by Thomas and Millet; and Charles William, the Duke's grandfather, who was mortally wounded at Auerstadt; and Frederick William, his father, the fated chieftain of Brunswick, who fell at Quatre Bras, both executed by Herr Kissling, a Swiss sculptor, established at Paris. The sarcophagus will be placed in an hexagonal chapel, or tabernacle, of white marble, the roof of which is supported by six columns of Carrara marble. On the sarcophagus will repose a full-length statue of the late duke, a lion couchant at his feet, and at each angle will be placed the figure of a winged angel. The sides and ends of the sarcophagus are ornamented with bas-reliefs representing scenes in the history of the house of Brunswick, the work of M. Iguel, of Neuchâtel. Above the chapel and the sarcophagus rises a hexagonal gabled pyramid in red marble, each of its six faces containing a niche, in which appears the figure of an angel in white marble. The gables are richly sculptured and surmounted by golden crowns. From the centre

of the pyramid springs a hexagonal pedestal in white marble with red marble capitals, whereon will shortly be placed a bronze equestrian statue of the last Duke of Brunswick. The faces of the pedestal will be filled with statues of the twelve apostles, also in white marble. The lower part of the mausoleum, or claustrum, will be enclosed within an iron grille, by Moreau, of Paris. The platform supporting the sarcophagus, as well as that supporting the angels, the architraves, and the six columns of the first order, forming the base of the monument, are of red Aberdeen granite. Colossal sphinxes repose on each side of the mausoleum, and the stairs are flanked by two lions couchant, all in red marble, the models for which, as well as for the bronze equestrian statue of the duke, were designed by M. Auguste Caen, of Paris. The late duke gave no directions in his will as to the amount to be expended on the mausoleum, only that its cost should be defrayed from the millions which he had bequeathed to the city of Geneva. The architect, M. Franel, has, therefore, had *carte blanche* from the corporation in the matter of outlay. The total expenditure on the monument and its surroundings will not exceed 60,000*l*. The average rate of pay of the sculptors employed on the spot, nearly all of whom are Italians, has been 1s. 6d. per hour, and the maximum 20s. a day.

Stratford.—The Martyrs' Memorial at Stratford-le-Bow was unveiled on Saturday last by the Earl of Shaftesbury. The memorial stands in the churchyard at the west end of Stratford Church. It is a simple structure of terra cotta, and has a spire surmounted by a martyr's crown. Its height is 65 ft., and it has been built by public subscription at a cost of about 1,000*l*. Tablets on each of the six sides record the names of those who suffered and the circumstances of their death, while the bas-relief in the first panel is a copy of the original engraving in Foxe's "Book of Martyrs," representing the execution. The architect is Mr. J. Newman, and Messrs. H. Johnson & Co. were the builders.

Dean Ramsay.—Operations have been commenced for the erection of a memorial to Dean Ramsay in the enclosed ground on the level of Prince's-street, Edinburgh, immediately to the east of St. John's Episcopal Church. The monument has been executed by Messrs. Farmer & Brindley, of London, from drawings by Mr. R. Anderson, A.R.S.A. The design is that of a granite cross, rising 26 ft. from the ground, and having a width of 8 ft. 6 in. from end to end of the arms. The cross proper rests upon a base constructed in three stages, whose sides have an inward slope or taper. At the height of 16 ft. there spring curves which bend round into the arms; while between those arms and the upright shaft are carried four arcs of a circle, having a diameter of 6 ft. On each of its main faces the cross is divided into panels, in which are inserted bronze bas-reliefs, worked out by Messrs. Farmer & Brindley, from Mr. Anderson's sketches. Those occupying the head and arms of the cross represent the various stages of the Passion, together with the Resurrection and Ascension; and in another series of six, placed three on each face of the shaft, are set forth the Acts of Charity,—visiting the sick, clothing the naked, &c. Large panels at the foot of the shaft are filled in with sculptured ornament. The material employed in the work is the reddish granite quarried at Shap, in Cumberland. The bronzes have been cast by Mr. Elkington, London, and the erection of the monument has been entrusted to Mr. Peter Sinclair, builder, Edinburgh.

The Late Countess of Loudoun.—The Eleanor cross, erected at Ashby-de-la-Zouch to the memory of the late Countess of Loudoun by the people of that town and neighbourhood, was unveiled on the 24th ult. The cross, which is 70 ft. high, is from the designs of the late Sir Gilbert Scott, and is richly decorated.

The late Mr. Sam Bough, R.S.A.—The *Scotsman* says that that there is now in course of execution, at Mr. John Rhind's Granite Works, Pitt-street, Edinburgh, a monument designed by Mr. W. Brodie, R.S.A., and intended to be erected in the Dean Cemetery, as the tribute of friends to the memory of the late Sam Bough, R.S.A. The structure is of simple, massive character; its material, granite, from New Galloway; its leading feature being a bronze relievo of the late artist's head, modelled by Mr. Brodie. A base 5 ft. wide supports a large slab, which tapers away to a width of 3 ft. at the top, and is surmounted by a moulded cope, the total height of the monument being nearly 10 ft. In the centre of the slab will be inserted the bronze head, which is enclosed in a circular panel overhung with a wreath of bay-leaves. On the ledge of the base will be placed a palette and sheaf of pencils, also worked out in bronze.

Leighton Buzzard.—The trustees of Wilkes's Charity have revived the memory of the philanthropists by having the tablets erected to them in the chancel of All Saints' Church thoroughly restored. This work has been carried out by Messrs. Heaton, Butler, & Bayne, of London. The tablets, which are in marble, have been cleaned; the inscriptions, which had become all but illegible, re-written; and the heraldic mountings re-emblazoned.

STATUES.

Robert Burns.—Mr. W. G. Stevenson, Edinburgh, has completed the Sicilian marble statue of Burns, intended to form the central feature of the Kilmarnock monument. The monument, which has cost about 3,000*l*., is to be unveiled this Saturday, the 9th.

Daniel O'Connell.—Mr. E. Dwyer Gray, the honorary secretary to the committee for the erection in Sackville-street, Dublin, of a statue to O'Connell, writes that he visited Mr. Brock's studio on the 26th ult., and found that the modelling of the central drum, with its many figures, has been completed to the satisfaction of Mr. Armstead, the artist employed by the committee, who has certified to the excellence of the work. The principal figures of this portion are now in the foundry. One of the winged figures is almost completed. Mr. Brock has no apprehension but that the monument will be completed by the time specified in the contract,—1881,—provided the stone be ready.

The Prince of Wales.—The equestrian statue of H.R.H. the Prince of Wales, presented to the city of Bombay by Sir Albert Sassoon, C.S.I., K.T., was unveiled on the 26th of June by Sir Richard Temple, the governor. The statue (of which a view was published in the *Builder* for 1877, p. 787) is intended as a memorial of the royal visit to India, and is from the *atelier* of Mr. J. E. Boehm, A.R.A. It was cast at the Messrs. Young's foundry in Pimlico, in March of last year. The Prince is represented in field-marshal's uniform, the dress he appeared in at most of the ceremonies in his visit to India.

Prince Louis Napoleon.—It is stated that Mr. Boehm, A.R.A., has received instructions to execute a statue of the late Prince Imperial of France for erection in Westminster Abbey. The statue will be life size, and the figure of the prince will be represented in an attitude of defence with drawn sword.

Chief Justice Whiteside.—The clay model of the statue to the late Chief Justice Whiteside, which is to be erected in St. Patrick's Cathedral, Dublin, has been completed by the artist, Mr. Albert Bruce Joy. The statue will be between 7 ft. and 8 ft. in height. The late Chief Justice is represented seated in an arm-chair in his attire as Doctor of Law, his right-hand resting on his knee, and the left touching lightly the arm of the chair.

Lord Gough.—We hear from Dublin that the equestrian statue of Lord Gough, which was intended to perpetuate the memory of a brave Irishman in the capital of his country, is now ready for delivery from the hands of the sculptor, but no site has yet been found for it. Two sites were named, but nothing was decided. When the statue committee asked to have the gift of a site in Westmoreland-street confirmed, the Corporation declined, and the matter has been a subject of controversy ever since. A site has been offered in London. The statue is one of Foley's finest works.

DRAINAGE AND SEWERAGE WORKS.

Solihull.—On the 29th ult. the new sewerage works for the Solihull district were formally handed over to the Rural Sanitary Authority by Mr. Green, contractor, of Warwick. The proceedings took place at the sewerage farm and outfall works near Catherine-de-Barnes. The separate system of sewerage has been adopted, and provision made for an ultimate population of about 7,000, the cost of the works, &c., being about 6,000*l*. The effluent water from the tanks is carried off into the Blythe and the Birmingham Canal. Mr. E. Pritchard is the engineer. The sewers are on what is commonly called the straight-line system, with man-hol and ventilators at each change of inclinatio whether vertical or lateral. The length of t sewers is 2,590 lineal yards of 15 in. outfa sewers, and 3,100 yards of 9 in. branch sewe giving a total of between three and four mil The depth of the sewer is, in consequence of t superficial configuration of the ground, in som instances as much as 20 ft. The 15 in. sew had a capacity of 1,145,000 gallons in twen four hours, and the 9 in. of nearly a milli gallons. The outfall works were constructed land belonging to Mr. Gillott, the area consi ing of about 15 acres. The Authority l obtained the land on a lease for 30 years, a rental of 4*l*. per acre, with power of purcha Mr. Pritchard, in the course of a speech m by him on the occasion, said that he had bd ably supported in carrying out the works Mr. C. Lewall, C.E., and the manner in wh the contractors had carried out the work wo bear the fullest investigation.

Brampton.—At a meeting of the Brixwo Rural Sanitary Authority on the 31st ult., E. F. Griffith, C.E., submitted a scheme for drainage and water supply of Chapel Bramp and Church Brampton. The scheme adopted, and steps taken for carrying it out.

Chester.—At the last meeting of the Holy Rural Sanitary Authority, a letter was recei from the Local Government Board transmit copies of orders which they had issued un seal, constituting the townships of Wepre Golftyn, in the parish of Northop, into a spe drainage district, to be designated the Conn Quay special drainage district, for the purp of carrying out the drainage scheme for districts repectively. The formal consent of London Board was also received for borrow the necessary money from the Public W Loan Commissioners.

Selkirk.—The contract for the drainage Selkirk, which was begun about two years has now been completed. Previously to that with the exception of a few new streets which properly-constructed drains were down, all the sewage of the town was conve in roughly-built drains or "cundies" to the lade, or into one or other of the burns w empty themselves into it, the whole findin way to the Ettrick without any attempt at p fication being made. About that time, howe a resolution was come to by the Police missioners to adopt a more efficient syste drainage, and for this purpose a plan prep by Mr. Young, C.E., Perth, several years be was, with certain modifications, adopted. this plan the whole of the sewage is carrie to a level haugh at the north-east corner of burgh lands, between the line of railway the river Ettrick, and utilised as an irriga agent. The precipitation process is adop The cost of the undertaking has been upward 4,000*l*., the contractor for the works being Drysdale, Glasgow.

Forfar.—The mode of sewage disposal kn as intermittent downward filtration in comb tion with surface irrigation is being carrie at Forfar. At present the sewage is depos in the Loch of Forfar, but the proprietor of loch (the Earl of Strathmore) objects to and has compelled the Local Authority to a some other means of getting rid of the sew A new drainage system is accordingly b carried out, from plans by Mr. Willet, Aberdeen, whereby as much of the storm-w and overflow from the public works as pos is separated from the sewage. The loch is only outlet for the town's sewage, so that necessary to adopt some system of purifica Acting on the advice of Mr. Willet and Mr. B man, the Local Authority consulted Mr. B Denton, on whose advice the present syste sewage disposal has been adopted, and adop it is stated, for the first time in Scotland, sewage from the town will be delivered pumping-station on the banks of the Loc Forfar, immediately under land selected purchased for the utilisation and clearing o sewage by a main outfall sewer. It wi collected by two reservoirs, each 120 ft. lon 17 ft. wide, and 4 ft. deep below the inver the main sewer. The engines are capabl lifting about two million gallons of sewage d The amount of dry weather outflow has gauged, and found to be only 600,000 gal The sewage will be pumped through a ri main, 13 in. in diameter, to the highest poi Orchardbank Farm. The farm contains a 40 acres of land, and is adjacent to other perty belonging to the burgh, which may

, when required, be adapted for sewage ation. The cost of the works, including ying out of the land, is estimated at .

STAINED GLASS.

n Marsh.—Three new painted glass rs have just been dedicated in the parish , Dilton Marsh, Wilts. The windows are t of a series of the beatitudes that has rawn up by the vicar (the Rev. C. F. That in memory of Bishop Hamilton tes the first beatitude, "Blessed are the spirit." The other two windows are ials to Sister Elizabeth, Superior of St. Home. They represent respectively the nd sixth beatitudes, "Blessed are the l," and "Blessed are the pure in heart." ndows are the work of Mr. Horwood, of Mr. Singer, of the same place, pre- he brasses.

ngham.—A stained-glass window has been inserted in the eastern side of the transept of St. Mary's Church, to the y of the late Mr. Job Bradshaw, solicitor, ham. The window forms a companion djoining one put in to the memory of Bradshaw, the subjects depicted being number, of an historical character taken e earlier prophets, and being in accord- th a general scheme for the church by llope, the Suffragan Bishop of Notting- In the window to the memory of Mrs. aw the subjects are taken from Zecha- id Malachi, whilst those in the window mpleted are from Daniel and Jonah. ndows are by Messrs. Clayton & Bell.

urhey.—A stained-glass window, designed ecuted by Messrs. Wailes & Strang, of tle-on-Tyne, has just been inserted in Church, Harpurhey. The window con- three lights, in each of which are two s, forming a higher and lower tier. The pper subjects are connected with the dispensation, and the three lower with w Testament dispensation. This is the indow placed in Harpurhey Church by Wailes & Strang.

naben.—The hitherto plain glass windows the "Bruce window," in the new Loch- Town-hall, have been filled with orna- coloured glass by Mr. Ballantine, of gh. It is proposed to insert a "Wallace " in the opposite end of the hall.

ry.—A window has been lately erected ury Church, in memory of Mr. William , J.P., major Royal North Gloucester introducing the subjects, "The Talents," ive Wise and Five Foolish Virgins." It ecuted by Messrs. Heaton, Butler, &

MASTERS AND MEN.

l.—The strike in the Bristol building as brought to a close on the 29th ult. by concessions. The masons accept the n of a halfpenny per hour, and give in he worked stone question, while the give way on the walling question.

of England Iron Trade.—On the 30th employers in the North of England ctured iron trade connected with the arbitration gave notice of a reduction r ton in the present wages for puddling, derably lower rate, the men assert, than or before known in the history of the A reduction of 5 per cent. took place in er last by Mr. Shaw Lefevre's award. sent demand will be submitted to arbi-

ord.—In consequence of the threatened extension of the hours of labour in the le, the Bradford Engineers' Committee engaged in establishing a "Nine Hours " the object of which will be the pre- n of the nine-hours system. Unionists n-unionists will be asked to join its

ld.—An association has been formed in for the purpose of aiding working men ate to the Western States of America.

pt to Destroy the Kremlin.—The at Moscow was set on fire in broad on the 19th ult., a wooden staircase een saturated with petroleum. In five e flames were extinguished, but the s considerable.

PROVINCIAL NEWS.

Canterbury.—It is stated that extensive works are about to be carried on at her Majesty's (St. Augustine's) prison at the foot of St. Martin's-hill, Canterbury. The works consist of two new wings to the present buildings,—one for male, and the other for female prisoners; the two wings to accommodate 450 prisoners. The new buildings are to be erected where at present stands what is known as the old prison, which is now being pulled down. The whole of the labour in connexion with the new works is to be done by prisoners, from plans and specifications furnished by the Home Office authorities.

Cambridge.—The *Cambridge Chronicle* says that the trustees and directors of Cavendish College have approved of the plans for a new block of buildings.

Heywood.—On the 29th ult., Messrs. W. Grundy & Sons, of Manchester, offered for sale by auction, under an order of the Court of Chancery, the extensive cotton-mills and surrounding houses at Hooley Bridge, Heywood, formerly the property of Messrs. Fenton, of Heywood and Rochdale. The estate consists of two extensive mills, the largest of which is five stories in height, 256 ft. in length, and 51 ft. 6 in. in width, and is fireproof; and a weaving-shed, covering 2,034 superficial square yards. The mill is fitted with shafting, and there are also four condensing engines,—one of eighty and three of forty horse-power respectively, with seven cylindrical steam-boilers. There are also two houses for managers, 161 workmen's cottages, a school, three shops, and a reservoir. The site of the buildings and the vacant land occupied therewith contains an area of about 38,000 superficial square yards. The whole of the property is freehold of inheritance, free from chief rent, and, with the exception of a few cottages, is now vacant. The bidding was commenced at 1,000*l.*, and bids of 2,000*l.*, 5,000*l.*, 5,200*l.*, 5,500*l.*, and 6,000*l.*, were made. As no further advance was offered the property was withdrawn.

Darlington.—It is reported that since the closing of the Skerne Ironworks at Darlington, there are additional houses in the ironworks district thrown on the hands of landlords. There is now a considerable extent not only of cottage property, but of houses of large size and commanding high rents, unoccupied in the town. The depopulation has gone on gradually for the last four years since the iron trade commenced to decline. Up to within two years ago building was continued briskly, and there are houses which have never yet been inhabited, though this is the exception. A census has just been taken of the empty houses. They are found to amount to 1,028. House property, unless in very favoured situations, can hardly find purchasers at any price.

Hove.—The Hove Commissioners have accepted the tender of Mr. J. T. Chappell, of Hove and London, amounting to 31,933*l.*, for the erection of the new Town Hall.

Sunderland.—Mr. T. E. Harrison, an inspector of the Local Government Board, has held an inquiry respecting an application of the Corporation for a loan of 4,000*l.* to lay out certain land at Roker for pleasure grounds, and to erect a bridge over Roker Gill. The bridge is estimated to cost 2,000*l.*, and the roads 500*l.*

Epsom.—The *Surrey Advertiser* says that the directors of the Epsom Grand Stand Association propose pulling down the whole of the buildings at present composing the stand for H.R.H. the Prince of Wales, and also the private stand. They have, therefore, instructed Mr. Hatchard Smith, architect, to prepare the necessary drawings for an entirely new private stand in connexion with the existing building, at a cost of about 8,000*l.*

Hereford.—It is stated that the Post Office authorities have purchased premises in Broad-street, and intend to erect a new post-office on the site.

Hertford.—The work of demolishing the old county prison here is progressing. The remains of various persons who have been from time to time buried within the precincts of the gaol have been collected and placed in a large chest, and with the approval of the vicar quietly removed and buried in the churchyard of All Saints. It appears (says the *Herts Mercury*) to be a strange oversight on the part of the Legislature that no provision was made in the Prisons Act (in consequence of which many prisons were abolished and brought to the hammer) for disposing of the human remains of those who had, in accordance with the Criminal Law, been denied the right of sepulture in the ordinary burial-places of the country.

Liverpool.—The *Liverpool Post* states that the date of the banquet in honour of Mr. J. A. Picton, F.S.A., in connexion with the opening of the Picton Reading-room, has been fixed for October 8th, in St. George's Hall. Lord Derby has promised to preside.

CLOCKS AND BELLS.

Winchester.—The *Hampshire Advertiser* states that the Dean and Chapter of Winchester are going to have a chiming apparatus attached to the peal of bells in the tower. The apparatus is to be provided by Messrs. Warner, London.

Shrewsbury.—The erection of a new clock and quarter striking apparatus for the clock of St. Mary's Church has been entrusted to Messrs. Gillett, Bland, & Co., Croydon.

Meltham.—The tower of St. Bartholomew's Church, Meltham, has just been furnished with a carillon apparatus by Messrs. Gillett, Bland, & Co. It plays fourteen tunes on ten bells. There were originally only six bells in the tower; Messrs. Gillett, Bland, & Co., have added four others.

Bedford.—A movement has been initiated for providing the tower of St. Paul's Church, Bedford, with a set of chimes to play seven tunes, one tune to be played at intervals of three hours during the day and night. The estimated cost is 300*l.* Messrs. Gillett, Bland, & Co., of Croydon, will supply the apparatus.

NEW HOTELS.

Carlisle.—A new hotel is about to be erected on the Viaduct, Carlisle. The site is 250 ft. in length by 48 ft. deep. The main entrance will be from the Viaduct, but there will be an entrance from the West Walls. In the basement there will be a large restaurant. Mr. D. Birkett is the architect of the new building, which is variously described as "Old English" or "Queen Anne" in style. The site has cost 5,000*l.*, and the building itself is estimated to cost 20,000*l.*

Glasgow.—The St. Enoch Station Hotel, the erection of which was commenced about two years and a half ago, has just been opened. The establishment is stated to be the largest of its kind in Scotland, and the third largest in the United Kingdom. Its frontage occupies the south side of St. Enoch-square, while the north wing extends to Dunlop-street. From the basement to the upper story the height of the building is about 118 ft. The style is Gothic of the Early English period. The elevation is diversified by a large oriel window and two smaller projecting windows, and is surmounted by a stone balustrade, a balcony, and balconets. There are for the accommodation of the public somewhere about 200 bedrooms, twenty-two private rooms, and twenty public rooms. The chief entrance is by the porch at the northern angle, while there are other entrances from Howard-street and the railway platform. The kitchen, which is 85 ft. long by 32 ft. wide, is situated in the basement, as also are the larders. The wine-cellars and other stores are on the same level. The ground-floor has a carriage entrance from Howard-street, and a goods entrance from St. Enoch Station. A large dining-hall is situated in the centre for the servants Kitchen, scullery, storehouses, laundry, and washhouses are on the same level. On the first floor is the coffee-room, an apartment 72 ft. by 33 ft. Adjoining this is a music-room, drawing-rooms, commercial rooms, bedrooms, and a large billiard-room situated in the southern wing. On the second and third floors are sitting-rooms and bedrooms; on the fourth and fifth are bedrooms; while the sixth story—the upper story—is entirely set apart for the servants, accommodation having been provided for about eighty. The engineers and architects for the building were Mr. John Fowler, of London, and the late Mr. James F. Blair, of Glasgow, but since Mr. Blair's death, three years ago, Mr. Crouch, of Glasgow, has been the responsible engineer. The execution of the work has been constantly supervised since the ground was broken by Mr. Hogg, assisted by Mr. James Paterson, clerk of works. The contractors for the building were Messrs. James Watson & Son, of Glasgow, who themselves executed the masonry and brickwork, and through them the carpentry and joiner work was done by Messrs. Wm. Cowan & Sons,

Glasgow; the ironwork by Messrs. Hanna, Donald, & Wilson, of Paisley; the slater work by Messrs. John Morrison & Son, Glasgow; the plaster work by Mr. James Caird, of Glasgow; the plumber work by Messrs. Wallace & Connell, of Glasgow; the painter work by Messrs. Torrens & Husband, of Glasgow; and the glazier work by Messrs. C. & J. Malloch, of Glasgow.

Liverpool.—The Washington Hotel, Liverpool, has been re-opened on "Temperance principles" by Mr. Ronald M'Dougall, well known in connexion with the "People's *Cofés*" in London and elsewhere. The structural alterations have been carried out under the directions of Messrs. E. & H. Shelmerdine, architects, of Liverpool.

RAILWAY EXTENSIONS.

Wales.—The new line of railway from Bettwsycoed to Festiniog, connecting the London and North-Western system with the great slate-producing district of Merionethshire, was opened for passenger traffic on the 22nd ult. Its length is about eleven miles, and it has cost upwards of 500,000*l.*, half that amount being expended on a tunnel two miles long.

Severn Bridge.—Simultaneously with the near approach towards completion of the Severn Bridge, Mr. Griffith Griffiths, contractor for the railways proper and viaducts, has made, notwithstanding the unfavourable weather, corresponding progress, and, in the course of a few weeks, the works undertaken by him on either side of the Severn will be practically finished. The viaduct of masonry on the Forest shore is so far advanced that the coping is being fixed. In constructing the line from the Berkeley shore of the Bridge, a considerable amount of excavation was involved, upwards of 100,000 yards of earth and rock having to be removed. The permanent way is actually laid upon the greater portion of the railway on the west side of the Severn, extending also nearly to the junction on the Midland line. In addition to its shipping prospects, the line will enable the Forest proprietors to send their house coal to the South of England independently of the Great Western route. It is intended that the station at Sharpness shall serve both the Severn Bridge Railway and the Midland. Mr. G. W. Keeling, M. Inst. C.E., is the engineer of the railway, and Mr. Reichenbach is the resident assistant engineer.

Ireland.—On the 28th ult. a new line of railway was opened from Dungannon to Cookstown. This railway will connect the two great lines in Ulster,—the Great Northern Railway at Dungannon with the Belfast and Northern Counties Railway at Cookstown. The new line has been opened by the Great Northern (of Ireland) Company, to whom it belongs.

Books.

A Handbook for Travellers in Switzerland, the Alps, the Italian Lakes, and Part of Dauphiné. London: John Murray. 1879.

In reply to the question, "Where shall we go this summer?" the answer in thousands of cases will be "Switzerland," and we will add to the conversation, "In that case do not forget to take the new edition of Murray's Handbook." Sixteen have preceded it, and it has been so corrected, condensed, and polished up as to become a model guide. For convenience' sake, it is made into two small volumes, and has been added to considerably in several sections. There are no fewer than thirty-nine maps and plans of towns.

VARIORUM.

A pamphlet on "Agricultural Depression: its Causes and Remedies," by Mr. Gilbert Murray, has been published by Bemrose & Sons, Paternoster-buildings. The writer in one part of it says, —"The steam-engines and productive machinery of the manufacturer represent a certain amount of fixed capital, the interest upon which is daily accruing, whether they are working up to their full power, or only to half or quarter. On the former scale of working the earnings are sufficient to pay the interest on the capital, and leave a handsome margin for profit; whilst on the latter the earnings are insufficient to pay the interest, and instead of a profit being realised, the result of the working entails a loss on the proprietor. The same rule applies to the agriculturist. It is only by attaining to the maximum of production at a minimum cost. The case of the man who is only half developing the productive powers of the soil is much worse than that of a manufacturer working only half time. In the former, the cost of labour, rent, rates, taxes, and other outgoings are practically the same whether he grows two quarters of corn or four; whilst the latter has only to provide for the rent of buildings and interest on the fixed plant. Again, the high farmer,—the man whose land is clean and full of condition,—is in a much better position than he who is only, so to speak, farming from hand to mouth. When evil times come, the good farmer can curtail his expenses for some years without greatly reducing his produce. The bad farmer, when overtaken by unfavourable circumstances, is compelled to reduce his expenditure, however meagre and inadequate to the requirements of the land; hence the produce dwindles to a point which will not realise the cost of fixed charges. This is a state of things with which we are only too familiar at the present time. It is the man of slender capital, who for the most part is located on land of naturally inferior quality, often undrained, always in low manurial condition, and generally destitute of the necessary buildings for housing his stock,—this is the class who are just now subject to such acute suffering. Every year brings the fact more clearly home to us, that it is only by a liberal expenditure of capital under the most intelligent and judicious system of management, that the farmer can hope to succeed." —— In the August number of the *Nineteenth Century* Mr. Matthew Arnold strikes a good blow for the coming "National Theatre." He follows in our lines, and strengthens them:—"The theatre is irresistible: organise the theatre." The following is the parting lesson which he supposes the French Company, lately in London, to have left us:—"'Forget,'—can we not hear these fine artists saying in an undertone to us, amidst their graceful compliments of adieu?—'forget your clap-trap, and believe that the State, the nation in its collective and corporate character, does well to concern itself about an influence so important to national life and manners as the theatre. Form a company out of the materials ready to your hand in your many good actors or actors of promise. Give them Drury-lane Theatre. Let them have a grant from your Science and Art Department; let some intelligent and accomplished man, like our friend Mr. Pigott, your present Examiner of Plays, be joined to them as commissioner from the Department, to see that the conditions of the grant are observed. Let the conditions of the grant be that a repertory is agreed upon, taken out of the works of Shakspeare and out of the volumes of the Modern British Drama, and that pieces from this repertory are played a certain number of times in each season; as to new pieces, let your company use its discretion. Let a school of dramatic elocution and declamation be instituted in connexion with your company; it may surprise you to hear that elocution and declamation are things to be taught and learnt, and do not come by nature, but it is so. Your best and most serious actors" (this is added with a smile) "would have been better if in their youth they had learnt elocution. These recommendations, you may think, are not very much; but as your divine William says, they are enough; they will serve. Try them. When your institution in the west of London has become a success, plant a second of like kind in the east. The people *will* have the theatre; then make it a good one. Let your two or three chief provincial towns institute, with municipal subsidy and co-operation, theatres such as you institute in the metropolis with State subsidy and co-operation. So you will restore the English theatre, and then a modern drama of your own will also, probably, spring up amongst you, and you will not have to come to us for pieces like 'Pink Dominoes.'"

Roscrea.—The foundation-stone has been laid of a new church attached to the Cistercian monastery known as Mount St. Joseph's, Roscrea, North Tipperary. The new church is designed by Mr. Beardwood, of Manchester. It is in the Early English style, in length 226 ft., and breadth 60 ft., and 90 ft. in the transept. The columns are supplied from Roscommon, the bases and capitals from Templemore, all of limestone. The arch stones are from the Roscrea quarries, and the building work will be done by the monks themselves.

Miscellanea.

Architects' Commission and Boards of Guardians.—The Bethnal-green Board of Guardians contemplate the erection of n school buildings at Leytonstone, at a cost about 10,000*l.*, and the question arose, at last meeting of the Board, as to the appoi ment of an architect. Mr. Rippin moved t it be Messrs. A. & C. Harston, at 5 per ce but it was stated there were others who wo do the work at half that, and after a long cussion the subject was postponed, and Board adjourned.——At the last meeting of West Ham Board of Guardians, Mr. Mee brought up a report from the building c mittee, in reference to the suggestions of Local Government Board as to the enlargem of the workhouse. The committee rec mended that the architect should advertise tenders for carrying out the plans approved the Local Government Board, and that architect should be paid the usual commis of 5 per cent., the same to include all pl already prepared.—Mr. Collins objected to payment, on the ground that the architect already agreed to take 2½ per cent. A further discussion, it was finally agreed to the commission at 2½ per cent., and to give architect 200 guineas for the additional tro in respect to the frequent alterations in plans.

Intimidation.—At the Chester County Co Court two men, named Bryan and Gee, w sentenced to three months' imprisonment fo timidation. Bryan belongs to the Plaste Association, and recently left his employm because his employer wished him to comm work an hour earlier than the rules of the A ciation allowed. Two non-society men na Armstrong and Smith remained on the we and one day Bryan and Gee, the latte whom had been engaged as a plaste labourer, went to the works with a numb other men and threatened to kill Armstrong Smith if they did not give up their work. threats were used, Smith was assaulted, were destroyed, and injury was done to building. Armstrong was also assaulted. men had promised to leave at night if defendants would let them remain till to get a few shillings to take them on s where else, but they refused, and the men so frightened by the treatment they rece that they were afraid to work, and employer was seriously inconvenienced.

The Sydney International Exhibition Building.—The Sydney correspondent of *Times* writes,—"The preparations for our I national Exhibition are proceeding bri though it will task the energy of the Com sioners to make adequate provision in tim meet the demands of all the exhibitors. scheme was rather forced upon us by ev than deliberately planned. We have had in a hurry what ought to have been do leisure; and the extent to which Europe America are willing to exhibit in Australi taken us somewhat by surprise. One secti the building, however, is already nearly fini and the principal delay will be in completin dome and the towers. There was some tho of dispensing with these, partly on groun economy, partly to save time. But thoug are a practical people, æsthetic considera prevailed, and it was decided that the bui would look too bare if it was merely a shed it was therefore resolved to complete it ac ing to the architect's design. In order to down the expense, however, it has been d mined that the supplementary buildings i outer domain shall be of as simple and e mical a character as possible."

Action against a Local Board.—An a brought against the Edmonton Local Boa Mr. Littler, Q.C., to recover damages for i done to ornamental ponds in his grounds thi the defective construction of a sewer, was the other day at the Hertford Assizes. Littler had been put to an expense of 17 cleansing the ponds, but the contamin remained, and it was discovered that so the sewage pipes were defective at the j and that the sewage escaped. The pipes relaid, and the evil ceased. The Board d that there was any sewage contaminatio contended that the foul state of the pond due to their never having been cleansed. jury gave a verdict for the plaintiff, with damages.

ious Mishap to a Dock Wall.—A ar and very serious mishap occurred en four and five a.m. on the 29th ult. at port dock of the East India Docks, Black- The south quay wall, for a length of ds of 150 ft., suddenly gave way, and the cranes, &c., on the bank were carried The damage is estimated to amount to ds of 100,000*l.*, and great fears were for ime entertained for the safety of a large of brick warehouses situate to the rear of ods which have been destroyed. The s of the dock company are instituting ies into the cause of the catastrophe. It en suggested that the settlement of the attributable to dredging, but it is stated orkmen who assisted some years since in nstruction of a sewer speak of a large t of quicksand underneath as likely to aused the giving way of the wall. The o which the accident happened is far d from the new entrance and extension East India Dock Basin, which was on Saturday last.

ue of Property in the Metropolis.— course of an inquiry on the 24th ult. Sir Henry Hunt, at the Surveyors' Insti- reat George-street, Westminster, evidence en by skilled witnesses as to the value ondemned property" proposed to be by the Metropolitan Board of Works for ements to be effected under the Artisans' abourers' Dwellings Act. The property stion is in the neighbourhood of White- treet, St. Luke's. The evidence of the ors was conflicting in the extreme. epresenting the claimants put the com- ion at from 20 to 25 years' purchase on and 5 per cent. tables, and those for the olitan Board of Works at 16½ and 12½ purchase at 6 and 8 per cent. The only pon which the witnesses were agreed at there was very active competition the labouring classes even for the most and dilapidated tenements, and that the f freehold property in the metropolis adily increasing. The arbitrator took consider his final awards.

New Eddystone Lighthouse.—The laying the foundation-stone of the new ne Lighthouse is definitely fixed. The ay will take place on the 19th inst., weather ing. Both the royal princes have arranged resent, and, as was before proposed, the Edinburgh, as Master of Trinity House, form the ceremony. The progress made works at the Eddystone since the un- ul gathering in June has been of an nt character. Last week four stones nded with the greatest ease by means of cules steam winch and the permanent the rock, and Mr. Edmond, the resi- gineer, permanently fixed the first block ottom course. A second block was suc- fixed, and the arrangements for lifting ering the foundation-stone were satis- tested. The actual work of building lystone Lighthouse was commenced on h. On Tuesday further progress was d on Wednesday the staff achieved what never done before,—made two tides' ing one day.

street, Chelsea. — The clever and gentlemen artists who have made Embankment their home, do not like e of "Tite-street" upon their cards as nce to where they live. The Chelsea say that Sir William Tite, who was nstrumental in obtaining the formation Embankment, is entitled to have his respected, and think the name quite as ate as Whistler or Ruskin, and we con- ey are right. Sir William was a great Chelsea, and the name is quite in with the residences of artists, for the of the Royal Exchange is as much or titled to consideration than a painter.— *tan.*

ution of Mechanical Engineers.— mer meeting of the Institution of al Engineers, which is this year being lasgow, commenced on Tuesday in the ion Galleries.

den.—New Church of England Sunday schools are being erected at Baxenden, rington, from plans by Mr. Varley, Blackburn. They will accommodate lars. The estimated cost, including a ster's house, is 3,500*l.*

The Lifting and Removing of Port Talbot Railway Station.—Mr. C. W. Whalley, contractor, of Chepstow, having lifted the above station 2 ft. by means of screw-jacks, as previously described by us, he on the 31st ult. removed the building on the up-platform several feet out from the rails by the following means:—Four baulks of timber were placed under the needles and bolted firmly together; then four cills were placed in the bottom on the packing, and four other cills were bolted on to the baulks. The jacks were then worked horizontally against the cills on the lower baulks, and the whole mass forced over till the desired distance was reached, when the building was fixed in its new position, and the foundations and walls built in. Each building was between 50 ft. and 60 ft. long, and 20 ft. wide, built of stone, and all the doors and windows were left in; yet each operation has been performed without the least crack of any kind, either in walls or windows.

Libelling Architects.—At the assizes held in Leeds, a case of interest was heard before Lord Justice Bramwell, in which Messrs. W. & W. H. Botterill, architects, Hull, brought an action for libel against the Rev. Robert Y. Whytehead, vicar of Nunkeeling-in-Holderness. The alleged libel arose out of the proposed restoration of Skirlaugh Church, described as a pure specimen of Gothic architecture. The restoration had been entrusted to the plaintiffs, whereat the defendant expressed his sorrow in a letter to Mr. Bethell, of Rise, on whose estate the church is situated. He also wrote on the subject to the Restoration Committee, and to Mr. Barnes, vicar of Skirlaugh, asking, "Are you aware that the Messrs. Botterill are Wesleyans, and cannot have any religious acquaintance with such work?" The jury gave a verdict for the plaintiffs,—damages 50*l.*

Local Taxation in England.—The eighth annual return of local taxation, compiled under the supervision of the Local Government Board, which applies to the year 1877-8, shows that during that year the sum raised by local taxation was 29,519,984*l.*, in addition to which Treasury subventions amounting to 2,032,552*l.* were received in easement of the local rates. Of the total local taxation, 24,352,437*l.* were raised by rates falling on rateable property; 4,715,476*l.* by tolls, dues, and rents falling on traffic; and 452,071*l.* by duties falling on consumable articles. The local taxation levied by rates included:—Poor-rate, 8,531,849*l.*; county and police rates, 2,869,299*l.*; borough and town police rates, 2,786,126*l.*; highway rates, 1,722,575*l.*; metropolitan and local management rate, excluding precept rates paid thereout, 2,222,486*l.*; Metropolitan Board of Works, 2,077,749*l.*; Metrop. Police-rates, 1,050,503*l.*; urban sanitary rate, 17,221,478*l.*; and School Board rate, 3,174,105*l.* The loan transactions of the local authorities show that a sum of 14,930,429*l.* was borrowed, and 9,262,658*l.* repaid during the year, while at the close of the year there were loans outstanding to the amount of 114,683,002*l.*

Work for Glaziers. — The remarkable thunder-storm which raged during a great part of Saturday night and Sunday morning over the Southern and Midland counties made terrible havoc with crops, railway embankments, and low-lying ground, and has created plenty of work for glaziers. Mr. E. J. Beale, of Teddington-grove, writes that he had over fifty squares of rough plate glass, $\frac{3}{16}$ of an inch thick, broken by the hailstones, which he speaks of as being an inch in diameter. Mr. G. S. Measom, of St. Margaret's, Twickenham, writes,—

"The most remarkable feature of the storm was the size of the hailstones, the circumference of some of them being over 5 in. The velocity is indicated by the fact that the indentations on the lawn were in many cases 2 in. in diameter, and 3 in. in depth. In my vineries and flower-houses I have counted over 900 broken panes of glass, the total number of panes barely exceeding 1,000. On the balcony of the house, every pane of thick, rough glass in the roof was destroyed, and a stained glass staircase-window shared the same fate. The market-gardeners in the neighbourhood will be half-ruined, and have a claim upon the sympathy of the residents."

The Sunday Society.—On Sunday last the Grosvenor Gallery was opened to the public, under the auspices of the Sunday Society, when no fewer than 3,000 visitors took advantage of the opportunity thus afforded them of inspecting the art collection which has been on view at the gallery during the present season.

Tewkesbury Abbey will be re-opened on the 23rd proximo.

Large Stones.—The Portland Stone Company have lately hauled two immense stones from the quarries during the last few days. On the 18th ult. they started from the "France" quarry with one, the measurement of which was 195 ft., and the actual weight 14 tons. Two or three days later another stone, not so heavy by a ton, was brought down to the station.

Fall of Houses.—Shortly before two o'clock on Monday morning two houses, 7 and 8 Fisher-street, Holborn, fell. The District Surveyor had taken steps to warn the owners of the property of its dangerous state, and on Saturday the occupants left the premises. No one was injured.

St. Alban's Abbey.—At the last meeting of the Court of Common Council, it was resolved:—

"That this Court being desirous of having the name of the Corporation of the City of London associated with the great national work of the restoration of St. Alban's Abbey, the first cathedral erected in this country, and erected, too, upon the site of the first municipality the country ever possessed, hereby agrees to restore the east window of the beautiful Lady Chapel, at an expense not exceeding 350*l.*"

TENDERS

For the erection of new town-hall, Hove. Mr. Alfred Waterhouse, architect. Quantities by Mr. J. H. Stradwick:—

Ockenden	£45,864 0 0!
Bruton	37,540 0 0
Higgs & Hill	36,697 0 0
Nightingale	36,051 0 0
Perry & Co.	35,410 0 0
Booth	35,330 0 0
Cheesman & Co.	34,800 0 0
Smart	34,713 0 0
Wagner	34,525 0 0
Longley	34,257 0 0
Barnes	34,077 0 0
Lovell	33,900 0 0
Hook & Oldrey	33,797 0 0
Parnell & Son	33,383 0 0
Jones & Co.	32,891 0 0
Stephens & Bastow	32,607 0 0
Chappell (accepted)	31,933 0 0!

For machinery, &c., at the St. Marylebone Schools, Southall. Messrs. H. Saxon Snell & Son, architects:—

Williams & Sons	£1,355 12 6!
Clements & Co.	1,300 0 0
Benham & Sons	1,019 14 0
Warner & Lee	979 10 0
Quain & Co.	885 0 0
Neale	881 10 0
May Brothers	849 0 0
Clarke	839 0 0
Eagle Ironworks	778 0 0
Potter & Sons (accepted)	740 0 0!

For alterations and additions to Eastfield, Tiverton, for Mr. T. O. Lozenby. Mr. E. W. Barnes, architect. Quantities by Mr. Arthur Deane:—

Church	£3,594 0 0
Baker & Sons	2,435 0 0
Gratten	2,300 0 0
Stephens & Bastow (accepted)	2,189 0 0
Barrows	2,099 0 0
Denning	2,038 0 0
Stock	1,849 0 0
Phillips	1,630 0 0

For the erection of a vicarage-house for the parish of St. Michael and All Angels, Maidstone. Mr. Hubert Benstead, architect. Quantities by Mr. Edward Young:—

Foad	£2,693 0 0
Vaughan Brothers	2,590 0 0
Cox Brothers	2,545 0 0
Avard	2,530 0 0
Wallis & Clements	2,498 0 0
Reeves	2,434 0 0
Beale	2,397 0 0

For new boys' school, Arundel, Sussex, for the Duke of Norfolk. Messrs. Josh. A. Hansom & Son, architects:—

McManus	£4,072 0 0
Chinnock	3,988 0 0
Traske	3,950 10 6
O'Keefe	3,838 0 0
J. & C. Boyer	3,760 0 0
Beale	3,750 0 0
Jones	3,697 0 0
Longley	3,620 0 0
Claridge (accepted)	3,590 0 0

For works in re-building Nos. 7 and 8, Bloomsbury-square. Mr. C. F. Hayward, architect. Quantities supplied by Mr. Thacker:—

Stamp & Bowtle	£7,050 0 0
Patman & Co.	6,875 0 0
Clemence	6,875 0 0
Nightingale	6,654 0 0
Boyce	6,629 0 0
Dove Brothers	6,795 0 0
Langmead & Co.	6,690 0 0
Wontner Smith & Co.	6,589 0 0

For works in alterations and additions to 29, Albemarle-street, Piccadilly. Messrs. Glasier & Sons, architects:—

Clemence	£1,879 0 0
Rider & Son	1,658 0 0

For new Board Schools in Katherine-street, Leicester, for the Leicester School Board. Mr. E. Burgess, architect. Quantities by Mr. W. Thorncraft:—

Kirk & Randell	£9,499 0 0
Kellett	8,652 0 0
Hutchinson & Son	8,064 0 0

For St. James's End sewerage, Northampton. Messrs. Smith & Austin, civil engineers. Quantities supplied:—

Green & Hill	£9,250	0	0!
Cadley	8,015	15	4
Young	6,850	0	0
Martin	6,600	0	0
Smith	6,548	0	0
Barker	6,544	0	0
Cowdery & Son	6,338	0	0
Dodds & Co.	6,250	0	0
Pressland & Son	6,200	0	0
Bell	6,180	0	0
Meston	6,085	0	0
Olney	6,026	0	0
Cocker	5,931	15	0
Dunkley	5,899	0	0
Hunter	5,785	2	6
Cosford	5,718	0	0
Frayne & Sheldon	5,059	19	4
Rowland Brothers (accepted)	4,850	0	0!

For swimming-bath at Wanstead, for the Infant Orphan Asylum. Messrs. H. Saxon Snell and Charles Henman, architects:—

	With glazed brick facings.	Cement dressings in lieu of glazed brick facings.
S. & G. L. Mann	£3,711	£3,461
Barford	3,550	3,330
Axford	3,105	2,991
Williams & Son	2,945	2,770
Temple & Foster	936*	975*

* Evidently an error.

For alterations at Charles-street and Nassau-street, Middlesex Hospital, for Messrs. Kelly Brothers. Mr. E. C. Robins, architect:—

Watson	£1,877	0	0
Fairchild	1,773	0	0
S. & G. L. Mann	1,744	0	0*

* Revised and accepted at 1,154l.

For additions to Ferot Hall, Tonbridge, for Mr. A. T. Bucking. Messrs. Wadmore & Baker, architects:—

Wilson	£6,044	0	0
F. & E. Vaughan	5,555	0	0
Punnett*	4,995	0	0
Mansfield & Son	4,800	0	0
Strange	4,739	12	0
Wheatley	4,489	0	0

* The three last-named having required an extension of time for the completion of the work, Messrs. Punnett's tender was accepted subject to this condition.

For the erection of chapels, lodge, fences, and formation of roads at Prittlewell, for the Prittlewell Burial Board. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Jones & Co.	£2,445	0	0
Prout	2,372	0	0
Spendelow	2,385	0	0
Steward	2,214	0	0
Scott	2,137	0	0

For new industrial school at Desford, near Leicester, for the Leicester School Board. Mr. E. Burgess, architect. Quantities by Mr. W. Thorntcraft:—

Hutchinson & Son	£13,689	0	0
Major	13,548	0	0
Parnell & Son	13,515	0	0
Kellett	12,879	0	0
Kirk & Randell	12,704	0	0
T. & H. Herbert	11,923	0	0

For works, Essex-road and Oakendon-street, Islington, for Mr. James Jay. Mr. Worthington, architect. Quantities supplied:—

Langmead & Way	£4,248	0	0
Clarke & Bracey	3,993	0	0
Clemence	3,974	0	0
Wontner Smith & Co.	3,902	0	0
Cowland	3,797	0	0
Outhwaite & Son	3,729	0	0

For detached residence at Upperton-road, Eastbourne, for Mr. Tolhurst. Mr. A. Crisford, architect. No quantities:—

Cornwell	£1,880	0	0
Fowler	1,775	0	0
Stevens (accepted)	1,456	0	0

For alterations, &c., at the Fernery, Oxford-street, for Messrs. Paxton & Paxton. Mr. H. Newlyn, architect:—

S. & G. L. Mann	£635	0	0
Baldwin Brothers	512	0	0
Frost & Co. (accepted)	510	0	0

For repairs to the exteriors of thirty-three houses at Lee, for Mr. J. Todd. Mr. E. Witts, architect:—

Hatfield	£372	0	0!
Eaton	495	0	0
Williams	260	0	0
Bush (accepted)	206	0	0!

For repairs to the interiors of five houses at Lee, for Mr. J. Todd. Mr. E. Witts, architect:—

Hatfield	£372	0	0!
Williams	110	0	0
Jeal	89	0	0
Bush (accepted)	83	0	0!

For repairs and redecorations to Canning Town Schools, for West Ham School Board. Mr. J. T. Newman, architect:—

Crabtree	£188	0	0
Heritage	133	0	0
North, Bros. (accepted)	110	0	0

For restoration, West Ham Parish Church. Section 1. Roofs. Mr. J. T. Newman, architect:—

Gregar	£795	0	0
Reed	770	0	0
Norton & Son	694	0	0
Hoskings	682	0	0
North Bros.	665	0	0
Morter	642	0	0

For the construction of new pipe-sewers and making up roads on an estate at Silvertown, for the Silvertown Land Company. Mr. J. T. Newman, surveyor. Quantities supplied by Messrs. Curtis & Sons:—

Knight	£520	0	0
Bed	475	0	0
Harris	473	0	0
Jesse Jackson	444	0	0
Wainwright	436	0	0
John Jackson	420	0	0

At a meeting of the Finance Committee of the Corporation of Hereford, held on the 29th ult., the tender of Messrs. Hall & Co., Ettingshall, near Wolverhampton, was accepted for their "Ferrumite" paving flags.

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The Builder.

Vol. XXXVII. No. 1903. Saturday, August 16, 1879.

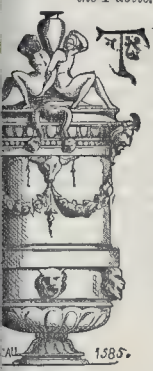
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...use of Lords, the Rookery-owners, and the Public.



THE discussion in the House of Lords on the Artisans and Labourers' Dwellings Act was doubly interesting, not only from the facts which it put on record, and from the opinions which it elicited, but also as showing how far the attention of the members of the Legislature has been directed to ...tion of sanitary improvement, including, ...hat title, the financial as well as the ... elements of the case. The Earl of ...down called the attention of their ...s to the "enormous pecuniary loss ... incurred by the Metropolitan rate- ...in carrying out the Artisans and ...s' Dwellings Act of 1875; and espe- ...ticed the declaration of the chairman of ...ropolitan Board of Works to the effect ... was impossible to estimate the cost to ...e ratepayers might be put under that ...even-eighths of the sums already ex- ...the noble Earl said, had been lost; the ... already carried out having incurred ...of half a million sterling. Further ... had received Parliamentary sanction, ...g an equal amount of cost, and pre- ... of loss, and it was contemplated as a ... result that the ratepayers of the ...lis may be put to a cost of two millions ...y in order to provide sites for the dwell- ...artisans.

...notive of Lord Camperdown's speech ...ry decidedly in accordance with the ... which we ourselves ventured to offer ...ame subject, which had excited a con- ...e degree of public attention before it ...as brought before the House of Lords. ...he contention of the noble Earl that the ... the Act of 1875 had been to encourage ... in houses that were unfit for human ...on; and that if the vestries had duly ...l the provisions of the Nuisances Re- ...Act, it might have proved unnecessary ... the Artisans' Dwellings Act. As an ...e of the want of due provision in defence ...ublic interest, from the ratepaying point ..., Lord Camperdown stated that while ...imates of the Metropolitan Board of ...so late as December last, had amounted ...00*l.* for six schemes, the actual cost had ... much as 562,000*l.*, or very nearly double ...mate. Assuming the correctness of this ...nt, and further assuming that there is no *per contra* hereafter to be carried to account, such a case of discrepancy between promise and performance would beat the wildest vagaries of the estimates of railway engineers in the palmy days of railway-making.

Earl Beauchamp took up the opposite (but by no means contradictory) view of the case, and referred to the importance of reducing rates of another kind, namely, death-rates and disease-rates, which he regarded as diminished by the operation of the Artisans' Dwellings Act. It was impossible, the noble Earl remarked, to acquire the sites occupied by fever dens and plague spots without incurring considerable expense. The property to which the Act applied was often held in the most complicated way, and it was impossible to settle the question of compensation on any simple method. It was the object of the Act of 1875 to prevent a fancy value being put on property of this description, and to reduce the expense that might have been incurred under the provisions of the Nuisances Removal Act. Lord Beauchamp stated that the results of the operation of the Artisans' Dwellings Act in the metropolis had been the displacement of 11,000 of the working classes, and the providing sites for the accommodation of 11,500 individuals.

Earl Granville pointed out that there was no essential antagonism in the views of the two preceding speakers; but urged that nothing could be more fatal than to allow so large an expenditure as that which was being carried out in the application of the Artisans' Dwellings Act to be borne by the ratepayers of the metropolis. How the difficulty which we have already pointed out could be met, was not suggested by Lord Granville. The different desiderata are irreconcileable. First, it is urged that the sites of abodes unfit for human habitation must be cleared, and that at a large money cost, because of the highly-lucrative character of the class of property. We may have little sympathy with the owners, but we cannot confiscate an income which we have allowed thus gradually to increase to an inordinate amount. Secondly, to put on the ground a building corresponding to the cost of the land, will be, in many cases, if not in all, prohibitory of building artisans' dwellings thereon. Thirdly, this loss, thus incurred, must fall on some one. The question is, on whom?

Lord Beaconsfield observed that the Government had given notice of an Act to amend the Artisans' Dwellings Act; and that it was extremely difficult, from the largeness and novelty of the subject, "to bring forward at once an altogether perfect measure." It was found that the machinery provided by the Nuisances Removal Act could not effect the large changes which seem necessary. Under that Act it was possible to deal with houses, but not with areas. The expense was increased by compensation being necessary, not only for the owners of the property which was the hot-bed of disease, but for those neighbouring proprietors whose property had to be expropriated as part of the scheme. Lord Beaconsfield did not believe that there was any measure ever brought forward that was more desired by the country, more approved by it, or more completely effectual in its object of the improvement of the sanitary condition and health of the people; and he looked forward to the experience to be gained in the carrying out of the measure for enlightenment as to further legislation. This, from a statesman's point of view, is eminently reasonable. But the subject is one on which the builder is more at home than the legislator. No amount of experience can remove the discrepancy between the three requirements of sanitary improvement, provision of accommodation for, at least, an equal number of persons with those displaced for the object of that improvement; and doing so at a rent that shall come within the capacity of the tenant. The very first contention on the part of the sanitary reformer is, that the people are too closely packed. The decay and dilapidation of the houses we demolish aggravate, but do not cause, the evil. The only protest for urging that an equal number of persons per acre can be accommodated in suitable rooms, by demolishing those that are unsuitable, must be based on the assumption that by a more substantial style of building a greater number of vertical planes of abode can be obtained. We do not say that there is no gain in such a change, but if the density per acre remain the same, an element of anxiety still remains.

The Home Secretary gave an illustration of that unconscious humour which so often leads men to teach that they are wiser than their neighbours owing to their use of the simple process of shutting one eye. A respectable-looking man came to the office of the Home Secretary to draw his attention to a point which he thought he had overlooked. The visitor had invested his savings in house-property, which paid him an enormous interest, and which it was proposed to sweep away under the Act. "I cannot afford to lose my interest," said the investor. Here we see one view so simply and straightforwardly held, that the contrary view seemed to be simply an error. "What! stop my rental! Why the Government cannot know how much it is." To reply that its undue amount was the very gravamen of the charge would seem very bitter irony to such a proprietor. Nor can it be denied that on the view of the political economists pure and simple (who ride their theories to death), the rookery-owner had the best of it. He carried out the great law of demand and supply, and he provided in the cheapest way what he sold in the dearest market. As a political economist, in action he was not only unblameable but highly meritorious. "The people want cheap lodging; I can give them cheap lodging. On the principle that many a little makes a mickle, I can so utilise the area of my property as to accommodate four human beings where other people would only accommodate one. I force no one to take my rooms,—or dens, if you choose to call them so. I could let twice the number of

fractions of rooms if I had them to let. The demand, in this particular locality, is very brisk; I keep up a brisk supply. You talk to me of health and all those things in which I take no interest whatever. As a political economist I have one duty to perform to myself and to the public, and only one,—that is, to make the best of my capital. If, therefore, you touch my houses you must leave me an income equal to that which I enjoy. I don't know anything about an architect's valuation, and I don't care. A hundred a year is a hundred a year, and if you take that from me in one way, you must give it to me in another way!"

Now it is quite true that, from a loftier standpoint, the statesman, or the sanitary engineer, sees that the arguments of the rookery-keeper, however good in themselves, do not exhaust the subject. But this is the whole quarrel between those who take our view of the case and the thoroughgoing political economists. *Salus publici suprema lex* is a good motto; and, as far as the individual in question is concerned, it applies. For it is by no means an imaginary case that the desire to crowd the greatest number of lodgers on a given site may be so industriously carried out that lodgers, and proprietors to boot, may be swept off by resulting illness. Our friend who called on Mr. Cross would be loth to believe this possible, but if he were down on his back in bed he would believe it too late. To him the personal question is *the* question. To us the personal question is subordinate. We say, there is danger of fever, and certainty of damage to health. Where the blow falls matters little from our point of view. We say, prevent it altogether.

Here come in two questions, neither of which has yet, so far as we are aware, received anything like the proper amount of discussion. The first is, looking at the subject as a whole, is that mode of dealing with property of a low description "by areas," for which Lord Beaconsfield takes credit as a new method, introduced by the Artisans' Dwellings Act, practically the best?

The second is,—is the replacing of old houses that contained 11,000 inmates, by new ones that hold 11,500 inmates, a permanent advantage to the locality? And, if so, is it an advantage at all commensurate with the cost at which it has been attained?

Leaving the question of money aside, it may be easy to show that to clear away a mass of complicated house property, some of which may be very bad, and the rest of various degrees of excellence, or of the absence of excellence, is what the architect and the sanitary engineer would alike desire. That we quite allow. But then, unfortunately, it is not possible to leave the question of money aside, without great absurdity. We can do pretty much what we like if money is unstinted. A couple of millions sterling is a large sum. We may take it as equivalent to a perpetual burden of 100,000*l.* per annum imposed on the ratepayers. It is, therefore, essential to ask if an equal amount of public service cannot be secured by a less costly method.

It must be remembered that the figures quoted are very large. Three acres is an appreciable portion of an urban area. But four thousand souls is a much more appreciable portion of the metropolitan population. Three acres are only a 26,000th part of the area of the London of the Registrar-General (77,997 acres). But 4,000 persons are the 750th part of the population of that area, taking it roughly as three millions of souls. To pack 4,000 persons on three acres is a terrible effort, regarded from a sanitary point of view. It is a density of 1,333 souls per acre,—the density of Shoreditch being 200, that of Holborn 210, and that of St. Giles 220 souls per acre. We have been lately regarding the question of the amount of heat liberated by the human organism. We have more than the heating power of half a ton of coals per diem liberated by that population. We get a centre of vitiation which is not only intense, but very large. It is an area of, as we said before, very appreciable extent, six times as densely packed as the average of the densest districts in London. Is that a state of things which it is desirable to perpetuate, and to perpetuate at an enormous cost?

How are we to be assured that, after the expenditure of 120,000*l.* per acre per site, and (if we allow 50*l.* per head) a further expenditure of 66,660*l.* per acre for building, the new abodes shall not, in another ten or twenty years, be as unhealthy as those they have displaced? There can be but one reply to that question. Such security, if attainable at all, is only attainable by the introduction of an efficient machinery of supervision. To this, then, we must come. Why not try it in the first instance? When we once recognise the fact that, when a certain density of population is reached the public safety demands the organisation of a sanitary police, we have some daylight thrown on the subject. On the one hand we are compelled to admit that an outlay of 186,660*l.* per acre will give us no safety from the diseases arising primarily from overcrowding, without new police arrangements. On the other hand, it is open to inquire,—what would be the effect of the application of these arrangements to spots now possessing such endangering density, before we talk of buying and of demolition?

It is, we think, undeniable, that it is quite within the limits of possibility that so large an expenditure of the ratepayers' money will not, by itself, effect any very material change in the source of public danger, without supervision; we can see no reason why it should. It may be said that the supervision will be exerted by the builders, the Peabody trustees, or any one else. Be it so. All that we say is that supervision will be essential. It will, no doubt, require sooner or later, to be made imperative by Act of Parliament. Why not try it before we lay out sums of the magnitude above indicated?

The fact is, to put the matter in the plainest terms, that all over England a fight is going on between public good and private greed. The Artisans' Dwellings question is only a part of the whole case. The River Pollution question is one that perhaps is even more of a public scandal; Mining supervision, Factory supervision, School Board supervision, are all parts of the same movement. Our population has become so dense that we have at last admitted, in principle, that even the grand desideratum of individual liberty must yield to the public welfare. We deny to a man the right to bring up his children untaught, even although, like Sir Anthony Absolute, he may have the strongest conviction as to the mischief of teaching people to read. We stop another man from throwing his refuse into the stream that runs through his own land, because we say that he has no right to pollute the rivers, which are meant for the public good. In the same way we have the right,—and Parliament has declared that such is the case,—to go to a private individual and say, "I see an unusual number of persons going into your house. They seem to sleep there. I must come in, and see that they are not so ill accommodated as to be liable to mischief. Your house must not become a hot-bed of fever, and, if you choose to make it so far a public house, I shall come in any night and see that you give proper facilities for the health and decency of your inmates."

But with this supervision, the lucrative occupation of the rookery-keeper would be gone. The demand for enormous compensation would be gone too. The tables would be turned. "You are making," the law would say to the lodging-owner, ;" cent. per cent. on your capital. That I have no wish to interfere with, but you shall not pack lodgers like pigs. Your income and expenditure are one thing,—the use you make of your house, as an abode for lodgers, is another. With the first thing I have no concern; with the second I have a very lively concern. Put your house in order, or I shall do so for you, and at your expense."

It may be said this is harsh; but the question is, is it just? If it is not, we must reverse all our late legislation, which is based on the principle of restricting private liberty when it causes public mischief. If it is, we have begun at the wrong end, by the attempt to deal with areas, at enormous cost. We ought to have begun with the removal of nuisances. Slackness in dealing with admitted evils, when the law has given power to do so, only puts off the evil day. It has already bound a heavy burden on the neck of the ratepayer.

We now come again to the necessity of normal regulations. How much cubic contents should be allowed in a house per inmate? How many places of abode can be reared one on another, with due regard to the ventilation, not of the rooms only, but of the area? We shall have, sooner or later, to settle these questions by legislation. But if the experience of which we are in search is only to be obtained at the cost of 160,000*l.* an acre, the least that the ratepayer is entitled to demand is that such costly experiments shall be made one at a time.

It is with great reluctance that we say a thing that might be interpreted as in any v throwing an obstacle in the way of improv the dwellings of the poor. It ought to unnecessary for us to make any disclai on that head. But it is certain that the m astute enemy of any reform could not fight own battle more ably than by attaching to carrying out of that reform a prohibitory pr If it needs an outlay of 100,000*l.* per acre, o 200,000*l.* an acre, to clear away a centre of fection, we would be the first to say, "Let i done." But we should also be the first to "Can it not be done at a lower cost?" If there is an end of the matter as far as t individual case is concerned. But there is an end of the matter in another sense. number of cases taken in hand will be shar limited by their cost. At all events, if thi not the case, the public disgust will be strongly excited that sanitary reform will come checked; and the contention of the we enemies of sanitary reform,—to the effect i it involves intolerable cost,—will be subsan tiated.

Our view of the case will at once be adop by all those professional men, whether archit or doctors, who have had any experience in pital buildings. Not only the area of the wa but the distance of the windows of the we from other buildings, has to be taken account; so it must be with all great m chambered buildings. A monastery, cover an acre of ground, and containing 1,333 mo may be perfectly healthy if perched on the of the Superga, or on the desolate wilds surrcund Mapra. But transplant such a monas to Geneva, or place three or four of them by side on contiguous areas of land, in Lon and the salubrity of the building will disapp We have a consumption of oxygen going o each such building equal to that required the combustion of 217 tons of coals in the y or nearly four tons of coal per week! A figures are large, we will take the action hour. The equivalent for the result of hour's respiration of that number of inm is 55·55 lb. of coal. Allowing this to vitiate air only to the standard allowance of purit one part of carbonic acid in 1,000 parts o (carbonic acid containing eight equivalent oxygen to three of carbon) we vitiate 205,00 of air per hour. The volume of one poun air at 62° Fahrenheit under the pressure of atmosphere, is 13,141 cubic feet. Take round number of 13,000 cubic feet, and we ha bulk of 2,665 million cubic feet per hour, require removal from the building. This wil found to come tolerably near to the chang the entire atmospheric contents of the buil per second. But suppose that that enorm amount of ventilation is obtained, what beco of the expelled air? It goes to supply the houses, or, at all events, will not be much dil in its passage thither. Facts like these be tedious and uninteresting, and they may, e not entail quite so much evil as they seem to but they are not with any safety to be blin

The question then is, before, at enorm cost, we deal with areas of urban dwell ought we not to agree upon the maxim density of population to be allowed per ac For a few years, perhaps, it may be more hea to pack 1,000 persons per acre in new houses t in old ones. But this will not last. We can get away from the fact that disease-rates be definite relation to sleeping population per a The density of population in London varies fr 74 persons per acre in the Hanover-square trict, to 220 in the St. Giles's district. The responding death-rates are 18 and 28 per mi

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St. Michael's, Enbourne, Berks.—T chancel of this ancient church is in process restoration. The south wall was 13½ in. out perpendicular, and the roof and other parts by lapse of time become almost worn out. roof, which was originally an open-timbe one of oak, was covered by a rude lath-a plaster ceiling. The original roof is now be reinstated, the old timber being used as far as p sible. The south wall has been made uprig without pulling it down. The chancel is to paved with tiles supplied by Maw & Co., a new oak seats are to take the place of the hi deal pews. Some interesting wall paintin have been discovered under several coats whitewash. The rector, the Rev. C. A. Johns is defraying the cost of the work, and Money is the architect employed.

GLOUCESTER COUNTY LUNATIC ASYLUM.

plans submitted in competition for this
ed building (which is, we believe, correctly
ed as the "Second County Lunatic
n," the county possessing one establish-
f the kind already) have been open to in-
n at the Shire-hall, Gloucester, during
t few days. We mentioned incidentally
ek the titles of some of the plans which
derstood had been looked upon with
but the contemplated building is of
nt importance to render some further
nt on the designs desirable.

instructions were for a building to accom-
from 600 to 700 patients, and they have
made out with a degree of care and
ness of instruction unfortunately not
in such documents, and which reflects
on the good sense and consideration of
y whom they were framed. The instruc-
nay, in fact, be said to have in some
made the plan in advance for the archi-
or the relative positions and sizes of the
al departments are so carefully defined
e main disposition of the plan may almost
arded as fixed by them; and that the
itors have so regarded the matter is
from the unusual degree of similarity
y of the plans. At the same time, the
tee have guarded against too much
ring the architect, by the introduction of
e to the effect that while they have
ted to enumerate all that may be
ry for an asylum capable of accommo-
700 patients, "they do not wish to limit
hitects' designs absolutely to this present
nt, the main object being to design a
g as perfect as is practicable." Competing
cts would have reason to be thankful if
uctions for competitions were drawn up
ll and considerate a spirit.

planning of a lunatic asylum is a very
kind of problem, differing in its conditions
ost others which the architect has to
It is a sick asylum or hospital in one
ut it is not influenced by some of the
rations which most influence the planning
ordinary hospital for diseases of other

Lunacy is not (or so we suppose) a
lly contagious malady, however it may
ally or mentally so; consequently the
quirement of entire separation between
ks of building, and the division into as
locks of limited size as is possible, is not
rily applicable, on sanitary grounds, to
m of this class. But the nature of the
renders it necessary to have exceptional
ence for overseeing and keeping in order
nlation of the establishment. Thus it
that easy intercommunication, and a
ion of the plan which allows of general
on with little difficulty, is in reality more
nt than absolute isolation of situation
different departments.

ommittee, or their official advisers, have,
, attached nearly the same importance
ion of the departments as it is now usual
h to this point in planning ordinary
s. We do not say that their require-
n this head are prejudicial to the build-
merely that we do not see the absolute
y of such decided isolation, and that the
for it undoubtedly increases the diffi-
f providing a plan the inner working of
ill be convenient to the officials. The
ions divide the building into five main
ients,—the administrative block, the
y block, the epileptic block, the ordi-
ronic case block, and the workshop and
block. In the last-named department
kshop block on the men's side answers
aundry block on the women's side, the
f plan, however, being of course different;
thers, each block is to be regarded as in
e for men and for women, the plan and
rrangements being almost exactly similar
two; except the administrative block,
f course, is not in duplicate, but is the
centre of the whole establishment. The
trative department includes secretaries'
and committee-rooms, and the usual
y rooms for staff administration, the
department and its accessories, and a
ining-hall, to be available also as a
on-room, and with a stage at one end;
ter to communicate equally with the
nd women's quarters of the establish-
The whole scheme, as here sketched in a
way, of course necessarily presupposes a central position for the administrative portion, with the men's and women's corresponding departments on opposite sides. The committee have further indicated the general arrangement by a provision that the workshop and laundry blocks are to be in the rear of the ward blocks, and that these latter are to be arranged *en échelon*, *i.e.*, in successive blocks receding one behind another. They specify which floors are to be occupied by dormitories and which by day-rooms; that the day-rooms are to face south and to have plenty of light, and the dormitories are nearly all to be provided not only with beds in the general or associated dormitory, but with certain specified numbers of "cubicles," or sleeping-places separated by doors and partitions, the partitions not reaching to the ceiling. These are points which have been variously met in the different plans. The block called the epileptic block has some special features, as only the ground floor in it is really devoted to epileptic patients; the other two floors are to be reached by a staircase quite separate from the ground floor, and are, we presume, to be devoted to ordinary chronic cases, in addition to the space specially provided for these in another block. The dormitory for the epileptic patients is to be on the ground-floor, and the statement is that it is to be on the *north* side of the main corridor. As the portion of each block including the day-rooms is almost necessarily on the *south* side of this corridor, owing to the demand for south light to the day-position of one of the main corridors of internal traffic between the day department and the dormitory for the epileptic patients. This looks on the plans so bad and so unpractical that we had wondered how the authors of some of the best plans had possibly been led to adopt it, until noticing that it actually arose out of the instructions. It is a mistake in planning, and would certainly lead to awkwardness in the working of this department. The instructions further specify provision for the addition of a chapel and a medical superintendent's house, not at once to be built, but their convenient addition and communication with the main building to be provided for; and the privies and lavatories are of course to be outside of main walls, and with through ventilation between them and the wards. The different blocks are to be united to each other and to the administrative block by a corridor on the ground-floor, "in which angles are to be avoided as far as possible." In regard to style, it is stated that the duty which the committee owe to the county compels them to insist on as rigid economy as is possible in everything not directly connected with the practical objects of the establishment; "while, therefore, they would be compelled to reject a plan which might depress the patients by its gloom and monotony, they would equally reject one which should seek to recommend itself by extravagance of style or by the waste of costly materials." Considering the usual tendency of competitions, it is worth remark that not one of the competitors seems to have ignored this consideration, or attempted to recommend his plan by showy elevations and useless towers. The designs are all comparatively plain and unadorned, as far as architectural effect is concerned, one or two of them perhaps unnecessarily so.

These two provisions, for an arrangement *en échelon* and for corridors in which angles are to be avoided, seem together to lead naturally to the kind of scheme which nearly all the best plans have adopted, consisting of a diagonal arrangement of the main corridors radiating backward each side from the centre of the front portion of the building, with the various departments or blocks opening out of them at intervals. The plan in which this diagonal arrangement is most completely adopted is that signed "Tentanda est Via." In this the main corridors diverge north-east and north-west from the principal entrance in the south front, the successive blocks, lying east and west, opening out of the corridors by a small lobby of communication at the angle of each block. The aim of the author seems to have been to produce an exceedingly symmetrical plan, but in following this end he has allowed himself to be betrayed into ignoring part of the instructions, which specify that the workshop and laundry blocks should be in the rear, while he has made them range with the other blocks, and open out of the corridor on the same side and in the same manner. But the function of these two blocks is so very different from that of the ward blocks, and they obviously require such different provision in the way of approach and access, that it must be considered an entire mistake to range them with the ward blocks. Putting this aside, the plan is one of the better ones of the set, but it has points in detail open to criticism. One of these is that in the dormitories the separate cubicles are merely partitioned off from the main room, and open right on to it. The instructions, it is true, do not specify the contrary; but as these cubicles are obviously intended for patients whom, owing to the special nature of their case, it is desirable to keep separate from the bulk of occupants, it appears to us that to make their cubicles part of the main room is an insufficient and unsatisfactory way of meeting the case, and that they should certainly have a lobby shut off from the associated dormitory. Several of the competitors have taken this view of the point, and we think they are right. The general perspective of this design has a very pleasing effect, and produces some picturesqueness without extravagance, and in a manner quite suitable to the class of building.

"Sunshine all Day" also adopts the diagonal arrangement of the corridors, and provides for his "sunshine" (in the day-rooms) by numerous bay-windows. In this point, however, one or two other competitors are quite up to him. The workshop and laundry departments are in the proper position, and are conveniently connected with, and at the same time divided from, the rest of the building by small quadrant corridors, leading to the angle of the block. There is a great deal that is good in this plan; but, unfortunately, the author does not seem up to detail in some points, more especially in the manner of planning the connexion with the water-closet blocks, which open straight out of the dormitories with very insufficient isolation. The point is not only an important one in itself; but the neglect of it argues want of experience in the right way of doing these things.

"Tria Juncta in Uno" is a plan with a rectangular system of corridors, and on this system provides well for the placing of all the departments according to the requirements; but the system adopted necessitates a great many angles and corners, and makes very long courses of corridor to be traversed in internal communication, and in several of the details it can hardly be called a satisfactory plan for the purpose.

"Experience" is a plan with diagonal corridors, and with the blocks connected angularly with the corridor at regular intervals, somewhat in the same manner as in "Tentanda est Via," but at greater distances, and the blocks are further isolated by short intermediate corridors interposed between them and the main corridor. If complete isolation of each block is an object, it is very thoroughly attained in this plan. The large hall is placed north and south, perpendicularly to the main body of the plan; the workshop and laundry departments adjoin the corridors on either side of it. The day-rooms are very good in shape, with large bays admitting various views and lights, and the latrines are well planned. The architectural design also is very suitable and pleasing, of a character verging towards Gothic, and domestic and homelike in appearance. The alternative design is not so good either in plan or design.

"Utilitas": in the main an admirable plan, on the diagonal principle, two corridors branching off north-east and north-west, connected near their extremities by a long corridor east and west the whole length of the buildings, and this again connected with the diagonal corridors or intermediate points by two corridors running north and south. In none of the other plans, as far as we could observe, is intercommunication provided for so conveniently, with so few angles and so nearly the minimum of corridor length. The day-rooms are very good in shape, having outer walls on two sides, each wall expanding into a large bay, which occupies great part of the side of the room. The author has been alive to the disadvantage of having the dormitory for the epileptic patients separated from the rest of their department by a main corridor, and has in this respect neglected the instructions to the advantage of his plan, getting the ground-floor for the epileptics on the same side of the main corridor as their day department, and in close connexion with it. He has, however, contradicted the instructions as to the same block in another point, in placing a dormitory on the first floor of the block where none is wanted,—apparently an oversight in reading the instructions. The cubicles in the dormitories

are grouped separately on either side of their own passage or lobby, shut out from the general dormitory; and the w.c. department is well planned. The separation of the workshop and laundry departments seems hardly adequate; they are on opposite sides of the large yard in rear of the centre building, but the yard is not divided, and the windows directly face each other. This is not an adequate separation of the male and female departments, as every one knows who has seen or heard much of the difficulties in the oversight of workhouse inmates in some of our older and less scientifically-planned houses; and many of the inmates of a lunatic asylum are not much above the workhouse class socially, with the additional difficulty produced by mental aberration and excitability. The design of the building can hardly be praised. In the elevations it looks sufficiently neat, and shows an ample area of window space; but in the perspective view we must confess it appears to us to come under the category of designs hinted at in the instructions, which "might depress the patients by their gloom or monotony." The blocks are square, bulky, and prison-like: a more picturesque and less loaded style of treatment would have been better for the purpose.

"Glory of Glevum": a plan with corridors in diagonal lines, but at a much more obtuse angle than the others which are treated in this way, and in consequence spreading out the plan laterally to a great extent in a way which does not promote compactness and convenience of intercommunication. The general system is the same as in other plans we have mentioned; the blocks connected at their angles with the diagonal corridors, but they are not so well separated from sight and sound of each other as they would be with a more acute angle of divergence in the main corridors. The laundry and workshop blocks are placed at the opposite extremities of the plan; we should have thought a nearer connexion of these with the administration department was more suitable. The day-rooms are good in shape, and their lavatory accommodation well connected, but this is not so well done in the dormitories, where the angle entrance to the latrines is too near the beds at the same corner, and the passage-way cramped; the cubicles also open direct on the main rooms. The conservatory at the end of the large recreation hall is a good idea, and the detachment of the chapel and the medical superintendent's house, at some distance and with corridors of communication, is a suitable way of adding these buildings. The plan, however, would be a rather long one to walk over, and cause the doctors and attendants much pedestrian exercise. The architectural design, as shown in the perspective view, is one of the most pleasing and suitable of the set; picturesque and attractive without pretence or extravagance.

"Desideratum" shows a peculiarity of plan differing from any other set; the main direction of the corridors and plan is diagonal, but the reverse way to the others, the diagonal being taken south-east and south-west from the back of the centre block, and the main corridors, though connecting the blocks diagonally, are twisted so as to run east and west where they adjoin the blocks, which project at right angles from these portions of the corridor. This arrangement certainly gets over some minor difficulties in planning the entrance to a block of rooms from a passage which cuts into them diagonally; but as the instructions specify that corridors should have as few angles as possible, the author seems to have got himself into a major difficulty in avoiding a minor one. The plan stands fairly in general characteristics, but it is somewhat eccentric.

"Strive" has sent a charming set of drawings; the tinted elevations are very nice in appearance, and very picturesque; but, unfortunately, the plan is full of practical faults.

"Mens Sana" is another plan in which the author has taken a line of his own, even more decidedly than "Desideratum"; for he has directly ignored the main point in the instructions, which requires that the blocks should be arranged *en échelon*. He can hardly hope under these circumstances to come in for selection, though it is a spirited effort to "better his instructions," and shows a great deal of ability. He arranges the whole set of buildings as a great octagon, with blocks at the angles and corridors between, like bastions and curtains. The administration department occupies a part of the centre space, connected by corridors at two or three points with the outer buildings; the route from some of the outlying portions to the centre, however, must either be very circuitous, or must mix the departments too much. The latrines are (mostly) arranged in small octagon buildings connected by short corridors with the internal angles of the octagon. The centre space not occupied by building is laid out as garden and recreation ground, which will thus be very secluded from observation without the expense of high walls built specially for the purpose. The plan has the merit of naturally and almost inevitably making a pleasing and picturesque grouping of the buildings; but this, though not a point to be quite overlooked, is nevertheless so very minor a consideration in a building of this class, that it can hardly count for much; and, considering the plan as a whole, the method of enclosing a space with the buildings in this way has the disadvantage that it must either be unsanitary (if too compressed), or it must be spread so as to make the plan very detached and difficult to oversee as a whole, which latter would be rather the defect in the present case. We must, however, give the author full credit for originality and ingenuity and for good suggestions in some points of treatment of detail.

"Thought" is a rectangular plan, which looks neat and symmetrical, but would be rather cumbrous in working, and one department or block is made the passage to another, which is not only a serious defect in planning, but is contrary to the spirit, if not the letter, of the instructions, which require that the different departments should be connected with each other and with the administrative department by a "corridor," a phrase which clearly points to one corridor, not a set of passages from one block to another. The same objection applies to "Io," which, however, is a very nice-looking building, and has very good points in detail. In regard to the w.c. connexion, we may observe that in this and some other plans the architects, while duly providing a ventilating lobby between the w.c.s and the main building, do not seem awake to the fact that the narrower this lobby is, so long as it allows fair space for passage, the better. It should be only a narrow neck of building, just sufficient for connexion. To carry it right across the full width of the w.c. block is only to weaken the cross ventilation and impair the efficiency of the disconnexion.

"Spectemur agendo," a good plan in general corridor arrangement (diagonal), but faulty in detail, the small rooms for separated patients opening right upon the general day-rooms, &c.

"Échelonne," a right-angle plan mainly, but with diagonal communication from corner to corner of the blocks, the communication being intercepted by octagonal buildings for the latrines, the w.c. rooms each communicating with their own block only, but the lavatories having a door of intercommunication, so as to allow a passage through. There is corridor communication from block to block, separate from this; but, owing to the rectangular form adopted, it is rather round-about, and the only other way is to make use of the lavatories as passages,—a very bad idea, surprising in a plan which, in some respects, shows experience and ability.

"A, B, C": a rectangular plan, which complies with all the requirements except that which demands a minimum of angles in the corridors, a requirement necessarily ignored from the very nature of the general arrangement, and which would make a great deal of pedestrian exercise for the attendants. The author seems, as his motto suggests, to have been aiming at extreme simplicity of arrangement, but what looks simplest on paper is not always so in actual working; real simplicity in plan is attained, in such a building, only by very careful contrivance; *ars est celare artem* is a true motto for plan as well as for design. The same remarks will apply to "*Pro bono lunatico*," a motto, by the way, the flippancy of which is in bad taste. Lunacy is no matter for jesting.

"Light and Air" is a plan arranged partially on the diagonal principle, with latrines in octagonal blocks attached to the angles of the main blocks, in a manner which combines picturesque effect with practical suitability. The plan is not one of the best; in particular, the day-rooms require to be broken up more by bays or projections,—they would be dull and deficient in light at some parts of the day. But it shows consideration and thought, and the architectural treatment, simple and economical in the extreme, is nevertheless picturesque [illegible] suitable.

"Deo Juvante" is a fine set of drawin[gs] but can hardly claim praise on practical groun[ds] rooms and departments are made passages [through] one another, which is objectionable, and agai[n] the spirit of the instructions. "Æsculapius" and "Perseverando" deserve recognition [for] the labour bestowed on the drawings and [the] agreeable effect of the elevation, but they [can] hardly be said to have really grappled with [the] problem of the plan at all.

One or two other sets of drawings hardly [call] for remark; but on the whole we may say [that] we have seldom seen a set of competition dra[w]ings for an important building in which, in [spite] of the lapses that we have pointed out (and [which] have, for practical reasons, dwelt rather [on] the points in which each design seemed [to] come short), there seemed so good an aver[age] of merit in proportion to the numbers, and [so] much evidence of an intention on the part [of] the competitors to meet the real requirements of the case, instead of merely outbidding [each] other by showy drawings.*

WHAT WE LEARN FROM THE BOARD [OF] TRADE RAILWAY RETURNS FOR 187[8]

The Railway Companies of the United K[ing]dom have added 286 miles to the length of [their] during the year 1878. They have also [added] 24,486,106*l.* to their capital. The result of [the] expenditure of the year has been to add 830*l.* [to] the cost of every mile of railway open in [the] United Kingdom; that cost having averaged 39,472*l.* in 1877, and 40,301*l.* in 1878. In other words, the cost of our railways has been increased by more than two per cent. in the [year] per mile of measured distance. As to the capital on which dividend has to be paid, it has been increased by 3·6 per cent. in the year.

In addition to this augmentation, both [in] gross capital, and of cost per mile, the [com]panies have added 202 locomotives, and 4[,]vehicles of different kinds, to their carr[iage] stock during 1878. In 1877 each locomotive enumerated in the return earned an average sum of 4,750*l.*; so that provision has been made during the past year for conveying additional traffic to the amount of near[ly a] million (actually 959,500*l.*) more than in the preceding year. The cost of these engines [and] vehicles is not given, but that of the locomotives alone must be from 400,000*l.* to 450,000*l.*

Under these circumstances the shareholder may be justly disappointed to learn that the gross earnings of the year 1878, instead of being nearly a million more, have been a ninth, a million less, than those of 1877. There has been a nominal economy of rather more than 666,000*l.* shown as effected in the working charges, but this diminution in the debit of revenue account cannot be said to more than counterbalance the amount by which the account must have been increased by the withdrawing out of capital for stock not required for additional traffic. Thus the least that can be said is, that the entire capital spent within the year has been spent unproductively.

The locomotive is the true bread-winner of the railway proprietors. And it is a bread-winner that never grumbles if taxed to the utmost extent of its powers. The more economically an engine is worked, as regards the provision of fuel, the better for its durability. Due care, and immediate repair, when it first becomes [need]ed, are all that the engine requires, in order to maintain its highest efficiency. And not only is that the case, but a hint given by foreign practice leads to the hope that more, rather than less, duty may hereafter be obtained from the locomotive. On the Odessa Railway, which is 650 miles in length, we are told by an extract from a German paper in the recently-issued vol. lvii. of the Minutes of Proceedings of the Institution of Civil Engineers, that the system of each driver having his own engine has been given up for the goods service, and continuous working has been substituted. The result has been that the number of locomotives required for the traffic service has been reduced in the proportion of 13 to 10. At first the time expended in repairs rose somewhat under the new system, but it has again fallen. On other lines it appears that a marked decrease, both in cost of repairs and consumption of fuel, has followed the adop[tion]

* As we go to press, we learn that the Committee have awarded the first premium to Messrs. John Giles & Co. of London ("Experience"); and the second premium to Mr. Pritchett, of Darlington ("Sunshine all Day").

e continuous system. When we contrast rience of this kind with that of the increase omotive work in 1878, it is clear that there ne room for improvement in that item of ilway management. Every locomotive on ists in 1878 earned only 4,662*l.*, against *l.* in 1877.

ere is a remarkable contrast between the ment of the six great passenger-lines gh and out of London, and that of the six mineral-conveying lines, including the -Eastern, that radiate from the metro-

Commencing with the latter group, we ain from the returns of 1878 that six great covering an aggregate length of more than miles, have cost rather more than 41,000*l.* ile. Their aggregate earnings in 1878 nted to nearly 35,000,000*l.*, of which about 0,000*l.* was earned from passengers, and 000*l.* from mineral traffic, the latter thus sing 41 per cent. of the gross revenue. ost of working has been 18,500,000*l.*, being 53 per cent. of the gross income, giving a of 4·6 per cent. on the capital.

ing the year 1878 these lines have earned 2*l.* less than they earned in 1877. Their gate capital has been increased by 0,000*l.* within the year, although a portion increase has been only nominal, caused e conversion of stock. The working ses for the year have been reduced 0*l.*, or by about 0·73 per cent. A portion increase of capital has been expended on -nine new locomotive engines, to work a shed traffic. Supposing that out of the stock of engines, old and new, ninety- are idle for the year, the remainder of the will still have earned 20*l.* per engine less n 1877.

erting now to the other, or passenger, of lines, we find that six great lines, ling over a length of 1,563 miles, have eatly 99,000,000*l.*, or more than 63,000*l.* ile, mainly owing to the cost of metro- property and Thames bridges. Their gate gross earnings in 1878 were rather 9,000,000*l.*, of which less than 5 per cent. lerived from the carriage of minerals. orking cost has amounted to 4,466,000*l.*, per cent. on the gross receipts. The net g thus amounts to 4·53 per cent. on the nileage cost of these lines.

ing the year 1878 these lines have earned 0*l.* more than they did in 1877. Their ag- e capital has been increased by 3,107,000*l.*, ne working expenses have shown an in- of 224,700*l.*, being about 0·5 per cent. on penditure of 1877. Twenty-four engines een added to the stock. If we assume ach of the old engines earned the same in as it did in 1877, each new engine will arned more than 15,000*l.*, or more than times the average earnings of the loco- s on the English railways.

s the first group of lines has increased its by more than 8 per cent., and its engine by 1·3 per cent. to earn 0·6 per cent. less with a nominal saving of 0·7 per cent. rking cost, or rather less than 0·33 per n gross income.

second group of lines has increased its by 3·1 per cent., and its locomotive stock r cent., and has earned 4·3 per cent. more ncome, at an increase of working cost of 5·3 per cent. on that of 1877, or about cent. on the gross income of that year.

s such as these, which are the simple out- f the Board of Trade Returns, are enough the attention of the country to the ques- hich Sir George Balfour has given notice shall put to the President of the Board le. These are as follows, not quoting the anguage, but giving the gist:—

the Government take measures to obtain the railway companies such statistical ation as will allow of the determination cost of carriage of the different classes engers, and of the different descriptions chandise, as is done on the Indian rail- nd on those of New South Wales?

they ascertain the rates charged on all r passengers, of each class, and for each tion of merchandise or mineral transport, uishing local from through, or from com- e traffic, where any difference exists?

they seek to obtain the power of audit- supervising the accounts given to share- ?

they produce information as to the ed or useless stock that is included in the returns made by the railway companies?

Of the two distinct classes of information contemplated in the above notice, one is most essential to the shareholders, the other to the customers. Mr. Parslee's little book, called "Our Railways," shows the great injustice to which freighters are subjected, by the practical refusal of the railway companies to give full and frank information on the subject of freight charges. On the other hand, if each railway company in England were compelled to state the average distances for which they carried a passenger or a ton of goods, or, which comes to the same thing, the gross number of passenger miles and of goods ton miles from which their gross revenues are derived, the relative profit and loss of various descriptions of traffic would not much longer be kept a profound secret.

A comparative statement of the earnings of each passenger locomotive and each goods locomotive, as well as of each description of vehicle, would, in itself, be a most instructive paper. In 1877 these varied, on the twenty principal lines analysed by Mr. Fleming, from 12,176*l.* per engine, and 2,830*l.* per carriage, on the Metropolitan, to 3,719*l.* per engine on the Manchester, Sheffield, and Lincoln, and to 47*l.* per wagon on the Caledonian. Considering the allowance to be made for the return of empty wagons, it probably costs a company as much per mile to transport the wagon earning 47*l.* as the coach earning 2,830*l.* by its year's work.

It may be added that the Metropolitan Railway has earned 944*l.* per engine, and the Metropolitan District 816*l.* per engine, more in 1878 than they did in 1877. On the other hand, the Midland, with a stock augmented by forty-three engines, has earned 86*l.* per engine, and the North-Eastern, with no addition to its locomotive stock, 247*l.* per engine, less in 1878 than was the case in 1877.

FROM THE BANKS OF THE SEINE.

A LAW case, which came before the *Cour de Cassation*, or as we should say, the Court of Appeal, on the 5th inst., has occupied the attention of not a small portion of the architectural profession during the last week. For how long a time has the proprietor a remedy against architect and contractor for flaws in construction which show themselves in the work they have designed, directed, or executed? It is not often in France that one hears of complaints of this nature on the part of house-owners, for happily "jerry builders" scarcely exist, and the houses that are now rising in every quarter of Paris are certainly not intended for even exactly ninety-nine years' leases; indeed, they are built, if not for eternity, at least for many centuries.

By the terms of articles 1,792 and 2,270 of the *Code Civil*, the architect and contractor are responsible for ten years, dating from the completion of the works, for any vices in their construction. The *Cour de Paris*, interpreting the letter of these articles, had more than once (previously to 1857) decided that at the end of ten years all responsibility ceased on the part of contractor and architect; once this period was passed, no action could be commenced. In other terms, it had been held that, for the architect to be liable, it was not sufficient that the vices should have manifested themselves in the course of the ten years' delay, but, in addition, the action must be brought before the expiration of that term, in default of which it was untenable. It is this jurisprudence, often combated, that the Supreme Court had some time since for the first time to consider, in the appeal made by the Comtesse de Béarn against M. Parent, architect, who had been entrusted by her in 1862 with the execution of various works of restoration and enlargement of her château at Clèvres. The works were terminated in 1863, but in the course of 1873 grave defects and flaws manifesting themselves in the work, an expert was called in to decide the responsibility of the architect; this done, in 1875 M. Parent was summoned as responsible for the defects existing. To this the architect opposed the terms of the article above referred to, the stipulated period having been passed two years previously to the action. The appeal maintained that the existence of the evils having been noticed *before* the expiration of the legal delay, the time at which the action was brought was not limited by the terms of the law,—indeed, was still valid during a delay of thirty years (according to common law) and capable of being suspended over a possible minority of an heir. To produce the complicated arguments *pro* and *con.* would be difficult with the limited space at our disposal; suffice it to say, that the Court of Appeal, after having heard the pleading of the several advocates, annulled the decision referred to by deciding that the articles 1,792 and 2,270 referred only to the duration of the guarantee, and the law not having decided on the duration of the power of the action, that action, once originated, could not be put aside during the ordinary prescription of thirty years. It would be interesting to know what cases of a like nature have come before the English Courts, and in what way they were decided.

The mention of this lawsuit recalls an incident in the life of Fechter, the news of whose death has produced not a little feeling on the banks of the Seine, where his earliest triumphs delighted the Parisian public. It is an incident which is scarcely likely to be recalled in any of the many biographies which will doubtless shortly appear of the first actor who played "Hamlet" in a flaxen wig. Some fifteen or sixteen years ago a gigantic and beautiful cotton plant overshadowed and beautified the house of Fechter, then residing at No. 20 in the Rue de Navarin, one of the many characteristic streets lying at the back of Notre Dame de Lorette. By the exigencies of M. Haussmann's plans the cotton plant had to be torn down. Fechter, who had enjoyed the beauty of the greenery, demanded immediately the cancelling of his lease, and in bringing the matter before the courts was awarded, in addition to his claim, satisfactory damages; for full particulars of all which we refer the curious to the pages of the *Gazette des Tribunaux* for January 12th, 1861.

We had occasion last week to speak of the competition for the Grand Prix de Rome in architecture. On Tuesday the members of the architectural section of the École des Beaux Arts met, and, after two and a half hours' deliberation, awarded the Grand Prix to M. Victor Auguste Blavette, born in 1850, and pupil of M. Ginan. The first second Grand Prix to M. Charles Girault, born in 1851, pupil of M. Daumet; the second second Grand Prix to M. Charles Jennings, born in 1852, and pupil of M. Train. It will be instructive to watch the progress of these artists in the drawings which before long they will send home from the Villa Medici and the School at Athens; for the young architect in the Eternal City and in the land of Ictinus and Callicrates, indeed, may be envied, with the noble examples with which he is brought into actual contact,—a privilege and advantage which his brother artists the painters and sculptors can scarcely be said any longer to enjoy in their respective lines of study in Rome and Greece.

It may not be uninteresting to archæologists, while we are speaking of the French School in Athens, to learn that a former member of that school, M. Homolle, has recently left France for the Island of Delos (in the Grecian archipelago), entrusted by the French Government with the duty of continuing the excavations commenced some years since in that interesting island by the École Française. Delos, it will be remembered, was famous in antiquity for the oracles which were pronounced in the magnificent temple consecrated to Apollo, who was born in the island, according to a mythological tradition. Already many precious remains of the oracle and temple,—one of the finest in Greece,—have been unearthed, and before long we may expect to hear interesting news from the neighbourhood of our own now famous and new archæological hunting-ground, Cyprus.

Active preparations are being made at the Palais Bourbon for the reception of the Deputies in November next. Arranged for the Chamber of the Empire, which only consisted of 290 members, the palace has now to hold 525 deputies, while the increased development of the services for the Parliament require enlarged dependencies. All that will come from Versailles is the "*tribune*," which plays so important a part in French politics; for the deputies, as most persons know, do not, like our members of the two Houses, address the Speaker from their places, but the whole house, from the tribune, at the feet of the President of the Chamber. As may be imagined, the architect of the works has no easy task before him. At the palace of the Luxembourg the same activity is observable in the preparations for the Senate. Official Paris, indeed, is entirely "on the move," the Pavillon de Flore at the Tuileries being rapidly put in order to receive the Prefecture of the Seine, to be transferred thither from the Luxembourg.

PUBLIC HEALTH IN CORK.

The British Medical Association, at their meeting held last week in Cork, included a Public Health Section and an Exhibition of Sanitary Appliances. At a meeting of the former,

Dr. Pacciotti, of Turin, informed the meeting that the International Congress of Hygiene would be held in Turin in April next, and he would welcome to Italy all friends who might desire to be present on the occasion. He said the king was very liberal, the Government gave money, and the mayor and citizens of Turin would do their duty in the matter of hospitality to all foreigners.

A discussion was then opened on "The Influence of Drinking-Water in originating or propagating Enteric Fever, Diarrhœa, Diphtheria, and Scarlatina."

The discussion was commenced by Dr. Andrew Fergus, of Glasgow, who confined himself to matters that came under his own observation. He said that until comparatively recently Glasgow was supplied with river water which contained the drainage of the towns higher up. In 1848 cholera prevailed universally in Glasgow. No district was specially exempt from the disease. In 1854 the south side of the city, inhabited by the working population, had got a pure supply of gravitation water, and it was remarked at the time that the south side suffered very little from cholera. There was no registration at that time, and they could not bring that point to the touchstone of figures; but the experience of all medical men at the time was, that though there was not complete exemption, there was a very marked exemption from the disease in the south side, which had the supply of pure water. By the year 1866 all Glasgow was supplied with pure water, and though since then they had imported cases of cholera, though the poison was there, it did not take any hold on the city whatever. There was also a marked diminution in the prevalence of cases of diphtheria since Glasgow got a supply of pure water. He remembered once going to a fine house in a beautiful country, and three of the inmates were down with typhoid fever, and on investigating it he found that the cause of it was impure well-water. In another instance, he was told by a lady that her family had never been well since they removed to a very large house, and on making inquiries it turned out that there was a cesspool with an open grating in close proximity to the well which supplied the house with water. The same thing occurred in cases of diphtheria, and he (Dr. Fergus) had found many cases which were clearly traceable to impure water. On the return of several families to Glasgow from a watering-place which has been called the Brighton of Scotland, many of the inmates were suffering from typhoid fever, and an examination of the wells in the vicinity of the place being made, it was discovered that every one of the twenty-eight wells showed evidences of organic pollution, when he (Dr. Fergus) employed the only test he could—that of the Nesslear solution. He would counsel people to have the water attached to a house always tested before taking the house, and if the water was at all suspected, let it be distilled. Water contaminated by sewage was not unpleasant to drink, for the reason that the organic matter decomposes, and the process of decomposition produced chemical action which rendered the water sparkling and cooling, and almost pleasant to the palate. Not alone should all communities be supplied with pure water, but all sources of impure water should be cut off. Dr. Fergus concluded by saying that in some cases it was hard to overcome the partiality people had for old practices, and he related how in the case of a favourite well in Glasgow,—the closing up of which would have caused an outbreak,—the authorities got over the difficulty by turning the pure Loch Katrine water into the well, and the people went and drank out of the well as before.

Dr. Alfred Carpenter, president of the council, read a paper on the dual requirements of enteric fever, and the fallacies based upon a narrow view of the germ theory. He said that some writers assumed that if an enteric germ found admission into a pure water-supply, it retained its vitality. He pointed out the fallacies contained in this, as also in the beliefs which were often expressed that there was no limit to the distance which the contagion might not be transmitted underground. He also believed that filtration would not alter the contagious nature of the particles, and also that neither microscopical nor chemical analysis was able to prove the absence of such contagious particles. Those fallacies had been propagated in districts supplied with water from deep wells. It had been stated that zymotic disease of every kind which had arisen in these districts had been caused by the water alone, independently of imported contagion, or local nuisances. The fallacies were used for the purpose of assailing the character of deep-well water, and for resisting the establishment of waterworks which were often urgently required. It was argued by the authors of the fallacies in question, that water which might have been polluted by mischance or accident was not fit for public supply, because they said there were no safe provisions in nature for restoring it to a state fit to drink. Dr. Carpenter brought forth evidence, based upon personal experience, as well as the observations of others, to show that these ideas were dangerous fallacies. He also pointed out that two causes were generally at work in the establishment of an epidemic of enteric fever. First, there was a marked departure from the first sanitary law, by means of which the house of the victim was exposed to sewer contamination from defective sewers; and secondly, that the water-services were in immediate communication with the sewer system, by means of which an interchange of material took place, and thus typhoid germs gained admission.

Dr. J. Lane Notter next read a paper on the value of chemical and microscopical analysis in relation to the question treated of by Drs. Fergus and Carpenter.

Dr. Norman Kerr read a paper giving some typical cases of enteric fever, diarrhœa, scarlatina, and diphtheria arising from drinking-water; and

Dr. Martin (in the absence of Dr. Ballard) read that gentleman's paper giving some facts illustrative of the spread of these diseases.

Surgeon-General Crawford, Dublin, said he rose for the purpose of expressing his cordial thanks and that of the meeting to the gentlemen who had been so kind as to read those papers for the edification of those present, and for the instruction of the public at large. Coinciding as he did with regard to the remarks made as to the importance of a pure water-supply, and as to the great factor impure water was in promoting the diseases referred to, still he found from experience that more than once several forms of fever, typhoid, diphtheritic, and others, had arisen from other causes than impure water. After five years recently spent in India he had discovered that, and he did not mention it with the view of contradicting what the gentlemen who had read the papers had put forward, but for the purpose of inducing them and others to follow further the source of this, holding as he did that water alone would not account for the spread of contagion in all cases.

Dr. Fergus said he wished to make a few observations with reference to the remarks of Surgeon-General Crawford, who had raised a very important point. He (Dr. Fergus) and the other gentlemen who had addressed the meeting did not by any means wish to indicate that those diseases might not arise from other sources of impurity than contaminated water. But he held that the diseases under discussion arose almost invariably by taking into the system by air or by water human excrement in a state of decomposition. The question was how those noxious gases were conveyed into the houses, so as to cause an outbreak of fever. It got in in several ways; but the general opinion was that it was by the tension of the sewers, or by the suction powers of the openings into the drains, that it was conveyed into the houses. He (Dr. Fergus) was extremely puzzled for a long time to know how the air got into the houses. What led him to find it out was observing the decay of leaden pipes in houses, and the lead become affected on the outside and not on the inside,—on the upper surface where there was no water, and at places where no water could lodge. His opinion as to one of the means by which those foul gases got into the house was this, when they could not escape through the volume of water in the ordinary sanitary arrangements of closets, they were driven back through the supply pipes to the cistern, which in many cases supplied the house with water for dietetic purposes, and hence the cause of typhoid fever in many cases that were rather difficult to trace.

The President said the question that had been discussed by the various speakers was a very important one: as far as his experience went he knew cases of typhoid fever being caused by the gases being absorbed into exposed cisterns aft passing through pipes, thereby contaminati the drinking-water for the house.

The Sanitary Museum was located in the no Plant-house, which, however, proved too sm for the number of exhibits, and additio ground was taken in.

Those interested in the important subject sewerage derived some instruction from t perusal of plans of a pneumatic sewage syste invented by Mr. Isaac Shone, C.E., mayor Wrexham. By this process (described in *Builder*, p. 781, *ante*) steam is not used, the air is so applied as to force the sews through the pipes. It is adapted for level d tricts. In connexion with this branch of museum will be found sink-traps, contribu by Clarke, of Carlisle; Mitchel, of Dublin; a model destructor for disposal of sewage, Messrs. Manlove, Alliot, & Co., Nottingham.

Boyle & Son, Glasgow, have on view th air-pump ventilators, the object of which is extract foul air from rooms, stores, or ships. ventilator is fixed, and it is so constructed the different parts so nicely adjusted that gentlest breath of air impinging on it from point produces motive power on the princi of the air-pump for extracting foul air. Th ventilators have an advantage in being o more tasteful design than these affairs usu have, and they will not disfigure any building which they are attached.

Mr. William Barton, Boston, shows some f grates, and a feature of interest in this exhi is the fact that the ornamental inlaid tiles designed by students of the Cork School Art,—namely, Mrs. Hill, Miss Baker, and Willis.

Messrs. Sibthorpe, Dublin, have on view new plan of wall decoration, which is v effective. It is Isaac Walton's invention, an an application of linoleum. Flowers and foli are impressed with striking truth to natu Woollams & Co., London, show specimens wall-papering free from arsenic; and Gould & Co., Cork, have samples of paint guaran non-poisonous, and adapted for painting hosp walls, &c. The "Sanitas" Company, of Lond showed meat preserved by their fluid.

The Cork Gas Company has an exhibit which is full of interest in the present stat the public mind on the lighting question. E tricity, as a medium of illumination, though far from perfect, has had a most wholes effect in waking up the gas manufacturers, a inducing them to efforts to improve their sys and obtain the maximum amount of illumi tion which coal gas is capable of impart The strides made in this direction within a v few years is most striking, and the exhibit the gas company in this museum show that proportion of illuminating power which has b attained from gas does not compare unfav ably with the bright, though to a great ext uncertain, electric light.

The Museum of Sanitary Appliances, should mention, is mainly under the charg Mr. Arthur Hill, an Associate of the Insti of British Architects.

EPPING FOREST AND FOREST TREE

It is not the works of man alone that serve preservation. There are natural obj which it is almost as impossible to replac destroyed, or to make up for, as are antiq themselves, whatever they may be, or whate the amount of mental interest they may themselves possess. Many such things mi be cited; but there is one especially wh would seem at the present time to need spe attention. We refer to the forests, so cal which are yet scattered about the land, ev here and there, and which go so far to m up the scenery of the country, and to make it a series of pictures as you pass through A very great deal, it is needless to say, mi be written on so fertile a theme as this, so fu it of both science and art; but we must ne limit ourselves, and would just now say b word or two, this being holiday time, what is termed, strangely enough, Epp "*Forest*." All have heard of this famous for but not many, perhaps, have passed through or particularly observed the precise state i now in, or still less have speculated on its for state, when forests were of more use and inte than they now are. It may, therefore, h matters, and do, may be, a little artistic serv to hint at the past and point to the pres state of Epping Forest.

rest, so the dictionaries tell us, and in the l case before us it is quite necessary to his, is an extensive tract of ground over- with trees of one or several species, or rees and underwood. Many fine and ful descriptions there are of forests and scenery; and many fine pictures and gs there are descriptive to the eye of of, and glimpses into, magnificent forests, t home and in other parts of the where Nature does her work without help lrance. We hardly need to do more than allude to them, for they are all the world rom the farthest north to the islands of cific, and to South America, where, as ldt tells us, the forests are so thick with owth that it is impossible to find a path- nd with a luxuriance of growth that seem to defy all attempts at even thinning. Indeed, it would seem that this mighty rowth has at all periods of the earth's played no small part in it, and this but sland itself has fully borne its part in the g of trees, for there have been forests of n and over all parts of it, from north to

What we would now say a passing word and for, is but a very small part of allude to this Forest of Epping, so o London town,—so close, indeed, that ought to make of it a sort of metro- recreation-ground for holiday folks and blic.

Forest of Epping is, therefore, well worth study and looking at, in an artistic ertainly, and not only so, but as a thing onal interest. Others have thought this, in 1871 a Royal Commission was ap- to inquire into and ascertain the precise ries of Epping Forest, and to find out any, "purprestures," "incroachments," spasses," had been made within the said and by whom, and when made, and how cupied, and as to whether the forestal nd interests of her Majesty the Queen,— s a royal forest,—had been in any way hed, abridged, or otherwise prejudiced; short, to find out to the full what the state of this royal forest now,—at the the Commission, 1871,—is. It is quite that nothing ever could, judging from appearances, be more needful or useful. accurate plan was obtained, and thus the oundaries" of the forest are at once seen, is curious to note, a "perambulation" of posed boundaries of the uninclosed nds and inclosures was, on several days, when numerous parties attended, who out various matters relating to the es and boundaries of the forest. It o be noted that before this inquiry in ecent days, a "perambulation," in the Charles the First, was made, by which ndaries of the forest were then settled dance with the meets, meres, limits, and as they existed in the twentieth year James I. The forest has not, there- en forgotten. The last and final report 17th of March, 1877.

ommissioners, previously having ascer- pproximately what were the boundaries orest, and what were the open waste nd what were the lands enclosed in the years preceding, were obviously in a to see more clearly into the precise things, and accordingly issued an order, er 30, 1872,—prohibiting all persons mmitting waste, injury, or destruction the trees growing upon the waste land aid forest, with but one or two small ns, so that the total destruction of the rees (for, strange to say, there is not one specimen of a tree left) was not an ished fact before this date. It is need- haps, to say how small this forest now hat it was, and how much has been om it from time to time, commencing m the days of Edward the Confessor; ny lords of manors have successively the right of inclosure, even from that nd contended that they had not within emory been interfered with in the exer- their manorial rights, including the o inclose. The wonder really is that g but the mere name of Epping Forest out as we are here looking at the matter rtistic light, and sincerely deploring an loss of infinite moment, as we think, we dwell on this, or go into the "right of ," as it is called, and which evidently e so much harm; still less into the supposed right, of "lopping and topping," which has in reality done still more mischief. Our main thought is with the total absence of all sign even of a forest tree, or trees, here. When we say that there is not a forest tree left, it is but truth to say that there is every here and there the mere stump of what was once on a time a goodly tree, but which is now, in consequence, doubtless, of this right of lopping and topping, nothing but a tree stump, without leaves or any sign of tree growth at all left. Indeed, as you look more and more closely, it becomes difficult to find out what "influence," to use the Commissioners' word, has accomplished the most mischief, or has done the most cruel public wrong.

We may here add that the Metropolitan Board of Works urged before the Commissioners, on behalf of the public, citing authorities, that the public had acquired a right of *wandering over* the forest at their pleasure, and using it for recreation and enjoyment. But the Commissioners of Her Majesty's Works and Public Buildings also urged, producing documentary evidence that the forest was still a *Royal Forest*, and that the forestal rights of the Crown still existed. A full and clear history of Epping Forest, from the earliest date, would be a thing of much interest, for it was submitted that the early kings passed to the grantees all the rights that the Crown then had, including forestal rights, and that they were thus wholly free from the operation of the forest laws. It may be noted that Epping Forest is now some six miles long by two miles wide, thus occupying twelve square miles of tree-growing space. But however interesting and profitable all such inquiries may be, they will most assuredly not get us out of our artistic difficulty, viz.,—the total absence of the *trees* of which we are so vainly in search. The poor rotten stumps every here and there yet left, the underwood, the tall grass in some places, the ever-present fern and other low wild plants, all good enough in their way, do not make a forest, and the disappointed artist can but again and again ask for the *trees* of Epping Forest, whoever owns it. Can nothing be done, it may be asked usefully? The Commissioners, after all their careful and detailed inquiries, came to the following conclusions, among others, as affecting the public, viz.,—that although the public have long wandered over the waste lands of Epping Forest without let or hindrance, no legal right can be found for such "user." But even this somewhat hard case for the unfortunate public might not altogether destroy our sense of the picturesque and the beautiful in forest-tree growth if it existed, for it might be viewed, as Turner viewed it, from a distance, but, as we say, it does not now exist. The main and practical conclusion is, that the Forest is to be kept open and unenclosed and unbuilt upon, and as an "open space," for the recreation and enjoyment of the public; and that the *natural aspect* of the Forest shall be preserved, and the ancient earthworks and other ancient remains shall be preserved. All good enough, but the Commissioners do not suggest any method whereby the old forest oak and other trees, which made it a forest, are to be again called into existence.

It would be, indeed, difficult to devise anything better than this of preserving the true forest character of the place rather than the making it into a sort of park. A park is one thing, and a forest is another. And we pause for a moment on it, inasmuch as there are several indications in the Commissioners' Report of a desire to inclose parts of it for a variety of purposes hardly within the generally-understood notions of a forest, however interpreted. Surely the very idea of a forest implies that Nature does the work, and that the wildness and irregularity of the tree-growth and the wild growth of the underwood are to be got at and kept only in this way. All that is needed is, that the ground itself be protected, and the growing vegetation, trees, and underwood be saved from wanton waste and destructive action. Nay, would not the very forest-trees again make an appearance, even as it is, and without help, if but time were afforded for it? Indeed, wonderful is it to note what kindly and untiring Nature will do, even in the most unlikely and unpromising spots, if left to do so unhindered and unhelped, and thus to do her own work in her own way. This all may occasionally see in unnoticed nooks and corners, and there find, too, what wonderfully beautiful forms, which even the highest art fails to rival or imitate, are produced,—no man knows how or whence. In the forest growth such are never absent.

LIMBURG-ON-THE-LAHN.

In describing Erfurt, with its marvellous "acropolis" crowned with magnificent churches, we alluded to Limburg-on-the-Lahn as presenting an equally wonderful appearance.

Rising quite precipitously from the river Lahn is an escarped rock, the opposite side of which has been cut away into a series of terraces, which gradually descend to the level plain. On the very edge of this precipice is placed the cathedral, or, as it was formerly called, the Collegiate Church of St. George, so close, indeed, is it to the escarped face of the rock that the buttresses of the north transept are exactly flush with it, and in the dim light of evening it is impossible to see where the church begins and the rock ends. This method of "broaching" a church down on to the rock upon which it stands was a very favourite device of the Middle Ages at Limburg,* Mont St. Michel, Durham, &c. The church seems to run down into the rock, and the rock to run up into the church, so that the effect is as though some vast rock had been carved and shaped into a church. The power this gives to a building is wonderful. Instead of, as is so often the case with buildings now, the site being a difficulty, it is made to add enormously to the dignity of the structure which stands upon it.

Most modern architects or builders, if they had such a site as that of Limburg Cathedral to erect buildings upon, would commence by cutting the rock down so as to gain a level platform for the buildings to rest upon, but it seems that the Mediæval men never did this. Whenever they did anything with earthwork it was to pile up, never to cut down. The idea of levelling a site seems never to have occurred to them, and if they wanted to put a building down upon a certain spot, they do not seem the least to have cared what was in the way. At Würzburg there is a church the west end of which is built over a stream, and the east end over a road. At Dettelbach the town-hall has a river running under it from north to south, and the principal street of the town from east to west. Probably the Germans were more daring in this respect than any other Mediæval builders; the fact is, they seem to have delighted in overcoming difficulties, and if there were no difficulties to be overcome, they sometimes seem to have almost gone out of the way to make them. That spirit of "adventure" for which the Middle Ages were so remarkable, that dislike of what was vapid or commonplace, that restless activity of mind always in search of the wonderful, longing for the supernatural and the mysterious, entered largely into their buildings and their choice of sites for their towns and churches. It may, of course, be advanced that defence had a good deal to do with the question, but no ideas of this kind could have dictated the choice of such a site as that of Limburg-on-the-Lahn, because there is immediately to the east a lofty hill with sloping side, and thus easy of ascent, which completely commands the town.

Perhaps no town in Germany possesses so romantic an appearance as Limburg when viewed from the river. Seen from the west, with the cathedral crowning the eminence, and the gables of the houses forming an intricate foreground, its simple but striking fourteenth-century bridge spanning the river, and lofty hills filling in the background, it is difficult to imagine a more charming scene than this quaint old city presents. Nor is the view from the east in any way less beautiful, for here the noble apse of the cathedral rises over some interesting ancient collegiate buildings, a picturesque old mill and some willows group themselves charmingly about the base of the rock, while, far above everything else, the seven graceful spires of the cathedral shoot up into the sky. When one sees these grand old towns one is led to question whether we have really improved; and if, after leaving Limburg, one finds oneself in Ems or Carlsruhe, the thought will naturally present itself that three centuries of civilisation have not improved our dwellings, at least as far as their external appearance is concerned. It is a very remarkable fact that, in passing judgment upon all ancient peoples, we take our views of their high civilisation or the reverse from the beauty of their buildings, more than, perhaps, from any other circumstance, but yet we never dare to apply the same test to

* Internal and external views of the Cathedral will be found in our previous volumes,—for 1873, p. 267, and for 1877, p. 1225.

ourselves. We acknowledge frankly that our domestic architecture would, as a rule, disgrace any nation of savages; that we see with horror the wretched rows of ill-built, badly-designed, undignified, and paltry houses, spreading out from our ugly, uninteresting, and vulgar-looking towns, destroying everything that is beautiful; splendid groups of trees cut down; the pleasant little brook or rivulet converted into a sewer or ditch; the charming fields converted into dull and hideous streets. The late Sir G. Scott said that it was a lamentable fact, that when our ancestors erected a house it added a beauty to the surrounding country, but now a new house is generally a plague-spot in the fair landscape.

The fact that so very few people seem now to care about or to appreciate the beauty of buildings is the commencement, if it is not stopped, of a serious danger in the future,—it is the beginning of a want of appreciation of the beautiful altogether; and that we are advancing pretty far on this dangerous road is proved by the proposed conversion of a Cumberland lake into a reservoir. The destruction of Springfield Park, Acton; the sweeping away of Rogers's house and gardens; the hideous transformation of Old Well-walk, Hampstead, and the needless destruction of fine trees everywhere in the neighbourhood of London,—all these show that it is not only in architecture and building that we have ceased to appreciate the beautiful, but that we care very little indeed for the beauties of nature.

If this want of interest in what is beautiful, this training our minds to get thoroughly used to ugliness, and to look upon the destruction of beautiful objects unmoved, and if the habit which of late years has been so largely on the increase of sneering and laughing at those who respect these things, is allowed to continue and to grow, it will in time become part of our nature, and we shall realise the triumph of dulness so admirably described by Pope in the "Dunciad," when,—

"Art after art goes out, and all is night."

NEW CONSERVATIVE CLUB BUILDINGS, PRESTWICH.

The directors of the Conservative Club, Prestwich, having decided to erect new club buildings, invited several Manchester architects to submit designs in competition. Those submitted by Mr. William Dawes have been selected, and tenders have been obtained for the works, which will be proceeded with at once under the architect's superintendence.

The buildings will be erected on a plot of land in Church-lane. They will comprise a large meeting and reading room, retiring-room, secretary's room, porter's living-rooms and office, with general conveniences, on the ground-floor; two billiard-rooms, card-room, lavatory, and bath-room, on the first-floor; and gymnasium, lavatories, wine and beer cellars, coal and wood stores, and heating-chamber, in the basement. The billiard-rooms will have a roof light in addition to the end and side lights, and will be fitted up with three tables. The gymnasium will be well lighted by large windows, opening into an area extending the whole length of the building. There will be three entrances on the ground-floor,—two opening into the front hall, and the other into the staircase landing to the gymnasium.

The buildings will be constructed of brick, with stone dressings. There will be a small tower at the corner nearest the main road.

FLITCROFT'S MONUMENT.

At the close of our volume for 1877* attention was drawn to the state of a small marble tablet affixed to the west wall of Teddington Church in memory of Henry Flitcroft, the architect of St. Giles's Church, London, and St. Olave's, Southwark. Under the kind superintendence of Dr. Hugh Diamond, F.S.A., who resides near the spot, this tablet has been repaired, and the Doctor writes,—"What has already existed for more than one century is now safe for another if allowed to rest untouched." The expense, which is trifling, we willingly defray.

Flitcroft, "who had the honour of having ye three first Princes of the House of Brunswick with him in the Board of Works, of which he was successively appointed Clerk, Master-mason, and Controller," was born September 8th, 1697, and died March 5th, 1769.

* See pp. 1183 and 1204.

TOWN HALL AND PUBLIC OFFICES, BARROW-IN-FURNESS.

A new town-hall and public offices for Barrow-in-Furness are now in course of erection from the designs and under the superintendence of Mr. W. H. Lynn, whose designs were selected in competition some time ago. We give a view of the building as proposed to be completed, and plans of the principal floors.

The General Plan of the design consists of a front building and wings, which enclose a spacious courtyard 144 ft. by 122 ft. The fourth side of the quadrangle is bounded by the existing town-hall. The space immediately behind the present town-hall towards Market-street, and outside the main square of the site, is given to the fire department. The remainder of the Market-street wing is occupied by the police and court departments; these departments return along the front as far as the central entrance-tower. The other half of the front building, and the whole of the Cornwallis-street wing, are occupied by the municipal departments. The space between the end of this wing and the existing town-hall is enclosed by arched gateways, through which the court-yard is entered; and above these a corridor is formed, which connects the first floor of the new buildings with the large public-room of the present town-hall. The space fronting Market-street adjoining the fire department and opposite to these gateways forms the police and parade yard, with gates in the enclosing walls which afford a passage for police and other purposes from one street to the other. The present flagged footway along the side and back of the Town-hall Market area is preserved, and is divided from the courtyard by an iron railing with a gate at each extremity.

Municipal Department.—The accommodation required at present, with spare rooms in addition, is contained in the north half of the front building, and in the Cornwallis-street wing. The entrances are two in number. The council entrance leads directly to the council staircase, which occupies a position at the north angle of the quadrangle. This entrance and staircase lead directly to the council chamber lobby and corridor, to the committee-rooms, and to the private offices of the several departments. On the ground-floor, to the left of the council entrance, is a side-porch, or lobby, which leads to the waiting-room in the rates-office, so that those having only rate business to transact need not intrude on the building. The second, or public entrance to this wing, is placed at the end next the present Town-hall, and immediately adjoining it is the public staircase. From this entrance and staircase are approached the accountant-general's office on the ground-floor, the town clerk's general office on the first-floor, and the surveyor's clerk's office on the second-floor. These offices are all close to the staircase; and by this means the public are brought directly to where they have business to transact, without having to traverse the corridors of the building, these being reserved for official communication between the several departments. On the ground-floor, and adjoining the general office, are the other offices required for the accountant's department. The rates office is in the front building. The pay-office is placed on the right of the public entrance, with a separate entrance from the courtyard for the men, while the door between the pay-office and hall of public entrance will serve for the egress of the men when paid. Between the rates-office and the central hall are two large apartments unappropriated. Strong-rooms are provided on this and the other floors for the several departments.

The town clerk's offices and committee-rooms occupy the first-floor of this wing, the private office being at the end next the council chamber, ante-room, and No. 1 committee-room. These three large apartments are in the front building, and are so arranged that they may be thrown together on special occasions by the opening of folding doors. The council chamber is carried through the second-floor.

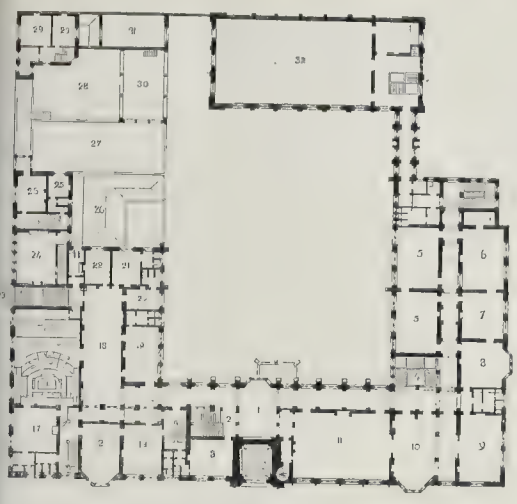
The surveyor's and other offices are placed on the second-floor of this wing, and are all within easy reach of the public staircase. The drawing office, with a room for contractors adjoining it, and a large fire-proof room for plans, is placed at the north angle of the front building. The style of roof adopted admits of an attic story being formed over the whole of this wing, approached by a continuation of the public staircase. The staircase space is further continued as a tower to receive the main cisterns for the water supply of the buildings. Provision is made for lavatories, water-closets, &c., on the several floors. Steps from the ground-floor to the public entrance-hall lead to a basement which is provided coal-stores and a room for heating apparatus. From this level a lift for coals communicates with the several floors of the building.

The Police Department occupies the ground floor at the east end of the front building and the Market-street wing. The room for detectives is placed next to the central tower, with an entrance adjoining it, which also leads to staircase-hall, from which the office of the police clerk is entered. The principal entrance to the police station is in Market-street. The day room for the men adjoins the entrance-hall to the left; an inner hall leads to the charge-room which has next to it on one side the clerk's office, already mentioned, and on the other the superintendent's private office. The prisoners' cells are entered from a corridor which runs alongside a police corridor, and extends to the police yard at the end of this wing. A bath room is placed at the entrance end of the corridor. Lavatories, in addition, are provided at the approaches to the prisoners' exercise yard. This yard (80 ft. by 18 ft.) is placed immediately outside the cells. The greater portion of the yard is covered by a portion of the court department on the first floor. The front of the covered space faces the central courtyard, and is treated as an arcade, the arches being built up for about 7 ft. in height, and the upper portion filled with iron railing. The uncovered portion is inclosed by a wall of full height. The covered yard would have the advantage of being available for exercising purposes in all weather, and, while admitting sufficient light and air to the cells, would screen these from view. From the prisoners' corridor an iron stair, with a railed-in landing, crossing the police corridor, communicates directly with the prisoners' dock in the court above. The opening between the prisoners' corridor and police corridor, which this stair is placed, is filled with an iron railing to afford supervision of the prisoners' departure from the police corridor and day-room. Iron gates at each end of the prisoners' corridor offer similar facilities from other points. An inside door from the police day-room opens into the police corridor, from which are approached the lavatories, water-closets, &c., for the men, the police stores, and also the kitchen and the stairs leading to the men's dining-room. A hatch for serving food to the prisoners is placed in the wall between the two corridors opposite to the door of the kitchen. A private door, communicating with the police superintendent's residence, is also provided. The police yard is approached from the police corridor, and adjoining is an iron gate opening into the prisoners' corridor. The men's dining-room is placed immediately over the kitchen, with a lift between for serving dinner, in addition to the stairs approach. Next to the superintendent's residence, and at the end of the police and prisoners' corridors, is the police yard or parade ground (70 ft. by 23 ft.), into which the police van may be driven to take up or set down prisoners.

Fire Brigade Department.—Next to the police yard, and adjoining the market, is placed the Fire Brigade Department. The entrance to the yard is through a gateway corresponding to that to the police yard. The house for the fire-engines, with parade-room over, and the stables with loft, adjoin each other at the back portion of the yard. The superintendent's residence is placed next to the market front, and is designed in a tower form, to balance the tower termination to the present municipal offices at the angle of Lawson-street. The porch entrance to the department is carried up as a bell-tower, and surmounted by a wooden belfry to receive the fire-bell.

Court Department.—The court department on the first-floor, extends over the greater portion of the police department. The main entrance is in Market-street. From this entrance steps lead directly to a general waiting-hall (62 ft. by 20 ft.) for the use of professional men, witnesses, and others engaged about the courts. From the landing outside the entrance to the hall steps on the right lead up to the portion of the court-room set apart for the general public or onlookers, which can thus be reached without passing through the business portions of the department. To the left of the same landing are lavatories, water-closets, &c., for general use

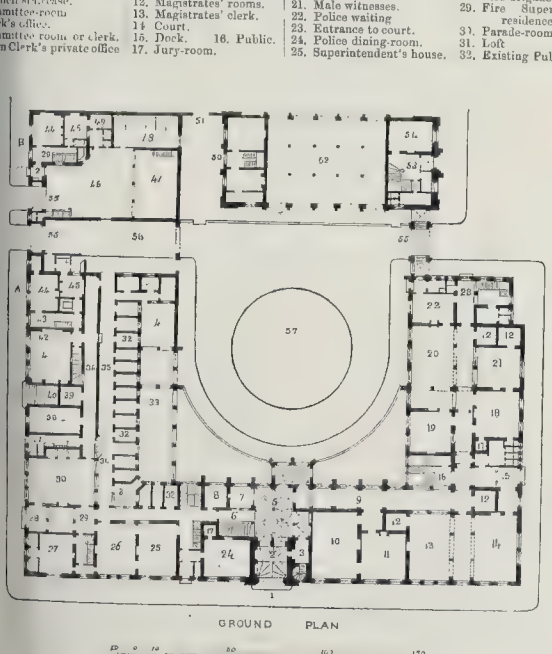




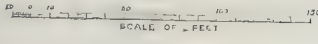
PRINCIPAL FLOOR PLAN

tral hall.
tral staircase.
iting-room.
ncil staircase.
mmittee-room
k's office.
mmittee room or clerk.
m Clerk's private office

9. Mayor's parlour.
10. Ante-room.
11. Council chamber.
12. Magistrates' rooms.
13. Magistrates' clerk.
14. Court.
15. Dock. 16. Public.
17. Jury-room.
18. General waiting-room.
19. Solicitors' room.
20. Female witnesses.
21. Male witnesses.
22. Police waiting
23. Entrance to court.
24. Police dining-room.
25. Superintendent's house.
26. Roof over cells
27. Police yard and parade.
28. Fire-brigade yard
29. Fire Superintendent's residence.
30. Parade-room.
31. Loft
32. Existing Public-hall.



GROUND PLAN



SCALE OF FEET

Ground Plan.

ral entrance.
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17. Safe.
18. Private office.
19. Stock clerk.
20. Accountant's clerk's office.
21. Chief clerk.
22. Pay-office.
23. General entrance to offices.
24. Detectives' room.
25. Police clerk.
26. Charge-room.
27. Superintendent.
28. Police entrance.
29. Hall.
30. Police day-room.
31. Bath. 32. Cells.
33. Prisoners' airing-sheds.
34. Stairs to dock.
35. Prisoners' corridor.
36. Police corridor.
37. Police lavatory.
38. Police stores.
39. Store.
40. Entrance to court.
41. Police kitchen.
42. Lift.
43. Hall.
44. Parlour.
45. Kitchen.
46. Fire-brigade yard.
47. Engine-house.
48. Stable
49. Scullery.
50. Residence.
51. Covered market.
52. Market space under present Town-hall.
53. Entrance.
54. Cloak-room.
55. Gateway.
56. Police yard and parade-ground.
57. Courtyards, 144 ft. by 122 ft.
A. Police Superintendent.
B. Fire Superintendent's house.

TOWN-HALL AND PUBLIC OFFICES, BARROW-IN-FURNESS.

To the left, on entering the waiting-hall, is placed the police waiting-room, and, next to it, rooms for witnesses in waiting. Instead of one common-room for witnesses, as suggested by the instructions, two have been provided,—for male and female witnesses respectively,—with separate lavatories and water-closets off them. Next to the witnesses' rooms is the solicitors' room, and opposite to the latter is the business entrance to the court.

Central Entrance.—The main entrance to the buildings, when complete, would be through the lower portion of a tower occupying the centre of the Duke-street front. The tower porch will be level with the street, and from it will be entered the ground-floor hall, from which the central staircase will lead to the hall on the first-floor. It also will afford a general entrance from Duke-street to the ground-floor of the building, and through the building to the central court-yard. The circular stair at the north angle of the tower leads to a burgesses' gallery formed over the lobby at the entrance end of the council-chamber. The stairs are carried further to a bell-chamber in the tower, and above that to a clock stage, the centre of the clock-face being about 130 ft. from the street level.

THE ART-UNION OF LONDON.

The Art-Union of London is now fairly installed in its new premises, No. 112, Strand. We gave a description of the new building, accompanied by a view and plans, in the *Builder* for the 4th of January last (pp. 19-21, *ante*). The new premises, of which Mr. E. M. Barry, R.A., is the architect, have been specially designed and are admirably adapted for the important purposes of the Art-Union. On the first floor are two capital picture-galleries. The larger of the two, known as the South Gallery, is top-lighted, and is nearly square, measuring 31 ft. by 27 ft. The North Gallery is a parallelogram, 31 ft. by 18 ft., extending the whole length of the Strand frontage on the first floor, and lighted by the three lofty circular-headed windows of that story. In these commodious galleries the pictures selected by the prize-holders of 1879 are now on exhibition. The pictures (of which we have previously given lists *) have been selected by the prizeholders from the exhibitions of the Royal Academy, Society of British Artists, Society of Lady-Artists, Water-colour Society, Institute of Water-colour Painters, the Crystal Palace Picture Gallery, &c. Altogether, 170 works are exhibited, and they form a collection which is well worth a visit. It will be of interest to note that while the money given by the Art-Union to the prizeholders for the purchase of works of art amounts, according to the catalogue, to 5,440*l.*, the actual amount paid to the artists for the works exhibited is 5,767*l.* 8*s.*, the difference being accounted for by the fact that in many instances prizeholders have added to the sum received from the Society in order to secure particular works.

It is desirable that it should be generally known that the cost of the new building does not encroach on the regular income of the Society. It is provided for by 2½ per cent. of the subscriptions, ordered to be reserved on the incorporation of the society by royal charter; from the profit on the sale of catalogues the exhibition; the amount unexpended by prize-holders; and the interest of the fund itself.

It may reasonably be hoped that the possession of a permanent exhibition of works of interest, forming a rallying-point for foreign and provincial friends visiting London, will not be without effect in making more generally known the objects and mode of operation of the Art-Union, and the advantages of membership.

THE STRAND: THEN AND NOW.

Mr. Editor,—The opening of the new galleries of the Art-Union of London is an event fraught with so much interest to the public, as providing the focus from which we hope to see ever-new ramifications and ever-fresh efforts emanate, that I, a mere "outsider," venture to ask for the insertion of a few words on the subject. Yourself, and the gentlemen associated with you in this work, have made it the object of such life-long and energetic efforts to carry out the intention with which you started,—that of "Promoting the knowledge and love

* See pp. 667, 812, *ante*.

of fine arts, and their general advancement in the British Empire by a wide diffusion of works of native artists, and to elevate art and encourage its professors by creating an increased demand for their works, and an improved taste on the part of the public,"—that we, the public, cannot but admit and praise the fact that this promise has been faithfully fulfilled. We see brought within the hope of the humblest home the prototype of things of beauty that are the fairest creations of the poets and the painters; and which hope, up to within the last few years, was as vain as the desire of the "moth for the star." But now a version of the "gem" that adorns the palace of some nobleman, or the mansion of a merchant-prince, may find its way through the community till it becomes familiar as a "household word." They even inspire some son of toil to soar above his chill surroundings, and, inscribing his name on the roll of fame, to exclaim, "I also am a painter."

And not only on English ground has the tree which has sprung from such a seed taken root and flourished. I assisted at the distribution of prizes which took place this year at the Lyceum, lent for the occasion by Mr. Irving, and the addresses of the prize-drawers ranged from the suburbs of London to California, China, America, and India. Lord Houghton wisely counselled those who had drawn prizes to weigh well their choice, mentioning the fact that more than one prizeholder had selected the picture of a rising artist, and that its value had afterwards trebled in amount.

Mr. Edward Barry, the professor of architecture at the Academy, has made the most of the space allotted him, and built a house which, with its mosaic landings, cool-looking green scagliola columns, and spacious rooms, is charming and appropriate.

There is so much worthy of notice in the Exhibition itself that it would seem almost invidious to notice one thing more than another, but naturally, on entering, the great prize gained by Mr. Mitchell, of Ballarat, catches the eye of any one familiar with mountain scenery by its sharp grey outlines and downfall of mist. It is a bit of Borrowdale, by Jas. Peel. In striking contrast is a bright morsel of Eastern life we had already noticed at the Academy, "The Door of a Mosque in Egypt," by Mr. Robertson. Then there is a pleasant idyll, suggested by a pretty girl in pink, with glimpses of green meadows and calm water, by Yeend King, who tells us the "Best of Friends must part." But wholly to our satisfaction, we meet again at "La Vereke, a Valley in Brittany." Then we have De Breanski's fairy-like "Water Hen's Haunt." Further on, a good moral lesson, "Evil Beginnings make Bad Endings"; then "A Glimpse of Venice," "Reminiscences of Wales," and quaint bits of fair France. All are so good we regret fleeting time; so, with a hasty look at the excellent model from Mr. Bell's "America," from the Hyde Park Memorial, our favourite "Wounded Warrior," and the new bust of Princess Alice, we pass on.

The Art-Union is to be congratulated on having been able to establish its home permanently on a spot so rich in historical recollections as the Strand. Unromantic though it may look, no street in London is more full of romance, which even the rapid rush of life in this century has not contrived to extinguish, and I venture to send a few memorials of it, not meant for the more profoundly erudite of your readers, to whom it would be a more than a twice-told tale, but to interest some of your subscribers in far-away countries, who have neither leisure, inclination, nor opportunity, to wade through big books.

When Dr. Johnson made his oft-quoted remark, "Let us take a walk down Fleet-street,' and which contained doubtless as many understood though unspoken injunctions as the celebrated nod of Lord Burleigh in the *Critic*,—a hint to us to keep our mind's eye open, and by blending past and present associations together turn a dull walk into a pleasant one,—he added, "the Strand is even more amusing still." Dr. Johnson himself would hardly be able to realise the rapid changes there of the last few years. Horace Walpole, in 1759, wrote to Montague, saying, "When do you come? If not soon, you will find a new town." What would he say now! Northumberland House, with the familiar lion and its amazing tail vanished; whilst, like Aladdin's palace, is springing up in what was the home of the Percys the huge handsome hotel that dwarfs the already dwarfish Trafalgar-square, though, if it leads to some improvement in that melancholy-looking monumental necropolis, and gives surroundings worthier of the magnificent work of Sir Edwin Landseer, none will regret it. The avenue now building is to be, we are told, with its marble and stone mansions, one of the handsomest in London. The ugly duckling seems to be turning into the swan. And yet we cling to the reminiscences of its Mediæval pageantry,—the aroma of the poetry that still lingers round this part of London.

By dipping into a few old chronicles, and culling a line here and there, we can fairly picture what the strand was like in the times when it was an open space extending from the site of what was known later as Temple Bar, running parallel with the fair Thames, which, then, was so stocked with various fish, that we hear of "ye silver salmon" being abundantly caught in it. We hear also from Evelyn, in 1658, of a much larger fish being seen after a tempestuous day, and the wind having been northerly nearly six months. It was a whale, and was caught near Greenwich. The strand ran on to the village of Charing. Historians give us no origin of the name of this village, and repudiate an old tradition as vulgar and absurd which attributed it to Edward I.'s "*chère reine*,"—the dear Queen's body having rested there for the last time on the way to Westminster Abbey; although so much poetry still clings to the memory of that beloved and loving queen, that even modern improvers have not disdained to erect a replica on the spot where her original Gothic cross once stood.

From the neighbouring heights several streams ran down which emptied themselves into the Thames at this spot. The country around must have been lovely. And roses seem to have been especially luxuriant in their growth here. In the course of ages, when the residence of the Court at Westminster became more frequent, Parliament being held there, the Strand became the site of many magnificent houses of the nobility, and especially prelates, the latter at the time of the Reformation numbering as many as nine, and whose names the streets still retain. The gardens sloped down to the river. At one period Middleton called it the "luxurious Strand," yet up to the reign of Henry VIII., when in 1532 an Act was passed for paving the way between Charing-cross and the Strand at the expense of the owners of the land, woeful must have been the state of things. Nearly as bad as it was in Cheapside in 1090, when the mud was so deep that when the roof of St. Mary-le-Bow ("Far as loud Bow's stupendous bells resound."—*Pope*) was blown off by a violent gale of wind, four of the beams, each 24 ft. long, were so deeply embedded in the earth that little more than 4 ft. remained above the surface. Indeed, London was in Henry's time still so full of "perilous pits and sloughs" that it probably induced him to pass this Act. Or he may have pondered on improvements in those days, when, like Haroun al Raschid, he wandered disguised amongst his lieges, for history tells us how some twenty-two years before this date he had the jollity and freshness of nature that so endeared him to the English and makes it so difficult to reconcile the memory of him with that of the harsh and embittered man of later years. "In 1510, on St. John's Even, at night, King Henry VIII. came to this place, then called the King's Head in Cheape, in a livery of the Yeoman of the Guard, with an halbert on his shoulder (and there beholding the watch) departed privily when the watch was done, and was not known to any but whom it pleased him. But on St. Peter's night following he and the queen came riding royally to the said place, and there with their nobles beheld the watch of the city and returned in the morning."

It is in that same year we hear of his going a-Maying. We quote it in modern spelling. Though well known, it is such a pretty story:—"On May-day, in the second year of his reign, A.D. 1510, his Grace being young and willing not to be idle, rose in the morning very early, to fetch May or green boughs, himself fresh, richly-apparelled, and clothed all his knights, esquires, and gentlemen in white satin, and all his guards and yeomen of the Crown in white sarcenet, and so went, every man with his bows and arrows, shooting in the woods, and so repaired every man to the court with a green bough in his cap, and at his returning many hearing of his going a-Maying were desirous to see him shoot, for at that time his Grace shot as strong and as great a length as any of his guard."

Up to 1762 people paved exactly as they liked, each inhabitant before his own door, and in such manner and with such materials as poverty, or caprice might suggest. Kerb-s were unknown. From that period most c more modern improvements date. Indee 1829 the City itself was only under the guar ship of the old watchmen, when Sir R. established the police. And the public have been at the mercy of the ruffianism o only what we call rowdies, but also the di of the day. In Charles II.'s reign the trembled at the name of scourers and mob And even up to 1744, it was said, "Lond really dangerous at this time; pickpo formerly content with mere filching, ma scruple to knock people down with bludge Fleet-street and the Strand."

The lighting must have been deplorable know lanterns were hung out, and in convex lights were used in London; glass between Whitehall and Kensington in 16 a shed was built for their preservation summer. Gas was used in Pall Mall i but Grosvenor-square was lighted with oil 1842.

Yet, with all this, the Strand held it When an ambassador entered London olden times, on landing at Dover he was the Governor and Lord Mayor; ther went to Canterbury, Rochester, and Grav where he was received by the Lord Chi lain of the king's household, and by th Mayor; here he took water in the royal ba to London, and landed with ceremony Tower. Here the chief nobility, who waiting to receive him, conducted him i state through the chief streets of the City king at Westminster; his house was a him in the Strand, and when his embas over he was attended out of London in th manner. We hear of Queen Elizabeth s with Lord Burleigh at his house in the in 1561. In 1583 he gave Durham Hous Walter Raleigh. Durham House was palace. "After he, Sir Walter Raleigh to his greatness he lived there or i apartment of it. I well remember his that was on a little turret that looke and over the Thames, and had the p which is as pleasant, perhaps, as any world."

What celebrities has Norfolk-street Monday night, 1690, the Czar of Russia the Great, arrived from Holland, and directly to the house prepared for him folk-street, near the water-side." Thi astounding autocrat, who, on being tak Westminster Hall, inquired who thos people were in wigs [and black gowns, being told they were lawyers, said, wit of astonishment, "Lawyers! Why, I h two in my whole dominions, and I sha one of them the moment I get home." different was the character of another m inhabited the same street at a ti circumstances were involved,—it w safe for him to walk abroad,—the William Penn, the Quaker. He ch house as one from which he might c sion slip out by water. In the entr it he had a peeping-hole through which see any person that came to him. One who had sent in his name, being made more than a reasonable time, knocked servant, whom he asked, "Will not thy see me?" "Friend," answered the "he has seen thee, but he does not lik The fact was that Penn had from his s taken a view of him, and found him creditor. What wits, what scholars, h gregated at various times!

George Sale, translator of the Kor Congreve, the dramatist, were known in street. Sturdy old Samuel Johnso lodging was in Exeter-street. "I dine he, "very well for eightpence, with ve company, at the 'Pine Apple,' in Ne just by. Some of them had travelled expected to meet every day, but did n one another's names. It used to cost t shilling, for they drank wine; but I h of meat for sixpence, and bread a pe gave the waiter a penny, so that I w well served,—nay, better than the rest, gave the waiter nothing." Speaking o ticular part in his play of "Irene," "that speech I wrote in a garret in street"; and at No. 40, Essex-street, blished a little club, called occ "Sam's," of which he observed, "Th were lax, and the expenses light." Th to meet thrice a week, and he who did

ited 3d. Very blithely, too, does he relate one evening he and Savage walked round ames's-square for want of a lodging; they not at all depressed by their situation, but gh spirits, and brimful of patriotism, and rsed the square for several hours inveighing st the ministers, and resolving they would nd by their country." Howard-street adds rker shade to all this, for here poor Mount- was set on and killed by Capt. Hill and Mohun.

e "Ship" was an inn given with other lands r Christopher Hatton; there we hear of am Faithorne, the celebrated engraver, who et up a new shop at the sign of the "Ship," the "Drake," opposite to the "Palsgrave " tavern, and there not only followed his nt sold Italian, Dutch, and English prints. as all know, chiefly engraved portraits, gst which are noted those of Henrietta , Milton, and Fairfax, and these were nprovement, probably, on those of Queen beth, who having a most praiseworthy e to being presented to her loving subjects right, made Cecil draw up a proclamation her "Portraictures," saying that as none xpressed the naturell representation of her ity's person, favour, or grace, they were to ar from painting or graining her till some yng and speciall person" had done a good h one for them to copy.

n there was the new Exchange in the d, or Britain's Burse,—"a kind of Soho ar." It had been opened by James I., and r supplanted, after the Restoration, the old nge in the City. It was so popular in the of Charles II. that almost every dramatist ons it. It was the resort of the gallants air ladies of the day, and our old friend was frequently to be seen there. There irst edition of "Othello" was sold by as Walkly. "There, at the sign of the sh Gypsies, lived John Radford and his the daughter of John Clarges (a farrier in Savoy); they sold powder, wash-balls, ; and this same Nan Clarges Radford be- later Duchess of Albemarle, and is interred stminster Abbey; and here at the Revo- sat for a few days the widowed Duchess rconnell, who, reduced to absolute want on rrival in England, and unable to procure s to her family, hired one of the stalls, and ained herself by the sale of small articles erdashery. She wore a white dress, wrap- ner whole person, and a white mask, which ver removed." The Exchange was on the f part of Durham House and part of the t Adelphi. Soon after the death of Anne, 7, it was taken down.

need to tell that there is at No. 5, Strand- an ancient Roman bath. The clear cold (used for drinking only) probably flows the old "Holy well," situated on the north f the Strand, and lending its name to the nt Holywell-street, where now stands the h of St. Mary-le-Strand, built by Gibbs in on the spot where stood in olden times the ated May-pole. May-poles and May-day ng been the delight of the English. The h of St. Andrew the Apostle, in the ward lgate, was known from other churches he name and addition of *Knape* or *shaft*, "because that of old time every on May-day in the morning it was that gh shaft or May-pole be set up there the south doore of the sayde church, pole, when it was set on end and fixed on ound, was higher than the church steeple. n the third year of Edward VI.'s reign, tic curate, 'Sir Stephen,' preached against aul's Cross." The last pole erected was this Strand, 1661. It was so tall that the Duke rk had to lend twelve able seamen to help e it; it was 134 ft. high, and was clasped ound about with iron, and the crown and with the king's arms, richly gilded, were top. In 1634, a Captain Baily set up a of four hackney-coaches near the Maypole, instructions at what rates they were to assengers. This proved so successful that was a "rush" of other hackney coachmen, oon twenty stood about there. In the of Anne the Maypole was ordered to be down. Sir Isaac Newton got possession and erected it in the grounds of Sir R. at Wanstead, for the raising of a telescope. en days we must suppose there really was eather in England for that early in the , for Mayday was an especial favourite as a y.

es I. and Charles I. fought strenuously against the ultra-Puritanical spirit that was beginning to creep over the age, and Charles issued a proclamation permitting all lawful sports on the Sabbath, provided always that every partaker in them had attended divine service first,—a proclamation worth a comment; but I have already encroached too much on your valuable space. I should say no more, but looking out of the Art-Union council-room window I see the "Savoy Chapel," dedicated to St. John the Baptist, and built during the reigns of Henry VII. and Henry VIII., on the site of the ancient Savoy Palace. This building (one of the Chapels Royal) was seriously injured by fire in 1864, but has since been restored by the Queen, as you have doubtless told. Savoy Palace was first built in 1245, and was given by Henry III. to Peter Count of Savoy, the uncle of his queen, Eleanor of Provence. It stood between the present chapel and the river, but has entirely disappeared. John, king of France, was confined here after the battle of Poictiers, 1356; and, after his release, came on a visit, and died in the palace. When the Savoy was in the possession of old John of Gaunt, it was burnt and destroyed by Wat Tyler and his rebels. The Savoy was long neglected and saw many changes. In 1581 Fleetwood, the recorder, describes it in a letter to Lord Burleigh as a nursery of "rogues and masterless men." It was an Alsatia with a sort of right of sanctuary for debtors.

The German Chapel, which used to stand contiguous to the Savoy Chapel, was removed in widening Savoy-street, which now forms a thoroughfare to the Thames Embankment.

All now has disappeared. Of the palace—the scene of so many vicissitudes, of so much alternate splendour and squalor, the arena for the exhibition of so many fierce human passions,—not a stone remains; and as I gaze from the window of the council-room on the quiet little Gothic church and the green "God's Acre" round it, with its softly waving trees, and not far off the flowing Thames, it occurs that a fairer palace has arisen in the neighbourhood of the old one,—a palace of art,—where the only warfare that will be waged is that of beauty and truth, with their elevating influences, against old superstitions and old uglinesses.

I turn regretfully from the peaceful spot on which the calm of ages past and gone lingers, and step once more into that busy thoroughfare through which the ever-rolling mighty stream of human life is rushing,—whither?

> "For evermore towards Temple Bar
> A mighty music rolls,
> A troublous motion, urging on
> The march of human souls;
> The City palpitates around
> With streets that seethe and roar,
> And still that living sea of sound
> Aches to an unseen shore."
>
> "O City poet! darkly veil'd,
> Unveil thy secret heart,
> Breathe out thy song of toil and show,
> The prophet that thou art;
> Sing life is equal in us all,
> Blind arms stretch'd out in air
> To touch the robe of Beauty, who
> Is with us unaware."

Through what is being done for the diffusion of art in these days, beauty is placed within the reach of all. It is no longer an impossible attainment except to the wealthy; and to you and to your colleagues all must wish the success such endeavours to diffuse it deserve. Of any work, be it great or humble, when it tends to the good of the community and not of self, one may say "*sic itur ad astra*,"—so men attain the stars, and found for themselves monuments more "endurable than brass." C.

THE YARMOUTH MEETING OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

The thirty-sixth annual congress of the British Archæological Association commenced at Great Yarmouth on Monday last, under the presidency of Lord Waveney. The inaugural proceedings took place in the Town-hall, and after the members had been welcomed by the Mayor, on behalf of the corporation and the townsmen,

Lord Waveney proceeded to deliver his presidential address. After some introductory observations, thanking the members of the Association for the honour done him by electing him as the president of the congress, his lordship went on to say that the tendency of the age was in two directions,—the one that in which archæology found its principal object and scope, and the other that which carried them forward with an accelerated pace. While they were endeavouring to develop the mightier powers of nature in their manifestations of steam and electricity, and motive forces in various directions, thoughtful attention had been paid to tracing back, step by step, the progress of our race from the earliest recorded times. In this fortunate age the analytic and the synthetic elements mutually assisted each other. Most of the applied sciences tended in a remarkable degree to help to trace out the steps by which they had arrived at their present point of knowledge. The discovery of geology, critical philology, and comparative anatomy lent their astute discrimination and searching glance in that direction, till they arrived at the mysterious barrier where they learned nothing of man, save that he existed to be developed for the purpose for which he was created. Beyond the walls of space which encircled the globe they knew nothing certain. Endeavours had been made to give them some insight into the history of their forefathers in the remote past. A great speculative philosopher had endeavoured to trace back the origin and accretion of man upon that faint streak of light in the distant and pre-historic past. But it appeared to him that they would exercise a wise and thoughtful humility in pursuing such researches to the bounds of physical science, and the inductions and references they permit; but beyond that they must pause and wait humbly and hope for knowledge. Archæological knowledge was of two sorts,—the positive, which might be seen and traced step by step by the touch of the hand; and the comparative, which must be based mainly on inference, guided by a power of assimilating likelihoods, and inferring from thence what could not be seen. The greatest discovery in astronomical knowledge made in recent years was by the exercise of indomitable perseverance and that marvellous faculty which, showing that certain perturbations existed, inferred some perturbing body here or there, and the planet Neptune swept into our ken. The greatest reward of inferential archæology was in discovering on the wild wastes of the Roman Campagna, the sites of cities coeval with the foundation of ancient Rome; of discovering on the Hampshire downs the buried villas of the Roman colonists; of tracing around a railway station the vallum and rampart which held the Roman legions during their occupation; and of discovering, in the neighbourhood of an old presbytery of the Templars or Knights of St. John, where the tilt-yard might be found. It had been an object of inquiry for many years among the Roman antiquaries as to which might be the site of that famous Latin city called Politorium, destroyed by Coriolanus. The general position was known, and it was known also that it had become absorbed into one of the greatest estates of the Roman patricians, in which so many antiquities were confused. The search was specially confided to him, and for three days, at a distance of ten miles from Rome, he pursued his task with confidence until the evening of the third, when, as he mounted his horse, he turned towards the setting sun and looked once more on the level Campagna: by the aid of the sinking orb he saw distinctly drawn out the whole plan of the city, with ditches, bridges, and ramparts. In geodesic science it was an axiom that where the hand of man had once been the mark was never effaced. Where man once placed the stamp of his imperial signature that writing and record would remain as long as time to bear witness to the fact. At the angles of the fields on the Hampshire and Berkshire downs some then present might have seen elevated parallelograms of more or less accuracy, which represented the superstructures of the old Roman villas, with their covering of earth and ashes when destroyed in some inroad of the colonists or when abandoned to decay. The outlines which marked the enclosure of the buildings, however, remained undisturbed to the present day. Wherever such elevations were, he believed, excavation would bring Roman remains to light. It required what he might call a "fanaticism of appropriation" to be certain that one was on Roman ground. Let any one observe the formation of the ground in the vicinity of the railway station at Chesterford,—a name indicating the existence of a camp in the neighbourhood,—and there would be distinctly seen the angles of the *castra* which, situate near a ford, gave the name to the place. When looking over the presbytery of the Templars at Hitchin some time ago he was convinced that an

elliptic enclosure there formed the tilting-yard, and that a hedge occupied the place of the barrier. That was the thirty-sixth annual meeting of the Association, and it was the third time that they had met in East Anglia, having assembled once at Norwich and once at Ipswich. He congratulated the British Archæological Association on coming to a district of so varied a character, in which at one time land and sea had been so blended together that there was great opportunity there for exercising the discriminating skill of which he had spoken,—a district known to the commerce of Europe when the greater part of England languished in an undeveloped state, — a district through which military roads,—the blessed highways of commerce, and the sacred paths of pilgrimages,—passed in every direction, almost before their own history was formed into shape,—a district in which the sea had worked its ravages, carrying away, even in our own time, rood after rood of the solid land, leaving bare cliffs, where were great centres of commerce, over the ruins of which they would pass in course of their expedition. An admirable article which appeared some time ago in the *Edinburgh Review*, on the Paston letters, said that anciently a large portion of power belonged to the county of Norfolk,—and, of course, to Suffolk too, as connected with it,—which then occupied a larger relative position to the rest of England than it did now. Did they seek to know what manner of commerce met these shores in the low-lying lands of the Dutchman and the Belgian? It was at first a commerce, not of peace and of interchange for mutual benefit, but of war and javelins. The theory which attributed the stockading and moating of a large number of Suffolk houses on the coast-line was to protect the inhabitants from the predatory invasions of the Norsemen up the estuaries which had since been stopped, and which in that time enabled the invaders to enter the country to make inroads. The houses continued to be stockaded and moated as they had been in Saxon times. Did they wish to know what succeeded that sad time? There was the great city of Dunwich, Framlingham, the great staple town of the woollen trade, and Yarmouth, with a merchant navy that was paramount on the seas, and thus made nearer to the Continent than Norwich. Then there were the pilgrimages to Walsingham and South Elmham, and athwart the country to the interior, all commencing with the shores, but all passing inwards to carry with them the blessed influences of civilisation. In the first instance they were traced out by those Burgundian pioneers of Christianity who had left marks of their presence through the land. The mighty empire of Rome was a power which stood apart from all others of the ancient world; so vast and peculiar were its operations, so resistless in its efforts as to be almost independent of chronology. Go where they might, traces of that great people would be found, and he believed if search were made, that Roman camps or stations would be discovered in places which at present were not thought to possess them. A gentleman, an acquaintance of his at Bungay, had pointed out to him the neighbourhood of the Church of St. Lawrence, Ilketshall, as the site of what was once a Roman camp. Sir John Boilean had also shown him a similar place just north-east of Wymondham, and he was convinced such posts were placed within trumpet-call for the purpose of arousing the soldiers to resist the great outbursts of the wrath of the Iceni. In modern time the citizens of the United States had, in a similar manner, carried on their journeys from point to point, despite the opposition of the Indians. On Thursday he hoped to be honoured at his residence with the presence of many who were at the opening meeting, and he intended to show a remarkable instance of the two civilisations brought together,—a church within a Roman camp, and that church a most remarkable one. Speaking of manors and churches, the noble president expressed gratitude to Mr. Danby Palmer for two splendid volumes of etchings by Cotman, of the Norwich school; referred with terms of admiration to that school and its work; and concluded by touching upon various places of interest which would be visited.

A vote of thanks to the President for his address was heartily adopted, on the motion of Mr. T. Morgan. After some formal business, a large party, under the guidance of Dr. Raven, perambulated the town, first visiting what is known as "Carter's Mansion," No. 4, South Quay, the residence of Mr. C. J. Palmer, F.S.A. It was erected in 1596. A break in the perambulation was made at the house of Dr. Aldred, where tea was served on the lawn; but the walk was soon resumed. Keeping within the wall, between which and the sea in Mediæval times there was a wide expanse of Denes, the party proceeded to examine the remains of the Benedictine Priory, near the church, and the site of the north gate, and to follow the line of the wall to the side of the Bure.

In the evening a public dinner was provided at the Star Hotel, for about 120 ladies and gentlemen. Lord Waveney presided, and the Mayor, Mr. J. J. Colman, M.P., Mr. E. Birkbeck, M.P., Sir W. Stirling, bart., and the Vicar were among the company present.

Tuesday was a "carriage day," and at half-past nine in the morning a large party started for Caister, where excavations had been made on the site of the Roman camp. When the party had assembled round the exposed portion of the remains, Dr. Raven remarked that it was a matter of dispute whether the Roman station of Garianonum was at Caister or at Burgh. Sir H. Spelman favoured the view that it was at Caister. A Roman kiln had been found in the neighbourhood. It was 4 ft. square. Much Roman pottery had also been turned up, together with an iron stand, on which the sun-baked urns were placed. A paper descriptive of this kiln and of the pottery, by Mr. J. Gunn, was read by Dr. Raven. Among the fragments of pottery were shown some bones, principally tibiæ, which had sharpened ends.

A short drive brought the party to Caister Castle, a ruin which forms, with its lofty tower, a picturesque object in the well-wooded landscape. Here Mr. Loftus Brock made some observations on the town of Caister. In the Saxon period there was a church here, the site of which is marked to the present day by a tower. That early church was given by Edward the Confessor to the Abbey of St. Benet. The present parish church was built about 1300. Caister Castle is, however, the most interesting structure in the district. It is so like the older castles which preceded the days of Sir John Fastolf, who built it, that Mr. Loftus Brock believes Sir John Fastolf utilised the moat of an older fortress. The building was deserving of careful study, because it illustrated the point advanced by the president in his inaugural address that the dwelling-houses of Norfolk and Suffolk were moated so as to enable them to resist any piratical descent from the coast. Caister Castle had more of the features of a castellated manor-house than was usual in buildings of the same period. An interesting paper by Miss Haddon gave an account of the principal personages connected with the castle.

The party next proceeded to Filby Church. There was a church here, said Mr. Loftus Brock, as early as the second year of King John, a church that may have been founded long anterior to the time of that monarch. A record of presentation in the time of Edward III. shows that the manor had then passed into the hands of a family named De Filby. These references of presentations to rectors are always of great interest in the elucidation of the history of a church. The phases of architecture may also be frequently marked by them, for whenever a church became vested in a family they would look after the fabric. Filby Church bears evidence of a second change. Mr. Brock attributes to the middle of the fourteenth century the nave arches, the external walls, the south doorway, and the walls of the chancel. The aisle-windows of the church, which belong to the early part of the fifteenth century, differ from those of the north aisle, which are probably of the same date as the nave arches. The most interesting object in the church is the remaining portion of the rood-screen. Norfolk churches abounded with rich ornamental woodwork, erected at great expense; and this screen at Filby is a remarkable example. In the series of paintings on the lower panels, the work of the fifth century, the figures bear comparison with the best of those to be found in Norfolk and Suffolk. Mr. Brock said that these figures are indeed as good as in any painting France, or even Italy, can produce of that character. The figures are lifelike; the attitudes for the period anything but stiff, and the colour excellent. The figures are those of SS. Cecily, George, Catherine, Peter, Paul, Margaret, Michael, and Barbara.

We shall continue our notes of the congress next week.

THE ROYAL ARCHÆOLOGICAL INSTITUTE AT TAUNTON.*

As we mentioned last week, a paper was before the Architectural Section, by Sir Ch Anderson, on "Towers." He said the Tow Babel was the parent of that form of bui and they owed their origin to the desire w men felt to get nearer the sky. Some c earlier towers were civic monuments, b most cases they were ecclesiastical struc and were near the church, or connected w In Italy they were generally detached. I towers were the earliest ecclesiastical spec in the north of Europe and Ireland. He th they were not intended for bells, but pro for the sake of exhibiting a light at nigh for watching purposes. He instanced towers at home and abroad, and exp their characteristics, adding that he bel their effect was watched from the bott they were built, and that in the case of of the most beautiful structures shams erected to judge of the effect of the building it was complete. Cathedral towers are gen added to or finished with wooden spires, o with lead. Every tower had what is ca physiognomy of its own. The windows f the eyes, and the string-course above th brows. A double belfry-window was infi superior to any other for towers. Mu pended for effect on the position of the win and the space between them and the top tower. The tendency in modern times raise the pinnacles too high. The pinnac Bath Abbey, for instance, had much bet away. The finest towers were Lincoln, C bury, and Gloucester. Canterbury and Glou had the advantage over Lincoln in pose very fine pinnacles. The York centre-tow very fine, but it was unfinished. No do was intended to have an upper story lik ham, but the foundation was not strong e and it was left alone. The west towers of were amongst the most beautiful they ha supposed it was intended to have wooden to these, but they were very handsome w them. Of spires, Salisbury stood first. Coventry, Newark, and Grantham, and a n in Northamptonshire, came next. As to spires, he placed Mechlin first, and Stra was the finest in the world of its kind, be light that it really looked at a distance were transparent, much like the noble to St. Mary's in Taunton.

On Wednesday, the 6th inst., a party n ing about 200 of the members and friends Institute left Taunton Station for Washf *route* to Cleeve Abbey, where Mr. B Barber acted as *cicerone*. He prefaced scription of the ruins by a brief explana the disposition of Cistercian abbey bui and pointed out that the range of apar on the south side of the cloister-garth w later date than the rest of the building that the windows which lighted those ments were especially beautiful. At the east end of the church Mr. Barber point the door which led to the sacristy, whe vessels connected with the administration mass were kept. Leading from this was which had been marked on Mr. Mac Walcott's plan as a parlour, but which thought was the room in which the bo dead monks were placed before interme was suggested also that it was a place refractory monks were kept in silence, would be a very different thing from a p Next to this apartment they came chapter-house, a room with quadripartite ing in two spans, on which, Mr. Barber out, there still existed traces of mural dec in polychromy. They then came to handsome spiral staircase leading to the tory. Mr. Walcott, in his otherwise very rable remarks on this abbey, stated th this staircase was the library. Now, well known that the members of the Cis order were not allowed to have many They next came to the slype, or covere On the right of the slype they entered t room of the monks. It would be observe the lights on the west side of the buildin been entirely blocked by the erection that side of a new refectory. It was a resting foundation, said to have been estab by William de Romarâ, in 1188. That critical period in Cistercian history, for it until 1191 that the consuetudino was sanc

* See p. 892, *ante*.

the general chapter of Citeaux. He parlarly called the attention of visitors to the e quantity of heraldic tiles found on the rch and about the abbey. They fixed the e when the refectory was built as in the n of Henry III. There could be no doubt there had been two sets of alterations, and e was a mixture of really good and very bad k. The windows of the refectory were ıtiful, because they had a transom, with ogees, also quatrefoils in the parts that were cut off he ogees against the square of the transoms. tracery of the window at the end of the ɔtory was beautifully done, but it had spoiled by the wood-work which had been rted in later years. They saw the lavatory rneath the refectory windows in the cloister h. There was this departure from the simty of the normal arrangement,—they had f the refectory, and, in fact, gone upstairs inner. Near the fireplace here were the ins of a staircase, which evidently led to a l pulpit for the monk who read at meals. Fountains Abbey that arrangement was perfectly marked, and the small cupboard e the books were kept might still be seen. ought as archæologists to feel glad that valuable relic had fallen into the hands of reful a man as Mr. Luttrell, who had not gone to the great expense of getting the into their present state, but had himself great interest in seeing this grand old which had been covered with dust, opened, to leave a few lines in which they could a little of its history. There was no such on in stones as that to be found in the of a Cistercian abbey.

e excursionists next proceeded to Dunster e, the residence of Mr. G. F. Luttrell, by they were hospitably entertained in the house, and afterwards shown over the e, upon which Mr. G. T. Clark gave a short ngs. He said the great feature of ancient hs were the mounds, and these mounds were r artificial or natural. At the foot of the d, unless there were other defences, there ditch. On one side, outside that ditch, court, which also had its ditch. Here had the mound, and the buildings of the stood upon the enclosure of which he was ing. These mounds were exceedingly com- They were not like the earlier British or an works, which were intended for the amodation of a large garrison. They were n up simply to hold the residence of a f rank who lived there. The mound was u up really out of the ditch, and the owner l himself at the top. They were not always al, however. Sometimes nature provided ound, and the house was built upon the al rock. They had such a one at Pomfret, his one was an instance. Then came the ion what were upon the earthworks. They not left to conjecture in this matter. In rst place, it would be quite impossible for years to erect anything like a substantial ng of masonry. Therefore, it was necesto find some material which could be thrown hard ground. The material used was r, and that suited very well the habits of Northern nations, who were a maritime e, and accustomed to handle timber. There representation of such a structure on the ix tapestry: a castle was placed on the f a mound, and a body of men were asg it, and endeavouring to set it on fire. times the defences of these were both al and artificial, and there were instances me places that, not content with the ces of the castle, they threw up a mound ll. The first mention they had of Dunster n Domesday. Dunster was there menl as Torr, which was a west-country word ll, and they were told that Aleuric possessed orr in the time of the Confessor. It was possessed by a William de Mohun, who red" at Hastings, and received from m the Conqueror a grant of something like or seventy manors. He held a strong and rtable position here, and was able to ere very materially with his neighbours. s the strong fortress of the west, and there have been the means, therefore, of holding l. But the strange thing was this, and it not peculiar to Dunster. They might se that he built a shell keep here. The ion was what he did build. If there was an ite of Norman masonry, where was it? was no masonry visible earlier than the time nry III. There was nothing approaching an work in the castle, although there was in the church. Norman masonry was, for the most part, excellent masonry, and very thick, and a castle that was built in the time of the Conqueror or William Rufus was not likely, in the time of Henry III. to be rotten. There was evidence of a keep, for not long ago Mr. Luttrell, in digging here, discovered some indications of a large sewer, which might be taken as conclusive evidence that there was a keep and castle. Nothing of that sort had been discovered below the time of King John and Henry III.; both held this castle in wardship during the minority of the owners, and Henry III. mentioned it as "my castle." That was curious, because Dunster was never considered a royal castle. In those days there might have been a keep here. Then there must have been a boundary wall which went in the shape of a half-moon, which had flanking towers upon it. The upper ward of the castle would not be accessible to carriages and horses, and the access to the keep was different from the present roadway around the mount.

A short visit was next paid to Dunster Church, under the guidance of Dr. E. A. Freeman, who called the attention of the party to a staircase tower near the middle of the south wall, indicating where the rood-loft inside existed. That explained the whole history of the building. The changes that had been made had to some extent destroyed the original arrangement; but it was something to be able to say that a restoration had left anything at all. Inside the church Dr. Freeman explained the real nature of the building. The matter was of some importance just now, because of the case of the collegiate church of Arundel, which was recently decided by Lord Coleridge. The judge had decided, on convincing evidence, that there were two churches,—the eastern part was not the chancel of the parish church, but was the collegiate church, which by the suppression became the private property of the Earl of Arundel, now Duke of Norfolk; and exactly in the same way, while the parish of Dunster owned the western side of the church, the eastern side was as much the private property of Mr. Luttrell as his castle was, and he had as much power to pull it down as to pull down any part of his private house. The suppression of the monasteries did not affect the rights of the parishioners, but it did affect the monastic churches, for they, with the rest of the monastic property, passed into the hands of the person the king granted it to. This church and Ewenny, in Glamorganshire, were the two cases which now taught them really what this dual arrangement was. Inside the church Dr. Freeman repeated his explanation, pointing out where the choir of the parish church commenced and where the division took place. The division was made in 1499, and he had a copy of the document referring to it in his hand. The Prior of Bath and the Abbot of Glastonbury were made arbiters between the priory and the parish of Dunster, and they decided that the church should be divided, and that the parishioners should occupy the western part of the church, and they made a new choir there, and the priory the eastern side.

Lord Talbot de Malahide said that a similar arrangement was common in Spanish churches, and there was a division of the kind in Westminster Abbey.

Dr. Freeman said if Lord Talbot de Malahide had spoken of Germany he would have mentioned an analogous case. The division in Westminster Abbey simply arose from the fact that the choir was in the constructed nave. There was no double choir, as here. It was a single choir, which happened to be west of the central tower.

The party returned to Taunton by train. A *conversazione* was held in the evening, and an interesting paper, entitled "A Valhalla of Somersetshire Worthies," was read by Mr. Arthur Kinglake.

On Thursday, the 7th, the proceedings commenced with the opening address of the President of the Historical Section, Dr. Freeman, who said that in passing from Northampton* to Somerset the Institute passed from one of the regions of England most favoured in antiquarian wealth to another region no less favoured. The comparison and contrast between the two with regard to buildings is attractive, almost fascinating. Northamptonshire is, among all the shires of England, one of the richest, perhaps the very richest, in buildings of Romanesque date and style. It abounds in every variety of round-arched architecture, from those arches of the basilica of Brixworth, which, whatever may be their date, are surely Roman in material, Roman in style, to those arches of the Minster of Peterborough, whose mouldings show that nothing but conformity to each other's design kept their builders back from adopting the constructive forms of the then new-born Gothic. In the average Northamptonshire parish church we look at least for a Norman doorway, while in not a few we find other features of that style reaching their climax in the rich capitals and arches of St. Peter's in Northampton. And Northamptonshire has more precious relics still. Fragments of earlier days,—arches, doorways, whole towers, built in that primitive style which our earliest teachers brought from Rome,—are there usual enough to cease to be wonderful. Here in Somerset one may go miles without seeing a wall of even Norman work, and I doubt whether a mid-wall shaft is to be found between the Avon and Exmoor.

In the same section papers were read by Mr. C. N. Welman on "The Battle of Sedgemoor"; by Mr. E. Green on "The Siege and Surrender of Dunster Castle"; and by Mr. Chisholm-Batten on "Henry VII. in Somerset."

In the Architectural Section, the Rev. Sydenham Hervey read a paper on "The Supposed Palace of Alfred the Great at Wedmore."

The annual meeting of members was afterwards held, and it was decided to meet next year in Lincoln.

In the afternoon there were excursions to Castle Neroche and Staple Fitzpaine, and at a sectional meeting held in the evening the Rev. Prebendary Scarth read a paper on "The Roman Occupation of the West of England, particularly in the county of Somerset."

On Friday, the 8th, there was an excursion to Bridgwater, Cannington, Blackmoor Manor House, Stogursey Church and Castle, Fairfield, Dodington Manor House, and St. Audries; and on the return of the party to Taunton in the evening a *conversazione* was given by the mayor.

On Saturday, the 9th, there was an excursion to Muchelney Abbey, Martock, Montacute House, Stoke, South Petherton, and Barrington Court.

On Monday last the members went on an excursion to the cathedral city of Wells, under the guidance of Mr. J. H. Parker and Mr. M. H. Bloxam. A visit was paid to Glastonbury on the return journey.

We will next week conclude our notes of this congress.

* The *locale* of last year's meeting of the Institute.

CRYSTAL PALACE SCHOOL OF ENGINEERING.

On Saturday last the twentieth term of this school was brought to a close in the school lecture-room in the south tower of the Palace. There were sixty-five students in attendance during the term, including twelve in the Colonial section. The certificates awarded to the successful students were presented by Captain Douglas Galton, F.R.S.

There was a large attendance of the friends of the pupils and of the school. The work of the students in the drawing-office, in the pattern and fitting shops, in the two courses of civil engineering, and especially in the Colonial section, was examined with unusual interest. The camp of the Colonial students had many visitors. It is pitched on the tertiary island at the southern portion of the Palace grounds. The work of the students shown there included two well-made bridges, a pontoon or barrel bridge, and a double lock-bridge, each made according to drawings and specifications. Their work on the island included also the fixing of their sleeping and mess tents, and of their erection and working of their rude, yet thoroughly effective, camp-fires, for hot water, stew, and vegetables, with an oven for baking and the open fire for broiling. The materials used were stones, clay, a few iron bars, and a short length of iron funnel for the chimney, which, on some former occasions, the students have built of clay. The cooking apparatus was shown at work under the skilful superintendence of student W. Thackwell, who, in the absence of Mr. Rixon, was left in charge of the camp, and privileged to show hospitality to the friends of the students by a taste of the savoury viands cooked in the primitive *al fresco* kitchen. The work of the Colonial students included also patterns for a lattice girder-bridge, a plunger-pump, railway platform, four-panelled

doors, with mitred mouldings, carriage and wagon wheels, hammocks, chairs, tables, wheelbarrows, an overshot waterwheel, with double buckets, and a quantity of carpentry work that would do no discredit to ordinary trained handicraftsmen.

The lecture examination was on "Railways, their Construction and Appliances." The highest number of marks attainable is 250. The examiners put A. M. Tippett first with 205 marks; he was first also for work in the fitting-shop. G. M. Lawford was second for lecture examination, and had also a certificate for fitting; W. W. Buckland third for lecture questions, and a certificate for fitting. Thirty students attended the lectures, twenty-one were eligible for examination, and fifteen received certificates. In the drawing-office, five certificates were awarded, H. G. M. Conybeare, first; G. Okubo, second; and A. J. Jack, third. Twelve certificates were awarded for pattern-making, A. J. Bovill first; A. G. Drury, second; and G. Bird and W. Maylor, equal thirds. Nine certificates were awarded for fitting, E. Moul, A. M. Tippett, and M. Wilson, equal firsts. In the Civil Engineering section for preparation of plans for Parliament, the order of merit was, J. M. Templer first; G. N. Taylor, second; and H. Gordon Cumming, third. For calculation of strains, plans, specifications, and estimates, for railway and dock work, A. A. Barnes, first; E. Allen, second; and D. C. C. Grey, third. Certificates of merit were also awarded to a number of students in the Colonial section, including A. R. McEwen, F. Clifford, R.E.; M. Labarca, W. Thackwell, &c.

Captain Galton delivered an address to the students and visitors. He said he felt sure that those who had inspected the work of the students would think it almost impossible to overrate the value of the technical education, the practical instruction, and the careful training given in this school; he heartily desired that all the young engineers in England could be put in possession of equal advantages. His young friends should take a high view of the responsibility, the dignity, and usefulness of their profession. To the engineer the world had to look not only for providing means of transport by land and water, but also for the promotion and provision, directly or indirectly, of the conveniences and needs of daily life. The engineer was the pioneer of modern civilisation. He converted the rushing cataract into a peaceful mill-stream, or into a canal to facilitate intercourse between adjacent towns; he even bent the wind to the service of man, and made it drive mills and waft ships across the ocean. He had recovered large tracts of land from the sea, in Holland and other countries, and even in our own. He had deepened shallow streams, and made them navigable channels; had immensely improved agricultural conditions, and had had much to do with our being able to obtain food from almost everywhere,—fruit and vegetables from the other side of the world cheaper than we could produce them here.

Thanks were voted to the examiners, Messrs. W. Shelford and J. L. Haddan, and with some other complimentary expressions the proceedings were closed.

"AN INCREDIBLE STORY."

UNDER this title Mr. T. J. Nelson has addressed a letter to the Earl of Beaconsfield (Jas. Truscott & Son, Suffolk-lane, City), setting forth the condition in which certain places on the Thames, such as Richmond, Kingston, and Barnes, find themselves with reference to the disposal of their sewage. Towards the close Mr. Nelson thus sums up, and asks the Prime Minister to help them out of the difficulty:—"We find the Lower Thames Valley in this incredible position. The local authorities are required by law, and under severe penalties, to divert the sewage of their respective districts from the Thames. One district after another has, as I have detailed to your lordship, produced schemes for obeying the law which have been impartially stifled by the Local Government Board when their authority for carrying them out was asked for. It mattered absolutely nothing what the unfortunate district proposed,—whether irrigation, downward filtration, precipitation, or chemical treatment, nor whether the place of treatment was in the district or out of the district,—opponents always appeared, and they always succeeded in preventing the local authority carrying out its plans.

At last came the formation of the Joint Board. They took up the onerous and ungrateful burden of carrying out the orders of the Legislature. Nor did they walk in the dark; the Local Government Board had issued for the guidance of all sanitary authorities the report of a commission of most able men, who, after an exhaustive examination of the various plans in operation, both in England and on the Continent, united in renewing the recommendation of former royal commissions that irrigation on land was the best and safest mode of dealing with sewage.

My Lord, the Joint Board acted on this authoritative advice; their engineer was an able and competent adviser,—Colonel Haywood, the engineer of the City of London. He was assisted by another engineer well known in sanitary matters, Mr. Peregrine Birch. One of Colonel Haywood's competitors, Mr. Mansergh, C.E., to his great honour, made an independent examination into Mr. Haywood's scheme, after the rejection of his own, and gave it his cordial support. Other eminent engineers, agriculturists, and sanitarians,—Sir John Coode, C.E.; Professor Frankland; Dr. Tidy; Colonel Jones, V.C., C.E.; Edwin Chadwick, C.B.; Baldwin Latham, C.E.; Hawksley, C.E.; Grantham, C.E.; Chalmers Morton; G. J. Symons; and Buchanan, C.E.,—expressed opinions favourable to the scheme, and were prepared to testify in its support; as did also Mr. Ripley, C.E., the assistant of the late Mr. Menzies in successfully dealing with the sewage of Windsor Castle and of Eton.

With all this care, precaution, and advice the Joint Board failed in accomplishing the one purpose only for which they exist, and at Michaelmas, 1880, the suspended penalties will become due, and something like one million of money will be enforcible against the unfortunate ratepayers. Such gentlemen in this neighbourhood as are foolish enough to remain members of the Joint Board may then be served with a mandamus from the Queen's Bench Division of the High Court of Justice, not only to make the rates to pay this million of penalties, but also with a peremptory order to execute an impossible work under the penalty of being punished for disobedience by imprisonment in Holloway Gaol."

ASPHALTE, AND ITS APPLICATION TO STREET PAVING.*

Durability of Compressed Roadways.—M. Chabrier states that the effect produced by wear and tear on asphalte is so trivial that it may almost be said to be imperishable so long as no other cause than friction of wheels occurs to alter its working conditions. It is hardly possible to accept such a statement without challenge, and the wear is unquestionably so slight that exaggeration is not necessary, even by partisans. The most lengthened experience in England is in the piece of road laid by the Val de Travers Company in Threadneedle-street in May, 1869. In February, 1877, the City Engineer reported this piece of paving as having had few repairs, and being in good condition. The author examined it a few weeks ago, and, with the exception of those places cut out for experiments and gas or water repairs, the surface was in good condition; it has been subjected to a traffic of 200,000 tons† per annum per yard of width. Unfortunately for the statement just quoted by M. Chabrier, the pavements of all cities are subject to many other incidents tending to destroy them than mere friction of wheels. The constant removal of the surface to repair gas and water mains and drainage is such that in many streets 50 per cent. of the whole surface will be removed during the life of a pavement.

Rock asphalte is compressed without appreciable wear under traffic such as the above. On the table is a specimen taken from Cheapside. It was laid in December, 1870, 2½ in. in thickness. After having been subject to a tr upwards of 500,000 tons per annum per y width, the bulk is reduced $\frac{1}{16}$, while it h $\frac{1}{2}$ in weight. The difference in the perc of loss of bulk and weight is accounted the compression of the material. This is rent to the depth of half an inch. U magnifying glass the compression can b to a depth of more than 1 in. After years' wear in the Rue Bergère, th by weight was 5 per cent. In Gracec street, where the traffic is 603,000 to annum per yard of width, the mater lost in bulk and in weight during a of eight years. These results are all o from the compressed rock of the Travers. When other materials in have been laid in streets of much less they have been replaced either with com or wood; and, without making invidio tinctions, it may be here stated that exp in London has demonstrated the fact t class of asphalte has stood equally we that of the Val de Travers compressed. 1870 to 1878 thirteen different kinds of a had been tried in the City of London. period of writing but three remain in having traffic of more than 500 vehi twelve hours. The manner in which th pressed rock is laid has much to do w duration; disintegration has taken many roads from circumstances that readily accounted for; fissures appear surface, so close together as to form a c web-like appearance; the percussion horses' feet detach small portions of thi rial, and if frost supervene, the road will fail, owing to the crystallisation of th held between the fissures. It has bee that this is occasioned by the executio work during wet weather. When the powder is placed on a wet surface, v water is produced; this permeates the below the bulk influenced by compress it will be readily understood these pre perfect homogeneity of the whole. cause of failure is owing to the crac produced by the use of too new a cer a foundation. When the concrete f asphalte will fail also. The question bility, apart from other considerations venience, is the question of cost. It i fore, necessary to compare this wit materials.

The cost is reduced to 100,000 tons pe per yard of width.

Description.	Original Cost per Square Yard.	Interest on Original Cost.	Sinking Fund at 3 per cent. Compound Interest	Maintenance per Square Yard.	Scavenging per Square Yard.
	s. d.	d.	d.	s. d.	d.
Wood (Liverpool)	15 1·5	7·5	10·1	0 1	2·7 Gra 5·0
Val de Travers compressed asphalte	18 0	9·7	...	0 3·6	0·4
Granite	17 9	9·6	0·5	0 1·4	2·5
Macadam	4 9	2·1	...	3·6	12·0

It will be observed that nothing is for renewal of asphalte, inasmuch as th sum for maintenance provides the as perpetuity. In Paris $\frac{1}{15}$ of the enti paved with asphalte are renewed every a charge of 8d. per square yard; but t no precise figures whereby to reduce th the above standard, as this sum includ roads having very small traffics. In Lo Val de Travers Company maintain vario at fixed sums per annum, from which th in the table are arrived at. The figures are those of Mr. Deacon, which the au lieves are the only figures reduced standard that can be relied upon; observations of engineers in New Yor and London, confirm these, although not to the same data.*

From Colonel Haywood's reports i appear that the average duration of wo

* From a paper by Mr. E. B. Ellice-Clark, Associate Inst. C.E., read at the annual meeting of the Association of Municipal Engineers and Surveyors, August 1st, 1879.

† These weights are approximate, and probably considerably under the actual weights. Each vehicle is taken to weigh a ton and a half, probably 50 per cent. might be added to them; but, as there are no means of ascertaining the weights exactly, Colonel Heywood has never given weights in his reports, so that in comparing these figures with those given by other writers, the vehicles must be reduced to the standard of 1½ ton weight each, and the traffic is for twelve hours only each day.

* See Appendix, p. v., to Report of the Vestry, 1878; Report of Colonel Haywood on Asphalte Pavements, 1877; Report of Mr. Va New York, December 17, 1874.

s in the City is three years. The following show the life of some recently laid:—

	Years.		Years.
church-street ...	1¼	Aldersgate-street ...	3
Tower-street ...	3½	Angel-street	3
Wilham-street..	2½	Ludgate-hill	3½

th regard to the absence of foothold for s, the observations made in London prove asphalte is not so slippery as granite cubes. now well known that when the atmosphere mid the fine dust and dirt, ever present in y street, are spread over the surface of the alte by the traffic, forming a pellicle, which rs foothold difficult. In dry weather the is also covered with the *detritus* incidental eat traffic, apart from wear. When asphalte ept as a method of cleansing, this adheres e surface, and becomes greasy mud with a slight shower of rain. In Paris grit is n down on such occasions; but the proper od of cleansing asphalte is by hydraulic ot mechanical means. With fire hydrants ach side of the roadway this could be ed at slight cost. Hitherto this has not done in London, as there were no hydrants, i cities where hydrants are in use the diffi- would be solved. Asphalte, either wet or affords an excellent foothold. Trials of lte, on a small scale, are not to be relied

No trial can give a fair result unless a lerable area is paved. It was abandoned nchester, where only 968 yards super. were but has remained in Southampton, where yards were laid in 1873. In no case should th of less than 440 yards be laid. Horses ot become used to the surface in short s, and unless the adjoining road is paved ept clean asphalte will be not only dangerous ostly. The maximum foothold for horses ot be attained until every street in a town ed with the same material.

ntenance.—Hitherto in England the main- ce of asphalte paving has formed part of riginal contract of construction. Engi- appear to have thrown the responsibility pairs upon the contractors, because want erience did not justify them in taking over oads when once completed, and waiting s. So far as the author can ascertain, me engineer, Mr. Lemon, reported against l annual sum for maintenance. In London rices vary from 3d. to 1s. 6d. per yard nnum. These prices are based upon the f granite maintenance, and in many cases robably too much, while in others they are all. The periods for which the mainten- is contracted vary from ten to seventeen at the end of which time the pavement is as good as when first laid. Whether this economical method of maintenance cannot determined. In Paris, where the original cts have long expired, the work is let for years, and the contractors have to renew the entire areas each year; the life of the ent is thus fixed at fifteen years. As the ation of asphalte is increased, this method robably be found more economical than reviously alluded to, and experience will what areas will require renewal. To state ly that $\frac{1}{15}$ of the asphalte must be re- , appears a random method of determining eedful repairs. Each street should be d on its merits; thus Cheapside would e much more frequent renewal than re-yard, and the two should be kept ite. Maintenance of road by contract has ed into disuse in this country; but will o be resorted to for asphalte works.

s, therefore, necessary to determine when et requires renewal. The surfaces must placed when there are cracks $\frac{1}{16}$ in. in , or there are holes $\frac{3}{4}$ in. deep; or when are depressions in a circle of 3 ft. 3 in. in ter, the normal depth of the hollows at least 1½ in.; or when the water in the els cannot be freely discharged, and when ints or partings from the curbs or other g stones are $\frac{3}{4}$ in. wide; and when the e is blown up or lifted $\frac{3}{16}$ in. above the ing surface. These defects, if not repaired, ubject the contractor to a fine, according scale of areas and depths. With regard repairs to trenches, they must be paid for w work. In the city of London, imme- y the excavation is filled, the concrete is nd in a few hours the powder is com- d. Within the past month portions of the ay have been opened and closed within y-four hours; this may be insisted on in s of great traffic; but, for reasons pre- y stated, the asphalte can never obtain that firmness over such trenches as it does when the concrete is dry. In Paris a maximum period of fifteen days is allowed; while the trench is becoming consolidated, the surface is kept up with flints. Probably the most convenient mode of maintaining the asphalte would be by schedule of prices; the engineer giving directions which portions are to be relaid. The only difficulty would be this:—When the contract expires under the previously described mode, the entire surfaces are to be in good condition; this compels the contractors to execute good work, and as the methods of preparing asphalte and the different qualities are so variable,—gives such opportunities of fraud,—the engineer will have to be thoroughly conversant with the details, and exercise a rigid supervision over every process, as well as to sample frequently the natural materials. For these purposes the French engineers have prepared elaborate specifications, to which reference can be made.*

Convenience—Sanitary.—One of the greatest inconveniences in a city of great traffic is the renewal of a road,—this work frequently closes a street for a fortnight. With granite in Cheapside this occurred about once in nine years. With wood-paving the nuisance and loss has been intensified to a degree that cannot be tolerated. With the compressed Rock of the Val de Travers a street never need be closed for a day when once the work is completed. Cheapside has been down nine years without the traffic being stopped an hour for road renewal. The advantages of paving streets with a smooth, impervious surface are so great that no one can contest the point as to cleanliness. The results from actual observation give:—

Material.	Superficial Yards for each Load of Mud.	Traffic in Tons per annum per Yard of width.
Macadam	344	25,000
Granite	500	5,000
Wood..	1,666	25,000
Asphalte	4,000†	500,000

As dirt means mud in wet weather, and dust in dry weather, the same proportions hold good when considering the question of dust. The asphalted streets in London are never watered; streams of water are sent down the channels where dust collects.

Absorption of Filth.—No positive statements, founded on facts, have ever been placed on record as to the actual amount of filth absorbed by different classes of pavement. The only fact recorded is patent to the eye, and is disputed by none, that whether other materials do or do not absorb filth and moisture, asphalte does not. Opinions, only founded simply on general observation, and to be taken for what they are worth, place the materials in this position as to absorption:—

Macadam—1.	Wood—3.
Granite—2.	Asphalte—4.

Freedom from Noise.—This desideratum has led, no doubt, to the application of new materials for roads in large towns. As there are no means of measuring noise, opinions must be relied upon. When wood is new, close-laid, and the pavement is perfectly level, it may be characterised as noiseless. In consequence of the density of the asphalte, the horses' hoofs can always be heard upon it; and as the surface wears away in undulations, and as these are not defined by such sudden vertical depressions as all pavements composed of blocks show when wearing away, the comparative quietude of wood and asphalte depends entirely upon the state of repair. Seeing that none of the wood pavements in London have lasted many years without being relaid in streets of great traffic; see reports of their existing condition,* it appears to the author that they cannot be maintained with that evenness of surface which places them at the head of the list for noiselessness; and that on the average state of the two materials asphalte is equal, if not superior, in this respect to any other kind of material, both it and wood being preferable to macadam, as that is to granite. The only point now remaining is the gradients at which the material can be laid with safety. It would be unwise to lay asphalte on any gradient much steeper than 1 in 50, although a portion of Broad-street, London, is 1 in 46, and no inconvenience has been felt.

* "Roads and Bridges, Municipal Service of Paris." Schedule and specification for footpaths and pavements in bitumen and compressed asphalte issued by the Prefect of the Seine. † Approximate.
‡ Colonel Haywood, Report, 1877.

THE ARCHITECTURAL ASSOCIATION AT WELLS.

When Bishop Beckington, about the middle of the fifteenth century, contemplated the erection of the houses which still line the north side of the market-place in Wells, he had either been struck by the effect seen in many Continental towns,—a mass of cathedral on rising ground above a comparatively low screen of houses,—or, by accident, he was advised to undertake something which leads to the somewhat similar result of to-day. The central and western towers show much of their bulk above the old houses,—modernised almost out of recognition, it is true,—and over the "Penniless porch" at the north-west angle of the *place*, and over the buildings between it and perhaps the most imposing of the four gateways to the precinct. The flaming beacon threaded through a barrel, the *rebus* of Beckington, shows on this gateway as well as on "The Bishop's Eye." It might properly have appeared, also, if the founder had so willed it, on the well-house in the garden of the bishop's palace, on the north side of the moat,—a pretty little stone building square in plan, with a stone roof and mullioned windows. That well-house was part of a work which furnishes to Wells another feature shared with many Continental towns, built on the sides of more or less gentle hills, but which has not often struck the imagination of would-be benefactors of similarly situated English towns. The well-house is within a stone's throw of the heads of the springs, which have welled up for so many centuries on the same spot, which gave the name to the place,—and furnish still one of its notable characteristics, and call attention to others. These springs are the outlets from a water-bearing stratum on the east side of the city,—a stratum fed from an area so large and inclined from the horizontal so steadily that,—even in the dryest seasons,—although the supply may not be driven upwards in so great quantity, the water has never been known to fail. To the well-house the water is led from the springs, and from it pipes lead to the conduit in the Market-place,—which,—till a few years ago,—supplied the inhabitants generally with water. From the conduit and other waters at the upper level strong rapid currents of clear water are constantly running in the stone channels on each side of the High-street,—currents which seem to know no change, but fill with their pleasant sound the dreary hours of the quiet day in this sleepy hollow of Somerset. Currents run further down into Broad-street, which has the same gentle incline downwards to the west, and then onwards to join the river Brue, and to feed,—along with the drainage of the marsh land nearly twenty miles long,—the Bridgewater Bay, where it broadens the Bristol Channel, and makes it fully fifteen miles wide,—just before it begins its northern turn, and thus gets ready to become the river Severn between Cleveland and Cardiff.

These characteristics of the bishop's town of Wells have not always appealed so strongly to the imagination of those who have written descriptions of it as the calm beauty of the close. "There is a profound peace about these precincts," says the regretted Mr. R. J. King, whose measured utterances on such subjects we shall miss much as the years go by; "the feeble sounds of the little town hushed and softened by distance, and all around breathing a holy calm." The fact that there is a town as well as a close underlies this memory of street scenes, and might lead any one given to such unconscientious movements to the perverseness of wishing that the town could be wholly worthy of the church under the shadow of which it grew up. The church and its precincts were not taken into the city till the days of reform in Parliament and municipal affairs,—comparatively recent to us in fancy,—even though nearly half a century has gone by since such things began to be seriously considered. The buildings for laymen were erected hard by the cathedral of the bishopric of Wells, the diocese which comprised the county of Somerset, and were added from time to time after Edward the Elder detached this county from the diocese of Sherborne, in the beginning of the tenth century. Durham and Salisbury are the nearest examples of towns which grew up around cathedral foundations; but there are strong differences between these bishops' towns and Wells. It, alone among the cities of England proper, claims no other position than that of a cathedral city, whose history is the history of

its cathedral church; with only such slight exception, for instance, as the occupation of the city by the forces of Monmouth on their retreat in 1615, when the church ran danger from their desperation. Perhaps the city might be the better if the claims of its history were not put with such absolute fierceness. The opening in the line of houses at the west of the green space at the west of the cathedral, which has made the Swan Hotel a much pleasanter resting-place for the members of the Architectural Association this week, need not be denounced as an act of very hopeless Vandalism. A bit of a mere boundary wall has disappeared, and an iron railing with a gate in it has taken its place; but what resident or stranger need forget, unless he wishes to do so, that the straitened accommodation between street and close of the early centuries is well enough marked to the north and south of the opening, and that modern ideas do not allow much enthusiasm for congested house sites in the midst of abounding plenty of agricultural land?

When such concessions as are extorted by the force of facts have been made, and all acknowledgments, as in duty must be, of the interesting surroundings,—the range of the Mendips, the southern hills, the rounded hills on the west, —Dulcot Hill and the Ebber Rocks; when it has been mentioned that the basin in which the city is placed is surrounded with natural beauty, it is then about time to turn to the special interests which bring archæologists in troops to sojourn here for a time, and realise the olden days with a vividness only possible, where such helps to the fancy are before the outward and inward eye,—

> "Where the great tide of human life stands still;
> The blended calmness of the heaven and earth,
> Moonlight and stars, and empty streets, and sound
> Unfrequent as in deserts,"

are no unwholesome surroundings for him who makes strenuous holiday.

The purely architectural considerations, which occupied the Association during the morning of Monday, were brought forward by Mr. E. B. Ferrey, who accompanied the body, by that time consisting of near upon forty members, over every part of the cathedral church. We do not propose to follow the history in detail. Many readers must know it by heart. For others, it will be sufficient to call to mind that the earlier structures have entirely disappeared; and that the present building has nave and aisles, transepts and transept aisles, and part of its choir of Early English date; undercroft to chapter-house (the only example in England), and the chapter-house itself of Early Decorated; Decorated central tower, choir, and lady-chapel; Perpendicular west towers (the upper parts), and Perpendicular cloisters. The west front, some of the earliest work in the church, has had its share of notice of late years. It has been praised without measure. Flaxman's eulogies of its admirable figure sculpture have been quoted without stint. It has been denounced as a sham front; dishonest;—not the natural finish of the nave and aisles;—the architectural feature put into the second place; sculpture and ornament,—properly secondary considerations, —having assumed the first. It has been the subject of special notice on account of its being subjected to restoration. Several feet of earth heaped over its plinths have been cleared away, to nobody's regret to-day, though the prognostications of evil were not infrequent before and during the performance of that simple task. The decayed Dettingstone,—stone of the inferior oolite, from a quarry about nine miles from Wells, used in the buildings generally,—has been replaced with new Doulting stone, and the harsh contrast was wept over, and artificial toning talked about. Nature has dealt kindly with this defect, and the new stone is rapidly sinking into its place among the old. Most of the lias shafts, standing in a hollow moulding at their bases, had rotted at their feet, and the sun had twisted some of them as sticks of sealing-wax may be twisted. Kilkenny marble has replaced the lias, and gives good hope of duration. Indeed, the hardness of the surface seems now its drawback. Whereas, the lias shafts which remain are beautifully toned to harmony with loss of distinction of colour, the Kilkenny shafts resemble new slate pencils more closely than zinc rain-water pipes. If the blanched dead surface of these shafts give no sign of weather in years to come, after due patient waiting, it may be seriously debated whether surfaces may not be artificially roughened, and hold given to clinging lichen and other growths. The architectural carving has been largely renewed, the finials of the lower arcade, for example, from old finials recovered very strangely by cutting away the masonry which had been built up on the south face of the south-west tower. The figure sculpture, albeit much decayed, and in some parts completely missing, has not been dealt with. Careful and conservative restoration could no further go. The gilded vanes, added to the pinnacles on the faces of the towers, might be called spotty, and the life which they are deemed to give to the building be exchanged, not wholly with regret, for more perfect repose; but the evidence for their previous existence can hardly be questioned. The louvres in the lower windows, which fit their windows so well in scale, may suggest that further reforms in the towers might be equally successful, and that all changes are not necessarily injurious. Why should the two western towers retain the look of mutilation, as if the pinnacles, obviously designed for the angles, and between the angles, had been sawn off to a line? It is true that what would be the beds of the pinnacles are weathered all ways ingeniously to turn the water out between the embattlings of the cornice; but was this more than a temporary device, resorted to till pinnacles such as those which suit well the centre tower could be erected? The question of spires for the towers opens too large a question to notice here, but one which it is profitable to discuss from time to time to get good grasp of principles, both of architectural design and of the proper treatment of old buildings. Spires of wood covered with lead have their eager advocates. It may be mentioned anent a little detail given by Murray with undue certainty in the midst of a good account of the church, that Mr. E. Ferrey considers that in the uppermost stage of the central part of the front, the figure of the Saviour in majesty had on each side of it an angel censing; it was not supported on either side by the Virgin and St. John." He also considers that a large floriated cross occupied the centre of the uppermost coping in the original design, in the place where the large pinnacle of Decorated date now stands. The peculiar crockets in the lower tiers, especially those on the east face of the north-west tower, deserve a word on account of their general likeness to those at Lincoln and in the west porch at St. Alban's. They stand straight up with circular tops and very flat treatment of the sides.

This may suffice in the way of notice of a long peripatetic lecture,—lasting, in fact, several hours, and delivered in very varied situations inside and outside the church and its appurtenances. It should be mentioned that Monday was the last day of the Taunton meeting of the Royal Archæological Institute, and that Wells occupied them in the morning and Glastonbury in the afternoon. In the chapter-house were hung the plans to illustrate his theory of the chronology of the church prepared by Mr. J. F. Irvine, the clerk of the works at the cathedral during the restoration,—who would, among other revisions of previous beliefs, put the west front at the beginning of all if his argument were accepted. Some of the capital drawings by Mr. Clark, of Wells, who has rendered good service to the Association, were also exhibted; they show buildings now destroyed which stood about the cathedral in not distant years; and old states of buildings which have been or will be altered within memory. The history of the cathedral was described to the Institute by Mr. E. A. Freeman; the architecture by Mr. J. H. Parker.

The Bishop (Lord Arthur Hervey) entertained the Association and Institute at the palace in a genial way, and expressed the pleasure it had given him to do so when his health and that of his lady were proposed by Lord Talbot de Malahide, and drunk with hearty cheering. The palace, from roof to cellars,—including the family rooms,—was shown to the members of the Association,—a rare if not unique house. The members had lunched in the hall founded in the thirteenth century; they inspected the chapel,—a very perfect work in Geometrical Decorated,—and the ruins of the great hall, also built by Bishop Burnell. The sixteenth-century works of Bishop Clerk, and the Jacobean screen, &c., in the servants' hall, the adaptations to modern requirements, the enriched ceilings of forty years since, and of course many other details, go to make up a really wonderful result. Inside the very walls erected in the first half of the thirteenth century, and with an outlook through the windows of Bishop Jocelin, the best life of the nineteenth century is being lived. The excursion will take the members to a[ll] all the buildings of interest within easy [dr]ive of Wells; and something may have to be [sa]id of the later doings at Wells itself, as w[ell] as I know, has no rival, either in our own [co]untry or beyond the sea. To most of these ol[d] taken singly, it would be easy to find [ot]hers which would equal or surpass them. [Th]e church itself, seen even from that most f[a]vourable point of view, cannot, from mere l[ac]k of bulk, hold its ground against the soaring [ma]jesty of Amiens, or against the windows ra[is]ed tier above tier, in the mighty gable o[f] The cloister cannot measure itself with[ou]t Chichester or Salisbury; the chapter-house lac[k]s the soaring roofs of York and Lincoln; the [ha]ll itself finds its rival in the ruined pile [of] David's. The peculiar charm and gl[ory] of Wells lies in the union and harmonious gr[ou]p of all. . . . The aspect of the place i[s] once that we are looking on an English [ca]thedral church, on a cathedral church serv[ed] by secular canons, on a church of secular [or]der where ancient buildings and ancient ar[ra]ngements are preserved more perfectly than [in] any other in the island."

THE LONDON SALVAGE CORPS

The large block of buildings in the Sou[th] Bridge-road, built at the cost of the ins[ur]ance companies for the London Salvage Co[rps] now completed. It is opposite the new [St]ation of the Metropolitan Fire Brigade Station (illu[st]rated in our pages some time ago), with which [it] is telegraphic communication. There [is] also telephone communication with the W[est] street Station.

The building has a frontage to Sou[th] Bridge-road of about 48 ft., and is abou[t 6]0 ft. in height from pavement level. It co[n]sists of basement, ground, and four upper [st]oreys. Yellow malm bricks have been used, with [Por]tland stone string-courses and cornice[s], arched window-heads, window-jambs [and] general ornamentation being in Brown's [pat]ent red brick. It is surrounded by a parap[et] 4 ft. in height, inclosing a flat open roof [co]vered with lead.

The upper floors have been arranged [for] members of the corps and their families. [The] first-floor contains the superintendent's [apa]rtments, consisting of two living-rooms, [four] bedrooms, kitchen, scullery, and bath-room.

The second, third, and fourth floors [are] the apartments for the men, each suite [cons]isting of a parlour, two bedrooms, and a kit[chen].

The laundry is on the fourth floor, com[mu]nicating with a flight of steps leading to the le[ad] which is intended to serve for recreation [as] well as for drying purposes. The bath[s] are also on the fourth floor. The suites of [apa]rtments are reached by a stone staircase and [by] galleries at the rear of the building.

On the ground-floor in the centre of [the] building is the carriage-room, 13 ft. in [hei]ght, extending to the courtyard in the re[ar]. The walls are faced with white enamelled bri[cks] a buff dado, the arches of doorways, &[c.] the cornice at the ceiling, being in red [and] bricks. This floor also contains the [sup]erintendent's office, watch-room, carmen's [mes]s stores, lavatory, &c.

In the basement are bath-rooms and [lav]atories.

In the rear of the ground-floor at the [ea]st end of the courtyard are the stables, with [the] carriage-drivers' apartments over them.

In addition to the main building just de[scr]ibed a number of cottages on the east side [of] courtyard and facing Lombard-street ha[ve] been purchased, and fitted as additional res[ide]nces for the corps. Between the main build[ing] and the cottages is a large courtyard in w[hich] are bath-rooms for the use of the occupants [of] the cottages.

The architect of the building is Mr. [Ed]ward Wimble; and the contractor, Mr. E. La[ng]ley, of Wharf-road, City-road.

ASSOCIATION FOR THE REFORM AND CODIFICATION OF THE LAW OF NATIONS.

The seventh annual conference of this Association was opened on Monday, the 11th inst., in the Council Chamber of the Guildhall, by the Right Hon. the Lord Mayor, Sir Charles Reed. His Lordship welcomed the members of the Association to the City, the Right Hon. Sir Robert Phillimore, president of the conference, delivered the inaugural address, in which he said that a codification of the law of nations, if it were ever to be effected, must be the well-ripened fruit of wise delay. On the conclusion of the address, a cordial vote of thanks was accorded to Sir R. Phillimore, on the motion of Sir Travers Twiss.

In the report for 1878-9, which was next read, it was stated that, since the last conference, which was held last year, it will be remembered, at Frankfurt on the Main, the progress of the Association has been steadily maintained, 116 new members having joined during the year. The Association lost four members by death.

The exertions of the General Average Committee to bring about the introduction into practice of the York and Antwerp Rules have been continued with the most satisfactory results in Great Britain, the Scandinavian kingdoms, Germany, Austria, Holland, Belgium, Spain, the United States, and the British colonies. It is more particularly deserving of notice that in England insurances upon the terms of the Rules can now be readily obtained in Lloyd's, more especially because that corporation has at one time opposed to the introduction of the Rules. On the other hand, in France and Belgium, with a few notable exceptions, the Rules have met with little beyond an approval of the principles.

The Committee upon Negotiable Securities, which sitted last year at Frankfurt, has been strengthened by the accession of bankers and other gentlemen interested on the subject, of Amsterdam, Berlin, Genoa, Hamburg, London, Paris, New York, and Vienna.

The movement in favour of uniformity of the laws of nations with regard to bills of exchange has extended to Holland, the Dutch Government having taken action upon a petition presented to the beginning of the present year by the Amsterdam Chamber of Commerce.

It will be remembered that the Committee on Patents for Inventions and that upon Copyright held their annual meetings last year at Paris.

The labours of the Parliamentary Sub-committee upon Patents have unfortunately been rendered so far unproductive, through the close of Commons not having reached the second reading of the Patents Bill.

It should be added that, owing to the munificence of an anonymous donor, the finances of the Association are in a very flourishing condition.

On assembling on Tuesday morning, Professor Pierantoni Levi read a paper on "International Copyright in Relation to the United States of America and other Foreign States." The author said in the course of it:—The protection of literary and artistic property at home and abroad is a measure of simple justice due to those who contribute largely to the advancement of learning, science, and art, all over the world. Unlike patents, copyright does not restrict the use of human ideas and thoughts; it only refers to the language in which they are expressed, to the plan and arrangement in which they are presented,—to matters, in short, which are the personal characteristics of the author, which are, in a special sense, his own, and the exclusive use of which does not hinder human progress. Copyright is nowhere granted in perpetuity. Literary and artistic property, though universally recognised and established by municipal laws, is the product of human genius and labour, and has in view to public convenience, and for important reasons, restricted as to its duration. Perpetual copyright would, in most cases, be injurious to the author and his representatives, and would unnecessarily trammel the diffusion of knowledge. A literary production, moreover, can scarcely be said to be the absolute creation of one individual. An author enters, so to speak, into a noble patrimony of learning, the common stock of knowledge, and though by his own labour and research he succeeds in rearing a new edifice, he is nevertheless beholden for many of the materials to those who left the rich legacy. Property narrowed in respect to matter and time, as it is, is nevertheless a fit recognition of literary property, and in an age when thoughts and ideas are communicated with unexampled rapidity, in an age when a constant interchange is taking place of the products of learning, art, and industry, between all countries, it scarcely befits any civilised state to say that the rights of an author should be limited to the narrow boundaries of his own nationality. The exclusive laws of former days, the "Droit d'Aubaine" and the "Loi de Détraction," were long ago expunged from the statute-book. The courts of justice are open to foreigners and natives alike, and it is only just and fair that, if I possess in England a literary property over my own work, I should be able to follow and prosecute the invader of that property, be he in the United States or in any other quarter of the world, and that a Frenchman or an American possessing a right of property in his work in his own country should equally be entitled to the protection of the courts here in the same manner as any Englishman. For my part, I cannot subscribe to the dicta pronounced in the English Court of Chancery, before the conclusion of copyright treaties, "that the Court does not protect the right of a foreigner"; or "that the policy of our law recognised by statutes express in their wording that the importation of foreign inventions shall be encouraged in the same manner as the inventions made in this country and by natives; this is founded as well upon reason, sense, and justice, as it is upon policy." Such opinions seem to me to be illiberal in principle, and founded on too restricted a view of the right of property. Literary property is as sacred as any other description of property, and it makes no difference whether it is created at home or abroad. If so, no need should there be of international copyright, in order to admit foreign literary property to the protection of the courts. Not to recognise the right is vandalism. It is piracy, which no civilised state should permit. Regarded in its international aspect, the question presents the greatest difficulty in relation to states using the identical language, yet separated in territorial jurisdiction. This was the case in Germany until 1827, when Prussia entered into special treaties on the subject with other German states. And this is just the point which divides at present the United Kingdom from the United States of America. Both use the same Anglo-Saxon tongue. Both consider themselves the inheritors of a literature at once rich and elegant, the possessors of the same classics, and alike interested in the preservation and development of their language. The older sister is more prolific, more inventive, and more advanced in the production of works of science, literature, and art. The younger affords probably the widest scope for their diffusion. Nevertheless, there is no mutual recognition of literary right between them. Consequently, a United States author publishing a work first in the United States has no right of protection against piracy in the courts of justice in the United Kingdom, and a British author publishing a work first in the United Kingdom has no *locus standi* before the American courts. Surely such a state of matters is not becoming states so advanced in civilisation and so friendly in their relations. It is not creditable to either party. Surely it should not be necessary to enter into a treaty for the fulfilment of a simple act of justice. Lord Chancellor Cairns, in the case of Routledge *v.* Low, said that "the aim of the Legislature is to increase the common stock of the literature of the country." But whatever be the aim of the statute, its principle is that it recognises and guarantees literary property, and it is narrowing that principle in an unjustifiable manner to apply it to literary property first created in this country. A more liberal interpretation of the Act would render international treaties on the subject superfluous, at least for the recognition of the right. England, however, is ready to concede to the United States a perfect right of property in American literature if she will only enter into a treaty as other states have done.

After referring to the direct negotiations which have been carried on between the two governments, without any beneficial result, the lecturer asked what is it that the United States allege as a justification against international copyright? They plead that copyright would enhance the cost of literature, and thereby prove a barrier to the diffusion of literature and learning in the United States. The latter grant copyright to an American citizen. Why refuse the same protection to a foreigner when any other description of foreign property is scrupulously protected? The lecturer denied that international copyright would check the diffusion of literature and learning in the United States; on the contrary, it is certain to give a needed stimulus to American literature. It is high time that the two civilised states should come to an understanding. There is no intention on the part of England to retaliate on America by withdrawing from Americans the privilege of copyright on first publication in this country, whatever be the result of further negotiations.

M. Clunet (Paris) expressed his satisfaction at the views of Professor Leone Levi, and said that, although they were not so far advanced in America, they were advancing in the direction of international law of copyright.

General Grant Wilson (New York), speaking on behalf of the United States, remarked that there was a great probability of a measure on the subject being introduced into Congress, and of an agreement with Great Britain being arrived at.

After Mr. Freeland had spoken, and some further discussion, the matter was referred to the committee to consider.

The conference here adjourned, and assembled again in the afternoon, when the subjects of negotiable securities and bills of exchange were discussed, after which the conference adjourned till Wednesday.

MONASTERY AT ERDINGTON.

The foundation-stone of the first portion of St. Thomas's Priory, a new monastery in course of erection at Erdington, near Birmingham, for the Fathers of the Order of St. Benedict, was laid on the 5th instant by the prior, the Rev. Hildebrand de Hemptinne.

The new priory will be built of Kenilworth stone on a site adjoining the Roman Catholic Church of SS. Thomas and Edmund, with which there will be a communication by a cloister, and when finished will form a complete group of ecclesiastical buildings of the old monastic type.

The plans have been prepared by Mr. A. E. Dempster, architect, of Birmingham, under whose superintendence the work is being carried out by the contractor, Mr. J. Garlick, of Saltley Works.

COMPETITIONS.

Greenock Corporation Buildings.—We are informed that the following are the six plans which Mr. Barry in his report recommended to the town council, with the relative cost of each in round numbers:—1st, "Art and Science," 88,000*l.*; 2nd, "Omega," 64,000*l.*; 3rd, "Let Greenock Flourish," 73,000*l.*; 4th, "Qui dit Progrès dit Labeur," 70,000*l.*; 5th, "Ciconia," 83,000*l.*; and, 6th, "M.B.," 70,000*l.* These six plans have been placed in the hands of Mr Robert Scott, of Glasgow, who was recently appointed measurer for the new buildings, who will check the estimates, and it is quite possible that the estimated cost of each, or at least of some of them, as given above, may be altered. The plan having attached to it the motto, "Art and Science," which Mr. Barry has placed first in the order of merit, is said to be the work of Messrs. H. & D. Barclay, Wellington-street, Glasgow. The various architects were limited to the sum of 80,000*l.* as the estimated cost of the buildings.

Gateshead Workhouse.—At a meeting of the Gateshead Board of Guardians, on the 5th inst., the Chairman (Mr. Alderman Hindmarsh) moved that the Local Government Board be asked to give their consent to the Board spending 25*l.* as a premium for a plan showing how the present workhouse could be so extended as to meet the requirements of the authorities. He stated that the cost of the proposed works would be about 3,000*l.* One of the Guardians, Mr. Reid, said there was no need to spend such a sum as 25*l.* for a plan when their architect, Mr. Newcombe, could provide them with one. After some further discussion, Mr. Lamb moved, and Mr. Montgomery seconded, an amendment that the matter stand over for discussion at the next meeting of the Board. It having been suggested that 25*l.* was a small sum to offer, the Chairman said that he would double that amount in his motion. The Chairman then put the amendment to the vote, when eight voted for it and eight against it. The Chairman gave his casting vote in favour of his own motion.

Bushey Schools.—The Board decided to invite

designs, under motto, from seven architects, for the new girls' and infants' schools, under one roof. The choice fell on that marked "Success," the author being Mr. H. H. Bridgman, architect, who has since received instructions to obtain tenders.

Billiard Tables.—A few months ago Messrs. Orme & Sons, billiard-table manufacturers, Manchester, intimated their intention of offering 120*l.* in prizes for the best designs for billiard-tables and markers that might be submitted to them for exhibition. Mr. W. J. Muckley, of the School of Art, Bond-street, Mr. E. Salomons, architect, and Mr. James Lamb, cabinetmaker, consented to act as judges, and the prizes having now been awarded, the exhibition will be at once opened at Messrs. Orme's rooms. Altogether upwards of 200 designs have been sent in. The following are the prizes awarded:—Class I., 50*l.* prize for the handsomest design for a billiard-table of any style, Mr. L. A. Shuffrey, London. Class II., 25*l.* prize for the best design for a billiard-table suitable for a house of no special style or character, Mr. J. Ainsworth, Elton, near Bury. Class III., 15*l.* prize for the best design for an inexpensive billiard-table, Mr. A. Hall, Leicester. Class IV., for the best design for a marking-board, Mr. F. G. Knight, London. Class V., 20*l.* prize for the best sketch of an interior of a billiard-room, ideal or otherwise, Mr. H. Jewitt, Manchester.

CANDIDATES SUCCESSFUL FOR THE WHITWORTH SCHOLARSHIPS, 1879.

Name.	Age.	Occupation.	Address.
Hardisty, John ...	20	Engineer	Manchester.
Harrison, George J.	20	Mill-wright ...	Oldham.
Shaw, Ernest ...	19	Engineer Apprent.	Bristol.
Simpson, John A..	21	Engineer	Birkenhead.
Geddes, John W...	20	Mechanic	Oldham.
Harris, Sydney J..	21	Engine Fitter	Crewe.
Sackfield, Thos E.	20	Mechanic	Crewe.
Brodie, John A. ...	20	Engineer Apprent.	Liverpool.

DOME OF THE ROCK.

SIR,—A letter, addressed by Mr. E. C. Robins, F.S.A., to the president of the Royal Institute of British Architects, appears in their Transactions for 1878-9.

Mr. Robins compares two churches at Rome, one round, one octagonal, to the Dome of the Rock at Jerusalem. I should like to be allowed to ask for further information on the subject, as one in which I take interest:—

1st. Do either of the Roman churches present the distinctive feature of a wooden beam running from pillar to pillar, as in the Dome of the Rock, the Dome of the Chain, and many other domed buildings in the mosques of Jerusalem, Damascus, and Cairo?

2nd. Is it certain that the present structure of Sta. Constanza is the work of Constantine, or that the mosaics are fourth-century work? Mosaic ornamentation was much in use (at least in the East) in the thirteenth century, at which period Sta. Constanza was, according to Mr. Robins, "turned into a church." Imitations of the Templum Domini, or Dome of the Rock, are also known to have been built by the Templars in Europe.

3rd. Is it certain that St. Giovanni in Fonte is the work of Constantine?

I would also beg to point out, in order to prevent any misconceptions arising, that Eusebius, in describing the work of Constantine at the supposed site of the Holy Sepulchre, makes no mention of either a round or an octagonal church of Anastasis. He describes only a basilica with an atrium; gates opening to the market of the city, and a *hemisphairon*, or large apse surrounding the Holy Sepulchre.

According to contemporary historians, these works were entirely destroyed in 614 A.D., and it is not until 700 A.D. that we have any account of the Round Church of the Anastasis which most authorities ascribed to Modestus, who replaced the single structure of the basilica by four small separate buildings.

As regards the site of these buildings, the fourth and fifth century writers place them in the middle of Jerusalem and north of the traditional site of Sion,—a position wholly irreconcileable with that of the Dome of the Rock.

With regard to the architectural style of the Roman buildings under consideration, I would point out that in San Giovanni in Fonte the pillars support a horizontal cornice with a second order of lighter shafts above,—a disposition which is not found in the Dome of the Rock. As regards round arches I have already pointed out in your columns that the arches of the Dome of the Chain (which Mejr-ed-Din states to have been the model for the Dome of the Rock) are semicircular, so that the use of round arches by Arab builders is clearly established.

C. R. CONDER, Lieut. R.E.

"EXTRAS" IN THE NEW THEATRE, PLYMOUTH.

AT the quarterly meeting of the Plymouth Town Council, on the 6th inst., the Land Committee reported that the total cost of the theatre restoration amounted to 7,060*l.*, being 481*l.* in excess of the amount of the contract. The committee much regretted that the contract price should have been exceeded by so large a sum, and the more so as they took every precaution to prevent any additional expense being incurred, and obtained repeated assurances from Mr. Phipps (the architect) that there would be none. Until the account for extras was actually delivered, they were unaware of any additional works having being executed, with the exception of one item, viz.,—the bonding of the roof, which they had ordered, at a cost of 26*l.* The committee distinctly affirmed that they gave no authority to Mr. Phipps to execute any additional works, all of which, with the exception before referred to, had been carried out without their knowledge or approval. Inasmuch, however, as Mr. Phipps, acting as the architect of the Council, had certified that the additional amount was payable, the committee could not but recommend payment to the contractor.

Mr. A. S. Harris moved the adoption of the report, and Mr. J. Marshall seconded the motion.

The Town Clerk stated that he had received a letter on the subject from Mr. W. Derry, the chairman of the Land Committee, who was unavoidably absent that day. The writer said:—

"The only extra item which has received the sanction of the committee is the amount of 26*l.* for extra bonding the roof and giving increased security to it, in deference to the decided opinion of the contractor that it was necessary. On the other hand, Mr. Phipps was reminded on several occasions by myself and other members of the committee that as we were in the position of trustees of the public money, any departure from or increase in the amount of the contract would be resisted, and he more than once gave us an assurance that our instructions should be implicitly adhered to. Yet, notwithstanding this, it transpired that at that moment extras to the amount of 200*l.* had already been incurred, and I distinctly remember when on one occasion the committee visited the theatre they were asked to sanction an extra for roofing a passage, but they refused to do so, and Mr. Phipps then said he would pay for the thing himself. These and other matters having reached the serious total of 481*l.*, it became a question to the council whether, remembering the repeated cautions the architect received from the secretary, and his repeated assurances of obedience with our instructions, that the council should not throw on him the responsibility of this liability. I am quite willing to admit the contractor has done this extra work and must be paid, but I maintain that if it be proved that the architect has disregarded the peremptory instructions and repeated cautions of the committee, on him alone should rest the responsibility."

The Town Clerk also said that he had received several letters on the subject from Mr. Phipps, and the latest, dated July 31st, had not yet been under the consideration of the committee. In it Mr. Phipps said:—

"I have to acknowledge receipt of your letter of July 28, and it would be as well for me to call your attention to Clauses 7 and 8 of the contract, and, at the same time, I beg to disclaim having in any way given orders involving extras. I was specially careful not to do so, and the few matters I did order were at the time fully counterbalanced by omissions. Many works were done by order of the clerk of the works and Mr. Newcombe as being necessary for the building, which, when the measurements took place, I was bound to sanction as additional under Clause 7. But, as I said before, it is a question of measurement; the plans and specifications have not been deviated from, but more work is done than appears in the schedule of quantities, which must be paid for. If less had been done there would have been a deduction. I have nothing to do with the quantities; they were prepared by an independent surveyor, who measured the works up afterwards, and Clause 1 of the contract is in error when it states the priced estimate to be signed by me. It is signed by the surveyor, who took them out in the usual way."

After a somewhat acrimonious discussion, the committee's report was adopted by twenty-six to four.

Newport, Monmouthshire.—The Great Western Railway Company are considerably enlarging their station here by the erection of new station buildings, offices, bridges, platforms and approaches, at a cost exceeding 25,000*l.* The contractor is Mr. Charles Claridge, of Banbury, who is pushing forward the work with all possible speed.

VALUE OF SANITARY WORKS.

IN the last quarterly report of the Regi General a piece of very strong evidence is of the value of sanitary works. The to Llandudno has recently been sewered, the direction of Mr. Baldwin Latham, C.E. cost of upwards of 30,000*l.*, and a new s of waterworks has been undertaken at greater cost. During the past quarter dudno is shown to have been the healthi all the watering-places or health resorts country, having had a rate of mortality 8·4 per 1000, while no death was recorded any zymotic disease. The rural district Llandudno, which has not received any sa attention, and is in a neglected and unsa condition, has had in the same period a rate of 38·6 per 1,000, and a zymotic deat of 4·3 per 1,000. The Registrar-Genera to his report that the enterprise and spirit shown by the town "is thus entit reap, as it does, the credit and benefit it well earned."

LIGHT CASE.

DOIG *v.* GAME.

THIS was an action, before Vice-Chan Sir C. Hall, by the proprietor of the "Wine Nicholas-lane, City, to restrain interferen the access of light and air to his prem the operations of the defendant, wh recently demolished adjoining premise erected new buildings on the site to plaintiff alleged, a greater height than the buildings they had replaced.

After considerable argument it was ar that the matter should be referred to the dent of the Institute of British Archit decide the extent of the injury, if any, the plaintiff, and the amount of compensa which he was entitled.

Books.

Town and Window Gardening, includi Structure, Habits, and Uses of Plant CATHERINE M. BUCKTON, Member of the School Board. 127 Illustrations. L Longmans, Green, & Co.

ABOUT three years ago the author offered for window-garden boxes to children fr Leeds Board Schools who attended her l on the "Laws of Health." The result by two years' experience in awarding prizes showed her that window-garde very difficult gardens, and that it is imp for children or men to become good ga unless they understand the structure, and growth of plants. Failing to find book with the necessary information, the studied the best authors, procured at P Auzoux's beautiful models of plants, a delivered the lectures which form the volume, the lectures being occasionally f by a practical lesson on preparing the drainage in the box or flower-pot, an sowing seeds or planting cuttings, bulbs,

It is a very interesting and valuabl book, but a little over the heads of the m of those for whom it is intended. It w good in schools.

VARIORUM.

THE Great Eastern Railway's "Touris to the Continent" (125, Fleet-street) 150 pages of readable letterpress, by M Lindley; fifty sketches of interesting and people, by Birket Forster, J. Temple Bryan, and others; a coloured map; for 6d. It alludes to Holland, Belgi Rhine, Germany, Switzerland, and It will be found useful by many who want where they shall go.——"House Invas Defence" (Knight & Co), by C. W. M.A., discusses what a man may or ma in defence of his house. The object Mr has in view is to show that a man, sta defence of his homestead with a six-sh his hand, has a good many serious que ask himself before he "burns powder, placed in trying circumstances.—— summer edition of Bevis's "Builders Book and Guide for Estimates," has be lished (8, St. Martin's-place), in wh author claims to have revised the prices present values. Useful suggestions a

ting are given in connexion with the several isions. It is a handy little book.——"The Gas l Water Companies Directory," for the year '9, edited by Charles W. Hastings (Marcus rd & Co., Belfast), contains a large amount statistical information especially useful just v.——"Symons's British Rainfall," 1878 Stanford, 1879), gives the observations de at about 2,000 stations, besides a full ount of all known forms of self-recording n-gauges. The science of weather is about ake a new and important shape.

Miscellanea.

afety of the Alhambra.—Some few weeks there appeared in the *Times* a statement to effect that, owing to a serious landslip, the ambra at Granada was in great danger of truction. Mr. R. Herbert Carpenter now tes:—"Having but recently seen the build- and having noticed nothing which indicated danger, I made inquiries, and am very py to be able to say, on the authority of H. Stanier, her Majesty's Vice-Consul at nada, and of Señor Contreras, the resident itect of the Alhambra, that not only is e no fear whatever of any collapse, but that e is no landslip nor any indications whatever ne being likely. 'Not a single pebble or n of earth has been observed to fall,' says Stanier, 'though there are often earth- kes here.' Similar alarming statements have eared in the Madrid and in some of the chief tinental papers, but all seemed to be based local sources of information, there having n some agitation in Granada to try and ce the authorities (besides restoring a ruined rish gateway quite distinct from the Al- bra) to build a great retaining-wall in a ow of the Alhambra hill, formed ages ago by River Darro. There has, however, been no ge in this hollow (nor does the Darro now high enough to effect a change) since the mbra walls were built over it 600 or 700 s ago. This proposed wall is considered by r Contreras to be quite unnecessary, and is also the opinion, I am told, of the rnment engineers who have considered the er."

he Water Supply of the Metropolis.—e House of Commons on Wednesday, the rned debate on this subject was resumed r. Fawcett, who moved,

hat in view of the fact that the Metropolitan Board of s has been unable to pass any measure dealing with is House is of opinion that it is a subject which , without further delay, to be dealt with by the nment."

Solater-Booth said the subject was under onsideration of the Government, but no cific statement must be expected from them Mr. Cross promised, on behalf of the rnment, that the subject should be fully d into in all its bearings before next Session, certain whether the water supply of the opolis could be improved without any rial increase in the cost, and whether it l be necessary to call on the companies to nder their powers into the hands of some al body appointed by the Government. t must be understood that if the Govern- undertook any scheme of that kind, no n which the companies might take, no lative arrangements into which they might , no prospective addition which they might to the value of their shares, would be into account. The Government would the shares as they found them, say, at st day of the last half-year. Mr. Fawcett rew his resolution.

verpool.—At a meeting of the Liverpool Council on the 6th inst., it was resolved,—

at the Council having resolved that the offices of ct engineer and water engineer should be divided, it erred to a special Committee, consisting of four rs of the Health Committee and four members of ter Committee, with one member added, to consider port to the Council their recommendation as to the of the respective officers, and the salaries to be paid n."

ath of Mr. James Robinson.—We to have to announce that Mr. James son, secretary to the Social Science Asso- n, expired on Tuesday, at his residence, man-road, Clapham-road. He was held in ghest esteem by the members of the Social e and Law Amendment Societies, and his ill be severely felt at the approaching ess.

Steel.—Messrs. Matheson & Grant, in their Engineering Trades Report, say:—"The use of steel has not been so rapidly extended as its more sanguine advocates predicted; but those who are best informed are more than ever certain of its ultimate triumph. Extra prices for the purchase of steel rails rather than iron rails have no longer to be justified, for the direct and simple methods of steel-making are proving to be less costly than those of making iron through the intermediary process of puddling. Indeed, the iron rail trade seems practically at an end. There is the apparent anomaly that at certain steel-works having no obvious local advantage, rails can be produced without loss at prices impossible to other makers. Improvements and economies in the various processes of [steel making have followed rapidly during the last few years, and the newer works benefit by the dearly-bought experience of the older works; every such advantage, however small, telling forcibly during the present keen competition."

South London Art Exhibition.—The opening of this exhibition, in the rooms of the Working Men's College, 143, Upper Kennington-lane, took place on Thursday. The chief portraits are lent by Sir Charles Dilke, M.P., and include one of Mr. J. S. Mill, by Watts; one of Professor Fawcett, by Madox Brown; and one of M. Gambetta, by Le Gros. Mr. P. A. Taylor, M.P., has lent a large number of works, including some by Goodwin, Webb, Stanfield, Moore, &c. Mr. Woolner, R.A., also lends several works, including Turners, Cotmans, Reynoldses, and Nasmyths. There are also pictures by Guido, Spagnoletti, Hogarth, and Sir F. Leighton. The exhibition will be open free, on week-days from two till five and from seven till ten p.m., and on Sundays from six to ten p.m.

Public-House Property.—In the course of a sale, at the Mart, by Messrs. Debenham, Tewson, & Farmer, of freehold properties, situate in and near to Long-lane and Crosby-row, Bermondsey, the Coach and Horses, a fully-licensed public-house, and two cottage tenements adjacent, let together, on lease, expiring at Midsummer, 1881, at 60*l.* per annum, were put up. They excited most vigorous competition, and eventually realised 5,500*l.* The premises are small, and possess a frontage of 20 ft. only to Long-lane; but it was stated that the house has a well-established reputation, and is the seat of a large business. Even if it be so, the price is extraordinary.

National Hospital for the Paralysed and Epileptic.—The history of the foundation of this establishment by two ladies some twenty years ago, with its Samaritan Fund and Convalescent Branch, is very interesting and encouraging. It has been well supported, too, and done much good, but just now help is needed, and those who would like to know more about and help on a good work should address Miss Johanna Chandler, 43, Albany-street, N.W. The Samaritan Society has special claims on the sympathy of women; "its administrative committee is composed exclusively of women, and its benevolent purposes are carried out by the unwearied labours of women."

Cavendish College, Cambridge.—As we have already mentioned, a further extension of this college is contemplated, and we now learn that the works are being commenced. Accommodation is being provided for thirty additional students, and later in the year it is in contemplation to erect temporary accommodation for about twenty-five more students. Messrs. John Giles & Gough, of London, are the architects.

St. Paul's.—A design for the decoration of the dome of St. Paul's Cathedral, by Mr. R. P. Pullan, architect, and Mr. C. Heath Wilson, is now on view in the gallery of the Universal Fine Art Society, Egyptian Hall, Piccadilly. We have already given a few particulars of the design.

Lowestoft.—At a meeting of the Lowestoft Improvement Commissioners on the 11th inst., it was unanimously resolved to make an addition of 50*l.* a year to the salary of the surveyor, Mr. Robert H. Inch.

Fall of Warehouses, New Oxford-street. At the end of last week, a fall of houses occurred in a thoroughfare known as Dyott-street, New Oxford-street. There was no loss of life. They seem to have been a heap of rubbish waiting the first opportunity to fall.

The Social Science Congress.—It is announced that the Bishop of Manchester has accepted the office of president for the ensuing meeting; that Lord Reay has accepted the office of president of the Economy and Trade department; Sir Coutts Lindsay that of the Art department; Mr. F. S. Powell that of the Health department; Sir Travers Twiss that of the Jurisprudence department; and the Hon. Lyulph Stanley that of the Education department.

TENDERS

For alterations and additions to the Agricultural Hall, Walsall. Mr. Samuel Loxton, architect. Quantities by the architect:—

James Davis & Son	£2,745 0 0
Wistawe	2,500 0 0
Bethell	2,500 0 0
Evans	2,178 15 0
Pilshaw	2,176 0 0
Wiley	2,126 18 0
Trow & Sons	2,100 0 0
Crutchley	1,923 0 0
Pritchard & Feltham	1,897 0 0
Jones & Sons	1,885 0 0
Millward, executors of (accepted)	1,893 15 6

For the erection of thirteen houses in Albert-road, Walthamstow, for Mr. N. Argent. Mr. Edward Brown, architect:—

Perry & Co.	£5,460 0 0
Outhwaite and Son	5,243 0 0
Hearle & Son	5,085 0 0
Marr	4,978 0 0
Gann	4,841 0 0
Salt	4,600 0 0
Good (accepted)	4,138 0 0

For pumping station, sewerage works, Lincoln. Mr. J. Mansergh, engineer. Quantities provided:—

Barnes & Wright	3,055 0 0
H. S. & W. Close	2,992 11 10
Kellett & Bentley	2,704 0 0

For additions and alterations to Lincoln Lunatic Hospital. Mr. M. Drury, architect. Quantities provided:—

Martin & Sims	£865 0 0
Morgan	841 14 0
Hatcliffe	837 6 7
Baines	811 10 0
Barnes & Wright	799 0 0
Thorpe	789 7 4
Otter & Elsey	768 10 0
Chambers	750 0 0
Taylor	725 0 0
Crossby & Sons	690 10 0
Cliffe & Cox	625 1 10

For completing No. 2, Serle-street, for Mr. Young. Mr. R. Groom, architect:—

Nash (accepted)	£550 0 0

For two studios at Haverstock-hill, for Mr. Bellamy. Mr. R. Groom, architect:—

Robinson	£1,444 0 0
Langmead & Way	1,289 0 0
Nash	1,245 0 0
White (accepted)	1,187 0 0

For erecting a pair of semi-detached residences in Coplastone-road, Choumert-road, Peckham-rye. Mr. E. C. Stimson, architect:—

Payne	£1,175 0 0
Terry (accepted)	1,094 0 0

For alterations and additions at Broad Oak, near Berhill, Sussex, for Colonel H. Lane. Mr. Edward Cook, architect:—

Langmead & Way (accepted).

For alterations and additions to The Lamb public-house, Lamb's Conduit-street. Messrs. Johnstone & Paine, architects. No quantities:—

King	£1,490 0 0
Axford	1,400 0 0
Langmead & Way (accepted)	1,351 0 0

For Skegness Promenade Pier, Lincolnshire. Messrs. Clarke & Pickwell, engineers. Quantities by the engineers:—

Contract No. 1.

Butterley Ironworks	£25,118 1 9
Hutton & Coventry	22,260 11 6
Laidlaw, Sons, & Caine	21,044 0 0
Stockton Forge Company	20,166 12 2
Rolin & Co.	19,872 18 7
Handysides & Co.	19,635 0 0
Eckersley & Williams	19,500 0 0
Bridge and Roofing Co.	17,152 10 2
Head, Wrightson, & Co. (accepted provisionally)	16,859 2 0
Bergheim & Co.	16,764 14 10

Contract No. 2.—For ornamental saloon, refreshment-rooms, &c.:—

Laidlaw, Sons, & Caine	£4,593 0 0
Hutton & Coventry	4,378 14 4
Rolin & Co.	4,281 2 11
Kirk & Parry	3,796 8 7
Head, Wrightson, & Co.	3,659 18 0
Dunkley	3,600 0 0
Young & Akrigg	3,539 0 0
Holmes & Wallhead	3,526 0 0
Handysides & Co.	3,399 9 6
Brown, Toogood, & Co.	3,258 1 8
Macfarlane	3,161 16 5

For the erection of a farm residence and homestead at Hersham, near Walton-on-Thames, for Mr. Edward Raphael. John Gordon Picking, architect:—

Wright	£1,125 10 0
Light (accepted)	996 15 0

For the restoration of St. Mary's Church, Tickhill, Mr. J. M. Teale, architect:—

Smith & Co.	£1,200 0 0
Dobson	747 3 0
Langley	725 0 0
Anelay	711 7 0
Tomlinson & Sons	700 0 0
Rawson & Co. (accepted)	7 0 0 0
Flowitt	694 0 0
Jackson & Son	624 0 0
Chadwick & Co.	627 0 0
Dennison	576 0 0

For the erection of a mission-hall in Glengall-road, Manchester-road, Cubitt Town. Mr. H. H. Bridgman, architect. Quantities by Mr. F. Thomson:—

Hunt, amended tender (accepted)	£823 17 1

For the erection of a villa residence in Woodville-road, Hadley-by-Barnet, for Mr. J. B. Poole. Mr. H. H. Bridgman, architect. Quantities by Mr. F. Thomson:—

Burman	£2,754 0 0
W. & H. Castle	2,637 0 0
Manley	2,499 0 0
Scrivener & Co.	2,440 0 0
Frost & Co.	2,410 17 0
Toms	2,390 0 0
Staines & Son	2,334 0 0
Sims	2,365 0 0
Niblett	2,339 0 0
Moreland & Nixon	2,300 0 0
Kirk & Randall	2,292 0 0
Nobbett	2,240 0 0
Gould & Brand	2,275 0 0
Hunt	2,230 0 0
Chinnock	2,203 0 0
Somerville & Hill	2,197 0 0
Richardson Bros.	2,175 0 0
Taylor (accepted)	2,089 17 3

For extensions to the Camden Turkish Baths, 114, Kentish Town-road. Mr. H. H. Bridgman, architect:—
Hunt (accepted) by schedule.

For two warehouses, Bucknell-street, Oxford-street. Mr. W. S. Trehearne, architect:—
W. B. Downs & Co. (accepted).

For seven houses, Chiswick. Mr. T. Roger Smith, architect:—
W. B. Downs & Co. (accepted).

For house at Woodford. Mr. J. J. Stiles, architect:—

Tillett	£1,080 0 0
Day	881 0 0
Cox	830 0 0
North Bros.	807 0 0
Wood (accepted)	720 0 0

For erecting house and shop, High-street, Hampstead. Mr. J. Tanner, architect. Quantities supplied:—

Eaton	£1,193 0 0
Hobson	1,148 0 0
Hayworth	1,127 0 0
Butcher	1,045 0 0
Mustoe	1,000 0 0
Grey (accepted)	939 0 0

For pulling down and re-building 13, Air-street, Regent-street, for Mr. Stokes. Mr. Shaw, architect:—

Sneesham	£1,789 0 0
Warne & Son	1,637 0 0
Jackson & Todd	1,620 0 0
Hobson	1,167 0 0
Bywater	1,440 0 0
Jerratt	1,318 0 0
Taylor & Parfitt (accepted)	1,199 0 0

For repairing seven houses, York-road, City-road, for Mr. Mace:—

Taylor & Parfitt (accepted)	£175 0 0

For the erection of shops and warehouses in Bethnal Green-road, for Messrs. Nicholson & Sons. Messrs. Gordon & Lowther, architects:—

Browne & Robinson	£7,848 0 0
Thoms	7,689 0 0
Tully	7,323 0 0
Brand & Co.	7,053 0 0
Thomerson & Son	7,025 0 0
Farrah & Son	6,999 0 0
Lauder & Son	6,775 0 0
Forrest	6,695 0 0

For erection of pair of semi-detached cottages in the Gleahurst-road, Brentford, for Mr. F. J. Evans. Messrs. Smithies & Gladman, architects:—

Falkner	£784 0 0
Nye	705 0 0
Taylor	644 0 0
Brunsden	603 0 0
Beauchamp	597 0 0

For additions to farm-buildings, Manington Estate, for Mr. Lewis R. Price. Mr. Evan Powell, architect. Quantities supplied:—

Cross	£590 0 0
Morgan	490 0 0
Weale	488 2 0
Geltrin	450 1 0
Davies	442 2 1
Lockley	434 0 0
Price	415 15 0
Birrell	402 0 0
Hughes & Son	374 16 1
Price & Son (accepted)	360 0 0

For alterations and additions to Penymaes House, for Mrs. Evans. Mr. Evan Powell, architect. Quantities not supplied:—

Birrell	£1,000 0 0
Price & Son (accepted)	780 0 0

For pair of cottages and outbuildings, Little Marrington, for Mr. Lewis R. Price. Mr. Evan Powell, architect. Quantities supplied:—

Lockley	£643 0 0
Phillips	632 9 5
Smitheman	597 10 0
Geltrin	545 14 0
Price & Son	530 0 0

For additions to farm-buildings at Bodaioch Farm, for the trustees of the late General Worsnam. Mr. Evan Powell, architect. Quantities supplied:—

Williams	£403 18 10
Woolley	390 0 0
Phillips	359 2 7
Breeze (accepted)	339 1 0

For cemetery chapels, entrance lodge, fence, walling, and outbuildings, for the Burial Board of the parish of Llanidloes. Mr. Evan Powell, architect. Quantities not supplied:—

Williams	£1,750 0 0
Janman	1,487 11 0
Meredith (accepted)	1,386 0 0

For alteration to "George and Dragon" public-house, Cleveland-street, Tottenham Court-road, for Mr. Joseph Newport. Mr. Robert Emerio Tyler, architect.—
Somerville & Hill (accepted) £1,050 0 0

Boys' School at Arundel for the Duke of Norfolk.—The quantities were prepared by Mr. Henry Smith, of John-street, Adelphi.

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A Recent Look at Netley Abbey.

N actual appearance the Cistercian Abbey on the banks of Southampton Water is unknown to many, even among architects, to whom its name has been a familiar sound throughout their lives. It is one of those interesting places which get overlooked because they are on the way to nowhere. The west gable can be seen when going down hampton Water in the steamers which con- Southampton with Cowes, but no passenger touches at Netley. It can be reached from hampton without difficulty by the railway h the traffic to the great military hospital Tetley has called into existence, and the y ruins are, in fact, a great resort of sts and holiday-makers from the adjoining try. But busy people from other parts of and (and architects are usually busy when journey) are mostly taking Southampton *route* for somewhere else, and do not think pending the greater part of an afternoon etting out to Netley and back. Perhaps, pite of the familiarity of the name and te of the abbey, they are not all aware how resting and beautiful a relic of early iæval architecture it is; with some special ts of interest, too, which are missed by e-books, and even by archæologians.

he single-line railway from Southampton s station takes us out, at a jog-trot pace, and many stoppages, in about five-and-twenty utes; passing on the way, at a little distance, Street's memorial church to Bishop Wilber- e, and crossing small reaches of water which diapered with water-lilies, white stars on a n ground. About half a mile from the ion is Netley village, on the way to which we e on our left hand the huge mass of the tary hospital, into the walls of which were rporated, if we were rightly informed, not a "precious stones" from the abbey ruins, t uninclosed and accessible to the predatory ractor. Netley, consisting mainly of one of a street of small houses, looks a place re one cannot imagine anything ever happen- at all. A furlong beyond it, and a turn to right through a gate into long grass, and we in front of the south entrance into the ster garth of the Abbey, the outer walls of ch are nearly lost in a mass of ivy.

he builders of the abbey adopted the usual e of the Cistercians in regard to seclusion of , as far as the nature of the ground allowed m. The land here rises rather rapidly from water, and then falls again eastward, leaving dge, and on the lower ground beyond this ridge the abbey is placed, so as to be only partially visible from the water. The church is known in its main characteristics, to all architects, by the illustrations of it in Sharpe's "Parallels." The brown-tinted lithographs in his fine work, however, convey but an inadequate idea of the beauty of some of the more perfect portions of the building. The stone (said to be Caen) has acquired the most beautiful pearly grey tint from time and minute vegetation, and, seen as we saw it, in one of the few half-hours of bright sunshine which this wintry summer has allowed us, the appearance of the plain, massive, Early Pointed work of the choir, standing in the midst of green foliage, was as beautiful a combination of tone as the painter could wish. The church has the short square choir peculiar to the Cistercian plan, and transepts with aisles on the eastern side. The south transept and the choir are the best preserved; of the north transept only the footings are left, and the same is the case with the nave piers and west crossing piers, of which little but the bases remain. The greater portion of the east and west walls remains, and the end windows, with fragments of the tracery. The choir, as is so often the case, is older than the nave, and unless we are to reconsider some of the usually accepted views as to the relation between date and style, it somewhat contradicts the published statement that the place was founded by Henry III. in 1237. Those who make this statement have, we presume, documentary evidence to back it, but this date brings the foundation to near the close of the full Lancet period, whereas many of the details suggest a decidedly early period of that style. The work is massive and plain to a degree; the orders of the transept arches are merely recessed and chamfered without moulding; the plan of the piers is more like what we usually regard as a transitional plan; the external labels over the lancet couplets form circular arches without the slightest point; and the little bits of foliage carving which terminate the chamfers of the piers in choir and transept (forming part of the capital) have the small leaves and long thin weak stems which characterise everywhere the tentative foliage that preceded the development of the full, rich, and flowing type of the Early English foliage. We should therefore be disposed to think that the date given is at least that of the completion of the choir and transepts, which may have been some time in process through interruptions, or that of the installation of the brotherhood. The foliage which terminates the vaulting shafts at the triforium level is, in fact, considerably later in style than that of the main capitals, as far as one can judge from the small portions remaining uninjured: this may be explained, perhaps, from its having been put up in the rough and carved afterwards. The nave is perceptibly later in style, the aisle windows containing a small proportion of geometric tracery in a tolerably advanced stage of its development, so far as treatment of detail can characterise it. The circular label over the windows is retained, obviously with the object of assimilating the character of the design with that of the choir. The transept has been re-vaulted at a late period of the style, before the introduction of fan vaulting, but verging towards that style of vault; little more is left of it than the starting of the ribs, and the springers which carry them: these latter are very curious and unusual in design, consisting of a long inverted conoid, square on plan, the lower end of which is brought down on to the old vaulting shaft of the original vault; the upper end spreads considerably, and is adorned by the thin wiry mouldings of the period, with a battlement ornament on them, from behind which spring the vaulting shafts, as from a large square abacus. The front of the springer is worked into two long panels, dying into a point at the lower end. The care with which the later masonry is fitted into the old is as remarkable for neatness of workmanship as the design is for clumsiness of effect. It is a very odd freak of Gothic detail, and looks the more so in contrast with the grand severity and entire absence of pretence or affectation in the older work. In these qualities it would be difficult to find work of the period to surpass this. Both the east and west ends, with their plain, massive buttresses, hardly relieved (in the choir portion) even by a moulding, the weatherings just projected sufficiently to give an adequate drip, seem the perfection of the architecture of common sense, good taste, and stability. The fine gradation of line in the successive slopes of the set-offs of the great west-end buttresses is worth attention, the slope becoming steeper and steeper as the buttresses approach the ground, in contradiction to the theory and practice of some modern Gothic architects, Pugin especially, who have laid it down that the slope should be steeper as the buttress rises, in order to accommodate the line of the set-off to the position of the spectator, and enable him to see the face of the upper set-off, instead of seeing only the drip-moulding. But with the Mediæval builders, or at least with those who worked at Netley, the buttress was not a matter of show, but was regarded as a matter of practical building, and the fact of the buttresses following in their slopes the actual line of pressure, which would necessarily be brought nearer to the vertical as the vertical weight of the upper part of the buttress made itself felt on the lower part, is a proof of the practical aim with which such buildings were constructed in the days when Gothic architecture was a real practical thing, and not a mere sentiment.

It was, however, more especially the remains of the conventual buildings concerning which we wished to say a word. Mr. Sharpe, as before observed, has edited the church in his "Parallels," or at least has illustrated it pretty fully, both by views of it as existing and by "restorations" of that harmless and entirely beneficial kind which exist on paper only. But as far as we know, there are no published illustrations of the conventual buildings, and they deserve some comment, as they have some unusual characteristics, and have been in some points incorrectly described even in publications which claim to be the work of experts. The general plan of a Cistercian monastery, followed with so little

variation in the larger establishments of this order, is not here fully carried out, and the reason is obvious from an inspection of the buildings, even without the corroborative testimony of history. According to the latter, it would seem that Netley was really an offshoot from Beaulieu, then the great abbey of the south of Hampshire, but of which there is less remaining now than of Netley. Only a small body of monks were detailed from Beaulieu to inhabit the new monastery at the outset; and Mr. Mackenzie Walcott tells us that at the dissolution under Henry VIII. there were twelve monks in the establishment. The number of inmates at the dissolution epoch may not represent the average numbers during the high tide of asceticism, but this argument applies equally to all the monasteries, and a comparison of the numbers reported at other localities at the dissolution shows plainly that Netley was a small house. It is with the recollection of this that the remains must be examined. According to the usual rule of Cistercian planning, there should be at the centre of the south side of the cloister garth, and projecting from it at right angles southwards, the refectory of the convent. This is the point at which visitors are at present admitted to the precincts; there is a doorway at this point in the cloister wall, but there is not a trace of the refectory building, and as the ground falls away from the cloister enclosure at this point, it seems impossible that there should not have been some vestige of these walls above the ground had they existed, especially since the other portions of the building are so much preserved. But when we come to look over the buildings on the east side of the enclosure, we understand at once why there are no remains of a refectory. The day-room for the monks occupies its usual place, entered from a door near the south-east corner of the cloister,—a long apartment, running north and south, and projecting some distance beyond the south boundary of the cloister garth. But instead of the day-room being lighted at the end as usual, it is intercepted by a square chamber of its own width, communicating with it by a door, but having also a smaller opening about 2 ft. 6 in. from the ground, by the side of the door, and going into this square chamber we find a long room opening out of it again to the left, at right angles to the day-room; a room containing an immense fireplace, and again with a small opening by the side of the door, communicating with the square room, just as in the room. The whole thing is as clear as it can be. The establishment being a small one, it was thought that one long room might serve all purposes, without going to the expense of a separate refectory; accordingly the serving-room is placed at the end of the day-room, and the kitchen at right angles to it. The thing is so plain to any one accustomed to planning that it seems impossible to make a mistake. But when we turn to the description of Netley in Mr. Mackenzie Walcott's "Monasticon," forming the second volume of his "English Minsters," it appears to us that he has explained the building wrongly, from going with a preconceived notion of what ought to be there. He says the Early English door of the refectory is in the middle of the south walk of the cloister. There is a door there, but there is not much if any Early English left in it, and no trace of the refectory walls. What we have called (and what has been generally called) the kitchen, Mr. Walcott calls the "calefactory,"—*i.e.*, the room where brethren who suffered from the cold could find a fire and get warm. There was such a room frequently in Benedictine monasteries; but we have no reason to think that it existed in an original Cistercian monastery (the room is of the same date as the rest of the building), and it seems very unlikely that an order who pushed the duty of "enduring hardness" to such a point that their chapter-house, and frequently the end of their day-room, were open to the air, should have established an adjoining sitting-room, smaller than the day-room, with a fireplace big enough to roast an ox. Mr. Sharpe, who had seen more and written more of Cistercian architecture than any one else in this country, does not seem to have been acquainted with any such building as a part of a Cistercian plan, but he does call special attention to the characteristic large fireplaces in the kitchens, similar in character to this one, though larger in larger establishments. There is certainly a small building outside the south wall of the cloisters and parallel to it, in which are two fireplaces, but these are a late,—probably Tudor,—addition, the fireplaces and part of the walls being built in brick, and the door, which Mr. Walcott calls the refectory door, appeared to us to have been broken through at the same time; certainly we can remember no traces of Early English work in it.* The outer constructions on the south side only show, as at present, indications of a narrow range of buildings running parallel with the south wall, a part of which has been so modernised and interfered with in forming a dwelling for the custodian, that it is difficult to say what it may have been.

The plan of Netley is exceptional in other ways, it must be remembered. Even Mr. Sharpe, who was usually so accurate in these matters, has fallen into too hasty a generalisation in speaking of the "long two-storied building which *invariably* flanks the west side of the cloister," and which he defined, probably rightly, as the "*domus conversorum*." Not only is there no trace of such a building at Netley, but there is no room for it; the west side of the cloister comes too close up to the west end of the church, upon which the building should have abutted.† Again, opening out of the east cloister, immediately south of the sacristy, we find what Mr. Walcott, to our amazement, calls "the vestibule of the chapter-house." It is the chapter-house itself, with its usual three open arches towards the cloister, according to the Cistercian model, and on the east side its range of lancet windows, with holes for the bars supporting the glass or lattice, and no hint of any further passage. Apparently Mr. Walcott (if he has seen the place himself, which his description leaves us room to doubt) calls it a "vestibule" because it is square and does not project beyond the rest of the line of building, whereas, conventual (as distinguished from cathedral) chapter-houses were usually long-shaped, and projecting eastward. But here, again, there is no puzzle, if we bear in mind the indications everywhere that the establishment was a comparatively small one. Even in the Middle Ages people had common sense enough not to build a room bigger than they wanted it. The church was large and grand, because to make it so was an act of worship and devotion; the conventual buildings were suited to the number of the occupants.

The said chapter-house shows beautiful work, a great deal of it in good preservation. The three arches toward the cloister, the centre one open down to the ground, the side ones with sills a little off the ground, were carried on centre shafts of stone, with four auxiliary shafts of (probably) Purbeck marble. These latter are gone, and only their stone caps remain. The sacristy had a door with a bold trefoiled head. The architectural beauty of the cloister-court (except the church side of it) seems to have been concentrated on these chambers. The space for the lavatory remains in the south wall of the cloister. We can see that it had a corbelled out arcade over it, and the bed-stone of the washing-trough is there, but all the detail is broken away. The dormitory was in its usual position over the day-room. There is another story also, the same height, over the kitchen wing; and it is pretty obvious that there was access to the choir of the church on the same level as the dormitory, across the chapter-house and sacristy, in the manner so frequently found; the traces of the triforium door, and the staircase down into the church, are visible in the interior of the south transept. Another point that we may call attention to is that in the west wall of the day-room, near one end, is a large and deep gap in the wall, from which something has been broken away; the existence of this confirms us in the belief that this room was used as the refectory, and that this gap was the recess for the reader's pulpit.

A curious point in the building is that the stream that was turned through it for drainage purposes is still running in its old channel, and the sanitary (or unsanitary) working o establishment at this point can be pretty comprehended. Along one-half of the side of the kitchen, between the buttre which form deep embrasures for the windows, we look down into a deep trench 3 ft. wide and 8 ft. or 9 ft. deep, and int end of this comes a continuous stream of led through a subterranean aqueduct to point. The buttresses and the wall div the kitchen from the square apartment b mentioned, are carried on arches clear o water-course, which flows out at the south angle of this wing of the building, the trench continued along the side of the square s ment between the day-room and kitchen, a little space left for a landing at one Over the trench, in the outer wall of this s room, is a series of square holes for be about the level of the floor. Here wa monks' "gong," or row of w.c.s, like so small stalls, with the water running under It is easy to see the part of the wall in fr the trench where the partition came divided off these *penetralia*; apparen wooden partition, or, at all events, some that did not bond into the wall, for there sign of any stone having been broken away "gong" must have been disagreeably ne living-room, but that may have been p monastic penance. The remainder o trench, in the kitchen apartment, we in was left open to throw kitchen refuse there is no sign of its having ever been sh and indeed it could not have been so w blocking up the windows on that side, ar end window would have given very insuf light.

It is a curious question, whether there was not a cloister, in the accepted sense term. Mr. Sharpe, in his work on "The tecture of the Cistercians," says, "I kn no monastic remains of this order in En in which the cloister, or any part of it, is Mr. Walcott gives it as one of the disti features of the Cistercian monasteries they had usually no cloister arcade. were so, it is the more reason why Mr. should not have found one; but thou believe Mr. Walcott to have much knowle the documentary evidence as to the way habits of Mediæval monastics, we must h to take his word as to points in the archit of the buildings. Moreover, Mr. Sharpe rates several very fine Continental spe of Cistercian monasteries in which the cl remain. There is not a trace of a cloi the ground at Netley, but there are occasionally, not everywhere, projecting the wall, as if to carry a wall-plate to timbers; at least, we can offer no better nation of them. Our conclusion would be that there was a lean-to roof hung fr building where shelter was most wante timber verandah on wooden supports. reason for thinking there was no built clo not only the absence of any remains of the fact that there is not the slightest t the walls round the enclosure of any gr and a stone-built cloister would certainl been groined in a group of buildings every other covered part, even the passage, had a vaulted ceiling.

Netley leaves a delightful impression memory when visited under bright su Some of the trees by which it was forme much concealed have been removed, a ground cleared, but there is enough pla round it still to give beautiful effects purely artistic point of view. Fine trees in the cloister-garth, and a large one has up right out of the centre of the day-roo But the floor of the church is kept caref a beautiful level green, its expanse onl rupted by the bases of the nave piers and oddly-assorted pile or lump of stones together in the centre of the nave, and i of which an old rusty field-piece has bee in the ground muzzle downwards, for mysteriously symbolical reason it wo difficult for a stranger to say. From th door is a very good place to see the ch good effect, and while doing so the sp will probably notice also that the f the church has always been, as now or three steps below the level o ground outside, as shown by the steps still remaining. The present Mr. Chamberlayne, has, we believe, every for the place, and the custodian seems t for it, and take an intelligent interest in

* It was not till after our visit that we took up, from curiosity, Mr. Walcott's "Monasticon" to see how he described the place, otherwise we might have compared his description with the facts more minutely in some points.

† As another example of the danger of generalities, Sharpe says ("Architecture of the Cistercians") that "the transepts had no aisles, but invariably two or three chapels on their east sides." The aisle-space in Netley transept may have been used for chapels, but to say that the transept has (architecturally) no aisle would be absurd. In the earlier Romanesque or transition churches of the order there were close chapels with partition-walls between them at the east side of the transept; but the aisle form is fully developed at Netley, as well as in some other instances.

re are two things we should like to see red. For reasons of sentiment we should y much wish to see pic-nics and such enter- ments in the grounds put a stop to; as it is, place is turned into a tea-garden in the most nounced manner, putting to rout all the ociations which belong to such remains. for purely practical reasons, we very much ise that the ivy should not be allowed its way with the walls to the extent which it at present; it is very picturesque, no doubt, it hides in some places all the architectural ail, and (which is a more serious matter) it pull down the remaining portions of the s before their time, if allowed to develop. e of it should be removed without delay, ss it is wished that much of what is left of ey Abbey should disappear irrecoverably.

SCHOOL BUILDING AND SCHOOL LIGHTING.

re importance of what we take leave to call scholastic architecture of England is un- ably very great. We may roughly divide rchitectural designs into certain categories, rding to the objects for which the buildings ntended. If we do this, we shall at once hat the progress of civilisation is indicated ne predominance, from time to time, of one nother motive for the architect. As far back nonumental relics enable us to pursue the ry, defence was the first object of the ler; defence against savage beasts was ably more early in its development than ary fortification. The lake dwellings of zerland have come down to historic times, hey appear to reach back to a very remote uity, and these structures would so readily prey to the attack of any enemy that had cient skill to kindle and to propagate fire, that fact affords a strong ground for the conclu- that the original reason for selecting so ge a site for human abode, was the desire otain protection for domesticated animals beasts of prey.

hen we come, however, to the megalithic tures, of which the actual relics are far ancient in point of historic chronology tever may be their true position in the ry of civilisation) than the lake dwellings, an have little hesitation in concluding that ary defence was the motive of these costly tures. And from the date of the walls of is to that of the fortifications now rising ur own shores, military architecture has ied a very important position,—if not the important position,—in the art of the er.

ile, however, it is easy, as well as instruc- to define the great classes of military, ial, religious, or domestic architecture, as as to point out the special requisites of the ings required for the working of municipal utions, or of those devoted to the purpose usement; when we have enumerated baths, res, hospitals, churches, monasteries, as- ly-rooms, parliament-houses, and all other of public building, we must still reserve a ory apart for buildings devoted to the pur- of education. We do not obtain those ples, in this respect, from the architecture reece that might be at first expected from onsideration of the importance assigned to ation by the sages and the legislators of foremost people in the intellectual race. reason of this defect, however, is not far to

It lies, primarily, in the climate of the terranean. The physical education of the ian youth was conducted for the most part e open air. A layer of sand and a movable were enough to constitute the palæstra. the higher education of Greece, as we are ell aware, was conducted by men of such e stature as were Aristotle and Plato, be- n the peristyle of a temple, or amid the es of Academe. Thus we look in vain for mental relics of Grecian schools. The itheatres and the temples, each lent their er to the pedagogue. So we come down e time when learning revived, although it ed to breathe another atmosphere from that he Grecian republics. To the learned s, especially to the Benedictines, we owe of the educational impulse of the time the institution of the monastic orders ed so important a feature in the social iognomy. Then the school became a por- of a monastery; and, again, the distinction special and fruitful motive for scholastic architecture failed to become a matter of necessity.

Out of the monastic architecture, however, has grown, in not a few centres of education, the type of that educational building which we call the college. These edifices, indeed, very closely resemble monasteries in their main arrangements, although they require, for university purposes, special halls, or even special buildings, as in the case of the schools at Oxford. Thus the chapel, the common hall, and the series of cells or apartments for monks or for students, are nearly the same for the requirements of the learned training of our noble youth at the present day, as those that were required for the comfort of the illiterate brotherhood of the darker Christian centuries. Libraries, like the Radcliffe or the Bodleian; galleries, like that of the Fitzwilliam Museum; amply-lighted courts, such as that of the Natural Science Schools at Oxford, have been successively added to the original groups of buildings which (as in the case of the noble foundations of William of Wykeham) were designed on the type of the monastery.

The Reformation, however, has left its handwriting on the educational architecture of the country, in the form of those buildings known as King Edward VI.'s Schools. At Birmingham, at Guildford, and in other places that may be familiar to many of our readers, these venerable buildings breathe a special air of sixteenth century life and effort. They very perfectly represent the idea of the scholastic life of their date. They are humble reflections of the dignity of the college,—buildings not of an expensive character, and yet rich in a sort of learned ease.

The one thing which prevents the still-existing King Edward's Schools from being pointed to as samples of what school architecture ought now to be, is the question of accommodation. The immense growth of the population of the country, since the Tudor times, is such as to demand for villages and smaller towns more school-room than was required for the more important cities when the sixth Edward bethought him that the children whose natural instructors, the regular clergy, had been chased from the land by his father, would grow up like wild beasts, unless some effort was made to supply the teaching of which they had thus been deprived.

Of those great schools which hold a *quasi*-collegiate rank—Eton, Harrow, Westminster, Winchester,—or of that second growth which is now acquiring traditions of its own,—Marlborough, Cheltenham, and the like,—of the picturesque towers of Charterhouse, unrivalled in the beauty of its Surrey landscape; of Woolwich, Sandhurst, the Wellington College, Cooper's Hill, and other places of the kind, we have not now to speak. Our attention has rather been directed, by the speech of Lord G. Hamilton, in moving the Education estimates the other day, towards a more humble, and yet, taken in the aggregate, a more costly class of building. Very few of us, we should conceive, are aware of the enormous amount of school-building that has been going on all over the country since 1872. It may be asked, "Is it not something like shutting the stable-door after the steed is stolen to inquire, at the present moment, into the normal condition of a good scholastic building?" The reply is, that there are two modes of acquiring scientific information; and that in the absence of the first,—exhaustive preliminary study,—it behoves us to make use of the second, namely, the teaching of experience. It is unfortunately true that the teaching of experience in such cases too clearly resembles the old method of communicating the humane letters by the instrumentality of the ferule and of the birch.

From 40 to 42 per cent. of the deaths registered in England occur under five years of age; four-sevenths of that number occurring in the first year. By the fifteenth year of life, rather more than 51 per cent. of the births have been balanced by the hand of death. We may thus infer that about 11 per cent. of the population range in age from 7 to 14 years; so that, if we allow 5 per cent. for children under 7, 15 per cent. on the births would include all the children who could be sent to school under 15. Lord G. Hamilton gives the population of England and Wales at 22,700,000, which of course includes all ages. It would, therefore, appear that the maximum number of children in the country for whom school-room is needed,—if they all went to school,—would be 3,400,000. If it be argued that the proportion of births is not the same thing as the proportion of population, we may look at the question in another way. The total number of births in England, in 1869, was 773,381. If we allow 800,000 births a year, in seven years 5,600,000 children are born, of whom less than half will be alive by the time they reach fifteen years of age. This would, however, give a smaller maximum number for any possible attendance in schools than that which we have attempted to estimate. Exactitude is, perhaps, not to be looked for; but we do not see how it can very well be argued that a larger number of attendances than 3,400,000 could be possible. There is no doubt that no such number has been as yet approached. And it must be remembered that in the allowance we have made are included, not only all those for whom an elementary allowance is provided, more or less at the public cost; but all the children of the richer classes, brought up at home, or in private schools, and also a large number of children who have passed from school to industrial occupations. The tables of the Registrar-General, from which we take the proportions above indicated, go at a step from ten to fifteen years of age. If we drew the line at twelve, we should probably find 12 or 13 per cent. would be nearer the outside number than 10 per cent. On what ground Lord G. Hamilton's information was based he did not state. But the identical number of 3,400,000 children is that which he stated ought, according to the calculations of the Department, to be in daily attendance. It seems to us an outside number. The actual attendances are 2,700,000, which is a definite fact.

School accommodation, however, has already been provided for 3,950,000 children. School building, therefore, is now sixteen per cent. in advance of the highest possible requirements of the country. We cannot require,—or rather, could not require if details and sums always fitted,—to build another school for sixteen years. This is not what the London School Board tell us; and we find each locality must be dealt with according to its own statistics. But still the fact is a very striking one, and it is one that should by no means be overlooked by those who are interested either in education or in building. Lord G. Hamilton admits that the accommodation now provided is "500,000 in excess of what the average accommodation should be, and 1,300,000 in excess of what the average attendance is." We should say that it is 450,000 in excess of what the maximum attendance at the present time possibly could be made if every child went to school.

What, then, have these 3,950,000 school sittings cost? That is one of the points on which we trust that some one will move for a return. We can only offer a rough estimate. It is not, of course, to be assumed that all these schools have been built within the last seven years. Many of them, no doubt, are buildings of some age. Many of them have been supplied by private contributions. During the past year, out of 1,112 new schools, 506 have been supplied by voluntary efforts, and 606 by School Boards. But wherever built, or whoever built them, these schools have been paid for in some way. The buildings of the London School Board, as is pointed out by a correspondent in our own columns (*ante*, p. 435), have cost over 11*l.* per child, and the cost is still increasing, amounting in many schools to as much as 12*l.* or 13*l.* per head. The price of 7*l.* 18*s.* 9*d.* per child is cited by the same writer as that at which twenty-four schools had been built within his own knowledge. If we take an average of 7*l.* per child accommodated throughout the country, we shall probably be under the mark. But even that estimate gives as a result that we have spent 27,650,000*l.* in providing house-room in which to carry on the elementary teaching of children whose education is more or less directly compelled and superintended by the State. It is a large sum of money, and, with a natural wish to see the activity of the work of the builder encouraged to the utmost, we cannot, for the next ten or fifteen years, expect that we can do,—or ought to do,—very much in the way of building schools consistently with ordinary prudence.

However this sum was obtained, it has to be regarded as a national outlay. In our present mode of raising money by funding, every outlay may be regarded as tantamount to an annual charge. Even if we reduce the cost to the improbably low figure of 25,000,000*l.* we still find an annual charge of a million to be incurred, as matter of account, for interest on school build-

ings. Not, of course, that an annual payment to that amount is made: but that the figure represents an annual sum that would have accrued somewhere had the money been otherwise laid out. Thus to the estimate of 2,181,168*l.*, which is that laid before Parliament for public education in England and Wales in the present year, two-fifths has to be added for rent, or something in some way equivalent to rent, of buildings. Or we may say that to the 15*s.* 9*d.* per head asked for in the present year, the sum of nearly 7*s.* per head has been silently added by the efforts already made to provide school-room.

We are not speaking as in any way criticising the expenditure. But it has been, take it how we can, a very large one. We do not find, in point of fact, that large public expenditures of this nature are apt suddenly to collapse. Whatever might be the case if a complete educational budget were regularly brought before the House of Commons by a responsible Minister of Education, and if that kind of detailed criticism to which Mr. Hume used to subject the estimates of his day were again to come in vogue, we may take it for granted that, for some years to come, the school-builder will, at least in some places, be necessarily at work. Supposing this to be the case, what are the chief architectural requisites that should characterise this class of building?

We think that they are of a nature for the determination of which we should look rather forward than backward. We have seen why we cannot look to Classic architecture for models; but it does not follow that we should not look to Classic architecture for motives. What are the chief requisites for a school building? Adequate,—not too much,—warmth, and adequate ventilation are, perhaps, the first; but they are not special to schools. What seems to us to be the first special requisite for a school is light. Light of more abundance and more regulated incidence than is demanded either in the dwelling-house, the church, or perhaps almost any other class of building.

The importance of a good regulation of light in any building devoted to the use of the young is one of those things of which few people are adequately aware. Those who are by nature gifted with a perfect vision are but little conscious how rare that noble gift of nature is; those who are not are probably but little aware, unless special causes have turned their attention to the fact, how much the preservation and the education of the vision depend on the regulation of light. In this, too, it must be remembered that there is mischief in excess as well as in defect of light. The use of over-lighted rooms, where gas is the illuminating power, for night-work is even more to be deprecated than the use of dim, ill-lighted rooms for the purposes of the day-school.

In regarding the illumination of schools, we have to consider not only the quantity of the light admitted, but also its quality and its angle of incidence. What we are anxious to enforce is, that these points should be so thoroughly discussed and thrashed out, that it will become possible to construct a definite formula for the use of the scholastic architect. Thus, first to take the quantity of light. We are able, when we use artificial light, to ascertain the quantity that will fall on any part of a room from a certain number of measured sources of light, because we know that the illuminative power diminishes exactly as the square of the distance from the luminous power increases. But this law does not apply to a window. We know, as matter of fact, that if we take a large room lighted by a given window, or set of windows, we come nearer to the windows if we want more light. In reading in a library, for instance, as evening draws on, who is not accustomed to draw nearer to the window before lighting a lamp or candle? We can understand why this should be. It has nothing to do with the law above cited. It is for the reason that the external atmosphere is full of light moving and radiating in every direction. A ray of light that strikes directly on a window,—as in the case of the sun setting exactly opposite to it,—arrives at the far end of the room with exactly the same degree of intensity, so far as we can appreciate it, as that with which it escapes from the glass. And that will be the same degree of intensity as that with which it strikes the glass, less only any loss occasioned by transmission through the glass itself, which is usually about 10 per cent. But rays of light strike on the flat surface of the window at every angle, from one close to the zenith to upward reflections from the ground. Each ray is deflected from its path by entering, and again by leaving, the transparent screen formed by the window. It is thus evident that a much larger quantity of light will enter the part of the room nearest to the window than will reach the end of the apartment, and that in great degree in proportion both to the size of the window and to the vicinity of the observer. What we want, then, in the first place, is a formula for proportioning the size of window to the size of a room, on the principle that a definite quantity of light, under given conditions of the height of the sun above the horizon, shall reach the part of the room most distant from the window.

It will thus become apparent that the question of quantity of light is very closely connected with that of angle of incidence. For example, in a room lighted by a horizontal sky-light,—if such a thing existed,—there would be no difference in the illumination of the different parts of the room, excepting such as was caused by reflection from the walls. There would be another cause of difference, indeed, even here, but it would be a horary one, dependent only upon the height of the sun above the horizon, modified, of course, by the state of the atmosphere. In the same way the incidence of the direct sunset or sunrise rays would be too brilliant for practical use. They would require filtering through linen, or some material that would absorb a portion of the light.

Again, if we take such a unit of comparison as the quantity of light admitted through a window containing, say, 40 superficial feet of glass, the mode in which these rays would reach the eyes of the pupils would depend, to a great degree, on the form of the window. Thus the window might be regarded as either square or oblong, and the position of either form in the walls would greatly affect the illumination. If we used a window of 15 ft. high, and 2 ft. 8 in. wide, we might admit the same quantity of light that we should do if the window was 10 ft. high and 4 ft. wide. But in the former case the window would reach from the ceiling over to the floor. In the latter, it might reach from the ceiling to within 3 ft. or 4 ft. of the floor. We think few persons can have made a study of the question of the incidence of rays of light on the eye without coming to the conclusion that upward striking light is rather obnoxious than favourable to vision. Thus, if we take the eye of a student seated at a desk or a table as 3 ft. from the ground, all the light that comes into the room below that level, or let us say at a lower level than 4 ft. from the floor of the room, will be in great part wasted, if not actually causing disturbance to the vision. In starting from the level of the ceiling, therefore, the 10 ft. by 4 ft. window would admit more useful light than the 15 ft. by 2·66 ft. window in the proportion of 40 to 28·6. If we try to pursue this subject a little further, we are stopped by a want of observed facts. We know that if a room be required for certain purposes of art, the best mode of admitting light is through vertical windows placed in a lantern at the top of the room, the walls proper being unpierced. But what we want is definite measurement, of a photometric nature, of the effect of the admission of equal quantities of light through windows placed at different altitudes. The subject is one eminently deserving attention. The question will arise as to the method of making the photometric comparisons. We can indicate one. It is to provide a number of discs of glass or slips of ivory on which micrometric scales are formed by ruling lines at minute distances apart. The instrument of comparison would then simply be the eye of a trained observer, making observations as nearly as possible at the same minute of time. Thus in a room lighted in our method he would be able to see clearly, say 60 lines to the inch, in another 80, and so on. This method may be rough, but it has the merit of making the test as closely as possible represent the thing required,—clearness of vision. We will not venture to do more than suggest the great probability of the result being made evident that no window should be allowed to present an illuminating surface lower than perhaps 6 ft. from the floor of the room. The question of the substitution of a lantern for any ordinary windows, in cases where the building could readily be adapted to this method of illumination, would also become a matter of study. One rather anomalous result would be likely here to come out, that is, that in country localities, where, though the view from the windows may be most agreeable, the cost of land may small, the use of the lantern would probe prove the most convenient. In urban localit on the other hand, where, as far as view is cerned, wall would be preferable in many c to window, the high price of site would rec the construction of superposed stories, in w a lantern light could only be convenie applied in that on the highest plane.

METROPOLITAN WATER SUPPLY.

The debate in the House of Commons, o 13th of August, on the water supply of Lon was characterised by moderation and feeling. The subject is one on which especially necessary that the speakers sh be fully informed; a preliminary to debate which it is less easy to dispense when fac a physical nature are in question, than theoretic changes only are proposed. The House fully appreciated the advantage of addressed by the head of the Departmen Government which not only has some resp bility on its shoulders in the matter, but has taken the trouble to master the main of the case.

The thesis that impure water prejudi affects the health of the community; th affects the moral, as well as the physical, he that security of life and property depends adequate supply of water; and that water to be supplied to the population of the m polis at the lowest cost; is so simple and putable, that we should rather have expec hear it brought forward at a debating s than in a legislative body. It is well, how to place on record these great postulates. truth is not in debate; but their importanc be under-estimated. The assertion of Mr. cett that London is at present sufferings from defects in the mode of supply than defects in the quality of the water suppli however, rather more of a novelty, especia the mouth of an advocate of water-r Chemical analysis shows that it is the The point is one of primary importance, b it shows the direction in which we have for improvement. Mr. Fawcett stated th Thames supplies about 51 per cent. of the used throughout London. The water Southwark and Vauxhall, the Grand Jun and the West Middlesex companies, the of which are at Hampton, is the only por the supply of the metropolis which is spoken of as unfit for dietetic purpose forms above 32 per cent. of the entire s As far, then, as any attacks on the purity water supplied is concerned, it is import bear in mind that they apply to rather les a third of the total supply of the metr and that a practical improvement i respect is a far less colossal matter than the friends or the enemies of new schem apt to make out. The water of the Chels Lambeth companies, also taken from the T but taken higher up the river, at Mole described as of a superior quality.

We thoroughly sympathise with Mr. F in that part of his speech which calls att to defects in the mode of storage of wa houses. Every commission and every com as he truly said, that has inquired in subject has come to the same conclusion this. The best water in the world wo hopelessly spoiled if stored in the man which water is kept in the cisterns of s part of the metropolis. Mr. Fawcett sp the poorer parts of the town alone. He with advantage have extended the field remarks. Where are the water-cisterns houses placed? Are they not frequently vicinity of the water-closets, or in sou ventilated and confined part of the People are apt to forget the absorbent of water. If a pail of water is placed midst of a room that is being painted, ho of the smell and vapours of the paint not absorb? If the supply of drinking is accessible to sewer gas,—to heate breathed air,—or any of the thousand p of the vital chemistry, it acts in the sam The very virtue of water as a sanitary p its capacity for absorbing and holding in s or in mixture gases and other foreign m is the main source of the impurity of water. "If pure spring water were r a cistern close to a cesspool in some dar dingy back-yard, where soot and almost kind of filth got into the water, and if no

er were run into it for forty-eight hours,—
ely, from Saturday to Monday morning,—
t frequently happens, hopeless contamina-
would result." There cannot be a doubt
hat. But we will go further. We can cite
ase in point. It is that of a well-made
rn, fitted with a movable wooden cover,
holding some twenty-five gallons of water.
water is supplied on constant service, regu-
d by a ball-cock in the cistern, and is of
est absolute purity,—certainly the very best
er supplied by any water company in the
ed Kingdom. Soot and atmospheric im-
ties are excluded as far as can be the case
ost hermetic closure. The little cistern is
a water-closet, used only by four, or at
s five, persons, and not used by servants.
nall pipe allows water to be drawn from the
rn for the supply of the floor on which it
aced.

y dint of thoroughly emptying the cistern,
ast once a week, the water in it is kept fit
se,—though it is not used for drinking. The
t is, that day by day the cistern becomes less
. If the thorough washing out be omitted,
water becomes dirty. The only assignable
e is the vapour arising from the use of the
t,—not any permanent escape of gas. A
e typical instance of the need of extreme
ance could not readily be given. How
y cisterns in London are thoroughly washed
nce a week?

ith regard to the quantity of water supply,
on, as fairly represented on that subject
r. Fawcett, is undergoing a change. Some
since the demand was for more water.
it is for less. The thirty-two gallons per
supplied to the average Londoner (a quan-
which rises as high as thirty-seven gallons
head per diem in sultry weather) is con-
ed with the sixteen gallons per head of
hester and other places. The question is
iately connected with that of constant
y,—a mode of service which, with proper
diminishes the take of water per head. As
is, Mr. Fawcett said that, "excluding the
London Company, considerably less than
er cent. of the houses in the metropolis
constant supply, and that after thirty
efforts." We do not see why East London
been excluded. The figures which have
furnished to us, from a trustworthy source,
a not altogether unsatisfactory result. They
s follow:—Out of 563,000 houses in the
companies' districts, constant supply
d on to 128,704,—or nearly one-fourth of
hole; and no less than 76,853 houses have
so supplied since October, 1873.

is question of constant supply may be
ded as one involving the outlay of
l. According to the evidence of one of
ost experienced hydraulic engineers in this
ry, given before the select committee of
House of Commons on the Fire Brigade,
verage cost of altering the fittings from
ermittant to a constant supply is 8l. per
, taking one with another. Thus to carry out
stem for the 434,600 houses still receiving
ermittent supply would demand an outlay in
st instance of 3,476,800l. The interest on
ught not to be put at less than 7½ per cent.
nnum, considering the nature of the outlay.
ven at 5 per cent. it comes to 173,000l.
nnum. The water rental last year was
000l., so that a cost of about 8 per cent.
be added as incident on the ratepayers
he fittings;—8 per cent., that is to say
general rental. We may safely take it
per cent. increase in this particular case.
st this may be set off a saving of, let us
alf, the consumption of water. But it is
ning to arrange for a definite supply, and
o take a less quantity, and quite another
to arrange for a smaller supply in the first
ce. Economy is possible in the first case,
is not possible in the second. The only
saving in the delivery of a smaller quan-
f water through pipes and fittings con-
ed to convey a larger quantity is in the
f pumping. In London the cost of pump-
curred by the water companies in 1876
little under 140,000l. out of a total
ng charge of 493,000l. The interest and
nds account came to 756,000l., being at
ate of 6·58 per cent. on the capital of
,000l. It is enough to state these figures
ow how doubtful is the assertion that
ing like 100,000l. per annum can be
by consolidation. The utmost that the
nment hold out is that the incidence of
0,000l. per annum shall not be increased by these measures. As to the 493,000l. now expended on working charges, if the quantity of water consumed were reduced one-half, by the introduction of universal constant service, the saving in pumping would be, as we have shown, under 70,000l. per year. That has to be contrasted with the cost of 173,000l. per year incurred by the new fittings.

It is of extreme importance that people who undertake to propose improvements in the water supply of London should, in the first instance, acquaint themselves with the facts of the case. That which appears to us to be the most forcible argument for legislative interference in the matter was not mentioned in the debate, so far as we have seen the reports,—that is, the question of remedy for non-payment of water-rates. At present the companies have, and at times use, the power of cutting off the supply to enforce payment. From a purely commercial point of view this is perhaps the simplest and best means imaginable. But from the higher point of view, the public health, it is altogether inadmissible. If it could be shown that stoppage of water was a necessary weapon to leave in the hands of the companies, it would be proved, at the same time, that the companies ought to be bought up, at whatever cost.

To the question of actual cost we may find occasion to return. Mr. Sclater-Booth, who spoke not as an advocate, but as a man possessed of a full knowledge of the subject, wisely deprecated exaggerated statements as to either the quantity or the cost of the present supply. The cost in London, the right honourable gentleman said, is between 8d. and 9d. per 1,000 gallons. In Liverpool and Manchester it is 9d.; and in Glasgow a shilling. Mr. Cross thought that the powers now possessed by the vestries might be exercised with advantage in improving the purity of the cisterns. That very much is requisite in order to supply every house in London with pure water fit to drink is unquestionably true. Our anxiety in the matter is to prevent efforts being made that will do more harm than good. There is no question at all that certain plans which have been proposed on a vast scale would have had the effect of increasing the rates to an enormous extent, without giving any assurance as to improving the quality of supply. We are desirous that effort should be made only in a useful direction; that neither the party of job, nor the party of crotchet, should be allowed to interfere; and that, above all, those who deal with the matter shall have the courage to confess the absolute necessity of a constant house-to-house inspection of cisterns and fittings by independent and competent authority. That is the true panacea; but it is one the advocacy of which is not to be expected from any but real sanitary reformers.

FROM THE BANKS OF THE SEINE.

At this season, when it is the daily custom of editors and public to speak of the capital as empty, ample excuse has been afforded for escaping from the banks of the Seine, in the interesting ceremony which took place on Sunday, the 9th inst., at Le Creuzot, the solemn unveiling of the statue of Eugène Schneider, the work of the sculptor Chapu.

Eugène Schneider may be said to be the creator of the town which bears the name of Le Creuzot (situated about half-way between Lyons and Dijon), and which may fairly be termed the Sheffield of France. Louis XVI., a king so rarely regarded in history as anything but a too famous political character, but who often showed his desire to advance the cause of science, warmly supported the proposal made to work the rich mines of the Creuzot hills, and from the first foundation of the society, the statutes of which he signed in 1784, he took up himself half the shares of the company which was to work the foundry constructed two years previously, and it may not be uninteresting to English readers to learn that some years since a commemorative plate was discovered stating this foundry to have been the first in France, "built to melt the mineral by the aid of coak [*sic*] according to the method brought over from England, and put in practice by M. Williams Wilkinson." While France was suffering from the effects of her revolution, and the still more fatal effects of the first Empire, England, it will be remembered, was commencing that great industrial career which, till within so short a time, she has triumphantly carried through. France, exhausted by her long wars, was unable to supply her own wants, and looked to us for most of the main staples, and great was then the vogue of English razors, English cloth, and English locomotives. Little by little this situation changed, and foremost among the workers stands out M. Eugène Schneider. Notwithstanding the enormous sums which had been swallowed up in the great Creuzot foundry, he boldly, in 1837, purchased the company's rights, and before many years had passed his management produced the extraordinary effects which his son has been able so successfully to continue. After a voyage to our manufactories in 1846, M. Schneider stated it as his opinion that there existed no reason why France should not be as capable as England to supply her own wants, and events have shown M. Schneider to have been right. Almost to a month the patents of the steam-hammer were drawn out by Schneider in France, and our own Nasmyth,—who had paid a visit the same year, 1842, to Le Creuzot,—and before long the factory began to supply many important productions which England till that time had exported. From that day to this Le Creuzot has steadily advanced, but not the least interesting and instructive feature of the now vast system is the simple and paternal organisation which Eugène Schneider inaugurated. He called about him numbers of workmen, and schools were opened for apprentices, who eventually obtained good positions in the factory; savings-banks, a library well supplied with scientific and literary works, an admirable medical service, and a hospital (another hospital was opened on the occasion of the unveiling of the statue on Sunday) were founded, but the chief point to be noticed in the organisation of this admirable system was the principle set forth that all was to be done by the workmen themselves. Charity is a personal quality, foresight is a social virtue; nothing at Le Creuzot is gratuitous, and it is this very principle which renders its organisation stable; the workmen are recompensed each according to his merits. Le Creuzot, indeed, as has been truly observed, realises the ideal of a large industrial family,—large indeed; 15,000 workmen, with a population in the town of some 26,432 according to the last census, and since then there has been an addition of perhaps 3,000 souls. In 1837 the population was 2,500. The ceremony of the 9th inst., we may well understand, was a homage of gratitude on the part of these thousands to the memory of a great benefactor whose noble traditions are worthily continued by his son, M. Henri Schneider. We will not attempt to describe the details of so enormous a factory. We refer those interested to the pages of the admirable work of Turgan, "Les Grandes Usines" (vol. vi.); but above all we would urge a visit being paid to Le Creuzot. Visitors are ever welcome there, and both for the manufacturer and the tourist much is to be learnt in the organisation of the great industrial enterprise.

Very appropriately at such a moment has reached us the announcement of a wise step taken by the Government of the United States in obliging its consuls in Europe to send home on the 1st and 15th of each month a report of the state of trade in the countries and districts to which they are accredited, together with the prices of those articles which might be imported. More than one French journal has taken up the question, urging the Government to follow the wise example of America. However true it may be that our English journals, as the French urge, inform their readers of the state of foreign markets before even the manufacturers of those countries know it themselves, there is none the less as great a need for England, in her present commercial condition, to endeavour to learn the reason of the falling off of her commerce abroad, and this unpleasant truth may unquestionably have much light thrown upon it by our consular agents; then we shall see the reality of what at present is so unwillingly believed, that we are being slowly beaten out by superior intelligence and superior taste,—a fact which we hope our manufacturers may at last believe when they hear it set forth, as it was not many days since at Chester, by so experienced a statesman as Mr. Gladstone.

Paris, in the hurricane which blew over it last Saturday, was deprived of one of the features which strangers and Parisians have enjoyed for the last two years. By a strange fatality, only a few days after the determination of the Chamber for the destruction of the Tuileries, the captive balloon, which has occupied the courtyard of the ruined palace, was

demolished; fortunately no life was sacrificed, and the only sufferer is the intrepid M. Godard.

The death of Mr. Severn on the banks of the Tiber has not passed unnoticed on those of the Seine; his picturesque studio, overlooking the famous fountain of the Trevi, is well remembered by more than one Parisian, and his name in Paris is not merely associated, as it has been so long the custom in England, with that of the poet Keats, but his pictures are regarded here as Thackeray regarded them, as entitled to our reverence.* Severn was no grumbler, or he might have complained that his neighbour, Castellani, received more commissions for his beautiful work in a precious and plastic material, than he, Severn, did for his ideal canvasses. There is no sympathy felt here with the writers of recent letters relating to his funeral at the well-known Protestant Cemetery in Rome, where he reposes as he must have desired, not far from the grave of his friend Keats, beside which he stood and wept fifty-nine years ago; the tombs of Keats, of Shelley, of Gibson, and of Severn, add, indeed, a melancholy interest to the old resting-place of Caius Cestius.

MEDIÆVAL ARCHITECTURE AND "GOTHIC" RESTORERS AT SALISBURY.

It is matter for lamentation, if we may reasonably allow ourselves to be disturbed by anything which it is clearly beyond our power to control, that the necessary discomfort of long railway journeys should miss one alleviation which from time to time seems promised, but only to tantalise and disappoint us. After a long interval of tame scenery, we are at last approaching a cathedral town, and anticipate the pause of five minutes given by a punctual train for a sight of a noble tower or a group of spires, which hitherto has only been known to us pictorially. The object of our interest only comes momentarily into view as we sweep into a station that effectually conceals all but bustle and bookstalls, or up to a station that not of necessity, and, therefore, as it seems to us perversely is so placed as no less effectually to shut off all that we desire to see, but can again only glance at as momentarily when we quit the station as on arrival. In the case of Salisbury, the openness of the country favours us; and on approach and departure, at least, we have the opportunity of gathering delight for comparatively a satisfactory time, and from changing aspects,—the direct and the oblique, of the square tower, and,—may we not boldly say,—of the most graceful spire that architectural genius ever conceived, and most daringly succeeded in erecting. He is not unenviable by one who knows the spire from books, who has had the opportunity of such a vision of the work itself, if no more; still more enviable is one who, arriving at the city after dark, strolls out to the Close, and has his first sight of the aspiring pinnacle lighted only by the moon, or only it may be by some unclouded stars.

It is a common experience that the shades of night lend a massiveness and a dignity to buildings which fall back into the frittered or the common place, if even that is the worst, when seen as they are chiefly, or indeed solely, supposed and designed to be seen, in broad daylight. The lesson is one well worth taking to heart; it is a warning how elaboration of ornament and detail is worse than thrown away when the revelation of its variety and delicacy proves fatal to the decision of leading lines and the subordination of considerable masses. But it is not at Salisbury that the light of day is to be shunned as bringing back confusion which only the broad mantle of comparative darkness can subdue. The plan of the cathedral, diversified as it is, with double transepts, projecting north porch, and lady-chapel, declares itself in all simplicity; every member of the organic group is expressive of that measured self-assertion which never infringes the due importance of the superior, and never loses itself by declining indistinguishably to another that on its own part it is bound to dominate. The architect might be said to have embodied in stone that condition which an ancient stated for a well-ordered commonwealth,—that every member of it should be as competent to exercise appropriate authority as prompt to render due submission. Strange to say, the key to the complete unity is the spire, which it is difficult to date much nearer than a century to the completion of the chapter-house, which itself is somewhat later than the cathedral. The dates of the cathedral are tolerably ascertained as follows:—The foundation laid, A.D. 1218; first service, 1225; full dedication, 1258; the style is consistently then the Early English of the thirteenth century, and that of the chapter-house is somewhat later, and is assigned by probable conjecture still, only to about A.D. 1262.

But the style of the spire, as salient in details of pinnacles and other ornaments, is decided Decorated, and must be placed about A.D. 1350. That the addition of the spire, however, is a more afterthought of a century later is not easy to believe, as it is impossible to prove. Notwithstanding the tendencies of the period of its actual erection, it is in marvellous sympathy with the sobriety of the general structure, so that whatever enhancement of ornament it displays is far from offending as an incongruity, but rather affects us with a sense of that progressive enrichment and advance to emphasis that in nature leads us on from stem to branch and foliage, and culminates at last, in "the bright consummate flower." We may safely assume that the earlier architect contemplated a spire; the two spires of Bayeux, in Normandy, attest that the imagination and enterprise of his contemporaries were equal to such original achievements; and beyond this, the presumption is very strong that the design of the first architect was preserved, and gave the leading lines and characteristics which were adhered to by his successor as conscientiously as human nature admitted,—human nature as modified by the instincts of a Mediæval builder who never would complete the work of a past century without giving it more or less the impress of his own. Such impress appears not only in the details of the spire itself, but in the pinnacles of various piers that give attachment to flying buttresses in the re-entering angles of the transept. It is fortunate that these are not more conspicuous, or the detriment to external effect would have been serious; as it is, it is easy to disregard and forget them. The majesty of the spire is largely due to its manifest independence of complicated and officious propping by buttresses. We become aware on examination that the architects thought it necessary to take the fullest security for stability by a system of buttresses which are behind the triforium, and find abutment on the piers of the nave, but the clustered pinnacles at the angles of the tower give expression of adequate solidity at the main points of responsibility; and still something more is gained to the same purpose by the slight but well-defined setting in of the upper stage of the tower which gives to the lower the character of a base. This division of the tower into two nearly equal stages has the further effect of subordinating the whole to the single structurally undivided elevation of the spire; the outlines of the octagon of this rise without interruption from base to apex, the beading of ball-flowers effectually precluding atmospheric illusion at a sharp edge of the sloping line, and the triple bands at varied intervals assist the eye in recognising the height which they mark but do not interrupt.

The exterior of Salisbury Cathedral, then, taken as a whole, is especially, is unusually harmonious; the exposure of the full basement down to the turf-level of the beautiful close is a restoration in a sense that goes far to redeem a word "which was an excellent good word till it was ill sorted"; sequences of importance and magnitude of the lateral projections are happily proportioned; the western front is the least effective feature, but at least it does not interfere, and no further expression is demanded in this direction from the peculiar collocation of approaches. For the same reason it would always be seen in comparative isolation; the general scheme of its adaptation was ingenious and praiseworthy, as made available for the display of architectural sculpture, which the style gave no opportunity for elsewhere. Even the architectural effect would doubtless be very much improved when the sameness of the system of niches with which it is clothed should be relieved by the complex curves of lines and surfaces of draped figures, and enlivened by representation of animated forms. Completion, perhaps, as much as restoration has been continues to be busied here in filling blanks, whatever opinions may be held as to sculpture supplied, it would be unfair n admit that the general effect must be bro nearer to the original intention, if not t original design. Where it would seem that design must have been at fault is in respe distributed plan; it does not appear how series of the isolated figures,—groups could be none,—were so framed in as to ind a central subject, and thus give a palpabl to a leading purpose and idea. The west however, stands by itself, and is seen by and so long as we remain outside the cath we shall be captious, indeed, if we allow secondary discords to disturb our enjoyme a pure and elevated harmony; a certain h of buttresses is not nearly so offensive h in the worse confusion at the re-entering ang many other cathedrals; the comparativel pitch of the roof of the nave saves us fro heavy and featureless expanse of lead t often seems to repudiate fellowship with a rated and enriched system of curtain, wi and buttresses below, and, another advar the flat Norman pilasters which represent mentary buttresses are even less incons than the few Decorated pinnacles. The and to a large extent admirably exact ash the wall-surface is in keeping with the simp of the lancet windows of the aisles an clearstory and the larger system of the transept, and leads up to the judicious s of considerable plain surface in the sp Decorated of the fourteenth century tho may be.

O si sic omnia! but it were well that or is about to pass within should brace hims to speak, æsthetically, and call to minc many are the occasions when the apprec of much that is most beautiful is reserv those who can abstract their attention fr hideous, and withdraw themselves fro obtrusive, — provisionally,— with liberty reserved to make a visitation upon the obn in due time. Such faculty do we wholes exercise when, confronted with archaic are content to ignore crudities, while we best to appreciate the living soul of the that struggles to release itself, and ga come for worthy expression, in a Selin metope, a vase with black figures, a Mado Cimabüe, a sculpture of Niccolo Pisano.

Still more severe than the exercise of nating the faulty work of a fine artist is cancelling the bad work of a poor cop order to recover the fine art of an originah it encumbers; but this is the work that us if we are not to turn away from such as the "Niobe" at Florence, and remai to how much it preserves of the spir inspiration of the lost original by Scopas.

Our difficulties grow as we attempt to with them; how often have we to disco the phrase runs, the prejudicial effects o decay and ruin; and then we have to ment from our own imagination those defic in a fine work which are due to the lack pletion by its author,—or to his failure pletion,—as to his spoiling by bad colou was unimpeachable in form; and, last we have to recognise, if we can, "a goodness in things evil," which are ve indeed, and undo, if we can, the dam falsified restoration and of vulgar presu in arbitrary change. What, then, is problem when we have a compound al deal with, which comprises these m every one? Little less than this is o when we now enter the interior of Sa Cathedral. Let us show that we are n unequal to it, and give to admiration rogative and precedence. The interior seen freely from end to end without inter by the light brass gates of the choir reredos which does not shut out the view window of the lady-chapel eastward. charm of this interior lies in the fine pro of the nave arch under the tower, with Purbeck shafts, its correspondence w vault of the nave, and then with the a encloses the heads of the high-lancet window at the west. This latter adva again made the most of in the transept no such odious misfit is shown as we often afflicted by; the main outline lighted portion of the wall agrees abo the enclosing curve of the arch, and whe space is left around is well and justly dist —not cramped in one part to be left a

* Prince Albert, who appreciated Mr. Severn, commissioned him to paint one of the lunettes of the famous pavilion at Buckingham Palace, to which Thackeray refers in his "Lyra Hibernica":—

"That picture of Severn's is worthy of rever'nce,
But some I won't mintion is rather so-so,
For sweet philosophy or crumpets and coffee,
Oh, where's a pavilion like sweet Pimlico?"

in excess at another; for once we escape association of an interior with an exterior re which it neither knows how to agree with reasonably to differ from.

. main beauty of the cathedral has been eited, necessarily or not, by the introduc- of late sub-arches and inverted buttresses ss the transepts, with a view to give dity to the structure. We thus lose the fine ct of the main tall arches north and south, the fair and open vistas over the crossing to north and south windows.

nother serious consequence of this is that expression of verticality which can be ill- ed in this interior, loses the help of the shafts at the crossing, which are entirely red up,—covered up where it is most im- ant that verticality should be insisted on. horizontal string-course below the triforium passes continuously from one end of the edral to the other. Thus is exaggerated of the few difficulties,—but that a serious —which are chargeable to the original gn. This string-course is not crossed by ting shafts, and in consequence the division ne nave into compartments by the vaulting t odds with the horizontal division into es; horizontality makes a hard fight for ominance again by the unfortunate design ne triforium. At Lincoln and Westminster ng other examples, over each side arch of the a pair of triforium arches are carried up ne clearstory string-course, and thus a tall ortion of parts is obtained; but at Salis- the pair of arches are kept low and spanned n arch-moulding so low, and at so open an e, that it seems to awkwardly straddle ss to the dumpy compound pier; leaning on this instead of appearing to easily spring it, it is an ungraceful arch in itself and peculiarly out of place in its proportions.

nen we may fairly take exception to some r particulars, and are supported by the tice of masters of equally good time. The of the quadripartite vaulting descend upon ttached pillaret or corbelled shaft; the adjustment is no doubt found elsewhere in y elaborated examples, and yet it were y ill that "the influence of authority" ld be allowed to justify imitations. The nsibility of pressure which the ribs express elivered unfairly; it seems cast not on the but in front of it,—in front, indeed, of the stout compound triforium pier below and nd it, which thus becomes a counter-sense.

ce more. The transverse moulded rib has cial significance, if only as self-dependent marking the compartment; but it does not ve the acknowledgment of a rosette like blique ribs at their meeting. The fact of ing to cross is doubtless the suggestion of an ornament as a rosette or knotted boss; he single rib looks weak and poor by con- . The architect of Westminster solves the lem by introducing a ridge-band, which gives stifying crossing,—the desiderated strength he ornament.

we are to pursue our indictment of the nts conscientiously, and we must do so if are to claim liberty to reflect upon the rns, the orders of mouldings of the nave es are scarcely distinguished with that best nand of section which is the glory of Early ish Gothic at the very best. In the choir partially elsewhere a remedy almost ient is given by separating lines of a very dogtooth, but elsewhere the projections groovings are not so managed as to define orrespondence of systems of mouldings and hafts they pertain to. It seems probable progressive improvement may be traced within the building itself.

ere are considerable indications that ently, whether originally or not, reliance was d on colour to give the contrast and defini- which simple light and shade did not iently bring out. Here we are landed in a difficulty for the conduct of anything like stinct charge against the ancients. We ot condemn them without knowing cer- y what it was they did, and in our ignorance is it is impossible for us to say that they not have been competent so to manage ir as to surmount this particular difficulty some others that are sufficiently obvious.

e Purbeck shafting, which is so liberally oyed, is beautiful in itself, but its decided r makes an abrupt contrast with the white of the plain surfaces and mouldings, and polish only promotes the discord and ces whiteness to chalkiness. It does not appear impossible that patterns might in some way be applied on the surfaces above the nave piers, so as not only to alleviate the discord of colour, but also by direction of lines to unite in some degree the piers with the triforium, to form a transition between the two stories. This is not impossible, but there is no encouragement to think that it is a likely consummation.

Whatever may have been the management of colour by the Mediævals, in the hands of the moderns at Salisbury, it is,—must plain truth be spoken plainly,—little less than revolting. When the result is unqualified ugliness we demur to the plea that the Mediævals set the example. If what has been done is the outcome of a course of sedulous and matured study we must sanction the application of a rule that an old prologue makes absolute for an over-laboured comedy,—

> "Damn it the more,—have no consideration
> For dulness on mature deliberation."

The colourings of the mouldings, original or refreshed, are at once flat and gaudy, dead and fantastic, disturbing, annoying, exasperating, and intenser adjectives would follow if we let them. When Lord Campbell saw the colouring of the vaulted ceiling of the restored Temple Church, he said it reminded him of Grimaldi's breeches. The generation which "knew inimitable Joe" is becoming rapidly extinct, and pantomime also is said to be dying; but if absurd contrasts of colour are required for its revival the colourists whose effects we criticise are of competence approved. It is really difficult to be serious on the subject, for seriousness must soon merge in undesirable severity. What must be the state of the case when we can see with pleasure the new colour detaching itself from the clean walls of the chapter-house,—by the square foot, by the square yard.

The difficulty as to colour comes up still more seriously in the matter of glazing. The extent of window opening throughout the cathedral can only be justified on the assumption that it was intended that the glare of admitted light should be tempered by the character of the glazing. This glare is at present intolerable; it could only be corrected by coloured or dulled glass. Remains of the ancient glass go far to prove that this might be done successfully; it may be uncertain whether it ever was done completely; it may have been left, like the spire, for the renewed resources of another generation to finish. The windows were not intended for looking out of; they were to light and to close in the holy structure, not to admit views, though only of trees and skies. In some of the preserved glass, the general tone is that of grisaille; it was given by a cool sea-green tint in the glass itself, which thus admitted none of the sharp sparkling white light of modern pure glass, and the roughness of the surface was further contributory to dulling the rays. Upon this was painted in an opaque dun colour a pattern of fine thirteenth-century foliation. When this is examined close at hand it is impossible not to admire the fine, clean outline, the purity of curve, and the delicacy with which a bold broad stroke tapers off to the fineness of a hair. The ultimate finish is given by narrow right-lined fillets and occasional centres of translucent coloured glass, which enliven, but do not predominate. Not only was such glazing not intended to be looked through, but it was not intended to be looked at otherwise than casually and incidentally; it was enough if it conduced to a general sentiment of tranquillity appropriate to the engrossing influence of devotion.

It may naturally and appropriately have been otherwise for the larger and terminal systems of lights, east and west, north and south. Here, if anywhere, there was fitness as there was scope for truly storied windows. Little of what was ancient in this kind now remains; what there is of modern only pronounces itself too positively. Windows, be it in all sadness said, are so introduced and so coloured, as if the characteristics and very purposes of the fabric were entirely forgotten. Windows are inserted in places where they declare themselves to be only parts of a series, yet so tawdry in effect,—even gaudy seems too complimentary a word,—that the dedicators themselves must be the last to expect that the companions can be filled in the same style. Happy that so it is! But then how vexatious is the single ostentatious intrusion.

The delicate shafting of the lady-chapel seems to demand association with tints as modest and refined as those of an Annunciation by Fra Angelico. But windows are inserted of such colours as are at once too rich and too dark, too gloomy and too garish, that flaunt with the insufferable intrusiveness of a music-hall advertisement. The offence is diffusive towards chancel and choir, whence the windows are visible by whose is ill-advised enough to look.

But now enough; such is the burden of which we have to deliver our souls as we quit Salisbury Cathedral after visiting it and revisiting. When the burden is delivered it may be happily dismissed, and happily we may congratulate ourselves that whatever has been our dismay at witnessing what (reverential) restoration ill-advised is capable of, the beauty and simple dignity and majesty of the thirteenth-century architecture of Salisbury are mighty enough still to dominate even abuses so extensive, and to live on in our memory after the misdeeds of false friends are forgiven,—forgiven because, in consequence of their comparative insignificance after all, they are in time forgotten.

W. W. L.

LONDON RECORDS, KNOWN AS "THE REMEMBRANCIA."

In the Record Room of the Town Clerk of London a series of books, nine in number, is preserved, entitled the "Remembrancia." These books contain copies of correspondence between important bodies and individuals of distinction on matters relating to the government of the City, its usages, customs, and public buildings, and embrace the period between the years 1579 and 1664. Upon the recommendation of the Library Committee the Corporation have just now published an analytical Index to this series, prepared by Mr. W. H. Overall, the librarian, and Mr. H. C. Overall, assistance having been given in the compilation of the biographical notes, which are numerous and valuable, by Mr. Reginald Hanson, F.S.A., chairman of the committee.*

Mr. Overall's knowledge, ability, and carefulness are so well known, that *il va sans dire*, as the French say, that the work is thoroughly well done. The references are given under separate headings placed alphabetically, as "Admiralty," "Aldermen," "Ambassadors," and so on, so as to be readily accessible.

Let us see what may be gleaned from two or three divisions, which address themselves more particularly to our readers. Under the head "*Buildings*," for example, reference is given to a letter from Jeamys Crofte and Sir Francis Walsingham to the Lord Mayor and Aldermen, reciting the Queen's Proclamation, dated at Nonsuch, the 8th of July, in the twenty-second year of her reign, commanding all persons to forbear from any new buildings within three miles from any of the gates of the City of London, and stating they were informed that Richard Woodrof had obtained a lease from William Chambers, gent., of a piece of ground with buildings thereupon, in Gunpowder-alley, *alias* Crown-court, within the City. This is dated 12th June, 1582. Then comes another letter from the Lords of the Council to the Lord Mayor and Aldermen, directing their attention to the Queen's Proclamation, prohibiting new buildings in and about the City, which gave power to the Lord Mayor and Aldermen to prevent the same, but which had been so ineffectually carried out, that buildings had greatly increased within the City and liberties, to the danger of pestilence and riot; and directing that steps should be at once taken to find out the number of houses erected, and by whom, and to certify the same to the Council, in order that the persons might be called before the Star Chamber, and to take into custody the workmen refusing to obey the said Proclamation, and commit them to close prison, certifying their names to the Council. (8th April, 1583.)

The Star Chamber dates back to very early times. In the reign of Edward III., 1240, it occupied the Chambre des Estoilles, near to the Exchequer at Westminster, from which it took its name. The history and constitution of the Court are given at considerable length in letters from John Bruce, esq., F.S.A., to the Society of Antiquaries, published in the "Archæologia," vol. xxv., p. 342 *et seq.* During the reign of Henry VII., says Mr. Bruce, "the Court became the instrument by which the politic rapacity of the sovereign and the subtility of his favourites, 'promoters of suits,' accomplished their nefarious purposes." The rulers of the City of

* Analytical Index to the Series of Records known as the Remembrancia, preserved among the Archives of the City of London. London: E. J. Francis & Co., Took's-court. 1878.

London did not escape: Sir W. Capell, Alderman of London, was fined, in 1195, a sum of 2,473*l.*, but compounded for 1,615*l.* 6*s.* 8*d.*; in 1505, he and his son, Giles Capell, were fined 1,000*l.*; they paid 100*l.* down, and gave recognisance for 900*l.* In 1507 Sir William was again fined, but refused to pay; he was thereupon sent to the Tower, but was released upon the death of Henry VII.

Dated October, 1593, there is a letter from the Lords of the Council to the Lord Mayor, directing steps to be taken to prevent the erecting and overcrowding of small tenements within the City, and that the aldermen and their deputies in the various wards should make search, and in cases of overcrowding, remove the inmates, according to the statute lately passed for that purpose. This statute was 35 Elizabeth, c. 6, 1593. It declares that "great mischiefs daily grow and increase by reason of pestering the houses with divers families, harbouring of inmates, and converting great houses into several tenements, and the erecting of new buildings in London and Westminster."

There is further a letter from the Lord Mayor to the Lord High Treasurer (the Earl Dorset) acknowledging the receipt of a letter from him concerning a building erected by Humphrey Hall, prejudicial to the Common Hall of the Innholders, and informing him that he had ordered the four sworn viewers to inspect the same, who reported that it was built according to the custom of the City, &c. This is without date. Sworn viewers were appointed by the Court of Aldermen from a very early period. The practice, although in some instances departed from, was to appoint to these offices two Master Carpenters and two Master Masons. Mr. Jupp, in his "History of the Carpenters' Company," gives much interesting information, with extracts from the Civic Records, concerning these officers. The Fire Act of 1666-7, 18 & 19 Charles II., cap. 8, sec. 2, continued them, with greatly increased powers, under the title of surveyors. John Ogilby and William Morgan, two of these surveyors or sworn viewers, subsequently surveyed the whole City, and published a most accurate ground-plan in 1677, a copy of which is preserved in the Guildhall Library.

The endeavours to prevent overcrowding, indeed to prevent any addition to the number of inhabitants, appear to have been continuous. Dated Oct., 1632, there is a petition to the Lords of the Council, complaining of the multitude of newly-erected tenements in Westminster, the Strand, Covent-garden, Holborn, St. Giles's, Wapping, Ratcliff, Limehouse, Southwark, and other places, which had brought great numbers of people from other parts, especially of the poorer sort, and was a great cause of beggars and other loose persons swarming about the City, who were harboured in those out-places. That by these multitudes of new erections the prices of victuals were greatly enhanced, and the greater part of their soil was conveyed by the sewers in and about the City, and so fell into the Thames, to the great annoyance of the inhabitants and of the river. That if any pestilence or mortality should happen, the City was so compassed in and straitened with these new buildings, that it might prove very dangerous to the inhabitants. They, therefore, prayed the Council to consider the great inconveniences of these new erections, and to be a means to the king that some restraint might be had.

Under the head "*Costume*" there is a letter, dated the 5th of May, 1580, from the Lord Mayor to the Lord Treasurer, stating that in executing the commands of her Majesty, for the reforming of monstrous Ruffs, and other disorders, he had friendly admonished Mr. Hewson, son-in-law of the Lord Chief Baron, for wearing excess of Ruffs, in the open street, after Easter, against her Majesty's proclamation; that he replied in a very contemptuous speech, and for the credit of his office, he had been compelled to take further steps to enforce the royal commands, whereby he had given great offence to the Lord Chief Baron, which he had expressed in his letter enclosed, and by refusing to enter his house, and that, fearing his displeasure for the rest of his life, he prayed his lordship's intercession in the matter. Philip Stubbes, in his "Anatomie of Abuses," published in 1583, gives a very curious picture of the excesses of dress in England, denouncing the great *ruffs, costly skirts, hosen, jerkins*, &c. Hall, in his "Satires," says of a fashionable, that he is as "double as his double ruff." A proclamation was issued by Queen Elizabeth, on the 12th of February, 1579, which is probably the one referred to in the letter, to prevent excesses in dress. It refers to the several laws passed for restraining the same in the reign of King Henry VIII., and gives a schedule of the permitted and prohibited articles of dress.

The first letter under the head "*St. Paul's, Cathedral of*," is one dated the 3rd of December, 1580, from the Lord Mayor to the Lords of the Council, reporting the steps taken by the committee appointed to consider what should be done in the matter of re-edifying the steeple of St. Paul's Cathedral, and requesting the advice of her Majesty and the Council as to the form of the building, the manner of proceeding, and the amount necessary to be collected for carrying out the work. On the 4th of June, 1561, a terrific storm burst over London. The church of St. Martin, Ludgate-hill, was struck by lightning, and so also was the steeple of the cathedral, which, being of wood, covered with lead, caught fire and was burned down, the *débris* causing great damage to the church. The steeple was never rebuilt, but steps were taken to repair the roofs. The Queen gave a thousand marks, also a thousand loads of timber, and in addition about 7,000*l.* was raised among the clergy, citizens, &c. Six citizens and two petty canons were the committee appointed to oversee the works. It is evident that the restoration was but imperfectly done, for in 1620, King James I. had his attention called to the ruinous condition of the edifice, and on Sunday, the 26th of March, 1620, he rode on horseback, attended by the nobility, and was met by the Lord Mayor and civic authorities, to hear a sermon at St. Paul's Cross, and afterwards to consult as to how the repairs could be effected. The result was that a Royal Commission was appointed to consider what measures should be taken towards restoring the church, removing the houses built too close to it, and in what way the necessary funds should be raised. The Lord Mayor of London was the first person named in the Commission. Inigo Jones was the architect. The raising of the fund would appear to have been a difficult task, nothing was done for eight years. Charles I. issued another Commission, dated April 10th, 1631, and the Chamberlain was appointed treasurer. Among the contributors, Sir Paul Pindar, the wealthy merchant of Bishopsgate, is mentioned; the total sum contributed by him amounted to about 10,000*l.* Charles II. issued a Commission for the repairs of the church, soon after his restoration, April 18th, 1663, and gave 1,000*l.* towards the funds. Sir Christopher Wren was appointed architect, and one of the Commissioners. Wren presented his report for repairing the cathedral, May 1st, 1666, which was agreed to on Monday, August 27th, 1666, but on Sunday, September 2nd, the Great Fire broke out, which destroyed the cathedral, and put an end to all plans for its restoration. See Stow's "Survey of London"; Dean Milman's "Annals of St. Paul's"; Longman's "History of St. Paul's."

The Corporation are entitled to thanks for making known the contents of "The Remembrancia."

THE ARCHITECTURAL ASSOCIATION AT WELLS.

By an odd slip on the printer's part last week, in the notice on page 921, the "dreamy" hours in the quiet days became "dreary," to the surprise of everybody. Vocabularies might have been searched in vain for a more inappropriate adjective to apply to the hours and days which have glided along with unhurrying and unlingering pace, and filled with sunny memories the week of excursion in the north of the centre of Somerset. The Association has always, since Mr. Sharpe showed the way, leaned towards a hard-working week, with plenty of critical notice of changes in architectural style,—with little divergence into general archæology, but with plenty of use of sketching-stools, two-foot rules, and ladders. The amount of record, shown as of old on the last night of the week, seemed somewhat startling, and might well have taken away a little of the breath of an innocent bystander. Some of the tendencies of the years we are living through are perhaps never shown by any other index so surely as by the preferences of a set of young architects left to act for themselves. It has now become necessary, in constructing programmes, not only to look out for *pièces de résistance* in the shape of fine and notable churches; there must also be a fair show of civic and domestic buildings, not to be kept in the background, and come upon by stealth, but to be sought out eag and preferred, it may be, when a choice n be made, to ecclesiastical work. Obser are not slow to remark that a good of the necessary restoration has been and, besides that, restoration is taken up in a somewhat different from that erewhile prevalent. A good de philosophical analysis and construction n be spent anent the reasons why old inns, m houses, cottages, seventeenth-century hosp &c., are pounced upon with absolute rapa and why tombs, chests, tables,—not to of more pretentious woodwork of the teenth century,—are noted with liking; work which, in the days of purism, we all remember, would have been sniffed at most suggestive way. Mr. C. R. Pink, th cellent excursion honorary secretary, with nite pains, constructed a programme to su times. As, however, a catalogue of buildi their parts, their dates, and their fitting very hard writing, and still harder readi may conduce to the comfort of the reader if only a few of the peculiarities buildings studied are noted; and if, fo sake of brevity, comparisons are kept the programme. The temptation is strong to describe something known to by reference to something presumed known to all,—a custom sanctioned by at last honouring in the breach becor counter-custom, and affords another illust of the revenges brought in by the whirl time. Mr. James Fowler, F.R.I.B.A., of took the direction of the party, kept active movement, and at every building b his large stores of experience to bear, a discourse of a few minutes' length, p history and the noteworthy features before the members.

It would be unfair to say that the buil the centuries before the fourteenth are tically unrepresented in the "district phrase which is sometimes hazarded, and be considered absolute slander, if it was in very seriously. In mere quantity of wo remaining to us, the fourteenth and lat turies come off better than all those befo the work of the first half of the twelfth c is certainly almost unrepresented. But list of one cathedral, one abbey church little over twenty parish churches, vi sequence of good work could be made f latter half of the twelfth century up present time without any considerable The Transition, for instance, needs no illustrations than the west part of Glasto and the nave of Pilton on a less stately For the Early English period there is th narthex, and a good deal of the Abbey of Glastonbury, and the remarkable Wells. The existence, in these great c and their appurtenances, of excellent almost every date would, however, n lead to their playing too large a part in a resembling a complete list. The point that reason be passed by without detailed as far as concerns the latter half of the thi and the greater part of the fourteenth ce

The adaptation to site, which gives su stant charm, is peculiarly a property o more or less hilly districts. Crosscom instance, stands on a hillside, and a broad steps is needed to lead from churchyard,—a pretty picture, flanked, road is, by stone-mullioned cottages, background formed of similar little build the upper slopes of the hill. Axbridge a tiny town nestled under Sheepshelv towards the western end of the Mendip an open *place*, in the north-east corner o ascent is made in flights of steps, a centre tower of the handsome cruciform shows with excellent effect above the which abut upon and, indeed, enter fr stone landings of the rising flights. S Mallet church, seen above the low buildi the fixed tile-roofed stalls of the marke to the west, is a natural composition simple kind,—dear to the heart of a pa which owes much of its easy picturesc to accident of site. The hillside on Pilton Church is placed has led to anot stance of sets of steps. Mells, three miles west of Frome, too little known the Somerset admirers of home scenes, in the memory as one of the most per villages in this district of hill and dale, and strong little streams, and fair show grown trees. One of the tiny feeders

me flows out from the leafy solitudes of
ls Park, which is on the west of the village,
:wards towards Elm and Vallis. When ap-
ached from the southward hill by way of
ney and Whatley, this stream marks out the
level of the valley, from which well-marked
es rise, dotted with grey stone cottages,
y of them ancient; and the church, which
a western tower of much dignity, is framed
he centre of the picture by the dark green
ge of the trees on the east of the road,
ch forms a pleasing limiting line. "Little
Horner," our firm friend from earliest
s, had his home at Mells; and his "corner"
be seen and sat in, when the hospitable host
that the gabled, bay-windowed, and Tudor-
neyed manor-house shall receive guests.
us hope that he will not compound for good
ls done with so much grace and goodwill,
lestroying, or removing, or altering much
benches in his church. Woodwork of the
half of the seventeenth century, with this
of merit, is much too rare, and in its
inal position gives the flavour of genuine
uity in a way which no modern woodwork,
it of the best Mediæval type, can hope to
, for "tyme tryeth truth." The somewhat
ar bench-ends at Bruton run no danger
for several generations to come no archi-
will think their existence menaced, yet they
'ar inferior in design and execution to those
falls, which, on account of minor injuries,
supposed incongruity of style, now live a
atened life.

though cruciform parish churches, with
rs over the crossings, are to be met with;—
neat, Axbridge, and Doulting, — an oc-
nal tower, — being sufficiently character-
examples; yet western towers have
rally the preference among these later
ches, — frequently opening into the
ches with grand arches, and in many
nces vaulted with ably-treated fan-vault-
hutting against bold ribs round central
. These towers are so well known; their
and special character seem, indeed, to have
d the imagination of the dwellers in other
icts so strongly, that "the late towers of
erset" serve not unfrequently as a modest
nary of the buildings to which they belong.
ton-Mallet, Bruton, West Cranmore, and
dar may be grouped together as specimens
e same idea, worked out with differences
xpression, due to varying dimension and
renced details. Four principal stages,—
only at West Cranmore,—the upper with
ole division, a west door, and a large west
ow in the lower stage, buttresses at the
s, terminated at the bottom of the upper
with disengaged pinnacles, and angle
icles carried upon their upper slopes, would
iently describe their general features.
h-east turrets, carried as high as the
pets, or above them, occur in these as well
the churches of a simpler form, more
non elsewhere, of which Rodney Stoke is
r example. The tower at Axbridge, with
rences due to its standing on the crossing,
d group with Shepton-Mallet. The staging
e buttresses, *e.g.*, at Bruton, is well done,
to diminish the bulk of the tower in the
lest way up to the termination of the solid
ng, at the string below the rich topmost
. The face of the wall itself sets in some-
at that level, and the lower pinnacles,—
d which the light is seen, — force the
ening of this stage upon the mind, with
appiest results. The whole outline of the
r takes shape, and there is that look of
mastery of the whole problem which
es and marks all considerable successes.
some reason, now lost in the mists of
, it has become a custom to class such
rs as Shepton, West Cranmore, &c., as of
Taunton type," the natural interpretation
g that St. Mary's Church has furnished all
distinctive features of the design. This
lar superstition has, of course, its basis of
as common beliefs are wont to have. The
of the inverted pyramid is, however, the
owest part of the structure. The Taunton
r is of late date (about 1500), and the
rs belong to different dates. The difference
aracter of the detail need not, however, be
e much of. The only other thing in com-
is the treatment of the buttresses, which,
oted above, give seating near the springings
he upper windows to disengaged pinnacles,
allow the angles of the upper stage to
ar set back in effect from the broader
es below. Western doors and western win-dows are too common in every part of the country to found resemblances upon. The long-separated brothers of farce do not arrive at mutual recognition by noticing features universally prevalent. St. Mary's, Taunton, has two windows on each face for each of three upper stages; Shepton has three divisions on the upper stage, and no similar stages below. At St. Mary's the great parapets of open-work resemble the others merely in outline,—not always in that; their height and the piercing are special to themselves. The immense open angle turrets and pierced spires above them at Taunton bear no resemblance to the single solid pinnacles at Cheddar or Axbridge. It would certainly be an interesting study for some persevering archæologist to determine where the very beautiful and original arrangement of these towers was first carried out, and to deduce a history of change and improvement to the towers of the fifteenth and sixteenth centuries; but a contented acceptance of Taunton as such a first example is probably about as much wrong in point of date as it is in perception of the essential features of the design.

Evercreech, perhaps the most perfect of the whole of the towers,—a very exquisite object as seen under the lighting of a westering sun,—differs a good deal in form from Shepton and its congeners. Very broad masses of buttress lead up to grouped masses of finial and pinnacle, arranged with admirable art. Embattled parapets, broken in upon by smaller centre pinnacles, crown the sides. The tower is occupied for near upon half its height by windows, two on each face, divided into three heights, the lower divisions solid, the upper divisions filled in with stonework pieced in patterns. A broad division with only small openings comes next, giving, by its plainness, great value to the rest; and the lower stage has on the west the common arrangement of doorway and great window. St. Cuthbert's, at Wells, is an example of a more solid treatment, not unlike in arrangement, but severe dignity has been aimed at, and it would therefore miss its intention sadly if any one was led to look for the grace which has been infused into the *tout ensemble* and into every detail at Evercreech. At St. Cuthbert's the expression of force is well sustained. The buttresses, one on each face at each angle, have strong projection, and are carried up with plain faces and only three set-offs, from the ground till the springings of the enormous windows are reached. The deep recesses of these windows and their rigid treatment are in good keeping. Perhaps it might be hinted by a stranger, who did not know that he risked his personal safety by mentioning to the good people of Wells anything to the prejudice of their well-reverenced tower, that the parapets might be the better for some additional height and a little more boldness, and that the solid building up of the windows with plain squared ashlar can hardly have been the first intention of the designers. This ashlar is now being renewed, and it may represent the filling-in which was there from the first. It is not necessary, however, to believe that the designer fell in any way behind the directors of the works at Bruton, Evercreech, and at the little church of Pylle, where the tower-lights are filled with very nicely designed pierced slabs. The infrequency of spires on towers (except those of modern churches which seem rather to affect them) might serve as a text for a longish discourse. The Perpendicular spire of Crosscombe, a pleasingly-managed spire, with rolls at the angles, and panelling at about mid-height, but without spirelights, shows that there was no universal vow against them. Doulting, a not very happy example of a rather short octagon upon an octagon tower over the crossing, was, oddly enough, visited in succession to Crosscombe, with its well-developed spire, and Shepton with what looks like an incipient spire, which, like St. Mary Redclyffe in old days, had not attained to, or been shorn of, full dimension. The county of Somerset probably does not furnish forth any other three adjacent villages with the same feature in their churches. The fact that there are two towers at Bruton seems never to escape remark; but the small tower over the north porch seems a kind of pretender to the name when compared with its magnificent rival at the west end.

Touching the mere skirts of this subject of the church towers would evidently prove a lengthy recreation; and so the temptation to go on must be resisted at this point; and the roofs which come next in the list shall not be allowed to beguile us even to the same extent, —certainly not in the notes in this number. They may appropriately be noticed with the other woodwork, the wooden pulpits and the stone ones, the parcloses, seats, tables and chests, the fonts, the tombs, ironwork, and other minor details which still exist to give interest to these quiet little towns and villages. The great barns —four very fine stone barns were inspected— and the domestic buildings would deserve a little treatise, not that there are as many of them, after all, as the heart would desire. Let it suffice for the present moment to mention that the excursion was brought to an end in due form on Saturday, and that the company, brought together from every part of England, and largely reinforced from Ireland, dispersed itself to the four winds very speedily thereafter, well satisfied with the county of Somerset, with its old buildings, with the mingling of grand and pleasant scenery, with the well-intentioned people, and with the obliging ways and the capacity of Mr. F. C. George, the worthy host of the model head-quarters,—the Swan Hotel at Wells.

TRAVELLING BACKWARDS.

It seems as if the external mountains had lost some of their charm; for a Swiss caterer has been compelled to devise a new expedient to attract the foreign tourist. We doubt whether this effort was necessary. So far, the season has been a bad one in Switzerland; the weather at home has not been suggestive of foreign travel, and the state of business generally has enforced the necessity of economy in the matter of holidays. If foreign hotel-keepers find that the times are not prosperous, this is due to other causes than the want of new attractions. Nevertheless, the new tavern which will constitute this year's sensation at Zurich is still worth notice. It is formed in a subterraneous passage where the visitor is called upon to forget modern civilisation, and plunge suddenly into the darkness of the Middle Ages. By this transition he is promised the advantage of contemplating some of the artistic merits which distinguished that epoch. The walls of this grotto are ornamented with numerous antique inscriptions; and at the far end, rising majestically in the shade, may be distinguished huge casks of wine painted in various colours. On the tables there are bread, pipes, and tobacco, which the public may consume *ad libitum*. At first it was thought that tobacco was a little too modern; but the practical conviction that it was impossible to do without it carried the day, and tobacco is admitted. On the other hand, the far more modern invention of matches was energetically repudiated, and persons who want a light must avail themselves of the flints and touchwood placed at their disposal. Of course, there are no such things as bottles or glasses, but there is a plentiful supply of quaint jugs, horns, and goblets. The waitresses are dressed as châtelaines of the Middle Ages; the seats are of carved wood, carefully collected for this purpose, and dating for the most part from the thirteenth and fourteenth centuries (?). From all that we have heard, the illusion is well kept up; and this is further increased by the exclusion of newspapers, and the substitution in their stead of old chronicles published in the sixteenth and seventeenth centuries.

Public Mortuaries for London.—In the Consistory Court, on the 11th inst., Dr. Tristram, the Chancellor of the Diocese of London, gave judgment in the case of the application on the part of the Rector of St. George's, Hanover-square, and Mr. Hugh H. Seymour and the Duke of Westminster, the churchwardens, for a faculty to authorise the erection of a parochial mortuary, with a *post-mortem* room attached, on the old burial-ground between Mount-street and South-street. The application was opposed by Mr. Hall, the lessee and occupier of a house in Mount-street abutting on the burial-ground, and other lessees in the neighbourhood, and also by Lord George Paget, the lessee and occupier of a house in Farm-street. One ground of opposition was that the site was unsuitable and inconvenient, and that the erection of a mortuary would be injurious to the health of the neighbourhood, as well as detrimental to the adjoining property. The learned chancellor decreed a faculty, subject to the observance of certain sanitary precautions. The case of St. Matthew's, Bethnal-green, which was before the court some months back, was also concluded, and a mortuary ordered to be made in the old burial-ground.

THE YARMOUTH MEETING OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.*

Leaving Filby, the excursionists had a pleasant drive to Ludham, where the Abbot of St. Benet's formerly had a palace. This building was nearly destroyed by fire in 1611, and the remains were subsequently appropriated for use as a farm-house. What was once the chapel of the palace may yet be found in a granary on the premises. The church much needs restoration. In the chancel is a screen, having the figures of twelve saints painted on the lower panels; the font, a very old one, bears the symbols of the Evangelists; and on the walls are brasses and tablets to the members of several families. Mr. Loftus Brock pointed to and explained the principal features of this building, which he regarded as encyclopædic, their variety being so great, showing such numerous alterations, removals, and additions.

The site of the once great Abbey of St. Benet, at Holm, situate in the parish of Horning, was the next resting-place. The ruins and the history of this abbey furnished abundance of material for comment and reflection. The Rev. W. White published, some years ago, in a history of Norfolk, a very complete description of this establishment.

In the evening a meeting was held in the Town-hall, the Mayor in the chair, to hear papers read by Mr. Thomas Morgan, on "East Anglian History in Saxon Times"; by Mr. Lambert, on "Maces"; and by Mr. H. W. Henfrey, "On the Ancient Coinage of Norfolk."

On Wednesday, the 13th, the members crossed the Yare, and, entering Suffolk, proceeded to inspect the Roman camp at Burgh Castle, which was described by Dr. Raven. There could be no doubt, he said, that Burgh Castle was the ancient Roman fortress of Garianonum. Sir Henry Spelman, it was true, identified Garianonum with Caister; but comparing what was not to be seen at Caister with what was to be seen at Burgh, the balance of evidence was against the conclusion of Sir H. Spelman. The masonry at Burgh Dr. Raven believed to be all of one period. The towers and the upper part of the walls were of a considerably later date than the rest of the work, as was clearly shown where there have been settlements. Mr. Harrod, who made excavations under the direction of the late Sir John Boileau, was of opinion that a British earthwork was utilised by the Romans, because the soil within the walls is very much higher than that outside. Dr. Raven thought that the members of the Association would, without much hesitation, pronounce it to have been a four-walled or square camp, though there was no wall remaining on the western side next the river.

Mr. Loftus Brock made some remarks on the architectural features of the wall of the camp. Its masonry was like that of a wall in Camomile-street, Bishopsgate, which he had maintained to be part of the wall enclosing ancient Londinium. The work in the walls was of two periods. The mortar of the lower part was made up with pounded brick; the mortar of the upper part of the wall had not this ingredient. The bastions, like those in London, had been built against the wall-buttresses, and not bonded with it. In the facing of the wall, however, the whole of the mortar contained pounded brick.

Mr. Thomas Morgan, F.S.A., remarked that these Roman camps were made upon mechanical principles. Polybius and others each described a particular kind of camp as made in their times. The early camps were nearly square, like those of Pevensey and Porchester. Other camps were in the proportion of 600 ft. by 400 ft.

Dr. Raven stated that the measurement of this camp would show that it belonged to the latter class.

The excursionists next proceeded to inspect the slight remains of St. Olave's Priory, which mainly consist of a vaulted crypt, now occupied as a labourers' dwelling. Mr. Loftus Brock gave a description of the priory, which was founded by Roger Fitzosbert in the reign of Henry III. An account of it and its priors is given by Dugdale. Other documents than those cited by that writer referring to this religious house have been recently discovered at Cambridge. This priory had but five or six monks, and it was amongst the first that were dissolved. The crypt, all but perfect, was divided by a central row of polished marble shafts, and was vaulted with brickwork,—another illustration of the use of brick at an early period. It was the monks' day-room, or fratry, as it was called in old documents. The upper story was evidently reached by two staircases. This raised a difficulty. Usually the dormitory was over the fratry. But one of the staircases seemed to have led to the church and the other to the refectory. The view that the church adjoined the wall beyond the garden, which in that case would have been the cloistered court, was supported by the fact that bones had been dug up behind it. Behind the crypt-cottage is an old barn, which twenty-five years ago had a carved roof and a few Gothic windows, now bricked up, called in tradition "the guests' room." This was undoubtedly the strangers' hall.

Fritton church, the next halting-place, was also described by Mr. Brock. The church, which has a round tower, is dedicated to St. Edmund. Sir John de Mautby in 1375 requested that his body should be buried in this church of St. Edmund, before the altar of St. Mary. The peculiarity of the church is in the manner in which it was enlarged about 1350. The church consists of a small nave and a chancel, which is lower than the nave, and a sacrarium, which is a step lower still. The little apse has three small Norman windows with zigzag mouldings, and one surrounded with remains of coloured decoration. This is not the only bit of mural colouring in the church. On the wall opposite the south door is a fresco of St. Christopher bearing the infant Saviour. This representation of St. Christopher is more common in churches in Norfolk and Suffolk than in any other part of England. Chancel, north wall, and tower are Norman, but the south wall was built in 1350, when the church was enlarged on that side only. The consequence of this method of enlargement has been to leave the north side of the chancel in line with the north wall, while the south side is several feet from the south wall. Much of the material of the old south wall had been used in making that erected in its stead. A good example of the Jacobean communion-tables, which Macaulay says were "irreverently termed oyster-boards by the Papists," is a feature in the church which marks another phase of ecclesiastical history.

After leaving the church the members and friends were entertained at luncheon by Mr. and Mrs. H. E. Buxton.

Herringfleet Church, which was next visited, also has a round tower. The church is dedicated to St. Margaret, and belonged to the Priory of St. Olave. Mr. Loftus Brock was unable to say that the round tower of this church was of Saxon date. But the east window of the tower was unquestionably Saxon, though whether it was taken from some older Saxon tower, or was made by Norman masons acquainted with Saxon work, is uncertain. The three other windows of the tower have architectural features common to the Norman and Saxon styles. In fact, nearly the whole church is of the Norman period. But the great feature of interest in the church is the patchwork of painted glass in the east window, brought piece by piece from time to time from the abbey of St. Edmund, at Bury. A great portion of the glass is, according to Mr. Brock, Flemish.

After glancing at Somerleyton Church, the party proceeded on to Lowestoft, and visited the parish church, of which a detailed description was given in a paper by Mr. J. L. Clemence. The church consists of a tower, nave, north and south aisles, chancel, south porch with parvise, and a crypt under the chancel. The oldest part of the church is the tower, which has no higher antiquity than the reign of Edward II. The lower part of the tower, judging from the mouldings, was built between 1307 and 1380. It was probably built to a more ancient structure, considerably smaller than the present edifice, referred to by a charter of Henry I. In 1870, Mr. Clemence, while removing old pews and walls, came upon the foundations of the original church, which extended no further than the third bay of the present church. The original church apparently had no aisles. It was 54 ft. long and 18 ft. wide, and its height was shown on the east face of the tower. The architect of the present church evidently desired to perpetuate the size of the old one, for on the second buttress from the porch he placed a rose, and the clearstory windows up to that point he made with two lights, while those eastward had three. Again, within the church, at the t pillar of the north arcade, is a pedestal, w at one time supported an image. The n aisles, chancel, and porch are of the tim Edward V. (1483), when the tower was ra and the wooden spire, covered with lead, added. Perhaps the church was built by Bi Scrope, who, after quitting the bishopric, wandering for many years, became vica 1478. The length of the nave and chanc 157 ft. The tower is 70 ft., and the spire high. The porch has a good deal of flint tra of good character. The entrance has excellent groined work. The only intere monument is that of Bishop Scrope, some bishop of Dromore, who died here in 1491 was buried in the chancel.

On their way back to Yarmouth the e sionists made a short stay at Corton H where they were entertained by Mr. J. J. Col M.P. In the evening there was a meeti the Town-hall, Yarmouth, when intere papers were read by Mr. Charles H. Com on "The Saxon Shore in Britain," and Mr. Prigg, "On some recent Finds of Coi Norfolk and Suffolk."

On Thursday, the 14th, the excursionists trated the heart of Suffolk. Leaving Yarn by train as early as 8·20 a.m., they proceed Harleston, where carriages were in waiti convey them to Wingfield Castle and Ch By the arrival of contingents representin Norfolk and Suffolk Archæological Societie number of the party was increased to abou Mr. R. M. Phipson, architect (Norwich), v restoring the church, contributed an inter paper, in the course of which he said th castle, so-called, is not a castle, nor was it for a castle. It was a moated manor although after it was erected the first Suffolk, Michael de la Pole, obtained a lice crenellate in 1384. This was, doubtless, soo the house was built. The enclosure con not quite an acre and a half of land. T trance gateway is in the centre of the side. At its four angles are octagon and octagon turrets. In the north-west turr fairly spacious staircase, and in the other t small circular stone staircases, comm from the first floor, and leading to the fla These recesses were doubtless used as rooms to the large central chamber, or " room" as it was called, over the archway interior of the gatehouse is somewhat mut but this Vandalism cannot be laid at the the president of the Association (Lord Wav as it was done before he was the owner entrance had a portcullis, but not a drawl The living-rooms extended right and le with the exception of a few holes for floor and openings for fireplaces, no traces o exist. This fine old manor-house was by the Catelyns soon after they becam sessed of it. They erected the building the fine brick chimneys and shafts, on th The present church at Wingfield was built in the fourteenth century and partly fifteenth. Sir John Wingfield left mo 1862 to found a collegiate church here for and priests. When that had been found rebuilding of this church was comm This shows how one style gradually ga to another. The tracery in the north ch vestry and the doors and arches nave are Decorated, while the arches ar of the chancel, as well as the east windo a Perpendicular character. The cha spacious, and has seven clearstory win an unusual number for a Suffolk church east window of five lights still retains its early glass, consisting of the arms De la Poles, Staffords, and others. The entirely modern, and so also are the sto bels from which the principals spring stalls and screen, of Perpendicular work, in the chancel. The misereres have foliage underneath, varying slightly in The Perpendicular screen in the chanc has been sadly mutilated, but the bottom remain, and vestiges of the figures of SS and Paul are visible. The roof consists bays, with trussed rafter principals b each bay. The church has several monu One is to Sir John de Wingfield, erro assigned to the Duke of Suffolk, but th tectural work and the character of the show that it was fifty or sixty years be time. Another tomb is to the mem Michael de la Pole, second Earl of Suffol built Cawston Church, in Norfolk. The as well as that of the countess, is of wo

* See p. 917, *ante*.

to be the finest of the kind existing. her monument is to John de la Pole, who ied Elizabeth Plantagenet.

leaving Wingfield, the party made for the l Minster," at South Elmham. The square eure in which the ruins are situate, Lord ney said, has all the peculiarities of a an camp, is in a position dominating the below, and probably communicated with similar stations. Of the minster the el can only be traced, the walls do not in, but those of the nave are still standing. micircular apse, a *galilee*, very uncommon all churches in England, and other inte- ig remains, were shown. Both the mate- used and the mode of construction point ery early period as the date of erection.

Waveney directed attention to certain s which led him to believe the church was completed. Probably it was begun r than the Norman conquest, and that that supervened, the work was stopped he design forgotten. Of documentary ice, all that is available is in some old records, which refers to the minster-yard. roximity of the abbey of South Elmham, e on the road to the shrine at Walsingham, he patronage given it by the Normans, ade it a favourite place, were mentioned.

Loftus Brock said he felt certain the n was Saxon work. It contained nothing was Norman, it had all the signs of the earliest churches, particularly those of ast rather than the west; and it was a ite theory of his that the Christian church gland was based upon the Greek church, e Latin, as some people supposed. The ig he regarded as a most interesting one, y the most attentive consideration of ologists.

party then proceeded to Bungay, *viâ* n. It was a part of the programme that n Hall should be visited; but as the day ar advanced the greater number of the ers had to forego this pleasure. It was ve when Bungay was reached, and as the l train engaged for the occasion was ed to start at 5·10 there was no time to ither the church or the castle.

an evening meeting in the Town-hall, Yar-, Mr. Loftus Brock read a paper on the Towers of Norfolk and Suffolk, the origin ch has been connected with many strange lusive theories. The dates of the towers, l, were from 1100 to 1150, and with very ceptions these peculiar parts of churches to the two counties mentioned, Norfolk, er, having many more than Suffolk. The ce was that these towers were Saxon in construction, and that the earliest known t Anglia were of Saxon date. The fact lso pointed out that similar circular s were found on that part of the con- opposite. Only fourteen or fifteen such s were known to stand elsewhere in nd. The fact that such had been found in districts was evidence that the form was nown by the people and could have been ed by them if they had chosen. In Sussex, stance, there was a great deal of flint stone, following the example set in Norfolk and k, might have been used, and thus saved eparation of quoins.

Vicar (Rev. G. Venables) wished to learn hing with reference to the round towers of d, which were said to be of a date anterior se Mr. Brock had described, and by some thought to be connected with sun or Baal ip.

Picton said the last-named theory had exploded. The towers being all near the it was though the inhabitants used them oring property during the raids so fre- ly made by rovers and pirates. The sh towers were not regarded as coeval the Saxon.

Raven concluded the business of the ng with interesting particulars relative to ey Church, a visit to which had been pro- , but was necessarily deferred.

Friday, the 15th, the members proceeded il to Darsham, where the church was d. The Rev. Mr. Thorpe, vicar of Darsham, some notes, for which he was indebted to ite Mr. Hakewill.

e party next proceeded to Dunwich, the f the Roman station Sitomagus. Nume- fragments of Roman tiles are to be seen in uins of the few remaining edifices that ed in Dunwich in Mediæval times. A ancient road leads from Dunwich to Bury, and another to Norwich. In Saxon times Sitomagus became known as Dunmoc, a name which has a hallowed memory; for upon the shores of Dunmoc, about 630, landed the Burgundian monk Felix, who became the first Bishop of East Anglia, and had his see at Dunmoc. In 673 another see was founded at North Elmham; but during the incursion of the Danes they were amalgamated, and during the Norman period the see was transferred first to Thetford and shortly afterwards to Norwich. Dunwich in its palmy days had six churches, and also convents, hospitals, and other public buildings. On the east side of the tower of the desolated church of All Saints, which stands within a few yards of the cliff, Mr. Loftus Brock pointed out a characteristic Saxon window, arched with Roman bricks. He is of opinion that the base and inner part of the tower are Saxon. There are several interesting remains of the Norman period. The most notable is a fragment of the Chapel of St. James's Hospital for lepers. This consists of a chancel and semicircular apse, which had a fine arcade. Several arches remain almost intact, while portions of others at the end of the ruin show that the arcade was continued beyond the apse. The Grey Friars' Monastery, standing amid a corn-field, which is encircled by the old monastery walls, evidently built of the materials of some more ancient structure, is another interesting relic of Mediæval times. This monastery was founded by Richard Fitz John, in the reign of Henry III. At the time when these monastic establishments and churches were in their glory and splendour, they were surrounded by a large and enterprising community. Dunwich had a harbour which made it a shipping port of some importance. Henry III. called upon the shipmen of Dunwich to furnish him with forty vessels for his service. A reference to Dunwich in the Harleian MSS. in the British Museum (read to the members of the Association by Mr. Thomas Morgan) shows that the place was, in these days, strongly defended. The MSS. say that Robert, Earl of Leicester, who took the part of Prince Henry against his father, Henry II., came "to the said towne of Dunwich to have taken it against the king. But when he came heere and beheld the strength thereof, it was terror and feare unto him to behold it, and soe retyred, both he and his people." A plan of Dunwich made in the sixteenth century, and in the possession of Mr. St. John Barne (kindly exhibited to the members at his house, where they were hospitably received), shows what Dunwich was even in those days. A river ran for a long distance almost parallel with the coast, and wound more inland just to the north of Dunwich. On this plan, the monastery of the Grey Friars of the Church of All Saints, now near the cliff, are shown as being a long way from the sea, between which and them are marked various streets and public buildings. All these latter are gone, with many and many a rood of ground. In the time of Edward III., when the port was made useless, 400 houses were swept into the sea. Between 1535 and 1600 four churches disappeared. In 1677 the Market Place went. In 1702 St. Peter's Church was undermined and fell. Dunwich has now about twenty houses and 200 inhabitants. It sent two members to Parliament from the days of Edward I. to 1832. Many of the above facts were stated to the members by Mr. R. M. Phipson, of Norwich, who was called upon to perform that duty in the absence of Mr. Fisher, who was to have read a paper on the subject.

The party afterwards visited Blythburgh and inspected the church. The parish presents another instance, so common in the Eastern counties, of a thinly-populated parish possessing a grand church. Blythburgh has interesting associations, some of which were treated of by Dr. Raven in a very pleasant paper. Though possessing on the surface, Dr. Raven says, slender traces of its ancient importance, this village possesses Roman remains of more than usual interest. A priory, of which there are some remains, was built here by the Abbot of St. Osyth, Essex, in 1130, and it extended nearly to the church. The monks were of the rule of St. Augustine. The church is Perpendicular, dating from about 1430, and has chancel and nave under the same roof, and north and south aisles. The roof, though of a late and depressed character, is richly ornamented with angels, bosses, and the sacred monogram repeated several times on every timber. This church, which had two chapels, each with its altar, must have had a gorgeous interior in pre-Reformation times, and even later; for when Will Dowsing made his visitation he ordered twenty cherubims to be broken down in the church and chancel, and 200 pictures to be removed. Part of the original screen, which has some beautifully-carved figures of the Evangelists in high relief, however, escaped destruction. There are some carved figures as finials on the seats on the north side. The seven deadly sins appear to have been represented in these figures. The corpulent figure of a monk evidently signifies gluttony. Other figures represent the husbandmen engaged in sowing and in taking up a sheaf. "Jack o' th' clock," who anciently struck the hours, has long been deposed from office, and stands in the tower. The chief external features of the church are the clearstory, containing eighteen windows on each side, an open parapet of quatrefoils, a tower of two stories, and a flying buttress against the north door.

At Southwold, which was next visited, a detailed description of the church was given by Mr. R. M. Phipson, F.S.A. Originally there was only a chapel to Wangford here. The Abbot of Bury built a small church here in 1202. That church was destroyed by fire late in the fifteenth century. The present fabric was built in the reign of Henry VIII. The church is divided into eighteen bays, six of which form the chancel, separated from the nave by a rood-screen. The tower is 100 ft. high. A sanctus bell-cot marks the junction of chancel and nave. In the chancel are remnants of mutilated stalls and seats. The chancel-screen and two side screens, which enclose north and south chapels, are amongst the richest examples of the kind. For the elaborate nature and extent of the ornamentation the rood-screen has hardly an equal. The old chancel-roof was richly decorated. Mr. Phipson was compelled to remove it when restoring the church, because of the rottenness of the wood; but he has replaced it by one in which the old design is repeated.

At Yarmouth in the evening, a sectional meeting was held to hear a paper by Mr. C. Tenniswood on "The Ancient Charters of Great Yarmouth," followed by a description by Mr. Prigg of bronze implements found in Norfolk and Suffolk.

Saturday was spent in Yarmouth and its immediate neighbourhood. The far-famed church of St. Nicholas was described to the visitors by Archdeacon Nevill and Mr. Loftus Brock. The Rows and the Tolhouse were afterwards inspected, and in the afternoon the party proceeded to Gorleston Church and the remains of the Priory. After being entertained at Ferryside, Southtown, the residence of the Mayor, the members dispersed, until the evening, when, at a meeting held in the Town-hall, Mr. W. de Gray Birch gave a very interesting account of the ancient charters and seals of the corporation.

On Monday, Tuesday, and Wednesday the Congress took up its quarters in Norwich. Of its doings there, as well as of some of its already-mentioned proceedings at Yarmouth during Saturday, we shall have more to say next week.

NATIONAL WATER SUPPLY EXHIBITION AT ALEXANDRA PALACE.

This exhibition, which in extent is at present a small affair in proportion to its title, was formally opened on the 14th inst. by the Lord Mayor, in the presence of Mr. Edwin Chadwick, C.B., and other well-known sanitary reformers. Making due allowance for the fact that the exhibition includes within its scope a great deal of detail which cannot be objectively illustrated in the form of tangible "exhibits," we are bound to say that it is at present very fragmentary and incomplete. The exhibition is, however, intended to be permanent, and its promoters declare their intention of making it more complete as time goes on. The avowed object of the exhibition is to popularise information as to water-supply,—its sources, methods of obtaining or "winning" it, impounding it, purifying it, and conducting it to the places where it is to be consumed; its chemistry, as affecting culinary and dietetic purposes and the industrial arts, and also as bearing on its action on the pipes which convey it and the vessels in which it is stored; and its possible sources of contamination. This is a wide and an important programme, and its fulfilment cannot but conduce greatly to the public welfare, for a popular acquaintance with the possibilities of water-

supply, as with those of other branches of sanitary science, will tend, at any rate, to keep corporations, local boards, and sanitary authorities up to the performance of their duty.

The exhibition on Muswell Hill includes two or three glass cases full of Blue Books on water supply, rainfall, river pollution, and cognate questions, each volume being in itself a mine of facts sufficient to satiate even a Gradgrind. It is to be presumed that these volumes will be accessible to those of the visitors who may wish to consult them, although, perhaps, few who are not specialists would be able to thread their way through such an amazing labyrinth of facts and figures. What seems to be required (as has been before urged in the *Builder*) is that the details and statistics contained in so many separate Blue Books and reports, and in the archives of Governmental departments and scientific societies, should be systematically collated and rendered readily accessible to all who may wish to consult them.

The exhibition also includes a number of maps and diagrams, showing water-shed areas and gathering-grounds, together with plans and sections of waterworks executed, or proposed to be executed, by Mr. Robert Rawlinson and other well-known engineers.

The mechanical exhibits include those of Messrs. Le Grand & Sutcliff, who show their well-known Abyssinian tube-wells; of the Diamond Rock Boring Company, who exhibit diamond-toothed drill-heads, and a number of cores of various diameters and strata; of Messrs. Thomas Docwra & Son, whose display includes two large drill-heads, 20½ in. and 23 in. in diameter, with the diamonds set on Gulland's patent principle; and of Messrs. John Warner & Son, who have a large show of pumps, turbines, and other appliances, including some for preventing waste of water in closets and lavatories. Water-waste prevention is also the object aimed at in Messrs. John Carter & Co.'s patent closed cistern. The subject of water purification is illustrated on a small scale by the filters for domestic purposes, exhibited by the Silicated Carbon Company, Mr. J. F. Clarke, Mr. Bischof, and the Boston Filter Company.

What may be called the archæological aspect of the subject is at present very meagrely illustrated. Messrs. Warner & Son show a very interesting old print, "Vene de la Machine de Marly," and in one of the glass cases is a black-letter book apparently treating of the conservancy of the Thames (the title-page was not exhibited, and in this as in some other instances a legible explanatory label would be of advantage). The only other exhibit of an archæological character which we noticed was a specimen of water-main formerly used (at what period the label did not state) in Colchester. This specimen is composed of a material resembling burnt fire-clay in appearance, about 1 in. thick all round, and with an internal diameter of 3½ in. or 4 in. The exterior of this pipe is covered with thin sheet iron, now very much worn with rust. No information was given as to the amount of pressure such pipes would bear, or as to their duration.

Incomplete as the exhibition confessedly is, we have said enough to show that it is one of much value, and, regarding it as the nucleus of a much more complete and representative collection, we shall watch its progress with interest.

THE MANUFACTURE OF PORTLAND CEMENT.

Among the improvements that have been introduced in connexion with the plant and machinery employed in the manufacture of Portland cement, "Johnson's Patent Chamber Kiln" appears to deserve notice. In the ordinary manufacture of Portland cement, after the raw materials,—generally composed of chalk and clay,—have been subjected to the process of washing or mixing in the "wash-mill," the slurry or washed material is pumped or conveyed by other mechanical means into reservoirs or settling-ponds, where the material is allowed to remain several weeks in order that the superincumbent water may be drawn off. When this slow and tedious operation is completed, the partially solidified slurry or "slip," is conveyed by barrows to the flats, there to undergo the process of drying by the heat derived from coke-ovens beneath.

The disadvantages attending the process described are these:—The lengthened period necessary for the precipitation of the material in the settling-ponds, and the danger of unequal subsidence and consequent separation of the mixed materials; the labour attending the conveyance of the slurry from the backs to the drying flats; and, lastly, the serious wear and tear and continual dilapidation of the flats, in consequence of the unequal and sudden expansion and contraction of the floor, unavoidable when subjected to the influence of the heat given off from the coke-ovens beneath, and the frigid temperature of the sluice-liquid slurry when deposited on the floor above.

The new arrangement to which we are referring consists of a kiln of the ordinary construction; but, instead of being surmounted with a cone, through the top of which the waste heat is liberated, it is arched over, forming a crown of semicircular shape. One side of this arch is continued, with a flat bottom, in a horizontal direction, forming a semicircular flue or chamber, supported on piers or ground work. The waste heat from the kiln traverses the length of this flue, so to call it, and eventually escapes through a chimney at the farther end. When the kiln is charged, the liquid slurry in the wash-mill is pumped or conveyed through pipes to the top of the flue or chamber; these pipes are furnished with outlets, through which the slurry flows, dropping through manholes on the roof of the chamber, and finally depositing itself on the floor or bottom of the same. Sufficient material having entered the chamber requisite for the recharging of the kiln, the manholes and other apertures are closed, the kiln is fired, and the heat evolved, passing over the surface of the slurry in the flue or chamber, thoroughly dries the material ready for the reloading of the kiln. Thus the heat given off from one charge is made to dry the slurry requisite for the reloading. The chamber is constructed of sufficient height to enable a workman to move about in it conveniently.

The superiority the inventor claims for his chamber-kiln in preference to the settling-backs and drying-flats, is in the first place the absence of the disadvantages described above, besides being able to utilise the waste heat from the kilns in an economical and practical manner, and dispensing entirely with the coke-ovens, an expensive and fuel-wasting mode of generating heat necessary for the drying of the slip. Other advantages are apparent, but one of most importance is, according to the inventor, that by the adoption of this kiln stronger cement can be and is made than by the settling-tank and drying-flat process. Why it is so is not quite obvious, but it is maintained that the speedy method of treatment, combined with equality in drying and a uniform result in calcination, is valuable where strong cement is required. The chamber-kiln can be seen in operation at several of the cement manufactories on the Thames.

A DOUBLE CHURCH AT WYMONDHAM, NORFOLK.

The recent legal decision in the Arundel Church case naturally leads to the inquiry whether there are examples in this country of churches, the eastern or chancel portion of which formed distinct ecclesiastical buildings from the western or nave portion.

The church of Wymondham, in Norfolk, although differing in many important particulars from that of Arundel, may yet serve to throw light upon this very interesting inquiry. In that particular church, at any rate, the eastern, or choir portion, formed a positively distinct and separate church from the western, or nave portion of the building.

The first glimpse which is obtained of Wymondham Church, with its two noble towers, lofty and magnificent nave, and massive fragments of ruined walls to the east, gives the impression of a stately cruciform minster, with a single western tower, and a graceful octagon lantern at the crossing, and so strong is this impression upon the mind that it is absolutely so described in the "Norfolk County Excursionist." A closer and more careful examination will, however, at once convince the architect or antiquary that this idea is quite erroneous, and that, instead of having formed originally one vast cruciform church, it is absolutely two distinct churches, one of which is still perfect, and consists of a massive and noble western tower, and a long nave and aisles. What at first sight appears to have been a central tower, or lantern, was in reality the western tower of a second church, built immediately against the eastern end of the first church. This seems to be proved by the following facts. Firstly, there is no indi of any arch opening from this tower wes and leading into the present existing c but in its place is a solidly-constructe with two small doorways, which opened on side of the altar of the western, or ex church, and formed the only communi between the two buildings. After exa this wall some six months back, we were the conclusion that the whole of this coeval with the tower. Secondly, there lateral arches to this tower leading into tra but in their place are long windows, wi doorways beneath them, which led into p the remains of which can be distinctly Thirdly, the only arch under this towe its eastern side; this arch opened in monastic church, at its western end, but ou enough it was not in the centre of the question, and there is one very singul puzzling circumstance about this, *i.e.*, a the south wall of the nave was further fr corresponding respond of the arch tha north wall was from its respond, y weathering of the roof shows that its ap exactly over the centre of the arch. It impossible to conceive how the roof coul been arranged.

The monastery of Wymondham was f in the year 1130, by William de Albi "monke," or rather canons of the order Augustine. Now the fine Norman arca triforium of the nave would exactly su date, and it is most probable that as first the church may have consisted of a na aisles, with perhaps transepts and a apsidal choir, but in the fifteenth cen great alteration seems to have taken p the building. The ancient clearstory an of the nave were rebuilt, the old chanc transepts taken down, the whole nave wa up to the parish church, though probably that time the monks' choir occupied the three eastern bays of the nave. The be octagonal tower was erected, together w wall which shuts it out from the pa church, and a completely new churc erected to the east. What was the exa of this church cannot well be deter though, as far as can at present be made appears to have consisted of a tower, sq the height of the roof of the church, a tagonal above (this tower, which still nearly perfect, is still called "the old tower" by some of the older inhabitants place); two porches opening north and into this tower, a nave, and rather narrow and a very large and important chapel south. There appears to have been n munication between the monastic a parochial churches, except by two very doorways, one on either side of the altar latter.

The western tower is a noble example Perpendicular work, probably not earlie the commencement of the sixteenth c and the roof of the nave and south a extremely magnificent. The font is lar adorned with fifteenth-century scu There is no other ancient furniture, but t a very singular early Italian Renaissance ment on the south side of the altar, p one of the very earliest examples of th in England, and may have been execu some of the Italian workmen who we ployed upon Bishop West's chapel at Ely details bear some resemblance. There is dition that this was the monument of "t prior," but it looks almost too early fo The three arched openings in the mon and its position, rather suggest the idea may have been intended to serve the pur "sedilia," as well as a tomb.

There are no remains of the monastic ings, though, from the unevenness of the g it is probable that they were on the sou of the monastic church. The church o bourne, near Cromer, appears to hav another example of a double church, an as at Wymondham, the eastern church ruins. At Leybourne, however, the two ch did not join on to one another in a cont line as at Wymondham, but the nave eastern church was so much to the north western as to be nearly angle to angle.

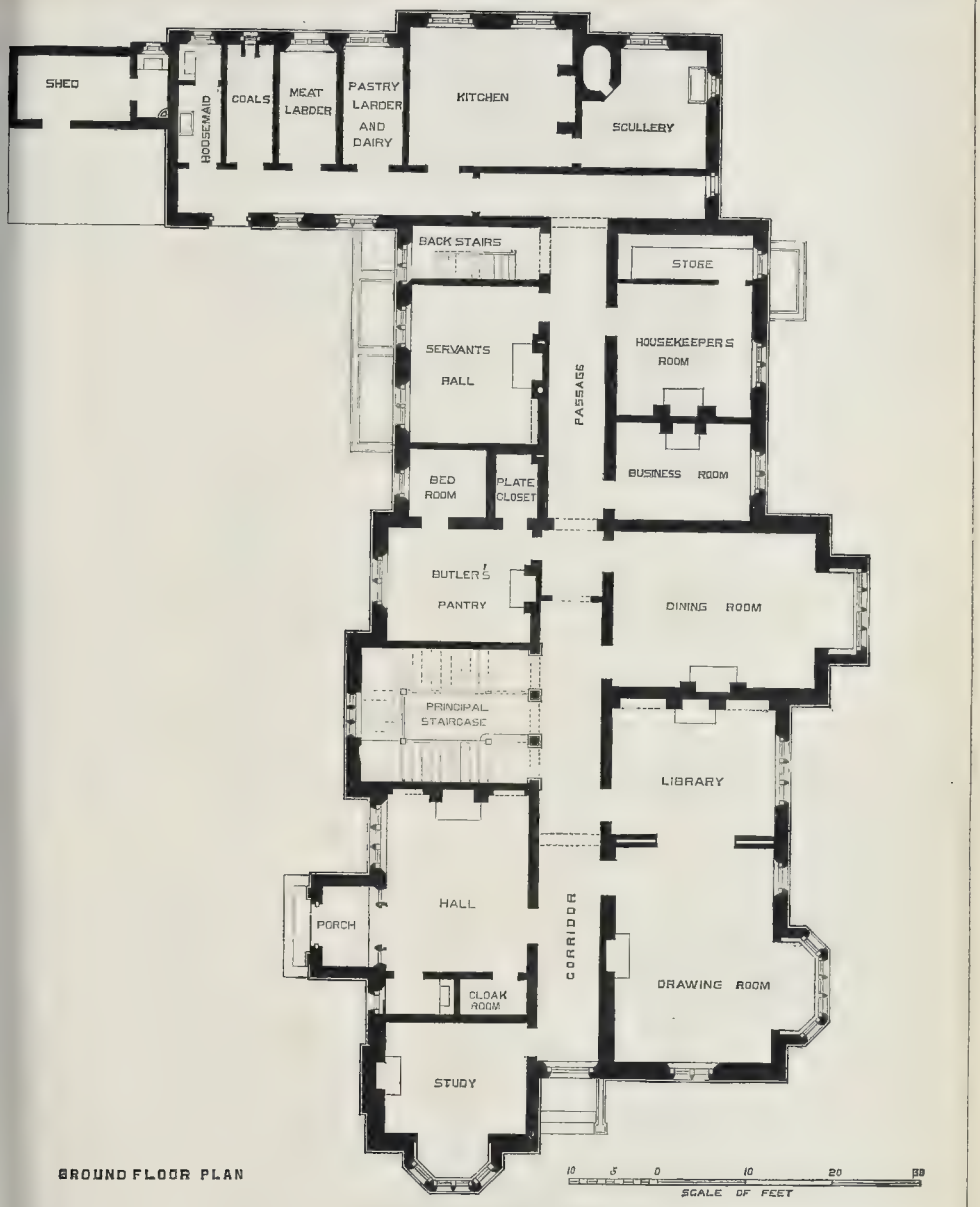
At Reepham, in the same county, a churches which do touch one another a angle, but they are in every way totally buildings, without any attempt being m make them appear one church, as w evident intention at Wymondham.



A DOUBLE CHURCH AT WYMONDHAM, NORFOLK.



LYTCHET HEATH, DORSET.—Mr. David Brandon, F.S.A., Architect.



LYTCHET HEATH.—*Plan.*

LYTCHET HEATH HOUSE.

Lytchet Heath, of which a plan and perspective view are given, is a newly-erected country-house, situated near to Wareham, in the county of Dorset, upon elevated ground commanding extensive and agreeable views overlooking Poole Bay and Brownsea Island and the ruins of Corfe Castle, to the English Channel in the distance.

The style or period of architecture which has been selected, both for the interior and exterior of the house, is that of the early part of the seventeenth century.

The principal walls are built hollow, with bricks made on the estate, faced with red bricks from Wareham, supplied by Mr. Court, and the brickwork of the cornices, windows, quoins, &c., is executed in Bath stone, from Box. The roofs are covered with tiles obtained from Broseley. The general arrangement of the apartments, staircases, and the offices is shown upon the ground-plan. The house was built for the Right Hon. Lord Eustace Cecil, from the designs of Mr. David Brandon. The builders were Messrs. Simpson & Son, of Paddington.

Birmingham.—Mr. George Dixon, the arbitrator appointed in the dispute between the operative gasfitters of Birmingham and their employers relative to the proposed discontinuance of the 15 per cent. bonus granted to the men in 1872, has made his award, decreeing a reduction of the bonus to 10 per cent.

THE ROYAL ARCHÆOLOGICAL INSTITUTE AT TAUNTON.*

In the Architectural Section, on Thursday, the 7th inst., the Rev. Sydenham Hervey read a paper on "The Supposed Palace of Alfred the Great at Wedmore." After giving a general description of the district, and of the "Island of Wedmore" in particular, Mr. Hervey quoted from contemporary or early authors to prove Alfred's connexion with Wedmore. Referring to that portion of the hamlet where tradition places the king's house, he said,—The field is a grass field of about ten acres. The excavations cover about two acres in one corner of it. The

* See pp. 892, 918, *ante*.

name of the field is Court Garden. It is situated on the south slope of the hill. No house has stood there in the memory of man, nor, I believe, in the memory of man's father. Loose stones and heaps of Cornish tile were lying about it some years ago, and the surface of the field was much more irregular than it is now. Old people remember houses to have been built with stones taken away out of it. The next field to Court Garden, lower down the hill, is called King's Close. There are two other fields, which once were one with Court Garden, but now are separated from it by a road made about sixty years ago. The one is now an orchard, and there is every appearance of the house having extended into it. I am told that when the road was made foundations of walls were taken up. The other, lower down the field, is called Redard, and in it tradition places the fish-ponds. On first coming into the field from Wedmore, there is the road, lying under 4 ft. or 5ft. of soil. It is made of good-sized stones, laid down one by one. Only about 15 yards in length have as yet been laid open. I was stopped from following it any further by not knowing where to put the soil. To the left or south-east of the road is a long detached building, 95 ft. by 39 ft., of the shape of a barn. The foundations are rude and irregular, from 4 ft. to 5 ft. thick. The walls were not carried up the same width. A little further on is an underground-room, 30 ft. by 16 ft., with two steps leading up out of it. A key found at the bottom of the steps is in the temporary museum. Two of the walls, and part of the third, are still standing, from 4 ft. to 7 ft. high,—high enough to show that the roof was an arched one. The present surface of the field is about 4 ft. above the top of the highest of them. One of these walls is plastered over, and nearly 6 ft. thick. The one opposite to it is dovetailed into the rock. The floor did not extend over the whole room. A trench ran along the opposite side of the wall, and ended in a hole not far from the foot of the steps. In that trench were lying the two largest pieces of pottery. A drain runs under the steps. The underground room seems to have been partially enclosed by three walls. That on the north is about 165 ft. long; that on the west, 120 ft. These two walls are well and regularly built, and quite of a different character to the barn-shaped building, and to some of the others. At the lower or south end of the western wall is a curious block of walls. Between the west wall and the hedge by the side of the road there is a pitched yard. We have not opened enough of it to be able to make out its course or shape. The well, which had been filled up with rubbish, is about 20 ft. deep. It is steyned round. An old man who has known the field for seventy years tells me that there is another well somewhere in it. Very little mortar is used in the masonry; sometimes there is a set-off, sometimes not. I do not know whether the set-off is or is not a distinctively Saxon feature. As a general rule, width and wideness of walls seem to go together. The better-built walls are not so wide as the under ones. Amongst the authorities who have seen it there has been an almost universal consensus of opinion that the masonry is not Roman. Mr. Bloxam, who alone held out for its being Roman work, came to that opinion, I believe, solely in consequence of its being a likely Roman site, and not from anything distinctively Roman that he could point to. Mr. Parker, jun., held out for its being post-Reformation; I am quite unable to say what were the grounds on which his opinion was based. Between the Roman and the post-Reformation there have been many suggestions. With regard to the relics found, some of which are exhibited in the Temporary Museum, there is a great number of small broken bits of coarse black and brown pottery, Roman according to Mr. Bloxam, Saxon according to others. There is one bit which has been called British. There is also a number of bits of glazed pottery. There are some glazed roof-tiles of various patterns, and also some shingle tiles, a horse-shoe, spur, arrow-head, spear-head, knife-blades, keys, nails, pair of compasses, and other bits of iron and other metal, three bits of slate, rather curious: on one are a few bars of music, diamond-shaped notes, with the words *Kyrie* and *Christe*. It has been ascribed to the latter half of the sixteenth century. The other side bears the name of Wolman. On another bit is a little man with his arms shed in his side. This came out of the well. Two silver pennies have been found,—Edward and Richard; four jetons or tokens. One of these has the head which prevailed from Edward I. to IV. on it, and no inscription on either side,—nothing but pellets. According to Snelling, this would be early. The others have inscriptions.

Mr. Fairless Barber read a paper on "The Discovery of Original Muniments from Citeaux, illustrating the Origin and Growth of the Cistercian Rules."

Mr. M. H. Bloxam read a paper on "A mutilated and much abraised Effigy of an Ecclesiastic, built up into the external East Wall of Batheaston Church, near Bath"; and on "The Sepulchral Effigy in Bath Abbey Church of Bishop Montague."

In the afternoon a large party proceeded in carriages to Castle Neroche, to visit the camp there. After a pleasant drive the party halted at the Castle Neroche inn, and proceeded on foot to the earthworks, which occupy a commanding position off the road to the left. The Rev. Prebendary Scarth conducted the party over the camp, and explained its different features. The same mischief had been perpetrated here that had been going on at other ancient camps in the country. People had begun to demolish the ramparts for the sake of gravel, and to save themselves the trouble of making a pit at another spot. He had brought the company to that particular spot in order that they might see for themselves the work of demolition that had begun, and to ask them if something could not be done to prevent it. If they could do so they would accomplish a great work. The party then walked along the ridge of the outer rampart, around to the high encampment which forms a part of the upper side of the earthworks, and the Rev. Prebendary Scarth pointed out how, at this point, the three ramparts merged into one, and were carried by a devious path behind the mound or citadel of the camp. With some difficulty, and not without a few amusing mishaps,—for the ground was muddy and slippery from the late rains,—the party ascended to the top of what is known locally as "The Beacon." This point, Mr. Scarth said, was the very heart of the camp, and was called by Mr. Warre "The Keep," and it was the strongest part of the Mediæval castle. A native brought the party a brick, which he said he had been asked to dig up for inspection by members of the Institute. It was examined by several experts present, who stated that there was no doubt it was one of modern manufacture.

Mr. Scarth said that iron swords had been found here, and that would place the date of the earthworks at the time of Roman occupation, or a little after. The site seemed to be in the line of a Roman road, and two Roman roads seem to have met here.

Bishop Clifford supposed it to be one of the points mentioned in the 12th Itinerary of Antonine. Taunton was another; and certainly the position suited that theory better than any other that had been named; and if they could only confirm their measurements by some undoubted relics of Roman times,—and he thought they had only to excavate and to examine more thoroughly into the matter to do so,—they might confirm that view of the case. They would observe the commanding position which this camp occupied. It comprised a view of the line of the Quantocks, the line of the Mendips, and they could see Crook Peak, Brean Down, the camp near Wincanton (Cadbury), and Ham Hill. The party were then shown how the approach to the citadel was fortified, and Mr. Scarth pointed out its exact resemblance in that respect to the camp at Worle Hill.

Mr. Bloxam asked if there were any other Roman camp below, and if this was one of the twenty cities taken by Vespasian?

Mr. Scarth replied that they had a Roman villa not far from here, but he could not mention the exact locality. He was inclined to think that this place had been fortified chiefly with wood; wood being so plentiful in the country, people would not go to the trouble of making bricks. With respect to the construction of walls of camps, they were simply earthen ramparts, when the place was used for temporary occupation, the earth being thrown out of the ditch, and arranged in the form of a parallelogram. The most elaborate earthwork of that kind was the one near Dorchester, which was the finest in England. The second kind of wall was the stone rampart. Stones were roughly thrown together into the form of a wall. They found many instances of this in Gloucestershire, amongst the Cotswold Hills. They had also the dry walling, as at Worle Hill, near Weston-super-Mare, which was perhaps the oldest, because no lime was used. Roman coins [illegible] been found there. There was a very curi[ous] camp, which was now, he was sorry to [say] totally destroyed, at Bowerwalls, near Cliff. That camp had three ramparts of the m[ost] perfect kind; and when they began to b[uild] villas there they tore the ramparts to pie[ces] for the sake of material. They found [that] the centre of the rampart was filled [up] concrete. Rocks had been thrown in, [and] was poured upon it, and so a firm wall [was] made, which could not be dug through. If he [were] to carry them further with regard to walls [he] should take them from Cirencester, where [the] were made of stone. They would find that [the] most ancient stone walls were the most [im]fect, and the most ancient earthworks were [the] most perfect and most elaborate. The earl[iest] works in the way of fortification were un[doubt]taken when the means for defence were [the] most simple, and they would find in [the] the finest hewn stones in the oldest fortifi[ca]tions. As he had said, it would be impos[sible] to give this place a date, but it would date [pro]bably to the time of Worle-hill and Mai[den] Castle.

The party then descended the hill and [were] conveyed to Staple Fitzpaine, where, [after] being entertained by the Rev. F. B. and [Mrs.] Portman, they examined the parish church[,] an edifice of the time, probably, of Henry [VII.] It has a square tower of two stages, which [is] Freeman pointed out was of the character [of] Bishop Lydeard's, with a stage left out. The[y] were no large pinnacles on the top, but six [or] a staircase-turret. Where the middle win[dow] on the north side was now situated there [was] formerly a door, as may be seen by the existi[ng] of a stoop there. The party then entered [the] church by the quaint Norman doorway, [and] Mr. Parker spoke a few words as to the inte[rior] He said there were evident indications [of] Norman church here, and the Norman door[way] was evidently of the twelfth century. [The] rest was of the usual fifteenth-century t[ype] One of the peculiarities of the Perpendic[ular] style was, that it prevailed with little varia[tion] through the whole of the century. St. Cuthbe[rt] at Wells, he believed, had been proved to h[ave] about the date 1430, which was considere[d] earlier than the time of Henry VII. On[e of] the peculiarities, too, of Somerset churches [was] their beautiful woodwork, and some splen[did] specimens of such work were still to be see[n] this church.

Mr. Portman explained that the screen [was] brought from another church to this place.

Mr. Parker said that was the kind of res[to]tion which no one had a right to object to. [Mr.] Parker also noticed two very peculiar [old] arches adjoining the chancel; and

Mr. Portman explained that they were [not] modern, and were put in to avoid the[ir] appearance of a blank wall there.

Mr. Parker remarked that they were [very] good imitations of the other arches in the ch[urch] There were two niches in the east end of [the] north wall, which marked the former exist[ence] of a chantry and chantry-altar. The party [then] returned to Taunton.

On Friday, the 8th inst., a party of about [30] excursionists left Taunton by the ten o'[clock] train for Bridgwater, at which station carr[iages] were in waiting to convey them, in the [first] place, to Cannington, where a survey h[ad] been made of the parish church, Bishop Cl[ifford] remarked that there was no very great [regu]liarity about the edifice. The original fo[und]tion of the convent was held by Rober[t de] Courcy, in the time of King Stephen. [The] writer had said in reference to it,—"I fou[nd a] goodly church, at the east end of which w[as a] church belonging to the Priory." He (B[ishop] Clifford) could not say whether that meant a separate church for the priory was bu[ilt] the east end, or whether it meant that a sep[arate] church was used by the nuns. There w[as a] few years ago, a communication from the cl[ose] to the Manor House, which belonged for[merly] to the Priory, and the chancel was used b[y the] Rogerses, who received it from the Crown [and] likewise by the Cliffords as a family bur[ying] place, for they buried in the chancel, and [there] were one or two inscriptions still remai[ning] The late Rev. Thomas Hugo, in a paper [pub]lished by him, had given a good many cha[rters] relating to the presentation of several cl[ergy]men, it being always decided that the P[rior] had the right of presentation. There [were] twelve crosses on the walls outside, put [up] the time of re-consecration. According t[o]

an ritual, these consecration crosses were inside, but in many of the churches they found on the outside. He had seen some iltshire, and also, he believed, at Amesbury. church had undergone many alterations the time it was first erected, and the ability was that it was entirely rebuilt.

e excursionists then walked a short distance spect Blackmoor Manor House, one portion hich is thought to be an example of a stic memorial chapel of the early sixteenth ry, preserving the old arrangement of the rn part of a chapel, divided into two stories, ower for the domestics and the upper com- cating with the principal rooms for the er of the house and his family, the eastern being the whole height of the chapel, for ltar and officiating priest.

oceeding on to Stogursey, the party visited parish church, which has recently been red at the cost of Sir Alexander Hood, Here Mr. Bloxam gave a description of recumbent stone effigies in the chancel. arliest of the two was, he said, in the time ward III. or Richard II.; or, at any rate, atter part of the fourteenth century. It ably represented the squire of the manor, it appeared by his locks of hair to be e Edwardian period. He was clad simply tunica, and from the absence of a super- a, or overcoat, he most likely died in the ner.

Alexander Hood stated that he had come s an old manuscript a few years ago in h mention was made that in the body of hurch, against the south wall, was a monu- of Sir Ralph Verney, who died in the ty-sixth year of Edward III. Before he he made an agreement with the proprietor he Priory to have a sitting-room, dining- , cellar, office, &c., for himself and servant. ved in that Priory for several years, and he Alexander Hood) believed the effigy now in ion to be his monument.

E. A. Freeman said the church belonged class different from other monastic and hial churches, for instead of having, as in churches, aisles in the nave and no aisles e choir, this church was of an exceptional ter, in having aisles for the choir and for the nave. The tower was square, not g, and was a fellow to the one of Leonard ley, in Gloucestershire, and also the tower e abbey of Bath.

gursey Castle was next visited, after which party proceeded to Fairfield House, an bethan or Early Jacobean mansion, stated llinson, in his "History of Somersetshire," ve been commenced by Sir Thomas Palmer, died in 1583, and to have been finished by randson, another Sir Thomas Palmer. Here arty were entertained at luncheon by Sir nder Hood.

dington Manor House and St. Audrie's next visited, and the party returned to ton in the evening to attend a *conversazione* by the Mayor.

Saturday, the 9th, a visit was paid to the ins of Muchelney Abbey, where Mr. Long the vicar of the parish, the Rev. S. O. , acted as guides. It was stated that at xtreme east end of the remains a stone had been unearthed, which was found y built into what turned out to be the apse e Saxon or Norman church. Subsequently portions of the earlier stonework had been vered. The lady-chapel of the more t building had been constructed on the of the old Norman chapel, and extended derably beyond it to the east. The whole e foundation of the north wall has been , and in a small chapel, measuring about by 10 ft., was discovered the headless nbent effigy of an ecclesiastic, the feet ng upon a conventional lion, bearing a very ing resemblance in treatment to some seen artock Church later in the day. Mr. Bloxam, ell-known authority on sepulchral monu- s, on being asked his opinion on the figure, it was the effigy of an abbot in full eccle- ical vestments, and was fourteenth-century . Mr. Shelmerdine gives the dimensions e abbey church as 173 ft. long and 52 ft. ; the total length, taking in the lady-chapel, 216 ft. These figures do not correspond those given by Collinson. Mr. Baker, in rief explanation to the Institute, put the th of the church at 240 ft. and its breadth ft.

sits to Martock Church and Manor House, taunte House and Church, Stoke Church, South Petherton, and Barrington Court terminated the week.

On Monday, the 11th, the members of the Institute visited Wells and Glastonbury as mentioned in our last, and so the proceedings of the congress were brought to a close.

THE LARGEST TELESCOPE.

Messrs. Galloway, engineers, Knott Mill, Manchester, have constructed a gigantic telescope from the designs of Sir Henry Bessemer, who intends to erect the instrument at his residence on Denmark Hill, London. It is estimated to cost 40,000*l.*, and when completed is expected to be the most perfect and largest of its kind. It is now nearly three years since the attention of Sir Henry Bessemer was directed to this interesting subject. It was with him a desideratum that the instrument, notwithstanding its great magnitude, should be placed in a commodious and comfortable observatory, and not stand in the open air, exposed to all the vicissitudes of a climate like ours; and, further, that the instrument should be capable of being directed to any part of the heavens at will, without either waiting for the earth's motion, or for the assistance of any one but himself, so that at any hour of the night he could use it without climbing up long ladders or lying on his back in an uncomfortable and constrained position. With this view, he has designed a novel self-acting telescope, at which the observer can sit or stand in an upright position at the centre of the floor of the observatory, looking straight before him into the eye-piece, which is placed 5 ft. 6 in. above the floor, and from which position he need not move one inch for the purpose of viewing an object visible at any part of the whole hemisphere above. The observatory in which this large instrument is to be erected is approaching completion, and consists of a massive dwarf tower of 50 ft. in diameter, with a stone balustrade and promenade around it; in the centre rises the observing-room, which is also circular, the interior being 34 ft. in diameter, and 23 ft. in height, lighted by eight large plate-glass windows. Near the observatory there is a large workshop and laboratory, in which the reflector and some of the more delicate parts of the apparatus are now being made under Sir Henry's personal supervision, while the large axis and tube of the telescope, as well as several of the other massive parts, have been executed by the Messrs. Galloway.

The telescope tube consists of several open-framed circular castings, very carefully and beautifully moulded, the end flanges of which are all accurately turned and fitted together. The centre part of the tube is provided with hollow trunnions, on which it moves, and in one of which the eye-piece of the telescope slides, so that in all possible positions of the instrument the eye-piece remains in the same spot. The necessity of applying motive-power to effect all the motions of the instrument will be understood when we state that the moving parts of the telescope weigh between eleven and twelve tons, and by their solidity and inertia give a degree of steadiness so generally absent, but so very necessary, in all large telescopes. Sir Henry first conceived the idea of constructing a special kind of lathe, for the purpose of cutting, with a diamond cutting tool, the slight spherical concavity of the massive plate of glass, which forms the reflector, and which is 50¼ in. in diameter. For this purpose, he designed a lathe having beds 50 ft. in length, carrying a massive radius-bar for describing the curved path of the diamond cutter, so as to give the precise focal length required. There is also another important machine designed by him for grinding and polishing the glass surface to an absolutely true spherical curve, after which it must be converted into a parabola of revolution, without which it would be absolutely useless. Some idea may be formed of the delicacy and difficulty of this operation when it is stated that the curved glass surface, which is 50¼ in. in diameter (3 in. in excess of the largest ever made), must have this surface reduced at the edges only one 13-1000th of an inch, and gradually lessening by the law of the parabolic curve, until the reduction in the centre is *nil*. This operation of parabolising the reflector is so extremely difficult that a true curve is rarely if ever attained; hence the price quoted by the trade for a glass parabolic reflector of 4 ft. in diameter is no less than 2,000*l.* Should Sir Henry's plans be as successful in this, as in the turning of the glass to shape with a diamond, a perfect glass reflector will not cost as many shillings as it at present costs pounds, and what is of still greater importance, his system of mounting comparatively thin plate-glass on a marble backing holds out the prospect of our future telescopes being made at least four times as large as the one he is now making.

UTILITY AND BEAUTY.

Sir,—The relation of these two qualities is amongst the most subtle that æsthetics has to discuss. No wonder, then, that the artisan is bewildered by the dicta of amateurs, who make confusion worse confounded by their imperfect comprehension of principles. Why should public men be permitted a liberty with regard to the fine arts that would not be tolerated in them with respect to any other profession? Would they dare to stump on medicine, engineering, &c.? The theory of the fine arts is the most difficult of all the sciences to enunciate, and for this reason it still remains in a chaotic state. Even professional artists as yet find it difficult on many points to give a reason for the faith that is in them. The whole field of art discussion is laid waste by a terrific invasion of nonsense. In a recent review in your columns of Mr. Poynter's Lectures upon Art, the writer appears to have an *aperçu* of the real relation of "Utility to Beauty." The first wholesale blunder that amateurs generally stumble upon is that everything in nature must necessarily be beautiful. That the entire purpose of the Almighty in creation was to make everything beautiful. It is the human conceit that everything was made to please man. Upon this point the late Sir John Herschel once wrote to me. "The Creator had other purposes in creation to subserve than that of beauty." Our everyday experience must convince us of this. All being is fitted to its purpose, but only some is beautiful. Indeed, we should not recognise the beautiful, or take a delight in it if it were not for contrariety.

We see, then, that the grand motive of nature is fitness, but if all things are fit and only some are beautiful, it must be clear that fitness alone is not the cause of beauty, but that the beautiful must inhere in that which, beside being fit, has some appositeness, some *rapport*, with our own nature. The beautiful, then, inheres in those combinations of forms, colours, &c., which are in accord with our sensuous constitution. If we fit a thing rigorously to its purpose, and independently of any attempt to reconcile it to our own nature, as great creating Nature does, it may turn out to be beautiful or it may not. But, at all events, if we steadfastly adopt this principle, it will have the satisfactory quality of nature's works, fitness. And that is the motive which, with all due deference to Mr. Gladstone, we would inculcate as that which should animate the English workman; for it is almost invariably in the attempt to overlay fitness with ornament out of all proportion to it, that vulgarity and bad taste result. Good taste consists in knowing to what extent we may modify things which are not beautiful as well as fit, so as to recommend them to the human nature. Therein lies the difficulty, for in this case we have to overlay or engraft upon the "useful" something which does not essentially belong to it, in order to satisfy tastes, and which, to all intents and purposes, is in respect to its purpose of utility *appliqué*, a mere sham. This beautification of the useful had better, then, be left to the artist-workman, whilst the main object of the general workman should be utility, rigorous utility.

The beautiful, however, may be considered apart, in the abstract, without any considerations with respect to utility except the one purpose of conforming forms, colours, &c., to our own sensuous nature. A beautiful object may subserve no other purpose than the gratification of our taste. But this is the domain of purely art considerations, wherein there is a large field to be worked by the artist-workman, who is the proper person to gild the useful with the beautiful when it is required of him.

"When it is required of him,"—for with what show of reason can we insist upon the artisan cultivating his taste if there be not a demand for it? Is it that our art-manufactures may be more saleable abroad than at home? Grecian art was not developed by art-schools, and by beginning from the artisan. The taste originated with the powerful and rich. The demand for art and the art-manufactures came from the

powerful and wealthy Greeks, and the artist and artist-workman arose to meet that demand. No other mechanism than this will ever correct England's deficiency in taste. To expect it is as unreasonable as to expect the play of "Hamlet" to be successful with the part of *Hamlet* left out.

W. Cave Thomas.

LIGHT PORTABLE RAILWAYS.

Sir,—A few days ago I was in the Erewash Valley on business, and was invited to see a piece of light portable railway laid down and worked at the manufactory of Mr. G. R. Turner, Vulcan Iron Works, Langley Mill, near Nottingham. I made notes of the plant and of the work done, which may be of interest to many of your readers.

The railway consisted of 10 lb. to the yard flat-bottomed steel rails, laid to a gauge of 18 in. Two light plates of steel, bolted together, form the sleepers. The lower plate passes underneath the rails, and grasps the outside of the flanges, while the upper plate, which is now bolted to the lower one, grips the top of the flanges, and also keeps the pair of rails extended to the true gauge. The rails so laid lie firmly on the ground, and the trucks run as freely over them as if they were of the most permanent character.

The length of the single line of rails laid down was 56 yards, and in this length there were two curves, one of 11 ft. radius, and one of 10 ft. radius. Two men laid the rails in fifteen minutes.

The truck used had a cast-iron frame, 2 ft. 2 in. by 2 ft. 2 in. The wheels were 9 in. in diameter, and of cast iron, fixed on 1¼-in. wrought-iron axles. The axle-boxes of the two pairs of wheels are simple and effective. A top brass in each receives the weight of the work, and the axle-bearings are lubricated by oil, obtained from cotton-waste, held in a cup beneath the bearings. The waste furnished a regular supply of the lubricant. The cup can be readily replenished with oil, as it is fitted for removal, and when it is replaced it is held in its position by an outer slide of U-shape, that keeps out dust and dirt. Upon the cast-iron frame the truck-box is planted on a central pin of ample strength, and is fixed in position by a set bolt, which, on being eased, allows the truck to travel all round. The truck-box is of sheet steel, and is 34½ in. by 31½ in. at top and 30 in. by 26 in. at bottom, by 16½ in. deep. It has self-acting tipping-gear. A lever is jerked aside, the box tips over and empties itself, readily comes to its seat again, and locks itself there, ready for another load.

On the front of the wagon-frame is a steel bow or buffer spring, upon which a self-acting coupling is placed. As soon as two trucks come in contact the coupling gear locks itself.

A man commenced to load the truck. He cut grass sods from a well-trodden spot down into clayey soil and filled the truck. After heaping his load, he pushed the truck away to the end of the rails, and, striking the tipping lever with his hand, the truck canted over, emptied itself, and was back to its place in less time than I take to note the fact. Back he goes with the empty truck, re-fills it, and continues to repeat the work. He conveys over the 56 yards of railway twelve loads an hour; each load weighs about 6 cwt. One load was brought to the scales, and the net weight of earth was 5 cwt. 3 qrs. 8 lb. The work done by this factory labourer, in one hour, upon the portable railway by the handy truck which I have described may be summarised thus. He cuts and lifts 3½ tons of earthwork, conveys that weight, in twelve loads, over 672 yards of rail, unloads twelve times, and brings the empty wagon over 672 yards, making a total of ground covered of 1,364 yards. At this rate, the work done in a day of ten hours will be equal to the lifting of 35 tons of earth by one man, who conveys that weight 56 yards and deposits it.

This is fifty per cent. more work than can be done by a man with wheelbarrow and plank road. A strong London coal-wheeler fills a barrow with 3½ cwt. of coal, and conveys the load 30 yards. In a day of ten hours he carries 24 tons, for which he is paid 3d. per ton. He thus earns, by vigorous piecework, six shillings per day. But with light steel rails and one of these trucks he could do one-half more work, and earn nine shillings per day, with no more expenditure of physical labour than he gives to the barrow and plank for six shillings only. And the plant to do this effective work, say 100 yards of rail and truck inclusive, will not cost 25*l*.

A strong, but lighter description of truck, suitable for exportation and conveyance overland, is made at the same works.

I saw also a light portable railway carriage, similar to an Irish jaunting-car roofed over, but with open sides. This is a very suitable vehicle for light tramways, and the day is not distant when the turnpike roads of this country will be utilised for tram-car travelling such as this, and for the conveyance of goods on light trucks, drawn by light, noiseless, and nearly smokeless locomotives. By such means passengers can be carried at a halfpenny per mile, and goods at a penny per mile.

Libra.

THE HOME OF THE FUTURE.

"As the home, so the people."
George Godwin.

Houses are built in various ways,
For people to dwell therein,
But few are plann'd deserving of praise,
Below, around, or within.
What is a dwelling? one may well ask,
In seeing the time has come
When men have need to essay the task
Of building a healthy home.

Houses are many, but homes are few,
Despite of the country's wealth,
And dwellings are legion, old and new,
But they are not homes of health.
Art and science may raise a pile
As grand as St. Peter's dome,
But rich and poor may all the while
Possess neither health nor home.

A home should not be a human trap,
But nursery pure; in sooth,
Plann'd that the morals we may not sap
Of the child or tender youth.
Give plenty of water, space, and air,
And vice you will overcome;
For cleanliness will be godliness where
There exists a healthy home.

Architect, builder, and workman too,
A noble mission is thine,
If each your duty will dare to do,
For health and for good design.
The credit of one, the honour of all,
Is pledged for the time to come;
Build well, and your works, strong as Roman wall,
Will live in each heart and home.

C. Clinton Hoey.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

The annual meeting of this society was held in Taunton on the 7th inst., in connexion with the visit of the Royal Archæological Institute. The Rev. Canon Meade presided.

The report (presented by the Rev. W. Hunt and Mr. C. J. Turner, joint hon. secs.) stated that the society continues to meet with no less welcome and support than in past years, and that the number of its members has somewhat increased since the last report was presented. Some valued members have been lost by death during the past year. Among these has been Sir Walter Trevelyan, bart., who was the first president of the society, and delivered the opening address at its first meeting, in 1849. He was a warm friend and liberal supporter, and has recorded in his will his unabated interest in the welfare of the society by a donation of 100*l*. The death of Mr. Richard Walter, of South Petherton, one of the local secretaries, is also noticed with regret. The council regret to observe that the finances are scarcely in a satisfactory state, and the society has, in consequence, been unable to grant any pecuniary assistance to works which it would otherwise have gladly furthered, such as the excavations at Wedmore and the exploration of Pen-pits. The Council propose to call a meeting, in accordance with rule 16, to obtain the sanction of the society for certain changes, and for the necessary alteration of rule 11 which these will entail if accepted. The Council feel that it is unadvisable that any further changes should be made in, or work done to, the fabric of Taunton Castle, without a plan being drawn up, by some competent architect, of all the changes which appear necessary to make it meet the requirements of the society, with due regard to the great and important trust which the possession of such a building entails; in order to avoid a patchwork treatment of the castle, and to ensure that whatever may be done, either for use or beauty, may be a source of pride, and not of shame and annoyance, it seems advisable to employ an architect, and work by such degrees as we can in accordance with his directions. The Council therefore recommend that Mr. E. Ferrey be appointed architect of the society; that he be requested to draw up a plan for the castle alterations that he be paid for this and such work as he may do from time to time for the society; that the Castle Restoration Fund; and that a sub-committee be appointed in place of the construction committee to assist and control the work, consisting of Messrs. G. T. Clark, H. Sanford, Surtees, Gale, and Sloper; and that no change be made in the castle except in accordance with his plan and under his direction as architect."

The Council re-appointed Canon Meade (President) as chairman, Rev. T. W. Wilkinson secretary, and Bishop Clifford, Revs. J. Norwood, J. A. Bennett, Geo. Smith, and W. Hunt, Messrs. Bennett and W. Wills, as members of the Pen-pits Exploration Committee.

The catalogue of the Museum, drawn up by the curator, Mr. Bidgood, has been published, and the Council acknowledged the great industry, ability, and care which he has shown in this work.

ARCHÆOLOGICAL DISCOVERIES.

Northampton.—A valuable collection of Roman coins has just been recovered by the county police, and is now in the possession of the chief constable for the purpose of being handed over to the Treasury. It seems that on the 10th ult., a man was at plough in a field called the Start, at Southwick, in the occupation of a tenant on the Earl of Westmorland's estate, when he turned up an earthen pot which broke in pieces, disclosing no less than ninety-one silver coins. Of these he gave one to his employer, and distributed the rest. The policeman stationed there collected them, and there have been identified coins of Trajan, Hadrian, Nerva, and Antoninus. Endeavours are being made by the hon. secretary to the museum (Mr. J. B. Hensman) to obtain the collection for the town, and the Secretary of State has been written to.

Exeter.—At the annual meeting of the Devonshire Association for the Advancement of Science, Literature, and Art, held at Ilfracombe on the 30th ult., Mr. E. Parfitt read a paper on "Archæological Discoveries in Exeter in 1871." He said he found very great difficulty in impressing on the workmen at Exeter the importance of preserving specimens of pottery. They looked upon them as so many shards, and nothing more. Exeter had been one of the richest in wealth in that way of any city of its size in the kingdom; but had it not been for the unfatigable exertions of Captain Short in collecting and recording his collections, they would be poor indeed. Mr. Harry Hems had placed in his hands a small collection of Roman pottery which he had picked up at various times in the city. The first was the base of a sepulchral urn of coarse ware, found at Mr. Salter's, in Fore-street. The name of the potter was on the urn, but it was reversed on the urn. The next was a small vessel of red Samian, quite perfect except a string line round the middle. In an excavation made in Musgrave's-alley, for some new buildings erected by Mr. J. T. Perry, fragments of pottery and coins and tokens of different dates were found. The oldest, and perhaps the best of that find, was a small vessel, very thin and light, nearly as thin as biscuit china. It measures 4½ inches in height and 3⅜ in its widest part. It bulged out in the middle, and on that part were a number of elliptical depressions placed vertically. This kind of vase was very rare. In a field at the back of the Artillery Barracks, Topsham, in making a drain for draining the camp, and for the Militia, one of the workmen came upon what he believed to be a very rare coin, a gold noble of the reign of King Richard II. Another interesting relic was found in Bartholomew-street in excavating for a sewer drain there. It was a tradesman's mark, made of lead, and 2 in. in diameter. It was round, and was stamped with the name of the tradesman on one side, Clavo Passavante. Those circular pieces were the trade-marks of the day, and it was necessary with all workers in cloth to affix

a distinctive mark, then a seal of lead, ng as a token or mark of the length or ty of the cloth proffered for sale. That an enactment anterior to 1446.

le Abbey.—The excavations at Dale Abbey ceased for want of funds. It has been tained that the cloister alley was 10 ft. , and roofed with red tiles. That part of ave which is within the enclosure has been ed, resulting in the discovery of a very derable portion of the original tile pave- , which appears to have been laid in bands fferent widths.

rrey.—While engaged in making excavations he property of Mr. Richard Twining, near ng, for the foundations of a new building, workmen struck a brittle substance at a of about 20 ft. On an examination being , some Roman and Etruscan ware was un- ed, and the following articles found:—A tity of glass, with etching in gold, repre- ng two figures of the early Christian age; specimens of glass vases of great irides- ; a Roman glass bowl, broken in fifteen s, in white, yellow, blue, ruby, and other rs; a vase of antique Roman manufacture, r pieces; a lance, battle-axe, and dagger, ome bronze weapons in fragments, and a cup, the whole of these being fused her apparently by fire. Alongside these ures was found a large square copper box, id lying next the articles named, and the portion broken in halves, the treasures g evidently been once inclosed in it.

BOROUGH SURVEYORS.

R,—The recent appointment of a *local er and contractor* as surveyor to a Local d is one which deserves the attention of the to as well as that of engineers and borough yors; for there can be little doubt that the er are much interested in the appointment roperly-qualified professional men to carry nd maintain sanitary works and public im- oments affecting the health and comfort of opulations. I think if we inquire into the sary qualifications of a borough surveyor all at once see that no one is fit for the intment who has not received a special ing.

e necessary qualifications are:—

He should be thoroughly acquainted with hole of the Public Health and Highway Acts.

He should be capable of designing and ing out in a scientific and practical manner s of sewerage and drainage and water y in all their details, and have a thorough ledge of the various kinds of engines for g sewage and water. To the above should ded a knowledge of gas-works and of electric ing.

He should be capable of designing and taining *high-class roads and streets*, in- ng, of course, a thorough knowledge of the us applications of wood, stone, concrete, natural and artificial asphaltes to produce roads.

He should have a practical and *scientific* ledge of building construction.

He should have a fair knowledge of archi- re.

He should be an accurate surveyor with hain and theodolite, and an accurate der.

He should be a good draughtsman, and ble of preparing specifications and taking uantities.

He should have a good knowledge of the of labour and materials, and be able to accounts.

w, sir, for a man to be capable of carrying he works above mentioned in a proper her, he must have had at least four kinds aining, viz.:—

A preliminary scientific training embracing ast the following subjects:—1. Arithmetic, id, mensuration, practical geometry, algebra, and spherical trigonometry, conic sections, the differential and integral calculus; echanics, hydraulics, hydrostatics, pneu- ics, and acoustics. 3. Light, heat, elec- ty, and magnetism. 4. Elements of che- try and magnetism.

Office training, including the drawing of s neatly, accurately, and expeditiously; itectural design and scientific construction; preparation of specifications, taking out tities, and the other usual office-routine

C. Town, land, and engineering surveying and levelling.

D. Practical training,—including setting out and measuring up works, superintendence of works, and so gaining a practical knowledge of materials, construction, and workmen.

In order to insure a competitor having such a knowledge as above mentioned, the following should be required:—

1. That he should have been articled for four years to a civil engineer or a borough surveyor, or have received a four years' training in the engineering department of one of our universities, or at Cooper's-hill College, which should be thrown open for the training of engineers generally. That previously to being articled he should pass a preliminary scientific examination, and on the completion of his articles or college course he should be examined in the subjects of classes A, B, and C.

2. He should serve four years as an assistant, so as to acquire the subjects in class C, and at the end of that term should be examined in the subjects of that class, and if successful in passing such examination should then be considered qualified to enter into competition for any borough engineer's or surveyor's appointment that might be vacant. Corporations and local boards would then have some protection from "quacks," and a guarantee to some extent of the qualifications of all competitors. It would then be for them to make the selection of the man who had had most experience, or who was most suitable in other respects for their purpose.

I suggest that the Board of Examiners should be the chiefs of the engineering, legal, and medical departments of the Local Government Board; a member of the Council of the Institution of Civil Engineers; a member of the Council of the Royal Institute of British Architects; a Professor of Mathematics and Physical Science.

I think if the Local Government Board insisted upon all borough and town surveyors (I would call them engineers) of towns having a population of 10,000 and upwards being so qualified, it would do very much to ensure the carrying out of sanitary and improvement works in a proper manner, and thus promote the health and comfort, and therefore the happiness and prosperity, of the people. PROGRESS.

SIR,—As one of the candidates for the surveyorship of Enfield, and also for others decided in a somewhat similar manner, I have come to the conclusion that until it is made *illegal* for persons not duly qualified by (1) a term of pupilage, (2) a term of practice, and (3) an examination in scientific and professional subjects, to act either as surveyors or civil engineers, such evils will continue and increase.

The time may come when Government lending money to local boards may insist upon such boards having competent and educated officers to see it is spent properly; but before then it is surely time for the profession to do something to prevent every one who pleases calling himself and acting as a civil engineer. JUSTICE.

As suggesting a curious and sadly instructive contrast between what seems desirable and what actually is, we print *verbatim* a letter on the same subject received from a perfectly well-intentioned candidate for the Enfield surveyorship, who writes thoroughly in earnest, and sends his name and address:—

Enfeild Local Board Surveyorship.

Sir,—I am realy don't no what C. E means by is professional men. in Last week builder, & "Not a Candidate" & C S C in this Weeks *Builder* they Seam greatly Put about with a Builder & Contractor been elected. Now I whould ask them Professional Men whow is More fit for the Situation of Surveyor. then a good Practical Builder if he as had Practial expereince in all that the Local Board requires. Now I carnt blame the Local Board for electeng Builder & contractor if he is But thire is Contractor that Now no More about what is required of a Surveyor nor the Man in the Moon & they have to Imploy Foreman to carry the works on for them & thire is some what call themself Professional Men quite as bad that dont now good Stone from Bad & good work from bad nor yet Price of either Labor nor nothing els the only thing is theys can Draw a good sett of Plans &c and as to get thire Practial Nolige from the Best of work me now I dont Blame the Local board for Nothing only Paying such Large Salarys as the Do for I was a candidate and whould of been glad of the Situation at a Salary of £150 & I consider myself Second to no professional for I can booth Do thire work a a Surveyor & is Practial in every thing that is required & as had above 20 years expeireince in Warter Works. Sewarge Works. gas Warok. Street and rood Making flaging. Paving &c: & understands Boath cost of Labor, Meeteral, & can understond wither it is good or Bad at once where for Professional Men as to advetice for Tenders before can inform the Board what it will cost and if some of the Local Board had to Pay the Salarys out of thire own Packet they whould not be so fond of Paying Such Large Salarys when they chould get good Practical Men at Much Les. A CANDIDATES.

THE NEW CLAYTON HOSPITAL, WAKEFIELD.

THIS building externally is Flemish in character; the total length of the main front is 287 ft., with a central tower 70 ft. in height. The hospital is planned on the pavilion system, with accident and special wards, operating-theatre, day-rooms, and offices. The administrative department is placed in the centre of the building, with the kitchens, &c., at the rear. The mortuary and laundry are situated at the south side of the site. The staff entrance, under the tower, is approached from the new road on the north; the entrance for accidents is from Northgate. The porters' rooms are placed on the south side of the entrance; the outdoor patients' entrance is from the new street at the rear of the site, and communicates with a spacious waiting-hall, and with the dispensary department. The hospital, in the first instance, is constructed to accommodate fifty-two patients, with provision for future extension. The walls of the building are, externally, faced with Elland edge wall stones and ashlar dressings from the quarries near Haddersfield, and lined with brick. The vitiated air is to be extracted by means of air-shafts connected with the copper cylinders which are placed in the roof and fitted with rings of gas-jets, the exit-shaft being carried into the ventilators provided for them. The hospital has been designed by Mr. W. Bakewell, of Leeds, and carried out under his superintendence. The contractors are Messrs. Pickersgill, Craven & Lloyd, Rawsthorne, Stafford, Tattersall, and Rayner. The corridors and other portions of the building are warmed by Messrs. Galli & Co., of Leeds, who have fixed the electric bells and speaking-tubes; Messrs. Shillito & Harrison have carried out the boundary railings and gates; and the gardens have been carried out by Mr. W. L. Skinner, of Silcoates. The total cost of the building and fittings will be about 20,000*l.*

ARCHITECTS AND THE BETHNAL-GREEN BOARD OF GUARDIANS.

WE have already mentioned that this Board decided to engage an architect in reference to the new buildings they purpose to erect at Leytonstone in place of the iron temporary sheds that have been in use for some years past. It was proposed that Messrs. A. & C. Harston be engaged, but on its transpiring that their charge was five per cent., the chairman expressed an opinion that others might be found who would carry out the work much cheaper. It was resolved to write to a number of architects, and the clerk at the last meeting proceeded to open letters from them on the subject. They were as follow:—Messrs. Knightley, 5 per cent. on the outlay, and offering to dispense with the clerk of the works; Blashill, 5 per cent.; Saxon Snell, 5 per cent.; Hill & Fletcher, 5 per cent.; Harston, 5 per cent.; Lee & Smith, 5 per cent.; Stone, 5 per cent.; Jackson, 5 per cent. on the first 1,000*l.*, and 3½ per cent. afterwards; Ingram, 2½ per cent.; Wilson & Aldwinckle, 2½ per cent. This firm offered to submit designs in competition with other architects. After some discussion, the several names were read, and, after being reduced to three, the votes were respectively:—Harston, 12; Knightley, 7; Wilson & Co., 8; on the first voting. The second showed Harston, 11; Knightley, 1; Wilson & Co., 10; and the final resting alone with Messrs. Harston and Wilson & Co., decided the former to be chosen, 13 votes being recorded for Messrs. Harston and 9 for Messrs. Wilson & Aldwinckle.

ARCHITECTS' CERTIFICATES: IMPORTANT JUDGMENT.

CLEMENCE *v.* CLARKE.

In this case, tried in the Common Pleas Division before Lord Coleridge and a special jury, the plaintiff, a builder, sued the defendant, a seed-merchant in King-street, Covent-garden, for the balance of amount of contract and of extras, for a building in the neighbourhood of Covent-garden. The circumstances are somewhat involved, but we will endeavour, with the shorthand writer's report of the arguments of counsel before us, to state briefly the main point in question.

Mr. R. E. Webster and Mr. E. Pollock appeared for the plaintiff, and Mr. W. G. Harrison and Mr. Crispe for the defendant.

In the first instance, Mr. Cross, surveyor to the Duke of Bedford, prepared the plans for Mr. Clarke, and afterwards, in conjunction with Mr. Waghorn, surveyor, took out the quantities. The first tenders provided for too great an expenditure, but a revised tender by Mr. Clemence (6,975*l.*) was accepted. Mr. Clemence's tender was to execute the works "according to drawings and specification signed by me, and general conditions of contract, and revised Bills of Quantities."

The priced bills of quantities were sealed up and made part of the contract, and were to regulate the charges for any extra work done. For good reasons Mr. Cross ceased to act as Mr. Clarke's architect, Mr. C. F. Hayward taking that position, and under this gentleman the works were carried out.

The contract was "in accordance with the agreement between the Royal Institute of British Architects and the Builders' Society, and adopted by the Central Association of the Master Builders of London." It contained, amongst other clauses, the following:—

"The contractor is not to vary or deviate from the drawings or specification, or execute any extra work of any kind whatsoever, unless the same be required to comply with any of the provisions of any of the Acts of Parliament, regulations, or bye-laws hereinbefore mentioned, or unless upon the authority of the Architect, to be sufficiently shown by any order in writing or by any plan or drawing expressly given and signed or initialled by him as an extra or variation, or by any subsequently-written approval signed or initialled by him."

It contained also this clause (18), upon the exact meaning of which the whole question turned:—

"A certificate of the Architect, or an award of the Referee hereinafter referred to, as the case may be, showing the final balance due or payable to the Contractors, is to be conclusive evidence of the works having been duly completed, and that the Contractors are entitled to receive payment of the final balance, but without prejudice to the liability of the Contractors under the provisions of Clause No. 11."*

Mr. Clemence received money under certificates as the work went on, Messrs. Cross and Waghorn, the quantity surveyors, measuring what was done, and ultimately Mr. Clemence received the final certificate from Mr. Hayward, including the extra works, in these words:—"I hereby certify that Mr. John Clemence, builder, of 32, Villiers-street, Strand, is entitled to receive the sum of 585*l.* 12s. 10d., the balance account of works as certified by the measuring surveyors to be the final amount due thereon executed by him at warehouses at Hart-street, Covent-garden."

There had been a previous certificate for 1,500*l.*, not paid, which contained no reference to the measuring surveyors.

On the part of the defendant it was contended that the final certificate was a bad certificate, because the architect's judgment alone should have determined the matter; and, secondly, that written orders had not been given for the extra works. Mr. Harrison urged that the certificate of the completion of the work would not do if there were no orders in writing such as had been stipulated for.

Lord Coleridge did not agree in this, and ruled that, although an architect might not have done what he was bound to do, the certificate was conclusive evidence that the work had been ordered, and conclusive evidence that the contractor is entitled to receive payment of his final balance. The Judge added, If your architect has not done what he should have done, you have your remedy against him.

Judgment for the plaintiff for 2,085*l.* 12s. 10d., with 71*l.* 18s. amount of interest from the date of the writ.

* Clause 11 says—"Any defects, shrinkage, and other faults which may appear within —— months from the completion of the building, and arising out of defective or improper materials or workmanship, are, upon the direction of the Architect, to be amended and made good by the Contractors at their own cost, unless the Architect shall decide that they ought to be paid for the same, and, in case of default, the employer may recover from the Contractors the cost of making good the works."

BUILDERS IN EDMONTON.

EDMONTON LOCAL BOARD *v.* BROWN.

On Monday last, Edmonton Police-court was filled with members of the building trade, when this case, once before heard, was called on.

The Chairman (Mr. Abbiss) asked whether Mr. Glyn (for the defendant) intended offering any fresh evidence; to which the learned counsel replied that as the magistrates had inspected the premises in question, and had had pointed out to them the parts in respect of which the summonses had been taken, he was unable to conclude what their opinion on the matter was; but, if they wished, they could hear from the surveyors who were in court that the houses were so far properly built, and that the material used was good material. In addition to which he had a letter from the freeholder, which, although not strictly evidence, was to the effect that he had never had to complain of the way in which the houses were being built, that a surveyor was employed to see that the work was properly carried out on the Langhedge estate, and that he had asked the surveyor to the Local Board on more than one occasion to inspect the houses in question and see that they were being properly built, but without avail, the surveyor not even sending a reply.

The Chairman observed that he and Mr. Doe were the magistrates who visited the defendant's buildings, and he might say that they were not in favour of an entire acquittal. They had given the matter every possible consideration, their only object being to see justice done, so far as they could, between man and man. He might, however, at once say that the case was a very different one from those from Tottenham. There was no doubt that what was used at Tottenham for mortar was material of the most inferior kind, and unfit to be used even in the construction of a pig-stye. In the present instance he was free to admit that the mortar used in the habitable parts of the houses was fairly good; but that used in some of the back premises was not fairly good mortar, although it was nothing like so bad as that produced at the court from Tottenham a few weeks ago. But the additional expense of making the present mortar good would have been so small that he was surprised that a builder should have thought it worth his while to deprive his houses of their character, and endanger the health of persons who might occupy them. He was of opinion that the mortar used would not have passed any surveyor, although no objection had been made previously to the summonses being taken out. In the Tottenham cases the Bench marked their sense of the badness of the mortar used by inflicting the largest penalty that the law allowed. In the present instance they believed the Local Board had done quite right in causing the summonses to be taken out, and that the builder was not justified in doing his work in such a slovenly manner. Therefore, while on the one hand they wished it to be distinctly understood that Mr. Brown had constructed his buildings in a much more satisfactory manner than the builders from the adjoining parish who had been convicted; on the other hand, they wished it to be equally understood that they could not see how such an infringement as Mr. Brown had committed could be justified. They had no desire to impose fines merely for the satisfaction of Local Boards, but in the present case they felt there ought to be a conviction, but at the same time thought that under all the circumstances a fine of 1*l.* each on six of the summonses would meet the case; while the two summonses in respect of houses the back additions of which were not yet erected, would be dismissed. The only costs allowed were for the six summonses, amounting to 6s.

REFUSE DISPOSAL AT NOTTINGHAM.

Not more than twelve years ago there was no public provision for scavenging the streets and for removing the refuse of Nottingham. The inhabitants had to see to those things so far as they were able, and in the poorer neighbourhoods they were fearfully neglected. As a consequence flagrant nuisances, from which sprang foul diseases, existed in various parts of the town. At length the matter was taken in hand by the Health Committee, and wharfs for the reception of the refuse were established, one in Poplar and the other on the canal side, both in densely-populated quarters of the town. These were maintained for about three years, but as (according to the *Nottingham Journal*) the contractors did not observe all the conditions imposed upon them, the committee again had to deal with the matter. A new wharf was accordingly purchased on the Leen-side, but with the increased spread of the town in this locality it was ultimately discovered that this arrangement, like the other, was anything but a good one, and about three years ago the corporation commenced to erect a sanitary wharf on a large scale in the Eastcroft, on land which belonged to them. This wharf, or rather set of buildings, is now used for the sanitary purposes of the town. The works consist of a basin 325 ft. long and 35 ft. wide for loading and unloading boats; and the shed adjoining same for washing tubs, &c., is 140 ft. long and 50 ft. span. Another shed, the same size, is constructed over a portion of the basin and adjoining the last mentioned, so that the work can be carried on entirely under cover. At the east end of the basin is a repairing dock, 80 ft. by 20 ft., for executing repairs to the boats engaged in carrying manure. Screens or sieves are fixed overhanging the basin, so that the refuse, when brought wharf, can be screened so as to keep out b pots, and other rubbish. The sheds ar structed almost entirely of ironwork, withi roofs, and are lofty and well lighted. cart-sheds, to accommodate the carts and belonging to the Health Committee, are 140 ft. long and 30 ft. broad, and are const of ironwork, the roofs being boarded and The stables are built in the shape of a quadr 180 ft. by 140 ft., and contain altog accommodation for fifty-two horses. The ing is two stories in height, and the roo stables is used for hay and corn stores, a contains the cutting and crushing machir preparing the food for the horses. At the w entrance to the courtyard of the stabl tower containing a large cast-iron wate which is placed high enough to supply the ings with water. This tank when fu contain about 12,000 gallons of water, a supply will be pumped into the tank from which has been sunk to a depth of over At the north-west corner of the road down to the works are situated the and superintendent's house, and in con with the former are two weigh-b The whole area occupied by these ings was originally 6 ft. below flood lev the land has been raised to that exten increasing the cost of the works consid The total cost of the works will be about The works have been designed by Mr. Tarbotton, engineer to the Corporation, a been carried out under the immediate intendence of Mr. A. Brown, the a borough engineer. From 1,400 to 1,5 loads of refuse, including the contents of and pail-closets, are brought to the depô week, and a great portion of it is sold to at the rate of 3s. 6d. or 4s. per to borough contains upwards of 10,000 pail each of which is changed at least once The Committee report that these closets well.

OUR SUBURBAN BUILDINGS.—T LATEST NOVELTY.

I am an old-fashioned individual, a taught the art of building quite a quart century ago. Of late years I have been by some of my friends as "antiquated" of date in my notions of building const &c.; it is therefore with feelings of di that I venture to trespass on your kind gence, and solicit a corner of your v journal to air the subject of my commun

It is not, I hope, in my nature to carp "too captious critic" at the efforts of a builders to "level up" to the increasing d of an enlightened public; but I am disp raise strong objection when I find the sai treated as fools from the point of view "Jerry builder."

The chapter of accidents has of late me into better and soberer acquaintan some of these speculative gentlemen tha ever thought would have fallen to m experience, and I have had some oppor afforded me to become more enlightene class of building than formerly. I would I would not condemn wholesale beca many may deserve condemnation, and have you, sir, believe that there are m of the speculative class who are tho respectable in themselves, who are hon who do fairly honest work, as things go

"The latest novelty" then, sir, would to be the new damp-proof course, which duty at the present time in some new h a nice suburb, which may be nameless, enterprising builder has inserted it so as ject well beyond the outer face of the br that it may be seen and appreciated. houses, I believe, when finished are to be about 800*l.* a-piece. I have peeled off a this damp-proof course that I may be su not mistaken. It appears to me to be wo and to consist simply of ragged and w "Croggon's" roofing felt, which comm placed, when new, under the slates of th class of houses as a bedding. No doubt or later, if we could follow the advert sheets, we should read that such and such will be sold or be let, replete with ev venience, hot and cold supplies, bath, brick walls damp-proofed at ground leve

Another house I looked into I thought conveniently planned. I opened a do recess of one of the back rooms which a

to be intended for a larder or pantry, as elves were of slate, and I thought the gement not bad, when, lo and behold! at eiling level the plumber had skilfully ged to insert the D-trap of the mezzanine mmediately above, so that it should pro- ell below the ceiling of the assumed larder ntry, and be seen. N.

E DOUBLE OWNERSHIP, ARUNDEL CHURCH.

—In your account of the Archæological ute's late meeting, you report Dr. Freeman ing, at Dunster, that Lord Coleridge had ly decided that there were two churches undel, as there undoubtedly are at er.

an hardly think that Dr. Freeman is tly reported by you in this version of Coleridge's judgment. For certain reasons own, I employed a very efficient short- writer to take down the judgment. Now, ot find in it anything to justify Dr. Free- account.

d Coleridge's expressions were as follow:— n of opinion that the church spoken of ie documents is the whole parish church Nicolas, Arundel, including what is now y the parish, and what is claimed by the of Norfolk."

in, "At, and soon after, the foundation of llege, I do not at all doubt that if it had asked what was the parish church of el, the present church of St. Nicolas, in chitectural integrity, would have been d out; and if it had been asked what was urch of the College of the Holy Trinity of el, the questioner would have been shown ry same building in its architectural in- ."

in,—"It appears to me that in 1511 the building was commonly spoken of as one ."

further on,—"The church, of which the son was in the college, the freehold of and of the churchyard was in them, and hole *undivided* church of St. Nicolas, el, in which the college and the parish e respective rights, which I have already ed."

ster and Arundel cannot be compared. er was monastic and parochial; Arundel ollegiate and parochial; Dunster had a l, with an altar and a rood-screen taken its nave, and a solid dividing wall; el had a pure and simple nave, adapted ongregation, and remarkably open to the l by a transparent iron screen.

surprising that these two churches should een considered as having any special re- ance. THOMAS DARLING.

LONDON SCHOOL BOARD SCHOOLS.

—There can be no doubt that the cost of of these buildings has become outrageous, Mr. Aldwinckle is perfectly justified in the rations he addressed to you on the matter recent letter.

th the greatest possible respect for the man who fills, and excellently fills, the on of architect to the London School , there is no manner of doubt that the eason why expense has gone up is that hools have been all put into the hands of chitect, and he has been paid by salary ot by commission.

ave not the smallest hesitation in saying f I had filled Mr. Robson's post I should, as I could, have done exactly what he one. I should have endeavoured to secure improvement of every sort of which the tures were capable; and as no one could y possibility have said that I did so se it was to my interest to run up the in order to increase my own commission, uld have had but little scruple in adopting ovements because they were expensive. I say I should not have succeeded as well as obson has in making my buildings patterns cellent contrivance and construction, but I d have done my best, and, as long as the l would back me, I should have had little le as to outlay.

the Board desires to economise, let them t to the system with which they started, n which they built their first fifty schools. hem employ a variety of London architects, hem commission, dismiss the large staff of draughtsmen at the building on the Thames Embankment, and give Mr. Robson the same general control over the architects which he had at first. The ratepayers will soon find out the difference in expense, and the school-buildings will be much more likely to be successful than those carried out under such sweeping reductions as Mr. Aldwinckle points to can possibly be. A SCHOOL BOARD ARCHITECT.

A COMMON-SENSE VIEW OF ARCHITECTURAL RESTORATION.

SIR,—"C. H. C.'s" anecdote, in his recent article under this heading, concerning Mr. J. Smyth's carving at Christ Church Cathedral being taken fifty years ago for ancient work has numerous counterparts in more modern times. In 1871 one of your contemporaries published some interesting illustrations of gargoyles and grotesques from Notre Dame, Paris. These were accompanied by a description in which the vigour of these old works was contrasted with the lifeless lumpiness of similar work wrought by men now-a-days. The next week, however, a letter appeared in the same publication, from Mr. Blomfield, a carver, of London, saying that under the immediate direction of M. Viollet-le-Duc, *he* had executed these very gargoyles *himself* a few years before!

Further, few more beautiful monuments exist anywhere, perhaps, than are those of Bishop Bronescombe (1280) and Bishop Stafford (1419), which guard, like mute sentinels, the north and south sides of the lady-chapel at Exeter Cathedral. The cresting upon both these tombs is altogether new, and was placed there during Sir G. Gilbert Scott's restoration a few years ago. When Messrs. Clayton & Bell decorated the monuments in question the fresh paint made old and new work look alike; but, although this took place so recently, I am probably one of the few people in Exeter who have cared to remember the circumstance. Note the result. A few days ago I chanced to pass one of the tombs in question, and saw a gentleman,—evidently a visitor and an architect,—busily engaged in sketching these very crestings into his pocket-book. "You know that isn't old," I ventured to remark. "Old; isn't it, though, by Jove! What do you know about it?" he retorted, evidently thinking I was a smug Exonian linen-draper. A few words of explanation were sufficient, and the page was torn from his book. But surely precisely the same thing occurs over and over again; and you, sir, and I, and everybody else who sketch, are more or less similarly victimised. HARRY HEMS.

STONE AND GRANITE *v.* CEMENT.

SIR,—I am somewhat surprised that your correspondent "W. S. S.," who, I presume, knows the value of building materials, should anathematise cement, by calling houses built of that material mud houses.

Cement or concrete houses are presumably as strong as those built of stone; and whereas most stone deteriorates by age and exposure, cement, so far as is yet known, continues to increase in hardness, and it is therefore, I think, fair to assume that buildings constructed now of cement or concrete would still exist when our heirs and grandchildren come into the world.

A brick building, stuccoed over to give the appearance of stone, is the class of building to which, I presume, "W. S. S." refers; but that is evidently a brick structure, not a cement one, and I therefore cannot see how his argument as against cement can hold good even in this case.

An architect or engineer, when using stone, takes care to investigate the nature of the quarry from which the stone is procured, and further, amongst other precautions, takes care that the stone is placed in the building on its natural bed; with these precautions, stone, as a building material, has a better chance of withstanding the effects of age than the anathematised cement.

Whether it be from want of knowledge or simply carelessness on the part of users cannot be said, but the use of cement is seldom attended with the same judicious care. To ninety-nine people in a hundred cement is cement, whether it be good, bad, or indifferent, and it is not, therefore, surprising that many failures have occurred in its use.

Cement being a manufactured article may be good or bad; further, it is a most delicate material, easily affected and damaged by undue exposure and damp; besides which, the aggregates with which it is used, either as plaster, mortar, or concrete, materially affect its ultimate hardness and strength.

Given a good Portland cement, used in combination with a clean sharp sand, pulverised stone, or other suitable material, it is, as I have before said, one of the most useful of building materials, the ultimate strength of which is not even yet known.

As regards cost, there can be no comparison. A good building-stone will always pay for its carriage to a considerable distance, and is therefore dear, even in the immediate neighbourhood of the quarry; while, even in that quarry, concrete blocks could be made, at small expense, from the chippings and broken stone which are now more than useless.

Portland cement, as a building material, is daily receiving more attention, and the proper way of treating it becoming more generally understood, and I trust that, even by "W. S. S.," it will no longer be placed in the same category with mud, though the latter material is no doubt not always "matter out of place."

H. FAIJA.

A BOOK ON MASONRY?

SIR,—Can your readers inform me as to a good work upon masonry, and the quarries of England? I must, perhaps, try to explain my idea of a good work, that I may not cause needless trouble to any gentleman who is so kind as to endeavour to furnish me with an answer.

What I mean by a good work is one written by an architect such as Hawksmoor, or by a practical stonemason, who knows nothing about geology or the chemical composition of stone (such as,—Flint, when heated, yields nearly pure silicic acid [SiO_2]),—a work, in fact, written by a man thoroughly acquainted with his subject and the old knowledges of the trade, and without any modern science, or new may-be-wrong or may-be-right theories imported into the question.

How valuable soever geology and chemistry may be for speculative cosmogonists and amateur world builders, they have only done mischief as yet to the practical builder by endangering his faith in the old and tried processes, just as the mathematicians and acoustical theorists have confused and hurt the theories of harmony and counterpoint, and helped greatly to impede the career of the practical composer of music.

Hy. Bunting published a book called an "Itinerary of Scripture, and concerning Wrights and Masons, 1615." Does that book contain anything on this topic worth knowing?

C. A. W.

DEFILED BATH ROOMS.

SIR,—"V. R.," in your issue of the 2nd inst., writing on the above subject, strikes a chord which will be heard throughout the country, and I for one beg to tender him my thanks, and trust that he will continue to call attention to this matter of defiled bath-rooms. What "V. R." asserts is a notorious fact, and why architects persist in this uncalled-for practice does seem strange to the experienced sanitary engineer.

It is true that often on board ship, where every nook and corner has to be utilised, want of space necessitates the w.c. being screwed into a cell where there is barely room for the user to turn round, but I am glad to say that great changes for the better have been made in this particular in most of our large passenger-ships. It is only necessary to pay a visit to the magnificent vessels of any of our great passenger-carrying ocean lines, such as the Peninsular and Oriental, the White Star, the Anchor Line, &c., to perceive these improvements. In the saloon will be seen perfect sanitary appliances working efficiently,—marble baths, with douches, that would grace a palace, with no w.c. in the same compartment, but these latter fitted up apart from the bath-rooms with the greatest care, and supplied with abundance of water for cleansing purposes.

Now, sir, if on board ship, where every inch of room is valuable, we still are careful to keep the bath-rooms separate from the w.c.s, I wish to know why architects should consider it advisable to join them together in the beautiful mansions which are at present being built. Have them close to each other by all means but put the latter outside the building, and the bath in a separate room alongside on every

floor, taking care to use all the best known sanitary appliances for prevention of disagreeable smells in the closet. It is, unfortunately, only too well known among experienced sanitary engineers and plumbers, that great evils arise from the bad arrangement and construction of the house-drains and soil-pipes and closets from inefficient and bad workmanship, light and flimsy fittings, want of experienced men to supervise, and the inordinate longing on the part of builders to put in the cheapest articles they can get. Is it, then, to be wondered at that, of late years, we have had such an outcry about the prevalence of typhoid fever?

"V. R." has called attention to one evil which has arisen in sanitary arrangements of late years; but there are, unfortunately, many others besides those which I have indicated above, which often make our modern houses at night, when every aperture is closed, mere gigantic retainers of bad atmosphere, thus slowly poisoning the inmates during the very hours that they are most susceptible to that most stealthy and unseen of enemies, sewer-gas.

T. Suffield.

CARVING, GILDING, AND GERMAN METAL.

Sir,—Will you be kind enough to allow me to draw your attention to a very important subject concerning the trade of carving and gilding, principally, as it is carried on in the picture-frame business, and introduced into this country by the Germans? It is the gilding of picture-frames, alhambras, and all kinds of other patterns, with a German metal which is only a mixture of tin, zinc, and brass, the cost of which is 1½d. per book, whereas the genuine metal (English gold) costs 1s. 3d. per book. Picture-frames are being gilded in this country at the present time by foreigners in thousands with this German metal and sold for English gilding; and so well can they be got up to deceive the eye that one picture-frame shall be done with German metal and another shall be done with the genuine metal, the very best English gold: you may then call in an experienced gilder, and ask him if he can pick out the one done with the German metal, and the one done with the genuine metal, the very best English gold; and although he may be an excellent workman, and have had years of experience at the business, he will not be able to do so. The frames done with the German metal look very well for a short time, but in a little while they go black, and are done for. Pure English gold will always look well while there is a bit of gold left. They can be cleaned, touched up, and always look well and as fresh as ever; but you cannot do this with those frames done in German metal. Just take a walk into some of our picture-galleries; you will not find any German metal there. If at any time the frames in these picture-galleries should get tarnished, dusty, or dirty, a gilder is sent for, and all that he simply does is to take off the dust, wash them very carefully with a small brush, and sponge them very gently with a soft sponge and a little clean cold water, and with a clean wash-leather lightly rub the burnished parts over, and they will look as fresh as ever; but this could not be done if they were coated with this imitation gold or German metal. My principal object in writing upon this subject is to try, in my very humble way, to open the eyes of the British public as much as possible in this matter. There are thousands of well-to-do people that have nice pictures hanging round their rooms: the frames are supposed to be gilt with the very best English gold, and have been bought and paid for as such, but are a complete sham, being only done with this German metal. In conclusion, I should like to say that if you buy a picture-frame as a gold one, and it turns out a Dutch metal one, it is a fraud. Let us remember that it is not all gold that glitters.

George Ryan, Carver and Gilder.

COMPETITIONS.

Hull Borough Asylum.—Thirty-eight designs have been received in competition. The estimates vary from 27,000*l.* to 80,000*l.* The drawings are now being arranged in the town-hall.

Over Darwen.—The designs for the town-hall here and the market, sent in competition, have been on view in the Co-operative Hall.

Bulkeley Memorial.—The successful competitor herein is Mr. Thomas Brown, architect, Beaumont, Carlisle.

NEW PARKS.

Heywood.—A new public park was opened at Heywood on the 2nd inst. According to the *Manchester Courier*, the park has been provided and is to become the property of the town under very singular circumstances. Several years ago Mr. Charles M. Newhouse, a local cotton manufacturer, was proceeding by train from Heywood to Manchester, and when near Miles Platting an accident occurred. Mr. Newhouse, who occupied the carriage along with other gentlemen, got upon the steps of the vehicle. Immediately afterwards the carriage capsized and he was killed, but the rest of the passengers escaped with slight injury. As Mr. Newhouse died without heirs, his property passed into the possession of her Majesty by her right of the Duchy of Lancaster. About twelve months ago her Majesty announced her intention of disposing of this property, which, on being realised, amounted to several thousand pounds sterling, for the benefit of the inhabitants of the district, and ultimately it was decided to expend it in providing a public park. The land acquired comprises an area of twenty acres, and is situated on the banks of the river Roach, about half a mile from the centre of the town. It is very undulating, and well wooded with beech, chestnut, and other trees, and from a plateau a fine view is obtained of the surrounding district. A stone fountain occupies the centre space at the convergence of the principal walks. In the lower part of the park there is a lake. A bowling-green is provided, and a band-house has also been erected. The various works in connexion with the park have been carried out under the direction of Mr. G. R. Cartwright, of the office of the Surveyor-General of the Duchy of Lancaster at Harrogate. The contractors have been,—for masonry, Messrs. Diggle Bros.; for painting, &c., Mr. W. Warburton; for the cutting of the walks, &c., Mr. W. Turner; and the Coalbrookdale Iron Company.

Huddersfield.—A special meeting of the Huddersfield Town Council was held on the 8th inst. to consider a proposed gift of twenty-five acres of land by Mr. Henry F. Beaumont for a public park at Dungeonwood, about a mile and three-quarters from the centre of Huddersfield. The council almost unanimously decided to accept the gift, and it is proposed to spend about 5,000*l.* in preparing the ground for a park.

Aberdeen.—At a meeting of the St. Nicholas Association of Aberdeen on the 6th inst., a letter was read from Mr. Jas. Tulloch, jun., offering with a view of assisting the proposal that the vacant ground west of South Crown-street, lying between Rosebank and Springbank terraces, should be turned into public recreation ground, to raise one-third of the purchase price in the event of the association seeing their way to acquire the ground for the purpose indicated. After considerable discussion the meeting resolved, while thanking Mr. Tulloch for his offer and the trouble he had taken in the matter, to defer consideration of the scheme until it can be ascertained what the probability is of acquiring also the piece of ground in front of Bon-Accord-terrace, in order that the whole may form the public park. Professor Stephenson, Mr. J. R. Mackenzie, architect, Mr. J. Willet, C.E., and Dr. Angus Fraser were appointed as a committee to inquire into the matter and report.

Salford.—On the 9th inst. Ordsal Park, situated in the Regent-road district of Salford,—the fourth park established by the Corporation of Salford,—was formally opened by Mr. Alderman Davies, chairman of the Salford Museum, Libraries, and Parks committee. The park covers an area of nearly sixteen acres, which was purchased from Lord Egerton for about 6,000*l.* It lies in the centre of a large and growing population of working people. The task of designing and executing the arrangement of the park ground was entrusted by the Corporation of Salford to Mr. Henry Moore, head gardener of Peel Park, who designed Seedley and Albert Parks. The total cost of the park,—including the site, the laying out of the ground, and the boundary-wall and railings,—is about 15,000*l.* The main entrance is in South Cross-lane.

Kilmarnock.—On the 9th inst. the Kay Park, Kilmarnock, was formally opened. The park is the gift of Mr. Alexander Kay, a native of Kilmarnock, who amassed a fortune as an insurance broker in Glasgow, and at his death in 1866 bequeathed 16,000*l.* to "Auld Killie,"—6,000*l.* for the erection and endowment of two schools, and the remainder for the purchase of a p park. The land so acquired, forming pa the estate of the Duke of Portland, exter 40¾ acres, and was purchased for 9,000 portion of the ground, about 3½ acres, ha set apart for feuing, while power has been to the permanent trustees to let, for agricu purposes, 15 acres, which, however, w available at any time for the extension park. The park has been laid out by M'Lellan, curator of the Glasgow Besides the Burns monument unveiled o same day, a notable object in the ground fountain, the gift of Mrs. Crooks, wife late Bailie Crooks, and daughter of th Provost Strang. This structure, which ri the height of 22 ft. 9 in., has a ground 30 ft. 6 in. in diameter, constructed of cor The centre column of the fountain is surmo by a group of boy and serpent, the numb jets being fifty-one.

DOCKS.

London.—On the 2nd inst. a new ba the East and West India Dock Compan opened, an extension of the docks at Blac This addition to the dock accommodation Port of London is especially noticeable b of the great depth of the entrance lock a basin. At ordinary spring tides there are of water above the stone sills against whi lower edge of the gates fit, and the ocean-going steamers can, therefore, ent basin for some time before or after high This, it is said, is a greater depth by som than is to be found in any other docks Thames. The new basin has an area of six acres. It is irregularly shaped, the quay being 600 ft. in length, the eas 455 ft., and the south quay, between th and the old locks, by which the enlarge is entered, 270 ft. The wall of the dock, a total thickness of 20 ft. at the botto 8 ft. at the top, is formed of Portland concrete, faced with 3 ft. of brickwork. north and east quays extensive ware three stories high, have been built, and im machinery has been erected for loading and discharging cargoes expeditiously hydraulic machinery is in some respect liar. According to the *Times*, the new 65 ft. wide, and is fitted with two p wrought-iron double-skinned gates, hollow and like great caissons, are at once and buoyant. These gates are moved and easily by hydraulic machinery. The which have taken three years and a complete, have been carried out at a about 240,000*l.*, under the direction of Manning, the dock company's engineer; Stockman, resident engineer; and Mr. Berwick, assistant engineer.

Inverkeithing.—A deputation from keithing Town Council has waited directors of the North British Railway pany in regard to the construction of dock at Inverkeithing. Plans prepared John Buchanan, C.E., Edinburgh, were mitted, and it was stated that a dock, co a superficial area of nearly forty acres, co constructed for 75,000*l.* The director the proposal under consideration.

BATHS AND WASHHOUSES.

Chatham.—The Chatham Local Bo Health has resolved to establish a large ming-bath, where the public may be ins in swimming.

Birmingham.—New and extensive baths have lately been erected in Birmi by joint-stock enterprise. A site havin secured in High-street, it was decided to a sum not exceeding 3,000*l.* upon the co tion of the baths, and some of the builders of the town and district were to tender for the carrying out of the according to the design of Mr. H. W. Eventually, Messrs. Horsley Brothers' es which amounted to 2,795*l.*, was accepted work was then pushed forward without del the baths have lately been opened. The te ture of the hottest room varies from 200° The heating apparatus was supplied by Crichley & Co. The stained-glass wor been supplied by Messrs. J. & O. C. H and the burnished brass chandeliers an fittings are from the manufactory of Power & Co.

...rhithe. — At their last meeting, the ...rhithe Vestry had under consideration the ...tion of the Commissioners of Baths and ...ouses of the parish, that the vestry would ...n their borrowing at interest the further ... 18,500*l.*, on the security of a mortgage ... poor-rates, to be expended in the con... ...on of baths and washhouses. Mr. Bulmer ... that the Vestry grant the application, ...plained that the ground for the buildings ...en cleared, and the plans and estimates ...ed and submitted to the Vestry, and they ...xious to get out the contracts before the ... The estimate of the surveyor for the ...gs was 14,300*l.*; the balance of the total ... 20,000*l.* would be set aside for the pur... ...of fittings and machinery. The motion ...rried.

MARKETS.

...msford.—A new cattle-market is in course ...tion at Chelmsford. Mr. J. Walker is ...ntractor for the roads, and Messrs. Choat ... shedding for the horses and the sales by ..., and the building of the settling-house ...eding. These several erections are com... ...of white stock bricks and red tiles. A ...f workmen in the employment of Mr. ...ir, of Wolverhampton, are putting up the ...cing of the various pens and inclosures, ...se in the employment of Mr. J. H. Wray ...ving the pens with Staffordshire blue

...pool.—At the meeting of the Liverpool ...Council, on the 6th inst., Mr. M'Ardle ... "That the Markets Committee be re... ...l to report to the Council on the adapta... ...St. Martin's Market for the purposes of ...nd poultry market, in substitution of the ... fish-market in Great Charlotte-street." ...rdle said St. Martin's Market contained a ...rge area, was well adapted for a whole... ...h-market, and was near to the other ...ale markets. The motion was agreed to.

...ford.—On the 1st proximo, there will be ... at Stratford, by the Great Eastern ...y Company, a new market for potatoes, ...regetables, hay, straw, coals, &c., which ...join the Stratford-bridge station. It will ... every convenience for a large trade, ...g-room being provided for over 400 ... and the cart-roads between the sidings ...50 ft., and 60 ft. wide. The warehouses ...e 60 ft. by 45 ft., and are fitted up with ...ent offices, and two lines of rails run ...n it.

...pool.—Shortly after six o'clock on the ...g of the 7th inst. a fire was discovered ...d's New Market Hall, Central Beech, ...ool. A strong gale was blowing at the ...om the sea, and as the building imme... ...faces the promenade, the gale fanned ...nes, which spread with fearful rapidity, ...e building was soon completely gutted.

NEW BRIDGES.

...mielaw.—The new railway bridge across ...bour at Broomielaw has been completed, ...rmally opened. The bridge has been ... by Messrs. Wm. Arrol & Co., Dalmar... ...Yorks, for the Caledonian Railway Com...

...Forth.—The *Scotsman* says, that at a ...g of the directors of the Forth Bridge ...y Company, on the 6th inst., the tenders ... different sections of the Forth Bridge ...aking, received from the firms whose ...es had been invited, were opened and ...ed. In view, however, of the necessity ...liminary inquiries in connexion with the ...t contracts, no final decision as to the ...ance of any offer was come to.

...ia.—What is stated to be the largest ... in Europe will be completed next year. ... cross the Volga in the government of ..., Russia, on the Siberia railroad line. ...lga, at the point of the bridge, is about ...iles wide in the spring season, and in the ...n is 4,732 ft. The bridge will be sup... ... by twelve piers 85 ft. high, with ice... ... 35 ft. high, at a distance of every 364 ft. ...e-cutters are covered with granite. A ...ary colony is established for working men ...ed on the bridge. It occupies about ...ve acres, and has sixty different buildings, ...l at 100,000 roubles. 2,000 men are em... ... and amongst them are 100 Italian ...

...rd.—At a meeting of the Salford Town Council, on the 6th inst., Mr. Alderman Dewhurst proposed the confirmation of the following resolution of the building committee:—"That the tender of Messrs. A. Pilling & Son be accepted for the ironwork of the Springfield-lane bridge, in accordance with the plans and specifications, for the sum of 4,117*l.* 16s. 9d., and that the Town Clerk do prepare the contract." The resolution was confirmed.

GAS JOTTINGS.

Cambridge.—At the half-yearly meeting of the Cambridge Gas Company, on the 30th ult., it was resolved to raise additional capital to the extent of 25,000*l.* for new works now in course of construction.

Warrington.—The gas accounts of the Corporation of Warrington for the nine months ending the 25th of March last show a net profit of 4,204*l.*

Walsall.—The profits of the Walsall Gasworks last year amounted to 4,139*l.*, and the portion of the profits for the year ensuing to come into the funds of the Corporation was set down in the estimates at 4,000*l.*, which, it is stated, will reduce the rates to the extent of 10d. in the pound.

Glasgow.—On the 7th inst., on the invitation of Mr. A. Buchanan Miller, architect, Glasgow, several persons connected with the manufacture of gas visited the printing works of Mr. Alexander Crum, Thornliebank, to inspect a new process for the manufacture of gas. The novelty of the invention consists in charging the gas-retort with common coal dross instead of the more expensive coal hitherto used, and when the retort has been raised to the necessary heat, the light hydrocarbon gases evolved during the first fifteen or twenty minutes are led off by a branch-pipe from the ordinary ascension-pipe (before it passes through the hydraulic main) into a separate or special gasholder of ordinary construction, where it is stored for use. It is claimed that a thoroughly pure gas is obtained, altogether free from bisulphate of carbon. A ton weight of common dross is stated to yield about 10,000 cubic feet of gas, of an average illuminating power of twenty candles; but by the new method of taking off 1,000 ft. at the first stage of the distilling process, and leaving 1,000 ft. of gas to be taken off at the last stage of the process, it is claimed that about 8,000 ft. of pure gas is obtained of an illuminating power equal to twenty-eight candles.

Newbury.—Major Tulloch held an inquiry on behalf of the Local Government Board at the Municipal Buildings at Newbury, on the 1st inst., in reference to the proposal of the town council to erect new gas-works within a short distance of the goods station.

DOME OF THE ROCK.

SIR,—With respect to Lieutenant Conder's series of questions in your last number, in reference to my communication from Rome to Mr. Barry, I beg to remark that, as to the materials in which the horizontal beams connecting the inner peristyle of columns are constructed, I am unable to inform him, not having had the means of testing them. But the materials locally available would be likely to prevail both at Rome and Jerusalem.

As to the age of the mosaics, the accepted opinion is, I think, most probably the correct one, from comparison with other reputed fourth-century mosaics still existing in Rome.

As to the *absolute certainty* of the authorship of the buildings in question, I may say that nothing advanced by Lieut. Conder at all invalidates the prevailing opinion which attributes the two Roman buildings to Constantine; and, in the absence of evidence to the contrary, I have no reason to doubt conclusions which I have shown to bear the marks of high probability.

There is no upper range of columns at the mausoleum of Constantia and Helena, whose sarcophagus has been removed to the Vatican.

The other matters referred to have been dealt with by Mr. Fergusson.

EDW. C. ROBINS.

Eddystone Lighthouse.—The foundation-stone of the new Eddystone Lighthouse was successfully laid on Tuesday by H.R.H. the Duke of Edinburgh.

Books.

The Industrial Arts in Spain. By JUAN F. RIAÑO. Chapman & Hall. 1879.

THE Committee of Council on Education have wisely entrusted to the hands of a Spanish gentleman the preparation of a handbook on the industrial art of Spain, which, probably, could not have been adequately carried out by any one who had not such knowledge of the country as only a resident could acquire. For various reasons Spain is, even in these days of universal locomotion, less understood in regard to its arts and products than almost any other of the great European nations. This small and comprehensive volume will probably be very useful in giving to many who are very much in the dark on the subject, a connected idea as to what is to be looked for in Spanish industrial art, and what is the nature of its excellence. The volume deals with the subjects of gold and silver work, iron work, bronzes, arms, furniture, ivories, pottery and porcelain, glass, textile fabrics, and lace, and is illustrated by fifty woodcuts, in some cases representing objects of unusual beauty and interest.

The author does not go into any general history or critical review of Spanish art, for which we presume the reader would be referred to his catalogue of the objects of Spanish art at South Kensington, published some six years since; he merely treats each branch of his subject separately, and gives the outline of what is to be said and to be known about; but from incidental remarks here and there we pick up food for reflection in regard to the peculiarities of Spanish art and its relationship to that of Europe generally, especially in an historical point of view. One remark in the chapter on glass opens a pretty wide field for future investigation to the historian of art. Noticing the fact that the ornamentation of glass by the running of a thread or line all over the glass, peculiar to Roman glass ware, was revived in the fifteenth and sixteenth centuries, and that this form was especially a favourite in Spain, he observes "it is an interesting fact that objects of a traditional Moorish form have the greatest amount of lines of this style of ornamentation. We cannot, until this subject is more thoroughly investigated, do otherwise than infer either that the tradition of this industry was preserved in Spain, or that the Arabs imported this style of decoration from the same localities from which it had been copied by the Romans centuries before." Another point in the chapter on glass worth mention is that in certain glass-making localities in Spain, the tradition of Italian models was kept up to a very recent period, and that the glass made in these localities closely resembles the Venetian glass in character,—so much so, that it is reasonable to conclude that not a few objects of this description which have been classed as Venetian may have been made in Spain. The illustration showing a vase of green glass (p. 242), Spanish of the seventeenth century, entirely bears out this view; it has the characteristics of Venetian design to a very marked degree.

Part of the interest special to Spanish ornamental art, in addition to its intrinsic beauty, lies certainly in the mingling of styles derived from various sources which it presents. The earlier art is largely influenced by Oriental feeling imported by the Arabs; the later art is influenced, of course, by Italian Renaissance. But this takes often a peculiar, more enriched, and Gothicised form when it reaches the Spanish peninsula; and still more often Gothic and Moorish elements are mixed, or found side by side, in the same design. The author gives a full description, in exemplification of this, of an armoire formerly in the church of the monastery of Piedro in Aragon, now in the Academia de la Historia (at Madrid?). Externally much of the ornament is purely Oriental in style, but accompanied by a Latin inscription in Gothic characters. "When the triptych is opened several compartments appear, formed by cusped Gothic arches placed within others, in the form of a mitre divided by pinnacles. The ornamentation which fills the space between the arches, and the seven banderoles in the lower part, are in pure Gothic style, without a reminiscence of Moorish art"; but "the details and several of the architectural lines of the Gothic part of this ornamentation denote an Italian influence, probably Sicilian, for this province belonged then to the crown of Aragon." A splendid piece of furniture-

design, of which an illustration is given (page 115), furnishes a remarkable and rich example of combination of Moorish and Gothic feeling. This is in the Museum at South Kensington, and it presents the opposite combination to that in the last-named example, the exterior being more Gothic in taste, the interior more Moorish; but it is impossible wholly to separate the characteristics of the two styles, for the fine foliage ornament filling the outer spandrels of the large arched opening, though decidedly more Gothic than anything else, has a certain richness of design, accompanied by a flat manner of execution, suggestive of Oriental habits of workmanship; while in the interior, though the lower miniature arcade is almost purely Moorish, the upper one looks rather like the idea of Gothic trefoil arches treated in a Moorish manner. The whole is in the finest and most beautiful artistic feeling, and has quite sufficient unity of design to satisfy the eye and appear complete; it is only when it is analysed in detail that its peculiar combinations become decidedly apparent.

The chapter on pottery and porcelain, though but slightly illustrated, suggests how much there is of interest in this branch of Spanish art, of which few in this country probably know much; and one of the objects illustrated, a wine-jar ("tinaja") in the South Kensington Museum, though exceedingly simply treated as regards the method of workmanship, is one of the most characteristic and admirable things of the kind that we have seen; Messrs. Doulton might take an inspiration from it. The splendour of Spanish arms, and the great repute of the country in the manufacture, are almost proverbial. The author alludes to the great variety of Spanish arms, tracing this in part to the influence of the Arabs, who, according to one of their own authors, had as many as a thousand names to designate swords. "The Arabs, after they took possession of Spain at the beginning of the eighth century, imported, with their arts and industries, special arms and weapons, the greater part of which were copied from Persian models; their swords, helmets, and shields deserve special attention; in other weapons the difference is not so great, and indeed, in the two first it is chiefly confined to their decoration." The description of the sword which belonged to the last king of Granada (Boabdil), and now in the possession of the Marquis of Villaseca, at Madrid, gives, accompanied by the illustrations, a remarkable idea of the importance attached to this chivalrous weapon, and the expense and talent lavished upon it by grandees. The hilt is of solid gold, enamelled in blue, white, and red, in the well-known Moorish style, and the weapon has quite a small pamphlet, as one might say, of chivalrous and pious inscriptions, engraved in different positions, the attributes of the Almighty being the principal subjects of the mottoes or legends, some of which are in odd contrast (to modern feeling at least) with the purposes of the object which they adorn: "In the name of God, power belongs to Him, there is no other divinity but He, happiness proceeds from God alone"; "God is clement and merciful." The *montante*, or double-handed sword, has an iron hilt, ornamented with ivory, and with only the motto, "God alone is the conqueror." Probably the more ornate weapon was the show one, and the latter intended for serious business. The title of the double-handed sword occurs in a slightly differing form, we may notice, in Shakspeare, where Beatrice sarcastically inquires after Benedick, "Is Signor Montanto returned from the wars?" the expression being a reference to his supposed martial pretensions, as if she had called him "Mr. Long-sword." A still more characteristic specimen of art applied to weapons is, however, that figured by Señor Riaño on p. 89, a dagger with a blade of very elegant but very practically effective shape, ornamented with arabesques where it joins the hilt, but the latter is formed of a skeleton with the leg-bones doubled and a serpent twining in and out of the bony framework. The chivalrous appearance of the blade, and the ghastly hilt, form a combination singularly suggestive of the time when murder under certain circumstances was a gentlemanly crime and a word of impertinence might be answered by a stab with one of these elegantly ornamented blades. There is much more in Señor Riaño's little book which will be found interesting and suggestive, giving to the reader who is inclined to pursue further the subject of Spanish art sufficient of its outlines to show him where and in what direction to continue his studies.

Miscellanea.

Electric Lighting for Interiors.—The members of the Museum, Library, and Arts Committee of the Corporation of Liverpool assembled on the 8th inst. in the Picton Reading-room for the purpose of witnessing experiments with gas and the electric light. A number of gas chandeliers had been fixed round the room, and these were first lighted, after which the room was illuminated with the electric light. Three small Gramme machines had been placed underneath St. George's Hall, the necessary motive power being supplied by the engine which elevates the water for the Steble fountain, and in the centre of the reading-room a temporary pedestal, about 15 ft. high, was erected, upon which the lamps were fixed. Mr. M. Radcliffe Ward conducted the electric experiments on behalf of the British Electric Light Company. It is stated that the Committee have determined to adopt the electric light.—— At the meeting of the Metropolitan Board of Works on the same day, a report was presented by the Works Committee, stating that in considering the question of renovating the Board's offices during the recess, they had found it necessary to direct that a new sun-gaslight be fixed in the Board-room, and in connexion with this subject the attention of the committee had been directed to the desirability of making a further trial of electric lighting. An offer had recently been received from the French Electric Society to provide twenty additional lights on the Thames Embankment, at a cost of 3d. per light, and it was proposed that eight or ten of these should be placed on Waterloo-bridge, and the remainder along the Northumberland-avenue. It seemed, however, that the Vestry of St. Martin's-in-the-Fields was not willing to co-operate with the Board in the matter, on the ground of the extra expense, and the committee thought that some of the additional lights might be utilised at the offices of the Board. They accordingly recommended, "That arrangements be made for placing four electric lights in the Board-room on standards erected in convenient positions, and one light over the principal entrance of the building." The recommendation was adopted.

Architects' Fees.—At the last meeting of the West Ham Board of Guardians, the clerk read a letter from Mr. Angell, the Board's architect, declining to acquiesce in the resolution of the Board, passed at a previous meeting, in reference to the sum to be paid him for his professional services in connexion with the enlargement of the house, and stating that in justice to himself and his profession he could not consent to the terms then agreed upon, as the resolution had been passed without previous consultation with him on the subject. He further pointed out that he had been appointed as "consulting architect" only, and when the Local Government Board had rejected the first plans, he had been obliged to get out fresh ones, which had been done upon the usual professional charges.—Mr. Angell was here admitted to an interview with the Board, and suggested an arrangement to which he should be willing to agree, as a compromise to get rid of a difficulty. After a long conversation, the further consideration of the matter was deferred.

A Sanitary Congress.—The Sanitary Congress and Exhibition of the Sanitary Institute of Great Britain will this year be held at Croydon, from October 21st to November 8th inclusively, Dr. Richardson, F.R.S., president. There will be three sections, as follows:—1. Sanitary Science and Preventive Medicine; president, Alfred Carpenter, M.D. Lond., J.P. 2. Engineering and Sanitary Construction; president, Captain Douglas Galton, C.B., and 3. Meteorology and Geology; president, Mr. G. J. Symons, F.R.S.

American Joinery.—A considerable trade has been gradually diverted from England of late years, in the shape of machine-made doors, window-sashes, and other joinery, which are now being furnished to this country and to our Australian colonies in very large numbers. The trade first commenced in 1877, when 2,800 doors were shipped to Great Britain, an amount which last year was increased to 45,000. As much of the pine wood used in England comes from the States, the diversion of a manufacture of so much importance is a double loss to this country. A large number of machine-made doors also come here from Sweden.

The Late M. Louis Favre and th Gothard Tunnel.—"The death of Louis the contractor for the St. Gothard Tu writes the Geneva correspondent of the "adds a deeply pathetic incident to tha quered history of the famous enterprise which his name will ever be associated died of apoplexy, not at Göschenen, as stated, but inside the gallery; and, as issued invitations to his friends only a fe previously to meet him at a not distan midway in the mountain, there to celebra completion of the great tunnel which made, he may be said to have died general on the field of battle with the sh victory ringing in his ears. Favre was 1826, in the canton of Geneva. His par was obscure and his education indifferen he began life as a common workman. showed so much ability and energy calling that, while still young, he rose fr ranks and became a builder and contrac his own account. Finding Geneva too a field for his activity, he removed to Par acquired much money and reputation undertaker of public works. When the of a tunnel through the St. Gothard was for public competition, Favre's tende accepted, and so great was the confide in him in his native city that he found di culty in raising among the bankers of th several of whom became his *commandi* the large sum of 250,000*l.* required Federal Council as security for the due c out of the contract. All Favre's calcu have been justified by the result." The will be finished before some of the lines proach are well begun; and if the compa not failed in their engagements toward his part in the undertaking would ha since been completed. Their financial a ments so utterly broke down that at o he had to defray all the current expens his own resources."

Leaf Decorations in Architecture C. R. Kelly contributes to the *Ga Magazine* an article on this subject, as plified in the decorations at Tarporley hall. He says:—"I have long been of that in many cases interior decoration been executed in a style much too heavy character of the buildings, that far mor rial was used than was necessary, and much more graceful and pleasing effec be produced by single leaf work, combin very light dressing of the parts requirin than the single leaf. The character building is, of course, the first consid there being, in my opinion, three very classes of interiors, viz.,—1. Where gres tectural beauty of design is displayed; 2 the architect has been allowed to display in the interior only to a limited extent; 3 no pretension to architectural display is Now in each of these three classes I quite a different style of decoration is ne In the first, where the architect has much, the question naturally arises, sho more be attempted? This question, ought to be very carefully weighed by t rator, and the greatest care exercise instead of embellishing, he should in conceal or destroy the beauty of any the design of a mind perhaps greater own. Let him carefully study the des try to get as near as possible to the min original designer, so that he may, as far sible, only carry out such embellishment indicated by the character of the bui likely to be executed by the architect requested to enrich and adorn his wo fuller extent. Let graceful, neat, and designs be placed only where archi carved designs would be most likely placed."

Faccombe, Hants.—Considerable a to the Manor House were commenced i 1878, for Mr. Allan B. Heath. These h been enlarged upon, so as to form a family mansion for the estate, which c an area of about 4,500 acres. The wo still in progress, and it is expected the will be fit for occupation by the spring The style of the building is in keeping character of the manor-house, which wa during the last century. The work carried out by Mr. H. Isles, of Fa assisted by London workmen, from th and under the supervision of Mr. Ja Money, architect.

ruction of Timber.—Notwithstanding easing substitution of iron for timber in ntion, the increasing use of coal, and the rtion of mineral oil for fuel, the forests of ld are being rapidly diminished, much of sheer wastefulness; and this is especially new countries. In the United States 00 of people are living in perishable dwellings, and immense quantities of the mber are destroyed in the process of the forests of the West under cultiva- Unfortunately, too, the most valuable and growing species affect the soils best r grain, and the pioneer never thinks of portions of the timber on his allotment, planting. The result is that in North , which when first settled was clothed wood from sea to sea, a note of warning some time been raised against the in- nate use of timber, and replanting in f the States has been encouraged by y inducements. In Australia, from its peculiarities, still more liable to drought her North America or Central Asia, the f the destruction of its timber have been pidly and more distinctly manifested, colonists appear to be seriously alarmed e consequences. They are calling for ve measures, and others of a reproduc- racter are already in operation.—*Iron*.

St. Sepulchre's Faculty Case.—The ers in this case were the vicar and rdens of the City portion of the parish ulchre, Holborn, who applied for an al licence or faculty to carry out altera- the parish church. A faculty was last year, and the churchwardens of ddlesex part of the parish applied to the alterations. Dr. Tristram gave a judgment, in which he reviewed the f St. Sepulchre's Church from ancient d the laws applicable to churchwardens. churchwardens had petitioned last year ulty, and he was of opinion that from itional faculty the Middlesex church- could not be excluded if they wished ined in it. The funds were vested in churchwardens, and they claimed to be That question would have to be by the Chancery Division. He would faculty to be granted to them as trustees und. He considered that all the five rdens were officers of the ordinary, led to a voice in the management of ch. Each party would pay their own d if there was a parochial fund out of ey could be paid, he would give a cer- Order accordingly.

quities.—Information has reached us Pyrenees that in examining the ancient Phocæan and Phœnician settlements né has found a bronze head of the Isis, of rude but expressive workman- The horns of the cow are well formed, mounting them is the crescent moon, of the cow are pendent and distinct, the exception of the face, which is t and of human form, the portion of exhibited is clothed in the skin of the appears to have been made for eleva- staff or standard. Some rude objects th it are said to indicate a very early

nological Examinations.—The re- the first technological examinations, the newly-formed City Institute for g technical education, have just been d. These examinations were established Society of Arts in 1873, and at the g of the present year they were trans- the Institute. The number of candi- mined was 202, of whom 151 satisfied iners in technology. In the programme nations for next year, which will shortly many important alterations have been d it is expected that the offer of pay- teachers of successful candidates will many more candidates than have yet

Artisans' Dwellings Act in the he area of the first scheme which has menced in the City under the Artisans' s Act (the Golden-lane scheme) is now and will, it is stated, shortly be offered The roadway of that portion of the fare within the City was, until recently, s than about 15 ft. wide, and in some was even narrower, but it has now e about 50 ft. wide.

Fall of Building in Portugal-street.—On the 18th inst., the Westminster coroner held an inquest at St. Clement's Vestry-hall touching the death of William Clarke, aged nine years, who was killed by the fall of a portion of a building undergoing demolition for improvements in Portugal-street, Lincoln's Inn-fields. Mr. M. H. Lewis, solicitor, watched the case for the relatives of the deceased, and being a witness of the occurrence, was sworn. He said that he saw a wall within the hoarding fall a distance of 20 ft., and the deceased was crushed beneath it. The houses being pulled down in Carey-street had protective hoarding, but where the accident happened there was none. Mr. Dale, of Vale-place, Kensington, said he was passing on the pavement when he saw a man, who was pushing the wall down, shout to the boy, but before he could get clear the whole mass went into the road and struck deceased. Mr. George Ashton said he bought the property for removal, understanding it was safe. On pulling down near the part spoken of, witness found the "compo" running out, and consequently the brickwork was broken, and was independent of the party-wall, and this caused the pier to give way: hence the accident. Verdict, "Accidental death."

St. Enoch's Station Hotel, Glasgow.—We would add to the list of names enumerated in the *Builder* in connexion with this building, those of the well-known firm of C. Jeakes & Co., of Great Russell-street, Bloomsbury, who were engaged to execute the whole of the various cooking apparatus and steam-laundry. These were of an extensive nature, and were carried out under the direct personal supervision of Mr. Edward Clements, the principal member of the firm.

Monumental.—On the 9th inst. a monument, which has been erected by public subscription at Kilmarnock to the poet Burns, was inaugurated by Colonel Alexander, M.P. for South Ayrshire. The monument, which is in the Scottish Baronial style of architecture, contains in an alcove a statue of the poet after the portrait by Naysmith, by Mr. W. G. Stevenson, of Edinburgh. The monument has been erected from the designs and under the superintendence of Messrs. J. & R. S. Ingram, architects.

Robbery by a Carpenter.—At the Westminster Police Court, Henry Peckover has been committed for trial on a charge of stealing, on the 8th inst., from a workshop at Messrs. Trollope's Works, Grosvenor-road, Pimlico, eleven planes and a stock, the property of George Mearings and others, value 8*l*. 5*s*.; he was further charged with assaulting Henry Freaker, the watchman at the works. The prisoner had formerly been in Messrs. Trollope's service.

TENDERS

For the erection of a new Children's Home, Schools, and outbuildings, &c., at Nantwich, Cheshire, for the Guardians of the Nantwich Union. Mr. J. Aldersey Davenport, architect:—

Yates	£4,130	0	0
Cottrill	3,827	0	0
Brown	3,788	0	0
Lucas	3,750	8	0
Harding	3,715	0	0
Ray	3,695	0	0
Latham	3,610	0	0
Jones & Co.	3,590	0	0
Price	3,490	0	0
Parker	3,468	0	0
Wood & Gresty	3,339	3	9
Meadows	3,325	0	0
Bromage	3,240	0	0
Madeley	3,200	0	0
Matthews	3,200	0	0
Brereton (accepted)	2,903	12	6

For Tyne Dock Police-station and Officers' houses, Mr. Matthew Hall, architect. Quantities by Mr. George Connell:—

Atkins & Co.	£3,114	6	9
Simpson	2,904	15	1
Scott & Son	2,891	15	11
Elliott	2,873	0	0
A. & P. Marshall	2,870	0	0
Halliday & Christie	2,817	1	8
Richardson	2,811	3	4
J. Nichol, jun.	2,736	0	0
Harwood	2,721	3	9
Kennedy & Son	2,687	14	10
Hepple	2,665	11	6
Summerrell & Young	2,664	3	4
Mackey	2,599	12	0
Hurst & White	2,605	14	10
Fishburn	2,410	0	0
Storrar	2,406	0	0
Smith	2,397	0	0

For works to gateway and rooms over Paulin-street, Bermondsey, for Mr. W. Elliott. Messrs. George Elkington & Son, architects:—

Eldridge & Gee (accepted)	£210	0	0
Roffey	193	0	0

For alterations, &c., at the Crown, Broad-street, Golden-square, for Mr. Gupwell. Messrs. Bushill & Finlayson, architects:—

Beale	£324	0	0
Everett	319	0	0
Fairchild & Son	318	0	0
Gritten (accepted)	291	0	0
Williams	290	0	0

For works at the new Charing-cross Hair-cutting Saloon, 36, Chandos-street, for Messrs. Nash & Co.:—

Goodman (accepted)	£351	6	10

For the erection of additional almshouses at Kingston, for the Trustees of Kingston Almshouses. Mr. Luck, architect. Quantities supplied by Messrs. Northcroft, Son, & Neighbour:—

Vare	£2,047	0	0
Hockley	1,849	0	0
Manley	1,843	0	0
Mudie	1,760	0	0
Stevenson	1,699	0	0
Clemence	1,693	0	0
Jones	1,655	0	0
Wheatley	1,646	0	0
Wells	1,550	0	0
Merrywether	1,499	0	0
Adkins	1,469	0	0
Jarvis	1,437	0	0
Todd	1,257	0	0

For raising and levelling ground, and erecting boundary wall, Burton Joyce, Nottinghamshire. Mr. Herbert Walker, architect:—

McCulloch	£693	0	0
Sills	431	0	0
Bickmore	375	0	0
S. & J. Cargill	292	0	0
Smart, jun., & Co.	289	0	0
Henson	276	0	0
Meats, Bros.	269	0	0
Key (accepted)	269	0	0
Smith & Greaves	259	0	0

For building two shops and offices in Theobald's-road for Mr. R. A. Notley. Mr. F. C. Notley, architect. Quantities by Mr. W. Barrett.—

Brass	£4,297	0	0
Haworth	4,121	0	0
Conder	4,112	0	0
Greenwood	4,082	0	0
Tarrant & Son	4,025	0	0
Langmead & Way	3,858	0	0
Macey	3,811	0	0
Scrivener	3,671	0	0
Morter	3,653	0	0

For alterations at 3, Hyde Park-gate South, for Mr. F. H. Streatfield. Messrs. Perry & Reed, architects. Quantities supplied:—

Clarke & Bracey	£1,062	0	0
Clemence (accepted)	937	0	0

For paving to mews, Haverstock-hill. Mr. R. W Giblett, surveyor:—

Holland	£137	0	0
Mowlem & Co.	125	0	0
Nowell & Robson (accepted)	118	0	0

For proposed school's for 350 children at Redbourne Cheney, near Swindon, Wiltshire, for the School Board of that parish. Messrs. W. H. Read and W. Drew, joint architects.—

	Schools.		Boundary Fences, &c.
Phillips	£1,633	10	£150
Forshaw	1,602	0	412
Barrett	1,563	16	441
Wiltshire (accepted)	1,732	0	424

For alterations to the Ship Tavern, Finsbury-place. Messrs. Bird & Walters, architects:—

Temple & Foster	£1,099	0	0
Godden	994	0	0
Mark	979	0	0
Lawrance	949	0	0
Grimwood & Sons	893	0	0
Brown	798	0	0
Auley	773	0	0

For alterations at the Elephant and Castle, Victoria Park-road, for Mr. R. Clarke. Mr. H. J. Newton, architect:—

Lewis	£1,318	0	0
Cocks	1,140	0	0
Curtis	1,090	0	0
Godden	994	0	0
Beale	989	0	0
Lamble (accepted)	970	0	0

For repairs and alterations to the Foundation School, Whitechapel. Mr. W. A. Longmore, architect:—

Outhwaite & Sons	£630	0	0
Jacobs	620	0	0
Read & Son (accepted)	608	0	0

For five villa residences, Richmond road, New Barnet, for Mr. B. J. Mills:—

Smith (accepted)	£3,250	0	0

For rebuilding shop premises, Nos. 33, 35, 37, Newington Butts, for Mr. C. Thompson. Mr. Banister Fletcher, architect:—

Taylor	£2,231	0	0
W. & H. Castle	2,200	0	0
Downs	2,157	0	0
Burman	2,140	0	0
Tyerman	2,127	0	0
Prout	1,946	0	0
Hobern (accepted)	1,945	0	0

For rebuilding the Tankard Public-house, Kennington-road, Lambeth, for Mr. Henry Mason (first contract Mr. Banister Fletcher, architect:—

Ansell	£1,650	0	0
Wagner	1,580	0	0
Cooke	1,519	0	0
Tyerman	1,408	0	0
Kirk	1,399	0	0
Hobern	1,370	0	0
Smith	1,367	0	0
Burman (accepted)	1,240	0	0

decidedly imitative architecture as Thornhill's, and it is not, like his, fitted to assist the perspective effect of the dome.

It may, however, be a question whether the subdivision of the dome, in accordance with the architectural substructure, is the most desirable method of treatment for a decorative scheme. The dome is architecturally an unbroken hemisphere, and it seems questionable whether its architectural expression is not, to some extent, impaired and contradicted by a treatment which breaks it up into sections. The one positive reason for doing this is, perhaps, that if the dome is made the field of pictorial representation, divided into a series of subjects, these subjects must be subdivided or framed in some way, and in that case a correspondence of the pictorial subdivision with the architectural subdivision beneath it becomes a necessity. But it may be very much questioned whether a treatment which breaks the unity of the great concave hemisphere, and masks and confuses its curves, is not really an injury to its architectural effect. Look, for example, at the result in this respect which such a design as Messrs. Wilson and Pullan's would have if carried out. We have, first, an architectural composition on a foreground plane, full of angles and breaks, in painted perspective, and with a horizontal cornice cutting across the dome at one point in its rise, so as to make a marked horizontal line where the architectural construction gives no reason for one; then, above this line we look through, apparently, into open air-space, where angels are flying, with a blue sky seen between them. The idea of the concave roof is thus impaired, the whole surface is broken up, and we have the effect of looking through the painted architecture into space. Now, it is surely not the object of decoration in such a position to do away with the substance of the dome and make us look through it into space. The dome is a roof, and its decoration should make it appear as such, and not aim at taking the roof off by an ocular deception. In this respect Thornhill's paintings are better in keeping with the situation than anything we have yet seen proposed to replace them, except Mr. Penrose's own purely decorative design, which, as far as we remember it, from a casual glance some time since, was purely a roof decoration and not a picture, and as such represented a true principle of architectural decoration, though we might not regard it as giving all that could be desired for the situation.

Then there is the further and still more important question, whether figure subjects of the highest class of pictorial design are suitable to such a situation at all; whether they are not actually thrown away. Who, in looking at the existing decoration from below, really studies or considers the figures, as he would if they were pictorial subjects exhibited in the usual manner on a vertical surface nearly level with the eye? It is impossible to do so; the attitude necessary for their examination is too uncomfortable and unnatural, and the figures are too much distorted by their perspective position: the general effect only is taken in. This general effect is tolerably satisfactory as regards line and balance of form, and as defining the contour of the dome; it is unsatisfactory chiefly from its deadness of effect, owing to the want of positive colour. But if it is to be replaced by a new design, it is really a point to be seriously considered, whether it is of any use to place in such a position figure-subjects of a high class, and such as require special study and examination to realise the character and expression of individual figures. Such a situation is not, we must think, suitable for picture painting, in whatever medium. It is a situation for architectural decoration, not necessarily excluding the figure, but introducing figures in such a manner as to contribute to producing a general effect in a semi-conventional style of treatment, not necessitating individual study of character in each figure, which is really thrown away in such a case; and the grouping of the design should be such as to emphasise the contour of the dome as an unbroken hemisphere hung over the centre space of the building, and not such as to break it up and mask its real contour and architectural construction.

The existing decoration, as we have said, does this pretty fairly; and let us ask, in conclusion, is it worth while to deliberately paint it out at present for the substitution of a new design, and have we good reason to hope that we shall get anything better in its place? Surely it would be worth while to consider whether its too dead and colourless effect might not be relieved for the present by some decorative gilding or powdering introduced at suitable points of the decorative or architectural portion of the design and on the backgrounds; and then leave it until its repainting or restoration becomes a necessity. It has been once repainted at a comparatively recent period; it will in due time require such a renovation again. It will then be time to consider whether it is worth while a second time to repaint it, or whether anything better or more effective can be introduced in its place. We very much doubt whether its removal at present will lead to the substitution of anything that will compensate for the loss of a design which has much merit in its way, and has the additional claim of long association with the building.

GLEANINGS AFTER GLADSTONE ON BEAUTY IN MANUFACTURE.

The opening of the fine art exhibition at Chester in aid of the funds of the local School of Art, was the occasion of an interesting and highly-appreciated speech by Mr. Gladstone on beauty in manufactures,—a subject which, naturally enough, and doubtless with especial advantage under the circumstances of the times, he treated in relation to a period of commercial struggle for which it behoves the country to husband its means,—to extend its resources. The question, as might be expected, was opened and illustrated with precision and force, and the audience showed by "loud applause" that the orator had awakened or strengthened their conviction most effectually that "to unite all forms of beauty, all the varied qualities of beauty, with the different characteristics that make up the utility of industrial productions, is the true way to the success of our national enterprise and commerce." The subject, however, has more aspects than could be embraced in a speech with definite limitations of time and also of audience; it may be worth while to glance at some of these. Beauty in manufacture is certainly a very merchantable, marketable article. A very few visits to Christie's auction-room during the London season will bring home that fact to our sensibilities. How far workmanship can enhance the value of the most ordinary materials is perhaps not more astonishing than how it can render the intrinsic value of the most precious materials relatively insignificant. Even the extravagant prices which are often given for objects that are of comparatively inferior excellence are to be explained by a contagion of competition that has its origin in a more genuine form, that is propagated by the instinct of imitation among the less wisely appreciative, from the example of the fully-justified eagerness of true connoisseurs for the possession and preservation of works of such originality and excellence that no rivalry or imitation can render them otherwise than unique. The moral of the value in exchange commanded, in commerce, by the Beautiful, as well as by the Good and the True, is only too easily pointed by reference to the success of competitors, of the French especially, whom we now, wiser or happier than our fathers, are able to recognise as our natural friends, whatever our rivalries, if only because they are by natural conditions our nearest neighbours. Let this, then, be admitted, but how far does it conduct us? How far will the conviction that beauty "pays" carry us forward to the attainment of it? Not very much is to be hoped from the morality that takes a new departure from the maxim, "Honesty is the better policy: I have tried both;" what is to be anticipated from a culture of beauty which is prompted chiefly by the experience that ugliness has proved a commercial failure? The search after beauty that is so inaugurated is pretty certain to take its direction from the earliest hint as to what is the kind of beauty that will at the moment pay or will pay best, and be constantly liable to diverge into the bypaths of the momentarily fashionable.

We hear sometimes,—we hear how often,—that the hour produces the man, the demand ensures the supply;—statements these, which, being interpreted from the sententious to the commonplace, read very much like assurances that we have only to want something very much and we shall be sure to get it. What truth the axiom contains is that at least we shall be sure to try for it; and that until we vigorously try for it our chance of getting it is small indeed. But even with adequate resources at hand possible to search London through for more one object, be it but a coalscuttle or deco flower-pot, which a correct taste may require to complete the mere furnishing moderate dwelling-house, and find that not exist, or certainly is undiscoverable. alternative is presented of accepting what vulgar, only because it is hopelessly dull, and tame, or something which co extravagance of form or colour with an ex gance of expensiveness, wherein the fairly admits lies the main objection to his special connexion, not on the score of but of the reverse; he is troubled by in for it in more expensive form, without any lation as to whether it shall be in better or even as good; and how from its nature be made more expensive he is somewha loss to know. Demand,—effective dema a political economist would define it,—d with money in its hand, may go about the in search for many a form of beauty in facture, and be heard of again only as ret home with the money unexpended in th or the pocket. The theorists are man Mr. Gladstone on this occasion takes up tion very near to them, who hold that to the root of the matter in demanding at the hands of the workman. "We wa says, "to carry the work of improve such length that it shall not depend spirit or enterprise of this or that ma this or that workshop or factory. We get it into the mind and brain and hea feeling of the working men; that is w want." These are very wholesome an encouraging words for the ears of the w man; but there is a word at least as wh if not quite so encouraging, that m addressed to his other ear: the manu are but limited in number and extent i the most accomplished workman can giv to his powers independently of a facto the contingent organisation of commerc vidually and isolated, it is for the most true that he can do no more "than hand when Cæsar's head is off." Se organic; when it ceases to be organic social system no longer; and the true is, how can effective furtherance be g such development of the interdepend skilled and accomplished workmen, prising manufacturers, and a public demands and will take off beautiful factures, such as only can be produ or continue to be produced in virtue a combination.

At which end, then, are we to begin we find an end? If the artisan is without the manufacturer, the manufac no less dependent on a correlative pu seems that all the factors must exist if they are to exist at all, and, in fact, into existence together,—a phenomeno it is not easy to conceive. The grass m time to grow if the herbivore is to e unless the herbivore has time to mat to propagate, the duration of the carniv be brief indeed. Or, let us say, perfe can only be made by help of perfect mac but what engineer can construct a machine without the assistance of perfe We look round for some guidance as to t bilities available in precedent, and are co by the example of Josiah Wedgwood. seem to have proof that the manufac the truly central principle and germinan Within a comparatively short life he brought a very original form of art to h fection, and by combination of taste w mercial instincts of a very marked ch stood in common relation to a staff of designers, and accomplished artisans on hand, and to an appreciative public on t There is much appearance here that he his workmen and his public also; that the skill to teach the world at large appreciate graceful art, and the wor his new Etruria how to produce it.

"When shall such heroes live again?"

Live they do at this present; he least, of no less effective qualification exactly directed to the same ends. In of the *Times* lying parallel to those w cord Mr. Gladstone's speech, we may we are so minded, a description of the e ment at Essen, from which Herr Kr supplied 20,000 cannon to various Gove and brought gunnery to a perfectio

..ves nothing to be desired by those who ..ppen to be at the right end of the course of projectiles.

But we have only to press the comparison a ..le closer to find how much allowance is to be ..de for another factor,—the receptiveness of ..temporaries. The genius of artillerists is ..s created by the fact that nations, wherever ..r fault may lie, find themselves in the hands ..military rulers whose passion it is to turn ..ire nations into standing armies; still, ..y under such circumstances can the arts of ..ntific destruction be pressed to their utter..st development. A certain number of favour..e coincidences are required for the produc..n of any works, even of the highest genius, ..the highest possible perfection. In the ..gland of Wedgwood there was a happy excite..nt of interest in the recent discoveries in ..y of ancient pottery of exquisite beauty,—an ..rest which, at the same time, was not ..mped by pedantry or strict antiquarianism, ..in consequence did not exclude an appeal to ..dern predilections as well as to associations ..h antiquity. Certain previous advances, ..n, of a very important nature in improve..t of selected and treated materials, are ..rvable as conditions in either case, as well ..ntecedent training and schooling of bands ..workmen. But when the production of ..real beauty and not of the agencies of brute ..e is in question, we have to observe that ..classes which contribute the aid of actual ..ipulation,—call them all artisans if we ..se,—follow on in a series, almost without a ..k, from the merest hodman to the supremest ..t. So far as the artisan can and does have a ..n to make an original contribution to the ..ty of result, he has a fair claim to a title ..rior to that of simple workman, mechanic, ..rtisan. His own claim may be to be con..red and called an artist; but the resources ..nguage do not allow us to dispense with ..omy in the employment of words, and we ..n find the title of artist required with refe..ce to other qualifications.

..e art-workman has a standing and a dis..ion of his own; but at last he will usually ..to estimate his position by relation to the ..ly-skilled workman who is sometimes not ..ehind him, rather than to the artist who is ..bove. Very admirable is the precision of ..which is attained in numerous manu..res, from joinery upwards;—a precision ..h it seems marvellous that a designer should ..be able to count upon to reduce his ideal ..l to reality. Still, we can by no means put ..xecution of good work upon prescribed and ..erable lines in the same category with ..which makes demand not only on manual ..rity in this form, whatever its perfection, ..n the exercise of fancy, or of imagination, ..free variation in execution. When the ..man advances beyond this limit, he be..s an art-workman, he is entered as an art..man, but he has still a course of earnest ..ication and studious self-culture before him ..is to be entitled to the approbation of Mr. ..stone as having "made the pursuit of ..y a part of his regular apparatus of life." ..ever, there seems no reason why the educa..of workmen, up to even the very first stage ..his development, should not relieve life ..lily from somewhat of its tameness and ..ess. In the patterns of common earthen..e, for example, we see how compositions of ..n elaboration are repeated by a process of ..ing by transfer, which we would willingly ..hange for a design incomparably simpler, ..a practised hand could apply direct with as ..trouble. What is it that attracts us in a ..s of Japanese trays of the size of saucers, ..of which bears only a tiny bird and a ..y? Similar as they are, we find on com..ng them that each was painted freely; no ..lines, which correspond generally in purpose ..n position, are precisely alike; the lines are ..few, but sufficient, because all expressive, ..the large proportion of uncovered space is ..ch true relative proportion to the design, ..it conveys no suggestion of vacuity through ..rty of ideas or neglect. It may be true ..a superior hand gave the exemplar which ..as repeated with such facile grace; but ..ition with facile grace is characteristic ..tistic faculty, and has inestimable value in ..ealing unobtrusively, but not without effect, ..r sympathies with nature.

..nless our schools of art are productive of a ..erous band of art-workmen, call them what ..will, who are at least equal to such an exercise of unrestrained and unhampered execution, there must be something very wrong indeed in their system of instruction. The very life of art is inventive variation, which we have seen has a certain scope even in adaptation of a set copy; but the process of mere mechanical copying, of which the perfection demands the exclusion of any personal impress of the copyist, may be conducted, doubtless, with much exercise of conscientiousness as well as skill, and so far forth is trustworthy; but the full meed of praise of contributing to the beauty of manufacture belongs, in the first instance,—which is all but equivalent to saying in the last also,—to the author of the example to be copied. When the boundary, however, is once overpassed, then, as we have said, the career of invention is open, and invention may find range which seems to extend to infinity in a numberless succession of stages,—if only in the forms of vessels of all kinds, and so onward in decorative compositions, from rivalry with the willow-pattern plate to the design of Flaxman for the shield of Achilles.

Considering what large numbers of students are now on the rolls of the schools of art, it will furthermore be hard, indeed, if some of exceptional, of even highest capability, do not declare their powers in due time,—and time is already pressing,—to reward the national confidence by manifestation of genius of even more than national interest; but here, as in the case of a Flaxman, or of a Chantrey as a more precise example, we leave the question of beauty in manufacture, or are supposed and ought to make it a principle to do so. It will often be only a vanishing line that divides the art-workman and his artistic work from the artist proper and his work of fine art; but the line is a real line; its termination may be as difficult to determine as the precise limit of the solar penumbra, but we are not on that account to falsify terms and contest the reality of distinction between shadow and broad sunlight.

We must not, moreover, give way so far to a false enthusiasm of liberality as to suppose that the simple workman will, or indeed can, develop into the true art-workman by simple application, however conscientious, and by force of will, with nothing to work upon. A certain primary endowment—"gifts that God gives"—to take Dogberry's words as seriously as he intended them, but with more logical applicability, is a primary condition, and then must external aid, which now does not fail, be supported by resolute energy. We laugh at the labourer in *Punch*, who encourages his countryman: "This is the country, Tim, to earn your money; you've only to run up and down a ladder; a man at the top takes the bricks and does all the work." But there is a truth in the jest, which comes home to reflection while we laugh. The extremest muscular toil will be accepted by multitudes as ease itself for the sake of exemption from the most moderate mental strain. This is "the dead part of the stroke" which must be overcome by the more ambitious by the accumulated energy that is best provided by a certain extension of general cultivation,—the cultivation which accustoms the mind to a variety of ideas, and to variation of aspect relatively to the same ideas. Imagination, which is the soul of art, must be ministered to by the intellectual stores which do not accrue spontaneously, while highly-strung moral purpose is at once the primary condition and the predominant force which must bind all energies into unity at last. Not very much is to be hoped for in development of the love and pursuit of beauty, if a starting-point is to be taken from a theory of duty in work which is consistent with slurring present work to provide work in the future—with giving fictitious finish which will pass while withholding solidity that will endure, and with systematically starving the quantity as well as the quality of the work that can be put into an hour. Different, indeed, is the spirit in which the men of professions—the men of business even—keep themselves at the wheel, in which the student who seeks for truth at any cost is unceasingly urgent, vigilant, pre-occupied. The relaxation of moral fibre involves even that of muscular, and leaves little chance, indeed, for the enthusiasm without which it is impossible for art to be born, and which is "like the air it breathes, if it has it not it dies."

The kind of mental culture which might best supplement the technical instruction of the art schools would probably be such as would direct itself at once to the enrichment of the intellect and the excitement of the imagination through poetry. In this respect it is unfortunate that so large a proportion of the finest English poetry should be quite above the heads of all who do not unite to a sensibility for poetry a very full and extensive liberal education. We have contemporary poetry of very high merit; we may even say that what contemporary poetry we have of the highest merit, is even more difficult of appreciation by an ordinary reader than that ode of Gray, which he declared could only be complained of as difficult by those who were not familiar with Pindar. It will be a very different England, indeed, in which Milton will ever be genuinely popular and genuinely appreciated by the mass of the people. The very power of reading his epics or "Samson Agonistes" with the rhythmical effect that is necessary to give poetry a fair chance is a rare accomplishment; and he constantly takes for granted a readiness to apprehend allusions that are as remote from the associations of ordinary readers as those of Lycophron. It was of extraordinary value for the general education of the Greeks that the poems which were at once the most important and excellent and the most extensive were in a style which could be universally understood. There is no English translation whatever of the "Iliad" and "Odyssey" which fairly brings home to the English reader how simple is the Homeric phraseology. The translator either into verse, rhymed or blank, into either prose or poetry, has invariably thought himself bound to give the ideas of the ancient a certain clothing of so-called poetic diction, or a tincture of the unusual or the stilted; and even when the vehicle is prose, to foist in a phrase from time to time, which, as Biblical, is assumed to be simple, but which, in fact, strikes the modern reader as an obsolete solecism,—an effect which never was produced in antiquity by the Greek equivalent.

Shakspeare is most nearly to modern England what Homer was to the Greek; that is, as our greatest poet, and a poet who is largely engaged upon truly national themes. But in the case of Shakspeare, no less than of Milton, to read him well is an art, and unless his poetry is read well, with appropriate emphasis, intonation, and rhythmical feeling, it is "not understanded of the people." Even as soon after his death as at the Restoration, it sounded strangely. But it will not do to reconcile ourselves to the general world losing hold of it, and leaving it to be nothing more than a study for a clique of antiquarians or enthusiasts or grammarians. Something is now being done with sedulous care to explain all his unfamiliar words and constructions to the schoolboys, but this process penetrates very little way even when it penetrates at all. What is really required for popular education is a popular theatre, at which Shakspeare's plays should be represented so frequently and so well that his language should explain as well as recommend itself. Alcibiades, it is told, broke the pate of a schoolmaster whom he found pretending to instruct youth without a copy of Homer on the premises; we may excuse our own School Boards from the responsibility with regard to Shakspeare, if we can only secure the better introduction of his spirit into the very minds and hearts of our population by well-established publication in that form, and with those aids and accompaniments for which he originally and exclusively bodied forth the form of things unknown.

But however artisans, skilled workmen, art workmen, artists, and manufacturers, may become embued with poetic feeling and enthusiasm, and accomplished in the training of all necessary kinds, the predilections of the public as the patron will enter into the problem as an ultimate factor. One man, it is said, may bring a horse to the water, but be the water the very font of Hippocrene, and however copious it may be, it may still flow in vain, for a hundred men cannot make it drink. Must we, then, be driven to hold the artist excusable who sighs for a tyranny of an individual or a corrupt aristocracy,—of a family of Medici,—of an Augustus or worse, as the last chance for the arts, as alone capable of bringing about the union of unstinted funds with large schemes, and exaction at once and appreciation, of universal finish and refinement. It is a continental reflection, of long standing, upon Englishmen that we are a nation of shopkeepers, and the English are themselves responsible for the proverbial currency of the dictum that it takes three generations out of trade to make a gentleman. England is not, happily, about to retire from business in any sense; but this being so, it is incumbent upon us to adopt such a general and generous culture as shall disprove our own

proverb, and make the foreign imputation equivalent to a compliment, by showing that the training which is fostering a capacity for the realisation of beauty in manufacture, is met from above by a refined and lively appreciation of the beautiful by those classes that occupy the political place of the gifted but, in so many ways, untoward patrons of the earlier and later Renaissance.

THE NORMAL ARCHITECTURE OF SCHOOLS.

The principle that the amount of light that will, on a gloomy day, fall on the desk of the scholar, should be taken as determinative of the proportions of the school-room, especially with reference to the area and position of the windows, is one that hardly requires any lengthened argument in its favour. Of course it is not a principle that is to be worked to death. But it is one founded on physiological reason, and calculated to supply a normal guide to the architect, of which he is so greatly in need.

Without going into any optical details, it may be remarked that the effort of learning to read is, perhaps, the greatest strain to which the infant brain is ordinarily exposed in this country. And without venturing to assert positively that such is the fact, we may observe that there are many observations collected which tend to support the belief that the children of highly-educated parents afford but little measure of the much greater difficulty experienced by the children of those more unfamiliar with the alphabet, in acquiring a rudimentary knowledge of letters. That the strain thus put upon the youthful brain ought to be diminished, by the careful consideration of those who are responsible for their educational career, in every available way, is a proposition that may be termed self-evident. What is required is, that all effort should be made, as far as possible useful effort, and not mere strain. If any one wishes for a practical illustration of the effect of light in facilitating the act of reading, we recommend them to make this trial. Persons gifted with perfect eyesight, and who are not so far advanced in life as to need any aid from spectacles, may be challenged as jurors in this matter. They cannot fairly estimate the difficulty that attends feeble or untrained vision. But let any man who cannot read,—let us say the advertisements of the *Times*,—readily without spectacles of the second or third degree of magnifying power, take that paper into the open country on a bright day. He will be able to read without his glasses. Such, at least, is the outcome of personal experience. That an adequate amount of light thrown on the desk or book of each scholar is a primary requisite for the distribution of the plan of a school building we will, therefore, now assume. It remains to be inquired whether we have any means for determining what that amount of light ought to be, and how it is to be measured and provided.

The diminution of the illuminative power of a source of light in proportion to the square of its distance from the illuminated object is a result of the proportion known to exist between the radius of a sphere and the area of its superficies. If we look at the matter as if reversed, and suppose the illumination to come from the superficies, and to be concentrated in a focus, the law will be the same, stated inversely. If we regard a vertical window as a source of illumination, it is at once apparent that only a portion of the illuminating power of the sky that spreads over the locality can strike upon the window. Immediately within the window the eye would receive only about one-eighth part of the light that would fall on it if the observer stood, let us say, on the roof of the building. This will become manifest from the following consideration.

If an observer stands on a level plain, light will fall on him from an arc of 180° north and south, and also from an arc of 180° east and west. If we suppose the point of observation to be in the middle of a cube, with glass sides, light will enter from the upper face of the cube from a spherical area of 90° by 90°; and on each side it will enter from a spherical area of 45° by 90°. Thus the light entering on the top will be one-fourth, and that entering on each side will be one-eighth, of the atmospheric light transmitted from the sky, assuming the whole light to be equally diffused, as on a day when the sky is covered with clouds.

If we now consider the incidence of the rays of light on the glass, and omit, for the sake of distinction, the consideration of refraction, absorption, or dispersal of the rays, it is manifest that the light which would pass through the window to any point within the apartment will be directly as the size of the window, and inversely as some function of the distance of the observer from the plane of the glass. Striking at every angle, from the smallest subtended from the zenith to the horizontal, the light will enter, and as the eye is removed from the plane of the window (as will be at once seen by a simple diagram), a constantly decreasing number of rays will fall upon it. And although refraction and dispersion will vary the details of any particular observation, the broad fact of the proportionate incidence of the rays will remain the same: so that we shall not go very far wide of the mark if we take the illumination of any given spot in a room from a window as equal to one-eighth of the atmospheric or outdoor light of the time and place, multiplied by the area of the window, and divided by x times the distance of the point of observation from the plane of the glass. This is assuming the glass to be perfectly diaphanous. In point of fact it absorbs some 10 per cent. of the light that falls on it. For the sake of simplicity, let us at first assume $x = 1$.

We then have to consider the proportion proper to be borne by the windows to the walls of a room. If we turn to an authoritative work on design for buildings in this country to ascertain what proportions are ordinary, we are met with the unsatisfactory information that "every room and every passage is to be sufficiently lighted from the external atmosphere." But we are inquiring into what that sufficiency is, so that this dictum does not help us. If we turn to the "Dictionary of Mechanics" for more information, we are told that "a window is an aperture to admit light,"—which we knew before. Transparent windows, we are further told, were a curiosity in the time of Seneca. Glass windows were introduced into England by Walford, Bishop of Worcester, in 736. "Trefoil openings, within triangles, are of the time of Edward I. In the reign of Richard II. they were divided by upright mullions, dividing the window into lights." "Cast glass was introduced into England in 1773." All this is interesting information, but it is not that of which we are in search. We know, in point of fact, that from the time of Alfred to that of Henry VII., there was a steady increase in the proportion of the perforated or illuminating area of the window, as compared to that of the arch. In the ancient tower of the church of St. Mary, at Guildford, which bears still the "strips" of the Saxon builders, two very ancient window openings yet remain. They are of the rudest form, splaying both without and within, till they are reduced to an aperture too small for a man to squeeze through. Defence from the Dane, or some other marauder, was, no doubt, the object. If we turn to such a work as the "History of Modern Architecture," we shall find an extraordinary diversity in the proportion of window area to wall shown in the illustrations, but nothing to guide us as to the principles adopted by the architect. In the Whitehall banqueting-house, the windows, which Mr. Fergusson characterises as well proportioned, measure rather less than an eighth part of the wall in which they are pierced. In Wollaton House, they appear to occupy one-half; in Longleat, measuring the glass, and not including the mullions, less than one-sixth. One-seventh is a proportion not unusual in some of the finest buildings in Italy. But a small window in that climate would admit a quantity of light equal to that transmitted by a much larger window in England. Thus, if we seek for guidance by measuring buildings, we find a variation of from less than one-ninth to more than one-half of the wall to be pierced for light, and are forced to arrive at the conclusion that the architect has not so much considered the absolute quantity of illuminating surface allowed for windows as a proper function of the plan of his building, as he has regarded the perforations as picturesque features of the elevation.

If we take the largest proportion of which we have found an instance, namely, that of the principal face of Longleat, we shall find that the light actually admitted into that portion of the house is one-sixteenth of the atmospheric light. This portion of light, less 10 per cent. due to the absorption of rays by the glass, is that which actually enters the room through the windows. But as the windows themselves are only one-half of the area of the side of room, or the proportion we have selected, th will not be, in any part of the room where illumination is equally dispersed, more than thirty-second part of the intensity of the il mination that would be obtainable, at the sa time, at a point of observation on the unsha roof of the house. But the proportions of noble windows of Longleat are very rare. sixth or one-eighth of the wall-space is as m as is usually allowed to window room in o nary buildings. Thus we come to the fact in a large school-room, lighted with one ro windows, the proportion of the free atmosph light that is utilised for the eye of the schol but a fraction of the full light of day, avoid in both cases, the direct rays of the sun.

As to the difference of the distribution wi the apartment of the light which actually en a room, let any man who wishes to mea pen, or woman who has to thread a ne reply. It may be in the memory of many public school-boys how a worthy master, w hair had not begun to turn grey, in a very lighted apartment, in which the windows on the long side of the room, habitually tool position close to a certain window in ord mend his stock of pens. We intimate occurs to us as a rough mode of measurin loss of light in a room. We shall be glad t the subject discussed on scientific princi and be the loss of light more or less, there remains the question for the physiologis answer,—"What is the smallest proportio the atmospheric daylight of a locality ought to be used to illumiuate the prim the child who is learning to read?"

It ought not to be necessary here to say in deprecation of the practice of cross-ligh Let us ask any person to whom a pure and light is an object, and the answer will be the Diffused light is the best for most purpo vision (we are not speaking of the use o microscope); cross-lights interfere with function. From the engraver who ere paper-screen to throw a soft light on the su of his copper, to the painter who sele northern aspect for his studio,—this view o incidence of rays of light is habitually tak a guide to practice.

We thus arrive at two indications as t plan of rooms intended for the study o young which cannot be neglected with prop One is, that the form of the room s be oblong, the light being admitted on the side; and that increase of accommodation s be obtained by increasing, not the depth, b length of the room. That is to say, room be made by prolonging the side in whic windows are placed, of course multiplyin windows in the same proportion.

The second remark is, that as the qu of light which will be transmitted into a through a square foot of horizontal roof, phanous, is on the average double the qu that will be admitted through a square f vertical window, serious and systematic tion should be given to the subject of lig from above.

We are aware that this will be regarde heresy by some writers. "Avoid also," one authority, "the use of skylights." special care is requisite in the use of r glass we fully admit; and considering the tion as that of roof alone we should n least until tempered glass has become one available materials of the builder) conside tiles, slate, or metal could be, without disa tage, replaced by glass. But what we h consider is not the best material for a roo want to find out how, in the best mann transmit the requisite amount of light school, and we cannot, therefore, omit to out that the fact that a double quant light comes through a horizontal, as com with a vertical, pane, is one that the arc is bound to show, at all events, that he ha sidered in his design.

We have spoken of 10 per cent. of the being absorbed by the glass. Recent e ments on the absorbing power of glass, i nexion with the electric light, have her firmed the estimate long since made b illustrious Faraday. Mr. Faraday inven very beautiful arrangement for burning which, by means of a double chimney, th ducts of combustion were prevented mixing in the air of the apartment. B double chimney was found to absorb so la proportion of the light produced, that admirable sanitary arrangement was laid

has to be remembered that pure, bright
s is here spoken of, and that any inferiority
he tint or structure of the glass used in
dows causes a direct diminution in the trans-
ed light beyond the allowance thus made.
ery little reflection will show that a proper
rd to the illumination of the school-room will
uce a direct effect, not only on the plan, but
on the elevation, of every well-proportioned
ol building. It will do so to an extent that
affect the choice of style. The principle of
ding cross lights and of admitting a definite
ortion of the light of day into a room, will
to the establishment of the rule that school-
ms must be oblong, and lighted from the
side of the room, unless they be lighted
the roof, in which case the shape of the
may be left to be determined by other con-
ations. Those of our readers who are
liar with the reading-room of the British
um know what lighting from the roof
is. We are much mistaken if persons who
customed to work in that noble apartment
not be found very zealous advocates for the
tion of that method of lighting. We may
he reader to compare the illumination of
room with that of Westminster Hall. Of
e, the use of stained glass in the splendid
w at the south end of that great apart-
arrests much of the light that would
wise pass through so large a perforation in
all; but the effect on the eye of a body of
coming through a large window,—let the
iment be made in St. Paul's Cathedral,—
y an equal amount of illumination trans-
d through a lantern, is very different. Nor
suppose that there can be much difference
inion as to which mode of admission of
is most favourable for any work that
res a sustained effort of the eye.

do not conceal the fact that considerations
s nature may be found to militate against
ideas of pictorial effect which we should
e last to undervalue. But the utility of
rk should always be, with the architect,
sideration prior to that of its pictorial
. We have little doubt, indeed, that the
pictorial effects have been produced
indirectly than directly. The quaint
, and gables, and pinnacles, and re-entering
s of our Domestic-Gothic work, are only
able when they arise from the require-
of plan. When they are "put in" for
own sake, they almost invariably appear
what they are, namely, shams—like
ial ruins erected to give a mendacious
y to a newly-planted estate. Thus we
at there will be little hesitation on the
f the true artist in adopting the suggestion
in attempting to design a large school,
ould first decide on the proportion of the
pheric light which is, all things considered,
st to admit to the desks of the scholars,
hat we should then proportion the size,
, and lighting of the large school-rooms so
follow the rule thus laid down.

s more than probable that the outcome of
udy will be unfavourable to the use of
t buildings with pointed windows. A
e-sloping roof, with deep eaves, and boldly-
d barge-boads, a house framed with
timbers, and covered with a dense veil of
small casement, projecting through the
elow the gables,—these are things that
t the eye. The artist loves to linger
such scenes, and to reproduce them.
enerable tower or spire of the village
h, the shadow of lofty elms, the chorus of
ng-retiring rooks,—all these are associated
memories with the lowly-gabled porch of
llage school. But where are the villages
elves? They are, in very many instances,
into towns. The old pictorial charm is
flight; and whether or no this be the
n any particular spot, there are few dis-
of the country in which the growth of the
tion is not so rapid that the arrangements
might have been adequate for the school-
the children of the last century are anti-
l and ineffective for those of the present,
nothing of the approaching twentieth
y.

ring in mind that we are rather inviting
ects and students of architecture to ac-
ny us on a sort of professional voyage of
ation, than attempting to lay down any
of our own prescription, we suggest the
tage of careful investigation of the effect
erent modes of illumination. There is, for
ple, an arrangement as to which we can
peak from the glance caught from the window of a railway carriage. On one of the metropolitan lines, close in the vicinity of the Victoria Station, is a large group of sheds, on which the alternate slopes of the roofs are covered with slates and with glass, the slopes to the south, on which the rays of the sun might at times strike directly, are slated, and those to the north, on which this incidence is impossible, glazed. An arrangement of this kind will admit into the building light from a spherical surface of nearly 90° by 45°, or a very large proportion of the atmospheric illumination. When a building of that kind exists, it is so much gained in the way of experiment. What we require to know is,—how far will such a method of lighting answer? How far would it be available for the special purpose of school illumination? What we desire to have is a sound practical judgment, formed by a competent authority. The establishment of a series of observations of this nature would be of very high professional value.

We may note that photography furnishes the means of a direct metrical comparison of the illuminative power of different windows. What is needful in this case is that observations should be simultaneous. The number of seconds of exposure of a photographic print, or of a piece of sensitised paper, on the same day and hour, in different rooms differently lighted, or in different parts of the same room, that produce an equal depth of tint, could be noted. There might be a comparision made of the depth of tint produced in equal time, but the measurement by time would probably be more exact.

At all events, our object will have been gained if we have called to this important subject the attention of those who are competent to take up the inquiry and to advance it to its proper results. We want the verdict first of the physiologist, as to what proportion of the ordinary atmospheric light is the best to be thrown on the desk of the child. We want the opinion of the practical photometer as to the illuminative effect of different forms of window, of lantern, and of skylight (distinguishing by the two latter terms the horizontal from the vertical admission of light at the top of an apartment). And when this first step is taken, we do not doubt that the genius of the architect will clothe with proper structural beauty the rude skeleton that has been provided for his use by the physiologist, the optician, and the photometer.

DRAGON WORSHIP.

"LA TARASQUE."

Two years ago I promised to send you the particulars of a very curious ceremony existing in the south of France, probably the last of its kind in Europe, that of "La Tarasque." But the conflicting statements made by authors and authorities cautioned me to be careful that my information should be exact. Hence the delay. The British consul nearest the locality laughed at my inquiries, and denied the existence of the ceremony except in Mediæval times. Murray's Handbook states the ceremony does not exist, and Joanne, a careful French writer, gives the *fête* of St. Martha as the day of "la Tarasque," which is wrong. But for these contradictions I should have thought it unnecessary to give the authority guided by which I have for two years examined into the matter by several visits to the locality, and which, I felt sure, from its source and the manner in which the information was given me, was quite reliable, the communication being made to me personally by the Marquis of Bute, during an entertainment given by the British Minister at Athens, two years ago. What I saw on my first personal inspection might, I thought, possibly be an exceptional or accidental affair, but having been made for the purpose an honorary member, *pro tem.*, of the Society of St. Martha, I have attended the various ceremonies, and the following account is from personal observation. The ceremony of "La Tarasque" is a religious one of great solemnity. La Tarasque is a huge dragon, about 17 ft. long, which is pursued through the streets of the town of Tarascon by a large body of clergy, richly attired, and chanting solemn litanies, the foremost in the procession wearing scarlet and lace, and the remainder being in deep mourning and lace. High mass is celebrated before the march commences, which is constituted as follows:—A number of maidens, covered to the feet with long white veils, bear and keep guard over a magnificent white silk banner, thickly embroidered in gold, representing the Virgin treading on a serpent. Then the daughters of the upper classes in the town, in ordinary dress, following a second rich banner of the Virgin and the infant Christ; a body of black-veiled nuns then bear a pink-and-blue banner, representing St. Martha habited in the same colours, which are those of the saint who is treading under foot the Tarasque, and delivering a child, already in its mouth, from death. Then follows a magnificent half statue of St. Martha, life-size, in silver gilt, decorated with precious stones and costly Limoges enamels, beneath a handsome *baldaquin*, each of the four corner pillars having the form of a serpent twined round it. Here follow the clergy chanting, and at each interval the chant is taken up by the nuns both in black and white veils, so that it wanders along the procession without ceasing. Then follow a number of youths in costume, and the rear is brought up by the principal burghers bearing candles. The procession numbers several hundred persons, and all except the youths and veiled nuns are uncovered. Sixteen men are required to carry the dragon, which is of great weight; of these, four are placed on each side externally and internally, and one in the head to gnash the jaws of the beast; and, on the Feast of Pentecost, to issue fire from the nostrils. The dragon has a guard of men dressed in Mediæval attire bearing the veritable arms used from time immemorial in the ceremony of "La Tarasque," and which are, therefore, of great antiquity, and are kept in the "Mairie" with jealous care, and only brought out for the purpose. They wear vizards of cloth in form of chain armour worn up or down at pleasure. They have to clear the way for the dragon and guard it from injury by the crowd. Immediately the clock strikes five (p.m.) on the first Sunday *after* the *fête*-day of St. Martha, bells ring, drums are beaten, and cannon are fired, and the pursuit commences, the procession issuing from the church of St. Martha, then parading in front of the château of King René, and following the Tarasque, which flies through the streets to escape the saint. On its way it is seized by a pretty maiden, about twelve years old, in pink and blue, who acts as a lay St. Martha, and who attaches a pink ribbon to its neck and assumes to drag it along; the dragon gnashes its jaws furiously, runs hither and thither in the crowd to the terror of the young and amusement of the old, the armed men make feints of attacking he crowd, with like results. The streets being narrow and tortuous hardly permit its passage with a single file of persons on each side. After traversing the town it finally takes refuge in the Place St. Martha, near the church, here it is overtaken by the procession, and as the silver-gilt effigy of the saint, with the clergy following, advances, it makes three vast demi-vaults into the air and falls prostrate before the figure. The procession then re-enters the church, and another service, jubilant in a high degree, is held, and the effigy of St. Martha placed in front of the altar, amidst hundreds of candles and a highly magnificent display of altar-plate, jewelled with lavish outlay.

Your readers will be disposed to put all this down as a remnant of a ceremony of the Middle Ages, and it is true that during that period, and also retained for a long time afterwards, a special part of the procession was introduced in character with the customs of the times, which made the spectacle more like that of the Lord Mayor's Show, but this has since been abandoned, to which may probably be attributed the impression that the whole was obsolete; but those parts have nothing to do with the religious ceremony, which is like several still existing in Brittany, and which may be traced, more or less, along the whole route marked by the remains of that extraordinary people who, according to Strabo, conveyed the tin procured in Britain through Gaul, by a long horse traffic down to Massilia (Marseilles). Mention of this part of the ceremony would be highly interesting would space permit, but there is new matter which I venture to supply, as I think it gives evidence of the great antiquity of the ceremony. But I may be allowed to say that such part consisted of a cavalcade of knights, headed by Toison d'Or, and followed by what appears to me a part of the primitive ceremony, viz., the various pastoral callings, the craftsmen of which carried the fruits and implements which distinguished them, and which probably originally formed offerings to their local divinity; a pastoral dance then existed, and all the et-ceteras of a saturnalia,

which represented the age of gold, and the ceremonies of an ancient pagan faith, as recorded by French authors. All agree in its remote antiquity; according to the clerical tradition, it dates back to the first century, but as this was simply the date of the release from the dragon which had long infested the district, of course the dragon goes much further back, and a French author, Amédée Pichot, goes so far as to date it back to the time of the Trojan war, or the flight of Israel from Egypt. As to my own experiences, it was deeply interesting to find myself taking official part in a ceremony still having so many ancient and Mediæval features, in a town quite unaltered in its Middle Age aspect, and with a population in its original costume; to march under the battlements of the castle of King René, the poetic king of Provence; and to see before me the times and scenes figured so graphically by Scott in "Quentin Durward" and "Anne of Gierstein," and still more so with the vast emblem of the earliest Pagan faith that the world probably ever knew. The following is extracted from a ballad of Provence, in the original *patois*:—

"Ha! quand courrié la vièio masco,
Lagadigadèu! la Tarasco!
Que de danso, de crid, de joio e d'estampèu
La vilo morno s'enlumino,
Res que faguesse en Coundamino,
Mies qu'eu o de meiouro mino,
Voulastreja pèr l'èr la Pico e lou Drapèu."

Which may be rendered,—

"Ah! when the old witch ran,
The *gadou gadou*,* the Tarasque!
When during dances, cries of joy and revelry,
The dull town illuminates itself,
No other did in Coundamino,
Better than he (the Knight of the Tarasque) or more full of grace,
Make to fly in the air the pike and the banner."

With the actual visible worship of the living serpent amongst two of the peoples in Africa whom our army has lately had to attack, in the west and south, there is little to investigate, for it is difficult to surmise what originated the worship. But I have selected the district of the Tarasque, where the ceremony of the subjugation of that worship exists in all its features, to endeavour to trace out its meaning, but not its origin, as the worship seems to me to have there a marked, though local, intent. As my obtaining these facts required much time, and a considerable expenditure, I venture to send some points which came under my notice, and should not otherwise intrude so far on your valuable space.

Assuming this worship to have existed very anciently with the various settlers on the north side of the Mediterranean, who, whether Phœnicians or others, must have been acquainted with the worship of Egypt and of the colonies in Africa, we find it perpetuated along the banks of the Rhone and the Loire. There is good evidence that Gauls and Phœnicians,—in short, the first settlers,—occupied lofty sites, as well to defend their positions, to watch against hostile approach, and as places of worship. The Rhone must in those days have been subject to more frequent and more dangerous floodings than those experienced in late years, which have been severe enough, the whole district having evidence of being repeatedly washed by rivers seeking egress. It is remarkable, also, that the sites occupied in the earliest times are those which have been successively occupied by succeeding people all over the south and west of Europe, hardly any spot so appropriated having been wholly abandoned. Tarascon stands out in bold relief under these heads. It is referred to by Ptolemy as an ancient town. On the former site the Romans built a castrum and a temple,—a Corinthian capital still remains; the early barons built a château and a church. It was of sufficient importance for the sojourn of Pope Urban II. in 1096. In 1146 the barons were summoned here to render homage and fidelity to the Count of Provence, and it still maintains a position commanding respect. But there are similar evidences on all the now occupied and original sites along the district I have examined from Brittany to Marseilles. To keep to the latter district, we have at Marseilles, Arles, St. Remy, Tarascon, Avignon, Orange, Mont Dragon, Le Puy, Puy de Dôme, Gergovia (Clermont Ferrand), and others, not only the same features of successive occupation, both in civic and religious structures,—Gaulish, Ligurian, Phœnician, Roman,—but others in coins, ancient Roman and Mediæval architecture, traditions and customs which have a strong visible representation of the dragon or serpent, and are not found in the surrounding districts. Thus even around Avignon and Tarascon the buildings have no evidence of the kind. The ancient Roman architecture is most to the point, for it could have had no emblematic suggestion of the triumph of a pure religion over a foul one, and it is in the ancient Roman architecture and sculpture of the localities that the serpent and dragon are unmistakably, and not metaphorically, illustrated. On the ancient Papal mint facing the palace of the popes at Avignon, the dragon of the Gauls and the eagle of Pagan Rome are placed in positions of equal importance, and alternate equally in every case. This was clearly a compliment to the locality, and shows that, notwithstanding Christianity, the dragon was still a badge of the Gauls. On the ancient Roman triumphal arch at Orange, the *draconarius*, or standard of the dragon, is profusely introduced with the other trophies of spoil taken from the Gauls; all the standards are Gaulish, the Roman eagle being nowhere apparent. They include, besides the *draconarius*, standards of the dog, pig, wolf, &c.; above these towers the magnificent *rayonnant* head of Phœbus, indicating the triumph of Rome; with two dragonesque sea-gods consenting as it were to Fate. At St. Remy, on the finely-sculptured mausoleum, sacred no doubt to the Romans who fell in the combat with the Gauls, as represented at the base, the frieze is occupied by dragons, as consenting supernal deities; in short, the Romans appropriated the chief god of the locality. At Arles and Avignon, amongst other examples have been disinterred fine sculptures illustrating the serpent as dominant. The one called Mithra, which I should think is Serapis, enfolds the body of the god in a triple coil, the other shows a vast cobra dominant over the Roman eagle, both of which stand beside a colossal figure. These are examples; but at Nimes, which is more prolific in Roman remains than these localities, there is, as may be said throughout Languedoc as far as the Pyrenees, not in either Pagan or Christian remains any device of the sort. Mont Dragon is excepted by Joanne from any association with the dragon, except as a possession of a family bearing that title; in the same way the Rue Dragon at Marseilles is said to be only heraldic, but it has been overlooked that these titles or arms were held by the bearers of the Gaulish *draconarius*,—a standard which, as a compliment to the Gauls after incorporation as Roman freemen, was adopted by the Romans for those armies previously bearing this as their national emblem; while the dog, pig, wolf, &c., were abandoned as standards, appropriately showing the dragon as superior. That these standards were the emblems of deities there can be no doubt, as the eagle was of Jove, or supreme power; but the remarkable example of a sculptured Gaulish chief dug up at Mont Dragon, and now in the Museum Calvet, proves this to have been one of the early settlements. The worship of the serpent was evidently part of the religion of Carthage; and in the *British Archæological Journal* for March last year, I endeavoured to show that there was intercourse between Marseilles and Carthage before as well as after the Romans occupied Gaul, and in an ancient French work on the Roman remains in the above localities I now find a quotation from Isidor to the same effect.

That which has caused the perpetuation of the Tarasque seems to have risen from the devastations from flooding by the Rhone, and as the dragon was always a water deity, its fearful power would have been particularly propitiated here, even to the offering of human victims; evidence of something similar is found in Egypt. The introduction of Christianity would, of course, release the inhabitants from this fearful superstition, and the château of Christian knights was no doubt founded on the rock of refuge from inundation, which would also form the altar of sacrifice. A most remarkable pagan altar still stands in the crypt where St. Martha is buried. It is a strange corroboration that the procession is limited to those streets where the great height of the Rhone in May, 1856, is recorded,—evidently the parts most deeply inundated in former as in modern times.

Saragosa, Spain. J. S. Phené.

* Not translatable.

Death of Sir Rowland Hill.—This great public benefactor died early on Wednesday morning, in his eighty-fourth year.

THE FORTH BRIDGE.

The *magnum opus* of engineering in t country going on at present is undoubtedly t Forth Bridge. The honour of knighthood, n cently bestowed upon Mr. Bouch, following it did upon the passage of the Queen over t Tay Bridge, gave sufficient point to her Majest appreciation of the great work of joining t counties of Forfar and Fife. On the occas of the dinner of the Institution of Civil En neers, Lord Derby referred to the absence representatives of the profession of engineer in the House of Lords, and we may safely that so far as the achievement of success, and surmounting of apparently insurmountable di culties can entitle a man to further hono Sir Thomas Bouch will have fairly deser them when he has brought the Forth Bridge an equally happy conclusion with its rival of Tay. The new route to the North, which find its complement in this gigantic undertak is but little known to the tourist, and is e out of the beaten highways of commerce. linen industries of the ancient town of Dunfe line, which is situated about three miles in from the northern shores of the Forth, hitherto sufficed to keep up a scanty strea passengers, which until within the last years were conveyed in one of the few remn of the old coaching days which still find a re in Edinburgh. Even the modern Athens soon have ceased to afford them a resting-p and in a few more years the east end of Prin street will have lost one of its attractions i final departure of the four-horsed coach which its pavements have echoed for more a century. The situation of the Forth Br forcibly recalls to our minds the opening of the "Antiquary." It was here that Oldbuck, after his fierce passage of words Mrs. Maclencher, delivered on his part "her ain stairhead," and answered on her from the "laigh shop," *Anglicè* "a cellar the High-street, discovered that he had m the tide, and was therefore obliged to co himself with the companionship of Mr. and the hospitalities of the Hawes Inn. strange Mr. Oldbuck's expressions of disapp ment appear to us, within earshot of the s whistle and the fog-horn. "'The d—l's i diligence and the old hag it belongs t 'Diligence,' quoth I. 'Thou shouldst called it a Sloth.'—'Fly,' quoth she. 'W moves like a fly through a gluepot, as the man says.' But, however, time and tide for no man; and so, my young friend, we'll a snack here at the Hawes, which is decent sort of a place, and I'll be very to finish the account I was giving y the difference between the mode of entrea *castra stativa* and *castra æstiva*, things founded by too many of our historians." words refer to the lumbering vehicle whic brought the travellers from Edinburgh having broken down on the way. The supposed to be spoken within a stone's thr the spot which is now being dedicated to the wonders of the world, where the m rival of the old diligence will be whirling suspended in mid air far above the s waters of the Frith, which were crosse Mr. Oldbuck and his companion in a row or pinnace, "sailing with the tide of eb the evening breeze." The neighbourhoo North and South Queensferry, that ha prospect of being thus brought within the of all who are northward bound on the highway of the Forth, are full of interest architect and antiquary. The very name passage recalls a period of Scottish h which was distinguished above all othe devotion to the religious aspirations which expression in the magnificence of Gothic drals. It was here Queen Margaret, the consort of Malcolm Canmoor, passed ov Forth when she went to perform her vo the Church of Dunfermline, that after became the burial-place of the Scottish And now again, perhaps, after the la centuries, her gracious descendant, who the hearts of the Scottish nation as no sov has done since the days of the "Good Margaret," may pass over the Forth Brid give a new meaning and emphasis to the of the "Queen's Ferry."

When the change has been made, and the row-boat and pinnace and paddle-boa all alike given place to their swifter and efficient rival of the iron road, the beau the Forth will be no doubt well known, a

hitectural treasures of its vicinity explored. r for us who have known them in their more mitive state, while yet the railway was far ant, and the horn of the four-horse coach nded the hours of morning and afternoon, re is a vague feeling of regret that such re- e should be so rudely disturbed, and such a fair spect broken even by the airy outline of the ige.

lut if any consolation may be drawn from the pleteness of the transformation, the mourners r bygone times will find it here. Within a dred yards of the town where the Antiquary young Lovel regaled themselves, the foun- ions of the Forth Bridge are being laid. No side station will replace the romantic asso- ions of Macadam, but a world's wonder ich will add lustre to the achievements of the torian era.

o those of our readers who are acquainted the Forth as a Highland river, and who e never traversed the "Carse" and "Links" where, joining the upper waters of the frith, idens out to an arm of the sea, we must com- d a visit to South Queensferry. The county Fife, at this part of the estuary, forms its thern shore, and at intervals, where a break he rocky coast affords the shelter of a our, ancient royal burghs climb up the s to the level upland beyond the sea. was the frequent occurrence of these old ns which led to the saying of a Scottish that Fife was like a cloak of frieze with a ge of gold. One or two have held their own ne struggle for existence, and become the res of thriving industries, while others, less urably situated, have fallen into decay. y are dotted all round the coast, until we h the ancient city of St. Andrew's, whose ther-beaten towers look out upon the sombre ers of the German ocean, and are the last s of habitation until, ascending the Tay, we e to the far-famed rival of the intended ge. To a casual observer, the situation of h and South Queensferry, and the wide anse of stormy water that lies between, ld be more suggestive of insuperable diffi- es than of opportunities for the erection of idge. On the northern shore a precipitous of trap rock rises to an elevation of fully ft., forming the easternmost extremity of a known harbour of refuge, called Mar- t's Hope, while the other side, sloping down- ds to the north, forms a bay, in whose most nd bend lies the royal ancient burgh of In- keithing. Due south of the cliff of Carlynose, which the headland referred to is generally wn, and at a distance of nearly one-third of a , there rises a rocky little island, called Inch- ie, an ancient heritage of the Dundases of idas. The channel between the island and mainland is exceedingly deep, and forms the urite passage for vessels sailing up and n the Firth, bound to and from Grange- th and the other seaports of the upper hes of the Forth. It is across this channel the new bridge is to pass in one gigantic , so far above the stormy waters of the sea, the rails will be nearly on a level with the of the cliff at Carlynose. On the southern of the island the channel continues to be of t depth, until a further distance of nearly third of a mile is reached, and then it enly becomes shallow. It is this division ween the island and the shelving up of the om on the southern shores of the Forth that be crossed by the second great span, which then pass across the shallow water by the nary methods of construction. Although two spans which stretch from the precipi- sides of the Firth on one side to the shallow er upon the other will present the appearance continuous structure when judged by the ine of the chains, they are really two rate bridges, and the necessity for their ig constructed in this way forms no small of the difficulties with which the engineer to contend. The top of the piers over which chains of the bridge are to be suspended be about 600 ft. above the sea level, an nds which the reader may be able to realise referring to the top of the dome of St. Paul's hedral, which is not two-thirds of that height ve the pavement of St. Paul's Churchyard. If central pier of such a height as this were used upport a wide expanse of continuous chain ing from each of its sides, it would be in position of the bridge of a violin,—sub- ed to movements of the strings that might at moment bring it down by the inequality of strains upon either of its sides. It is neces- sary, therefore, that each span of the bridge should be self-contained, in so far that each chain passing from the northern cliff to the southern shore should have an anchorage of its own upon the island of Inchgarvie. In consequence of this a double set of anchors are required; and some idea of the extent of the foundations for this vast central structure may be formed from what has already been accomplished. On the extreme west of the island a block of brick and concrete has been built 31 ft. square and 13 ft. in height, surmounted by a stone plinth 2 ft. in thickness. This is built upon the rock of which the island is fortunately altogether composed, and forms only one-fourth part of the base of the tower, which will be built of four similar structures, each one making up the corner of a square of 121 ft. Some notion may be formed from these figures of the great extent of work preliminary to the construction of the bridge itself, but carried out as these are now being done upon the surface of a rock that rises far above the highest tides and the most tempestuous waves, they do not throw any light upon the difficulties that stand in the way of constructing a similar edifice upon the edge of a shelving sea-bed covered with a depth of water which, when it is exposed to the full fury of an easterly gale, presents as wild a stretch of billows as can be seen in the whole length of the channel. Here, again, as well as upon the cliffs and the island, provision must be made for anchoring the suspension-chains deep down in a bed of solid rock.

But while the foundations of the bridge present a long series of obstacles that of themselves will be sufficient to tax the utmost ingenuity of the engineer and the contractor, it is to the great superstructure itself that we must look for the indications of genius and originality of which Sir Thomas Bouch has already shown himself to be possessed in no common degree. A bridge that is hung in the clouds, and extends for nearly two-thirds of a mile in two spans, will afford an object upon which the winds will not fail to vent their fury. The only security against their inroads is breadth of base, and especially in the case of the Forth Bridge, which affords no opportunities of giving lateral support. In order to obtain this, the up and down lines are to be separated by a space of nearly 100 ft., and tied together by stays which will bind into one what will be practically two bridges. With this width the engineer can defy the winds.

The exceptional nature of the work has rendered it necessary to search out with the utmost care all the available resources of the iron trade, and in the choice of materials and the mode of applying them Sir Thomas Bouch is showing himself to be a master of the principles upon which the safety of such a structure depends. The chains will most probably be made of steel manufactured by the Siemens-Martin process, and the low elastic limit of this material affords an opportunity for getting rid of the deflection which in such an enormous span would have been a source of considerable trouble. The chain plates will be about 1 in. in thickness and 18 in. deep, and as each of these, in being tested, will be stretched beyond its elastic limit, the deflection due to the weight of a passing train will be practically eliminated. As this loss of elasticity is obtained by subjecting the material spoken of to a strain that is far within its breaking, though considerably in excess of its working, load, no practical objection can be offered to the proposal, while it proves an originality of resource on the part of the engineer which must appear to be very startling to those who have been accustomed to work with ordinary iron which would be rendered unsafe by a similar treatment.

Not only from the vast sums of money involved, but from the interest which attaches to the progress of the undertaking from the standpoint of the builder and the engineer, the Forth bridge will be a subject that cannot fail to command a great amount of attention. When it is finished, and we sincerely trust it may be so successfully, how paltry will the efforts of the Chinese general, Pan-ho, who has the credit of being the inventor of chain bridges, appear in the light of the great new high road across the Forth! It will dwarf the labours of Stevenson and Brunel. What a record will be stored up in all its details of the progress of mankind in the industrial arts, and of the mighty achievements of the present century as compared with the work of Fabricius and Cestius, who put the crowning finish to the old Flaminian Way! This year of grace, 1879, in which the Forth bridge is commenced, is the anniversary of the erection of the first iron bridge in England at Coalbrookdale, and it is to be hoped that the one may be as great an augury for the future prosperity of England as the other has proved to be in the past. When the bridge is completed it will, we trust, not only be a high road for commerce, but will help to open up a part of the country which has been hitherto little explored by the archæologist and architect, but which is full of interest to both. Not only do the ancient royal burghs already referred to contain many objects of interest, from the quaint "pends" of the sea-side town to the grand remains of St. Andrew's Cathedral, but on the southern shores of the Forth there are architectural treasures but little known to Englishmen, one of which alone is well worthy of the journey of an enthusiast, who will discover in the present parish church of Dalmeny a specimen of Norman architecture which is scarcely excelled by any rival north or south of the Tweed.

THE PARIS EXHIBITION OF SCIENCES APPLIED TO INDUSTRY.

More than a month since we announced the opening in Paris of the Exhibition of Sciences applied to Industry; in reality, however, only within the last few days can it be said that the Palais de l'Industrie deserves the visit of the interested observer. After a hasty inspection, it is difficult to resist a feeling of disappointment, considering the promising programme set forth by M. Nicole, the director; and those who remember the Exhibition of Fine Arts applied to Industry three years since* will certainly look in vain for many of the attractive features of that elegant and instructive show. We have here, after all, only on a small scale, the exhibition of last year on the Champ de Mars, with far too many of the features of a bazaar on a large scale.

One of those shrewd classic sentences which so aptly illustrate the intricate exceptions to the rule of the Latin grammar of our school-days attributes to Scipio's friend Ennius the philosophic declaration that what is not needful should be considered as dear at a penny; what can be said, therefore, even by an indulgent critic, of the expensive pennyworths here exhibited, which the French have so long been celebrated in producing, and which bear the title of "Articles de Paris?"

In the first days of the exhibition we had looked forward with pleasure to the possibility of a detailed description of a show which promised so much matter for the consideration of English readers, but later visits have somewhat undeceived us. None the less, many salient points are to be observed in the Palais de l'Industrie, and of some of these it is our intention to give a summary description. Departing from the classification of the catalogue, which has already been described, we will endeavour to take into consideration the various exhibits in a classification of our own, founded on the somewhat more easily-grasped division of the exhibits into the great elements which make up the house and household.

Commencing, in accordance with this plan, building materials, as the matter of early consideration in the construction of the house, merit the first place. Touching the thorny question of the architectural style to be adopted before beginning to shoot one's materials on to the site chosen, very little matter is supplied in this exhibition to aid the consideration of the question. While a widely-exercised eclecticism is repeating in the buildings that now rise in our great cities and in the country in every direction the models of the past, nature is continually offering us new materials, industry new inventions, mechanics new forces, human intellect new discoveries, all tending to combine the useful with the beautiful, the comforts of life with economy, and to place within the power of the poorest the enjoyment of many things which at one time were the exclusive privilege of a few fortunate individuals.

As an instructive exhibit few are more interesting than a case of geological specimens arranged on shelves in the exact order in which they present themselves in nature in their respective strata; the case is intended for the

* See *Builder*, vol. xxxiv. p. 1062.

instruction of young agriculturists, but its interest should be equally great for the architect and builder. The French government not long ago determined that in all the village schools, geology should form a part of the programme of education; the exhibitor has endeavoured to place within the power of each teacher the means of demonstrating the geology of his district. The cases are coloured in accordance with the geological map of France, and any district is in this way procurable. The clearness of this practical method of teaching an otherwise complicated science, by means of distinctly labelled specimens arranged in the order in which they are met with in nature, is to be commended. When we state that the whole case (an upright piece of furniture), together with an explanatory text-book, is supplied at little more than 3*l.* it will be seen what service will we rendered by the exhibitor. We recommend to Mr. Tennant, who is so well-known in England for his successful efforts to popularise the science of geology, the consideration of this instructive arrangement.

For the geologically-disposed architect or builder there is no want of exhibits to attract his attention, from the huge blocks of sandstone of the Department of the Drôme, the special advantage of which would appear to lie in the facility with which the shafts of columns and their capitals may be carved out in them entire, to the varied and effective natural cements and mortars that modern ingenuity has been able to turn to account. But interesting as may be all these exhibits to the French professional visitor, the English observer sees few means of application to the particular wants of his countrymen. Each nation perseveres in its old ways, so often ruled by natural causes. We in England build mainly in brick, while our neighbours build in stone. But the various cements introduced from different countries are now largely employed in public and private buildings. They possess the power of hardening even under water, and of acquiring with time the consistency of stone. In all the great hydraulic and maritime works they are used on account of their economy, while they serve excellently for cisterns, vases, and water-conduits, for which purpose they surpass lead and iron. For architectural decorations cement is largely coming into use abroad, as being able to resist the weather, and in many other domestic usages cement is rapidly gaining a reputation. Every mountainous country is able to produce materials for the manufacture of cement, with the aid of which, and fragments of stone, can be easily constructed the largest and stoutest buildings, bridges and embankments at the smallest possible outlay. After the various cements we come to the plasters, among which are prominent those which serve to protect walls from the destructive action of sea-water or from the corrosion of latrines and drains, as also those to prevent the appearance of dampness on the walls of houses. To the plasters succeed the various stuccoes, and the skilful and eminently successful efforts of several manufacturers to imitate marble employed in polished and fluted columns, mantel-pieces, and slabs.

Among the ornamental building materials rapidly acquiring reputation stands terra-cotta, in its easy application in cornices, medallions, and other decorated architectural features; while in France the use of zinc is far more common for the same purposes than with us. The Exhibition presents more than one specimen of work in which zinc plays an important part, and it is to be desired that its use could be introduced into England more largely than at present, breaking the monotony of the house roofs of our great cities. Roofs of zinc, when well executed with good material, last, with small expense for repair, many years. The characteristic Mansard roof has already been introduced with us, but might be oftener used with the aid of zinc.

To mention the innumerable zinc tiles, galvanised iron, the terra-cotta tiles, and bituminised felt roofing, is needless,—they are all familiar in England, where they are largely used. One exhibit that attracted no small share of professional attention in the last Exhibition is absent at the Palais de l'Industrie, the system by which the largest beams and planks are seasoned in the course of a few hours at a small expense.

In a climate like ours, the necessity for keeping out draught is imperative, and we would recommend to the practical tourist who may cross the Channel this autumn to visit Paris, not to neglect the exhibits of several inventors who have studied this important question,—one not sufficiently paid attention to in England.

To refer to the innumerable varnishes, paints, and other preservative applications, is needless. England stands foremost in their production, and it is rather to us that the foreigner looks for such than we to him. The important question of the floor can be conveniently studied in such an exhibition as this. Strength and elegance are not easily found combined with other necessary qualities; we in England have long since somewhat carelessly solved the question by the use of carpets, but the modern science of hygiene finds little difficulty in condemning their use, if not in winter, certainly in summer. The marble of Italy is too cold and too costly; wood is the most healthy, but if it is parquetried its expense becomes great; if it is waxed and polished, as it is in France, the polish is not durable, requiring constant attention and re-waxing, and admits the dust between the boards, and with this inconvenience all the ills that dust is capable of propagating, while the expense of oak floorings is great; cement pulverises with use, and stains cannot be taken out; the mosaic and the flooring which are in use throughout Venetia, beautiful as they are, are cold, and hence unhealthy, and when once they commence to wear out are difficult to repair. Terra-cotta tiles, like cement, in course of time pulverise, and are easily stained, defects to which are subject also bricks; enamelled tiles soon lose their surface, only some of the modern tiles made by our great firms being able to be used when such are necessary. For England, where carpets are rendered necessary by the climate (abroad such luxuries are little used), a custom adopted throughout Belgium, of painting the boards with several coats of paint, might be oftener practised than it already is. In winter the carpet can be laid down over such a floor, and in summer raised, its place being supplied by a few light rugs.

FROM THE BANKS OF THE SEINE.

The difficulties met with in the working of the copyright laws are not alone confined to England, and by a coincidence worthy of remark, almost at the same moment that Lord John Manners had laid before the House a Bill to amend our existing imperfect copyright laws, that much-vexed and always vexing question was receiving the attention of the French courts in an interesting suit between the heirs of the well-known painters, Horace Vernet, Paul Delaroche, and Ary Scheffer, and Messrs. Goupil, the fine-art publishers, whose right the descendants of the artists above-mentioned question, according to the terms of the law of 1866, in the reproduction and sale of the works of their respective parents, and which M. Goupil first published previous to the law of 1854. According to the plaintiffs, the permission granted to the publishers extended, in conformity with the then existing law of 1793, to a period not exceeding two years after the death of the paioter, and they demand the right to claim at the expiration of the period of enjoyment, fixed at thirty years by the law of 1854, the exclusive property of the works of those authors published during their life-time by the defendants, since the currency of that law; the plaintiffs further asked that it should be adjudged that Goupil had reproduced without right the works he has published since the death of the three painters, and that he should be prevented from continuing their publication; damages were further claimed, the amount to be determined by an expert. A year since, the plaintiffs had been defeated in their suit, but nothing daunted, they have within the last few days brought the affair before the Court of Appeal; and a decision has been given. The terms of this decision cannot fail to interest many readers at a moment when the copyright laws, so difficult to clearly define and determine, so often modified, and upon which the law is as yet so unsatisfactory, are undergoing fresh consideration. Of the categories in the matter of works of art, laid down by the defendant's lawyer, the first, the case of pictures, purchased under reserve by the author of the right of reproduction, the position of the artist becoming the competitor of his purchaser was clearly shown,—a position which, as long ago as 1842, was settled by the courts deciding that the right of reproducing a picture by engraving should be understood to be among the rights acquired by a purchaser a sale made without reserve, the owner of t picture becoming the owner of the right reproduction. In the course of the explanati of this portion of the debate, an interesting fa was brought forward, that the well-kno engraver, Mercuri, spent no less than twen four years in engraving Delaroche's famo picture of "Lady Jane Grey's Execution" (f picture in which the painter so successfu showed the possibility of affecting the sp tators by a work in which no eyes should b seen), receiving for his work 4,000*l.*; nine ye were passed on the "Beggars at the Foot of Obelisk," for which the engraver received 60 A further interesting question was raised in course of the discussion, Who is the author an engraved work? The author is the paint it cannot be the engraver, any more than printer of a printed work is the author; hea if the painter is the author, he has the po of yielding his rights to any person substitu in his place. The defendants, Messrs. Gou in this manner claimed that they stood in position, and the authors' rights had b yielded to them; their lawyer adroitly putt the case of the publishers of the arti works being forbidden after a term f reproducing them, and hence the su falling into oblivion. The *Gazette des Tribun* thus sums up from a legal point of view decision: 1st. The agreement by which a pain gives up the right to reproduce a picture engraving, must, in the absence of any proc contrary presumption, be understood to m that the painter has intended only to give this right, such as it was, regulated in the ma of duration by the laws existing at the ment of the agreement. In case an ulte law should prolong the duration of the r attributed to the author or artist, the ben resulting from that extension only profits him not the publisher, or other who would enjoy right without paying an equivalent. 2nd. right of reproduction of a picture does not stitute a distinct property of itself, i pendently of the property of the work. sale of the picture consented to without rese by the painter, transmits to the purchaser right of disposing, in an absolute manner, of object sold, and he is only exercising this r when he reproduces or concedes to a third pe the faculty of reproducing the work by purchased. Let it be remarked that Mes Goupil, having been acknowledged to have a entirely in good faith, without intention defraud, will only find themselves injure pocket, but not in reputation by this deci One important point has been recognise this affair, let us hope for good, that the pa of a picture being the author, not alone of canvas but of each reproduction, it is the of the law to protect him and his inter which he may transmit, within limits, to his h Let this important fact be once settled, the business view of the question alone sidered, when the artist shall have lost his ri either through want of foresight in neglec to make agreement, or through the expir of his legal limit of ownership, and a great will have been made in the eventual settle of the copyright question.

How many Parisians must there be on banks of the Seine, who on reading the annou ment of the death of M. Octave Delepierr London on the 18th inst., will recall mem connected with his name that have illumin their lives with agreeable recollections? not alone the Duc d'Aumale, as an old me of the Philobiblon, who will be reminded of many brilliant gatherings of that luxu little society, of which Lord Houghton, John Murray, and Peter Cunningham were spicuous members, and who met at breakfa each other's houses to talk over the subje their tastes, but many a casual and well sented visitor from the continent and Am will remember with pleasure the graceful re tions at M. Delepierre's house in Bays where diplomats, journalists, painters and p musicians and merchants, and the or beauties that go to form a very wide circle, together season after season. Writing, a are, within a stone's throw of the famou house of Firmin-Didot, we cannot but pau reflect on the interesting bookish and ar recollections that the name of Delepierre gests.

Apropos of bibliophiles, we can with diffic imagine that M. Garnier will greatly incr

eputation as the architect of the new Opera se, by the club-house he has built on the evard Saint Germain, at the corner of the Gregoire-de-Tours, for the booksellers of s (the Cercle des Libraires). Notwithstand- his, the journals rashly speak of everybody iring the architecture and the decorative ity of the new building, to be opened in a weeks. With so many towering houses t it, M. Garnier's new club-house is far imposing.

is often a question asked, not alone by the ies of State patronage, but by those ns in the history of promising talent,— t becomes of the artists who gain the *Prix ome?* Here in Paris a belief exists which only be compared to that which obtains ngland with regard to the senior wranglers, they do not often enough fulfil the expec- ns they raised; and certainly when such a ission is commenced, how many are the es which instantly occur as never having ed either State or university honours? But Chabrol, the young architect of the Palais al, cannot be brought forward as another ccessful prizeman. Not long since we had sion to speak of the re-opening of the tre Français, and the repainting of the ng by M. Mazerolles,—a work, by the way, h, for rapidity of execution and for learning saign, has scarcely received its just reward ublic admiration; but no small credit is to M. Chabrol for the many other important ges that were carried out in the interior of house, principally the ingenious modifica- in the new distribution of the balcony. Chabrol spent his years profitably in the Medici, and on his return succeeded his r as director of the works of the Palais l. He is now, by his recent restoration of Théâtre Français, justly considered in pro- onal circles as having earned a high place ng modern French architects; he has dy proved his practical powers in Algeria, it was no matter of surprise that in com- with M. Mazerolles, M. Chabrol should received the Cross of the Legion of Honour. rarely that the sentiment of artistic ty and its practical and useful application to be found combined, and the French atre, while it will benefit largely by the ior arrangements of the house, will have to ratulate itself on the choice of an architect has also so skilfully considered the decora- effects of these changes.

mong other innovations which will mark eventful season in the history of the édie Française, must be mentioned the rt that is now spread that M. Perrin has ged a full orchestra for his theatre, in view ne revival of Molière's amusing comedy of "Bourgeois Gentilhomme." Two rows of front stalls will be suppressed, and again bâton of the conductor will wave across the pter's box. The orchestra of the Théâtre nçais has no great traditions to boast of, pt that it possessed from 1847 to 1855 a who has since distinguished himself greatly he world,—not of Classic music,—Jacques nbach. Under the active direction of the re head of the contemporary school of ch opera-bouffe, the orchestra of the édie Française enjoyed some reputation, since the retirement of M. Offenbach it has essed no great leader; and after the death, 870, of M. Ancessy, the orchestra of the ench Theatre" ceased to exist.

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anitary "Retreats."—One of these neces- arrangements has been opened to the public t. George's-road, near to the Elephant and le. It has been erected by order of the ry of the parish of St. George the Martyr, ne specification of their surveyor, Mr. A. M. cocks, and constructed by Mr. B. Finch, of h Holborn. It consists of a slate rectangular cture, about 28 ft. long, 6 ft. wide, and 7 ft. , enclosing within it sixteen pews, also two 's at one entrance end and a caretaker's e at the other end, there being two entrances ither side. The closets are kept locked, and ission is obtained by 1d. fee. It is lighted light, internally and externally, by two large erical lamps. The pews are cleansed by a liar arrangement of water-jets, placed level the roof, and out of reach, which produces ntinuous sheet of water from roof to floor, hes then the gutter beneath, and passes y through traps into the drain. The floor is tly tiled, red and black.

HENDON, KINGSBURY, AND HARROW.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

The seventy-third meeting of the London and Middlesex Archæological Society was held on the 14th inst., at the Institution in Hendon (the room being kindly placed at the disposal of the society by the proprietors), Mr. John Green Waller, V.P., in the chair. The Vicar of Hendon, the Rev. F. H. A. Scrivener, LL.D., and Prebendary of Exeter, gave an account of the parish of Hendon, and traced the historical descent of the manor, originally held by the Abbots of Westminster at the time of the Domesday Survey, remaining in their possession until the suppression of the monasteries; and when Westminster was raised to a bishopric by Henry VIII. the Manor of Hendon became its endowment. The honour, however, was but short-lived, and the manor was granted by that unscrupulous king to one of his needy satellites, William Herbert, afterwards created Earl of Pembroke. As an instance of the slipshod manner with which grants of this kind were made, the king having forgotten all about the transaction, Herbert had to give an account of how it had come into his possession, and had some difficulty in getting it confirmed.

The old Manor House, or Palace of the Abbots, became the residence of the Herberts, who are recorded as occasionally residing at Hendon Place, as it was called. In Mary's reign, some little inquiry was made as to the disposal of the enormous loot made away with by the king and his courtiers, and Herbert, created Earl of Pembroke 1551, returned the value of the manor at some absurd nominal sum. No further inquisition was made, and the Herberts remained in undisturbed possession for several generations, one of them dying at Hendon Place. From the Herberts it passed by purchase into other families, with the advowson, which was held at one time by the famous actor Garrick. The advowson was last purchased by the present Duke of Portland. Dr. Scrivener further traced the history of some other houses and their possessors, Hendon House, and Hendon Hall, and brought his paper to a conclusion by a description of the church, to which, after having thanked Dr. Scrivener for his clear and concise paper, the society adjourned.

Hendon Church, beautifully situated on an eminence, with an extensive view to the north, has lost much of its antiquity in appearance by modern alterations. The tower seems to have been least interfered with, and has a venerable aspect, but the whole of the church externally has been stuccoed. The plan consists of nave and aisles, chancel, with north and south chapels, and western tower. The eastern part has been entirely modernised; the arcade of three arches is probably Late Decorated, but a clearstory has been added about 1530. The roof is flat, panelled and open. The chief points of interest in the interior are the following: the matrix of a once-magnificent bracket brass, 10 ft. in length, representing the Virgin and Child in a sort of canopy; at the base are kneeling figures with labels of unknown commemoration this occupies, probably, its original position in the floor of the nave; a small brass in a very loose condition close to the vestry door at the west end of the north aisle; and underneath the west gallery is the chief glory of Hendon Church, one of the finest Romanesque fonts in the kingdom; it is square in shape, with no base, and on each face is an arcade of nine intersecting arches with chevron and scroll ornaments. Dr. Scrivener was inclined to put this a little earlier in date than what one would have first imagined from its twelfth century appearance. The church is not particularly rich in monuments; there are two large ones in the north chancel, one commemorating "a serjeant learned in the law," who is represented with the purse and Great Seal of England, having held it in commission during the occupation of the throne by William and Mary, and another of a bishop of one of the Welsh dioceses. Against the south wall of the nave is a very beautiful little tablet by Flaxman; two statuettes of Religion and Faith, one on each side of this tablet, are exquisite in their delicacy and refinement. In the south chancel is a tablet to one of the Herberts, erected in James I.'s time; this is in a very bad condition, and ought to be better cared for. The president, Mr. Waller, described the font.

Carriages were waiting outside to convey the party, now mustering nearly one hundred, to Kingsbury, the next halting-place, the way to which lay through beautiful lanes skirting the Brent reservoir, embosomed in green hills, and ornamented with very finely-grown oak and elms. So thick was the foliage that considerable merriment was afforded by the efforts made to avoid being swept off the tops of the drags and omnibuses by the branches of the trees completely shading these lanes.

At Kingsbury Church the party was met by the vicar, but no paper was read, the time being very limited. The church, a simple structure of nave and chancel under one roof, aisleless, and a low shingled spire and belfry at the west end of the roof, is externally a very picturesque object, but sadly spoilt internally, some enterprising churchwarden having filled all the windows with wooden frames and imitation stained glass in "Diaphanie" or oiled paper; the walls were also powdered all over with *fleur-de-lis*, and a huge text about 2 ft. deep of very Gothic character enriches the wall plate all round. The east wall is also embellished with some imitation slabs of porphyry painted on canvas. Antiquity, as may easily be imagined, has nearly disappeared. Placed against the wall is a brass to John Shephard and his two wives, about 1520. The roof is plastered internally. There formerly existed on the south side of the church an exceedingly picturesque open timber porch, but it was destroyed not many years ago and the south door blocked. The walls are probably very early. Mr. Carlos states that there were traces of Roman tiles let in to the walls, but as the whole of the exterior has been plastered and colour-washed all traces are now covered up. The church, which is dedicated to St. Andrew, possesses two very sweet-toned old bells, one very ancient.

The hon. secretary with some difficulty got his party together again, for the place was so charming and, although so close to London, so thoroughly rural, that it could scarcely be realised that it was only five miles and a half, instead of 500 miles, from Hyde Park-corner; but as Harrow was to be reached by four o'clock, no further time could be allowed. The lanes from Kingsbury to Harrow were, if possible, even more lovely. Skirting Wembley Park on one side, and meadows in which the hay was just being carried on the other, the air being heavy with the scent of the new-mown grass and the hedges lined with wisps left by the loaded wains, the party went on, past red-tiled barns and snug farmhouses, scattering the barn-door fowls and driving the ducks to desperation, until their waddle had to be supplemented with their wings; past residences with trim lawns and greenhouses, showing unmistakable signs of the late storms, until the ascent of Harrow-on-the-Hill was reached, and reins were slackened and a halt was made at the King's Head, and every one having safely descended, the church was first visited. Here the visitors were received by the Rector of Harrow, the Rev. Hayward Joyce, M.A.; but in consequence of there being service an adjournment was made to the old fourth form-room of Harrow School, on whose venerable oak panelling has been carved many a name illustrious in our annals,—a quaint room with a large stone fireplace on one side opposite the door, the master's throne at one end, and round the walls, raised on steps, massive oak forms of Spartan severity, cut and hacked with many an initial and more ambitious name,—Spencer Perceval, the murdered Prime Minister; Richard Brinsley Sheridan, Lord Byron, Hartington (Duke of Devonshire), Sir Robert Peel, Temple (Lord Palmerston), and a host of others not unknown to fame. To save time, Mr. S. Weyland Kershaw, M.A., Librarian at Lambeth Palace, read a paper on the Manor of Harrow and its connexion with the Archbishops of Canterbury; a connexion very early in our annals, for previous to the year 822, Kenulf, king of Mercia, took it from the church at Canterbury, but it was afterwards recovered by St. Wilfrid, and at the Domesday Survey it is stated to be the land of the archbishops, and that it was taxed at 100 hides, and the value, estimated in King Edward's days at 60*l.*, only then returned 66*l.* It was then called "Herges," or Harwes. In 1170 St. Thomas à Becket was here, about the 16th of December, exchanging civilities with the Abbot of St. Alban's, and getting him to go to Woodstock and effect a reconciliation with the king. The result was not favourable, and the archbishop left Harrow for Canterbury, where, very soon after, his brutal murder, committed before the altar of St. Benedict, excited horror throughout Europe. It was at Harrow that Robert de Broc maimed the archbishop's horse,

and the vicar, Nigel de Sackville, was loud in his condemnation of the primate. One of the rectors, William de Bosco, founded a chantry at the church and very richly endowed it; and when Arundel, Archbishop of Canterbury, was impeached for high treason and banished the realm, 1398, Harrow was one of the manors held by him; but in 1543 it was conveyed by Cranmer to the king, and was afterwards given by the king to Lord North, in whose family the manor remained until 1630.

The Vaughan Library and the chapel of Harrow School were then briefly visited, and the company returned to the church. Mr. Waller gave an account of the monumental brasses, which are unusually rich:—

1370. John Flambard and wife, a fine bracket brass.
1390. John Flambard, a single figure.
1442. Simon Marchford, Canon of Salisbury and Windsor, and Rector of Harrow. Head lost.
1450. Three-quarter figure of a priest in an M.A. dress,
1480. John Byrkhede, rector; very fine, but head lost.
1488. George Aynesworth, three wives, and fourteen children.
1574. Dorothye Frankyshe, a palimpsest.
1579. William Wightman and wife (five children lost).
1592. John Lyon and wife, the founder of Harrow School. Moved from original position.
1600. A gentleman and his wife.
1603. John Sonkey, and Alice, his wife.

These brasses are in a very bad condition, some of them loose at the edges; it is much to be wished that something may be done to preserve them.

Harrow Church is a large cruciform structure, with nave and aisles, transepts, a modern north chancel or aisle, and western tower and porches. It had been rebuilt by Lanfranc, but the only Norman portions now remaining are part of the tower and the font. The tower has a western door, with solid tympanum. This door is now blocked. The nave is Early English; the arcade is very fine and bold. The transepts may be of this date also; but the windows are fifteenth-century. The upper part of the spire is also thirteenth-century work. The chancel is fourteenth-century; while the aisles, nave, clearstory, and porch are all subsequent to the fifteenth century. The roof of the nave is very fine. The principals come down on to corbel figures, rather mutilated, representing the Apostles. The corbels on which they stand are carved into grotesque heads. The transept roofs are similar, but without the figures. There is a parvise over the south porch, the entrance being from the church. The font had for a long time served for a flower-vase in some garden. It is of Purbeck. The pulpit is very fine for the period,—oak, about 1708. There is a great curiosity in the shape of the lock, now on the north door, formerly on the south, and its two stupendous keys. There are several monuments, kneeling alabaster figures, and one by Chantrey, commemorating another Dr. Butler, head-master. The south transept serves as a sort of memorial chapel to the head-masters, and there is some very excellent modern glass in some of the windows. In the churchyard is the well-known flat tomb, close to a large elm-tree, on which, as we know from his letters and his poem, Byron used to loll. The view from here is magnificent.

Returning to the King's Head, a cold collation was served, to which ample justice was done. The only toasts were the usual loyal ones, "The London and Middlesex Archæological Society," to which Mr. Alfred White, F.S.A., responded; "The Readers of Papers," for whom Mr. Kershaw answered; and "The Honorary Secretary," to which Mr. George H. Birch replied. Tea was served in the garden, and it was not until the lovely view had almost faded from the sight that the members returned to town, very pleased with the day, for the weather had been very delightful, and the meeting will long be remembered as one of the pleasantest the Society has ever held.

Kersley.—New Wesleyan day and Sunday schools are being erected at Kersley Mount, Kersley. The new buildings are of brick, with stone and blue brick dressings sparingly introduced, the general design being necessarily of a plain character. The plans have been prepared by Mr. Thomas Ormrod, architect, of Town Hall-square, Bolton, and are being carried out under his direction by Mr. John Taylor, builder and contractor, of Farnworth. The cost of the building, according to the present contract, will be about 970*l.*; but the heating, lighting, and furnishing, also boundary-walls, outbuildings, and drainage, &c., will, it is estimated, bring the total expenditure to upwards of 1,300*l.*

THE YARMOUTH MEETING OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.*

As we briefly mentioned last week, Saturday, the 16th, was spent in Yarmouth and its immediate neighbourhood. At half-past nine in the morning the members rallied to the horn of Mr. George Wright, and assembled on the Market Plain, proceeding thence in a body to *St. Nicholas' Church*, where they were received by the Ven. Archdeacon Neville and the Rev. G. Venables. The former delivered a lecture explanatory of the singularity of the form and arrangement of the church, which was founded on the sand-bank formed at the mouths of the Yare. Probably in no important church in England, he said, are the aisles so disproportionate to the size of the nave, and in few churches is an equal opportunity afforded for studying the various styles of architecture which prevailed from the Norman conquest to the Reformation. Herbert de Lozinga, who founded the Cathedral at Norwich, St. Margaret's, Lynn, and St. Mary's, North Elmham, commenced the erection of St. Nicholas' Church in 1101, and it was completed and consecrated in 1119, the year in which he died. Bishop Herbert's church was in the form of a Latin cross. It had a central tower, a nave 101 ft. long and 24 ft. wide, two transepts of the same width as the nave, and a chancel. It has sometimes been asserted that the church had two narrow lean-to aisles, but the ven. archdeacon believed this to be incorrect. All the original building, except Bishop Herbert's central tower, has been swept away by successive alterations. Subsequent additions have been made to Herbert's tower, the core of which remains. On its outer face, on the south, still remains the old Norman arcading with billet moulding. The great wooden piles which formed a foundation to the tower were found, when examined in 1862, to be undecayed and strong as when first driven into the sand nearly 800 years ago. The fact that the tower has remained unaltered has ever since determined the form and character of the church. In less than 100 years the original church had become insufficient for the growing population of the town, and during the reign of Henry I. it was in a great measure rebuilt. The fact that no trace of purely Norman architecture is to be found in the columns of the nave seems to indicate clearly that the earlier nave had no aisles; for, had a Norman line of pillars existed, it is very improbable that they should have been taken down within a century after their erection. It would appear that the outer walls of the nave were removed, and that a new nave of eight bays was constructed, extending westward to its present length. At the same time two narrow lean-to aisles were built, each about 13 ft. in width. According to Sir Gilbert Scott the character of the work exactly agrees with the tradition that the alteration of the church was carried out during the reign of King John. The nave was terminated by a bold doorway, above which was a triplet of lancet windows, and the gable end was flanked by two staircase pinnacles, each 70 ft. in height. The exact length of the chancel of this second church cannot be ascertained, but the first bay of the present chancel, with the respond or western half of the capital of the first pillars, is of the same date as the nave. Within fifty years after the time when the nave was lengthened and the lean-to aisles erected, it was thought necessary again to enlarge the church by building the great aisles, first of the nave, and a few years subsequently of the chancel also. Two causes seem to have led to this—first, the rapid growth of the population, owing to the extension of the fishing trade; and, secondly, the custom of erecting private side chapels which had been introduced, and was probably on the increase. These chapels were either set apart for guilds, by whom the altar, image of patron saint, lights, reliquary, vestments, and communion plate were provided and maintained; or else they were mortuary chapels for which provision was made by legacies or by the care of private families. As many as twenty chapels are said to have been enclosed within the aisles of the nave and chancel. Remains of a chapel at the east end of the south aisle of the nave, and of another at the east end of the south aisle of the chancel, show how richly they were decorated. Traces of wall-painting in the north aisle of the chancel indicate the position of Becket's Chapel. The great aisles, erected in the reign of Henry II are 40 ft. in width. They brought the church in the three-gabled form, but with the great pec liarity that the side roofs were enormously excess of that of the nave. Two flanking pi nacles were repeated at the angles of the ne aisles, in correspondence with the existing pi nacles of the nave, from an evident desire bring the western face of the church as far possible into harmony. One point in connexi with the erection of these aisles has never befo been noticed. The new ground enclosed h previously been a churchyard; and just as former days the builders had no hesitati in removing good work of an earlier d to introduce their own style, so they h not the slighest scruple in making use stone coffins and monumental slabs as ma rials for building the enlarged aisle. Wh in 1871, a great part of the south-weste pinnacle and of the west gable of the sou aisle were taken down, because the wall was out of the perpendicular, no less than thirty these stones were discovered. The stone coff had, in some cases, been cut in half, and bu bottom upwards into the staircase, so as form at once a riser and a step. We sometim dream of the greater reverence paid by fathers to holy places and holy things; b here was an act which would hardly be sa tioned nowadays by any consistory court or any chancellor's faculty. It was, probably, continued desecration of the churchyard wh a few years afterwards, led Sibilla Flatt erect a carnary or chapel, in which bones, turbed by recent additions to the church, mi be collected and interred. The new aisles the church are said, by William of Worces to have been consecrated in 1251. Probo within thirty years after the building of aisles of the nave the aisles of the chancel w added. Tradition asserts that these chan aisles were consecrated in 1286 by Bishop dleton. If this be so, the two heads wh terminate the dripstone over the eastern w dow in the north chancel aisle will repre Edward I. and Bishop Middleton. The exten eastward of the chancel was probably of same date. Coming to the fourth stage in history of the church, the ven. archdeacon ca attention to the fact that the aisle both of nave and of the chancel have blocked windows above the arch of the gable at point where they meet the transepts. Th windows, at one time open, prove that whe was determined to enlarge the aisles, no was taken at the same time to enlarge transept, and the effect must have been ex ordinary. In the cruciform church the transa did not extend north and south as far as did aisles, nor were they equal in height to great buildings which overshadowed th Probably this defect was remedied wi 1320—1330 by the heightening and exten of the transepts to their present dimensi Externally they were supported at their an by flanking turrets; and a very beautiful d the most perfect in its proportions the chu possesses, was opened at the time, or not afterwards, in the west wall of the south t sept. This seems to have been an entrance an outside chapel, probably connected with Fastolfe vault. Indications of the original t septs may still be seen in the low arches w open into the aisles of the nave and chan The line of carved bosses bearing a serie emblazoned shields, was placed at the inter tion of the ribs of the wagon roof during reign of Edward III. These shields con the banner of the Holy Trinity, the two-hea eagle of Austria, and the arms of Edward of his sons, of the Duke of Bedford, of Tho of Brotherton, of Bishop Spencer, and of Norfolk families of Morley, Scales, Fast Bardolph, Paston, Buckton, and others. In additional space was again required for the chapels, and a new extension of the nave aisles, 47 ft. westward, was commenced carried up to a considerable height. Two w ern towers, with a gateway 40 ft. in wi formed part of the design. This work, w was called the "Bachelor's Aisle," progre but slowly. In 1349 it came to an end in sequence of that terrible pestilence, the B Death, which carried off 7,052 of the habitants of Yarmouth. "The living,' Manship, "scarce sufficed to bury the much less to proceed with the building." Sho before the Reformation, that singular of church decoration which introduced Perpendicular style into three-fourths

* See pp. 917, 936, *ante*.

churches of England, transformed the lows of the aisles and transepts. At Reformation the church suffered frightfully. side chapels were demolished, the plate the rood-loft taken down, and the magnifi- reredos of Prior Roger of Haddiscoe was royed. In 1551, the sepulchral brasses were to London and sold for weights. In 1560, gravestones were taken out of the church- and shipped to Newcastle to be turned into lestones. During the reign of Elizabeth, urret of the south aisle of the chancel is to have fallen and crushed the roof and of the wall. Wooden windows of the r style were inserted, and these were ty-five years ago replaced in stone. At ime of the Commonwealth the church was ed into three parts. A brick wall was across the eastern arches of the tower, two transepts. The chancel was then ned to the Independents. A door was cut em through the canopied tomb of Thomas ner, and the seating altered for their nmodation. In 1803 the old spire, 186 ft. ight, was taken down. The present spire rected in 1806, when an Act of Parliament obtained enabling the Corporation to levy e repairs of the church a rate of 1s. per ron on all coal imported into the town. A proportion of the rate on coal was spent stering the church. The Bachelor's aisle aken down to form a foundation for works e harbour's mouth. Since 1847 many of disfigurements have been removed, the ies have been cleared away, the columns ie nave replaced, the chancel arches l, the chancel restored to its old propor- the tower strengthened so as to bear a of the original height, the south aisle re-, and the west front restored; but still remains to be done before the mutilation nturies can be effaced, and the church nt back to the splendour which it once sed.

Vial thanks were given to Archdeacon e for his able paper. Mr. Loftus Brock, , pronounced this church to be the most s he had seen for a long time. It required night's study. The ground plan shows ne Norman church differed but little from rdinary plan of a Norman church. If it e that the lines of three apses are to be as has been stated, we have almost the plan that was usual. The central tower tess shows a cruciform church. But the al of the Norman nave at the end of the h or the beginning of the thirteenth y is a difficulty. The work at the west the nave, called the Bachelor's aisle, has very much misunderstood. That work, rock believes, was intended as a mask to st front, and to correct the defect of the having but a small portion of frontage red with the aisles, which is an anomaly, inversion of the natural order of things. he architect had in his mind was the con- on of a fine bell-tower, similar to that at st end of Ely Cathedral. People living lying lands have always desired to erect ficent towers. To correct the proportions west end of St. Nicholas, the builder of chelor's aisle intended to carry out a plan usual, that of a church with a central having a western tower also. The founda- f the Bachelor's aisle, carefully preserved, he exact square for a campanile. The e foundations of quadrangular turrets are portion to the scale of the tower. If the ad been carried out there would have been sive and grand steeple that would have he glory of the town. Mr. Brock added words as to restoration of churches. He nended an adherence to the golden le of repairing old work instead of intro- new.

party, on leaving St. Nicholas Church, the residence of Mr. Christmas, Market- where they inspected the large and le collection of oil paintings, old china, ner rare curiosities that Mr. Christmas is sed of. This was followed by an examina- the "Rows" and the old Tolbouse.

r luncheon at the Star Hotel, the party ded in tramcars to Gorleston, where a vas paid to St. Andrew's Church. Dr. , one of the churchwardens, read a paper building.

he evening a meeting was held in the all, when Mr. De Gray Birch described ils and charters of the Corporation, and f thanks were accorded to local friends for assistance rendered in making the proceedings successful.

The subsequent three days' proceedings of the Congress were conducted at Norwich, as hereafter detailed.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT NORWICH.

The members of this Association having finished their proceedings in Yarmouth, arrived in Norwich on Monday, the 18th, and were received in the Guildhall by the Mayor (Mr. H. Ballard). After inspecting the Guildhall, the visitors proceeded to the Cathedral, where a paper was read by the Dean (Dr. Goulburn). Norwich Cathedral, the Dean remarked, may be said to have been founded amid the blare of trumpets. In the year preceding its foundation (1095) all Europe had thrilled with excitement as Pope Urban II. had touched the chords of chivalry and fanaticism at Claremont. Not the least notice of this enthusiasm is to be discovered in the letters of Bishop Herbert. They are remarkable for the insight they give into the character of the writer. Herbert de Lozinga was a Lotharingian, educated at Fécamp, in Normandy, who became prior of Ramsey Abbey. It is said that by simonincal practices he obtained from William Rufus this see, which he removed from Thetford to Norwich, where he laid the foundation of the Cathedral in 1096. He lived, however, to complete only the eastern arm of the church, with its three circular apsidal chapels, two of which remain, the transepts, choir, with the two bays on the west side of the tower, and the south wall of the cloister, with its magnificent Norman arcade. Two other semicircular chapels—one from the north, the other from the south transept—must have been the work of Herbert. The erection of grand buildings was a mania with the Normans. The date of Herbert's church is attested by the basilican arrangement of the east end, which still exhibits the Bishop's stone chair, raised above several steps, and stone benches arranged on either side for the presbyters. Herbert also founded a convent for sixty Benedictine monks. The easternmost of the chapels having been destroyed, was replaced in the thirteenth century by Bishop Suffield, by an Early English lady chapel, of which only the two entrance arches remain. The Registrum Primum, or register of the Prior, shows that Herbert finished the church nearly up to the present screen across the nave, while his successor, Bishop Eborard, completed it. Just on the north of the stone screen was the altar of St. William-in-the-Wood, a lad who was said to have been mockingly crucified by the Jews on Good Friday, and whose body was buried in Thorpe Wood, where it was afterwards miraculously discovered. In the time of Henry III. and Edward I. a dispute arose between the monks and citizens as to the right of the former to take toll on Tombland, when the convent was besieged by the citizens. Most of the conventual buildings were destroyed by fire. Edward I. ordered the citizens to pay 3,000 marks to the Prior for the restoration of the buildings. It is probable that the Ethelbert gate of the Close was then built. The cloisters were built by Richard de Uppenhall, Bishop Wakering, and Bishop Alnwyck, and completed in 1430. The Beauchamp Chapel was founded in 1320. In 1362 a furious hurricane blew down the steeple, and did great damage to the clearstory, whereupon Bishop Percy, with great munificence, rebuilt it in the style of the period. In Bishop Alnwyck's time, about 1430, a Norman west front was removed, and one of a Perpendicular character substituted. Bishop Lyhart (1445-1472) vaulted the roof of the nave, in which he introduced 360 sculptures illustrating sacred history. Bishop Goldwell (1472-1498), who inherited much work from Bishop Lyhart, directed his attention to the roof of the choir, which he vaulted and adorned with his rebus. Bishop Nix, who was a persecutor of the Reformers, completed the roof by erecting the stone vaulting of the transept and adorning it likewise.

Dr. Bensly followed with a paper enumerating and describing a number of curious books and MSS. in the possession of the Dean and Chapter.

After being hospitably entertained at luncheon in the grounds of the Deanery, the party, under the guidance of Mr. R. M. Phipson, visited the grounds of the Bishop's palace, where, over the door of the north transept of the Cathedral, they saw the effigy of a bishop, supposed by some to be that of Herbert de Lozinga, and by others of Eborard. The chapel in the garden, an ivy-covered ruin, and the fine vaulted rooms of the present palace, were visited, and shown by a plan to have been the chapel and parts of the palace of Bishop Salmon. That prelate also built the charnel-house with chapel over it, now used as the Grammar School. Where the dry bones of the dead were deposited the Grammar School boys now disport themselves on wet days in gymnastic exercises. A look at the fine gateway erected by Sir Thomas Erpingham was followed by a visit to St. Andrew's Hall, the monastery of the Blackfriars, of which Sir Thomas was a great benefactor. Between St. Andrew's Hall,—which was the nave, while the Dutch Church was the chancel of the grand church of the Blackfriars,—and the river are extensive remains of the monastery, including the cloisters, now part of the playground of the Commercial School, and other vaulted rooms now part of the kitchen and offices of Mr. Lacey, builder. But the most interesting work near the Hall is a relic of Becket's Chapel, a fragment of brickwork of an early period. On St. Andrew's Hill are the remains of the church of St. Christopher, now part of the premises of Mr. Harman. These were of course noticed. The finest piece of flintwork in the Eastern Counties is said to be the old Bridewell, in Bridewell Alley. It arrested the attention of Evelyn when he came to visit Sir Thomas Browne. St. Andrew's Church, a parochial church second only to St. Peter's Mancroft, was opened to the members of the Association by the Rev. A. C. Copeman. Here Mr. R. F. Beecheno read an interesting paper on the history of the church. There was a church here before the Conquest, but the present one was erected in 1506. Its architecture is Late Perpendicular. The length is 120 ft. and the width 55 ft., being next in size to St. Peter's Mancroft. At the Reformation the parish had a martyr, one Elizabeth Cooper, a pewterer's wife, who suffered death in the Lollard's pit in 1557. She at first recanted openly in the church, but afterwards during divine service called upon the congregation not to follow her example. Within the altar-rails are the brass effigies of a man and woman, supposed by Blomefield to be William Layer, mayor in 1537, and his wife; but Mr. Beecheno found, from Mackerell's MS. in the British Museum, that in his time an escutcheon remained with the mark of Robert Gardiner, mayor, who died in 1508, and whose effigy remains in the north aisle, with the same mark and an inscription. Among the historical features are two specially worthy of note. A mural monument in the south aisle records the fact that the parish of St. Andrew had the honour of giving to the city the first and last mayor under the old charter, viz., William Appleyard, in 1403, and William Moore, in 1834. In the same aisle is also a mural monument to Abraham Lincoln, an ancestor of the late president of the United States. Mr. Lambert pronounced the plate to be the finest in England, and took drawings of it. St. John's Maddermarket Church, which was visited, has monuments of the Howard family,—for in this parish was the ducal palace,—and several interesting brasses. Strangers' Hall, formerly the residence of Canon Dalton, behind the Roman Catholic Church of St. John, is an interesting old mansion built by Nicholas Sotherton. The house has a fine old staircase and a grand panelled room. It was opposite this house that Kemp finished his "Nine Daies Wonder," his dance from London to Norwich. St. Gregory's Church, close by, the next place visited, is interesting for its monuments, its mural painting of St. George and the Dragon, and its lectern.

On Tuesday, the 19th, the members met in the Council Chamber of the Guildhall, where Mr. Phipson pointed out by the aid of maps the ancient boundaries of the city and the sites of the walls and gates. He also gave a description of the various churches, &c.

Mr. De Gray Birch (of the British Museum) called the attention of the members to the charters of the city which were exhibited on the table. He complimented the Corporation on the great care which they had evidently taken of these documents, the series of which formed a most magnificent collection. The members of the Association had often seen documents in a condition the very reverse of these,—tumbled about in confusion, and very

seriously injured beyond reclamation. During the whole time he had been connected with the Association he had never seen a series of documents in a better state of preservation, or more carefully kept than these charters of Norwich. The first charter was of Henry II., and from internal evidence was presumed to have been granted in the fifth year of that monarch. The series might well be contrasted with the unfortunate remains of corporate documents they visited in a town not long ago, where many of the ancient manuscripts had been allowed to fall under the hammer of the auctioneer. But, as an officer of the British Museum, he ought to speak with hesitation on this point, because if such documents did not sometimes get out of their proper ownership, the British Museum would not be able to gather together such a collection as it had. The seal attached to the charter of Henry III. was a remarkable example of the seal of the period; it was appended to the charter by a fine specimen of the weaver's art, composed of a silk facing on a ground of worsted or thread. These were some of the oldest remains of the weaver's art now to be found, and he doubted whether it could be reproduced in the present day.

The visitors then proceeded to visit some of the city churches. St. Peter's Mancroft was the first seen. It is of the Perpendicular period, and is a well-known example. St. Stephen's Church, which was erected after the Reformation, was next visited. It contains some elegant tracery, some fine painted glass, and several interesting monuments. Other objects of interest in the church having been noticed, the party proceeded to Heigham, to the flint-faced house, the Dolphin Inn, the home of Bishop Hall. Over the ornamented doorway is the date "1587." In the wall just within the door is a piscina, and a wall bench-end of the fourteenth century projects from the old stairway. The principal room of the house has wood panelled ornamental walls, oak doors, and an elaborately plastered ceiling, all of the Jacobean period. Bishop Hall, who died on September 6th, 1656, lies buried in the recently-restored church of St. Bartholomew close by, where there is a curious monument to his memory.

In the afternoon the members proceeded to Arminghall, where they inspected a fine old Elizabethan house, now divided into two dwellings for workpeople. Cotman mentions a tradition that some of the materials used in this house were brought from Carrow Abbey. Over the doorway is a sunk panel filled with the sculpture of a man pulled off his horse by a lion. On their way back from Arminghall the excursionists visited Carrow Abbey, the residence of Mr. J. H. Tillett, who gave them a very cordial welcome and full liberty to make a thorough examination of the house and grounds. Mr. E. A. Tillett, who some years ago traced out the plan of the church and buildings of the nunnery in continuous ridges of ground in a meadow at the back of the Abbey, took Mr. Loftus Brock and other gentlemen the whole circuit of the convent lands, nearly ten acres. Mr. Brock confirmed Mr. E. A. Tillett's conjectures as to the situation of the church, the churchyard, and the buildings of the nunnery. Mr. J. H. Tillett then read some notes on the history of the Abbey. On the return of the party to Norwich, a few gentlemen explored the old Norman crypts in King-street, and noted the remains of Saxon and Norman architecture in the churches of St. Julian and St. Etheldred.

An evening meeting was held in the Guildhall, when an interesting paper on "The Place Names in Norfolk," was read by Mr. Picton, who pointed out how the local nomenclature of any district is generally calculated to throw light on the succession of races by which the country has been inhabited, the circumstances of their settlement, the languages which they spoke, and the incidents of their history. Norfolk was not inferior in interest to any other part of England. The names of its rivers are Celtic, and that the Angles gave names to many of its villages is shown by such terminations as "ham," "ton," "ing," &c., whilst similar evidence respecting the Danes was afforded by terminations like "by," "thorpe," "stead," &c. In the course of his paper Mr. Picton remarked that there are evidences of the ancient Saxon mark in Norfolk. —A brief discussion followed, in the course of which Mr. M. Knight referred to Markshall as a place which retained the very name of the Mark, and to the Town Close Estate as being part of the ancient mark lands of the burgh. Papers were also read by Mr. Knight on "Norwich as the Venta Icenorum," and by Mr. J. Gunn on "The Trinitarian Form of Norwich Cathedral." The corporation plate was displayed at this meeting, and discoursed upon by Mr. Lambert.

On the concluding day, Wednesday, the 20th, there was a carriage excursion, in conjunction with the Norfolk and Norwich Association, to Burgh, near Aylsham, Sall, and Cawston, taking in *en route*, by the invitation of the Marchioness of Lothian, Blickley-hall. About half-past ten the vehicles being all occupied, the party commenced their journey, first making for Burgh, near Aylsham, by way of Catton, Spixworth, and Buxton. On entering the church at Burgh, which is dedicated to St. Mary-the-Virgin, the attention of the party was at once attracted to the restored chancel which, as Sir Gilbert Scott says, "is one of peculiar interest," having on the south side "a continuous range of beautiful lancet lights arcaded within and absolutely simple without." Below is an arcade upon stone seats. Mr. Phipson gave some interesting information both with respect to the township and the church. Soon after one o'clock the party arrived at Blickling-hall, where they were received by the Marchioness of Lothian, and hospitably entertained at luncheon. The company afterwards made an inspection of the house, conducted by the Rev. F. Meyrick, rector of Blickling and Erpingham, who gave some interesting details respecting the house itself, the persons who have lived in it, and some of the books and pictures it contains. The party next proceeded to Blickling Church, which is of the Perpendicular period, and contains several old brasses, the most remarkable being one to Sir Nicholas Dagworth, concerning whose career Mr. Spaul, of Norwich, contributed some interesting notes. Re-entering their carriages, the party next went to Sall Church, which is one of the finest of the Perpendicular churches to be found in Norfolk. It consists of chancel, nave, aisles, transepts, with a south porch and parvise, and has a fine west door with angels in the spandrels. The church was built in the time of Henry VI., probably by the De Brews, Mantebys, Morleys, and Kerdistons, whose arms occur upon it. Parts of the arms of the Wingfields and De la Poles occur in various parts of the church. A portion of the fine old painted roof, very similar to that at Blythburgh, remains. A rood-screen, which has been sawn in two, and the upper parts utilised in the formation of pews, was enriched with paintings of saints, as may be seen on removing the whitewash or paint which has been thickly spread over them. There are some misereres with elegant carvings. The church is reported to be in a bad condition, and to need attention. Cawston Church, subsequently visited, was built by Michael de la Pole, Earl of Suffolk, and is a fine example of the Transition period from Decorated to Perpendicular. Its massive tower, in the opinion of Mr. Phipson, by whom both churches were described, was never completed by the putting on of the parapets. The principal features in the interior are the hammer-beam roof with the spandrels filled with tracery and angels at the ends; the almost perfect rood-screen, its panels filled with paintings of the Apostles, the Fathers, and Sir John Shore; and its singular oak-screen across the tower arch, on which runs the legend, "God speed the plow, and send us ale enow our purpose for to make, at the sign of the Plow leet in Sygate. Be merry and glad; what good ale this work made." It is supposed that this has reference to the ancient custom of the blessing of the plough on Plough Monday, or to some old manorial usage.

In the evening the party returned to the Royal Hotel, where they had dinner and an evening sitting, under the presidency of Mr. J. J. Colman, M.P. A paper contributed by Dr. Jessopp was read on the Grammar School House, in which it was endeavoured to prove that Bishop Salmon built the house, and that it is the oldest in Norwich; but Mr. Phipson, in commenting upon the paper, doubted the success of Dr. Jessopp's efforts in this direction.

The thanks of the Association were given to Mr. Colman, who, in reply, expressed a hope that it would not be long before the Association came to Norwich to explore more thoroughly its places of architectural and historic interest. The thanks of the Association were next given to Mr. Phipson, and to the local gentlemen who had read papers, and had made the visit more successful and enjoyable by imparting interesting information relative to places of note. Mr. Loftus Brock proposed a vote of thanks to t mayor, magistrates, and corporation of Norwi and also joined in the hope that before long t Association would again visit "that charm old city."—Mr. Fitch having acknowledged compliment, a hearty vote of thanks w tendered to Mr. Geo. Wright, the Excurs secretary, on the motion of Mr. Phipson, this brought the congress to an end.

SUBTERRANEAN TELEGRAPHS IN GERMANY.

Several important additions to the extens network of subterranean cables in Germany in course of construction. Preparations h been made for immediately laying down t cables from Berlin, to Dresden, Breslau, Stettin, respectively. The seven-wired cab are supplied by Messrs. Guillaume & Velten Cologne, and Messrs. Siemens & Halske, Berlin. The splicing, the most difficult par the work, will now be done by German w men. The laying of the cable from Berlin Halle, described in a former number of *Builder*, offered many difficulties, which h now been overcome. It is possible now to splice, and imbed in one day as many piece cable as it formerly took a week to do. manipulation has been greatly simplified machine invented by Dr. Siemens. This mach driven by steam, excavates, as it proceeds, road to a depth of 3 ft., and a breadth o inches, depositing behind, at the same time, cable into the ditch prepared by it in fr workmen follow, and rapidly fill up the tr and beat the ground firm. In submerging ca in rivers, also, practice has contrived manip tions by which much time is saved. The c from Berlin to Dresden will be continued some future time, over Hof and Nürnberg München; that to Breslau will receive an tension as far as Oderberg, with a branc Posen; and the cable to Stettin will be exten over Köslin, Schlawe, Stolp, and Lauenburg far as Danzig and ultimately Königsberg. W once the cables from the centre Berlin above cated are completed, it will only require a junctions in order to perfect the network over Germany. The empire will then posse system of telegraphic communication enti independent of the vicissitudes of the eleme If we look on Germany as a circle, the cen Berlin, will send cable radii to Königsb Strassburg-Metz, Oderberg, Hamburg- Magdeburg-Cologne, and Dresden-München work of the future will be a cable perip covering all the frontiers of the German Em

THE JEWISH SYNAGOGUE, RUE DI TOURNELLES, PARIS.

We have already given an interior view o new synagogue recently erected in Paris, w few descriptive particulars, and we add according to promise, a view of the exter We may repeat, for the sake of convenie that the façade measures 22 mètres in ext is decorated with sculptured emblems of Jewish faith, such as branches of palm, as trumpets, as also Hebrew inscriptions; as surmounted by a semicircular frontal, at th of which are placed the tables of the law. sculpture was executed by MM. Germain Watrinelle. M. Varcollier, official architec the Fourth Arrondissement of Paris, designe building.

Bridges for the Suburbs.—At the m ing of the Metropolitan Board of Work the 8th inst., on the motion of Mr. Dresser-B (for the Works, &c., Committee), seconde Mr. Lloyd, the Board approved of the dra submitted by the Lewisham and Plum District Boards, of a bridge proposed to be structed over the river Quaggy, and agre contribute one-half of the cost of the work exceeding 300*l*. A report was also submitte the Works and General Purposes Comm recommending that the Board do contr one-half of the cost of the construction new bridge over the river Lea at Temple and of improvements to the two bridges pa over the Hackney-cut, such contribution n exceed in the aggregate the sum of 2,550*l*. report was adopted.

* See pp. 858, 859, *ante*.



EXTERIOR OF THE JEWISH SYNAGOGUE, RUE DES TOURNELLES, PARIS.—M. Varcollier, Architect.



THE LONDON LEATHER EXCHANGE, BERMONDSEY.—Messrs. George Elkington & Sons, Architects.

E LONDON LEATHER EXCHANGE, BERMONDSEY.

building at the corner of Weston- and Market-street, Bermondsey, imme- adjacent to the Leather and Skin , belongs to the Leather Warehouse ny, and has been recently erected to the recognised want of a suitable place should be regarded as the head-quarters leather trades in London. It was for- pened on Wednesday, the 13th inst.

manufacture of leather has been carried ngland from a remote date, this useful having been mentioned as an export in ie of Augustus. It is difficult to state ie manufacture became localised in Ber- y, but certainly soon after the Norman st tanners were found there. The character of the locality, which con- until the last century of low marshes ted by tidal streams, marked out this of Southwark as the obvious seat of a cture for which considerable space and nt supply of running water were essen- There are several important factories till possess the right of tidal water sup- n the river Thames, the regulations and of the culverts being vested in the local ties.

e time of Edward III. it was enacted l leather, skins, wool, &c., for export, e sent out from a staple town or port, being one of the chief. The earliest for leather appears to have been held ar the Guildhall, in the City, afterwards l to Leadenhall in 1444, and in 1488 the f Common Council made an ordinance e assay of tanned leather was to be Leadenhall, the position of which as a is thereby confirmed.

e reign of James I., 1604, the great of Leather was passed, the salutary f which exist to the present time. That vided for the classification and regulation arious trades concerned in the production her; confirmed the London right of nd assay; regulated Leadenhall; recog- nthwark market and Bartholomew Fair s for the sale of leather; and broke down opoly which previously restricted dealing r to citizens of the City of London.*

31 the Leather Warehouse Company rmed, and the market established at dsey on a site containing several acres. arehouses, with hide depository, tavern, re erected under the superintendence ite Mr. G. Porter, and several additional ises have been built by the company at period.

dismarketing of Leadenhall market by poration of London, and the consequent of leading factors and merchants con- with the leather trade to Bermondsey, duced the directors of the company to e new Exchange and Mart in the very the trade. The building is faced exter- ith red bricks and Portland stone, the being of Haytor granite. Two carved —one on each side of the principal en- — assist in supporting the balcony in the bay window on the first floor. The medallions on the semicircular heads of and-floor windows represent various pro- of leather manufacture. The clock, in ret at the angle of the principal fronts, he hours on a bell in the open turret above. principal portion of the ground floor is d by the Exchange, 46 ft. by 40 ft. and in. high; adjoining is a business room ncheon bar for members only.

oad staircase leads to the first floor, 13 ft. n which are separate dining-rooms for rs and non-subscribers, servery and lift, and butler's pantry. The first floor ntains reading-room, 26 ft. by 17 ft. 9 in., g-room, and extensive lavatories, &c., for rs.

he second floor is a sale-room, available public meetings, 46 ft. by 40 ft., and 13 ft. aving a semicircular ceiling with con- skylights over the centre portion, which . in extreme height.

private rooms connected with the sale- nd the manager's apartments, complete ery.

he basement are the kitchen, scullery, larder, pantries, store-rooms, wine, spirit, beer, and coal cellars.

The rear portion of the building on the basement and ground floor is appropriated to the business of the Leather Market Tavern, formerly carried on on this site.

Internally the walls are pointed, the woodwork stained and varnished, the lobbies and vestibules being paved with Minton's tiles. The public rooms are heated by hot-water pipes and coils supplied by Messrs. J. Weeks & Co. The works have been carried out from the designs, and under the superintendence of Messrs. Geo. Elkington & Son, of Cannon-street, architects to the company. The builder is Mr. Wm. Shepherd, of 101, Bermondsey New-road. Messrs. Strode & Co. have carried out the gas-fittings, and Mr. John Warne the bar and counter fittings. The restaurant department is in the hands of Messrs. Roberts, of St. James's Hall.

, recently-published "Index to the Remem- reviewed in our last issue, gives an account of r of letters referring to the early history of the rade.

NEW HIDE AND SKIN MARKET, EASTCROFT, NOTTINGHAM.

In connexion with the account we give above of the London Leather Exchange, we have to mention the recent completion of the Hide and Skin Market, Eastcroft, Nottingham, under the directions of Mr. S. Dutton Walker, architect. The buiders were Messrs. Lees, Brothers. The style adopted is a variation of Gothic. The building covers an area of 120 square feet. The terra-cotta of the Whitwick Colliery Company is freely used. Entering by one of the wide archways on the north side, we find ourselves in a large open shed that one might take to be a modern railway station, the iron pillars supporting the roof and the light iron framework above favouring such a supposition. One side of the interior is intended for sheep skins and another for hides, and wooden benches on the south side have been erected for the fat "market." The floor on which the skins will be deposited is, of course, slanting, and is made of a hard brick specially adapted for the purpose, whilst the walls are of white enamelled bricks, which may be readily washed after the market has been held. The ventilation is on what is known as the louvre system; and, the light being admitted from the north side, little or no sunshine will enter, this being an especial desideratum. To the right of the building, as you enter from the north, are situated various offices. There is stabling capable of accommodating six horses (the floor is of a new kind of brick, which, as the grooves only run in one direction, may be easily swept); there is, further, a harness-room, salt store, and a yard suitable for grooming the horses. The business offices are placed on the north side, immediately as you enter. There is an entry department and a general office, and above these a sale-room and board-room, the whole suite of rooms being comfortably fitted up and heated by hot-water pipes. The market is built by the Bridge Committee, and let on lease to the Nottingham Hide, Skin, and Fat Market Company, Limited.*

* A small view, and a plan of the market will be found in the *Leather Trades' Circular* for June 7th, 1879.

THE SHEFFIELD MEETING OF THE BRITISH ASSOCIATION.

The annual meeting of the British Association for the Advancement of Science commenced in Sheffield on the 20th inst., under the presidency of Dr. Allman. We give abstracts of a few of the papers read in the sectional meetings.

In Section C, Geology, Professor Boyd Dawkins, F.R.S., gave an account of the discoveries in the bone caves of Derbyshire. The first cavern brought to light in Derbyshire, he said, was the famous one of Wirksworth, about 1820, accidentally come upon in the working of a lead mine. The finding in it of the remains of elephants, an almost perfect skeleton of the rhinoceros, and other remains of the same animal, alone established the fact of the existence of these animals in that part of the world in olden days. In 1875 Mr. Mello found, in the caves of Cresswell Crags, bones of animals and remains of men's handiwork. The last cavern that had been explored was discovered at Matlock Bath this year, and the remains of animals found were of the same sort as those met with in Cresswell Crags. The next and most important thing they would like to see settled was the age of these caverns, but that he looked upon as an impossibility. There was nothing to show that they existed before or during the Glacial period; and all the attempts that had been made to fix a date, outside the written record in the pages of the historian, he looked upon as useless, because they put before the minds of people who did not know a certain amount of definiteness with regard to geological events which those events did not possess.

The President of the Anthropological Department of Section D, Biology, was Dr. E. B. Tylor, F.R.S., who, in the course of his address, asked what, looking back 4,000 or 5,000 years, was the appearance of mankind as disclosed to us by the Egyptian monuments and inscriptions? Several of the best marked races of men were already in existence, including the brown Egyptian, the dark white Semitic man of Assyria or Palestine, and the Central African of two varieties, which travellers still found as distinct as ever. The evidence accessible as to ancient races of men went to prove that the causes which brought about the difference in types of skull, hair, skin, and constitution did their chief work in times before history began. Experience and history showed that civilisation grew up gradually, while every age preserved recognisable traces of the ages which went before. The woodman's axe of to-day still retained much of the form of its ancestor—the stone celt in its wooden handle. The monuments showed that in the Egyptian life 5,000 years ago civilisation had advanced so far that there was an elaborate form of government, an educated literary priesthood, a nation skilled in agriculture, architecture, and metal work. There appeared no particular reason to think that the relics from the drift-beds or bone-caves represented man as he first appeared on the earth. The savage condition generally, though rude, and more or less representing early stages of culture, never looked absolutely primitive, just as no savage language ever had the appearance of being a primitive language.

In the same section, Dr. Phené, F.S.A., read a paper "On the Discovery of Animal Mounds in the Pyrenees." The present discovery was very greatly due to the description given by Sir Vincent Eyre of a custom of burning living serpents at a particular spot in the Pyrenees. In exploring these mountains, the author found in certain directions indications which always accompany the mounds. The churches abounded in features expressive of the subversion of a pagan faith, of which the serpent or dragon had evidently been the representative, and with these were found built into the walls examples of pagan Roman occupation, as votive altars, &c. Following the track where these were most expressive, he had come upon mounds as distinct in form to an animal appearance as that presented by any of the American mounds; they were altogether artificial, and shaped into an appearance of animal outline so real as to seem like life. In the parts forming the heads the chamber had been appropriated, in one case by an arched chamber of Roman work, in another by a descent of several feet into the body of a small church. On the spine of the least molested one had been a tumulus, in which, the curé of the church informed him, had been found several of the most primitive incinerary urns, containing bones, Celtic articles, and above these, objects of the Gallo-Romano description, and again above these, later or Christian Roman works. One of the most interesting of the latter had been laid aside, and the curé sought it out for Dr. Phené amongst some *débris*; it was the stem of an ancient cross, and on it were sculptured serpents—not in the usual position of subjection to a superior power, but evidently as being in a condition of supremacy; but as there were also several dead ones represented, it might be that the sculpture figured the condition of the real serpents before and after the ceremony of burning. Everything in the district was emblematic of the serpent or dragon, and the mounds were distinctly of such a form. On the mountains overlooking these mounds were a number of stone circles, like those so well known in Britain. The description of these and further details he reserved, to meet a request made by the representatives of the American Congress at Brussels, before which he had been invited to read a paper on the mounds of Europe. In this last discovery he had the advantage of having some members of the British Archæological Association present with him, who also identified the exact resemblance of the mounds with life-like animal forms.

In Section E, Geography, a paper on the Imperial Survey of India, by Mr. J. O. N. James, Deputy-Superintendent of the Surveys of India, was read by Mr. Black. The object of Mr. James's paper was to sketch out in a concise manner the nature of the work in progress and already performed by the Indian Survey Department, and to point out its practical utility. The Imperial Survey of India, up to a late period, consisted of three distinct branches, namely, the Trigonometrical, Topographical, and Revenue Surveys. The Trigonometrical Survey, besides its purely scientific work, furnishes the great basis by principal triangulation for the origin and extension of detail surveys executed by the Topographical and Revenue branches. Already the whole of India is covered with principal triangulation which, for scientific accuracy, is unsurpassed by any similar undertaking in the world. To the Topographical branch is assigned the labour of executing geographical surveys of native States and hilly or forest tracks in British territory, usually on a scale of 1 in. to the mile. Mr. James described the methods adopted in the execution of these topographical surveys, and pointed out the vast amount of geographical information which is collected by the surveyors. During the administration of Sir Henry Thuillier, late Surveyor-General of India (1861 to 1877), an area of not less than 290,000 square miles was surveyed and mapped, including the wildest and least known tracts of India. This enormous area, more than double the size of Great Britain and Ireland, was surveyed in sixteen years, at an average cost of 2*l.* the square mile. The Revenue Survey operations, the paper said, are chiefly confined to open and well-cultivated districts in British territory. They furnish complete and accurate records of the area and boundaries of every village and district; they show the extent of waste and cultivated land, the nature of the soil, and the principal features of the country, on a scale of 4 in. to the mile. From these original surveys excellent maps of complete districts are completed on various scales for general administrative purposes. In some special districts the system of cadastral field surveys has been introduced. During Sir Henry Thuillier's superintendence, an area of 493,000 square miles was completed on the village survey system on a scale of 4 in. to the mile, and 12,281 square miles by cadastral measurement on a scale of 16 in. and 32 in. to the mile, making an aggregate of 505,574 square miles, considerably more than double the area of France. The Revenue Surveys comprise a great portion of Bengal and Assam, all Oude, part of the north-west and central provinces and Bombay, nearly all the Punjaub, and all Scinde. This work has not been accomplished without the sacrifice of many valuable lives and the necessity of facing dangers and hardships of no common kind. The zeal and devotion of the Indian surveyors are beyond all praise, and their work has been and continues to be most valuable. It must, however, be clearly understood that a considerable portion of what has been accomplished by the Topographical branch of the Department is nothing more than a first survey, rapidly executed, for geographical and general administrative purposes. Hereafter, more rigorously accurate and complete surveys will be needed.

In Section F, Economic Science, Professor Leone Levi read a paper on the "Scientific Societies in Relation to the Advancement of Science in the United Kingdom." He enumerated the existing scientific societies in the United Kingdom, stating their present numbers and the functions they discharged. First and foremost were the three Royal Societies—one in England, one in Scotland, and one in Ireland, the number of members in 1878 being for the Royal Society, 549; the Royal Society of Edinburgh, 428; and the Royal Irish Academy, 328. The societies devoted to physical and mathematical sciences had, in 1878, 5,406 members; the natural history sciences, 16,534; the archæological and geographical societies, 5,038; and the societies whose object is the study of the applied sciences, 21,947. The amount voted by the State yearly for education, science, and art appeared large, and constituted a somewhat greater percentage on the total national expenditure than in former years. Thus, in 1878, the total expenditure was 85,408,000*l.*, and the expenditure for education, science, and art, 4,153,000*l.*, or 4·88 per cent. If, however, we eliminate from the total vote the amount expended for elementary education, the proportion left for science and art is considerably diminished, amounting only to 529,000*l.* The income of our scientific societies ordinarily arises from annual subscriptions or life subscriptions of members, and from the proceeds of any funded property. Some of the societies were indifferently located, and their house-rent constituted an appreciable proportion of their expenditure. Dr. Siemens, the president of the Iron and Steel Institute, had offered 10,000*l.* towards the erection of a suitable building for the accommodation of the various societies representing the applied sciences in the metropolis. It was to be hoped several societies might see their way to combine for such a purpose, and it would not be too much to expect that her Majesty's Government may, if applied to, be willing to grant at least a site for such a building. Professor Levi went on to say that it was not to be desired that our scientific societies should be subsidised by the State, but the claim of science to State assistance had been so fully recognised that they might well demand that whatever amount is so devoted should be fairly distributed among all branches of science.

In the same Section, Professor Silvanus P. Thompson read a paper on "The Apprenticeship Schools in France," and claimed to have established by facts drawn from the experience of French schools—first, that the systematic instruction of apprentices in the skilled industries is possible; secondly, that it can be effected in several different ways; thirdly, that apprenticeship schools of one or other type afford a most satisfactory and economically sound way of attaining this result; and, fourthly, that this new apprenticeship solves the knotty problem of technical education which arose out of the decay of the old apprenticeship.

Section G, Mechanical Science, was presided over by Mr. J. Robinson, president of the Institution of Mechanical Engineers, who took for the subject of his address "The Development of the Use of Steel during the last Forty Years, considered in its Mechanical and Economic Aspects." In the course of it he said:—As the use of this material is perpetually growing more common, so are discussions as to its manufacture, composition, and characteristics becoming almost wearisome from their frequency. At the time when railway extension was becoming general, about forty years ago, the use of steel in this country was confined mainly to tools for mechanical purposes, including files and other articles, springs for vehicles, weapons of various sorts, and implements for agricultural and domestic uses; and it is proposed to measure the scientific and mechanical energy brought to bear upon the manufacture and improvement of this metal by the increase in the number of purposes to which it is applied, and the diminished price at which it can be obtained, as compared with the price at the time of its introduction for constructive works. There are, however, several important exceptions to this method of appreciation to which reference will hereafter be made. Mr. Robinson then referred in detail to the reduction of prices of steel, and asked, To what do we owe this enormous reduction of price and consequent more frequent and more economic application? "The answer must be that, following the initiation of Krupp, our English engineers and men of science set themselves to work to discover and apply new processes for the production and manufacture of this most wonderful metal; and I venture to say that, in the whole history of metallurgy, from the time of Tubal Cain downwards, there has been no such progress in invention and manufacture as has been realised by the aid of such men as Mushet, Krupp, Bessemer, Siemens, Whitworth, Martin, Vickers, Bell, Bauschinger, Styffe, and many others within the period comprised in this retrospect; and our national predilections will perhaps lead us to the opinion that our own country may fairly appropriate a large share of merit for the results achieved. Another of the uses of steel to which attention may be given is that of the production of cannon of large size. Efforts had been made by some of our enterprising workers in metal to produce large guns of solid wrought iron; but the processes of heating and hammering were attended with so much difficulty that the attempt was given up. Here, again, Krupp stepped in, and succeeded, thirty-two years ago, in manufacturing cannon of cast steel, which unhappily have become ordinary commodities with those nationalities who can afford such expensive weapons. Since that time Krupp has produced about 2,000 guns, the heaviest being, when finished, 72 tons (16 in.)." After enlar on the different processes, he said that the of steel will be still further extended an price reduced mainly by means of the metho researches of our scientific metallurgists.

In the same section, Mr. Baldwin Lat read a paper on "The Temperature of T Water Supply," and pointed out that increase in the temperature beyond 55° rend water very unwholesome. The author in paper drew attention to the fact that the perature of the water supply of a town furnished by public waterworks, was to independent of the temperature of the wate its source of supply, and that invariably temperature of the water was the tempera of the ground, at any season of the year, a depth at which the distributing mains laid. While the temperature in the chalk-l at Croydon gave an average monthly r based upon daily observations, of 0·64°, same water, when supplied direct from mains, gave an average monthly range of 2 or when stored in a cistern a range of 28 while water supplied from the Thames in minster gave an average monthly rang 24·69°. But the average yearly differen temperature between the chalk-water sup at Croydon and the Thames water supplie Westminster was only 0·67°.

Mr. J. Oldham asked whether Mr. La could tell the various temperatures in arte wells from 1,400 ft. to 1,800 ft.

Mr. Latham said that he had made a large number of observations, and he found the temperature of the overflowing wel Wandsworth was about 50½°. The temper of the water in wells varied greatly. In of the deepest wells the temperature was than in the shallow wells. The moveme the water through the strata of itself incr the temperature.

Mr. J. W. L. Glaisher said that, having been connected with the Registrar-Gen Office, he had frequently had to take the perature of the Thames water. It had long recognised as a fact that cholera or diar never showed itself to any great extent the Thames water reached 62°. It sto reason that when the waterpipes were of diameter, and were near the surface, the partook of the temperature of the surroun He was in favour of having a much l diameter of supply-pipes. Water at a of 50 ft. or 60 ft. differed very little fro climate; but at a depth of several hundre the temperature was higher.

Captain Galton said that the water should, as much as possible, be kept belo ground. The statements which had been were a strong argument in favour of the tion of cisterns and in favour of a sta water supply.

MR. GLADSTONE AND AMERICA

Sir,—The speech made by Mr. Gladst Chester would have carried weight with a larger proportion of thoughtful people if h confined himself to the expression of his opinion regarding the value of superior e tion to the manufacturer, and especially kind of education which leads to a knowle men and their actions combined with as h technical education as the state of m science can afford.

Had Mr. Gladstone confined himself t expression of his belief that English com must still suffer by the competition of cou like France, Germany, America, and Bel where the workmen are all but suffic educated, we should have received from Gladstone a valuable addition to our anth tive opinion on the subject; but we can fully accept his views as to what const "taste," defining it as "nothing in the except the faculty which devises accordi lines of beauty, executes according to li beauty, and judges according to lines of bea

Mr. Gladstone is unhappy also, we are to consider, in his attempts to complimen Americans, and he is severe when he cen them for not having in any of their ma tures succeeded as yet in producing any that is beautiful. American manufact have been the first commercial workers the value of the theory that construction precede decoration; and there can be no that American manufacturers are at this exceedingly forward in their march toward ever-receding perfection that will give Am

ion with the rest of the world, enough the direction of art to satisfy the most s for a century at least.

ica is producing at the present time ojects of widely-extended commercial iat owe much of their claim for success artistic beauty, and this beauty is at by the simplest possible process,— the practical, judicious exercise of in the hands of tolerably educated turers, who, contrary to the English f the American, are so wholesomely free judice as to seek for skill such as they not merely in their own country, but in or Birmingham, in Paris or Lyons, in na or Liège, and from almost every any consequence of unhappy but still l Germany.

cannot be a doubt as to the importance uing to establish well-conducted schools hroughout England; but it is a sad ht to have to reflect upon which Mr. has allowed to appear in a corrected of one of his lectures, that England can y on foreign training and teachers for of obtaining artistic eminence. Surely nter considers himself as well able to s those foreign gentlemen whom he nds to us, and certainly he must admit technical and mechanical methods ndoubtedly many foreign workmen excel ot difficult of communication, through s slightly less complicated than those in the establishment of a Conservatoire, f the more intricate paraphernalia of Academy.

ry ordinary manufacturer who has l his machinery, it may be to carry out urd fashion of a season, can with very ficulty, although at considerable cost, e whole power so as to apply the plant w demand; and if the new fashion has l from a distance, the manufacturer manufacturers have done for centuries, native workmen to direct his produc- he "last new thing"; for, after all, we look into the processes by which wonderful objects that we require, or at we require, for our daily wants are , the more we shall find that the aid of t, the thinker, the thorough workman, equired.

n scarcely accept Mr. Gladstone's con- is expression regarding the form of the n axe, an implement on which the mind accredits Mr. Gladstone as a great r; it would be difficult to suggest the ny common and useful implement where ciple of beautiful strength and utility completely considered in relation to the onal lines of beauty; the perfect wedge- the blade, and the delicately curving the handle. In the more abstruse f the commercial exercise of beauty in varied forms and exquisite colours, it ed, even in France, that Americans power of manipulating feminine cos- as to add a grace even to the dainty the Parisian. There may be some this opinion, we are inclined to think ist be, and such an opinion may be the appearance of costumes when worn whose great personal attractions are by all the world. We suspect that complished and erudite American ladies gained the proud title of being able glory to a Parisian toilette, would om even claiming equality with their nch mistresses in their beloved art. e objects of commercial beauty which nore or less desire to collect about r homes, the Americans are rapidly most fastidious critics, and it is not to point to noticeable instances amongst s in America of rare family historic f art, who are on the whole better ed with the real value of their posses- n the owners of similar objects generally rope. And if this is admitting a little n, it may at least be fairly conceded knowledge of what we understand by nd "taste" has increased in America e last twenty-five years in a remarkable fact distinctly to be traced to the f art-education, art-literature, and art- such as that Mr. Gladstone opened on inst.

M.

Masons.—The Ayr masons have re- work on the masters' terms—6d. per

THE GRAVITATION OF TRAVEL.

One of the results of recent changes, and of the great dulness in the chief industries of the country, has been little marked hitherto,—the tendency of travel to gravitate towards the lowest rank. For some time—since the extension of the facilities for travelling by the third class—there was an increase in the number of travellers by that class in a more rapid ratio than by any other; and in the last two or three years there has been an absolute decrease in the number of travellers by the higher classes, whilst in many instances on the chief railways there has been a continuance of the increase in the lowest class. In the two methods there has been a general tendency of travel downwards, though there is in different districts of the country considerable variation in the ratio of that tendency. A few figures, collated from official sources, will illustrate as well as prove the facts, and will also show how markedly the extent and manner of travel on railways are altered by depression in trades and trading centres. Taking the Manchester, Sheffield, and Lincolnshire Railway, which serves a very important district of the country,—that indicated by its title,—we have facts showing that the elasticity of travel, which gave for years a constant increase, has disappeared, and that the body of that travel is contracted. The following are the numbers of persons who travelled by each class on that line during two corresponding periods of six months—the first half of 1878 and the first half of 1879:—

	1878.		1879.
First class	199,591	.....	145,090
Second class	305,210	.....	240,805
Third class	4,624,914	.....	4,011,062
Total	5,129,715	.....	4,396,957

On this large system, then, there is a falling off in the volume of traffic to a very considerable extent, the numbers in the last six months being more than 700,000 less than in the corresponding period of last year. But it is clear that the declension is by far the largest in the two upper classes, whilst in the first class the percentage of decrease is almost alarming in its magnitude. Turning now to the North-Eastern Railway, we have, for the same two half-years, the following as the state of the passenger traffic numerically:—

	1878.		1879.
First class	511,891	.....	443,445
Second class	739,765	.....	643,855
Third class	11,686,454	.....	11,172,587
	12,928,110	.....	12,359,887

A falling off of 58,000 in the first-class, of 95,000 in the second-class, and of 514,000 in the third-class, sufficiently attests the reduction in the volume of travel. On the North-Eastern the volume of first and second class traffic is less than it was when the line was little more than half its present extent. Turning now to the Midland Railway, we have the following as the numerical result of the working of the two classes of traffic on that line:—

	1878.		1879.
First class	1,145,926	.....	937,658
Third class	11,326,754	.....	10,695,772
Total	12,477,680	.....	11,633,730

A marked decrease of nearly 800,000 passengers shows the effect of depression in trade and unseasonable weather on this great line; but here it is noticeable also that whilst in the first class the numerical falling off is about 15 per cent., in the third class the declension is little more than a third of the ratio. Turning now to one of the great passenger lines—the Great Northern—we have for the same two periods of six months the following results:—

	1878.		1879.
First class	526,121	.....	471,085
Second class	1,199,680	.....	1,117,857
Third class	7,281,334	.....	7,135,639
Total	9,007,185	.....	8,724,581

On this line, despite the addition to the mileage worked during the half-year, there has been a falling off of over a quarter of a million passengers; but though the loss numerically has been great in every class, it has been the greatest in proportion in the two upper classes. And here it may be repeated that the financial results are generally more emphatic in their testimony as to that gravitation to the lowest level than the numbers. On the line last named, the Great Northern—the loss of revenue is about 8,000*l.* on the first-class traffic, about 6,000*l.* on the second-class traffic, and about 4,700*l.* on the third-class traffic; so that it is apparent that the numerical loss involves the transfer to the cheapest class of passengers travelling the longest distances.

As a final example we have that of the great London and North-Western Railway, on which, for the same two periods of six months, the number of travellers was as follows:—

	1878.		1879.
First class	1,408,700	.....	1,273,912
Second class	2,459,619	.....	2,291,199
Third class	18,268,149	.....	17,491,744
Total	22,136,368	.....	20,956,856

Again, there is a lessened volume of traffic; the first-class showing a declension approaching 10 per cent.; the second-class one of similar ratio; and the third-class one of less than half that proportion. It may be added that the financial results prove even more strongly that the falling off is greatest in ratio in the upper, and especially in the highest class. The figures thus quoted from official sources prove that there is not only a gravitation in travel to the lowest level, but that in addition there is a lessened volume on most of the great lines of railway. In part the prolonged winter may have caused this; but in part also the deep depression in trade is responsible for it. But all the facts obtainable prove that the greater dependence of all the great railway companies is now on the third-class traffic, which, at one time only tolerated, has become the chief source of passenger revenue on railways. And as last year the tendency of travel was to gravitate from the highest to the lowest class, so as to cause the numbers in the latter to increase, the causes which brought this about have now further operated to cause a diminution of the volume on most of the chief railways. It will be noticed that on the three largest railways, the figures for which are given above, that there is not only a gravitation in that stream of travel downwards, but there is also a very considerable falling off in the total volume, which, on the London and North-Western, the Midland, and the North-Eastern, is to the extent of 3 millions in the half-year, and, so far as can be ascertained from the weekly traffic returns, that declension continues. It may, therefore, be accepted as a fact that there will not only be a gravitation in the traffic downwards, but there will also be found at the close of the present year to have been a material diminution in the volume of that traffic—though it is probable that on certain lines the latter symptom will be chiefly shown—the former on others not being so fully affected by the trading depression and dulness.

ASSERTED SAXON CHURCH, ESCOMB, DURHAM.

At the Yarmouth Congress of the British Archæological Association, the following paper by Dr. Hooppell, of Byers-green, was read:—

"It would have been thought impossible, in this age of knowledge and research, that there should have been still in existence, in so populous a county as that of Durham, a perfect Saxon church, entirely overlooked by and unknown to archæologists until a few weeks ago, but, strange as it may appear, such has been actually the case. The ancient parish church of Escomb is a perfect specimen of Saxon architecture. It stands in the centre of a small triangular village, bearing in every feature the impress of great antiquity, on the slope of a hill by the southern bank of the Wear, two miles from the market town of Bishop Auckland, but neither on nor near any main road, the lane which leads to it and ends at it being the only road in the vicinity. For centuries it was but a chapelry to St. Andrew's Auckland, until, in the lifetime of the present generation, it was made an ecclesiastical parish. Hence, no doubt the obscurity in which it has remained. About seventeen years ago, the churchyard having become so excessively crowded that a new burial-place was absolutely necessary, a new building was erected about half a mile from the village, nearer to Auckland, to serve at once the purposes of a church and of a cemetery chapel, and the old parish church was abandoned for the lately-erected edifice. With praiseworthy regard, the present vicar, the Rev. T. E. Lord, who succeeded to the benefice some time afterwards, though not fully aware of the extremely interesting character of the ancient edifice, had the walls of the churchyard round it raised, the ground kept somewhat in order, and trespassers restrained, but the building itself was left to the forces which, with marvellous rapidity, impress upon any deserted edifice the symptoms

of decay. At the present moment many shingles from the roof have slipped from their places, and lie shattered in the churchyard. The glass of the windows is gone. The floor is damp and mossy. And the time when the building would have to be spoken of as a ruin is hastening on apace.

It was the good fortune of the writer to be the first to recognise the true character of the building. Indeed, no trained archæologist can set eyes upon it for a momount without detecting it. It is recognisable at the first glance, and succeeding examination only confirms undeniably and abundantly the immediate conclusion. Since its discovery by the writer, he has had the pleasure of conducting over it the Archæological and Architectural Society of Durham and Northumberland, who were deeply impressed with the existence and condition of the church, and, holding their meeting for the day upon the spot, passed a resolution:—'That it is extremely desirable that a fund should be raised, with as little delay as possible, for the complete repair and restoration of the old parish church at Escomb, with a view to its permanent preservation.' It has also been visited by many other antiquaries, and, in particular, by Mr. W. H. D. Longstaffe, well known as one of the able secretaries of the Society of Antiquaries of Newcastle-upon-Tyne, and as the editor of several of the volumes published by the Surtees Society, who has affirmed publicly that 'the church is Saxon from end to end,' and that 'he knows nothing equal to it in interest.' In addition to these testimonies, I may mention that the Newcastle Society of Antiquaries has, in its corporate capacity, contributed a liberal donation to the fund already instituted for the thorough repair of the building.

The church consists of a nave, chancel, and porch. The dimensions are very striking. The nave measures inside 43 ft. 6 in. by 14 ft. 4 in. The chancel 10 ft. by 10 ft. The porch 10 ft. by 10 ft. The nave is separated from the chancel by an arch, the walls of which are 2 ft. 5 in. in thickness. The thickness of the outer walls of the church is between 2 ft. 4 in. and 2 ft. 5 in.; of the walls of the porch, 1 ft. 10 in. The height of the nave, from floor to wall-plate, is 23 ft. 4 in.; of the chancel, 18 ft. 6 in.; of the porch, 5 ft. 9 in. The height of the nave from floor to ridge is 33 ft. 10 in.; of the chancel, 26 ft. 8 in.; of the porch, 11 ft. 4 in. There is a step from nave to chancel of 4 in. The great height of the building in proportion to its length and breadth, and the shortness of the chancel, are very remarkable. They remind those who have seen the ancient Saxon church of St. Laurence, Bradford-on-Avon, lately restored by the zeal and energetic exertions of Canon Jones, of Bradford-on-Avon, very strongly of that church, and strikingly accord with the pictures of churches extant on early illuminated MSS. The chancel arch is lofty, 11 ft. 3 in. from the floor to the spring, 13 ft. 10 in. from the floor to the crown. Its width is 5 ft. 3 in. It is simple, but thoroughly characteristic.

The walls of the church are, as will be concluded from their thickness, exceedingly massive. They are built of Roman stones, brought from the neighbouring Roman station (about two miles off) of Vinovium. Many of them have the peculiar Roman broaching or tooling upon them. One has a pellet within an annulet. Another has the letters C.V. As the stone stands in the wall, these letters are inverted. Many more evidences of Roman work may exist in the stones, at present undiscernible, as the whole church, with the exception of the west end, was covered in early times, probably in the early English period, with rough-cast plaster, the falling off or removal of which in some places has revealed those mentioned. Against the west end apparently stood the priests' house, the line of the roof of which, of the same pitch as that of the church, but lower, is very marked. A striking feature in the walls are the massive quoins at the angles, with alternating faces and edges, somewhat after the manner of 'long and short work.' The size of these quoins may be judged from an average one measured by the writer, which was 3 ft. 2 in., by 2 ft., by 11 in. Another one measured was 4 ft. 11 in. in length. They go from the ground to the wall-plate, at each of the angles of nave, chancel, and porch. The seats in the porch are massive stones of the same character, with Roman tooling on their faces.

The original windows are five in number, two in the south wall of the nave, two in the north wall of the nave, and one in the west end. The two in the south wall are round headed, the heads being formed of single stones, and the height of their sills above the floor being 13 ft. 2 in. The height of each window from sill to crown is 2 ft. 8 in., the width 1 ft. 3 in. They are deeply splayed. The height from splay to splay is 5 ft. 7 in., and the width 2 ft. 5 in. The two windows in the north wall are square headed. Their height above the floor is 13 ft.; from sill to head 2 ft. 6 in., width 1 ft. 3 in. They likewise are splayed, but not so deeply; height from splay to splay 4 ft. 10 in., width 2 ft. 5 in. The height of the window in the west wall is 25 ft. 9 in. above the floor; from sill to spring is 3 ft.; from sill to crown 3 ft. 6 in., width 1 ft. 3 in.; width of splays 3 ft.; height from splay to splay 4 ft. 3 in. This window is immediately under a characteristic bell gable, and the tolling of the bell, through so many centuries, has worn a furrow, 7 in. deep and 8 in. wide, in the stone which forms the head of this window inside, and in the stones above them.

Besides these windows there are two Early English insertions, one in the nave and the other in the chancel. The church must have been an 'old' church when these were put in. There are evident indications that at the time when they were inserted, other extensive repairs and 'improvements' were effected in the church. As has been already partly intimated, the church received then, as far as can be judged, its external and internal coats of plaster. The roof was also thoroughly repaired. There are six massive couples of principals, tied by footbeams and struts equally ponderous, which formed an open roof, of that date. But four of the footbeams of the earlier roof remain, and the spars on the south side are those of the earlier roof, repaired where they had begun to show signs of decay, while the spars on the north side were all renewed. One of the original windows on each side of the nave was also blocked at this time. The two new ones which were inserted are long, narrow, lancet windows, shouldered internally. The lines of the one in the chancel are brought down nearly to the floor to form sedilia. There is also a piscina, apparently of contemporaneous construction. The disturbance of the massive masonry by the Early English builders, for the insertion of these two windows, is strikingly apparent in the outside walls.

Besides the Early English insertions, there have been three in much more recent times. One is a wide pointed window in the south wall of the nave; the others are wide round-headed windows in the east and west ends. The original window under the bell gable was also blocked at some period, and an original door, of most interesting character, in the centre of the north wall. This door is perfect. It is 5 ft. 9 in. high from floor to head; 3 ft. wide at top, 3 ft. 4 in. or 3 ft. 5 in. at bottom. I cannot give the width at the bottom exactly, as at the present moment it is encumbered with rubbish. These are the inside measurements; outside it is 2 in. less in height, and 4 in. less in width, as the head and jambs are all recessed 2 in. inside. The head is formed of one massive stone, each jamb of three of similar character, two perpendicular, and one between them horizontal. I doubt whether any other ecclesiastical doorway of equally early age, so perfect and so interesting as this one, exists in England."

THE DEBATE ON THE WATER SUPPLY OF LONDON.

The satisfaction which certain members of Parliament seemed to find in the result of the recent debate on the water supply of London is somewhat unaccountable, because the actual result is really to be found in the words which Mr. Cross uttered at the end of his speech, and they were these:—"He was as anxious as any one could be that the whole subject should be investigated, and that immediately and in all its bearings as to whether the water supply could be improved for the benefit of the inhabitants of London; whether, if so, it could be done without seriously increasing the cost of supply to the consumer; whether the mode of supply could not be vastly improved; whether it was necessary for that purpose that the water companies should not by agreement surrender their power to somebody to be appointed by the Government, or whether there was any other mode in which the subject could be more satisfactorily dealt with. Before Parliament met again, he should take care that such an investigation should be made as might lead to such satisfactory conclusion." But, aft what does this amount to? It means th water supply of London will again forf subject of investigation. If the subject unexplored ground, we might then find satisfaction in this declaration, but, seein in 1866 there was a Royal Commission to ex into the question, a Select Committee in 18 to mention Rivers Pollution Commissions have given much valuable attention to th ject, a further investigation seems, to a extent, unnecessary or a mere matter of Because all authorities are agreed that ch of some sort are desirable, and the comm known as Mr. Ritchie's committee, did ac Mr. Fawcett pointed out in the course very elaborate speech, state that "it necessary to consolidate the superseded companies under a single authority which administer the supply of water, not so for profit as for public advantage." Here was a distinct recommendation that, af water companies have been superseded place should be taken by a central aut Thus the sole question is how is this authority to be constituted. For nearly speakers in the late debate agreed that thing must be done, and this being matter is ripe for the Government to t by introducing a Bill constituting a authority, and fairly compensating the companies for the loss of their position. again, was a point upon which all the sp were more or less agreed, viz., that th panies should be fairly compensated. A mode of compensation, opinions natura fered, and, of course, will continue to Yet this seems only to show that it is Government of the day to bring forwar measure dealing with this subject of con tion, and then allow the various opinion exist upon the subject to be tested by cess of a Parliamentary Debate.

We have no intention of following the discussion in regard to the failure of the water-supply; the matter has often be cussed, directly or indirectly, in the colu so many publications, the *Builder* includ we do not propose now to say anything head. But it is obvious that people will make up their minds as to what form the authority to which allusion was made debate, shall take. Opinion seems pre agreed upon one point, namely, that the politan Board of Works has enough to do taking this additional burden on its sh Therefore we think that the Board of may be put out of sight, thus still further ing the question. Then comes the next which is, shall the central authority be or almost purely, a representative body, it be more or less a Government departm other words, shall it occupy in substa position of the School Board, or that, sa Charity Commissioners? Because one shapes it must take; to say as Mr. that it must be a public body, is wha know. What we all desire to find out kind of public body should it be. Und considerable difficulties will be found when the question comes to be analys the one hand, a representative body is more sympathetic to the public want easily moved, and generally more elasti Government department. On the department is more easily regulated, le to make capricious changes. But on th we prefer the representative body, and an example in our mind of a representa which does its work admirably. We the Mersey Docks Harbour Board manages the whole port of Liverpool, a of the most noticeable bodies in Of course, relatively speaking, the im of acting ably as a member of the Mers Board would be more an object of amb Liverpool merchant than would servi London Water Board be to an inhabita metropolis. But a London Water efficient in its character, might be co in some such fashion as this:—One might be elected by the Corporation of another by the Metropolitan Board o another, again, might be nominated by sident of the Local Government Board, others be elected by the several met Parliamentary boroughs. Of course, w no means setting this scheme up as which, above all others, is the most per put it forward rather as a suggestion, as showing that, though it may be di

on a scheme for the supply of water to
ropolis, it is by no means impossible.
e it is that we say the debate at the
the session was not satisfactory, because
ot promise us any actual measure which
criticised, and even if not passed at
yet may be gradually modelled into
ut it foretells further investigation.
d to the question of compensation, we
sure Mr. Cross is himself man of busi-
ugh, even without the aid of advisers,
some feasible plan which will bear dis-
at any rate, and Mr. Sclater-Booth, with
tice in considering County Government
and Boards of Guardians, can surely
s colleague to some scheme to obtain a
g and a water-supplying body. This
general election, to tell the truth, we
lieve that anything can be done; but
rs in London will remind candidates of
ect it may be possible that when the
se appears, in the next Parliament we
some Bill to carry out the better sup-
water to London on the notice-paper
ouse of Commons. Clearly the subject
ed at a stage when a Bill in Parliament
e the next move, and if the Govern-
not soon bring forward some measure
h hope that Mr. Fawcett will shape
l which may be, at any rate, discussed
possible, turned into an Act of Par-
It has been supposed by some that
's words point to the creation of a new
lity for London, including amongst its
e water supply. We do not so read

A Barrister.

PRESENT STATE OF THINGS.

The prevailing feeling amongst all throughout England at the present is *discontent*. The great landowners, comes are derived from rent, complain heir tenants are in many cases unable nd a discount has to be made; and the rmers complain because under the of three or four bad seasons, they n, in the world's competition, culti- t a loss. The labourers complain, be- though it has been shown over and n that the soil gives the most fruitful the labour of the human hand, yet the the farmers and their landlords for rs past has been to totally remove, if the labourer from the land, and compel o,—where he can. The labourers in mplain that as a result of this policy, competition is created, which not only ages unreasonably, but prevents regu- yment, and so produces in the labourer hiftless, unsettled feeling. The trades- manufacturer also complain, that the policy of forcing labour from the into the towns gives them a greater and power over men, yet that the f the men so driven has deteriorated; ur town-bred labourer has not the in him that your country-bred im- ns, and that, in fact, it is a case of e goose that laid the golden eggs, with result, that for the greater part of the y, if not most, are dependent to some least upon the poor-rate and other nary aid.

perience of the past winter has left a deep n on our most thoughtful workmen, while ns only confirmed in their shiftlessness. ion also, especially in the building trade, this year so keen, that, like giving illings change for a sovereign, no profit In many other branches a positive loss with the result in many instances g the works. Again, it is found that s started on leased land in good times le to bear the strain of high ground these depressed times, but as this is a rge which must be paid, be the works able operation or not, it is like a mill- und the trader's neck.

a complain bitterly, also, of our bank- ws, which enable the crafty rogue to ile the honest man sinks, and which loss to the country last year of ns sterling, the laws being well as "Thieving made easy"; and that, nence, a class of persons have sprung g themselves accountants, &c., who, lawyers, trade upon the debtor's s and rob the creditor of his legitimate Then the great merchant complains e *Othello*, "his occupation's gone."

The telegraph and the steamship have put a girdle around the earth, so that merchant "adventurers" are no longer possible. The wants and desires and means of persons at the remotest distances are quickly and publicly known in the markets of the world, and are in consequence readily met, and in close competition, too.

Merchanting has now become in most cases mere gambling, with "heads I win, tails you lose," and all their wretched jargon of bulling and bearing and contango-ing, so different from the honest trader of former years, who was content to risk his own, and wait the event. Then the statesman is discontented because wars and rumours of wars and general unrest disquiet the world, and distract attention from that forward march of progress which we have a right to expect from past labours, and involve us in great and unnecessary expense at a time of commercial depression when our every means should be husbanded to tide us over until more prosperous times. As I said at first, everybody seems at the present time to be in a very discontented state.

What are to be the remedies for these distresses and this discontent? for without a suggestion in that direction, their mere enumeration is a thankless and a useless task. And I am not unmindful that offering advice under these circumstances is a grave and serious business, involving, it may be, when acted upon, the welfare and happiness and comfort of many fellow-countrymen. For immediate relief then, it appears to me that a large emigration is necessary. Many trades in which numbers of our people were brought up have become, by reason of invention and discovery, obsolete, and others are hopelessly overcrowded, and I cannot do otherwise, therefore, than applaud the decision of the Miners' Conference, when they determine to send out of the country a considerable number of their fellows. Trade is looking up, especially in America, and the wrench is not by any means a great one when a man may transfer himself from Liverpool to Canada by at least three lines of steamers, for the small sum of 4*l*., and at a loss of time at most of ten days. There, if he be fond of a country life, he may have a plot of good land of 160 acres in extent, simply for living on it, and in three years it becomes his own freehold. If his strength or inclination does not lead him in that direction, he may find employment in the towns, or he may cross the river into the States. Anyhow he will have entered the land from which at the present moment the bulk of the food of the people of this country is derived, and he may therefore reasonably expect to get a greater share of the necessaries of life than he has been able to get here. Those who go away will, in most cases, be workers. Then the percentage of *drones* in this hive of ours will be sensibly increased, and it will be the duty of those who remain so to alter the laws which relate to the land, that not only may the bulk of our people have a stake in the country, but may also have a portion of land into which that stake may be driven. We must abolish entail and primogeniture and settlement, as every other country with any pretensions to civilisation has done, and must give every present owner of land absolute power of disposal of it, and prohibit its being tied up in any way in the future. We should also provide that leaseholds for building purposes may be bought up, and the freehold secured to the building owner. Thirty years of this *régime* would make much alteration in a future edition of the Domesday Book, and add enormously to the wealth and comfort and happiness of our people.

In trade, I should propose to abolish debt, except for wages, for all sums under 20*l*. Nothing I know of is so conducive to prosperity in trade as ready money. People would look more closely into the quality of their goods if they were going to pay down on the nail for them than they do under the present reckless and demoralising system of credit. There would then be less need than now of a reform in our bankruptcy laws, which it is to be hoped cannot long be delayed. Then we want a cheap and good patent law, by which the real inventor, however poor, may hope to reap some reward for his labours, and not as sometimes happens now, be compelled to a costly litigation to defend his rights.

We also want a very considerable redistribution of the professional and shopkeeping classes. It is proverbial that of the former by far the larger majority must have a means of living independently of their profession, and it is notorious that with regard to the latter, and their agents, they are almost like the Kilkenny cats, ready to devour one another, and their customers too. Every builder knows far too well what it is to be pestered with travellers calling upon him, and other traders are in a similar position. The small shopkeeping class is vastly too numerous and needy, living from hand to mouth, mostly on credit, and that very short, and trade is followed by a great number, mainly because it enables them to spend five days out of seven in semi-idleness. The facilities for distribution are now so numerous and complete, that a very great diminution of the smaller class of distributors might be advantageously effected, and if they and their families could be induced to turn their attention to agriculture, we might hope for more prosperous times in future. Finally, we want a greater practice of frugality amongst *all* classes of our people.

E. Grimes.

UTILITY AND BEAUTY.

Sir,—In my last letter I endeavoured to rightly divide this subject for the purposes of accurate thinking, to show,—1. That either an object or a being may be perfectly adapted to a purpose without being beautiful; 2. That either an object or a being may be perfectly adapted to a purpose and also beautiful; 3. That a work of art may have no other utility than that of satisfying the æsthetic sense; and 4. That the greatest judgment is required in heightening with art anything which, in its fitness, is not also beautiful. But we will now pass on to review some of the economic phases of the question.

The gratification of a refined taste, at the fount of originality, is, save and except under the cover of museums, an expensive luxury. We may, indeed, say, that even then it is an expensive luxury, for museums are costly State appendages. It is very true that, by the various processes of reproduction, which are daily increasing even to a craze, the semblances of things beautiful may be cheaply disseminated; still, the purchase of reproductions is the purchase of superfluity, and the people who are engaged in a hard struggle for existence will think twice before laying out money upon anything beyond what is absolutely necessary and useful. The teeming majority, therefore, do not make any great demand for artistic and ornamental luxuries. It requires a nation to be overwhelmed with wealth, or otherwise in easy circumstances, and labour very cheap, to gratify to the full a taste for fine art. Would any Chancellor of the Exchequer, though he should advocate that the beautiful should never be divorced from the useful, have the temerity, in presenting his estimates to Parliament, to include one for damascening all the Martini-Henrys, all the heavy ordnance, all the sword-blades, and all the bayonets in the services? At present, utility,—a murderously-effective utility,—is all that has been aimed at and accomplished in arms of precision. Damascening would by no means mar their utility; it would only greatly increase their cost. It was once practised in the picturesque ages, and savages still decorate their war prahus, their paddles, and their spears. Why should we now divorce the beautiful from the useful in our firearms, and thus deprive the common soldier of an element of culture? Many of the working parts of stationary and locomotive engines also might be damascened; cannot we defer our lives till this is accomplished and railway whistles shall be attuned? We might greatly extend the list of utilities which it would be possible to ornament. But we should recollect that the embellishment of the useful, which is not always in itself beautiful, always increases the cost of production.

A barrel,—do not smile gentle reader,—a barrel is a very useful thing, but it is a thing that has been divorced from the beautiful ever since barrels had their being. Who would ever dream of ornamenting a good beery or winey barrel? The Great Tun at Heidelberg is the single exception so honoured, but that is not an every-day barrel; and yet we would venture to say that whichever nation should be pre-eminent in a Grand International Barrel Competition would in the aggregate excel in all other kinds of manufacture, for utility is the paramount consideration in its construction.

The truth is that the modern art-notion is surcharged with ornamentation, even to ridiculous excess. A nightmare of Louis Quatorze

extravagances oppresses us. There is scarcely a house or a mansion of any importance that is not overdone in artistic and ornamental display, and of the wrong kind. They are for the most part more like museums than homes of taste; there is no repose, they are like theatrical property-rooms, and the visitor feels inclined to inquire when the play will commence. How different were the Grecian homes; and if the Greeks were perfect in taste, it should be the Greeks whom we should endeavour to rival. The Grecian homes were sparse in ornament, a mural painting here and there, a few ornamental vases and bronzes, a statue or two, and some graceful hangings either drawn aside or covering the doorways. We have yet to learn the virtue of simplicity and proportion as the main elements of good taste. Yet to these qualities in the manufactures will ultimately be opened the markets of the world. This is why I urge, emphatically urge, that fitness, rigorous utility, should be the primary object of the manufacturer and the workmen, for in that training they would learn to appreciate simplicity and thoroughness; and in divesting objects of everything extraneous to this purpose, they would come to know wherein workmanship of certain kinds permits judicious heightening with art. We are always disquieting ourselves about what the French are doing. Cannot we have a taste of our own? This foolish spirit of imitation will, depend upon it, always find us behind. We cannot indulge our taste in a curtain but it must be covered with a French pattern on a lovely toned ground, a sweet thing wherewith we look forward to convince our friends of our perfect æsthetic culture; whereas a simple plain hanging, gracefully disposed, would be a much stronger evidence of good taste to the really cultivated. He who, having a grand mansion, shall be the first to exclude pictures in frames from its walls, and who shall admit nothing in the way of art but what shall be designed to occupy some appropriate position, will lead the way to a great and beneficial art reform. The development of art itself becomes more robust when it is consecrated to a purpose.

The world in the aggregate desires thorough workmanship and utility beyond everything else, and that nation which shall exhibit these qualities in the highest degree will have the greatest number of customers. For this principle conforms to a world-wide economical policy; and even in the art manufactures, that nation will lead which shall exhibit moderation and economy in matters of taste. Simplicity in the long run will beat the excessive and overdone in decoration. Even the wealthy will hail a taste which shall dispense with the extravagantly expensive, the unnecessary, and the profuse; and this economy will in the end prove favourable to the encouragement of the higher forms of art, for the rich will then have capital to spare for painting and sculpture out of the savings upon gewgaws. The English æsthetician would have ornament everywhere, and over everything; he has no appreciation of plain spaces, of repose. He will be content with nothing less than a metropolis all art and decoration. His art taste is founded on the national Christmas pudding,—he must have richness throughout. He has no conception of the value of contrast, of concentrating art at emphatic points, and thus poor, well-meaning, and simple-minded folk are put to the blush, and made to fancy that their taste is very much worse than it is.

Orators upon the commercial value of the beautiful would do well in discoursing upon this favourable topic to recollect that it is not upon arms of precision, upon ploughshares, pickaxes, and spades that the beautiful is required to be displayed, but upon public buildings, and the homes and surroundings of the wealthy. This is the speciality of the artist and artist workman. In the art manufactures, the greatest success will be attained by purchasing the direction of the best artists. The credit of Wedgwood was due to his enterprise,—the success of his wares was due to Flaxman and others. We need men to discourse upon art who understand what they are talking about, not amateurs who have a confused smattering of notions, any one of which coming uppermost is paraded as if it were a general law established on the soundest of bases. Let us have no more of this; for, though it may be laughed at by men who really understand the principles of art, it only serves to confuse those who require to be rightly instructed.

W. Cave Thomas.

THE NEW POST-OFFICE SAVINGS BANK BUILDINGS.

With the completion of the Government new Post-Office Savings Bank buildings, now in progress in Queen Victoria-street, that new thoroughfare will have been entirely built up from its junction with New Bridge-street, Blackfriars, to the Mansion House. The new Post-office buildings are now almost externally completed, the fifth, or top, story having been reached. The structure is chiefly distinguishable for its unusual height and length, and its massiveness and strength. It has a frontage to Queen Victoria-street 146 ft. in length, and is upwards of 80 ft. in height, being the loftiest building in the thoroughfare, and about 20 ft. higher than the British and Foreign Bible Society's premises, which it immediately adjoins. The elevation is entirely in Portland stone, the ground and first floors being rusticated. Each floor contains a range of eleven lofty windows, those from the first floor to the top of the building being alternately surmounted by arches and pediments. The main cornice is by arches and pediments. The main cornice is exceptionally large, being nearly 5 ft. in depth, and projecting between 3 ft. and 4 ft. beyond the general face of the elevation. The cornice will be surmounted by a parapet about 3 ft. in height. Apart from the five floors there is a basement, the windows of which are deeply recessed, and rise to a height of several feet above the street line. There are two spacious arched entrances to the building, one at the east and the other at the west end.

Internally, all the floors rest on iron girders and columns, from the basement and ground floor to the upper story, and it is computed that the weight of iron in the building amounts to about 900 tons. All the floors are intended to be made strictly fire-proof. The building extends to an average depth of about 100 ft., and covers a ground area of nearly 15,000 superficial feet. The general business of the Savings Bank will be conducted on the ground floor, while the upper part of the building will consist of offices for the clerks employed in this department of the Post Office.

Mr. Williams, of her Majesty's Office of Works, is the architect, and Mr. W. Brass the contractor.

A CO-OPERATIVE BUILDERS' SUPPLY ASSOCIATION.

The principle of co-operation appears to be permeating through all classes of society,—trading, commercial, and professional men. Amongst others of its class the latest announced of these societies is the "Co-operative Foundry and Builders' Supply and Advance Association," the prospectus of which states that it was registered on the 7th of the present month, with twenty-two articles, and a capital of 25,000*l.* in 5000 A shares of 1*l.*, and 4000 B shares of 5*l.* Amongst the signatures are several well-known city men in the iron and other trades connected with building; also a number of architects, surveyors, and builders, all of whose names and addresses are given. It is stated that the objects of the association is to acquire the business of Messrs. Macphail & Co., of Upper Thames-street, with its machinery, stock-in-trade, and plant, and to manufacture, sell, and deal, in iron and metal-work, foundry, wood, and cabinet work, and all fittings and articles used by builders.

DISCOVERY IN THE LAKE OF GENEVA.

M. Morel Fatio, who is carrying on investigations respecting pile structures in Lake Leman, has just found a large boat, dating probably from the time of the lake-dwellers, which, excepting some trifling injury to its stern, is in a perfect state of preservation. This "one-tree," of a large fir trunk, is 32 ft. long and 2¾ ft. wide. The bow is decorated with carving. This relic of pre-historic times has been moved to the museum of Lucerne.

Antwerp Cathedral.—A note of warning as to the threatening condition of the tower and spire of Antwerp Cathedral comes from Paris. A writer in the *Figaro* asserts seriously that unless proper works of repair be immediately and efficiently undertaken, the open work which surmounts the tower will become a ruin dangerous to the passers-by.

THE QUALIFICATIONS OF TOWN SURVEYORS.

Sir,—The attention now being direct this subject, through the medium of columns, may ultimately be of benefit, but hardly able to hope for this desirable end face of such extravagant demands as that by "Progress," in your issue of August The attainment of such an excessively standard of engineering knowledge and e ence is possible only to a small minority o fessional men, to whom, consequently, th of the *larger* boroughs should be co Even "Progress" seems to have some i this kind, as he proposes to limit these c cations to the engineers of towns ha population of at least 10,000. There is h my mind, a serious flaw in his argument is not so much in the larger towns th cause for complaint on the score of incom officials exists. It is in the smaller towns of them already provided with well l sewerage and waterworks, and thus esp requiring permanent engineering adviser the "quack" finds his most secure and turbed retreat, and where, as a consequen sanitary arrangements are, after all, most questionable character. Thanks to vellous provision of the Public Healt Local Boards are permitted to merge t portant office of surveyor in the total simular one of inspector of nuisances, result for which the Local Government B nominally responsible. At the same t must be doubted whether that body is a the wide extent of the mischief, other might be supposed that sanction to su appointments would, in a large numbe stances, be refused. Of course, the local rities plead the old excuse of cost, but consider is the last consideration to attention should be paid. Permanent wo now being laid down throughout the under totally unskilled advisers, and w utter disregard of sanitary principles, w management of existing works, as perfo the class of towns to which I more part refer, is a miserable farce, which would amusement were it not for the importa rests which this course of action so imperils. The remedy lies entirely w Legislature. If the Local Government be powerless to enforce the appointme better class of local executive officials sanitary district, steps should without delay be taken to ensure the grouping districts, with a view to the permanent ment of consulting engineers, speciall rienced in sanitary work. For if it be n to employ medical advisers to local au at high salaries, for the sole pur reporting upon existing sanitary def is surely equally important that t vising and execution of the remedie should be entrusted to men of equa in their own proper profession. sense, the work of medical officers o may be regarded as being to a gre exhausted. Their labours up to the time may be looked upon as the oper a huge commission, the result being whelming unanimity of testimony a prevalent sanitary defects in every par kingdom. This being so, the appoint skilled engineering advisers to local au cannot longer be shirked, unless w deliberate intention of casting discre the recommendations of medical offic imperfect and disastrous carrying ou works arising therefrom. John S. Ho

LOCAL BOARD SURVEYORSH

Sir,—It appears to me, and I thi venture to say it is pretty well under the profession generally, that not Enfield, of which such strange proceedi recently been shown up and deservedly in the *Builder*, but that there are places to be found where the so-cal *sighted* country boards" act even mo sistently than the Enfield Board has do instance, allow me to inform your rea a little time since, whilst staying at small but pretty watering-place on t east coast of Devon, when discussing state of the roads there as well as the and other matters which are under th of the local board of that town, I was to my great surprise, that they had a li

elected a *sailor* as their surveyor at a of 30*l.* the year. Yes, a person, who as nformed, had been "ploughing the wide all his life or nearly so. Now I would r readers, what can a sailor understand he duties of a board surveyor, or wherein rson of that calling be in the least degree d for the post? A TRAVELLER.

ENOCK MUNICIPAL BUILDINGS COMPETITION.

reference to the designs sent in for the d new municipal buildings in Greenock, already mentioned briefly the selection y Mr. Chas. Barry, to whom they were . As one or two points in the report ready given rise to comment, it will be et the referee speak for himself. We e print his report *in extenso* :—

g regard to the request you did me the honour to e by the letter of the Town Clerk of the 5th of June having regard to the further letter of the 9th of ich by your direction he addressed to me, I have you are aware, several days at Greenock in d repeated examination of the fifty designs sent ition by architects for your proposed new muni- dings, and I may be permitted to say that during of my stay my whole time and thoughts were to the somewhat difficult task of advising you portant matter.

essive separate examinations, I had while there reduced the number of plans sent in to eleven, uch I felt convinced that my final choice would aving been permitted by you to have these sent I have further examined and analysed them fully again, and now beg to lay before you the which I have arrived.

examinations I have been influenced by the desire for you, so far as I may, a plan which shall, to rt extent possible, and under the circumstances petition guided by instructions such as these ill the requirements considered by you by those ns to be essential, and which most sufficiently the question of utility and convenience in the king of its several departments. I have, there- sidered these points rather than simply which ght externally be the most original and beautiful hitectural point of view, and it is only right to the competitors, whose plans and designs I do not berty to recommend to your notice, to say that several among them with at least as high a claim, , as any of those I shall presently name. At time, should you confirm my choice, I have no hat Greenock will possess a building of which she roud.

soon evident to me that as several distinct depart- public service were to be accommodated in a ilding, my proper course would be to examine eral heads the different plans, having regard to arate requirements, and then finally putting the these distinct examinations together, to recom- on those plans which, on the whole, best dealt or with the most of these requirements, in the sesful manner.

separate heads of inquiry seemed to resolve them- o the following :—

most satisfactory line of road which should he site from Taylor's Close to Cathcart-square, best serve as the mode of approach to the present , which was required to be retained as an integral he New Municipal Buildings, and in connexion me so adopted should also provide by reasonable to the old town-hall the best accommodation for public assemblies which are held there from time

most suitable arrangement for easy working of all and the several separate offices connected ot forgetting that the natural desire of the town to have an interior not only conveniently but with some reasonable architectural preten-

police department, having regard to the instruc- extent of accommodation required, its internal nts in reference to the police court, and its s from, yet easy communication with, the other s and the Council-chamber.

distribution and relative position of the several as so as to secure their most convenient working, ully the relative position of the town clerk's office rovost's room to the Council-chamber.

means of ready access from without to the several departments, and to the building as a whole, by ious staircases for public use, and sufficient, well- ed connected corridors.

arrangements and extent of the spaces proposed oted to shops and offices, which might become a annual revenue, and meet to some extent the e new building, but of course without sacrificing subordinate the primary use which it is destined for many years to come as the administrative your important and increasing town.

ly, but not altogether least, which design com- the largest extent all the foregoing requirements o have sufficient architectural pretensions to take k among the public buildings of the country.

I therefore conducted my examination under these eads of consideration, the result is as follows :— t the head of the list the design sent under the rt and Science,' as I find it very much in advance all its arrangements, departmental and otherwise, other. I beg to advise that the two premiums of be awarded to the designs with the mottoes ' 'Let Greenock Flourish.'

have asked me to designate the six sets I consider I add in the following order three other designs toes, 'Qui dit Progrès dit Labeur,' 'Ciconia,'

the Town Council adopt my suggestions, and work in the hands of the author of 'Art and there are some points in which I think the plan nproved, and I would also suggest some curtail- he raised portions of the façades or quasi-towers, rd), I think, detract (if so numerous as shown) simplicity of the sky outline and the consequent dignity of the building, while these omissions would also effect some economy.

In making the above selection I have been guided, as I have already said, primarily, by the general comparative excellence of the arrangements in planning, the accommodation given to the several departments, and the utilisation of the entire site; and secondarily, by the architectural merits of each design.

To effect the first in the most complete way, it obviously follows that larger and better accommodation involves greater cube contents, and consequently greater cost, and the same remark applies in due proportion to the architectural treatment of the exterior, some designs showing plain, and others more ornate treatment, some having lofty bell towers or smaller projections above the parapet level to a greater degree than others, no doubt with the intention of producing a more imposing and pleasing sky-line, and a more dignified effect from a distance.

These several treatments affect, of course, the estimates, and in considering these it is right to point out that increased cost means, therefore, increased advantages, while, in carrying out the work, it is of course optional with the Council to have these increased advantages, or, for the sake of reducing cost, to curtail or do without them.

In the instructions to architects, it is said that the cost should not exceed 80,000*l.*, though this is not made imperative, while, on the other hand, they are specially told to utilise the whole of the space available, two directions which are somewhat inconsistent one with the other.

I venture to think that design is the most meritorious which, by careful study, shows how the whole site may be utilised to the greatest advantage, and I have been largely influenced by this consideration.

I subjoin approximate estimates of each of the above-named six designs, founded on prices for work of similar sort in Greenock, furnished to me by the Master of Works, and from local experience deemed by him to be there sufficient.

They are, it is true, lower by at least 10 per cent. than the prices which I believe, the same work would cost in London. They would range as follows, following the order of merit in which I have placed them :—

	Total Cost.	Cost of Land to Accommodation.	Net for the Municipal Purposes.
	£	£	£
1. Art and Science	88,603	5,724	83,879
2. Omega	64,559	8,848	55,711
3. Let Greenock Flourish ...	73,138	6,155	66 983
4. Qui dit Progres dit Labeur	70,446	12,653	57,793
5. Ciconia	82,912	7,544	75,368
6. M. B.	70,090	6,164	63,926

At London prices, I think the cost would be :—

1. Art and Science	£101,168
2. Omega	75,928
3. Let Greenock Flourish	91,606
4. Qui de Progrès dit Labeur	79,660
5. Ciconia	88,773
6. M. B.	90,926

I cannot conclude this Report without bearing testimony to the ingenuity in planning, and the artistic excellence of composition of several of the designs sent in, but which, though thus excellent in one or other single particular, are, in my opinion, less worthy, taking them in their entirety, and subject to the heads of inquiry I have above named, than the six designs I have brought prominently under your notice."

WILTSHIRE ARCHÆOLOGICAL SOCIETY.

THE annual gathering of the members of this society was held on the 12th inst. at Marlborough, under the presidency of the Marquis of Ailesbury. The report, read by the hon. sec., the Rev. A. C. Smith, stated that there are now 380 members on the books, and that there is a balance in hand of 152*l.* Sir John Lubbock, in moving the adoption of the report, congratulated the members on the flourishing state of the Society, which was due in such a great measure to the exertions of their officials, and especially to the labours of the honorary secretary, Mr. Smith.

Lord Edmond Fitzmaurice was elected President of the Society for the coming year, and the Rev. A. C. Smith and Mr. C. H. Talbot were re-elected general secretaries.

The Rev. Canon Jackson read an interesting paper on "Savernake Forest," and Lord Henry Bruce, in seconding a vote of thanks, referred to the tenure-horn mentioned by the author of the paper. There was a curious incident connected with it in which his (the speaker's) grandfather was concerned. In his time the king came and paid a visit to Savernake House, and stayed two or three days; and just as his Majesty was going away, his grandfather expressed the hope that he was pleased with his entertainment. The king assured him that he was exceedingly pleased with everything, but he had omitted to discharge a rather important duty. Perhaps he was not aware, the king told him, that his property would pass immediately into the hands of the crown if he did not discharge the duty. His grandfather on hearing this was thrown into a state of great trepidation, and inquired what the duty was. "You have forgotten," the king replied, "to blow your tenure-horn. When a king of England comes here and that horn is not blown, your property becomes forfeited to the crown." His grandfather lost no time in discharging the duty, and, fortunately, the estate still remained in the hands of his descendants.

Later in the day the members visited the churches of St. Mary the Virgin, and St. Peter and St. Paul the Apostles. The notice of the visitors was likewise directed to the "Old House" at the College (formerly the Castle Hotel), and which was previously the residence of the Seymour family. A temporary museum had also been organised.

The anniversary dinner was held in the evening at the Town-hall, the Marquis of Ailesbury in the chair. The speeches included one by Sir John Lubbock, who, in reference to the Ancient Monuments Bill, said that nothing was further from the idea of any of those who brought forward the Bill than to imagine that all the owners of ancient monuments were likely to destroy them. When the schedule was drawn up it was thought that it would be invidious to leave out any, although they were known to be safe, and it was thought best to make a list of them all, whether they were safe or not. It was only in this sense that some were included, which, he was quite sure, would be perfectly safe without any such protection. The effect of the Bill would be this, that if the owner of any one of those ancient monuments wished to destroy it, the nation would have the power of saying, "Give us the opportunity of purchasing it at a fair valuation." So that they would see that all those who, like Lord Ailesbury, were anxious to preserve the monuments, would not be interfered with the least bit in the world. That being the case, if his lordship had still been a member of the House of Commons, he should have confidently claimed him as a supporter when he brought the Bill forward again, as he proposed to do next session.

On Wednesday, the 13th, the members had an excursion to Savernake; and on Thursday visits were paid to Rockley, where a barrow had been specially opened under the direction of Mr. H. Cunnington. The party took the lower road to Barbury Castle, and proceeded thence by Ridgeway, an old British tract way to the Marlborough and Wootton Bassett road, and so on to Avebury. After visiting Silbury Hill and the stone circle, and the cromlech in Clatford Bottom, the members returned to Marlborough, and the meeting of 1879 was brought to a close.

M. VIOLLET-LE-DUC.

SIR,—Will you have the kindness to answer in your column to correspondents, for the information of Mr. Planché and myself, the following inquiries?

1. Is the *M. Eugène Emanuel Viollet-le-Duc*, who figures in this year's Royal Academy Catalogue as an Honorary Foreign Academician (and is, I presume, the famous French architect), still living? and is he the same "M. Viollet-le-Duc, architecte," who appears on the title-page as author of the "Dictionnaire Raisonné du Mobilier Français et de l'Armure"?

2. If the author of that work, and still living, who was the M. Viollet-le-Duc, who, if I mistake not, died sometime about March — May, in the present year?

The edition of "Men of the Time," to which I have access, does not quite clear up these points.

Mr. Planché, in his recently-completed "Cyclopædia of Costume," writes of the author of the "Dictionnaire Raisonné" as one recently deceased. I cannot but think this is a mistake, and I promised him to ask for the benefit of your kind assistance in clearing up the point.

W. B.

*** M. Viollet-le-Duc, author of the well-known books mentioned, is, happily, in active life. It was M. J. L. Duc, the well-known French (Classic) architect, who died not long ago.

A line in the "Notices to Correspondents" would have sufficed to answer "W. B.," but as the confusion caused by similarity of name in the case of these two distinguished Frenchmen (and which we have sought on more than one occasion to remove) still exists, we have thought it better to give prominence to this reply.

Pictures at Liverpool.—We hear that a very large number of works have been sent in for the forthcoming Autumn Exhibition of Pictures, under the auspices of the Corporation of Liverpool. It is expected in local circles that the exhibition will exceed in interest any of its predecessors. A fine display of sculpture is also promised.

ASHINGDON CHURCH, ESSEX.

Sir,—I have been much interested in the report given in your paper of August 9th of the recent excursion of the Essex Archæological Society. Mr. J. H. Parker, C.B., kindly drew my attention to Ashingdon Church in the autumn of 1873, and I went down there to examine it and make some measured drawings, as well as visiting the neighbouring churches of Canewdon and Hockley, in the search for possible Saxon remains. Subsequently I had the honour of reading a paper on the subject at one of the afternoon meetings of the Royal Archæological Institute (February 6th, 1874), having received valuable aid from Mr. Parker. My conclusions at that time pointed the same way as those of Mr. Alfred White, F.S.A., i.e., that the tower was of Saxon date. Mr. Parker, I may add, was of that opinion.

Edmund B. Ferrey.

MUCHELNEY ABBEY.

Sir,—In your remarks on this abbey at the recent meeting of the Archæological Institute, you say that the Rev. S. O. Baker (not Long) gives the width of the church as 58 ft. This is outside the foundation walls; the inside would be 52 ft., as stated by me in my paper in the "Proceedings" of the Somerset Society for 1878.

T. Shelmerdine.

METROPOLITAN WATER SUPPLY.

Sir,—Your excellent article on this all-important subject, so full of facts, should be reprinted and distributed throughout the metropolis and the length and breadth of the land. The loss by defective water supply to the great City of London and its surroundings, where every necessary and commodity of the choicest quality can be procured for its thousands of occupiers, except that of plenty of pure water,—the life-sustainer in every sense,—the article of all others which should stand pre-eminent in its importance to the community for health and prosperity, cannot be estimated in a monetary sense. And why all this quibbling and delay should stop the way cannot be understood, when so many of our cities and provincial towns have had their constant supply for many years past,—take York, Nottingham, Norwich, and others for instance,—and some of the supplies obtained under difficulties, and here we are, in many parts of this great emporium, often without water for days. Many poor families who cannot afford the ordinary necessaries of life are deprived of pure water, or impure. Such a state of things to be recorded in this the nineteenth century, will pass into history, and remain a black spot in its pages. There are more deaths caused from the want of water, and the use of bad water, than by great battles, earthquakes, or plagues. Contributions are set on foot for the survivors of the above,—abundance of money flows in from the generous public. Again and again this is repeated, year after year, and responded to with a will, placing this great country pre-eminently before the nations of the earth, yet our own destitute and poor inhabitants are forgotten in this sense, having no water, no redress, and are left to die in poverty and filth, for want of that which should be within their reach. Better to start missionaries throughout the metropolis, and ask them to make the outcry, and seek contributions from all classes, from the highest to the lowest, to aid in procuring water, and free London from the trammels that prevent this boon. If the cities and provincial towns can give water, surely some strong effort should be made to give London a constant supply. Eminent engineers have shown, over and over again, where and how this supply can be given, and with considerably less waste than this intermittent supply—this being admitted by all experienced in the subject. The 30 gallons per head per diem is calculated on the intermittent supply. Give a constant supply, under suitable fittings and proper supervision, and it will be found that 15 gallons will be ample per head per diem; and we can obtain this at the estimated cost of, say 1,000*l.* Pray, what is that sum to be compared with the great and beneficial advantages it will bring to all concerned?—setting aside, wiping out the great blot that overhangs the metropolis. Surely this ought to be done without much further delay. The Prince of Wales having in some measure taken up the subject, I have faith that his Royal Highness will lead on to success,—that our householders and great landed proprietors, engineers, &c., will support the Prince with all their might. Noticing your remarks on the impurities of the water in cisterns, I must encourage you to speak out. It is only the press, your journal, and those interested by practice and experience, that can give the public the benefit therefrom. Every word you have spoken can be supported by facts, and by far worse cases than you describe. If all the defective cases were sent for your publication it would make the water-drinkers of the metropolis shudder and fly from it—it would make the aristocratic householder, and more particularly the fair sex, blush with confusion and terror.

T. Suffield.

Archæology in Staffordshire.—It has been suggested that, in order to avoid ground occupied by several local societies in this county, the projected new Staffordshire Archæological Society should name itself "The Salt Antiquarian Society,"—a title which (says the *Staffordshire Advertiser*) will better show its origin with the trustees of the William Salt Library, and that its essential object is that of a publishing society. A general meeting of the subscribers is to be summoned for the middle of September.

PROPER FITTINGS FOR THE WATER SUPPLY.

At the Lambeth Police-court, before Mr. Saunders, Mr. Henry Wilson, owner of houses in Farmer-street and Sharstead-street, Kennington, was summoned at the instance of the Lambeth Waterworks Company for contravention of the regulations made under the Metropolitan Water Act, 1871, by permitting waste of water and not supplying proper fittings for the water supply.

Mr. Louttit, secretary to the company, prosecuted, and informed the court that under the regulations of the Act the Lambeth Company had spent a considerable sum to allow of the public having the constant supply of water. Some 5,000 houses were now supplied, and the system was being rapidly extended. Notice had been served on the defendant that he should have the necessary fittings ready; but, not having done so, a great waste followed. The company, although having the power, did not wish to cut off the water, as the tenants would suffer, and therefore, as the defendant had not done the necessary work, it was requisite to bring him to this court. It was only the desire of the company that the regulation should be carried out, and the public receive the benefit of the constant supply.

Ultimately Mr. Wilson said he was willing to make arrangements with the company with regard to the question, and to enable that to be carried out an adjournment was ordered.

Mr. Louttit said there were 2,000 houses in the same district, and only 150 had failed to comply with the regulations.

At Hammersmith, before Mr. Bridge, Mr. Brickell, a builder, was summoned by the Fulham Board of Works for erecting a new house, 17, Pownall-terrace, Fulham, without sufficient apparatus for a water supply and ash-pit.

This was the first case of the kind brought under the notice of the court.

Mr. Farman, in support of the summons, said it was taken out under the 81st section of the Metropolis Local Management Act, the defendant being liable to a penalty of 2*l.*

The house, recently finished and now occupied, was without any water supply.

Mr. Bridge said it was in direct disobedience of the Act, and might have caused disease. He imposed a penalty of 4*s.* and 2*s.* costs.

BLACKBURN HIGH-LEVEL WATER SUPPLY.

The town of Blackburn is supplied with water by the corporation by a gravitation scheme from the hilly range on the south. There is, however, a portion of the district ranging from 450 ft. to 725 ft. above Ordnance datum, which is beyond the reach of the gravitation levels, and which has for many years suffered from the want of some adequate supply of water. According to the *Engineer*, a scheme for the supply of this high-level district was commenced some time ago, and has just been completed. At an elevation of about 600 ft. above Ordnance datum a well or shaft, 10 ft. in diameter and 31 ft. deep, was sunk into the grit rock forming the ridge or boundary line on the north of the town. From the bottom of this shaft a bore-hole of 20 in. diameter has been put down to a depth of 215 ft. from the ground surface. At this depth a supply of water adequate for the district was met with, and is now being utilised. The bore-hole was put down by the patent steam-boring machinery of Messrs. Mather & Platt, of Manchester, in a most satisfactory manner. The rock bored through was especially hard, and tested the machinery very thoroughly; but the circular-mounted steel cutters did their work in a clean manner, and produced from time to time excellent cores or samples of the rock, which have been preserved for reference. The water in the bore-hole and well rises to within 12 ft. from the surface of the ground when there is no pumping, and the flow is rapid and constant, the yield being about 70,000 gallons per day. An engine-house has been erected over the well and bore-hole, and supplied with a horizontal engine with 13 in. cylinder and stroke of 2 ft., which is employed to work bucket and plunger-pumps, which raise the water from the bore-hole, and force it to a height of 125 ft. from the engine-house floor into a covered reservoir constructed within the public park, and having a top-water elevation of 730 ft. above the mean sea-level, and from this reservoir the supply will gravitate through the high-level district. The reservoir is excavated on a hill-side slope, and its formation required the removal of about 4,000 cubic yards of hard grit rock. Advantage was taken of this circumstance to form the reservoir bottom and walls of concrete, which was prepared on the spot from the excavated rock, broken by a steam stone-breaker, and mixed with suitable proportions of Portland cement. The i of the reservoir is lined, and the bottom is with brickwork in Portland cement. covering-in of the reservoir is formed series of forty-eight cast-iron columns girders spanning from column to column versely across the reservoir, the length of is 160 ft., and the breadth 55 ft., the area covered in with a series of longitudinal in 9-in. brickwork in hydraulic mortar; spandrels of the arches are filled in wit crete, and the whole covered with a la puddle, and the surface soiled over. The voir will contain 550,000 gallons. The been no purchase of land, the reservoi being, as before stated, in the Corporation

The works at the reservoir and pu station,—except the ironwork,—were ex by Messrs. J. Pickthall & Sons. Messrs. of the Canal Foundry, Blackburn, supplie erected the pumping-engine and mac and the ironwork, in columns, girders, the reservoir. The works have been de and superintended by Messrs. Brierley civil engineers, Blackburn. The cost ha 9,500*l.*

NEW WATERWORKS.

Edinburgh.—The Moorfoot Waterworks burgh, have been for the most part com and are now in use. The scheme, for wh Act was obtained in 1874, was devis Messrs. J. & A. Leslie, with the view pounding the superfluous waters of a tainous country on and near the nor slope of the Moorfoot-hills, on the bor Midlothian and Peebleshire. The dist question, drained by the South Esk and butary the Fullarton Burn, embraces an 8,078 acres; and the *Scotsman* says it w mated that, with proper storage applia was capable of affording, for the use of and district, a supply of 9,000,000 gall day, while at the same time adequate pr was made for keeping up the flow of the To effect these objects, the existing Pc Loch has been converted into a reservoir, a small embankment was necessary to re level of the water in the loch 10 ft., to i the area to 103 acres, and to give a r capacity, available for city supply, of 40 cubic feet, or 250 million gallons. Th was constructed in the usual way, with a puddle-wall and trench, and materia rammed down on either side, so as to g inner slope of 3 to 1, and an outer s 2½ to 1, a width on the top of 10 ft., height of 6 ft. above the top-water leve top water, as thus raised, stands at 1, above Ordnance datum, affording an amp for traversing by gravitation the eighte of undulating country that separate th from the city. From Portmore to Gladh distance of three miles and a half, a fire-cl has been laid, through which the water veyed direct to the measuring-house, it passes into the main conduit leadi town. At Gladhouse, the construction the South Esk of an embankment me 1,000 ft. in its extreme length, has bee sufficient to form an artificial lake with of about 400 acres, and a storage capa 1,700 million gallons. The top water reservoir stands at 890 ft. above Ordnance the embankment rising 7 ft. above tha There are two outlets,—one at the bot the discharge of compensation water, th for town supply, some 25 ft. higher; a passing through an upstand shaft b ashlar masonry, and connected with th by a bowstring-girder gangway. Fr measuring-house, above referred to, th for town use is led off in a built aqueduct forms the means of conveyance as far as gub Dean, a distance of one mile and quarters. The aqueduct debouches into a stone cistern, of sufficient size to keep head upon the iron-pipe, which from thi carries the supply to the service reser Alnwick-hill. On the line of this pipe, partly 24 in., partly 22 in. in diameter, th several more or less important works. T is a tunnel, 420 yards long, cut for th part through rock, which leads it from G Dean into the valley of the Fullarton Next comes a stone bridge, by which t as well as a public road are carried acr South Esk. Several smaller bridges, in a wrought-iron one across the Penicuil way, besides embankments and c

ɾ the track as it passes on to the North
nich is crossed, near the gate of the
lowder Works, by a stone arch of 55 ft.
ıl 9 ft. wide. At Alawick-hill, about two
d a half from Edinburgh, the water is
ıd into a service reservoir, fitted with
ns of effective filtration. This reservoir
o water area of 900 ft. by 250 ft., and a
22 ft., the slopes of the enclosing em-
its being 2½ to 1 on either side, their
bove the water-level 4 ft., and their
cross the top 6 ft. There are two exit
ne for discharging overflow, which is
to pass into St. Catherine's Burn; the
ge drawing off the water for town supply,
he surface as possible. The water so
ff is delivered into a semicircular
, from which a pipe distributes it to
the four filters as happen to be in
ie filter-beds, formed in the usual way
tum of sand, getting gradually coarser
descends, and resting on layers of
nd broken stones, measure each 175 ft.
. and afford a collective filtering area
res. Their top-water level is 401 ft.
ndnance datum, or 20 ft. lower than that
adjacent reservoir. The water, after
through the filter-beds, is led away in
ited fire-clay pipes to the c ear-water
chamber 335 ft. long by 120 ft. wide
. deep, formed of substantial masonry
red with a roof of brick vaulting sup-
a massive stone pillars. At one end of
, whose interior is kept cool by a cover-
il and turf, is placed a measuring-house,
me depth, and having an area of 40 ft.
Externally, this structure appears as
tory building of Classic design, sur-
by a roof of thick flags. The interior
with a set of wire screens, intended to
insects or dust from the water passing
them; and as the town supply flows off
service-pipes, the quantity given out
easured, from time to time, by shutting
nnexion with the clear-water tank, and
ow long the level in the cistern takes
certain number of inches. Of the
y works required for compensation
, only the Edgelaw reservoir has yet
mmenced. Besides providing compensa-
he river, the trustees were bound by
of Parliament to furnish three-quarters
illion gallons per day, to be divided
he landowners whose properties might
dered as affected by their operations,
the Duke of Buccleuch, the Marquis
an, and Mr. Dundas of Arniston.
rland.—The Crummock waterworks,
apply of Cockermouth, Workington, and
from Crummock Lake, have been
The works commence on the east
enthwaite side of the lake, about 400
stream from the neck or exit of the
ker from the lake, by a tube, project-
the steep shore into deep water, 15 in.
eter, and continued of that size to
outh reservoir, where the pipe is re-
14 in. in diameter, and continued to
lf a mile west of Brigham, where it is
diminished to 13 in. in diameter, at
e it is continued to Stainburn, where
arges into the Workington reservoir.
is in some parts were of a very difficult
com the lake down through Lanthwaite
d in the meadows near Scale Hill Bridge.
ing varied from 5 ft. to 13 ft. deep in
sands and gravels, yielding water in
ce, and requiring steam power and
e plant. There were two crossings
e river Cocker in this length, and as
t of the gravitating main was generally
ft. below the surface of the water in the
e difficulties were aggravated so far
ar Scale Hill Bridge to Corn How.
k cuttings were the rule from 4 ft. to
depth. The rock stood on edge, and
owder nor dynamite was efficacious in
ng it in the trenches. Most of it
be hagged out by manual labour. At
us, the conduit leaves the turnpike-road
rges to the south, and enters a tunnel
ray Pit Gate of about 520 yards in
nd 22 ft. deep, a part of which length
ficult wet and spongy clays and quick-
The track continues until within 200
the Stainburn reservoir, where it enters
the Earl of Lonsdale, and joins the
ton reservoir. Messrs. D. Y. Stewart &
Glasgow, have supplied the pipes and
from Cockermouth to Workington (con-
. 1). Messrs. Thomas Edington & Sons, of the Phœnix Works, Glasgow, have supplied the pipes and castings from Lake Crummock to Cockermouth. Messrs. Lucock, Coates & Waddington originally contracted to lay pipes and do the excavations, &c., from the lake to Cockermouth (contract No. 3), but the joint committee have had to carry out themselves, under the management of their engineers, about four-fifths of their work, part of which was done by sub-contractors, and the remainder, including some of the most difficult work, by day gangs. Messrs. Kirk & Fisher laid the pipes and executed the excavations from Cockermouth to Stainburn (contract No. 4). The Glenfield Company, Kilmarnock, supplied the stop, sluice, and air valves, and also the meters and other mechanism for measuring the water to the several authorities. The whole of the works have been designed and carried out under the superintendence of Messrs. Pickering & Crompton, of Whitehaven, civil engineers, Mr. Alexander Reid, of Workington, acting as inspector during a great part of the time. The cost of the chief main will be, including all expenses of obtaining the Act and outlay of all kinds, about 28,000*l*. The rural distribution works have yet to be executed, at a probable cost of about 12,000*l*.

AN AMERICAN DINNER SERVICE.

Mr. Theodore R. Davis, of the staff of *Harper's Weekly*, has been engaged for two months upon designs for what, it is said, will be the first truly American china dinner set. It has been ordered for the White House for State dinners, and will be executed by Haviland & Co., in Limoges, the illustrations making it thoroughly American, and it is to be completed early next year. Mr. Davis's own account of it, given by an "Interviewer" in the *Times*, shows that it is designed, at any rate so far as form is concerned, on entirely wrong principles. "The soup-plate," says Mr. Davis, "is modelled from the Kalmia flower, the mountain laurel, the form being that of a bowl rather than of the narrow-based plate at present in use. It is the flower with its natural base instead of the circular base, and the decoration of this series will be simple, though strong in colour, embracing this list of subjects: A clam-bake, crab, green turtle, okra, palmetto, cabbage, maize, potato, laurel, frog, and other designs." "The form of the service-plate of the fish series is that of two scallop-shells combined." "I have introduced an independent American butter-plate, the object of which is to give a point of colour and a reflective light in the glasses. It is a pond-lily leaf, slightly curled, and upon the surface of the leaf is a drop of Haviland's faïence glaze, simulating water. The after-dinner coffee-cup is of a very novel design, and quite unlike any cup at present in use. The tea-cup is a mandarin's hat inverted. The stem of a spray of the tea-plant forms the handle." We were in hopes that our American cousins had got past deceits of this kind, and had recognised the fact that a soup-plate should look like a soup-plate rather than a flower, and that as a rule tea is not drunk out of mandarin's hats even of the highest grade. It is soothing to learn that only twenty-five sets, signed by the makers and the artist, will be sent into the world.

PROVINCIAL NEWS.

Widnes.—The Widnes Local Board have taken a lease of some premises in Alforde-street, for the purpose of providing themselves with a new board and offices. The necessary alterations are being carried out under the superintendence of Mr. T. F. Butler, builder.——Improvements are being made by the board on their roads. The high boundary-wall hitherto existing at the front of the Wesleyan Chapel and the Drill Hall has been pulled down, so as to admit of the widening of Victoria-road, the ch of thoroughfare in the town, and rebuilt much lower. The width of Victoria-road will be from 60 ft. in some places to 100 ft. in others. Other improvements are being effected by the board, under the superintendence of Mr. Thomas Higginson, their surveyor.

Hexham.—A large hydropathic establishment, erected at a cost, with land, of about 30,000*l*., was opened on the 7th inst. at Hexham. It is for the accommodation of about 120 visitors, and stands in twenty acres of ground.

Preston.—At the Preston Police-court, on the 7th inst., Ambrose Cowburn and John Thompson were fined 5s. and costs each in one case, and ordered to pay costs in another, for "tipping" nightsoil on a piece of vacant land in Marsh-lane, and another place. The Mayor very properly said the practice of depositing such offensive matter on the vacant places in the town, upon which houses were built for the working population, must be stopped at once. Serious complaints were made of the high death-rate in Preston, and the magistrates thought the tipping of nightsoil on vacant places in the borough, upon which dwellings had been erected, was a prolific source of disease.

THE LONDON SCHOOL BOARD AND THEIR SURVEYORS.

Sir,—There is hope yet for the groaning payers of the School-Board rate for London. The Board have no doubt at last seriously decided upon reducing their expenditure; as you probably saw the other day, in a report brought up from the stationery department of the Board, it was seriously proposed to substitute "thin" for "thick" post-cards, as heretofore used in their correspondence. There is no doubt this would materially affect the rate, but a more serious matter is the saving in surveyor's expenses. The Board, some few weeks back, sent a circular to each of their surveyors, asking at what percentage he would be willing to take out the whole of the remaining quantities for the schools, supposing it were given into his hands. I may mention there were five original surveyors appointed to do the whole of the work of the Board, and this appointment was made some seven years ago; but this circular was sent to thirteen surveyors. This movement, as was naturally to be expected, much, no doubt, to the delight of the Board, resulted in some extremely low tenders, ranging from the ordinary commission to as low as ¾ per cent. But now comes the *dénouement*. The result, after much deliberation, was another circular from the Board, notifying to *four* of the surveyors (who, of course, were all ¾ per cent. gentlemen) that they were appointed to divide the remaining work of the Board amongst them at 1 per cent. each. To three out of the five original surveyors a circular was sent informing them that their services were no longer required. The only satisfaction these three poor men have is, that, giving, say, 100,000*l*. worth of quantities per annum to one man at ¾ per cent. is a very different thing from dividing it amongst four at 1 per cent. You will, no doubt, agree with me that a much more simple and business-like (not to say "gentlemanly") way of effecting this reduction in surveyors' charges would surely have been first to ask the original five men, who had borne the burden and heat of the day, whether they were willing to take out the future quantities at 1 per cent.; had they refused, then to have put it up to public competition. Ratepayer.

SCHOOL-BOARD SCHOOLS.

London.—At the meeting of the School Board for London on the 30th ult., the Works Committee reported, for the information of the Board, that, in order to comply with the requirements of the Education Department that the cost of schools should not exceed 10*l*. per head, the sundry items (quoted in Mr. Aldwinckle's letter on p. 899, *ante*) were now being omitted from the tenders, and that in future a special vote of the Board would be taken in each case where it was considered desirable to add these provisions. At the same meeting the Board accepted a tender, amounting to 6,097*l*., with 700*l*. for extras, for the erection of a school to provide seat accommodation for 800 children in St. Clement's-road, Kensington, the cost of the complete school working out at 8*l*. 10s. 8d. per head.——On the 28th ult., the Rev. John Rodgers, vice-chairman of the Board, opened a new school which has been lately erected in Gillespie-road, Highbury Vale. The school has been built to contain 1 000 children, and is shortly to be extended to the necessary capacity for 1,200. Mr. E. R. Robson is the architect.

Newcastle-on-Tyne.—The new Board school at Byker, opened on the 30th ult., is the fourth which has been opened by the Newcastle School Board, the others being at St. Peter's, Westmorland-road, and Snow-street. The Byker school is erected to accommodate 1,064 children, namely, 300 boys, 300 girls, and 464 infants. The school buildings are two stories in height, the infants being placed on the ground floor, and

the boys and girls in a large mixed school above. The cost of the site was 1,815*l.*; contract, 7,867*l.*; furniture and fittings, 647*l.* 15s.; architect's commission and other expenses of superintendence, 550*l.*; other expenses, 500*l.*; flagging and paving, 500*l.*; contingencies and legal expenses, 200*l.*; making a total of 11,579*l.* 15s.

Huddersfield.—The foundation-stone of a new Board School in Spring-grove, Huddersfield, was lately laid. The architect is Mr. E. Hughes. The school will accommodate 308 boys, 308 girls, and 467 infants; in all, 1,083 children. The principal feature in the main building will be the central hall, 85 ft. long by 52 ft. wide, into which fourteen class-rooms open, seven on the ground-floor, and seven on the upper floor. This department will be nominally, though not really, a mixed school, the boys and girls being taught in separate class-rooms by teachers of their own sex. The boys will enter by the west door, and occupy the ground-floor; the girls will enter by the east door, and go up their own staircase to the upper story, reaching their class-rooms by means of a balcony running round the central hall, and ending in the large orchestra, which will occupy the southern half of the main room. This orchestra will accommodate more than 500 children; the upper half will be used by the girls, who will enter from the balcony, and the other half by the boys, who will enter from the floor. The class-rooms accommodate from twenty-four to seventy-two children, so as to suit the varying size of the different classes. The total cost of the school will be 14,000*l.* The contractors for the new building are as follow:—Masons, Messrs. A. Graham & Sons; joiner, William Roberts; plasterers, Tunnacliffe & Son; plumber, Smithson; slater, Hargreaves, Dewsbury; painter, A. Beevers; hot-water apparatus, James Brooke.

Gateshead.—A new Day Industrial School is now being erected on the Windmill Hills for the Gateshead School Board. The school is intended for children who, whatever be the cause, whether from having worthless and reckless parents, or from other circumstances in life likely to prove fatal to them, are verging on the criminal class. The total cost will amount to 7,251*l.*, of which 2,200*l.* is for the site. The school, which will be two stories high, will accommodate 100 boys and 100 girls. Upon the same site is being built an infants' school to accommodate 200 children. The buildings are of red brick, with stone dressings and slated roofs. The school, when completed, will be open from six in the morning until six in the evening, the age for admittance being from five to fourteen. The boys will be taught match-box-making, wood-chopping, and industries of a similar nature, the girls being well drilled in domestic occupations. The architects are Messrs. Oliver & Leeson, of Newcastle, and the general contractor is Mr. Alexander Thompson, builder, of Gateshead. Messrs. John Abbot & Co. have the contract for the engineering, plumbing, and gasfitting, and Messrs. T. Carr & Son, of Scotswood, are supplying the bricks. The work is being carried out under the superintendence of the architects and Mr. Edlington, clerk of works to the Gateshead School Board.

Edinburgh.—The new Board School for the St. Leonard's district of the city is now approaching completion. It occupies a site between Forbes-street and St. Leonard's-hill, and is a large, substantial two-story structure, intended to afford accommodation for about 900 pupils. The exterior is almost entirely destitute of architectural ornamentation. The elevation shows a spacious wing at either end, and is further relieved by a projecting block, in which both the entrances are situated, the boys entering from St. Leonard's-hill, and the girls from Forbes-street. There are in all four large school-rooms, measuring 45 ft. by 30 ft., and adjoining each are two class-rooms, situated in the wings of the building. The infant school-room, which will be provided with a gallery, is on the ground-floor, as are also the sewing-room and various juvenile class-rooms. The second-floor is entirely occupied by the juvenile department. The architect is Mr. Wilson.

Birmingham Royal Society of Artists.—The Autumn Exhibition of this Society has been opened this week. Mr. Millais, Mr. Horsley, Mr. Alma Tadema, Mr. Vicat Cole, Mr. Elijah Walton, and other well-known painters, are represented,—in several instances, however, by works which have been exhibited at the Royal Academy and elsewhere.

SCHOOL BUILDING NEWS.

Burnham (Essex).—A new school, for the accommodation of fifty children, on Wallasea Island, has been completed. The work was carried out by Mr. Charles Read, of Burnham.

Consett. — On the 29th ult. the Bishop of Durham opened the new National Schools at Consett. The schools provide accommodation for 800 children, and have been built at a cost of 3,500*l.* A portion of the school buildings was erected some three years ago, and the portion now completed is intended as a school for girls, and can also be used as a public meeting-room, for which it has been adapted by the addition of a platform and gallery.

Exeter.—On the 30th ult. the corner-stone of the new Exeter Grammar School, in Victoria Park, which is to take the place of the old school building in High-street, was laid by the bishop of the diocese. The site of the new building is an elevated and open one, and accommodation is provided not only for the buildings at present proposed, but for future additions. According to the present plan, the building as proposed will consist of two wings, running in a northerly and easterly direction. It will occupy an area of about 200 ft. by 150 ft., and arrangements are made for extending it at some future period. As far as it is proposed to build for the present, the structure will consist of a dwelling-house situated at the corner where the two wings intended for school purposes will join. This dwelling-house will be a six-story structure, and will be used as a residence for the assistant masters, matron, &c. The two wings, which will branch off from this part, will consist of a ground-floor, and first and second stories. In the north wing there will be a dining-hall, kitchens, &c., whilst in the east wing will be class-rooms, studies, and on the upper story dormitories. This wing will eventually be prolonged by the addition of a great schoolroom, in which the annual meetings can be held. It is also proposed, at some future time, to put an addition in the shape of a south wing, containing more class-rooms, studies, and dormitories, and when this is done, the assistant masters' house will occupy the centre of the front block. At present it is estimated that sixty boarders will be provided for, but when the additional accommodation is provided, it is believed that twice that number can be accommodated. The cost of the site was 7,600*l.*, and the estimated cost of the buildings is about 14,000*l.* In style, the new building is said to be what is known as Domestic Gothic of the fourteenth century. It will be constructed of red brick from Cum Davy, with Box Ground dressings, and the roof will be covered with Willand Abbey slates. The architect is Mr. W. Butterfield, and the contractors are Messrs. Stephens & Bastow, of Bristol. The clerk of the works is Mr. J. H. Newton, and the foreman Mr. C. Hampton.

Books.

Wild Flowers worth notice for their Beauty, Uses, or Associations. By Mrs. Lankester. London: David Bogue, 1879.

Mrs. Lankester's pretty book about wild flowers is so well known in its first form that we need simply say of the new edition now before us that it has been revised with the knowledge of later years, is illustrated with 108 coloured figures, and includes a new preface, in which Mrs. Lankester re-urges the value and delight of a study of botany, and points out how it may best be pursued. Young people in the country without any botanical knowledge may with the help of this book identify, name, and learn all about the bright, beautiful little things to be met with in the meadows and the hedgerows during their daily rambles. Mrs. Lankester is a safe, instructive, and pleasant guide.

The Practical Arbitrator. By Chas. Jackson, Surveyor. London: Knight & Co. 1879.

This treatise is designed particularly for the use of lay arbitrators, and sets forth succinctly and clearly the principles of the law of arbitrations, awards, evidence, and contracts, without a knowledge of which no one should venture to act in an arbitration. Mr. Chas. Jackson, who is a member of the firm of Taylor, Son, & Jackson, of Manchester, is a practical arbitrator, and has analysed and digested several larger works to produce the handy little volume before us.

Miscellanea.

Proposed New Workhouse for Pancras.—At a recent meeting of th Pancras Board of Guardians, a repor received from the Visiting Committee respect to the reference of the board em ing the committee to act upon any resolu which they may arrive as to the selectio suitable site for the proposed new work and they recommended the board to ob subject for a period of three months.—Mr. moved the adoption of the recommen He regretted that circumstances should to render the delay necessary, but he ha they could make provision for the adc number required at a very trifling co number at the present time being on beyond the number certified by the Government Board; and if the board com do that they would be master of the posi Mr. Ross objected to the system of pr nation, for a new workhouse was much and by the delay they would lose the tunity of securing land in the parish might suit them. They could obtain, he be for the present building and site, 100,00 he hoped they would not go to the exp having two workhouses, as the expense of two establishments would be a heavy upon the ratepayers. The motion for d the matter for three months was carried to three in a very thin board.

Drinking Fountain behind th change.—In immediate contiguity w unhappy-looking statue of the late Mr. Peabody, sitting without his hat in t court of a house in the Royal Exchange-there is in course of erection a drinkin tain, mainly due to the exertions and ge of the municipal authorities connected w Wardmote of Broad-street, Mr. Alderma who is treasurer of the fund, having sub 150*l.* towards the cost of the fountain, tion to a further subscription of 50*l.* to piece of statuary in Carrara marble. The was designed by Mr. J. S. Edmeston, ar and a view of it will be found in our vol 1878, p. 353. It consists of a base and in red and grey polished granite of vari and which rise to a height of 3 ft. 6 in. T four basins, facing north, south, east, a respectively. The upper portion of the consists of a canopy in bronze, restin double columns at each of the four ang mounted by enriched capitals. An orn turret rises above the canopy; the height of the fountain, including the pedestal, being about 16 ft. The within the columns under the canopy of a full-sized seated figure of a female child on her knee, and designated "C the work of Mr. Dalou, sculptor, of The entire cost of the fountain is estim 1,500*l.*, the expense of the statuary bei

Wills.—The will of Mr. John Weeks, 32, Bartholomew-close, and of 14, Bo grove, Barnsbury, builder, who died on inst., was proved on the 14th inst., by P. Weeks, the son, and Mr. C. W. Wat executors. The testator gives all his r interest in the business of Weeks & S the stock-in-trade, &c., to his son, Walte and he distributes the rest of his prop cluding his freehold and leasehold house his three children—viz., his said son, daughters, Mrs. Mary Quick and Mis Weeks.—*City Press.*

The Electric Light at Blackpoo Corporation of Blackpool have decided up the Promenade with six of Siemens' lights, representing 6,000 candle-powe cost of 2,500*l.* The light will be in o in a few weeks' time, and will be use season for about twenty weeks. On the Embankment the electric light exhibi represents 300 candle-power, so that t be no comparison between the displ and at Blackpool. The Corporation pr spread the cost of the lights over ten *The Electrician.*

Warrington. — The Town Counc adopted a scheme of proposed impro at the manure depôt by Mr. Thos. the borough surveyor, and the works proceeded with. Mr. Longdin's p report gives details of Fryer's patents version of garbage and street sweep charcoal, and merits attention.

Architect's Mania.—M. Charles Mon- is discovered in the shop of a bookseller Quai Voltaire one of the most singular ents of human idiosyncracy yet brought l. It consists of no fewer than forty-five ript volumes—quite modern—written in unknown characters. An assembly of having been convoked to pass an opinion hieroglyphics, declared that they were yond their ken. The form of the letters, told, bears, when looked at from some e, some resemblance to Oriental cali- but this is the only description vouch- Several pages are framed by borders d with the pen in the most marvellously style—flowers, animals, heraldic shields, landscapes, ruins, &c.; the illuminators als produced nothing superior to them. uselet proceeds: "And now what do orty-five volumes contain? Everything the supposition that they are memoirs, h the author was so morbidly jealous created a writing peculiar to himself purpose of transcribing them. And this s known; he died but a little while ago. an architect, very skilful in his profes- d much consulted, M. H. Legrand, en are due some important works—not script—that indicate a man of perfectly tastes. How, then, can we find an tion of these many volumes in which are d the secrets of his inmost thoughts, l to die with himself? And in the first here did he find time for writing them? exaggerate in saying that by the per- of its caligraphy, this collection repre- ore than two years' labour. If it be a ation, we must allow that it has been ot with rare patience, but for my part to attribute it to a wild and pleasing I feel convinced that M. H. Legrand e best moments of his life to his solitary sterious occupation. The most surpris- g that could happen now would be to e forty-five volumes bought up by some- sirous to decipher the enigma they The bookseller does not despair of across such a purchaser.—*Galignani's er.*

and Writing."—Soennecken's system nd Writing is practised to a considerable in France and part of Germany, and g, of Paternoster-row, has published a ical text-book for self-instruction, with number of differently-formed pens for he system appears to be over-elaborated, operate with some of the pens would long study and care, but for draughts- l lithographers many of them would be ery useful. The practice of the systems ols, requiring, as it does, the perfect n of every letter, would be a standing against the shamefully illegible scrawl h large numbers of persons nowadays indulge without thought or care for the d convenience of others.

verhampton Gas Offices.—In a limited tation for new offices and premises for the mpton Gas Company, designs were ed by Messrs. Veall, Fleeming, Banks leday, and Johnson. That of Mr. Veall ected by the directors, and a contract been entered into with Mr. Henry Clark, verhampton, for the sum of 6,500*l.*, the have been commenced. The buildings, tuate at the corner of Darlington-street terloo-road, will comprise offices, board- how-rooms, warehouses, and workshops, with a residence for the secretary; lo shops, with dwellings attached, to be a rental. The elevations will be in red- bricks and Grinshill stone.

eyorship Items.—The Chester Town have increased the salary of Mr. I. w Jones, city surveyor, from £200 to r annum.——Mr. J. H. Abbey, borough r of Huddersfield, has sent in his resig- in consequence of a resolution come to mmittee of the town council to the effect was desirable to have a borough sur- ho was at liberty to devote the whole of to the duties of the office. The resig- has been accepted by the councillors, debate in the course of which Mr. Abbey y highly spoken of.

gbridge.—The Sanitary Authority of ridge have accepted the scheme prepared Wallace Peggs and Mr. Catley for the ge and outfall works for the towns of ridge and Dodbrook.

How the Arrow-heads were Made.—A young man in the Smithsonian Institution, writes the Washington correspondent of the Cleveland *Leader*, as quoted by the *American Architect*, "has just made public the discovery of the method employed in making the stone and volcanic-glass arrow-heads, daggers, knives, axes, and razors, of the prehistoric races. Up to this time this has been a great problem to all antiquarian students; but no theory has ever been advanced showing such practical results as Mr. Cushing's. He started to solve the difficulty by putting himself in the identical position of the Aztecs or Mound-builders, without anything to work with except sticks, various shaped stones such as he could find on the banks of any stream, and his hands. After making some rude implements by chipping one flint with another, he discovered that no amount of chipping would produce surfaces like the best of those which he was trying to imitate. He therefore came to the conclusion that there was another way of doing it, and, by chance, tried pressure with the point of a stick, instead of chipping by blows of a stone; when, presto! he found that he could break stone, flint, and obsidian, in any shape he chose. Soon he had made spear-heads and daggers that would cut like a razor, as good as any he had before him, which had been picked up from all over the world. By a little more observation, he found that the "flaking," which he calls his process, on the old arrow-head left grooves that all turned one way. He produced a like result by turning his stick the easiest way from right to left. He therefore concludes that prehistoric men were right-handed people like ourselves. This conclusion is reinforced by the fact that occasionally an arrow-head is found that has flakes running from left to right, showing a left-handed person. The importance of the discovery is, that it shows that the early races were able to do this work without the use of iron or bronze, a thing long doubted."

Electric Railways.—Application has just been made to the police authorities of Berlin for permission to construct a system of tramways in the city upon which electricity will be used for motive power. The inventor, Mr. Westpfahl, has had considerable experience in the construction of rail and tram ways, and intends, if the Berlin experiment succeeds, to apply the invention in all the larger towns in Germany.—*The Electrician.*

The Tomb of the late Duke of Sussex.—A correspondent says, the tomb of his late Royal Highness the Duke of Sussex, which was erected in Kensal-green Cemetery by the Masonic brotherhood, owing to the very wet weather, is now in a most dilapidated condition, and likely to fall in, the ornamental iron work having given way. Her Royal Highness Princess Sophia's tomb opposite is in the same condition.

The New Market at Stratford.—The opening of this new market for potatoes, hay, straw, coals, &c., at Stratford, already mentioned in the *Builder*, is deferred from the 1st proximo to the 1st October next. The works have not progressed so rapidly as was expected, by reason of the unfavourable weather.

Heating and Ventilation of Turkish Baths.—A paper on this subject, by Mr. J. L. Bruce, architect, read before the Philosophical Society of Glasgow, and now printed in their "Transactions," deserves the attention of those who are interested in the subject. The experiments made by him afford valuable data.

The Builders' Strike in Bristol.—The joiners and carpenters have followed the example of the masons, and the strike in the Bristol building trade is now practically at end, a large number of the men having returned to their work at the halfpenny per hour reduction.

Burnley Joiners.—The master-joiners of Burnley have given notice of a reduction in the wages of journeymen of ½d. per hour, to come into force on the 1st September. The present wages are 32s. 6d. per week, and the reduction will be equal to 3s. 3d. per week, thus leaving them at 29s. 3d. per week.

French Archæologists.—The French Archæological Society, founded by M. de Caumont, will open their forty-sixth session on September 2. Vienne, the ancient capital of Dauphiné, is the place selected for the meeting.

Cambrian Archæological Association.—The annual congress of this Association commenced on Monday last, in Welshpool, under the presidency of Mr. C. W. Williams Wynn, M.P.

TENDERS

For the erection of laundry and stables, Basingstoke. Messrs. Raynbird & Sons, architects. Quantities by the architects:—

G. Batten	£2,265 0 0
Blunden	2,220 0 0
Kent & Lunn	2,165 17 6
Goodall	2,096 18 0
Wilkes	1,998 18 6
Sims, Bros.	1,977 0 0
W. W. Batten	1,961 11 0
Tigwell	1,941 16 0
Pelham	1,932 13 0
Jennings	1,915 0 0
Musselwhite	1,879 0 0

For the erection of new premises, Corporation-street, Birmingham, for Mr. Alfred Humpage. Mr. W. H. Ward, architect:—

Whittal	£4,630 0 0
Dawson & Bradley	4,567 0 0
Bennett	4,517 0 0
Surman & Son	4,500 0 0
Robinson	4,490 0 0
Cresswell & Harrison	4,480 0 0
Garlick	4,470 0 0
Horsley, Bros. (accepted)	4,467 0 0

For the erection and completion of an Independent chapel and school-room at Kinlig-hill, Bridgend, Glamorgan. Mr. T. Thomas, architect. Quantities by Mr. S. J. Rooney:—

Jones (accepted)	£1,600 0 0

For alterations and additions to business premises, No. 55, Earl-street, Edgware-road, for Messrs. Culhane & Scott. Mr. Patrick J. J. Fay, architect:—

Jackson & Todd (accepted)	£130 0 0

For new Baptist chapel, Harlington, Middlesex. Al bricks and sand provided by the trustees. Mr. Ranger, architect:—

Keen	£3,400 0 0
Wilkinson	3,340 0 0
Allen	3,010 0 0
Taylor	2,989 0 0

It being desirable to reduce the above figures, Messrs. Taylor and Allen were requested to amend their tenders after certain deductions were made, when both builders handed in the same figures. They afterwards drew lots, when the job fell to Mr. Allen, whose tender was accepted by the trustees.

For new Primitive Methodist chapel, Kingswood, Bristol, exclusive of galleries and pewing. Mr. Ranger, architect:—

Phipps (accepted)	£1,068 0 0

For new Wesleyan chapel, Chartham, Kent. Mr. Ranger, architect:—

Cozens (accepted)	£555 0 0

For New Wesleyan chapel, Blean, Kent, and the materials of old chapel. Mr. Ranger, architect:—

Foad (accepted)	£461 0 0

For the erection and completion of the Eastwood Vale Schools, in three departments, for 700 children, including the boundary-walls, tar pavement, play-sheds, &c., for the Hanley School Board. Mr. W. A. Keates, architect:—

Ellis (accepted)	£4,100 0 0

For pitch-pine parquet flooring in the banqueting-hall, Freemasons' Tavern, for the proprietor, Mr. Alfred Best. Quantities by Mr. John Fugh:—

Whiteley	£495 0 6
Howard & Sons	277 0 0
Ennor Julian & Co.	205 0 0

For alterations and additions for the Northampton Café Company, Gold-street. Mr. William Hull, architect. Quantities supplied:—

	Contract No. 1.	Contract No. 2.
Hart	£973 0 0	£96 14 0
Cosford	778 5 0	61 2 6
Ireson	730 0 0	60 10 0
Martin	690 0 0	66 0 0
Green, E. & H.	685 0 0	60 0 0
Heap (accepted)	662 0 0	58 0 0

For proposed alterations at 6, Leathersellers'-buildings, for Mr. T. Paramore. Messrs. Wilson, Son, & Aldwinckle, architects:—

Sharp & Mills	£297 0 0
Heaps	187 0 0
Beeton (accepted)	179 15 0

For pumping station (contract No. 4), sewage outfall works, for the Worksop Local Board of Health. Mr. John Allsopp, engineer:—

Brumby	£7,894 0 0
Kellitt & Wilkinson	7,250 0 0
Kellett & Bentley	6,504 0 0
Mills, Holden, & Co.	6,238 0 0
Greenwood	6,030 0 0
Bulling (accepted)	6,000 0 0
Barber	5,924 17 6

For the erection of a house and shop, 35, Little Newport-street, Soho, for Mr. G. McKoen. Messrs. J. & J. S. Edmeston, architects:—

Phillipson	£1,810 0 0
Herne	1,750 0 0
Smith	1,577 0 0
Bales	1,575 0 0
Grimwood	1,543 0 0
Langmead & Way	1,480 0 0
Gould & Brand	1,393 0 0

For new offices and premises, Darlington-street, Wolverhampton, for the Wolverhampton Gas Company. Mr. J. R. Veall, architect:—

Cockerill	£7,389 0 0
Lovatt	7,161 0 0
Higham, G. & F.	7,121 0 0
Dawson & Bradley	6,796 0 0
Clark (accepted)	6,503 0 0

For the erection and completion of the buildings and works of the Army and Navy Provision Markets, Limited, No. 121A, Regent-street, Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

	Terra-Cotta.	Stone.	Old Materials.
Sprake & Foreman	£13,500	£13,500	£185
Brass & Sons	13,307	13,307	100
Dove Brothers	13,070	13,070	80
Colls & Son	12,970	12,970	120
Chappell	12,503	12,773	70
Green & King	12,775	12,845	175

For rebuilding Nos. 10 and 11, Cursitor-street, and No. 19, Took's-court, Chancery-lane, for Mr. Alexander. Mr. Joseph Lavender, architect. Quantities supplied:—

Mortar	£3 943 0 0
Pickersgill Bros.	3,700 0 0
Atherton & Latta	3,700 0 0
Green & King	3,675 0 0
Patman & Fotheringham*	3,655 0 0

* Accepted)

For pulling down and rebuilding No. 10, Marylebone-lane, for Mr. Gilbert. Messrs. Sainsbury, Gilbert & Gardner, architects. Quantities not supplied:—

Williams & Son	£975 0 0
Simpson & Son	945 0 0
Catchpole	898 0 0
Eaton (accepted)	850 0 0

For repairs and alterations to the Court House, Marylebone-lane, for the St. Marylebone Vestry:—

French (accepted)	£344 18 0

For the erection of a fish-shop in Barking-road, for Mr. Sutton. Mr. Norman, architect:—

T. Ellis	£680 0 0
Leniss	637 0 0
G. Cordery	353 0 0
Carey (accepted)	300 0 0

For fittings (first portion) to York House, Regent-street, for the Junior Army and Navy Stores. Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Hewetson & Co.	£4,094 8 9
Sage	3,995 0 0
Drew & Co.	3,795 0 0
Dodds (accepted)	3,400 0 0

For repairs, alterations, and re-decorations at the Wesleyan Chapel, Old King-street, Bristol. Mr. Herbert J. Jones, architect:—

Lewis & Son	£499 0 0
Cowlin & Son	373 0 0
Scott	370 12 9
Hodges	326 0 0

For temporary iron chapel (Wesleyan) St. Philip's Marsh, Bristol. Mr. Herbert J. Jones, architect:—

Lysaght	£600 0 0
Goodenough	400 0 0
For External Ironwork only.	
Wright & Co.	95 0 0

For finishing six houses, at Montpelier, Bristol. Mr. Herbert J. Jones, architect:—

Lewis & Ecbrooke	£1,149 0 0

For finishing three houses, at Montpelier, Bristol. Mr. Herbert J. Jones, architect:—

Humphreys	£589 0 0
Forse & Ashley	513 0 0

For finishing three houses, at Montpelier, Bristol. Mr. Herbert J. Jones, architect:—

Humphreys	£249 0 0
Forse & Ashley	512 0 0 (?)
Saville	169 0 0

For new farmhouse, Stockland, Devon. Part materials supplied. Mr. Herbert J. Jones, architect:—

Trott	£420 7 0

For the erection of a Baptist Chapel at Catford-hill. Mr. H. Mill, architect:—

Morter	£3,100 0 0
Dove Bros.	2,975 0 0
Taylor & Son	2,968 0 0
Nightingale	2,788 0 0
Hill, Higgs, & Hill	2,784 0 0

For alterations and additions to the David Garrick publichouse, Catherine-street, Strand. Mr. P. J. J. Fay, architect.

Jackson & Todd (accepted)	£135 0 0

BEDFORD.—The following tenders have recently been received by Mr. F. T. Mercer, architect:—

For two business premises, with frontages to St. Loyes and Dane-street,—

Moore (accepted)	£1,145 0 0

For alterations and additions to two residences in Offa-street and Wellington-street, for Mr. W. H. Hands. Plasterer and cementer's contract not included in the amount,—

Lilley (accepted)	£523 0 0

For a villa residence, the Plantation, near Bromham-road, for Mr. G. Fasnacht,—

Spencer (accepted, subject to alterations)	£1,120 0 0

For alterations and additions to the Working Men's Institute, Harpur-street,—

Coker	£842 10 0
Green & Hull	795 0 0
Long	676 0 0
Moore	674 0 0
Lilley	648 0 0
Harrison	640 0 0
Litchfield	639 0 0
Corby & Son	633 13 0

TO CORRESPONDENTS.

"The Architectural Association at Wells."—A further notice of buildings visited will be given in our next.

W. F. (answer depends on several matters. Take proper advice).—R. F. (lease would require to be examined. Consult an architect. We cannot interfere in private disputes).—J. J. G. (Her Majesty's Board of Works, Whitehall).—A. E. (names and amounts should be given).—Subscriber (the Victoria Dock extension works have been already very fully described in our pages).—Borough Surveyors (a heap of letters on this subject shall have consideration).—H. T. (next week).—T. D. B. & Son (next week).—Z. B. (received).—C. E.—R. & Sons.—P. & Son.—L.—J. G. P.—H. J. W.—Dr. P.—T. S.—J. S. H.—O. M. S. G. J. & Co.—H. S.—G. P.—W. H. P.—A. S.—J. P.—G. P.—S. W.—M. H. J.—G. J. & Co.—J. A.—A. B.—T. B. W.—H. R.—Dr. G.—H. St. J.—J. W. P.—H. J. J.—M. & S.—I. K. V.—A. H.—W. C.—H. F. H.—A. P. H.—P. & W.—T. P.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

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Architecture and the Handmaid Arts before and after the Renaissance.

RECENT noteworthy work of Mrs. Mark Pattison, "The Renaissance of Art in France," presents us with a view of a most remarkable movement in art and its relation to a movement in culture [illegible]al civilisation. But it is not quite the aspect under which these move- [illegible]e presented by the accomplished not sometimes a little obscured by a lacy that makes even the title of the [illegible]nguous. In France, if anywhere, the [illegible]rate phrase to express the subject [illegible]f, in respect of the fifteenth and centuries, would be, not the Renais- Art, but the Art of the Renaissance. art in a very high sense, indeed, had dead or even dormant in the ante- [illegible]nturies,—fourteenth, thirteenth, or [illegible]fth,—and if it had been, the art of [illegible]ding centuries would certainly have [illegible]m to be its revivification. The earlier [illegible]ave been in decline, or even in decay; [illegible]er weak or strong it was not revived [illegible]se, but superseded and conquered by [illegible]f a rival of an alien and hostile spirit. [illegible]the new movement could properly be [illegible]naissance,—a revival,—it was a revival [illegible]and systems and principles which had [illegible]n obscurity ages before, and from the [illegible]hich all the grace and glory of Gothic [illegible]sprung to vindicate the continuous [illegible]f art, if not in one manifestation in [illegible]. In much the same way, when we [illegible]the revival of letters, we are apt [illegible]incautiously that the ages which [illegible]the erection of the great cathedrals [illegible]itute of any literature at all; how in- [illegible]be witness the vast accumulations of [illegible]gs of the so-called schoolmen,—monu- [illegible]industry, and even of acuteness, upon [illegible]e colossal scale. It is not necessary to [illegible]n strictness on the claim of the period [illegible]s revival, to such names as Dante and [illegible]a glance over the titles of books in [illegible]al Leipsic catalogue, even without [illegible]icular scrutiny of their tables of con- [illegible]make it evident that the world is not [illegible]forget the contributions of those [illegible]turies to belles lettres, any more than [illegible]es of Roger Bacon, and we will say [illegible]go philosophy, natural and speculative. [illegible]t art at large and comprehensively [illegible]ed in the fifteenth and sixteenth cen- [illegible]a specific style of art; not literature, and certainly not philosophy, or even scientific study, but attention to a certain long-neglected literature and an intellectual altitude in respect of metaphysical and physical inquiry. It is, no doubt, intelligible enough how the men who had felt themselves cramped and oppressed by a system of thought and society which was too self-consistent to admit of free expansion, should feel, as they cast themselves free from its fetters and abuses, as if they had come to life again, and should announce the change as a true revival. They had been in too close contact with mischiefs that we do not personally experience for them to entertain all our appreciation for the beauties of art that incidentally qualified the disorders of times which we are unworthy of our better light if we demur to designating as the Dark Ages. We must have some tenderness for the exigencies of a struggle in which intellectual freedom was at stake; it is much to ask of a general to whom the safety of an army is the safety of a kingdom, to hesitate for a moment about securing it, by a second thought as to the artistic or archæological interest of a bridge which he must needs break down. We, however, who sit at home in our nineteenth century at comparative ease can see that the so-called Renaissance of Art was really a subversion of one style of art by intrusion of another, was a Revolution,—indeed, a counter-revolution.

This counter revolution may, perhaps, on the broadest view, be considered as due in principle to the uprising of the civilian to assert independence of the ecclesiastic; persons and parties get intermixed in the struggle, but the animating spirit is revealed in the final outcome, even as the abolition of slavery in America is the expression of what North and South really disagreed about, though it was not always apparent in the course of the quarrel. The architecture of St. Peter's at Rome and St. Paul's in London exemplifies the vigour with which the new movement reacted even upon ecclesiasticism; but this is only a cumulative proof of the force of its independent vigour: it was strong enough to engage by sympathy a party among the partisans most naturally opposed to it, or to force opposition to a politic compromise. The architecture of France does not present us with any example of sufficient dignity from the same period to afford another parallel, though it abounds in secondary illustrations. There is, however, no country in which the revolution can be more satisfactorily studied, both in civil and ecclesiastical structures. As we walk round many of the later Gothic buildings,—buildings and additions to buildings, which can only be called Gothic still,—the eye is constantly caught by ornaments and details that betray familiarity with, and a certain hankering after, Classic design. It is but a little later still that, even in a château, we discern that the Classic element is superinduced upon what is substantially a Gothic construction. It is even in this case as when the Roman applied a veil of modified decorative Greek orders to his solid core of independent construction; though, again, it is perhaps on Italian ground that we find this process most exactly paralleled by the Renaissance. The translation of the Gothic of the façade of a Venetian palace into Classic is constantly managed fairly enough, and be it confidently said, in the majority of cases, with a gain in dignity and simplicity; but this will not be so readily allowed in some other structures where the columnar systems are more important. We cannot pass through the less altered cities and from the earlier ecclesiastical structures of Northern Italy, without recognising that many of the churches of Palladio and his school,—with all reverence be it spoken,—are but Mediæval constructions in a modified Classic costume, that, even when graceful in itself, does not always hang gracefully about them. It is a principle in what may be called the draping of architectural construction, as of the human figure in sculpture, that it should not only add variety, but assist the expression of motive, and to do so must positively *cling* at certain accentuated points of the organism; but when it clings at the wrong and unimportant points, or does not cling at all, accentuation is forfeited, and what architecture is presented to us is architecture in ill-fitting masquerade.

With far greater justice than in the case of architecture can the movement of the fifteenth and sixteenth centuries be called a revival of sculpture and painting. It is with full consciousness of exposure to vehement protests that the individual conviction must be set down, that Mediæval architecture was not favourable to either of the sister arts. It does not appear why this should have been so necessarily. The mastery of the chisel is fully displayed in many a gracefully-curved and modelled boss or course of foliated decoration; examples of well-invented and well-executed draperies are forthcoming; and features of beauty, heads, and even gestures of dignity, are found realised, occasionally something approaching to a power of grouping; but even those who would willingly be enthusiastic, if they are equally anxious to be conscientious and candid, will probably admit that Mediæval sculpture fell far short indeed of what, from such an art as sculpture, may fairly be demanded; it is in a few recumbent figures upon altar tombs, perhaps, that it approaches most nearly to giving full satisfaction to our sympathies.

Mediæval painting might be thought to have had a fairer chance as a freer scope, when applied to ornament the wide expansions which were ultimately provided for coloured glass. There was no lack of ambition and application to make the most of the opportunities, and very much, indeed, was made. But, again, the success was not that of painting in the very highest sense. A certain style was attained to which is accepted as the culminant style of the art,—of the art of glass painting; even as among the Greek vases we come upon a per-

fected style of draughtsmanship,—but that is of ceramic draughtsmanship. In neither case would the style be appropriate elsewhere. It is a fair matter for question whether the true style for painted glass,—whether the style which should take the very best advantage of the art of design and colouring, which is compatible with the best advantage of the capacity of the material as transparent, has yet been attained. If our best outcome is to make some approach to rivalry with the Mediævals, by effective copy of a combination of grimness with gorgeousness, it were better on the whole perhaps to accept the imitations of academy pictures which neglect the characteristics of the glass entirely.

In any case it is unfair to charge the deficiencies of Mediæval sculpture and painting upon architecture; the age was not prolific in genius in all the arts alike; the philosophers are for ever fondly attempting to follow forth how that which was, was that which must have been, and, therefore, that which might have been calculated upon and anticipated; but they are baulked for ever in what seems to them so natural as well as so tempting an equation. The birth of a man of genius is a factor of enormous influence,—the birth and also the prolonged survival of a man of genius,—and neither the one nor the other can be, as the philosophers are fond of terming it, integrated. If Mediæval architecture is taxed with having degraded sculpture and painting by subordinating them to her purposes, the reply must be that the mischief would fall in full proportion upon architecture itself, which has claims on both the arts that would stand over unsatisfied at once by their degradation. Beyond this, it lay with the ill-treated arts to right themselves by self-assertion.

Sculpture and painting are, no doubt, subordinated in an unworthy degree in connexion with architecture, when the chisel finds no better employment than the deft execution of carved bosses, mouldings, string-courses, or even capitals, with whatever fertility of inventive variation; and when the brush has no worthier occupation than picking out orders of arcuation, or of relieving plain surfaces by patterns and diapers and fantastic foliation. For the association of the arts to be properly successful, the arts must be associated on equal terms. Sculpture is bound to be as perfect as sculpture, the painting as painting, as the architecture with which they are united is as architecture. That this was not the case with the Mediævals may be readily granted, but the result was not a gain for Gothic architecture, but a loss; had the sister arts been strong enough to establish themselves in proper position they might have kept certain tendencies to architectural vagaries in check, which emancipated from such check hurried on the inevitable violent reaction which effected the extinction of a noble style. When architecture owes nothing to painter and sculptor, or nothing more than for such services which are scarcely beyond those of the house painter and the paperhanger, it may be parading self-sufficiency in the more unamiable sense, but it is not approving its true dignity of independence. When the representative arts, as they have been called, are thus little better than the handmaids of the house decorator, they may be fairly stigmatised as the merely decorative arts; but some other title is deserved and called for when they really rise to their highest function of heightening the expression of architecture, indicating the specific motives of the work, its germinant and animating principle; when they supervene upon the bare construction even as living vegetation upon the surface of mineral nature, a link of transition between it and sensitive and locomotive beings. The purposes of the great works of the architect have their accomplishment when they are ultimately haunted and occupied by thronging humanity, engrossed in some of the interests which collect mankind to listen to or interchange communications by the gift of speech; the architectural environment is only then in due harmony with its occupants, their interests and sentiments, when the interval between them and absolutely monumental dumbness is relieved by those characteristic representations of humanity, of which it may be said that though dumb yet they speak.

It is not to be denied that here we hint at artistic requirements that may seem extravagant in scope. We are fortunate when a lofty genius in one of the arts is accorded to us; sanguine, indeed, it may be thought to hope for three in three several arts, and all prepared to co-operate harmoniously in elaboration of a single work. Perhaps it would be hard to gainsay one who should affirm that such a combination has never been effected, such a coincidence is nowhere to be discovered as having come about in the history of the arts and of the world.

For let us bethink ourselves; in such a matter we cannot fairly leave Egypt out of consideration, and although monumental evidence is defective, notwithstanding the marvellously conservative climate, we can recognise at least an intention of comprehensive scope to harmonise the arts; it is something, it is no little, to find this object aimed at; it is much for it to have been achieved within the capabilities, in fact, of the degree of perfection to which the several arts had in that day attained. The culture of Egypt, which, in certain aspects, revolts us by grovelling and superstitious materialism, in another appears to rise transfigured into the region of noble abstractions and ideal aspirations. Thus it is that when we pry too narrowly into minutiæ of worship and ceremonialism, we recoil in disgust; while so soon as we extend our field of view to take in the full range of a national monument we are struck by an admirable expression of majesty, dignity, repose. The colossal seated statues, in virtue of their very formality and in spite of technical inexactness in detail or in proportion, affect us with sense of self-respect and superiority to passion or to triviality, that approaches what is known as religious awe. By the union of the simple with the colossal such statues would harmonise with the correspondingly colossal temples, the grandeur of their outlines and plan, the self-explaining moderation of architectural distributions and details. Colour, again, was liberally employed throughout in the very grandest examples, but very largely in the most purely decorative sense upon columns and architraves in constant repetition of royal cartouches and titles. It was on the faces of the great pylons that the chief approach to large pictorial compositions was attempted; and the counter-sunk and coloured reliefs of the king in the full course of personal victory over hisenemies, was a contribution to the grand concentration of art in which what we know as painting was fully entitled to assert her predominance.

To Egyptian art we must allow the high merit of realising at its best an expression of dignified sentiment. We have only to transfer our attention to what we have of Assyrian remains to recognise the contrast of a brutal type,—the mere self-glorification of a military clan; and honour must also be assigned to the Egyptians for their combination of the arts; but still the arts of Egypt are crude and rudimentary, and we turn to Greece to inquire how far men who had done the best men can do in certain arts succeeded in combining them to mutual advantage. The best Greek monument was that which we know best,—the Parthenon; and here two of the greatest geniuses the world has known co-operated. Of the perfection of the architecture need is not to speak; but besides its specific beauty, it afforded seat and framework for the most perfect sculpture the world has seen. The sculptures of the frieze, the metopes, and the two grand compositions of either pediment, added infinite grace and relief to the pure architectural lines, but the sculpture gained at least as much from the association. It was only as attached in appropriate distribution to regular architecture that the pertinence of each subject to a large theme, and the interdependence of the subjects, became self-evident. The architect provided sufficient accommodation for the sculpture, but with no appearance of having to disarrange his natural lines of construction; and the sculptor as little betrays a purpose to take an advantage of his opportunity to the detriment of the architecture. There is no question here of either art being degraded into the mere handmaiden of the other. Neither appears to exist for the sake of the other, but both for a common end. It were as incongruous to speak of the sculpture as decorative relatively to the architecture, as of the architecture being merely ancillary to the sculpture. Even in the Parthenon, however, we do not find that there was any painting in the proper sense. Externally, certain mouldings were ornamented with coloured patterns, certain string-courses and retiring plane surfaces were evenly coloured; but no more can be asserted; the variegation of the materials of the colossal chryselephantine statue of the goddess gave a certain liveliness to the interior; but w
of no paintings such as are mentioned
smaller temple of Theseus. It may be
however, that we have an example here
sculpture can avail itself of the assist
architecture, to present a series of gra
jects in most favourable individual aspe
to indicate at the same time their inter
ence, their due sequence, subordinatio
relation to a generally-inspiring idea
ultimate culmination of interest and exp
ness. Sculpture so employed does lit
in requital for the service of architectur
what is all but equivalent to endowing
articulate speech.

The work of modern genius which
worthy to be mentioned next to the Pa
of Phidias and Ictinus, is the Sistine C
Michelangelo. But here we are met
objection that the architecture of the
itself is very unimportant, while neither
nor within does it present us with any
sculpture. Still is the instance not fa
illustration of the union with painting
arts of architecture and sculpture, in wh
artist of the immortal painting of th
was no less a master. The portion
ceiling which is nearly flat, is, in trut
narrow strip; the remainder on either
a quick slope on the pendentives of th
Upon these Michelangelo adapted a
arrangement of architectonic framing
was further enriched by representa
sculptured figures and groups in sy
Thus it was that he recognised how indis
was the expression of strict architectural
and distribution, when it was necessar
play the sequence and connexion of
which were to be contemplated only
when understood as parts of nothing l
an epic plan.

It is clear that when painting and
are to put forth all their strength t
demand and deal with most extensive
complicated subjects,—subjects that wi
distribution into series of themes, bu
still all require to be arranged in succe
obvious connexion. The grandest subje
naturally a public if not national relat
public or national buildings are the
recipients of them, and enforce in addit
a specific local reference and propriety
art is content with subjects that ar
telligible and interesting in one place as
it manifestly accepts a decline; its pro
are on the way to be objects of furnit
able for general demand. It is well
world that there should be such,
indeed that it should have, still grea
that it should even cease to wish for
else. A large proportion of the Italian
which were complete in their single se
being removable are now scattered ove
were originally designed for certain pos
as particular altars in particular ch
where they had a special significanc
now is only precariously recoverable by
It is not unusual to find the actual arch
moulding of a niche extending in
perspective into a picture; the repro
of the Arundel Society have made the
world familiar with the studious arch
ordination of sacred subjects by the
masters.

However, it is too certain that
only highly-favoured epochs, under p
favourable combinations of circumstan
we can expect a truly monumental
noble architecture to become the c
expression of noble associations and pur
co-operation of pictorial and sculptur
of the highest order. Still, we shall
pusillanimous indeed in respect of the
strangely in contrast to our self-confiden
progress of our century in other direc
we can complacently give up all hope
will be a revival of the arts indeed, a
them to that harmoniously-combined ac
modern centres of overflowing popu
which they once displayed as if with spo
luxuriance among the republics small a
the municipalities and *scuole* of Italy
conceptions prevalent in a community s
generative of large opportunities at le
a community pervaded by sentiments d
once and elevated,—and with an in
repugnance to that daring spirit whethe
disguise of science or of sentimentalis
is only daring in the cause of persona
ceit and general degradation, is the ve
bed of genius. If it is in the power o

ng the mighty masters of old that we find a
g of refreshment from the many harass-
s of the happiest life, the draught approves
healthfulness for him alone who becomes
after more hopeful for the future from his
ration for the past, and prepared to
pathise with the enthusiasm of a genial
of our time :—

"Heroes of old! I humbly lay
The laurel on your graves again;
Whatever man has done man may;
The deeds you wrought were not in vain!"

AS TO BUILDINGS
ND ABOUT WELLS VISITED BY THE ARCHITECTURAL ASSOCIATION.*

TEN Master John Horner had, with fine art,
ed himself to the good thing of this life
which he longed, he did not hesitate to
ss his satisfaction with the well-ordered
rse in which rare merits had met with
opriate reward. Happily, no detractor with
rp pen has been moved to take away any
e glory, which hangs around that type of
omplacent success, whose healthy feelings
tinged with livelier colours the grey
of many of his compatriots. There may
omething in the air about the Mendips
h disperses the morbid humours of less-
ured districts, and abolishes dissatisfaction
other people while it is conducing to satis-
n with yourself; and Master Horner may
shared to the full the benefits of his native
It would not be easy, one may think, to
w an ordinary member of the Society for
rotection of Ancient Buildings with any
onal confidence in his own infallibility, or
rd him any new satisfaction in his own
ng perfections, and in carrying that heavy
n with him always. Perhaps, however,
most fanatical member of the S.P.A.B.
, by a due number of inspirations of the
central Somerset, find his contempt for
algar world so far modified that he would
with fair temper about a conservative
ation, and even hesitate to decide whether
ct and wilful damage in past years may
occasionally justify us poor moderns in
g out some traces of the neglect, and in
g back some of the features of old build-
—which would never have been missed if
had not been at some time or other not
e rampant savagery in the neighbourhood.
ch of some medicine for the mind of such
ent would obviously be advisable, before
s allowed to range at will in Somerset
Wells as a centre; for restoration has had its
mong the twenty and odd parish churches
d in the circuit explored by the Association;
thedral, too, has come in for its share of
ion, as well as buildings not wholly for
iastical uses, in which, considering their
, we should feel entitled to look for im-
ment in the way of rust, and to think it
ch to the good when they have not been
to lose much of it. Counting very strictly,—
s counting in the works of thirty to forty
ago, a kind of bewitched period of archi-
re in the eyes of many worthy persons
lays,—only two parish churches can be
on which have yet to go through every
of the conventional furbishing up. Priddy
of them; and is worth a visit from any
possible on a day of gloom and mist and
ll, so that the wild desolation of the moor-
n the back of the hills may tell to the best
tage, and the untouched aspect of the church
well in harmony with all the surroundings.
ook of things at Priddy cannot be very
g on the sunniest days of early summer.
ng eastward from the unkempt church-
the weird-looking Eight Barrows and Nine
ws cut against the sky—only these and the
, bare downs of North Hill are interposed
en the church and the Roman road leading
ward to what is now Uphill, on the Bristol
nel, whence the produce of the mines in the
ips was shipped,—a road which runs east-
by Maesbury Camp and Beacon Hill, and
nd—well in line with this Somerset portion
ery perfect state for fifteen miles on the
of Salisbury. A methodical crow would
the rarely-used fragment of the old road,—
courses so strangely along the tops of
lonely hills,—after a flight of a mile and a
er from the square western tower, of good
design of Early Perpendicular date, with
buttresses in three stages, little windows,

* See pp. 921, 934, *ante*.

pierced parapets and crocketted pinnacles, and a grey tone and growth of vegetation over all. The characteristic stone pulpit, built with the pier against which it stands, might remain almost untouched when the cleansing takes place. Westbury, on the southern slope of the Mendips, dwells also in the memory. There is a sense there of insecure walls, much out of the perpendicular, of roughcast and whitewash, and pews of 1¼-in. panelling and rounded cappings. As these are not likely to be the last remnants of that prolific race, perhaps their disappearance would cause dismay to very few. The church has stonework of the Transition waiting to be cleared from gallery-framing, and elsewhere from careful sheathings of pebble-dash. It probably has a good old roof to the nave, hidden above the flat plaster ceiling. It has a stone pulpit, a sixteenth-century monument, a seventeenth-century chest and panelling.

When a well-disposed observer has moaned over instances of want of proper care, he usually feels bound, in dealing out even-handed justice all round, to take a good deal of exception to walls, window traceries, roofs, seats, and other fittings, floors, stained glass, and decoration which have had reparation or restoration. To open the floodgates by naming the new choir-stalls, put up nearly thirty years ago at Wells Cathedral, may be somewhat rash,—especially when it is necessary to say that placing the stalls between the piers does not deserve all the reprobation which it has received. The lines of the architecture are so good that they deserve to be brought into view as much as possible, and the piers of the ground story are comparatively short. Entire satisfaction with the cold effect of the stone and marble used for these fittings can hardly be felt. Warm-coloured oak would have done something for the eye which is not done at present; and the more delicate treatment which woodwork enforces would have avoided the danger of vying in scale with the architecture in which the fittings are placed. The original and most elegantly-designed chantry of Bishop Beckington, a portion of which is now standing against the east wall in the chapel formed out of the north bay of the east aisle of the transept, must have added much to the effect of the choir when it stood where the good bishop had directed it to be placed before he died in 1464. One of the great merits of such later insertions in the old fabric is that, in aiming at multiplicity of parts, the fifteenth and sixteenth-century designers reassured rather than frightened the architecture of their predecessors. This sounds as if it ought to be a commonplace; but the different way in which still later insertions were designed must not be forgotten by the complacent well-wisher to all ages which have the good fortune to be removed at least four or five generations from his own. Bruton chancel will be likely hereafter to supply a battle-field, for strife of conservationists and those who may happen to belong to the party of change at the time. The windows, walls, and plaster-vaulted ceiling received their present form in Georgian times, somewhere about the middle of the last century, and an altar-piece with columns and entablatures of good proportions was then put on the east wall. The work generally is good of its kind; the ceiling very good. Under half the length of this chancel, and under one bay of the nave, is a Mediæval crypt, now containing mouldering coffins (dated by Mr. J. H. Parker anywhere between 1120 and 1250, says the vicar), but from the flat points of the arches, the angles of the chamfers on the vaulting-ribs, and the shape of the single hollows of the pier-bases, many people would be inclined to put it at the latter part of the fourteenth century. Thus there is nothing but Mediæval work on every side:—a stately nave resembling St. Mary's, Taunton, in the design of its walls, crowned by a high-pitched oak roof of fine character; aisles with roofs of rich panelling formed by bold ribs; and at the west the grand tower opening into the church by a majestic arch. What should happen to the chancel thus set down among the excellent features of this spacious and well-treated church, is asked to-day? and the question is answered in two ways at least. Alter nothing of its form; treat that as a settled thing; fit up well-designed stall-work in wood; decorate the walls with colour; get something richer in place of the tint of dirty brown on the walls and in place of the very white surfaces of the ceiling and cornices; and be content to leave this substantial work of a past time to tell its own tale, as well as it can when it has had these additional helps at your hands;—and then this adviser nearly completes his exhortation. The language of the others can be imagined,—the most thorough would call for the pulling down of walls and roof, and the building of a new chancel of good pure Decorated date; the cumbrous and in truth somewhat dull Georgian plaster-work would not be much respected. At Axbridge almost the same problem is being dealt with at the present moment. The nave windows have new tracery and new glazing; there are good new seats, with much fertility shown in varied designs, all by Mr. John D. Sedding, architect. The nave vault has been preserved, a plaster barrel-vault running from end to end, decorated with small ribs carried in patterns all over the vault; and, albeit bearing date 1636, with much cusping and suggestion of earlier work. The rather monstrous pendants at the main ribs and the strap-work cornice above the walls, might seem later additions,—they are unlike the rest in character of design,—if there was not pretty conclusive evidence that all was done at one time. The spaces between the ribs being coloured a dull and faint grey-blue, the vault is by no means an unpleasant thing; decidedly it was well worth preserving. New wooden roofs, designed as well as the splendid old aisle-roofs, would not have made up to us for the loss of a good little bit of a century which we are not yet disposed to wipe entirely out of memory. The chancel has a similar plaster vault, at the present time coloured in the most painful way with shouting red ochre on all the ribs. It has the façade of a small Corinthian temple,—date near about 1750,—on the east wall. Should this ceiling and this bit of temple find conservators? or should the plaster become dry rubbish for packing under raised floors? The order seems likely to be given for bringing the chancel into harmony of style with the strictly Mediæval portions of the church.

This cheerful bandying of yesterday's wisdom and to-day's is not soon at an end when a start has once been fairly made, and the partisans of the restoration factions laid by the ears. Public teachers may settle for us some day soon how we ought to stand with relation to the future and to the past,—tell us which way to look to find what should be most to our liking,—so that we may know whether we are in the evening twilight, or in the grey light before the dawn of true day; and when these preliminaries have been settled we shall see what old buildings are, and be able to deal with them—and many other matters as well—with a firmer will and hand.

The church at Rodney-Stoke,—reopened for service on the day after it was visited by the Association, after careful additions and reparations by Messrs. Ferrey,—has a set of tombs of considerable interest, and two of them of real beauty, injured by displacements and mutilations, but now put into the condition in which they must have been, say a century ago, with the probability of their remaining in their present state for several centuries. A statement has been prepared mentioning every piece of reparation,—a good thing to do; a copy might be kept in the church for general reference. The monuments are mainly of the Rodney family, and all placed in and about the little monumental chapel, a sort of north aisle of the chancel. An extract from the statement referred to, as to the two fine Mediæval tombs, will illustrate the previous and present condition of the monuments:—

"*Westernmost Monument (opening through to Chancel.)*—This, on the chapel side, has been entirely taken down and refixed. The figure of the knight, which rested on loose rubbish, has been built upon solid work. The lower portion of the monument was in a dreadful condition. One panel was in six different pieces, the slab containing the figure was deficient altogether, the tracery receded from its proper plane 1½ in. on the right side and projected 1 in. on the left. The cornice was a 3-in. ogee moulding; but in restoring the monument next the altar, in the chancel, the top stone at the east side was found face inwards, the back being worked into a piece of cap moulding. This gave the profile for the cornice, which, with the finial at the right-hand (west) side, is new. The figure has been generally restored; the dog's head and eagle's head are new; also the hands, with the exception of the thumbs, upon each of which there are two diamonds. The helmet sword, and one foot have been made perfect. On the side next the chancel this monument had a very different appearance before the work was begun. Portions of the cresting and the finials were lying in the chapel, and the face of the wall of the chancel above the monument was carried down to the cornice just above the panels which contain the large shields. Three new lengths of the cresting have been worked, and the wall panelled. Many of the cusps on both sides have also been restored, only two were perfect; portions also of the jambs are new.

Easternmost Monument in Chancel (next Altar).—The upper panels of this have been taken down and refixed.

The centre panel projected 1¼ in. in front of the others. The capping has also been made good, and a new piece put where the jamb had been cut away. The cornice is all new, copied from an old specimen which was found; also the finials. The old finial, which evidently did not form part of the original work, now lies in the chapel. The base of this monument has also been chiefly reworked."

As it blocked up the window in the north wall of the chapel, one of the seventeenth-century monuments has been removed, and placed against the west wall,—an innovation which is an obvious improvement. The painstaking reparations at Rodney-Stoke may be contrasted with the unceremonious treatment of good effigies at Nunney, where they are now heaped together out of sight behind the organ, one thrust above another, evidently classed as lumber, as something fit for destruction, since there seems neither profit nor pleasure from the keeping. As the Delameres founded the castle, which is the great feature at Nunney (and sadly in need by-the-by of a little propping and holding up from imminent total ruin), giving rare interest and beauty to what would otherwise be merely a pretty little village, gratitude should not have so thoroughly evaporated. The good people of Shepton-Mallet, who owe charitable foundations, schools, &c., to the Strode family, have not thus thrust into a corner the memorials of the days that are gone. A really remarkable collection of monuments and engraved brasses—some containing figure-subjects with merits—of the seventeenth and eighteenth centuries are placed together on the inside of the south wall of the tower;—a fairly-lighted position, although if some of the engraved subjects were nearer to the eye-level of ordinary mortals, they might be even better appreciated.

The seventeenth century did its part in looking forward and thinking of the needs of the times that were coming; and hereabouts has left stonework to testify the same before all eyes. Some of the high feather of such foundations cannot be attributed to mere foresight. The best prophetic spirit would have been overtaxed if called upon to predict all the actual growths of cities and townships, and what is still more wonderful, the very careful remembrance of the very words of the "pious founders." Buildings at Shepton-Mallet, Glastonbury, the work directed by Bishop Still's son, in addition to Bishop Bubwith's foundation at Wells, might begin a little catalogue; but the name of the Sexey Hospital, at Bruton, would deserve to be printed in capital letters. The small quadrangle with hall and chapel on the southern side, lies on the south of the principal street of the little town on the Brue, a very little stream here, at about a mile from its leaving Cogley Wood, in which it has its source. There are bits of picturesque overhanging timber work on the steepish slopes that lead up from the water to the main street, which happens to be also part of the high road leading from north-west Wilts,—Chippenham and Bradford,—by Frome, and after passing Bruton by Yeovil and Crewkerne to West Bay, and besides to Exeter and the south-west. The founder of the hospital was "auditor to Queene Elizabeth and King James." The chapel is dated 1638; and must, barring some fresh colour-washing and additional blackness in the oak-work, have charged little since it was completed. In this tiny chapel, where many an hour might be spent upon careful drawings of wall-panelling, seating, desk, and pulpit, all very notable and in capital preservation, it would not be difficult to forget for a little the last two centuries and a half—the two centuries of "Old Leisure" followed by the spell of ever intensified hurry. The difficulty might, indeed, be to resist such illusions amid the drowsiness which hangs in the atmosphere, seemingly distilled from the listless lives of generations,—beaten in the struggles of life and retired to doze away the few remaining hours, with ill-health and the pique which comes with a sense of failure as their only personal possessions. The seventeenth-century builders cannot be credited with the chapel windows,—two three-light windows, with traceried heads of Early Perpendicular date and of good design, to all appearance moved here from some destroyed building, new monials being worked of a different section from that of the tracery bars. They may, however, be credited with the woodwork of the hall, the screen with rude Ionic columns, table with carved rails, cupboards, and perhaps with the prodigious lock with ten bolts, which ought to make the muniment chest a sinecurist, existing only for show,—the deeds being relegated to the business-like Chubb or Milner of our less showy and less impressible times. Wyke Champflower furnishes another instance of a seventeenth-century work which seems to have profited by spoils from some earlier building. It is prettily situated, surrounded by old trees, attached to the Manor-house, and reached through its grounds. Except the rough-cast on the exterior it may well be unaltered since 1623,—the date given on its doorway. "Henry Southworth, Lord of the Manor of Wyke, at his own charge built and adorned this chappell, and departed this life the 23 May, 1625," is the inscription on his monument; but the doorways must be older work, and perhaps the windows, and the odd little bell-turret standing on the top of the west wall,—a square tower in miniature with crocketted angle pinnacles, battlemented cornices, buttress on each face at each angle, and a barrel-vault from east to west. The so-called "Late Gothic of Somersetshire" must have been a peculiar possession,—if the ordinary Perpendicular of these details was being designed at the same time that the pulpit of this church, of a thoroughly Stuart type, and the altar-table, and the coved plaster ceiling, were being thought about. There can be no room for doubt about the windows at Bruton, and but little doubt about some of the work at Wyke, but the assertion has been made with so much firmness that it would be worth somebody's while to hunt down some amount of work which is dated by documents, and to examine all details with minuteness.

It will, however, be desirable here and now to have courage; and in spite of Mr. Lowe's shriek at "the stereotyped idiocy of generations," to quote the ancient sentiments anent discipline, good breeding, and good sense, and "leaving off hungry,"—which are at once compliments to the reader's virtues and good intentions, and still more delicate allusions to the virtues of others. A hint as to the treasures which might be produced, if the frame of things did not demand a return to golden silence, is all that can be ventured upon. Draycott stone might be the first item of a string of references to materials,—where old and new Doulting, lias, Purbeck, Ham Hill, and their uses, quarrying, and the local rubble, would all play their parts; and such instances of wall texture, as at Cheddar Church at present, after restoration by Mr. Butterfield, with pointing well withdrawn from the face, would need notice. At Rodney-Stoke the new step to the altar-space is from Draycott, a hamlet not far off on the road to Cheddar; it is a conglomerate capable of high polish, and the step is a single stone, 11 ft. 8 in. by 1 ft. 4 ft. by 6½ in. The great stone barns; a double transept on each side at Doulting; rare dignity of design at Pilton; grace and refinement and excellent sculpture in gables (signs of the evangelists) at Glastonbury; notable size at Wells,—may be put into one short sentence. The domestic buildings could hardly be driven into one of reasonable dimensions. The Fish-house and the Abbot's residence at Meare, where there are grand fireplaces and noteworthy doorways and windows, would be succeeded by the work of Bishop Ralph, and then by the later work at the Vicar's Close at Wells; the manor-house at Ditcheat, a most picturesque gabled house, with later woodwork in doors and staircase; the George, the Tribunal, the gateway, and Red Lion, and the almshouses at Glastonbury; the strange parsonage at Bruton, formed out of the ruins of Bruton Abbey; the modern Mellifont abbey (an invented name) at Wookey, with an old window built in over its entrance resembling the window at the south end of the Vicar's Close at Wells, and with a great deal of excellent old stone carving stuck in a miscellaneous way into the walls; the roof of the great hall at the archdeaconry at Wells, and the garden-front and bay window of the deanery; the manor-house and other buildings at Mells; the group of gables on the north of the main line of houses at Axbridge, with a turret rising behind the gables; the clever general design with clever details of the old timber-and-plaster house in the rear of the inn on the south of the market-place at Wells:—these might be considered enough for the best-disposed of sentences to carry. The elaborate brackets of wrought iron, supporting the inn signs which hang over Bruton streets, are good work of the last century. Roofs were entitled to an earlier mention. First among the wagon-roofs would come Shepton-Mallet, for varied design and capital execution,—panels, foliage, and angels, and all of an aërial tone, the natural colour of the oak, which allows the detail to be seen, and does not rush down on the spectator and swallow the detail, i will happen with black woodwork in that po tion. Some stronger marking of the main div sions might render such a roof still mo perfect. Among the high-pointed roofs t transepts at Doulting would bear off t palm; among the flat-ribbed ceilings the aisl at Bruton and Axbridge. A parenthetical par graph might, however, become in this way b enough to nourish parenthetical sentences, if r cruelly pruned. Enough has been said to sh that the memory of Mr. Sharpe,—the first lead of the excursions, of which the tenth has th been completed,—is kept green; and that t path he marked out is followed still, and a we spent each year pleasantly in company in givi a keen glance at some little district in Engla where good buildings are to be found for t instruction of those architects who wish s hope, with due consideration for the wants a views of the present, to carry on the traditi of the elder days.

EXAMPLES OF DECORATIVE IRONWORK.

AMID the very questionable taste in m points of architectural design to which recent revival of eighteenth-century archit ture has given rise, there is one part of t revival with which the most cultivated t may sympathise, that which concerns the ir work of the period referred to. This, in fa was with ourselves, as with many others, mat for admiration long before the idea of rehab tating the architecture of the period *in toto* occurred to any one. It is not very easy understand why, but certain it is that while i English architecture of the eighteenth cent (interesting, no doubt, in some ways) sh some of the worst and most senseless corrup of Classic detail that could well be, and, in fa is on the whole a most debased style of ar tecture, the ornamental ironwork of the pe is frequently in admirable taste, and is desig with a true perception of the nature and c racter of the material which seems to impa meaning and refinement of their own ever some of the *rococo* forms peculiar to the t of the day, when they are modified and ada to his purpose by the ironworker.

We, therefore, can speak with all cordialit a work, just now published, which illustr some of the best specimens of the ironwor the last century and the close of the seventee which are to be found in London and its ne bourhood, for it is from this quarter that specimens offered to us by Mr. Ebbetts* chiefly selected; and probably the neighb hood of London affords a far greater amoun work of this kind than can be found anyw else in England, for the ornamental iron was an almost inevitable accompaniment of solid brick houses which were built during last century around the suburbs of London residences of a class of wealthy men who, in present day of railways, would live far ou the country, but who, in the pre-railway pe had to be within easy reach of the town their business or court appointments. T old residences, with their high brick walls, rich and tasteful iron gates, are mostly built up and surrounded by the encroachm of modern London; but they still give to roads or streets in the outskirts of the tow special character, as we come upon their weat stained but solid walls here and there, amid rows of speculative villas and bay-windo "desirable residences" which threaten to en them. This encroachment of new subu streets upon the old suburban mansions is tinually threatening to lead to the demolitio the latter, so that the specimens of iron from such sites have a special value in publi illustrations; the author, indeed, remarks some of the specimens have already disappe since he drew them. In addition to t smaller specimens, which may be called fugitive poetry of ironwork, we have meas drawings of larger works in St. Paul's Westminster Abbey, of the gates at Carsh and Loughton Hall, and of the noble iron scr from Hampton Court Palace, two of which now in the South Kensington Museum. These are, of course, known to all those who study things, but they can hardly be too well kn and no work on the subject could have

* Examples of Decorative Wrought-iron Work Seventeenth and Eighteenth Centuries. By D. G. Eb London: B. T. Batsford. 1879.

mplete without them. The drawings seem ry carefully executed; we are given to under- nd that they are from original measurements; e general design of each specimen is given in l, of a sufficiently large size, and details which esent any noteworthy peculiarity of design or ail are sketched larger size. There is, how- r, one serious omission which surprises us in ook otherwise carefully got up; there is no le to any of the drawings, and no hint as to scale anywhere in the letterpress description. e thicknesses of the principal bars are figured; a book of measured drawings ought to have n scaled, especially as the scales obviously er very much in different plates.

The qualities which make this Jacobean and en Anne ironwork so valuable are in a great asure the same as those which are exhibited good Mediæval ironwork, only they are shown ler a different form. There is one important erence, that the Renaissance ironwork dis- ys much more decided reminiscence of archi- tural forms and details than does the Medi- al ironwork. The latter, in its scrolls and sted fibres and flower forms, seems much more ed to nature than to architectural detail. In ironwork the illustrations of which we are considering, all the forms are purely arti- al, and a good many of them are directly ived from architectural detail and ornament he kind in fashion at the period. Sometimes find this imitation carried out too closely unsuitably; for instance, the Classic base- ldings executed in iron as a base to a gate- or pilaster of ironwork. But the pilaster lf is almost always suitably treated, trans- d into the form suitable for execution in al-work, groups of parallel bars substituted fluted surfaces, and so on, as in the St. Paul's r aisle gates, shown in Plate X. of Mr. ette's work. And in the smaller details we many of the peculiar forms of handling ind us of very much of Mediæval work, ply because the like causes produce the like cts, and when iron came to be treated in the easiest and most suitable to its character mmering it into thin strips, and then turn- and bending it, the man who worked it this in the seventeenth century naturally duced some of the same effects as the man handled the metal in a similar fashion in fourteenth century. It is only when you e to impress upon iron, in its cast shape, all ner of artificial treatments perfectly foreign he nature of the material, that there comes ssarily a wide divergence between one treat- t and another; otherwise, two men who ly understand the working of iron will ress on it the same sort of character, just as men who understand mosaic-work will give he same distinctive character, though one prefer to be working in Classic and the r in Gothic style.* Details might be picked from these few illustrations we are speaking which do equally well for Gothic as for sic work. In the main, however, the broad inction which does exist between Renais- e and Gothic metalwork is that the ner is artificial in its shapes and feeling; epresents the art of a society essentially icial, though at the same time refined elegant in its tastes. Gothic ironwork s the natural forms of foliage as the basis uch of its best detail; Renaissance iron- k makes no reference to nature; even where ge is largely introduced, as in the Hampton rt screen-work, it is a purely artificial , based upon Classic models, and the bulk he ornament consists in intertwined lines scrolls, representing abstract beauty of line proportion merely. This is a type of orna- t not so poetical or so universally interesting hat based upon nature, but it has a great of beauty and "fitness," and is quite thy of special illustration, such as it has ived in the publication before us, which will be of value as a record of a class of work very durable in itself, and much of which is g removed in the course of inevitable nges and alterations in building property.

urveyorship.—Mr. John Parker, of Bridg- er, has been appointed surveyor and in- ctor to the Maldon (Essex) Rural Sanitary hority, *vice* Longdin, resigned. There were 100 applications for the post.

*This applies, of course, only to materials which are so rigid in their conditions of working, and consequently r the artist and impose a style upon him. In free rials, such as clay or marble, the style of the day and o individual is much more decisively marked.

THE BANKING ACT, 1879.

The importance of the new Banking Act to all classes of the community, especially to those who, like contractors and builders, have considerable cash dealings, is so great that it deserves a short notice in these columns. Primarily, as we all know, the cause of the Act was the disastrous failure of the City of Glasgow Bank, and therefore, primarily, it is a banking measure. On the other hand, like most of our English legislation, it is not a plain and simple enactment; for, instead of dealing solely with banks, it affects in some respects joint-stock companies in general. In fact, the actual title of this statute is, "The Companies Act, 1879," adding another to the several Companies Acts which have found their way into the Statute-book since the great measure of 1862 became law. And certainly, in our opinion, it would have been better to have kept this Act for banks alone, and to have introduced those portions of it which have to do with joint-stock companies other than banks in a separate Bill.

The main provisions of the measure which has now become law are in reality three. The first and most important is the permission granted by section 4, under which "any company registered before or after the passing of this Act as an unlimited company may register as a limited company, or any company already registered as a limited company may re-register under the provisions of this Act." This section, it will be noticed, deals with *all* joint-stock companies, not alone with banks; and though, as we have said, the primary object and reason for the measure was the security of shareholders in banks, yet all unlimited companies are touched by it. Apart altogether, therefore, from any question of the liability of shareholders in banks, or the security of depositors, this measure introduces a change which is of importance to all classes of business men.

The second main provision in the new statute is in regard to the capital of any re-registered company, the fifth section introduces an important rider to the limitation of liability clause. By this section it is enacted that "an unlimited company may, by the resolution passed by the members when assenting to registration as a limited company, increase the nominal amount of its capital by increasing the nominal amount of each of its shares. Provided always that no part of such increased capital shall be capable of being called up, except in the event of, and for the purpose of, the company being wound up." Then there follows a further proviso that when the capital is not nominally increased for winding-up purposes, yet that the shareholders in a registered company, or in one already limited, may set apart a portion of the hitherto uncalled-up capital for winding-up purposes, and this portion shall not then be capable of being called up except the company has the misfortune to require it for these untoward purposes. Here again it will be observed all joint-stock companies are brought within the range of the new measure, so that it directly affects all limited companies which are now in existence by allowing them to set apart a portion of their uncalled-up capital for winding-up purposes, which has hitherto been available for any purpose, such as the increase in the sphere of the operations and for similar objects.

The third head of importance deals with banks alone, and provides for a compulsory audit of the books and accounts of the bank and the signature of the annual balance-sheet by the secretary and at least three directors. This latter clause will certainly give a larger measure of security to shareholders, though it is extraordinary how unbusinesslike directors will sign documents which are sanctioned by their more energetic colleagues, so that too much faith should not, after all, be placed on this part of the new Act. But in these latter directions we find points solely connected with banks which should not properly have been included in a general joint-stock measure.

There are other minor provisions, chiefly for the purpose of carrying out the main points which we have noticed, but from what has been said it will be obvious that this is an Act of the highest importance, not only to men of business, but to the general public. The question which is now of most interest, and which a few months will probably answer, is to what extent the permissive action of the new statute will be set in motion. Will the numerous unlimited banks which are now in existence re-register as limited concerns, or will they remain in the present state? Again, will any unlimited joint-stock companies other than banks take advantage of its provisions, and will limited companies, as a rule, set apart a portion of their unpaid capital for the, it is to be hoped, unnecessary purpose of winding up? It has been urged as an objection to this new Act that, like so many of the enactments of the present Government, it is permissive and not directory. But, on the whole, it seems to be the soundest principle to allow banks at present unlimited to re-register as limited if they please, and not actually compel them to do so. After all, banks are only trading companies like any other body of men united for a commercial purpose, and if the majority of shareholders do not desire to limit their liability, why should a paternal Government compel them to do so any more than it should compel all house-owners to insure their dwellings? Shareholders know their risks, and if they do not choose to avail themselves of the provisions which the Legislature has given them the opportunity of using, there can be no sound reason for not letting them "gang their ain gait," as the Scotch say. At the same time, it is clear that no man of prudence will, if a bank does not limit its liability, remain a shareholder in such concern, and all shareholders in unlimited banks should at once put pressure on their directors to induce them to re-register the banks of which they have the management. That depositors should consider their security lessened by the new Act seems to us a groundless alarm. Not one depositor in a hundred in an unlimited bank knows anything about the stability of the shareholders; they may be "good" for millions, or a couple of calls may exhaust their means. When a bank is limited, the shareholders, it is true, may not even be worth the amount of their liability, but that only shows that the limit fixed cannot really injure very greatly the general security of the depositors. Again, undoubtedly, the fact that a man knows the amount of his liability will in all probability cause bank shares to become a much more favourite investment with some prudent persons, though they may not individually be as large holders as some shareholders in the present unlimited banks; on the other hand there will, probably, be fewer "rotten" holders of shares, and banks will, therefore, as a rule, become really sounder and more stable concerns. Thus it is possible that the new Act will be the means of enlarging the area of *bona fide* investments, for in principle there should be no concerns more fit for those who desire fairly remunerative investments, yet not of the highest order of security, than banks; therefore we regard this measure of the Session of 1879 as a really useful and beneficial enactment. The cry of the election agents, which is so loud just now, "Register, register," may, in a different sense, be fairly taken up by shareholders in unlimited banks and dinned into the ears of directors.

THE ORGANISATION OF ARCHÆOLOGICAL ASSOCIATIONS.

While in England the agreeable meetings of the archæological societies are being held, and in many a quiet corner of distant counties smaller local gatherings are emulating the proceedings of the older societies, in France the archæologists have been busy in preparing their valuable notes for the antiquarian campaign; but though the ends proposed by these diligent searchers in the domain of the past is the same in each country, the means adopted by each somewhat differ. With a lively sense of the gratitude that we owe to the labours of our archæological societies which have so diligently explored our old towns and villages within the last generation, might it not be justly asked, to what determined end have all these laboriously-collected studies tended? Certainly, to a more correct appreciation of the science of archæology, the value of which, by the way, is still too little, and in many cases altogether misunderstood, by the public at large; and to the exposure of innumerable errors; but can it be said that any clearly-defined aim has been fulfilled in the bulky volumes of the interesting transactions laden with valuable facts buried away, difficult of access, for want of classification? Is it not possible that some amelioration might be introduced into the system at present followed in the annual meetings, and in the learned papers which are so industriously prepared?

The forty-sixth annual session of the French

Archæological Society began on the 2nd of this month, and the programme of the subjects which the society propose to inquire into certainly embraces a wide field, and shows us how admirably such meetings are regulated in France. At the present moment our readers may find a summary of the programme of the Archæological Society's meeting in the superb old Gallo-Roman city of Vienne not uninteresting. A column might be filled with the details, for there are no fewer than eight sections and twenty articles, comprising the consideration of the pre-historic archæology, the Roman epoch, the Middle Ages, the numismatics, the sigillography, the stethmatics, or science of the weights and measures, and the language of this interesting south-west corner of France. A sketch of the results of the labours of other societies and of private individuals, of the latest discoveries, will be presented, with the notice of any facts that may have modified existing opinions on the elements of the Roman rule in this part of the country; the re-examination of the topography of the old town of Vienne, and a notice of all known maps of the town in more modern times; the study of the exterior and interior decoration of all the most interesting monuments, statues, bronzes, mosaics, &c.; the indication of the museums in which all detached objects are to be seen; the notice of the pottery trade of the district, whether foreign or native; the study of the Roman roads of the province; that of the architectural progress of the cathedral; the production of texts or other proofs of the date of all remarkable sculptures, goldsmith's work, tapestry, &c., and the extension of this catalogue to the monuments of religious, military, and civil architecture; the study, in their principal types, of the religious monuments of the province, and the manner in which they differ from those of the same type in other portions of the country; the study of the military architecture of the province; the monography of some special château and its figured restoration; the study of the civil and domestic architecture of the province, the great architects and patrons; the families of the most distinguished armourers of the province; in numismatics, the notice of all recently-discovered coins; in sigillography, the critical notice of all the most interesting seals preserved in the archives; the study of the ancient weights and measures; that of the language of the province and its bearings on the etymology of the towns and other geographical features. It is not difficult to see in this comprehensive programme the effects of the recently-organised Commission for the formation of an inventory of the artistic treasures of France, referred to not long since in these columns. It is evidently intended that the archæological societies shall aid the interesting and valuable labours of this Commission. In reading over the programme of the French Archæological Society's meeting for this year, how is it possible not to feel that our English societies might with profit follow the excellent example of their foreign brethren? Why should not a commission be formed of members selected from the various archæological societies of our country, who should draw up a fixed programme to be followed each year, and by means of which we might be assured of directing the somewhat desultory studies as at present pursued? Thus in each town or county in which an archæological society would meet, we might, by the aid of this programme, lead to the preparation of a paper on each of the great branches of the art or the industry of the province, the architecture, the painting, the sculpture, the gold and silversmith, and ironsmith's work, the dialects, the labours of the carver, the potter, the typographer, the antiquary, the medallist and the monk. Each would form a special study, and each meeting, as years crept on, would add to the stores of self-classifying information, henceforward at the easy access of the student or the professor.

Another hint: the pleasant outings of the archæological societies are drawing to a close. Let us hope, for the sake of those who reverence the study of antiquity, and those who find an innocent sensation in gazing on grey and green-lichened boulders on the ivy-clad walls of abbeys and castles, and the grass-grown traces of tumuli on weald and wold, that next summer warm, bright sunshine may enable them to extend their visits, and place an additional stone or two on the cairn of antiquarian lore Pleasant it would be to recount some rambles to little-known places which are fading away before the influences of "silence and slow time"; but an aged gentleman, a boon companion of Harrie Baillie, whilome taverner of the Tabard, whispers, "Say forth thy tale, and tarry not the time." Hath not Geoffrey Chaucer become an antiquity?

Within late years a change has come over the mountain and moor, the copse and the stubble-field, regarded from the sporting point of view. No longer a small band of men and dogs go forth to track the stag and deer to their lair, or the grouse and partridge from the heathery hill and the grassy valley. Nowadays the sportsman goes not forth in search of his quarry; the quarry is penned in by "beaters," and driven within an easy distance of the fatal rifle and fowling-piece.

After the same plan is there not much "beating up" in connexion with the rambles of archæological societies? Some energetic lovers of antiquity in their daily walks stumble by accident on some ancient church (*Builder*, August 30, 1879) in some "sleepy hollow" hamlet, or some decaying inscription on the keystone of some bridge built long ago by nobody knows who, and when a year passes away thither will flock troops of archæologists, grave and gay, to gaze on the relics and listen to the story or legend. Now, in a certain sense, the ancient church and the mouldering inscription are "beaten up" game. Doubtless such excursions are instructive, and long may they continue. But would it not be well if every fellow and member of our antiquarian associations became "beaters up" according to their leisure and opportunities? The hunting-ground is large, and the game not easily found, although, without doubt, plentiful.

Turn to the hundreds of volumes of county histories of England, and to the first issue of the "Statistical Account of Scotland," and in them will be found references to caves, memorial stones, &c., existing at the time in which the writers penned their accounts, but which nowadays are either unnoticed or unknown. The caves may have been closed up by proprietors who were tender on the subject of trespassing; Vandalism and agricultural improvement may have swept away many of the memorial-stones, tumuli, and barrows; but there is a possibility that the plantations which cover the once bare hills and valleys may hide many records of past ages in their shadows and undergrowth.

The late Sir James Y. Simpson, the eminent physician and antiquary, in his daily walk in the gardens of Princes-street, Edinburgh, was struck by the appearance of a stone which served as a foot bridge over a narrow canal. He had it moved from its position, and discovered on its lower side a very perfect specimen of the "cup and spectacle" incisings which have so long been a puzzle to archæologists. In the vicinity of Hawthornden, James Drummond, the late secretary to the Scottish Antiquarian Society, discovered a stone coffin in excellent preservation, forming a portion of a flight of steps, and a friend of the writer was successful in replacing, on its proper site, a sculptured monument recording the deeds of the fair Lilliard, who fell in a battle with the English at Ancrum. He found the precious relic serving the purpose of a hearthstone in a farmhouse adjoining the battlefield. Many other similar discoveries might be cited, but enough has been said to show to the students of archæology the great advantages that may result from personal effort. Much has been done, and well, towards making the dumb records of ages long gone give up their secrets. Archæology, as a science, is still in its youth, and the sooner that its students aid its veteran professors the sooner will it attain vigorous manhood.

Colonial Woods.—Messrs. Coltart & Co., of Liverpool, say in their *Wood Circular* for September:—Yellow pine has arrived freely during the month, and the stock shows a considerable increase; several parcels of inferior wood have been sold as low as 11½d. per foot ex quay, and good fair average at 14½d., while prime wood maintains its value; a parcel of St. John pine has been sold by auction at an average of about 17½d. per foot. Red pine is not much inquired for. Oak has been in better demand during the month, the consumption showing an increase of 122,000 ft. against the same month last year; Ohio has been sold by auction at prices ranging from 1s. 8d. to 2s. 4½d. per foot, and a small parcel of Michigan at from 19d. to 21d. For elm and ash the demand continues dull.

FROM THE BANKS OF THE SEINE.

While we find that we may profit in son things by carefully watching the conduct pu sued by our neighbours, they, on the other hand though not quite so readily, are not unwilling admit that they have much to learn from wit out. For example, recently the defects of t French patent system have been rousing t attention of the professional public. Certain it is an administrative rule, long since admitt to be true, that all the more important branch of the service of the Government should enj a species of autonomy, in order that the interes which it is intended to protect may not be co founded with others contrary or of less impo ance. All those nations which stand at th head of the industrial world, our own count and the United States especially, have centralis in the management of a special service all t duties concerning the protection of industr property. But in France it would appear th there exists no institution similar to the Pate Office; the patents are deposited (hence t word *déposé* on many French objects) with t Minister of Commerce, and the trade-mar with the Conservatoire des Arts et Métier Owing to this system, it may be imagined wi trouble is met with in the verification of fa and marks. The drawings and models, worse st are scattered all over the country, and it is law to remedy this imperfect state of affa that M. Bozerian not long since induced Senate to submit to the Chamber of Deputi and it is hoped that before long satisfact will be given to the just claims of the ventors and manufacturers of the country.

In the same direction there is equally a want France of an official journal, similar to those wh have long existed with us and in America, voted to the interests of patentees and invent Foreign legislation in such matters rema almost entirely unknown to a large and interes portion of the population. It is also felt t it would be desirable that, as in the *Washing Gazette*, the more important law decisions gi in France and abroad, in the matter of pat rights, would afford a valuable amount of formation. With the power of organisat which the French show so strikingly in th great exhibitions, it is scarcely likely that wants expressed by so large a class of the po lation will long remain unsatisfied. The sa factory arrangement of the laws of copyri and patent remains still one of the more portant questions of the day.

Wandering along the old quays of the bank of the Seine, and the rows of book-bo and book-shops that have so long formed on its agreeable features, and handling over time-eaten boxes in which, alas! no longer i possible, as in the past, to come upon a "fin of intrinsic value, or even a very bright back, where often a useful, even if discarded, t can be lighted upon, an odd volume, in ordinary roan binding of the last century, labelled "Londres," attracted our attent Published at Lausanne in 1770, and with author's name, it is probably one of numerous pirated Dutch and Swiss edition the last century. We have mentioned volume, as an extract from it "concern St. Paul's and its Decoration," seems curi enough to merit translation, after the article last week's issue on that much-vexed quest After speaking flatteringly (in a section devo to historical painting) of Hogarth, of his su work at the Foundling Hospital, composed competition with Hayman, Highmore, and W our author remarks, "This competition is only means of giving historical painters England," and he quotes the example gi by the French goldsmiths in their gifts pictures to Notre Dame. "The nudity," continues, "of the Church of St. Paul offe fine field for the example to be followed of Paris Goldsmiths' Company. The manne which the Reformers understood the second c mandment cannot now with the English be sidered an obstacle. The people of London no more exposed than those of Paris to a the personages represented in their cathe pictures; it would regard them as it does decorations by Thornhill of the cupola of Paul's. The fanaticism of the Independe banished painted glass from those churche

* This interesting institution, much resembling Patent Museum at South Kensington, is well worthy visit of all professional visitors to Paris. From th to the 15th of this month, by the way, the Conservato closed.

ch it existed in spite of the Reformation; these windows were re-established with the glican Church. It is for the Society of Arts ee how far the expedient proposed can be le to agree with the existing prejudices. In pting it, it will procure for St. Paul's an ment which will cause it to resemble, in a more striking degree than at present, St. r's of Rome; the taste for this decoration, extending to other sacred edifices, will gurate in England a school of painting, which always be wanting as long as her artists are spurred on by a motive as powerful as lation."

o not these remarks as equally apply in present day, when the school of great rical painting is as little cultivated for t of patronage as it was a century since? e we not all sympathised with the sad fate ames Barry, whose works we never see on walls of the Society of Arts without regret- that he was not employed to decorate St. l's? Have we not Haydon's word for the rable fate of his "Judgment of Solomon," "Lazarus," his "Crucifixion," and his try into Jerusalem," and were not Hilton's ers too little appreciated? But within the s of a paragraph we have entered upon a ject somewhat too deep for discussion here. rance each year's *Salon* produces many o historical pictures, the most important of h are invariably bought by the Goverament lorn the churches and public monuments of s and the provinces; but Burlington House ly exhibits any but moderately-sized can- es, nor, indeed, are the rooms calculated he reception of very large pictures.

beaking of Burlington House, a recent visit e Parc Monceaux and its beautiful lawns clusters of trees and foliage suggests to us in these gardens the well-known picturesque nade reflected in the quiet surface of the *machie* affords an excellent example of the in which the Burlington House colonnade t be made available at Battersea Park; lesign of placing it as an entrance to the seems happy enough, but as a beautiful rasting feature with the prolific growth of limate, could not a site in the gardens be lined such as many of us remember in the ly Borghese villa, so well described by thorne, and which was unfortunately de- ed during the Roman revolution of 1849? lar colonnades, indeed, are to be found in ly all the great gardens of the Palladian d.

A MANUFACTORY OF MIRRORS.

HE first mirrors were of polished copper, or, or, of brass, such as are mentioned both in apter of Exodus and by Cicero. At a later tin entered more largely into their compo- n, to be superseded, in the days of Roman ry by silver; but the Phœnicians had pre- d the Romans of Pompey's age by putting a ished surface behind a plate of glass. Since it must be admitted, great advances have made, so that there is scarcely one of sed human kind whose face is not upon tion reflected in a mirror, large or small, lor brilliant. In consequence, the demand normous, and the production on a corre- ling scale. Regarded, moreover, as articles rniture and decoration, mirrors have be- essential to modern taste. They are of tiful effect almost anywhere. They mul- the lights; they reflect the dresses and ls in a saloon; they create an air of mag- nce where very little of it really exists. French, of course, claim a pre-eminence in manufacture; but it might be difficult to mine where a similar superiority is not ted by them, and it is quite easy to admit their productions rank among the highest. e of St. Gobain, notwithstanding formidable ries, have succeeded in holding their position, h is second to that of no kindred establish- in the world. They are not to be classed, remembered, with the sparkling Venetian , the excellence of which was principally to entirely other causes; but it is, at the time, unquestionably true that the French rs of the seventeenth century owed many eir improvements to the artisans brought ris from Venice by Colbert. It was they taught the French to abandon, for this se, the tedious and imperfect process of wing," and to substitute for it one of nding," if such a term will apply to this cular material. The St. Gobain factory, in a northern department not far from the Belgian frontier, was threatened with collapse at the commencement of the last century; but with the reign of Louis XIV. the public taste for this style of ornament revived. The palaces of that monarch were literally lined with glass; his Hall of Mirrors at Versailles, and his crystal chambers at the Trianon, were imitated by the more opulent nobility, so that an immense impetus was given to the manufacture. The historical part of the subject, however, is too elaborate to be dwelt upon here; but it is worth while noticing the different kinds of alkalies that have at various periods, been employed at St. Gobain;—from Syria and the Levant; from Valentia, Alicante, and Carthaginia; from Sicily, Languedoc, the Holy Islands near the mouths of the Rhone, and from Narbonne. These still continue to be used, but with admixtures of manganese and cobalt blue, the latest combination approved being thirty ounces of the former to three of the latter. The process of vitrification at St. Gobain is now, of course, far simpler and more perfect than when its founders fancied themselves in possession of inscrutable and invaluable secrets. Sand, it need scarcely be said, is the first necessity, and of this that of Fontainebleau is preferred before any other. It is washed in the forest, and sent to head-quarters by rail. From Chauny, in the same department, are brought large quantities, prepared in a special factory, of carbonates and sulphates of soda, with, also, the requisite supplies of charcoal. The neighbourhood of Namur provides carbonates of quicklime and a peculiar blue chalk, the tint of which is rapidly destroyed by the action of fire. Into this mixture, while not yet in a state of fusion, are thrown innumerable fragments of broken glass, which have been scrupulously cleaned, from all metallic impurities especially, and the "magma," as it is called," is now complete, and is forwarded to the scene of another stage of operations. There, one huge furnace is for ever glowing, night and day; another is in course of construction; a third, fully built and drying, is ready to replace the first when that, after seven or eight months of incandescence, at a white heat, has literally burnt itself out and been destroyed. These occupy, in a line, the centre of a vast building. On either side are ranged deep arched ovens, the use for which comes after that of the furnaces. These latter are built upon deeply-embedded masses of a stony earth, which absorbs no heat, but throws it upward, the walls and arches being composed of the hardest brick, encased with slabs of concrete, fabricated in special workshops on the establishment, and regarded as of the highest importance to the manufacture.

Then come the melting-pots. These are of an importance even higher still, not an iota less so than those employed in the most exquisite porcelain manufacture. They must be made of clay from Champagne, Monterau, or the vicinity of Namur. This is minutely examined on the spot, and all suspicious specimens are rejected. Arrived at St. Gobain, it is once more analysed and tested, so that the least admixture of pyrites or any colouring mineral may be detected. A part is then crushed, and a part calcined, when the same processes of examination are gone over again. With these are mixed the dust and *débris* of previous "turnings-out," which have all been subjected to similar scrutiny, and the whole is ground in mortars, with enormous pestles working vertically, at a velocity that makes them "sleep" to the unaccustomed eye. The result of all this is a sort of paste, carefully shaped into blocks, and placed in cellars maintained in a certain regular degree of dampness, the object being to keep it moist and pliable so that it may be kneaded by the hand, as dough used to be by the feet in England and Germany. Every attempt to substitute machinery for actual manipulation has hitherto failed. So equal in consistence and softness should this composition be, that, supposing a number of leaden balls, all of the same weight, dropped from the same height, at the same time, upon the surface of a mass of two or three hundred-weight, they would be expected to sink to precisely the same depth, one and all. And this perfection is, more frequently than not, attained. It is necessary, in order that one part of the crucible may be neither more nor less susceptible of heat than any other. The "pots" are then fashioned, also by hand, without the aid of moulds, an exact equality of thickness being secured by measurements from within and without, of mathematical accuracy. Into them, slightly vase-shaped and of great solidity at the bottom, is poured, when they have been thoroughly hardened, the molten flood which is, ultimately, to become glass, and shine from the walls of palaces, theatres, and mansions, all over the world. Round each is drawn a raised ring, giving a hold to the pincer-claws that are to suspend it over a fire not to be approached by human hand or breath. But the "ordinary" drying occupies six months, followed by a shorter or longer period, "extraordinary," in the ovens. When the "pots" are hung, every aperture is closed, except that which is necessary to preserve a draught, but through half-moons of coloured glass, immensely thick, a watch is kept upon the fires burning and caldrons bubbling within. In about six or eight hours the melting is complete; next, the heat must be intensified to throw off, or rather annihilate, whatever impurities may still lurk in the boiling compound. Everything in it capable of destruction is destroyed, every volatile element is cast up and out, every obstinate particle is assimilated, and this goes on during about four hours, after which, by slow degrees, the power of the furnace is abated, the glass, when too hot or too liquid, being less paste-like, and therefore less plastic. In three hours more the molten mass is ready to be let flow, by the assistance of machinery, out from crucible and furnace in a red almost transparent stream, over a large perfectly level plane of iron under huge rollers, when it passes on to tables by diverging ways, and is separated into differently-sized sheets. Of course there are numerous mechanical operations between the tilting of the "pot," the spreading forth of the glass in a stream, and its sudden arrest, as though the same stream had been suddenly transformed into a surface of transparent ice. But besides that they would take long in description, the length of the description would mislead,—for the swiftness with which the whole takes place, from beginning to end, seems magical. This, however, is not all. The annealing furnaces have yet to come, and in them the glass sheets are arranged, two and two or four and four, according to their dimensions, when their heat is gradually dissipated, though the admission of air is most carefully regulated. A plate of glass taken hot from the furnace into the outer atmosphere would instantly fly to pieces. In due time they are again taken forth, examined for defects, cut with the diamond into the regulation market sizes, and transmitted to Chauny to be converted into mirrors, that is, by being smoothed on both sides, polished as though each square inch were a separate jewel to be worn in a diadem, emery being still the principal substance used, though a particular oxide of iron also enters into the process, reddening everything around, so that the workshops are called "the Red Houses," and the sheet of glass at length only wants its coating of quicksilver to become a mirror. With this part of the manufacture it is unnecessary to detain ourselves, since it is familiar everywhere. The annual production of mirror glass at St. Gobain now amounts to upwards of two hundred thousand square yards. For the the new Grand Hotel at Paris alone, five hundred square yards were required,—a sufficient comment on the modern prosperity of the manufacture.

VALLE CRUCIS ABBEY.

It would be curious to find out, if it were possible, what proportion of the visitors who make a pilgrimage to some of the ruins of the buildings which are now in decay, do so purely out of interest in the ruins themselves, or because, in the phrase of the day, it is "the thing to do," when visiting a particular part of the country. Very few ruins, we imagine, are less intelligently visited than those of Valle Crucis Abbey, for most of those who spend a few days in the Vale of Llangollen consider themselves in duty bound to find their way to the remains of the Abbey of Llan-Egwest.

But there is much of pleasure in such a visit to any one interested in architecture, or in the picturesque alone. Like most of the buildings which we owe to the Mediæval monkish orders, Valle Crucis Abbey is most picturesquely situated, for it lies in a side valley from the larger valley of the Dee through which a small stream trickles down to

"Where Deva spreads her wizard stream,"

dashing down through its rocky bed, half hidden by overhanging clumps of alder, or the more

stately sycamore. It is also, apart from the pleasant site which it occupies, noticeable as being the only ruin of the kind in this portion of Wales. The valley in which it stands runs more or less north and south, and the abbey is, therefore, placed at right angles to the hill sides by which the vale is shut in.

What remains of the once stately church shows that it was at one period a fine example of Early English architecture. The main portion is, as we have said, in sufficient preservation to give a perfect idea of the original structure. "The church," says Mr. Brock, in the paper read by him at the Congress of the British Archæological Association in 1877, "is of the usual cruciform type,—an aisleless presbytery, transepts with two chapels, forming an eastern aisle to each. There has been a low square tower over the crossing, and a nave of six bays with two aisles. The extreme length is 165 ft.; length of transept from north to south, 98 ft.; width of nave and aisles, 67 ft. 6 in.; width of chancel, 30 ft.; and of transept, 30 ft." But it is the east and west walls which are most striking, for the west wall is almost perfect, showing the Pointed doorway, the three lancet-headed windows, surmounted by a rose window of eight divisions, in all their original completeness; whilst opposite we have the lofty windows in the eastern end in all the severe simplicity of the earliest period of the Early English style. But from the character of the architecture there is no wealth of detail or great beauty of execution to cause the eye to follow for hours the shapes produced by the Mediæval chisel. When you have once grasped the proportions and the simplicity of Llan-Egwest, the most noticeable features of the abbey church are gained. Fine tombs are visible on the floor of the abbey, one of which contains an inscription, still in considerable preservation, helping to point out the age of the church, running, as it does :—

"Hic jacet Gweirca filia Owein, cuj. animæ propicietur Deus. A.M. 1290."

The abbey itself was originally an offshoot of the Abbey of Strata Marcella, or Stratmargel, in Montgomeryshire, and belonged to the Cistercian order, and it was apparently founded in or about the year 1200, by Madoc ap Gryffydd Maelor. When we get to the reign of Henry VIII., the Domesday period of the religious houses of England, we find the Cistercians of Valle Crucis holding considerable property in the neighbouring valleys; but at the same time it did not rank as one of the greatest religious houses of England. ("Monasticon Anglicanum," vol. v. p. 720.)

To the south of the abbey and joined to it is still visible the chapter-house; but it unfortunately is occupied as a dwelling-house, has the windows at the back blocked up, partitions inside, so that its architectural effect is almost wholly spoilt. It is much, indeed, to be regretted that the owner does not build a more commodious house at a little distance for his tenant, and leave the remains of the monks' secular building unincumbered with modern brick and plaster, standing alone, side by side, with the pure and simple architecture of the church. Yet, perhaps, the most telling and suggestive way to view the ruins of Valle Crucis is to ascend to the top of one of the overhanging hills,—the smooth and grassy summit of Coed Teddryn, for example, which rises to the westward. By this means the windings of the Dee are visible, passing down through the fertile meadows and dashing through the gorge of Berwyn; the smooth and swelling hills divided by the lesser valleys appear; Llangollen with its ancient bridge; and, down in the smaller valley, half hidden by the trees, Valle Crucis Abbey, its white walls showing the original form; so that with but a small effort of the imagination it is easy to picture it in its flourishing days, a stately pile,—the great religious house of the district, receiving the wearied traveller as he passed from the western coast of Wales through the valley of the Dee to Shrewsbury or Chester. The broken columns, the glassless windows, are not seen from the heights above, only the still lofty walls, the general form, so that like the suggestive drawings of a great artist, it is not difficult to fill in the details, and thus obtain in the mind an idea which the mere wandering close to and among the ruins can hardly give. The position, too, of the building is thus much more striking, because it is possible to recognise what was once the wildness of the valleys beneath, and the homelike character of the little town of Llangollen, and to understand the awe, it may be said, which a pile of the grandeur and size of Valle Crucis must have caused in the minds of those who dwelt in, or those who passed through, these Welsh valleys. One understands better, from such a bird's-eye view, the position of the great religious houses in Mediæval days, a position which mere ruins, however picturesque, or however craftily worked, cannot thoroughly give.

COST OF LIGHTHOUSES.

THE following statement of the comparative cost of various lighthouses at home and abroad, is taken from the papers of Mr. Gordon, C.E., to which we referred in our former articles on Lighthouse Towers. The structures mentioned are all lofty towers, and the cost of lanterns and optical arrangements, as well as of dwellings for the men engaged in the service, are also included, and reduced to the common unit of comparison of the foot linear of vertical height of the towers. The list will be found to add to the completeness of our former articles on this interesting subject.

Lighthouses abroad (on Mr. Gordon's designs).

No.	Total height. feet.		£.	s.	d. About.
1.	... 150	Leboscery, founded on a shaky sand island	155	14	0
2.	... 145	Great Isaacs	114	12	0
3.	... 128	Bermuda	66	1	0
4.	... 133	Little Færder (Norway)	56	8	0
5.	... 100	Jamaica	58	13	0
6.	... 97	Barbadoes	55	1	0
7.	... 83	Trowbridge Shoal, S. Australia, founded on sand bank	110	7	0
8.	... 60	Turks' Island	68	9	0

The mean cost being 84*l.* 18s. per foot of height.

At Home.

9.	... 101	Carlingford	281	6	0
10.	... 112	Arran Island, S.	127	5	0
11.	... 101	Arran Island, N.	148	14	0
12.	... 110	Tusker Rock	326	0	0
13.	... 100	Kinsale	105	5	0
14.	... 92	Fastnet Rock (iron)	205	19	0
15.	... 84	Tarbert Rock	120	7	0
16.	... 87	Tory Island	192	10	0
17.	... 88	Rathlin Island	109	10	0
18.	... 73	St. John's Point	151	3	0
19.	... 76	Maiden Rock, S.	243	15	0
20.	... 68	Maiden Rock, N.	272	8	0
21.	... 79	Hyne Head, N.	263	4	0
22.	... 79	Hyne Head, S.	263	4	0
23.	... 66	South Rock	286	10	0
24.	... 74	Beeves Rock	128	0	0
25.	... 75	Wicklow, Upper	122	16	0
26.	... 68	Minehead	144	0	0
27.	... 158	Skerryvore, including also harbour and dwellings at Hynish *	550	0	0
28.	... 139	North Ronaldsay	93	0	0
29.	... 134	Tarbetness	69	17	0
30.	... 118	Covesea Skerries	97	11	0
31.	... 115	Buchaness	103	11	0
32.	... 117	Bell Rock	524	4	0
33.	... 99	Whntsey Skerries	216	13	0
24.	... 113	Rhu Vaal	65	16	0
35.	... 120	Girdleness	107	16	0

Mean cost of lighthouses at home, 194*l.* 1s. per foot of height.

* According to the Report of the Commissioners on Lights, Buoys, and Beacons, the cost of the Skerryvore tower comes out at 526*l.* per foot, or nearly the same as the Bell Rock.

THE STAGE FOR THE PEOPLE.

IT must be interesting to those who are moving to obtain the establishment of a National Theatre in London to find so eminent an artist as M. Viollet-le-Duc embodying views which he has long privately expressed in a project which he has brought before the Paris Municipal Council, of supplying the necessity for the formation of a popular Opera-house and a Dramatic Theatre.

Though not similar in aim, it is a coincidence worthy of remark, this necessity expressed simultaneously in two countries, already, one would suppose, plentifully supplied with theatrical amusement; and the interest shown in the question by M. Viollet-le-Duc is pleasantly encouraging to the promoters of the scheme for the establishment of a National Theatre in London.

In France the need of a national Opera-house and a popular Dramatic Theatre has been unde discussion for more than two years, not alone the Municipal Council but in the Ministry Fine Arts, and to the zeal of M. Turquet, t Under-Secretary, must be attributed the revi of the question, which there is now every pr spect will be carried through. M. Viollet-l Duc's active interest in all that tends to advan the spread of general culture is well-known the professional world, and it is not surprisi to find him thus warmly advocating a proje so directly serving the aims of instruction afforded through wholesome theatrical amus ment.

The popular Opera-house, remarks M. Viol le-Duc, in the report he has recently laid bef the Council, will not appeal to the public wh frequents either the Grand Opera-house or Opéra Comique. By the lowness of the pri the popular lyric theatre will receive a gr part of the numerous persons who crowd *café concerts* and smaller theatres. M. Viol le-Duc believes that since the closing of first Théâtre Lyrique, some nine years sin the Parisian population has sensibly increa in its musical taste. If really, he remarks, need of hearing good musical works is notices among a large portion of the Parisian popula (a fact proved by the success of the numer popular concerts) the popular opera will sup this want. The expenses of the *mise-en-sc* are usually exaggerated. Hundreds of th sands of francs are swallowed up without pr either to art or to the manager to prepare pie which eventually fail in pleasing the public. it necessary in the proposed Popular Op house to have such exaggerated extravagan The public which, in many theatres, is conten with simple scenery and accessories, whe goes to the theatre to hear good music, will it is my opinion, be exacting on this point. will especially wish to hear well-rendered m and well-interpreted plays, visiting other thea to please their sense of the beautiful and gorgeous.

With regard to the popular Dramatic Thea which would serve as a complement to popular Opera-house, the Municipal Counci is generally believed, will endeavour in e way to satisfy the intellectual claims of public; it being intended to introduce sev original features into the management, not the organisation of morning performances lectures. The manager of one of the popular of the Paris theatres has, even as offered to place gratuitously each Thurs (the French half-holiday), during the daytim certain number of seats at the disposal of children of the municipal schools and masters; and these conditions will be taken consideration by the direction of the pop Opera-house and the Dramatic Theatre; these seats, given to the young pupils as p for good conduct, it is expected, will serve powerful and instructive incentive to study.

Without, as we have previously remar there existing any decided similarity betw the two projects which are at present receiv the attention of the theatrical worlds of Fr and England, we see the interest that, on other side of the Channel, is taken in the q tion of the dramatic amusement placed a disposition of the people, and the import that is attached to the nature of that am ment as a potent factor in the education of masses.

It is in this light that the advocates of National Theatre in England would desire question should be studied, and it forms t principal argument in favour of the estab ment of a theatre able to place before the p a well-chosen and well-interpreted list of st pieces, and in the choice of which the pop taste, in lieu of controlling the announcem of the play-bills, may be, in part, healthily trolled.

The Town Council of St. Ives last elected Mr. J. M. Noall, builder, borough veyor, in place of Mr. Henry Daniel, resig There were sixteen applicants for the app ment, which also includes the duties of inspe of nuisances. After the election of surv the Council proceeded to discuss the ligh question, and finally resolved to accept the of Mr. Bower, proprietor of the gas work supply gas for the ensuing winter at 6s. 1,000 cubic ft., this being the same rate as year.

HULL, AND ITS TRADE.

WATER divided men into three classes,—retrograde, the stationary, and the progressive," and the same division might even justly be applied to towns and ports. Plainly, it may be said of Hull that it belongs to the last-named class; for few of the ports of and have known such continued progress ull has made. Unlike some of the ports on north-east coast, such as West Hartlepool, lesbrough, or Seaham, it has a history and ntiquity, and hence it might fairly be ned that the growth of the past would not stained throughout the later years, when r rivals had arisen. It has changed its s at times, but usually these changes have in the direction, on the whole, of enlarge-, and from generation to generation Hull rown. It used to be supposed that its ncement as a town and port dated to but its importance in a commercial point ew scores of years before that date has demonstrated. When the thirteenth century was young, the trade of Hull was extensive, and the duties received there seem to been about equal to one-seventh of the gate for the whole of the kingdom. Charat the end of that century, it had for a a chequered history,—now visited by ty, then devastated by flood and pestilence, hen besieged by a king in the civil wars. t growth in its trade has characterised it g the last century; but if we look at the ge in a lesser period, we shall better appre- the importance of Hull as a commercial e and as a port. In 1832 the importance ull as a shipping place was established by act that 644 foreign trading vessels entered ards with cargoes, and nearly double that ber entered inwards with cargoes; whilst of ing vessels, with cargoes, 1,893 entered out-, and 1,556 entered inwards. The docks the Old Dock, the Humber Dock, and the tion Dock. It was not a manufacturing proper, though it produced sacking, sail-, and chain-cables. It had five or six ches, and a score of chapels and other meetlaces for Dissenters. The population was nated at 49,761 for the town and county of ston-upon-Hull. The town was lighted by private gas-works and partly by those company for the parish of Sculcoates. ers were brought there by mail, as well as acket in one or two instances. A number aches left the town, carriers were many, t the *Enterprise*, the *Trent*, the *Eagle*, the *sit*, the *Rockingham*, and other steamets, as well as "market packets" and ng vessels, and "fly boats" sailed from the but the time of railways had not arrived Hull, and commerce, though on a large for that day, languished for want of fuller ties of traffic and transit, which could not pplied under the olden *régime*.

ace that want of fuller facilities of trade been supplied by the railways and the improvements that have been placed at ervice of the commercial world, there has a vast growth of Hull. Its population be set down as 124,120, and it is one of the centres of conveyance between Great in and the North of Europe. Its commerce grown with that enlarged population, and as become a wealthy and populous port; gh its greatest admirers can scarcely lay to the possession of great beauty for it. harfs and warehouses, its great docks, its and parks, and the vast town that surrounds in great degree are utilitarian in design in scope. The import and export trades, as as fishing, have given to it the momentum for the last few years has characterised it; the figures that show the extent of these bear looking at a little in detail. Turning to the statistics that deal with the shipping allied trades, it may be said that there is a yearly entrance of over 4,680 vessels with oes into Hull, the aggregate tonnage being 1,328 tons, whilst the clearances amount to 4,000 with cargoes. In each case more half the number, and two-thirds of the age, are steam vessels. To Hull there ngs the large total of 755 vessels, the age being 170,000 tons,—larger than any r English port, with the exception of London Liverpool. Hull is not a large shipbuilding; but it turns out a few vessels of small nage yearly. If is one of our largest fishing rts,—the boats registered under the Sea heries Act being about 650 in number, which give regular employment to about 2,500 men and boys.

The Victoria, Queen's, Junction, Humber, and Albert Docks unitedly occupy nearly eighty acres, and near them, in the dock office, the Wilberforce Column, and the town-hall, are some of the architectural boasts of the town. There are, in some of the churches and chapels, others; and it is boasted that one of the former is the largest parish church in England. In Trinity House are portraits of men whose fame Hull will not willingly let die; whilst there are infirmaries, and in less pretentious buildings, homes for sailors' orphans, and other similar institutions, testifying to the benevolence and the catholic spirit of the people of the great town on the Humber. What are the great industries of Hull? Its shipping, its rope and canvass factories, iron shipbuilding, and fishing. It is one of our great exporting and importing towns. It is not a great coal-shipping port, nor is it likely to be. It sends out about 600,000 tons of coals yearly; but, put beside the quantities sent from Sunderland, the Tyne, or Cardiff, that is a very small amount. It ships occasionally boxes of tin plates, to the extent, possibly, of 20,000 boxes yearly; but it is one of the least of the export ports in this branch of commerce. And put beside those sent from Middlesbrough, the shipments of iron are small indeed. But of general merchandise,—of goods for the Baltic, for the hyperborean countries, for Germany, and for other near Continental neighbours,—it numbers its exports by the thousand tons; and its imports of timber and provisions, and of general goods from these countries, are on a scale of vast magnitude. An idea of that magnitude cannot be readily gained from the mere statement of the value of the imports and exports; but from other sources some indication thereof may be drawn. Hull issues daily 122 money-orders at its post-office, and pays from 300 to 400, the amount of which may be stated as about 1,000*l*. The town has a large number of public-houses,—one licensed house to every 250 of its population,—and there is a heavy drunken-rate, there being annually one person out of every eighty-three of its population taken up for drunkenness. Its tramways have receipts varying from 300*l*. to 500*l*. weekly; and the sum received from its ferries would, in smaller towns and in towns less affected by winds and tides, be deemed fabulous. It is needless to give the numbers of its paupers, or of the patients treated at its infirmaries,—sufficient to state that both of poverty and of other ills that flesh is heir to the town has its full share.

Unquestionably, the commerce of Hull depends in a very large degree upon its position and upon its shipping industries. Its unrivalled position in these respects, the railway facilities its situation on two of our chief railways gives it, and the ancient repute it has acquired as a trading town, give it an immense advantage over its younger competing ports. Some of the latter have had, in recent years, the advantage which ownership in whole or part by wealthy railways gives, but though there has been in these no small progress, it has not been at the expense of Hull. It is true that that progress has been fluctuating; but this is necessarily the case with any town which depends upon one industry or class of industries, though probably it may be said that this statement applies less to seaport than to inland towns. When an inland town depends upon one industry, that dependence is complete, but when a seaport is dependent upon shipping, it is less often found that dulness affects all branches of the shipping industries, and the shipping commerce of all trades at once. In the case of the Humber port, it is true that it relies largely upon the trade to the north of Europe, and when that trade is generally depressed, the reflection of the depression is found in the trade of the port. Hence its commerce rises by leaps with interspersed depressions; but from generation to generation it is found to have largely progressed. In the future there is no doubt that it will continue to increase, though the ratio of that increase will be less rapid than it has been. Hull is the port whence a large portion of the populous manufacturing country to the west and south-west of Yorkshire can be best supplied, and hence, as the wants of the world for ocean carriage grow, and as the wants of that manufacturing district grow, and its manufactures are dispersed over a wider field, there is an increased future for the common port of shipment. If timber is needed from the Baltic, or Sweden needs cotton goods, or Germany silk, or Russia woollen goods, Hull, as the port of receipt or shipment must benefit, whoever loses, by all these transactions. The question has been raised whether England's manufacturing supremacy is likely to endure; but whether that manufacturing supremacy endures or not, it seems clear that Britain (if not the manufactory) will remain the mart of the world; and retaining that character, it seems certain that her shipping industries will flourish, and her shipping ports to a large extent also. As one of the chief of these, Hull should have a future as fair as its past; for it is certain that there is now a larger share of the carrying capacity of the world done by the mercantile fleet of England. With that increased share, the ports may look, after the dulness which has been known for the last few years, for enlarged trade,—not trade, perhaps, from the older Continental centres so much increased, but commerce drawn from a wider area. The expansion of that area is now in progress. We are opening out new fields in which our manufactures will be needed, and in the future the manufacturing districts and seaports will first benefit.

THE NATIONAL PENNY BANK BUILDINGS, VICTORIA STREET.

THE promoters of the National Penny Bank are supplementing their establishments in the East end of London by the erection of similar buildings in other parts of the metropolis, and another branch is now in course of erection in Victoria-street, Westminster, the business of the bank being carried on in the meantime in temporary premises in an adjoining thoroughfare named Strutton-ground, to which the new bank has one of its frontages.

The new building is situated on the south side of Victoria-street, nearly opposite the newly-erected residential buildings called "Members' Chambers," and not far from the Army and Navy Co-operative Stores. The principal elevation to Victoria-street is 62 ft. in height to the top of a bold projecting cornice and balustrade, above which is a high-pitched roof, the entire height of the elevation to the cresting surmounting the roof being 74 ft., and the width 46 ft. The elevation contains a lofty ground floor, and four floors above, the upper floor lighted by dormers in the roof. The materials are red brick, with dressings and ornamentation in terra-cotta, which is freely introduced, the whole of the window jambs, sills, and heads being of this material, as well as ornamental bands and cornices thrown across the face of the elevation. Above the third floor windows there is an enriched cornice ornamented with foliage and moulded figure heads. The ground and first and second floors have arched projecting three-light windows with mullions. In the centre of the ground floor there is a bold arched entrance in terra-cotta, 6 ft. 6 in. in width, which leads to the upper portions of the building. There is another entrance on the west side by which the banking-house is approached. At each angle of the elevation, and also in the central portion, projecting brick piers, surmounted by terra-cotta capitals, are carried up from the street-level to the top of the building. The return frontage in Strutton-ground is 52 ft. in width, and generally uniform in character with the Victoria-street elevation, and the prominent architectural features of the structure are in harmony with the several palatial buildings in the locality.

The portion of the ground-floor of the building devoted to the banking-house has a frontage of 18 ft. to Victoria-street, with a depth along the Strutton-ground frontage of 50 ft. Parts of the upper portion of the building are intended to be set apart for the manager as a residence, whilst the remaining apartments will be let as residential chambers and offices. The bank floor and the first floor are fireproof, being constructed with Dennett's fireproof flooring. The walls of the basement, which contain the strong-rooms, are also fireproof, with a flooring of cement. The large safes and iron doors in the strong-rooms have been furnished by Milner's Safe Company, who have likewise supplied the principal locks throughout the building.

The architects are Messrs. Hennan & Harrison, of Bedford-row; and the contractors are Messrs. Aitchison & Walker, St. John's-wood. Mr. Smith is the clerk of works, and Mr. Paice the foreman. The total estimated cost of the building, when completed, is about 12,000*l*.

WATER SUPPLY AND THE DECORATION OF TOWNS.

A GREAT deal is now being said and agitated about the water supply of London, and it is certainly not before there is need,—and good need,—of a something being done to make it what it ought to be, and doubtless one day will be, in so huge a city as modern London. It has been stated, even in the House of Commons, that not only does "pure" water affect the health of the whole community, but that it also affects its "moral condition"; for, without it, it must be ever hopeless to expect "temperance." It was earnestly contended that the millions of our population in this huge London should be able readily to obtain water at the very lowest possible cost. No one will be likely to dispute these dicta, so often here contended for. It was also urged that the all-important practical questions which had, and have, to be yet solved, are—whether the quality of the water now supplied is sufficiently good, whether the mode of supply is what it ought to be, and whether or no the price charged for it is fair and reasonable. It was also said, a little hastily, perhaps, that London is at present suffering more from the defects in the mode of supply than from the quality of the water supplied. However pure the water, it must needs be spoiled by a wrong mode of conveying and storing it. That this is most true, who can doubt, who have ever personally examined the cisterns and other apparatus connected with them through which the water is conveyed to the occupants of London houses? But even with all this before us, day by day, it may well be questioned whether, after all, the water itself, both as to quality and quantity, is not the most faulty, and stands the most in need of being inquired about and looked after. Where does the water come from originally, and what do natural and artificial appliances do for it respectively, before it is used?—are momentous questions, and worth yet a little further inquiry and knowing something more about before final decision is come to.

In the first place, it may not be useless to yet once again note that London is supplied with its *washing* and *drinking* water alike, by no fewer than eight water companies, and that about one-half of the water so supplied comes from the river which flows through it, and to which it contributes in its turn so much. It may be of interest to note, for it has not in this inquiry been sufficiently, if at all, dwelt on, that not so very long ago London town was supplied for the *purposes* of *drinking*, at least, from quite another source, now all but forgotten. We allude to the old-fashioned pumps over wells, which stood about at the corners of the streets every here and there, and that the water which these supplied did not come from the river. Many will, doubtless, remember these rough but certainly useful pumps, and the spring-water which they supplied. There are yet, in out-of-the-way spots, some of these pumps left, though no water, except in one or two instances, can be drawn from them. Some of the companies, it must be remembered, now draw their supply of water not from the river but from wells sunk in the chalk, so there is yet spring-water to be had somewhere in London. It is important in this inquiry to bear this in mind, it being recollected always that all water, from wherever we get it, originally comes from the clouds as rain-water, and the difference between "river-water" and "spring-water" is caused by changes it undergoes—the work of nature herself.

Before we proceed further, it is well to note one fact, for it is hardly touched on in the many Water-Supply Reports and Blue-Books which have been published. One might have thought that some attention would have been given to what may well be termed an *art aspect* of this question, for why should not so wonderful and beautiful an element as water, for whatever purpose used, be occasionally, at least, in so vast a city, seen and presented to the eye in some artistic way, and so at least as not to negative the impression made on the eye and mind by the sight of the water when present? A concealed supply-pipe, a common square box, and a common brass tap, is all that has yet been done, with the exception of what is termed a "drinking fountain" here and there. We believe that in all mighty endless London but three fountains with flowing water—two in Trafalgar-square and one in the Temple, yet exist (the occasional sprays in Leicester-square can scarcely be included); surely a strange oversight and neglect. It is, indeed, not a little singular, this absence, in so vast an extent of house-covered ground, of all sign of flowing or moving water. We do not, of course, forget the river Thames itself, which, in spite of all shortcomings and hindrances, always looks new, and with its daily tides, is never the same two hours together. A good deal might be said about the Thames, for this river flowed where it now does long before London was founded, or even dreamed of, and it is quite possible that it may yet see London either rebuilt or maybe its blank shores! It is the oldest thing we Londoners can possibly gaze on, and at times, small as it is, compared with such mighty streams as the Ganges or the Mississippi, one is tempted to think it endless. Nature, thus far, has given us the sight of moving and beautiful water, so that there is a something at least to go by—flowing water—one of the most beautiful objects in nature, however surrounded and pent in. Fountains, as we have hinted, might at least have been looked for, with water always flowing, and with basins sufficiently large, thus giving the idea, at least, of a plentiful supply.

In the collection of water-supply "apparatus" now to be seen at the Alexandra Palace, there is much to help in the more thoroughly scientific understanding of this question; but a great deal more yet remains to be done, and most surely, if artistically looked at, as we are here for the most part considering it. There is but the ordinary apparatus to be seen everywhere, all duly labelled, but of any new and suggestive art appliance in this direction, there is but a little, indeed. A right plentiful supply may, it is true, be but perhaps too readily got of what is termed art manufacture, in this as in all other directions; but what is really wanted, and would be, if supplied, so new and unthought of, is artists' work, specially fitted and suited and designed and wrought for the purpose and place it is to serve and fill. It is this that is needed, and there could hardly be imagined a wider scope for inventive art, or a larger field for its exercise. Always visible, it could never be overlooked, and must needs, if at all worthy of its aim and purpose, delight all, young and old. Might not some of our great, but now all but useless, squares, be made more attractive and useful than they now are? Would not a fountain, and, say a fish-pond, be here and there an attractive addition to the trees and garden? A well of clear spring-water, away from all contaminating influences, certainly, in a large London square, in the centre of it, would add much to its beauty and utility: a boon to its inhabitants and public, providing, at least for the first, the best and purest of drinking water.

It is hardly possible to overrate the importance of this subject of the water-supply of London, in whatever way it is regarded; but, if there be one item in it of more moment than others, it is the necessity of providing fit and pleasant water for drinking. How much, indeed, of evil is due to the impossibility of getting good and palatable water it might be very hard to say, but that a good deal of evil comes of it there can be no doubt whatever. In the days of our fathers and grandfathers, who were not quite so scientific as we now are, the London parish pumps, built up over London wells, afforded an all but ample supply of drinkable spring-water. Some of these wells got foul, and away they all went in a sort of sudden panic. They were not all of them bad, for many of them, as in Hyde Park, were sunk in places where no possible contamination from sewage or drainage could have reached them. Might not, again, a few trials be made of a London well, away from drainage and cesspools, and of sufficient depth, so as to be beyond all possibility of contamination from this source?—a simple pump and ample basin being all that is required. No water artificially purified can possibly ever equal the water purified and made palatable by nature, as in a natural spring when away from all contaminating influences. The river-water and spring-water are different elements almost, even as nature leaves them, but yet more so after the filtering processes of the companies, necessary as they are. Science teaches us, as does observation, that a *river* for the most part is the result of land surface drainage, the rain having no other way of quickly finding its way to the sea,—while *springs* are the result of the same rain but of that portion of it which filters through the ground and through the strata beneath the surface of it to the depth of many hundred feet at times. Thus the very earth itself is a huge natural filter, by the sic of which, as a pure water producer, the filters the companies are but feeble substitutes. Mig not a trial then be made here and there? Curio scientific tests they would most surely prove, no more came of them. At the Alexand Palace, we may mention, there is a large strat boring apparatus, scattered about the groun at present. It would be interesting to see th at work, and why not here, as at the Sydenh Palace, have a *well* of pure spring-water, wi palatable water always ready, at least for t many hundreds of school children who so oft here spend a day? The water must needs found pure and free from contamination at reasonable depth, an artesian well not bei forgotten. We cannot but think that this i portant inquiry is but commenced, and that great deal more would come of it if but natr and fine art were to be kept more constantly full view.

THE SCOTTISH CORPORATION'S NEW HALL IN CRANE-COURT.

IT will be remembered that in November, 18 the ancient building in Crane-court, Fleet-stre and Fleur-de-Lys-court, which had been oc pied by the Scottish Corporation as their h for nearly a century,—they having purchase from the Royal Society in the year 1782,—w completely destroyed by fire. A new hall now in course of construction on the site, wh will have three distinct frontages, one in Cra court, approached from Fleet-street, the ot two frontages being in Fleur-de-Lys-court (the east side of the new building) and on north side respectively, and reached fr Fetter-lane. In excavating for the foundati considerable difficulties were met with, wh have caused much delay in the progress of building. Within the last two or three ye in the course of the excavations for several n buildings in the locality around Fleet-street Farringdon-street, traces of the old Fleet-di were come upon, and the excavations for new buildings we are describing afford anot instance of the kind, a black-water ditch hav been met with at a considerable depth. consequence of this discovery it was fo necessary to excavate to a depth of 9 ft. be the contract level, which must necessa somewhat increase the estimated cost of new building. The difficulty has, however, b surmounted, and the superstructure has alre been carried several feet above the grou line, and the works are actively proceedi although they have been somewhat retarded unfavourable weather.

The materials of which the building is be constructed are red and malm bricks w Ancaster stone dressings. The Crane-co frontage, however, will be entirely in red br and Ancaster stone. Although this will be principal frontage and contain the main entra it will necessarily be the narrowest, in co quence of the limited width of Crane-court. three several elevations will each be about 5 in height, containing three floors. The Cra court frontage will be 17 ft. wide, and will h a richly-carved arched entrance, deeply recess with mullion three-light windows to each fl The elevation will be surmounted and or mented at each angle by oriel turrets. building will be carried to a depth of 50 ft. f Crane-court, which will be the length of the Fle de-Lys-court frontage on the east, the width the structure being 56 ft., which represents length of the north frontage. The last-nar frontage will have large bay windows in centre of each floor.

The internal arrangements of the build will comprise the principal apartment, a s cious hall on the ground floor, and as i intended on certain occasions to appropriat to the purposes of a chapel; it will be 4 by 18 ft., and 17 ft. high. The court-room the first floor, for the transaction of the busin of the corporation, will be of like size, artistic decorated. In addition to the two princ apartments of the building just named, uppermost floor will contain the officer's ap ments. It may be interesting to add that old buildings which the new structure repla were designed by Sir Christopher Wren, built for the Royal Society in the early par the eighteenth century.

Professor Donaldson is the architect of new building, and Mr. Hobson, of Duke-str Adelphi, is the contractor, Mr. W. Chapman be clerk of the works.

AT MAY BE LEARNT FROM "THE STATISTICAL ABSTRACT."

of the Blue Books issued are of more l importance, or deserving of closer study, he "Statistical Abstract for the United om." It embodies in its 144 pages a mass rmation in regard to the revenue, the tion, the trade, and other important s in relation to the United Kingdom. all the tables contained in this Blue Book, f them are more interesting than those ndicate the proportion per head of the ion of taxation, consumption, and other for the facts are given so clearly that it st impossible to misunderstand them, and e freed from the cloud of figures which is ldering in some of the tables. It may, re, be of interest to many to learn the in regard to these matters in the United m,—the more especially as comparative for some years give additional value to ts. The gross revenue of the United m is given for sixteen years, but without ng the total, the change in the revenue best shown by the statement that in was 2*l.* 7s. 7d. per head of the popula- at it fell to 2*l.* 5s. 1d. in 1866, rising to d. in 1870, and thence fluctuating until it was 2*l.* 9s. 2d. per head. The pay- ut of the Exchequer are given without g those for fortifications or barracks, y were at the beginning of the sixteen . 6s. 0d. per head, falling to 2*l.* 4s. 0d. per 870, but since then they have irregularly d for the last year the expenditure of the Kingdom averaged 2*l.* 10s. 6d. per head opulation. In addition to this there is d taxation, which for the latest year for e details are procurable, was 18s. 3d. d, and it has since largely increased. ation of the kingdom was 2*l.* 18s. 11d. at the date for which all the figures urable, and it has since been consider- eased. With this, it is unsatisfactory that the public debt of the kingdom considerably enlarged, and that the t has enormously increased. We have roportionate table of the value of the and exports per head of the population, ese there is also great fluctuation. We in 1864 goods to the value of 9*l.* 5s. 7d. of the population; and the lowest since that time was in 1877, when the as 9*l.* 1s. 5d. per head; but that value til, in 1877, it was 11*l.* 15s. 10d., ast year it fell to 10*l.* 18s. 3d., and is further falling. Of exports, we have e for British goods only,—the foreign onial produce being excluded. Of oods, then, the value of the exports was, equal to 5*l.* 8s. 4d. per head of the n, and it rose until, in 1873, it was 0d. per head; since then the declen- ugh irregular, has been large, and for the proportionate value was 5*l.* 14s. 1d. t interesting table is that which shows ntities of many of the chief articles and retained for consumption in the . Of bacon and hams we consumed, of goods, in 1864, about 3·77 lb. per head pulation; and the lowest amount since 867, when the amount was only 1·92 lb. en the consumption of foreign bacon s has gone on increasing, and last year 2·60 lb. per head. Of butter there has ower and more regular increase in the tion of imported, the average being, for 4 lb. per head of the population; and year, 5·82 lb. Of cheese the same pplies, the consumption of the imported ising from 3·13 lb. per head to 6·37 lb. nts and raisins the consumption rose 1 lb. in 1864, to 4·49 lb. last year. Of eggs we used 11·34 per head of the n in 1864, and last year 23·18 per head. oes there has been a large increase, 1 lb. per head to 28·96 lb. Rice rose lb. per head to 13·70 lb. in 1872; but sunk to 7·50 lb. per head, the con- being very irregular. Cocoa has risen 3 lb. per head to 0·29 lb. per head; s fallen in proportion, from 1·06 lb. per 0·97 lb. Wheat and wheat-flour, from . per head in 1864, rose to 203·26 lb. but fell last year to 188·29 lb. Raw s used in 1864 to the extent of 33·80 lb., and last year to the extent of 48·56 lb.; fined sugar rose from 3·03 lb. per head o 10·27 lb. in 1878. Of tea there is an consumption, the quantity rising from 3 lb. per head in 1864 to 4·66 lb. per head last year. In tobacco there is a slighter increase, from 1·29 lb. per head to 1·45 lb. in the same years. Of wine, the consumption rose from 0·39 gallon per head to 0·48 gallon; of spirits, from 0·21 to 0·31; and of British malt, from 1·75 bushel to 1·91 bushel per head.

In England, in 1864, every hundred of the population received 2,688 letters, and there has been a regular increase, until now 3,698 are yearly received by every 100 of the population. In Scotland, the increase per hundred has been from 2,028 per 100 to 2,748; in Ireland, from 975 per 100 to 1,419; and for the whole of the United Kingdom from 2,292 for every hundred to 3,237. It is here to be noticed that only approximate accuracy can be obtained in all these particulars, but that such accuracy is obtained seems certain, and the figures prove that in the important particulars named there is a substantial increase in the prosperity of the kingdom, even at a time of unparalleled commercial depression. It is true that in one other matter for which the gross but not the proportionate details are given,—the pauperism of the country,—there is shown to be an increase, but even this is not so large as might have been expected, and in all the indications of enlarged wealth, of greater railway facilities, and of increased use thereof, there is a large growth even in the past few years. It is true that our commerce in the past year or two has shown signs of shrinkage in some important branches, but looked at over the fifteen or sixteen years for which tables are given in the "Statistical Abstract," it is to be clearly seen that there is a vast growth in the United Kingdom. Not only is this shown in trade, but in population, in traffic, in enlarged use of luxuries, and in all the essentials and incidentals of increased prosperity. A pessimist view has of late prevailed as regards the future of the commerce and the general prospects of the country; but there is little to support such a view in the bulky Blue Book from which we have drawn these details. On the contrary, there are signs of continued growth at a rate which could scarcely be expected to be maintained; and the temporary check to that growth, looked at from this point of view, must be held to be a blessing in disguise. The future of the United Kingdom cannot with truth be said to be an unclouded one, for our manufacturing supremacy is assailed, and in some branches it is evident that the increased competition and the heavy import duties put on by some countries tell against us; but our buying and selling, and our conveyance of goods by sea especially, is continually increasing; and whilst we may not retain so large a share of the manufactures of the globe, we shall in all probability continue to make England the mart, and its ships, to a very large extent, the common carriers of the world.

EARLY CUSTOMS PERPETUATED BY LATE DESIGNS.

At the Sheffield meeting of the British Association, a paper was read by Dr. Phené, on "Evidence of Early Historic Events and Prehistoric Customs by perpetuation of design in art and manufactures in later, and even in present, times." The reader admitted, in the outset, the difficulty of the subject, which he thought had not yet been opened. The sources of information were few, and the researches were consequently not to be pursued continuously, but caught up in other investigations as they occurred. He thought a large amount of matter was dormant in the hands of other inquirers, which, when a distinct channel was given to it, would arise in discussion, and be found of great interest. As the further we go back in time, the more difficult it is to identify causes or to determine events, he proposed to give such evidence as he had collected inversely, and beginning at the present to work gradually into the past, as by investigating familiar and existing examples, the more remote might, when brought forward, appear less confused by the mists of time. He selected first the works of ordinary artisans, and took as an example the carpenter and joiner of the present day. He pointed out that in Western Europe all their ordinary work was made in a rectangular manner; ordinary doors and windows, for instance, were shown not only to be so formed, but designs and sections alike always produced that which the artisan had never contemplated as a part of his work, but which he unthinkingly perpetuated from his forefathers, viz., the emblem of the faith of Europe,—the Cross. It would not do to say this was the result of the simplest mode of construction, because in Asia, and even in Eastern Europe, it was argued with the same persistency that a curve was not only the most beautiful but the easiest and simplest form of construction. Of course, the force of habit is great, and the artisan working continually in curved work finds it much easier than one only accustomed to the square. But the work in India, whether in plain solid work, such as had been taken as an example for Europe, or the delicate metal-work, was always curved or interlaced; and the old religion of India was that of the serpent. In Persia the circular was always contending with the curved and the undulating design, and the contending religions there were the sun and serpent. In Turkey, the designs, as for instance of the dome of a mosque, were formed of a series of crescents, by omitting the intermediate ones of which separate crescents existed, which appeared hardly capable of producing the design. Every Turkish article, even to the oar and scimitar, was formed of more than one crescent, and the Christian sword was as great a contrast as the French window. Gothic and Byzantine work had been introduced among the artisans of Europe, but it had failed to grow upon the soil, and was clearly exotic. The reader gave evidence that these arts were introduced by the Templars, the most cultivated men of their day, but notoriously given to the old Pagan faiths, and who met with symbols of the old faith of their Pagan forefathers in their contact with Orientals. He considered there was abundant evidence from their design to attribute all interlaced work, and the sculptured stones of Britain and Ireland, to the influence and designs of the Templars. They all perpetuated, directly or indirectly, the form of the serpent. The author then examined the art of pre-Christian Rome,—not in Rome itself, but in the countries where such art was significant of matters connected with them,—in Gaul, Britain, the Campania, and elsewhere. In special countries, and even in particular districts of those countries, the grand object of Pagan Roman sculpture was the serpent or dragon. For example, the works of this class in Provence were abundant; but though more and better preserved Roman remains were to be found of the same date in Languedoc, as at Nîmes, there was no indication of the serpent. Other emblems, used as standards by Gauls and Teutons, were profusely shown in some of the early Roman sculptures in Provence, but they were nowhere perpetuated, showing that the great emblem,—the greatest of their standards and, no doubt, therefore, their chief deity,—was the dragon. It was even adopted by the Popes in their dealings with Gaul, and in one notable instance they used only two emblems,—the eagle of Pagan Rome and the dragon of Gaul,—and gave equal honour and position to both, as a compliment to the people of both countries, showing that these emblems of nationality were retained irrespective of the new faith. He had referred so much to the serpent or dragon simply because it was the most prominent object. The whole district he was treating of was dragonesque. He had lately officiated himself at a great dragon ceremony, in which the clergy of the district took the chief part. In this case cakes in the form of the dragon were distributed. When the ceremany is abolished the form of these cakes will not be understood. All the ordinary loaves of the district were formed like sections of a creeping thing like a caterpillar. Nothing of the sort existed in the adjoining districts. The dragon was only appeased by the death of children. These things strongly pointed to immolation to a serpent deity. There were many other examples he could from want of time only enumerate. The schoolboy notches on a stick the number of runs at cricket; in doing so he perpetuates the old custom of the Exchequer. The baker of Brittany still notches a stick for the number of loaves he sells you, instead of making a bill. This was, no doubt, a very old custom amongst the Gauls, and he (Dr. Phené) discovered in the former temple of Triptolemus, near Eleusis, two disused columns, the flutings of which, though rude and very ancient, gave the number of days of the week and month, in fact formed a lunar calendar. Our schoolboys and Breton bakers of to-day had no idea they were perpetuating these ancient customs.

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The disc found on the forehead of Dr. Schliemann's cow's-head, or Hera, had been perpetuated by Greek sculptors, apparently without the meaning, and had subsequently been represented merely by the concentric form the hair of a cow or bull takes on the forehead; the exhumation of this antique showed it to have a special meaning. In the Persian mace he produced, the cow's horns were gilt, showing, though the meaning had been lost, that the horns were those of the moon. This agreed also with the horns of Schliemann's Hera. In a bronze head of Isis he (Dr. Phené) had lately found, the crescent was between the cow's horns, and this was evidently the original emblem from which the Mahommedans of to-day derived their crescent and star; instead of giving a double crescent, as the horns and crescent if perpetuated would have done, they introduced the star; but your Mahommedan, although scrupulous in praying at sunrise and sunset, would repudiate the idea that he worshipped Astarte as Isis, and does not know that he uses the special symbol of these deities. The success of Mahommed was, no doubt, greatly attributable to this emblem, as all these scattered worshippers, finding their own deity debased, gathered round his standard. This emblem was, as he pointed out last year, found in Ireland, on a cow's head, of which he gave an illustration.

He exhibited a tile from the monastery at Patmos; it had three serpents,—everything at Patmos had three serpents. He also exhibited a horse from Troy; no child at Troy would be content without a *horse* for a toy; it was the old Trojan horse of the Iliad, which was shown by an antique bronze horse found in the plains of Argos, of exactly the same shape. A water-jug from Ephesus, made in that locality alone, was as much in the form of Diana of Ephesus as Dr. Schliemann's jugs were of Hera, and modern jugs gave the form of the latter. A large Italian water-jug he had represented the sun and serpent, without any intention of the maker, but evidence of their worship abounded in the locality.

ST. OSWALD'S SCHOOLS, ELLESMERE, SALOP.

SCHOOLS AT DENSTONE AND LANCING.

THE "corner-stone" of the new buildings was laid on the 5th ult. by the Earl and Countess Brownlow, on a site purchased on easy terms from his lordship close to the town of Ellesmere. Its situation is elevated, and commands a magnificent view over the Welsh hills. The school will be for 500 "lower middle-class" boys. It belongs to the parent society of Lancing College, and will be similar in its terms and arrangement to the school at Ardingley, in Sussex, and is attached to the Midland county centre at present located at Denstone, under Provost Lowe.

The foundations and basement of a large portion have been already executed by Messrs. Bowdler Bros., of Shrewsbury, and the contracts for the superstructure of this portion will shortly be arranged. The plan is on the quadrangular system. The upper and lower dining-halls, with complete offices and laundries, will now be built, as well as portions of the quadrangles, providing accommodation for 250 boys, masters, &c.

The material of the buildings is brick, with dressings of Cefn stone, the style being kept very simple.

At Denstone, the corner-stone of the new chapel of St. Chad's School was laid by Sir Percival Heywood, bart., on the 29th July. The dimensions are on a large and dignified scale. The sanctuary is apsidal, and will be vaulted with stone, with a tower on each side, finished with low stone spires. These towers will form chapels on the ground floor (for use in the holidays, &c.); the three open by arches into the nave, in which the stalls and benches will be arranged facing each other. The ante-chapel will have an upper story opening by arches into the chapel. The whole will be built and faced inside and outside with Alton stone. The works at present are being executed by Mr. Ford, of Uttoxeter.

At Lancing College the society is engaged in extensive works, to which Mr. D. M. Gibbs is a liberal contributor. The school quadrangle (the westernmost one) is now being pushed forward. On its east side is a range of boys' studies and reading-rooms for the Fellows' and boys' libraries. On the north side is the new great school-room (running northwards), with its gable in the centre of this side. It is joined to the other buildings by cloisters with rooms above. In the centre, projecting into the quadrangle, is a lofty octagonal two-story porch with a pyramidal roof; the upper story opens into and forms part of the gallery of the school-room. On each side of the school-room, and opening into it directly, are six class-rooms, each 20 ft. by 16 ft. The school-room itself is 108 ft. long by 34 ft. wide and 43 ft. up to the apex of the panelled ceiling. It is lighted by great stone dormer windows on each side, up to the sills of which will be oak panelling.

On the east side of the school-room is being built a quadrangle, on a lower level, with an arcaded cloister round it extending to the new gymnasium, where will be built the laboratory and racquet-court.

But little progress (owing to the severe winter) has been made with the great upper chapel (the lower chapel or crypt being now used); but at the eastern end the walls and buttresses are carried up to the springing of the aisle windows. All this work is in local sandstone ashlar; but the other buildings are in flint, with dressings of Caen and sandstone.

The works at the various schools are being executed under the college architects, Messrs. Carpenter & Ingelow; Mr. Garland being clerk of works at Ellesmere, and Mr. Knight at Lancing.

THE BERLIN "ZEUGHAUS."

A NEW MUSEUM OF ARTILLERY AND MILITARY ENGINEERING.

THE recent excursion of the Berlin Society of Architects included a visit to the "Zeughaus," or Armoury. We might almost call it the "Tower" of Berlin, if there were not such a great difference in the respective ages of that and the London building, the Berlin edifice being, comparatively speaking, a modern erection. We take from the *Deutsche Bauzeitung* the following data respecting the new works in progress there. They permit a good insight into the arrangements of the future Museum of Artillery and Military Engineering, into which the old Zeughaus is being converted. The additions on the ground story are nearly completed. The various rooms will be in a very simple style, the chief effort of decoration having been concentrated on the railings separating the vestibule from the rooms, which are of artistically wrought ironwork. The floor of the ground-story is of fluted Mettlach tiles. The vaulting of the old erection has been retained. In the interior court, to be covered with glass, and which will form the stair vestibule of the converted building, the works have been just begun. The drawings and models show, however, that the glass roof will have the form of a large surbased spherical vault, resting upon consoles raised on the court walls, and divided in the centre by two pairs of trussed girders intersecting each other. The novelty of the design, conditioned by the peculiar construction of the old building, as well as the intention of attempting an artistic employment of iron, cause its erection to be looked forward to with some interest. The stairs are to rise in two gently sloping flights to the first floor. Beneath them provision is made, besides the lobby leading to the back wing of the building, for cloak-rooms. It is intended to place in the court the figures of two lansquenets at the entrance to the staircase, and a colossal statue of Germania. But as the keystones of the court windows, being masks, would produce a disagreeable contrast with such statuary, it is expected that a change will be made. In the upper story, which has been vaulted, the works are nearly all so far progressed as to leave only matters of decorative detail to be completed. In the three wings of the front, where the museum of arms is to be placed, the decorations are very simple. The plastered vaulting and walls, slightly enlivened by stucco ornaments, are to be coloured in various shades of grey. The only decoration proper, as far as it will not be produced by the objects exhibited, will consist of a number of bronzed portrait-busts, placed in medallions sunk in the walls.

Least advanced of all the works in progress is the great hall in the rear of the building, lighted by a skylight, the old windows having all been closed up. This room is intended as a hall of glory of the Prussian army, and will be rich in decorative and historic frescoes and statues. Its effect, when completed, it is stated, will be magnificent, such as Berlin, with all handsome buildings and halls, cannot at pres boast of.

NEW BUILDINGS AT MERCHANT TAYLORS' HALL.

MERCHANT TAYLORS' HALL is at pres undergoing a very considerable enlargemen the erection of an extensive new bloc buildings on a site between the present ha Threadneedle-street and Cornhill, from which named thoroughfare there will be an entranc the enlarged building, in addition to the pre entrance in Threadneedle-street. The new b ings consist of Gothic structures in Port and York stone, one portion having a fron to the west and the other to the north, both overlooking the banquetting-hall the garden area adjoining. The build are about 50 ft. in height to ridge of a high-pitched roof, and in tion to the basement contain two floors, dormers in the roof forming a third st The north block is 60 ft. in length, the elev having rich Gothic tracery windows, wi massive bay window, in four divisions, in centre of the ground floor. The block fr the west is generally uniform in its architec character with that on the north side, and blocks are connected with the existing bui by a spacious corridor on the ground floor in width.

The ground floor of the north block con the waiting-room, immediately adjoining large banquetting-room in the present bui also a committee-room, together with the c room, a spacious apartment, 37 ft. by 2 which is intended to be richly decorated. the north block the corridor leads to the portion of the building, which contains assembly-room and library, a hand apartment, 32 ft. by 20 ft., and which a large Gothic bay window uniform with in the court-room. On this floor there is luncheon-room and several other apartm The first floor contains a number of dres rooms and retiring-rooms for the use guests on festive occasions, together apartments to be occupied by the b The two upper floors likewise contain s bed and dressing-rooms. The basement co the kitchen offices, and work-rooms, &c.

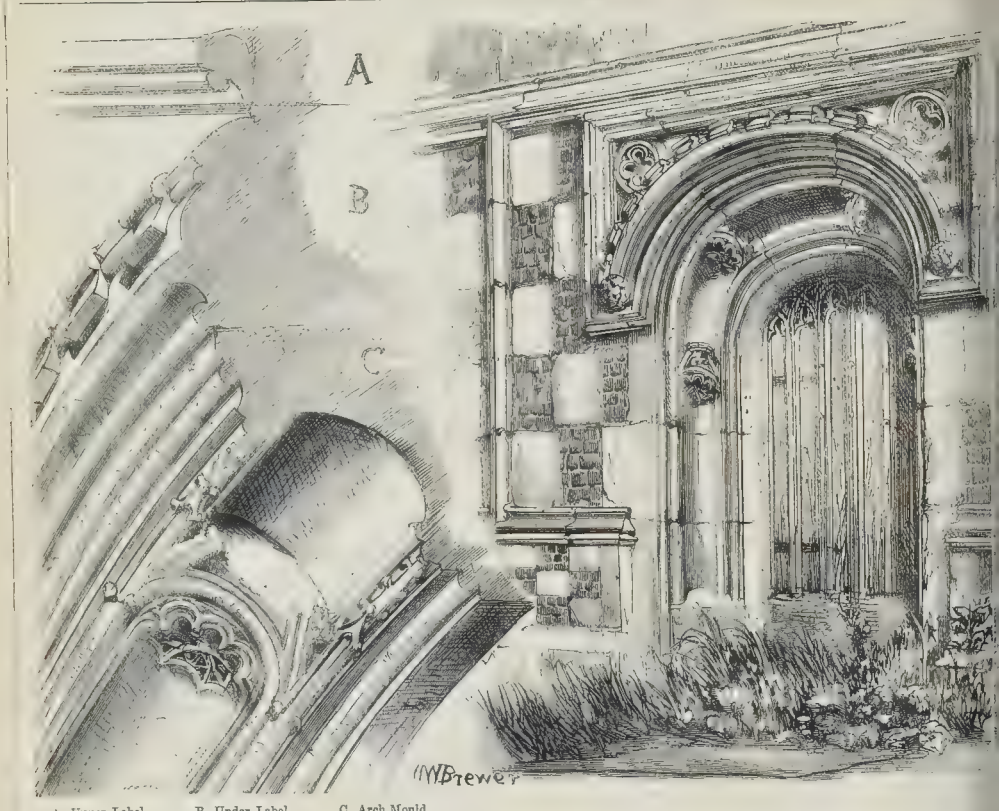
The entrance to the new building from hill is through White Lion-court.

The buildings have been designed by l'Anson, the Company's architect, and estimated cost is about 22,000*l*. Mr. G Shaw, of Earl-street, Westminster, is th tractor; and Mr. Biven is clerk of the wor

A PUNIC INSCRIPTION.

THE missionary priest, M. Delattre, w intrusted with the care of the chapel of St. at Carthage, has discovered a fragmen Punic inscription in that town. He at took a cast of this treasure and forwar to the Académie des Inscriptions et Lettres in Paris. Here it was submitt M. Ernest Renan, who considered tha inscription related to the tariff of the sacr At Marseilles there is a similar relic. The mittee on Semitic Inscriptions possesses s similar inscriptions, and considers that th discovery forms part of the monument of Mr. Davis found a fragment. In any ca have now yet another link which will b recall the history and customs of the past

Ancient Earthwork.—The earthwo Castle Neroche, which looks down from its headland on the Vale of Taunton, is in pi of destruction by ignorant road surveyors are carting away the gravel of its rampa mend the highways. We would strengt cry in its favour which has been raised b Venables and Mr. Scarth. The still more resting work known as Penpits, in the par Penselwood, not far from Wincanton, a pri British metropolis, defended by lofty works, and exhibiting within its fortifie those conical hollows which are so well k to antiquaries as the bases of primeval ings is also in process of destruction. historic and archæological monument, acco to Dr. Guest, was the scene of Kenw victory over the Britons in 658, and still certainly that of Edmund Ironside over C in 1016. Can nothing be done to save it?



A. Upper Label. B. Under Label. C. Arch Mould.

PRIEST'S DOOR, CAVENDISH CHURCH, SUFFOLK.

"PRIEST'S DOOR," CAVENDISH CHURCH, SUFFOLK.

THE pretty little doorway represented in our engraving, is a pleasing example of Perpendicular work, and is also an instance of the freedom with which that style was treated by the ancient builders in East Anglia. The double label and the small battlemented ornament are to be found in other Suffolk and Norfolk churches, though not treated quite in the same way as at Cavendish. Cavendish forms one of that noble group of Perpendicular churches existing in the south-west of Suffolk, close to the Essex borders. Within a space of some ten miles are to be seen the magnificent churches of Lavenham, Long Melford, Clare, and Cavendish, while those of Stoke-by-Nayland, Hadleigh, and Bures are close at hand, and the splendid Norman church and castle of Castle Hedingham are just over the Essex border. The whole architecture of this district is remarkably beautiful, and the flint-work is not to be equalled anywhere else in England.

The churches abound in fine screen-work, stalls, and fine roofs, while some of them possess rare fragments of stained glass and wall painting. Many of the houses at Lavenham and Long Melford are most interesting examples of fifteenth and sixteenth-century timber work. Some of the farmhouses in the neighbourhood of Great Yeldham, Toppesfield, and Guestingthorpe, are as old as the sixteenth century, and one or two possess halls surrounded by Gothic panelling (one of these we may possibly illustrate). There is a singular fact about the churches in Norfolk, Suffolk, and the parts of Essex adjoining Suffolk; —it is that they contain more ancient furniture, decorative painting, rood-screens, reredoses, font-covers, stained glass, and sculpture, than the churches in any other part of England, yet, strange to say, this was the very head-quarters of Puritanism, which seems to support our belief, often expressed, that the Puritans have been charged with a good deal of destruction for which they are not answerable; it is otherwise very difficult to account for this remarkable fact.

CALLAN PARK HOSPITAL FOR THE INSANE, SYDNEY.

THE site selected for this hospital consists of an extensive area known as the Garryowen Estate, comprising 100 acres, purchased by the Government some years ago for the purpose. It is about three miles and a half from Sydney, approached by the Parramatta and Balmain roads, to the latter of which it has a large frontage. The ground slopes in a westerly direction to the waters of Long Cove, a branch of the Parramatta River, to which the land has also an extensive frontage. It commands magnificent panoramic views of the river referred to, embracing Hunter's Hill, Gladesville, Spectacle, Cockatoo and Goat Islands, and in the distance the Blue Mountains. The plans for the buildings represented in our engraving have been designed and prepared by Mr. James Barnet, colonial architect.

The main design of the building is adapted from that for the new asylum for the county of Kent, at Chartham, England, of which Messrs. Giles & Gough were the architects. Considerable alterations have, however, been made in internal arrangements, and a large verandah space has been added to meet the requirements of the climate of New South Wales.

The accommodation for patients is in two divisions, one for males and one for females, separated by the central and administrative offices. An equal number of each sex are provided for, and the arrangements for each [illegible] similar in all essential points. Each division [illegible] sists of three distinct parts:—

1. A large block placed near the administ[illegible] tive offices and the medical officers' quarte[illegible] and consisting of two wards,—one for the s[illegible] and the other for the recent and acute cases both of which classes require special attent[illegible] and supervision.

2. Three pavilions or wards connected wi[illegible] the rest of the hospital by verandahs or c[illegible] ridors for the violent and noisy, the convalesc[illegible] and working patients, and patients of an int[illegible] mediate class.

3. Three detached cottages, each to cont[illegible] sixteen patients, for the quiet and convalesce[illegible] and for patients who have been in a better po[illegible] tion in life.

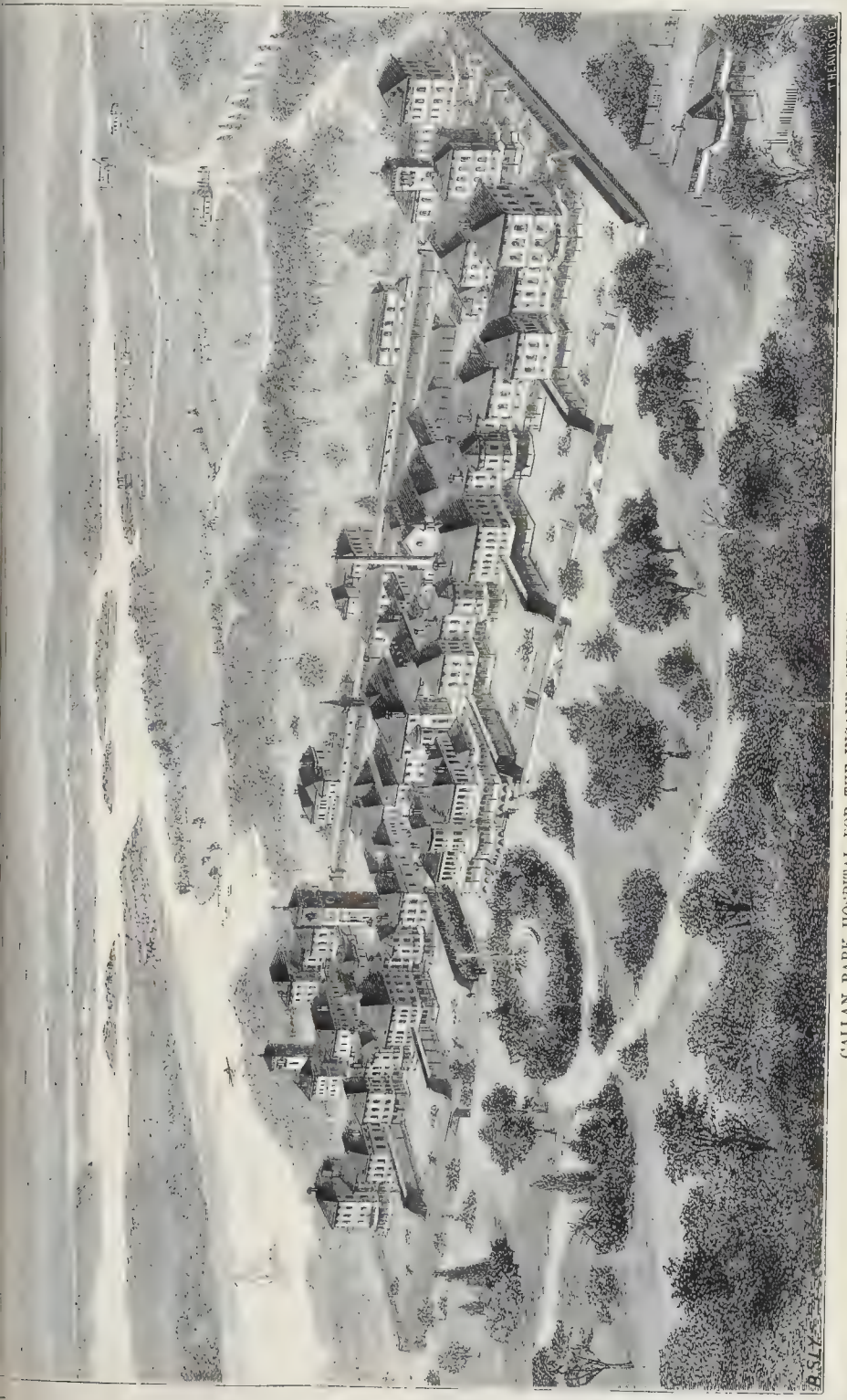
In addition it is proposed to place a sp[illegible] room in the gate-lodges and in the cottages [illegible] gardener, &c., by which means six convalesc[illegible] male patients will be comfortably lodged.

The total accommodation may be set down [illegible] under, viz.:—

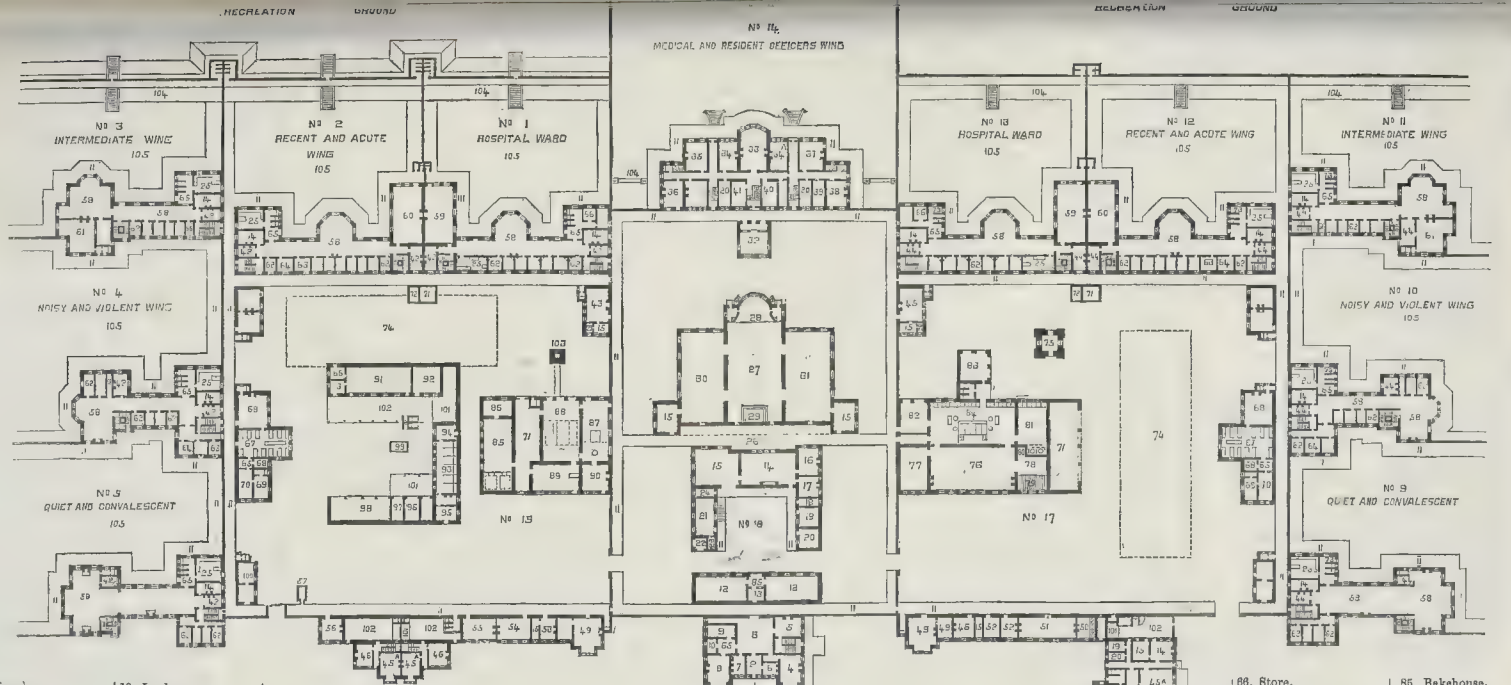
In main block and three pavilions, divided [illegible] follows,—

In ward for sick.....	52	
In ward for acute cases	55	
Intermediate ward	65	
Ward for excited and noisy	35	
Ward for quiet and convalescent	75	
2 of each.....		= 56
In special cottages.....		9[illegible]
In gate-lodges		[illegible]
Total.....		66[illegible]

The buildings are two storied throughou[illegible] except at the ends of the pavilions, where th[illegible] rise to three stories. The accommodation co[illegible] sists of day-rooms and dormitories, and [illegible]



CALLAN PARK HOSPITAL FOR THE INSANE, SYDNEY.—Mr. James Barnet, Architect.



1. Portico.
2. Vestibule.
3. Hall.
4. Superintendent's office.
5. Assistant Superintendent's office.
6. Hall-porter's dining-room.
7. Hall-porter's bed-room.
8. Inquest and reception-room.
9. Clerk's office.
10. Record.
11. Verandah.
12. General store.
13. Office.
14. Kitchen.
15. Scullery.
16. Servants' dining-room.
17. Cook.
18. Cook's store.
19. Larder.
20. Pantry.
21. Vegetables.
22. Serving.
23. Beer.
24. Lavatory.
25. Bath-room and lavatory.
26. Corridor—tunnel.
27. Chapel and recreation-room.
28. Stage.
29. Platform.
30. Dining-room, male division.
31. Dining-room, female division.
32. Dispensary.
33. Consulting-room and medical office.
34. Resident medical officer's sitting-room.
34A. Assistant medical officers' sitting-room.
35. Resident medical officers' dining-room.
36. Chief attendant's office and store.
37. Matron's sitting-room.
38. Matron's store and office.
39. Bath.
40. Dispenser's sitting-room.
41. Waiting-room.
42. Attendant.
43. Attendants' dining-room.
44. Nurse.
45. Nurses' dining-room.
45A. Dining-room.
46. Parlour.
47. Drawing-room.
48. Library.
49. Visitors' room.
50. Work-mistress's sitting-room.
51. Work-room.
52. Laundry-women's sitting-room.
53. Artisans' dining-room.
54. Tailors' shop.
55. Shoemakers' shop.
56. Gatekeeper's lodge.
57. Weighbridge.
58. Day-room.
59. Dormitory for sick.
60. Dormitory for epileptic and suicidal.
61. Dormitory.
62. Single room.
63. Panelled room.
64. Padded room.
65. Lobby.
66. Store.
67. Bath-house.
68. Dressing-room.
69. Hot-room, with steam and sulphur baths.
70. Shower-room.
71. Coals.
72. Buckets.
73. Brooms.
74. Tank.
75. Water tower.
76. Laundry.
77. Sorting and delivery room.
78. Drying-room.
79. Drying-horse.
80. Hair.
81. Officers' laundry.
82. Reception-room.
83. Foul linen washhouse.
84. Washhouse.
85. Bakehouse.
86. Flour store.
87. Engine-house.
88. Boiler-house.
89. Smithy.
90. Office and store.
91. Carpenter's shop.
92. Painter's store.
93. Stables.
94. Harness-room.
95. Forage store.
96. Coach-house.
97. Hearse-house.
98. Cart-shed.
99 Manure tank.
100. Mortuary.
101. Shed.
102 Yard.
103. Chimney.
104. Slope.
105. Airing-yard.

HOSPITAL FOR THE INSANE, CALLAN PARK, SYDNEY.

whole of the day or living-rooms are on the ground floor. The first floor and the small second floor are devoted entirely to dormitory accommodation. The number of single rooms is 162. Of these 140 are ordinary single rooms, twelve are panelled, and eight padded for acute cases and others requiring special treatment. There are in addition two single rooms for the temporary isolation of special and infectious diseases. The proportion of single rooms bears, therefore, a proportion of about one-fourth to the total accommodation. This is somewhat larger than has been considered necessary in some modern asylums, but special circumstances have determined the adoption of this proportion. The hospital will be a metropolitan one, and the proportion of admissions to the whole resident population, and the number of acute cases requiring separate sleeping-rooms, is therefore likely to be large. In the directions to architects issued by the English Commissioners in Lunacy it is stated that the proportion of single rooms need not exceed one-fourth, and the commissioners have raised objections in some cases where the proportion provided has not been more than one-fifth.

The associated dormitories, including the rooms at the gate-lodges, will accommodate 504 patients. They vary considerably in size; twelve are arranged for three patients each. The largest dormitories will not hold more than an average of fifteen patients, with the exception of one in the convalescent wards of both male and female divisions, which will accommodate twenty-eight.

The space allowed in the associated dormitories is, for the sick and bedridden cases, 1,000 cubic feet each, or a full 80 superficial feet, and for ordinary cases 600 cubic or 50 superficial feet. This is the amount of space set forth by the English Commissioners in Lunacy as essential.

The day-rooms will afford, on an average, 26 superficial feet to each patient. This is much less than the proportion considered necessary in England, and insisted on in all plans submitted to the English Lunacy Commissioners, who consider that 48 ft. should be the minimum; but it is deemed sufficient in this climate, where the patients pass a large proportion of every day in the open air, and, as a rule, use the day-rooms only in boisterous weather, and it is supplemented by a very large amount of verandah accommodation, which, as a rule, is more pleasant and more wholesome than indoor rooms. The corridors on the upper floor are also available as day-space in an emergency, but are not likely to be often required. Each ward or pavilion contains lavatories on both floors, which are to be fitted with one bath in each; a ward kitchen or scullery on the ground-floor, store-rooms, and rooms for attendants, which are so placed as to command full views of the dormitories and day-rooms.

A general dining-room for each sex has been provided near the kitchen, and which will seat about three-fourths of the total number of patients, quite as many as can be ordinarily permitted to take their meals together; the remaindor, consisting of the sick, epileptic, and excited, will dine in the wards. Between the dining-room is a large hall for religious service, for amusements, and for the general gatherings which will be held periodically. The arrangement of the dining and amusement rooms has been taken from the new asylum at Whittingham, in Lancashire, which was mainly designed by Mr. Holland, the medical superintendent. A large general bath-room, for the ordinary weekly or bi-weekly ablutions of the patients, is provided in both the male and female divisions, so placed as to be readily accessible from all the wards. In connexion with this are a Turkish bath, a service of shower-baths, and the necessary medicated baths.

The accessory buildings comprise kitchen and all necessary offices, bakehouse, flour store, dining-rooms for attendants and nurses, store-rooms for clothing, provisions, &c., laundry, carpenters', painters', tailors', and shoemakers' shops, shed for bricklayers, sewing-rooms, stables, cart-sheds, and mortuaries, together with residences for all the officers whose duties require them to be more or less constantly on the premises. In the central block provision is made for medical consulting-room, library, and pathological museum, and there are also rooms for the accommodation of students in psychological medicine, which will form part of the professional course of instruction on the establishment of a medical school in connexion with the University of Sydney. Attached to each ward or pavilion is an airing-yard which is surrounded on three sides by verandahs or covered ways, whilst on the fourth side the wall is sunk in a "ha-ha," and so allows a full and uninterrupted view of the country around. The buildings have been so arranged that the whole of the wards in the female division, and three out of five in the male division, command beautiful views of the harbour, and a distant view extending to the Blue Mountains.

The general recreation grounds in both divisions, which are in front of, and somewhat below the airing-yards, and can be reached from them, also command an extensive and varied view, and along the boundaries of these and opening on to them the cottages for convalescent patients will be placed.

NEW BUILDING FOR THE MANCHESTER HOUSEHOLD STORES.

The premises in Albert-square, where the business has hitherto been carried on, have been found too contracted and inconvenient for the increasing operations of the association, and about eighteen months ago the directors entrusted to Messrs. Mangnall & Littlewoods, architects, of Manchester, the duty of designing and carrying out suitable erections for the special purposes required upon an eligible plot in what was then called Lower King-street, but is now King-street West. The space of ground covered by the buildings is about 1,300 square yards in all, 300 yards of which, at the end furthest from Deansgate, are devoted to the purposes of an hotel, as it was deemed advisable to make use of the licence which attached to the site. The hotel is to be let to a suitable tenant.

The style of architecture adopted in the entire erection is Italian, and the principal frontage in King-street West is five stories in height, the lower portion being of Yorkshire stone, and the upper story of brickwork, intermixed with stone dressings. The elevations are characterised by a somewhat novel arrangement of the windows.

The main entrance to the household stores, at the angle formed by King-street West and Southgate, is octagonal in plan, with three semicircular-headed doorways of handsome treatment, surmounted by stone cornice and pediment. This feature of the design is carried upwards to a steep octagonal slated roof and lofty flagstaff. The entrance vestibule is floored with marble concrete, which, with the German tiles and marble concrete on the wall of the entrance to the hotel, have been supplied by Messrs. Patteson. The first floor, entering from the street, is devoted to the department of groceries, provisions, wines and spirits, fancy stationery, leather goods, packing, delivery, &c. The second floor is appropriated to drapery, drugs, boots, shoes, &c., and in this story are the business offices, also the waiting and refreshment rooms for ladies. The third story will be used for brushes, ironmongery and other branches, as may be found expedient. A kitchen and offices are arranged on the top floor for the cooking and supplying of meals for the whole of the *employés* in the establishment. The delivery of goods has been provided for by a covered loading area, running lengthwise along Back Bridge-street, provided with sliding doors to all departments. The lifting of heavy articles will be effected by one of Messrs. E. T. Bellhouse & Co.'s hydraulic table-hoists, by means of which goods can be lowered from the covered cartway to the cellar story, and can be otherwise available for raising or lowering for four stories, the total lift being 35 ft., and the size of moving table 6 ft. by 4 ft. 6 in. It is on the same principle as the hydraulic press; a ram of 1·4 in. diameter rises in a cast-iron cylinder, into which the water from the street mains is admitted as the moving power. The valve apparatus for regulating the upward or downward motions is so arranged as to be used from any floor, or from the table itself. The ram and table are counterbalanced by weights. The other appliances for raising and lowering consist of a hand-rope hoist made by Messrs. A. Woodward & Co., and another similar one removed from the old premises, also a pair of inclined plane gantries, by which heavy casks are adroitly lowered. In the department of power may be mentioned three of Messrs. J. Bailey & Co.'s water motors, on the horizontal cylinder principle, worked from the street mains, which are to drive the machinery for chopping and grinding sugar, grinding coffee and rice, fruit-dressing and other purposes.

The cast-iron columns and beam-boxes supporting the various beams and floors are mi into ventilating shafts, being continued throu the roof by galvanised iron flues and ventilati cowls attached thereto. Each beambox is novel construction, the sides having openi through which the current of vitiated air fr the various rooms is conducted upwards throu the hollow of the columns. We are told th this is a suggestion of a director. Of ventilating shafts are built in the walls. artificial lighting is by means of gaselie The heating apparatus is on the principle distribution of hot water in small wrought-i pipes, and Mr. Renton Gibb, of Liverpool, executed this work.

Messrs. Neill & Sons are the general c tractors for the buildings and for the fitti and fixtures; and the sub-contractors are Mr. P. Hodkinson, brickwork; Messrs. Ellic Hinchcliffe, masonry; Messrs. Longden & C ironwork; Mr. H. Lightfoot, plumbing glazing; Mr. George Kirkley, slating; and Harwood, plastering and painting. Mr. Edwi Wood has acted as clerk of works.

The establishment was opened for use Monday, September 1st.

OLD AND NEW ROADS.

We are pleased to note that the construct of railways in Tunis is progressing. In abstract, this is a great advantage; but, at same time, we may suggest that this end m perhaps be achieved without the destruction an old and historical bridge. M. Charles Tis the Minister representing the French Repu at the Court of Athens, has profited by a rec holiday to travel through Tunis, discover many old ruins and collecting thirty inscriptio four out of the number being considered of gr importance. One of these inscriptions gi nformation as to the epoch when Trajan bu the bridge of Simetta Colonia. It is upon ruins of this bridge that the railway contract have been trespassing. They are in want, appears, of 2,000 cubic mètres of stone, have recklessly helped themselves from ruins of the bridge, and this without display the least care for the preservation of the anci inscriptions and the archæological interest the old structure. In vain M. Tissot protes against this Vandalism; the utmost concess he could obtain was that the inscriptions sho in future be either preserved or copied bef they are used for the building of the railw This incident, however, suggests curious speculative contrasts. In the railway itself have the most typical emblem of the pres of nineteenth-century civilisation; but the f that the line should be constructed in Tu points distinctly to the great work of the futu the opening out of the African continent; wh finally, the old historical stones that recal road-building propensities of the great Rom emperor are impressive mementoes of the p

THE COMPTON GIFFORD DRAINAGE SCHEME.

To the scheme lately initiated for draining tything of Compton Gifford into the Laira petition setting forth strong objections to course has been very generally signed by r dents and house-owners of Laira and Crabt for presentation to the Plympton Sanit Authority. They say: "Your petitioners with amazement and dismay that at this me ing a scheme proposed by Mr. Appleton, C for the drainage of Compton Gifford adopted. By this scheme it is proposed convey the sewage of an already extensive rapidly-enlarging district in its unfiltered feculent state, by means of a culvert runn down the Lipson Valley and under the Sut Pool branch of the Great Western Railway Embankment road, into the Laira, whence low water it will be discharged into the m which forms the bed of the estuary, and wh is dry at low water. Your petitioners consi it scarcely necessary to point out to you highly deleterious effects this must produce the health of the residents in Laira and Cr tree, and the injury which must arise the from to household property."

Torquay.—The new railway station at T quay is finished. It is a handsome structure

NG FOREST AND FOREST TREES.

s terrible season we are having it requires ng of the Mark Tapley spirit to pre- e's interest in things sylvan, but with vour and permission I am desirous of g upon a few remarks touching your rticle with the above heading (page 910), ecially with regard to the statement in le that all the trees of the forest are

sadly knowing the wholesale injury, serious extent, the destruction of the t I could point out where still to find al trees, and groups of trees, of fine and growth, uninjured by the too general and topping—I may instance one of s of the forest nearest the metropolis— gular part having for its poiats Whips- t the end of the Lee Bridge-road), the the Leytonstone-road, and the Eagle esbrook. Going back to my earliest ance with the forest (some twenty-five nce) this part, while not having the and dense growth of more outlying d a beauty of its own, in the combina- fine grown foresters (chiefly oaks), nd frequently occurring glades carpeted ngy turf. One admits and grieves that the number of the trees of this tract of the ve disappeared, but there yet remain, g the road from Whips-Cross to Leyton- nd in some few other parts) of tree, nd vista, subjects and pictures worthy t's study and brush.

d instance several other parts—High r one—where such trees as are referred r article may be found, but will refrain. uld ask permission to say, with refer- nother statement of the writer of the g., that the forest is "now some six g by two miles wide," that certainly f the forest is much, if any, more than s wide; but in length, measured by a wn centrally through the continuous m the one extremity on the south side ead Flats to the other just short of own, the forest would measure quite iles.

ject in addressing you was to contest ment as to the trees, not to discuss the vanced by the writer of the article. m wishful to say that I thoroughly of the suggestion that the forest shall ved as a forest, not converted into a ch less into a garden; and that to this forest should be allowed (for, I would rtain period, presently named) to re- lf, "the ground itself being protected, growing vegetation, trees and under- . . saved from wanton waste and ve action." My own further sug- n this head is that the course above- hould be pursued until the arbitration ted, and the exact area and boundaries brest are settled, and the whole of it st) as thus definitely settled be legally the Corporation. That in the mean- Corporation should ask for plans or (offering substantial payment for the e, say, in order of merit) for the re- and the future preservation of the a forest, as above insisted upon. I mind the plan and suggestions of ace, but, without offering an opinion plan, I clearly think the subject is too nit it to the views of one person, how- petent. And I would add that should ve designs be solicited I venture to say is special case (the like of which may ppen again) the Corporation should that they would not engage to carry o any selected plan, nor to employ the any plan; that they, the Corporation, all in the most competent professional ot only to advise them of the merits mpetition plans with a view to the g of the rewards, but to report to them the assessor, assisted in his judgment rough collation of the plans sent in, ommend as a whole.

suming that none but experts would lists, and that if they did not already actual and intimate acquaintance with and its surroundings, the prizes offered would be such in amount as to induce devote sufficient labour to obtain this acquaintance,—it always being an express instruction to competitors that their plans should be framed with a view to the observance of the express injunction to the Conservators by the Epping Forest Act (*inter alia*) to preserve the natural aspect of the forest.

In the remarks with which I am about to conclude this communication, grateful as I am to the Corporation for their action in the matter of the forest, I am desirous of not being charged with indulging in carping criticism. But when I come to canvass the probability of the views broadly expressed in your article (added to with all humility by myself) being adopted, I am not at present too sanguine, as there is already evidence of the danger of the forest being dealt with in a piecemeal, nay, peddling and incongruous manner.

With my interest in the forest I am watchful of all that transpires with regard to it; and therefore had noted, as soon as it was publicly made known, that the Corporation had sanctioned the (as it at once struck me) incongruity of the placing of a modern hotel in one of the most "natural" parts of the forest, and not only this, but the placing it cheek-by-jowl with the genuine antique piece of brick and mortar (and timber, lath, and plaster, to be precise), Queen Elizabeth's Lodge.

Recently I made a day's outing in the forest, entering it from the new Chingford station of the Great Eastern Railway, and found that the new hotel was quite up, and nearly completed, ready for commencing business. As to its design and completion, you probably would, I think, join with me in condemning most of it. Before the hotel was built, entering the forest from the point where the new station now is, the old lodge (upon the next rising ground) was a conspicuous object and landmark, but now, from the same point and some others, it is utterly shut out from view by the hotel.

I also found that reparations of the old lodge were being effected, and something more, I rather think; for, as well as enlarging and putting new casements to old windows, it appeared that quite new windows were being inserted. All this may be right and proper, and I very gladly excuse myself entering here upon the vexed *restoration* question. As regards pure reparation there is no doubt of the old lodge requiring it; but that which I further found going on upon the spot I had no hesitation at once of condemning utterly.

Those knowing Queen Elizabeth's Lodge and its surroundings know that on the east or south-east side of it are some fine old Elizabethan elms; that a little further away, on sloping ground to the right, are a number of fine grown oaks, which, while having years since been pollarded, yet, nevertheless, are very handsome trees with umbrageous foliage, and that the other trees near at hand, with an exception presently named, are nearly all oak. Walking straight from this east side of the lodge you come upon a group of the straight-growing poplar; but beyond these, in front of you, is an open, treeless space reaching down to the margin of a pond, the latter of which, on the other three sides, being bordered by trees and bush. This pond cannot be seen on the level for some little way after proceeding from the lodge. Another feature of this spot to mention is, that from this side of the lodge there was a beaten road winding to the right, partly under the oaks, down to the Queen Elizabeth public-house, and which was a forest-like, and, in ordinary weather, fairly-sound travelling road.

Now, what did one discover was doing and was partly done in and leading from and to this open space between the old lodge and the pond with its informal surroundings of "natural aspect?" Why, first, a straight and formal avenue, formed with a double row on either side, of the straight, formal-shaped poplar, running from near the lodge down to the margin of the pond. Secondly, the making of a new road, which takes the course of the old one, but while running from the lodge between the new-made avenue for a certain distance of the latter, necessarily does not continue to the end of the avenue (which terminates in the pond) but *breaks* through the side of it.

There are other works done and doing in this part which are open to criticism, and which some will, I think, be prone to say are made with a view of conserving the interest and *enjoyment* of the hotel rather than the enjoyment and preservation of the natural aspect of the forest, —saying this, however, in no captious or unfriendly spirit towards the Conservators.

URBAN.

THE SHEFFIELD MEETING OF THE BRITISH ASSOCIATION.*

WE give abstracts of a few more of the papers read in the various sectional meetings of the British Association at Sheffield, most likely to interest our readers:—

Buddhist Remains in Jellalabad.

In Section E, Geography, Mr. William Simpson, the well-known artist who has travelled all over the world for the *Illustrated London News*, read a paper on Buddhist remains in the Jellalabad region. He gave a list of the larger groups. One point, he said, was apparently clear, that in the Buddhist period the population of the Jellalabad Valley must have been much more numerous than at present, and that the area of cultivation must have been also more extensive. The topes were large and elaborate architectural structures, and the author believes the same might be said of the monasteries; for the explorations produced sculptures and plaster figures in great quantities, which had been all painted with bright colours, and in many cases thickly gilt. The wealth necessary to construct such a mass of buildings, as well as the maintenance of them and the large population of monks who lived in these places, must have been great. The scanty number of people in the region at this day would be quite insufficient to support them. The Buddhist ascetics alone must have been, judging by the remains, two or three times greater than the present population. At Girdi Kas, where the river flows out of the valley at the eastern end, are the remains of an aqueduct and an old road. The last is known as the Badshah-i-Rah, or the "Imperial road," and it was supposed from its name to have been made by one of the emperors of India. Our engineers made repairs on this road, and from the officers engaged on this work Mr. Simpson received the information that portions of Buddhist masonry are still to be seen on it, showing it is older than the Badshahs who ruled in Delhi, and that regularly-constructed ways were made in the more civilised period of Buddhism, a kind of public work which the Afghan has long ceased to trouble himself about. While the engineers were at work at this spot they also discovered an old aqueduct constructed along with the road, with a considerable tunnel through one of the hills, by which the water was led to the Chardeh Plain, on the east of the Jellalabad Valley, and which is now a desert of stones, and so dangerous from heat that no native of the country, they were told, would venture to pass over it in June or July in the daytime. The aqueduct discovered by the officers is a pretty clear evidence that this wilderness of boulders was at some former period under cultivation. Further valuable light drawn from the same source was afforded by Major Cavagnari supplying the author with a working party to make excavations at the Ahin Posh Tope, about a mile south from Jellalabad. The principal object was to explore the architectural details of the remains, but while thus engaged the author penetrated, by means of a tunnel cut for about 45 ft. through solid masonry, to the central cell of the shrine, and found, along with what were most probably the ashes of some Buddhist saint of high repute, twenty gold coins, each about the size of a sovereign. Seventeen of these were Bactrian, or Indo-Scythian, and three were Roman. One belonged to Domitian, another to Trajan, and the third to "Sabina Augusta," the wife of Hadrian. Evidence of a road has already been given, and these coins proved that at a past date a commerce went along that road; and it must have been a commerce of considerable importance which brought coins all the way from ancient Rome in its track. They know that in the Buddhist period the capital city of the Jellalabad region was called Nagarahara. When Mr. Simpson started for the Afghan war, Colonel Yule called his attention to this as a point of importance and that the fixing of its site would be of some value. This task the author thinks he has accomplished.

The Savings of the People.

In Section F, Economic Science and Statistics, Professor Leone Levi read a paper on "The Savings of the People as evidenced by the Returns of Trustees of Post-office Savings Banks," in which he remarked that in his last

See p. 971, *ante*.

report to Mr. Bass, M.P., on the earnings of the labouring classes, including labourers and artisans, he estimated their total amount in 1878 at about 422,000,000*l.*, of which 350,000,000*l.* was in cash, and 72,000,000*l.* in board, lodging, clothing, and other requisites. The wages were somewhat higher in 1878 than in 1866, though considerably lower than in 1872 and 1873; yet the total amount of earnings was not greater, in consequence of the stagnation in trade, which reduced the number of labourers at work and the number of days when they were actually earning wages. The difference in wages to the working men of the United Kingdom between prosperous and bad times was 50,000,000*l.* a year, and it was interesting to ascertain how far the labouring classes had to learn to set something aside for a rainy day. In the three years from 1871 to 1873, when wages rose at least 20 per cent., and in some cases 40 and 50 per cent., the labouring classes received in hard cash some 70,000,000*l.* per year, or a total of 210,000,000*l.* in three years, more than the normal amount. The cost of living during those three years increased, however. A rise of wages was not all gain to the working man, for the cost of production increased, and higher prices had to be paid for food, rent, and every enjoyment. That rise he estimated at 10 per cent.; therefore, 105,000,000*l.* was required for the increased cost of living in the three years. Allowing 5 per cent. more for a legitimate increase of the comforts of life in times of prosperity, or 42,500,000*l.* in the three years,—in all 147,500,000*l.*,—there still remained 63,000,000*l.* which should have been saved and stand now to the credit of the labouring classes in some form or other. Since 1873 wages had suffered a considerable fall, yet even now in many occupations the wages were liberal, and with the lower prices of many articles of daily consumption there might be room for saving something if only a sense of economy and proper management prevailed in the households of the working population. For at least the half of the last eight years wages were most liberal, and afforded ample room for saving a handsome amount. What trace of these savings did they find stored in the savings banks? The accounts of the savings banks in 1870 and 1878 stood as follows:—In 1870, trustees' savings-banks, 37,958,000*l.*; post office savings-banks, 15,099,000*l.*; total, 52,987,000*l.* In 1878, trustees' savings-bank, 44 293,000*l.*; post office savings bank, 30,412,000*l.*; total, 74,705,000*l.* Thus, the savings-banks in 1878 possessed 21,700,000*l.* more than in 1870. Deducting 14,000,000*l.* for interest during those eight years, there remained 7,500,000*l.* saved in this form out of all the extra wages in the eight years. It could not be said that what was saved in 1873 had been since lost and withdrawn, for the accounts showed that in the total there had been no going back, but only a slow progress, as shown by the following table:—

	England and Wales.	Scotland.	Ireland.
1870 ...	46,229,000*l.*	... 4,132,000*l.*	... 2,636,000*l.*
1878 ...	64,433,000*l.*	... 6,726,000*l.*	... 3,546,000*l.*

This was an increase of 24 per cent. for England and Wales, 50 per cent. for Scotland, and 32 per cent. for Ireland. The results of the last eight years were, therefore, most favourable to Scotland and Ireland, the next to England and Wales. Comparing six agricultural with six manufacturing districts, he found that the savings of the manufacturing districts had increased 48 per cent. and the agricultural 71 per cent.; but he affirmed that in large towns there were many other ways of saving, and that might account for the difference in the percentage. He advocated a closer connexion between savings-banks, workshops, and schools, so that the idea of saving might be ever before the population.

In the discussion which followed, it was pointed out by more than one speaker that there was no country in the world in which the wages earned by the working classes were higher than in England, and the means of saving were greater. It was also suggested that it would be desirable that savings-banks should be empowered to invest the money at their command in other securities than Consols, from which a higher rate of interest than 3 per cent. might be obtained.

Vital Statistics of Sheffield.

In the same section, Dr. T. W. Hime, Medical Officer of Health for Sheffield, read a paper "On the Vital Statistics of Sheffield." In the course of his remarks Dr. Hime said: "Although handsome public buildings are not a prominent feature in the town, still there are few towns in England where the great bulk of the population is as well provided for in the way of domestic architecture. Overcrowding is very rare, cellar-dwellings are unknown, and almost every family has an entire house, a most important agent in securing physical as well as moral health. Owing to the impervious clay existing below the subsoil, surface wells used to be very common; most of them are closed now, and the water supply is almost exclusively drawn from the Water Company, which has large reservoirs to the west. They are eleven in number, and cover 492¾ acres. The average daily supply is about seventeen and a half gallons per head. High winds are rare, owing the high escarpments which protect the town on all sides. The prevailing wind in the first quarter of the year is east, in the other three it is westerly, varying to the north or south. The average temperature of the first quarter of the year is 40° Fahr.; of the third (the warmest), 61° Fahr. The population now is 297,538, showing an increase of 48,031 since the last census. Some of the sub-districts increase little, or even negatively. The population of Sheffield South has fallen off 311 persons, and the Park only grows at the rate of about four persons per annum. The density of the population in general in the borough is only 15·1 per acre. But a large part of the area is wild moorland, never built on, while some parts are closely packed. In Sheffield North there are 257 persons living on each acre; in Sheffield West, 89; while in Upper Hallam only 36. The birth-rate is high. During the period 1870-78 it amounted to 40·7 per 1,000 living, the highest birth-rate, 41·7, among the twenty largest towns in England being found in Salford; the lowest 30·7, in Plymouth. The males born in the whole borough are slightly in excess of the females, but this is not true of each of the sub-districts. The marriage rate is also high. Last year the death-rate was 24·8 per 1,000, or ·4 above the rate in the twenty largest towns, if London be included, during the nine years 1870-78. But there has been a considerable improvement in the mortality of late years. In fact, Birmingham is the only town of equal size which has had as low a death-rate during the past nine years, if London be excluded. Zymotic and local diseases are the most fatal in Sheffield. Hitherto no hospital has existed in the town for the treatment of infective fevers, but the Sanitary Authority is building one which will, when finished, be one of the most complete in the kingdom. Among the local diseases those affecting the lungs are the most fatal, owing, to a large extent, to the nature of some of the trades of the town. During the ten years, 1851-60, disease of the lungs amounted to 4·247 per 1,000, and during 1862-71 to 4·867 per 1,000. Phthisis, or consumption, a disease very fatal in Sheffield, is not included in this. During 1851-60 3·061 per 1,000 fell victims to consumption, a rate which is ·364 in excess of the average for all England and Wales. The distribution of deaths among the various trades of the town is a subject which is deserving of the greatest attention. There is some reason to believe that the mortality among grinders is not so excessive as it was, though it is still very high. According to the table it was in 1862-71 forty-four years. The presence of silica and iron has been demonstrated in the lungs of persons much exposed to the dust of grinding and stonecutting. Meinel found an excess of from 30 to 50 grains as compared with the lungs of those who were not exposed to the danger of dust. If hygienists believe that fevers are preventible, which are caused by an invisible, unknown agent, surely we should be able to diminish the terrible mortality among stonecutters and grinders, the cause of which may be seen and felt and tasted, as it hangs suspended in the air they breathe for hours every day in earning their bread. Why many workers, at trades of entirely different character, should have exactly the same average age at death, is a problem which is deserving of attention. Why should policemen have such very bad lives, an average of only forty-one years, the same as the bricklayer? Of 107 soldiers who died in Sheffield, the average age at death was only thirty-four, the same as among rollers, though the former are enlisted in the prime of life, are well fed, housed, and clothed, and have easy work, while the latter live under very trying conditions.

Self-acting Syphons.

In section G, Mechanical Science, Mr. [illegible] Field read a paper "On Self-acting Intermi[ttent] Syphons and the Conditions which determine the Commencement of their Action." He observed that in an extensive series of experiments which he tried some years ago on syphons with their outer legs dipped in water, he was much puzzled by finding that the quantity of water necessary to put a syphon of given bore into action varied in the most unaccountable way at different times. The only difference that could be perceived between the cases in which the syphon started and those in which it did not start was, that in the former cases bubbles escaped freely at the mouth of the syphon, whereas, in the latter case, under apparently the same conditions, very few bubbles came out. At last the idea suggested itself to him of making a portion of the syphon in glass so as to see what was going on inside the bend when the cause of the irregularity was at once discovered. Sometimes the water which passed over the bend adhered closely to the sides of the pipe, at other times a portion of it would fall more or less clear of the sides. When the water adhered to the sides it produced very much the effect in displacing the air, so that only a small quantity of air was driven through the water at the mouth of the syphon. When, on the other hand, the water fell clear of the sides, it produced a great effect in displacing the air, and large bubbles of air at once escaped from the mouth of the syphon. He pursued the investigation further by producing artificial irregularities in the pipe, and he then found the more completely he could throw the water clear of the sides of the pipe, the greater effect it produced in expelling the air and starting the syphon. The form of syphon which he had finally adopted consists of two concentric tubes, the outer one being closed at the top, and steadied and supported by three radial ribs projecting from the inner tube. The annular space between the tubes constitutes the ascending or shorter leg of the syphon, and the inner tube the descending or longer leg.

Stone Circle at Arbor Low.

Of the excursions, that to the stone circle at Arbor Low was one of the most interesting. The area of this circle, which is situated a few miles from Sheffield, and which is marked by rough blocks of limestone of various forms and sizes, ranging from 6 ft. to 8 ft. in length, about 167 ft. in diameter, and the stones, instead of standing upright, lie horizontally on the ground. Within the circle are some smaller scattered stones, and in the centre three larger ones. It is surrounded by a fosse and vallum, and on the east side of the southern entrance there is a large barrow. Sir J. Lubbock accompanied the excursionists, and wh[ile] paper in which the nature of these and [other] mains was clearly described, pointed out [that] conical tumulus known as Gibhill, at a [distance] of about a quarter of a mile to the west [of] Low, which he said was connected with [the] rampart of earth, adding that there could [be] doubt that Gibhill was a place of burial, that the original purpose of the circle was so obvious. Mr. Bateman had called it a temple, but the temple was the house of the deity, and even when perfect Arbor Low could scarcely be regarded as a house. Still the tomb was the house of the dead, so [that] a copy of the dwelling of the deceased, [with] obvious chain of ideas the tomb became developed into the temple. Even now, Sir J. Lubbock went on to say, the northern races of men built houses founded on the models of those of the dead. Having to contend with an Arctic climate, they constructed a subterranean chamber, over which they piled earth for the sake of warmth, and which for the same reason communicated with the open air, not directly, but by means of a long passage. In a few instances tumuli exactly resembling these modern houses had been discovered. At Godhavn, in Sweden, a [stone] grave had been opened in 1830, and the bodies had been found sitting, each with his implements, in the very seats which, doubtless, they had occupied when alive. Thus, in some cases that which was first a house at last became a tomb. So, again, the tomb in the end became a temple. The Khasias were a primitive people of India, who even now [erect] Megalithic monuments over the dead. The question, when the monument on which the hearers were standing was erected,

replied that he did not know, but that one day or other that question also answered. There could be no doubt, that many of our tumuli belonged to age; some were certainly Saxon, but character of the remains found in them disposed to refer those which clustered nehenge and Abury, and, consequently, ment before him, to the Bronze age.

MBRIAN ARCHÆOLOGICAL ASSOCIATION.

hirty-fourth annual meeting of this on was held in Welshpool last week, e presidency of Mr. C. W. Williams-.P., who, in his inaugural address, o the British camps and dykes which merous all over Montgomerysbire. Of mps and roads, also, there is, he said, The nomenclature of the county also a passing word. In addition to its descriptive character, it has other g features indicative of very primitive irst, Afon (boar), Twich (boar), Banw och (pig), Colwyn (badger), Nant-yr-i), Cathau (cats). Second, historical—ddan, Llanerch Frochwel, Clawdd Llesg eg), Maen Beano, Fridd Faldwyn, adoc, Fridd S. John. Besides these ome the founders of churches, as adwan, Gwyddfarch, Cynfelyn, Gar-ynog, and others. The churches of the are fast disappearing, and the curious en belfry is being superseded by the ver and spire. Amongst the most xamples, however, of wood, with wattle are Trelystan and Melverley. *Pre-* a piece of arcade in Meifod church.—Meifod, Llandrinio, Llanfechain. (This remarkable as having no east window, three very narrow lancets in the east *arly English:* Montgomery, Chirbury, n Llanidloes.—*Decorated:* Welshpool, (a beautiful oak ceiling), recently by Mr. Street, mainly through the ice of Captain Mytton and the Earl of Rood-screens are numerous and beauti-e at Newtown, Pennant, Welshpool, , Llangurig, and Llangyniew, are worthy of notice. Shrine at Llanerfel, t Montgomery, Pennant, Llanfair; in um from Berriew, in brass. At Bettws, ouses, commonly called half-timbered, ient, and some of important size; on, Lymore Park, Llyssin, said to have residence of Lord Herbert of Chirbury; m old hall, Perrhos, Pontyscowhyd, y other considerable ones which have o farm-houses. *Monastic associations:* s of Llanllugan and Pennant and others. sident then went on to enumerate the antiquities which would be seen xcursionists during the week. On their leifod they would pass an important wich Deddan. Some of the visitors ubtless extend their wanderings from ross the river to the bold hill which the name of Allt-yr-Dner, or An-Hill. There are traces of a British, an, camp, on its west side, and rious shallow holes dug in the rock supply of the small garrison. Who orite is from whom the hill takes its natter of conjecture, not certainty, but r is disposed to identify him with rch, the first founder of the Church. self offers but little to arrest attention, be the church. During the process of g a false ceiling, of comparatively ate, and laying open the old timbered ios of fresco work became visible in the lose to the east window, to which Mr. he architect who superintended the on, was disposed to assign a date not later thirteenth century. But the present low, some three centuries later, which placed three narrow lancet ones, like Llanfechain, had obliterated so much gures, and damp and decay had effaced more, that there was only a trace ng. Attention would be directed to an coffin-lid in the church, and also to a Norman arcade and a column which elonged to a different and earlier fabric present, and which were accidentally to light by the falling of some plaster he recent work of restoration. Mr. ssigns these to the first church (St. and to a date certainly anterior to 1154, when St. Mary's Church in Meifod is stated in the But-y-Yorwysagion to have been consecrated. Meifod was supposed at one time to have been the site of the Roman station at Mediolanum, and traces of Roman work have certainly been found at Mathraval, the site of the palace of the Princes of Powys. To this spot the Princes of Powys, when vanquished by Offa, King of Mercia, bent their steps, and towards the close of the eighth century built or enlarged the castle. Its walls comprised an area of upwards of two acres, and for 400 years it was the seat of government, paying an annual tribute, however, of four tons of honey to the Prince of Gwynedd. Rhodir Mawr was the first occupant of this regal residence, and here in later generations Meredydd ap Bleddyn divided his kingdom into Upper and Lower Powys. But its most celebrated possessor was, perhaps, Owen Cyfeitig, eminent as prince, lawgiver, poet, and orator, and here he dwelt till he retired to his own abbey of Ystrad Marchell, and became a monk. To those acquainted with the already half-forgotten poets of the early part of this century, the name of Mathraval would at once recall Southey's noble poem of "Madoc," the opening scenes of which are laid there. Robert de Vipont, the Norman chieftain, who held the castle for King John, was besieged here by the Prince of Gwynedd in 1212. Near Llanwddyn, a village which it was proposed to drown out to make a gigantic reservoir for the supply of Liverpool with water, was a remarkable spot, Bwlch-y-Paul, the boundary of Powys-land, and the established place of arbitration by the Princes of Powys in any dispute that arose between Gwynedd and Vyfed. The President brought his review of the local antiquities to a close with some remarks on Montgomery and Dolforwyn Castles.

Professor Babington moved a vote of thanks to the president for his address.

Mr. M. H. Bloxam, in seconding the motion, congratulated the town of Welshpool upon the excellent museum it possessed in connexion with the Powys-land Club.

The annual report, read by Mr. Trevor Owen, stated that it was twenty-three years since the Association met in Welshpool. A vigorous offshoot of the Association, the Powys-land Club, had, however, sprung up in the town, and was doing much in the way of illustrating the history of Montgomeryshire, and there existed a local museum of great interest, due mainly to the exertions of Mr. Morris C. Jones, secretary of the Powys-land Club. The number of members continues to be satisfactory, but the committee announce with regret the resignation of the Rev. D. R. Thomas, who had held the office of editor and general secretary since 1875. Within the last twelve months the Association had lost two very old members, by the decease of the Very Rev. Llewellyn Lewellin, Dean of St. David's, and the Rev. T. James, M.A., vicar of Netherthong.

The report having been adopted,

The Rev. D. R. Thomas read a paper on "Wattlesborough Castle," contributed by Mr. Stanley Leighton, M.P., who was unable to be present. Situated midway between Alberbury Castle and Caus Castle, Wattlesborough was, the author remarked, well fitted to form a link in the chain of border fortresses which in this neighbourhood commanded the Marches of Wales. The general appearance, however, is a little disappointing, for it is wanting in some of those features of picturesqueness which lend a charm to manor-houses of far less ancient date. The principal building consists of a simple square tower, about 50 ft. high, with flat Norman buttresses. The battlements and corner turret, which probably once surmounted the walls, have been removed, and a modern roof has taken their place. The existence, however, of the weather mouldings on each face of the opposite internal walls immediately below the present roof and the set-back of the wall at the springing of these gable-mouldings in the other walls, may indicate that the original termination was a gable one. The massiveness of the stonework of the tower, and the clean-cut masonry of the circular stone staircase, are worthy of notice. The walls are 6 ft. thick; the angles are finished with broad, flat buttresses, 6 ft. wide and 10 in. deep. Including the basement, the tower is divided into three stories. On the south side only the original windows remain; they are narrow square loops. On that side, also, may be observed an example of the roughness of the early conditions of English life, in the existence of a drain, issuing through an aperture in the thick wall, from one of the principal rooms. On the three other sides windows in the later Gothic style have been inserted. On the western side may be seen the remains of a garderobe, another indication of an inconvenient simplicity of manners and closeness of quarters. On the northern side a wing, ancient indeed, but added a century or more after the date of the original tower, is still standing, the small buttress at the end of which appears to be of the fourteenth century. The wing itself is dilapidated, and shows signs of frequent old alterations. In the north-east corner of the main building the circular staircase winds up within the buttress, commencing with the first floor and continued to the roof, but having no communication with the basement; nor does there appear ever to have been any. There is, however, on the first floor, a good sized circular-headed, double chamfered door, enclosing a square-headed lintel opening internally, on which it appears to have been secured by a strong bar, the holes for fixing which remain. The inference is that this formed the real and only entrance to the tower, and was approached by an external staircase, all traces of which are lost in the present farmhouse constructed out of the old materials, which abuts on the tower on the eastern side. In the parlour of the farmhouse may be seen some panelling of Elizabethan character. In each of the upper floors is a fireplace. They are square-headed and plain, the lower one only having a shallow moulding around it. These are probably of the fifteenth century. There is no stone vaulting.

On the second day there were carriage excursions to a number of churches, castles, and other antiquities, and at the evening meeting held in the Town-hall on the return of the excursionists to Welshpool, Professor Babington gave a sketch of the work done during the day. He said that when they started there was every appearance of a wet day, but they had been most agreeably disappointed, for the weather had been delightful. They went to Buttington Church first. The chief thing here was the curious font, which had, there was no doubt, been the capital of a column. In the west window there is some glass, and he thought it might have been arranged very differently, and better than it had been. He was also attracted by the yew-tree, which was a very fine specimen, but he had seen a larger one recently in Derbyshire. They were informed that a large number of human skulls,—upwards of 200,—had been found in a pit in the churchyard; these evidently pointed to the great battle which took place near that spot between the Danes and the English and Welsh. They then passed on to the tumulus at Great Woollaston, and some doubt existed amongst those who inspected it as to its object, but it was a well-known fact that such tumuli were used for military purposes. The chief, no doubt, threw it up, and put a stockade of timber around it. The visitors then went inside the church to see the mural brass commemorating the death of Old Parr, who was said to have lived 140 years (the age on the brass is given at 152 years 9 months); it was a matter recorded, and they must take it for what it was worth. The remains of Wattlesborough Castle were next visited, and then Alberbury Church, Castle, and Priory. The style of these buildings seemed Norman, but the church had gone through a great many changes. The windows were strong, but the tracery seemed as if it had been rubbed off, but it may not have been so. The church had been rebuilt, the south aisle being built in the fourteenth century, and was built after the other part by the monks for their own purposes. It was curiously marked by beams detached from the roof. It would seem that it was giving way at one time, and was strengthened in this manner. At Llandrinio Church, next visited, there were traces of a north aisle, and of the church being larger than at present. To ascertain correctly about the former existence of a north aisle, it would require extensive excavations to be made.

Some discussion having taken place, the Rev. J. Davis, prebendary of Hereford, read a paper on "The Breiddon Hills and their connexion with Caractacus."

On the third day there was an excursion by rail to Oswestry, and thence by road to Whittington Castle. At Oswestry, the Rev. Canon W. Howell Evans, the vicar, read an interesting address, in the course of which he said: There can be but little surprise that so few architectural remains of an early date should be found

in Oswestry, when we remember how for centuries the almost ceaseless ebb and flow of war and strife swept over the whole of the district. Of the earliest church that existed here, there is no certain record or knowledge. No doubt the monastic system prevailed here in the fifth century, as it did throughout Wales; for how thoroughly it was developed amongst the British, who at that time occupied this broad land of Meisic, we learn not only from the celebrated monastery of Bangor-is-coed, only a short distance from Oswestry, but also from the well-known fact that the founder of the great monastery of Clonaid, in Meath, and the regenerator of Ireland, St. Finnian, was trained amongst the British, and went forth from them. But we approach firmer ground as to the connexion of Oswestry Church with that old Celtic Church, which was independent then, as we are now, of Rome, differing from it in many of its customs and traditions. Oswald, to whom the church is dedicated, after the defeat and death of his father, Ethelfred (destroyer of the monks of Bangor), found safety in the monastery of Iona, and was there trained up in the Christian faith and baptised; so that when he had gained his kingdom, and desired to instruct his people in Christianity, it was from Iona that he sought teachers, of whom Aidan was bishop, Lindisfarne being their monastery, and where in that fatal year of 642 he set his forces in battle array against heathen Penda, somewhere near Maesyllan, and erected the cross to invoke God's blessing. It was doubtless as near as possible to the spot where the cross had been fixed that they reared the new buildings to the glory of God, connecting them for ever with the memory of him whom they regarded as a martyr king. About 777 the tide of war must have again rolled over this district, when it was taken from the British by Offa and made part of the kingdom of Mercia, only to be won back when he was defeated and slain. Then thick mist settles down upon all this land, until, in the eleventh century, the Church of St. Oswald rises up before us in all its fair proportions. Of that building nothing remains; all has passed away. We next find it known as Blanc Minster, Candida Ecclesia or Whiteminster, or the Church of Albrun Monasterium. In 1277, Edward I. surrounded the town with walls, and in August, 1284, the whole place must have been full of stir and bustle, for Bishop Anian and his clergy assembled here to receive the Archbishop of Canterbury (Peckham), who, with all the pomp and religious ceremonial of that age, commenced in this church his visitation of the St. Asaph diocese. Perhaps it was soon after these events that some work of restoration was done, and the nave at least rebuilt, and re-aisled, for the pillars and arches at the extreme west end of this church, which existed before the last restoration, might have been built about this period, being Early English in character, whilst the tower, with its windows and arches for spire, was evidently built about 1300,—an undertaking, we might have expected, as the result of these visits if the church had been, as it probably was, seriously injured during the preceding wars. Somewhat later on still, we may suppose, the north chancel aisle was built, *i.e.*, if the present windows are, as I believe is the case, correct copies of the old. The Welsh, under Owen Glyndwr, attacked and burned the town in 1400, and in 1403 assembled to join Lord Percy (Harry Hotspur) in his rebellion, but too late to be of any use. Again, probably, the church was injured, and when peace was established, and the inhabitants had recovered their losses, the work of restoration went on; the chancel, arches, pillars, and east window being of fifteenth-century date. When in Henry VIII.'s reign, 1540, Leland visited Oswestry, he says that of the monastery the cloisters alone were left in the memory of persons then living. Of this church he writes that "it is a very fair ledded church with a great tourrid steeple." There are some interesting data about this time which make it clear that there were special chapels in different parts of the church, although their position can only be guessed. Pennant assumes that part of the church was destroyed about 1616, and the Yale Monument (1618) speaks of St. Mary's chancel as demolished in late wars. What this destruction was it is difficult to say, but certainly the fine specimens of debased windows in the north chancel aisles may have been built about this period—perhaps at the same time as the lych-gate, the date of which is 1631. Was the old north transept window also of this period? I mean the one which existed up to a comparatively recent date. If so, it would almost appear that at this time the north transept was destroyed. In 1644 the Royalists, who garrisoned the town for their king, fearing lest the enemy should make use of the tower of the church to command the walls, pulled down the upper part of it (Gough says leaving the part where the bells hung) levelling it with the church (Terrier, 1685); and also destroyed the middle part of the building, leaving the east end standing. How much the church must have suffered we can judge from its condition before the late restoration by Mr. Street. For though Humphrey Wynn, the rightful vicar, who had been deprived in 1650, that Rowland Nevett might be inducted, was restored in 1662, and in the time of his successor (Richard Edwards, 1664–1680) efforts were made to rebuild the church, and much was done; the tower, for example, at great cost was built as it now stands, and the whole church prepared for worship. Yet the pillars of the nave were but masses of rough masonry, and the roof and arches of the meanest character possible, and this throughout the whole of the nave, aisles, and transepts, with the exception of two or three pillars at the west end. For these repairs a brief was granted in 1675, their cost being 1,500*l*.

The subsequent proceedings of the Congress included excursions to Powis Castle, Garth, Guilsfield, Garthfawr, Bwlch Æddan Camp, Clawydd Liesy dyke, Llanfair, and Montgomery.

ARCHÆOLOGICAL SOCIETIES.

Shropshire.—The annual excursion of the Shropshire Archæological Society takes place on Monday next, the 8th inst. Among the places to be visited are Berrington, Pitchford, Acton Burnell, Langley, the Roman Causeway, and Condover. The annual dinner will take place at the Lion Hotel, Shrewsbury, the same day.

North Staffordshire.—The fifth excursion of the season of the North Staffordshire Naturalists' Field Club and Archæological Society took place on the 21st ult. Leaving Stoke by train, the excursionists proceeded to Macclesfield, and thence to Bramhall Hall. The manor of Bramhall was held by Matthew de Brameall, in the time of Henry II., 1160, and in 1375, *temp.* Edward III., it passed into the Davenport family. Two years since the hall and the estate were sold to the Freeholders' Company (Limited), Manchester, and the estate is to be disposed of for building purposes. The hall is one of the principal of the half-timbered houses characteristic of Cheshire and the adjoining counties. It is a fifteenth-century building, and a portion of the hall as originally erected still remains standing. The party next proceeded to Prestbury Church, the mother church of a parish comprising no fewer than thirty-two townships, including Macclesfield, extending from Stockport parish on the north to Astbury on the south, and embracing an area forty miles in circumference. In the eastern portion of the burial ground stands a small stone structure of Norman erection, excepting the original Saxon doorway, which remains in a comparatively perfect state. The little Anglo-Norman edifice being ill-adapted for the gorgeous ritual which was coming into use at the beginning of the thirteenth century, the erection of a new and more imposing structure was commenced, which is in several stages of architecture. Mr. Croston, one of the churchwardens, conducted the party through the edifice, supplied several of the visitors with pamphlets relating to the history of the church, and describing the edifice and the alterations which have from time to time been made in it. An effort is now being made "to repair the fabric and restore it to something like its original comeliness." Indeed, the restoration of the north aisle is already in progress, and Mr. Wardle expressed his regret at noticing the Gothicising of this seventeenth-century piece of work of good proportions. He hoped that with this, as it seemed to him, unfortunate alteration, this beautiful and interesting church might be spared the further proposed restoration. On leaving Prestbury, the excursionists proceeded to Macclesfield for the purpose of seeing St. Michael's Church, or the Chapel of St. Michael, as it was anciently called, owing to its depending on the mother church of Prestbury. It is the oldest of the existing buildings in the town. It was founded by Edward I. and his Queen, Eleanor, in 1278. The interior consists of a nave, two side aisles, and chancel. It tower (and formerly had a spire) contain bells. But the visitors were principa terested in the Rivers Chapel adjoini church, and formerly communicating wit a door which is now blocked up. The ch an interesting structure in the later s English architecture, with a turret of stages, through the lower of which an arched gateway, highly enriched with and other architectural ornaments, leads i chapel. The chapel was founded in 1 Thomas Savage, a native of the town, w came successively Bishop of Rochest London, and Archbishop of York. It c several fine monuments, including one memory of Thomas Savage, Earl Rive died in 1694.

TELEGRAPHIC PROGRESS.

OFFICIAL statistics enable us to take a measurement of the progress achieved neighbours. The telegraphic wires esta throughout France will reach by the end current year the immense length of kilomètres. At the fall of the Second there were 114,000 kilomètres in existe that in eight years 57,500 kilomètres of n will have been created. During this less than 13,000 kilomètres of line will structed, while the average increase du previous years amounted to only 5,000 kil annually. This is progress of a most p character, which will not fail to incre popularity of the present Government cularly as the lines have not only been in in number, but the cost of sending m considerably decreased. Thus last year than 11,019,218 messages were transmi telegraph, which shows an increase 52 per cent.; a fact showing that the p which made the penny post so great a applies also to telegraphic communicati the end of this year Paris will have line of telegraphic wires to each capita eighty-four departments, not to me number of large towns. With reg foreign communications, there is a dir between Paris and Amsterdam, Antwerp three to Berlin, one to Berne, Braganza to Brussels, one to Cologne and Flore to Frankfort, one to Geneva, nine to Lon to Metz, Hombourg, Milan, Mulhouse, Strasbourg, Turin, and two to Vienna. is also a direct submarine line between and Marseilles. Finally, we should ad without counting Paris, there are 4,8 graphic offices in France.

SEA-WATER AND THE LIVERPO WELLS.

MR. T. MELLARD READE, well-know civil engineer and architect practising i pool, is a geologist and a member of the Association Committee for inquiring i circulation of underground water, a therefore, some claim to be heard in the question, "Will the sea-water af Liverpool well supply?" He writes:—

"It is a favourite argument with th deprecate our water supply being tak the New Red Sandstone, that as the w pumped down the drainage of the rocks reversed, and there will be a gradual i salt water from the river. To those interested in the question I would recom visit to the South-End docks, now bei structed. The Herculaneum Extension now separated from the Herculaneum a wall of natural rock about 500 ft. lo 60 ft. wide at the high-water level. At tides there is a head of salt water up in the present dock above the bottom excavations of the new dock. The am salt water that finds its way through i excavations, I am informed by the clerk works, could all be taken by a pipe diameter with a head of 8 ft. Whet estimate is correct or not, it is plain to that this wall of red sandstone is pra impervious to the salt water. What ma fact so very interesting is that the wall is not faced up with masonry on either s it is traversed by two transverse faults, as consisting of the most porous, broke have seen. The rock is so bad as to be, ing in a few bands, utterly worthless for

Sandstone from a similar forma- Keuper, at Runcorn, is actually being he masonry, while the rock from the ns is taken out into the Irish Sea by ges and there dropped to the bottom. ing of these interesting facts on our ly is obvious and interesting. While g no opinion about the capacity of Red Sandstone for supplying our ants, it appears to me to conclusively we need be apprehensive of no influx ter to our present wells, which are an a mile from the river, and also to od grounds for thinking that the new ottle, even if pumped down to 300 ft. surface, may not be affected by the absence of percolation of sea-water e remarkable as at the lowest point cavation a spring of pure water was which ran for nine months and then stopped. As a practical geologist I dvance any theory on the subject, but ou to lay the facts before the public."

REPAIRS OF THE WATERLOO BRIDGE APPROACHES.

quisition of Waterloo-bridge by the tan Board of Works is likely to lead to as to the authority liable for the cost of he roadway of the northern approach in he opinion of counsel has been taken tter, at the instance of the Metropo- d of Works, and this opinion is to the the Strand District Board of Works to keep up the approach roadway, and Metropolitan Board are entitled to the derneath, and to all rents accruing . This opinion appears to be directly o the views of the Strand Board, who hat the approach is a part of the d ought, therefore, to be maintained etropolitan Board of Works, to which bridge belongs. It seems that the the approach involve an outlay of . a year, and, believing that they are for this expenditure, the Strand Dis- d have determined to take the highest on on the subject, which will include e Attorney-General and other eminent

ARBOUR WORKS, DOUGLAS, ISLE OF MAN.

w pier at Douglas has been opened for *Times* says:—Briefly described, the s are as follows: The first portion in me was the structure which since its has, by her Majesty's permission, d Queen Victoria Pier. This work om the shore at the south end of the Douglas, and runs about 1,100 ft. in a erly direction. It is 50 ft. wide at nd has a depth of 13 ft. at low-water es alongside the inner berths, and he outer, the respective depths at r being 34 ft. and 41 ft.; there is ccommodation for steamers on each ix sets of steps are provided. Queen ier was completed and brought into in 1872, and since that time the f visitors to the island has been creasing.

r pier, which serves also as a break- fording protection against the violent hich the bay is exposed, commences n the promontory known as Douglas starting-point being immediately old War Department battery; it has een known as the "Battery Pier," and which was opened last week. It is d on the south side of the harbour by supported by a concrete revetment rds of 2,000 ft. long, founded on rock, in some portions of its length to a 35 ft. above low water. Seaward of rbour this wall will serve also as a the accommodation of vessels. The Battery Point is about 1,000 ft. long, from the face of the quay wall last or nearly 900 ft. beyond the original line. This structure is of a massive and seems well adapted to resist the y seas to which it is exposed in south- rales. The outermost portion is of ory throughout, formed of heavy locks. To give an idea of its substan- cter it may be mentioned that this e work is about 55 ft. wide at the bottom and nearly 70 ft. wide at the extreme end; the total height of the solid masonry from the sea bed to the parapet is just 80 ft.; the depth at the inner berthage is 18 ft. at low water, and at the outer berthage 26 ft., the respective depths at high water being 39 ft. and 47 ft. At the northern extremity or head there is a concrete lighthouse tower. The focal plane of the red light exhibited in it is 52 ft. above mean sea level.

The works have been constructed entirely of Portland cement concrete blocks, from the plans of Sir John Coode, as engineer-in-chief, under the direction of Mr. William Powell, as resident engineer, and without the intervention of a contractor. The total cost has, it is stated, been but slightly above 150,000*l.*

CAUTION TO CONTRACTORS AND OTHERS.

On Tuesday, the Axminster bench of magistrates were engaged for six hours in hearing an action brought against Messrs. Ford & Son, timber merchants, of Gloucester, for injuring roads in the highway district, by reason of excessive traffic. It appears defendants were engaged in hauling timber, but, it was alleged, their timber trucks were overladen, consequently they cut up the roads to a depth of 9 in. doing damage to the amount of about 9*l.*, and were fined 5*l.* and 1*l.* 19*s.* 7*d.* costs.

Another merchant, of Colyton, Devon, for a similar offence, was fined 7*l.*, together with costs, 17*s.*, for doing damage to the amount of 13*l.* 7*s.* 2*d.*

MASTERS AND MEN.

Hull.—The Hull Master-Builders' Association on Tuesday last agreed, owing to the bad state of trade, to reduce the operatives' wages on the 1st of October next by ½d. per hour, excepting joiners, in whose case the reduction will be ¼d. per hour. Bricklayers and labourers are to be paid by the hour instead of day as at present, and the working hours are to be increased.

Glasgow.—The Glasgow plumbers commenced work on Monday last, on a reduction of ½d. an hour. The standard wage is now 7d., but in many cases as low as 6d. is paid.

Prizes, Manchester Society of Architects.—The report of the prizes committee on the students' competition for the present year states that the committee, some months ago, issued instructions to students for the competition for prizes to be awarded by the council during this session. The subject selected for the Society's prize was a series of drawings from actual measurements of portions of Ordsall Hall, Salford, which building was, at the request of the committee, at once placed at their disposal by the owner, Mr. Haworth. Applications were made for instructions by twenty-three students, and copies were issued to twenty-two of them, the other being ineligible. The subject selected for the prize placed at the disposal of the council, by Mr. James P. Holden, was a perspective study in light and shade in monochrome with the brush of some building in Manchester of Classic architecture, the latter prize being specially awarded for the purpose of encouraging the study of Classic architecture. As in former years, many applications for instructions were made, but few drawings were actually submitted. Four sets were submitted for the Society's prize, and three for Mr. Holden's prize. The committee recommend that the Society's prize be awarded to Joseph Percival, and that Mr. Holden's prize be awarded to George Rushworth for his drawing in sepia of the Theatre Royal, Peter-street. Generally, the committee are pleased with the drawings which have been submitted. The competition for prizes given by or though the council to the students of the Building Trades' Institute was held in May at St. John's School, Gartside-street. The committee now recommend that the first prize of two guineas, given by the council, be awarded to Charles Lawton; that the second prize of one guinea, given by Messrs. Ryle & Bennett, be awarded to Donald Hamilton; and that the third prize of one guinea, offered by Messrs. J. Holden & Son, to the student who should make the most satisfactory progress during the session, be awarded to Harry Bishop, whose name was supplied to them by the honorary secretary of the Building Trades' Institute and the teachers.

PETROLEUM IN GERMANY.

A Bremen company which has been boring for petroleum on the Lüneburg Moors, in Hanover, struck oil in the early part of this year at a depth of 180 ft. The supply since oil was first found has been from 8 cwt. to 10 cwt. daily, or altogether about 1,000 cwt. to 1,200 cwt. during the last four months. The gas which escapes from the hole is conducted by a pipe to the boiler which supplies the steam to the pumping-engine, and used as additional fuel. As, according to American experience, the inferior description of oil met with is looked upon as propelled by gases developed by petroleum below it, the company has driven a second hole near the first, in order to ascertain the existence of petroleum proper. Grease-oil (as it is termed) has been found at a distance below the surface of only 60 ft. The above facts throw an entirely new light on the many traces of petroleum in the locality, and give rise to a supposition that there are large subterranean stores of petroleum in Germany which only require tapping.

STONE *v.* CEMENT.

Sir,—Having read H. Faija's letter [p. 949] on concrete houses, allow me to say, in any system of concrete building the most important consideration is the proper admixture of the ingredients, a thorough incorporation of the matrix, and unless this is rigorously attended to much disappointment will be experienced. Architects and the public in general look on concrete with suspicion, through the many failures that have occurred in different parts of the country through neglect on the part of the builder, who in general trusts to a carpenter or a joiner to superintend the erection. In my opinion, a plasterer has a better knowledge of cement than any one else in the building trade, therefore I consider he is the proper person to superintend the erection of concrete houses: he has them to plaster inside, he has them to stucco outside, therefore, if he has an understanding of plans and a knowledge of the building apparatus, he is the fit and proper person to superintend the erection. Concrete building in general is carried on by the rule of thumb, without ever giving the ingredients a consideration. Let us look at the cement, as it is the principal ingredient, but, I am sorry to say, the least-understood. In ninety-nine cases in a hundred, the complaint is, it is setting too slow; the result is, an appeal to the manufacturer. He will inform you that he can supply you with some that will set faster. Let us take a walk to the manufactory, and see how it is procured. We will begin at the wash-mill, as that is the fountain-head. Who has charge of it? Is he an intelligent, careful, painstaking individual, weighing his chalk and clay to an ounce, keeping his mill and all its accessories in the best of order? If so, we will pass on to backs; but, previously to doing so, let us see if the slurry passes through a fine sieve previously to entering the backs; if not, I am afraid you will meet with small particles of chalk that will cause you a deal of trouble if you should use the cement for cast work. We will pass over the drying-plates to the kilns. We will presume they are drawing two; but, strange to say, there is a great difference in the colour,—the one is of a dark greenish colour, the other is of a reddish yellow, the dark being heavier than the light. How does this happen? "The fact is, we have a customer who is building concrete houses, and he wants it to set quick, so the light-coloured is for him." What is the result? He has got his cement; it sets first-class; he can lift his frames three times a day; but his roof is scarcely on when he begins to perceive there is something wrong; his walls are cracking and blowing in all shape and form. This is the result of half-burnt cement. He has now paid for his experience; he is now the possessor of a standing monument of his stupidity. Having paid for his experience, let him select a well-known manufacturer; get him to guarantee his cement to be of the best quality, weighing not less than 120 lb. to the bushel, and capable of maintaining a breaking weight of 420 lb. on an area of 1½ in., equal to 2¼ square inches, seven days after being made, and immersed six of these days in water. We will now presume we have got a good cement. Let us look at the other ingredients. The durability of the materials is an essential element for consideration; for

however good the cement may be, the matrix itself is really the portion which will eventually have to stand the greatest strain. A rotten or friable material is therefore to be avoided; shingle or gravel mixed with a limited proportion of sharp sand to fill up the vacuities of the compound will, when mixed in proportion of 5 of gravel and sand to 1 of cement, form an ordinary concrete; but for thoroughly good concrete I would recommend crushed materials such as granite chips, whinstone, limestone, slag from blast furnaces, old bricks, pottery refuse, &c. One of Blake's crushers will crush from thirty to forty tons per day. I would recommend "packing" in all walls over 9 in. in thickness, but I object to the way in which it is thrown into the frames in general. The packing should be good, clean, hard stone, or any other hard material properly bedded and incorporated in the concrete. I would recommend fire-clay lining to all flues, as this stands the heat better than the concrete. I would recommend concrete floors to all outhouses, kitchens, sculleries, pantries, passages, yards, greenhouses, coach-houses, stables, byres, and barns, the concrete to consist of three parts crushed granite, slag, or good hard brick to one of cement, laid on a bottom of broken stone or brick not less than 4 in. thick; the concrete should not be less than 1½ in. thick, well beaten down, and trowelled on the face. Speaking from practical experience, houses built of the concrete I have described, and properly carried out in detail, are superior to houses built of brick or any of the many soft perishable freestones, but it can never be compared to granite.

J. TAYLOR.

BOROUGH SURVEYORS.

SIR,—With all respect for your correspondents I offer you a few remarks on the Enfield surveyorship. It seems to me that, looking at the circumstance under discussion from an impartial point of view, that they (your correspondents) who object to the appointment of one who was once a builder, confine the great profession and history of engineers into the small compass of their own selfish minds, and it almost amounts to intimidation. Do not think, sir, that I advocate that unqualified persons should be appointed; but I fail to see that it is not in the power of a builder to qualify himself for such a situation, seeing that he must be possessed of much the same qualifications to properly understand and carry on his own business.

It has been proved in hundreds of cases that men of all ranks and trades have, by dint of perseverance, pushed themselves to the front in all professions, and the engineering profession in particular, against the bitterest opposition from many so-called professional engineers. The names of Watt, Stephenson, and many others, could be mentioned, who have made the greatest advances in engineering the world has ever seen. "Progress" says his qualified surveyor "should have a practical and *scientific* knowledge of building construction"; he can obtain such knowledge only from a builder or builder's foreman. And further, I ask, is it possible that a builder with a scientific turn of mind, and an inclination to follow out engineering, can fail to obtain the requisite knowledge in his daily experience? Any small duty he might not be up in would be quite overbalanced by his practical experience in another. It must not be taken that I mean that all builders, as a rule, would be suitable; but as it is the exception that a builder is appointed a surveyor, it is quite reasonable to assume that a few good builders could easily qualify themselves to be surveyors, as we often see surveyors turn builders and contractors.

P. H. D.

SANITARY BYE-LAWS.

SIR,—The enclosed report will give you some idea as to the mode of conducting sanitary business in Malton.

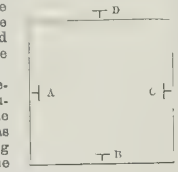
An architect in the town has, prior to the appointment of the new surveyor, held the office of inspector of plans and buildings, a separate man being surveyor of roads. They have recently appointed a surveyor competent to discharge the duties appertaining to both offices. He has evidently found himself in a hornet's nest, as plans have apparently been passed contrary to all sanitary principles and their own bye-laws; and he very properly brought such cases before the Board, and the chairman had to resort to arguments which, to sanitarians, are questionable, and an additional plea for further legislation with respect to the power of surveyors, who are desirous of doing their duty and have a care for the public health.

If you can in any way promulgate such views, and at the same time stimulate such Boards to exert themselves in the right direction, you will confer a boon on those who are in any way interested in sanitary matters and the public health.

A YORK SANITARIAN.

THE ORDNANCE SURVEY PLANS.

SIR,—I have met with instances in which these plans, 25·344 in. to the mile, and the quantities, have been used without correction; therefore surveyors and solicitors cannot generally be acquainted with the fact, that in all cases the lines are drawn and the quantities calculated to the centre of the divisions, be they walls, fences, hedges, or streams; therefore, in adopting the survey for the plan of an estate, each enclosure must be gone over, the divisions carefully marked, to show to which side the ditches belong, and the quantities altered by the addition or subtraction of the area of the ditch, as the case may be. Thus, suppose a field enclosure, surrounded by a hedge and ditch, drawn, say 10 chains square on the Ordnance plan, having the fence belonging to it on three sides, A, B, and C, and on the fourth, D, to the adjoining enclosure.



The Ordnance references would be calculated to the centre of the fence, and be given as 10 acres; but taking the mean width of the ditch as 6 links, the actual area would be 10·120=10 a. 0 r. 19 p. (without going into fractions), thus,—

Quantity for Ordnance reference	A 10·000
Plus 3 chains × 6 links for the ditches beyond, A, B, and C	180
	10·180
Minus ditch inside at B, 10 chains × 6 links	60
Actual area.....	10·120

Knowledge of this is most important, otherwise the asserted area of an estate (say for sale) might be shown to be in excess of the actual quantity, and be the cause of litigation, or it might be shown less, to the detriment of the vendor, both being dependent upon whether the greater proportion of the outside boundaries belong to the estate or not, in either case causing much trouble and confusion hereafter.

SURVEYOR.

AN ARCHITECTURAL EMIGRANT'S COMPLAINT.

SIR,—At a time like the present, when emigration on a large scale has begun, and, owing to the general depression of our manufactures and agricultural interests is likely to increase, a few remarks from an emigrant may not prove uninteresting.

My passage was for Sydney in the steamer *City of London*, chartered by the Orient Steam Company as an extra ship, and not one of their regular passenger steamers; this was owing to two causes,—first, the extra emigration for Australia and New Zealand; and secondly, the great exhibition at Sydney to open on the 1st of September.

The ship was a fine, large, and seaworthy one, but not built as a passenger-vessel, having traded between Glasgow and Calcutta as a cargo ship, with accommodation in the saloon for a few first-class passengers. In consequence of the number of applications for passages this ship was chartered but a brief time before sailing, and it had to be hastily fitted up with berths for passengers, both open and enclosed bunks. In this latter respect the steerage passengers had the best of it; there being no compartments in their fore part, the light from the portholes was enabled to be distributed more evenly than in the middle hold, which was filled with partitioned berths and a gangway down the centre, in which were fitted the mess tables, the consequence being that at meal times on a dull day it was pitch dark, and people had to grope for their food with their fingers, until, chancing to see the captain down one day, I pointed it out to him, and he ordered a couple of candles to be lighted during meals in the worst position.

Concerning the additional fitments to the vessel,—from a cargo to a passenger one in the cooking and w.c. accommodation,—a very inadequate and meagre supply was given. Its original offices for first-class passengers and crew were liberal, while for the purposes of a large number of emigrants, a passengers' galley, 12 ft. by 7 ft. 7 in., was considered sufficient, with a very scanty supply of cooking utensils, and only two cooks, the consequence being frequent delays and petty troubles in the serving out of meals. The adjoining saloon cookery was 14 ft. 6 in. by 7 ft. 3 in., with two cooks for thirty-five passengers.

It was in the w.c.'s that the worst feature of an hastily-fitted up vessel was shown. These were built so low that no one could stand upright in them, while so narrow that a stout person could not enter them, and after a week's endurance of the nuisance a few of the passengers obtained the captain's leave to alter them by doing it themselves. This was done by reversing the pitch of the roofs, and leaving the increased height for ventilation at the back, which had been overlooked. There were no urinals.

My object in writing this is to fix the blame on the right official. The "Plimsoll Act" of Parliament requires every emigrant vessel to have proper accommodation for a certain number of passengers. This vessel conveyed over 500 emigrants, yet was the cooking and w.c. accommodation not suitable for more than one-third that number; and that any Government inspector should have passed this vessel as being adequately fitted for such a number of persons convinced all on board that the observance of the Act of Parliament is more of a farce than a reality.

J. B. WATTS.

Cape of Good Hope.

CHURCH-BUILDING NEWS.

Tardebigge.—The parish church of St tholomew, Tardebigge, was reopened 22nd ult. after extensive repairs and alte The alterations consist principally addition of a new chancel and the rese the body of the church. The present was built in 1777, and the old chancel w better than a recess about 10 ft. long. been taken down and a new chancel of e area, having an apsed end, has been er harmonise somewhat with the style church, which is of an Italian characte ceiling is divided into panels by moulde ribs, and the moulded projecting wall supported by a series of carved stone The walls are stuccoed, the portion wi altar-rail having a tiled dado of rich Strings of similar material give relief walls above, and the floors are also la tiles of neat and approved pattern. Th the chancel is fitted with open benches carved ends, and will provide for abo sittings. The organ, which formerly oc place in the western gallery of the n been removed and improved by Mr. Ni of Worcester, and placed at the north si chancel. The fittings are of fir timb bench ends being of pitch pine, and th is varnished. The tile work is in acc with the designs of the architects, Henry Rowe & Son, of Worcester, carried out by Messrs. Maw & Co. tractor was Mr. Thomas Collins, of bury. The cost of the whole of th was about 2,000*l.*, that of the chancel including all fittings, being defrayed Windsor.

Greenhead.—Greenhead Church has opened, after alterations and restoration church has been re-floored and re-seat new vestry has been added, and at the of the building are three stained glass from the establishment of Mr. Kemp, of The ceiling is intersected with ribs an and it and the whole of the fittings pitch pine. Amongst other improvem chancel has been laid with red an Mansfield stone by Mr. R. Beall, of Ne Messrs. Dinning & Cooke, of Newcast supplied the heating apparatus, and R Routledge, of Consett, contracted for th work, which has been carried out un supervision of Mr. William Glover. the boundary walls, the total cost of is about 1,200*l.* Messrs. Austin, John & Hicks, were the architects.

Hockley Heath.—The foundation-ston new church of St. Thomas Nuthurst, Heath, near Knowle, has been laid. edifice will be the church of the newly parish of Nuthurst-cum-Hockley Heath site is situated within a short distance of Bridge. The structure comprises a na south porch; chancel, with organ-cham choir-vestry, also on the south-side, which the heating-chamber is situa tower, in the lower part of which is th vestry, with separate entrance, rises, with a belfry and spire at the angl nave and chancel on the north sid building will be very substantiall chiefly of red brick, with grey st moulded-brick dressings, the interior of being lined with buff pressed bricks thr The nave roof will be covered wit Broseley tiles, and divided internally bays, with principal timbers and exposed, but plastered and coloured The roof of the chancel will also timbered, the seating of red deal, sta varnished. Accommodation will be pro a total of 202 persons. The chancel paved with encaustic tiles, and the filled with cathedral-tinted glass in lea lights. Messrs. Barnsley & Son, of ham, have taken the contract at the 2,123*l.* The architect is Mr. John Birmingham.

Liverpool.—The church of St. Ste Martyr, Crown-street, erected some y from the designs of the late Sir Gilbe is about to be removed and rebuilt u direction of Messrs. T. D. Barry & Sc tects, on a new site in Grove-street, i quence of the opening up of the presen tunnel, over which it stands.

Crediton.—Mr. Dart, builder, of th has, during the week, been engaged in the old roof timbers, and plastered ceili

ancel aisle of the parish church. A new is to be substituted, of oak, moulded k, and carved bosses. The work is e superintendence of Mr. Hayward, Exeter.

Man.—The foundation-stone of a new r the parish of German, Peel, has just . The old church is of great age, and ained as being unhealthy, owing, it is the graveyard being fully 3 ft. higher body of the church. The new church, ill be in the Early Decorated style, ected from designs prepared by Messrs. Barry & Son, architects, Liverpool. It d to accommodate about 900 persons, cost about 5,000*l.*, exclusive of the spire, which can be added at a future cost of about 1,500*l.* There are two urches in progress in the Island, one at s and the other at Patrick, from y the same architects.

—A new church, dedicated to St. new, was consecrated at Bolton on the The church, which is designed to adults, stands at the junction of reet and Nelson-street, and has been rom the designs of Messrs. T. D. Barry architects, Liverpool. It comprises ft. 4 in. by 27 ft. 5 in.; chancel, 28 ft. 5 in.; south transept, 31 ft. 10 in. by uth aisle, 66 ft. 6 in. by 11 ft. 11 in.; le, 93 ft. 4 in. by 11 ft. 11 in.; organ 15 ft. by 15 ft.; vestry, 15 ft. by orches at the west of the north aisle e south-east corner of the transept, chamber under vestry, &c. The nave rth side is divided from the aisle by of seven lofty arches, supported on ed granite columns, having moulded es, and moulded and carved capitals. de supports the clearstory, which is ly seven two-light tracery windows. outh side there is a similar arcade of s and a lofty transept arch, supported additional granite columns. Under roof principals are circular ribs, and timbers behind the principals are sup- y stone shafts with carved capitals. ior stonework is Bath, except the caps s of the nave columns, which are of e. The walls are built of local rubble inner lining being of brick, and the ng of parpoints in courses. The style ted. The stonework and brickwork n executed by Messrs. Aspinall & ; the joiner's work in the roofs and by Mr. Silas Seddon, Little Lever; and painting by Mr. Abraham War- t. Helen's-road; glazing, by Messrs. lands & Co., Liverpool; and the gas- by the Gas Department of the Bolton on. Mr. Kelly, of Halliwell, has acted of the works. The total cost of the s been about 9,000*l.*

.—On the 25th ult. Mr. R. W. Han- ., laid the corner-stone of a chancel all Church. A new vestry and bap- e to be likewise added to the church. bsequent luncheon, the honourable laimed for Bagnall no little distinction ng the scene of the destruction of a f Saxons by William the Conqueror; ing been the residence of Bishop Bull; s the place where the art of glazing as discovered.

g Use of His Time.—An American e *New Haven Register*) gives a curious t a workman, by birth a Swede and by n an ironmoulder, who, so far from o cut his day's work short, can with be induced to leave off. His usual bour is from four in the morning until night, without even the usual knock- als. As of course he is obliged to eat , he economises his time by keeping a up on a bench above him, placed on a his mouth, so that when he feels in- grasps the rim of the bucket with his , throwing his head back, drinks what s, while his hands are busy with his The same performance is gone with his loaf of bread, which is cut nvenient mouthfuls. The extreme r a first-class artisan at this branch are 120 moulds a day, but this industrial makes nothing of turning moulds. Half a dozen such workers fatal to the passing of a short-time y country in the world.

DISSENTING CHURCH-BUILDING NEWS.

York.—A new chapel for the Primitive Methodists is being erected on a site near Victoria-bar, York. Mr. William Peachey, of York, is the architect. The chapel, which is intended to seat 900 persons, is in the Renaissance style, carried out in red and white pressed bricks, with a little terra-cotta. The following are the contractors for the work, viz.—Mr. Barry for the excavator, bricklayer, mason, slater, plasterer, and carpenter and joiner's work; Mr. Shouksmith for the plumber, gas-fitter, and glazier's work; Mr. M. Bousfield for the smith and ironfounder's work; and Mr. G. E. Boynton for the painting; the total amount being 2,612*l.* 10s., which, with the site, will entail a total expenditure of about 3,000*l.*

Wick.—A new church for the U.P. congregation in Wick was formally opened on the 1st ult. The building has been erected at a cost of 4,300*l.*, from designs by Mr. Mackintosh, architect, Inverness.

Ludlow.—A new Wesleyan Chapel has been recently opened in Broad-street. The building is in the Italian style, in red brick, liberally treated with Bath-stone dressings. Mr. Ranger, of Finsbury-pavement, is the architect, and Messrs. Nevett, of Ironbridge, are the contractors. The entire outlay will exceed 4,000*l.*

Kippen.—A new church for the Free congregation at Kippen, Stirlingshire, has been opened, the congregation, which is ministered to by the Rev. Patrick Thomas Muirhead, having outgrown their church. The building in which Mr. Muirhead has for so many years gathered around him an active living congregation, was for long esteemed quite suitable for the district, but latterly the feeling began to grow that if the Kippen Free Church was to keep pace with the times, there must be a new place of worship, one more in harmony with present day taste, and having all the comforts of the modern structures springing up around. This feeling ultimately found expression in an application to the Free Presbytery of Dunblane for sanction to set up a new building. The contemplated change was cordially approved of. Plans of a building, estimated to cost about 1,900*l.*, were procured from Mr. F. Mackinnon, architect, Stirling. The church is built in the Early English style; the coursers and square rubble are of the local stone, of a red colour, and the hewn work white. A tower and slated spire rise to a height of 90 ft. from the ground, and, in consequence of the elevated position of the site, are visible from a considerable distance around. The lower part of the tower has been arranged as the principal entrance to the interior, from which there are other two doors intended as additional exits. The measurement of the interior is 60 ft. by 31 ft., and there is a high-pitched timber roof open to the ridge. The seats provide accommodation for about 290 sitters.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Clonoulty.—A new church has been completed at Clonoulty, Co. Tipperary. The windows and door dressings are in the solid limestone of the locality. The roof is open-timbered, of pitch pine. The architect is Mr. Daul. J. Freeman, of Dublin, and the entire works have been carried out to completion by Messrs. Wm. Connolly & Sons.

Salford.—On the 9th ult. Dr. Vaughan, Roman Catholic Bishop of Salford, laid the foundation-stone of a new Roman Catholic church in New Oldfield-road, Salford. The church is intended to accommodate from 700 to 800 worshippers. It will be a plain brick building, in the Early English style. The fittings are to be of polished pitch pine, with an open-timbered roof. At one corner of the site a presbytery is to be erected for the use of the resident priest. The architect is Mr. Samuel Hanson, of Manchester.

Walton-le-Dale.—On the 23rd ult., Dr. Vaughan, Roman Catholic Bishop of Salford, laid the foundation-stone of a new Catholic church at Walton-le-Dale, near Preston. The edifice, which will be erected from the designs of Mr. Pugin, architect, is Gothic in style, and is estimated to cost about 6,000*l.*

Handsworth Woodhouse.—On the 27th ult. the Duke of Norfolk laid the foundation-stone of a new Roman Catholic church, school, and priest's residence at Handsworth Woodhouse. The buildings will entail an outlay of between 6,000*l.* and 7,000*l.*, the whole of which will be borne by the duke. The new church will contain 800 sittings. The style of the building will be Perpendicular. The site was also given by the Duke of Norfolk.

Books.

CANTERBURY IN THE OLDEN TIME.

Canterbury in the Olden Time. Second edition, enlarged, with numerous Illustrations. By John Brent, F.S.A. London: Simpkin, Marshall, & Co. 1879.

The book published under the above title a few years since by Mr. Brent has now appeared in a second edition, with some valuable and interesting additions, especially in regard to the earliest history of the town in the Roman period. The author begins at the very beginning, in the spirit of a true antiquary, in the endeavour to suggest the probable origin and earliest history of Canterbury, but he is obliged to leave himself and his readers in the dark on this point. It is, however, interesting to learn incidentally that there is found over the chalk deposit on which Canterbury stands "the drift or bed of a river or rivers, the very outlines of which are lost," and that this ancient drift nevertheless contains implements of human manufacture. And even when we come to the time of Roman occupation, the information which can be gleaned about Canterbury is to be gathered from scattered fragments of Roman work found in the locality rather than from any historical mention of the place. We have to look underground for the lost city, the Durovernum of the Romans. As usual in such cases, there is evidence that the level of the ground has risen considerably in the lapse of centuries. A city is, in fact, in one sense, a constantly though slowly-accumulating heap of *débris*, and Canterbury was at least a sufficiently large and changing place to be no exception to the rule. "Eight feet at least below the present causeway, in the densest part of the city, and somewhat less in the suburbs, may be given as the level at which Roman remains and antiquities may be expected to be found. In the dark soil of refuse deposit, and of ancient drainage, sometimes within a few inches of the line of brick or tile dust, which in certain parts of Canterbury appears to have been the lining of the roads, lay the broken pottery, coins, the bone pins and implements, which the soil furnishes in places to the excavator." The "somewhat less" depth of deposit in the suburbs is, of course, naturally to be expected. The refuse of a town raises the ground most in the centre, where living is thickest. Archæologists, as a rule, hardly seem to realise this simple explanation as to the relative depths of burying of antiquities in different parts of an old city.

Though Canterbury, or by whatever name the site was then called, is known to have been 400 years under Roman occupation, the vestiges of Roman walls and structures have been so entirely demolished as to leave little clue, even to the boundaries of the Roman town. The remains, in the shape of small articles of personal adornment, and other small objects for ornament or use, are, however, considerable, and some of them of no little beauty and interest. Numerous and well-executed illustrations of them are given. They include enamelled brooches, pieces of pottery ("Samian ware") with representations of man-and-beast combats, keys, rings, armlets, various toilet articles, &c. Mr. Brent is of opinion that from the heterogenous way in which articles of very various descriptions are mixed together, the Roman town must have been destroyed suddenly and by attack, and attempts made to collect property for flight or for concealment.

Some parts of the succeeding chapters on "Saxon Canterbury" and "Norman Canterbury," as well as other parts of the book, are really a little wide of the special subject, and go into general questions of the condition of England at the periods dealt with, rather than specially illustrating Canterbury history. A little more concentration in this respect would have been an advantage in reducing the size of the book without interfering with its special object. In the chapter on Saxon Canterbury we are given the earliest form of the modern name of the town, as "Cantawarabyrig," the town or city of the men of Kent. We should have liked, however, some information as to where this name is found. The name of Watling-street, given to the Roman road near Canterbury, is of

course Saxon, and to this date Mr. Brent traces, also, the term "Burgate," now applied to one old gate of the city, and which he translates as "the city gate,"—the chief gate of the city. A similar gate in Southampton, the present structure of which dates from a late Mediæval period, is traditionally called "Bargate," which reminds one of Temple Bar, and as it is evidently the same word as Burgate originally, we are tempted to doubt the interpretation of Mr Brent. In the chapter on the local government and general history of the city are some curious incidents, of which we have no doubt that (as the author hints in his preface) the town records would furnish many more. The defacement of the cathedral at the hands especially of a noted iconoclast of the Commonwealth, a Puritan minister named Culmer, forms a vexatious chapter of this history. The author quotes Culmer's own description of a day's work on the cathedral, August 26th, 1642:—"Many window images, or pictures in glass, were demolished that day, and many idols in stone. A minister (meaning himself) was on the top of the city ladder, near 60 ft. high, with a whole pike in his hands, rattling down proud Beckett's glasse bones." When times changed Culmer was arrested for political reasons, and among other matters his ravages at Canterbury were brought up against him, and he was asked "why he brake those famous windows in Canterbury Cathedral, to which he answered 'He did it by order of the Parliament'; and being interrogated further, 'why in one window representing the devil tempting Christ, he brake down Christ and left the devil standing,' he said 'he had an order to take down Christ, but not to take down the devil'"; which, we may observe, was very likely true; what the Puritan leaders objected to was that carved or painted figures should be the object of worship, or ostensibly so; so that the more sacred the figure the more reason for removing it. However deeply one regrets the spoliation of so much that was interesting and beautiful in the Mediæval churches, it is only fair to the Puritans (to whom, moreover, more damage is ascribed than they committed) to remember that to them these ornaments represented a real religious grievance or stumbling-block, and were inseparably connected with a ritual which they regarded as superstitious and antiquated. Not that we have a grain of sympathy, however, for fellows like Culmer, who probably took a mischievous pleasure in the work of demolition for its own sake.

One paragraph in the chapter headed "Canterbury a City and County," puzzles us considerably; that relating to an old inn in "the Mercerie," commonly called "Chaucer's Inn." Little of this is now left. "The stone arches on the floor, level with the street, forming the windows of a shop, yet remain, and once extended much further down Mercery-lane." Further on the author says: "Chaucer describes his inn as the 'Checquers on the Hope,' which is strongly confirmatory of the fact that our inn in the Mercerie was the identical one he describes in his 'Pilgrimage';" but as it appears from a foot-note, that the nearest actual connexion that can be established with the sign of the "Checquers on the Hope" is the fact that there was an old signboard somewhere in Canterbury called the "Cock upon the Hop" (hoop), the coincidence seems rather distant at the best. But what does Mr. Brent mean by his reference to Chaucer and the "Pilgrimage?" The "Canterbury Tales" only describe the inn in London, the Tabard, from which the company set out, and the poet does not get them to Canterbury at all, unless some additional MS. has been discovered since we used to be familiar with the "Canterbury Tales." We suspect Mr. Brent, in his enthusiasm for Canterbury, has been adopting some spurious version of Chaucer which would be rejected by literary critics.

The history of the cathedral and its adjoining buildings forms the concluding portion of the book, and includes some graphic descriptions of scenes in the building on one or two important occasions long ago; nothing, however, in regard to that extraordinary scene of the murder of Beckett and all the confusion of the terrified monks, and the collision between them and the townspeople who crowded into the building, of which a full description by one of the monks who witnessed it is extant somewhere,* and is one of the most real and living bits of Mediæval history in existence. Beckett was by far the most remarkable figure in the whole history of Canterbury, and seems to be passed over by the author with unaccountable neglect. A list, given in the last chapter, of the existing charters, records, and public documents relating to the city, will be of use to those who have occasion to make investigations in connexion with the subject. The illustrations of some of the older portions of the city, in some cases taken from old drawings of structures which have now disappeared, are of considerable interest also.

* Great part of this graphic and stirring description was given in modern English in an article on Beckett and Canterbury in the *Quarterly Review* many years ago: we cannot give the precise date at this moment, but well remember the impression its perusal made upon us at the time.

Luxurious Bathing. A Sketch by Andrew W. Tuer, illustrated with twelve folio etchings, initials, &c., by Sutton Sharpe. London: Field & Tuer, "Ye Leadenhalle Presse." 1879.

We have here within the same stout pair of covers two different and not precisely correlative matters: a memoir advocating the daily use of the soap-bath, which might have been issued by the proprietor of an "establishment," and would not be bought by the public at a shilling, with a dozen folio etchings, by Mr. Sutton Sharpe, of river-side views; the whole set forth and produced in so expensive a manner as to bring the price of the book to three guineas. If the real object of the work be to show in how excellent a manner a book can be made at the Leadenhall Press, that object is certainly achieved,—type, ink, paper, and printing, are all admirable.

The etchings are of different degrees of excellence, some of them being beautiful.

VARIORUM.

In the current number of the *Journal of Dramatic Reform*, an interesting account is given of the good effects which resulted in the Netherlands from the establishment there of a Dramatic Reform Association. In ten places, the writer states—Rotterdam, Amsterdam, Leeuwarden, 's-Gravenhage, Utrecht, Dordrecht, 's-Hertogenbosch, Gouda, Gent (Belgium), and Zwolle—there are departments of the association with from twenty to three hundred members, subscribing 8s. yearly, and receiving gratis the journal of the association, published every fortnight, from September to April, during the theatrical season. Yearly in October there is a general meeting of delegates of the different departments, in order to hear what has been done throughout the year, and to form plans for the future. The foundation of the "Theatrical Union," an association of friends of the Dramatic Art, who, under the superintendence of men of letters of independent means, endeavour to bring together the best performers, to have them play only good, real, artistic work, and reform the art in the Netherlands, together with the Dramatic Reform Association, made the theatre, at all events in Amsterdam, the topic of the day for at least four years. The School for Dramatic Art does very well. The Dramatic Reform Association, he says, had a house built containing rooms for the indoor pupils (at present not used), class-rooms, a little theatre, and rooms for the director and his family. In a course of three years the pupils, both male and female, have lessons in acting, dancing, singing, standing, drawing; together with geography, history, mythology, mathematics; and Dutch, French, German, and English languages and literature. At the end of the course a diploma is granted to those who pass their final examination well. The School for Dramatic Art was built at cost of 21,000 fr., of which sum the *Maatschappy Tot Nut van't Algemeen* contributed 10,000 fr. The current expenses have been met by gifts from the King of the Netherlands, from the Dramatic Reform Association, donations, and school fees. The lessons occupy thirty-two hours weekly. The terms, inclusive, are 50 fr. per annum; or, for lessons in one branch only, 15 fr. per annum. Pupils are required to pass an examination before entering, to prove their fitness for the theatre, and competent knowledge of Dutch, history, geography, &c.——In the new number of *Great Industries of Great Britain*, a very interesting account is given of Joseph Gillott, the great penmaker. After describing his first struggles in Birmingham, the writer proceeds,—"In the garret of a very small house in Bread-street,—a locality marked down for destruction as a 'slum,'—Gillott made buckles and other 'steel toys.' 'He made very excellent goods,' said the merchant who used to buy of him, and 'came for his money every week.' His work showed evidences of a taste beyond that commonly possessed by a workma this insured him plenty of orders; w native ingenuity enabled him to execute in the readiest way, with the least expendit time and labour, and with the directest aid mechanical means. There is no doubt t was perfectly familiar with the powers foot-lathe and stamp and of the hand-pres that he could make tools for these machi perhaps construct the machines themsel suit the purposes of his trade. At this c juncture chance guided his efforts in direction, and to an *El Dorado* which he have had little conception of. He was en to a young woman in his own rank of life, two brothers, John and William Mitchell working in about the same style as hims the 'new thing,'—just beginning to be in after,—steel-pens. Their sister was h them, and in the confidences of courtship often explain to her lover the nature of h suits. No doubt the brothers were work 'rule of thumb,' producing, by painful la clipping, shearing, filing, and punching by a fairly saleable article. But Gillott once that the *press* could be made availa nearly every process, and that the proc could be multiplied *ad infinitum*. Aided skill in tool-making, which stood him i stead during all the greater part of his ca worked secretly in his garret till he h fected appliances which enabled him to single-handed, as many pens as could be twenty persons in the same time under system, and of a better and more uniform that had yet been seen. He found ready all he could make, and in a short time the grew faster than his power of producti he wanted help. Then his sweethear Mitchell, agreed to his proposal that they marry and work together, and reap the harvest while it was ripe. In after ye Gillott used often to tell how, on th morning of his marriage, he began and a gross of pens, and sold them for 7*l.* 4*s.* going to church."——The first part of work on ferns, with fac-simile coloured has been issued by Messrs. Cassell & Co demy quarto in size, and entitled, "Ea Ferns," by James Britten, F.L.S., with o plates, painted from nature, by D. Blair, and numerous wood engravings. "It intrinsic loveliness of ferns, combined wi sociable nature, which has caused the sought far and wide by countless ad who have transplanted them from natural home to adorn the rockery of th try mansion or the cottage, while favourite picturesque plant to beautify th corners of the villa residence or humble d of the residents in our towns and subur without a rival." We have no doubt t culture of ferns will be largely and perm developed, and a new means opened up entertaining as well as useful employ time, by the issue of the present publicati No. 43 of "Picturesque Europe," just pu is delightfully illustrated. It treats o Italy, where good subjects abound. W had occasion before now to speak highly beautiful work.

Miscellanea.

Herr Ludwig Vogel, called "The of Helvetian art," died on the 21st was born in 1788, and at the age of entered as a pupil the Art Academy of whence he was expelled for his criticism professors of that institution. Proceed Rome, he there became acquainted wit Cornelius, with whom he found himself in sympathy. His first important paintin the "Return of Swiss from the Battle garten," executed at Rome.

Asserted Explosion of a Gasom Shortly before one o'clock on Saturday a terrific explosion took place at the Co Gasworks, Macclesfield. A small gas holding about 30,000 ft. of gas, and wh nearly full, exploded with so severe a s to shatter the windows of most of the ho the immedediate neighbourhood of the The gasometer was totally wrecked, as w the purifying-house adjoining. The caus explosion is as yet a mystery, and sh investigated. If the accident be corre scribed, atmospheric air must have been s into the gasometer.

verpool Art Club.—On Monday evening, ommittee of the Liverpool Art Club enter- d at dinner, at their Club in Sugnall-street, Val Prinsep, A.R.A., Mr. Luke Fildes, A., Mr. M. Stone, A.R.A., and other gentle- connected with the Autumn Exhibition of res just opened at the Walker Art Gallery. ohn Finnie occupied the chair. Mr. Philip bone, in giving the toast of "The London ts," expressed a hope that the frescoes in ew Picton Reading-room would be occupied ctures illustrative of the history of Liver- Mr. Val Prinsep, in responding, said that he had come to Liverpool he had been struck with the effort which had been by the authorities in the way of beautify- ne town, and also in the direction of en- ging the arts. He had there found a public which did not always exist in the South, hich contrasted very favourably with what o be found in London. Still, in Liverpool, Manchester and other large towns, he his old friend, the hideous house, with its e door and the windows by the side of it, ne chimneys of the same outline. He had miles of these houses almost everywhere, e had asked himself, what could be the and comfort of such erections to the ns who were compelled to occupy them? dvocated the adoption of a higher style of n connexion with the dwellings of the e, so as to remove the working classes, and hose connected with manufactures, from mere "men machines."

proved Industrial Dwellings at New- e-on-Tyne.—The ninth annual report of Newcastle-on-Tyne Improved Industrial ings Company, presented at the annual ng on Wednesday last, recommends that idend of five per cent. per annum be de- upon the original 396 fully paid-up shares by the company. The extensions referred the directors in their last report have completed, and were formally opened at untide. The greater portion of the build- now occupied, and the directors anticipate a very short time, the whole will be let. of 6,000*l.* has been made by the Public Loan Commissioners to the company at r cent. per annum, repayable in thirty years al half-yearly instalments at the rate of 8d. per cent. per annum. The agent, [in his , says that the value of these dwellings is s most strikingly illustrated, in a sanitary f view, by the fact that the average death- as never yet exceeded 12·8 per 1,000, often under; whilst the average rate of t of the town for the past year was 23·7, rly double the above rate. The large provided by the company for the use of nants has been much appreciated. Al- it has been open only a few weeks ds of forty members have already joined many others have promised to do so as son advances. It is well supplied with apers and books.

tizæval Art at Lubeck.—In the old atic city of Lübeck an exhibition was d on September 4th of antiquities con- with art and industrial occupations and istic productions of the Middle Ages. It ved that a large quantity of art treasures an preserved in the churches and in the ions of the city and of private persons will invest this exhibition with an interest erior to that of the Westphalian collection. remain open for three weeks.

rineerships, Liverpool.—The special ittee of the Liverpool Town Council ap- d to consider the subject, has reported in of the severance of the offices of Borough ater Engineer hitherto held by the same . It is recommended that they should be distinct. The present engineer, Mr. G. acon, will, it is proposed, act as Water er at his present salary of 1,200*l.*; while ended to appoint a borough engineer at ry of 1,000*l.*, his being an entirely new

lburton, Devon.—Two new bells have dded to the existing peal of six in the of St. Andrew's Church. They were Messrs. Blews & Son, of Birmingham; eigh together about 14 cwt., and the ed cost is 100*l.*

ghton Pavilion.—The sixth annual ion of Modern Pictures in Oil has been here. The private view took place on day, the 4th inst.

Dressing Stone by Electricity.—Among the novel applications of electricity to the industrial arts is a new stone-dressing apparatus, which is worked by a dynamo-electric machine, and which the inventor claims will dress millstones or other stones, and drill rock, economically, with rapidity, precision, and despatch. The chisel employed is fastened to a spring arm which protrudes from a case containing magnets and armatures. This spring arm, when the magnets are connected with the dynamo-electric machine, moves up and down with extreme rapidity, causing the chisel to strike a blow at each descent. The inventor states that it can be made to strike from 1,000 to 2,000 blows per minute. Wires being used in place of steam-pipes, the apparatus may be readily moved to any angle, or worked at any reasonable distance without much loss of power; while not the least meritorious portion of the whole invention is the horizontal frame or base to which the electric apparatus is fixed. This frame is portable, and by the use of screws can be so adjusted as to cause the chisel to strike any portion of a circle with either a swift or a slow motion, the number and intensity of the blows being regulated according to the softness or hardness of the stone. By the use of this machine it is said that a mill-stone can be covered in a very short space of time with the necessary grooves and furrows, having the straightness, regularity, and parallelism so much desired in good mill-stone dressing. The apparatus can be worked either automatically or by hand, so as to suit the varying natures of the stone operated upon.—*New York Tribune.*

To Test Glue.—An article of glue which will stand damp atmosphere is a desideratum among mechanics. Few know how to judge of quality, except by the price they pay for it. But price is no criterion; neither is colour, upon which so many depend. Its adhesive and lasting properties depend more upon the material from which it is made, and the method of securing purity in the raw material, for if that is inferior and not well cleansed, the product will have to be unduly charged with alum or some other antiseptic, to make it keep during the drying process. Weathered glue is that which has experienced unfavourable weather while drying, at which time it is rather a delicate substance. To resist damp atmosphere well, it should contain as little saline matter as possible. When buying the article, venture to apply your tongue to it, and if it tastes salt or acid, reject it for anything but the commonest purpose. The same operation will also bring out any bad smell the glue may have. These are simple and ready tests, and are the ones usually adopted by dealers and large consumers. Another good test is to soak a weighed portion of dry glue in cold water for twenty-four hours, then dry again, and weigh. The nearer it approaches to its original weight the better glue it is, thereby showing its degree of insolubility.—*Capital and Labour.*

Telephones.—The Children's hospital at Pendlebury, near Manchester, has recently been fitted with a system of telephones. By this means the lady superintendent's room is connected with each of the six wards, the kitchen, and the pantry. As the hospital consists of six pavilions opening into a long corridor, the most distant pavilion being about 120 yards from the administrative block, it is obvious that much time and labour in running to and fro are saved by this convenient method of communication.

A Colonial Museum.—A proposal has been made to the Colonial Governments to support a projected colonial museum in London. South Australia has decided not to join in any such movement unless it emanates from the Imperial Government, and the Victorian Government have telegraphed to the promoters in London that they cannot agree to the large expenditure involved in the proposition.—*Melbourne Argus.*

Pictures in Manchester.—The fifty-ninth annual exhibition of modern works of art at the Royal Manchester Institution is now open. The collection is a very large one, including more than 700 works. The exhibition contains works by G. A. Storey, G. H. Boughton, E. Burne Jones, and other well-known painters.

Over Darwen Town-hall Competition.—We have been requested by several architects to state that, although amongst the number of architects invited to compete, they did not submit designs. It will scarcely be supposed by the public that all who were asked did do so.

Proposed New Route for the South Yorkshire Coal Trade.—It is proposed, in the interest of coal proprietors and others, that a tidal navigation should be constructed from the sea to the vicinity of the Yorkshire, Derbyshire, and Nottinghamshire coal-fields which large steamers could traverse and load and unload in. In order to fix upon the most central and convenient position, Bawtry has been selected as the terminus of the navigation. Bawtry is on the River Idle, distant twenty miles from Barnsley, eight from Doncaster and Retford, fifteen from Rotherham, eighteen from Sheffield, twenty-two from Chesterfield, twenty from Mansfield, twenty-one and a half from Teversal and Pleasly collieries, and thirty-four from Nottingham. It is proposed to provide two short lines of railway extending from Shireoaks to Bawtry ten miles, and from Rotherham to Bawtry fourteen miles, making a total length of twenty-four miles. The tidal navigation would be entirely free from the existence of any lock, and would consist of fifteen and a quarter miles of the River Trent from Whitton to Owston, which would have to be straightened, widened, and deepened, and twelve and three-quarter miles of new tidal and navigable cut or channel from Owston to Bawtry. The coal rates from South Yorkshire, &c., by the railways to London amount to about 8s. 6d. per ton. From Bawtry to London by the proposed navigation, it is estimated the freight would be 4s. per ton. The estimate of the cost of the undertaking, as made by the engineer, Mr. Hamilton Fulton, Mem. Inst. C.E., amounts to, it is said, 750,000*l.*

Pre-Historic.—The third Congress of the Americanists, or students of American antiquities, will be held in Brussels from September 23rd to September 26th, under the patronage of His Majesty the King of the Belgians. It is thought that great light will be thrown by its labours on the antiquities and pre-Columbian history of America.

TENDERS

For additions to New College, Eastbourne, for Mr. Fred. Schreiner, B.A. Mr. A. Crisford, architect:—
Stevens (no competition) £1,800 0 0

For store-room and bakehouse, at Eastbourne, for Mr. Tolburst. Mr. Amos Crisford, architect:—
Stevens (no competition) £210 0 0

For engine and boiler buildings and chimney shaft, at Sewerage Works, Hanley. Mr. Joseph Lobley, C.E. borough surveyor:—

Tellwright	£1,818	0	0
Redfern	1,267	0	0
Tildsley	1,218	0	0
Smith & Son	1,190	0	0
Chatfield & Roberts	1,159	0	0
Bradbury	1,150	0	0
Clark	1,030	19	0
Barlow (accepted)	994	0	0

For new road and drains on the Eversfield Estate, St. Leonard's-on-Sea. Messrs. Fowler & Hill, architects:—

Parks	£463	0	0
Yalder	415	0	0
Hughes	400	0	0
King	470	0	0
Cruttenden	395	0	0
Gasson	389	0	0

For additions to Capel School. Mr. F. J. Dibble, architect:—

Heselgrave	£659	0	0
Pierce	559	0	0
Hamblin Bros.	483	0	0
Ansell Bros.	439	0	0
Weeden (accepted)	437	15	0

For cottage, for Mr. E. Herrick, Arnolds Capel. Mr. F. J. Dibble, architect:—

Hamblin Bros.	£298	0	0
Weeden	284	0	0
Ansell Bros.	269	15	0

For stables, &c., High-street, Stratford, for Dr. Grogono. Mr. Edwin C. Stimson, architect:—

North Bros.	£344	0	0
Hosking Bros.	337	0	0
Reed (accepted)	325	0	0

For alterations and additions to 35, Sackville-street, Piccadilly, for Mr. B. Rolfe. Mr. H. B. Sandall, architect. Quantities by Messrs. Corderoy & Sandall:—
Mitchell & Co. (accepted) £748 0 0

For a new roof to picture gallery and decoration, 18, Green-street, Leicester-square, for Mr. Thibaudeau:—
Mitchell & Co. (accepted).

For Mission Chapel, Wyndham-road. Mr. F. W. Hunt, architect;
Downs & Co. (accepted).

For two cottages and laundry, at Southgate, for Alderman Thos. Sidney. Mr. William Smith, architect:—
Pococke £604 0 0

For new implement sheds at Long Crendon, Bucks, for Mr. Richard John Coltman. Mr. H. J. Heath, architect:
Godden (accepted).

For alterations at 187, Seven Sisters'-road, for Mr. Hussey. Mr. William Smith, architect :—

Pritchard	£784	0	0
Rade & Notley	660	0	0

For alterations at 444, West Strand, for Messrs. Hudson Bros. Mr. William Smith, architect :—

Harper	£1,130	0	0
Dunford & Langham	1,063	0	0
Sage	1,020	0	0
Lascelles	1,010	0	0
Aitchison & Walker	921	8	0

For the erection of shop and office, corner of Bell-yard and 203, Fleet-street, for Messrs. Dunn & Judges. Mr. William Smith, architect :—

Harris & Wardrop	£2,565	0	0
Dunford & Langham	2,329	0	0
Pritchard	2,264	0	0
Sykes	2,139	0	0
Mattock Bros.	2,099	0	0
Harper	2,078	0	0
Johnson & Co.	2,059	0	0
Howett	1,998	0	0
Aitchison & Walker	1,956	0	0
Sheffield & Prebble	1,887	0	0
Larke	1,874	0	0
Temple & Foster	1,832	0	0

For alterations at 80, High-street, Kingsland, for Messrs. Higgs & Co. Mr. William Smith, architect :—

Dunford & Langham	£109	0	0

For two detached villa residences at Walton-on-Thames, for Alderman Thos. Sidney. Mr. W. Smith, architect ; —

Harper	£3,560	0	0
Faulkner	3,460	0	0
Clarke	3,444	15	0
Ingram	3,400	0	0

For two smaller villa residences :—

Clarke	£3,141	0	0
Harper	2,860	0	0
Faulkner	2,830	0	0
Ingram	2,800	0	0

For two pair of semi-detached residences :—

Clarke	£2,418	0	0
Faulkner	2,160	0	0
Ingram	2,100	0	0
Harper	2,040	0	0

For alterations and repairs at Penryn House, Twickenham, for Mr. T. Twining. Mr. A. Edwards, architect ;— Messrs (accepted).

For alterations and repairs at 138, Sloane-street, S.W., for the West London Permanent Building Society. Mr. Charles Sowell, architect :—

Stimpson & Co.	£353	0	0
Bellamy & Son	349	0	0
Turrell	320	0	0
Holland	302	0	0
Wilkins	294	0	0

For construction of sewers, &c., at Llanidloes, Mr. Evan Powell, engineer. Quantities supplied :—

Williams & Hurst	£6,537	0	0
Carver	6,500	0	0
Mackay	6,349	0	0
Cowdery & Son	6,295	3	10
Dickson	5,983	0	0
Davies & Son	4,490	11	3
Frayne & Sheldon (accepted)	4,328	4	6

For the erection of a pair of cottages and outbuildings at Little Marrington, Llanidloes, for Mr. Lewis R. Price. Mr. Evan Powell, architect. Quantities supplied :—

F. & J. Torkley	£643	0	0
Phillips	632	9	5
Smitheman	597	10	0
W. & J. Gethin	545	14	0
Price & Son	539	0	0

For works at Park House, Wimbledon, for Lady Christian Maule. Messrs. Whitfield & Thomas, architects. Quantities by Mr. Deacon :—

Aviss & Co.	£2,940	0	0
Clemence	2,845	0	0
Jarrett	2,470	0	0

For alterations to roof and redecorating interior of St. Paul's, Dock-street, London Docks. Messrs. Greatorex & Co., architects :—

Bear & Son (accepted).

For the erection of a sale warehouse and a shop and dwelling-house in Derby-road, Nottingham. Messrs. S. Dutton Walker & Howitt, architects :—

Bell & Son	£3,847	0	0
Marriott & Wartnaby	3,655	0	0
Claricoat	3,625	15	0
Hind	3,577	0	0
Woolf Bros.	3,500	0	0
Wheatley & Maule	3,498	0	0
Vickers	3,453	0	0
Middleton	3,450	0	0
Lynam	3,414	0	0
Fox	3,399	10	0
Hollingworth Bros.	3,399	0	0
Lowe	3,391	15	0
Hodson & Facon	3,389	0	0
Clarke	3,325	0	0
Henshaw	3,320	17	0
Roberts & Perkins	3,314	0	0
Tutin	3,285	0	0
Bailey	3,248	0	0
Messam (accepted)	3,231	0	0

For supplying and fixing gas pendants and fittings for various rooms and offices in the Worcester Guildhall and wings, for the Town Council :—

Messenger & Sons (accepted)	£202	14	10

For new counter at Ship Tavern, Vauxhall Bridge-road, for Mr. Purchase :—

Warne	£170	10	0
Heath	161	0	0
Hellings (accepted)	145	0	0

For villa residence at Finchley, for Mr. C. G. Stafford. Mr. F. H. Collins, architect :—

French (accepted)	£1,259	0	0

For sanitary and ventilating works to drains, &c., at Lastingham, Hornsey-lane, for Mr. Augustus Meismer, the estimate of Stephen Harradine has been accepted.

Alterations at the David Garrick.—Benjamin Cook, 300*l.* (not Jackson & Todd as stated).

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J. P. (should have sent list of the other tenderers) —G. R. C. (gives no evidence of the unfitness of the candidate selected by the Dartford Highway Board) —R. F. -E. T. B.—F. W. J. P.—T. O.—G. S. & Co.—H. J. N.—W. W. G.—R. L.—H. H.—C. B.—H. de Q. S.—F. J. D.—J. L.—W. S.—T. S.—R. C. S.—W. M.—B. C.

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VOL. XXXVII. No. 1910. SATURDAY, SEPTEMBER 13, 1879.

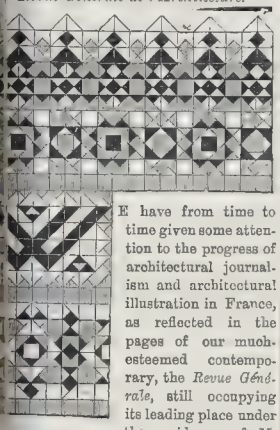
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"*Revue Générale de l'Architecture.*"



E have from time to time given some attention to the progress of architectural journalism and architectural illustration in France, as reflected in the pages of our much-esteemed contemporary, the *Revue Générale*, still occupying its leading place under the guidance of M.

ily. The present season of the year, ive operations are more or less tempo- spended, seems a not unsuitable one for bout and noticing what our neighbours g. We arrange a certain number of parts *evue Générale* before us, therefore, as a f illustration not only of French archi- journalism, but of recent architectural oss the Channel, in its main styles and es as illustrated in the fine engravings ork before us.*

ifference between French and English in regard to this department of journal- ustrated in the very form and manner of the *Revue* as compared with *ilder*. The *Revue Générale*, the only of architecture in France which can aim the highest rank of importance in o the matter and manner of its contents illustrations, is hardly in any sense a of architectural news, nor is it even d with absolute regularity of date or

About twelve numbers are published r, at intervals of about a month, but not dated by months even, and come suppose, when it is most convenient, an sufficient matter of importance has llected, and sufficient illustrations are e i. This form assumed by the leading architectural journal is one among a any examples of the peculiar demand y the French public on journalism of ss, of what they do and what they do nire. The French architectural public ntent to wait indefinitely for their perio- erature, provided it is in a satisfactory en it does reach them. The volume of tions of one of the architectural con-

* articles and the illustrations in our present other with many recently given and others still of preparation, will further serve to make evident on of things architectural in France.

ferences at Paris was not published for nearly two years after date, after the most elaborate editing and revision. Such a paper as the *Revue* would not, of course, meet the views of our *clientèle*. They demand not merely (perhaps we shall be right in saying, not chiefly) essays and illustrations, but also regular professional news brought up to date, and a paper which may be a field for the immediate interchange of correspondence upon all subjects connected with the profession and its surroundings; its achievements, its prospects, its wrongs, and even its misdeeds, which latter have to be confessed now and then. For all this there is little or no place in the *Revue Générale de l'Architecture*; there is no medium for it at all corresponding to that of the *Builder* in England, and it does not seem to be wanted. On the other hand, a paper in the style and with the scope of the *Revue Générale*, would probably find no public in England such as would enable it to pay its way. As the *Revue* continues to all appearance as flourishing as ever, we may presume,—indeed, we are able to assert,—that its production does pay, though the fact may be difficult of comprehension to those who have had any experience of architectural journalism in this country.

Taking up a number of the set before us, we find it a series of essays more or less elaborate, grouped under the heads of "Histoire," "Théorie," "Pratique," and "Mélanges," and under one or another of these groups, each of which has its characteristic ornamental heading, all the matter of each number is to be found appropriately grouped. Sometimes one section of the four is unrepresented; there are several numbers before us in which "Théorie" is not to be found; but these heads seem to include everything, at greater or less length, as the case may be. French periodical literature, of all classes, is nothing if not systematic. In the first number that comes under our hand we find under the head "Histoire" only a brief notice of a tomb in St. Étienne at Toulouse; under "Théorie" there is a mathematical paper of some length and elaboration, on the effects of the thrust of the vault in some Mediæval churches in thrusting the piers out of the perpendicular ("Flexion des Piliers d'Église"),—a paper which appears to us to make rather more complication than is necessary out of a comparatively simple matter. "Pratique" gives the commencement of an article by M. Lavezzari, to be continued in a succeeding number, on the Lunatic Asylum of Saint Anne, at Paris; and "Mélanges," which is by far the largest portion of this particular number of the paper, commences with an article by the editor (of which more anon) on "Engineers and Architects," followed by a critique on "Les Envois de Rome in 1877" (the designs or restorations sent in by the students who have been working at Rome), a letter from Philadelphia on the architectural works in the Philadelphia Exhibition, a lengthened report of the proceedings of the fifth session of the Congrès National des Architectes, and a "chronique judiciare," a summing-up of the principal legal proceedings arising out of building operations during the half-year, and not so much in the nature of news as of a critical examination of the cases and of the judgments passed, and the possible results on architectural practice. Two articles dealing with proceedings a year apart in point of time,—the Philadelphia Exhibition in '76, and the Architectural Congress in '77,—thus find place in the same number. The Philadelphia notice would have been considered quite out of date here, of course. The opening of the report of the Architectural Congress is amusing, as showing that like causes produce like effects, in Paris as in London. "About sixty persons were present at the opening meeting of the session, which was held according to custom,—but in a temperature exceptionally stifling,—in the hall of the Hemicycle of the École des Beaux Arts. Among those present we counted about twenty architects from the provinces. These last are the really assiduous members of the Congress; they come to nearly all the meetings, remain to the end, and are very ready to take their turn in speaking. Too many of our Parisian brethren, on the contrary, content themselves with a brief appearance at the commencement of one or two sittings, brought there evidently by the reproaches of conscience only; then, after a few moments, when they are quite certain that their appearance has been noticed, they glide adroitly to the door, and go about their usual business with a conscience set at rest." It is needless to observe that the articles are all signed; a practice concerning which, without going into all that might be urged for as well as against it, we will merely observe that it may do in France, but experience is against it, as a rule, in England.

Concerning M. Daly's essay on engineers and architects, we may say a word, since it is a subject interesting to ourselves, and on which we have before now been led to speak. The article was apparently wrung from the apologetic conscience of M. Daly by the manner in which the toast "aux Ingénieurs," proposed by him at an architectural congress dinner, was regarded by some of the younger members of the architectural profession present on the occasion. This was in 1877, and might be said to be out of date for remark now; but the want of unity between the two professions is as apparent in England as it appears to be in France, and it may be of interest to some of our readers to notice the remarks thereupon of a leading French architectural critic. From the commencement of the century, says M. Daly, architects and engineers have, in France, regarded each other "avec plus d'étonnement que de bienveillance. On croirait le dieu $a + b$ et la déesse *Fantaisie* en train de se dévisager réciproquement"; and the chronic hostility between them he regards, as of course in the main it is, as the result of natural misunderstandings in

regard to the requisite objects and ends of the two professions. In order to establish an understanding between them, it is not necessary, he thinks, that either architects or engineers should renounce their characteristic tendencies; on the contrary, "they are each distinct and complementary organs of one complex function,—that of the art of building." Thirty-five years ago, M. Daly had heard an old member of the Institute, a professor of architecture, and an "*homme de mérite*" in other ways, affirm that questions of construction in architecture were only the business of the contractor! We do not know that any one has had the boldness to positively affirm such a theory on this side of the channel, although some members of the profession seem practically to act upon it. It may be observed, however, that the progress of things seems to have been in the reverse way in England and France; for with us the architect who does not want to know anything about construction is rather a recent development of the æsthetic school; while in France, apparently, an increasing importance has been attached to questions of construction lately, and the purely æsthetic or designing architect is a relic of the last professional generation. The eclectic school with us at this moment is a school of purely sentimental architects; the eclectic school contemplated by M. Daly is one which, besides using and absorbing the artistic designs of the past, lays hold also of all the progress of pure and applied science: "l'architecte, depuis une trentaine d'années, s'est donc rapproché de plus en plus de la science." Under these circumstances it would seem that the gulf between the architect and the engineer in France is in a fair way to being bridged over. But the latter, says M. Daly, has been guilty of the opposite fault from that of the exclusively æsthetic architect, and has regarded beauty as entirely out of his province; an idea in which he seems, in France, to have been officially assisted and supported, for mention is made of an official circular addressed by an inspector-general to the Government engineers of roads and bridges, "qui recommandait fortement de s'écarter de toute préoccupation du beau." M. Daly, however, speaks positively and hopefully of the increasing mutual understanding of each other's subjects by the two professions, mentioning that the engineers study the history of architecture, and even write well upon it, and cites three books on architectural subjects by French engineers.* In that case there certainly is hope for the ultimate unity of the two professions in France. No English engineers, as far as we remember, write works on architecture; and, on the whole, perhaps it is better they should not for some time to come.

A paper on "La Numismatique et l'Architecture," in the next number we take up, suggests a branch of study in connexion with the history of architecture which ought to yield some interesting results if systematically followed up. Of course, reference to coinage in illustration of art and manners and costume is no new idea; in regard to architecture, the evidence of coins has occasionally been drawn upon in this country in regard to special points, as in the coin illustrations of the Ephesus Temple, which Mr. Wood has made use of to throw light on points in the restoration of the temple, and we do not forget our excellent friend Professor Donaldson's charming book on the subject. M. Lenormant, the writer of the article, refers especially to the important illustration of circular temples which coins and medals have furnished to the architect. M. Questel's elaborate article on the Saint-Anne Lunatic Asylum (before-mentioned) continues in this number, and affords important suggestions and information as to the latest new ideas in the treatment of such buildings in France, for which we must refer the reader to the *Revue* itself. A "Revue des progrès des sciences dans leurs rapports avec l'architecture," in the same number, is entirely occupied with the telephone; of course, a perfectly fitting subject for an architectural journal to take up; its special "rapport avec l'architecture" is, however, hardly made out.

Those of our readers who remember how largely the *Builder* has been occupied, ever since its commencement, with sanitary questions, will appreciate our satisfaction in finding the paramount importance of this class of questions so fully recognised as it is in the leading French architectural paper, in the few remarks of the editor as introductory to a series of papers on the utilisation of sewage ("De l'utilisation des eaux d'égout"). We ourselves have not unfrequently been taunted by æsthetic people, directly or indirectly, with too great a devotion to sanitary subjects, to the detriment of the prominence which ought to be given to the artistic side of architecture. Well, what says the editor of the *Revue Générale de l'Architecture?* "Aujourd'hui il n'y a qu'une opinion dans le monde civilisé: l'hygiène, c'est-à-dire la vie saine, la force et la santé, avant toute chose! . . . . La vie d'abord, la charme ensuite." And he adds further,—"Combattre dans la maison toute cause de corruption (à la cuisine et ses dépendances, dans les cabinets privés et leurs accessoires, les dépôts de linge sale, &c., &c.) *est aujourd'hui le premier devoir de l'architecte.*' So that if we have sinned in too earnest a devotion to the sanitary powers, we are not, at all events, without fellow-sinners whose principles on the subject are, in theory at least, as stern as our own, though their practice may not perhaps have been (if we may be allowed the remark) so active. Indeed, M. Daly seems to admit that the subject of sewers and drainage has not found so large a place in his columns for some time as it might rightly have taken. The series of papers which he introduces to his readers are by M. Bazaine, an eminent engineer, and deal in the first place with the various stages in the pollution and subsequent purification of the Seine. Subsequent numbers in continuation of the article go a good deal into detail as to the utilisation of sewage, with illustrations of various points in the mechanism of irrigation and of the carriage of sewage, which, whether superior to our own methods or not, will interest those who are practically concerned in the subject. The same number gives the first part of an essay, by M. Ravon, on "Les Honoraires des Architectes," which treats on a subject so important to the profession, and in so suggestive a manner, that we may very possibly take an opportunity of considering some of the views maintained in it more in detail and in reference to some questions as touching the profession in this country: at present, we content ourselves by alluding to the article.

"Les fouilles des Mycènes" is a subject which interests all the civilised world; and we observe that M. Emile Burnouf, in the course of his remarks thereupon, touches on the same point on which we have before strenuously insisted, viz., the importance of the gold work discovered by Dr. Schliemann as bearing upon the illustration of the history of Greek art, more especially in showing that ancient Greek art was not Egyptian in its origin (art, that is to say, in its more plastic forms, we presume; for Greek Doric architecture obviously is of Egyptian origin). "Depuis plusieurs années on avait remarqué l'analogie des sculptures de la *porte des Lions* et de sujets similaires fréquemment figurés sur les cylindres et les pierres gravées Assyro-Babyloniens. On en avait conclu, mais comme une hypothèse probable, que l'ancien art Grec, au moins en Argolide, avait ses racines dans l'Asie et non sur les bords du Nil. Les fouilles de Mycènes ont pleinement justifié cette supposition."

An article, from the pen also of M. Burnouf, on "Les maisons privées de l'ancien Athènes," is also founded on some recent excavations, those of the "Société Archéologique de Grèce," but, to say truth, seems to prove only how little domestic architecture there was among the Greeks, or how little trace of it is left to us. An elaborate descriptive article of the processes and methods of construction employed in some parts of the Great Exhibition building is useful as a record of the difficulties connected with such a building, and the way in which they were met; and we notice a letter to the editor from M. Richand (architect) commenting on the article on architects and engineers before referred to, agreeing with the editorial article in the main, and observing that in regard to the architectural profession "ce qui a fait et notre isolement et notre infériorité dans ces derniers temps, c'est notre faux point de vue en matière d'esthétique et notre manque d'instruction scientifique dans la pratique et dans la mise en œuvre de notre art." This is exactly what is making "notre isolement" in this country at this minute: a false æsthetic to begin with, and a wilful neglect of the practical side for this false æsthetic.

Among the obituary notices of deceased French architects is an interesting one, by Radoux, on Eugène-Louis Millet, who was an ardent combatant, partly under the banner of Viollet-le-Duc, against the conventional architectural school of France, and in favour of freedom and romanticism. A paragraph describing his habit of working is worth quotation, as giving a very well-expressed *résumé* of what should be the method of regarding and working out a problem in building design by an architect practised in his craft and treating it according to a logical method:—

"Sa facilité de travail était surprenante. Rompu aux difficultés du métier, il abordait la construction nouvelle avec l'aisance d'un sculpteur qui pétrit une marquette ou d'un peintre qui brosse une esquisse. En peu de temps il avait mit son projet sur pied, et l'exécution suivait toujours méthodique et régulière jusqu'à l'achèvement de l'œuvre. Quand il avait saisi la disposition générale des lignes, les détails se co-ordinaient comme d'eux-mêmes; et si peu que l'ornementation n'était pas aussi bien réussie qu'on l'aurait désiré, elle n'avait cependant rien de choquant, parce qu'elle était toujours à sa place, parce qu'elle se fondait dans l'harmonie de l'ensemble. Il procédait toujours du simple au composé. En homme pratique, il se préoccupait d'abord de l'ossature, et quand il l'avait raisonnée et équilibrée dans toutes ses parties alors il habillait son édifice suivant les exigences de sa destination, et les ressources dont il disposait, mais toujours de façon à laisser deviner sous les plis du vêtement, une plastique saine et vigoureuse. Avec lui, point de défaillance ni de tromp-l'œil; la sincérité était une des qualités dominantes de son talent comme de son caractère."

M. Millet, in addition to his general practice, held the post of inspector-general of diocesan edifices, and we noticed, if we remember right, some beautiful drawings by him, representations of buildings in their actual state and of restorations, among the drawings of the "Commission des Monumens Historiques," exhibited some time ago in London.

A paragraph is devoted to Sir G. G. Scott, one of the "Nécrologie" articles. One would certainly have supposed that Scott, though an English architect, had filled a sufficiently large place in the profession to have claimed a special notice; but the fact probably is that the bulk of work in which he was mainly engaged, and one with which there is little sympathy in France, where Gothic is not popular, and may add, is not much understood in modern days. The fact is mentioned that some members of the profession in England have found fault with "vivement," with Scott's restoration, or rather with the whole theory of restoration. Into the debated question the *Revue* (the article apparently is editorial) does not care to enter. "Mais la justice nous oblige à noter que s'est à peu près universellement accordé à connaître la conscience et le talent qu'un Gilbert apportait dans les travaux qui lui étaient confiés."

A few lines of very cordial recognition are stowed on poor Cockerell, with the promise of an article specially devoted to him (which, however, we have not been able to find). Cockerell practised a style of architecture much in harmony with French tastes, and the merit of which would be specially appreciated by French architects and critics.

Touching upon this point of style, leads us to look at the illustrations which accompany the *Revue*, and the light they throw upon French architectural taste and practice at present; as to the manner of the illustrations, too much praise could hardly be given, especially in regard to those which consist of geometrical drawings, elevations, and details, which are got up with beautiful neatness and finish. The perspective views, "gravures à l'effet," as the term is, though equally finished, somewhat hard and mechanical to English taste, which has perhaps run a little too much in the direction of "effect" of a rather too picturesque and splashy nature, while in these French drawings "effect" is what seems to be wanting. But the fact that the kind of element in art, in architecture, and in architectural drawing, which we call "the picturesque," is radically alien to French proclivities, and consequently that they try it they seldom do it well. There are a good many buildings among the illustrations, chiefly of a domestic character, in which wood is largely used in ornamental construction and in pure ornament, and hardly

* "Traité de l'Architecture," by M. Léonce Reynaud, "inspecteur-général des ponts et chaussées"; "L'Art de bâtir chez les Romains," by M. Choisy; and "Études sur l'Architecture Lombarde," by M. de Dartein,—both the latter being engineers in the same department of *Ponts et Chaussées*.

ese are good from our point of view: they no "filagree" in treatment, and too ornate style of work in which the expression and should depend mainly on the lines and al character of the construction than upon ent. But this class of work, which aims picturesque, and which has acquired with undue importance of late years, is, we in fairness remember, not that into which h architects put their best mind and their fforts. If we want to realise the best of mporary French architectural design we urn to the class of work in which elegance, inish, and a certain expression of luxurious ation are predominant, and here the h architect is *facile princeps* among his ean contemporaries. The revived Jaco- and Queen Anne styles as now practised ne English architects come the nearest to alk of French architecture,—but it is with t difference; for this development in nd, whether or not it may lead to any- better eventually, is at present little than mere blind and illogical copyism, ing up together of a *pot-pourri* of debased materials. But the French are making effort to elaborate a style out of Classic ts, what may be called a Greek-French and with results which exhibit often a degree of originality and refinement; nally, also, too much of Roman lavishness, , and over-exuberance. We see the latter es in the details of the Théâtre de la sance, clever, and in their way effective, y unquestionably are; we see the finer es of French Classic work to the best age in some of their smaller decorative and ental works, as in the exterior foun- the St. Claire Market at Grenoble, by ndel (plate 27 in the *Revue* for 1877), the simple but refined and suitable ent of Henri Labrouste, designed by his . Leon Labrouste; and still more in the monument to Regnault, of which an ing was given in the *Builder* some time and of which, in the numbers of the *Revue* fore us, there is a large coloured eleva- nd a number of details on a large scale. art may well be proud of this monument of the most brilliant and gifted sons of France; there has seldom been a better e seen of the complete blending of the sculptor and architect in one homogeneous completely expressing its purpose, and out with the greatest refinement in every In this respect it may deserve com- with Stevens's Wellington memorial, to it is superior in detail, though not equal grandeur of manner and conception in sculpture; we trust that it is not, like ountryman's work, placed so that never by any chance be properly seen. t deal of the characteristic excellence of domestic architecture is exhibited also front of the Hôtel Privé, Rue Legendre, Hermant (plate 19, vol. 1879), and in the 's studio, Boulevard Arago, by M. F. in (plate 10, vol. 1878), which last, in some slightly eccentric detail, is a truly ble and original treatment of a special building, in such a way as to be at once ally suitable and architecturally expres- ne can see at a glance that it is a studio nting, and can, in fact, be nothing else. of the works we have alluded to, as well rs that are illustrated, are strongly sug- of the finished and painstaking character ch architectural design, where trouble is in elaborating the smallest detail in a which we fear has very little parallel in ctural design in this country. The French, r, make the mistake, it must be admitted, rying over-refinement into situations it is not suitable, and where, in fact, it s weakness. If we were to define the position and tastes of the architectural ion of France and England at present, uld say that the French architect ought d town mansions and the English archi- ountry houses. Each has something to om the other.

conclude our remarks on the *Revue* with wishes of continued success to our able contemporary.

posed International Exhibition at .—It is announced that the Emperor and the Crown Prince have approved a for the holding of an International ion at Berlin in the year 1885.

THE PARIS EXHIBITION OF SCIENCES APPLIED TO INDUSTRY.

It is not a little indicative of the nature of the Exhibition at present being held at the Palais de l'Industrie, that the Parisian press should have said as yet so little concerning the show, which has now been open six weeks; for, with the exception of a few evidently interested paragraphs, nothing, after the account of the inauguration and the recent visit of President Grévy, has been said of any of the interesting exhibits collected in the Champs Élysées. Certainly, old sightseers cannot fail to recognise too many objects which have figured in all the exhibitions of the last few years, but there remains none the less much to be said, were it only to notice this somewhat tiresome repetition. But setting aside these, there are, it can be understood, exhibited many suggestive inventions and applications of science to industry that deserve notice, when, as in the present day, the mechanical arts afford as interesting a theme for discussion as the liberal arts, in the former of which are understood to rest most of the productions indispensable for the maintenance of life and the satisfaction of our material needs.

Those branches of industry which contribute so largely to the happiness of social life are no less useful than the more abstruse arts, but yet, by a strange perversion, these latter are only too often the object of an exaggerated esteem and admiration, while too little interest is expressed in the modest artisan whose work satisfies our wants at every moment. Let the different labours of each be judged according to their degree of utility and necessity, and the public will easily rectify the error it so often commits. Far from despising the mechanical arts, they cannot, on the contrary, be too warmly encouraged and multiplied; for they are, on the one hand, an absolute need in our existing social order, and, on the other, an active instrument of civilisation in their encouragement of industry,—and industry has at all times been recognised to form the foremost wealth of a nation. It was Bacon's opinion, and that of Colbert, the honest minister of Louis XIV., who devoted all his efforts to favour the agriculture and develope the industry of his country. It was the sentiment of a famous writer of the last century when he wrote, "He who introduced from England the invention of the stocking-loom, who brought into France the manufacture of velvet from Genoa, of glass from Venice, did little less for the State than those who fought its enemies and conquered their cities."

Continuing the classification referred to in our last account of the Exhibition, based, it will be remembered, on the grouping of the exhibits according to their place in the household, after hastily reviewing the important group of building materials, it is a natural step to the next consideration of the ventilation and warming of the dwelling; but previously let us mention an exhibit which should properly have found a place in our last notice, the interesting model in relief of a house in course of erection, a reduction to the scale of five centimètres to the mètre, or roughly about 2 in. to the yard, a model in which the whole method employed by the French in building a town house is completely placed before one, with all the various apparatus of scaffolding, windlasses, and pulleys, with models of all the tools, and the systems of laying the various portions, whether of brick, stone, iron, or cement, with each exterior stone numbered, as also the iron beams and roofing; here, in fact, one may study the whole organisation of a French *chantier*, or work-yard, on a scale sufficiently large to enable the model to be perfect in every detail. The building which it represents was executed last year in the Rue de Rivoli, and the rapidity of execution obtained is stated by M. Emile Desplanques, the praiseworthy exhibitor, to be at 23 centimètres daily on an average, some 8½ in. Such a model is, it may be understood, of valuable assistance in a technical school, and might usefully be obtained for England.

The materials having been discussed, it is a consideration of the first importance that the house should be constantly ventilated, and in winter equably warmed. Natural ventilation is obtained by the situation of windows and doors opposite each other, and various other simple means needless to summarise. Artificial ventilation is a difficulty which has long occupied the attention of the profession, and various are the exhibits of atmospheric modifiers, ventilating propellers, producers of heat and cold, apparatus for the extraction of organic corpuscule from the vitiated air, &c.* And then the means of heating; where to begin?—what to mention?

Certainly, in examining these complicated and simple apparatus, it is difficult to imagine the possibility of existence in the days when the brazier or the huge open-fireplace formed the only means of warmth, when whole logs crackled and blazed, imperfectly heating the circle huddled round the hearth. From the days of John Winter and Franklin, down to the latest inventions, what improvements! and what innumerable heat-producers, from the modest stove with its daily cost of 1d., to the huge calorifer, which heats an abbey or a palace! But we are still far from a knowledge of the means of combating our worst enemy, the cold, and the severity of last winter made every household feel the imperfection of the means at present adopted for the attainment of even moderate comfort. Strange to say, England, which bears the world over the reputation of understanding essentially in what comfort consists, does not stand first among the nations which have adopted efficacious means of keeping the house warm when the housewife has ordered fires to commence with the traditionary All Saints' Day; and certain it is that our persistent adherence to the open fireplace leads us into an immense and useless consumption of fuel, and a minimum of heat radiated, the ill-consumed fuel additionally impregnating with blacks the thick air of our great cities.

Both the stove and the open fireplace have their partisans and opponents. The friends of the stove urge that the grate consumes much combustible, scorches the persons nearest it, and ill succeeds in heating the room; the friends of the grate—that the heat of the stove is noxious, and some have even refused to visit certain friends who made use of stoves; each and all of which are exaggerations. The most useful objects may be rendered harmful by abuse, while the reasonable employment of good things cannot fail to be beneficial.

In the use both of the stove and the open grate, circumstances and locality must be taken into consideration. In the work-room and the dressing-room, the stove is certainly to be preferred; in the dining-room, in the reception-room, and the bed-room, the open fireplace, for the sight of the fire produces an agreeable effect, sensible even to the most indifferent, while in the bed-room the open fire serves as an excellent ventilator. With regard to the defect of the open fire not heating the room, and the danger of the stove rendering the air vitiated, these are difficulties which have already been overcome, and which will in course of time be even further brought to perfection. In the Paris Exhibition of last year might have been noticed the well-known application of the air-chamber at the back of the grate, taking the place of the old fire-plate; as to the various other methods of heating by hot pipes, and by stoves, we have in the present Exhibition no want of models.

Happily for England, the cast-iron stove has received little encouragement, and the terrible example offered us by the United States (where the usual intelligence of the native is strangely wanting in the continued use of the cast-iron stove) and some few corners of Belgium, has served to set in work the inventive faculties of the manufacturers; and for the purchaser it can only be an *embarras de choix* to choose from such an exhibition as that of the Palais de l'Industrie the stove that most meets the requirements of his climate. Economy of fuel and large production of healthy moistened heat are advantages that they all offer, even if their appearance may not as yet satisfy the exigencies of the person of taste. For such, there always remains the so-called "porcelain" stove, with its agreeable heating powers, and its pleasing appearance.

Into the consideration of *calorifers* for the heating of large buildings, it is needless to enter. In this branch our country offers many important and effective examples well known to the professional world, but in the more modest warming of our dwelling-rooms it is useless to deny that we have still much to learn from our neighbours.

If the present exhibition affords little scope for the examination of the next important consideration, the question of light, which so

* Among these, deserve mention the apparatus of Messrs. Lacomme et Cie., and those of M. Gariandat and M. Dumuis, and Juvell & Carsley.

naturally follows that of heat, there is no want of models of excellent pumps for the supply of water. The electric light is still in a state of dormancy, and until future exhibitions have brought under notice a perfected form of the electric lamp, we must continue to burn imperfect gas, petroleum, oil, and candles.

For the raising of water, and its distribution to each part of the house, there are numerous excellent models to be seen in the annexes of the Palais de l'Industrie, each and all of which merit careful attention from the interested observer*; in every case it is now placed in the power of the most modest purse to possess a hydraulic pump able to raise from the well sufficient water for all domestic purposes, including the bath, disposable at any moment and at a great saving of time, of fatigue, and expense. But still in this country how few are the families which profit by these ingenious applications of science to industry? And the patriarchal bucket still continues to draw up from the well the daily supply of water as in the days of the beautiful incident of the woman of Samaria.

Hydraulic machines have drained the Haarlem Sea, but are introduced with difficulty into the household, where, if the bucket does not still exist, the traditionary and fatiguing pump-handle is enthroned in glory. The civilisation which imposes on our municipal authorities the obligation of reforming the sewers, of levelling the roads and streets, and lighting our thoroughfares with gas, if not with electricity, has not yet penetrated to every house, and hence within but a short distance of the princely dwelling, or the house where are adopted the most recent and improved inventions of hygiene, may be found habitations without air, without light, without water, hotbeds of material and moral infection. Since in social life everything is connected, it is not unreasonable to argue that where enter water, light, and air, there penetrate also the book, the journal, the magazine, and the piano, and with the culture of the mind, gentleness of thoughts and refinement; but where reign the sickening heat and fumes of the ill-ventilated, ill-lighted, ill-cleansed habitation, there must be fostered the worst inclinations, depravation, and vice. "As the home, so the people."

If fate has denied us the superfluous, let us at least see that our home is not wanting in the necessary: let us be lavish of air, of light, of heat, and of water, which preserve health and cleanliness, and correspond to the other liberal gifts,—to science, to knowledge, and to love, to the enlightened mind, and the spotless conscience.

* Among these deserve mention, for their moderate price, the exhibits of Girodiss, Hirt, Letellier, Nines, and Petit.

THE ARCHITECTURAL PRINCIPLES OF ROOF DECORATION.

The question which we have recently discussed as to the decoration of the Dome of St. Paul's leads the thoughts very naturally to dwell upon the general theory of roof or ceiling decoration. We may not find that an inquiry of this nature leads to results as incontrovertible as those which may be expected from a purely scientific investigation. We shall find, indeed, that even in buildings of admittedly high order of architectural merit, opposite principles of roof decoration have been adopted by great architects. But we think it cannot fail to be of use to inquire into the nature of these principles. And if we arrive at the conclusion that certain structures, which display an extraordinary amount of sumptuous and elaborate work, have been raised and adorned upon principles which are opposed to the grand rule that structure should control decoration, the conclusion will not fail to interest. We may admire what there is of excellence in such works, in spite of their radical faults; and, at the same time, we shall be guarded from imitating the faults in any attempt to emulate the excellences.

To decide on the rules for roof decoration we must first bear in mind the essential character of the roof. If we seek for a single word by which to express the function of the roof, we can find none so good as the plain English word "shelter." To shelter inmates from the inclemency of the weather is the primary object of the roof. And to shelter them from cold and wet is almost the exclusive function of the roofs of northern countries. This may seem a trite remark; but it is one that has to be made in passing, because shelter from the vertical rays of the sun is far more important in Southern Europe, and in tropical regions generally, than in our English experience. And the kind of shelter which is most required is a qualification which has a considerable influence on the adoption and development of architectural style.

With the exception of the case of the cavern, which is a natural shelter that has influenced certain styles of architecture, the roof is a thoroughly artificial element of structure. It is not one for which we can seek the prototype in nature, or as to which we can derive much that is of value from the study of the habits and operations of the inferior animals. The roof, regarded as the creation of human skill, has four natural forms. It is modelled either on a tent, a shed, a vault, or a cabin. Originally formed either of a textile fabric, or by the work of the woodman or of the mason, the exigencies of the material adopted have stamped their impress on the workmanship, and continually reappear in any form of suspended, inclined, or vaulted roof. In our own climate and country the forms of the internal and of the external roof for the most part differ. For the former, we have the idea of the cabin, or the simplest example of that trabeate structure which has risen to its noblest form when carried out in the Classical orders. This idea dominated the greater part of our domestic architecture in Shakspearian times, and we owe to it the convenience of raising story above story, and the box-like form of our smaller dwelling-houses. Thus the floor of one room,—a bit of carpentery or joiner's work, of which we have probably the earliest examples in the ship cabin,—forms the ceiling of the room below. While the shed or sloped roof is usually adopted for the external shelter of our buildings, as must always be the case in countries liable to falls of snow, the trabeate, box, or cabin shape has become so familiar from daily use, that we have come to think a ceiling to be as simple and natural a part of a building as a wall. Such being the case, the next unconscious step is to regard the decoration of the ceiling as a matter closely akin to the decoration of the wall. It is here that we hold that a pause should be made; and that a consideration of the essential differences of these two portions of the interior surface of a room should be duly weighed before we begin to talk of decoration.

While the trabeate structure, or the working out of the idea of the cabin, or framed wooden house, must be regarded as furnishing the principal motive of most of our interior roof work or ceiling, the vaulted structure, from the simple form of the semicircular vault to the most elaborate groining of pointed arch-work, or to the beautiful enormities of the Tudor chapel roofs, shares our favour in many public buildings. The first point here to bear in mind is, that in any attempt at decoration, the essential differences in the motives of the several styles must be borne in mind. It is from confusion in this respect that difficulties arise; and that people are led to question, as "matters of taste," constructions which are plainly indefensible as matters of science, or of decoration truly moulded on principles of structure.

It might be thought unnecessary to say anything as to the first form of roof to which we above referred,—that of the tent,—in a country in which there is so little to recall that early and temporary form of structure as in our own. In the East, indeed, the tent has become crystallised in the pagoda. The graceful curved roofs of Chinese and Indian temples have borrowed their characteristic outlines from the natural curves of the tent. In England, where the pagoda has been introduced, it has usually sunk under the weight of public ridicule. It has never taken root with us. But it does not follow that we have exhausted the architectural capabilities of the tent form. The hollow curves of the textile roof are outlined by nature. They are the natural result of the straining of a textile material to obtain a shelter. And the reason for which we conceive it to be not impossible that the tent form may hereafter be displayed on a large scale in our landscape is, that we are now introducing for roofing a material which bears a strong resemblance to the sheeted covering of the tent. In the French tongue the use of the word *toile* is highly suggestive of what we mean. In English we speak of sheet iron. The largest roofs that have recently been constructed in England have been reared on frameworks not very dissimilar in their relation to that which they support to the poles s
structure of the tent, and the material
covering has been vast sheets of iron. It is qu
within the limit of possibility that the return
ropes, to struts, and to sheets, although made
metal instead of hemp, may tend to re-introd
in architecture the curves which result from
use of tension as a method of support. Inde
we may point to one of our largest and m
original modern buildings, in which the tent
has been actually restored, although in the fo
of a ceiling instead of in that of a roof.
refer, of course, to the *velarium* or *tentorium*
the Albert Hall.

As the function of the roof, or outer shel
is to resist the elements, and more especi
the wintry elements, in this country, so
function of the ceiling, or internal roof, is
contribute to the comfort of the inmates.
chief material ends attained by a second or in
roof are equality of temperature, accon
advantage, and diffusion of illumination. W
ever we do by way of decoration ought to
subservient to these ends. In small rooms
latter function of the ceiling, that is to
illuminative value, is of the most mom
Those of our readers who have made
acquaintance of rooms with papered ceiling
such papers are of any dusky hue, will
aware of the sombre effect thus given
house. Bearing in mind what we have rece
written as to illumination, we admit into
ordinary sitting-room less than one fo
eighth part of the full atmospheric light
would fall at the same moment on a spot on
roof of the house in which the room is situa
The plane of the glass being on one side
normal cube, admits one-eighth of the
atmospheric light. If the aperture of
window be one-sixth part of the area of the
in which it is perforated, we have $\frac{1}{8} \times \frac{1}{6}$
From this we must take off 10 per cent. for
obstruction afforded by the glass of the win
The small proportion of light thus admi
into the room requires to be made the mos
No element of the internal structure has so m
importance here as the ceiling. A perfe
smooth, white, reflective surface is of the nt
value for optical purposes. And we must as
high in the architectural scale, and have
do with interiors of large size, and inte
for special purposes, before any ceiling de
tion, unless it be in the form of mould
immediately above the walls, at the angl
the ceiling, can be anything but a detra
from the true habitability of a room. It
the reflective surface of the ceiling that we
the greater part of the diffused light by w
we read, and work, and occupy ourselves in
tasks of indoor life. The richly-parge
ceilings of the Georgian era may be take
examples of the richest decoration that is
very destructive of light.

When we ascend from the dwelling-hous
the public hall, we generally have loftier ceil
with which to deal. The windows are also
lofty, and the direct reflection from the ceili
the eye plays a less important part in the d
sion of light. In such buildings, too, lig
usually here required by the individual.
is most important is, that the speaker, or ju
or clergyman, or singer should be visible,
above all, should be audible. The illumina
of the body of the hall is of less importa
and as, in our actual state of civilisation, a
great portion of our public life is carried o
artificial light, the illuminative function o
ceiling has been often much neglected.
very large number of buildings of a pu
nature we thus find that the trabeate
becomes developed to its natural outcome
panelled roof. Here decoration begins to luxur
The panels are deeply recessed. Bold mo
ings and central ornaments are thrown out
the surfaces. Gilding is employed to heig
the effect, and the extreme of decorative lu
is reached when painted compartments
framed in gilded mouldings.

The loss of light thus caused is immense.
are supposing that the architect can disp
with a very brilliant interior illumination.
it is essential for him to know beforehand
much light he shall have. What is lost
shadowy projections, of course, is a m
depending on detail in the individual c
But we now refer to what is lost by substit
colour for white surface. As to this we
mention one fact, which is highly signifi
When the dioptric apparatus for the
Lighthouse, which was completed in 1869,
in preparation, it became important to ascer

nuch light was lost by passing through glass. The investigation was entered on ofessor Tyndall, the scientific adviser of inity House, and it was found that the re- ould not be determined by ordinary photo- measurements. Observations were made olving-lights, showing red flashes, at 2, , and at 30½ miles' distances. From a com- n of all the practical tests it was determined ne quantity of light to be appropriated to d beams should be to the white in the f 5·275 to 2·250, or nearly as 21 to 9. s to say, that in the light reflected from a d ceiling there is a loss, as compared with ion from a white ceiling, which will depend colouration, but of which the amount may mated by knowing how much it is in the the pure tint of ruby red.

re illustrate an argument of this nature otical examples, we can find no more apt e than that of the church of La Santa ziata at Genoa. We can now only speak nemory, and that not of the most recent But we apprehend that this church is the most sumptuous specimens of a coloured and decorated roof anywhere g. The architectural lines of the columns, upport semicircular arches, supporting a eze and cornices, are carried across the ceiling. Gold, carving and gilding, are nt, and the central compartments are with colossal paintings representing in sacred story, which are visible on from the western end of the aisle. is splendour is not confined to the The entire church is gorgeous with d marbles, and with lavish wealth of nt. As to observing the paintings as of art, it is impossible. The painful required for gazing up at the roof any long inspection. But the effect on itor is that of a splendid whole. It is ossible that a plain white ceiling might of keeping. There is enough light in rch to show off its splendour, and that at is required. In the second edition of istory of Modern Architecture," Mr. son says of this church that "the whole ich good taste, so rich, and so elegant, s probably the very best church of its s Italy." He adds in a note that the f the interior has been re-gilt and re- and that it is consequently deficient in y, a view with which we quite agree, content," as Mr. Fergusson says of two n churches, "to be charmed with the of the colouring, and astonished at the ul elaboration of the details, without g too closely whether or not it is all in taste." In this case, then, it is not on of the decoration of the roof of a such as those which we are accustomed in this country. It is that of the ous treatment of an interior, the great oduced on entering which is the impres- s no wealth is too great to lavish on the ont of a famous shrine of Catholic

As to the *ensemble*, it may be possible more than one opinion. But it is as an alone that it can be regarded, and any to transplant a portion of the rich geous whole to a differently conceived e could only result in failure.

examples like that of the Church of the ata, where carved, gilded, and painted or vaults are in harmony with coloured richly-adorned altars, abundant votive lamps of precious metals, waxen tapers r candlesticks, gorgeously attired , and jewelled images of saints, and all h add to the magnificence which sur- pompous ritual, we may draw certain s as to roof decoration which are gene- licable. Of these, the first is, that rich colour on the ceiling tend to bring to the eye of the spectator. Magnificence ed, in so far as costliness of material is d, but it is at the expense of grandeur. ark may not apply to roof decoration by g mouldings, or receding panels, with- se of gold or of colours. By all forms ation of ceiling, indeed, light is lost. But "dim, religious light" is suitable to the d to the habit of the worshippers, it is o point out that this loss occurs. It is that it is not a disadvantage. So far re being loss of grandeur or of apparent , we apprehend that the reverse is the h a shadowy or even a dusky roof. As e of definition brings the object appa- oser to the eye, so does indistinct definition tend to remove it. This indistinctness may be created in various ways: by actual shadows, by want of sharpness in lines, or by duskiness of tint. Grandeur and splendour are thus diametrically opposed to one another as effects to be produced by decoration of roof. And good illumination of an interior (without the introduction of artificial light) may be said to be intermediate between the treatment which produces grandeur, and that which produces splendour, of effect.

The traveller who is familiar with Italy will at once remember how very generally colour is introduced even in domestic ceilings. As to this, it has to be borne in mind that under the bright sky of Italy there is a need for subduing the amount of daylight admitted to a house which is rarely, if ever, felt in more northern climates. But the experience of Italian ceilings leads to the remark how inappropriate for decorative use, in this part of the interior, is the human form. We have examples of the work of the greatest masters of drawing and of colouring, in some places, unfortunately spread over ceilings. It is impossible to be familiar with them without regret. The essence of art, the verisimilitude of the object represented, is absent. A perfect master of anatomy may give a tolerably correct representation of the human figure, as it might look if suspended in an impossible position. But he can never be perfectly sure that he is correct,—because he can never check his imagination by observation of a figure in that position. And those who know how different is the representation of a pose or of a movement which the artist has surprised in nature, from that of one in which he has arranged a model, will be aware what this means. Even in the wonderful aërial groups of Correggio, there is always a something to give the idea of an academic *tour de force*. Amoretti or angels, goddesses or saints, the inhabitants of a ceiling to whom human form has been given, have always much of the unreal, if not of the monstrous. A shadowy Night or a cloudy Morning reclining under a pediment, or frowning on a pendentive, offers the nearest approach to the introduction of the human figure on the ceiling that fails to weary, to disappoint, or to disgust. And if that be the case with artists who were consummate anatomists, masters of the art of foreshortening, educated by every day's varying light and shade in a sense of *chiaroscuro*, furnished with experience of at least the semi-nude *ad libitum* for half the sunny year, and practised in the rapid treatment of the *fresco* touch on the admirable plaster of the country,—what is likely to be the case if we employ decorators who cannot hope to unite these advantages, even if they can fully lay claim to the possession of a single one of them? We may refer to a recent instance of ceiling decoration in Paris as somewhat exceptional. Light, shadowy outlines of figures, borrowed from the Greek mythology, have not the ponderous and oppressive effect of solidly coloured human forms. In this instance, however, there is no attempt to carry the architectural lines of the building into the visible under-surfaces of the roof. Although the treatment may be more or less conventionalised, the object of the artist has been to give to the spectator the idea that he is gazing up into the vault of heaven, and that he catches an indistinct glimpse of the inhaitbants of the celestial regions. We cannot venture to offer the opinion that such an effort must necessarily be a failure. But we cannot be wrong in holding that it demands an artistic skill of a nature close upon genius to produce anything but a failure in such an attempt. And we are convinced that that essential characteristic of true poetic treatment, absence of exact or intrusive definition, should be adopted by the decorator in such a case.

There is no doubt that in many of the vaulted roofs of Pointed architecture, the use of colour and of gilding for defining the structural lines of rib and groin was familiar to the early architect. We are not so sure as to the date at which this mode of decoration was chiefly in favour, or as to what led to its decline. From the remains of colour in old churches it is clear that the use of colour in the roof is older than the introduction of the Early English style of Pointed work. The struggle which we have indicated as maintained between splendour and grandeur has probably been carried on, with varying fortune, during the whole period of the Gothic centuries. Indeed, Gothic architecture, pure and simple, may be said to have been absolutely crushed under the weight of the decorative luxury of the latest Perpendicular style. If we look at such roofs as those of King's College Chapel, Cambridge, Henry VII.'s Chapel, Westminster, or St. George's Chapel, Windsor, we find instances of the most costly and laboured negation of the law that structures must control decoration. The idea of these roofs is that of work by magic; to produce an impossible effect; to suspend solid pendants from a carved stone ceiling, instead of to raise a lofty vault on slender shafts, was to emulate the grandeur and simplicity of the sky. There can be no doubt of the high structural skill of the architects of these roofs and of similar structures; but there can be no doubt either that this skill has been directed in a very questionable path. The only natural model that could be mentioned as presented to the mind of the artist by one of these wonderful ceilings is that of the cavern. In a very homogeneous rock it might be possible to decorate a natural roof with the fanwork of Perpendicular tracery. Even here, however, a sense of insecurity would always be awakened. Such a sense is the reverse of that which the true architect seeks to gratify. The ideas of repose, of safety, of adaptation both of material and of design to their true purpose, are the very guiding-lights of the architect. To produce a roof that threatens to crush the spectator, and that actually involves in its form a wholly unnecessary degree of danger, or of labour directed to the express purpose of exciting fear or wonder, may be skill of a high order; but it is not, in our view, the proper skill of the architect. Such roofs may be magnificent, but they are not admirable as specimens of true architectural excellence.

A FAMOUS ROMAN ARSENAL.

"Forum Julii, a town of Gallia Narbonensis, now Fréjus, in Provence." Such is the short notice devoted in Lemprière's Classical Dictionary to a once famous town, one of the three great arsenals of the Roman Empire, but now a village situated far inland, its streets strewed with Roman ruins, the crumbling remains of past magnificence.

A recent article in the *Revue des Deux Mondes*, from the pen of M. Lentheric, has thrown much light upon the deserted old Roman station, with its interesting history and architecture, which three centuries ago the virtuous and accomplished French Chancellor, Michael de l'Hôpital, described so simply and so truthfully in one of those epistles the Latinity of which the learned have considered even equal to that of Horace.

"We reach Fréjus, which is now but a poor little town. Here are the great ruins of the antique theatre, the arches fallen down, the *thermæ*, the aqueduct, and the scattered remains of the quays and the port, its place only now a beach and fields."

There remains little doubt that the Phœnicians, in the first place, and after them the Greeks from Phocæa, traces of whose existence are found in all the towns of the Ligurian coast, founded at the mouth of the Argens a commercial establishment previously to the Roman occupation. Few vestiges, however, remain, of a period anterior to the Conquest, and the town of Fréjus only comes into notice at the epoch of the Roman colonisation,—that is, about half a century before our era. The great military road made, or rather repaired, by Aurelius Cotta (who gave it his name, the Via Aurelia), issued from Rome by the gate of the Janiculum, on the further side of the Tiber, ran along the Ligurian coast, and ended at Fréjus; there it left the shore, and ran northward to Arles. Fréjus was, therefore, as we see, the last maritime station on this important road, the chief feature of which, as it followed the coast line, consisted in its lying under the protection of the Roman fleet, and affording an open gate upon Gaul.

Irritated as Cæsar was with Marseilles, which had embraced the cause of Pompey against him, the future dictator favoured the creation of a rival to the Phocean city; a vanguard was sent to occupy the little port at the mouth of the Argens, a body of soldiers belonging to the tenth legion, which gave their name to the town, Forum Julii Decumanorum, from which has been corrupted the modern name of Fréjuls or Fréjus, which it bears to this day.

In spite of its advantages as a strategic post, it is certain that Cæsar's choice was, from a nautical point of view, bad. From the earliest times the ancients were aware of the effects produced by rivers which roll down to their

mouth quantities of mud, and the care with which they avoided placing their ports in such positions is constantly to be noticed. Vitruvius, the most experienced of the Romans in matters of construction, speaks of the dangers consequent on a want of consideration given to this point, but though the great architect actually served as a military engineer in the armies of Cæsar, his principles seem little to have been put in practice. The port of Fréjus was, so to speak, decreed by an act of sovereign will; by its very position, bathed on the south by shallow ponds connected with the sea, and on the west by the marshy course of the Argeus, where the fleet anchored, the ruin of the port could only be a matter of time.

The space at our disposal forbids our entering into the consideration of the incident of Antony and Lepidus meeting not far from Fréjus, after the murder of Cæsar, for the details of which we would refer the classical student to the original pages of the *Revue* for the two letters from Lepidus and Plancus to Cicero; their chief interest lies in the fact that they settle indubitably the position of Lepidus's *castrum*, or camp, on the plateau of Châteauneuf. The bridge of Argeus, the scene of the defection of Lepidus, some thirty years ago was still in existence, but its three unequal arches have since been carried away by a flood. The bridge of the modern road, which passes only a few yards distant, has taken its name, *Pont d'Argeus*, and there alone now remain of one of the oldest works of the Aurelian Way some still recognisable remains of the abutments, and a few mutilated inscriptions found among the ruins.

Fréjus was not an ordinary colony; and though there are to be found remains of the usual features of Classic official architecture, an amphitheatre, forum, thermæ, &c., Fréjus was principally an arsenal and a garrison town for the crews of the Roman fleet. Rome became a maritime power merely by the force of circumstances. It was alone when they resolved to drive out the Carthaginians from Sicily, that the Romans constructed, in an incredibly short space of time, a fleet, the ships of which were copied, more or less it is said, from the skeleton of one of the enemy's galleys wrecked on the coast of Latinum. But the Romans were never anything but bad naval engineers, and very poor sailors.

Their vessels belonged nearly all to the class called *onerariæ naves*. They were merely transport ships, chiefly manœuvred with the oar, and capable of holding arms, provisions, men, and even horses; they were therefore heavy, and by no means easy to manage in a bad sea. These vessels, armed with spurs and grappling-irons, resolutely hooked themselves on to the enemy's ships, and, once the two were locked, the battle was decided, not by naval tactics, but by the strength and bravery of the soldiers, who fought by the same rules as those employed on land.

We know that the ancient ships were often hauled on shore during the night by means of capstans,* for the practice of anchoring in the roadstead was unknown, and the Roman sailors alone felt in safety when their vessels were hauled up high and dry on the shore. The fleet, arrived in port, was dragged up inclined planes on stocks specially for that purpose, or even upon the shore, as is still practised all along the Mediterranean; nor does this primitive process, dating from the time of Homer, appear to have received any modification during the Roman rule.

As conquest had given their rule a development of coast line such as no nation has probably ever possessed (save England), it was indispensable for the Romans to keep a fleet to exercise a watch over this immense line. Thus there were three fleets: one in the Adriatic, the other in the Tyrrhenian Sea, the third to guard the coasts of Narbonne and Iberia, or Spain. Each of these fleets had its arsenal. The first was at Ravenna, the second at Misenum (the upper extremity of the bay of Naples), the third at Fréjus, which was the rallying-point of the squadron entrusted with the protection of the coast of Gaul and Spain. If we are to judge by Tacitus, Fréjus was the most important of the three, for there it was that the conqueror of Antony sent the ships of war he had captured at the fight of Actium, and which he justly considered as the most glorious trophy of his victories.

* A custom still observed in all fishing villages on the coasts of France and England, where the antique capstans form no inconsiderable portion of the picturesque effect of the sea-shore.

It is not our intention to describe in detail the monuments of Fréjus, an interesting task whish, as M. Lentheric very truly observes, would in itself require a volume. The study has been made more than once with care and talent, and we cannot do better than refer those interested to the valuable monographs that within the last half-century have been published on the subject, by M. Chas. Texier and others. There will be found, treated at length and illustrated by numerous plates, the complete restoration of all the monuments of the antique town, the citadel, and the jetty, the warehouses, the depôts, the signal towers, the gates and walls, the market, the thermæ, the theatre, the amphitheatre, the temples, the forum, the drains, the aqueducts, &c. We must content ourselves with a glance only at the interesting colony in its whole, and in some of its salient features.

We know that in the organisation of their conquered provinces the Romans pursued a double aim, to create a strong power which would insure them against the chance of a revolt, and at the same time to establish an administration as simple and as easy as possible. This system received a different application in each province, according to the nature of the place, the inhabitants, the state of their civilisation, and the circumstances of their conquest.

On those people conquered by force, whose land had been adjudged to the *ager publicus*, the Roman colony was imposed,—a semi-civil, semi-military institution, founded in principle on the expropriation of the old inhabitants, and the foundation of a little Rome in the midst of the vanquished people. Then came the Latin city, into which came those who had submitted to the Roman yoke; then those who paid an annual tribute, hence termed *stipendarii*. Such was the system constantly employed during the republic and the best days of the empire; it presented many advantages, and the governor of the province, leaving to the magistrates of the towns the details of the administration, could with greater ease look to the general interests of his charge.

The monuments of Fréjus point to the probability that from an early date it was one of the most favoured colonies; at the same time, a civil and a military colony. So successfully had the Romans carried out their system, that, if we are to believe Pliny, the Narbonnaise, comprising the whole maritime country from the Alps to the Pyrenees, had become so Roman that it was scarcely distinguished from Italy. No people certainly have possessed in so marked a degree the genius of administrative colonisation, which nowhere produced results more rapid and more complete than in Fréjus, and it is impossible not to admire the surety of method, the practical spirit, and the simplicity of the material means of execution which brought about, almost at a signal, the disappearance of the Græco-barbarous city, and improvised, in the short space of a few years, an absolutely new city traced on the model of the metropolis, and the machinery of which was able to work with regularity in its smallest details the marrow of its establishment.

In general a somewhat false idea is formed of the methods employed by the Romans in the innumerable constructions with which they have covered the soil of their immense empire. We have been led to believe that the Romans wished to give systematically to all their monuments a strong character of vigour and a majestic architecture. Nothing is less exact, and a recent study by M. Choisy (an engineer) on the art of building among the Romans (*L'Art de bâtir chez les Romains*) allows of our observing their processes of construction and the organisation of their yards in their smallest details. The Romans had not in reality an architecture which was strictly their own. The principal elements of all their edifices was the arch and the vault, which they had borrowed from the Etruscans. It is from them also that they adopted their enormous blocks, dressed without cement, and which distinguished the greater part of the monuments of the republic. This method of building, in which each stone impresses one with the idea of a difficulty overcome, suited too well the expression of their power to be abandoned in the days when Rome reached the pinnacle of its grandeur, and so we find it used at all the periods of her history. The columns of granite erected in the monuments of the empire, the monoliths, heavy and massive as Egyptian obelisks, from which the spring of the huge arches, the quarters of hewn rock which form the Roman amphitheatres, all the pomp ornaments which the architects of the la times applied to their great edifices, sh sufficiently, in spite of the difference of sty that the Roman builders never entirely for the antique traditions taken from the school the Etruscan masters. But the essentia practical spirit of the Romans, their instinct taste for the simple and the useful, urged thi soon to employ in their public buildings g cesses of execution more economical, especially more rapid. Already, with the of the republic, the embellishments of Ro undertaken with a feverish activity, were c used as a means to make the people forget old political life, and the city of the seven h was covered, under Agrippa, with edifices c secrated to the pleasures and the holiday the multitude. The colonies only reflected metropolis, and the same activity was displa in the construction of the same edifices; ev where the same discipline, the same rapidit execution, facilitated by the resources of lab gratuitous, and almost inexhaustible.

It was, indeed, a principle at Rome that soldier should never, in any case, remain occupied; and in employing him in workn construction, he was preserved from dange idleness. Frequently the Roman troops w thus employed in works which were alr superfluous. When Vitellius caused to be erec by his soldiers the amphitheatres in the c of Bologna and Cremona, he thought less Tacitus tells us, of endowing the two towns useful monuments than of diverting fo moment the turbulent spirit of the legi From a like reason we see the Roman sold building amphitheatres in Africa, defen walls in Brittany (doubtless also the Ro wall which divided Scotland and Englan "Hadrian's wall" was built under the s conditions); in Egypt, tombs, bridges, tem porticoes, and basilicas; in Italy they made great roads; almost everywhere the mentio their work is accompanied by the curious ob vation "that the monuments were undert to occupy the leisure of the soldiers."

It was not alone the soldiers who were t formed into builders; such was the simpl of the processes employed that they coul applied even by the prisoners whom the Ro kept at their discretion, as also by the con who sprang from the lowest ranks. Condem tion to public work was indeed among penalties of the law, and one of its chief d consisted in quarrying the building materia

But in the provinces, at m ments of h free men were often called upon to be buil The types of construction were very si and always the same; intelligence in the w man was almost unnecessary, numbers repr its want, and every able-bodied man, so prisoner-of-war, slave, convict, and free helped in the public works. The manageme this huge band of workmen required m organisation and discipline. The conseq of such a system was the natural abandon in most cases of any architectural disposi requiring not alone time, but especially sk hands, and it was alone in exceptional cir stances, when the proximity of the qu allowed of the easy transport of material, the enormous blocks of stone were used; for example, may be seen at the Pont du Ga in the arenas of Nimes. Almost everyw these buildings were made of small mate connected by mortar, such as bricks and crete masonry, which required on the part o workmen no talent or special education.

The antique town of Fréjus is a str example of these processes of rapid execu All the edifices of the city, the walls, the q and the port, were built at the same perio the same workmen, with the same mate cut in the same proportions and laid in a si manner. Though the neighbouring moun would have supplied excellent building rials, time and special workmen would been necessary, and with the exception o columns, and the ornaments in marble, serpe and porphyry remains of which are found city was built of brick and small rubble. E where, also, where the rock crops out, i been utilised, and in the amphitheatre one is formed of a rocky matter of volcanic o a condition found also in the walls of the everywhere are evident haste, and a desi make use of any natural advantages, wi the slightest effort in the direction of origi or ornamentation.

* See A. Choisy, "L'Art de bâtir chez les Romai

réjus, surrounded by brackish water, had to upplied with drinking-water,—a necessity o first order with the Romans; the distance e source mattered little, and so it was that liogne, a small river nearly forty miles from s, was utilised, and an aqueduct built, rsing more than one chain of hills and ys, and remains of which still lie stretched any a mile; from these ruins it is evident this aqueduct was the most extensive and mental which the Romans established in arbonnaise. Thousands of workmen must been employed, and evidently the same as nsed in the construction of the city, for me materials, the same haste in execution, bservable, a fact which led to the invariable accompanying carelessness, for remains till apparent of later reparations.

e only monuments of Fréjus which differ the familiar types reproduced by the ns in all their colonies are those connected the port. The quays and jetties are still ent to the south of the town, in the low, plain of sandy alluvium traversed by the ay line from Toulon to Nice. At the ex- ty of the chief jetty may still be seen in a ot state of preservation a singular monu- the circular base of which is surmounted six-sided prism, crowned by a hexagonal uid. The primitive destination of this has given rise to many conjectures; the probable of these make of it a signal- , and perhaps the faces of the prism were ed, like those of the famous Tower of the s at Athens, as sun-dials, while a staff or served to indicate the direction of the wind, give signals for the manœuvres of the to the port. In every case it is evident the tower was not a *phare* or lighthouse. rue *phare* of Fréjus was opposite. Like all ments of this nature, it resembled the s edifice erected to the entry of the port exandria. Every one knows that that gious monument was built on the little of Pharos (whence it took its name , still retained in the French word *phare*), which, ruined by an earthquake in 1303, remains a shapeless ruin. All the beacons thhouses of antiquity were built upon the of this marvel of the ancient world. for example, was that which Caligula at Boulogne in his foolish expedition, when proached our shores with such an alarming or of warlike engines. According to the ng preserved by the Dominican Lequieu, composed of no fewer than twelve stories. uilding was composed of stones of different rs, alternating with chains of bricks. Such he picturesque tower which Charlemagne ed, and with it its old lamp, extinguished any centuries, and the tower, the *Tour de* e, which, in 1545, while our English arms occupied Boulogne, was taken inside the pations and converted into a dungeon. and fort crumbled away in 1684.

its construction the Pharos of Fréjus bled that of the famous beacon-tower of ndria, and like that marvel of Sostratus's tectural powers, and the beacons at Ostia oulogne, had several stories, occupied by *horles vigilum*; half a century since, much old tower was still erect, but now time orked its effects, and restoration is almost sible.

far from the Pharos may still be seen the known as the *porte dorée*; executed with greater care than the other buildings of e, it is evidently of a later period, and rs, from the remains of marble and frag- of statues found at its base, to have been ly ornamented. In the midst of the scat- ruins, the *porte dorée* stands alone; the ng sun of the south has tinged it with so ng a colour that the brush could with diffi- render it faithfully without being accused aggeration. Is it from this reason, or be- of the golden riches that passed through the past, that it bears its name the *porta a*?

of the questions which always suggest lves at the sight of the ruins of an ne city is, what was its population? Two nts allow of an approximative calculation; erimeter of the walls, and the size of the itheatre. Free as these latter places of ement were, it has often been proposed to ate the figure of the population at double pacity of the theatre; in this way we have d at something like the population of most e towns of the Narbonnaise, Narbonne, s, and Arles.

While the amphitheatre at Nîmes was able to contain some 25,000 spectators, according to the restorations of M. Charles Texier that at Fréjus could only have contained about 10,000,—at the utmost, 12,000. Hence we arrive at the approximative figures of 20,000 to 25,000 for the population of antique Fréjus, a calculation confirmed by the capacities of the walled-in space of the city fortifications.

Situated as Fréjus was, at the mouth of the muddy Argens, its fate was doomed. As long as the empire flourished, the dredging of the port was carefully maintained, and the three or four yards' depth necessary in the channel for the vessels of those days was easily insured. With the fifth century, and the arrival of the barbarians, the port was neglected; the Saracen invasion still further ruined the country; the amphitheatre was transformed into a stronghold, and when in the tenth century the Christian bishops re-walled-in the city, many of the Roman buildings were destroyed for their material. The port had already filled up. Like Ostia, Ravenna, Narbonne, and Aigues-Mortes, Cæsar's port suffered the same fate; a low marshy plain cuts the village off from the sea, and the only future that remains for Fréjus is to cultivate the site where eighteen centuries ago proudly rode the three hundred galleys conquered by Octavius at the famous fight of Actium.

Few regions of Provence are more delightful for their scenery and climate. The little town of Saint-Raphael is placed outside the zone of infection of the marshes of Fréjus. It extends gracefully on the shore at the foot of the wild chain of the Esterel. On every side the peaked rocks of red porphyry glance through the thick foliage of the pine and the cork trees. In the distance Fréjus, deserted and sad, lies in mournful solitude. The veil of death seems already to have covered the silent, sleeping country side. The broad plain of the Argeus stretches out green and feverish; the ruins of the aqueduct stand out on the horizon, lost in the distance of the valley, and recalling the long lines of arches and pillars of the deserted Campania of the Eternal City. This southern landscape is far more Italian, in the classic sense of that word, than even many famous sites in Italy. It is the same soil, the same sky, the same sadness as on the banks of the Tiber. The Roman remains scattered on every side render the analogy even more striking. The port of Cæsar and Augustus recalls in many of its features the vicissitudes, the prosperity, and the ruins of imperial Ostia.

ELEEMOSYNARY ART.

THE taste for art has been gradually becoming, in this country, less of an aristocratic privilege than it used to be, partly keeping in pace in this respect with the great social change in the relative power of "family" and money in conferring social distinction. For until a very recent period, taste in art has certainly been an aristocratic privilege, even in times and under governments which were nominally democratic. The writer of a recent clever and piquant magazine article on "Art and Democracy" has observed, truly enough, that in the great days of Florentine art, in spite of the assumed democratic constitution of the State, the art patronage was all on the part of the wealthy and cultured leaders of society, of whom the Medici were the most notable types, and who were really an aristocracy, and an aristocracy of a very "exclusive" kind, to use a favourite expression of our American cousins. There is little evidence of any enlightened interest in art on the part of the many even in that day; and it is probably well for us, who inherit the works of the great artists of the period, that there was not, and that the public to whom they really appealed, though a limited one in regard to numbers, was composed of the persons who represented the most cultured, exacting, and sensitive taste of the age: people with all the selfishness and class prejudice, and other faults usually found to accompany an aristocratic caste, but having also, in an unusual degree, the intellectual refinement and delicacy of perception in regard to æsthetic which perhaps can hardly be attained except in a society accustomed to a luxurious and refined social atmosphere, possessed of the wealth which gives the means for the collection of beautiful surroundings, and the inherited and highly-developed taste which prompts the desire for them, and gives the facilities for fully appreciating them. The most marked feature in the art patronage of the present moment in England is that to a considerable extent the wealth, and consequently the power of commanding costly artistic production, has passed into the hands of a different set of people. According to the writer before mentioned,* the modern representatives of the art patron, the men who are to England what the Medici were to Florence, are "navvies who have made money"; and he attributes to this fact a great deal of the realistic and prosaic tendency of the art of the present day in England, which has to please patrons who have not inherited high culture or the sympathy with a refined ideal. There may be something in this idea, though it is rather contradicted by the fact that it is this very class of *nouveaux riches* who are the most enthusiastic patrons and liberal purchasers of the works of that small group of artists who specially profess to follow the ideal in art, such as Mr. Rossetti and Mr. Burne Jones. Whether the correct inference from this is, that the *nouveaux riches* have really a more refined and ideal taste than they have been credited with, or that the ideal of the painters in question is not so very ideal after all, or that the buyers follow a fashion, might be a profitable subject of discussion, which, however, we pass over just now. What we are specially remarking is the fact that art-patronage has taken of late a decidedly democratic turn.

It is, perhaps, partly the development of this taste for art on the part of the man who has made money (it would be more correct to say, perhaps, on the part of his sons and heirs) which has suggested a movement that is obviously going on for giving art to the many who have not made money. The desire to cultivate a taste for art on the part of the humbler working class of the population is, of course, not so new; it has been an aim with ourselves for long enough, as far as opportunity admitted, and no sensible person, we presume, questions its desirability. But progress is certainly slow in this direction. To awaken any desire for or interest in beautiful things for their own sake, in the mind of men of little education and engaged in a hard struggle for existence, is a work of time; and though the existence of the wish is the first and most important step towards the supply of the want, there is still the question, if you can implant in the labourer a desire for artistic embellishment of his life, how is he to gratify it? Art, after all, costs money, and he has, or says he has, none to spare. On holidays he has those art-galleries which are free to all, but these, even if understood and appreciated, do not affect his daily life. The better education which the next generation of the poor will probably have had will enable them to see better how to make their homes brighter and more attractive than they are now, even at little cost. The present generation can hardly, perhaps, have time to learn it, or opportunity to provide for it.

It is something like this line of argument, we may suppose, expressed or understood, which has given rise to various attempts at what we have called eleemosynary art. The working man and his family either will not or cannot get art, therefore art must be given to them. This is the object of not a few private and individual attempts, and of at least one constituted society (whose last annual report is now before us) with committee, secretaries, and other staff organisation in the usual form. Ladies are constantly found engaged on ornamental needlework which is to be presented to some *protégé* (or *gée*) who cannot afford to pay for anything merely ornamental; or they are painting the panels of the cupboards in the parish school-rooms with conventional foliage, or doing frescoes on the walls of the working-men's club. The Kyrle society, above referred to, is decorating the wards of hospitals and the walls of churches in poor districts, and in its last report requests subscriptions for adding various items of specified decoration to a new block of model dwellings; decorations which considerations of sound economy and a proper return for outlay prevent the promoters of the scheme from entertaining on their own account, but which they presumably are quite willing to see added—as a contribution at the hands of others. There are so many stone brackets, for example, which must be left plain if the builder's contract is to be kept within the mark, but each of which can for a certain sum be carved with foliage or other adornment, and

* See the *Cornhill Magazine* for August.

charitably-minded persons are invited to contribute that sum; and so on through other items.

There is excellent feeling about all this, and if charity (in the sense of giving) is to exist at all, perhaps it could hardly exist in a form which seems more graceful. But there certainly are two sides to it, and we are led, while recognising the kindly spirit which actuates such an undertaking, to ask, is it sound? or is it not in reality more creditable to the hearts than the heads of those who are endeavouring to carry it out? In the case of hospitals which are "supported by voluntary contributions" (as too many are), there is certainly something in a gift of this kind which is not out of keeping with the general relation of such an establishment to public aid. People who have little means, but who possess some artistic ability, may not unreasonably say, in the apostolic phrase, "Silver and gold have I none, but such as I have give I unto thee"; I cannot afford a large subscription in money, but I will expend some of my ability in decorating the rooms where your patients lie, and making them look more cheerful. This is especially a suitable position for people with artistic talent, which they exercise only as amateurs, who may by this means turn what would otherwise be a pursuit merely for their own gratification into a gratification for others. But when the decoration thus carried out is the work of or the design of people who are professionally engaged in that class of design, as architects or decorative artists, it is difficult to see on what grounds of general justice such persons should be expected to give time and ability, which are part of their daily bread, to the extent which is sometimes asked from them, and apparently complied with. A professional man with a moderate income, who would feel it most unreasonable if he were asked to subscribe more than two or three guineas towards the general working expenses of a "voluntary contribution" hospital, gives time and work worth perhaps ten or twenty times that sum, towards an ornamental contribution. It is very good-natured of him to do so, but we see no sense or justice in amateur philanthropists expecting him to do it: nor do we quite see on what grounds the very persons who are most opposed to ordinary "charity" in the sense of money and soup, from a conviction of the ill effects of "pauperising," should be so active in giving away art. Decoration costs money, just like soup and blankets, and (unless in exceptional cases) it seems to us that those who want it should pay for it. And, in fine, if the principle of providing people with art *gratis* is once admitted, where is it (logically) to stop?

FROM THE BANKS OF THE SEINE.

Coincidentally with the forty-first meeting at Sheffield of our own British Association, the French Association for the Advancement of the Sciences has held its eighth annual congress. It is at Montpellier that the association has met this year, and the old scientific capital of the South of France has determined to show itself worthy of its antique reputation. By a fortunate coincidence, the prefect of L'Herault, M. Cazelles, is himself a scientific man, and it is to him that the French owe a knowledge of our sturdy English contemporary school of philosophy through his translation of the works of Herbert Spencer. The labours of the Association this year comprise the fifteen sections of mathematics and mechanics, navigation, civil and military engineering, physics, chemistry, meteorology, geology, botany, zoology, anthropology, agriculture, geography, and political economy; among the papers already read, there have been not a few of more than passing interest. In the geographical section, M. Paul Soleillet, the intrepid traveller, treated the question of the fertilisation of the Sahara, and M. Bardoux, the Secretary-General of the Association and Minister, delivered an important speech on the burning question of education, which has already attracted no little attention from the European press. For the public, to whom the interest of the scientific discussions was unattractive, a superb horticultural show was prepared, in conjunction with which a visit was made to the Mas de las Sorres (Montpellier is not far from the borders of Spain), where are being carried out researches on the vine malady, the dreaded phylloxera. Several interesting manufactories were visited, and an excursion made to the Classic town of Nimes, with its characteristic and familiar features, and to the equally classic town of Aigues-Martes. A number of foreign savants are reported as being present, the name of Dr. Hogg, of the Royal Horticultural Society, being conspicuous among the English visitors. An important question was treated early in the meeting, in the remarks of M. Trelat, the director of the Ecole d'Architecture," of Paris, on the hygiene of the schoolroom; M. Trelat skilfully showed the value of the question, and the conditions necessary to the ample supply of light, space, air, and cleanliness, all subjects clearly developed, as also the most approved method of admitting light into the class-room. The Panama canal scheme does not appear to have monopolised the attention of the engineering world, but on the evening of the first day's meeting the long-talked-of project of the canal of irrigation of the Rhone received warm discussion. It would appear that the great plains of Languedoc are deprived of water, and hence the inhabitants suffer from deficient crops. This would be remedied by the adoption of the canal of Dumont, its first promoter. The mention of Dumont's canal suggests the appearance of a new periodical, directed by M. Ferdinand de Lesseps, and destined to defend the new enterprise of the man whom Gambetta once justly termed "the great Frenchman." M. de Lesseps is in no way discouraged, and in the first number of this new publication the eminent engineer sets forth with praiseworthy clearness the advantage which will result from the piercing of the American isthmus. The pages of his journal are further intended to be open for the discussion of all objections.

With these declining days of the summer, even in writing from the banks of the Seine, one seems destined to have to be carried away from the city of which Lord Beaconsfield, through one of his heroes, once remarked, that in aping imperial Rome, Paris might share its catastrophe. Carried far south to the classic city of Montpellier by the doings of the French Association, how is it possible not to link the name of that famous university town with that of François Rabelais, for the purpose of erecting a statue to whose memory a subscription is at present on foot? This statue will be set up in the birthplace of him who has been called the Democritus of France, at the quiet little Touraine town of Chinon, the picturesque town where took place the meeting of Charles VII. and the unfortunate Joan of Arc. It is only surprising that so many years should have passed away before the birthplace of the great author of "Gargantua" should be so suitably adorned. At last the good-humoured Franciscan, who took his first degree in the faculty of medicine at Montpellier, will be honoured as he should be; the child of that strange and tumultuous sixteenth century, who may be placed foremost among the originators of the existing French language, will at last have justice done to him. Let us hope that the sculptor may be impressed with the importance of his task, and create a satisfactory realisation of the jovial-minded curé of Meudon, from whose richly-embroidered writings old Burton, in his "Anatomy of Melancholy," drew such stores, and after him irreverent Swift and tender-minded Sterne, and even in our own days Southey, in that singular creation, "The Doctor." For the fortunate sculptor there will be no want of figured portraits of Rabelais, though discrimination will be absolutely necessary. Hopwood has engraved, for instance, from a miniature in the Bibliothèque Nationale here, a portrait, in profile, with the familiar flat cap of the sixteenth-century scholar, the features marked and characteristic. In M. Lenoir's collection there was a pencil drawing said to be by Janet Clouet, representing Rabelais at a later period, and a front view; this portrait has been lithographed by M. Prieur; while in the Orleans Museum exists a portrait of the author of "Pantagruel," said to be by Holbein. As for the other portraits of Rabelais, they are chiefly characterless creations of the seventeenth and eighteenth centuries, copied from a mezzotint by Jean Sarrabat. Michael Lasne also has engraved a portrait of Rabelais; but to mention all the other representations of the *protégé* of Cardinal du Bellay would occupy more space than is at our disposition. Good-hearted old Sir Thomas Urquhart will turn in his grave when he hears how at last Rabelais has been honoured as he deserved; and now, why should not the Royalist old Scotchman have a statue too, at least a bust, as the prince of translators?

The South of France is attracting more than usual share of notice just at the present moment. The interesting town of Vienne, wh only so short a time ago was discovered t beautiful crouching Venus which has recent enriched the Louvre with a formidable rival "Notre Dame de Milo," has been chosen as t site of the forty-sixth annual congress of t French Archæological Society, the programm of whose meetings was detailed in last wee issue. The congress was brilliantly opened the 2nd inst. in the midst of a large crowd *savants* and archæologists. M. Le Blanc rea paper on the valuable discoveries made with the last forty years in the town of Vien Among these discoveries the congress partic larly admired the head of a statue in wood, unique monument, it would appear. So curious details were given by M. Recamier the circus races and the disposition of " Spina" at Vienne. On the subject of Roman pottery a valuable paper was read, also one on the Roman roads of the provin After a number of other important communi tions, the congress visited the chief monume of the town, and the interesting basilica wh has recently been discovered in diggin foundations of a drain in the neighbourhoo the ancient cathedral of St. Maurice.

It is not alone on the banks of the Tha or on those of the Seine, that the archæologi autumn manœuvres are being warmly conduct from the banks of the Rhine we learn that general assembly of the German Historical Antiquarian or Archæological Society will m from the 14th to the 18th inst. at Landshut Bavaria, when the congress will conside number of interesting questions; among th the Roman and Mediæval antiquities of La shut, and other portions of this corner Bavaria. The unfortunate English archæ gist who in the warmth of his enthusiasm at one period of life have burdened him with the possession of more than one fore tongue, will, indeed, have enough to do in long winter evenings to read the transacti of the 1879 campaign of his brethren of Fra and Germany; indeed, we might picture b when the present season is terminated, much the position in which Leech placed the Pr Minister in the imagined *far niente* of rec surrounded by piles of littered papers, while domestic is seen in the background bearing trayful of fresh documents for perusal.

WAPPING IMPROVEMENTS.

The second bridge over the entrance to London Docks has just been commenced. works will for a time cause some inconvenie to the local traffic, which will have to be dive by way of Gravel-lane. A temporary bri for foot-passengers has been constructed wrought-iron, with horizontal movement draw backwards and forwards so as to allow the docking of vessels. The length is at 60 ft. over all. The new permanent swi bridge will be similar to that over the Hermit Dock entrance, with a width of 24 ft. 6 in., foot-paths on either side, thus avoiding block to the traffic which formerly existed hours at a time, and at the most important of the day. The solidity of the bridge may judged when the test required is to be 32 weight carried on a truck of four wheels. contractor is Mr. W. Webster, who is bound complete the work within a given time, and show the earnestness with which it has b commenced, the old bridge has been entir broken up and cleared away. The ironwork i be erected by Messrs. Handyside & Co., of Der and the superintendent is Mr. Rowell. completion of the works is anxiously desired the wharfingers and carmen.

Science and Art Examinations.—The cumstances arising out of the "Goffin ca have induced the Lords of the Committee Council of Education to issue a circular call the attention of local committees of science art schools to the fact that the duties undertal by them are a serious reality, and involve gr responsibility, public money being paid on faith of their certificate that it has been prope earned. The committee think that further p cautions are necessary, and these are now un consideration. A change has already been ma by which the period between the reception the examination papers by the secretaries the local committees and the examination its is considerably diminished.

THE LATE MR. EDWARD BLORE, ARCHITECT.

have to record the death of Mr. Edward , D.C.L., F.R.S., F.S.A., &c., who expired s residence, No. 4, Manchester-square, on day, September 4th, after a long and l illness, within a few days of completing ietieth year. Born at Derby on September 1789, he was the eldest son of Thomas F.S.A., member of the Middle Temple, nown as the historian of Rutland, and of other works. His early days were at Stamford, and he very soon evinced ve for ecclesiastical and domestic archi- e which distinguished him in after-life. quite a lad he used to walk about the y sketching the churches and other s of interest in the vicinity of his home, fore he had attained the age of twenty, executed the original drawings for the ations of the "History of Rutland," the part of which was published in the year The excellence and accuracy of these gs brought him prominently forward as htsman, and during the next few years engaged by Mr. Surtees, of Mainsforth, cute the original drawings for the archi- al plates in the "History and Antiquities rham"; also by John Britton to make ketches of York and Peterborough in ries of "English Cathedrals"; many engravings in Clutterbuck's "History rtfordshire" were also copied from wings. While still a young man he be- acquainted with the many eminent men this time constituted the leading society burgh, and before long he was introduced Walter, then Mr. Scott, with whom he intimately acquainted, and a mutual hip sprang up between them, which was rminated by Sir Walter's death. At the their first meeting in 1816 Scott was to build a new house at Abbotsford in thic style, but was unable to find any ct who could at all comprehend his views. re, however, on being invited to do so, nd then made a hasty sketch, with which was so delighted that he at once employed make the designs for the exterior of the g, and these were duly carried out, and se, as it now exists, remains as a speci- one of Mr. Blore's earliest works. The otion which the work afforded to Sir , and the general esteem in which he r. Blore, is well exemplified in many of ters published in Lockhart's "Life of Mr. Blore was also intimately asso- with Scott in the management of autiful work, entitled "The Provincial ities and Picturesque Scenery of Scot- which was intended to illustrate all the bjects of interest in Scotland; but after olumes had been published in 1826 the had to be abandoned, owing to the great e of the work and to the failing health of iter Scott, who had given his valuable s as editor without accepting any remu- n. Mr. Blore executed most of the archi- al drawings; and those of Dalmeny and churches, some of which he also himself ed, will compare favourably with any- f the kind which has ever been published. work he was associated with Turner, th, Calcott, the Rev. J. Thomson, and other distinguished artists of the day. In me year, Mr. Blore brought out a work "Monumental Remains of Noble and t Persons," containing illustrations of f the finest examples of the monuments gies in England and Scotland from the the thirteenth century down to the period Reformation. He was one of the first to ate the revival of taste for Gothic archi- , which had languished since the time of the ation, and he was in constant communi- with Rickman, then a clerk in a Liver- use, on this subject.

gh Mr. Blore flourished before the great church restoration set in, he carried out works which would be considered highly le at the present day. One of his undertakings was in connexion with orough Cathedral, where, besides nume- ructural repairs, he designed the present screen and choir fittings. So far had the connexion with this kind of work been at he had to find out intelligent masons rpenters, and personally instruct them in ork they had to carry out. Another of rks was the restoration of Glasgow Cathe- dral, and at Ely and Winchester cathedrals his services were also called into requisition. He also carried out the necessary repairs at Merton College Chapel, Oxford; at the churches of Barfreston, Kent; Thorney, Cambridgeshire; Ramsey, Huntingdonshire; and several others. The beautiful monument to W. Hilton, R.A., on the south side of the altar of Lincoln Cathedral, was from his design, as was also the font with rich tabernacle cover in the Royal Savoy Chapel, and this was the last of his professional works. Under Archbishop Howley he was employed in making extensive alterations at Lambeth Palace, and at this time the residential portion of the palace was entirely rebuilt, while the chapel and hall were restored. His practice as an architect had now become most extensive, and he was engaged in all parts of the United Kingdom, many of the most important houses now existing having been built or reconstructed by him. The magnificent Palace of Aloupka in the Crimea may be specially mentioned as having been erected for Prince Woronzow entirely from his designs. Worsley Hall, Lancashire; Haveringland Hall, Norfolk; Cranford Hall, Dorset; Pull Court, Worcestershire; the Frythe, Hertfordshire; and Crum Castle, Ireland, are among his more important works, a full list of which we hope shortly to be able to publish. He also made extensive alterations at Crewe Hall, Cheshire; the Grove, Watford, Herts; Wadham and St. John's Colleges, Oxford; and others. He soon came under the notice of King William IV., and was appointed by him special architect to his Majesty, and this honour was continued to him by her Majesty Queen Victoria during the early part of her reign. He executed numerous works at Windsor Castle, and undertook to complete for 100,000*l.* the building of Buckingham Palace, which had been commenced by Nash. In this undertaking he had considerable difficulties to contend with, as, on the one hand, H.R.H. Prince Albert was most anxious that the work should be completed as soon as possible, while, on the other, the necessary funds for carrying on the building were somewhat tardily voted by the Government. The whole front towards the Green Park and Buckingham Palace-road is his work, and he succeeded in carrying it out for less than the estimated sum. So well was his conduct appreciated that he was at this time offered the honour of knighthood, which, however, he thought proper to decline. About this time he was appointed architect to Westminster Abbey, a post which he filled for many years, and in which he was succeeded by the late Sir Gilbert Scott, at the time when he finally retired from the profession. As a recognition of the eminent position he held in his profession, he had the honorary degree of D.C.L. conferred upon him at Oxford in 1834, and it was on this same occasion that the first Duke of Wellington was installed as Chancellor of the University.

Mr. Blore was distinguished in his profession as an admirable draughtsman, and he has left behind him a remarkable collection of sketches of churches, castles, and other objects of antiquity, mainly in England, the result of more than seventy years' labour. The only other collection which can be compared with this, as far as is known, is that made by his friend, the late Mr. Twopenny, which has been bequeathed to the British Museum. Mr. Blore was possessed of indefatigable energy, and never missed an opportunity of sketching any object of interest he might meet with. Most of his drawings are of special value, as they were made before the present rage for restoration set in. In many instances they are the only memorials of buildings long since swept away, and many were the occasions when he would travel long distances to obtain a sketch of a church or other building which he had heard was about to be destroyed. His collection of drawings of ancient monuments is especially complete, and he recently furnished a list of the monuments of royal and eminent personages still existing to the Parliamentary Committee appointed to inquire into the subject. His knowledge of heraldry enabled him to identify from the armorial bearings many monuments, the traditions belonging to which had long been lost. As might be expected, during his sketching excursions he often met with amusing and sometimes unpleasant adventures. On one occasion, at Heckington, in Lincolnshire, he was accidentally locked up in the church all night, having been left sketching the Easter Sepulchre by candle-light, and there forgotten by the clerk, who had promised to come to release him. Even within the last five years he had made numerous additions to his collection, and almost up to the time of his death, he was engaged in finishing drawings from memoranda he had jotted down at the time of his visits to the various places. He was also engaged during the present year in collecting together various anecdotes which occurred in connexion with his intimacy with Sir Walter Scott, and which have been duly forwarded to Mr. Ruskin, at whose request they were compiled. During his long career he has been remarkable for his accuracy in and application to business, and for his clear-headedness and judgment, and by his many clients he was always treated more as a personal friend than as a professional adviser. He was a member of many of the chief London societies, and also an honorary member of several of the provincial archæological societies. In conjunction with Mr. Albert Way, with whom he was especially intimate, he was one of the founders of the Royal Archæological Institute at the time of its separation from the parent body, and was for several years on the council of this society, and the Society of Antiquaries, of which he became a fellow in 1824.

Illustrations of the following of his works will be found in our previous volumes:—The New Front, Buckingham Palace, vol. for 1847, pp. 410, 411; the Residence of Prince Woronzow, in the Crimea, 1850, p. 354; the Hilton and de Wint Monument, Lincoln Cathedral, 1865, p. 227; Monument to General Foster Walker, Kensal Green, Cemetery, 1866, p. 306; Font in St. Thomas's Church, Dudley, Worcester, 1867, p. 630.

Mr. Blore married in the year 1819, Sarah, daughter of the Rev. W. Hodges, vicar of Mattersly, Nottingham, who predeceased him, and by whom he has a family of two sons, viz., the Rev. E. W. Blore, senior fellow of Trinity College, Cambridge, and the Rev. G. J. Blore, D.D., head master of the King's School, Canterbury; and two daughters, viz., Harriet, married to the late Dr. Careton, Canon of Westminster, and Margaret, married to Mr. Charles Keyser, of Stanmore.

His remains were interred on Tuesday last at the City of London Cemetery, Highgate.

THE LATE MR. GEORGE SMITH, J.P.

WE are unwilling to let the death of this well-known member of the building community pass without an expression of sincere regret. He was for a long time the head of the firm "George Smith & Co., of Pimlico," and executed many large and important public works both in and out of the metropolis. He left business some ten years ago, having realised a fortune, and retired to a charming estate in Worth, Sussex, known as Paddockhurst, where he died on the 27th of last month, in the seventy-third year of his age. Although he had been ailing for some time, he had recently purchased additional land, and was at East Grinstead on the market-day in the previous week. The immediate cause of his death was paralysis. Mr. Smith was very good to the neighbourhood and will be missed; not least so on the Bench, where his strong common sense and wide experience made him a valuable attendant.

Lower Heyford.—On the 4th inst. the chancel of the ancient and interesting church of St. Peter and St. Paul, Nether Heyford, was re-opened. The nave and tower were restored in 1854 by Mr. Butterfield, of London. The architects who have been entrusted with the restoration of the chancel are Messrs. E. F. Law & Son, of Northampton; Mr. John Smith, of Heyford, being the builder. On the south side of the east end a new window, of Decorated character, — an exact copy of the ancient window, which was very much dilapidated,—has been inserted. The old flat lead roof has been replaced by an entirely new and substantial roof. The principal timbers are stained and varnished. A new organ-chamber has been built at the south side of the chancel, with arches opening one into the chancel and the other into the south aisle. All the internal arches are of Harlestone stone, and the new windows have been executed in the same material. Some blocks of stone at the termination of the labels in the church, which were left in the rough at the last restoration, have been carved by Mr. Phillips, of Northampton.

THE DEATH OF BARON TAYLOR, AND OF "CHAM."

THE ranks of the artistic army of France have been sadly damaged by the loss last week of two active veterans, the Baron Taylor, and "Cham," of the *Charivari*.

In the death of Baron Taylor, which took place on Saturday morning, the 6th inst., at twelve o'clock, after a lingering illness of a year, the world of art and letters has lost a firm friend, a man of warm heart, and deservedly universal popularity. Born at Brussels on the 15th of August, 1789, Baron Taylor was, at his death, in his ninety-first year. Of English origin on his father's side, his mother was a Flemish lady, and from each of his parents he seems to have inherited much of their respective national characteristics,—English practical and philanthropic good sense, and foreign artistic appreciation. A Frenchman by the naturalisation of his parents, young Taylor entered the art-world of Paris, and after a term in the *atelier* of Suvé, he commenced his career with the brush and the pencil; but his power of equally well handling the pen enabled him to contribute a number of remarkable articles to the Parisian press. Exempted from military service on account of feeble health, he was able to satisfy his desire for travel, and the marvels and museums of Italy, Spain, Holland, and Germany were successively visited and eventually described. With the Restoration he entered the army, and gained some distinction in Spain, but on his return, resigning his military position, he was entrusted with several important archæological expeditions in France, in Europe, and in the East, the results of which he has left in more than one magnificent illustrated work, which for their accuracy and splendour have long been prized by students.

One of his chief claims, however, to the gratitude of the artistic world lies in the fact that he was the first to solicit and obtain the restoration of the principal monuments of the French architecture of the Middle Ages, and it is to his energy that we owe the preservation at a time of universal neglect, of the many châteaux, churches, and abbeys that might have fallen a prey to the ruthless carelessness of parish authorities. By his constant petitions to the Chambers, by his active intervention, by his artistic agitation in society and in the press, he succeeded in saving the historic monuments of France, and now these buildings, classed among the "*monuments historiques*," are protected from mutilation, and made the object of watchful care and intelligent restoration.

In 1824, he was nominated to the post of "commissaire royal" for the Théâtre Français, and he held this post at the stirring period of the birth of the new romantic school, when Victor Hugo, Alexandre Dumas, and Alfred de Vigny inaugurated a new literature, the direct result of the influence of Sir Walter Scott and Lord Byron. In this position he further radically transformed many of the old traditions of the stage, and introduced more than one innovation still in vogue.

Such acts alone would suffice to deserve the gratitude of posterity, but to these he added the purchase of the famous Obelisk of Loucqsor, which forms so conspicuous a feature of the Place de la Concorde, together with many other of the Egyptian treasures of the national museum. His diplomatic powers were shown in the tact with which he was able, with a Government grant of 100,000 francs (4,000*l.*), to obtain the obelisk at the cost of 17,000 francs (680*l.*).

But Baron Taylor has done more than this, and in addition to the many valuable acquisitions he has made in his voyages to the East, and with which he has enriched the national collections, he has founded numerous benevolent societies, to aid not alone the painters, but all the various members of the great artistic professions, letters and the drama. He lived for the arts alone, and their protection and development, and a noble list is it of societies which he had founded, and all of which at present are in thriving condition; that for dramatic artists; the musical artists; the painters, sculptors, architects, engravers, and draughtsmen; inventors and workmen; teachers; the society of the men of letters; and the society of the authors and dramatic composers. Baron Taylor, in dying, leaves a numerous family; his funeral was officially honoured, and what is more grateful, his death will be sincerely regretted and deplored. He died a member of the Academy of Fine Arts, and a Commander of the Legion of Honour.

We first became acquainted with Baron Taylor at the Antwerp celebration of Rubens in 1861, and record his death with personal regret.

With the death of Cham,* the famous caricaturist of the *Charivari*, France has lost one of its old favourites. Cham, unlike our own inimitable Tenniel, has gained his reputation alone for his caricatures; in Cham's designs there was never any attempt at severe artistic or academic display, and his method of teaching by the pencil has been more by the aid of good humour and fun than by satire and fable. Cham's place as a caricaturist may be easily filled in France, but his memory will long be cherished by a large circle of sympathising and loving friends.

GYPSUM IN SUSSEX.

THE members of the British Association have sometimes been described to the effect that they are intellectual hybrids between a visionary *dilettante* and a theorist who never brings his imaginary views to a practical issue. Whether this criticism be fair in a general way it is not a part of our duty to inquire, but we may say that the views promulgated under the auspices of the members of the British Association sometimes lead to practical results, which prove to be more or less valuable, by inducing engineers and other scientific men of business to follow up suggestions made by or before them. The instance we now have to relate may fairly be set down to the transactions of the British Association.

It will be remembered that in 1872, when this body held its annual meeting at Brighton, a considerable sum of money was collected for the purpose of paying the cost of boring in the south of Sussex, with a view to ascertaining whether the Belgium coal-bed extended to the South of England, and lay within working distance from the surface. This boring was commenced at Netherfield, near Battle, under the superintendence of Professor H. C. Ramsay and other scientific celebrities and some gentlemen of the district. The experiment failed, however, as regards coal, for, after two trials and a depth of some 1,900 feet had been reached, it was found that the boring-tools were too small to go deeper, and as no signs of coal had been discovered the project was abandoned.

But although the presence of coal in Sussex was thus left an open question, another valuable mineral, viz., gypsum, or sulphate of lime, was found to exist in several beds or seams, some of which lay at an easily workable depth from the surface, the first seam having been struck at the depth of 160 ft. under the spot where the boring suggested by the British Association was carried out.

The reports of this discovery attracted the attention of Messrs. Bosworth & Ison, of Ashby-de-la-Zouch, who were familiar with mining for gypsum in that district and Derbyshire, and they proceeded to Battle, and ultimately came to an arrangement with a neighbouring landowner, Mr. C. A. Egerton, for sinking a shaft. As the result of this was beyond their sanguine expectations, they came to a further arrangement for mining under a given area of the above proprietor's land, and for erecting the works required for making the gypsum marketable. As this was anything but a small undertaking, some capitalists were invited to join Messrs. Bosworth & Ison, and a private company was soon formed, their style and title being "The Sub-Wealden Gypsum Company." As substantial evidence of their confidence and earnestness, most complete and efficient works have recently been completed, at a cost of 40,000*l.*

A brief description of these works, which represent the above large and spirited outlay, will no doubt be of interest to our readers. To begin at the beginning. About midway between Battle and Robertsbridge there is a siding formed by the South-Eastern Railway Company, at a cost to the Sub-Wealden Gypsum Company of 1,200*l.* From this siding the latter company's private railway runs at a gentle incline for a mile and a quarter through a valley of beautiful oaks and underwood. As we passed round the third or fourth curve in a truck propelled by the Sub-Wealden Gypsum Company's own locomotive, we came upon the singular picture for such a rural spot of a towering chimney or "stack," and six tapering ovens, which the raw material is dried. These ove we will, however, refer to later on.

The mine, of course, is the starting-point these works. The upper seam of gypsum or is being worked at present. To this sea which is 125 ft. below the surface, we descend in a "cage." Having landed in one of the g leries, we, with lighted candle in hand, follow our guide. The miners were working in fo directions, the caverns they leave behind th being about 6 ft. or 7 ft. square. In the cou of our exploration we came across four sets three men who were doing the required wo for breaking up the seam. The process which this is done is the Cornish system. blasting. In fact, the miners are mos Cornishmen. A well-sharpened steel bar held in an oblique position by one man and t others strike it in ding-dong fashion with sled hammers. The hammer-men are well practi at their work, as they need be for the sake the hand of the man who holds the steel h over whose shoulder they strike. One feat of this boring is that the bore-hole must be m at the top or bottom of the seam of gypsum the explosion will not have the desired eff The bore-hole being completed, it is dried c the required quantity of powder is poured in plug is rammed down, a fuzee applied, the r retire to a corner and in a short time a bod the seam of gypsum is reduced to pieces t can be easily dealt with. Here, however, su further work has to be done, for the gypsum surrounded, and occasionally mixed, with th layers of limestone which come down with explosion. This limestone is not of suffic value to be taken to the surface, but it is adv tageously used below by being packed in t so as to take the bearing of the roof, wher at some future time the blocks of gypsum wh remain between the present galleries may utilised. The roof, we may add, is fortuna very level and sound, so that there is no difficu whatever in this respect in proceeding with mining for gypsum.

This Sussex gypsum is partly white, or of pure an alabaster quality that it may be tur into cups or ornaments, and polished, or i ingrained and stained with grey substa This grey substance is limestone, and in fact lies the superiority of this Sussex gypsu In the Derbyshire and most of the Europ deposits the ingraining and staining is a clay, the chemical quality of which is oxid iron. This oxide results in efflorescence, as plaster made from gypsum containing it l its water, and if paint or gilt be applied thi loosened and falls away. This trifling mixt of limestone in the Sussex gypsum has, h ever, no effect of this kind, while its g appearance, as an intermixture with the gyps in its raw state, is completely lost during process of baking, the result being there is stained appearance, but it dries to a "co white, while it may be painted or gilded as as it has set. The specimens we saw at works, and some of which we now have be us, fully bear out this view.

The works for reducing, baking, and grind the gypsum are of great engineering mechanical interest, but we may dismiss th in a few sentences. Three steam-engines employed; one of 200-horse-power, for driv the heavy 5-feet diameter French burr m stones, and the stone-breakers and crush one of 60-horse power for raising the wagon gypsum from the mine; and one of 10-ho power, for doing such lighter work as pump

The first mechanical operation to which gypsum is subjected after it arrives ab ground is for it to be passed through one Blake's powerful stone-breakers, two of wh are in use. But before this is done the lu or blocks are overhauled by skilled men, any corners of limestone that may adhere them are knocked off with hammers suita for the purpose. The gypsum blocks are t crushed in the stone-breakers, and fall i wagons, whence they are subsequently eleva by a lift to the floor on a level with the o doors. As we are dealing with results rat than with the details of processes, all we n say here is that the ovens are 9 ft. in diame that they hold 25 tons each, that coke is use produce the required heat, and that the gyps is sufficiently calcined in twenty-four hours.

On the gypsum being withdrawn from ovens it has lost its original lustre. It is on the floor to cool, and after being ag assorted, or picked over, should any grey n

* The pseudonym of the Comte de Noë. See *Builder*, Feb. 17, 1877.

ve parted from the gypsum during the baking, is then passed between serrated crushers to duce it to nuts, as we may term this process, pen it is passed through the heavy millstones tove mentioned, from which it comes in the rm of the impalpable powder which is known the gypsum, or plaster of Paris, of commerce. the powder falls from the millstones it is bighed in bags, which hold 2 cwt. each. In is form it is ready for distribution to any part the United Kingdom or the world.

A few concluding remarks will now be sufficnt to fully show the importance of this covery of gypsum in Sussex. The promoters the Sub-Wealden Gypsum Company relied ich,—after they had made the required experint,—on the exceptional purity of the gypsum y were about to place on the market. They ve been nearly four years in bringing their rks to their present state of completeness and iciency. Some months of this time was lost cause they made the engineering mistake of ing engines and machinery of the power and pacity of those employed in raising and ducing the Derbyshire gypsum. But even this or has turned out to be an advantage, for the ra hardness of this Sussex gypsum in its y state turned out to be an indication that it uld become of extraordinary hardness when had been reduced and had again set in lders' or moulders' hands as plaster cornices, other house ornaments. Another advantage ich the Sub-Wealden Gypsum Company y on is that they will be able to supply lders in London and the South of England h their superior article at a lower price than bsum has hitherto been sold for. The comy are now preparing 250 tons per week for market, and they will be able to exceed this antity greatly with their present arrangents so soon as they have adapted their present ision of labour more fully to their increased am power and capacity of their machinery, ile they are sinking another shaft to facilitate raising of the raw material from their mine. here are agricultural advantages for the th of England connected with this mining gypsum in Sussex. Every one who has the htest knowledge of agricultural chemistry ows the value of sulphate of lime on soils ere free acids exist, and also of its capacity fixing ammonia, in stables, cow-sheds, and eties, whereby it is rendered harmless, and the same time retained till it is placed in tact with growing plants. This subject will, wever, no doubt be fully dealt with by our ricultural contemporaries. But there is one portant sanitary use to which this gypsum y be put that certainly comes clearly within province. When we have had occasion to pect the construction of outside closets for burban houses, village cottages, and farmuses, we have often found a simple pit made. at accumulates in these primitive places soon ins to ferment, and become not only offensive, exceedingly dangerous to health. The rious gases from such places may be fixed this combination of sulphate of lime, and refore rendered innocuous to animal life, ile they are rendered easily and pleasantly table for fertilising cultivated vegetation. lders may take this as a hint for them to suade owners of houses with outside closets ountry places to have suitable tanks for the eption of excreta and the application of gyp, as the deposit will then be turned to greatly reased manurial value, and its danger to health iated. The quality offered for this deodoris purpose is not of the same purity as regards iteness as that which is produced for moulding d plastering, but it is equally efficient from a itary and manurial point of view, and we are rmed it is offered at a very low price.

Somersetshire.—The Marquis of Bath presed on Monday afternoon over an important eeting at Bridgwater in connexion with the mersetshire Draining Act, obtained for the re effectual drainage of lands within the nity and the prevention of the annually rering floods that of late years have proved y destructive. It is intended that more than 000 acres shall be brought under the jurisction of the newly-formed body of Commisners, the whole of this acreage being below the ght of the highest recorded tide, namely, 24 ft. so that important works of arterial drainage ll be undertaken, including, it is understood, widening and deepening of the river Parret, l a new cut through the Sedgmoor districts.

THE PRIVATE BILL LEGISLATION OF THE LATE SESSION.

THE Session of Parliament recently concluded has resulted in the passing of 198 private Bills, of which 60 are railway Acts, 17 tramway Acts, 22 gas, 17 water, 13 docks and harbours, and 23 town improvement Acts, the remaining portion being made up of Acts of a general and miscellaneous character. Of the railway Bills which have received Parliamentary sanction, 54 were promoted by existing companies, and as the entire number of Bills of this character was 74 only, it will be seen that more than two-thirds of the number have been successful. The proposed capital for the works connected with these 74 Bills amounted to 11,513,870*l.*, and the additional length of railway to be constructed under them was 248 miles. By the powers which have been obtained in respect of the 54 successful Bills, an aggregate expenditure of 9,938,000*l.* has been sanctioned for the construction of 174 miles of additional railway and other works by the several companies named. The largest amount of expenditure for extension works under their several new powers is 2,003,000*l.* by the London and North Western Company; 1,200,000*l.* by the Midland Company; 660,000*l.* by the Manchester, Sheffield, and Lincolnshire Company; 573,333*l.* by the London and Brighton Company; 444,000*l.* by the North British Company; and 400,000*l.* by the London, Chatham, and Dover Company. The remaining six railway Bills which have successfully passed through Parliament are for the incorporation of companies for the construction of entirely new lines of railway, 63 miles in length, the capital for which is 772,000*l.* These figures show that not more than one-fourth of the Bills promoted during the session by new companies were successful, the entire number of Bills of this class being 24, for the construction of 206 miles of new railways, at an estimated outlay of 7,873,766*l.* The most important of the new companies is that for making lines to connect the Northampton and Banbury and the East and West Junction Railways, near Towcester, with the London and North Western, near Roade, and the Northampton and Bedford line of the Midland Railway at Ravenstone, near Olney.

The works to be constructed under the seventeen Tramway Acts comprise upwards of eighty miles of tramway in the metropolis and several provincial towns, the capital for which is upwards of 1,000,000*l.* The longest of these proposed tramways are those to be made by the Glasgow Corporation, and which are fourteen miles in length; those in St. Helen's, ten miles; Ramsgate and Margate, six miles; Manchester Suburban, nine miles; the new London Street Tramways, eight miles; and the South London Tramways, in the parishes of Battersea, Clapham, and Lambeth, seven miles in length. The estimated cost of the two last-named metropolitan lines is respectively 125,000*l.* and 138,000*l.*

The proposed expenditure on the several new works in connexion with gas and water Acts is very large. The aggregate proposed capital for the new gas works under the various Acts amounts to 1,500,000*l.*, of which the Newcastle-upon-Tyne and Gateshead Company propose to expend 375,000*l.*; the Brighton and Hove Company, 312,000*l.*; the Preston Company, 200,000*l.*; the South Shields Company, 100,000*l.*; and the Mirfield Company, 82,000*l.* For the works to be executed under the various new water Acts, the capital required amounts to no less than 5,039,250*l.*, of which the estimated cost of the Manchester (Thirlmere) works is 3,425,000*l.*; Nottingham, 800,000*l.*; Birmingham, 300,000*l.*; and Belfast, 170,000*l.* It should be added that the above particulars, so far as they relate to tramways and gas and water supply are exclusive of provisional orders made by the Board of Trade, under which a large number of undertakings of this character are intended to be carried out, involving a still further heavy expenditure. But apart from the expenditure to be incurred under provisional orders, the aggregate expenditure sanctioned in works by railway, tramway, gas, and water companies, under the several Acts of Parliament which have been obtained amounts, in round numbers to 18,249,250*l.*

The various Acts which have been obtained for town improvements will likewise be attended with a very considerable outlay in the construction of new streets and general sanitary work in the localities affected. These Acts apply to several of the principal towns in the provinces, including Bath, Blackburn, Blackpool, Cardiff, Derby, Dublin, Leeds, Leicester, Norwich, Nottingham, Over-Darwen, Rochester, Rotherham, St. Alban's, Stratford-upon-Avon, and Warrington.

Under the docks and harbours Acts of the session works of this nature have been sanctioned at Aberdeen, Dublin, the Medway, Sharpness, Whitby, Whitehaven, and at the Millwall and East and West India Docks.

The several Acts which have been passed in which the metropolis is interested include measures relating to the City of London School, the Crystal Palace District Gas Company, the East and West India Dock Company, East London Railway, Leadenhall Market Improvements, London Bridge Approaches (the last-named Act was changed from its original title "London Bridge," and limited to "London Bridge Approaches"), London Street Tramways, Metropolitan and Metropolitan District Railways, North and South Woolwich Subway, South London Tramways, Southwark and Deptford Tramways, Thames River (Prevention of Floods), and Millwall Docks.

There is plenty of work here cut out.

HUDDERSFIELD.

HUDDERSFIELD proved the truth of the expression of Horace, that wealth "new-born trouble brings" to those who exchange for it their "Sabine vale." It found wealth, but its wealth was accompanied with trouble, through its land ownership,—trouble which, however, has passed away now. Huddersfield is an ancient town, as the attribution of its name to an "original Saxon settler," named Oder or Hudder, of itself proves; its rivers and canals, its position and surroundings, have brought it trade, and given it growth, as we shall find. Without preface, let us look at the town in the past and the present. Forty years ago Huddersfield was a town of importance, but not as it is now. It depended chiefly on the woollen trade; it had its parish church and half a dozen Dissenting places of worship. Its mechanics' institute was youthful and vigorous; it had several philanthropic societies in advance of the age; and from a barren country round about it drew coals in abundance. Its population was, for the whole parish, 31,041 in 1831,—an increase within the previous decade of 7,000; and under the provisions of the Reform Bill, its one member was returned to Parliament by the voters out of the small total of about 600. The town was lighted by gas,—a circumstance not so general then; and fair attention was bestowed on its sanitary surroundings. There were three banks in Huddersfield then,—the Huddersfield Banking Company, the Mirfield and Huddersfield Bank, and that of Rawson & Co. Of cloth-dressers there were many, from Lindley to Fartown; there were half a dozen fulling-millers, many woollen cloth and fancy goods manufacturers, a paper-maker at the Forth House mill; twelve scribbling-mills; three of the Greenwoods were shuttle-makers; whilst velveteen-makers, woolstaplers, and others of kindred trades from the outskirts centred in the town. It had no railway then, but the "Royal Mail," the "Tally-ho," and other coaches did service, whilst many carriers, Pickford's "Fly-boats," and the water conveyances of the Kenworthys, Marsdens, and Carvers, did duty in their respective spheres. Since these days Huddersfield has been greatly changed, and for the better; whilst it has grown it has added to itself the attributes of growing towns, and it has, moreover, widened the area of its borough, and enlarged the liberties of its inhabitants. It depends still in great degree on woollens and worsted, and retains a hold on silk and cotton industries, while machinery and mining help it in large degree; and here it may be at once said that its population has risen to 121,892 at the last census, and that there is probably a continuance of the increase, which has marked itself so fully in previous decades,—an increase to be tabulated in a year or two.

Plunging into a mass of statistics, let us say that Huddersfield has an area of 10,998 acres, its population dwelling in 15,598 houses in the municipal borough, and that there are now over 13,000 electors to its one member. The amount of property and profits assessed to the income-tax was, in 1876, about 1,170,000*l.* As to the earnings in its great woollen industry, it may be said that an official report shows that they vary greatly,—in pre-

paring woollen cloth, from girls at 8s. per week, to foremen scribblers at 60s., and in weaving there is as wide a discrepancy. That industry has shared in the depression which most trades have known in this country in recent years, and from which they are only now apparently beginning to show signs of revival, but in the Huddersfield district the textile trades have taken deep root, the roots being also wide spread, and their present greatness is one of the best signs of the probable future growth of the town. But it does not depend exclusively on woollens or cotton, or silk. Its production of coal is large, thirty-six mines being included in the Huddersfield sub-district in the latest report of the mine inspector for Yorkshire, whilst several of these produce also considerable quantities of fire-clay in addition. But the value of these fuel-supplies is less in the way of those vaster supplies found in great mining districts than it is to ensure a cheap supply for the mills and manufactories around Huddersfield. For it is not only in the town, but in the many growing manufacturing villages near, that the trade of the Huddersfield district finds scope, though it is to that centre that it looks for its proper market. Here also the traffic of the district converges, as does also travel, by railway, 'bus, and occasionally by other methods. With that growth of trade there has been a growth of some of the evils which usually accompany great populations, for in a recent Blue Book it was stated that in Huddersfield one person out of every 118 of the population was yearly arrested for drunkenness, and it was also stated that there was one public house to every 247 of the population, so that the "droughty clay" of the town seems to have full facility for gratifying its thirst. The borough has had to provide for a large pauper community, and it has its full share of disease and accident, for which provision has been needed. There have been during the forty years attempts to meet the growing religious and scholastic needs of the community, as well as those of government in local affairs, and some of the buildings that are the result are architectural additions to the beauties of the town, whilst hitherto its comparatively young corporation has done good work in its own department.

As to the future of Huddersfield, it cannot be said that it gives the signs of a growth so rapid as it has experienced in the past. It belongs to the towns which depend upon manufactures; and it is evident that though Great Britain may retain its manufacturing supremacy, yet it will not continue to be the manufactory for the world. That is to say, some of the Continental nations are beginning to manufacture, and though they do a fully compete with us yet, they must to a very large extent manufacture for themselves, and England will need to find other markets for part of her manufactures. But though we may not be the manufactory of the world, we shall continue apparently for some time to be its mart. Hence the progress now should be most rapid in those towns which depend upon the sale and transit of goods to all parts of the world, rather than in those which manufacture. Huddersfield is one of the latter, but it has in it the elements of growth, though not perhaps to such a great extent as in the past. It has planted great trades in its midst and around it; these trades will in some measure grow, and if old markets are withdrawn from England there are new markets to be found for the looking,—markets into which it must be many years before we have to compete with native goods. Having built up a population on these industries, it is not to be expected that this great centre of the woollen trade shall rest there. But it is evident that it will have increased competition to meet with, and its motto will have to be to improve its product and to cheapen the cost of production. Waste will have to be lessened very greatly; the fullest measure of power will need to be extracted from coal; rates will need to be brought down, and economies all round, whilst every effort will be needed to lighten the capital charges by spreading them over an increased area of production. With an improvement of the product, and with less dislike to new processes with better work and cheaper goods, the Huddersfield of the future, preserving and extending its good government and its full attempts to educate, in the entire sense of the word, may compare favourably again with that of the present, as the latter does with that of the past.

EDUCATION AT THE ANTIPODES.

As ardent promoters of the cause of education in all parts of the world, we cannot refrain from translating and reproducing the following extremely typical proclamation. This royal manifesto testifies to an enlightened disposition of the sovereign lady governing a semi-barbarous state, which might serve as a good example to rulers of other and more advanced countries. This is the document, which we give as literally as possible:—

"I, Queen Ranavalona, by the grace of God and the will of the people, Queen of Madagascar, protectress of the laws of my kingdom, &c.

I say as follows. Inhabitants of Iboina, I am happy that the Gospel of Jesus Christ should be spread in my kingdom, to render my people wise and good by the knowledge of the true God. But it is not only the Imerinas who have heard this Gospel, it has also reached you, people of Iboina, and for this I am especially grateful to God.

And now I will make you know the number of pupils that may be fonnd in each of your towns. I have had these statistics printed, so that you may all see them, and so that you may be convinced that I see and hear all; for, in truth, I see and hear all, because my subjects are as so many eyes and so many ears looking and listening for me. And when I examined the number of your children who go to school I remarked that there were very few as compared to the population of Iboina.

Consequently, send your children to be instructed, for it will be a benefit to you as well as to them. It will be the means of keeping an account of your cattle, of your money, of your property, and it will also be the road to advancement; for I am a sovereign who rewards amply those who deserve it.

And you, fathers and mothers, be also active; for I am happy in seeing my subjects good and wise. It is a thing that will benefit you, that which I advise you to do; for if it was capable of doing you any harm I should not order it. But I know that it will be for you a cause of prosperity, and on that ground I insist that you shall all instruct yourselves; therefore be all of you diligent, for though you may not now understand the beauties and joys of science and wisdom, you will appreciate these benefits when you possess them.

Thus has spoken,

Ranavalona, Queen of Madagascar."

SCIENTIFIC MISSIONS.

A PREMIUM FOR WRITERS ON ART.

The French Minister of Public Instruction has determined to give an impulse to the spirit of original research by appointing various missions. These embrace a variety of subjects which are not perhaps all of the most useful and practical description, but they will not fail to interest scholars and specialists. For instance, M. E. Thomas, Professor at the University, is entrusted with a gratuitous mission to study in the libraries of Berne, Leyden, Cassel, Dresden, Leipzig, and Munich, the manuscripts of Servius and Virgil. As a contrast to this form of research, the sub-director of the Lyons Museum, M. Ernest Chantre, will proceed to Kasan, to the Caucasus, the Crimea, and Turkey so as to prosecute anthropological studies. M. Emile Rivière, who is a member of the Anthropological Society, will continue, under the patronage of the State, his archæological prehistoric researches in the department of the Alpes-Maritimes, and notably in the cantons of Saint Cézaire and Saint Vallier-de-Thieys. M. Félix Pecaut, a journalist and a contributor to the *Temps*, will be despatched on a special mission to Italy for the purpose of reporting on the organisation of primary and superior education in that country. An eminent engineer, M. Paul Sardu, will proceed to Japan to report on the geology of that country, and investigate its mineral industries and resources. Finally, M. Charles Sauvestre, the well-known writer, will collect, analyse, and classify all documents and reports concerning the history and organisation of primary instruction in France.

If these were the only missions and forms of research supported by the Government, we should find much to criticise, and might object that there are many other matters of far greater moment which require immediate attention. The appointments we have mentioned are, however, but a small instalment of the measures the Government of the Republic will adopt so as to forward the cause of learning in its every branch. With regard to the more practical form of study, such as engineering and architecture, we know that the French people are richly endowed, and that native talent readily obtains State aid to facilitate its development. In this respect, the most recent form of encouragement, which it may not be out of place to mention, is the notice just issued by the Académie des Inscriptions et Belles Lettres, announcing that the Louis Fould prize will be given for the first time during the course of the year 1881 for the best history of art and design up to the epoch of Pericles. For this purpose M. Fould has placed 20,000 francs at the disposal of the Academy. Foreigners as well as Frenchmen are allowed to compete, and their works must relate to all that concerns sculpture, painting, engraving, architecture, and arts generally as applied to industry.

THE MUSEUM OF PICARDY.

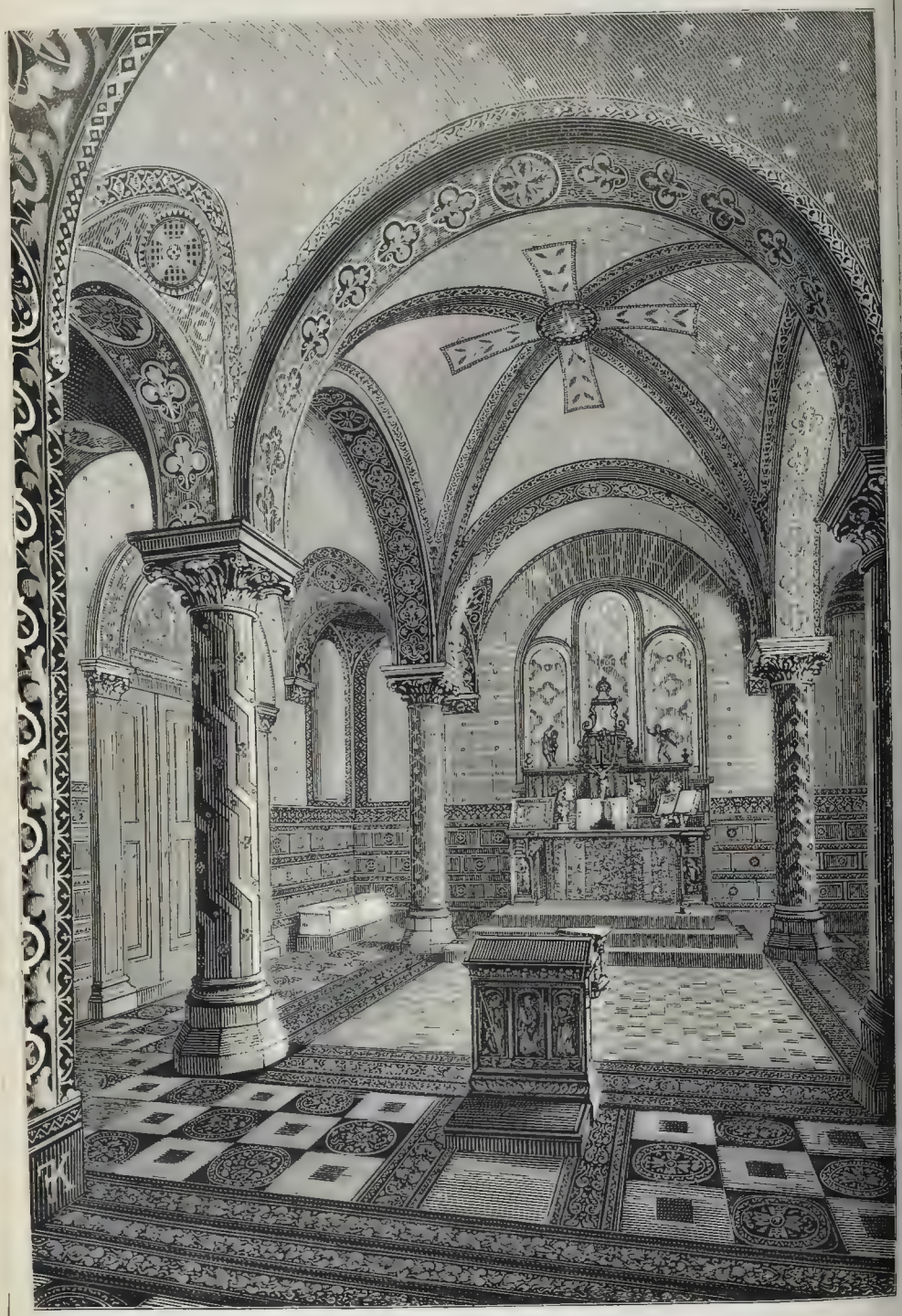
Archæological researches in France have been so extended within the last quarter of a century, and so many precious vestiges of the past brought to light, that it was deemed expedient to establish depôts for the reception of these valuable relics of a bygone age, and in these products no part of France has proved more fertile than the North. In consequence the Picardy Society of Antiquaries resolved upon the construction of a museum, and in 1852, from the proceeds of several lotteries, and under the auspices of Napoleon III., the ground where formerly the old arsenal stood was granted to them, in addition to another piece of town land, known as the Moreaucourt. The museum was constructed upon the plans of M. Parent, and completed by M. Diet in 1865. The success of the work is due, above all, to the energy of Mr. Charles Dufour, member of the Antiquarian Society, and who was also president of the commission appointed by the Government. One of the galleries bears his name. In 1870 the Society offered the museum to the town of Amiens, who entered into possession on January 15th, 1873.

The form of the museum is a rectangle, and is composed of a ground-floor and one story. The former is devoted to the antiquities, medals and sculpture, ancient and modern. The first-floor contains paintings and engravings, the greater number and most important of which have been given by the Government. Behind the museum, and belonging to it, is attached an archæological garden.

The paintings in the chapel were executed from the designs of M. Diet, the architect. The two over the door, "God, thy Father," and the "Creation," are the work of M. Charles Borély. There are also some very fine stained-glass windows of the sixteenth century, and antiquities of a most interesting nature, mostly local.

We have to thank M. Charles Borély, the indefatigable director of the museum, for useful information, and we would suggest to tourists the advisability of visiting the Museum. They will not regret the time spent there, and some, perhaps, may find it equally interesting as the famous cathedral.

An Artist's Will.—The will (dated June 28, 1879) of Mr. Charles Landseer, R.A., late of 35, Grove-end-road, St. John's-wood, who died on July 22nd last, was proved on the 16th ult. by Thomas Hyde Hills, John Percy, M.D., and Arnold William White, the executors, the personal estate being sworn under 30,000*l.* The testator bequeaths Stubbs's studies of the anatomy of the horse to the Royal Academy of Arts; 500*l.* each to the Royal National Lifeboat Institution and the Middlesex Hospital; 1,000*l.* each to the Artists' General Benevolent Institution, the Artists' Orphan Home Fund, and to the Benevolent Fund of the Artists' Fund; 10,000*l.* to three trustees to be named by the President and Council of the Royal Academy of Arts, London, upon trust, to apply the income towards founding one or more scholarships, to be called "Landseer Scholarships," such scholarships to be tenable for such periods, of such amount, and awarded on such conditions, as the said President and Council shall, by rules to be made by them, from time to time prescribe; and other legacies. The residue of his property he leaves to his brothers and sisters.



THE MUSEUM OF PICARDY: INTERIOR OF THE CHAPEL.



THE MUSEUM OF PICARDY, AMIENS, FRANCE.—M. Parent and M. Diet, Architects.

ROPOSED RESTORATION OF TLEY CHAPEL, DERBYSHIRE.

URE, on "Steetley and the Neighbour- as given on the 3rd inst., at the Corn , Worksop, by Mr. J. C. Cox, author of urches in Derbyshire." Mr. F. J. S. , M.P., presided. The lecture had ticular reference to Steetley Chapel, arish of Whitwell, and was given in e work of restoration. The chapel, an interesting example, is attributed gn of King Stephen. So late as the of the eighteenth century it was ith a vaulted roof, but this has long appeared. It is now proposed to e building, and to arrest the progress not merely from motives of antiqua- rest, says the *Independent*, for at a new shaft has been sunk for coal, a lation is springing up, twenty-five ve been built and inhabited, and hapel alone promises to supply a place p.

commenced by saying that the reason knew so little about the chapel was, that about the year 1400 it be a parochial church of its own, and volved in the neighbouring church of The probability was that Steetley as designed and carried out at the f Gley de Breton, between the years 1140, and, after being many years in of the Vavasours, was sold in 1360 brated baronial family of Freshfield, y, who held the Steetley estate on of a nominal service to the Vavasours. ir to conclude that about the year hurch became attached to Whitwell, in searching the diocesan registers documents, he had failed to find any f the amalgamation of Steetley to This was the more curious, because he difficulty in tracing such amalgama- er cases; for instance, he found that a at Duckmanton (a few miles from d) was united to Sutton, because it he people to sustain the two fabrics. rty at Steetley remained with the until the end of the reign of Eliza- it was sold to Sir Thomas Went- ultimately passed to the Duke of it it was purchased by the Duke of in 1842. It was interesting to notice f the rectors of Steetley, Lawrance, was instituted in 1349, probably be- uld cure bodies as well as souls. At a great plague devastated Europe (in d was brought to England by some who landed in Dorsetshire in 1348. 1349, the plague reached Derby- permeated throughout the kingdom. us in Europe were estimated at and one burial-ground in Lon- site of the Charterhouse, received ies. In Derbyshire alone 77 beneficed d from the plague, and 22 others re- or were the monastic clergy more The plague had a most important on agriculture, upon political life, and al history, especially as it gave a to church building and religion. The Steetley Chapel were surpassingly . The building was of simple con- Its nave formed a parallelogram, the s something like a square, and to the he sanctuary, in the shape of an m seen now in England, although with in Germany, and certain dis- rance. The exterior length of the ding, taking the outer walls, was n.; the length of the sanctuary, by 12 ft. 7 in.; the chancel, 16 ft. by ; and the nave, 29 ft. by 16 ft. The he chancel arch was 8 ft., and the arch a little over 10 ft., and the walls, substantial throughout, varied from to 3 ft. in thickness. One of the ties of the building was the very dition in which it had been left since mes. The greater portion of our rk had been built over, and inter- by subsequent styles, but so far as was worth anything he unhesitat- ounced Steetley Chapel as the most cimen of Norman architecture to be where in Europe. The lecturer de- sculpture upon the main entrance, and of elegantly-carved interlacing ch ran outside the apse, and after the twin objects of the chapel,—a place of worship in times of peace, and a place of refuge and defence when the barons were engaged in fighting,—said his opinion was that the chapel was erected either at the end of the reign of Henry I. or at the beginning of Stephen's reign, somewhere about 1120 or 1140. Concluding, he spoke of the importance of preserving such a valuable specimen of Norman architecture, and wished the project for the restoration of the chapel the most complete success.

CUMBERLAND AND WESTMORELAND ARCHÆOLOGICAL SOCIETY.

THE members of this Society had a two days' excursion to the vicinity of Naworth and Gilsland on the 27th and 28th ult. At Naworth Castle the visitors were received by Mr. George Howard, M.P., who at once conducted them into the hall, where seats had been arranged at the upper end. Mr. Howard was elected to the chair. Mr. R. S. Ferguson contributed a long and interesting paper on the Barony of Gilsland. In the course of it he remarked that Lord Thomas Dacre built Askerton Castle, as his initials show, to guard against inroads from Liddesdale by Bewcastle and the Maiden Way; he built Drumburgh Castle out of the materials from the Roman Wall to stop invasions across the Solway; and his arms, with the garter round, are still over the door of the farmhouse into which the castle has been converted. He built the outworks of Naworth Castle, as his arms and his initials and those of his wife prove. Much of the upper part of the castle is due to him. Lord Thomas Dacre died 24th of October, 1525, his wife having died nine years before. They are buried at Lanercost, under a finely-carved tomb, on the south side of the choir. His eldest son succeeded as William Lord Dacre of Gillesland and Greystoke, and also succeeded as Lord Warden of the Marches. He was governor of Carlisle in the reigns of Edward VI., Mary, and Elizabeth, though not continuously. It is probably his wife who is commemorated on the silver-gilt racing bell in possession of the Corporation of Carlisle:—

THE . SWEFTES . HORSE . THIS . BELL . TO . TAKE
FOR . MI . LADE . DAKES . SAKE.

Sir George Duckett, bart., contributed copies of a number of letters from Col. Charles Howard, of Naworth, to the Lord Protector Cromwell, in 1655, and his Secretary of State, Thurloe, 1655 58.

Mr. C. J. Ferguson began the reading of a paper in the hall, on Naworth Castle, and afterwards, under the direction of Mr. Howard, the party were conducted over the building, Mr. Ferguson explaining the architectural features of most interest. He pointed out the advantageous position of the castle for the purposes of offence and defence, as it rises from the summit of a natural escarpment of rock and cliff formed by the precipitous sides of a ravine down which flow the waters of two rivulets. Being thus naturally protected on three sides, it required only an artificial barrier to the south-east, facing that gentle declivity down which the visitors had just come. The question they were now trying to fathom was how this building grew upon this site, or what sort of building was first erected upon it. The earliest documentary evidence was the licence to Ranulph de Dacre, in 1335, to crenellate. In was to be presumed that some building existed before this. On making a careful examination of the south-west tower, the Carlisle Tower, he found that the lower part of it and of the western curtain-wall was not later than the thirteenth century, and that it had formed the original peel tower, from which this great castle grew. By the position this tower occupied, he thought it was the intention of the first builder to form a large enclosure or bailey, and that was done by stretching a similar wall across the south-east front to that existing on the west front, and occupying the position of the present south-east front, and before it was formed a deep moat crossed by a wooden drawbridge. The tower consists, on the ground floor, of the cellar, which possesses a narrow single-light window, with a staircase in the thickness of the wall, giving access to the house-place on the first-floor. It was evident that the boldly-ribbed vaulting was a later addition. He took it that Ranulph de Dacre when he obtained licence to crenellate, found this tower either not entirely completed, or in ruins, and that he completed it, battlemented it and the walls on the bailey, formed the gateway to the castle on its south-west front, and probably built sundry offices under the curtain walls. The next documentary evidence was in the heraldic dress of the great builder of the family, Thomas Lord Dacre. He took it that in his time the castle had fallen into disrepair. He repaired the existing buildings and made considerable additions to them. He rebuilt the upper part of the Carlisle Tower, and entirely built the south-east tower, known as Lord William Howard's Tower. This tower possessed great peculiarities. It had evidently been an afterthought, and had been constructed at a more recent period than the curtain walls in the court-yard, which at this point formed a very acute angle, and Lord William's Tower consisted only of the upper stories which rise above the battlemented walls of the court-yard, and is carried upon a deeply-ribbed series of arches spanning the triangular space between the walls and the court-yard,—a most daring and ingenious piece of construction. The Howard Tower is carried in mid-air by an arch, and for all the support they give it the rooms, staircases, and wall below it towards the court-yard might be cleared away. In the unfortunate fire which occurred in 1843 this actually occurred. In the early part of the sixteenth century the hall had arrived at its greatest perfection. He had no doubt Lord Thomas built himself a hall, built the gate-house, and the boat-house, and thus formed an outer court-yard. During litigation which took place in the time of Elizabeth, Naworth was said to have been unoccupied for thirty years. A report at that time said it was in "very great decay in all parts, and the out-houses and other houses and offices are utterlie decayed." To Lord William Howard they must attribute the domestic buildings that now exist, the repair of Lord Thomas Dacre's work, the construction of the gallery along the south-east front, and the decorating and beautifying of the whole structure.

The visitors afterwards took a walk round the castle, Mr. Charles Ferguson pointing out some of the portions of the building he had mentioned in his paper.

Mr. R. S. Ferguson submitted a paper giving a full description of all the heraldic devices in and about Naworth Castle.

Having left the castle, the visitors were conveyed to Gilsland, where they dined together at the Shaws Hotel, and the first day's proceedings were at an end. Mrs. Howard had, through Mr. R. S. Ferguson, invited the members of the society to luncheon at the castle, but the invitation was declined, owing to the stern rule of the society not to accept hospitality of the owners of any place they may visit. This led to groans on the part of some who had been out many hours.

On the second day, Mr. R. S. Ferguson gave brief descriptions of sepulchral slabs found at Melmerby and Beaumont. That at Melmerby was curious as having on it a very unusual combination of a chalice, a clasped book, and a pair of sharp shears. A good deal of discussion had taken place at a meeting of the Archæological Institute, on this combination of the shears, which are usually attributed to a woman, with the chalice and book, which are considered the emblem of a priest. The slab at Beaumont had on it a rudely-cut harp. A slab that was exhibited was perhaps the most important. It was found a hundred years ago at Bowness, and has been lost ever since. It is mentioned in Hutchinson's "History of Cumberland." Quite recently it was found again. Hutchinson's description of it raised a controversy between the English and German epigraphists, the former doubting and the latter supporting its genuineness. The following is given by the *Carlisle Journal* as the latest reading of the inscription on the stone:—

ONIANVS DI
LODATE VITE · IVRA QVARTVS
SVPPLEATV · OTIS FIDM Q
AVREIS · SAORABO CARMEN
IOXV . IRITIM LITTERIS.

A number of new members having been elected, shortly after twelve o'clock the party took their departure by train from Gilsland and went to Brampton, where they were met by carriages. In these they at once drove to Brampton old church, where Canon Dixon, of Hayton, read a paper on the old Hayton registers. Mr. Whitehead next read a paper on the church. He stated that when the ancient church was pulled down in 1789 the chancel was

allowed to remain, because the churchyard continued to be used occasionally as a burial-ground. Consequently what now remains is simply the fabric of the old chancel, with a modern porch added. In 1861 the burial-ground was closed by order of the Privy Council, but a new piece of ground was obtained close by, and the interior of the chancel was arranged as it stands at present. When that was done the east window was removed and a plain square sash window inserted, and the late Joseph Parker had said that a "fresco" was discovered on the north wall. He hoped Mr. Charles Ferguson would remove a portion of the plaster and see whether that was so. Though the renovation took place twenty years ago, nobody seemed to know anything about the roof, or even whether the chancel had one. At present there is a ceiling. Mr. C. J. Ferguson said the chancel was apparently Late Norman. In the south wall is an arch over a tomb, probably that of some great benefactor of the church, but he did not believe that the stone now beneath the arch is the original one.

The party proceeded next to Castlesteads. Here a number of Roman rings were exhibited, which had been found mainly during the making of a flower-garden by the late Mr. Johnson. This garden, said Mr. Ferguson, occupied the site of an old Roman camp. Most of the rings were set with gems, and two in especial were curious. One represented a human figure on the legs of a fowl, and Mr. King said it was gnostic. The other rudely represented a cross with a head on it.

With the return of the party to Brampton a very successful meeting was brought to a close.

A winter meeting is to be held at Penrith, probably in the second week of December.

"ELECTRICITY AS A MOTIVE POWER."

The discourse under this title delivered to 4,000 of the working men of Sheffield, during the recent meeting of the British Association, by Prof. W. E. Ayrton, was less quoted at the time than it deserved to be. We print the concluding portion, referring chiefly to the production of light:—

Various calculations have been made as to the relative cost of lighting by burning coal to produce gas, or by burning coal to work dynamo machines for producing electric currents, and it seems to be pretty certain that if a large amount of light be required in one place, the electric light is at least twenty times as cheap as coal; Sir William Thomson, our eminent electrician, goes so far as to say that it may be made 133 times as cheap. And certainly that there is a great saving in expense in electric lighting is seen from the actual result obtained at the Albert Hall, London, which is an example, and perhaps the only example in connexion with electric lighting, where the science of putting a brilliant light high up has been allowed to ride over the precedent of putting a number of feeble glimmers all over a building. Now, the duration during which the electric light is used at the Albert Hall on any one evening is only three hours, the time of the performance, so that the cost of getting up steam before the light is used, and the waste of heat after the engine is stopped, constitutes an important part of the whole expenditure. However, including this and other disadvantages under which Dr. Siemens labours in this matter, the actual cost, including labour of men, allowance for wear and tear of machinery, &c., is only one-third of that of the former inferior gas-lights, and thus a saving of about 1*l.* 10*s.* an hour has been effected. And in addition to this money economy, a great and almost unexpected gain has been attained. For the smaller amount of noxious gas produced in the electric arc, than in burning the necessary amount of gas to produce even an inferior light, makes ventilation at the Albert Hall, London, now a less important question. And the smaller amount of heat at present produced causes less draught, so that taking the two things together the air is much more steady. But steady air of uniform temperature is very transparent for sound, while layers of air of unequal temperature are opaque to sound. Consequently this stillness of the air, arising from the use of the electric light, enables the singing and music to be better heard, an advantage of enormous importance in so gigantic a concert-hall. As a striking contrast with the delightful coolness of the air at the Albert Hall, London, was the warmth of the brilliantly gas-lighted ball-room at the Cutlers' Hall on Thursday evening, and which was only surpassed by the warmth of the reception offered to the British Association by your Master Cutler.

Lighting streets by electricity has not been so successful, economically, for the simple reason that instead of having a large bright light, at a considerable height, reflected downwards, as in the Albert Hall, London, English conservatism has prevented the authorities from grasping the possibility of using for street illumination anything differing from an ordinary iron lamp-post. But there can be little doubt that if a few large electric lights, high up, were used for street illumination, the same sort of result as has been obtained at the Albert Hall would be arrived at. And in connexion with the general illumination of a town by electricity, there is this important fact to be borne in mind, that all experiments lead to the result that the larger are the dynamo machines used for producing the electric light, the cheaper is the light produced per horse power. For example, with this smallest Siemens's machine, which I have on the table, one-horse power gives 600 candles, whereas with the larger machine, such as we are running backwards for driving our emery wheel, circular saw, &c., one-horse power gives 1,500 candle power, more than double the light furnished by the other machine; and it is said, although I cannot vouch for the fact, that with the very large machines used in lighting the Palais de l'Industrie in Paris, 6,000 candles were obtained per horse power. At any rate, we may be absolutely safe in saying that the cost of using gas in Sheffield for lighting large halls, such as the one we are now in, factories, and the streets could be halved if electric currents, generated by water-engines worked by hill streams, as well as by very large steam-engines, were substituted for gas.

But can this be quite right, for I have proved that to transfer energy economically we must use a large pressure and a small flow? Now, how can we produce a very bright electric light with a small current? Why, by not using the current that comes along the wire to produce the light at all, but merely to drive an electro-motor, which motor, at the place where any large amount of light was required, would be employed in giving motion to a second dynamo-electric machine, which would produce the currents for lighting purposes. This experiment I might show you, but as we have used already several times during the evening electric lights fed from a distance, we will vary the experiment and try an analogous one. Messrs. Walker & Hall will now, at their works, give rapid motion to a dynamo machine, and the current which, when properly arranged as I have explained to you may be small, will set in motion this electro-motor. This in its turn will cause this other dynamo machine to rotate rapidly and produce a current, which I will use for rapidly gilding this piece of plate.

It is not necessary for me,—and, in fact, time would not allow me,—to tell you how I propose to employ the electric light to illuminate private rooms, if only I can get people to throw away the notion that to light a room we must have something with a globe on it, like an oil-lamp; nor is it necessary for me to remind you that by whitewashing the walls, yes, by whitewashing even the very machines themselves in some of the Paris factories, the supposed strong shadows cast by the electric light have been less than the strong shadows cast by another bright light, one that we not only put up with, but one that from the force of habit we are tolerably contented with, viz., the sun. At present, I am concerned with the pounds, shillings, and pence question, which has more than usual weight in these days of slack trade. Well, then, assume the cost of gas used for lighting the large buildings, factories, and the streets of Sheffield can be halved; also, that where it is used for heating purposes the expense can also be halved, by substituting electric currents generated by very large steam-engines at certain points, and by turbines driven by falling water out of the town; then you would save per year about 45,000*l.* Suppose, also, that the cost of producing motive power can in the same way also be halved, this represents an annual saving of something like 60,000*l.* In reality, I believe this last economy would be larger, since not only could power be produced so much more economically than by small steam-engines or even by a large engine, when a large proportion of its power is, as now, wasted in driving the shafting alone in your factories; but, in addition, much hand could be economically replaced by ma work. And, lastly, suppose the consumpt coal in Sheffield for heating your metals a heating your houses could also be halved there is another saving of about 300,0 year; or, altogether, the annual saving might be produced in this town alone, by tuting electricity for coal, would be som like the large sum of 400,000*l.* It is necessary for me to point out to you how capital a company would be willing to ad for such a comparatively certain profit or whether a large portion of this saving not be effected by expending only a por this capital. But I think I hear you this is all very nice, but there must be so something wrong in it all; is it likel Sheffield could save 400,000*l.* a year by using machines to whirl round coils of produce electric currents? If that be th pression this lecture is producing in your and I can hardly expect the more thought at once accept the truth of so novel a refo I am here advocating this evening, and probably you are listening to for the first allow me to adduce the following argume prove that although the reform is start may still be sound:—Imagine the cost of and plated goods to remain the same present, but all machinery to be removed Sheffield, then what an enormous loss accrue to the town from everything hav be done by hand labour. The saving, thes showing you how to obtain, enormous th may be, is still small when compared wi gain that the introduction of machinery the last hundred years has effected fo town.

Or, again, it may be objected that I using water power at the hill-sides t turbines. But this water cannot come wards into Sheffield for drinking and purposes, because to do work it must los We must therefore waste at the source water we use for power. But has the S Water Works any water that can be th pensed with in the town? Assuredly, to the energy and perseverance with wh Sheffield Water Works Company hav ducted their operations, there is always a very large stock of water. For insta present there is in the reservoirs at Re Rivelin, Agden, Strines, &c., enough to t town for six months if not another drop falls (which is a far more unlikely occ than that every Sheffield manufactur speedily adopt electricity), and when th voirs at Damflask and Dale Dyke, no pleted, but not yet in use, are employe will be at any time, I understand, a supply of water in the reservoirs, even consumption of Sheffield somewhat in Bearing this in mind, as well as the f the company has also power to constru other reservoirs in the Ewden Valley, it seen that there is no lack of water, a sure there will be no lack of willingness part of the company to allow water source to be used, especially when arrangement can be made remunerative themselves and to the manufacturers.

As an example of what water-power we will now cut a 2-in. board with a saw driven by an electric current produ the water motor in the yard of the Company, and conveyed to this hall wires crossing the streets.

So much for what may be done by el in producing motive power. Now, let sider what has been actually done. La two French engineers, MM. Chrétien a at Sermaize (Marne), actually ploughed electricity, the electric current being p by two dynamo-electric machines, of invented by M. Gramme, and shown diagrams on the walls. These machin usually worked with a steam-engine convenient place three or four hundr away in an adjoining road, and the motors were also two Gramme machi on each side of the field, with their volving, of course, backwards. Throug these the electric current was sent alte so that motion was given to one or othe large windlasses, one on each of the containing the electro-motors. In this plough which could be used going direction, was first pulled across the fiel a furrow, and then back again making parallel furrow.

ROCK CONCRETE TUBES, HEIR MANUFACTURE AND USE.

following paper, by Mr. C. Fletcher , was read at the last annual meeting of ssociation of Municipal and Sanitary ers and Surveyors:—

riting a paper upon this subject, it has he author's aim to do so as a member of ssociation, and he trusts that he will l in placing at the disposal of members ecial information regarding the mode of tion and the characteristic qualities of te in the form of sewer-pipes, which he such special opportunities of acquiring e was engaged by Messrs. Henry Sharp, & Co. to superintend that branch of acture carried on at the Bourne Valley

matter of fact, the process requires, ginning to end, constant care and atten- in making concrete *en masse* the engineer well how much supervision is required. more so is this the case when, instead of a slight hollow tube has to be produced, must be of great strength and without Faulty cement, dirty sand, soft aggregate, reless manipulation are dangers to be d against with the utmost care, inasmuch thing wrong may not otherwise be dis- until much material has been spoilt.

r pipes of concrete have been made and n the United States for the last thirty Among other reports from American rs as to their use is one speaking of their been laid in New Bedford as early as nd of their still being found in perfect n when since met with in the course of water-mains, and the American evidence ly is highly favourable to their use. The ing material used in the United States t, however, hitherto been the best that e procured. A native production, the ale cement, has been used, with a small ure only of English Portland. This has cated the pipes being made of abnormal ss; for instance, 9-in. pipes of 1 in. g, and 18-in. pipes of 2 in. scantling. ulds first used at Bourne Valley were d from America, and were facsimiles of egoing. An unwieldy article of this ion would not have succeeded in England petition with the vitreous stoneware pipes and Lambeth, by reason of the weight sequent cost of freight and handling.

is country Mr. William Buckwell, an r by profession, may be considered the o pioneer of the manufacture, and as a 1849 he patented a process "for the oture of pipes and other structures of which consisted in "condensing, solidify- compressing such matters by subject- m to percussion in moulds." Another n from his specification illustrates the which Portland cement then held as d with the present day. He says,— ments I use and recommend are those ng a large quantity of clay, of which tland is highly applicable; but I prefer having a larger quantity of clay, and d to a larger amount of firing, as well f the limes suitable to withstand the which the structure is to be applied." ll's principle of solidifying by percus- s not been improved upon up to the day, but his mode of putting it into by means of steam hammers, and his generally, appear to have been too slow plicated for it to become of practical and though he carried out several suc- examples of his work, which still remain, not sufficiently appreciated, and no more rd of it.

ssrs. Henry Sharp, Jones, & Co. belongs it of having first made the manufacture and cement concrete pipes a practical mercial success in England. That firm, engaged in the stoneware pipe manufac- ok up the question of making pipes of when introduced to them by Mr. J. W. ow of the East Greenwich works, and the patented American machinery which brought from the States. Various and difficulties, of course, cropped up, were sufficiently overcome for the pro- be shown, on Mr. Butler's behalf, in ul operation to the late Mr. James a man of great and varied experience se of concrete, and the establishment of manufactory at East Greenwich followed to Bourne Valley. Such has been the introduction of concrete pipes into this country. The superior strength of concrete in the form of sewer-pipes, so much above what concrete has generally been supposed capable of attaining, is primarily the result of solidifying by percussion as projected by Buckwell, combined with a small and regular feed of material under the rammer, which part of the process he also made a point of, as important.

The exceptional feature in the manufacture of rock-concrete tubes is the nature of the aggregate, viz., broken vitreous stoneware, the ordinary waste of extensive stoneware pipe works. Mr. John Grant has pointed out, as a prominent result of experiments, that concrete made of broken pottery is much stronger than that made of gravel, and Table A, showing experiments made by the author on the 19th of this month for the purposes of this paper, is confirmatory.* By this it will be seen that the average shows an advantage of 25 per cent. in favour of the stoneware aggregate, and it will be noticed that the lowest breaking strain of the stoneware was better than the highest of the gravel mixture. These test-blocks were made in the usual course, the gravel being clean, and part of a few tons got in water-bearing strata in the neighbourhood, and of similar description to Thames ballast.

The combined manufactures of stoneware pipes and rock-concrete tubes, as carried on at the Bourne Valley Works, afford an excellent example of the utilisation of waste products. The stoneware is passed through a Blake stone-breaker, and then under edge-runners; the fine being at each stage intercepted and returned to the pottery to be again worked up in the manufacture of stoneware; while the coarse, now reduced to the size of pea-gravel, goes on to the rock concrete department. It is here mixed by machines with the other ingredients,—washed sand and a fine, heavy Portland cement specially ground from picked clinkers. Thence into the automatic feed of the tube-making machine,—a more powerful one than the American invention, which it has practically superseded at these works, seeing that for large tubes a heavy and regular blow is an absolute necessity, as is also a regular feed; while a hand-feed, however careful, can never be so depended upon as a mechanical one, regulated by the speed of the revolving mould, into which it delivers, and in which the runner or tamper is at work. The tube is thus built up on the coil principle, as a diagram of the blows given in the course of filling the mould would indicate. A continuous and intermixed coil would appear, and it may be reasonably assumed that construction in conformity with this approved method must enhance the strength of the tube. The mould being fitted, the spigot is formed by means of a heavy iron ring-mould, which, under heavy blows, shapes it.

Great care is necessary throughout the above process. The exact proportion of water is of much importance. It is easier to make and compact the tubes when an excess of water or sand is used, but the point aimed at is to make good tubes with the least possible quantity of either. All moisture beyond that sufficient to set up the crystallisation of the cement detracts from its strength, and, if in greater excess, is liable to weaken it by washing out the soluble silicates. The sand partakes more of the nature of an economical distributor of the particles of cement than of an aggregate, though to some extent it is an aggregate, as it helps to fill up the interstitial spaces that would otherwise exist. Still, it does not add to the strength of the concrete,—probably the reverse; the aggregate proper, broken stoneware, does. Very fine sand is excluded, as surrounding the particles of cement, and thereby separating them and preventing perfect cohesion, the mixing becoming granular.

The tubes, now finished, are placed on trucks, and run out to the hardening ground, where they remain twenty-four hours in the moulds, of which they are gradually divested, the outer casing being the last to be removed. After standing on end for a week or ten days, during which time they have been constantly watered, if the weather is dry, they are removed to the silicating tanks, from which, a week later, they go into stack, there to complete induration. A few words may be said as to the process of silicating, and its results. Messrs. Sharp, Jones, & Co. make their own silicate baths under Righton's patent, now the property of the Victoria Stone Company, the *modus operandi* being to dissolve at a temperature of 500°, the natural silica found in the neighbourhood of Farnham by means of caustic soda. The silicate of soda thus formed is reduced to the required dilution by the addition of hot water, 1,130 specific gravity by the hydrometer being the strength most suitable for the purpose. The silicate thus produced can be relied on as absolutely pure and of good quality. The tubes constantly absorbing the silica, the tanks have as often to be replenished, so that the silica in solution may be taken as constant. A steam-boiler serves to make the solution and to pump the liquid from one tank to another as required. As to the utility of the process, there is no doubt that it hastens very much the natural induration of Portland cement, but it does not penetrate far into the material, and the stronger it is the less it penetrates, the result being a temporary case hardening,—temporary, because it does not appear that any property is conveyed to the cement that would not eventually accrue by age. It benefits the manufacturers by enabling them to place their goods sooner in the market.

A detail of much importance, and to which great attention is paid, is the regular and continuous testing by tensile strain of the cement. Tests are first made in the usual way of each consignment of cement as it comes on the works, including the tensile test at seven days. Testing briquettes are also daily made of both cement and of the tube mixtures in which it is incorporated. All these are entered in the test-book, which records particulars of each parcel of cement, where it came from, and what becomes of it. Thus, should any defect occur in the manufacture, the cause can at once be traced to its source. These numerous briquettes are all kept, and tested from time to time as occasion requires. An instance of their use quite unanticipated when the briquettes were made is table A. The author contemplated compiling an elaborate series of tables from the records of these tensile tests, but on consideration he did not think himself justified in publishing such as the results of scientific investigation, when as a matter of fact the testing is merely a guide,—though a very valuable one,—to those engaged in the manufacture, and many seeming discrepancies would arise, which, though at once to be accounted for on the spot, would be difficult and tedious to explain in a paper. The author may, however, state as a general deduction that at the end of four months the concrete is not more than ten per cent. below the strength of neat cement, and that this difference continues with a tendency to diminish as the age of both increases. This favourable result must be, to a great extent, due to the inherent strength of the stoneware aggregate and the capital "bite" that it affords to the matrix. It should be mentioned that the test briquettes are not silicated, the object being to arrive at the value of the concrete on its own merits.

There is, however, a record kept at Bourne Valley of another kind of testing that must have a higher practical value to engineers. This consists in submitting tubes to a crushing strain under the hydraulic ram, the breaking-weight being read off the dial of a self-registering gauge. This machine is by no means in daily requisition, since the breaking of large tubes is costly, and not to be undertaken without a specific object. Still, seventy-six experiments have been made in this way, some of which the author recapitulated in tables accompanying his paper. The most noteworthy are the comparative experiments made by Messrs. Welman and Creeke for purposes of investigation connected with the Bournemouth drainage. It should be added that the stoneware pipes averaged 256 lb. in weight, and the rock concrete tubes 252 lb.

A feature prominently demonstrated by the individual experiments, and patent also to the experimenters in all tests made, is the great toughness of rock concrete tubes.

The density and impermeability of the material is apparent to the eye, and was also demonstrated by a table of experiments made by Mr. Henry Reid, showing absorption of moisture after *ten days'* immersion to average 1·7 per cent. addition by weight. The average absorption, after twenty-four hours' immersion, by stone

* TABLE A.

Showing difference in tensile strength between concrete made with washed gravel and with broken stoneware: age, five weeks.

	lb. per sq. inch.		lb. per sq. inch.
1 part of cement	170	1 part of cement.....	230
1 ,, washed sand...	169	1 ,, washed sand	192
2 parts of pea gravel ...	146	2 parts vitreous stoneware	220
Mean	161·6	Mean	210·6

ware and fireclay, as shown by a number of experiments given by Mr. Baldwin Latham, is 3·057 per cent.

Having described the general features of the manufacture, a few words may be said on the tubes as ready for sale, and the uses to which they may be applied. First, they are applicable to the construction of main sewers, and, without advancing for them the quality of marvellous strength, it may safely be said that, *ceteris paribus*, all experiments show them to be somewhat superior in this respect to stoneware pipes.

As regards durability, the concrete being chemically and mechanically as perfect as the finest selected cement and aggregates, and modern machinery can make it, this quality follows as a matter of course. Sir John Coode, Mr. E. Druce, and others have testified to the extraordinary powers of resistance to the action of attrition or abrasion possessed by concrete; and, as regards resistance to the chemical action of deleterious liquids, it would be mere waste of time to enter into argument in defence of its well-known qualities in this respect. Although at Bournemouth a sewer constructed of rock concrete tubes was found to have cracked longitudinally in consequence of the most ordinary precautions of engineering having been neglected, it does not come within the author's experience to have heard of a concrete sewer that has succumbed to fair wear and tear. Brick sewers have been thus worn out or eaten away, and the author, as a town surveyor, has had occasion to pull up many hundred feet of fireclay pipe sewers, which, although only laid for periods varying from six to seventeen years, were absolutely rotten. He was obliged to relay with others of a similar material, through motives of first cost, and which cannot last but a very few years. At Frome, in Somersetshire, fireclay pipes have been discovered in a like condition. It is not surprising that this should be so, for fireclay, as its name implies, withstands the action of the heat, does not vitrify, and pipes made from it have only the salt glaze to protect them from the destructive effects of water, to say nothing of the more deleterious liquid they are specially intended to convey. Stoneware, on the other hand, as made in Lambeth and Poole, is the product of clays that partially vitrify under the action of intense heat, and, as Mr. Reid has shown in experiments made upon the aggregate of rock concrete tubes for the Bournemouth Commissioners, may be subject to boiling hydrochloric acid without deterioration.

With the above-mentioned qualities of strength and durability, rock concrete tubes become a desirable material for the construction of large sewers. In the ordinary sizes of pipe sewers they can be used as stoneware pipes are used; for the larger-sized sewers they are simply invaluable as permanent cores or linings to an exterior casing or ring of coarse concrete, as described by Mr. Baldwin Latham, and used by Mr. Ellice-Clark and other engineers. This mode of construction is less than the cost of sound brick sewers of the same diameters; in addition to which, the perfectly concentric form and imperviousness, the saving of centering, and the possible rapidity of construction and fitting in the trenches immediately after, show them to possess great advantages over other modes of making such sewers. As a rule, the sizes made at Bourne Valley, and generally kept in stock, are from 15 in. to 36 in. diameter, the process of manufacture not being adapted to the economical production of small tubes; and here stoneware pipes cannot be competed with.

The joint has been objected to as too short to allow of settlement, and the same objection has been raised to the Stanford patent joint. Doubtless, such objection holds good if a rigid sewer is to be laid on a shifting bed, but when the pipes are enveloped in concrete or laid thereon, as any sewer, pipe or brick, should be if the ground is bad, this objection is no longer a valid one. The jointing is easily and perfectly effected with Portland cement, the material being specially adapted to it. In the 15 in., 18 in., 21 in., and 24 in. diameters, provision is made to effect a good joint round the outside; with the larger tubes there is room to make the joint inside as well as outside.

In view of using the tubes in watery ground, the author has been making experiments with a mixture of boiled tar, pitch, and plaster, whereby the water is excluded for a sufficient time for a cement joint to be made and to set inside the tubes, and he has attained a fair measure of success.

Mr. Ellice-Clark's experience in the use and behaviour of the rock concrete having been considerable, and he, in addition to constructing sewers with the tubes, having used them for man-holes and ventilating shafts, will perhaps give his opinions on the subject. Mr. Cregeen, of Bromley, and Mr. Stow, of Frome, may also be mentioned, among others, as having used the tubes with success and satisfaction. Two or three wells have been constructed with them 30 in. and 36 in. diameters, one being 44 ft. in. depth. At Bourne Valley they are used for water-tanks, and also for a hydraulic balance lift, the cylinders being 12 ft. in depth by 18 in. diameter.

The author hopes that these few facts which he has been able to compile relating to a new industry may be found of interest and profit to the municipal engineers and surveyors of this country.

CHURCHES IN AND NEAR BRIGHTON.

SUSSEX ARCHÆOLOGICAL SOCIETY.

For the second time, but after a lapse of thirty years, the Sussex Archæological Society has visited Brighton and the neighbourhood. On the 27th ult.

St. Nicholas Church was visited, and a paper was read by Mr. Somers Clarke, jun., on the fabric and its history. Having referred to the opinion expressed by the late Mr. Mark Antony Lower that St. Nicholas Church occupied the site of a Druidical temple, Mr. Clarke said the church as they now saw it stood in Brighton, but those acquainted with the town knew that till very recently it stood out of Brighton. History told them, and the remains of building proved it, that years ago a considerable population lived below the cliff, and they might naturally ask how it was the church was so far removed from its parishioners. To that question he had never heard any satisfactory answer; and, though he did not profess to unravel the history of the building, he imagined that the choice of site was of comparatively recent date. They knew that the whole coast-line from Shoreham Harbour to Brighton had been constantly shifting, and why should not some such change, say in the fourteenth century, have so alarmed the inhabitants beneath the cliff as to induce them to remove their parish church quite behind the upper town? When a church had been altered, enlarged, and re-arranged on its original site, it was very seldom that some of the changes could not be traced or a part of the original building found. But here, on the other hand, they found some very early work in the font, whilst the rest was of the fourteenth, fifteenth, and nineteenth centuries. All the neighbouring churches out of the town showed signs of high antiquity. Why were there none here? Without pursuing this point further, Mr. Clarke went on to say that the building comprised a nave, with aisles north and south, separated from it by an arcade of five arches constructed of yellow stone from the other side of the Downs, a tower at the west end, and chancel at the east. This seemed to be the original fourteenth-century design of the building. The aisles were, until 1853, some 6 ft. narrower than at present, and the north aisle ended westward on a line with the east face of the tower. The windows were, however, apparently such as they now saw them. In the fifteenth century the south aisle of the chancel was built, and in that century the singularly rich screen must have been erected. Passing on to a more detailed account of the building, with a reference to some of the internal changes, of a temporary character, Mr. Clarke pointed to the site of the pew in the north gallery where Dr. Johnson was wont to sit when on his visits to the Thrales, at Brighton; and also adverted to the efforts of the late vicar, the Rev. H. M. Wagner, to improve the condition of the church. The vicar (said Mr. Clarke) proposed to widen the aisles considerably and cover them with gabled roofs, also adding large aisles to the chancel. The parishioners, however, remained obstinate, and, although a monition was served on the churchwardens from the Archdeaconry Court of Lewes, nothing was done, as a church-rate could not be obtained. On the 17th of May, 1852, the last endeavour was made to raise the necessary church-rate, but in vain. At the end of this year, the Duke of Wellington having lately died, a meeting was convened and a proposal was made that the restoration of the church should be taken in hand as a memorial to him, the church having been his place of worship when a pupil with the Rev. H. G. Michell, who was vicar at the end of the last century. The proposition was unanimously adopted, and the subscription was commenced with the sum of 1,000*l.* by Mr. Wag[ner]. The church, as they now saw it, was the re[sult] of that movement. The Ven. Archdeacon Hannah succeeded to the living in the [year] 1870, and caused the organ and inclosing screen to be erected, since which time the st[one] panelling to the walls of the sanctuary, and reredos had been added. Mr. Clarke concluded by giving a detailed description of the [church] which he attributed to the eleventh century.

Alderman H. Martin observed that he found in the Domesday Book that the spot which the church stood was the site of a religious house, and remarking that he found no instances of sepulture in the churchyard prior to 1600, said there could, he thought, be no question that the original parish church was that of St. Bartholomew, which formerly stood where the present Town-hall now [stands], and where, in digging out the foundations, ample evidence of many burials was found.

At *Rottingdean Church*, Mr. Gordon M. [Hills], architect, pointed out the features of the building, observing that, though the church was not mentioned in Domesday Book, there were traces in it which indicated that it must have existed at the time of the Conquest. Thus, they had a large nave, a small space over which the tower stood, and then the chancel,—features which were common in the Norman period and also common afterwards. He, therefore, thought that the building was originally a small Norman church, with a nave and presbytery, and a circular apse beyond, for he had been able to detect a starting in the wall as if it had had a circular form. He did not think, therefore, that they would be far out if they believed the church stood there at the time of the compilation of the Domesday Book. Its other features were Early English, the tower being of [the] date and the chancel for the most part of the same period. Forty years ago, the church had no south aisle, for though the arches were there they had been blocked up from time immemorial. These, about twenty-two years ago, were opened out and the aisle added, and the church had undergone further restoration later on. The arches under the tower and the window in the tower were Early English and of [the] form.

Ovingdean Church was also described by Mr. Hills. It was, he said, an almost perfect specimen,—perhaps as perfect as could be found anywhere,—of a church built before the Norman conquest, though they could not say the whole of it was of that date, as it had been subject to alterations in after times. A church at Ovingdean was mentioned in Domesday Book, and there was pretty positive evidence that this was the place referred to. Shortly after the Conquest, it became the property of the great Monastery at Lewes, which belonged to the Benedictine Order, then at the height of its power. The Monastery of Cluny in Burgundy had had the good fortune to be under the direction of three abbots, each of whom continued it for the remarkable period of fifty years; [all] being men of great talent, rectitude, and piety, they gave the Order an influence which it never afterwards attained. The Cluniacs were remarkable, not for establishing new monasteries, but for reforming and restoring those establishments already in existence; but it was not so that they did anything for this little church. It came into their power soon after the Norman Conquest, and being treated in a conservative spirit, it remained very much as it was until 1200, when the tower was added at the west end and an aisle to the south side, both of which were probably the result of the munificence of the great monastery at Lewes. Subsequently the aisle appeared to have made the church too large, and it had been suffered to fall into decay, the arches being then walled up as they are now found. The church comprised a [nave], chancel, lighted by three tiny Norman windows, and an almost perfect chancel, of a period of work before the Conquest, whilst on each side of the altar were some remarkable recesses, rarely, in his experience, found except in Norman churches. They were intended for the reception of the sacred vessels; and at Somerby and similar places, worked with early sculpture, were also to be seen. Originally, the nave opened to the chancel by a single arch, the centre one of the present three being the original. The other two were accounted for in another way. The

arch restorers sometimes puzzled archæ-; and Mr. Freshfield had told him (Mr. at he traced in the existence of the ches a connexion between the Church of and the Church of the East, where the orm was usual. Unfortunately, the s that, as the single opening was not sufficient, two others were made in a ay 200 years ago, and, when the church ently restored, they were finished off in shapely form similar to the centre one. s also drew attention to the original door in the nave and the original windows, and, referring to the latter, as interesting to know that the painted them was the work of a native of an, Mr. Kemp.

icar of Ovingdean (the Rev. Mr. Stead) pointed out the features of the church ly to Mr. Hills's arrival, supplemented tleman's explanations by observing that e arch near the tower was of chalk. ppearance of the south aisle he attri- the ravages of the French and Bur- s in the time of Richard II., remarking se forces, on landing at Rottingdean, he Prior of Lewes, took him to prison, set fire to the church there; and it unreasonable to suppose that, as Oving- only a mile off, they might have served me. The presence of fire-marks on the the arches, similar to some found at ean, and of some charred wood close orted, in his opinion, this not unreason- ry.

SUSSEX CHURCHES.

annual meeting of the Sussex Archæo- ociety, held on the 27th ult. in Brighton, Archdeacon Hannah read a paper on Churches."

, he said, must yield the palm to other if people searched for nothing more uteliness and splendour in its churches, were asked what they could learn from churches, he would reply that they nd illustrated the origin and the de- t of Gothic architecture almost as nd completely as those of any district nd. There were many points of inte- e ecclesiastical history of Sussex: its clusion; the late date of its conversion anity, three generations later than that eighbouring kingdom of Kent; the of the bishopric after some centuries ey to Chichester; the coincidence in the s of kingdom, shire, and diocese from earliest to the latest times; the close which afterwards grew up between se and the arch-diocese of Canterbury; erful religious houses at Lewes and ith the numerous less prominent foun- Michelham, Robertsbridge, Wilming- other places; and the occasional con- our ecclesiastical establishments with houses across the Channel. But it was through the medium of scattered and ively insignificant ruins that we could the local records of a great historic ssex, too, had suffered much at the both man and nature. Her churches sometimes burnt by the Frenchman, s swallowed up by the sea. They vain for the remains of that original n at Selsey, or the older parishes of ; and it had been thought that the of the hostile flames could still be the stones of the churches of Rye and an. In the larger towns their very old against them; for there could be hurches where there was scarcely any opulation; and hence a town like afforded but a barren field for the , as compared with some of the of older cities of the county.

for his first instances, churches where tectural interest was concentrated on style, the Archdeacon referred to the of Sompting and Worth, as two where the tower of one and the walls od-plan of the other were especially e relics of that archaic style that pre- l slightly overlapped the date of the Both showed good specimens of the l-short" work, the timber-like flat the small ancient windows, and the of a rude and primitive character, sed out of use under the influence of ambitious, if not abler, Norman At Sompting, besides a number of instructive details, and excellent examples of both pilasters and long-and-short work, the tower had the advantage of retaining the original top; each side ending in a gable, and the gables being roofed together in a point above, like the churches so often met with on the Rhine. At Bosham, on the other hand, they had a village church which could be made a sort of primer of architecture, for its walls had been altered and amended in the style of each succeeding age. The little village round that church, as Mr. Stephens says, "was connected with important, sometimes tragical, events in the reigns of Canute and Edward the Confessor, and in the lives of Earl Godwin and Harold. It is one of the four or five places which alone are marked in the oldest maps of Sussex. It is depicted in the Bayeux tapestry as the place whence Harold embarked on the ill-fated voyage which ended in his wreck on the coast of Normandy, and his detention at the court of William." But, centuries before the days of King Canute and King Harold, "it demands our attention as the one spot where Christianity had a home, when all the rest of Sussex was wrapped in heathen barbarity and ignorance." His excellent friend, the present Vicar of Bosham, had given reasons for believing that his church stood on the site of a Roman Basilica; namely, that bases undoubtedly Roman have been discovered at the foot of the piers of the chancel arch; and the facts that the "remains of a Saxon window may be seen on the north wall," that "the chancel was lengthened" in the Norman period, that a Norman window recently opened, and the presence of a piscina belonging to the Norman altar, record another stage in the history of the fabric. An Early English character was given to it at the end of the twelfth century by Bishop Warelwast, of Exeter, who again lengthened the chancel, added north and south aisles, and introduced Early English windows. A church like this reminded them of a palimpsest, in which one style crossed out and obliterated another, till modern skill read the riddle, and re-interpreted the stratified records of the past. Traversing the county, to Battle, they found in the well-restored church of St. Mary a Norman arch built in the south wall, near the chancel, whilst the nave was Late Norman, and the clearstory Early English, there being also some beautiful Early English arcading in the chancel itself. The north aisle was Perpendicular, and the west door Early English, beneath the inevitable Perpendicular west window of the later tower. At Rye they could study the same stages in the unrestored form. After saying a few words in defence of the judicious restoration of decaying churches, the Archdeacon proceeded to advert to a tour that would comprehend a series of interesting churches. A walk along the valley of the London-road from Brighton northward took them past the three village churches of Preston, Patcham, and Pyecombe, each with some points of interest; and they could go on past Clayton and Keymer to the remarkable and instructive church at Ditchling. From the Devil's Dyke they could drop down on the cruciform fourteenth-century church of Poynings; whilst on the road to Shoreham they passed the Norman tower of Southwick, and at Shoreham itself there was a rich store of instruction in Norman and Early English to be drawn from both the parish churches. Or they could take the train to Three Bridges, and a short walk round would lead them to Worth, Crawley, and Ifield. Go thence a little further eastward, past West Hoathly, to the decidedly unrestored Church of Horsted Keynes, with its memories of the low sweet voice of Leighton; and from thence, again, if they had two or three days to spare (for the distances are long), they could wander on, from church to church, through lovely broken forest land, till they emerged from the county at Tunbridge Wells. Then, turning southward and eastward, they found a perfect treasure of church architecture, including the late Decorated Church of Etchingham, once "amongst the noblest of baronial churches," down to Icklesham, and Rye, and Winchelsea. From thence the railway would bring them back to Brighton, past Hastings, and Bexhill, and Pevensey, and Westham, with their ancient fortresses and churches. Another expedition could be made by taking the railway to Eastbourne, to examine the old church there, and walking back over the Downs, they would find many an old village church nestling in the coombes,—here and there one of higher pretensions, like Alfriston. From Seaford they could turn inland towards Lewes, by the side of the Ouse, taking particular note of the lovely churchyard at East Blatchington, and the tower of Bishopstone, and then pass across the stream, to inspect the three round towers of Piddinghoe, Southease, and St. Michael's, Lewes, the relics of an economical antiquity. There were plenty of collateral points of interest in the monumental tombs and brasses, and he could only finish by urging all of those present to join in the work of studying their old churches, with a view to their better preservation. Let them make it a principle neither to destroy any genuine honest work that could be retained without public detriment, nor to try to impose a crude raw novelty, by mending some time-worn form of interest and beauty. In short, reverence for ancient work and modesty in repairing it were the plain and simple rules that would protect them from any serious errors in completing the restoration of the Sussex churches.

BERKSHIRE ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY.

On the 3rd inst. the members of this society went on an excursion from Reading to Hagbourne, Cholsey, North Moreton, and Wittenham.

At *Hagbourne*, the parish church was described by Mr. James Parker, who thought that the name Hagbourne was derived from the burn or brook of Hæcca, as was shown by one of the charters in the Codex Wintoniensis, of the twelfth century. In one of the Abingdon chronicles, dated 944, the name was spelt Haccan broc, and in 964 it was written Hæccebroc—broc or burne being equivalent terms for an intermittent brook. He thought the Hæcca was a proper name, and did not attach much importance to it. In the Domesday survey the *burne* became *borne*, equivalent in the Norman to a boundary, and they found in the survey that there were two manors bearing the name of Haccheborne. One was held by Walter Fitz-Other, and the other was held by Rainbald of Cirencester. It was stated in the survey that Rainbald held the latter manor in the reign of Edward the Confessor, so that it was not confiscated, as more than nine-tenths of the ecclesiastical property was at that time. Rainbald was Chancellor to Edward the Confessor, and was dean of the rich colleges of prebendaries at Cirencester, and he died before 1117, in which year there was a charter by which Henry founded the monastery of Cirencester. During the twelfth century, in nearly all cases where there were secular canons, regular monks were put in their place. That was probably not till Rainbald's death, as all his estates went to endow the newly-founded abbey. There was not now a vestige of the twelfth-century work in the church. It was most likely originally a small church, probably exactly the size of the present nave; but the whole had apparently been re-built. He thought the chancel arch, and parts of the nave, might fairly be ascribed to about the year 1200. Alexander Necham was Abbot of Cirencester down to about 1215, and was just the sort of man who would look after the property belonging to the abbey. In the reign of Edward II., the church not being large enough, the chapels were built. Lysons said the north aisle was built by John Yorke, who died in 1413, and who had a brass to his memory in that aisle; but the brass belonged no doubt to the south aisle, which was most probably founded by him, about 1413; and the north aisle was most likely founded by Claricia Wyndesore, in 1403. The eastern part of the present south aisle was of that date, the western part being about ten years later. The large tower was somewhere between the two; but it was difficult to ascertain its exact age, as the arch had probably been rebuilt and the old material worked in. The roof was probably raised, and the clearstory windows put in, at the time the tower was rebuilt.

At *Cholsey* the company assembled in the cruciform church, formerly belonging to Reading Abbey, and Mr. James Parker gave an address, in the course of which he said they possessed in Berkshire a larger number of charters relating to lands before the Conquest than could be found in any other county. Exactly as was the case at Hagbourne, there was not the slightest doubt as to the final syllable of Cholsey, but there was considerable doubt as to the first syllable. Before the Conquest there was only one way of

spelling Cholsey, viz., Ceol's-ige, or Ceol's island, perhaps more properly a tract of land surrounded by water. It was spelt Ceolsige in the Domesday Survey. Ceol might have derived his name from a ship, or "keel," and there was no doubt that the village ought etymologically to be called "Keelseye." In the year 950 Cholsey and Reading were joined together in the bequest of Alfræd; and the great interest the party of that day would feel in the church was in its connexion with Reading. They found in 993 a charter of King Ethelred, granting to his "venerable mother," Ælfthrith, certain lands in return for "the land which she first gave me, that is Ceolsig," or Cholsey. In the Domesday Survey they found that Cholsey belonged to the Royal Family. Henry I. wished to found an abbey at Reading, and he fixed upon three ancient churches, if not abbeys, to endow it; and those churches were most likely served by secular canons. In order to augment the funds sufficiently to support a large body of regular clergy, Cholsey and Leominster were added to Reading. Any one would say that the tower of that church, with its simple recessed arches, was of the time of Henry I., and no doubt the first thing the monks of Reading did when the land and everything belonging to it were granted to them, was to build the church. About a year and a half ago, in the south-east corner of the tower, he saw some very rough, rude masonry, quite different to everything else in the church; but now that the church had been restored that was absolutely gone, and he particularly regretted the fact, because he believed that piece of work dated back to before the Conquest. He thought it was clear, however, that the church actually occupied the site of the church which was there before. Equally he felt sure that originally each limb of that cruciform church was of the same size. It might not be going too far to say that the monks were so pleased with their church at Reading, which they were then building, that they decided to imitate it at Cholsey.

North Moreton was next visited, and after luncheon the party visited the church, where, in the Stapylton Chantry, a paper was read by Mr. Henry Stapylton on the history of the parish. Mr. Stapylton said that any one might have supposed from the beauty of the design that those buildings were the work of some great monastic establishment, or were in some way connected with the royal castle of Wallingford, but there was no reason for supposing either to have been the case. He thought he should be able to prove that the church (or, at any rate, the chancel) and the chantry were the work of two private persons, each animated by one common motive, that of commemorating a deceased relative, perhaps with the hope also of securing grace for themselves and the souls of their friends, both dead and living. In determining the date of the buildings, the fact that both were in the Early Decorated style, and connected by Early English arches, seemed strong evidence that they were built at the same time, —just when the Early Engliah was first merging into the Decorated. The chantry, at any rate, was already built in 1299, and he believed there were few specimens of the Decorated style in England earlier than 1290; so they would not be far wrong if they fixed the date of both chancel and chantry in the last decade of the thirteenth century. The earliest mention of the chantry was contained in an inquo ad quod damnum of the 27 Edw. I., held before the king's escheator, in full assembly, of the county of Berks (in pleno comitater Berks) the 16th of March, 1299:—"To ascertain whether any loss or injury would resort to the king if Milo de Stapelton were allowed to give and assign one messuage, one vigate of land, and two acres of meadow in North Moreton to the chaplains and their successors to celebrate mass daily in the chapel of St. Nicholas there."—Inq. a. d., 27 E. I. The jurors found there would be no damage to the king, but only to the Lady Joan, widow of William de Vallence, of whom this messuage and land were held, with other holdings in North Moreton, by service of one knight's fee. From that they learned that the chapel of St. Nicholas was already in existence in 1299, and that Milo de Stapelton held his estate there under the widow of De Vallence. He thought they would come to the conclusion that it was to the piety of those two persons that they owed the [church (or, at least, the chancel) and the chantry. Lady Joan's husband, William de Vallence, was one of those needy foreigners who flocked into England in the reign of Henry III. In fact, he was half-brother of the king, King John's widow having married the Count de Marche of Poitou, after the death of her first husband. They had a numerous family, and on the Queen dowager's death (1264) their children were sent over to England to thrive under the protection of their royal half-brother. William, the third son, was at once made Governor of Goodrich Castle. Several anecdotes related by Dugdale represent him as hard-drinking, mean, and unscrupulous,—no uncommon character in those days. Nevertheless, he was always faithful to the king, and helped him much to win the battle of Evesham. His wife was the Lady Joan, only daughter of Gwarin de Monchensi, one of the most noble, wealthy, and prudent warriors of his time. Camden called him "the Crœsus of England, his will amounting to above two hundred thousand marks." Lady Joan was, he believed, the founder of the church. She was lady of the manor; she was rich, and the death of her husband in a distant land might have been her motive. There was much less difficulty in identifying the builder of the chantry. Milo de Stapelton, mentioned in the Inq. ad quod with which they began, was the head of a family settled at Stapelton-on-Tees from a very early date. The theory he endeavoured to establish was, that Sir Miles de Stapelton, the son of one Sir Nicholas and the grandson of another, had an elder brother of the same name, who was a Templar, but died early, before his father; and it was to his memory that Sir Miles built the chantry at North Moreton. Mr. Winston, who restored the windows in 1856, and who was an authority on the subject of glass-painting, fixed the date of the glass between 1300 and 1310.

At *Little Wittenham*, the site of an ancient British camp, Mr. James Parker gave an address, in the course of which he called the attention of the party to the two mounds between Dorchester and the river, and explained that one-half of the ridges had been carted away by a farmer. He believed the destruction of those mounds was really the beginning of the effort, which was not yet successful, to obtain a Government Commission for the preservation of ancient monuments. Those two great ditches and mounds, half of which had been destroyed, were undoubtedly Roman. As nearly as could be, the Romans always attempted to obtain a parallelogram in their encampments, but one of their rules was that whenever they encamped by a river they had to cut a loop, as it were, exactly as they had done there. That was absolutely unlike any other mode of fortification of that early period.

After a brief glance at Little Wittenham Church, the visitors drove through Long Wittenham to Didcot, whence they returned to Reading and Maidenhead.

THE HALIFAX COMMERCIAL BANK.

The new bank, now being erected for the Halifax Commercial Banking Company, occupies a prominent position at the angle formed by Silver-street and Crown-street, and has three frontages to these streets. The site, though an excellent one, is of somewhat irregular shape, but the plan has been so adapted to it that a regular and convenient structure will be arranged. The ground-floor space is occupied entirely by the office of the bank, and the directors', manager's, and waiting rooms. The office itself will be a room about 40 ft. by 38 ft., and 18 ft. high. It is placed at the prominent angle of the site, and is lighted on three sides by ten windows. The approach to the office is by a porch opening from Silver-street, giving easy access to the banking-room, and protecting it at the same time from draught. The bank will be lined with a dado in American walnut, and all the fittings and furniture throughout will be in the same material. The basement contains the rooms for the curator, the strong-room, and voucher-rooms, and dressing-rooms, lavatory, &c., for the clerks. A hydraulic lift communicates between the banking-room and the basement for the easy removal of books. A separate wide staircase and entrance have been provided in Crown-street for the use of the first and second floors, which are arranged, with wide, well-lighted corridors, in suites of offices. Those on the first-floor for the principals, and small private staircase communicating with the second-floor for clerks' offices. Separate lavatories and coal-places are provided to each suite of offices, and these rooms are all excellently lighted by the windows on the sides of the building. Great care has expended upon the arrangement of these of which will be well adapted for lawyers other similar occupations. The exterior building has been treated in a free adapt of Lombardic Gothic. The ground-floor win are wide single lights with double shafts t reveals, pointed arches, labels, and sunk pan dados. The first-floor windows are double with double shafts and quatrefoil tracery i heads. The second-floor windows are clus single lights. Those to the principal front ing down Silver-street are five in number, three windows below. The building is cro by a bold cornice and perforated parapet, which are large stone dormers, with d shafts to the front and single shafts t reveals, in two lights, with moulded trace the heads, and an enclosing arch. The diff angles of the building are finished with nacles, and the grouping of the whole, wit lofty high-pitched roof, with wrought-iron ing and finials, will be picturesque. The me work is being executed by Messrs. John I Son, of Shipley; Messrs. Charnock & Se Halifax, are the joiners; S. W. Whitak Bradford, is the plumber; Messrs. Bancroft of Halifax, are the plasterers; and W. Lee & of Halifax, are the painters. Messrs. Farr Brindley, of London, are the carvers; Mr. S is the clerk of works. The amount of the tracts is 8,300*l.*, exclusive of land and furn The building has been carried out from designs and under the superintendence of M W. & R. Mawson, architects, Exchange, ford.

THE NEW WHOLESALE VEGETABL MARKET AT STRATFORD.

The spacious new wholesale market for tables which the Great Eastern Railway pany are erecting, as we have already ment immediately alongside their station at Stra Bridge, is intended more especially for the venience and accommodation of the dealer the inhabitants generally of the East E whom it is expected that it will serve the purpose as Covent-garden now affords t metropolis as a whole. It will not onl supplied with produce from Essex, whi essentially a vegetable and root-produ county, and which the Great Eastern line sects at various points, but supplies are expected from the Continent by the Eastern Company's steamships trading be Harwich and Rotterdam.

The market will be 480 ft. in length and in width, thus covering an area of 24,000 ficial feet. It is 30 ft. in height from the g line to the eaves, and will be covered in roof, in two bays, about one-half of which be in glass. The roof will be supporte light ornamental iron girders. One half entire area of the market will be divide warehouses. These warehouses will be ei number, each warehouse being 240 ft. by They will contain platforms, raised conside above the railway level, two lines of rails the main line of railway being carried alo entire length of the south side of the m immediately in front of the warehouse forms. On the arrival of the trains wit various descriptions of vegetable produc sale, the produce will be received fro trucks and taken into the warehouses, the business of the market will be carri There will be a separate entrance to each warehouses on the north side, and a large space immediately adjacent, belonging t company, will be appropriated for the a and departure of vehicles with the m produce. The materials of the marke yellow brick, with stone coping.

It has been designed by Mr. Langtr company's engineer. Mr. W. Bangs i contractor, and Mr. Selvey clerk of the w

Leeds.—The new Convalescent Home re erected at Meanwood, near Leeds, was o on the 30th ult., by the Bishop of Ripon Miss Beckett, of Somerly Park. The bu will accommodate about eighteen children is pleasantly situated in the high road be Meanwood and Moortown, having a fronta the south, east, and west aspects. The bu has been erected by the late Mr. Moxo Headlingley, from plans prepared by Mr. Birch, architect, London.

STRUCTION OF WORKS OF ART IN ITALY.

MR. HEATH WILSON, now resident in ...s come to the support of "Ouida," in ...ses, in her properly indignant protest the destruction of works of art in Italy. ...g his letter, Mr. Wilson says:—

...concluding statements shall be those of ...an lover of his country's monuments. ...a, the Church of St. Sebastian, with its ... by Piola and other Genoese masters, ...n razed to the ground to make a street ... The architecture was of little value. ...very of these proceedings lies in the ...ion of paintings which no modern artists ...roduce. It is said that the old Bank ...eorge, that central point of Genoese ...associated also with European history, ...cast down. Up to the present time the ...ut protests of intelligent men have ...d this; but my informant had little ... its being saved. The unequalled ...garden, with fountains of the Palace of ... Doria, is to be cut through by the ... railway. My Italian friend spoke of ...h distress and shame. It will be not ...offend taste, but to destroy a monument ...ly associated with the history and glories ...a. This once magnificent city is being ...d in every way by hideous modern ... The decay of all taste and sentiment, ...cide in its beauty, is apparent; every ...ory, and every point of vantage, are ...ered with monstrous piles of building ...n ugliness have no rivals. The calm ... in one of your correspondent's letters ...possible destruction of the Farnesina, ... he blood run cold. There is not a ...of proof that such an act would improve ...th of Rome or save one life. But we ...sole ourselves, such a deed as this never ...roposed. In their schemes for the im...nt of Italian cities, which have been ...on with such reckless haste that many ... are involved in hopeless debt, munici...and engineers may yet show their taste ...ty by so laying down their plans as to ... the monuments which have made their ... famous. If they do otherwise, they ...content to bear the indignant censure ...ed Europe."

BRICK-MASTERS OF LONDON AND THE HOME COUNTIES.

A LARGELY-ATTENDED meeting of the brick-... of the adjacent counties who supply ...opolis with bricks, was held on the 4th ... the Hop and Malt Exchange, Borough, ...r. Alfred Wagge, managing director ... firm of Messrs. Eastwood & Co., ... of Belvedere-road, Lambeth, presided. ...ect of the meeting was to consider the ...ct of the session, so as to arrive at a ...tion of the loss in manufacture caused by ...ralleled deplorable weather; to discuss ...e of labour for the ensuing winter and ... make; and the prospects of trade. ...t the masters present were Mr. Charles ...on, Vauxhall; Mr. Looker, Kingston; ...ad, Southall and Acton; Mr. Minter, ...ourne; Mr. L. H. Saunders, St. Helen's, ...W.; and Mr. Loat, Clapham.

...hairman, in opening the proceedings, ... meeting had not been called for any ...ve purposes, but for the purpose of com...he quantity of bricks they had produced ...he past unfavourable season. It had ...ace been computed that 600 millions ...s was the annual consumption of the ... market, but in ordinary seasons with ... operating unseasonably against the ...on, the London market consumed about ...lions; what they wanted to know was ...ge falling off had been during the past ...which was fast drawing to a close. In ...ick-fields there had been a diminution ... per cent. He believed the general ... of the brickmakers was that there ...not be so large a profit as heretofore, ...to a variety of causes, the chief cause, of ... being the weather. The consequence ...t he believed the diminution of produc...s on the average more than 25 per cent. ...ne production of an ordinary season.

...harles Richardson, of Vauxhall, said he ...uite confirm from experience all that ...rman had stated; for last year he had ...tools, and produced 25,000,000, and this year they had 9,000,000 less. They had 15 per cent. of shelves of "inferiors" more than during any previous season he had yet known. There had been, no doubt, great suffering experienced by the men in consequence of the amount of unworthy earth. If they could compute with tolerable accuracy the amount of bricks which they had made they would be able to arrive at the probable supply which would be required for the season of 1881. He therefore suggested that the masters present should put down on paper their estimated production at the beginning of the season, and their actual production now that it was nearly closed.

This having been done,

The chairman said that the figures showed that the reduction was quite 25 per cent. less than for the corresponding period of last year. The minimum was a decrease of 25 per cent., and in some cases it was 43 per cent. and 44 per cent., and he had no doubt that the diminution might be fixed at 33 per cent. and 34 per cent., and yet he might say that the make of 1878 was nothing like the make of 1877, which fell far short of the make of 1876. He thought that with the price of 32s. during the past season they had made as much money as they would at 40s. during the coming year. He was not one of those who was in favour of forcing up prices. It was only killing the goose that laid the golden eggs, and in their own interest they ought to meet the interests of the builders of London, who were their best friends and customers. Then there was another question, which was, that almost one-third of the earth would be carried over until next year. He would like to hear something said about the question of labour.

Mr. Richardson said the question of wages was one which ought to be considered as soon as possible after a season had finished, because agreements were entered into with the men immediately afterwards. Last March a meeting had been held at the Cannon-street Hotel in regard to the wages question, and at that time it was thought that the reduction in price paid to moulders should take place, but an objection was made that with the agreements entered into with the men nothing could then be done. His opinion was that in the approaching season the employers were entitled to a reduction of 6d. per 1,000 on the moulding, which would amount to 2s. per 1,000 on the actual production. In Kent and other places the wages paid to the moulders regulated the wages paid to the other *employés*. If they did not come to a conclusion on the subject at present they would find it impossible to do so when the season commenced. He thought there was every chance of their having a worse season next year, and that there should be the reduction he suggested.

Mr. Loat (Clapham) quite agreed with Mr. Richardson, that if a reduction was to be made now was the time to do it. Last March, at a meeting held at the Cannon-street Hotel, when seventy or eighty brickmasters were present, it was thought that there should be a reduction; but the great objection to making it was that they had then made their contracts with their men. If the masters made up their minds they could carry the reduction, and he believed the men would accept it.

The Chairman said if the meeting expressed its opinion upon the subject without binding themselves to a resolution it would be satisfactory.

Mr. Stroud said he fancied that the proposal was rather premature, seeing that they were hardly in a position to forecast the future. They had admitted that not more than two-thirds of the bricks usually made in a season had been produced this, and, therefore, how could they reasonably predict that the coming season would be a bad one? He did not quite understand that a reduction of 6d. per thousand to the moulders would represent a reduction all round of 2s. per thousand; indeed, he thought that it would not signify more than a reduction of 1s. per thousand.

Mr. Looker thought that the moulders were paid out of all proportion to the price obtained for bricks. If the weather had been fine during the past season the men would have done very well. He begged to move,—"That this meeting is of opinion that a reduction of not less than 6d. per thousand for moulding should be made."

Mr. Loat seconded the motion. He paid as much as 6s. 3d. and 6s. 9d. per thousand.

Mr. Minter thought the proposal premature. The men during the past season had had a severe time of it. The great difficulty was to get a moulder when you wanted him. If the next season were a good one the moulders would not take 4s. 2d., because they could command 4s. 8d. per thousand.

Mr. Compton said it was quite evident that they were all in the "wash," and not in the "mill," upon the subject. First of all they should have a maximum price for moulding. He had been paying 5s. 8d., but you could not take 6d. off a man who was receiving only 4s. 3d.

On a division the proposal in favour of a reduction was carried by twenty-three to seven votes.

A vote of thanks to the Chairman terminated the business.

A NEW ASSISTANCE: THE SOUTH DEVON HOUSE OF REST.

SIR,—You have always been so energetic a pioneer of any social reform, and so often taken up the cause of excellent charities, that I venture once more to ask your assistance in making more widely known one still in its infancy and sorely in need of aid.

I am the more induced to appeal to you, as you yourself urged very earnestly some years ago in various articles entitled "Another Blow for Life" (after having visited, I am told, at no small personal risk, the lowest and dreariest purlieus of London), the immense need of vast sanitary reforms and the imperative necessity of more light, more air, and purer water for the lower classes,—necessary not only under a point of view of humanity, but also as a check on various epidemics that the want of these inevitably give rise to. You have also suggested ways of relieving the overworked classes. Now it appears to me the most overworked and the most unfortunate class are people not paupers (the burden of maintaining that class is enforced on the community), but individuals to whom the constant fear of sinking into such a condition brings terror and humiliation,—who only ask for strength to continue their work,—who, not having *been* ill, are not eligible for a convalescent home, and, not *being* ill, for a hospital,—who merely want change of air, bodily and mental rest, to regain the strength necessary to take up again the thread of their lives, and to prevent them from breaking down. Under the head of such classes none can appeal more powerfully to every feeling of humanity than overworked women,—such as shopwomen and needlewomen. They are, perhaps, orphans with no country home to go to, or with relatives too poor to help them, or who are, like themselves, toilers in the great city.

However dire a man's need or necessity, there is, in the very fact of his being a man, something that must almost always (except in cases of mental and bodily disease) save him from sinking into the utter and entire helplessness women fall into. The world, as long as he has hands to work with or a heart to accept any fate, is before him. It would not even be degrading to a gentleman who found himself absolutely from force of circumstances without a shilling to work before the mast, break stones on a road, or try his luck at the diggings, and yet once more rise in the scale. But to a woman no such path is open, save only when exceptional genius, exceptional daring, exceptional high pirits, have been given as arms with which to "thrash through the storm" of misfortune. To women not so endowed by nature, and without the influence of any social position, nothing is left but the "daily round and common task," and which becomes in the case of shopwomen and needlewomen somewhat dreary drudgery. The day of misery so pathetically described by Hood in his "Song of the Shirt" is, let us hope, nearly over, though unfortunately the reaction that has set in is not as yet entirely in the right direction, for the wages girls earn at the sewing-machine give them enough to live on, and their evenings free, which induces the less steady amongst them to spend their spare cash on finery and cheap amusements, leaving them without provision for the time when age or illness incapacitates them from work, and throws them back a burden, to be supported by already over-taxed ratepayers. It is not for this class (whom experience alone can teach the folly of their ways) I plead, but for those good and humble women who try to live their lives out conscientiously and laboriously, to whom a breath of fresher air, a stroll in a daisied field, would be as the very foretaste of heaven, invigorating the tired

frame, sending them back to their daily routine with fresh courage and energy, and with the prospect in the future of another outing.

To provide this, and supply a link in the chain of charities, an establishment called the "South Devon House of Rest" has been founded at Babbacombe. A house has been secured in a high and healthy situation near breezy downs above the sea, and amidst beautiful scenery; the rent has already been provided for by a lady; the size of the house enables sixty young women to be received, and as the means increase its accommodation will be extended. An annual subscription of 1*l.* 1*s.* admits an inmate for three weeks, the inmate to pay, in addition, 5*s.* per week. It is under a committee of management including the Rev. John Hewett, Vicar of All Saints, Babbacombe, and Rural Dean; the Duchess of Sutherland, Stafford House; Miss Roberts, Florence Villa, Torquay; and Miss Skinner, Bayfield, Babbacombe.

To many of their own sex, to whom the good things of this world come without an effort on their part, and who calmly float through life almost as unaware of what the dread phantom of utter poverty,—through enforced cessation from work, looming before the eyes of overworked women,—means; of the gnawing pangs of hunger, the nipping cold of the fireless hearth, the terror when the landlord calls for the few shillings necessary to keep some modest tenement over their heads,—as the hapless queen who suggested cakes when there was no bread, an appeal can scarcely be in vain. Could they but realise the feelings that must fill the hearts of these poor women when they see the possibility of a few weeks' repose, they would, I am sure, give some yearly sum, if small as the widow's mite, but which, in the aggregate, would, ere another autumn, establish this charity on as firm a basis as the orphanage of the good Abbé Roussell at Auteuil, which, owing to the unaided but powerful pen of M. de St. Genest, became in a few weeks one of the noblest charities of Paris.

The prayer of Ajax was for light; these poor workers pray for "rest," and if this appeal finds the echo it merits in the heart of some more happily placed, I cannot but think that the knowledge that through their means some faint portion of the enjoyment they derive from change of air and scene has permeated down to their humbler sisters will add a keener zest to the intellectual treat of a trip on the Continent, the lazy delight of a float on the Mediterranean, or the invigorating tramp through the scented heather of a Scottish moor. C.

LONDON WATER-RATES.

Mr. Charles L. Gruneisen, writing from Surrey-street, Strand, says:—

"The public at large has, indeed, every reason to be grateful to the Society of Arts for its continued efforts to secure a more plentiful supply of water, and at a more reasonable rate than the one imposed at present by the New River Company. I do not see that any special merit is due for any alleged improvement, either in the quality or the quantity. The consumers and water-rate payers had a right to expect every consideration. It was to the interest of the companies to be liberal with their customers. As I think my experience is indicative of the peculiar system of rates imposed by the water companies, I submit the facts for your information. When I returned to London, after a residence abroad for some years, I purchased the 1843 lease of the house I occupy. The ground-rent, for the Duke of Norfolk, was 50*l.* per annum, I, of course, being bound by the covenants for repairs, besides having to pay a large sum before taking possession. The parochial rates were calculated at 43*l.* per annum. My water-rate for years was 30*s.* per annum. Now the parochial rating has been raised from 43*l.* to 63*l.* per annum, and as this is the basis on which the water-rate is charged, I now pay 4*l.* 0*s.* 6*d.* per annum. The other local rates are, of course, proportionately increased.

Now, we are only two in family, and the consumption of water is now much less than in former years, for the simple reason that we do not have visitors staying with us as at a previous period. The value of the house is not one farthing more to me than it was when I took the lease. As a man of letters, and as a journalist, I occupy and use my premises. There is no prospective value, even if I now tried to sell the lease for the ten years it has to run. I took the house on economical grounds, and I have been quite defeated in my calculation as to the amount I could yearly afford for house-rent, local taxes, &c.

Thus, without having the smallest increase of accommodation, without having any additional supply of water (less, in point of fact, at the present time), without deriving any advantage whatever of increase for estimated value of the house, every year I find the local outlay larger and larger. A beneficial lease might justify the additional charges, but my contention is that such is not my case, for the liability for repairs renders the landlord's ground-rent quite high enough in a street now filled with hotels and boarding-houses, instead of being inhabited, as in the first place, by private persons."

SKETCHES IN ALGIERS.

Mr. F. A. Inderwick, Q.C., is contributing to the paper of his locality, the *Rye Times*, an account of a Vacation Tour in and about Algiers. As concerns the *town*, Mr. Inderwick says:—

"The town itself has two distinct characters, the upper portion being that formerly and still occupied by the Moors; and the lower, having been built by the French from time to time, after their monotonous style of architecture, with boulevard and squares, is occupied entirely by them. As to this portion of the town, notwithstanding the eulogiums commonly passed upon it, it is, with the exception of the quay, not of a character to shed a glory even upon a second-rate French watering-place. But the upper town still retains, in a great degree, its ancient characteristics. The streets, narrow, about 6 ft. in the widest, steep and dirty, swarm with Arabs and Jews. The closely-veiled women, with their black attendants, go and return from their baths and their shopping; and the men lounge or sleep in their coffee-shops and on the sides of the streets, or, with the eternal cigarette between their lips, lie on their matting, or sit on their carpets gossiping over their coffee. This coffee, known as '*Café Maure*,' as distinguished from the French coffee, and as sold at these shops, is prepared by the Arabs in a peculiar mode, and one which is strongly to be recommended to all persons wishing a really good and well-flavoured cup of coffee."

"Many of the old Moorish houses, now occupied by the French, are, in the interior, of very beautiful Oriental construction and design. Probably the most unique and the most perfect in its way is the Palais Episcopal, now the residence of the bishop, but formerly a palace of the Dey of Algiers. It is built in the true Moorish style, with a large marble courtyard, with fountains in the centre, surrounded by galleries with tesselated tiles, supported by pillars of Algerian marble. From out of these galleries open the reception-rooms and the sleeping apartments. One of the rooms is fitted up as the private chapel of his Eminence, and is decorated with a painting of the Descent from the Cross, by the Duchesse de Malakhoff. The palaces of the Governor-General and the Court of Justice are in the same style, the courtyard in the latter case having been converted into the Court, and the galleries being reserved for the use of the spectators.

Many houses still in fine preservation, and gorgeously fitted up in the Eastern style, are now occupied by the wealthier Moors and Jews. They are, however, for the most part inaccessible to strangers, being occupied by the wives and families of the owners. They are all lighted from the inner courtyard, which is open to the sky, and have no windows except a few loopholes, which have been punctured in the outer walls mainly for the purpose of ventilation. They are all flat-roofed, and on these roofs, in the cool of the evening, the inmates are accustomed to sit, particularly those of the lower orders, whose women are often to be seen sitting on the house-tops, with a scarcity of drapery which would in a European country invoke the interposition of the municipal police. And in the more crowded and poorer parts of the town the communication between the houses is said to be carried on by means of the roofs, without the necessity of a descent to the street."

Then a word or two as to the mosques:—"The great architectural features of Algiers are, undoubtedly, the two large mosques, situated in the lower portion of the town, and seen clearly from the sea. The large mosque, that of Djama Kebir, is of some antiquity. It is surrounded by a colonnade, with pillars of Algerian marble, which, with the contin running of water from its fountains, makes cool and inviting lounge for the lazy Ar The interior of the mosque is entirely wh washed. It consists of several courts, amon which is one with a few trees and a la fountain, where the Mahometan performs ablutions before attending to his prayers; according to the Mahommedan religion, cle liness is not only next to godliness, but it before it, as their devotions count for noth unless preceded by ablution. The floor covered with matting and carpet, and no o according to Mahommedan custom, is allo to enter within the sacred precincts with shoes on his feet. The coolness of the within these buildings, and the relief affor to the eyes by the subdued light, together w the perfect stillness of all around, make the favourite resort among all classes of the Ar who come there, not only to perform th devotions, but also to while away the t which they have either no means or inclina to dispose of more profitably. Within curtilage of the mosque, and adjoining fountain court, is a native tribunal, composed a kadi and two muftis, who administer the according to the Koran. Their powers, howe are only civil, and are confined to the settlem of disputes arising between natives. A crimi case or a civil case in which a native an European are litigants must be taken before French courts."

To the male stranger the interior of a Moo residence is inaccessible, but the same obst is not always thrown in the way of a lady whom, upon a proper introduction to the pa arch of the house, and on an intimation of wish to become acquainted with the ladie his family, an invitation to visit the haren not unfrequently accorded. This opportun was afforded to Mrs. Inderwick, who contribu to the first instalment of The Tour a brigh written account of her visit to the fem members of one of the richest families in Algi

COMPETITIONS.

Greenock Municipal Buildings.—On the inst., Mr. Scott, measurer, Glasgow, s mitted to the Town Council, the follow estimate of the cost of the six selec designs:—"Art and Science," 78,67 "Omega," 51,241*l.*; "Let Greenock flouris 57,845*l.*; "Qui dit Progrès dit Labe 62,480*l.*; "Ciconia," 67,624*l.*; "M. B.," 55,0 These amounts are lower, it may be seen, t the estimates of the referee. On Monday the Town Council and Police Board met privat and discussed the merits of the six designs the new corporation buildings. A decided general preference is stated to have been i cated in favour of the plans sent in by Mes Barclay, architects, Glasgow. This select says the *Scotsman*, although not final, may said to have been virtually made.

Over Darwen Town-hall and Market-house. Mr. Waterhouse, to whom these designs w referred, recommended for first premium, Chas. Bell, Union-court, Old Broad-street; second, Messrs. E. Salomons & R. S. Worn and for the third, Mr. R. K. Freeman. At last meeting of the Council this award adopted, and it was resolved, on the motion the Mayor, that the first premium, 100*l.*, for Town-hall, and 75*l.*, for the Market-house, paid to Mr. Bell, by whom the work, in course, is to be carried out.

Southport Convalescent Home.—It is propo by the governors of the Cotton Districts C valescent Fund to expend from 25,000*l.* 30,000*l.* from the fund at their disposal in erection of a convalescent hospital and bathing establishment, in conjunction with one already in existence in Adelaide-stre Southport. The building is to accommod about 200 male convalescent patients, the p sent hospital to be used for females only. governors recently advertised for plans for proposed additional hospital, offering two p miums of 100*l.* and 50*l.* respectively for the best designs which should in their opinion com with their requirements, viz., convenience compactness of arrangement, simplicity tastefulness of design, and economy. In eponse to the advertisement, nineteen desig have been sent in to the governors, and they now on view at Haworth's Buildings, Cross-stre Manchester. No limitation as to expense w named, and the estimated cost of the schemes s mitted is stated to vary from 6,000*l.* to 30,00

DANGEROUS DECISION AS TO DANGEROUS STRUCTURES.

following official report with reference cision given on the 3rd inst. by Mr. ld, the magistrate at Marlborough-street, n sent to the Superintending Architect Metropolitan Board of Works. The seems very serious:—

" 21, King William-street, West Strand, W.C., September, 1879.

Re *Dangerous Structure*, 29, *Haymarket*.

r,—I beg to call your attention to the decision Mr. Mansfield at Marlborough-street Police-court sday last with reference to a dangerous structure r of 29, Haymarket.

ase 28, Haymarket, has been lately taken down rpose of being rebuilt, and the premises No. 1, place, adjoining it in the rear, which also abut on of 29, Haymarket, having been found in an dangerous condition, an order was made some by Mr. Mansfield for the removal of the inmates considerable portion of the building to be taken also for the removal of the side wall adjoining to No. 28, Haymarket.

this order was being complied with, it was dis- hat there was a vault on the ground-floor of No. 1, lace, which belonged to Mr. Fagg, the owner of Haymarket (the properties being intermixed). is about 8 ft. wide by 9 ft. long, and is arched brick arch, which is only 4½ in. thick, and ith rotten brick rubbish, whilst the side of the gs at its abutment from a defective wall only k thick.

ention was called to this by an order from the creport as to its safety on August 13, and on inspec- und it so dangerous that it was impossible for irk & Randall, the contractors who are executing djoining, to comply with the magistrate's order ade to take down the dangerous structure *above one side* and *beneath it on the other*. In fact, so y dangerous did I consider it that I advised the bout a moment's delay, to employ Messrs. Kirk (as they had materials on the spot) to put up rary struts on the other side with cross pieces, support the arch in order to prevent a catas- d this suggestion he at once adopted.

has since been done, and the case was heard by hfield on Wednesday last, when counsel and lon behalf of Mr. Fagg, the owner, though they *the structure was not strong enough to stand* ot attempted to prove that because it *had been* as safe, and though I gave evidence (which was ed both by the foreman and architect to the ining) that the wall and arch were *liable to fall ute*, notwithstanding the shores, yet the magis- ving his decision, said that while he considered ry dangerous practice ever to have erected such e, yet, as the witnesses on the other side had as shored, he considered it was safe and should e summons.

d's solicitor, Mr. Napier, tried to get me re- e evidence as to the insufficiency of the shores, agistrate declined to hear me, and upon my im to view the structure before deciding the fused to do so, and said *he himself would take visibility*.

ision of Mr. Mansfield, I submit, is wrong in law t the facts.

72 & 73 of the Building Act specify that when a veyor has reported a structure to be dangerous, shall shore up to protect the public, and if the fails to comply with the requisition served on edily as the nature of the case permits, he shall ted by the Board before a magistrate, who shall der for the necessary works to be done.

hard are entitled to prosecute after shoring up, field's decision is *evidently wrong*. Simply building cannot make it legally safe, and in the g the magistrate power to order the necessary e done, shoring is not even mentioned; and it is at such works must be done *in accordance with isions of the Building Act*, which distinctly pro- ngs from being *secured by timber*. But if the decision is right *every building* which is *shored*

er this case so important that I must ask you officially before the Metropolitan Board of I I enclose photographs and drawings which will

ld that the contractors have taken their men this part of the works, and, in my opinion, it an *act of madness* on their part to attempt to more of the upper and lower structures already by the magistrate till this rotten and fragile *e erection* is removed. In fact, I fully anticipate ident, with consequent loss of life, will occur, prompt steps are taken. The contractors also that they have given the magistrate notice they answerable for the result of his decision, both *life and property*.

mining the struts on Friday last, I found they safe that they could be shaken by the hand, and refore, now given a fresh certificate to remove e and dangerous shores, and all works sup- hem.

carcely point out the hardship and injustice myself by the *summons being dismissed*. I not to *pay costs* in the matter, but am practically *r doing my duty*, simply because, as an act of directed Messrs. Kirk & Randall's foreman to struts against an adjoining house to prevent so ad loss of life, whilst those gentlemen for carry- instructions have their works stopped and their *lives endangered*.

surveyors, by Mr. Mansfield's decision, will be kward dilemma. If they find a building fall- mptly get it shored up, they are then told it is to cost in costs; and if they let it alone pending leiays, and some one is killed, there is all the and worry of a coroner's inquest.

market accident, which happened three doors ot in question, a few months ago, was to a great result of the uncertain way in which the law is ed in these cases, and as a public officer called e evidence to enforce the building laws for the of human life, I cannot let this question rest in unsatisfactory state.

I may mention that Mr. Vaughan, Sir James Ingham and other magistrates have never refused my request to inspect structures such as these before giving their decision.

I am, &c.,
ROBERT WALKER, F.R.I.B.A.,
District Surveyor of St. Martin-in-the-Fields.

To the Superintending Architect,
Metropolitan Board of Works.

I have sent a copy of this letter and the photographs both to the Home Secretary and Mr. Mansfield."

"APPOINTMENTS BY LOCAL BOARDS."

SIR,—Will you permit me to reply to Mr. Hodgson's letter, in your issue of the 30th ult., to draw attention to a point he seems to have overlooked? In the present depressed state of trade there are many well-qualified professional men who are willing to accept comparatively small salaries, so that in the majority of cases the Local Boards have amongst the candidates several good men to choose from; but their choice often falls upon some one who has little to recommend him beyond his being a local candidate. I think the case of the appointment of Surveyor to the Dartford Highway Board is a fair illustration. The salary was 200*l.* per annum, and there were originally, I believe, sixty-two candidates. These were reduced to twenty-eight, and subsequently to seven, from which number a local candidate was selected, who openly stated that his principal qualification was having been a master in an industrial school, and that he had been ordered by one of the waywardens to apply for the appointment.

FAIR PLAY.

SURVEYOR TO THE DARTFORD HIGHWAY BOARD.

SIR,—This little practical joke is over. The situation was advertised at great length in your columns, salary 200*l.*, 256 miles of roads, surveyor to keep a horse, &c. Candidates to be in attendance at the Dartford Workhouse *at their own expense*. The day saw a gallant band of thirty of us assembled. There were sixty-two applicants, but the balance failed to attend.

One of us was a late articled pupil of Sir J. Bazalgette, another had been assistant in the office of the surveyor of one of our largest Midland towns, two were chief assistants in leading London parish offices, several were surveyors of towns, large or small, and one came from *Scotland*. What was the result? The Board elected a gentleman who is acting as surveyor to an adjoining district; all we heard about his qualifications was that he had unfortunately lost one arm, and that he and his wife were formerly superintendent and matron of an industrial school!

Now, sir, is it not cruelty to allow educated gentlemen to incur heavy expenses in attending such a meeting?

If the Board had selected, say six of us, and paid our expenses, we should not have grumbled. But now!

A CANDIDATE.

NOTES FROM DUBLIN.

Main Drainage.—At a meeting of the Corporation on the 4th inst., a letter was read from the Right Hon. James Lowther, Chief Secretary of State for Ireland, stating that he was directed by the Lord Lieutenant to acquaint the Town Council that the Lord Lieutenant proposes to appoint a Royal Commission to inquire and report into the sewerage and drainage systems of the city of Dublin, and their effect on the sanitary condition thereof, and that his Grace proposed to entrust the inquiry to Mr. Robert Rawlinson, C.B., C.E., Chief Engineering Inspector of the Local Government Board in England, and Mr. Frederick Xavier M'Cabe, Inspector of the Local Government Board in Ireland. The matter has lately been under the consideration of the Corporation, but its further discussion has been stopped by the foregoing announcement. The Corporation, has, however, nominated a committee to take charge of the matter on its behalf, to prepare all necessary information to lay before the Commission, but with instructions not to advocate any particular plan. It may be interesting to note that Mr. Richard Hassard, C.E., in a letter addressed, on the 30th ult., to the town clerk, says,—

"I have often stated, and I now repeat, that an excellent work of main drainage for the city and remaining townships (Rathmines and Pembroke being already provided for), by which the river would be effectually freed from pollution, can be carried out for 300,000*l.*, and I am willing that my plans, estimates, and mode of dealing with the question should be submitted to Sir John Hawkshaw, on the understanding, if adopted, I am to be engineer to my own project, or that, if the authorities elect to carry out the works by their own officers, I am to receive such professional honorarium as may be agreed on or awarded in the case of difference arising."

Foley's Sculptures.—At a meeting of the Municipal Council held on the 1st inst., the Town Clerk read a letter from the Science and Art Department, London, stating that they are unable, with the means at their disposal, to repair and send to the Science and Art Museum in Dublin all the casts bequeathed by the late Mr. Foley, R.A., or to provide space for them; that a committee of sculptors has been appointed to make a selection of such as could be put in a state for exhibition for 500*l.*, and the Lords Commissioners of Her Majesty's Treasury desired to know if the Corporation of Dublin would have any of the statues on the same terms as they

OPEN CONTRACTS.

	On or before	Tenders to be delivered to
Over School Board: additions and alterations.	Monday, Sept. 15.	John H. Cooke, clerk.
Great Western Railway: 8,000 loads of Quebec yellow pine.	Do.	Fred. G. Saunders, secretary, Paddington Station.
Chiswick Improvement Commissioners: alterations and additions to vestry-hall.	Do.	Robert F. Finnis, clerk to the Commissioners.
Borough of Brighton: erection of about 900 cubic yards of walling round waterworks.	Do.	James A. Freeman, town clerk.
Knutsford, Cheshire: rebuilding of Holy Cross Church.	Tuesday, Sept. 16.	Paley & Austin, architects, Lancaster.
Sheerness Local Board: supplying and fixing a multitubular boiler and feed heater.	Wednesday, Sept. 17.	N. H. Stallion, clerk.
Burial Board, Worcester: erection of stone walls and iron fencing.	Thursday, Sept. 18.	Thomas Southall, town clerk.
Feversham Gas Light and Coke Company (Lim.): erection of new wharf and works.	Saturday, Sept. 20.	Henry Bathurst, secretary.
London, Brighton, and South Coast Railway: erection of station-master's residence, booking offices, goods shed, warehouses, &c.	Tuesday, Sept. 23.	Secretary, London Bridge Terminus.
Borough of Ipswich: purchase, pulling down, and removal of the material of the structure of the Ipswich Corn Exchange.	Wednesday, Sept. 24.	John Orford, town clerk, Ipswich.
Borough of Ipswich: erection of Post-office.	Do.	Do.
Taunton, Somerset: erection of church.	Do.	J. Houghton Spencer, clerk.
Local Board of Malvern: construction of sewers.	Saturday, Sept. 27.	J. H. Whatley, clerk.
Urban Sanitary Authority, Belgrave, near Leicester: construction of 6¼ miles of sewers, and two horizontal condensing engines.	Monday, Sept. 29.	Jos. Barber Haxly, clerk.
Church Gresley Burial Board: erection of lodge and board-room.	Do.	William Willshee, Ashby de la Zouch.
Corporation of Cork: construction of wrought-iron swing bridge.	Tuesday, Sept. 30.	A. McCarthy, town clerk.
Staines Local Board: new town-hall.	Tuesday, Oct. 28.	John Anthony Egell, clerk.

would be offered to schools of art, viz., that they shall defray the cost of packing and removing them. Mr. Gray moved:—

"That the letter be acknowledged, saying that the matter is under consideration; that it be referred to the General Purpose Committee for report, the law agent to ascertain if the Corporation can legally spend any money for the proposed purposes, and write to the Science and Art Department to ascertain whether, if the Corporation brought the models over, or any of them, the department would take possession of them."

It would, he said, be a very lamentable thing if these models were lost, but if the Corporation were to bring them over they would have to decide where they could put them, and he knew of no place. They would have to get information before they could make up their minds. He thought under the circumstances that the Government might have given a larger amount than 500*l.*, but it was mentioned in the House by him, and they seemed to think they were doing a very generous thing in giving any money at all. The resolution was passed.

The Artisans' Dwellings Act.—At the same meeting, Mr. E. D. Gray moved,—

"That in view of the facilities given by the Artisans and Labourers' Dwellings Act, 1875, Amendment Act, 1879, this Council is of opinion that these Acts might be put into more extensive operation in Dublin, and recommends the subject to the immediate attention of the Artisans' Dwellings Committee, which is hereby authorised to prepare a scheme or schemes, with estimates, and take all necessary steps for that purpose, but nothing further to be done without further sanction of the Council."

The speaker said he had been the first to propose that the Council should adopt the Act, but seeing that the matter was beset with difficulties, he had suggested merely a tentative scheme. In working it out they abandoned half in consequence of the heavy expenses. Experience in other towns showed the same thing, that they could not obtain their value for the sites when cleared. Sometimes in London they did not get more than one-fourth or one-fifth of the cost of clearing the sites, and useful as they recognised the Act to be, they also recognised that in view of the great expense it was almost impossible to carry it out. An amendment Act had just been passed which very materially changed the condition of affairs. Under the original Act they purchased the interests of the parties owning the properties at their full market value. They all knew that, after all the arbitration, that meant about twice its actual value. Now, by Clause 3 in the Amendment Act it was provided that where any house in an unhealthy area was found, in consequence of overcrowding or any other cause, to be a nuisance, they should estimate the cost of removing the nuisance and making the house habitable; that they should estimate the value of it when such improvements were effected, and deduct the cost from the sum payable to the owner as the full market value. In some cases it would very materially reduce the compensation to be paid, and it would make the Act workable. Alderman Gregg said he thought it would be better to take advantage of the Amendment Act to go on with the old scheme in Boyne-street, instead of taking up new schemes. He would suggest an amendment of the resolution, omitting the words "this Council is of opinion that these Acts might be put into more extensive operation in Dublin, and." Mr. Gray agreed to Alderman Gregg's amendment.

A Public Abattoir.—On the motion of Mr. Gray, seconded by Dr. Moyers, it was resolved, "That the Council recommend to the Public Health Committee the propriety of taking steps to provide a public abattoir for Dublin, and authorise it to prepare a scheme and estimate for that purpose; but no further steps to be taken without the authority of the Council."

EPPING FOREST AND FOREST TREES.

SIR,—Permit me to correct a word occurring in my communication of last week, which, as printed, makes me say the opposite of that which I intended. Referring to the new hotel I wrote:—"As to its design and completion you probably would, I think, join with me in *commending* most of it," which word here in italics is printed "condemning."

This correction, however, does not qualify the opinion I expressed as to the incongruity of placing the hotel where it is. URBAN.

GAS JOTTINGS.

Ilkeston.—The Local Board has decided to enlarge the gasworks at an outlay of 7,500*l.*

Greenock.—What is stated to be the first exhibition of gas apparatus in Scotland was opened on Tuesday, the 9th inst., in the Watt Institution, Greenock.

MONUMENTAL.

Daniel O'Connell.—At a meeting of the O'Connell Monument Committee, held in Dublin, on the 4th inst., Mr. E. Dwyer Gray, M.P., the hon. sec., read the following certificate from Mr. H. H. Armstead, dated July 5 last:—

"I have this morning seen the model in plaster of the circular relief of the above, and found that Mr. Brock had very carefully carried out the late Mr. Foley's design. The figures of the bishop, peer, commoner, and workman are *very* good. Indeed, the entire work is excellent, and I have much pleasure in certifying that the amount named in the contract, viz.:—800*l.*—as due on the completion of the model of the circular relief, may now be paid to Mr. Brock."

The payment was ordered to be made. It was resolved that the stone for the monument should be the best Irish limestone, and that steps be taken to put the work in hand. It appears, however, that the site is not yet determined upon. It has been suggested by Messrs. Lanyon & Lynn, and by others, that the centre of the new Carlisle Bridge would be the most appropriate position, but Mr. Doherty, the contractor for the bridge, has stated that it would not, for structural reasons, be feasible to erect the monument in that position.

Thomas Clarkson.—Nearly a hundred years ago, viz., in June, 1785, Thomas Clarkson, the great advocate of the abolition of slavery, resting by the side of the highway near Wadesmill, on the road between Ware and Royston, resolved to devote his life to the abolition of the slave trade. And being in the neighbourhood about forty-five years back, in company with the Rev. Dr. Merivale, Dean of Ely, Clarkson pointed out the spot to him; and last autumn the Dean identified the precise place in the presence of Mr. Arthur Giles Puller, of Youngsbury, who proposes (according to the *Herts Guardian*) to place there an obelisk in memory of so interesting a circumstance.

John Knox.—The committee who are promoting a monument to John Knox have visited the studio of Mr. D. W. Stevenson, A.R.S.A., in Edinburgh, where they inspected a model design, which they approved, and commissioned Mr. Stevenson to execute the work if funds admit. Figures of Patrick Hamilton, George Wishart, George Buchanan, and Andrew Melville are to be placed at the four corners of the pedestal. The place selected for the monument is in the square to the west of St. Giles's Church, facing the High-street. It is estimated that the cost of the monument will not exceed 2,000*l.*, and over 500*l.* have already been subscribed.

VARIORUM.

THE maps and illustrations for the Handbook to the Bible, which we announced, in April last, as in course of preparation for publication, are now engraved. We shall hope to have the opportunity of referring in detail to the subject on the publication of the work; but our readers cannot fail to take interest in a brief notice of the illustrations. Among these is a plate of the various alphabets used in the Holy Land, showing the gradual changes that have occurred in the forms of the Aramaic letters during a period of 800 years, together with the Samaritan alphabet, and that of the Ashuri, or "sacred writing," usually called square Hebrew. There are four plates of Jewish coins, tracing the series from an archaic specimen bearing the name of "Eliashib the Priest," down to Pontius Pilate and Agrippa II. One plate of this series represents all the coins distinctly referred to in either the Old or the New Testament, such as the gold "dram" of Nehemiah; the "shekel of the sanctuary"; the stater found in the month of the fish, or "Peter's penny"; the "penny" of the Good Samaritan, or *denarius* of the tribute money bearing the "image and superscription" of Tiberius Cæsar; the larger farthing, or assarion, for which two sparrows were sold; the "uttermost farthing," or kontrinek, which was a fourth of the above; and the "widow's mite," the half of the last-named coin. Among the maps will be found a carefully-shaded map of the Holy Land, accompanied by coloured charts, showing the state of the country before the invasion by Joshua, the route of Joshua through Southern Palestine, the tribal boundaries, and the kingdom of Herod the Great. These are followed by a plan of ancient Jerusalem, in which the actual rock contours of the site, at heights of 50 ft. apart, are delineated, the hills are shaded, and all extant monuments are shown. This part of the work is printed in black. A diagram in red shows the outs of the ancient walls, as far as their cour plainly indicated by the exigencies of the or by existing scarps and ruins. There i enlarged plan of the Temple Hill treated in same way; the contour lines being 10 ft. a and the courts and buildings of the Tem according to the dimensions given by the t Middoth of the Talmud, by Maimonides, Abarbenel, being drawn in red. It is thus sible for the student of the plan to distinguish at a glance what are the ascertained phy facts of the site, and what are the coincide between those facts, and the dimensions corded by the ancient writers on the sub The whole of this inquiry is treated in the v itself; but the illustrations contain the su what has been discovered to the latest d independently of any theory or conjecture. Mrs. Brassey commences "My Journal in Holy Land" in the current number of *Fr* It is brightly written, and very pleasant read ——Who has not at one time or another vis with dismay the "back premises" of lodging at the seaside? The *Lancet*, writin the subject, says truly:—"Whenever, if it happens that the owners of property w is chiefly used by 'visitors' at a partic season come to recognise the economic prud of placing it in a perfectly sanitary condi attention will perhaps be directed to 'th premises' at the seaside. The general stat these hidden localities is, as a rule, mos plorable. They are blocked with lumber, ployed as receptacles for refuse, or left condition discreditable and dangerous to he Nothing but the most perverse neglect of op tunities can explain this fact. In nine of ten instances sanitary prudence would gest building out of special offices, and drai away at the back, so as to leave the resid free from those emanations of sewer-gas w make most 'lodging-houses' disagreeable, to a sensitive person, barely habitable. also very commonly the fact that in the re a stuffy house there is space for the laying and cultivation of a small garden, which w greatly enhance the value of the prop Considering that most of the well-to-do dents in cities pass some one or two month more of the year in 'seaside' lodgings or ho it is not unreasonable to ask that something be done to improve the conditions of life to w they are condemned."——In the current nur of *Social Notes*, Dr. Alfred Hill, medical offic health, speaks thus as to Birmingham:— remarkably glaring instance of the total d gard of sanitary considerations came under notice only a few months ago in a terrace houses well built, with small plots of garde front of each, and occupied by very respect persons of the artisan class. The ashpit, w was very large, open to the heavens, and ne sarily wet, was so situated in the centre back-to-back row of the buildings as necessa to cause soakage into the walls and founda of all the surrounding houses, and the pr were enclosed in the block of buildings, for an integral part of it, and situated under rooms. The soft and hard water pumps ad ing were both seriously contaminated, so the tenants were both breathing and drin the products of putrefying animal matter the most dangerous description, with the re which you will hardly be surprised to hear, nearly every house had sickness in it, a fifteen or sixteen cases in the terrace, one b alone having as many as six children suffe from fever. As if to leave no chance of esc the scullery sink in every house was in d communication with the drain. Common pr ought to be abolished in favour of either a interception method or of water-closets. I t I have succeeded in showing how impe is the system of drainage in Birmingham, there is reason to believe our town i exception to the rule, and how desirable that the authorities should be moved to pro for the proper laying and construction of dra My experience only confirms that of oth that an imperfect drainage system lies at root of the greater part of preventible dis Every day I observe that the particular hou a row or a court in which disease exists is one nearest to a sanitary structural defect instance, the house nearest the untrapped d or nearest the ashpit, and particularly w the latter adjoins the house."——Messrs. Ca & Co. have commenced the publication of a fine-art edition of Longfellow's Poems. five hundred illustrations with which it wi

d, will consist of landscapes, figure sub- nd ornamental designs, expressly pre- or this edition. The landscape views een drawn from nature, and have been ed to the best artists of America, whose will be supplemented by designs from t English and Continental artists. Among ay be mentioned P. H. Calderon, R.A., Dicksee, Giacomelli, and others." The mber now before us is a very good og.——The same publishers have com- the re-issue, in cheap parts, of David 's "Holy Land."

Miscellanea.

h Century MSS.—Mr. S. J. Capper ng in the *Times* the Abbey of St. Gaul, Bodensee, writes thus:—"The Abbey gs have been frequently destroyed by rebuilt, and are of little architectural . The spacious church is in the rich and but debased, style of the last century. , alike through the ravages of the Huns troubles and wars of the Middle Ages, en iconoclastic reformers stormed the nd French *sans-culottes* exemplified the s of universal brotherhood by unsparing the good monks knew how to hide and their literary treasures, so that out of gue of manuscripts that was compiled A.D., no less than 400 are still extant. these is a copy of 'Virgil' believed to be st in existence. It is written in fine capitals, without division into words or tion, and is supposed to date from the ntury. More interesting even than this bcabulary supposed to have been written , was certainly made use of by the holy It is pocket size, and was intended to m the language of those to whom he From it we learn that the ante-Carlovin- rman was very like the Suabian and lects still spoken. From the Latin and words in parallel columns I take the g:—'Columne'—'Sili,' which is exactly e modern Swiss would say for the rman word 'Säule,' a pillar; 'Folium' ' high German 'Blatt,' a leaf; 'Fo- aup,' 'Laub,' foliage. There are eral copies of the Gospels executed d in the sixth and seventh centuries, st interesting translation of the Bible man of the eleventh century interlined Latin. When the old monk is doubtful he German equivalent he writes the to the texts and puts the German in ters above,—thus (*Gotice Kraft* / *Filius Dei*). Very st the old monks have toiled copying gorgeously illuminating all these works. argins we find expressions of thankful- t evening had at last come to end their appeals to their patron saints to give tience, or a desire for a bowl of wine or er to sweeten the sour task; for monks man and could be drouthy. Let us be to them for all their labours have pre- r us."

Proof-Butts, Woolwich Marshes.— e works are in progress at the proof- , the Government marshes adjoining al Arsenal, Woolwich, under the direc- Colonel W. H. Noble, Royal Engineers, e of Works. A new firing platform, with ilway, for the proof of heavy guns, is d down on a firm foundation of concrete, ew bay is being added to the proof- front of this platform to receive the es fired from the guns proved on it. A chamber is being built adjacent of aterials in very solid form, as requisite purpose to which it will be put,—the f guns to destruction in order to deter- ir relative durability.

Quay at Galatz.—The loss caused by ng of the quay wall at Galatz is esti- 750,000f., without taking into account age to commercial affairs. The masonry ween six and seven mètres below the f the water. A considerable further wall is likely to follow. When quay idges, or other similar works are erected in without accident, nothing is thought m or their designers and constructors. when they fail that people are led to the knowledge, skill, and care that are to ensure success.

East and West End Properties.—One of the large rooms at the Auction Mart was crowded on the occasion of the sale by Messrs. Edwin Fox & Bousfield, of seventeen lots of small freehold house-property and vacant land in Bethnal-green and Mile-end, under directions from the Court of Chancery. The principal lot was described as being about one acre and a quarter of undeveloped land in the rear of Cambridge-road; the first bid was 4,000*l.*, which increased by fifties up to 4,600*l.*, at which sum it was sold. There were two other small plots of land at either end of the above, which fetched 810*l.* and 200*l.*, the latter being about three per cent. on the rental, and the former over forty years' purchase. A ground-rent of 6*l.* 10*s.* per acre, with reversion in 1881, realised 700*l.* The other lots were all weekly tenements in and about Cleveland-street, Union-place, &c., producing gross rents of 638*l.* per annum, from which rates, taxes, and other expenses have to be deducted: they brought together 7,175*l.*, or a little over eleven years' purchase. The total of the sale was 13,485*l.* Houses at the West End did not fare equally well; four in Clanricarde-gardens, Hyde Park, each let at 180*l.* per annum, failed to realise the reserve prices, and were bought in.——Messrs. Bray, Webb, & Harwood offered for sale by auction, the corner house, with shop, known as No. 76, Crawford-street, Portman-square, Marylebone, let at 55*l.* a year, and held for a term of twenty-six years, at 7*l.* 7*s.* per annum ground-rent. The property was sold for 550*l.* On the same occasion, the dwelling-house, No. 73, Seymour-place, Bryanston-square, rent 52*l.* 10*s.*, term twenty-two years, ground-rent 6*l.*, was sold for 580*l.*—*Metropolitan.*

Speed of Railway Trains in England.—Among other improvements which have been effected by the application of capital to duplicating lines, and putting in new sidings for marshalling traffic, are the greater speed of the trains generally, and a corresponding saving in fuel, wages, &c. The subject has been duly noticed at the half-yearly meetings. The *Railway Record* gives the following summary of the maximum averages now made on the different lines:—Great Western, 53½ miles; Great Northern, 51; London and Brighton, 47½; London and North-Western, 47¼; Midland, 46; London, Chatham, and Dover, 45; South-Eastern, 45; Great Eastern, 44; London and South-Western, 44.

The Chromograph.—This is a very ingenious arrangement for producing a number of copies of manuscripts, sketches, or plans. The first copy having been made with prepared ink, is pressed slightly against an absorbent composition, which retains the impression so firmly as to give off a number of copies, yet so superficially that a wet sponge can easily erase it, as though it were a slate whitened with slate-pencil. The composition is quickly susceptible to heat, and in its softened state can be easily re-smoothed and levelled. We have tried it to the extent of fifteen copies of a letter with perfect success.

Oak and Teak.—In 1878 there were imported into Great Britain 60,254 loads of oak, of the estimated value of 354,916*l.*, against 120,118 loads in the previous year, being a decrease of 59,864 loads. The various oak-producing countries contributed as follows:—Russia, 3,151 loads; Germany, 25,048 loads; Austria, 3,014 loads; United States, 2,641 loads; British America, 25,402 loads; other countries, 998 loads.——Last year, 37,990 loads of teak were imported to Great Britain, against 28,072 loads in 1877, showing an increase of 9,918 loads.—*Timber Trades' Journal.*

Moulton.—In connexion with the old-established endowed school known as Bliss's Charity at Moulton, Northamptonshire, a large building and master's house are in course of erection on an excellent site opening on to the village green. Messrs. E. F. Law & Son, of Northampton, are the architects, and Mr. Roberts, of Weedon, the builder. The structure is in the Gothic style, and contains girls', boys', and infants' schools, and a room for the more advanced boys in addition to class-rooms.

A Contract for the works on the extension of the Central Queensland Railway, Rockhampton, from the end of the present work, 170 miles, westward for a length of twenty-seven miles, has just been secured by Messrs. O'Rourke & M'Sherry, local contractors, for the sum of 52,754*l.*, equal to about 1,954*l.* per mile, the Government finding the rails, fastenings, &c.

Lucky Partners.—When Mr. James Shaw, of Leadenhall-street, bought the great iron and copper establishment of the Governor and Company of Copper Miners at Cwm-Avon, in South Wales, in April, 1877, he assumed as partners Mr. James Spence, of Liverpool, and Mr. John Dixon, of Cleopatra celebrity. This partnership has just been dissolved by Mr. Shaw paying out these gentlemen, who have received within a little over two years no less a sum than 38,500*l.* over and above the capital they embarked. The business has been entirely managed by Mr. Shaw, his two partners never having occasion to spend ten days at the works. Complaints of the iron trade have no reason to be made by these gentlemen who have been engaged in it, and we congratulate Mr. Shaw on his hard-earned and well-deserved success.—*City Press.*

TENDERS

For new infant school at Hounslow. Mr. C. Innes, architect:—

Wheeler & Co.	£2,240	0	0
Gamage	1,710	0	0
Collinson	1,650	0	0
Stephenson	1,629	0	0
Beale	1,600	0	0
Walter & Reavell	1,545	0	0
Taylor	1,528	0	0
Haynes	1,500	0	0
Jones & Co.	1,488	0	0
Raymes	1,473	0	0
Dorey	1,413	0	0
Brunsden	1,400	0	0
Wiles	1,345	0	0

For alterations and additions to Park House, Wimbledon, Surrey, for Lady Christian Maule. Messrs. Whitfield & Thomas, architects. Quantities by Mr. T. M. Deacon:—

Aviss & Co.	£2,941	0	0
Clemence	2,845	0	0
Jossett	2,470	0	0

For proposed new steam laundry for the National and Provincial Steam Laundry Co. Mr. Ernest Turner, architect. Quantities by Mr. Riddett.—

Kirk & Randall	£14,960	0	0
Conder	14,477	0	0
Brass	14,337	0	0
Browne & Robinson	14,250	0	0
Tyerman	14,000	0	0
McLachlan & Sons	13,980	0	0
Scrivener & Co.	13,510	0	0
Pyrell	13,151	0	0

For house and shop, West-street, Dorking, for Messrs. J. Young & Son. Mr. T. Cloutman, architect. Materials part found. Quantities supplied:—

Putney	£447	10	0
Hamblin, Bros.	405	0	0
Heselgrave	405	0	0
Lynn & Dudley	389	0	0
Goddard & Son (accepted)	338	0	0
Pledge	377	0	0
English	370	0	0

For proposed new buildings on site of Nos. 26 and 27, Cow Cross-street, for Messrs. Charles & Antony Beckmann. Mr. Thomas Milbourn, architect. Quantities supplied:—

W. & H. Salmon	£8,950	0	0
Snow & Co.	7,777	0	0
Anley	7,515	0	0
Merritt & Ashby	7,500	0	0
Steed, Bros.	7,360	0	0
Sabey & Sons	7,319	0	0
Jackson & Todd	6,700	0	0
Crabb	6,460	0	0

For alterations at the Euston-road Tavern, 73, Euston-road, for Mr. Alexander Hicks. Mr. James R. Furniss, architect. Quantities supplied:—

Grimwood & Sons	£1,993	0	0
Edgley	1,985	0	0
Temple & Forster	1,947	0	0
Gould & Brand	1,760	0	0
White	1,749	0	0
Anley (accepted)	1,650	0	0

For the erection of new Primitive Methodist school and cottages at Higham Hill, Walthamstow. Mr. William Ranger, architect:—

	School.			Cottages.		
Trigg	£550	0	0	£550	0	0
Richardson	594	0	0	430	0	0
Burbridge	456	0	0	549	0	0
Challis	500	0	0	360	0	0
Norman (accepted)	495	0	0	364	0	0

For the restoration and additions to Crawley Church, Sussex. Mr. H. Woodyer, architect. Quantities by Mr. G. Cox:—

Woolgar	£3,082	0	0
Cook	2,972	0	0
Card	2,613	0	0
Charlwood	2,576	15	0
Rowland	2,537	10	0
Mitchell	2,535	0	0
Longly	2,435	0	0
Goddard	2,330	0	0
Beale (accepted)	2,190	0	0

For a pair of villa residences, Rectory-road, Wandsworth. Mr. A. Searle, architect. Quantities supplied:—

Scott	£2,742	0	0
Smith	2,640	0	0
Lathey, Bros.	2,470	0	0
Turtle & Appleton	2,355	0	0
Stimpson & Co.	2,283	0	0
Smith	2,182	0	0
Johnson (too late)	2,147	7	0
Beale (accepted)	2,000	0	0

For the erection of a house and buildings, exclusive of 63,000 bricks, 16 windows and frames, 11 doors, &c., for Mr. E. Hardwicke, at Goff's Hill, near Crawley, Sussex. Mr. Peter Wood, architect:—

Burton	£2,050 0 0
Beale	1,815 0 0
Mitchell	1,440 0 0
Cooke (accepted)	1,115 5 11
Groome	1,100 0 0

For building new church, Huddersfield. Mr. J. Brown Norman, architect. Quantities by Mr. W. Hofmann Wood:—

Smith, Walker, & Co.	£4,000 0 0
Barker	2,987 0 0
Wilson & Stead	2,943 10 0
Kendall	2,894 5 0

For works proposed to be done in erecting a studio at No. 24, Cavendish-road, St. John's Wood, for Mr. Thomas Faed, R.A. Mr. William Wallace, architect:—

Wilkins	£560 0 0
Cox	538 0 0
Tavener & Son	508 0 0
Dowsing & Sons	495 0 0

For works proposed to be done in erecting a studio at No. 22, West Cromwell-road, South Kensington, for Mr. Hugh Brown Muir. Mr. William Wallace, architect:—

Cox	£1,017 0 0
Wilkins	892 0 0
Tavener & Son	879 0 0
Dowsing & Sons	820 0 0

For alterations and bar-fittings at the Beehive, Crawford-street, for Mr. Plumbridge. Mr. W. E. Williams, architect:—

Marr (accepted)	£1,700 0 0

For alterations to the Royal Duke, Commercial-road, E., for Messrs. Truman, Hanbury, & Buxton. Mr. W. E. Williams, architect:—

Anley	£344 0 0
Eaton	342 0 0
Marr (accepted)	327 0 0

For alterations at the Castle, Shouldham-street, W. Mr. W. E. Williams, architect:—

Eaton	£637 10 0
Anley	517 0 0
Marr	495 0 0
Wicks	435 0 0

For alterations, No. 1, Clarges-street, Mayfair. Mr. T. H. Watson, architect:—

Curtis	£553 0 0
Scott	495 0 0
Marr	472 0 0
Carr	450 0 0

For rebuilding the Greyhound, Lea Bridge-road. Mr. H. E. Cotton, architect:—

Williams & Sons	£3,493 0 0
Shurmer	3,168 0 0
Andrews	3,145 0 0
Toms	3,063 0 0
Marr	2,991 0 0
Cocks	2,989 0 0
Eaton	2,845 0 0

For rebuilding the Buffalo, Appold-street, Finsbury. Mr. E. Brown, architect:—

Browne & Robinson	£2,040 0 0
Griffiths	1,900 0 0
Salt	1,575 0 0
Hayworth	1,795 0 0
Christopher	1,754 0 0
Marr	1,612 0 0
Outhwaite	1,610 0 0

For public elementary school, for 385 children, for the Thaxted School Board. Messrs. G. Perry & Slater, architects. Quantities by Mr. L. C. Riddett:—

	School Buildings.	Master's House.	Playgrounds and Boundary Walls.
Ratcliffe	£4,098 0	£805 0	£777 0
Davis & Cock	3,770 0	772 0	928 0
Jones & Co.	3,335 0	689 0	1,060 0
Glasscock	3,300 0	670 0	726 0
Brown	3,070 0	615 0	810 0

For approaches and iron bridges, &c., for the Joint Committee, L. & Y. & W. L. Railways and Southport Corporation. Mr. R. B. Perring, C.E. Quantities supplied by Mr. Glendining:—

Braddock & Matthews (accepted).

For additions to the North-street Schools, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities by Messrs. Curtis & Sons:—

Abrahams	£2,995 0 0
Gregar	2,750 0 0
Reed	2,750 0 0
Knight & Duston	2,739 0 0
Hoskings	2,727 0 0
North, Bros.	2,697 0 0
Norton & Son	2,626 0 0
Morter (accepted)	2,520 0 0

For additions to the Channelsea Schools, for the West Ham School Board. Mr. J. T. Newman, architect:—

North, Bros.	£583 0 0
Hoskings	557 0 0
Gregar	495 0 0
Maddison	479 0 0
Reed	465 0 0

For second portion of fittings at the Junior Army and Navy Stores. Mr. A. Bedborough, architect. Quantities supplied by Messrs. Curtis & Sons:—

Green & King	£1,310 0 0
Drew & Cadman	1,298 0 0
Sage (accepted)	1,290 0 0

For rebuilding premises in Endell-street, Bloomsbury. Mr. H. W. Budd, architect:—

Fairchild & Co. (accepted).
Stanley, Hall, & Co., accepted for ironwork.

For rebuilding the Gladstone, Lucas-street, Deptford. Mr. H. W. Budd, architect:—

	Building.	Fittings.
Lamble	£1,037 0 0	£155 10 0
Hobson	1,032 0 0	116 0 0
Atley	940 0 0	169 0 0
King & Son	910 0 0	153 0 0

For alterations, &c. at 218, High-street, Camden Town, for Messrs. Ward & Rawley:—

Gould & Brand (accepted)	£290 0 0

TO CORRESPONDENTS.

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The Builder.

VOL. XXXVII. No. 1911. SATURDAY, SEPTEMBER 20, 1879.

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Architectural Harmony, or the Relation between the Whole and the Parts.

AMONG the chief elements of architectural beauty ranks one which, in very much of the building of the present time, is more conspicuous by its neglect than by its observance. It is, however, one on which the magical beauty of the purest classical structures intimately depends. It is one of which the neglect avenges itself; by producing, according to the nature of the case, the effect of the unory, the commonplace, or the gro-

It is a subject to which critical writers itecture have not failed to allude, and examples, which it is unfortunately too cite, of the neglect to which we have , may be taken to prove that the subject been so fully brought before the notice udent as its importance demands.

fer to that self-contained scale of magn architecture, as that magnitude is t by the spectator, which depends on relation of the parts to the whole. stated, of course, it may be said that ociation of that relation is one of the liments of study. Its importance is l by the use of the term *modulus* in architecture; and the relation of the tures of the Classical orders is, of course, of the most elementary knowledge.

he subject, though at the first glance ary, is one from consideration of which sh can never escape. It pursues him ry corner of the field of his toil. Duly d, it is ever available to supply him ne fresh opportunity of indicating his genius, if happily he possesses it. Conlly or perfunctorily treated, it is liable oment to give occasion to a slip or an t which will mar the beauty of what may wise admirable work.

obe the matter to the core, it may be at there is a scientific, or structural, or the effect produced on the eye by the or less amount of accuracy with which l of proportion of which we speak is ut. To the skilled artist of any kind ss of a construction for its object is a matter of instinctive perception. Originally, no doubt, it was the artistic instinct that brought into existence, not the rules, but the models, of proportion. It is to the advance of mathematical science that the designer is indebted for the power of saying, with absolute precision, "Such ought to be the strength of such a portion of a building or of a machine." The immense advantages of such science it is not easy to overrate. Works which, when first completed, were considered, as in the case of the Southwark Bridge, to be models of scientific disposal of material, are now known to be so far from attaining such exactness that assertions have been hazarded to the effect that it would pay to take them down, and to rebuild them for the sake of the saving in the metal that would be effected in the new construction. In the exquisite flying buttresses and aërial arches of pointed ecclesiastical work, dating before the revival of letters, or the use of the Arabic numerals, and thus, before the means of any intricate arithmetical calculation were available, we have evidence of the use of models—of tentative structures—by the builders. Unfurnished with the calculus, untaught by earlier example the architects of those bold structures, which have so often, in different parts of the world, been attributed to the handicraft of the Prince of Darkness, must have made in silence full many an experiment, before they ventured to peril their reputation on a challenge to the unsleeping force of gravitation.

It is not, however, so much purely structural proportion to which we now wish to refer, as what may be called apparent, or harmonic, proportion. And while structural proportion is in truth a matter of geometry, apparent proportion, pursued to its rudiments, is in great measure a matter of material.

If we regard an elevation of any kind from a certain distance, our eysight only allows us to apprehend the general balance of proportion. But as we approach more closely, we become aware of something more. Instead of the design,—which may be compared to the perspective drawing of the architect,—we become cognisant of the execution. The closer we approach, the more conspicuous are the details. At the distance of half a mile we are only made aware of the fact whether a building is erected of stone or of brick by the tint. At the distance of fifty yards, we become aware of the number and regularity of the joints of the work,—of the size and character of the courses, and of all those numerous details which pertain to execution rather than to design.

It is to the influence of the treatment of these details on general effect that we wish now to call attention. In natural objects, such, for example, as a lofty tree, the ultimate lines of detail that meet, or that elude, the eye are extremely delicate. A mass of foliage, looked at closely, is defined by an immense number of very small curves, each closely resembling the others, but no two of which are absolutely identical in outline. These minute elements, again, are grouped in boughs and branches. There is a constant up-building, which rests the eye by the interposition of stages, or masses, of more than one grade of size, by which the contemplation is allowed to ascend from the part to the whole, or to descend from the whole to the part. In the infinitely small differences of elementary form lies the secret of the richness of nature. The eye instinctively appreciates that difference between the natural and the artificial which is caused by the exact repetition proper to the mode of execution. If an artist were to attempt the construction of an artificial oak or elm, and were to make all the leaves from the same model, and all the forks of the branches from the same model, and then were to build the tree together with mathematical exactitude, he would produce an object that would be very painful to look at. People might say,—"What a wonderful exertion of skill or of labour," but no artist would say,—"What a beautiful object!"

Now the architect has, of necessity, to labour under the disadvantage that his whole has to be produced by the composition of an immense number of parts which are almost exact counterparts of one another. Hence the need that in the grouping of those parts, which is itself also artificial, there should be that true feeling of harmonic proportion which prevents the purely mechanical part of the work from pressing too closely on the imagination.

No better illustration of what we mean can be given than by referring to lace. Any judge of lace, familiar with the products of the various schools,—with the airy spider-work of Mechlin, or with the massive texture, almost as substantial as carved ivory, of some of the most costly rose-point,—knows that there must be a specific unity, so to speak, in the work, in order to make it perfect of its kind. To each pattern or kind of lacework its own stitch is essential; and the work of the amateur is at once betrayed to the real judge of lace by any intermixture of stitches belonging to different styles of work.

On the other hand, let us introduce exact uniformity of detail, as in the case of machine-made lace, and the great source of beauty which we have called richness vanishes. Regarded mathematically, or structurally, a piece of machine-made lace produced by some of those recent improvements which carry the work to so high a degree of excellence, is far superior to a piece of handmade lace of the same pattern. Put each bit of work under the microscope, and the irregularities of the hand-work will be magnified, and the texture will appear coarse and irregular. But it is in this very irregularity in minute detail that the subtle touch of nature is apparent. Lace, in this respect, has something of the inscrutable variety of foliage. A whole is composed of an infinite number of units, which closely resemble one another, but which do not exactly resemble one another. And these units are grouped in minor and again in larger and more comprehensive groups as we ascend to the unity of the whole. Make each unit a *fac-simile* of the other, and each primary and

each succeeding group of units also *fac-simile* copies of one another, and you have a regular piece of mechanical work, from which the charm and life of the product of the needle, showing the action of the human mind, are altogether absent.

The architect who has to deal with brick has a problem of this kind to solve. It may, indeed, be said that the brick manufacture has so deteriorated in this country since the removal of the duty that no two bricks exactly resemble one another. We fear that there is too much truth in that remark. But the fact does not come in to the aid of the architect. A wall built of bad bricks is not so pleasing to the eye as a wall built of good bricks. And the reason we take to be, that the eye instinctively perceives not only the artificial character of the brick, but the fact that it is intended to have a rectangular form. Any departure from exact regularity in sides or in angles is therefore as displeasing to the eye as would be the opposite case of the exact resemblance of every artificial leaf of an iron tree. It is not by a degradation of the visible excellence of the materials, but by a masterly grouping of units in successively increasing groups, that the architect will effect that which, in evidently human work, corresponds to the normal order of nature in vegetable growth.

But if we take small materials, such as flints, as to which we are aware, whether by instinct or by that experience which has become almost a second instinct, that regularity of form is not normal, the case is changed. A wall built of flints, in which the joints follow every conceivable irregularity of line, may not be as admirable as one of those plane, massive brick walls in which the purpoil joints are as exact as the beds, which we have almost (if not altogether) lost the power of now erecting in this country. But it is in every respect better than the best work that can be built from contorted and misshapen bricks.

In either case, however, that unity which would result from a plain, unrelieved mass of brickwork or rubble-work, would be a unity of disgust. Build a vast, unrelieved, unshadowed wall of any of these materials, and every one will pay it the same tribute. The universal comment will be, "How ugly!" It may be the case that, as in some of those grand chants of Tallis, in which the monotone is varied by only one or two modulations (as in the case of his chant for the Creed of St. Athanasius), the breaks required are few. But they must be distinct, appropriate, and governed by that subtle law of proportion the basis of which it is so difficult to master. There is, or was, some thirty years ago, a wall of this sort in Gray's-inn-lane. It had been, if we are not mistaken, the work of a military engineer. It was a plain brick wall, in which beds and joints were defined with mathematical exactitude. A plinth, a string-course, and a coping were the only lines of architectural accidentation. The wall was thus perfectly simple, but the proportion was so just, and the workmanship so excellent, that it was impossible to pass the spot, even in a daily walk, without a gratified glance. "What a fine wall!" must have been on the lips, or in the mind, of three by-passers out of four,—supposing, at least, the four to look at it at all, and to know what a wall ought to be.

We could point out in another place a simple garden-wall, made of the rough stone so much used by the builder in the neighbourhood of Guildford and of Godalming, to which something of the same sort of praise applies. Owing to the rough character of the stone, no attempt is made at a purpoil joint. But the beds are accurately kept. The regularity of the courses is maintained throughout, in gradually diminishing thicknesses; and a simple brick plinth course, and a brick coping in three receding courses, have a harmony and justness of proportion such as to make it worth the while of any judge and lover of good building to go a little out of his way in order to see what may be made of a material not in itself promising, and frequently so handled as to be anything but agreeable to the eye. The charm of excellent handiwork is more fully illustrated by this wall than by any instance that we can easily cite. For the structure is far from faultless. No weep-holes have been left,—an omission which always menaces the stability of a wall that has in any way to do the duty of a retaining-wall. Again, the whole face or outer surface is flush, while a slight projection of the coping, and a recess above the plinth course, would have added much to the architectural effect. That the excellence of the wall is due, to a considerable extent, to the especial skill of the builder, rather than to the design of the architect, is shown by the fact that a prolongation of the same work, executed by another hand (after the death, we believe, of the builder of the first portion) is so poor in its execution as to detract from the general character of the enclosure.

It would be wrong, however, to say that the effect produced by a well-proportioned piece of work is due only to the excellence of the workmanship. We might as well assert that the effect of the simple chants referred to is exclusively due to the sweetness of the sound of the organ-pipe. Of the value of good work, indeed, it is hard to speak too highly. What is good is good in many ways, and it is impossible to tell where any faithful work, or any excellence, may display an unexpected advantage. But it is quite clear that if equal excellence of work had been applied to a wall surface of equal size, without any relief of plinth, of string-course, or of coping, the effect would not have been pleasing to the educated eye. "What a pity to throw away such good work on such a hideous blank," would be the comment most likely to be provoked from the judges of architectural excellence.

It is probable that the sense of fitness, in the proportion of architectural details, is closely connected with the love of order in the human mind, or rather, with the necessity that exists, in order to grasp any subject, for a classification, of some sort, of its details. To learn a dictionary by heart is not a feasible mode of acquiring a language. We must study its structure as well as acquire its vocabulary. And thus, in regarding the practice of the architect, we require certain subordinated stages of grouping, by means of which the observer, while cognisant of the whole, may gradually proceed to the appreciation of the parts. "What a noble edifice," should be the exclamation at first sight; "what exquisite proportion," should be the comment on nearer approach; and "what fine stone," or "what admirable brickwork," should be reserved for the final survey.

In the due proportion of unit to group, and of group or feature to structure, lies one of the most subtle causes of the effect of architectural excellence. That excellence, no doubt, is manifold. It is not the case that every building should possess every excellence. On the contrary, the true merit of a building may be held mainly to depend on the grasp taken by the architect of the true key-note that should be struck, and on the subordination of the other requisites of excellence to the main requisite. Thus, in a quay wall, or a retaining wall, the main structural requisite is strength. Such a treatment, therefore, as conveys to the mind the idea of solid, massive, weight, and of unity of structure, is as proper in an artistic as it is in an engineering view of the case. Any attempt to introduce the opposite qualifications of lightness or grace would be misplaced. But, on the other hand, if we are dealing with a lofty spire, a tapering pinnacle, or an airy arch, the idea of strength must be made subservient to that of lightness or of elegance. The two opposite qualities have their several departments in construction. The master is he who knows where each is chiefly required, and by what means each is most clearly to be indicated.

These considerations have, perhaps, their first distinct application to the property of magnitude, or apparent size; which is closely connected with, though far from being identical with, that of apparent strength.

Solidity of structure, which is one of the main elements of apparent strength, is probably associated in the mind with magnitude of the structural unit. Thus the remains of Avebury and of Stonehenge impress us with an idea of durability, of solidity, and of grandeur,—chiefly from the enormous size of the stones. A single mighty block is in itself an imposing object. A group of such blocks is still more so. And the more thoroughly the blocks display the signs of perfect mastery by the builder, the more profoundly do they impress the mind. Thus (as far as our own experience and taste may be relied on as indications of what we suppose to be generally felt), the massive, rectangular, well-wrought courses of the Haram wall at Jerusalem impress the mind with a greater sense of size and solidity, than do the blocks of Cyclopean walls, in which the stone has not been compelled by the magic of man's power to lie on even beds, and to display perpendicular joints.

In Italian architecture, and in some of the best examples of Classical or Italian work this country, the existence of this considerati in the mind of the architect is evinced by t rustication of the lower courses. Ponderc blocks of stone are supposed to be defined this use of the chisel and of the pick; and t treatment of the basement, regarded for the p sent by itself, has a justification for that reas

But here again comes in the question of s ordinate proportion. A wall is to have, let say, a certain height. That being laid down a principle, the next question is, what tre ment, for that height, is the best suited for t materials at the command of the architec If the height is very great, say from 60 ft. 100 ft. or upwards, and if large blocks of st are attainable, massive, regular courses will the most desirable, from the artistic point view; and, indeed, from any point of view means allow. But if the size of the building small, the use of massive stones will be jectionable. Structurally they may be desirable as in the former case. Artistica regarded they will be found to dwarf the bu ing. When the observer approaches near enou to have his eye struck by the bed joints of stone, he will not stop to count the number courses. But instinctively he will form so impression of that number. And if his eye t him that they are few,—unless there be s scale alongside to tell him that also they very thick,—he will come to the instinct conclusion that the building is low.

A very admirable illustration of the law which we are referring may be found in a c parison of the elevations of the two well-kn noble bridges,—that over the river Dee Chester, erected from the designs of Mr. Hu son, in 1834, and that over the Dora Ripari Turin, erected by the Chevalier Mosca, of wh the date is not given in the account drawn by Mr. Albano, and published in the first vol of the Transactions of the Institution of Engineers, in 1842. The span of the for bridge is 200 ft., that of the latter 148 ft.

The Dee Bridge has an arch defined b common architrave moulding, and in which voussoirs are not marked. The spandrels panelled, and the abutments recessed w niches. This part of the structure, of which apparent size is suggested to the eye by natural assumption that the niches are inten to shelter each a life-size statue, is joined to retaining-walls of the embanked approach two semicircular arches, with marked vouss and visibly indicated courses. Instead of thi ing into relief the main arch, which is characterised by a treatment like that of a d iron bridge, this heterogeneous juxta-positio two styles of masonry only destroys the gr unity which might have been secured to elevation; and looks as if an iron bridge, small for the river, had been eked out a mason. "The essential parts," says Fergusson, "in the construction of a bri are the voussoirs of the arch. If there been fifty well-defined arch stones, the br would have looked infinitely larger than it appears. With one hundred, it would l looked larger still,—but, if too numerous, t is a danger of the structure losing that m lithic character which is almost as essenti actual dimensions for greatness of effect. true architect is the man who can weigh t various conditions one against the other, strike a judicious balance between the diffe elements at his command."

The Dora Riparia Bridge affords a sig confirmatory illustration of the justice of counsel. With fifty voussoirs, the visible u structure of the Chester Bridge would been a 4-ft. course, or thereabouts; with voussoirs, a 2-ft. course; still, a very solid of work. In the Dora Bridge there are ni three voussoirs, giving a unit measureme about 1 ft. 8 in. of thickness of course. Bu keystone is nearly 5 ft. deep, and the observ of the intersection of the mean curve o extrados of the arch with the courses o bridge divides the voussoirs into six grou each side; thus affording a series of rest the eye in passing from the visible un the voussoir and of the course, to the si grandeur of the opening.

Another scale is afforded to the eye by insertion of blocking-pieces under the cor These, which are sixty-seven in number bet the abutments, give distances of about 2 ft. from centre to centre; and thus afford a se and not very difficult modulus for the ins tive calculation by the eye of the span

quent size of the bridge. The abutments quarter circles on plan, curving round the line of the springing to a short retaining wall on each side, parallel to the river. her niches, recesses, or projections mar the e grandeur of the structure. The introon of what the French call *cornes de vache*, he Italians *ugnature*, which consist in a ling off the under-side of the arch, coming at nothing at the key, and gradually sing to the abutment, is the only other ntation, except the cornice and coping, of noble work. The *ugnatures* make the los of the face of the arch, when it meets at utments, cut the line of the perpendicular third course above the springing of the main and the bevel is such as to reach the ging course in a distance from the face to the depth of the keystone. A personal ivid remembrance of this noble bridge, which we remember on one occasion g shelter from one of those sudden and t Alpine storms that temper the intense f the Turin summer, fully bears out the ent of M. Albano that "the style of the tecture and the nature of the materials this bridge a noble and simple grandeur, character that is unique."

CHITECTS' REMUNERATIONS: A FOREIGN VIEW.

alluded, in some comments on the leading n architectural journal, to a series of s therein contained, under the heading Honoraires des Architectes." These s, by M. Ravon, contain a good many ions that are of general import in regard t may be termed the philosophy of archicharges, and give also some information he method of treating the subject which en suggested by different bodies of proarchitects on the Continent. It may be areat to compare these views with the ts and practice of our own country, and e what there is in the way of general tion which may be of any value to Engractitioners in regard to their business ns with their clients.

special reason given for reconsidering bject at present is put by the French ct in rather an effective manner. Not as the cost of living risen greatly, while hitect's fees have remained stationary, w elements of difficulty and responsibility een introduced into the architect's work h the double influence of the increased cation of appliances demanded by civiliin modern houses, and the increased d for economy of structure and of al. In regard to the former point, a f professional charges, fixed at a per e on the cost of the building, would, of rise with the rise of prices in the ordimanner; but, as M. Ravon complains that nuneration of architects is still estimated ing to the scheme formulated by the sil des bâtiments civils du 12 Pluviose, an that is to say, about eighty years since, sume that there has been in the French a certain element of fixity which has preits development in consistency with other es in prices. The other reasons, how or reconsidering the scale of remunera e what will occur in all countries where ing refinement and luxury introduce tails into the dwelling; and though ave of late years reconsidered and hat reformulated our tariff in this y (at least, the Institute of Archi has done so), we do not know that fect of the new method of building, easing the architect's labours and respon ties, has been specially remarked upon. on says, "it is important to consider nstruction has undergone profound modi as, by reason of the new materials intro and, above all, by the actual require of the habitation and the numerous cies of speculation. Formerly people ithout looking, as they do now, to a par ous economy. This is sufficiently illus in the demolitions that are made in nt parts of the capital; the timber found old houses is generally of scantling far what is sufficient; the ironwork is introin a prodigal manner; the walls are conly thicker than those of the present day; e buildings were covered with tiles or laid on high roofs with a very rapid fall to keep the rain from penetrating. Under these circumstances, the responsibility of the architect was evidently very small—almost nothing, one may say." But the responsibility of the architect has been much modified in the present day; all kinds of new materials have been introduced, and the architect is expected to exercise great care in the choice of them; gas and water, and elaborate sanitary apparatus, are on all stories of the house; and demands for light and space in business premises compel the architect to provide large areas not interfered with by points of support; he must carry great weights upon few and small points, and must find means of ensuring stability "always economically, that is understood as a condition absolute." The next sentence applies more to France than to England: "For all this, if the building fails in any way, it is the fault of the architect, and we know in how rigorous a fashion the courts ratify the demands which are made upon him in any such a case in which he is, or appears to be, to blame." The responsibility placed upon architects in France, and frankly accepted by many of them, in regard to such cases of failure, is of a much more serious and practical nature than is usual in this country; in fact, it appears to us that in France architects are saddled in such cases with responsibilities which, in this country, would rather be fixed on the contractors; so it is not surprising that they should think it a serious object to have their remuneration put on a liberal footing.

Nearly the whole of the difficulty which has been felt again and again in dealing systematically with the subject of architects' charges arises from the fact that it is a mixed profession, partly a business, partly an art: it contains elements that are easily appraised by a tariff, and others the real value of which can no more be stated in this way than the real value of a picture or a poem. In France it seems there have been (perhaps are still) three camps among the members of the profession who interest themselves about architects' charges: (1) those who think all work should and may be tariffed, of whatever kind it be; (2) those who think that each architect should be left perfectly free to treat with his client as he pleases; (3) those who think a tariff very necessary and suitable for "travaux *ordinaires*," but ask for complete liberty for the architect to treat as he pleases when it is a question of "travaux *extraordinaires*, c'est à dire de *travaux d'art*."

This last intermediate view is a good deal the same as that which has been adopted in the Institute scale of charges for English architects. Of course the main difficulty of such a principle is to find the means of distinguishing between "travaux ordinaires" and "travaux extraordinaires" on a principle which will be readily appreciated and will furnish no ground for disputes and differences between architects and clients as to the nature of the work. This difficulty hardly disappears when the attempt is made to reduce to a tariff all the works of every class which can be undertaken under the direction of an architect. The attempt to do this, however, seems to have been made by the architects of Marseilles in a "projet de tarif," the complexity of which, as our author observes with reason, becomes a decided weapon in the hands of those who object to all absolute regulation of architectural charges. This system, which emanated from the architectural section of the "Société Scientifique et Industrielle" of Marseilles, recognises no less than five classes of work, in which it resembles the German system, upon which it seems to have been partly founded. The main principles of this Marseilles tariff are thus summed up:—

1st. The charges are fixed at so much per cent. on the cost of the work, of whatever kind it be.

2. The constructions are divided into classes according to the greater or less labour which they impose on the architect, and these classes are again divided into "series" according to the amount of the expenditure.

3. In the same series, that is, in works coming within the same limits of expenditure, the charge is higher for works of a superior class.

4. In constructions of the same class, or of the same artistic value, the scale of charges is proportionally higher for works of less expenditure, that is to say, of an inferior "series."

5. The total remuneration of the architect is obtained from the sum of the charges on the different classes of work, such as preliminary sketches, working drawings, details, estimating, and superintendence.

The charges upon the various classes and series of work vary from 2½ to nearly 17½ per cent. At this rate it would be almost necessary, in a large practice, to engage a clerk for the special object of computing charges and making up the accounts against the various clients; and although it may be said that such a system gives great opportunity for exactitude in knowing precisely how much to charge, from the architect's point of view, it is pretty obvious that it would be a system on which it would be exceedingly difficult for the client to realise beforehand what the professional assistance of his architect would cost him, as he at least could not be expected to be acquainted with all these mysteries of "classes" and "series," which would be trouble enough to the architect himself. But it is one of the most important points in any system of professional charges that the client should be able, without much difficulty, to know what he will have to pay, within pretty near limits. The "Société Académique d'Architecture de Lyon" opposed this Marseillese tariff on the ground of its complexity, urging that any system of charges for general acceptance should have a base wide enough to lend itself to all solutions and comprehend all cases; any system not so based was dangerous to architects in giving room for continual conflicts between them and their clients, in which they (the architects) would probably suffer most. They, the Lyonnese architects, therefore proposed a system of five per cent. on all works of which the expense was above 10,000 francs, except works of art and those connected with underpinning (*reprise en sous-œuvre*); to remunerate these latter at 10 per cent. on the outlay; and to leave the architect free to treat with his client for an additional charge or percentage for either of these classes of work when the expenditure on labour and materials did not reach 10,000 francs. This is a much simpler, and, on the whole, not a bad system. English readers will notice the peculiarity, as it will appear in this country, of charging works of underpinning on the same level as works of art; an arrangement which, no doubt, is referable partly to the more direct and practical responsibility imposed upon French architects in regard to work of that kind. And after all, is not this a reasonable view of the matter? No work can be more practically important than the whole class of work which would come under this head; and by no class of work (especially when, as is so often the case, it is concerned partly with the safety of an adjoining property belonging to another owner) is the architect placed under a heavier responsibility if his responsibility is to be a reality, and not merely nominal, for upon him in this case may depend not only the safety of his client's and of the neighbour's property, but the avoidance of the chance of a lawsuit and heavy damages against his client. We cannot but commend to the notice of English architects this importance attached by the Lyonnese scheme to underpinning works, and the deductions to be drawn therefrom.

Occupying an intermediate place between these two tariffs comes that of the "Société Suisse des Ingénieurs et Architectes Génevois," which divides buildings into two classes, *d'ordre supérieur* and *d'ordre inférieur*; but in what way these two orders are distinguished we do not precisely make out. There is, however, a division of the proportions of charges for various parts of the work, so that if the total charge were 100 francs, 20 francs would go for plans and elevations,—working drawings, in fact,—15 francs for estimating (*devis*), 20 francs for detail drawings, 25 francs for superintendence, and 20 francs for examining and passing accounts (*vérification des mémoires*). The use of thus subdividing the charges we can hardly see, unless it is to be supposed that the client wishes to have plenty of convenience for introducing a new architect at one or another point in the proceedings, and paying off the original architect for the proportion of the work which he has done; at any rate, the knowledge of the existence of such a recognised scale would be very likely to suggest this to a troublesome or fidgety client, and it seems much better for the profession that the charge for the work should be massed as far as possible in one sum.

None of these systems are satisfactory to the critic of the *Revue Générale*, who says very forcibly that for any such tariff to become law, to have the force of law, and to be accepted as such in the courts, it is absolutely necessary that it should be perfectly comprehensible by both the parties

concerned in it. Again, if it is not to give rise to disputes, it must deal in no terms which may be diversely interpreted by the two parties. If, as in all these schemes, there is to be a large distinction between payment for *travaux ordinaires* and *travaux d'art*, shall we not, he says, frequently see the proprietor maintaining, rightly or wrongly, that such and such works are "ordinary," and the architect maintaining that they are "art"? And no tribunal can settle that question upon any principle of law: it can only be by an arbitrary judgment.

The scheme which M. Ravon proposes as superior to any of these is one which recognises two classes of structures, but by a classification about which no mistake or dispute is possible, as he divides them into new buildings of whatever kind, and works of alteration, repair, addition, &c., to buildings already in existence. As he says truly, there can be no question as to the facts here; and as it is generally admitted that alterations cost more trouble in proportion to the expenditure than new buildings, he proposes 6 per cent. for all new works, and 8 per cent. for works of alteration and addition. The substitution of 6 per cent. for the 5 per cent. of the existing system, as recognised by the French Government, is intended to cover the expense of estimating ("*devis*"), which is not included in the existing 5 per cent., but for which it is legally recognised that another 1 per cent. should be charged; but this, it appears, leads to frequent misunderstandings with clients, who expect the *rédaction des devis* to be comprised in the 5 per cent., and complain of the extra 1 per cent. The *rédaction des devis*, we presume, includes something more than a mere general estimate of probable cost; at all events, it must be an estimate in sufficient detail to be exact, or it would not be worth paying for. On any new buildings the total cost of which is under 10,000 francs there is to be an additional 2 per cent. in the architect's charges; that is to say, we presume that the charge is to be 8 per cent. instead of 6 per per cent., though the writer's wording on this point is a little obscure. On additions and alterations in the same way, the charge of 8 per cent. is to be raised to 10 per cent. when the cost is below 10,000 francs, with the reservation in either case that works approaching near to the limit of 10,000 francs, are never to be charged so that the remuneration for them mounts to a higher sum than the ordinary percentage on the 10,000 francs would amount to. As to the "*travaux d'art*," the safest plan, in M. Ravon's opinion, is to leave them out of the recognised tariff altogether. The architect knows better than any one else what kind of work the building he is going to carry out will exact from him; and it is for him to say beforehand to his client if any portions of the work are of such a nature as to come, in his opinion, beyond the scope of ordinary architect's work, and amount to artistic design of a high value, which must be paid for according to its worth or according to what the designer asks for it, just as a picture by Troyon or a statue by Carpeaux. And this is really the only way in which this question of artistic work can be dealt with; and is, it will be seen, the same way in which our Institute scale of charges leaves it. What is essential, however, is that the architect should let his client understand, at the earliest possible point in their relationship, what there is in the proposed work which must be specially paid for, and what he means to charge for it.

This scheme resembles very much, it will be seen, the English Institute scheme of charges; but it has one important superiority,—it is more definite in regard to the higher charge to be made for works which involve much trouble in proportion to the expenditure. For works under 500*l*. the Institute scheme does say distinctly that five per cent. is not remunerative, and that they should be charged by time or by an ascending scale up to 10 per cent. for work under 100*l*. But, in regard to alterations and additions, it merely provides that a special charge "may be made" on account of the extra trouble and difficulty involved. This leaves the architect in uncertainty as to when and to what extent he should make an extra charge, and gives some ground to the client for disputing it, and denying the existence of any extra trouble. As, however, it is certain that, in such works, the trouble is almost invariably greater in relation to the cost than in new works, and as they are usually in other indirect ways less valuable to the architect, giving him generally much annoyance and little credit or satisfaction, the positively formulated extra charge of the French architect we are quoting seems to us to meet the case much better than the more vague provision of the Institute scale.

There are one or two special points raised in the further discussion of the subject which are of interest as illustrating Continental practice, if not of more direct significance to us. We are reminded in reading them that the contract system is by no means so nearly universal in France as in England. The remuneration of the architect ought to be in general, we read, charged upon the amount of the accounts (*mémoires*); and in connexion with this we have a somewhat singular point raised, whether in cases where the builder lowers his price below the market value of materials and labour, in order to secure the immediate execution of work, rather than have his hands and plant left idle, the architect is to be remunerated according to the actual prices charged by the builder, or according to the real value of the work. The conclusion of M. Ravon is, that the architect is bound to claim a per-centage on the real value of the work, *à fortiori* in this case, because a builder who is ostensibly working at a loss will require all the more looking after, in order to guard against the results of his natural temptation to save expense and material wherever there is a loophole for this, and the architect will, therefore, have more trouble over the affair than in the case of a builder working at an ordinary profit. This is, no doubt, morally true, but there might be some difficulty in making it work with a client. The best rule is never to put architect and builder in so unfair a position. The Institute schedule provides indirectly, we may observe, against cases of this kind by its sentence that the commission of the architect is reckoned upon the total cost of the work, "valued as if executed by a builder, and of new materials," the real force of which is that the commission is to be on the market value of the work. In the case of estimates submitted in competition, where the lowest tender is accepted, it sometimes happens, again, that this is considerably below the market value for good work, owing to the fact that some one of the contractors does not want work to stop in his shops, and therefore tenders at a price that may ensure his selection. In this case M. Ravon thinks the architect's commission should be ruled by the amount of the tender, as the very object of the contract system is to get low prices, and it is a system much less troublesome to the architect than that of measuring up, and therefore he must take its drawbacks with its advantages. This, perhaps, would hardly sufficiently console the unfortunate architect for the result to his pocket of some of the tenders which figure as "accepted" in lists which are furnished to us for publication, where we may read, "Jones, 13,000*l*.," at the top of the list, and "Brown, 6,900*l*. (accepted)," at the bottom, the architect having into the bargain all the trouble and responsibility of seeing that all the little channels are carefully guarded by which the adventurous Brown hopes to recoup himself. The moral, however, is, not to receive estimates on terms that leave such a result possible.

On another point, our author suggests that the employment of old materials, the property of the client, ought to be included in the expenditure on which the architect's commission is based; that is, they must be valued, and their estimated price added. This is another case which is provided for, we may suppose, in the paragraph of the Institute schedule alluded to just now, and it is no doubt nothing more than strict fairness to the architect; yet we cannot help thinking there is often difficulty in enforcing it or making a client understand it, and that very often it is not claimed for fear of a misunderstanding being the result. M. Ravon adds, indeed, that "in strict justice the employment of old materials ought to be the ground for an extra charge, since they are very often the cause of difficulties which would not present themselves in the case of new materials made expressly for their situations": which also is perfectly true, but we hardly should say that it was very advisable to endeavour to act upon it.

This question of old materials really seems to belong to some extent to another which is discussed in the concluding part of the essay, viz., whether the proprietor can take out of the hands of the architect the direction of some parts of the decoration or other portion of the work, with the view of saving some part of the architect's commission by reducing the amo upon which it is to be reckoned. It is, of cou conceded that such a proceeding would be v shabby; but would it be legally, or mora justifiable? M. Ravon thinks not, because percentage by which the architect is paid is the amount of the whole works without tinction, and it is only so that it is remunerat Some parts of the work are over-remunerat at that rate, some are hardly remunerativ all; the percentage is a charge on the build *en masse* simply as an easy, general way appraisement. But one particular argum which is used by the writer in the *Revu* worth mention. "Suppose," he says, "an ar tect declared responsible for the falling dow a building, obliged to replace the building supply decorations similar to those which exi in the one which has perished by his fau (these decorations having been taken out of hands by the employer through motives economy); "works of decoration which he not superintended in the building destroyed, for which, consequently, he has received no ment, but for which he is, nevertheless, re nised as responsible, their restoration b rendered necessary by the ruin of the buil which has fallen by his fault; that would tainly be strange." In other words, respo bility for the whole involves remuneration the whole, and as the responsibility in suc case as that described cannot be divided more can the surveillance and the remunera for it be divided. But what especially str us in this passage is the illustration whic affords of the high degree of responsib fastened upon and accepted as a matte course by the French architect. And we ca but honour such a high feeling of pers responsibility on the part of the professio this fact gives evidence of.

In concluding our remarks, we may observe that the absolute property of the a tect in his own drawings is affirmed withe shadow of qualification or hesitation by French critic, and it is affirmed with certainty and decision in the scheme of cha put forth by the Neufchâtel section of the S Society of Engineers and Architects, w tariff in many ways resembles M. Ravon's confirms his views; and who assert that "toute construction exécutée les plans et d restent *la propriété absolue de l'archit* pendant la construction, il en est fourn doubles au client, à l'usage des entrepren mais ils ne peuvent *être employés que* pou *travaux en vue desquels ils ont élaborés*."

We draw attention to these strong and de expressions on the point, in the hope that may be for edification to some of those ou the profession (legal gentlemen especially) are always exclaiming against this claim o architect to property in his own drawings representing it as a claim not only unsustain but altogether strange and unheard of; wh it is the practice of the profession, as far a can ascertain, in all civilised Europe. framers of the Institute schedule of ch rather fell short of their duty to the profe in not affirming this point a little more str and unconditionally; but they probably f to mislead architects as to their legal posit

One point in the last-quoted tariff of Neufchâtel architects is an unusual, but we a wholesome, provision, namely, that architect cannot claim any augmentation o charges in consequence of increase of cost the original estimate as the work proc unless this is the result of changes and enl ments unforeseen, and now demanded or sented to by the client, or by an increase price of materials and workmanship of locality since the making out of the estim This is well intended, and we can hardly un stand why M. Ravon calls it a "singu rigorous condition"; it may be doubted wh it even goes far enough, for, after all, why sh the architect receive increased remuner because the price of the materials has since estimating? It is perhaps simpler th should do so, as it is making one unvarying (percentage on real cost of the work) after all it in no way entails fresh labour on And it is very desirable that in every possible way people should be disabused of idea that an architect is always trying to their building cost more in order to increas own gains,—the one real objection that ca urged to the percentage system, but one w probably we shall hardly be able to see our out of.

THE MONUMENTAL HISTORY OF ROME AND THE MIDDLE AGES.

At this season of the year, in these weeks of neral recess and vacation, when the archæo- gical societies of Europe are busily throwing esh gleams of light on the obscurity of the ast, and the silent study of the last year has en brought under the eyes of the interested blic, we are more willing to listen to the tales bygone times than perhaps at any other riod of the busy twelvemonth that modern ilisation has created for us. And very readily the archæologists seize this moment when e more thoughtless of us are not so prone to idly inquire into the utility of a science nich within a few generations has gifted the rld with such extraordinary stores of beauty d information, and the researches of whose llowers have successfully resulted in making chæology the practical illustrator of the storical and literary information we possess ncerning antiquity, enabling us to compare e works of the artists and conceptions of the n of letters of the past, annotated each by e other.

It is at this period, therefore, of archæological itation that M. Geoffroy, the well-known tiquarian scholar, has simultaneously, in a cent communication to the French Academy Moral and Political Sciences, and in a more tailed paper contributed to the current mber of the *Revue des Deux Mondes*, thrown ch light on the condition of antique Rome at at interesting period of its history which llowed the epoch of its greatest glory.

When and how, asks M. Geoffroy, was accom- shed the great overthrow of the city of the sars and the Popes, and what epoch was in s respect the most culpable? The great numents of ancient Rome which existed ring the Middle Ages dated almost all from first Empire, having been erected or repaired that period. There are few which were served as the Republic had left them, like Pantheon. There are few, again, which re not enlarged or restored, rather than stroyed, for they were protected by the man administration. The republican ædile d charge of them, and a series of legislative ts dating from the imperial period shows the cautions taken to avoid the aspect of Rome ng injured by ruins.

But Rome had to traverse many cruel phases, n at the moment of its greatest splendour. ck bands gave themselves up to strange culations, purchasing properties, selling the ptures, the marbles, and the paintings. The essive luxury of the rich was the cause of not w demolitions. Sallust converted into a den a large portion of the Quirinal; Mæcenas ted his sumptuous villa on the Esquiline. en Constantine conceived the project of ferring eastwards the capital of the Em- e, he called in the artists and most skilful kmen, and bore away from Rome a great t of the embellishments for his new city of nstantinople.

vasion continued the work of destruction. 410 Alaric accords three days of pillage to soldiers, who set fire to the gardens of nst, sack the city, and carry off the sacred es of Solomon and the Roman spoils from rusalem. Forty-five years later the Vandals Genseric sojourn in Rome fourteen days: sack the Temple of the Cæsars, on the atine; the Temple of Jupiter, on the Capitol; off the statues, and ruin the roof to e the sheets of gilded lead. In 472 Rome acked; and after that, in chronological er, comes the siege of the Goths, who cut the teen aqueducts which brought to Rome its le supply of water. To combat the enemy, soldiers of Belisarius, shut up in the tomb of drian, break the statues and convert their ains into projectiles.

. Geoffroy considers that Christianity fa- red the preservation of the antiquities, and s as an example the Temple of Minerva, which become the cathedral,' and the columns of ch have been maintained, owing alone to the e modern masonry. During the Middle s, the antique monuments were further ed. They became fortresses, and risked er the strangest changes of form or destruc- under assault; they ran the risk of being llated for new buildings, for the Mediæval ders seemed capable of making use only of que materials. The Coliseum was trans- ed into a quarry and a lime-kiln. Finally, old monuments had further to stand the effects of the earthquakes of 1348 and 1349, the inundations of 792 and 1230, and repeated fires.

Such is a *resumé* of M. Geoffroy's remarks to the Academy relative to a map of Rome by Bafalini, signed and dated 1502, an interesting and rare map recently republished by the Italian Government, and especially useful in offering a plan of the monuments of Rome previously to the alterations of the second Renaissance. The communication to the *Revue des Deux Mondes* is a review of two works, the *Piante iconografiche e prospettiche di Roma*, by the eminent Roman archæologist Signor Rossi, and showing the plans of the old city previously to the sixteenth century; the second work, "The Arts at the Court of the Popes during the Fifteenth and Sixteenth Centuries," by M. Paul Müntz, the librarian of the national École des Beaux Arts.

Another important work has been added by Signor Rossi to his valuable series, the *Roma Sotteranea*; his periodical Bulletin, his collection of Christian Inscriptions, and his great work at present in course of publication on the Christian Mosaics of the Churches of Rome before the fifteenth century,* a veritable encyclopædia of Roman archæology. But Signor Rossi has not confined his labours to these learned works; his indefatigable energy is displayed in numerous papers contributed to the learned societies of Europe, and in a series of lectures, which, under the patronage of the reigning pope, are held in the Palazzo Spada, and where Signor Rossi displays the enthusiasm of the true archæologist. On the recent celebration of the fiftieth annual meeting of the German Archæological Society at Rome, Signor Rossi prepared a study on the figured plans of Rome previously to the sixteenth century, and it is this study enlarged that now re-appears, a valuable aid to the student of the monumental history of Rome.

On this interesting ground Sig. Rossi has been working in the same direction as M. Müntz, who has published the result of a learned search into the Roman archives on the art of the Papal court during the fifteenth and sixteenth centuries, a work which, in method, bears some slight resemblance to the Comte de Labarde's esteemed study on the Dukes of Burgundy or the Athens of the fifteenth, sixteenth, and seventeenth centuries; the same use of that ever valuable source of information, the registers of expenses, has been made, and the same patience has been shown in the painful deciphering of the carefully-kept accounts of the Papal court, found scattered in the various libraries of Rome, Naples, Florence, and even Paris.

At the head of each pontificate a preliminary notice sums up the results obtained by the author, while a series of paragraphs studies, turn by turn, each of the great works of Rome, the walls and fortifications, the gates, the bridges, the streets and *piazze*, and the antique monuments. References in all cases are copiously supplied, and facility of reference assisted.

Both of these works throw a new light on what may be called the monumental history of Rome, a history contemporaneous with all the stirring events of which the Eternal City was turn by turn the scene.

We have already pointed out how the buildings of the Middle Ages, most of which belonged to the period of the first empire, were protected, even if their appearance was changed, by the care of the Government. Libanius cites the existence of an inspector of the public bronzes; but though Rome was thus more or less preserved from destruction, towards the end of the Empire the Eternal City commenced to be abandoned and a prey to desecration, and the increasing luxury of the wealthy served not a little to aid the work of destruction.

The treasures of Rome were carried off to Byzantium, and among them Phidias's incomparable Jupiter Olympus; fire further helped, and more than one beautiful work of art ravished from Greece crossed again the mountains to embellish the capital of the Greek empire.

The decadence and abandonment commenced by Greek emperors was completed by the barbarians, to whom, however, is attributed, perhaps, a too-wanton spirit of desecration. We have only to read the curious journal of excavations which Flaminio Vacca has left us, to see in what superstitious horror the Goths were held in the sixteenth century; there existed no crime but what was charged to their memory, they alone had committed all the ravages on the antique monuments; they seem, in fact, to have held much the same unenviable position still attributed by the thoughtless in England to the ubiquitous Cromwell and his sturdy Roundheads. From all accounts of the ruthlessness of the barbarians, it is evident that in the sixteenth century the name of Goth was, for the Romans, a synonym for brigand and plunderer, a reputation more commonly fathered in the present day on their contemporaries the Vandals.

The cruellest blow of the barbarians was the destruction of the fourteen superb aqueducts, depriving Rome, not alone of its boasted supply of water, but threatening it with famine, for the corn-mills were situated on the slopes of the Janiculum, opposite the now doomed Ponte Sisto of the present day; but Belisarius obviated the difficulty by constructing a number of floating mills (the *aquimoli* of the Middle Ages, still to be seen in many towns, notably in Verona). The worst result, however, of the measure taken by the Goths was, that the conduits interrupted, and, after that, ill repaired, allowed their waters to escape into the Roman Campagna, crumbling away the foundations of the ruins, and forming those marshes which, neglected for centuries, have generated the too famous *malaria*, the solitude and death that reign round the walls of Rome.

In the Tuscan maremma, the neglect of the aqueducts has led to the same result, with this strange difference, that in the midst of the antique plain of Vulci, which the torrent of the Fiora divides into two parts,—on the right bank the ancient Etruscan city, on the other its necropolis,—rises an old and dilapidated fortress which serves as a *tête de pont* to the remains of a classic aqueduct, the water conducted by which, charged with lime, has escaped through the fissures and the stones, and huge picturesque stalactites have been formed, burying everything they cover. We all know that stagnant water is the principal scourge of the unhealthy regions of the Italian peninsula, and so well did the Romans understand this that round the capital are still to be found remains of vast underground works prepared to obviate this danger.*

The injury dealt to the capital by the foundation of the Eastern Empire, and the attacks of the barbarians, cannot be said to have been carried on by the Christians. Hostile as was the antique worship to theirs, bitter as was the persecution their co-religionists had suffered in the arenas, the Christians appear to have wreaked no vengeance on the emblems of the pagan worship. It must be remarked that the rigour of the emperors partook more of cruel accesses of rage than continued persecution, and so it was that when the independence of the Christians came at length to be acknowledged, the emperors, even after renouncing paganism, respected the monuments of antiquity. Sig. Rossi has abundantly proved this interesting fact, often misrepresented by history. The principal sanctuaries, it is true, were closed, the lands of the pagan priests were confiscated, but the statues of their divinities were spared, and allowed to remain to ornament the city, a fact shown by the discovery of numerous fifth and sixth century inscriptions relating how such and such a prefect has excavated some statue "in order that it might serve to decorate the town." The chief violence exercised against the monuments of the past pagan worship was carried out in Egypt, in Africa, in the East, or in the country,—in every case away from Rome. The Christians of the capital wisely understood that the monuments of pagan Rome made part and parcel of a glory which could not be denied, since it had prepared the peoples of the world, in accordance with the designs of Providence, for the reception of the Gospel; the priests skilfully substituted the new religion to the old, the Christian emblems were attached to the pagan monuments, the old basilicas served as the churches for the new worship, and Rome is the most interesting scene on which may be followed out the strange blending of the two civilisations.

In addition to the foundation of Constantinople, in addition to the invasion of the barbarians and the triumph of Christianity, a fourth

* Twelve large chromo-lithographed mosaics and several plates of pavement in *opus tesselatum*, falsely called *Alexandrinum*, have already appeared, together with an explanatory text in Italian and French.

* See the recent works of Sig. di Tucci and the Professore Tommasi-Crudeli,—"Dell' antico e presente stato della Campagna di Roma," 1878, in 12mo.; and "Della distribuzione delle acque dell' Agro-Romano" (printed for the Accademia dei Lincei, 1879).

cause of entire transformation in the monumental aspect of Rome, and incontestably the most energetic, the most irremediable, were the long duration of the feudal anarchy and the civil wars of the Middle Ages, during which Rome, often abandoned by its own pontiffs, hiding in Ravenna, exiled at Avignon, became a battle-field in which the partisans of pope and anti-pope, of Guelph and Ghibeline, fought out their separate quarrels, ruthlessly destroying alike antique traditions and antique monuments.

The last great works of the Empire had been, in the fourth century, the circus of Maxentius, the basilica and the Arch of Constantine, itself composed of sculptured stones from other buildings, the bas-reliefs, for example, having come from the Arch of Trajan in the Forum. Constantius II., by a remarkable effort, brings from Egypt the obelisk of the Piazza St. John Lateran; but these are among the last proofs of the energy of the Roman Empire. In the middle of the seventh century the Greek emperor, Constantius II., sees the gilded horses of the triumphal arch which adorned the great circus, as also the gilded tiles of the Pantheon. Leo. IV., in the ninth century, builds against the Saracens the walls of the Leonine city; but the monumental decadence of Rome is far on its road. Not only were the Romans incapable of building, but they seemed unable even to raise what had been demolished or was falling to ruin. In vain, during the Carlovingian epoch, a slight revival of the arts is noticeable, the old traditions are dying out, and we find no traces of mosaics executed in Rome between the ninth century and the commencement of the twelfth, until those of Sta. Francesca Romana and Sta. Maria del Trastevere (1130). No great works in bronze are executed, and that noble art, which had produced such marvels, exiled to Constantinople, was alone to be revived in the early years of the twelfth century. For 200 years and more we wander in the deserted Rome of the *Mirabilia*.

This little book, the popular guide of the pilgrims, and so largely used by them for four centuries, offers a perfect specimen of the general decadence, and in it, the Christian legends are found so enveloped in those of paganism, that all precise information has vanished. The beautiful tomb of Cecilia Metella takes, among other corruptions, the name of the *Capo di Bove*, from the bull's-head ornament of the marble frieze, and many other similar well-known changes might be mentioned, the Arch of Titus, the *Arco delle Sette Lampe*, from its sculptured representation of the seven-branched candlestick.

The aurora of a Renaissance is revealed in some interesting Roman works of the thirteenth century, but the stay of the popes at Avignon, from 1309 to 1377, revived the old anarchy. The recollections of the ancient grandeur of the capital of the world have scarcely remained in the minds of even the Mediæval scholars, and Dante himself alone sees Rome through the clouds of the *Mirabilia*. It is not Petrarch, the enthusiastic Hellenist,—it is the poor tribune, Rienzi, who is the first to pay serious attention to the language of the lapidary inscriptions. The solitude extends like a leprosy; the Forum and the Palatine are soon little else than fields for pasture. The inertia becomes such that on the roofs of the houses, the miserable wooden shingles,—*scandulæ*,—which Rome had used in the first five centuries of her existence, replace the tiles, and this once important industry becomes unpractised by the degenerate Romans. The houses themselves are built of such bad materials that they may be said to be rather of earth than of brick.

With the enmities and quarrels of the Middle Ages the monuments of Rome suffer still further, and Guelph and Ghibeline rival each other in their destructive zeal; the Frangipanni occupy the Arch of Constantine, that of Titus, and the Coliseum; the Caëtani, the powerful family which gave four popes to the seat of St. Peter, seize the tomb of Cecilia Metella, and the now picturesque Torre della Milizia; the Orsini the tomb of Hadrian, the theatre of Pompey, and the Campo del Fiore; the Colonna occupy the mausoleum of Augustus and the baths of Constantine, the Savelli seize the theatre of Marcellus and the Aventino. Rome bristles with watch-towers rising from its classic monuments. Assault after assault from Robert Guiscard and his Normans, the contemporaries of our William the Conqueror, and many another band of pillagers, reduces Rome to a solitude, and with the thirteenth century Senator Brancaleone destroys 140 of the feudal towers of the nobility.

A further destruction arises from the rebuilding with antique materials. Each wall contains the fragments of past magnificence, discovered from time to time. Only last year in demolishing one of the bastions which flanked the Porta del Popolo, the remains of a beautiful funerary monument were laid bare; and it will be remembered how in 1871 the architect, Signor Vespignani, in destroying the two towers of the old Porta Salaria, discovered the interesting tomb of Q. Salpicius Maximus, the young Greek *improvisatore* who charmed Rome in the days of Domitian. These instances are but two among many others, and each moment may add to the list. As for the Coliseum, it is a familiar tale how long it served as a quarry,—a fate suffered by many other monuments; indeed, throughout Italy it is not rare to find in the lower portions of the older churches remains bearing traces of once having been Roman. The cathedrals of Pisa and Lucca are built of Roman materials, and more than one edifice in Verona is studded with Roman bas-reliefs and inscriptions.

No small cause of ruthless destruction was the further use made of the marble for the manufacture of projectiles and for the making of lime. On more than one old map may be seen the indication of the Coliseum or the Baths of Diocletian as a *petria*, and by their side is marked the *fornace* or kiln. Generations of marble-workers appear to have occupied the Arch of Septimius Severus, and during the Middle Ages one of the numerous lime-kilns of the city rose in the classic Forum. In this manner, doubtless, disappeared the beautiful Temple of Concord, of which we now alone possess a single column; even in the sixteenth and seventeenth centuries such abominable practices appear still to have been continued.

To aid the ruthless work of man came the effects of nature, and in successive earthquakes more than one building perished. The earthquake of the year 1348 destroyed a great part of the basilica of the Lateran. The following year a portion of the Coliseum fell; while repeated inundations further worked their mischief. The fifteenth century alone records eight floods; while the chronicle of the fires is no less disastrous. In the causes of decay should not be forgotten also the appropriation for projectiles of the stout iron bands that bound together the huge stones of many of the edifices, leaving those mysterious holes which have so long puzzled the archæologists.

The continual rise of the Roman soil, a fact due to the accumulation of ruin after ruin, above which the degraded inhabitants built their wretched hovels, is another of those singular effects which have reserved for the present day more than one agreeable surprise. This phenomenon is not alone observable in the valleys, but also on the heights; while the famous Tarpeian Rock has lost, since antique times, portions of its summit, and the Palatine, with the other hills, has lost much of its original height, every visitor to the Eternal City must have noticed that on the Esquiline the Baths of Titus are built above the Golden House of Nero. On the Quirinal, the Baths of Constantine were only recently discovered in digging between the Rospigliosi and the Colonna gardens. On the Cœlian, near the Church of Saints John and Paul, the excavations in the time of Piranesi showed that the filling up of the deposit was no less than 60 Roman feet.

In the valleys this work of slow burial has naturally been more marked. The Pantheon occupies one end of its *piazza*, the rest of which is evidently built above lower foundations. The basilica of St. Clement covers a more antique basilica, and the recent discoveries in the cutting of the Via Nazionale, have shown that this was the case with the Baths of Constantine. They cover the remains of the house of the Avidii Quieti, and the Claudii Claudiani, built again over another house dating from the first Antonines, and over an older construction in *opera quadrata*.

The first thought would be to throw our blame for all this destruction on the long disorders of the Middle Ages, but it would appear that other periods are equally culpable. The Porta San Lorenzo, for example, of the epoch of Honorius, of the year 403, retains its old level, while the monumental arch of the acque Marcia Tepula and Julia, built by Augustus five years before the Christian era, is now so surrounded by earth that a hay-cart is unable to pass beneath it; it has also been proved that the public way [illegible] been raised no less than three times. It is d[ifficult] cult to understand how, during the impe[rial] period, such a great modification took place[d] the level of the soil, at a time too when [the] the administration was so active and the bu[ild]ing so well constructed.

The phenomenon which we are thus enab[led] to see commenced, even at the outset of [the] empire, lasted until the time of the Renaissa[nce]. From the fifteenth century, while in ev[ery] direction the new city had enlarged, t[he] portions neglected were ruthlessly encumbe[red] with rubbish and rubble, and the Forum, a[lso] having served as a quarry and a lime-[kiln] during the Middle Ages, became, from [the] beginning of the sixteenth century, a [vast] *immondezzaio*. Round the famous columi[n] Phocas were found *débris* accumulated a[bove] the twelfth century. Those of the last cen[tury] alone were 18 ft. deep; and Nibby, who r[ec]tions these details in 1838, adds that the gro[und] was still 27 ft. above the original level. It [has] been calculated that in the Forum of Nerva[,] soil has risen some 24 ft., some 10 ft. in th[e] Trajan, and 12 ft. in the valley in whic[h] situated the Arch of Constantine.

It would be infinite to enumerate all [the] special facts of a nature to show the conti[nual] progress of this monumental ruin of I[taly] during the Middle Ages, of which we have [men]tioned the principal instances. It would [be] possible, with intelligent and assiduous rese[arch] to institute a chronological series of fig[ures] representations, bas-reliefs, medals, draw[ings] and engravings, offering the physiognomy o[f] great Roman edifices, as different ages [have] known them: such a series would serve [as] admirable complement to the already ext[ensive] collections of busts and coins; or, again[,] maps and figured plans might be arrang[ed] such a manner as to afford a successive [pa]rama of the Eternal City. Sig. Rossi[has] enabled the archæologist to grasp the seco[nd] these studies, at least in so far as concern[s] Middle Ages and the Renaissance. We [will] endeavour to follow him in his intere[sting] labours.

THE SUBURBS OF LONDON AND TH[EIR] IMPROVEMENT.

IT is impossible to cast even a glance o[n] "suburbs" of London, huge as they now are, as depicted on a map, without a painful fe[eling] of regret at the aspect they present on all [sides]. Whatever the impression,—artistic impressi[on] that is made on the mind when you are on the midst of London and in the confusion [of] endless lines of streets and open squares [or] vacant bits of building-ground, there can [be] question whatever as to the poverty and [the] aspect of the *suburbs* of it and of the [main] approaches to it. No one entering Lo[ndon] through any one of its main high roads le[ading] into it could for a moment suppose it to be [the] it boasts of being,—the metropolis of the w[orld]. A strong walled and fortified city, as in da[ys] yore, is to be readily pictured, and a fi[rst] view of any one of such, as approached fr[om a] distance, must always, to a certain exte[nt] least, have realised our dreams and imagi[ngs] about it; but surely no such hardly de[scribable] picture of London is to be got by any [of the] highway approaches to it. Leaving fo[r the] present the railway approaches to London, [what] can there possibly be of less interest or pr[ide] than the lines of roadway leading into the [great] metropolis, bounded on either side, as the [case] the most part are, by the "house-building[s]" seen everywhere, and without sign ev[en] where mighty London begins?

But this was not always so, and there m[ay] some interest at this moment in taking a [hur]ried ing glance at it; for are we not, all but da[ily] day, going to war, somewhere or other, [and] those who yet live in "walled cities" [or] towns, and who are compelled, whether [they] will or no, to mark out definitely where their [limits] begin and end? Whatever the character[istic] aspect of the streets of any such town ma[y be] and whatever the artistic value of the [first] imposing of its public buildings, of one [thing] we are certain, and that is, that you c[an] once know when you are in such town[s] when out of it, and where precisely it b[egins] and ends. There may, it is true, be some [sig]ficance in this contrast. A walled city [with] definite outline, and one without outline, [but] always, and day by day almost growing b[igger] and bigger. We but draw attention to the

ct. We may here remind the reader that this finite outline was once the state of London elf, and any old map of it will show how ghtly and definitely it was at one time *walled-in* th its city gates at definite distances, and w very different the approaches to it were m to what they now are. London, before its lls and gates disappeared, must have pre- ted an appearance so totally unlike every- ng now-a-days to be seen round and about it, t we can but feebly picture it to the mind's , even with the assistance of quaint and chentic pictures of it.

But more than this. It is not alone the in- initeness of the London outline, if it can e one, but the fact of the long roadway proaches to it being always lined on either for miles with rows of ordinary street ses, no way differing from those in the heart the City itself; and even right and left of se, long rows of houses are visible every here there for some distance, so that London is s made to seem even much bigger than it lly is. In this way the great City may be to commence many miles from its true out- , however defined. It is really quite impos- e to imagine any duller or less promising e of building, or architecture, if that word n any way applicable, than is that of these s of houses and dull and lifeless streets, and row and formal ways, without outline or racter of any kind. No power of poetic y could make anything out of these. The brightest or the most sombre of poets could lothing here,—both art and nature are fairly en; and you pass through and along these al lengths of house-building for miles, and at last that you are in London,—mighty don,—itself, but without knowing it: no t gateway, or guard-house, or even direction telling you, in more or less plain or forcible uage, that you are at last in it.

e call a moment's attention, as we have to these things in the hope of directing the ghts of those in authority to the surround- of the huge city in which they are said to so much pride, and in the hope of aiding ne preservation, every here and there of the s, the very little, that is yet left of art or ire, which, if in their pristine state, might ce matters somewhat better than they now

So much might be said by going some- t into detail, that it is difficult to fix on any item, all being of value. Thus it may be d that London at one time in its history t needs have been all but surrounded with st, and that patches and evidences, more or conclusive of this, are yet to be found all d and about it, and in ways at times not tle singular and exceptional. A careful ination of the Ordnance Survey Maps will v this without possibility of doubt, and yet e so an examination of the ground itself. ddition to these evidences, there are the *old* s of London and its environs, where the -covered spaces are for the most part care- , and we think, conscientiously indicated. ised hardly be said that these are fast dis- aring, day by day, and it may be hopeless ttempt much, but still a little might yet be if due and timely attention were paid to it; it would surely be worth a little trouble, if expense, to preserve these few records of a state of things.

parenthesis, may we call a moment's atten- to the way in which the Ordnance maps are in? Rising and falling ground, and thick ds and trees, are shown in spots where ing of the kind can be detected when on actual ground. In the Epping Lower Forest, is called on the map, a forest of trees is esented, but on the ground itself there is ing but a wide open space, grass covered, with here and there a few low ground ts. There is not a single tree on it till you e to the roadway, where, here and there, is one, but certainly none of forest th. While, singularly enough, as seen on map, there is Wanstead Park, which is y a part of the ancient forest; no trees are n on the map, but the park itself contains a few of them in close and forest-like groups, which afford perhaps a good though partial se of the whole forest as it once for miles ed, and with huge trees as densely packed ther as are those in Wanstead Park. The of London Cemetery, immediately to the h of Wanstead Park, occupies, too, a part of ancient forest, so that from this side of don at least there must have been an oach to it through miles of highway thickly grown on either side with forest trees, and thus imparting to it a character all but at this day impossible to imagine. A passing glimpse at Wanstead but intensifies our regrets at the cruel loss we have sustained in the wholesale destruction of the Forest of Epping.

It must, therefore, be of more than usual interest to note that old London must needs have been all but surrounded by forest, with occasional vacant ground, doubtless, as shown on old maps. Thus there could be hardly a greater contrast between two towns or cities, and their approaches and surroundings, than those of old and modern London. The road to the antique city, through a densely-covered ground, filled with huge trees of ancestral growth, and then the entering the City through a towered wall, must have presented as great a contrast to the present of things as can well be imagined. Material improvement here there may indeed be, and is; but if looked at from any art-point of observation there can surely be but little to boast of. The approaches to, and the entrances into, and the "first view" of a great city, would seem to be of as much importance, and as artistically descriptive, as can be the character and aspect of the City itself when once entered. This is, in truth, a subject hitherto so entirely neglected and passed by, that it is difficult, as we have said, to know well what to urge, or how best to look at it. Of its magnitude and difficulty there can be no doubt, however looked at, but its importance should overbalance these considerations when it is considered how much, as in the case of Epping Forest, has been lost to the public; and how much good might yet be done if this matter were but duly considered.

We could go on, and in some detail give a list of the spots of ground every here and there round London that are yet covered with evidences of the former state of things. We need hardly say how rapidly they are disappearing; indeed, so rapidly that in but a few short years all visible evidences of that former state of things must needs totally disappear. In their place there is, as before said, the usual evidences of a new state of things,—single houses and short rows of houses, either single or double, forming short streets, the ground all round such being industriously cleared of, at least, all evidences of venerable tree-growth. Much of this ground is in the possession of those who could, if they would, do much to hinder the destruction that is going on. Indeed, there would seem to be little doubt that the preservation and growth of trees round and about London town would go far to add to the value of each separate locality as a site for the erection of the ever-increasing bricks and mortar, and of which increase there would seem to be no end,—a very curious problem, and one which may well give rise to not a few useful and solemn reflections. We but advocate here the preservation, amidst all this coming "more house-building," of here and there an open spot, air-filled and if possible forest-tree-filled.

A HIGHLAND MONUMENT.

THERE are few parts of the Western Highlands wilder than Loch Shiel: for twenty-five miles a narrow sheet of water, half a mile in breadth, is overhung by steep mountains, which rising with rock and precipice above it, give a singular sternness to the surrounding scenery; and the grandness of the district is often not a little increased by the peculiar mistiness of the atmosphere so frequent near the Atlantic seaboard; so that on a cloudless day the mountain-sides loom above the loch with large and uncertain outlines. At the head of Loch Shiel, Glen Finnan debouches, and forms a marshy meadow between the rivers Finnan and Caller, which here pour their waters into this great lake. Upon this spot, on the margin of the loch, stands an edifice which at once arouses the curiosity of the strangers,—and they are very few,—who pass by. It is a round structure, too small in circumference to be called, properly speaking, a tower, but which it is difficult to describe by any other name, surmounted with battlements. Upon the top of this a statue is erected,—a kilted figure looking towards the mountains and the opening glen. A closer examination shows it to be surrounded by a wall, on three sides of which a large stone slab is placed, on which are respectively an English, a Latin, and a Gaelic inscription. Upon perusing them we find that the monument above was erected in 1825 by the then Macdonald of Glen Aladale to commemorate the ill-starred attempt of Prince Charles Edward to gain the throne in 1745, an attempt which was practically ended at Culloden, but which gave an opportunity for the West Highlanders to show their devotion to their prince in his wanderings for shelter among the glens which intersect the country around Lochs Shiel and Morar. But the monument commemorates, fitly enough, not the leader of the unfortunate enterprise, Prince Charles Edward, himself, but much more fitly his companions in arms, upon whose loyalty and courage he relied.

And this singular monument is placed in this singular place for an excellent reason, which, in spite of its want of artistic grandeur or beauty, makes it more suggestive than many more noticeable structures. On this marshy meadow Prince Charles erected his standard, and down Glen Caller and Glen Finnan and Glen Aladale the Highlanders flocked to the sides of Loch Shiel. When the fisherman is angling in the loch, and the monument is but a distant pillar, he is reminded of an historical event; he does not criticise the artistic value of the work, but it calls to mind an enterprise to which the distance of time gives not a little of the romantic. And the suggestiveness of this monument seems to show how necessary it is, in erecting material reminders of past events, to give careful attention to locality. A monument to the Highlanders who fell at Culloden placed in a Glasgow square would be absolutely without any suggestive value. Probably it would have been a laughing-stock to the onlooker, both for political and for artistic reasons. But here, on the very spot where the standard of the Stuarts was erected with a Mediæval-like daring, where amid the wildness of the scenery, the streams rush down from the mountains and the lake laps the shore as they did more than a century ago, and will do more than a century hence, was a fit place to raise a memorial to the Highlanders who, however mistaken, were courageous and loyal followers of a miserable dynasty. And the kilted figure, looking towards the hills from whence came his help, is not in itself without its suggestions also, so that, though we may compare the structure on which it stands to a miniature shot-tower, the history appears more poetical and more romantic. An event of a past century is brought more vividly before us by it than by a more pretentious work, or one of greater beauty, placed on a spot less significant. Here the mind can conjure up the past, and the memorial seems to point to the monuments of nature which stand around, and then sink out of sight with its task done.

And in regard to this head of Loch Shiel it is not uninteresting to notice that in the district which immediately surrounds the monument, the inhabitants—the few there are, at least—are Roman Catholics. The laird's house, a new Gothic structure, stands by the side of the loch; but with that exception, there are only two other small cottages outside the policies. In the grounds a new Roman Catholic chapel has been erected by Mr. Macdonald, of Glenaladale, and which is yet unfinished, though sufficiently complete for the purposes of a service. When a spire or tower has been added, it will, on the high terrace above the lake on which it stands, form a striking object for miles down the loch. But it is not so much the material structure of the chapel itself which calls for notice, as the fact that, just around the place where the monument stands to those who fell in the cause of the Stuarts and the Roman Catholic religion —for the Stuarts were essentially the champions of this church,—this religion has still a complete hold. Thus Glen Finnan remains like an island in a great ocean, a single small district peopled by Roman Catholics, among hundreds of Presbyterian parishes, from the Point of Ardnamurchan to the sands of Montrose. The fact adds, as it were, to the appropriateness of the Highland monument upon which we have briefly touched. The Scottish guide-books will say that it should be visited; but the way in which it should be seen in order that it may be appreciated, is not by taking a hasty walk round it at the end of a drive from Corpach and Banavie, whilst the driver baits his horses before he turns their heads back again; but by seeing it from the waters of Loch Shiel whilst they are calm on an autumn evening, or noticing the tower and its statue looming gloomily through a rising mist, when there is time for the suggestions of the place to be aroused, and for a monument to perform its work, and the suggestive part which properly belongs to it.

AMERICAN AND BRITISH IRON TRADE.

At the time when the British iron trade was at the deepest depth of depression, that in the United States had so recovered from its previous dulness that the makers have been unable to supply expeditiously all the needs of their customers, and orders have been sent in quantity across the Atlantic. From Glasgow, Barrow, Cardiff, and West Hartlepool, shipments of pig-iron have been sent to America; from Furness, Scotland, Wales, and Cleveland, cargoes of rails are now being sent; Sheffield is increasing her shipments of cutlery; and generally the exports of iron and steel to the United States are increasing. There is all the appearance of a genuine revival, to a certain extent; but the question arises whether this demand, abnormal in its recent height, will last? It is not a question that can be very readily answered with confidence. On the one hand the facts need to be borne in mind that American railways are often lighter-laid than British ones, and that with any rapid development of traffic there is a need for a large expenditure to fit them to bear the traffic; and from this circumstance a sudden and intense demand arises. Such has arisen at the present time, and it shows itself at a moment when the producing power of the United States was, so far as pig-iron is concerned, very low, and it was thus impossible to gratify American needs immediately from home furnaces and forges. But in addition to this sudden and intense demand for certain kinds of iron and steel, there was a more varied inquiry for other classes of goods. Good harvests have been known for two or three years, economy has prevailed, specie payments have been resumed, and the immense exertions to lessen debt have borne much fruit. But these kept down the consumption of goods to a minimum, and kept down stocks also; so that now that a wave of prosperity is passing over America, there are wants and needs to be gratified which enlarge materially the demand for iron and steel, and which have given great briskness to the producing and manufacturing works, forcing up prices to a very considerable extent.

Whilst prices are high in the United States they have been so low here that, with cheap freights, it has become possible to ship iron and sell it in the transatlantic markets as low as the home produce. These facts, then, have forced United States orders into the British market, and brought about the improvement witnessed in the last month or two. These being the causes of that demand, it is more difficult to decide as to its probable duration. It is certain, however, that there will be very large additions to the productive power of the United States, and as there are these additions the necessity for drawing upon British producing plant will be greatly reduced. For certain classes of goods,—for crude iron and Bessemer steel,—the demand may continue for a while, but there does not seem the probability of a demand arising for manufactured iron to the extent that there was seven years ago. The demand may be most safely looked upon as an opportune relief, rather than as a large permanent addition to the number of our customers. It cannot be expected that whilst the duties remain at the height they now are on British goods entering the United States, that we shall have a continued and large exportation of manufactured goods thereto,—of goods, that is, which can be produced as well and as cheaply in the United States as here. But whilst we continue to draw such large quantities of grain from the United States, it is probable that we shall send very considerable quantities of certain classes of iron and steel in exchange, and there is in this expectation a relief to our glutted markets.

Beyond this we shall derive probably a larger indirect benefit from the lessened competition we shall have to meet from the United States in non-producing markets. It has not obtained adequate notice that before the United States began to order iron goods from us as she has done for a month or two, her exportations were restricted. She had begun to compete with us in certain markets, and there is now a demand for the goods that have been sent thereinto at home. Her stocks were lessened by the large export trade that seemed likely to be built up; but now that a more valuable home trade is developing itself, the export trade is necessarily restricted. Some instructive figures show the effect of improved trade on the ephemeral export trade of the United States during the last year. During the financial year of the United States which has just ended, there has been a very large decrease in the quantities of certain classes of goods sent out of the country when compared with the previous full-exporting year. The value of locomotives exported has fallen off one-half, and in steam-engines, rails, pig-iron, and other similar goods, there is a marked falling off, only slightly checked by the increase in the exports of lead, steel manufactures, and cutlery, and, so far as is estimatable, these goods showed the chief gain at the early part of the financial year. A portion of these exports were sent to Europe, and the United States had also partial success in introducing her goods into Australia and other countries and colonies. Hence the fact that her manufactures are taken up now by her more profitable home trade is a sign that in these countries and colonies we shall have from America less competition, and generally, as the wave of prosperity advances, there will be fuller work as competitor after competitor is withdrawn from the market in some degree. In this way, and in other indirect ones, we shall benefit from the increased prosperity of the United States. Our vessels will find fuller freights, a part of our surplus population will leave us, more of the manufactures which are here planted but have not yet taken root in the States will be needed there, and for some,—such as tin plates,—there are already enlarged requirements. In these methods, the trade revival in the United States will materially aid in increasing the trade at home, in improving the whole tone of trade, and in restoring confidence to a considerable extent. It was noticeable that, so far as our iron trade was concerned, the dulness commenced by the withdrawal, first, of American, and then of Russian orders, and whilst the United States is in some degree giving us partial orders, there is ground for hope, in a slighter degree, now that Russia has stopped the drain war made upon her resources, that she will become a better customer again in the future. We have yet to notice the signs of improved home trade, but it is gratifying to see any indications of improvement on that which benefits so largely the iron and steel industries,—the outside demand at a time when that outside demand is brought to its lowest ebb by the declension in the exports to Germany. These exports must also rise when stocks are depleted in Germany, and thus the prospects of the future, so far as the iron and allied industries are concerned, are brightening generally,—the American market having been the first to give ours an impetus.

FROM THE BANKS OF THE SEINE.

In the artistic world of Paris, that world in which the honourable epithet of "artist" is used in a broad sense little known in England, the death of Baron Taylor has been indeed sincerely regretted, for notwithstanding his age, his interest, till within the last few months, when illness had confined him to bed, had never for one instant flagged in the progress and protection of the arts and literature of his adopted country. To few men has it been accorded to live through so eventful a period as to Baron Taylor, for under his eyes, and almost under his direction, the whole modern revolution of art and letters has taken place. Since the day when he visited England in 1818, while still a young man, what a sixty years of active, modest, and laborious research had been passed,—what an immense mass of artistic information had been gathered in! A special interest is attached to his princely work, "Les Voyages Pittoresques et Romantiques dans l'Ancienne France" (Paris, 1820 1854, in folio), undertaken with the collaboration of M. de Cailleux and Charles Nodier, and with the artistic aid of Isabey, Péricault, Ingres, Viollet-le-Duc, among others, from the fact that it was the first publication in which lithography was made use of for the purpose of book-illustration. To this work, published during the time that Baron Taylor was urging the protection of the historic monuments of France, succeeded a series of "Voyages Pittoresques" in Spain, Portugal, and the coast of Africa, Tangiers, Syria, Egypt, Palestine, Switzerland, Italy, England, Scotland, Germany, and Greece, each country being considered from an historical, archæological, and artistic point of view. Baron Taylor, with his venerable contemporary, Victor Hugo, lived to enjoy the rare pleasure of witnessing the revival of the earliest *chef d'œuvre* of the Romantic School, "Hernani," which he himself as *commissaire royal* of the Théâtre Français, had fought so hard to have re
sented on that classic stage, the piece which
February 25th, 1830, was played for the f
time, when the students of the Quartier Latin
the students of the present day are less en
siastic, — besieged the "Français" at
o'clock in the day, and packed the house to
exclusion of the equally determined oppon
of the new literature. It is more than inte
ing to recall the recollection of these f
receding days of the French romantic revi
the work, not alone, it must be remembe
of the poets and the men of letters, but of t
firm friendship and co-operation with
painters and the architects.

It is a coincidence indeed interesting that
week should have carried off, on almost
same day, and at almost the same age,
figures so closely knit up with the revivs
Romantic art, as Baron Taylor and Edv
Blore, the latter the intimate friend of
Walter Scott, the prime mover in that rev
understanding of the doings of the Mi
Ages. Notwithstanding the disregard
which French architects look upon their En
brethren, devoting only the merest mentio
their journals to our eminent men, the dea
Mr. Edward Blore has not failed to be a sc
of regret to many artists in Paris, coming
has at the same moment as that of Baron Ta
All who are interested in what is some
carelessly termed Gothic architecture
reason to be grateful to the memory of
early workers in that rich field, men like E
like Pugin, and like old John Britton,
earliest, and after all the most industrio
whose publications will be found much exqu
work by Edward Blore, rendered by the
pathetic hand of Henry Le Keux.

The remains of Baron Taylor, by a brea
the usual custom, in accordance with
here in France the funeral follows death
at two days' interval, are to be interred at
la-Chaise on Monday, the 15th inst., and b
time these lines have appeared the cerem
which will be rendered as imposing as
taste will allow, will have taken place.
Sunday journals announce the order of
ceremony, both a military, the deceased h
been grand officer of the Legion of Honour
an artistic ceremony, Baron Taylor h
founded several benevolent societies.
music of the Garde Républicaine is to ac
pany the convoy, the religious ceremony
performed in the church of St. Eustache.
are to be funeral orations on the part of ea
the associations founded by the late Baron
of the dramatic artists, the musicians,
painters, sculptors, and architects, the inva
and workmen, and the school teachers.
Edouard Thierry is to speak for the Socie
the Men of Letters, and M. Alexandre D
it is expected, will bid his friend a last
M. Cremieux will speak in the name o
Supreme Council of the Freemasons of
Scottish rite, the Baron having been Lieut
Grand Commander of that order, and all
masons now in Paris are invited to be pres

The life of the capital of a great coun
forcedly made up of contrasts, and whil
portion of the public mourns the loss of a
factor, another welcomes the revival a
New Opera-house of an old favourite, A
"Muette de Portici," better known t
English public as "Masaniello," represente
the first time at the then Académie Royal
historic old house in the Rue Lepeletie
February 29th, 1828, and not played in F
since the last days of the Empire, nine
since. It is not our intention to enter
criticism of the libretto of Scribe or A
stirring music, nor the curious anecdote
sudden creation of the poor *dumb* Fene
Walter Scott in the twenties was in high e
in Paris,—owing to the impossibility of fin
singer capable of representing that dra
personage, and holding a place worthily bes
Elvire such as Mme. Cinti-Damoreau,—no
the further details connected with the hi
opera which has played no mean part in
than one real revolution, but it is withi
domain of artistic discussion to speak o
costumes and the scenery.

If our experts in London were occasi
shocked during the recent visit of the F
Comedy, by the want of absolute accura
the *mise en scène*, and in the historical cos
which in our good nature we attributed t
company being away from home and thei
surroundings, what would they say to the ri
of "Masaniello" at the Opera-house here,

presence of the Neapolitan atmosphere, local ur and sentiment, are utterly wanting,—so ch so that the French critics, who are not osed to quarrel with their own countrymen, plain of this want, and even go further in ting out the inaccuracy of costume. The me and scenery in this revival are cer- ly such as we in England in the present would be severe upon, the more so as old ra-goers had imagined that such accessories become a traditionary certainty. Even at Théâtre Français, in other pieces, it is not cult to detect errors of costume, especially hat interesting detail involved not so much he dress as in the surroundings. The chorus the "supers" can at least be made correct, lady actresses doubtless are exceedingly oult to manage in submitting to the direc- s of the severe costumier, a fact probably ng to their affectionate clinging, less to the litions of the past, than to the more fascinat- combinations of the dress of the present

, in Paris of all cities, theatrical managers not able, with the aid of well-paid costu- s, and a large Government grant, to prepare r pieces with due regard to absolute accu- in costume and scenery, an effort to attain ch is evident, the French public have ed a right to ask, what is the cause of re in a subject on which the world formerly rded Paris as the highest authority? May t be owing, as in many other cases, to an -estimation of their own ability, and a want watchfulness of what is being done in other tries?

THE POOR IN ENGLAND.

A SHORT notice of the Rev. Richard Hibbs's er having appeared in a contemporary in- s me to offer you a few facts gathered from e reliable sources. The rev. gentleman is known to the public as an eccentric clergy- n who preaches in the London parks on the r-law system of England, and denounces its tcomings in no measured terms. The course ocanny: it raises a few weak friends and a of virulently bitter enemies. A man may great glory as a philanthropist by associa- s to set up coffee or *ninny-broth* shops at et corners for workmen, but if he lend a l to lift the really poor out of their distress, afening clamour rises up on all sides. The er class of bystanders take umbrage as if iked personally; the police interfere, not to him, but to prevent scandal, by removing speaker of ill-tidings. The police autho- s protect the constables, the magistrates if practicable with Scotland-yard, and the s reporters sneer it all down. The poor, nd hunger, do not understand their own ts or care, and the rich think the question e a muddy one, and so refuse to stir. When Hibbs attained his majority, he was still aged in mercantile pursuits, but with a ng longing for the Church. From his grand- er paternal he had a small legacy, and he used read with a tutor. In a year and a half he d undertake a tutorship in the school of an rd M.A., and performed its duties efficiently, gh a Cambridge B.A. had broken down at task, falling short in his classical attainments. ty well this for a youth who had had but teen months of study. At this and another blishment he spent the next three years, and n entered at St. John's College, Cambridge. had no money, so he made it out of coaching rs for the "great and little go" that as yet had not passed himself. The "plucked" ht him, for success attended his teaching. obtained a scholarship, and continued to ilise for sheer funds to satisfy the college nses, and in 1841 came out in the poll sixth in the list. Having approached so near to baincy he was in high favour as a coach for ll men"; but his original bias to the minis- led him now to relinquish this highly lucra- opening for a curacy at Hatfield, Herts. wisdom of this step may be variously coned; but no generous mind will permit nagement of the spirit that dictated the rse. He was able to combine with the ncy tutorship in an eminent private school, re the sons of noblemen and gentry were pared for Eton; amongst them were the pre- t Earl Derby and the late Marquis of Hastings n Lord Rawdon). The son of Viscount Can- bury and many other noblemen have been er Mr. Hibbs's tuition, so that in the learned educational world he is no mushroom growth, but widely, highly, and respectfully known. Any obloquy he has met with is simply due to his stepping out of the track to help the poor. The course may be useless, hopeless, what you will, but no want of success can tarnish its liberal disinterestedness. It is not because we agree with the reverend gentleman that we pen this, but that we think his conduct honourable to him, and that the public would honour it if they understood it sufficiently. The difficulty is to make them do so without prosing over the particulars. From Hatfield he went to Corton, and took charge of the parish, but it was at Hatfield that he first noticed the sufferings of the poor, and the maladministration of the relief funds devoted to them. In his Lenten sermon on "Prussia and the Poor"; in letters to the *Times* and *John Bull*; in consular chaplaincies; in journeyings to Stockholm, to Christiania, and Copenhagen; in voyages to Italy, to Portugal and Spain, and in Mid-Germany, he has toiled to understand the treatment of the poor, and, unhappily, he comes back convinced that in all wide Europe there is no country in which they are so ill-cared for as in London and the great towns of rich England. Sismondi told us our distribution of wealth was defective in England. The Rev. Richard Hibbs does but confirm Sismondi. He points out in practice what the writer showed in theory. No wonder that he would not quietly submit the other day to be driven out of the Regent's Park by two violent park-keepers. He summoned them to the Marylebone Police-court and carried his point. The men did not attempt to establish their charge of "seditious language," and upon their humble apology, Mr. Hibbs, at the advice of the magistrate, was content to allow the summons to drop. He has now established his right to preach in the parks unmolested, in season and out of season, on the wholesome but unpalatable text that England, of all places in Europe, is for the poor the very worst to live in. In common fairness to a conscientious gentleman and scholar, if any anger is excited by this, it should henceforth be directed not against the preacher, but the state of things in our midst. No man in a rage sits down to the twelfth book of Euclid to master it, and the Poor-law problems of England require, to understand and solve them, more sober thought than goes to the mastery of the famous twelfth book.

C. A. WARD.

THE HOLLOWAY COLLEGE FOR WOMEN, EGHAM.

ON the 12th inst. the important ceremony of laying the first brick of the College for Women, to be erected, at a cost of 257,000*l.*, by the munificence of Mr. Thomas Holloway, at Manor Lee, Egham, Surrey, was performed by Mr. George Martin, brother-in-law of the founder. At half-past twelve o'clock the architect, the builder, and a few gentlemen, and a large concourse of workmen, assembled round a temporary erection, near which the brick was to be laid. On Mr. Martin arriving on the ground a silver trowel, with ivory handle, was handed to him by Mr. John Thompson, of Peterborough, the contractor, and the brick was then adjusted and laid, Mr. Martin giving it the customary three taps, and then declaring it to be well and properly laid. Three cheers each were then given for Mr. Holloway, the founder, with the hope that he would live to see the top-stone laid, Mr. Martin, Mr. Crossland, the architect, and Mr. Thompson, the builder. Before leaving the platform, Mr. Martin said:—"In laying the first brick of the Holloway College to-day, I congratulate you, Mr. Crossland, as the architect of the magnificent pile about to be erected, that in the simple act I have just performed commences the realisation of those plans and designs on which you have bestowed so much skilful labour and attention, and which have been so thoughtfully directed throughout by Mr. Holloway, and I congratulate you still further in having secured for the carrying out of the same so able a coadjutor as Mr. Thompson, and I think that apart from the extent and importance of the work itself, he will feel a pride in associating his name with an undertaking having such objects as the present. He comes to the work, I am sure, with a good heart, and I believe with a good and able staff, for report says of them all that they are men to be proud of, and report, we know, seldom or never flatters. Therefore, with so fair a beginning, we are justified in anticipating that with God's blessing, and the harmonious working of all concerned, this women's college will be finished to the satisfaction of the generous founder and to the honour and renown of its architect and builder. There are many important duties which devolve upon the clerk of works and foremen necessary to secure this, and I feel sure they will be faithfully performed. I am, to-day, your most insignificant workman, a bricklayer, who has required a great deal of coaching; but if every bricklayer could share my desires in the matter, we should make a glorious work of it. I wish you all health and strength to attain the accomplishment of this grand work, and I only regret that Mr. Holloway is not here to offer you his good wishes. I do so in his name, and I pray God to give His blessing on the work and on the workmen, from the highest to the lowest, and to the founder the happiness of the full realisation of his noble scheme."

The building is designed in the French style of Francis I., the material to be used being red brick with Portland stone dressings.

Mr. Crossland, we may add, was also architect for the sanatorium at Virginia-water, likewise erected at the cost of Mr. Holloway.

The site of the new college has cost 25,000*l.* The contractor's term for finishing the building is four years.

Mr. G. Rogers is clerk of the works.

NEW PUBLIC BATHS AT LEICESTER.

ABOUT two months earlier in the year the first part of the new baths erected by the Corporation of Leicester, in Bath-lane, were opened, and last week the remainder was handed over for public use. The accommodation provided is a first-class circular swimming-bath, 40 ft. 6 in. in diameter, with dressing-boxes, &c., attached; a second-class swimming-bath, 130 ft. long and 24 ft. wide, horse-shoe in shape, and running rather more than half-round the first-class swimming-bath, with dressing-benches, &c., attached, and space reserved for private dressing-boxes. (This bath, opened about two months since, has already been used by from 30,000 to 40,000 bathers.) Private baths are also provided for both males and females, together with waiting-rooms and separate entrances for the different classes. Ticket-offices, superintendent's residence, and boiler-house complete the present accommodation, but space has been reserved at convenient points for the extension of any part, and the Corporation are now proposing to utilise part of the reserved space by erecting a small washhouse for towels, &c., together with an extension of the filtering arrangements. Nine private baths are set apart for ladies, and the whole establishment is reserved for their use upon the Friday in each week.

The principal front is to Bath-lane, but the river front is equally conspicuous, and these two frontages, not being parallel, required considerable care, to prevent the necessarily large roofs from breaking awkwardly against an irregular line. This has been accomplished by making the centre swimming-bath circular, adding a gallery, on which there is room for twenty-one private baths to this central bath, and so raising it to a considerable height, and then grouping the other buildings round it. This has a good effect both on the exterior and interior, particularly in the roofs, which are of wrought iron, and it also meets other difficulties connected with the foundations and the surface levels. The general style of the building is Romanesque, freely treated, terra cotta being largely used for enrichments. The cost of the buildings has been something under 10,000*l.*

The work has been carried out for the Corporation from the designs and under the superintendence of Mr. J. B. Everard, of Leicester, as engineer and architect, by Messrs. Bass & Langton as the principal contractors, with Messrs. Lindley (mason), Ellis & Wormell (slaters), Smith (plasterer), Townsend (painter), all of Leicester; and Mr. Cordon, of Nottingham (excavator), as sub-contractors. Mr. Whitmore, of Leicester, was the contractor for the plumbing, &c.; and Mr. F. Cox the carver.

Sea-wall at Newlyn-green, Cornwall.—Mr. Arnold Taylor has just held an inquiry at Madron with reference to a proposal of the Madron Local Board to borrow 300*l.* from the Government for the reparation and rebuilding of a portion of the sea-wall at Newlyn-green, under the direction of Mr. J. W. Trounson, the surveyor to the Board.

THE DEVELOPMENT OF THE MANUFACTURE OF STONEWARE FOR SANITARY AND ART PURPOSES.

At the recent meeting of the Association of Municipal and Sanitary Engineers and Surveyors, the members assembled at the pipe factory, in the High-street, Lambeth, after inspecting which they proceeded to the new buildings upon the Albert Embankment, recently illustrated in the *Builder*, where Mr. Henry Doulton delivered an address on "The Development of the Manufacture of Stoneware for Sanitary and Art Purposes."* Lambeth had, he said, been long noted for its potteries, and he believed it was quite an ancient seat of pottery manufacture. Speaking of Lambeth he also included Vauxhall, which was in the parish of Lambeth. About the middle of the seventeenth century workmen from Holland settled in Lambeth, and gave an impetus to the manufacture of delf-ware, but salt-glazed stoneware had for many years been the chief product. Stoneware was a dense, hard, sonorous substance. It was not absolutely necessary that stoneware should be salt-glazed if it had all the qualities of denseness and sonorousness, and was made of clay which would stand a high degree of heat and would also resist acids. Lambeth stoneware was made of clay found in Devonshire and Dorsetshire. Persons were surprised that in Lambeth it was possible to produce articles at the prices at which they were charged; but when he told them that clay was brought from Devon and Dorset by sea at the rate of about 5s. 6d. per ton, they would understand that they were able to make use of the finest clays procurable. He would explain to them the difference between salt-glazed stoneware and all other kinds of pottery except the very commonest ware, and some kinds of bricks. Most kinds of ware were fired at least twice,—first in the "biscuit" state, and secondly in a saggar or box, and were thus protected from dust and from the destructive gases evolved from the coal. In the biscuit state the ware could be handled with ease, and it could be painted and decorated in any desired style. It was then dipped in glaze of about the consistency of cream, after which it was again put into the kiln (still in saggar), when, the heat melting the glaze, the pattern shone through and became visible as shown in the specimen exhibited. There could be three, four, or more firings; as, for example, when the decorations were in gold, or where there were delicate tints and colours to bring out; often a separate firing being required for each. Salt-glazed stoneware had but one firing, and that not in a saggar, but in an open kiln, and exposed to the direct action of the flame. In Lambeth, until within the last forty years, the use of salt-glazed stoneware was chiefly confined to common articles, such as ginger-beer and ink-bottles; but, as the material was very pure and strong, it was found to be admirably adapted for the production of vessels used in the manufacture of chemicals, and capable of withstanding the action of acids. "Doulton ware" was introduced about ten years ago, and the beautiful specimens exhibited were all burned in an open kiln, with the flames playing around them, and sometimes a charming harmony of colour was thus produced. He need not inform them that to procure these colours had been a work of considerable difficulty and the result of numerous experiments. For instance, at the first attempt to obtain blue the colour had turned out black.

Mr. Doulton then described the process of salt-glazing. At the highest temperature of the kiln, the salt (chloride of sodium) thrown in was converted into vapour, and decomposed by the silica of the ware, forming silicate of sodium, which produces the surface-glaze. This process takes place at the close of the firing, and usually lasts from ten to fifteen minutes. Salt-glazed stoneware was produced extensively in Staffordshire many years ago,—about 1730 or 1750 it was very perfect. His friend, Professor Church, had amongst his collection of pottery some admirable specimens of these early productions; but, unfortunately, some 1,600 of such specimens were destroyed in the Alexandra Palace fire. There were few of such pieces now to be obtained. The manufacture of salt-glazed ware in Staffordshire had died out. The difficulty of getting good shapes in this hard ware, the risk of firing in the open kiln, and the British demand for articles more uniform in appearance, led to the gradual discontinuance of the manufacture. Now there was not a single salt-glaze kiln in Staffordshire. Lambeth, Bristol, and Fulham, were the centres of this industry up to a recent period, when it was discontinued at Bristol. At the last-named place, about forty years ago, what is called the "enamelled" stoneware was first made, and in consequence it is often termed "Bristol ware." They would observe in the specimens of this ware a uniform appearance. This, like the salt-glazed ware, was treated in one firing. But the article is dipped into a glaze formed of felspar and flint, and the top coloured by manganese. In this ware druggists' pots, spirit bottles, and numbers of other articles, were made. Lambeth was, however, chiefly and essentially a salt-glazed pottery district.

He would now call attention to the marvellous development in salt-glazed stoneware pottery during the last thirty-five years, and the causes of such progress. For about sixty years the manufacture of pottery in Lambeth had gone on with considerable increase. In 1820 there were only sixteen small kilns, producing ware to the value of about 300*l.* weekly. In 1846 he met Messrs. John Roe and John Phillips, and discussed the practicability of supplying stoneware pipes for house and street drainage at a moderate cost. He was deeply indebted to Mr. Roe and Mr. Phillips for their advice, and he was encouraged to proceed with such improvements that they were able to advocate the use of these pipes for sanitary purposes. He himself had made pipes on the wheel, and he had paid workmen as much for making them as the pipe itself now realised at some works. Since then sanitary science and the use of stoneware had advanced *pari passu*. Though the demand has arisen for more artistic and attractive-looking pottery for indoor use, salt-glazed stoneware for strength and durability combined with cheapness is now and is likely to remain unrivalled for sanitary purposes. His firm had been first in the manufacture of stoneware pipes, and had introduced improvements of all kinds in sanitary appliances. His father, Mr. John Doulton, commenced in Lambeth as a potter sixty-four years ago, and he could recollect the time when a barge of clay and a barge of coals were considered to be a very good stock (a "freight"* of clay being distributed amongst several potters), and when one blind horse sufficed to turn the mill to prepare the requisite quantity of clay, and the excitement that prevailed when the first steam-engine of eight-horse power was erected. The works of his firm at Lambeth, without including the new buildings upon the Albert Embankment, now covered seven acres. At Rowley Regis they have two large factories, and two large ones at St. Helen's; also one at Smethwick. One of these is no doubt the largest pipe works in the world. In 1878 the number of persons employed in their various works was 1,600, and the quantity of clay and raw material prepared during the year was 125,000 tons. Steam power employed (not including a large 100-horse power engine lately supplied to the new building) was equal to about 800-horse power. In the same period 48,500 tons of coal were consumed. The average quantity of drain-pipes they produced was 25 miles per week, or 1,300 miles per year, in sizes from 2 in. to 30 in. diameter. He would now specially notice the history of the Doulton ware. At the 1867 Exhibition in Paris, some rather good shapes of vases, &c., were shown, which readily sold, and which he would now be willing to buy back at several times the price they realised. In 1871 was held the Ceramic Exhibition at South Kensington, where the specimens were at first put under shelves almost out of sight. But their merits being observed, some were transferred to cases and properly exhibited. He was encouraged to proceed, and since then this ware has found a place in every museum in Europe, in many in America, and even in Japan. He would presently show them the process of "throwing," or, as it was called in Lambeth, "turning." It was an art which he himself had practised, and it seemed to him one of the most interesting of all arts. Moulding was death to art. He would be ashamed to see a piece of Doulton ware with a seam upon t, indicative of its having been "moulded." A few years ago "throwing" was gradually going out of use. In Staffordshire it was almost entirely discontinued for beautiful shapes. was so easy when a shape was produced to po a little plaster of Paris upon it, and reprod it in any quantity by moulding. But that w not art. Those fine Greek vases so familiar in hibitions were made upon the potter's whee precisely the same way as the vases, &c., wh were now before them. The artists enga had to execute the original design for e piece of Doulton ware. All was "handwor and, as a rule, designed by the same person actually did the work. Take one of the pie before them. It had been formed upon wheel. The pattern had been scratched incised upon it. Colours that would stand trying test to which he had alluded were upon it, all the while in its clay state. Then was placed in the kiln, and the fire play about it, the colours were brought out by glazing. They had now the blue, and ind the whole range of colours as exhibited. was speaking to sanitary engineers, and thought that this ware ought to be used more extensively than it was in sanitary w They were introducing it for cups and han in water-closets, knobs, bosses, &c., both indoor and outdoor use, as well as for pla and tiles. It was not only suitable for dom and indoor uses, but would be found perfe durable under the most trying circumstan Even strong acid trickling down upon the pi would not harm them or destroy the colo He had no doubt that in future this ware w be largely used for architectural and sani purposes. Then there was the "Lam faïence" for tiles, panels, plaques, &c. T was a bath-room adjoining, fitted with pa tiles, &c., which they would presently have opportunity of inspecting. He did not c the credit for the invention of this ware, as the case with Doulton ware. But very n had been done in introducing good shapes, adapting it (the faïence ware) to practical poses. The speaker here pointed out that c mental pottery was admirably adapted decorating apartments for sanitary uses. the new "Doulton Impasto ware" he had time to speak at length. The first specimen this ware were drawn from the kiln upon morning of the recent visit of the Princes Wales and the Crown Princess of German the pottery. The ware was made upon wheel, and the patterns laid upon it in relief. It was then fired, and when in the cuit state was coloured, and again fired. It thus as strong as ordinary pottery, but course not so durable as Doulton ware.

Afterwards, in reply to a question a whether all the artists employed were Eng Mr. Doulton said that not only were they so that they all belonged to Lambeth. There pened to be in Lambeth one of the best sch of art in England, and he had received as ance for many years from Mr. Sparkes, the master, who had placed the resources of school at his disposal. Some of the artists had been students of the school had sh great talent. There was George Tinw whom he might call a genius, and who lately executed a large panel for the reredo York Cathedral, and was now designing pa in the same class of work to be placed round the Guards' Chapel in Wellington racks, St. James's Park. Miss Hannah Ba likewise had remarkable talent, and there very many other artists he would wish to tion did time permit.

* The proceedings at the annual meeting of the Association have been printed in pamphlet form, edited by Mr. Graham Smith, C.E., secretary of the Association, and are published by E. & F. N. Spon, Charing-cross, 1879.

* Small shipload, 150 to 300 tons.

Removal of Gravel at Chelsea Hosp—For some months past a considerable po of the public inclosure on the north side of Queen's-road, Chelsea, forming part of grounds of Chelsea Hospital, has been tu into a gravel-pit, and made an eyesore to whole neighbourhood, solely for the sake of gravel and sand it contains, the latter h carted away, and replaced by what is apparently nothing better than rubbish and refuse the London dust-heaps. This having been saturated by constant rains, has converte large portion of this recreation-ground in dismal swamp, covered with shapeless mo of earth, at present bare of turf. We sh be glad to learn by whose orders and for w benefit this objectionable course is being sued. We have been long conversant with injurious practice on the part of speculat builders trying to make the utmost of thei of land, but we never heard before ok adoption by a Government Department.

EROUS STRUCTURES UNDER THE BUILDING ACT.

REMARKS ON THE LAW AND PRACTICE.

IDERABLE difference of opinion seems to among architects on the above subject, e law as it at present stands is often misunderstood. The dangerous struc- auses of the Building Act are the only laws for the prompt protection from accidents of the lives not only of gers in the street, but also of the inmates es and the workmen engaged in erecting and it is therefore important, not only eir meaning should be well understood, t they should be fairly and equitably put ration against all owners of insecure y. The other portions of the Building ply provide for the supervision of build- *ter works are done*, and the punishment of ics by the magistrate, and the only pro- enactments in it as regards *securing life anger* are, therefore, clauses 69 to 73, in of the Act. The number of dangerous es, concerning which proceedings are n the course of the year in the metropolis, s to nearly 2,500, and when it is remem- that every recurring year several lives ually lost from the fall of either the or portions of buildings, to say nothing of who are permanently injured, it will be at the prompt working of this part of is a positive necessity.

e is no doubt that much of this danger rom defective and worn-out party-walls. parts of London there is scarcely a good wall in the whole street, and when old gs are taken down and new ones about ected, the opposition of adjoining owners the old walls on the sides of their houses d becomes a continual *source of danger*.

Williamy, the Superintending Architect Metropolitan Board of Works, in giving e before the coroner's inquest on the rket accident on the 8th of March, 1878, *e knew from experience, in seeing that was carried out in connexion with the ous Structures Act, that people would use any amount of persuasion and cajolery in of prevailing upon himself and the dis- veyors to allow old and dangerous party- and other unsafe structures to stand; but ys turned a deaf ear to such entreaties e had any reason to suppose that a struc- s unsafe.*" He was not, however, asked would have done had the Board sum- the owner of a dangerous wall, and the ate dismissed it because, though ad- to be insecure and defective, it was ed from falling by shores. It is evident ld not summon the builder under the auses of the Act for using the old wall new works were in great part done, and ere would always be the chance of its ut about and very probably falling, while erection was going on.

dangerous structure clauses of Part II. of t, however, are so *clear and consistent*, they are only properly *administered*, ed be no difficulty in the matter; but consequence of misunderstandings in the *of the law* that *dangers are multiplied*.

ses 69 to 71 say, that if it is made known Board of Works that a structure is ous, they shall require a survey to be by a District Surveyor or other competent or, and that upon completion of his sur- shall report to the Board.

se 72 says,—If the certificate is to the hat it is in a dangerous state, the Board use the same "to be shored up or other- ecured," and, if necessary, hoarded in ; at *after doing this*, the Board shall give in writing to the owner or occupier forth- *take down, secure, or repair* the same as *e requires*.

rder fully to understand what follows it is ary here to carefully consider the exact nd common-sense meaning of the words *ous state* in the Act.

ger is defined in Johnson's Dictionary to , hazard, peril, insecurity, or jeopardy, y structure is in a dangerous state when of the above words may be fairly used to s its condition.

aps the best definition, which clearly s the meaning of the words, is the ng:—

ry structure is in a dangerous condition it is not permanently secure against all ry influences which may be brought to bear upon it and any extraordinary influences which may be fairly foreseen."

A few examples will illustrate this. A balcony originally constructed of only sufficient strength to bear the weight of some flower-pots, is not safe if a casement window is opened on to it so as to adapt it for persons to walk on, and the District Surveyor (if called on to report) must certify that it is dangerous, even though it *shows no signs of falling*; but if it can be *fairly foreseen* that there will be at any time a *rush of people* on the balcony to view a public procession, he should then, in giving his evidence, ask the magistrate to order it to be made strong enough to *meet that contingency*.

Again, an old warehouse wall may be in no danger of immediately falling because the building is empty, but if there is a probability of its being occupied, the District Surveyor should report it dangerous (if called upon) unless it is strong enough to bear an ordinary and fair warehouse load on each floor.

If a column placed at the angle of a building has a load on it of 40 tons, and the District Surveyor is asked to report on its safety, and finds, according to ordinary calculation, it ought only to be loaded to 25 tons, he is fairly justified in reporting *it dangerous*, though it *apparently stands firm*, and he should, if there is a probability of any extra strain being brought to bear on it, say, for instance, from the vibration of a parish steam-roller, consider this in his certificate.

The notion so common amongst many surveyors, as well as the general public, that a structure must be *actually falling* before a District Surveyor can certify it to be dangerous, is one which is fraught with peril to the public safety, and when a building shows actual signs of falling, it too often results in a report *on the damage done*, or inquiry as to *cause of death*.

The question as to the factor of safety to be adopted in these cases is one which must be regulated by the common-sense every-day rules used by practical architects and builders; but it should be remembered, as regards old and decayed fabrics, that the rule of safety is generally an *unknown quantity*, only to be settled by the practical experience of experts accustomed to these special class of cases. We once heard an eminent counsel severely cross-examine an architect because he could not state the weight old and decayed brickwork ought to fairly carry per foot superficial. It is evident the question was an absurd one, and he might as well have asked an actuary to give him the number of years' expectancy of life of a person in a consumption without having medical opinion of the particular case.

We contend that the foregoing definition and illustrations are strictly within the scope and meaning of the words in the Act.

Clause 72 distinctly states, that upon receipt of the surveyor's certificate "that a structure is dangerous," the Board must *first shore up* the fabric, and then give notice to the owner to *execute works, &c.*; and as the Board are compelled to prosecute *after* shoring, it is clear the Act always requires something to be done beyond the first operation of shoring.

Clause 73 says, that if the owner or occupier have "failed to comply with the notice served on them as speedily as the nature of the case permits," the Board may summon them before a Justice, and it shall be lawful for him to order the owner, or in his default the occupier, to take down, repair, or otherwise secure such structure to the satisfaction of the surveyor who made such survey.

If default is committed, the owner is then to be summoned, and it is clear again, from the words of the Act, that the Justice has no power whatever to consider the *first temporary act* of shoring as a *compliance with the law*; but the owner is to be forced to carry out the notice served on him "to take down, secure, or repair, as the case requires."

There is no doubt that some surveyors have been led away by the words "otherwise secure"; but it distinctly says, to the satisfaction of the surveyor, which must mean, not to his satisfaction as a mere practitioner in his calling, but to his satisfaction acting under all the clauses of the whole of the Building Act, which he is specially appointed to see carried out.

Clauses 9 and 39 of the Building Act distinctly specify that *all works* of this character in securing external and party walls, &c., shall be done according to the *rules of the Act*; while sections 14, 15, and 56, and the first schedule of the Act, distinctly require that a building shall be supported by brick or stone walls, and that no building shall be merely *upheld* by such means as *timber shores*. It is evident, indeed, that the public security requires such should be the case. Were buildings to be allowed to be upheld by shores, in some of the older parts of London the pathways would become an avenue of wooden props, and in case of fire not only would the buildings fall, but the conflagration would spread from house to house, and involve whole streets in ruin.

It is, however, somewhat singular that such a confusion of ideas, as the impression that shores can *secure a structure* should have ever originated in the legal mind. The words everywhere in the Act are to take down, repair, or *secure the structure*,—by mere shoring, *nothing whatever* is done to the *structure itself*. The shores are not made *part of* nor *incorporated* with the *structure*; they are merely an external something *stuck against it to prevent it becoming worse or falling down*. A broken leg-bone, for instance, cannot be said in surgery to be *repaired* or *secured*, because *splints* are placed *round it*; the bone itself is unaffected by the splints, with the exception that the parts are kept properly together while nature carries on and perfects her wonderful healing process; but suppose the bone a diseased one, and the parts refuse to unite, any number of splints will never *repair or otherwise secure it*, at any rate to the satisfaction of the owner, and the leg must be cut off: so with the decayed, rotten, or diseased house, the defective parts may, pending adjudication, *rest on the shores*, but the living workman, like the living principle in man, must take the structure in hand; and if he can secure it in accordance with the laws *for its existence*, namely, the rules of the Building Act, well and good, but if not, *it must come down*, and a magistrate is as legally wrong in considering a defective or cracked house safe *because it is shored*, as a surgeon would be in reporting a broken leg-bone safe because it *was in splints*.

In conclusion, we would observe that District Surveyors are constantly met with such remarks as the following:—That the structure is not actually falling, that it is shored up, that there is no imminent danger, that it is temporarily secure, or may be said to be fairly safe, &c., whilst the very parties who urge these plausible pleas, if asked boldly to give a guarantee or to take the responsibility of the safety of the building in question, at once shrink back and say they have come as paid witnesses and they *must do the best they can for their clients*, and will not face the responsibility of certifying as to the safety of the building. Practically, however, the District Surveyor has to do this, and if he gives a certificate that a structure is not dangerous it amounts to this at least, that on inspection he can detect neither risk, hazard, nor peril to any one from its condition.

As regards the shameful and dastardly plea so often attempted to be urged by barristers in court, that these laws are made for the protection of the passenger in the street, but not for the workmen in the building, the author believes that though some barristers may try and urge it for the purpose of worrying the District Surveyor, yet there does not exist a magistrate who would be influenced by it. The laws are made for all, and every one as well as the street passenger has a right to ask the magistrate to enforce them for his protection. The workman honestly earning his daily bread by underpinning a ruinous party-wall has as much right to be protected by the laws made for the public safety as the merchant in the building on the other side in his counting-house, and the writer is determined to let those who act in these cases, when they come in contact with himself, know and realise that they will *do the best for their clients* by clearly understanding, and fully and frankly carrying out the enactments made for the mutual benefit of owners of party structures, in which they each hold an *undivided interest*, be it either for *profit or loss*. It is not by raising *legal questions* over *dangerous structures* that the joint owners can best settle their differences, and the wisest way to avoid litigation and loss is to frankly recognise facts and settle their disputes by arbitration as the law requires, and at the same time promptly comply with the legal regulations made for the public safety.

ROBERT WALKER, F.R.I.B.A.,
District Surveyor for St. Martin's-in-the-Fields.

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ROYAL ARCHITECTURAL MUSEUM.

PRESENTATION OF PRIZES.

The evening classes of the School of Art in connexion with the Royal Architectural Museum were re-opened for Session 1879-80 on Monday evening last. A meeting of the students and their friends was held at seven o'clock, when the Rev. Canon Duckworth presided, and subsequently presented the prizes and certificates gained by the students during the past session.

The Chairman, in opening the proceedings, said that the Architectural Museum, situate as it was in a densely-populated neighbourhood, and on the edge of what was once Thorney Island,—under the very shadow of that glorious work of art, Westminster Abbey,—was doing a great deal of good work. This was the fourth year that the art-classes in connexion with the Science and Art Department had been carried on. They included a modelling-class, a life-class, and a ladies' class. The members attending during the past year were rather fewer than in the previous year, the numbers being 131 as against 135; but, on the other hand, the average attendance had been considerably higher, and the school had, for the first time, gained a gold medal, which had been awarded to Mr. Andrew Garbutt, a gentleman who had won many other distinctions, including a 50*l.* prize given by the Goldsmiths' Company.

The following is the list of students who obtained prizes:—

1. Robert Anning Bell, certificate for model-drawing and freehand, and second-grade prize for model-drawing.
2. Robert Donaldson Hawes, certificate and second-grade prize for perspective.
3. John Alexander Smith, certificate and second-grade prize for model-drawing.
4. Henry Budd, certificate for free-hand and perspective.
5. William R. Jones, certificate for free-hand.
6. Rolant S. Rawberts, certificate for free-hand.
7. Arthur W. Phillips, certificate for free-hand.
8. Edward Wilson, certificate for model-drawing.
9. Arthur Harris, third-grade prize for model from the antique.
10. James Smith, third-grade prize for model from the antique.
11. George Pridmore, third-grade prize for design.
12. William Kitson, third-grade prize for model from the antique.
13. Walter Allan, third-grade prize for modelled design.
14. Andrew Garbutt, third-grade prize for a figure modelled from life. Mr. Garbutt has also gained two Queen's Prizes for design, and a Gold Medal for a model of a twisted column, original design, for which he also obtained the first prize of the Plasterers' Company, value seven guineas. Alluding to this work, the examiners in their report stated that "it is decidedly original in treatment, and carried out in good taste." Unfortunately, the Queen's Prizes and Gold Medal had not arrived at the Museum up to the time the meeting was held, and therefore they could not be actually presented, but the Chairman warmly commended the assiduity of Mr. Garbutt, and expressed a hope that his career as a student would be but the prelude to further distinction.

The Chairman next announced that during the session now entered upon, in addition to the prizes offered by the Department of Science and Art, extra prizes would be given by the Council of the Museum. The president (Mr. Beresford Hope) had promised a guinea for a book prize; Mr. Brindley had also promised a guinea book; and a student, who wished to be nameless, had given to the curator (Mr. Randall Druce) five pounds to be expended in prizes. The Council would thus be enabled to offer for competition by the students during the current session, (1) a book prize, value 2*l.* 2s., for best modelled design; (2) a book, value 2*l.* 2s., for best model from the antique; (3) a book, value 2*l.* 2s., for best drawing from the antique; (4) a book, value 1*l.* 1s., for the best attendance; and (5) a book, value 1*l.* 1s., for the best results in second-grade examinations. In addition to these prizes, Canon Duckworth said he should be very pleased to offer a guinea prize, which will probably be given for a measured or other detailed drawing of some feature of architectural interest in Westminster Abbey, but further particulars will be announced.

Mr. Maurice B. Adams, one of the honorary secretaries, in moving a vote of thanks to Canon Duckworth, exhorted the students not to rest satisfied with their triumphs as prize-winners, but to continue to be diligent and earnest seekers after excellence in their respective walks of art and industry.

Canon Duckworth, in responding, endorsed this appeal, and the meeting terminated.

EYE, EAR, AND THROAT HOSPITAL, SHREWSBURY.

The foundation-stone of the new Shropshire Eye and Ear Hospital at Shrewsbury was laid on the 9th inst. by the Earl of Powis. The institution was established sixty-one years ago, and has done much useful work. Its operations during recent years have been rapidly extending, and it has become necessary to give it what Earl Powis called "a new frame and a new material habitation."

The new building, which is being erected from the designs and under the superintendence of Mr. C. O. Ellison, architect, Liverpool, will cost, with site, nearly 10,000*l.* The site overlooks the Severn, and the building will be faced externally with pressed red brick and terra-cotta manufactured and supplied by Mr. J. C. Edwards, of Ruabon. Messrs. Treasure & Sons, of Shrewsbury are the contractors, and the amount of the contract is 6,294*l.* The ground floor is principally occupied by the out-patients' department. The remainder of the ground floor is occupied by day and dining rooms for male and female in-patients, matron's rooms, secretary's rooms, and serving-room, with large hall, staircase, and main entrance forming the central feature of the building. The first floor is occupied by wards having windows on three sides; four beds in each of two wards for males in one wing, and the same for females in the other wing, each having nurses' room, bath, lavatories, &c. The second or top floor is occupied by two wards of two beds each for special cases; an operating-room, with nurses' room, surgeon's closet, &c., in proximity thereto, although shut off to prevent sound passing. Kitchen and servants' departments occupy the remainder of this floor, excepting over one of the large wards, which has a flat roof and balustrade round for convalescents' airing-court. A covered airing-court is provided on the garden level, one-half of the building being carried on arches and vaulted floors, the nature of the site giving ample height for the purpose. All the water-closets are contained in an entirely detached block of building, connected with the corridors by light covered bridges, so constructed as to prevent the entrance of foul air into the wards from the closets.

ART AND SCIENCE AT SOUTH KENSINGTON.

In the sixth report of the Commissioners for the Exhibition of 1851, which has just been published, they state that the work which had chiefly engaged their attention since the date of their last report has been the carrying out of a series of four annual International Exhibitions in the years 1871, 1872, 1873, and 1874, the loss on which,—13,912*l.*,—was something less than the loss of the interest on capital during their continuance. Dealing next with the relations of the Commissioners with the Royal Horticultural Society, the report points out that they deemed it to be their duty to decline to assent to any modification of the agreement of the 5th of April, 1876, by which it was provided that if the Society should fail to raise its income to the required sum of 10,000*l.* a year, they should have an immediate right of re-entry into the possession of the Royal Horticultural Gardens. Experience showed that the Society could not raise its income even to the amount of 7,000*l.* a year, and its lease of the gardens accordingly terminated at the end of last year. An account is next given of the completion of the Albert Hall and of the provisions which had been made for its permanent maintenance. Referring to the proposals of the Commissioners for the future, the report goes on to say that the Commissioners intend, with the concurrence of the Government, to erect a building to be used for the purpose of scientific and technical instruction, to contain laboratories for study and research, a collection of scientific instruments, and a library of works on science, and to transfer it to the Government on condition that ... be used for those purposes; secondly, to ... the Government in possession, on very fav... terms, of their permanent galleries; to ... the Government free of rent the greater ... of the present Horticultural Gardens, as ... of recreation for the public; and to esta... number of scholarships with the object of ... the development of scientific culture an... nical training in the manufacturing distr... the country. To the foresight and wise c... of his Royal Highness the late Prince ... is attributed by the Commissioners the in... ment in the artistic cultivation of the ... generation as compared with those whi... ceded the year 1851. The provision no... by the Government, they add, for instruc... art might fairly be considered to be o... surable with the wants of the country... science there was, however, no adequa... vision, and they believed it to be their ... promote its study and diffusion so far a... means would permit in a manner calcul... benefit all parts of the country. It w... that object that they had determined t... the science scholarships, and had made t... posal to the Government to establish o... estate institutions calculated to promot... studies in science which were so essentia... progress of industry. Among the growi... petition of the world England could ex... maintain her high position among manufa... nations only by a thorough training of he... in science and art.

INTENDED ROMAN CATHOLIC CH... EDINBURGH-ROAD, PORTSMOU...

The accompanying engravings illustr... ternally and internally the selected desi... limited competition for a Roman Catholic ... presbytery, and schools about to be ere... Portsmouth, for Dr. Danell, the Roman C... Bishop of Southwark.

The buildings have been arranged w... view of placing the church in the most pro... position, with the tower and spire form... starting-point of the two ranges of front... Edinburgh and Alfred roads. The chur... have three public entrances,—two in Edi... road and one in Alfred-road; and will co... nave, north and south aisles, transept, c... two side chapels, baptistery, Calvary, ... loft, tower and spire, and sacristies. ... arranged to afford good accommodati... 1,100 persons.

The materials proposed to be used ar... ham red bricks, with Bath or Tisbury ... dressings, the roof being covered with dar...

The roof of the nave will be vaulted in ... and by adopting partly the principle ... hammer-beam roof, the effect of greater ... will be obtained.

The following are the principal i... dimensions:—Length of nave, 144 ft.; c... 41 ft.,—total length, 185 ft. The width ... nave in the clear of the clearstory walls is ... aisles, 13 ft. 6 in. each,—making, with th... piers, a total width of 58 ft. 6 in. The tr... is 25 ft. wide and 72 ft. long. The width ... chancel is 24 ft. 6 in. The height from th... to the ridge of the nave roof is 68 ft.

The height of the spire, exclusive of th... is 190 ft.

The presbytery is placed so as to conven... serve the chancel end of the church, to... access is obtained by a cloister leading ... sacristies. Accommodation is provided fo... priests, and by the future addition of a... story further accommodation for three ... priests is obtainable.

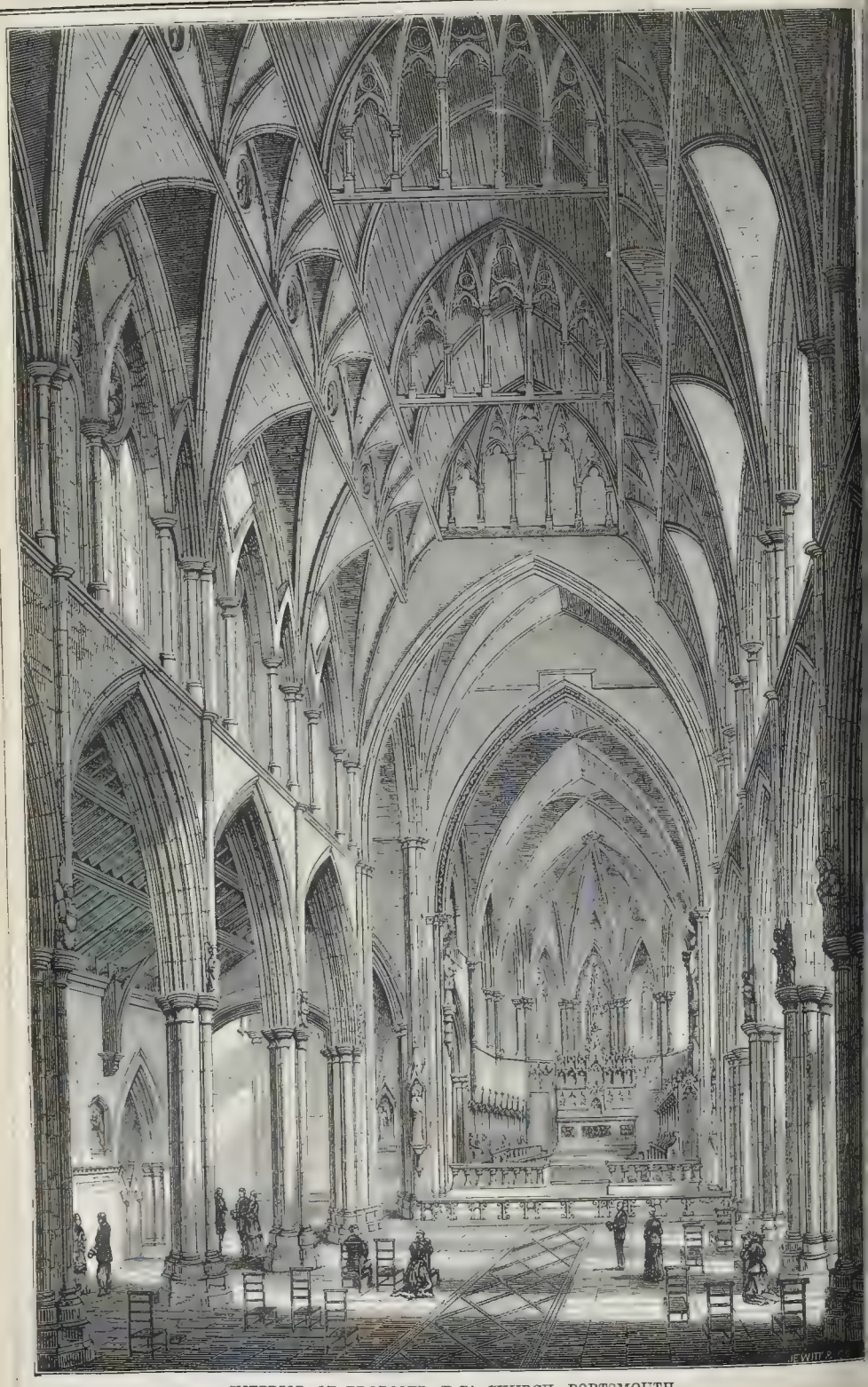
Large schools for 700 children are als... erected on the site contiguous to and i... nexion with the church.

Messrs. Patman & Fotheringham's tend... the school buildings has been accepted, a... foundations are already laid in.

The working drawings and estimates f... church and presbytery are in course of pr... tion.

The designs have been prepared by ... Crawley, of No. 2, Bloomsbury-square; an... clerk of works appointed is Mr. Broomfield.

Mercers' Hall, Cheapside.—A corres... ent complains that the entrance to Me... Hall, which was taken down some time ... not being re-erected, as promised. We ... none of the circumstances, and cannot inte...



INTERIOR OF PROPOSED (R.C.) CHURCH, PORTSMOUTH.



PROPOSED (R.C.) CHURCH, EDINBURGH ROAD, PORTSMOUTH.—Mr. John Crawley, Architect.

SHROPSHIRE ARCHÆOLOGICAL SOCIETY.

"NEARLY three years have passed since the formation of this society, and it appears to be making rapid strides in prosperity and usefulness. Its roll of members continues to increase, and its finances are in a satisfactory condition. The third annual excursion took place on the 9th inst., to Berrington, Pitchford, Acton Burnell, and Condover. Starting in carriages from the Town Museum, Shrewsbury, at half-past ten in the morning, the party proceeded by way of the town walls, the Abbey-foregate, and Wenlock-road, to the site of the Weeping Cross, the terminus of the procession of ecclesiastics, secular and regular, with the bailiffs and the incorporated trading companies, on the festival of Corpus Christi. The cross is now demolished, but fragments may be traced in some of the adjoining fields.

At *Berrington*, the church was first visited. It is dedicated to All Saints, and dates from the fifteenth century. It has recently been restored, and comprises a nave and chancel, with western tower similar to those of St. Julian, Shrewsbury, Pound, and Battlefield. On a corbel in the tower are the arms of Barre. The principal archæological feature, however, is the fine effigy in wood, as well as the "leigers" in the floor of the nave to the old families of Pontesbury and Lawen, once chief landowners in the parish, well known in the annals of the town of Shrewsbury, and ultimately united in one family as Pontesbury-Owen.

Pitchford was reached after a drive of four miles. The little Church of St. Michael, which adjoins the hall, was first visited, and the oaken figure of a Baron de Pycheford, an effigy of a crusader in chain armour, was examined. An engraving of this monument is to be found in Mr. Eyton's book, and Mr. Anderson, in commenting on it, remarks that "tradition says the figure represents Sir Hugh de Pitchford, yet heraldry points rather to Sir John de Pitchford, who died in 1285." In the fifth of Edward I. (1277) John de Pycheford held the manor, but in 1322 it had passed to Walter de Langton, Bishop of Coventry and Lichfield. The alabaster monuments to the memory of several members of the Corbley family, who owned the estate for 334 years, also attracted attention. Lady Louisa Forbes, at present residing at the Hall, kindly permitted the visitors to inspect the interior. This is a fine specimen of the half-timbered mansion, erected probably early in the sixteenth century. It is supposed to have been built by William Ottley, Sheriff of Salop in 1499 and 1513. A long gallery leads to the drawing-room, and the walls of this are covered with paintings and rare and curious engravings. The luminous spring, from which the place derives its name, was also visited. Fortunately, although the coldness of the weather militated against a good yield of pitch, a few specimens were floated on the water at the time of the visit, and these were secured by the members of the party. Camden compares the scum of this well with the bitter found in Lake Asphalites, in Palestine, and says there is a spring of the same kind in Calabria. The site of the ancient corn-mill having been inspected, the party resumed their journey. Watling-street runs from north-east to south-west through this parish for about two miles, and a portion of this Roman road was traversed by the brakes.

At *Acton Burnell*, three miles further on, the first place visited was the venerable church dedicated to St. Mary. The Lee Chapel on the south side contains monuments of the Lees of Langley, and the fine brass of Sir Nicholas Lawel, Knight, Lord of Holgate and Acton Burnell, 1382. It is figured in Boutell's "Monumental Brasses." There is also a fine alabaster tomb in an excellent state of preservation, with recumbent figures under a rich canopy of the same material. On a slab affixed to the wall is the following inscription:—"*Hic jacet Dns Richardi Lee, Armigeri, qui obiit* 27 *die anno dni.* 1591." Here also are the remains of a stone coffin, besides several monuments to the Lees and the Smythes, and over the centre of the arch is a helmet, with crest (a squirrel). The next visit was to the ruins of Acton Burnell Castle. They form a parallelogram with a square tower at each angle. The castle was built by Robert Burnell, Bishop of Bath and Wells, Lord Treasurer and Chancellor, in 1282. The Castle is celebrated in history as having been the place where sat the Parliament of Edward I., 1283. The celebrated Statute of Acton Burnell was passed here, and is still in force. It appoints the mode in which a statute of merchants is made, the manner of valuing goods for the payment of debts, the imprisonment of debtors, &c. It may be remarked that the Barons, then the House of Peers, sat at the Abbey Church, Shrewsbury, during this session of Parliament. This hall is 157 ft. long by 40 ft. wide.

Condover, the last place visited, was reached after a long drive. The parish church, dedicated to St. Andrew, has been completely restored. The history of this parish is most interesting. William I. gave Condover to Roger de Montgomery, who gave the church to Shrewsbury Abbey. It was seized by Henry I. Henry III. granted it, in his eleventh year, to his sister, the Princess of Wales; then the Hastings family had it; then Robert Burnell, Bishop of Bath and Wells, bought it, and it passed to the Lovells. Lord Viscount Lovell forfeited it to the Crown, and Henry VIII. granted it to Rich. Cornwell for life, and afterwards to Henry Knyvitt and his heirs male. George and John Isam sold it to Thomas Owen, and from them it has descended to the present owner. The church is rich in memorial monuments to various members of the Condover family since the middle of the seventeenth century, about which time the church is believed to have been built. The most important of these are contained in the chapel on the north side of the chancel, and the oldest one is a large mural monument affixed to the wall, occupying most of its space. It was erected in 1641. The design is Grecian, and consists of four spaces, two above and two below, separated by black marble pillars supporting circular arches, underneath each of which is a kneeling figure. The two lower figures represent Judge Owen and his son, Sir Roger; the two upper ones his daughter, Mrs. Jane Moreton, by whose orders the monument was erected, and her husband. The whole is surmounted by an emblazonment in relief of the family arms. Beneath the east window of the chapel stands a monument in white marble, said to be by Roubiliac, representing in life size Roger Owen and his daughter. There are several other monuments, comparatively modern, in memory of various members of the family of the last and present centuries, and within the sacrarium, under an arch in the south wall, is a well-preserved alabaster altar tomb, with two recumbent figures, representing Colonel Scriven, of Frodesley, an eminent Royalist and friend of Charles I., and his wife. There is an aumbry in the north transept.

On returning to Shrewsbury, the members dined together at the Lion Hotel, the Rev. W. A. Leighton in the chair.

NEW RAILWAY STATIONS IN PRESTON AND GLASGOW.

FOR some years past a new railway-station has been in course of erection in Preston, which, when finally completed, will be one of the largest in England. It extends under Fishergate, the principal street in the town, occupying several acres both north and south of that thoroughfare, and an enormous sum has been expended in the purchase of land for the rebuilding and enlargement of the station. The greater portion of the new station is to be opened next week. The part to be opened contains several new lines of metals, a new approach-road from Fishergate to the station, also new booking-offices, about one-half of what has been named the great Highland platform, together with large new dining and refreshment rooms, and also what is called the waiting-room block, which includes the station-master's and other offices. The station has been erected at the joint expense of the London and North-Western and Lancashire and Yorkshire Companies.

The report of the Caledonian Company, which has just been issued in anticipation of the half-yearly meeting, states that during the past half-year no fewer than five new stations, erected by the company, have been opened. These include the Bridgetown and London-road Station, opened on April 1st; the Clyde-place Station, opened on July 1st; the joint station at Bridge-street, opened on July 12th; the Central Station in Gordon-street, opened on August 1st, for the western district; and on the 1st of the present month that portion of the Central Station for the English and Edinburgh districts.

THE MOORE MEMORIAL

IN BROMHAM CHURCH, WILTSHIRE.

ON Saturday last, September 13th, a memorial window was placed in the church at Bromham, where the poet Moore, his widow, and three of his children, are buried. It contains this inscription:—

"This window was placed in this church by the combined subscriptions of 200 persons, friends or admirers of 'the Poet of all circles and the idol of his own,' THOMAS MOORE."

It is the west window of the church that has been filled; the east window is a memorial window to the estimable wife of the poet, placed there by her nephew, Charles Murray (recently dead), who considered it right that a "companion" should be provided by the public: that duty the public have now discharged. The window was designed and executed by Mr. W. H. Constable, of Cambridge, and represents the "Last Judgment." The memorial was originated and brought to this successful issue by Mr. S. C. Hall, who deserves the hearty thanks of all admirers of the poet, and we are glad to hear that Mr. and Mrs. Hall were both present at the opening. Mrs. Hall, indeed, removed the curtain from the window. They are among the oldest living friends of the poet and his wife, dating friendship and intercourse with them much farther back than half a century. The list of subscribers is a remarkable one.

SUNDAY RECREATIONS.

MR. EDITOR,—It was with unfeigned pleasure I read some very sensible and well-written letters in last Sunday's *Observer*, signed "Vox Populi," "Portcullis," and "Wet Skin."

"Vox Populi" enters more especially into a subject which has been now for some time agitating the public mind, and to which men of high position, and with arduous daily work of their own to perform, have yet devoted much of the little leisure time they have, and all their eloquence and influence. Notably amongst them we find one of our principal surgeons, Sir Henry Thompson, who doubtless urges the influence that rational pleasures, rational recreation, have on forming the *mens sana* that is so essential to physical health.

Then there is Sir Coutts Lindsay, who not only talks but acts, and throws open his fine rooms and fine collection for a brief space to the masses; and I also find, sir, your name, in conjunction with others of note, eagerly advocating a new era.

Too long has lasted the fell sway, the Circe-like power, drink exercises on the mass, and it is high time for men of power and influence to be no longer lukewarm, but to remove by every means in their power the blot this vice is on our land and on our people. To every poison there is generally an antidote; to every attraction a counter-attraction. And without insulting or offending what we consider an ultra-Puritanical spirit, we would, as we respect even a prejudice if it is the honest expression of a man's conscience, try and prove we are not opposing religion or religious views, but, on the contrary, working hand in hand with those who would make the Sabbath a day of simple piety, earnest thanksgiving, and yet of innocent amusement; an oasis in the seven days of toil, an incentive to put by something towards the spending such another day, opposed to the tawdry glitter of the gin-palace, bad tobacco, and worse spirits who would give them museums, offering for inspection the treasures of past and present ages, the produce of far-away lands, and that would be as the tale "Robinson Crusoe" to many a man who will never in his life make a longer voyage than within the limits of the suburbs of London; pictures and galleries of sculpture, where the contemplation of the beautiful in art would entice men to turn from the coarser and ruder scenes of life. Why should there not be good music in the parks, or in these very museums? "Music," Congreve says, "hath charms to soothe the savage breast." Would it not infuse (passing by the superior class of workpeople, to whom appreciation of these things comes naturally), even into natures that are debased merely because from their birth they have lived in an atmosphere of dirt and degradation, some softening influence, some aspirations after better things?

But how is this to be done? During the week-day we have but little hold on the people; in the evening it is true they can, if so inclined, go to the theatres, and there at the hands of men like

Mr. Irving and other good actors, have a rare intellectual treat offered to them. But with the Saturday's wage comes the Sabbath-day of temptation, not looked on as good people would have it,—as a day of entire rest, entire devotion to religious exercises,—but a day of enforced idleness, which, if he cannot be induced to spend entirely within a church (and our climate precludes any one counting with certainty on any Sunday being actually a fine day for a stroll in the park), leaves a man,—if he will not go to three services, only the contemplation of the humble,—generally very humble,—walls, he has gazed on for six consecutive days. And it thus often ends by his drifting off to where other loungers like himself do congregate, where club meetings, where some knavish companion,—a blatant ignoramus on the matters he is holding forth about,—is yet clever enough to lead his hearers like sheep; and to cozen the senses out of their heads and the money out of their pockets. Oppose to this the counter influence of a religion —not carping, not gloomy, not holding before the eyes unknown terrors,— but a religion of love, of mercy, of tender forgiveness, by making "their lives less ugly and more beautiful." The more refined their tastes grew the more naturally men would turn to offer some meed of thanksgiving in the morning, if they had before them the prospect of an afternoon of rational enjoyment. I would not only have the picture-galleries thrown open, the museums with their treasures of past and present times, but a reading-room in the latter, with the publications of the day; good music also in some room of the museum, and in the parks. All this for only two or three hours in the afternoon; we ask for no more. And that the work might not press too much on the *employés*, the staff on duty to be changed every alternate Sunday. And I also think, Mr. Editor, if men of the standing of your colleagues, or yourself, would once a month devote an hour to giving in the reading-room at one of these museums, or at the Albert Hall, a lecture on some interesting subject, you would help to strengthen your influence for good. Explain clearly to the people what this new movement means, and they would feel more inclined, I think, after their tea to finish their evening in a well-lighted church than to return to coarser pleasures. It would also help to draw still closer the bond between gentle and simple. Those whom poets term the "brawny sons of toil" really like being brought in contact with what we call in vulgar vernacular a "swell," for they know how ready this class are when the time comes to devote their higher advantages to them. The war telegrams daily prove through what storm of shot and shell the "curled darlings" of a London ball-room will ride,—how they will cheerfully lie down to rest with no canopy but the star-gemmed heaven, no bed but the rain-soaked sod,—how, without wavering, they will ride on to meet the death that buys us victory, so that England and England's people may live great and free.

The statesman is at his brain-work into the far hours of night. The doctor and philosopher face death in all its forms so that knowledge and science may be more widely diffused, and that the humbler classes may profit by it. Give these classes, then, this one chance more. I do not think it would be abused. We are not a nation likely to run into extremes, or ask for the Sunday of large Continental cities (though that of Continental villages is harmless enough). We are a reflective, an energetic, and a healthy people, and though we are accused by foreigners of taking our "pleasures sadly," I do not think a more naturally "jolly" people than the English exist,—a little too fond of doing the "Rule Britannia" business all over the world, and too little careful of other people's susceptibilities; but an essentially kind-hearted and sensible people.

The only danger is in having the vigour and activity of the mass mis-directed. So it is for men of master-mind and master-influence to take the helm in hand and be the architects of some vast system of reform,—the amelioration of existing abuses,—or the piloting of their newer theories through the surf of opposing prejudice. And yet each one of us can, like the humble workmen of the pyramids, assist in the construction, each place a brick, that shall help to form the mighty whole; and though it would be Utopian to suppose the belief of George Dawson "Portcullis" alludes to will be realised in our day, "that the time would come when the highest in the land would not be happy till the lowest was lifted out of his misery," still a chance will have been given to thousands, and hence will have been given to thousands, and if they will not take it the blame cannot be laid at the door of the other class, who, I do not wonder, sometimes get weary of well-doing, or muse in a melancholy manner on "man's ingratitude." One ought to put the expectation of gratitude on one side, and do the right thing, because the thing in itself is the right thing to do.

SUNSHINE.

SALARIES OF BOROUGH SURVEYORS.

AT a recent meeting of the Huddersfield Town Council, Mr. Councillor Haigh, in moving for the appointment of a borough surveyor who should be required to devote the whole of his time to the duties of his office, quoted returns which had been made by thirty-six other towns in reply to questions as to the salaries and duties of their borough surveyors. Of the thirty-six towns enumerated below, thirty-one required the whole time of their surveyors. The five towns which did not make such a stipulation were Brighton, Coventry, Chester, Nottingham, and Worcester, which, he said, paid such small salaries * that they could not obtain men worthy of the position without allowing them to take private practice. Mr. Haigh then read the following statistics, giving the population, acreage, rateable value, and salaries of the borough surveyors of the several towns mentioned:—

	Population.	Acreage.	Rat. Val. £.	Salary £.
Ashton	37,725	1,391	122,794	200
Barnsley	30,000	2,385	88,167	250
Barrow-in-Furness	40,000	16,503	187,000	350
Blackburn	95,000	4,071	270,000	650
Bolton	105,000	2,378	367,000	400
Bradford	191,000	7,221	857,000	500
Brighton	104,000	2,591	565,706	500
Burnley	55,500	4,063	119,325	300
Burton-on-Trent	30,000	4,025	140,000	300
Cardiff	80,000	7,000	357,374	500
Chester	35,232	2,960	140,642	200
Coventry	40,000	1,600	117,000	250
Darlington	32,000	3,909	159,117	350
Derby	80,385	3,400	260,000	500
Exeter	37,000	1,822	165,000	500
Halifax	70,000	3,768	270,000	400
Leeds	311,000	22,000	1,083,654	800
Leicester	130,000	3,960	396,022	700
Lincoln	31,000	10,689	97,227	300
Middlesbrough	54000	—	201,000	500
Newcastle	147,000	5,326	709,430	1,000
Northampton	55,000	1,520	140,753	300
Nottingham	190,000	10,000	600,000	1,500
Oldham	111,318	4,665	467,954	350
Oxford	35,000	—	156,177	260
Preston	87,600	2,820	262,150	600
Rochdale	71,000	4,180	215,934	400
Salford	180,000	5,170	792,974	700
Sheffield	289,000	19,651	915,877	600
Shrewsbury	25,000	3,470	106,500	380
Staleybridge	23,121	783	—	170
Stockton	35,000	1,189	144,484	300
Wolverhampton	75,000	3,440	197,000	500
Worcester	33,226	1,284	118,405	100
York	43,796	2,720	168,703	400
Huddersfield	80,000	10,476	272,723	750

BOROUGH SURVEYORS.

SIR,—Much has been said during the past few weeks about borough surveyors and the unfairness of such appointments as are now occasionally made, and as so-called "trained" borough surveyors appear to complain, I am anxious to know what is your opinion, as well as the opinion of your correspondents, on the following conduct of a "trained borough surveyor."

Some time ago a vacancy occurred in a large town for a borough surveyor; several candidates applied for the post, which was ultimately given to a comparatively young man, who, however, in order to further his chances of success, stated in his application that he was four years older than he actually was. I should like to know whether such conduct is legitimate. To me it appears barefaced dishonesty, and I should be glad to hear if such a practice has been known before.

FAIR PLAY.

*** No answer can be needed to this inquiry. Proof of such an act would damage, not to say damn, a man through life. It is to be hoped, and we are disposed to believe, that such an act is not common.

* We quote the figures as given in the *Huddersfield Chronicle*. The statement as to the salary paid at Nottingham does not appear to bear out Mr. Haigh's remark.

THE QUALIFICATIONS OF SURVEYORS.

SIR,—Having taken some interest in the discussion which has been so freely ventilated in your columns with reference to the qualifications of surveyors, I am somewhat pleased that the other side of the question has been opened out, and am surprised that it has not been done previously.

According to the arguments of some of your correspondents, they wish to imply that a scientific knowledge is the fundamental principle which ought to guide public bodies in reference to the selection of town surveyor; but I find, from experience, that a good practical knowledge, based upon a scientific one, is far preferable, and can be much more utilised in the general ordinary work. I admit that in rural districts men are appointed who are wholly incompetent for the offices they occupy, but in towns or boroughs of any note whatever, such appointments are open to competition, in which qualified and unqualified candidates enter, and in the generality of cases those are chosen who are duly qualified for the post, and have been trained in a surveyor's office. In many surveyors' offices they receive no sanitary training whatever, and are simply acquainted with the taking of surveys and other ordinary work, so the fact of being a pupil with either an architect or a surveyor is no criterion to go by.

Knowledge is acquired only by application and perseverance; and no matter how great the premium and the practice of the architect, if the pupil will not investigate for himself, he will never excel. I have known, and know at the present time, builders who employ clerks at salaries from 50*l.* to 200*l.* per year, who have been pupils in architects' offices; but, compared with the builder, they are "dummies" as to an real practical knowledge.

But I ask, sir, how it is that at the present time so many of our architects and engineers are placing their sons for a term of years in the workshops previous to their entering the offices? Simply because the parents have learnt experience from the past, and are desirous that their own sons should not be placed in the same difficulty as they themselves are, and have been, and consequently avoid those architectural and engineering "bungles" which daily occur.

I consider that some of your correspondents are similar to the dog in the manger,—not qualified, either through misconduct or want of ability, for posts of trust, and consequently envious of those who are. If they would only inquire as to whom we are indebted for some of the greatest achievements in the architectural and engineering world, they would no doubt pause before inditing further with reference to the matter. The majority of the present generation are mere copyists of those who do not receive that scientific training, except through their own perseverance.

I have seen pupils take subordinate positions in offices, owing to their deficiency in practical knowledge; and I am fully persuaded that a young man entering a builder's or engineer's workshop with the intention of becoming an architect or an engineer, and during that time advancing himself in private study, will eventually outrun the man who has merely passed through the ordinary office routine; and I shall always endeavour to procure such for my own use, knowing that their services are far preferable.

A PROFESSIONAL.

Rainfall in 1879.—A table which exhibits the rainfall at Helenslea, Child's Hill, London, N.W., prepared by Mr. A. J. Woodhouse, where is kept in view that the average rainfall in London district is 25 in. per year, shows that for the eight months of 1879 now past, we have had already 3¼ in. above the usual average of the whole year. 1878 and 1877 were both very wet years, both slightly exceeding 30 in. If only the same fall occurs in September, October, November, and December as was registered last year in the corresponding months (a fall considerably within the average), then we shall have about 36 in. for 1879. It has been a frightful year in this respect; the loss caused by it is immense. But, on the other hand, it is long since so healthy a year was known. There is always a compensation to be found if looked for.

HE TRADE-UNION CONGRESS IN EDINBURGH.

e twelfth annual Trade-union Congress enced in the Oddfellows' Hall, Edinburgh, onday morning, the 15th inst. As many elegates were present, four of whom were es.

societies represented at the congress are r in number, and they include in their ership 541,892 working men and women. ollowing are some of the societies repre-d, with the names of the delegates, the s giving the number of members belonging h society named,—

oklayers' Operative Society, 6,510, E. n, London; Operative Bricklayers of nd, 600, Thomas Macduff, Glasgow; l Operative Society of Bricklayers ester Branch of Manchester Unity), 250, Main, Leicester; Carpenters and Joiners, gamated Society, 17,000, J. D. Prior, ester; Associated Carpenters and s of Scotland, 8,110, W. Paterson, Glas-and J. Thom, Edinburgh; Carpenters Joiners, General Union, 10,085, J. y, Manchester; Amalgamated Society gineers, 45,000, J. Burnett, London; Decorators' and Painters' Amalgamated y, 800, G. Shipton, London; Ironfounders gland, Ireland, and Wales, 12,500, Daniel London; United Operative Masons of nd, 11,821, T. Walker, Edinburgh, and Carmichael, Edinburgh; Mill Sawyers, l Society of Liverpool, 60, W. Warwick, ool; Masons' Friendly Operative Society, Henry Broadhurst, London; General e of Operative House-Painters, 700, Sharples, North Liverpool; National ive Association of Plasterers, 8,000, C. ns, Birmingham.

J. D. Prior, of the Amalgamated Society rpenters and Joiners, presided at the g of the proceedings, and delivered an s in his capacity of chairman of the Par-tary committee. He defended trade-, averring that if working men had d no wrong, they would never have oin combination a mode of redress. He d that the congress, whose members that trade depression meant something han the curtailment of luxuries and the tion of accumulated capital, would ascer-hether something more than had been done ot be done to alleviate the suffering and on which prevailed amongst those whom ere delegated to represent. From figures ed by Mr. Guile, he found that during the 378 four societies, numbering in the aggre-0,000 members, had expended in benefits ressed members during the year no less a an 260,000*l.*; and he could not help astonishment at the vast amount of y and distress which had been alle-by the unions, and the enormous which had accrued to the ratepayers country by the establishment of the nd and much-abused trade-unions. But, he was it really an absolute necessity that ew years large multitudes of the people through no fault of their own, be re-to such a destitute condition? Opinion at much might be done to improve the ondition of those whom they represented would only enlarge the area of their al action, and unitedly endeavour to some of the evils by which the people country were impoverished. Their action ngress had hitherto been mainly political, rough the influence used by the trade-bad laws had been repealed, and ques-of great national importance in which d taken the initiative had demanded and d the attention of the Ministry, the ature, and the country. They required to , few great questions out of the area of olitics, the questions on which working both Liberals and Conservatives, could and they could accept no candidate for onours unless he was prepared to unite em in endeavouring to remedy the evils ch they complained.

he motion of Mr. Thom, joiner, Edin-seconded by Mr. F. W. Evans, Mr. Gibson, chairman of the Edinburgh Council, was elected president of the ss, and at once took the chair in place of ior.

Henry Broadhurst, secretary of the Parlia-ry Committee, then presented the annual of that body, which at some length reviewed the legislation of the past session as affecting the working classes. The Committee expressed regret that no progress had been made with the Employers' Liability Bill in the past session of Parliament. Mr. Macdonald's Bill, if passed into law, would not establish any exceptional legislation in favour of workpeople. On the contrary, it would merely remove special exclusion from the protection of the law. This Bill, originally proposed by the Parliamentary Committee, and so ably taken in charge by Mr. Macdonald, was the only measure which proposed to give the workman the same protection as was now enjoyed by other people against the carelessness and neglect of an employer who endeavoured to carry on his works with inefficient or unskilled labour or defective plant. Such employers, the Committee was convinced, formed but a small minority of their class, but it was nevertheless necessary to protect their workpeople against this recklessness and disregard of the safety of those employed. In the "General Remarks" with which the Committee conclude their report, they say:—"During the past year labour disputes have been far too numerous for special reference to be made to any particular cases. Desperate struggles have been entered upon, and in some cases maintained, for the defence of the existing hours of labour. That numerous attempts to destroy the nine-hours system should be made does not surprise us; we therefore congratulate the trades upon the large measure of success they have achieved in this direction. Whatever is suffered in the form of reduced wages, the existing working-hours must be defended, and where they are surrendered for a time, the first work to be done with the return of prosperity must be their re-establishment. Reduction in wages has been almost general in every trade. In some cases circumstances may have given reason for the demands made upon the workpeople, but in a large number of cases there has been no just cause. Many employers have reduced wages upon no other ground but that the opportunity served them. . . . . The Parliamentary committee and the congress have ever been the advocates of Reason *v.* Brute Force; but if, in time of depression, employers recognise 'might' as the only 'right,' we may well despair of the future relationship of capital and labour. The events of the past few years offer food for reflection as to the present system of trade societies in rendering assistance to each other in times of difficulties, and the question is raised whether many of the unions do not need considerable reorganisation, not only in administration, but in regard to an increase in their contributions. There is no doubt of the necessity of a much closer unity of action, not only amongst kindred trades, but amongst all trade associations, if unionism is to be a real power in the land. The larger the scale upon which it is practised the better it must be for those affected. At the same time, we cannot ignore the obstacles in the way of a complete form of federation of all trades for all purposes, but there does not appear to be any reason why nearly all the unions should not unite for the common purpose of defence in cases of attack on any established conditions of labour. On the contrary, we are of opinion that such a scheme is practicable, providing those forming the alliance would submit to the wholesome discipline of an unbiased central board of management. This would give to those connected with it not only material assistance, but the advantages of a valuable experience on a broader scale than can possibly be obtained from any one trade, however great their numbers may be or however wide their ramifications. The present severe depression of trade, and the consequent suffering amongst all classes of workpeople, will force upon these annual gatherings a consideration of the broader and higher questions which affect the material condition of the working population."

On Tuesday morning the president, Mr. Gibson, delivered an inaugural address as a preliminary to the real work of the congress. He complained that recent experiences had shown employers to have a strong aversion to any reasoning on the question of wages, which, taken with the fact that in the great productive trades—such as coal, cotton, and iron—there was a determination to reduce wages to the lowest rate, made the industrial outlook sufficiently ominous. The miners' dispute in the Durham district, among others, might be referred to as an illustration of this intolerance of conciliation now so prevalent. Indeed, all over the country instances could be found of strikes wantonly provoked by a tyrannous enforcement of terms such as was there sought to be inflicted. The employers, in their power, had evidently forgotten their old love for arbitration. The belief had taken possession of their minds, instead, that they could do as they pleased, and so they could; but this was founded upon the idea that working men could not do as they pleased too. They calculated that working men would be deterred by the censures of the Press from doing as they had been done by, if, in time to come, the example set by the employers should be thought worthy of imitation. There was no warrant for believing they looked so far forward, but, by the time it had been discovered how little the men could live and work upon, they might realise the fact that the relations between capital and labour had by their shortsighted policy been unnecessarily strained and materially changed for the worse. If there was any danger of foreign competition—that wolf of British commerce about which there arose periodically such nervous panic—it was more likely to be successful in a contest with industries conditioned such as these were, than where more generous treatment obtained. It was to be regretted that so much of the spirit of antagonism to trade-unions should have been evinced by nearly all who had written on the subject of trade depression. With somewhat portentous unanimity, they agreed to assign a more or less prominent position in the sometimes long list of causes to the action of the working classes. The many charges that had been thus made against them had over and over again been refuted in past congresses, and it would be thrashing already thrashed straw to repeat the work. Regarded at one time as one of the principal causes, they had now become chargeable with the minor offence of shortening the time during which commerce continued prosperous, and in the same way prolonging the present depression. This had been done by strikes. It was thus assumed that the collapse of trade which occurred in America in 1873 was caused by the workmen of this country, for to such an absurdity was this statement reducible, and that the consequent depression, universal in extent though it was, could never be got rid of until the workmen agreed to take for the future what wages capitalists thought fit to give. By some, again, the chief cause is attributed to the condition of the schools and workshops of the Continent, and in a pamphlet published in Edinburgh recently (which for the information it gave concerning the state of technical education on the Continent was very valuable) it was quietly assumed that some of these countries had an advantage over this in their manufacturing industries. The ignorance of the British workman had always been regarded as an unknown quantity by his candid friends, and those gentlemen who advocated measures designed to instruct him with a technical knowledge of the trade he belonged to were desirous that the same opportunities should be afforded him here as were supplied on the Continent. In these schools diplomas were granted, and the advantages of having secured the education necessary to be in this position were stated to be that the services of those who obtained them were much sought after by employers, and that they were everywhere able to demand higher wages, because the work was of more value. He wished not to be misunderstood nor taken to mean anything that would imply an underrating of the importance and value of education of this kind to all workmen; but it must be apparent to any one who had the slightest acquaintance with the conditions of employment of this class of men in Britain that this education, vouched for as it might be by however many diplomas, could not be relied upon to bring them promotion of any kind. In the railway services of the country, for instance, it was well known that engine men and drivers, with the diploma of long experience, were too often suspended or dismissed for the most trivial faults, and sometimes no fault at all, in order that their wages might be reduced. The effect of this special knowledge in these countries had not been felt in any part of our trade, and could not be ranked as one of the causes of its depression. Speculative loans to bankrupt States were of the number, but, to his mind, the real cause was to be found in the withdrawal of millions of men from the ranks of productive industry, and imposing upon the people the herculean task of supporting armies of idlers, who, like locusts, consumed the fruits of other men's toil.

A vote of thanks was accorded to Mr. Gibson for his address; and, on the motion of Mr. Daniel Guile, the report of the Parliamentary Committee was adopted. Other matters were discussed (not without acrimony), and the Congress adjourned until Wednesday. Of its proceedings on that day, and on Thursday and Friday, we may have more to say next week.

PUBLIC IMPROVEMENTS IN SOUTHPORT.

The Corporation of Southport, having spent 130,000*l.* in carrying out a new and thorough system of drainage, now propose to spend something like 64,000*l.* in the erection of a new market-hall and the extension of the promenade in a north-easterly direction. For this latter purpose they are reclaiming 41¾ acres of the sea-shore, and have paid 8,000*l.* for the right of ownership of the land. The work of forming the promenade is already in progress, and it is expected (according to the *Manchester Courier*) to be completed about December, 1880. The extension will be carried for about half a mile towards the north-east, and will then take a curve inland and join the roadway near the Hesketh Park. The land behind the embankment, which is called the reclaimed land, will be filled in so as to be available for building purposes. The contractors for the works are Messrs. Gripper & Bayliss, of Nottingham and Hull, who have undertaken to form the promenade for the sum of 20,752*l.*, and to lay out and sewer the land behind ready for the commencement of building operations for 11,071*l.*, making a total of 31,823*l.* To this must be added the 8,000*l.* paid for the right of ownership to the land, which raises the full cost of the works to about 40,000*l.* A portion of the 41¾ acres of land inside the proposed promenade has already been sold at 7*s.* 6*d.* per yard to persons who intend to erect houses thereon, and if the corporation can only manage to obtain the same price for the remainder they will receive a total sum of 53,000*l.*, so that the undertaking will in this way be made to more than pay for itself. The promenade is being formed of sand,—which is conveyed from Birkdale,—and will be carried to a height of 12 ft. The front sea-wall will consist of concrete, the foundations being 3 ft. thick, and extending to a depth of 6 ft. below the level of the shore. It will be taken upwards on the side of the promenade on a curve at a thickness of 1 ft. 6 in. The embankment itself will be 60 ft. in width, 25 ft. being devoted to a marine drive, another 25 ft. to the promenade proper, and the remaining 10 ft. will be laid out as a footpath alongside the houses. It is to be asphalted over its entire extent, and a dwarf wall 1 ft. 6 in. high, surmounted with an ornamental iron railing, will be carried along the side nearest the sea. Plans have already been drawn for the laying out of the reclaimed land, and it is intended that seven streets shall be formed. Mr. William Crabtree, borough surveyor of Southport, is the engineer for the works, and they are being carried out under his superintendence.

The New Market Hall is being erected by Mr. Thomas Bridge, builder, of Burscough, at a cost of 23,800*l.*, from the designs of Messrs. Mellor & Sutton, architects and surveyors, London-road, Southport, and the late Mr. John Ducie, C.E., London. It stands upon a site containing about 4,550 square yards, being bounded on three sides by streets, viz., East-bank-street on the north-east, Upper King-street on the north-west, and Market-street on the south-west. The market will be divided into three parts by walls about 12 ft. high, the first or main portion being for butchers, poulterers, greengrocers, and provision dealers; the second for fish-dealers; and the third being devoted to a wholesale market. Direct access from one part to the other is obtained by means of wide archways. Thirteen main entrances have been provided, leading into avenues five yards wide, from which cross passages, four yards in width, are taken, thus securing a front position for each stall. All the stalls will be lined to the height of 5 ft. with white glazed firebricks, and will each be provided with an American cooking-stove, and also with town's water. The fish-stalls will be fitted with marble slabs, and will each have an earthenware sink and drainer. The roof of the market is divided into five equal spans of about 38 ft. each, the centre span being carved, and the whole supported by strong cast-iron columns, with enriched capitals and lattice girders. In the centre of each bay of the roof is a lantern light running almost the whole length. Externally, the architecture of the market is Classical. The façade is to be of Longridge stone, the central feature to East Bank-street being treated with fluted Corinthian columns, above which will spring a curved dome covered with zinc of a fish-scale pattern. This dome terminates the centre bay of the roof.

THE DESTRUCTION OF WORKS OF ART IN ITALY.

Fresh evidence continues to be given as to the reckless and suicidal manner in which relics of antiquity and architectural monuments have been and are being treated in Italy. Mr. J. C. Robinson, writing in the *Times*, says:—

"One of the latest examples of Italian vandalism that occurs to me has recently been perpetrated in the old city of Cremona, a moribund place, which has no longer strength enough left to produce even fiddles. One of the most notable architectural monuments of Cremona was the splendid sculptured marble portal of an ancient palace, standing in one of the most conspicuous positions in the city. This doorway was one of the principal "lions" of the place; it gave a special character even to the locality, and it was one of those things which remained fixed in the recollection of every visitor. The noble owner of the palace lived in it, and one of the principal endeavours of his life seems to have been to make money by the sale of this doorway. Some sixteen or eighteen years ago the Kensington Museum was besieged with applications and offers to this end, but it seemed to me that it would be a sin and a shame to listen to them. I knew this doorway well, and nothing would have induced me to recommend its acquisition and removal by our own Government. It was for the Municipality of Cremona to have secured this fine work, and probably they might in the outset have bought the entire palace for the price which has since been paid for the doorway alone. There was no lack of representations and entreaties to induce them to do so. But, to make my story short, years passed away, photographs and descriptions of the doorway were persistently hawked all over Europe with a view to its sale, and at last, a short time ago, the French Government purchased it for 3,000*l.*, pulled it down, and removed it to Paris, where it may now be seen at the École des Beaux Arts. The public may now see, just erected in the Sculpture Court at South Kensington, two other fine portals, in black marble, recently brought from Genoa, originally constructed, as the inscriptions on them denote, by members of the famous old families of Doria and Spinola respectively, at the close of the fifteenth century. How these have been obtained is as follows:—Some three on four years ago these doorways were removed from a church in Genoa, and sold to a local speculator, who resold them to a well-known dealer in London for a considerable sum. The latter, however, made a bad business of it; the packing and carriage to England of the massive stones alone added greatly to the cost; and, after all, the customer he had in view failed him, so that they remained a dead weight on his hands. At this conjuncture they were brought to my knowledge. The importer died shortly afterwards, and his representatives, despairing of finding a purchaser, offered to sell them for little more than the cost of the transport of the stones to England. On these terms, by my recommendation, the nation has acquired them."

We have received two or three letters objecting to the interference of English writers in the matter, mainly on the ground that we have not ourselves clean hands. As it is as well to hear what can be said on both sides, we print one of these,—a communication from our correspondent "Meter":—

Sir,—In my humble opinion, the Italians should either resent or take no notice of impertinent attempts to influence their resolve to reconstruct Italy politically, socially, and artistically. Because English folk are foolish enough to suppose that art is never again to attain to the same excellence as in the past, it is no reason why Italians should entertain the same notion. I believe Italians to be much wiser in looking hopefully ahead, and in not exhibiting an overweening regard for the monuments of the past. Pioneers must carry hatchets. Good heavens! is it of any use boasting of science progress if these do not afford us any ho attaining to at least an equal excellence ancient and Mediæval art? Down with walls of brick and stone, so many feet many, if they interfere with any great pr of public advantage. Note its dimensions and build it at South Kensington if you thi possesses such an immaculate beauty. Nature any regard for your great works? the least; she is insidiously crumbling away, and the greatest in a few more ge tions will be total wrecks. It is upon the fu —the future,—that we must steadfastly our gaze.

But who are we that we should assum function of European censor in matte taste? Have we no glass windows in ou house? Would it not be for our own adva if we were to turn iconoclasts in our ways? Are we not ourselves coolly conte ting the erasure of the time-honoured d tions of Thornhill in St. Paul's, the wor the friend and associate of Wren, the which were executed under Wren's sanc Have we not allowed Sir Isaac Newton's vatory, within the last few years, to be ren from the house of the great astronomer, s be carried across the Atlantic? Can the c tent nation who, with the one hand pre Shakspeare's House, whilst it drives S peare's plays from the stage with the with any decency assume to direct the wo matters of taste? Go to! Me

THE HOUSE OF REST FOR WOM IN BUSINESS.

Sir,—I have this moment risen fro perusal of your correspondent "C.'s" el and generous appeal for our House of Re I cannot rest without thanking our un friend with all my heart for the glowing which strengthen and cheer the hearts workers as well as help the cause of the women for whom the writer pleads with generous and powerful words.

I have seen, in long years of work a women, such desperate need of some suc porary rests, some place to which they co for a breathing-time, where they get just take breath, and go on again, that last, help being offered me towards it, we o this little house and furnished it by sub tion. If I could convey to you a sense enjoyment it has given and the help it ha to the class for whom it was intended, no f plea for it would be needed. We have only si and within three months we, *i.e.* my sister have had about seventy applications for mostly from London, many applications it has been very hard to be compelled to In many cases, during last spring, we h great pleasure of being the means of re to entire health and the power of again e their bread, some of quite the upper of these women, who shrink from makin wants known publicly; others were c recovery from incipient consumption.

Then during the summer the enjoym numbers of worn-out women and girls is a sight to make one thankful. Little teas on the coves and beaches about h ought to say not a farthing of subscript donations is devoted to these: my sister- of course, do all this ourselves), scramble the cliffs collecting stones and ferns,— sources of pleasure, of which, as one gi "one must have been eleven months in a workroom to know what a holiday like t Another woman, who had fought bra maintain herself, without any relations kind to help her, and with miserable he an ill-paid trade, and who had kept good t all difficulties, said to me, as we came together from a little treat, "I never t it would come to *me* to have such a holid

Some who have been with us have nev a holiday in their lives; others not for a p five or seven years. Some had never s "real country." They do not come in t of ordinary help, and in their effort to k appearances, do not care to seem as needed help, and they struggle on and they drop.

"Nine out of ten have something wro their lungs," said, in the most matter tone, one of them to me the other day, in incipient consumption. But it is not health's sake we want to provide the m

ng a greater number here: I frankly own it rtly just to give them a little bit of ire, a real downright holiday. I know shire is a long way from London, as kind ors often say, but Devonshire is to them Switzerland is to the higher classes. as, often they have never had to do with , except as customers, before, and they ad to find a friend in whom they can safely e.

y forgive these details. Your correspond- generous-hearted article in favour of these women has made me trespass upon your ce, in confidence that you might be inte- in hearing how the scheme had actually d.

spend as little of the money as possible in s, that all may go direct to the work- n. We have a working matron, who cooks, ith the help of a girl for part of the day, y sister and I manage the house, settle sions, write the letters, &c. We live ves at a short distance from the House of go the money given goes direct to those om it is intended.

C. E. S.
(Member of the Committee).

Jacombe.

ARCHÆOLOGICAL ITEMS.

rgow.—The members of the Glasgow ological Society had their annual excur- n the 9th inst. to Dunfermline. The party Glasgow by the 9.5 a.m. train, and on ing Dunfermline were received by Provost Baillie Walker, and Mr. George Robert- S.A. Scot. After a short stay at the City Hotel, during which time Mr. Duncan read porate paper giving a sketch of the history fermline from the time of Malcolm Canmore, rty proceeded to the Abbey Church, which spected very closely. The other places included the ruins of the Benedictine ttery, the tomb of "The Bruce," the shrine Margaret, the ancient palace of Malcolm re, the Abbot's house in the Maygate, argaret's cave and well, Ralph Erskine's ient, and the damask works of Messrs. Mathewson & Son, in Bothwell-street. ards the excursionists dined together in ty Arms Hotel.

on-in-Furness.—An interesting discovery man remains has lately been made on the Farm Estate, near Dalton-in-Furness, be- g to the Duke of Devonshire, and occupied Wm. Slater. West's "Antiquities of Fur- refers to a consecrated edifice, containing more baths, which was built before Fur- bbey, in a meadow near Park Farm, and that in 1801 part of a leaden aqueduct umerous branches was found within the an ancient building. In digging for stone plete some buildings the men have come some stone foundations, laid on massive of oak, and which are believed to be mains of one of the above baths. Steps ing taken to reserve the site, which adjoins rness Railway, until the real nature of mains has been more clearly ascertained.

Jermline.—Steps are now being taken by gentlemen interested in antiquarian s for the proper preservation of "St. ret's Stone," which stands on the public ay between Dunfermline and North Queens- ff. It is to be placed on an erection consist- an ashlar stone seat, measuring 10 ft. g 2 ft. broad, above which there will be a t bearing an inscription giving the tra- al history of the stone, which is, that it i the resting-place of St. Margaret, Queen lcolm Canmore, on her frequent journeys ien Edinburgh and Dunfermline.

t Cassin.—According to the Paris corre- nt of the *Times*, the foundation of the mple of Apollo at Mont Cassin, part of was converted by St. Benedict into two ic chapels, has just been discovered.

sborough Abbey.—The Rev. Mackenzie tt writes concerning recent discoveries at orough Abbey:—"Until recently the to Guisborough Abbey has seen only the nd of the church,—a masterpiece of Deco- art. . . . Admiral Chaloner, during the wo springs, has occupied about fifty men were out of work in the removal of the bles and masses of stone which had been n down when the minster was leased out uarry. . . . For the first time the dimen- of the church have been ascertained; it 37 ft. long by 77 ft. in width. The western walls of the aisles of the nave have been laid bare, and also the bases of four pillars of the northern arcade, and the south-west footstall, with sufficient remains of bases and shafts to enable an archæologist to reproduce the plan of the central alley. The site of the rood-loft, deeply dinted into the soil, probably by the fall of a central tower, is clearly marked, and two tombstones direct the eye towards the place of the high altar. Besides two coffins with trefoiled heads, a portion of the end of the tomb of the founder (erected long after his time) remains, which has been recovered from Hardwicke, whither it had been removed. It exhibits the shield of the Bruce arms, borne by St. Mary, round whom are kneeling figures of Austin canons in surplice and cope. In the spandrels are a cock on a rail and the Madonna. The upper slab covers the altar in the parish church, and in the porch are the two sides, with knights in armour bearing shields, and in the interspaces bishops, abbots, St. Jerome, and saints at their devotions or study. Along the cornice appear the evangelistic symbols, the sun and moon, the chalice, the shell of Compostella, mitre and staff, a cock on a rail, an eagle, and other devices. Southward of the church, at a distance of 146 ft., is part of the cellarage of the refectory (40 ft. by 10 ft.) in two spans, with quadripartite vaulting. To the north-west is the lower story of the gate-house, with a round-headed arch, and the arches of the postern and entrance to the abbey court. The guest-house is probably represented by a wall with Late Perpendicular windows fronting the market-cross in the town."

Old House at Blandford.—It is reported that "The Old House" in the Close was recently bought by Mr. Luff, and has since then been purchased by Mr. Guest, who is now the owner of this interesting relic of the old town. The danger of its destruction, a year or two ago contemplated, is thus averted.

Druid Circle at Pitlochrie.—A correspondent of the *Scotsman* says,—"No one can take a walk through the Pass, and onward to the battlefield of Killiecrankie, without having his nobler feelings stirred within him. But I have never taken that walk without feeling surprised at the neglected condition of an interesting Druidical circle which is situated close by the road, and half a mile west of Pitlochrie. There is here a Druidical circle of six, originally seven, standing stones, most deplorably neglected. Pitlochrie itself has not many historical objects, but this is one it might well be proud of. When I first saw this circle, a fence for a cabbage-garden divided it, and a pile of rubbish obscured it. I have looked each year for a change, but there is none for the better. The fence is still there, a piggery is close at hand, and a rubbish-heap and other nuisances now encroach upon the once sacred circle."

QUAY WORK AT NEWCASTLE-ON-TYNE.

CONSIDERABLE improvements on the public quay have been made recently by the Newcastle corporation, including the construction, which has just been completed, of a deep-water berth in front of the new grain-warehouse which is now upon the point of completion. The work has been in progress for some time past under very precarious conditions, the strata of land over which the quay had to be built being found to be resting upon quicksand, so that many months elapsed, and many thousands of pounds were expended by the contractor, Mr. Walter Scott, before a sufficient foundation could be obtained. According to the local *Daily Journal*, the foundation is formed by two rows of cylinders, each cylinder being 6 ft. in diameter and 6 ft. in length, and sunk into the bed of the river to the depth of 40 ft., which allowed of the river bed being dredged to a depth of 22 ft. below low-water mark, with a foundation of ironwork 20 ft. into the ground. The front portion of the rows of cylinders is closely keyed together by means of timber let into the sides of cylinders, and so framed as to form a wall hermetically sealed from the river water. Behind these cylinders is another row placed alternately behind the front ones, and each 5 ft. in diameter and 6 ft. in length. The cylinders were sunk by men working inside the cylinders under atmospheric pressure; and having been fixed at their proper depth, or low-water mark, they were filled in with concrete, upon which is built the masonry of the quay-wall. The work is of a very massive character, and practically solid as the earth itself. It is 150 yards in length, and has been built to accommodate the large Transatlantic steamers which are expected to convey large quantities of grain and other provisions to the warehouse, and which will be from 220 ft. to 320 ft. in length, and will each carry about 3,000 tons of cargo, with a draught of water of about 20 ft. each. The quay at this point is about 125 ft. in width, and upon it iron hydraulic hoists are now being constructed from the front of the quay to the grain warehouse, so as to form a ready means of communication between the front, and more particularly adapted to the rapid discharge and loading of vessels, which is one of the essential requisites of commerce and the shipping business in modern times, and has been very carefully considered and provided for by the company by whom the new grain-warehouse has been constructed. The contractor for the whole of the building is Mr. W. E. Jackson, under the superintendence of Mr. Charles Jackson. Sir Wm. George Armstrong & Co. Elswick Engine Works, are the contractors for the hydraulic engines for working the elevators and patent band machinery which convey the grain from the vessels into the warehouse and also work the cleaning apparatus and weighing hoppers. Messrs. John Abbot & Co., Gateshead, are the contractors for the general machinery, including steam-engine, boilers, accumulator, pressing pipes, and hydraulic fire-pumps and fire-extinguishing apparatus; and Mr. Walter Scott has been the contractor for the construction of the new quay-wall, for which Mr. Fowler, the borough engineer, has been the engineer, and the cost of which is upwards of 30,000*l.* Mr. John Thompson, Cloth Market, is the engineer for the building and machinery.

THE WEDGWOOD INSTITUTE, BURSLEM.

A FEW years ago a movement was set on foot for the purpose of presenting Mr. William Woodall with a testimonial in acknowledgment of his services in connexion with the erection of the Wedgwood Institute and the work carried on within its walls. Upwards of 400*l.* was subscribed, but Mr. Woodall not only declined to accept the testimonial for his own benefit, but with great generosity promised whatever might be needed beyond that amount for the purpose of erecting and fitting up additional rooms for a museum and other pressing requirements, on condition that the burgesses would simultaneously undertake the repair and renovation of the existing building by subscription. This renovation, involving a few slight structural alterations, has been effected, and the museum has been built at a total cost of about 1,000*l.* by Mr. W. Cooke, from the plans of Mr. G. B. Ford, architect. The new portion of the Institute is approached from the grand staircase by a spacious corridor, and comprises a museum on the first floor 25 ft. 8 in. by 17 ft., with a smaller room 18 ft. by 10 ft. 6 in. Underneath these are rooms which can be used for general purposes. The committee are thus enabled to remove the various works of art from the reading-room to a place suitable for them, and at the same time the comfort and convenience of the readers will be increased. The upper rooms are lighted from the top. The floors are of fire-proof construction, laid with encaustic tiles.

The new buildings were formally opened on the 11th inst., with an exhibition of the works of George Mason, A.R.A., and James Holland, both of them artists connected with North Staffordshire.

The Mayor having declared the buildings to be open, Professor Colvin gave an address on the works of the two artists mentioned. There were, he said (in conclusion), only two or three great provincial towns, such as Liverpool and Manchester, which were at present likely to be great centres of art worthy the name; but he looked forward to the time when works of art should not be so much centralised,—when there should be other centres besides that great Babylon of London. That Mason should have been born in that neighbourhood, should have come back there and painted Staffordshire scenes, and that an exhibition should be held in his honour in Burslem, was an indication of that future which one hoped for in art. In the pastoral eastern counties of England, two artists,—Crowe and Crome,—had been produced, who had described the scenes of their native counties. He wanted to see the works of such men recognised in their own town and neighbourhood, so

[1]hat artistic resources of the country might be ndefinitely developed. He alluded to the effect of the vast industries of the Potteries on the district, and said, notwithstanding the grimness of the district, the tall chimneys, and the low houses, there was much there that was capable of picturesque rendering. Those pottery towns would not have done their duty until they had trained the eyes and instincts of the people, so that they might record artistically the aspects of their actual existence as it was. There was plenty to be done in that way,—plenty to yield results which should have their value to posterity. It was to the encouragement of art, both by the development of the local spirit in artists and their love for their native soil, that he looked for the real improvement and extension of art.

MONUMENTS AND STATUES.

Lord Colonsay.—There has just been erected on the island of Colonsay by the inhabitants a large granite monument in commemoration of the late Lord Colonsay. As will be remembered, the monument erected about three years ago on the same site as the present one was destroyed by lightning shortly after it was completed. The monument now erected, like the former one, has been designed in the form of an obelisk, and, as placed on a cairn, stands 30 ft. in height. It is executed in unpolished red granite. In order to prevent the recurrence of the disaster which befel the former monument, a lightning conductor has been fixed.

Dr. James Bryce, F.G.S.—The local monument in memory of the late Dr. James Bryce, erected to mark the spot where he fell in the Pass of Inverfarigaig, has been completed. The monument consists merely of an upright monolith, undressed and rude, nearly as taken from the high craig beside which it stands. The stone is about 12 ft. above the ground, and is based upon a rock slightly higher than the level of the road, which passes within a few yards. The following inscription has been engraved upon a part of the stone dressed for the purpose:—

"In memory of James Bryce, LL.D., F.G.S., F.R.S.E., a distinguished geologist; born near Coleraine, Ireland, 1806; killed opposite this spot, while in pursuit of his favourite science, July 11th, 1877. Erected by scientific friends in Edinburgh, Glasgow, and Inverness."

Sam Bough, R.S.A.—The monument to the late Sam Bough, R.S.A., which was mentioned a few weeks ago, has been placed over the painter's grave in Dean Cemetery. The outcome of a subscription started shortly after Mr. Bough's death, under the auspices of a committee presided over by Sir Daniel Macnee, P.R.S.A., the memorial was designed by Mr. W. Brodie, R.S.A., and has been erected by Mr. John Rhind. It is a simple structure of grey New Galloway granite, bearing on one side a bronze relievo of the late artist's head and bust, modelled by Mr. Brodie, and cast, it is stated, at Sir John Steell's foundry.

Highgate Cemetery.—A marble monument, designed by Mr. J. O. Scott, architect, has just been erected in Mr. Julius Beer's mausoleum, Highgate Cemetery, a view of which was given in our pages, to the memory of his only daughter. The design is in Italian Renaissance. Standing on two steps, in St. Ann's marble, is a moulded base, bearing a sarcophagus, in which will be placed the coffin. On this will be a group in statuary marble, representing an angel receiving the spirit of the departed. The group is in the hands of Mr. H. H. Armstead, A.R.A. Around is a recessed arch and jambs, with carved angels in spandrels. On each side of the sarcophagus is a pedestal supporting a square column and pilaster richly fluted, with carved capitals. Over these is a bold entablature, in the frieze of which, and over the group, are a number of cherubs holding a ribbon. The material is Sicilian marble, and the monument has been executed by Mr. Henry Terry, architectural sculptor, Lambeth-road, who is also preparing a floor in coloured marbles for the mausoleum. A bronze gate, carved by Mr. Brindley, and cast by Mr. Young, of Pimlico, has just been hung in position.

Archdeacon Moore.—A recumbent effigy of the late Archdeacon of Stafford has been placed on the altar-pedestal in the south choir aisle of Lichfield Cathedral. The figure has been executed by Mr. H. H. Armstead, R.A., and was exhibited at the Royal Academy. It is of white Italian marble, and the pedestal on which it rests is composed of alabaster and British and foreign marbles. The front of the latter is ornamented with a scroll of marble mosaics, with a panel in the centre of rich green Anglesey marble. Columns of Languedoc marble are also introduced. In the hollow of the cornice, which is of Levantine marble, is the inscription, written by Dean Bickersteth. The work was designed by the late Sir G. G. Scott, R.A., and the pedestal has been executed by Messrs. Farmer & Brindley.

The Right Hon. T. H. S. Sotheron Estcourt.—The unveiling of the memorial statue to the late Mr. Sotheron-Estcourt took place at Devizes on the 16th inst. The memorial has been erected by Messrs. Wheeler, of Reading, from a design furnished by Mr. Woodyer, architect, Graffham, Guildford. It consists of a full-length statue by Mr. Nichols, of London, in combination with a fountain.

François Arago.—A statue of François Arago, the astronomer, is to be unveiled at Perpignan on Sunday next, September 21.

Robert Bruce.—The Lochmaben statue of King Robert the Bruce was unveiled on the 13th inst. by Miss Alice Hope Johnstone. Carved out of a close-grained freestone obtained from Fairholm Quarry, near Hawick, the figure stands 8 ft. high, irrespective of the plinth on which it rests; and is to be placed at the height of 10 ft. from the ground, on a pedestal of Dalbeattie granite of simple design. The sculptor, Mr. John Hutchison, R.S.A., has sought to represent the king as a sturdy warrior.

WATER SUPPLY.

Bradford.—The Mayor and Town Council of Bradford recently spent two days in inspecting the whole of the vast system of waterworks which, completed and in progress, forms the principal undertaking of the Corporation. On the first day the high-level works were visited, these including the Horton Bank and Brayshaw Reservoirs, the Stubden Reservoir, and the new compensation reservoirs and conduits at Leeming and Leeshaw, at the head of the Oxenhope Valley. The mayor (Mr. Angus Holden) expressed his great satisfaction at the successful completion of the works, which, as he observed, were designed for the benefit not only of Bradford, but of some thirty surrounding townships. Votes of thanks were given to the waterworks engineer, Mr. Binnie; to Mr. Gott, who, when in the service of the Corporation, originated the Oxenhope scheme; to the contractors, Messrs. Crabtree Bros. & Sugden; to Mr. Lee, their assistant; and to Mr. Patterson, the clerk of the works. On the second day the corporation first visited the Silsden compensation reservoir, part of the undertaking of the old Bradford Waterworks Company, where Mr. Binnie, the waterworks engineer, briefly explained the object of the reservoir, its capacity, drainage-area, &c. The drive was then continued by Addingham to the Chelker Reservoir, and thence the party proceeded by Draughton and Embsay to the navvy settlement at Halton Moor, above Barden. Here is the terminus of a railway which has been constructed by the contractors for the upper Barden reservoir, and which runs along the hill-side for about two miles and a half to the site of the new works. A special train was waiting, and in this the party were conveyed to the extreme end of the new reservoir, where the principal feeder is received. After an inspection of the works, under the guidance of Mr. Binnie, the party walked down to the lower reservoirs, where the carriages were in waiting, and were soon *en route* to Ilkley, where the party celebrated the occasion by dining together.

Blantyre.—As the Local Authority has not succeeded in agreeing with the proprietors and others whose lands would be affected by the proposed scheme for obtaining a supply of water for the special water supply district, it has been resolved, in exercise of the powers of the Public Health Act, to petition the Home Secretary to be allowed to put in force the powers of the Lands Clauses Acts in order to carry out the scheme agreed upon.

Burntisland.—The Corporation of Burntisland have recently opened new waterworks for the supply of the town. The works, of which Mr. John Sang, of Kirkcaldy, is the engineer, have cost about 25,000*l.* The distributing reservoir is situated at Kilmundy, a mile north-west of the town, 200 ft. above the sea level, and about 40 ft. below the level of the other reservoir. The principal reservoir is at Cullalo. The gathering ground, of which it is the culmination, extends to 1,200 acres, and the reservoir itself covers forty-three acres. It has a capaci 100,000,000 gallons, or about 140 days' su The inhabitants of Burntisland are now prov for at the rate of 70 gallons per head per as against 16 or 17 in the best yield of former supply.

Keith.—New waterworks for Keith and Keith, in Banffshire, have recently been op by the Local Authority. The water is colle from springs in the glacks between the hi Balloch, about three miles and a half Keith. The reservoir cost 1,895*l.*, and the 2,097*l.*, and other items of expenditure the total cost up to nearly 5,000*l.* The were designed by Mr. Willet, C.E., Aber and carried out by Mr. Scott, contractor Pirie acting as inspector of the works.

DRAINAGE AND SEWERAGE.

Kirkintilloch.—It is proposed to carry scheme of drainage for Lenzie and Kirkinti at an estimated cost of 4,200*l.* Mr. Cop of Glasgow, is the engineer.

Selkirk.—At a meeting of the Selkirk Council and Police Commission, on the 8th Provost Anderson, referring to the compl of the new sewerage works, said the town now provided with a complete system of u ground drainage, with filtration and irrig works, in compliance with the provisions o Rivers Pollution Act. In carrying out object it had been necessary to cons upwards of five miles of drains; these had laid with fireclay pipes, jointed with Por cement. At intervals there were man flushing-tanks, and ventilating-shafts ca above the chimney-tops. So far as the perience went, the works appeared to success, the small quantity of water ret to the river after leaving the irrigation g being clear, pure, and tasteless.

Galashiels.—At a meeting of the Gala Town Council, on the 8th inst., it was agre employ Mr. Lundy, C.E., Cardiff, to m map of the burgh suitable for a general dra scheme.

DANGEROUS STRUCTURES IN THE OF LONDON.

The large extent of property in Londo dangerous state of disrepair may be sur from the following report made at *one* m of the Commissioners of Sewers,—the m on the 9th inst.:—

Notices in Reference to various Dangerous Stru

Reported 1st time:—By Mr. Power—No. 109, Thames-street, west external wall; No. 109, Thames-street, archway or floor over a way; No. 109, Upper Thames-street, front No. 109, Upper Thames-street, rear externa (next skylight). *Certificates* (premises danger By Mr. Power—No. 109, Upper Thames-stree external wall; No. 109, Upper Thames-street, arch floor over a public way; No. 109, Upper Thames front wall; No. 109, Upper Thames-street, rear wall (next skylight). By Mr. Collins—Nos. 29 Botolph-lane; No. 8, Botolph-alley; No. 7, B alley; No. 21, Love-lane, Eastcheap. *Reports (wo done)*:—By Mr. Collins—The "George" public corner of Mansell-street and Little Somerset-stree "George" public-house, and No. 12, Little So street; Nos. 10 and 11, Little Somerset-street; Little Somerset-street; Nos. 19 and 21, Mansell-st *Reports (works done)*.—By Mr. Collins—No. square, Houndsditch; No. 3, Love-lane, Eastcheap Botolph-alley: Nos. 31 and 33, Fenchurch-street; Botolph-alley and No. 7, Love-lane. By Mr. Pow 123, Lower Thames-street, and being the southern e wall; No. 124, Lower Thames-street, and bei southern external wall; Nos. 123 and 124, Thames-street; No. 4, Paternoster-row; Nos. 11 Paternoster-row; Nos. 8, 9, and 11, Ivy-lane; N Upper Thames-street and Fye Foot-lane; No. 1 gate-hill; and Nos. 10 and 11, Printing-house-lane.

Presentation.—At Swanage a large g ing recently took place at the Mowlem Ins for the purpose of presenting Mrs. Burt w address and portrait of her husband, subs for by the workpeople and friends of M Mowlem & Burt, on the occasion of Mr becoming Sheriff of London. The portr the work of Mr. Edgar Williams. On the form were the Lord and Lady Mayoress, Sheriff Burt, and Mrs. Burt, and a depu from London to represent the subscribers Hall, on behalf of the committee and subsc requested the Lord Mayor to present the a and portrait to Mrs. Burt. The Lord in doing so said that over 1,000 workmen employ of Mr. Sheriff Burt had subscribe only in London and Swanage, but also Aberdeen and Guernsey.

PROVINCIAL NEWS.

...stings.—The Local Government Board has ...ioned a loan of 15,000*l.* to the Corporation ...stings for the erection of new municipal ...ings, which will not include a town-hall, ...will comprise a commodious Police and ...ty Court,—which is much needed,—with ...sual municipal offices. The site belonging ...e Corporation was not large enough for a ... hall, and owing to the scarcity and high ...e of eligible building land in Hastings, a new ...together with the extra buildings, would ...just doubled the cost, and have made it ...30,000*l.* instead of 15,000*l.* At the meet... the Town Council on the 5th inst., a ..., amounting to 12,180*l.* was accepted for ...ecution of the work.

...gton.—At a meeting of the Longton Town ...ll, on the 4th inst., it was unanimously ...ed, on the recommendation of the Baths ...ittee, to erect baths on the site of the ...ground, and the surveyor was instructed ...pare the necessary plans.

...lenhall.—At the meeting of the Willenhall ... Board, on the 1st inst., a report of the ...age Committee was read. Mr. John Clark ...led and explained how the lease from the ...of Lichfield affected the land which it was ...sed to purchase for carrying out the ...age scheme, after which it was resolved, ... such report be received, and that this ..., after the fullest discussion, are of ...n that the price of 300*l.* an acre, asked by ...Lichfield's agent for the land in question, ... high, and so far above what they are ...d is its fair value, that they do not feel ...ed in accepting it."

...sall.—The new post-office buildings, which ...veral months past have been in course of ...on at the junction of the two new streets ... back of the County Court, are now nearly ...d. The style is Italian, the materials ...eing red brick, with stone dressings and ...e. From the vestibule, entrance is ob... to the public office, a well-arranged ...ment, 24 ft. long by 19 ft. broad, and 15 ft. ... Along the centre of this apartment is a ... mahogany counter, with desks for the ...otion of money-order, telegraph, and ... business, whilst at the side are compart... for the writing of telegrams. At the ... of the general office is the sorting-room, ... by 24 ft., and the postmaster's office ... The upper floor is reached by a stone ...se, and the set of rooms in this part of ...ilding includes the telegraphic operating-... the messengers' waiting-room, a retiring-... for the clerks, a similar room for the ...carriers, the battery-room, a bedroom, &c. ...otal cost will exceed 4,000*l.* The work ...en carried out by Mr. D. Moore, from ...s by Mr. James Williams, of H.M. Office ...rks. Mr. G. Reavell, Birmingham, has ...as clerk of the works.

...ley.—The Local Board of Shipley, near ...rd, have, in pursuance of powers conferred ...them by Act of Parliament in 1874, in ... of many adverse circumstances, made ...orable progress in street and other im...ents, of which a long and detailed account ...en published in the *Bradford Observer*. ... years the town of Shipley has acquired ...portance of which its founders had no ...e conception. Originally a few clusters ...ses bordering the market-place, and a ... line of dwellings along the main high ... from Leeds to Skipton, constituted ...hole of Shipley village early in the ...t century. Even in 1826, when the ... was built, the erection of that edifice ...oked upon as a great mistake, the site ...considered so far away from the village. ...nsequences of abnormal growth are seen ... narrowness of the roads, as well as in the ...ar construction of many of the dwellings. ... other hand, the better arrangement of ... and houses in the newer portions of the ..., as on the higher side of Church-lane ...ltaire, so threw into the shade the cramped ... and streets of old Shipley, that a re... ing was almost necessitated for the sake of ...ance. The Public Health Act was adopted ... township in 1853, after a local inquiry ... fully established the necessity of some ... ing hand being laid upon the place, and ...stablished, the new authority exhibited ...nterprise in obtaining a Waterworks and ... Act, the powers of which were extended ...5 and 1873. By the Act of 1874, in ...n to other provisions for rendering more efficient the administration of the town, the Local Board were empowered to borrow, in respect to the water undertaking, 10,000*l.*; in respect to street improvements, 50,000*l.*; and in respect to other purposes, 40,000*l.* The Board have since obtained an addition to their powers for street improvements amounting to 16,000*l.*, making a total of 66,000*l.* borrowed for this purpose alone. The waterworks scheme of the Board, so important to the well-being of the town, has turned out a somewhat expensive affair. The principal reservoir at Eldwick, for which an estimate of 28,000*l.* was given, has already cost over 50,000*l.*, and it is not yet completed.

Salisbury.—The new banking premises for Messrs. Pinckney Bros. have just been completed in the Market-place, at the corner of Winchester-street. The building is in the domesticated style of half-timbered Tudor work, the principal material being red brick. In the lower parts Bath stone dressings are freely introduced, whilst the whole of the upper portions are of half-timbered work, filled in with stuccoed plaster, ornamented with *sgraffito*. The entrance porch has supporters on either side sculptured in stone, in the shape of griffins on their haunches, bearing shields. Upon these shields are emblazoned respectively the arms of the Pinckney family and the civic arms of Sarum. The barge-boards of the various gables are enriched by carved oak work, and above the numerous gables and gablets of the building tower the tall red brick chimneys. The *sgraffito* work, as well as all the wood and stone carving upon the building, has been carried out by Mr. Harry Hems, of Exeter. The mosaic floor in the entrance lobby is by Messrs. Burke, of London. The architect is Mr. Henry Hall, of London, and the work has been carried out by Messrs. Hale & Sons, builders, of Salisbury.——A fine-art exhibition is to be opened in Salisbury during the week commencing the 22nd of September. Mr. James Hussey is the honorary secretary.

MASTERS AND MEN.

Glasgow.—The Glasgow painters held a private mass meeting on the 12th instant, and adopted resolutions in favour of trade organisation.

The Potteries.—The master-builders of Stoke-on-Trent and those of Newcastle-under-Lyne, Hanley, Burslem, Longton, and Tunstall, have resolved on a general reduction in the wages of bricklayers and other operatives, owing to the general fall of wages throughout the country.——At a meeting of the Master Potters' Association at Hanley on the 11th instant it was unanimously resolved to reduce absolutely the wages paid to all workmen in the china and earthenware trades of the Staffordshire potteries 10 per cent., and it is stated that there was a strong feeling against arbitration.

London.—A strike has occurred among some of the workmen of Messrs. Browne & Robinson, builders, Worship-street. That firm is now engaged in the erection of a block of warehouses in Fann-street, Aldersgate-street, and it appears that about a month ago the labourers engaged on the job complained of having insufficient help to serve the bricklayers, and that the foreman, on the 12th instant, having given an irregular order, the men who were getting 5¾d. per hour demanded more help, or an increase of ¼d. per hour. The demand was refused, and they, followed by the bricklayers—thirty-one men in all,—thereupon left their work, and got their money. This, however, had not affected the masons' and carpenters' work on the job, which has not been stopped, as a few bricklayers remained, and lads have supplied the place of bricklayers' labourers.——On the 13th instant, at a meeting of the members of the engineering trade, held at the Rising Sun, Blackfriars-road, the secretary of the Central Executive committee for the men on strike presented the weekly balance-sheet, which stated that a committee appointed by the West London branch had investigated the strike-books, and had certified that there were no grounds for the imputation of dishonesty and mismanagement which had been cast upon the officers by recent auditors. There were now 286 men and 432 children on the strike-rolls, the highest pay to them being 7s. 6d. weekly.

Manchester.—On the 5th inst. the representatives of the Manchester and Salford Associations of House Painters met at the offices of the Master Builders' Association, No. 45, Arcade Chambers, and signed the following award of the Mayor of Manchester:—

"Having held a court of arbitration for the purpose of settling certain differences between the master and operative house-painters of Manchester and Salford, and heard the various facts stated and arguments used on both sides, and having duly considered the same, I decide and award as follows:—On the question of wages, That the employers have established to my satisfaction that there is just cause for a reduction in the wages now paid, and that the standard rate of wages be reduced on and after September 1st, from 7½d. to 7d. per hour. As regards town work and walking time, that the system hitherto adopted of workmen proceeding in the morning to certain points or boundaries other than, and often in opposite directions to where, their work lies, and of charging the time occupied in walking from such points or boundaries to their work at the rate of working wages, is vicious in principle, wasteful in practice, and unjust in result, and must be abolished; and that the new rule proposed by the employers to the effect that 'men working within three miles of Albert-square must be on the job at starting time' is sound in principle and approved by me accordingly. As regards country work, that the scale of distances proposed by the employers, with the extra pay for lodgings, and the conditions as to men travelling to and from their homes, are reasonable, and must be adopted, with the following addition: That the men have 1s. per week extra when having to stay in the country on Sunday. CHARLES S. GRUNDY, Mayor, Arbitrator."

The Scotch Iron Trade.—The ironmasters of Scotland, at a meeting held on the 9th inst. in Glasgow, resolved not to raise the pay of their operatives, and also to put out of blast one-third of the furnaces at present in operation.

Dearth of Work at the Antipodes.—The *Melbourne Argus* says the condition of the artisans and labourers in Victoria at the present time is most deplorable. On every hand there is a cry of workmen of all kinds being out of employment. On the 23rd of June a deputation from the unemployed presented to the Government a petition praying for work. It was signed by 1,001 men, comprising labourers, carpenters, blacksmiths, engineers, moulders, tinsmiths, plumbers, painters, bricklayers, masons, and other trades.

Intimidation.—Mr. Henry White, of Waterford, having procured a set of Messrs. Allen Ransome & Co.'s ingenious butter-firkin-making machines, mentioned by us in connexion with the Agricultural Show at Kilburn, has received a letter threatening himself and his business with destruction unless he gives up the idea.——At Manchester, a man named Dore, a glass-cutter, who has been working on his own account in disregard of the rules of the union, of which he is presumably not even a member, and whose offence has been an endeavour to find purchasers for his work, has been shot at and wounded in the public streets, and has been again threatened, and even assaulted, since his discharge from the infirmary.

CLOCKS AND BELLS.

Hathersage.—A new clock has just been erected in the church tower of this village. It strikes the hours, chimes the Cambridge quarters, and shows time on one dial 5 ft. diameter. It was manufactured by Mr. John Smith, Derby.

Storrington.—A new turret-clock has just been fixed in the tower of Storrington Church, near Pulborough. It was manufactured by Mr. J. W. Benson, of London, who has already made and fixed a large number of clocks in this part of the country. The clock is made upon the latest principles, the bed or frame being of cast iron, the different parts so constructed and bolted into the same that any portion can be easily removed for cleaning or other purposes without disturbing the remainder.

Too Fast.—One of the effects of the panic of 1873 was to defeat certain railroad projects in Virginia, and suddenly check the growth in its infancy of a grandly laid-out city near Quantico, in Prince William County, in that State, about thirty miles down the Potomac. New York capitalists purchased there a tract of land,—about 7,000 acres. This tract they laid out in streets, avenues, and squares, and named it Potomac City. Mr. Bangs was so confident of the success of the enterprise that he immediately had erected, near the intersection of Potomac-avenue and the railroad, a large hotel. This is a concrete building of four stories, containing 122 rooms, and it cost $68,000. It is well arranged and finely finished. This building, now occupied only by some one to care for it, has long been a wonder to those who have caught sight of it from passing cars or steamers. The enclosure surrounding it having once or twice been cultivated in corn, gave it a still more singular appearance,—a hotel in a cornfield.—*Washington Star.*

THE LATE MR. WALTER NEWALL.

AN unostentatious but useful and honourable career was closed by the death, on the 28th ult., of Mr. Walter Newall, late principal clerk in the Building Act office of the Metropolitan Board of Works. Mr. Newall, who was in his 75th year, entered the public service in September, 1844, as clerk in the office of the Official Referees under the Metropolitan Building Act of 1844. On the passing of the Act of 1855, Mr. Newall elected to take office under the Metropolitan Board of Works, a position which he occupied until May, 1878, when he retired, the Board granting him the maximum allowance under the Superannuation Act of 1866. Mr. Newell may be said to have devoted himself to the Building Act, and had a considerable part in the framing of the Act of 1855, and of the various measures which had been put forward for the purpose of amending and extending that Act. He was examined at considerable length by the Committee of the House of Commons on the Metropolitan Fire Brigade, presided over by Sir H. Selwin-Ibbetson, in 1876, and on all matters connected with the municipal government of the metropolis his lengthened experience and clearness of judgment made him a valuable adviser. Mr. Newall's face and figure must be familiar to many of our readers, and there must be but few connected with building in the metropolis who have not received some kindness at his hands, and who will not remember him as an upright, single-minded public servant.

THE NATIONAL SCHOOL OF ART WOOD-CARVING.

THIS school was established with the view of encouraging the neglected art of wood-carving in this country by a committee of gentlemen, who, being aided by the Society of Arts and the Drapers' Company, engaged a Florentine wood-carver, Signor Bulletti, and opened a school last year at 3, Somerset-street, Oxford-street, with the assistance of Mr. Donaldson. A convenient room in the Royal Albert Hall has been placed at the disposal of the school, and the Drapers' Company have given a further grant with which the committee are enabled to provide for the instruction of twelve free students.

Candidates for free studentships are selected from persons of the industrial class who are intending to earn their living by wood-carving; other students are admitted to the day classes of the school on payment of 2*l.* a month, or 5*l.* a quarter, and to the evening classes on payment of 15*s.* a month, or 2*l.* a quarter. For particulars, applications should be addressed to Mr. Healey, Royal Albert Hall, Kensington. We will take an opportunity of looking into the working of the school.

TAMPERING WITH "TIME-SHEETS."

AT the Westminster Police Court, on Saturday last, Richard Warden, a scaffolder, was charged with uttering to George Alexander Welsh a certain forged authority for the payment of money, with intent to defraud George Shaw.

Mr. George A. Welsh, clerk to Mr. George Shaw, builder, of 79, Page-street, Westminster, said the prisoner, as a scaffolder in the employ of the firm, would have his time booked, as a check, by the timekeeper at the works where he was employed, and in this instance he was at work at 123, New Bond-street, and brought over to Westminster a sheet signed by Hurrell, the timekeeper, for twenty hours' work, at 6*d.* per hour. Witness saw it had been tampered with, and communicated with Hurrell, whose answer was that the sheet had been made out for ten hours only, and it was then apparent that the 10 had been altered to 20 in the most clumsy manner. The prisoner, who apparently suspected nothing, was told to call for the money in the morning, and, when he did so, was given into custody.

Henry Hurrell, the timekeeper, proved that the prisoner worked only 10 hours, for which he gave him a check. It had been altered without his sanction to "20." When Mr. Welsh sent to him to verify the check he at once detected the fraud, and he sent back to Mr. Welsh by the prisoner, under cover, to that effect.

The prisoner was committed for trial.

BRICK-STEALING.

AT the Middlesex Sessions, before Mr. J. Dunnington Fletcher, Andrew Mullins and George Taylor were indicted,—Mullins for stealing 1,500 bricks, the property of Abraham Cohen, and Taylor for receiving them, well knowing them to have been stolen.

The prosecutor is a builder, of 22, Portsdown-road, and about the 4th of July he ordered 8,000 bricks of Mr. Nash, of Slough, and they were to be counted by Mr. Woolridge, to whom the prisoner Mullins was carman. Instead of 8,000, only 6,500 bricks were delivered on his premises. Another carman, named Sibley, was with Mullins, and they each took 500 bricks, and according to his statement, instead of going the direct road to Kilburn, where they had to take them, Mullins went down another road, and when Sibley got to the place he did not find Mullins there. The same evening he went to Taylor's place, and there found 500 bricks that had been shot out loose, and he brought away one of the bricks to show that it was of the same kind they had to deliver on the premises of the prosecutor. Detective Clary afterwards went to Taylor, whom he found in an unfinished building in Kilburn-lane, and told him that he had come to make inquiries about a number of bricks that had been stolen, the property of Mr. Cohen, 22, Portsdown-road, Maida-vale, and as some had been found on his premises he was asked to account for them, and whether he had an invoice for them. At first he said he knew nothing about them, but after some hesitation he said he supposed that the truth must come out, and that Andrew had shot them there as he could not get them through the lane with him. He said he had not paid for them, nor had he used any. The detective then told him that he had seen one of his men take two hodfuls on to the scaffold a short time before, and he believed there were some on the scaffold then. The detective added he should take him into custody for receiving a quantity of bricks well knowing them to have been stolen, when Taylor said he would pay Mr. Cohen for the whole lot. He was then taken to Kilburn station, and Mullins was apprehended the same evening.

The jury returned a verdict of guilty against both the prisoners.

Mr. Fletcher sentenced Mullins to hard labour for four months, and Taylor for six months.

STAINES TOWN-HALL COMPETITION.

SIR,—I have seen an advertisement inviting architects to compete for this work. With your permission, I should like to draw attention to the terms upon which they are asked to do so.

The total cost of the building is to be 2,500*l.*, the architect whose design is chosen being required to superintend its erection. The Local Board magnanimously put it thus:—"It is not proposed to offer a premium for plans, &c., but a sum of 100*l.* will be paid, which shall be inclusive for plans, elevations, sections, &c., and the superintendence of the works." We shall be politely asked to work for honour and glory next, and to discard such a vulgar and prosaic notion as being compensated for one's services. I earnestly hope that architects who respect their calling will refuse to compete.

The profession is losing caste, and its members have, in a great measure, to thank themselves for it.

ESPRIT DE CORPS.

STONE *v.* CEMENT.

SIR,—From practical experience in the North, I confidently endorse the conclusions your correspondent, J. Taylor, arrives at (p 1006):—1. That houses built of concrete composed of crushed materials, such as the slag of blast-furnaces, pottery refuse, &c., are (from many points of view) superior to those built of brick or soft freestone; and 2. That the many failures which have occurred have been entirely owing to neglect on the part of the builders, either to obtain proper materials, or to secure their thorough admixture.

But these difficulties (by proper supervision) removed, the principal one,—of architectural treatment,—still remains; for the stucco fronts, with their panelled and *sgrafito* decoration, can only be accounted most miserable failures.

Concrete is undoubtedly a most excellent building material, but it should only be used for the purpose for which it is fitted, viz., the central filling-in of walls; the facing must be of materials which are capable of architectural treatment.

Many of our old churches, particularly in the eastern counties, are built in this way, the walls being filled in with a sort of concrete, and faced with flint and stone.

Why, then, should not concrete walls be faced with terra-cotta? a material most admirably adapted for use in large towns; and if manufactured with a slight vitreous glaze, we should have one of the finest possible materials for resisting damp, smoke, dirt, and dust; but the glaze must be very different from that in general use, which is far too strong and glaring.

By the judicious use of different-coloured terra-cotta, plain and slightly glazed, with some parts, such as the shafts of columns, panels, &c., decorated with a richer glaze, or even with enamels, almost any desired architectural effect might be obtained, which would be second only in appearance and durability to fronts of granite and marble. For the internal face of the walls I would recommend concrete blocks built up with and bonded to the terra-cotta, the whole filled up with concrete.

For ecclesiastical architecture, the use of terra-cotta would open out a noble field of coloured decoration, and instead of the usual miserable bareness of stucco, the walls of our churches might be rendered rich and living with a glorious harmony of permanent colour, capable of the highest and most artistic t ment. Caps and other foliated parts shou cast in block; they could then receive as an amount of individual art-treatment as would at the hands of the carver.

JOHN L. BIR

SELF-ACTING SYPHONS.

SIR,—In the short abstract you have (at p. 1002) of the paper I read on this su at the recent meeting of the British Assoc at Sheffield, your description of the s which I have finally adopted as most eff does not explain what is really the ess feature of this form; viz., the expedie throwing the water clear of the sides c syphon. At the upper mouth of the long a *conical shell* is fixed, projecting inwards from the inner surface of the tube; where water, trickling over the edge of the sh directed so as to fall towards the centre tube, and thus produce the maximum eff displacing the air. It is this conical (shown both in the diagram and in the w model exhibited at the meeting) which e mere driblets of water to start syphons of dimensions, and thus renders syphons form so valuable for automatically fl drains and sewers. For instance, as exp in the paper, the water which runs to from a drinking-fountain will start a 10 in. or 12 in. in diameter of the im form; so that this trickle of water, when co in a tank, can be made the means of automa flushing a sewer of considerable size.

ROGERS FI

CHURCH-BUILDING NEWS.

Fordington St. Georgs.—The parish chu Fordington St. George, Dorchester, is be seated, from designs by Mr. Chapman.

Brighton.—All Souls' Church, Eastern Brighton, has just been restored, from pl Mr. E. E. Scott, architect, Brighton. builder is Mr. Barnes, of North-street. of the principal features are a new or Mr. Farrant; an east window, the gift late incumbent, the Rev. Snowden Sm memory of his wife; re-seating of the fre raising the roof, and putting in a wooden place of the old plaster ceiling; placing fronts of carved work in the galleries; painting the church. The church was re- on the 7th inst.

Liverpool.—On the 3rd inst. Mr. Groves, who is a principal contributor undertaking, laid the foundation stone new church of St. Cyprian, at the co Durning-road and Edge-lane, Liverpool building, of which Mr. Henry Sumners architect, will be in the Gothic style, a accommodate about 800 persons. The si gether comprises 1,400 square yards, an has been left for the erection of a vi The church will include a nave and tri together with a tower and spire at the we The contractor for the building is Mr. Leslie, of Bootle, and for the woodwork Morrison & Son, Wavertree.

Southwick.—A new mission church and room is about to be erected at Fishe Southwick, Sussex. The plans have be pared by Mr. Arthur Loader, architect, Br

Bathford.—Nearly a quarter of a cent the work of restoring the parish church Swithin, Bathford, was first commenced H. D. Skrine, of Warleigh Manor, who additional accommodation was required, t north aisle, which is still known as the W aisle. In 1872 the church was restored the direction of Mr. Preedy, architect, L a new south chancel aisle being added, s south aisle being enlarged. The old to the west of the church, which was sq shape, was left. It was confessedly a erected in the early part of the present c and it is now to be replaced, at the cost Skrine, with a tower more in keeping w rest of the church. The foundation-st this tower was laid on the 29th ult., by t J. H. Skrine, son of Mr. H. D. Skrine through illness, was unable to be present tower will be but a little less than 10 height, square, and surmounted by a tu the south-west corner. It will be erecte the plans of Mr. Preedy. It will be cons of local stone, by Mr. W. H. Newman, h of Bathford, at a cost of 1,600*l.*

ester.—The church of St. Mary, Ilchester, ly the capital of Somerset, is about to go restoration at a cost, as estimated, of It is proposed to rebuild the nave, add a aisle, and restore the north chapel.

pton Bellinger.—The parish church has en reopened after restoration, at a cost 00*l.*, under the direction of Mr. Withers, ct, London.

h Shields.—Holy Trinity Church, South s, has been reopened, after alterations and ment. The nave has been lengthened y, and the whole of the internal fittings een renewed. The carving round the was done by Mrs. Johnson, the wife of the ct, and by her presented to the church. urch as altered will accommodate 1,000 The total cost is about 3,000*l.* Messrs. Johnson, & Hicks, of Newcastle-on- have been the architects, and Messrs. Scott & Son the contractors for the of the works. Mr. Charles Cobham, of land, has been the clerk of the works.

n-on-Severn.—The new parish church of on-Severn was consecrated on the 3rd It has been erected by Mr. T. Collins, Tewkesbury, from plans by and under perintendence of Mr. A. W. Blomfield, ct. The style is Geometrical Decorated. ternal facings are of coursed Stanway with Bath stone dressings. The plan is gular, consisting of a nave and aisles, l, transept, north chancel aisles, and ves- There is a square tower at the north- ngle, carrying a broached stone spire, a moulded pinnacle at each angle. The tage of the tower constitutes one of the al entrances, and the belfry above is d to receive a peal of bells. The new g will accommodate more than 700 per- The dimensions of the various portions structure are as follow:—Nave, 84 ft. ft.; aisles, 13 ft. 3 in. wide; chancel, 5 in. by 22 ft.; transept, 15 ft. 6 in. by chancel aisle, 31 ft. by 16 ft. The tower is 12 ft. square, with walls of 4 ft. in ss. Height to the top of tower, to top of finial cross on spire, 183 ft. ount of the contract at which the work ken was 11,194*l.* 12s.; additional for eight of spire, 60*l.* This does not the warming apparatus, nor the altar- font, pulpit, lighting arrangements, , levelling of ground, &c. The total urred exceeds 12,000*l.*

—The church of St. Patrick, Cambridge- ove, Sussex, was re-opened on the 7th The interior of the edifice has undergone ough renovation at the hands of Messrs. man & Co., builders and contractors, on, and several important improvements en effected in the structure, one of which ghting of the cloister, which was formerly rk. The walls and ceilings, and all the ork, have been painted, and the stone- s has been well cleaned. The organ has horoughly cleaned by Mr. Willis, the of the instrument. A large stained- indow has been placed in the west end hurch. It is by Messrs. Clayton & Bell.

Worthington (Devon).—The ancient parish of St. Mary, East Worthington, having arly rebuilt, the re-opening took place 14th inst. The work has been carried der the superintendence and from the of Messrs. Clark & Holland, architects, market, Cambridge. The structure con- nave, chancel, and a western tower, some high. The church is very small, only odating 80 persons, but the parish itself but 250 inhabitants all told, so that it iently roomy for the requirements of the The work of restoration has occupied two years. The chancel work has been the vicar's expense (Rev. W. M. Bruton) Wm. Parish, builder, of Witheridge; and ly, builder, of the same place, has done e and tower. This part has been done xpense of the Earl of Portsmouth. Four ve been hung in the tower by Mr. Moses of Winkleigh.

nleigh.—The parish church of St. Mary ene, Chulmleigh, has been re-opened, storation. The building is a structure Perpendicular period, and has a fine tower. The works just completed the complete reseating of the nave and oak, the erection of stalls of the same in the chancel, the putting-up of a al pulpit, the addition of a new credence, the general restoration of the tower. The seating throughout has been made by Mr. Grant, from the designs of Mr. J. F. Gould, architect, Barnstaple, and the carving is by Mr. Harry Hems, of Exeter. The pulpit is erected in memory of the late Dr. Davey. It has been especially designed by Mr. R. Medley Fulford, architect, Exeter. In the main it is of wainscot oak, but stands upon an octagonal base of Dumfries and Painswick stones. The pulpit has been constructed and erected by Mr. Harry Hems. The works to the tower embrace the erection of new battlements and crocketed pinnacles in Dartmoor granite, and other necessary additions and renovations. This portion is not yet complete, but is being carried out from the designs and under the supervision of Mr. Edward Ashworthy, architect, Exeter.

Stoke Gabriel.—The parish church of Stoke Gabriel has just been re-opened, after restoration. The village lies about four miles south-east from Totnes, on the east bank of the estuary of the Dart. The church is an exceptionally lofty one, and altogether is a fine sample of a Devonshire church. It has a good western tower. Messrs. John Hayward & Son, architects, Exeter, having prepared designs for the proposed restoration, the contract was taken by Mr. Crocker, builder, of Torquay. The works have embraced the restoration of the building generally, especially the putting on of new roofs and the construction of a new vestry and organ-chamber, and a new western tower-screen, dividing the ringers in the belfry from the congregation. This screen, like the old ones, is in oak. A memorial stained-glass window has been placed in the east end. It is by Messrs. Clayton & Bell. Beneath it is a reredos in Caen stone, made from Mr. Hayward's design by Mr. Harry Hems, of Exeter, who has also done other wood and stone carving in the church. The roofs are all open, their intersections stopped by carved bosses. That of the chancel is decorated in colour, the decoration of this and of the old screens dividing the chancel and nave aisles from each other having been carried out by Mr. F. Drake, of Exeter. Mr. Drake has also done the geometrical glazing of the windows. A new organ has been erected in the south transept by Messrs. H. P. Dicker & Son, of Exeter.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Hooton.—On the 21st ult., the new Roman Catholic Church of St. Mary of the Angels, at Hooton, was opened by Dr. Knight, the Roman Catholic Bishop-auxiliary of Shrewsbury. The style adopted by the architect, Mr. E. J. Tarver, is thirteenth-century Gothic. The church is built of red sandstone, taken from a quarry belonging to Sir John Stanley Errington, and will accommodate about 200 worshippers. There are few embellishments about the stonework. The altar and side altar were made in Paris. The masonry work and vaulting were executed by Mr. William Pritchard, of Little Neston; the woodwork, by Mr. A. Bleakley, Birkenhead; the ironwork, plumbing, and glasswork were undertaken by Mr. H. Tomlinson, of Liverpool; the carving by Mr. T. Allen, of Chester; and seven stained-glass windows in the chancel were made and fixed by Messrs. Heaton, Butler, & Bayne.

Burton-on-Trent. — On the 28th ult. a new Roman Catholic Church was opened in Burton. The structure is of brick with stone dressings, and is Early Gothic in character. The plan comprises nave, north and south aisles, sanctuary, small side-chapels, sacristry, organ-gallery, and tower, and is capable of seating about 400 persons. The nave arches are supported by polished Aberdeen granite columns, with Stourton stone moulded caps and bases. In the spandrels of the arches carved Bath stone corbels support a polished Irish marble shaft with carved capitals to form pedestal rests for eight carved figures, only one of which is at present fixed. The chancel arch is of moulded Bath stone, springing from moulded caps on three-quarter columns of polished Aberdeen granite, the base being formed by carved stone corbels. Both bases and soffit of the arch are filled with carved pateras. The principals and roof timber are varnished deal, diagonally boarded, laid with felt and covered with the Broomhall Tile Company's patent roofing tiles. The west front is in Guild-street, and here is placed the tower, which is at present unfinished. It is intended, when funds will permit, to carry it up higher and add a spire. Immediately under the west window a double niche has been fixed to receive the figures of SS. Mary and Modwena, to whom the church has been dedicated. The contract for the building was let to Messrs. Lowe & Sons. Messrs. Camm, of Smethwick, did the glazing, and Mr. Jerram, of Derby, supplied the heating apparatus. The church was erected from designs by Mr. J. K. Morley, architect. A font is shortly to be added, a fine block of alabaster having been specially selected for the purpose from the quarries of Messrs. Staton & Newton, at Fauld. Up to the present (exclusive of the organ and reredos) the cost of the building has been about 3,500*l.* The reredos was supplied by Mr. Roddis, of Birmingham (who also did the carving) at a cost of 200*l.*

STAINED GLASS.

Pennycross. — A stained-glass window has lately been placed in the south transept of St. Pancras Church, Pennycross, near Plymouth, to perpetuate the memory of the late Mr. W. C. Hodge, of "Pounds." The window is of three lights, with a traceried head of Perpendicular design, and the subject illustrated is the parable of the Good Samaritan. The window has been designed and executed by Messrs. Fouracre, of Stonehouse.

Inverness.—At a meeting of the Inverness Town Council, on the 1st inst., the Town-hall Committee recommended that the stained-glass windows in the new Town-hall be filled in with the arms of the principal Highland clans. Councillor Rhind moved as an amendment that the badges of the different trades and industries of the burgh be substituted for the arms of the clans,—such as masonry, workers in wood, workers in iron, gold, and silver, and other fabrics, commerce, agriculture, engineering, sculpture, painting, banking (represented by the arms and motto of the local bank), the railway, telegraphy, education, literature, the press, sportmen's windows, the Church of the country, an illumination of the old sculptured pediment found in the old building, the arms of Scotland, the quarterings of the town arms, the arms of provosts, and members of Parliament; also those of the peers of the realm who have forwarded the prosperity of the town, such as the Duke of Sutherland, the Earl of Seafield, Earl of Moray, Duke of Gordon; the arms of those who were friendly to the burgh in olden time, such as the Mackintosh, Forbes of Culloden, and Fraser of Lovat; the monograms of the Provost, Bailies, and the Councillors of the First, Second, and Third Wards. Councillor Rhind, in support of his proposal, said that those windows should be filled with what was essentially municipal and Invernessian, and with what really belonged to, and was intimately connected with, the interest and prosperity of the burgh. It appeared to him to be invidious to represent one section of the community to the exclusion of all others,—the Highland element to the exclusion of the Anglo-Saxon,—especially when Inverness was founded by an Anglo-Saxon king by royal charter, and continued an English town to the present day. It was proposed to put the arms of those who were not ratepayers in preference to those who were,—to make it a barons' hall instead of a burghers'—a hall in borrowed plumes. The recommendation of the Committee was, however, carried by twelve to five.

Penn (Bucks).—Four new stained-glass lights have been fixed in St. Margaret's Church, Penn, Bucks. Two by Sir Philip Rose, bart., of Rayners; the subjects are St. Margaret and St. Lucia; and two by Lady Margaret Rose, in memory to Mrs. Lucy de Saint Croix, consisting of the Charities, and the Saint Croix arms in the traceries. They have been executed by Messrs. Mayer & Co., of Grosvenor-street and Munich, after designs by Mr. Henry G. Liley, of Hammersmith.

Hove.—A stained glass window has just been fixed in the west end of St. Patrick's Church, Cambridge-road, Hove, Brighton. The window illustrates the life of the patron saint, whose figure is prominently set forward in the centre of the design, occupying the upper portion of the central light. It is richly canopied, and is nearly life-sized. Associated with the figure are a series of twenty-three pictures, setting forth many of the principal and interesting incidents in the life of the patron saint. The window has been put in, at a cost of several hundred pounds, by Messrs. Clayton & Bell, of London.

Books.

Farming for Pleasure and Profit. By Arthur Roland. Edited by William H. Ablett. 1. Dairy Farming, Management of Cows, &c. 2nd Section. Poultry-keeping. London: Chapman & Hall. 1879.

The author of these neat little volumes thinks there are many persons who would gladly supplement their incomes if they could see their way clear to do it, by entering upon rural occupations which are congenial to their taste, but who are deterred by the want of a little practical knowledge; and as he himself was at one time in that position, and has gradually acquired knowledge and skill in such matters, he has been persuaded to give others the advantage of it. We are free to confess that in the course of our own experiences we have not usually found amateur farmers make much money by their doings. It depends, however, a good deal on natural aptitude and previous occupations and tendencies, and those who feel an inclination this way, as well as many who are already engaged in agricultural pursuits without any knowledge, and so are wholly in the hands of their assistants, cannot do better than obtain Mr. Roland's books. When they have mastered their contents, they will certainly find themselves in a much better and more agreeable position than they were before, and may be able to attain that long and indeed justly praised distinction of having made two blades of grass grow in the space which formerly produced but one.

We take a passage from the volume on Dairy Farming as a specimen of the style of the book:—

"By having a handy man or two about the place, nearly all the tradesmen's bills can be saved. Our jobs may not be done so thoroughly, but they answer my purpose very well; and we are in the habit of 'knocking up' quite extensive erections and conveniences out of *hurdles*, which we thatch with straw or furze. Is a cow-shed wanted in a distant part—perhaps at the extreme end of my little farm, which is of a long straggling character? We fell a few straight young fir-trees from out of the plantation, which we fix as uprights at the corners, and at convenient distances, to act as supports for others, placed across them at top; and fill up the spaces, and cover in the roof with thatched hurdles. A large roomy building is thus constructed by my men in a very short time. If a door is wanted, so that the whole may be closed entirely in, one hurdle placed upright, and working on stout 'withy' hinges, gives us a door at once. In this way we build sheds for the cows, which gladly avail themselves of them in hot weather, to get away from the flies; and we have these handy erections all over the place, wherever they are wanted, and pull them down without ceremony when they are not required to be permanent and we can do without them. Some time ago, being desirous of keeping my breed of black Spanish fowls distinct from the others, my foreman's wife, who lives in a cottage on the land, which stands by itself, but without any out-building save their own, agreed to look after them, and we accordingly put up a fowl-house of the above-named materials. It is warm, roomy, and everything that can be desired for the purpose, and in one corner of it my foreman keeps things, for which he was sadly pinched for room before, having rigged up some shelves within it, the opposite end being used for the fowls' roosting-place. To me, all these little improvements are a constant source of interest, and I make this digression, in order to show how comparatively easily things may be done where one has the right sort of men about, who can turn their hands to something a little different to ordinary farm work. It is not, of course, necessary that they *all* should be able to do this, but out of a number of men, two or three could easily be found who would prove useful upon these emergencies. In some parts of the country, as in Devonshire, 'stud and mud' houses are built, the walls being made up of straw mixed with earth wetted, sods, etc. These get firm and dry, and are 'rough-cast' outside and whitewashed, and an erection of this sort on a small scale would answer as well for many purposes as a proper brick building. To the citizen, and dweller in towns, who has to pay for everything that is brought to him, the item of carriage in some of the bulkier articles forming the greater portion of the cost, this sort of thing cannot be so readily realised; but in the country, often, the stones, which sometimes can be used for these purposes, and always the earth, are beneath one's feet for use. Tiles, as a roofing for a dairy-house, are objectionable. They are hot in summer and cold in winter, and a thatched roof is perhaps as good as any for the opposite reasons; but there is one drawback, that when a thatch gets old, it is apt to get musty, and therefore liable to harbour vermin. Good thick slates form the best roofing, being more impervious to the weather than any other material. Slate, indeed, should be used wherever it can in a dairy, even for the floors, for they imbibe less moisture than bricks. For, although water may be occasionally used in a dairy to advantage, as I have before instanced, yet, as a rule, it should be kept as dry as possible. When the floor is laid with brick, the spilled milk gets into the crannies, and also the water, and from these a certain amount of unpleasant odour will arise, however trifling, so that a slate flooring, raised a few inches above the outer ground, to make sure of a fall for water, is preferable to anything else; and any one making new arrangements in connexion with his dairies should have recourse to slate as much as possible, and a floor with slanting gutters, to carry off the water used in washing, or 'swilling' down, will be found advantageous. In the same way a slate table will be liked by those who make use of them, but slate is not always so procurable as slabs of stone, or pavement, and one has to deal often with the materials which are readiest to hand. Marble is affected by many gentlemen who like to see their dairies handsomely fitted up, but slate is even preferable to marble, fishmongers finding that it preserves fish twenty-four hours longer than marble does. Slates are easily laid upon a bed of mortar upon the ground, and where the earth is loose or soft a bottom of concrete should be first spread. This is composed of seven parts of dry gravel, free from clay or loam, mixed with one part of pounded quick-lime, mixed with water at the time of using it, till it attains the consistency of thick mortar. A little Portland cement would be found very useful in stopping up chinks and crannies in the floors of dairies. When it is necessary to build a new dairy altogether, a very economical method is to set up a framework of timber quartering, cased outside with half-inch slates, the cavities between the quarters inside being filled up solid with concrete, made as before described, or lime and hair mortar, with rubble of bricks, or stone, and made smooth inside with the trowel. When lime is used it preserves the timber from decaying."

VARIORUM.

According to the *Parisian*,—"The extension of the present canal system is exciting much attention in France, both from the recognised necessity of largely increasing the facilities for internal communication, and the large outlay, about 37,000,000*l.*, which the new works will cost. The canals now existing are about 3,000 miles in length, and among the proposals on the *tapis* are the construction of a canal from the Oise to the Aisne; the canalisation of the rivers Engre, Scarpe, Anthie, Canche, Ternoise, Clarence, Liane, Upper Lys, and Upper Aa; the connexion of the Upper Scarpe with the Anthie, of the Canche with the Ternoise and Clarence, and of the Liane with either the Upper Lys or the Upper Aa. A direct waterway from the Nord to Paris and Rouen will be of great benefit to the industries of Northern France, and it is proposed to obtain this by a canal which will leave the Deûle near Courrières, pass close by Lens, Arras, Bapaume, and Peronne, to join the Oise at Noyon. This would shorten the present route from Dunkirk, Lille, and the coalfield of the Pas-de-Calais to Paris by more than fifty kilomètres, and would represent on coal a saving of 1fr. per ton. By making this connexion between the Deûle, Scarpe, Somme, and Oise, a very important link would be completed in the great interior waterway between Calais and Dunkirk to Marseilles."——In the course of an answer to an inquiry why so little really good sculpture is now produced, *Replies* (a new paper, which is apparently conducted with much intelligence) says:—"It is almost too much to expect that sculptors of the present day will ever produce such noble work as that which the early Greeks have left in their Parthenon; nor can we hope that efforts equal in merit to the Niobe, the Laocoön, and other well-known marbles, will be repeated. Sculpture subjects are not so susceptible of variety of treatment as in other arts, and it is n easy to ring the changes, so to speak Venuses, Dianas, Gladiators, and Apollos, cially when unfavourable comparisons migl made with others of the kind. Still, the has not been altogether exhausted in directions, and there may yet arise an ent new conception of Cupid and Psyche, of at the Fountain, of the Dancing Fawn, o Bowling Discobolus, just as there may exist, or remain to be born, as many sculptors as have lived since the day Praxiteles, of Cleomenes, and of Mi angelo. That there has been, and still is, than a disposition to raise the tone of m sculpture, no one acquainted with the best ductions of Canova, of John Gibson, B Theed, Hiram Powers, Thorwaldsen, Flax Foley, Noble, and other remarkable sculpt a modern period, will deny; and that their living among us at the present day more one who possess many of the best qualifica which have belonged to great sculptors, w conceded by all who were only a short since enraptured by Leighton's 'Athlete,' a a work of Richmond's, representing a yo the act of running, which was represent the Grosvenor Gallery. In spite of th doubted genius which our illustrious Pre displays in his first important attempt i sculptor's art, it is more than doubtful wh so formidable a work would ever have bee dertaken had it not been that the accomp gentleman was already so far independe worldly patronage as to enable him to car his ambitious venture 'regardless,'—to sp common parlance,—'of expense.'"

Miscellanea.

Liverpool Engineering Society.—Th meeting of this Society since the summer was held on the 10th inst., when a pape read by Mr. E. C. V. Petherick, on "Pump Pumping Gear." The author describe various classes of pumps, their constructio maintenance, and went on to consider the n sary qualifications of pump-valves for v purposes, their design and arrangement the air-vessels, stand-pipes, rods, and othe necessary for pumping. The paper was sively illustrated by a series of diagrams.

Local Maladministration.—At a m of the Hexham Local Board of Health he week, a communication was read from the Government Board, enclosing copy of a which that Board had received from Mr Hodgson, a resident of the town, complain the Local Board's default in the manag of the town's sanitary arrangements, neglect of sewer-flushing and inattention cleansing of the ventilating-grates were objections most dwelt upon in the complai defective design and execution of the p drainage and water-fittings being also p out. The letter and enclosure were ultim referred to the Works Committee.

Lighthouse near Swanage.—The co for the erection of the lighthouse at Anvil near Swanage, have been recently opene it is stated that the tender of Mr. S. Cla Poole, has been accepted. The lighthou be built of Purbeck stone, and the total co be about 5,000*l.* The lighthouse will be ap able from the land, and will be situate high rock. The lantern will be fixe height of something like 300 feet above level.

Mrs. E. M. Ward's Classes.—We h ready mentioned the establishment by Mrs of classes for the study of painting and d by ladies at William-street, Lowndes-s and some of our readers may be glad t that the pupils have this week re-asse Mr. Frith, R.A., and Mr. Horsley, R.A visited the school and expressed themsel much pleased with the teaching and th done.

Paris International Exhibition.—T ports on the Paris Exhibition, made by s artisans who were sent out last year Society of Arts, are now in the press, a be published immediately. In order to them within the reach of the classes interested, the reports have been arrang printed in eleven classes. Messrs. Se Low are the publishers.

Proposed Theatre in the Strand.—It ed that "unforeseen difficulties" have led Mr. Toole to abandon, at least for the , his cherished project of building a new for himself in the Strand, notwithstand- t (according to the *Daily News*) things far progressed that plans were completed, gs of the intended buildings were made, nd entrances were planned, and all was in r the addition of a new playhouse to the t of metropolitan places of entertainment, questions of "ancient lights" and the emands of holders of adjacent property ry to give due access to the theatre, were o present insurmountable obstacles. To theatre in the Strand would seem to be costly undertaking. It is stated that in of the intended site of "Toole's Theatre," ere no fewer than five properties to be ted for, exclusive of what was required venient approaches. At present these ies, which lie back some 50 *ft.* from the horoughfare, are occupied only by poor gs—a common lodging-house, a barber's nd so forth. Yet the price of the free- s conditionally arranged, is said to have ed to no less than 23,000*l.* With the arrangements necessary, and the cost of lding, the total expense of the project is not far short of 40,000*l.* When the pro- building a theatre on the site of Exeter as discussed some months ago, no less than *l.* was demanded; but this amount in- the value of the adjacent hotel, which the sers were to undertake to rebuild on a cale. In the face of the difficulties which us beset him, Mr. Toole has for the pre- andoned his scheme, and has taken a ease of the "Folly" Theatre, in King n-street, Strand, which he will open in . In little more than two years hence have to vacate this building, which is d to be demolished to allow of the ment of the Charing-cross Hospital.

rian Exploration.—It is stated that ustees of the British Museum have ed a successor to Mr. Hormuzd Rassam work of Assyrian exploration, viz., Lieu- Kitchener, R.E., whose name has for ears been connected with the work of the ie Exploration Fund, and who will, as s official duties permit, start for Mosul. ant Kitchener has only recently returned prus, where he had been sent to arrange Ordnance survey of that island. With- ying anything in deprecation of this ment (if it has been made), it seems to er for regret that Mr. St. Chad Boscawen, the British Museum, is not to be asso- with the expedition. Mr. Boscawen, labours as an Assyriologist are widely sed, is, we believe, about to start for the of the Tigris in pursuit of his investiga- His special qualifications for such an ise were borne testimony to at a recent held at the Royal School of Mines, -street (*Builder*, p. 864, *ante*), upon occasion Mr. Hormuzd Rassam said, "if e going out again, he should only ask r. Boscawen might accompany him."

ctical Mechanics at Eton College.— w drill-hall and school of mechanics, on the west of the gas-works, is nearly t. The factory is a building of three which are being fitted with various ical appliances, lathes, and machinery, tive power consisting of an eight-horse gas-engine, manufactured by Crossley s, of Manchester. Mr. Francis M. , C.E., an old Etonian, has been selected first instructor in practical mechanics for lege, and he will commence his course out forty pupils as soon as the students mble.

neerships, Liverpool.—The Liverpool Council has substantially adopted the endations of the special committee ed to consider the subject of the seve- f the offices and duties of Borough and Engineer. As already stated (see p. *ante*), the committee recommended that ices should be made distinct; that Mr. Deacon (the present Borough and Water er) be elected Water Engineer, at a of 1,200*l.* per annum; and that a h Engineer be appointed at a salary of per annum. The first two recommenda- were adopted in their entirety, but an ment to reduce the salary of the proposed h Engineer was carried by 22 to 21 votes.

Undercutting.—At a recent meeting of the Shrewsbury Board the chairman remarked as to the proposed Wrekin-road school, that they had had two schools built in the district, and each under different architects, and the question would be,—Should they put the building of the new school into the hands of either of those architects, or put it into other hands? Mr. Webb asked who were the two architects; and the chairman replied that the architects for the Hadley schools were Messrs. Bidlake & Fleeming, and for the Lawley schools Mr. Randal. Mr. Webb said he would like to know which were built most satisfactorily to the Board. The chairman said the last school (Lawley) was the most satisfactory one. He could state that the schools had not cost less than from 7*l.* to 7*l.* 10s. per child, independently of the masters' houses; yet he had received a communication from an architect which had greatly astonished him. He had sent a bundle of papers giving the average cost of schools he had built, with or without fittings or boundary walls. He would give them a good school without boundary-walls or fittings at the rate of 5*l.* per child, and in proof of that he expressed his willingness to take his commission based on that. It transpired that the gentleman's name was E. H. Lingen-Barker, of Hereford. The question now arose whether they should divide the work,—employ an architect at 2½ per cent., and a clerk of the works at 2½ per cent. After a lengthy consultation it was resolved, upon the proposition of Mr. T. R. Groom, seconded by Mr. Webb, that plans and specifications be invited by advertisement for the Wrekin-road schools, with an intimation that the one which was accepted should receive 2½ per cent.

The Proposed New Musical Corporation. We are glad to notice that the proposal for the establishment of a representative musical institution, embracing in one body the most eminent practical musicians and the most influential patrons of music, the probability of which we were the first to make known, is taking definite shape. It was proposed to seek co-operation and support from all musical societies of eminence, and to begin by inviting a union between the Royal Academy of Music and the National Training School for Music. An executive committee, with Prince Christian at its head, was formed to carry the scheme into effect, and at once proceeded to open negotiations with the Royal Academy and the National Training School. Both institutions accepted the principle of union, and appointed committees to consider the details. The whole of the year has been occupied in discussing the terms of union, which consist, in effect, in the acceptance of a charter uniting the two bodies; such an acceptance to be binding only in the event of there being secured, through the agency of the executive committee, an annual income of at least 3,000*l.*, with other advantages, for the purpose of carrying into effect the objects of the new institution. The Duke of Edinburgh has recently communicated to Prince Christian the unanimous acceptance [by the Training School of the terms of union. The charter has been very fully discussed between the Royal Academy and Prince Christian's Committee, and there remain only to be considered a few matters of minor import. Owing to the illness of Lord Dudley, the president of the Royal Academy, it is not anticipated that the matter will be finally settled until the end of the year.

New Board School in Glasgow.—Mathieson-street school, situated in the Hutchesontown district, was formally opened by the Glasgow School Board on the 1st inst. The total cost of the structure is 8,500*l.*, and it is to accommodate 900 scholars, at an average cost of 9*l.* 8s. 10½d. per head, but adding the cost of the site (1,921*l.* 6s. 10d.), the average per scholar is 11*l.* 11s. 7d.

The New Market at Stratford.—In connexion with the notice of this market in our last issue, we would add that the whole of the ironwork, viz., the columns, iron roof principals, lattice girders, &c., of which there is a large number, was manufactured and supplied by Messrs. Stanley, Hall, & Co.

The Pulsometer.—This pump has obtained another silver medal (making in all two gold and five silver medals awarded to it). This last was awarded at the Manchester meeting of the Royal Manchester, Liverpool, and North Lancashire Agricultural Society, held from the 4th to the 8th of September.

The Halifax Commercial Bank.—We may add to the list of contractors given in our description of this bank last week the names of Messrs. Salmon, Barnes, & Co., of Ulverston, who are supplying their Patent Iron Bank Shutters for the various windows and doors.

TENDERS

For the erection of three houses, at Nunhead-grove, S.E. Mr. R. Cruwys, architect. Materials part found. Baths and fittings excluded:—

Holcombe (accepted)	£1,050 0 0

For Southwell Minster Church Restoration. Mr. Ewan Christian, architect:—

Estcourt	18,430 0 0
Thompson	18,456 10 0
Fast	18,455 0 0
Williams	18,218 0 0
Clipsham	18,171 0 0

For alterations at the Bell and Horns, Brompton. Mr. J. Edwards, architect. No quantities:—

Sprague & Foreman	£987 0 0
Marsland	838 0 0
Ansell	821 0 0
Langmead & Way	725 0 0

For alterations and fittings, 164, Oxford-street, for Messrs. Gooch & Co. Mr. George Edwards, architect:—

Sanders	£1,019 0 0
Cullum	968 0 0
Lidstone & Sons	903 0 0
Richardson	795 0 0
King	768 0 0
Martin, Wells, & Co. (accepted)	750 0 0

For additions to Peckham House, Rye-lane, Peckham, for Dr. Stocker. Messrs. Whitfield & Thomas, architects. Quantities supplied by Mr. T. M. Deacon:

Clemence	£3,845 0 0
Bangs & Co.	3,560 0 0
Jarrett	3,428 0 0
Cells & Son	3,400 0 0
Higgs & Hill	3,340 0 0
Downs & Co.	3,260 0 0
Bowyer	3,200 0 0
Deards	3,157 0 0
Thomas	2,850 0 0

For new public offices, for the Corporation of Southampton. Mr. Jas. Lemon, architect:—

Stevens & Son	£3,410 0 0
Sanders	3,198 0 0
Rowland	3,010 0 0
Bull & Sons	2,930 0 0
Crook (accepted)	2,797 0 0

For proposed new schools, &c., at Bromsgrove. Messrs. Day & Yates, architects. Quantities supplied:—

Mead	£4,745 3 0
Kendrick	4,391 8 6
Cook & Harris	4,389 16 0
Bate	4,298 0 0
Smith	4,297 16 0
Simmonds	4,151 8 3
Jones & Son	4,143 16 0
Smith & Son	4,115 0 0
Dixon	4,017 16 0
Corbett	3,984 13 0
Read & Ames	3,9 7 16 0
Tilt & Fisher	3,827 15 9
Trewood	3,777 0 0
Dawson & Bradbury	3,612 16 0
Vardey & Winter	3,590 10 0
Marshall	3,589 5 0
Brazier & Weaver (accepted)	3,563 10 0
Horton	3,474 16 0
Milward	3,227 0 0
Pritchard & Feltham	3,205 16 0
Widdowson	3,070 16 0

For mansion at Lea Park, Witley, for Mr. W. H. Stone. Mr. R. W. Drew, architect. Quantities by Mr. T. M. Deacon:—

Higgs & Hill	£17,557 0 0
Dove Bros.	14,799 0 0
Pink	14,772 0 0
Booth	14,650 0 0
Rider & Son	14,493 0 0
Franklin	14,265 0 0
Goddard & Son	13,772 0 0
Parnell & Sons	13,756 0 0
Hale & Sons	12,970 10 0

For dwelling house at Mill Hill, for Canon Benoit:—

Butler (accepted)	£760 0 0

For new farm buildings at Pipton, Glasbury, for Mr. Thomas Wood. Mr. Charles Butcher, architect:—

Hughes	£894 10 0
Webb	890 0 0
Price	880 0 0
Powell (accepted)	820 0 0

For the construction of the continuation of Dunstan's-road, on the British Land Company's Estate, at Dulwich. Mr. Henry B. Michell, surveyor:—

Thompson & Covington (accepted)	£1,755 0 0

For the drainage of Sheepshed. Mr. E. F. Stephens, engineer:—

Young & Williams	£5,400 0 0
Coker	4,700 0 0
Cowdery & Sons	4,475 16 0
Taylor	4,239 0 0
Bell	4,037 16 11
Dovener & Quennel	3,695 0 0
De Witt	3,686 0 0
Small & Sons	3,530 0 0
Beck	3,429 0 0
Stevenson	3,400 0 0
Meats Bros.	3,399 0 0
Dodds & Co.	3,250 0 0
J. & G. Tomlinson	3,250 0 0
Lea	3,100 0 0
Fotherby & Son	2,823 9 1½

For works for the Central London School District:—

For additions and alterations at the schools at Hanwell. Mr. William Hudson, architect. Quantities by Messrs. J. W. Forge & A. B. Hudson:—

Condor	£16,991	0	0
T. G. & R. Vigor	15,979	0	0
Patrick & Son	15,586	0	0
Downes	15,275	0	0
Gibson	15,000	0	0
Rider & Sons	14,988	0	0
Chappell	14,669	0	0
Verum & Ewens	14,390	0	0
Braid & Co.	14,249	0	0
Stephenson	14,100	0	0
Scrivener & Co.	13,897	0	0
Nye	13,848	0	0
Nightingale	13,840	0	0
Haynes	13,700	0	0
Sheppard	13,437	0	0
Higgs & Hill	13,420	0	0

For ironfounders' and other works in the erection of tanks and heating apparatus:—

G. F. & R. Vigor	£1,597	0	0!
McLean	1,540	0	0
Abercrombie & Sons	1,435	0	0
J. O. & C. E. Bretiel	1,430	0	0
Clements	1,383	0	0
Turner & Co.	1,350	0	0
Higgs & Hill	1,260	0	0
J. & F. May	1,210	0	0
Laidlaw & Son	1,170	0	0
Thames Bank Iron Co.	1,160	0	0
Hett	1,145	0	0
Pennycook, Sons, & Co.	1,120	0	0
Bacon & Co.	1,080	0	0
Land & Co.	1,020	0	0
Benham & Sons	1,012	0	0
Beckett Bros.	1,002	10	0
Derham	949	10	0
Gimson & Co.	891	0	0
Jukes, Coulson, & Co.	880	0	0!

For the erection of six cottages, at Edmonton. Mr. Robert Blackmore, architect:—

Uff (accepted)	£950	0	0

For the erection of five houses, at Southgate. Mr. Robert Blackmore, architect:—

Keen	£3,337	0	0
Harris	2,469	0	0
Webb & Co. (accepted)	1,912	10	0

For the erection of four villa residences, at Norwood Mr. Robert Blackmore, architect:—

Spelt	£2,480	0	0
Punchard	2,403	0	0
Street	2,200	0	0
Webb & Co. (accepted)	2,080	0	0
Burridge	2,037	0	0
Warr (withdrawn)	1,675	0	0

For the erection of two shops, at Green-lanes, Stoke Newington, for Messrs. Hall & Palmer. Mr. Robert Blackmore, architect:—

Uff	£959	0	0
Trigg	900	0	0
Skipper	877	17	0
Webb & Co. (accepted)	836	14	0

For alterations and additions to Camberwell House Lunatic Asylum. Mr. C. Innes, architect. Quantities by Mr. W. Birdseye:—

G. & S. Fisher	£3,469	0	0
Bangs & Co.	3,350	0	0
Browne & Robinson	3,284	0	0
Brass	3,279	0	0
Fish	3,256	0	0
Conder	3,162	0	0
Higgs & Hill	3,098	0	0
Shapley (accepted)	2,980	0	0

TO CORRESPONDENTS.

Errata.—"A Famous Roman Arsenal."—In the article so titled, the name of the river Argens was, by a clerical error, printed Argeus, as also that of the Siagne, Siogne.

Messrs. C.—L. L.—A. S.—R. P.—E. R.—Myra—L. & W.—R. S.—H. F.—C. S.—J. B. E.—C. E. S.—Col. D.—E. H.—J. O. C.—J. T.—J. S.—S. H. & Co.—P. & F.—T. M. D.—E. W.—T. T. G.—J. W.—J. C.—W. T. W.—F. R.—K. F. S.—W. H.—H. B. M.—C. R.—S. B. & Co.—R. W.—North Ritherdon (should have written earlier, and with right name and address).—F. E. (an application to Mr. Forrest, at the Institution, in Great George-street, S.W., will obtain the necessary papers).—G. R. (notice was already in type).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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The Social Science Congress.

THE twenty-third annual congress of the Social Science Association, to be opened in Manchester on the 1st of next month, promises not to be behind most of the meetings in interest, and the mere fact of its being held in so large and stirring a city as Manchester is ...t a guarantee of the success of the meeting ...th general sense which is implied in the ex...ion that it will "go off well." In reviewing ...eeting of last year we remarked how much ... it usually is to hold a congress of this sort ...own of active business and progress than ...lace consecrated to social ease and retire... such as the last rendezvous, where things ...nly did appear to hang fire somewhat. In ...shop of Manchester, the Association has ...d a president whose name has become ... proverbial for energy and activity, and ...lightened interest in social reform and ...ss; and this co-operation of a distin...d ecclesiastic in the affairs of the Con... will, we hope, tend to bring the clergy ... different kind of relation to the matter ... was apparent at the Cheltenham ...ess, where the clergy were mostly ... indifferent or in opposition. As to the ...ion the Association will meet with there ... little room for doubt. In the matter of ...ality, no one who knows Manchester will ... that the will to exercise it will be as con...ous as the means are known to be; and ... who have new ideas to bring forward ... education, trade, sanitation, or art, will ... lack of quick intellects to meet or combat ...views, and a local press fully equal to the ...cord and criticism of the proceedings, for in ...espect Manchester is eminent among our ...cial towns, and this is no unimportant ...nt in keeping up the interest of the week's ...dings on such an occasion.

... the two departments in which we are ...specially interested, "Health" and "Art," ... is certainly no want of interest in the ... of the questions proposed for discussion. ...irst one in the Health Section, "What ... evils resulting to health from the growth, ...le the boundaries of municipalities, of ...ban districts without due regulation or ...ol?" is perhaps so large in its scope as to ...r rather vague, and tend to generalities ...uch; but if it is regarded as the opening ... question to be considered in detail at a ...ding Congress, where the special points brought forward in this discussion may be taken up and dealt with more fully, it may ultimately lead to very practical results. The second subject, "The best means of improving the sanitary condition of existing homes of the middle classes," is a subject among those suggested last year, and postponed at that time in favour of others which were considered either more important or more attractive. We are glad it has not been allowed to drop, for though the considerations to which it leads may be dry enough, and can hardly, perhaps, be expected to attract audiences in large proportion to the number of the actual discussers of the question, nothing can be more practically important. It will be long indeed before we can hope to see all existing middle-class house property which is unsanitary rebuilt on better principles. Such reform could not be carried out without compulsory legislation on a scale which would involve practically the destruction of property on a great scale, and produce more serious evil than it removed, even if such a wholesale campaign were in any point of view practicable. But it may be possible to be agreed as to what can be done at reasonable expense to mitigate the evil effects of existing houses which have been planned and built in the pre-sanitary era, and it may be possible when this is done to induce Government to take some action by which owners of such property may be compelled to improve it either at once or on the first change of tenancy, so that the public may not be compelled to wait the indefinite period before the property reaches the state in which it can be condemned and pulled down. The "National Water-supply" is the third question which is to be discussed, and nowhere, certainly, could there be more suitable occasion for discussing it than within the town which has just made so decided a move in the effort to obtain once for all an efficient and sufficient supply of wholesome water, and given rise to so much discussion and recrimination on the subject. We sincerely hope that every effort will be made to strike out some idea that will be of general application, and will afford a prospect of arriving at a settled scheme by which to collect and store water for the parts of the country where its abundance is an absolute condition of healthy and anything approaching to pleasurable existence. The subject has been tinkered with long enough by specialists, each with his own views; its final settlement ought to be made. There is no doubt that scarcity of water need not affect any town or district in England if the most were made of natural supplies, and if water were stored instead of being allowed to run to waste; and if the Health Section of the Congress can arrive at any agreement as to a principle of storage and supply, the adoption of which can be really recommended as meeting the case and interfering with no private privileges or rights beyond reasonable limits, they will have done, perhaps, the most valuable stroke of work which any Social Science Congress has yet achieved. Nor must too great prominence be given, in regard to such a subject, to the claims or the sentiments of special persons or districts, or municipalities. We have already seen, in connexion with the Thirlmere scheme, how much fuss can be made by professed philanthropists, not understanding the subject on its practical side, whose objections on the score of sentiment turn out usually to be merely a preference for their own form of philanthropy over some other form, the value of which is not so apparent to them. We have got now to that crowded state of the country in which health is an overwhelming consideration, and must come before scenery and sentiment, since it is better that people should have health and no scenery (if that were the alternative) than scenery and no health. We are not, however, placed in so sad a dilemma by any means; nor is there any reason to think that operations undertaken to supply our towns generally with a liberal amount of water, even on the largest scale, will do anything to make the face of the country unpresentable more than railways have, or nearly so much; and we have survived the railways.

Thirteen years ago the Association met in this same good town, Manchester. On that occasion the condition of the place in various aspects was described by writers and speakers, and it is to be hoped that some inquiry will now be made as to the improvements that have been effected, and their results. The conductor of this journal, for example, said, after a personal examination of the town such as he had made in many other places on like occasions, "Many of the people live in a low condition of health. I have been in some houses in this wealthy city of Manchester, which are a disgrace to civilisation. Anything more frightful can scarcely be imagined, and I have seen a great deal, too." Again, "It is a monstrous fallacy to say Manchester could not be better sewered. I have looked into places that are fearful to contemplate."* Can or cannot similar statements still be made?

The special questions in the Art Department (which, as well as the Health questions, we have, indeed, already printed) are headed by the inquiry, "What subjects are most suitable for the pictorial decoration of public buildings in this country, and with whom should the selection rest?" In one sense we should say that the first part of the question might in a general form be very briefly answered; the subjects that are suitable are those,—within proper limits, of course,—that people take interest in; perhaps we might limit it by saying such as educated people of the present day will take interest in. That is at the bottom of the whole matter; but to be certain what people will take interest in, that is no doubt the difficulty. It is the more difficult because there is so much of pretence and affectation in these matters now, and it is really almost impossible to discriminate between the affected interest in some form of art revived by

* Transactions of the National Association for the Promotion of Social Science, 1868.

a set of enthusiasts, or the real interest in the matter felt by educated people at large. An additional difficulty in the way is the unpicturesque and often inartistic character of modern costume, which practically seems to put on one side what has been, in some other periods, the great source of subjects for the decoration of buildings, the public events of the day. Modern costume will lend itself to oil painting and to easel pictures well enough, but mural painting must be more or less decorative, and cannot be thoroughly realistic, and hence the great difficulty of treating modern subjects in that class of painting. On the other hand, ancient historical or so-called historical subjects, incidents in the early history of a town or city, are apt to have but a hazy and vague interest in the eyes of the modern spectator, and the more so because in many cases they are so like invented history made up to flatter the vanity of the modern inhabitants and their pride in the history and antiquity of their town, rather than probable representations of actual facts for which chapter and verse can be cited. It lies, however, between ancient history or legend, modern events, or ideal and abstract subjects. The first class of subjects are usually affectations, and we should not be inclined to encourage them; few people really care for them. The second class may be made highly and permanently interesting in the hands of a great artist, if only a material can be employed which will produce a sufficiently decorative effect while adhering in the main to realism of treatment, without which this class of subjects also becomes an affectation. It is possible that mosaic might meet the case here; the South Kensington authorities have set the example on a small scale in their portrait of Mulready among the historical group of artists, arrayed in his habit as he lived, and without the slightest attempt at heroic drapery or other sentimental accessories. Possibly mosaic may give a better chance with modern subjects than any other material, as its peculiar texture in itself removes the effect from too commonplace a realism, and the gold background supplies richness of decorative effect. But after all, we do not know whether abstract subjects introducing purely ideal figures do not afford as good a scope for decorative subjects, in fit hands, as any other class of theme. Such subjects have often, no doubt been treated coldly, academically, and pedantically, but they need not necessarily be so; genius will evolve something out of them, and they have the advantage of allowing the most abstract and decorative treatment possible, so as to harmonise with any style of architectural treatment. And after all, it is the mixing the materials "with brains" that is the all-important desideratum. Perhaps we might say, in answer to the question, "what subjects," "first catch a great artist; he will make any subject interesting, and without genius nothing will be so." By the way, should not the question have run "what *class* of subjects?" which we take it is really what is meant. As to who should choose them; why, the architect, if he is worth anything! That is exactly what he is for; to project and inspire the total expression and effect and scheme of the building, think over the decorative scheme along with the architecture, and provide suitable spaces and good light for it. That is the worst of most of the schemes for mural decoration, that they are never thought of in detail till after the architectural framework is finished, and then the subject and the treatment have to be cut to suit the framework, whereas both should be considered together.

We should hope that the second question in the Art Section, "Is it possible or desirable to establish regulations for the improvement of street architecture, and for the prevention of the disfigurement of towns and cities?" would be discussed rather with reference to the negative action implied in the second part of the sentence than to the positive action implied in the first. Regulations may be established,—of course, are established,—for hindering that which is considered dangerous and inconvenient in street architecture. This might be carried a step further, and extended to the prevention of features considered to be ugly, or to the erection of buildings without any attempt to make them agreeable in architectural effect; that is to say, to make them other than blank brick walls; but even this is a system of repression to be used with caution. The "improvement of street architecture," if it means anything, means obviously the improvement in artistic effect, and that cannot be legislated for. If that is what is intended, it is a mistake; but it is a good subject for discussion. The third leading question, "Is State aid beneficial to art?" is one of those questions as to which, although we have no doubt whatever on the subject ourselves, people never agree, and which always seem to us to be framed with the view of giving some one (generally the framer) an opportunity for attacking somebody or something else. However, it is a pretty question to quarrel upon, and wholesome disagreement is the life of a discussion. We hope the Art Section meetings will be well attended: they always have been so far. To the Congress as a whole we give our heartiest good wishes, and we commend its interests to the enlightened men and women of Manchester.

THE LATE EUGÈNE EMMANUEL VIOLLET-LE-DUC.

It was but a few days since, that in answer to the question whether M. Eugène Viollet-le-Duc were still living, we were able to state that happily that eminent artist was in the enjoyment of active health. Little did we then imagine that it would so soon be our sad duty to record the death of this accomplished artist and writer. Large is the debt of gratitude that the architects of the last two generations owe to the indefatigable and learned researches of the author of the "Dictionnaire raisonné de l'Architecture," and that valuable professional councillor and guide the "Entretiens sur l'Architecture."

Only two days after the grave had closed over the earthly remains of his old friend, Baron Taylor, has France been deprived of this other representative man. The death of M. Viollet-le-Duc (from inflammation of the lungs) occurred on Wednesday, the 17th inst., at Lausanne, in Switzerland, where he had hoped to spend as usual his autumn holidays; he had left Paris a few days previously slightly suffering in health, but nothing presaged the sad and sudden end.

Born in Paris, 27th of January, 1814, M. Viollet-le-Duc was consequently in his sixty-sixth year; his father, M. Adolphe Viollet-le-Duc, it may be incidentally mentioned, had been an eminent philologist, and a competent dramatic scholar. Young Viollet-le-Duc early entered the *atelier* of Achille Leclère, under whose direction he studied profoundly the whole architecture of the so-called Gothic period, from a triple point of view, the consideration of the civil, military, and religious works of each century. In the years 1836-37, he continued his studies in Italy and Sicily, especially noting the vestiges of the Roman and Greek art at Rome and Taormina. On his return to France the whole south was visited—Carcassone, Sens, Toulouse, and other towns, each supplying his bulky note-book with sketches. In 1840 nominated inspector of the works of the Sainte Chapelle, in conjunction with M. Lassus, he was in the same year entrusted with the restoration of the abbey-church of Vézelay, under the auspices of the Historic Monuments Commission. In the course of the next eight years, the churches of St. Pierre, Montreale (Yonne), the restoration of the Hôtel de Ville of Narbonne, the churches of Poissy, St. Nazare in Carcassone, and the church of Semur, amply occupied the time and attention of the energetic architect.

After 1845, and the competition of that year, M. Viollet-le-Duc was commissioned, in company with M. Lassus, to restore Notre Dame, Paris; with what success the profession well know. The following year the chapter of the abbey of St. Denis appointed him the architect of this historic church. In 1849 were commenced the restoration of the fortifications of Carcassone, the works for the cathedral of Amiens, and those of the Syndical Hall at Sens. Nominated in 1853 as one of the three Inspectors-General entrusted by the Minister of Public Worship with the Diocesan Service in France, M. Viollet-le-Duc conducted and directed, among other works, the restoration of Notre Dame de Chalons-sur-Marne, the cathedral of Laon, and the château of Pierrefonds, one of the eminent architect's most successful works, for in it he completely reconstituted the feudal dwelling in the days of all its splendour. At the close of 1863 he was nominated Professor of History, Art, and Æsthetics at the École des Beaux Arts, but this post the following year he resigned.

During the siege of Paris, in 1870-71, his activity added no little to the long defence of the capital, and its heroic resistance. Si that sad period, M. Viollet-le-Duc, while c tinuing his professional labours, ardently e braced politics; indeed, his views led to s serious difficulties that he resigned in 1874 position as inspector of diocesan edifices, at the same time he ceased to be the archit of the cathedrals of Amiens, Clermont, Paris, alone reserving to himself the direc of the works of the Abbey of St. Denis, on his most important restorations. During period he further restored the Protest Cathedral at Lausanne, and also, for the Co de Paris, the Château d'Eu.

As a writer, M. Viollet-le-Duc has displa rare talent and extensive erudition; his nu rous works, which have gained for hi world-wide reputation, are all remarkable their singular clearness of exposition, t methodical arrangement and attractive styl feature particularly noticeable in the n recent works he has published, and in whic has been his endeavour to popularise, both the pen and the pencil, the theory and hist of architecture.

Among his numerous works, in which knowledge of the art of the Middle has been set forth, the most importan his already mentioned "Dictionnaire raisonn l'Architecture Française," from the Tenth t Sixteenth Centuries (1853—1868, in volumes 8vo), a work which has brough author two prizes from the French Insti We have also by M. Viollet-le-Duc "L sur l'Architecture Militaire" in the M Ages (1854, 8vo), and the superb work "Dictionnaire du Mobilier Français," from Carlovingian epoch to the Renaissance (1 8vo), a continuation of, and complement t earlier work on the architecture of the M Ages, and in which the costume, armour, f ture, and customs of that interesting perio fully described and minutely illustrated. 1860 he contributed to the *Moniteur* a serie letters on Sicily, afterwards published in form. Next appeared his "Entretiens l'Architecture" (1858—68, 8vo), a work w with his two dictionaries above cited, have most rendered his name abroad familiar t professional world. In 1863 appeared a s tuous work on the "Cités et Ruins Americai illustrated with photographs by M. Cha In 1867—68 M. Viollet-le-Duc, in collabor with M. Ouradan, published a folio entitled "Chapelles de Notre Dame de Pa profusely illustrated.

In addition to these works, which the ir trious and delicate pencil of M. Viollet-le beautified with designs, for the most part, ever, simply sketches and technical explan drawings, he has exhibited at various tim number of water-colour drawings, chiefly, i be understood, of an architectural nature, for instance, as the view of the Cathe of Palermo, that of St. Mark, the Foru Trajan, and the antique theatre of Taor during a scenic representation; forty drawings belonging to the Commission o Historic Monuments of France, his prin works between the years 1833 and 1845.

As early as 1834 he obtained at the *Sal* third medal, in 1838 the second, and in 185 first medal; in 1849 he was decorated K of the Legion of Honour, and in 1858 pro to the grade of officer of that body. In 18 was elected member of the Royal Acade Fine Arts of Belgium, and, later, Hon Foreign Member of the London Royal Acad

In addition to the above works, M. Viol Duc has published a number of less impo volumes; a Description of the Château of C (1858) and the Château of Pierrefonds (1 "Intervention of the State on Art Educat (1864); "Letters addressed from Germ (1856); "What Architectural Education m in the Nineteenth Century" (1869); se works on fortifications, published after the of 1879-71; "Modern Habitations," two volumes, with numerous plates, an impo work published in 1874-75; the "History Fortress" (1874); the "History of the H Habitation" (1875); the "History of a Ho (1873); a "Monography of the Antique C of Vézelay" (1873); and more recently the "History of a Cathedral and Town- Full notices of most of these works will be in our pages.

Such, in addition to the numerous ar contributed to the press (he was a regular- tributor of the *XIXme Siècle*), are the lit labours of M. Viollet-le-Duc, in themselves

ent to have obtained a reputation for their thor, but to this large amount of erudition aced at the disposal of the artistic world must added his numerous works of restoration dis- buted over France, all of which he conscien- usly directed and inspected, forming a school young architects who are following in his ps. We may indeed mourn the loss of so tive a member of the profession, but his sons and the influence he has exercised on the ing generation will long be felt and bear it.

LIGHT IN THE SCHOOL-ROOM.

IT has been said that shortsightedness is a duct of civilisation. Where education spreads, re we notice the prevalence of *myopia*. When, 1870, the German legions poured into France, were told that it was the schoolmaster who won the battles, who had done more to eat the French armies than all the strategy Field Marshal von Moltke; but, at the same e, we had from all sides descriptions of the prise produced by the appearance of the rdy Teutons, whose martial aspect was some- at marred by the number of spectacles worn ler the *pickelhaube*. These great political nts impressed on all Europe the necessity education. Whatever mischief may have lted from this war, it must be owned that in the French themselves are indebted to rman prowess for the stimulant given to the se of education. But, at the same time, the otacles worn by these educated victors were altogether forgotten. They were first of all le the subject of much ridicule, and the rmans, who, in spite of their great victories, not seem able to tolerate a joke, took the ter keenly to heart. Searching inquiries e been instituted, and it is from Germany the bulk of the statistics on this subject forthcoming. For instance, Dr. Herrmann n, of Breslau, finds, from observations made 0,060 pupils, that the proportion of short- ted children was, in the rural primary ools, 2 per cent.; in the urban schools, 9 per .; in the middle-class schools 15 per cent.; e superior schools for girls, 18 per cent.; in royal schools, 44 per cent.; and in the nasiums, 55·8 per cent. He is of opinion, efore, that shortsightedness is developed in portion as education becomes of a higher ee.

ich a conclusion we need hardly remark d have a disastrous effect, and the highest ests of humanity are concerned in rectify- his state of affairs. Of course, the figures ave quoted must not be taken as final; but nevertheless a fact that study, reading, undoubtedly produce a deterioration of the , unless it is practised under improved mstances. Unfortunately, while on all , children are driven into schools and made udy in greater numbers and for longer s, little has been done, comparatively speak- to preserve their sight. The visual organs e population are exposed to an over-great n, and this, as often as not, in schools that ely afford any better light than that which led our ancestors to acquire their meagre a of education. It does not suffice to im- the schoolmaster, the school-book, &c., ust also ameliorate the school-desk and the ol-window. In the States of Southern many this has been understood, and in y all the books written on the subject, her official or otherwise, directions are to the effect that "management of the during school-hours should be the object of ant care. It is absolutely necessary that l school-rooms the light should be ample well distributed."

have recently spoken as to the mode of ing school-rooms,* and it will be useful to what is being said on the subject elsewhere. ile various researches have proved that ation injures the sight, that this mischief fests itself more or less rapidly according reditary predisposition, but is almost inva- developed during the school period, Dr. eich has experience to prove that the y is most extensive in those schools e the light is distributed in an unscientific ier; and it is on this opinion that we base ope for the future. No one can deny that light of the present is far inferior to that previous generation; but as the knowledge e evil becomes general the matter will become one of scientific study, and satisfactory remedies may be discovered. In fact, this is already the case, though the subject has not yet attracted as much attention as it deserves. Further, we would urge that any negligence in this respect is all the more culpable, as other and grave evils result from the same cause. Of course, it is well known, and we need hardly repeat, that light is a powerful disinfectant; epidemic diseases do not spread so easily in a schoolroom exposed to the sun's action. It is not to this, however, that we allude. Mere light is an insufficient remedy unless it be properly distributed. If this is not done, the children will seek to relieve the fatigue of their eyes by twisting round, and assuming various unnatural attitudes. Unnatural and extraordinary habits are thus acquired, and often maintained when the original cause and excuse are removed. The consequences of such habits, contracted when the body is developing, are most disastrous; and to this simple cause many cases of deviations of the spine may be traced. Thus, in Switzerland, out of a number of boys examined for this purpose, 20 per cent. had one shoulder higher than the other; while the proportion among the girls was equal to 40 per cent. Out of 100 cases of deviation of the vertebra, ninety could not be traced to any special disease, but had been developed during the school period. This may be, it is true, the result, not merely of inefficient light, but of unsuitable desks or seats. Nevertheless, we may conclude, with Dr. Liebreich, that "the child assumes a wrong position, and becomes deformed because he is growing shortsighted, and that he becomes shortsighted because he sits in a wrong position, and is growing deformed."

The moral to be deducted from all these facts will scarcely be disputed. Other statistics may be brought to bear, less startling in their general character, and other explanations in extenuation of the evils may be given; but still, speaking in a broad sense, every one will agree, firstly that there must be a plentiful supply of light in all schools; and secondly, that this light must be distributed in a manner proved theoretically and practically to be correct and beneficial. But, on this second point, opinions are unfortunately divided; and, though many persons may have their theories and adhere to them with considerable persistence, there is no golden maxim universally admitted to be correct. The Governments of the German States have, however, come to various conclusions on this somewhat difficult question; and their energy in this respect has excited the emulation of the French.

M. Emile Trélat, professeur de constructions civiles au Conservatoire des Arts et Métiers, has energetically taken the matter in hand. This gentleman, who in art and architecture has acquired a good reputation, possesses at once technical and scientific knowledge; and, as the chief architect of the Department of the Seine, can bring great influence to bear on the authorities. He has consequently written various pamphlets, which take the form of letters to the Prefect of Police, and delivered a number of lectures, all urging that, if France is to be as well educated as Germany, this is not a reason why Frenchmen should become equally shortsighted! M. Emile Trélat, in one of his letters, remarks that the Germans are so well acquainted with their weakness in the question of sight, that on the very day, the 28th of December, 1870, when they opened the bombardment of Paris, the State of Wurtemberg issued regulations which he quotes as a model for all nations. We will translate the regulations, as they seem to give those very maxims which, as we remarked above, should be adopted. For each principle laid down there are many arguments adduced:—

"The windows should be so placed that the light may be to the left of the pupils.

Light coming from the head of the class, that is from behind the master's seat as he faces the class, should be absolutely condemned.

Opposed lights, that is to say, lights coming from windows facing each other, and pierced on both sides of the class, must not be allowed.

The total surface of the openings admitting light into a class-room, when the building stands out alone, should be equal to one-sixth, but if the building is masked by other surrounding constructions, to one-quarter of the total surface of the floor of the class-room.

The height from the floor to the beginning of the window should be at least one mètre; as light falling below the table is useless, and may have a blinding effect.

The depth of the rooms depends principally on the height of the windows. The seats next to the wall opposite the windows should be well lighted, and consequently the depth of the room should not be more than one and a half times the height of the summit of the window, the measurement to commence from the level of the tables or desks. The shape of the room for classes of less than forty pupils should be as square as possible. The greatest care must be taken not to strain the sight of the pupils during work-hours. The master must, therefore, observe all that may tend to attain this end.

To protect the eye against the excessive vividness of the sunlight, he must provide suitable blinds; and he must be especially careful that the light shall not be admitted by two opposite sides. Further, light facing the students must be either absolutely suppressed, or at least shut out during class-hours.

In his teaching the master will also avoid exhibiting maps, the black-board, &c., between the windows.

No work of a nature to tire the sight must be allowed during the twilight."

The other German States have followed the example of Wurtemberg. Their regulations, if not identical, are the same in principle. In South and North Germany, in Austria and Hungary, the principle of what M. Trélat calls a *unilateral* light has been proclaimed. Windows facing each other are absolutely abolished, and these regulations are not only enforced with regard to new constructions, but even the old buildings have, in many instances, been modified. These principles, practised in Germany, warmly advocated in France, are based on arguments too lengthy for repetition here.

SOME ELEMENTARY CONSTRUCTION BOOKS.

Two of the books in question* come to us from America, and have therefore some additional interest as an indication of the manner in which work is done in the States, if we are to accept these, at least, as representative books. If, however, the work on "Foundations and Foundation Walls" does represent fairly the methods in vogue among the architects of New York and Chicago (for the book is a double-barrelled treatise proceeding from both quarters), we should say that some very queer things are done in those two cities of the West. The first method we find suggested for reaching a good foundation through a stratum of soft ground is to excavate holes through the soft stuff, and fill them up with sand, making what the author calls "sand piles." The stability of the column of sand must depend entirely on the power of the soft stuff to resist lateral pressure; and ground which is not fit to resist the vertical pressure of the building is not likely to be quite firm against the lateral pressure which would certainly be transmitted by the column of sand. Other suggestions appear to us to be marked by indifference as to what goes on with a foundation, out of sight, after the building has been erected. We have the suggestion that in the case of strata of rock and clay which have inclined beds, and are therefore liable to slide, "they may be made secure by drilling, and driving iron bars into holes passing through the stratum." What an English engineer would say to this it is easy to imagine, nor can we suppose that such a suggestion represents a method of practice among first-class American engineers. We must also express our surprise at finding in any practical book published at this date the recommendation of the wholesale employment of wood in foundations, in the way of bearers and p'anking on which to place the footings. We meet (p. 39) with this remarkable paragraph:—"A common method of planking foundations is shown in illustration 20. The space under the planking is intended to be rammed. After this, bed the sleepers of timber in concrete, and fill the spaces between them flush with concrete to the top, so that the planking may rest on a solid level surface." Then you are to build upon that. And what is this sub-footing timber

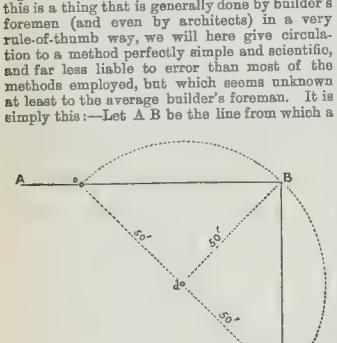
* See pp. 923, 953, *ante*.

* Foundations and Foundation Walls, by G. T. Powell architect and civil engineer, New York: with a Treatise on the Method of Foundations as followed in Chicago, by F. Bauman, architect. New York: Bicknell & Comstock; London: Trubner & Co. 1879.

Cameron's Plasterer's Manual. Same publishers. 1879.

The Plumber, Painter, and Glazier (being No. 29 of "Houlston's Industrial Library"). London: Houlston & Sons (no date).

supposed to be doing during the ordinary life of a building? In a few years the sleepers, if not the planking work, under ordinary circumstances, would all be rotten; and then, of course, they can not be taken up and replaced like a rotten railway sleeper. With us, at least, such a recommendation would not at this time be regarded as wise. The remarks on piling are good in many points, and contain some useful records of experiments on pile-driving, and rules for the weight and fall of hammer required, and the last set of the pile, in various kinds of site. The author comments strongly on the inattention paid to the proper bonding and jointing of footing courses in brick and stone work, on the part of masons and bricklayers, who, he says, merely lay the footings down with the requirements of the plans, "pay no regard to bonding, and leave the unequal settlement of the walls to chance"; and if this is a besetting sin of New York workmen, it cannot be too strongly condemned. Mr. Powell's methods for setting out a right angle in building are rather clumsy, and leave a good deal of room for accidental error; and as this is a thing that is generally done by builder's foremen (and even by architects) in a very rule-of-thumb way, we will here give circulation to a method perfectly simple and scientific, and far less liable to error than most of the methods employed, but which seems unknown at least to the average builder's foreman. It is simply this:—Let A B be the line from which a



right angle is wanted at the point B. Take *any* point *d* at a convenient distance from B, say 50 ft., drive a stake or otherwise mark it, and from *d* take the same length of 50 ft. back till it cuts the line A B at *e*; stake again at *e* (notching the centres on the top of each stake for greater exactitude) and take 50 ft. from *d* again, continuing the line of *e d*. The end of this last length C gives the right angle to A B. The advantage of this method is that it leaves little room for error, and that no trying of lines and angles is necessary, as the point *d* may be taken *anywhere* within the angle to be formed (it is practically best to have it pretty nearly at an angle of 45° with A B, but this can be pitched upon by the eye quite sufficiently), and no instrument is required but a tape and three stakes; least of all that very unsatisfactory means recommended by Mr. Powell, of a large mason's square to give the angle: it is almost impossible thus to ensure accuracy even when the "square" is correct, and a large one is apt enough to get more or less twisted. Where it is important to set out a boundary of considerable length with accuracy, a chain and surveying-poles may be used. We do not give it, of course, as a novelty, but as a method little used, and far better than those mostly used. The dotted circle is introduced in the diagram merely to indicate the theory of the method, as stated in Euclid, book iii., prop. 31:—"The angle in a semicircle is always a right angle."

The building laws passed in 1871 for foundations within the jurisdiction of New York city are given in full in the book, and are very good and of some interest, as they evidently arise out of peculiar difficulties encountered in the nature of the sites in Manhattan Island. The tabular statement of tests made on hydraulic and other cements at the Philadelphia Exhibition is given, and is of some interest as affording means for a general comparison of strengths of cement from all parts of the world. Mr. Bauman's addition to the publication consists of a treatise which has for its main object the recommendation of isolated piers rather than continuous foundations for the base of a building. His position can hardly be well explained without reproducing his diagrams, but there is something in what he urges as to the effect of continuous foundations or footings unequally loaded at different points, and we think some of his suggestions, in spite of eccentricities and questionable points here and there, are worth attention. His general idea is to divide the weight of a building equally over certain strong points in the foundation, and bring down the weight over the intermediate portions by arches on to these main piers, so distributing the weights that they may be equal on all the foundation piers, and that thus every portion of the foundation may settle equally. In some cases the method may be found (at the cost of some trouble and forethought) very efficacious in avoiding unequal settlements and consequent ruptures. He is very strong against *inverted* arches from pier to pier in the footings, urging that their effect in case of settlements is to throw the piers out of plumb, and induce cracks in the superstructure; and in this we agree with him. In this country, in fact, the system is little used now; but we gather from his remarks that it is, or has for some time been, in full force in Chicago.

"Cameron's Plasterer's Manual" is a small book containing practical information as to the ordinary tools, methods, and materials used in plasterers' work, and the best way of working to secure a satisfactory result. It is very clearly and simply written, appears to be well done throughout, and contains nothing which is not to the point; and as plastering is pretty much the same all the world over, and is not much affected by peculiarities of site or locality, it may be as useful to beginners in this country as in the States.

The "Plumber, Painter, and Glazier," from "Houlston's Industrial Library," is a treatise of rather more elaboration, and contains a great quantity of matter compressed into a cheap and portable form. The writer of it appears to be very well up in his subject, and has spared no pains to give, within the limits allowed by the size of the book, clear and precise and considerably detailed information for the benefit of those intending to take up the business of "plumber, painter, and glazier,"—three crafts which, as the author remarks, seem to have got linked together by accident rather than by any necessary connexion in their nature and methods or materials. The only defect we notice is that he does not always give the *reason* for a special process quite clearly enough. He does not, for example, state why lead in gutters is joined by means of "drips," instead of on the same level, and in mentioning that the overlap-joint in a lead flat is not so good for keeping out weather as a roll joint, he does not point out that it is in fact a radically vicious construction, as it allows no play in the case of contraction by cold, and the seam must in that case be disturbed or pulled up more or less. In the main, however, the book seems most carefully written, and some of the more general observations are full of good sense, and what we may call philosophy, in regard to the conditions of the pursuit generally. The workman is urged to take a scientific view of his craft, and endeavour to arrive at the best mode of doing a thing on scientific grounds, and not merely as following the custom of the trade: he would suggest to every house-painter, for instance, "that he has it in his power to give a more intellectual tone to his employment if he were to study the effects which chemical action produces both on the colours of various pigments, and on their power of mixing with oils, varnishes, &c." We are more in sympathy with him on this point than in the enthusiasm with which he speaks of graining, that "very pleasing part of a painter's business"; there does, however, seem to be a great love of this kind of work in the minds of painters, perhaps because being really in a way an imitation of nature (though a sort of imitation we cannot hold to be sound), it comes nearer to evoking an artistic feeling and spirit than any other part of the craft. The advice to painters as to the value of personal cleanliness and sobriety in combating the unfortunately unhealthy tendency of their work, is also well worth the attention of those whom it practically concerns. While touching on this subject, we may again call attention to the new mineral white, the innoxious qualities of which have been expounded in our pages. It is sad to read the statements and examples of the almost certainly injurious and baneful effect of white lead, the basis of many common colours, on the health and spirits of those employed in using it; and we entirely agree with our author that where the health of so many families is concerned, it is "a crime" to allow prejudice in favour of any substance which has been long used to stand in the way of the trial of a new substance which promises to deliver a large body of workers from slow but almost certain injury to health.

Perhaps we may draw another conclusion in regard to this part of the subject, in which our author would be less ready to agree with us, but it certainly might be suggested that a process which necessarily involves the use of unhealthy materials must be in contradiction to the good of the community generally, and that it is an open question whether the use of paint in any form is not, in regard to many things, a mere habit, founded on no good reason either artistic or scientific, and much better dropped altogether. It might read rather curiously in some future social history of European habits in the nineteenth century, that the people of that date plastered over many parts of their dwellings and furniture with a poisonous mineral drug, and conveyed their drinking-water to different parts of their habitations through pipes made of a poisonous metal!

AN AGE OF HANDBOOKS.

ONLY a few years ago a new kind of literary enterprise suddenly sprang up, having its first growth in educational literature. It was an enterprise which, owing to the spread of education among all classes, owing to the intellectual activity or curiosity which marks the present century, owing to the variety and multiplicity of the subjects which interest men's minds, owing to the impossibility of devoting much time to any particular question by the majority of men, quick-witted publishers foresaw was likely to prove lucrative. Hence arose the manuals with which the book-market is now flooded, especially in the field of literature and history. Epoch history are illustrated in a book of a hundred pages; the writings of the great English men of letters are criticised and their lives portrayed in a tiny volume; and the publishers are enriched by continued demand for these works, not from the school only, but from the enterprising men of business and from the fashionable ladies of Belgravia. In dozens of drawing-rooms you may now see on the table, side by side with the gossiping journal, whose most important part of information is probably the price which a well-known statesman pays for his cigars, Morley's "Burke" in Messrs. Macmillan's series of "English Men of Letters," or some kindred book. And now this species of literature has, as it was certain to do, flowed into the region of art. On any railway bookstall you will probably find some one of the well-got-up volumes of "Art at Home" series or the concise artistic biographies which are now being issued by a leading London firm of publishers. When once the handbook stream had begun to overflow history and literature it was quite certain that would soon find its way into art, and no subject will it ultimately not call its own.

But this mass of handbooks is a phenomenon of the age, which it is not without interest to notice with a little care. Undoubtedly they are a natural result of all the tendencies of the age, and, while they possess some useful qualities their influence is by no means wholly good. The intellectual curiosity which marks modern men must be satiated by some means, but time is too short to allow it to be satisfied by careful and legitimate research and thought.

People must have their research done for them, and likewise their thinking, unless the subject is one which forms the main object of their life. The statesman reads, as he hurries down to some political meeting, an almost forgotten novel of Scott. He must have something to read about it of a critical kind. He steps out of his carriage and buys Mr. Hutton's "Scott" in the "English Men of Letters" series at the next railway station. The man of business thinks he will make some alterations in his house: the principles of art which he is supposed to gather up in occasional visits to the Grosvenor Gallery he has no time to think out. He buys one of the "Art at Home" series, and forthwith has the principles upon which a dining-room should be furnished set out for him in black and white without the trouble of ten minutes' thought of his own brain. Undoubtedly, therefore, these handbooks are at once means of satisfying a certain intellectual curiosity, and are products of intellectual lassitude. For the thought which is the most useful is not that which is invo

, and caused by the pressure of daily busi-
s, but the thought which is voluntary, which
roduced by a desire of discovering some
ion or of finding out the principle which is
licable to a certain set of facts. Hence, we
e no hesitation in saying that these short
to knowledge, whether of facts or of
ciples, are calculated to produce intellectual
ness, and to cause a narrowness and a want
ndependence in thought. They are also
ulated to prevent that research which
a most valuable educational effect upon
ole of all ages. To behold the main
t of a man's life, and of the results in a
ical light of that life, is not half so useful intel-
ually as discovering them and thinking out
results. A man had much better read a
life of Michelangelo which will take him
nth of occasional evenings, than read it
igh in a handbook in a couple of hours.
hour spent in the National Gallery before a
n is better than reading a couple of pages
handbook, in which his characteristics are
ut with much precision. In art, observation
he chief instructor, aided by a proper con-
ation of principles. We do not by any
s agree with all Mr. Ruskin says in his
ra Penteleci," in which are collected the
es which he delivered in the University of
d, upon the Principles of Sculpture; but
a little of this work, and contempora-
usly visit the British Museum, and in time
y much better notion of furnishing a house
be obtained than by perusing all the "Art
me" series put together; because, even in
may be termed the commonplace matter
rnishing, the principles upon which it is
ed are the principles of art-harmony, pro-
on, gradation of colours, and beauty sub-
ant in this case to utility. In fact, a culti-
taste is that which is needed to adorn
a person or a room, and to taste there is
ort out, nor will all the handbooks in the
give it to the person without it. More-
these artistic, just like the historical and
ry, primers, tend to give a superficial know-
which is very far removed from real
ation, and by their very smallness enable
not bent upon one object to obtain a
ering of many things rather than a
ugh knowledge of one or two; and in the
nt day nothing is more lamentable than
mmense quantity of minutes and hours
are wasted in aimless reading, a reading
ut a purpose, which is fostered by the
nt facility of gaining a little knowledge of
things. By this endless reading the mind
strengthened nor real knowledge obtained,
the way is quietly laid for a distaste of con-
is though moderate study, and for a desire
nothing new.

we do not by any means wish it to be
stood that this age of handbooks can only
favourably criticised in this respect; for
eal student and the poor student have
l much by these manuals, and the man of
rounded knowledge may find something
stive in most of them. It is not given to
one to possess, for example, Crowe &
caselle's Life of Titian; but, on the other
if he has the new little biography of the
Venetian artist in Messrs. Sampson Low's
series, he may fairly use it as an *aide*
re, and thus save himself time which may
erwise profitably employed. But it should
s be remembered that these works are, as a
nly to be considered secondary in their cha-
, and that they should not generally super-
the use of larger and more detailed works, nor
areful observation of works of art, nor the
consideration of principles. Because it
ever be too often pointed out that a mere
ficial knowledge does not increase true cul-
and that the mere outside varnishing, with
e artistic knowledge, is really of little or
e. The general tendency of the time is to
this wide but shallow culture, except
g those who devote themselves more or less
ae particular subject as a business of life,
ublishers in making business capital out of
ndency are doing no more than cultivating,
perfectly legitimate manner, the business
which is obviously open to them. But, on
ther hand, it is clearly the duty of those
ecognise this modern tendency, and who
e how the present is becoming an age of
ooks, to prevent, so far as is possible,
literary undertakings, within certain
, from becoming a snare to the reader,
rom further increasing mere superficial
edge.

The technical worker in any kind of trade who is concerned with artistic matters may undoubtedly with reason congratulate himself that it is now within his power to obtain at a small cost works which will give him information upon various artistic matters. But, on the other hand, it would be the merest folly to suppose that such works as we have indicated can do more than give some leading features, or that they can take the place of mature study. In these observations we have in no way criticised adversely the works which have suggested these remarks; but we would have it understood that they occupy only a certain limited though useful place, and that the general tendency of these and similar compositions in other branches of literature is calculated to increase rather than to diminish some modern tendencies of an unsatisfactory kind.

THE MONUMENTAL HISTORY OF ROME AND THE MIDDLE AGES.*

How often have archæologists rejoiced at that accurate spirit,—if not foresight,—of the antique Romans, in multiplying, by the aid of the arts, the representation of now lost local and topographical features? In the same manner as the bas-reliefs of Trajan's column, which have enriched so largely our knowledge of the habits and customs of the old Roman legions which conquered the world, show us the celebrated bridge which Trajan threw across the Danube, on several bas-reliefs of the port of Ostia, on several stones found in Abruzzi, the works of Claudius at the Lago Fucino, in the same manner, in so far as concerns Rome, the monument of the Aterii in the museum of St. John Lateran shows us the *summa Sacra Via*; the antique found a few years ago at the foot of the column of Phocas, and erected now not far from thence, represents the Juliana Basilica, the temple of Saturn and that of Concord; and the bas-reliefs of the old Arch of Trajan, still to be seen on the Arch of Constantine, represent also several monuments of the Forum. A great number of sculptures, of coins, and lamps in terra-cotta and gems show us, for example, the disposition of the three *cellæ* of the capitol; two denarii of the year 40 B.C. show us the capitol of Sylla, of Catulus, and of Cæsar. This custom of figured reproduction is transmitted to the Roman works of the Middle Ages and the Renaissance; thus the sculptures of the bronze gate of St. Peter's show us the tomb of Hadrian, and the two *metæ* of the circus of Nero such as they imagined in the fifteenth century what they had been in former days.

These few indications, so easy to increase in number, show of what interest would be such an archæological series if made as complete as is possible, and with what early specimens it would commence is shown in the fact that a model of the traditionary house of Romulus could even be shown, taken from the little urns of black earth, of which the excavations at Monte Albano have supplied more than one example; fashioned in the form of round huts, with a roof and a door, sometimes a portico, they represent the legendary dwelling that was occupied by the founder of Rome, on the Palatine. On the model of this house the first habitations of Rome and the oldest sanctuaries, such as that of Vesta, were built, and modern archæologists have even gone so far as to say that the famous Rotunda of Rome, the Pantheon, was erected by Agrippa to serve as a temple, having the traditional form of the *casa Romuli*.

Signor Rossi has engraved this house of Romulus at the commencement of his new work. He has endeavoured to discover what were, in chronological order, the topographical transformations stated in the different official surveys from the time of Romulus to the Renaissance. He has endeavoured to find the plans, and translate the calculations, or at least restore as far as possible the tables, a task of no small difficulty.

The house of Romulus figures naturally on the first page of such a work, as reproducing the model of the primitive habitations of the Romans; it has also the merit of showing, by its traditional symbolism, the religious character which, with the Romans, was always assigned to the delimitation of property. Every student has read in Plutarch and Livy what solemn acts preceded the foundation of a city. The augur, erect on the Palatine, traced in the air with his mysterious wand, the double *cardo* and the double *decumanus*, perpendicular to each other, and this square was made to descend from the skies on earth by virtue of sacred formulæ. The interior divisions of the city, once the walls and ditch were traced out on these heaven-sent lines, from the primitive house surrounded by its field, its *hortus*, *heredium*, the public ways, the walls, and sacred property, were all alike marked out by divine intervention, which guaranteed their respect. There exists no doubt that Rome early possessed a register or survey, for the inhabitants of the city of Romulus had been preceded in history by nations who well knew the use of maps. Egypt and Assyria possessed maps at an early period; the Etruscans, the Samnites, and the Greek colonies of Southern Italy knew their use. The priests of Delphi exposed on their walls such documents. Herodotus has told us the story of Aristagoras of Miletus, who, to engage Cleomenes of Sparta in war with the Persians, showed, by means of a map incised on copper, the exact distances to traverse. The famous tables of Heraclea, preserved in the Naples Museum, mention the plans relative to the properties of the Temple of Bacchus, in the fifth century previously to our era, and modern research has shown that Rome did not remain behind its neighbours in civilisation.

A first period of the monumental history of Rome is terminated by the Gaulish invasion and the sack of the city, 390 B.C. Rome was immediately rebuilt, but hastily, according to Livy, and the demarcation of property had to be redrawn out. For this second period, the text speaks of plans on canvas, *mappæ lineæ*, which were deposited in the archives of the censors, in the atrium of the Temple of Liberty.

The immense work of survey and census carried out by Cæsar, and after him by Augustus and Agrippa, are well known. It was from this source that Pliny the Elder drew so much of the information of his Classic Encyclopædia; while in the reign of Agrippa was painted on the portico of Polla (the sister of that emperor) a map of the Roman world, the prototype of all the numerous other maps which circulated through the empire, especially of that which has been handed down to modern days, the famous map of Pentinger. Sig. Rossi's studies would further tend to show that with this map existed another, a plan of the city.

Augustus boasted of having left of marble the city which he had received of brick, but the Rome of his day suffered from the irregular reconstruction which followed the Gaulish invasion. It was in reality after the fire of Nero that Rome, at least in those portions destroyed, was rebuilt according to the severe rules of the municipal law, and according to the new exigencies of health and comfort. The streets were straight, the houses were not to exceed a certain height. Tacitus tells us in an interesting passage how many (doubtless himself among this number) regretted the narrow streets and the high houses, which gave shadow and protection against the sun and the wind. Pliny the Elder goes even further in his regret, and describes even the aspect of the old and the new town. "Formerly," he writes, "when the city population carefully tended the little gardens in their windows, the streets presented the continual aspect of the country, before the brigandage of a numerous multitude obliged them to bar all their doors and windows." His language only too plainly translates the personal feelings of the writer, and might, with striking analogy, be applied to the modernised aspect of more than one of the great capitals of the Italy, indeed the Europe, of to-day.

It is not astonishing that after the disorders of such reigns as those of Galba, Otho, and Vitellius, Vespasian should have wished to terminate the works commenced by Nero. His year of censure (A.D. 73) was occupied with this care. He measured out the city, and, in terminating his year of office, consecrated the Temple of Peace, in the forum of which he doubtless exhibited the plan,—the famous Capitoline plan,—which Septimius Severus and Caracalla restored in the same place, between the years A.D. 203 and 211, after the fire of the reign of Commodus. It is well known to archæologists that the fragments of this precious relic were discovered in the middle of the sixteenth century at the foot of the outer wall of a building which, after having served as the office of the prefectural archives, became a temple, and in the sixth century was incorporated with the church of Saints Cosmo and Damiano, formed of

* See p. 1043, *ante*.]

three antique temples. Incised on slabs of marble, probably fixed to the wall by iron rivets, the plan represented not only a portion of the city, but the whole of Rome, with its public and private buildings, neighbourhoods and streets, its villas and gardens. The eminent and regretted Duc de Luynes, during his last journey to Rome, wished to commence some excavations on this spot, to discover some fresh fragments to add to the originals preserved in the staircase of the Capitoline Museum, either by the drawings of the Farnesian fragments, now lost, drawings given by Fulvio Orsini to the Vatican, and reproduced by Bellari; and the Italian Government, with the same object, is now continuing its researches in the Forum.

Incomplete and mutilated as they are, the remains of the Capitoline plan give us an excellent idea of the large population of Rome, and the grandeur and number of its edifices. It is the only existing plan of the flourishing capital of the great empire. As yet the comparison and the explanation of the difference between this map and those of the Rome of the Middle Ages have not been made; but, apart from a few imperfect indications, no plans have so far been discovered to enable us to picture the Rome of the end of the empire.

The Carlovingian period was not so sterile in plans, since Pope Zachary ornamented, in 741, with what we should now call a map of the world, the triclinium of the Lateran, as Agrippa formerly had done the portico of Polla, and Adrian I., in rebuilding the walls of Rome, made a new census. The description of the city of that epoch (the end of the eighth century) which has remained in the famous MS. of the convent of Einsiedeln, reproduces very probably this reorganisation of the city.

Thus we reach the epoch of the *Mirabilia urbis Romæ*, towards the twelfth century, and the pilgrims crowding from every part of the then known world with these guides in their hands, must have been supplied with topographical plans. Those found attached to the MSS. of certain other works show plainly the influence exercised by the strange legends which these descriptions of Rome had put into circulation. It requires but a glance at the maps published by Signor Rossi to be convinced of this. The oldest which he has met with, and which he takes from a MS. of the Vatican library, appears to be an imperfect copy of an original of the twelfth century. In the middle of this map appears the Coliseum, covered with a semi-spherical cupola. "Coliseum," says the French translation made after the expedition of Charles VIII. in 1499, "was formerly the temple of the sun, built of great size and beauty, adapted and garnished with divers caverns.* And this marvellous temple was covered with a roof of copper gilt, and within were imitated thunder, lightning, and coruscations, and even showers of rain and water, by means of leaden pipes. And likewise in this roof were the celestial signs and the planets, with the sun and moon, the which things one saw more by subtile art and mathematics."

The same plan shows us, opposite the basilica of St. John Lateran, by the side of the equestrian statue of Marcus-Aurelius, which remained there till 1538, the shapeless image of a hand and a head. The sole explanation of these strange signs is again to be found in the *Mirabilia*, and a long story of Phœbus and his seat in the midst of the Coliseum, and with this how Pope St. Sylvester destroyed the temple and Phœbus's image, of which alone remained the head and hand. We can trace here, doubtless, a reference to the colossus of Nero, dedicated to the sun. The bronze head of this huge work is now in the court of the museum of St. John Lateran, the hand in that of the Palace of the Conservators.

The other buildings mentioned on this map are,—on the right bank, the castle of St. Angelo, the basilica of St. Peter, and near it the famous needle, *acus*, the obelisk which formerly ornamented the circus of Nero; on the left bank, the Rotunda, or Pantheon, the palace of the senators on the Capitoline, and the palace of the Cæsars, designated as *palatium majus*. Nothing of the great ruins of the Forum; the Arch of Constantine and that of Titus are perhaps represented, but certainly not mentioned. Indeed, throughout the whole, imagination rather than fact is evident in these drawings. On the margin various legends give the names of the principal streets, those of the hills, and the gates; the author has not been able to resist noticing the decadence of which the plan itself offers so striking an image. He recalls in bad Latin that Rome has been burnt: at first by the chief Brennus, and after him by Alaric; and a further poetic comparison is made of the city to the decrepit old man unable to support himself without the aid of a prop.

Sig. Rossi has taken, in his interesting series for the fourteenth century, the golden *bulla* of the Emperor Louis of Bavaria, which dates from 1328, and on which may be seen, if not exactly a plan of Rome, a collection of its principal monuments grouped together. In this curious relic there is a striking resemblance to an antique bas-relief or medal, in the classical forms of the architecture, so un-Mediæval in their conception. This is not the case with a plan belonging probably to the fourteenth century, from a MS. treasured in the Paris National Library. This MS., itself of the fifteenth century, contains the poem entitled "Dittamondo," the author of which is Fazio degli Uberti, one of Dante's imitators. He, like his master, makes an imaginary journey, in company with the divine Solino. The plan represents them both looking over the walls of the city; while Rome, clothed in widow's mourning, points out woefully her ruins. In more than one feature the influence of the *Mirabilia* is evident throughout this quaint work. The Coliseum has its gilded roof; on the Quirinal rise the two famous groups, the pretended work of Phidias and of Praxiteles, which so astonished the Middle Ages. The bridges are fortresses; the picturesque Torre delle Milizie, near Trajan's Forum, bears all the stamp of its feudal and military origin; but so closely is the city packed within the walls that all the monuments are not represented.

Other plans of Rome are taken from MSS. of that Latin translation of Ptolemy which met with such success in western Europe towards the middle of the fifteenth century. Although these plans still preserve the same traditional errors, we can remark already a greater care in execution and proportion. The magic influence of the Renaissance can be traced. We have reached the period when Brunelleschi, Donatello, Cyriaco d'Ancona, and especially Leo Batista Alberti, the friend of Lorenzo the Magnificent, are to show the beauty and the accuracy of, and the respect due to, the works and monuments of classic times. Those great artists measured the smallest detail of these ruins, and lovingly studied the rules by which they had been produced; at length the laws of geometry and perspective received proper attention.

The last plans of this series collected by Signor Rossi show peculiarly the transformation which transports us out of the Middle Ages, and which the studies of M. Müntz will assist the student in following, with the help of the new documents he has so carefully annotated, into the early and interesting period of the Renaissance.

It would be difficult, in having thus summed up the chief features of the monumental decadence of Rome, to determine what period may be looked upon as having been the most cruel in its treatment of the beauties of the classic city of the Cæsars. For centuries without a history, while a wretched population sheltered within these once glorious walls its inertia and its misery, it underwent the effect of a slow decomposition which soiled and mutilated its most beautiful edifices. The periods of agitation and of civil strife, which were not rare at this period, aided this work, for the hand of man has weighed on the "mistress of the world" more heavily than that of Time. Singularly maltreated in the fifth century, during the invasions; in the eleventh century by the wars of the Holy See and the Empire; in the fourteenth century, when the pontiffs were exiled from their capital, the civil wars and feudal rivalries, the democratic outbursts, the plague, flood, fire, and earthquake added to the general misery. Even the errors of very different epochs were equally fatal; the popes of the fifteenth century despoil and ruin the antique monuments to build up their proud palaces; Nicholas V. lays his hands, without remorse, on the old basilica of St. Peter, on the temple of Probus, and many another venerable building. The sixteenth century effaces almost all the paintings of the first Renaissance, and not to substitute for them in every case, as at the Vatican, the works of Raffaelle. Michelangelo even, wishing to give to the statue of Marcus Aurelius a solid base, did not hesitate to make use of a portion of the frieze of the Baths of Titus. Sixtus V. razed the Septizonium of Septimius Severus. The seventeenth century at last modernised the churches, sparing alone, among all the numerous works of the Middle Ages, a few campaniles, some of the feudal towers of the great family strongholds, and a rare convent cloister. But Rome survived its woeful disasters. Never in its long history had it entirely lost the recollection, the sentiment, or the traces of its power. Its great popes of the Middle Ages renewed those antique glories, and the Eternal City, after so many misfortunes, lived to become in its day the cherished centre of the glowing Italian Renaissance.

* We translate the quaint old French literally.

THE RAILWAY COMPANIES AND THE DEPRESSION IN TRADE.

The proceedings at the several half-year meetings of the railway companies, which have just been brought to a close, are strongly illustrative of the depression in trade which has for so long a period affected every branch of industry.

At the meeting of the London and North Western company, the chairman, Mr. Moon, in moving the adoption of the report, observed that their dividends had been going down annually since 1873 at the rate of about a quarter per cent. In 1873 the dividend was 7 per cent., and to-day it was only 5¼ per cent. He was sure, however, that the shareholders did not expect that the dividend could be maintained in the face of the depressed state of the trade of the country. It was not the depression of one interest only, for they would find that the agricultural interest, the manufacturing interest, cotton, iron, and everything else connected with it, as well as the shipping interest, were alike suffering most grievously. It was not likely, therefore, that the directors should be able to save their shareholders from participating in the consequences of this distress. Speaking of the works in progress on the line, he said that there was a great number of old-fashioned stations which they had to alter. Four years ago they were spending at the rate of 70,000*l.* in the half-year; this department of capital outlay, but they have now reduced it to 36,000*l.*, and they should continue to go on gradually reducing this expenditure whilst things were so bad with the trade until they recovered their prosperity, and until trade improved. Adverting to steel rails, he said that for seventeen years they had been relaying the line with them, and now they saw very few iron rails coming up, or on the system. He next made some remarks in reference to the manner in which parts of the had been injured by the recent floods. With regard to the Chester and Holyhead line they had probably sustained greater disasters than had ever been sustained by the line before. Bridges had been washed down, culverts broken down, turnpike roads washed up, and among other damages one large viaduct that had stood for forty years without a flaw or anything to show the least interference, had been washed down by a kind of avalanche, and thrown into the sea. In restoring all these they had the assistance of Mr. Webb, Mr. Footner, Mr. Smith, Mr. Woodhouse, and other gentlemen connected with their engineering staff, and the great Llandulas Viaduct, which consists of seven or eight arches, their establishment at Crewe had been set to work, and had prepared the girders, which are of steel [and which, with masonry, have been fixed in position, and the line re-opened for traffic,—perhaps the most rapidly executed piece of work of its kind on record].

At the meeting of the Great Western Company the chairman (Sir Daniel Gooch) spoke in a similar strain to that adopted by Mr. Moon. He said that the trade of the country seemed likely to continue, as far as they could see, depressed for some time. It was true that the press were writing that there were appearances of energy and activity in trade, but he did not think that they could see it in the receipts of their railway. He had been told that within the last few days some large orders for iron rails (something like 60,000 tons) were likely to go into South Wales from America, and if so he hoped to see an indication of an improvement which he trusted might last; but he thought it would be easier for them to look at things as they were rather than anticipate a very great increase of prosperity during the next two

ree years. The report stated that the re-ipts during the past half-year amounted to 354,003*l.*, showing a net decrease of 70,870*l.*, l branches except minerals, which showed an provement of 18,149*l.*, contributing to the minution. The revenue of the company, in mmon with that of nearly all the railway mpanies in the kingdom, had been seriously fected by the continuance of commercial de-ression, and by the unfavourable weather hich had prevailed during the past half-year. he balance of revenue available for dividend nong the proprietors of ordinary stock was at e rate of 3½ per cent. per annum. The report ded that the expenditure of capital had, as far possible, been postponed. The heading for e Severn Tunnel had made good progress ring the past half-year. The length under e river would probably be completed before e end of the year. The enlargement and ing of the lower heading, to be used for the rposes of drainage and ventilation, would be mmenced immediately. The material through hich the tunnel would be constructed ap-ared, so far as it had been opened out, to of a very favourable character.

The report of the Midland Company showed at during the half-year there had been a crease in the traffic from coaching of 39,760*l.*; crease from merchandise, 53,688*l.*; decrease m cattle, 2,561*l.*; and an increase from inerals, 128,310*l.*; the net increase was 32,225*l.* he total revenue receipts during the half-year ounted to 3,114,311*l.*, admitting of a dividend, er paying expenses, at the rate of 5 per cent. r annum on the open stock, and an average of 12s. 4d. per cent. upon the whole capital of e company. Adverting to the several new es and other works in progress, the report ated that with regard to the Poplar branch d dock the coffer-dam for three-fourths of the gth of the river wall was now finished, the de shut out, and the river wall in progress. e piles for the remaining length of the dam re being driven. The west and north dock alls were finished, and the coping fixed. Two-irds of the last dock wall were up to coping rel. More than one half of the railway dock anch, with retaining-walls, was formed, and e bridge under Brunswick-street, with the proaches, was commenced. The foundations r the warehouses were also commenced. The timated further expenditure on works during e current half-year was 850,000*l.* The chair-an, in addressing the shareholders, said that, nsidering the circumstances of severe depres-on in all departments of trade under which e receipts for the half-year had been earned, id the unusually bad weather, he thought the areholders would agree with him in thinking e receipts of the line had been remarkably ell maintained.

The report presented at the meeting of the reat Northern Company showed that the affic receipts for the half-year amounted to 509,727*l.* as compared with 1,443,649*l.* in 1878, id a dividend at the rate of 4*l.* per cent. per nnum on the original shares was recommended. he chairman observed that this dividend was e same as that paid in the corresponding eriod of 1878, and he thought that under all e circumstances of the times it was not a very ad one for them to pay. In alluding to the etails of capital expenditure during the half-ear, he said it had often been remarked that he front of their station at King's-cross looked ald and bare, and they were now erecting a overed platform for the protection of vehicles nd passengers, and they were going to cover the north end of the down platform, which ad hitherto been unprotected from the in-lemency of the weather.

The proceedings at the meeting of the Great Eastern Company showed that their receipts ad been much affected by the unfavourable eather during the past half-year. The chair-an stated that their season tickets had in-reased by no less than 5,000*l.*, showing that here must have been an occupation of a larger umber of houses. But when the cold and wet eather set in in the spring the passenger traffic ollapsed. Whitsuntide also turned out exceed-ngly wet, and instead of taking 60,000 pas-engers, as they expected, from Liverpool-street, hey only took 30,000. The Agricultural Show ikewise was a failure, and worse than a failure o the Great Eastern Company, because it put hem to considerable expense, and the whole hing, as far as passenger traffic was concerned, vas adverse to the company. In the course of his remarks the chairman stated that the London and Blackwall Company were executing certain works at the Fenchurch-street Station, and also making a curve at Limehouse for the use of the Great Eastern Company.

It was stated at the meeting of the North-Eastern Company that the commercial depression had been greater during the last half-year than in the corresponding period of 1878, and the revenue of the company had also been prejudicially affected by the closing for several weeks of a large proportion of the coal-mines in the county of Durham, owing to differences between the owners and their workmen. The half-year's traffic receipts amounted to 2,607,511*l.* as against 2,915,140*l.* in 1878, showing a decrease of 307,629*l.* A dividend at the rate of 5*l.* per cent. per annum was declared.

The report presented at the meeting of the London and South-Western Company showed that the net revenue for the six months was 195,454*l.*, against 213,564*l.* in 1878. A dividend at the rate of 4½ per cent. was declared, the chairman observing that it was not a matter of surprise that under the depressing circumstances there should be a slight diminution in the dividend recommended. At the Waterloo station the lines had been re-arranged, and the main line platforms widened and raised. Other necessary alterations were also being carried out. The raising of platforms throughout the system was being generally adopted, and before long the whole of them would be of one standard height. Great improvements were being effected in the machinery at Nine Elms.

The proceedings at the meetings of the London, Chatham, and Dover, South Eastern, London and Brighton, North London, Lancashire and Yorkshire, Manchester and Sheffield, Caledonian, and North British companies showed a decrease in the traffic during the half-year on the whole of these lines, attributed to the causes above named. At the meeting of the South Eastern company Sir Edward Watkin, the chairman, adverting to the bad weather which had so seriously affected the traffic of the line, observed that out of twenty-six Sundays which had occurred during the half-year, only four had been absolutely fine, rain having fallen on twenty-two of them.

The Metropolitan District Company is about the only line where the traffic receipts show an increase, the total receipts for the half-year being 166,506*l.* against 161,643*l.* for the corresponding half-year of 1878, showing an increase of 4,864*l.* The report stated that the works on the Fulham Extension were proceeding satisfactorily, considering the bad weather, the effect of which had been seriously to delay the completion of the line, which could not be opened until towards the end of the year.

At the meeting of the Metropolitan Company, the report stated that when the Inner Circle completion scheme was before Parliament the representatives of the several public bodies concerned admitted that the street improvements named in the Bill were urgently needed, and would be best carried out concurrently with the construction of the railway, and that an adequate money compensation should be secured to the companies if they executed the necessary works. In addressing the meeting on this important subject, Sir Edward Watkin said he thought he might just give one word of friendly warning to some professional men of great respectability who had been already canvassing everybody along the proposed line of this railway for business. He might tell them that the companies could make this line by what he might call burrowing, and that they were not going to serve notices on the owners of these properties, and run the risk of having to compensate many business men in connexion with a litigation to which the professional gentlemen to whom he had referred were apparently looking forward for an abundant harvest. If they did not take his (Sir Edward Watkin's) warning, why, of course, their sins must be visited on their own heads. If the companies said that they would take upon themselves the responsibility of pulling down the two sides of Eastcheap, and make a new street close upon Trinity-square and the Minories, and compensate every business and every man along that line of road, they would enter upon an undertaking in which he thought no prudent man would embark. The whole contention,—the whole thing that had been at the bottom of the contention in Parliament between the railway companies and the great City authorities (who had been, with one exception, their only opponents),—was as to who was to take the risk of the streets. If they could make terms with the City authorities it was their duty to assist in making these streets and improvements. It was their interest to do so, because if they made wide thoroughfares and improved the circulation of the City, his experience was that far from diminishing the amount of traffic they would increase it. He said, therefore, that they had an interest in making better thoroughfares in the City, paradoxical as the proposition might appear. But if the City authorities should not come to some arrangement with them within the period named (four months after the passing of the Act), then they (the directors) should simply advise the shareholders in the two lines to go on with the railway on the principle of burrowing underground, at the cheapest cost, and make it in the shortest possible time. The estimated cost of the works from the Mansion-house to Aldgate was 303,360*l.* The estimated cost of the two curves at High-street, Aldgate, was 54,360*l.* The cost of the work from Aldgate to Whitechapel, 183,126*l.* The cost of stations 214,000*l.*, and the entire estimated cost of the line and stations, including the property at the stations, 754,846*l.*; and to this must be added 10 per cent. for contingencies, and the cost of the right of way from the Mansion-house to the end of the undertaking. He was one of those who thought that the extension would be a very important feature in the undertaking. He had never said that, however economically they constructed it, it would pay a large dividend, but he thought that with proper economy it would pay for itself entirely.

FROM THE BANKS OF THE SEINE.

As the year, and with it the century, draws rapidly to a close, one by one the valiant soldiers who have fought their good fight are dropping from the ranks, and the sad roll-call of the year's obituary will have to record the loss of not a few stout veterans. M. Emmanuel Viollet-le-Duc, the eminent architect, has passed away at the age of sixty-five, and his loss will not alone be a blow to the architectural world of France, but to that of other countries, in which his name has been for years familiar, not alone on the reputation of his delicate artistic taste, but by his illustrated works on the architecture and general life of the Middle Ages, which have become standard text-books. Only two days after the burial of his old friend, and before the flowers on his barely-closed grave in Père la Chaise have faded, the active artist who carried out so enthusiastically the plans of Baron Taylor in the protection the latter had earnestly demanded should be accorded to the ancient monuments of France, has been taken away, and the age of Baron Taylor and that of the late Mr. Edward Blore serve to show how many years yet we might have hoped to see M. Viollet-le-Duc actively working among us, as he has done so far, up to within a few weeks of his death. Not many days since our readers must have seen in these columns the interest he had shown in a recent proposition for the establishment of a Popular Opera-house and Dramatic Theatre at Paris.

M. Viollet-le-Duc, having expressed in his will the desire to be buried in the town in which he has died, Lausanne, in Switzerland, his funeral took place there on Monday, the 22nd inst., at eleven o'clock in the morning.

The funeral of Baron Taylor was a solemnity which none of us who were present will forget, in the sincere regret expressed by the large crowd of artistic notabilities who crowded behind the funeral car through the narrow gateway of Père la Chaise and round the grave which has received the veteran. Among those who were announced to speak on this occasion, Alexandre Dumas *fils*, contrary to the statement of many journals, found himself utterly unable to fulfil this last sad duty to an old and tried friend, and this touching incident added one more proof of the deep sympathy with which the loss of Baron Taylor has been felt.

While we are still speaking of the distinguished author of the "Voyages Pittoresques," it may not be uninteresting to add to the series of artistic recollections with which his name is connected a fact which has not been noticed, that in the illustration of more than one of his many "Voyages," particularly those in Spain and Palestine, Baron Taylor employed, to reproduce his sketches and those of other artists,—among whom were Bonnington and the late M. Viollet-le-Duc,—some of our best engravers,

such as Finden, Greatbatch, Hollis, Le Keux, Barber, Cooke, Byrne, Goodall, Lewis, J. Pye, Redaway, Skelton, Smith, and Wallis. It was not alone probably the fact of his English origin that led the author to thus employ our best engravers, but unquestionably an appreciation of their exquisite powers of reproduction which are so perfectly shown in the minute and enchanting engravings from Turner's drawings which accompany the early editions of Rogers's "Italy."

It is not often, at least on this site of the Atlantic, that the death of the founder of a town is announced. It is additionally curious that this commune should be at the very gates of Paris. A few days since died, at the age of seventy-five, M. Levallois, formerly a carpenter, the founder of the commune of Levallois-Perret, to which he had given his name and that of his wife. In 1845 M. Levallois built a house on a large tract of land which stretched on the north-west of Paris. With intelligence and activity he proposed to the owner of the property to found a colony, and this is the origin of the commune of Levallois-Perret, which in 1848 counted some 500 inhabitants, and now possesses more than 50,000. This excellent man, whose example in founding a charming suburb at the gates of the capital might usefully be imitated in some other great cities, died in the house he had built, in the Rue de Courcelles.*.

It cannot be said in the present day that the great and good men, the benefactors of humanity, pass away without obtaining some tangible memorial. As we write these lines the old-fashioned town of Perpignan is inaugurating in a brilliant *fête* the unveiling of the statue of the astronomer, François Arago, the work of M. Mercié, and which was exhibited here in this year's *Salon*. It is a good work, and includes some bas-reliefs.

We in Paris not unfrequently hear of the doings of our neighbours across the Alps, and are shocked at the vandalism which is from time to time reported thence, but while the artistic world expresses its indignation, it not unwisely avails itself of "exceptional opportunities," and hence not a few of the art-treasures of that extraordinary museum of the world, which may yet be rifled for many a day, find their way to Paris. Thus it was that the beautiful doorway from one of the palaces of that picturesque Lombard city, Cremona, was purchased by the French Government, and much is it to be regretted that a feeling of archæological delicacy, almost misplaced we might say, should have allowed such an opportunity to pass by without acquiring the relic for England. As it is, however, those who reck not of the country to which the object of admiration belongs, can admire this specimen of the art of the interesting and emblematical period of Squarcione and Mantegna in the Renaissance Court of the Louvre. On each side of it, and contrasting with the rich coloured marble, browned by the burning sun of the golden south, are the superb unfinished "Prisoners" of Michelangelo. We have mentioned this portal to correct an account from a respected authority, in the *Times*, and quoted in these columns, which stated that the Cremona gateway had been placed in the École des Beaux-Arts, whereas in reality, for more than two years, it has formed one of the chief adornments of the beautiful Renaissance Court of the Louvre.

As a fact interesting to freemasons, we may mention that the General Masonic Assembly which meets at Paris each year in the month of September has, within the last few days, closed its session. The assembly is composed of the president of the 256 lodges of the whole world which are dependent on the "Grand Orient" of France. In the course of this annual meeting, the Assembly renews, partially, the members of the council of the order which directs its management. The council of the order of the "Grand Orient" of France is composed of thirty-two members renewable by a third every year. It is to elect the successors to the retiring third, that is to say, eleven members, invested with new powers, that has been held the Masonic "*Convent*," the name given to the meeting of this important assembly. We may observe incidentally that the first Grand Master of the Order in France was Lord Derwentwater (1725), the second, Lord Harnouester (1736), to whom succeeded the Duc d'Antin, Louis de Bourbon, the Duc de Chartres, Joseph Napoleon, Prince Murat, and several other well-known names. The first lodges instituted in France were founded, it may be mentioned, by the partisans of the exiled Stuarts,* and doubtless the idea of thus forming an organisation by means of which they hoped to overthrow the House of Hanover, was not foreign to this otherwise liberal institution. The Stuarts and their active partisans have passed away, but the order of Freemasonry, which they served to found in France, yearly increases in its numbers and influence for good.

* Sir Richard Wallace's Hertford Hospital is in this suburb.

ARTIFICIAL STONE-MAKING AT GREENWICH.

ON Tuesday afternoon last a number of the members of the Society of Engineers, headed by their president, Mr. R. P. Spice, visited the works of Messrs. A. H. Bateman & Co., Pelton-road, Greenwich. The establishment is somewhat unique, being partly devoted to the manufacture of several specialities connected with mechanical engineering, and partly to the manufacture of Ransome's patent emery wheels and patent siliceous stone. The visitors were conducted over the works by Mr. Bateman, who explained the various appliances and processes in operation. To speak of the emery wheels first, we may note that they are made of grains of emery cemented together by silicate of soda (dissolved flint), the latter being afterwards hardened. The emery is used in varying degrees of fineness or coarseness, according to the purpose for which the wheels are required. These wheels are now being extensively used in engineers' workshops, and it is satisfactory to note that the Cyclops blower presents a ready and effective means of drawing off the myriad fine particles which fly off when the emery wheel and metal surfaces come in contact, and which would otherwise be largely inhaled by the workman, to the serious injury of his lungs. The blower, which was shown in operation in conjunction with the use of the emery wheel, draws the metallic particles at great velocity along a pipe discharging into the base of the boiler flue, where they are consumed by the heat. The use of the blower also, of necessity, assists the ventilation of the workshop, inasmuch as when it is in operation the air of the shop is continually being changed, fresh air making its way in to supply the place of that abstracted by the blower.

The history of the production of Ransome's patent siliceous stone has, in years gone by, been recounted in the columns of the *Builder*, and it forms one of the most interesting chapters in the annals of inventive industry. Mr. Frederick Ransome, who more than thirty years ago conceived the idea of making artificial stone, met with many apparently insurmountable difficulties in the attainment of his object, but by dint of perseverance and enthusiasm such as were displayed by Palissy, the French potter, under somewhat similar circumstances, his efforts were ultimately crowned with success, and it has been said of him that he has done for the manufacture of artificial stone what Sir Henry Bessemer has done for steel. The process as perfected, and as now carried on at Messrs. Bateman's works, may be described as follows:—Fine sand, such as that from the neighbourhood of Aylesford in Kent, is dried in a chamber warmed by a hot blast, and with this dried sand is afterwards mixed a white semi-liquid substance, of about the consistency of treacle, and which may be called "flint-soup," or, in more scientific terms, silicate of soda. This latter substance is made as follows,—Black flints are put into a steam-jacketed cylinder, having a heat of about 300°, and by the addition of a little caustic soda are reduced to the viscous condition before mentioned. In this state it is drawn off from the container or digester, and allowed to evaporate down to a specific gravity of 1,700, when it is ready for use, and is mixed in a mill with the dried sand, in such proportions as to give to the combined materials the consistency of putty. In this state it is ready for moulding, and the visitors on Tuesday last had the opportunity of seeing in progress some very interesting work in the material for a new seawall at Margate, consisting of moulded copings and sunk-moulded panels bearing the corporate shield and motto. The moulds are of wood, and the combined silicate of soda and sand is, while in a state of free plasticity, very carefully pugged into the various interstices of the mould. The mould is then carefully removed, and the moulded block, still soft, is at once immersed in a cold solution of chloride of calcium (lime dissolved in muriatic acid). This solution almost instantaneously brings about the formation, with the silicate of soda previously used, of an insoluble silicate of lime and a soluble salt or chloride of sodium (common salt), which latter substance is subsequently removed by washing. To facilitate the action of the solution of chloride of calcium on the block, and to enable it to permeate the mass of the material, a pneumatic appliance in the form of a sucker attached to a length of pipe connected with an air-pump, is applied on various portions of the surface of the block while it remains in the solution. The moulded blocks are next conveyed to tanks containing a solution of chloride of calcium having a specific gravity of 1,400, and a temperature of about 212°, the heat being applied by steam coils in the bottoms of the tanks. In these heated baths or tanks the blocks remain for from fourteen to sixteen hours, and the process of joining indissolubly all the particles of sand is completed. The only remaining operation is to wash away the salt crystals which have been evolved by the combination of the sodium with the chloride. The adaptability of the process to the production of moulded copings, string-courses, balusters, &c., where a large number of pieces all precisely alike is required, is obvious; and the use of the material at the new St. Thomas' Hospital and in other large buildings has shown its capabilities. The material is also largely used for grindstones, as it can be made more regular in texture than the natural stone.

After thanking Mr. Bateman for his courtesy the visitors left the works, having spent a very instructive afternoon.

* See *Builder*, vol. xxxv., p. 57.

THE GROWTH OF SOUTHPORT.

ALTHOUGH nothing like a century has passed since the first house, in the shape of a log building, was erected, very few people require to be told that Southport is one of the most beautiful watering-places in England. What little history is attached to the place has been told so often that it need not be here repeated, but more than a passing notice is demanded respecting the numerous and costly improvements now in course of construction, or on the eve of their commencement.

Within the past few years few places have afforded a wider and more varied scope for the architect and the builder than Southport. The Town-hall, a building in the Grecian style of architecture, was erected in 1853, at a cost of 4,500*l*. The Cambridge Hall, in Lord-street, was built in 1872 and 1873, at a cost of 30,000*l*. from plans and designs executed by Messrs. Maxwell & Tuke,* architects, Bury. The frontage of the building, with the tower and pavilion, is 90 ft., and the height of the tower, 127 ft. The tower is replete with a public clock and chimes, presented by Mr. W. Atkinson, to whom the town owes a debt of gratitude for his munificence. The foundation-stone of the hall was laid by the Princess Mary of Cambridge in October, 1872, and was opened in October, 1874 by the Right Hon. R. A. Cross (Home Secretary). Side by side with the Cambridge Hall is the Atkinson Free Library and Art Gallery, presented by the gentleman whose name it bears, at a cost of 8,000*l*. It is a building in the Composite Italian style of architecture. Adjoining this erection, and forming a handsome block of buildings, the West Lancashire Banking Company are just completing new premises, Mr. Bridge, of Burscough, being the contractor. The building, part of which will be let as offices and lock-up shops, is in keeping with the structures by the side of which it is reared. In 1874 the town was provided with the Pavilion and Winter gardens,—a pile of buildings erected at a cost of 100,000*l*., from the designs of Messrs. Maxwell & Tuke. The Victoria Baths were added to the many public buildings in 1871, having been erected at a cost of 45,000*l*., and claiming to be the largest and most complete in the United Kingdom.

Much might be said respecting the churches and chapels in the town, many of which have been either erected or greatly assisted by the liberality of Mr. W. Atkinson, the late Mr. John Fearnley, of Birkdale, and other gentlemen.

Many extensive hotels are to be found, most of which have either been built by limited companies or worked by them.

* A view of the hall was given in the *Builder*, vol. xxxii., p. 843.

Numerous, however, as have been the erec-
ns and improvements in the town, the
ward march of progress does not seem to be
ckening. Last week the town was *en fête*,
the occasion of the formal commencement
new markets and promenade extension
Lord Derby. Some particulars of these
ks were given in last week's *Builder* (p. 1058,
e). We are requested to say that all the
gineering work of the new markets was de-
ned by Mr. James Turner for the executors
the late Mr. John Dence (not "Ducie," as
ated last week).

The most prominent of the public structures
out to be erected is the Southport Convales-
t Home, for which competitive designs have
t been sent in. The present Convalescent
spital may be said to be the oldest charity in
thport, dating so far back as 1806, when it
s established by Mr. T. Ridgway, and after-
rds supplemented by his son and several
ers. In 1821 a house was built in Lord-
set, but this was soon too small, and in 1854
present building was erected, and about
en or sixteen years ago it was enlarged
contain 150 beds. The new building is in-
ded to be erected on a plot of land extending
m Adelaide-street to the front of the Prome-
de, being about 150 ft. in width and 360 ft.
length. Premiums of 100*l.* and 50*l.* were
ered for the best and next best designs,
ich are to become the property of the
ernors. There are nineteen designs, and the
ommodation to be afforded ranges from 200
232 beds, whilst the cost varies from 6,000*l.*
32,700*l.* or from 30*l.* to 152*l.* per bed.

ORCESTER DIOCESAN ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

THE members of this Society on the 15th
t. went on an excursion to Suckley, Whit-
orne, and Brockhampton. Proceeding in
riages by way of Bransford, the excursionists
rived at

Suckley Church, where Mr. W. J. Hopkins,
chitect, read a paper, in the course of which
said that on the site where the present
urch is built there formerly stood the remains
the old parish church dedicated to St. John
Baptist. There is an interesting account of
ckley and its church and chapelries in Nash's
rcestershire, where it is said that "Suckley
the time of William the Conqueror belonged
the manor of Bromsgrove." Respecting the
urch, he tells us that the patronage was
ciently in the master of the College of Fod-
ghay-cum-Northampton, which was founded
Edward, Duke of York, A.D. 1415; that
re were two chapels annexed to the church,
t, the chapel of Lullesley and the chapel of
erwicke; that Sir Edward Hungerford, knt.,
ntested the patronage with the master of
dringhay in 1479, but did not obtain it. As
the portions of the old church that remained
ne years before the present church was built,
y had been allowed to fall into so lamentable
state, and had been so tampered with, and the
urch had become so damp, comfortless, and
onvenient for the due performance of public
rship, that it was determined by the pro-
ters of the memorial church which was pro-
sed to be built as a testimonial to the services
the Rev. John Pearson, the rector, that it
uld be erected on the old site, retaining as
as practicable every interesting feature of
former one. Among the relics thus left are
font, the founder's tomb, the piscina, and
edence-table. The sepulchral memorials also
main; many of them are of great interest,
though none of them are earlier than the
venteenth century. The new church stands
on the site of the old one, and the outline of
e ground-plan is somewhat similar. It con-
ted of a western tower, nave, south porch,
uth chapel, chancel, and vestry. The walls of
e tower had no features of interest, and were
ving way. For the original porch had been
bstituted a modern brick erection, and con-
cted with it was a schoolroom also of brick,
hich might put a spectator in mind of a back
tchen, or scullery. The vestry was in a similar
yle. The few fragments of the nave showed
to have been of the Early Decorated period.
he south chapel was of the Late Perpendicular
aracter. The old bells are six in number, one
which had been added by Mr. Racster, and
r. Presdee, a ringer, who got a subscription
r the purpose. Presdee always rang that
eble bell, and was buried directly under it,
e ringers striking up a merry peal over him
according to his last instructions. Rudhall, of Gloucester, was the founder of the peal, which was said to be a "virgin peal,"—not requiring chipping or filing. They have been now rehung, and the new framework has been admirably put together by Mr. Ranford, one of the old bell-ringers of the parish.

Whitbourne Church, next visited, has a time-worn square sandstone tower, with a Norman doorway with zigzag ornament. The Rev. George Bellett, the incumbent, received the visitors, and told them that the church was restored in 1863. He pointed out that the chancel arch was not in line with the arch of the tower, and wished it accounted for. He said it was not quite certain whether the church was dedicated to St. John the Baptist, or to the evangelist of the same name, and some critical ecclesiologists present suggested that there might be in consequence some error of orientation. Another curious object was the font of Norman date, on which was rudely sculptured an animal supposed to be an ass, with six-rayed stars on each side of it. Time had preyed upon this figure, and its lineaments were not very clear, so that a guess was made that it might be meant for the paschal lamb, but its asinine head refuted this idea, and it was left a puzzle. The nave has a north aisle, and the dividing pointed arches are of early construction, but the windows have all been renewed in modern times.

Near the church is a large manorial mansion, where once the Bishops of Hereford held court, one of whom was buried at Whitbourne. The house is moated round. The property has now passed to Sir Richard Harington, bart., who is making large additions to the place.

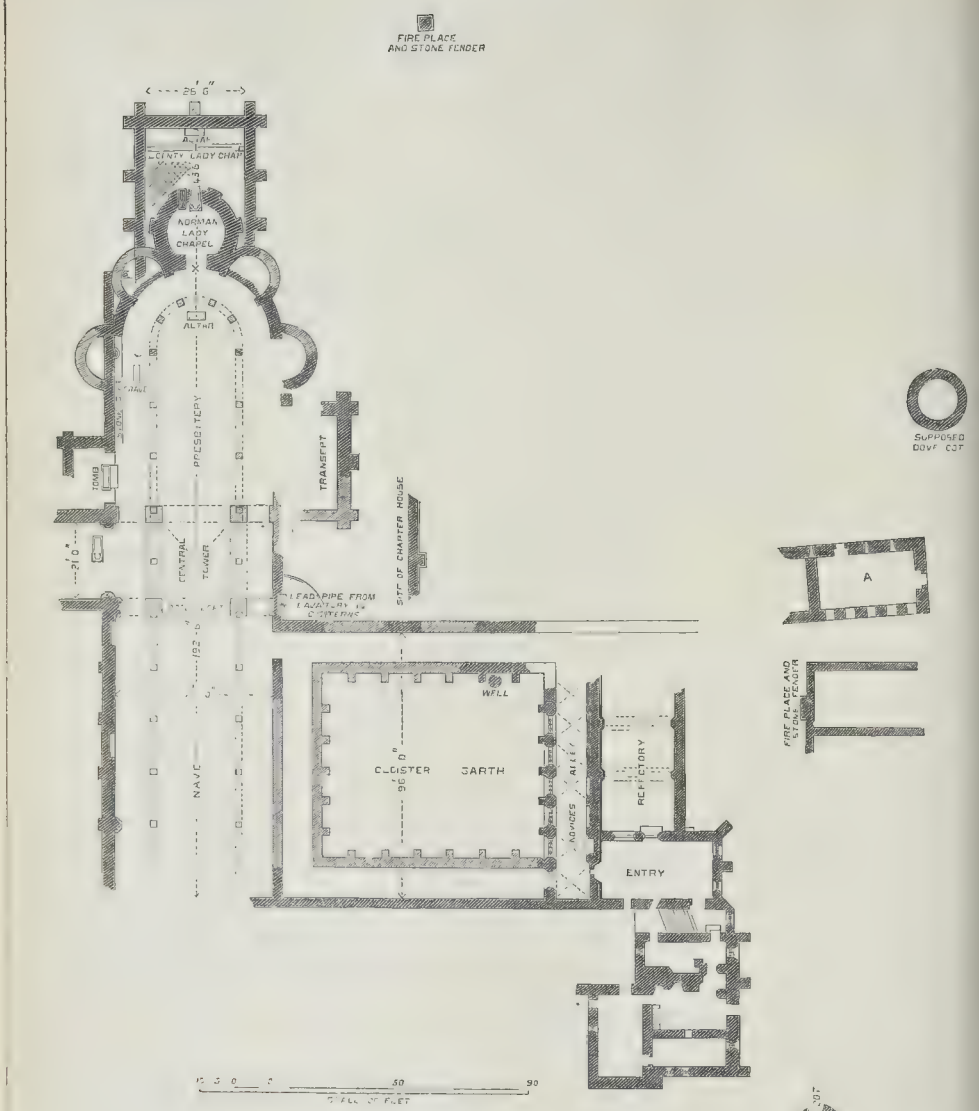
After partaking of the hospitality of Mr. Bickerton Evans, the company listened to a paper read by Mr. Noake descriptive of the surrounding country and the old churches of Doddenham and Knightwick; referring also to the folk-lore that yet remained in the vicinity. Mr. Noake, after describing the history and topography of the district, said:—"Lastly, we come to the architectural and other antiquities to be met with hereabout. Two of the most ancient churches of this vicinity have disappeared recently, namely those of Knightwick and Doddenham. A new church, more centrally placed for the accommodation of both places, was erected in 1855 near Knightsford Bridge, upon which the old parish church of Knightwick was turned into a mortuary; but, having since become utterly ruinous, it was pulled down about three months ago, and from its materials a mortuary chapel is now being erected at the cost of Mr. Greswold-Williams, of Henwick Grange. Its font, which was of doubtful antiquity, was removed into the new church in 1855. On pulling down the old building (which probably dated for the most part from the thirteenth century) fragments of a still older church were found to have been built into the walls. I well remember it as a little oblong structure, with wooden porch, and a wooden bell-cot, or tower, having a pyramidal cap; the seats were immensely high and very mouldy; the reading-desk and pulpit were contained in one immense box; and the venerable clerk, now long since gone to his rest, was a most eccentric character, perfectly harmonising with these surroundings. The little chapel of Doddenham, too, which I well recollect to have seen some thirty years ago, was a mere shell of a building, with a roof open to the tiles; there was a spire, up through which I could see from the pavement of the church. Some Norman details were to be seen, and the old font was ornamented with the chevron. The little building had long been out of use, as so far back as 1720 it had been presented to the bishop as 'a ruin and unfit for use.' It was destroyed when the new church was erected in 1855. With regard to Whitbourne Church, the ancient timbered house and chapel at Brockhampton, and the other notabilities of that district, we must look for a description to those gentlemen who have so kindly undertaken to be our guides to-day. I shall merely add that in Duncomb's 'History of Herefordshire' it is said that 'within Whitbourne Court Park was a Roman entrenchment, and, divided from it by a meadow and valley, were the lines of a circular British camp, but no vestiges remain of either. The latter, perhaps, formed, with Thornbury, &c., a chain of entrenchments which extended northward from Brangonium (Worcester) towards the country of the Ordovices, and were successively defended by Caractacus, who is supposed to have kept the Romans in check for a considerable time in these parts after they had taken Brangonium. Part of the park is a beautiful remnant of an amphitheatre, and is supposed to have been a vineyard.'"

The party next proceeded to Brockhampton Old Hall, a low timbered house of about the time of Henry VII. or VIII. Here Mr. J. H. Hooper read a short paper, in the course of which he said that Brockhampton, mentioned in Domesday Book as Brocoti, in the county noted for its three W's, wheat, wool, and water, to which one writer adds another W., out of compliment to the fair sex, lies in the parish of Bromyard, which was a manor attached to the see of Hereford. It gave name to a family, one of whom, Robert de Brockhampton, is mentioned in Bishop Swinfield's register as living early in the thirteenth century (A.D. 1220), and his son Richard, about 1283, granted the advowson of the chapel and lands in Brockhampton held of the manor of Bromyard to Robert de Farcles. Duncombe, in "History of Herefordshire," written about 1804, says of the old mansion-house now visited, that it was formed chiefly of timber, and is still surrounded by a mote, having no other access than by a drawbridge over it. But he makes no mention of the chapel, now roofless and in ruins. The house is a unique specimen of an English gentleman's residence, with the original dining-hall and gallery, and the lord's room beyond. A detached gateway stands over the moat.

Having partaken of Mr. Barneby-Lutley's hospitality, the party proceeded homeward.

MUCHELNEY ABBEY, SOMERSET.

THIS Benedictine Abbey, founded about the year 938, dedicated the 7th of January, 939, by King Athelstan, stands in a very retired spot, surrounded by magnificent elms, about a mile and a half from Langport station. Visitors to it would pass Langport Church, which contains some fine oak ceiling, and would do well to pause and take a view of the surrounding landscape, the adjoining counties of Devon and Dorset being plainly visible from here. Half a a mile further on, Huish Church, with its magnificent fifteenth-century tower and Norman doorway, is well worth a visit. A little farther, at a bend in the road, the wayside cross, the quaint fifteenth-century vicarage, and the parish church of Muchelney, burst to view from this spot. Although close to the church, only bits of it are visible, being hidden by elm, yew, and other trees. Adjoining the churchyard the abbey church stood. As long ago as 1872 some labourers, on digging in the orchard for stone for building purposes, came across a large blue stone, which, on turning it over, was found to be the cover of a stone coffin with a rude crozier cut on it, the centre being filled with a Tudor rose. Under the stone the beautiful pavement of the fourteenth century lady-chapel was found. Shortly afterwards, Mr. Long, the owner of the site, visited the spot and searched for the foundation of the church. The north wall of the chapel was followed until the three steps leading to the altar were found. These steps were of blue lias, the treads and risers being formed of tiles inlaid in the stone, about 1 in. of the stone tread and riser being seen. On searching farther, the Norman lady-chapel was uncovered, and, firmly embedded in the east end, a Ham stone coffin was found empty, the stone mentioned before being the cover of it. On the north side of this coffin a grave was found, evidently of a much later date: in it the skeleton of a man. At the end of the Norman or Saxon chapel some portion of the battlements had been stuck on their edges, evidently for melting the lead of the roofs, for lead was found under them, which appeared to be the droppings from some vessel. The tile floor was taken up, and re-laid in the chancel of the present church. The tiles are of different dates, some of them very early. They were laid diagonally, and seemed to have been placed there when the later chapel was built, tiles of different date being laid side by side. The centre piece was not found entire, but the pieces being put together formed a beautiful early centre. One tile is supposed to represent the west end of the church, a central tower with two flanking turrets. Some of the tiles are very curious,—lions with the head, neck, and arms of a man; dragons and nondescript animals in abundance. Some of the early tiles are very fine, forming beautifully curved



PLAN OF REMAINS, MUCHELNEY ABBEY.

lines (see the two birds on the towers, and fleur-de-lis), several knights on horseback, one of them carrying a shield, probably intended for *gules*; three escutcheons, *or*; other tiles have the arms of the De Warrens, chequée *or* and *azure*; the three fusils of the Montacutes, probably of William de Montacute, who died 1343. In that case, the lady-chapel would probably be of that date.

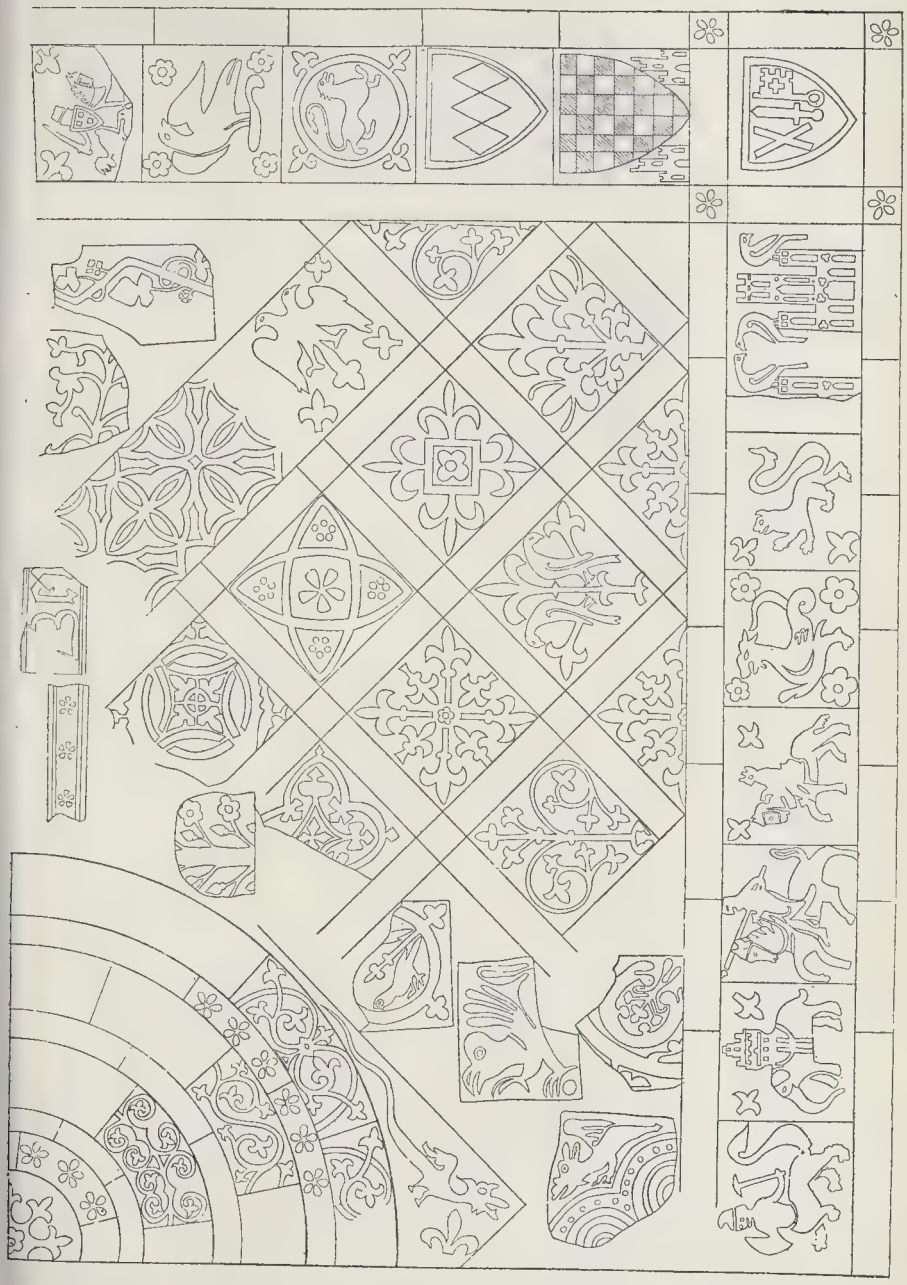
On one of the tiles there are the emblems of SS. Peter, Paul, and Andrew. This is the saint to whom the Church was dedicated. Most writers call it the church of SS. Peter and Paul, but in one of the royal rolls, dated 1489, it is called the Church of SS. Peter, Paul, and Andrew, the abbot's name at the time being William. The same emblem appears on the seal of the abbey (see Dugdale). The elephant and castle, which is one of the tiles, is supposed to be older than the one at Exeter, placed there by William de Briwere about 1230.

The lion rampant, the two-headed eagle, and a great number of Decorated and Perpendicular tiles, are to be found all over the site of the church. On three tiles, which appear to be a portion of a set, there is a deer, the huntsman in the act of blowing his horn, and the dogs coming up full cry, the huntsman being partially turned round, his spear being in one hand, the horn in the other. No doubt there were plenty of deer in the neighbourhood, the only hills in England on which the red deer can be found at the present time being visible from the site.

On one of the tiles the letters "BRAEMAR" occur, of a beautiful green tint; all the tiles are of a dull red colour inlaid with yellow ornament. I have found tiles made from the same mould on

the site of the monastery at Athelney, said t have been founded by Alfred the Great. T Norman lady-chapel, which terminates in t form of an apse, is very similar to the chapel the same date at Canterbury. On the north a south sides of this chapel some very stro foundations were found, probably the foundati of flanking turrets or chapels. On followi this wall the foundations of the south chap were uncovered, which is very similar to tho at Norwich, Gloucester, Tewkesbury, and other Farther on, the north-east corner of the cloist was found; and leading thence a lead pipe short lengths (about 13 ft. altogether), evident leading from a lavatory in the cloisters.

This was all found previously to the year 187 since then, at different times, the north w of the church, with its buttresses, has been u earthed, which appears to have been built



ANCIENT TILES, MUCHELNEY ABBEY.

foundations of the Norman church, and ex-ed towards the east at the time the four-th-century lady-chapel was built. On the b side of the church a small chapel, 20 ft. 6 in. 0 ft. 6 in., was found, and in it the head-figure of an abbot, his feet resting on a

From portions of the carving and moulded s that were found it appears to be four-th-century work, and in all probability placed there when the alteration was made in the fourteenth century. At the east end of this chapel the tiles were raised up as if there had been steps to an altar. From this chapel to the extreme east end of the north aisle, a stone seat is built in the wall, about 40 ft. long. At the entrance to the chapel two skeletons were found under a strong arch; probably the monument stood on this arch, adjoining this chapel. On the west side a portion of the north transept can be seen, and portions of the panelled arch of the north aisle next the central tower, which would be about 32 ft. square outside measure, the panelled arch being 4 ft. 6 in. across it. Just under this arch some beautifully carved central bosses were found, one of them 2 ft. square, with seven fine mouldings meeting into it. This may have been the centre boss of the groined ceiling in the tower, lying where it fell undisturbed by man for centuries; others smaller, with four mouldings intersecting in

them, may have been from the groined ceiling of two side aisles north and south of the tower. Near this spot a splendid canopy was found, the carving on it being very delicate; it was gilded and coloured, the colour and gold being very bright; also the figure of a man holding a boy, the boy holding a dove, representing the Holy Trinity,—a similar design being in some old glass at York.

Only two of the foundations to the piers of the nave have been found; but there is no doubt they would be opposite the buttresses in the north wall. In fact, two bases of pillars are still in their place, which show that they were 15 ft. 9 in. from centre to centre, making the aisle 9 ft. wide to the centre piers, and the nave 34 ft. to the same.

The exact length of the church is 192 ft. long, 52 ft. wide, the fourteenth-century chapel 43 ft. by 26 ft. 6 in., making the total length 235 ft., the nave being 1 ft. longer than the nave of Wells. The cloister garth is 96 ft. wide; a portion of the wall of the south transept and chapter-house has been found, and in digging for the foundation of the east wall of the cloister, a well about 14 ft. deep, cased with stone, was found inside the cloister garth. About 40 ft. south-east of the lady-chapel a stone hearth with raised fender stands by itself. Several pieces of Norman arch-stones have been found, probably from the arch of the Norman lady-chapel, some Norman string-courses, and one stone with the well-known boar's head; a great number of Early English and Decorated caps, bases, and bosses, the pieces of columns being 3½ in. and 3 in. in diameter, of blue lias stone; some early pieces of tombs in blue stone, the carving on them being very fine. The plate tracery of the windows to the lady-chapel could, with a little care, be put together, and give the complete windows. The Perpendicular carving and mouldings dug up during the excavation are very rich, and consist of cart-loads of canopies, finials, bosses, &c., some of the crockets on the finials being only ¾ in. long. Fragments of pottery have been found, consisting of portions of a bottle, the neck being only ⅜ in. in diameter, the handle twisted.

In publishing these few notes I hope it will induce some of our archæological friends to visit the spot, and throw some light on the buildings that are still standing. The purpose of one of them (marked A on plan) I have never been able to find out; it is a Decorated building, the oldest part standing with a door at the east and south sides, and on the west side there are five arches; these are only 3 ft. 6 in. to the crown of the arch, and the windows are mere squints, 2½ in. wide, with deep splays inside and pointed heads, and there are many other things that want explaining by abler inquirers than myself.

T. SHELMERDINE.

The dark tint on the plan shows foundations already found. Parts scored are supposed foundations. The south side of the cloister garth and the buildings at the south-west corner are still standing, also the building marked A.

NEW BUILDINGS ON LUDGATE-HILL.

THE architectural character of Ludgate-hill is at present undergoing a marked improvement by the erection of a new block of buildings on the south side, which is set back several feet, and when completed will be one of the most prominent features in that well-known thoroughfare. The buildings have two frontages, one to Ludgate-hill and the other to the new area named Ludgate-square. The principal elevation is that facing Ludgate-hill. It is 66 ft. in width, and 75 ft. in height, and contains four lofty stories above the ground floor. The latter will consist of large and handsome shops. This portion of the structure is carried up in polished Shap granite, resting on blue granite bases, the upper portion of the building being entirely of Tisbury stone, with much carving. Immediately above the first floor, at the foot of the second-floor windows, there is a dentil cornice, projecting 1 ft. 6 in., upon which rests a balcony with ornamental ironwork. There are fluted pilasters with carved capitals between the windows on the several floors, and above each of the third floor windows is a sculptured figure-head. Ornamental carving is likewise freely introduced in other portions of the elevation. Above the third floor there is a dentil cornice similar to that above the shops, the elevation being finally surmounted by five dormers. The carving has been executed by Mr. Walter Smith, of Lambeth-road. The Ludgate-square or west frontage is 70 ft. in depth from Ludgate-hill, from which it is approached under an arch, faced to Ludgate-hill with granite, uniform with the ground-floor portion of the building already described. This frontage is faced with white Suffolk brick and Tisbury stone dressings, but much plainer in character than the elaborate Ludgate-hill elevation. There are about fifty apartments in the several upper floors, which are intended for offices and chambers. The architects are Messrs. Joseph & Pearson, of Finsbury-pavement, and the contractor is Mr. G. S. Pritchard, of Paul-street.

OBITUARY.

Mr. W. Willoughby.—The death is announced of Mr. W. Willoughby, of the Central Foundry, Plymouth. He was brought up in the works of Messrs. Harvey & Co., of Hayle. When he came to Plymouth he worked for a few years with Mr. J. Moir, of Millbay, and then started the extensive works on Union Marshes, from which business he retired after nineteen years, leaving the undertaking to be carried on by his sons.

Herr Johann Kracker, a distinguished copper-plate engraver, has just died near Munich. He was born at Nürnberg in 1823, and removed to Munich in 1859. Among his principal pieces is reckoned "the Madonna at the Well," after a picture by Mayer, in the possession of Prince Karl, of Bavaria. But his chief work was "the Banquet of Wallenstein's Generals," after a picture by Scholz. He was occupied upon it from 1869 to 1873.

M. Théodore Valerie, painter, died at Vichy on the 14th inst., aged 60. He was a pupil of Charlet.

NEW UNIVERSITY BUILDINGS, MARBURG.

THE old university of Marburg, whose number of students is yearly increasing, has since its foundation (in 1527) been but niggardly provided for with respect to a suitable principal building. This was true at least as far as the theological, juridicial, and philosophical faculties are concerned, for they had not even proper lecture-halls. The administrative and governing bodies of the university also had found a but scanty abode in the old monastery buildings. To assert that it had become a crying necessity to provide space for all these various purposes is saying very little; the fact is there never had been sufficient accommodation since the university was founded three centuries and a half ago.

In 1874 the erection of new buildings was commenced. In consequence of the peculiar features of Marburg, which, like Nürnberg and Bruges, has preserved an entirely middle-age look in its buildings, and possesses important monuments dating from that period, — for example, the Church of St. Elizabeth, and the Castle, overlooking the town,—it became almost a necessity to give the new university buildings Gothic forms. The provision of these was entrusted to an eminent architect experienced in the Gothic style of architecture, Herr C. Schäfer, who has succeeded, favoured by the peculiarities of the site and its surroundings, in enriching the old town of Marburg by a building which does not clash with Mediæval structures.

The new university has been erected for the greater part upon the foundation walls of the old Dominican monastery which Philip the Generous, Landgrave of Hesse, handed over to the university on its establishment, and the church and eastern front of which are still standing. The southern side of the restored cloisters serve as a corridor for some of the lecture-halls. Their western side has been enlarged to a broad hall of two aisles, which, on account of the nature of the ground, reaches on the south side through two stories, while the remaining portion has only one floor. Thus an interesting link is formed between the upper and lower halls. The corridor already mentioned, and supplied by the southern part of the cloisters, has been lengthened beyond the two-aisled hall, and forms here also the entrance to the lecture-halls. This arrangement has been carried through two floors, by which it has been possible to place fourteen halls in one alignment. Over the lecture-halls joining the cloisters and the two-aisled hall rise two stories, in which the offices of the university have been located. The unsymmetrical proportions thus obtained on the south side nevertheless have a picturesque effect, corresponding with the whole character of the town.

The principal staircase, also in accordance with Mediæval arrangements, is placed in one corner of the cloisters, and affords, notwithstanding its hidden position, easy access to all the rooms. Two smaller staircases, developed into towers, promote this convenience.

The buildings are erected in ashlar work of white sandstone, in the Early Gothic style of architecture, with some amount of carved decoration on the front of the projecting centre. The corridors of the two lower stories, as well as the central hall, are vaulted. The details of the work have been carried out with great care and elaboration.

Although the great *aula* is still wanting, by which will be taken in hand shortly, the building may be considered as completed for the present. It was solemnly opened for the use of the university in May last.

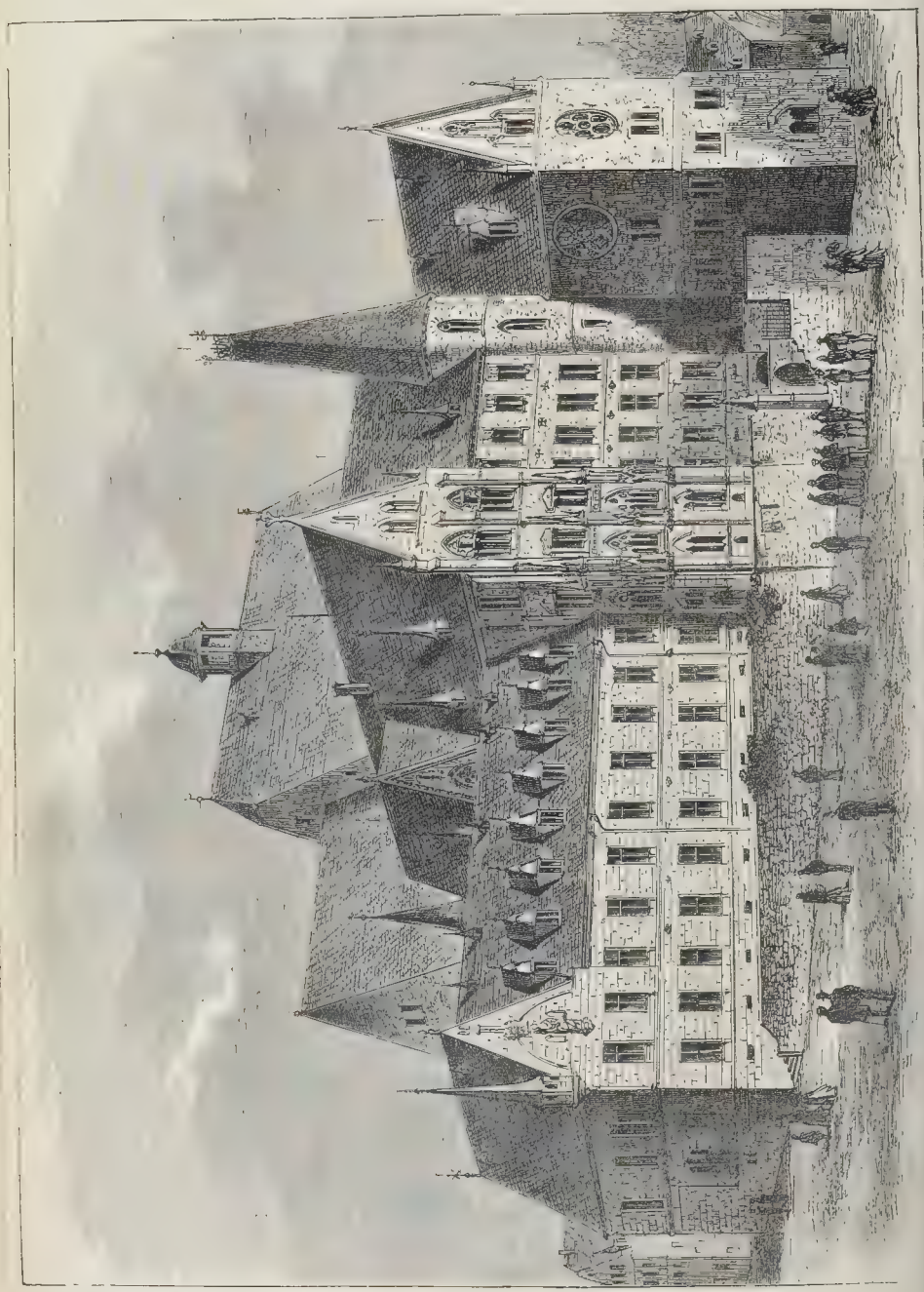
PORCH OF THE RATH-HAUS, COLOGNE.

THE beautiful porch or portal of the Rath-haus at Cologne is a very interesting work, not only on account of its great elegance and picturesqueness, but also from the fact that it is probably the earliest building erected in the pure Roman or Italian style in the Rhine country. Small isolated examples of Italian architecture, such as monuments, altars, screens, &c., may be found of a date as early, if not earlier, but nothing which can be properly designated as "a building."

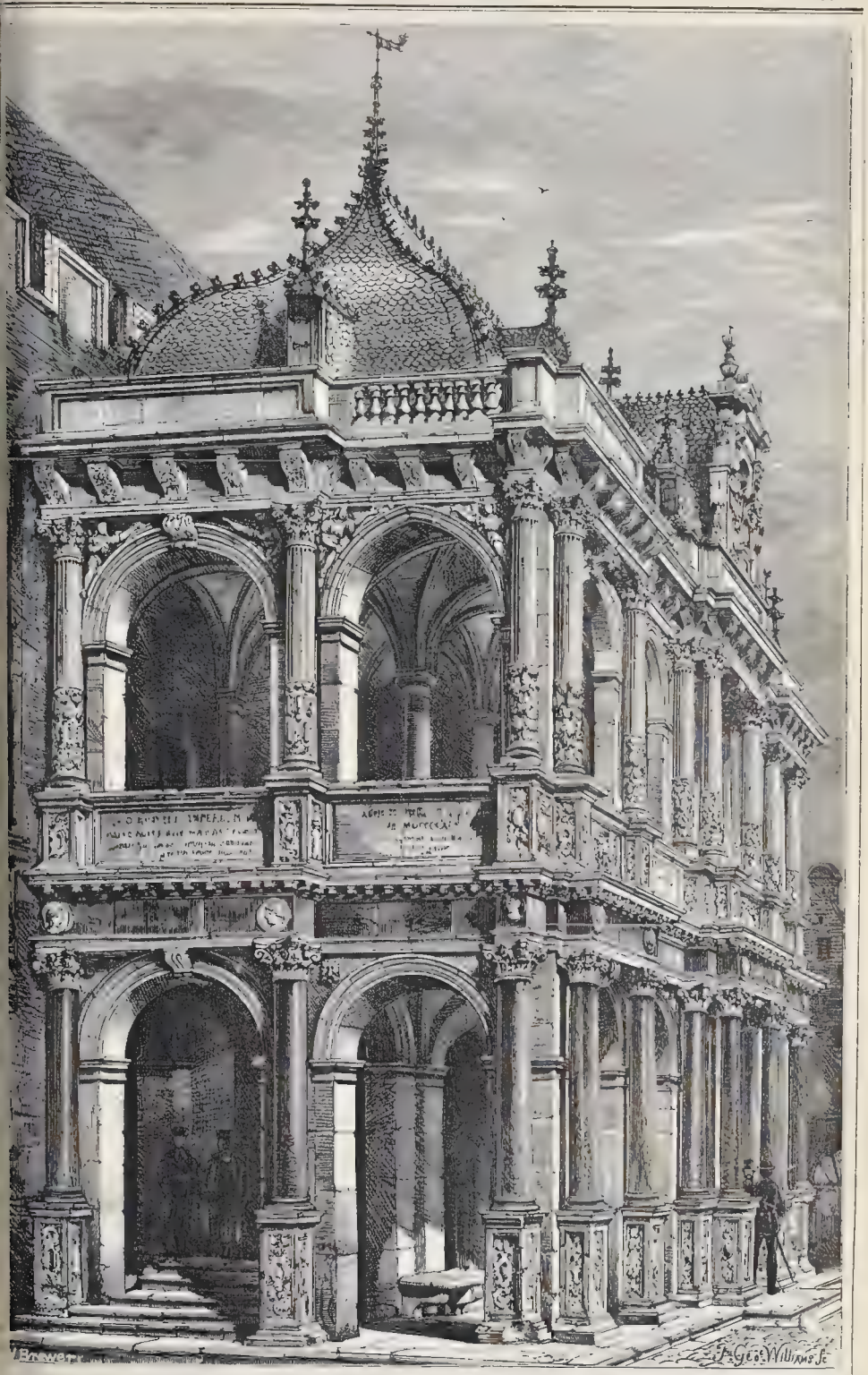
This beautiful work dates from the years 1569-1571. There can be little doubt that the architect was either an Italian or one who had learnt his art in Italy, though probably the workmen employed in executing the design were Germans. We are led to this conclusion from the following facts:—Firstly, the arches in some of the narrower compartments, into which the building is divided, are slightly Pointed, although the detail is quite Classical; secondly, the vaulting inside, and the slate roof over the building,—features which might possibly have been shown in the architect's drawings—are quite Gothic in spirit, which would lead us to suppose that where the workmen were left to their own devices they naturally fell into the Gothic style. It should be borne in mind that Italian architecture was used in England many years before it was introduced into Germany. We find examples of it here which date from very soon after the year 1500, though probably they are all the work of foreign architects or workmen. The monuments of Henry VII., Westminster Abbey; of the Countess of Richmond and Dr. John Young in the Rolls Chapel are known to be the works of Torrigiano; and although the names of the men who executed the great monument on the south side of the altar at Wymondham Church, Norfolk (evidently a pre-Reformation work), some of the details of Bishop West's Chapel, at Ely, and the capitals of Moore's Chapel, at Chelsea, are, as known, they were probably some of Torrigiano's pupils or assistants.

In Germany, however, we find no pure Italian work until thirty or forty years later, though it is true, we see a slight admixture of Italian work with the Gothic detail in such works as the shrine of St. Sebald, at Nuremburg (1519), and the monument of Bishop von Bibra at Wurzburg (1521), by Tilman Riemenschneider. Yet in all these works the general motive is Gothic, the details alone being Italian; but in the portal of the Rath-haus at Cologne both motive and detail are purely Italian.

Singularly, the Italian style of building seems to have been used for secular buildings for several years before it came into general use for churches in Germany; for although we find the Rath-haus porch at Cologne, dated 1569-1571, the Otto Heinrich's buildings at Heidelberg (1556-1559), the Pavilion at Prague, before the year 1565; yet the earliest Italian church, St. Michael's, at Munich was not commenced until about 1583. And the Jesuit churches at Cologne and Coblentz, which date as late as the year 1613, are thoroughly Gothic in character, though the furniture and doorways are Italian. In fact during the latter part of the sixteenth, and the commencement of the seventeenth century the Germans must have been doing pretty much what we do now—*i.e.*, building churches in the Gothic style and secular buildings in the Italian.



NEW UNIVERSITY BUILDINGS, MARBURG.—Herr C. Schäfer, Architect.



PORCH OF THE RATH-HAUS, COLOGNE.—1569 TO 1571.

EASEHOLD HOUSES AND THEIR RESULTS.*

almost every house in London there are
ces of the mental degradation that this
constantly occasions. Furniture and
s, works of art, and even dress, are all
smanlike and inartistic, or 'artistic,'
is worse, and fashionable, which is worst
The more a room is furnished 'in the
n taste' the worse it is. The motive and
f modern furniture are vanity and affec-
and it seems that for the present every
ust yield to these to some extent, or have
niture at all. But what is very grievous
fact that all this failing so reflects the
mind. The intellectual deficiency, the
ic moral weakness, clearly evident in
nts of leasehold houses, is, indeed, well
tood and recognised by men of trade,
arn to know their customers. The very
ge and address of shopmen show what
ters they have to deal with, and each
aper contains a page or more of business-
endacities, which are well known to pay.
ublic catch at them; they promise more
what is right, and that is what so many
hope to gain. Of course they are de-
, and all the furniture and fiddle-faddle in
omes, intended to impress the world with
ictitious wealth, or 'taste,' or elegance
shion, only show their great deficiency in
ter and sense.

unnatural and strange condition of so
a population has still further evil conse-
s. A deficiency of independent thought,
viduality, and of social power; a habit of
ing public questions as mere themes for
apers and subjects for home gossip, not
ng personal responsibility and duty; and,
seems, a comprehensive incapacity for
ate combination and development, and
lective will in action, mark the character
doners. They are a people spread abroad
territory, leaseholders, without enduring
t in the place, and seeking none,—a huge
ading multipede, invertebrate and head-

ing the last twenty years there have been
ntly before the public schemes for the
pal self-government of London, all of
superficial, dealing with the population
, severed from the land, and so without
e. for permanently local interests. Such
es would scarcely do substantial good:
ge and permanent success the freeholders
undertake the primary requirements of
hbourhood, the laying out of roads and
and sewers, and gas and water works.
se things leaseholders and tenants have
porary user only, and are, therefore,
lly, seldom zealous for their liberal
pment and sound construction. Public
and playgrounds, viaducts and bridges,
and libraries, are still less likely to engage
erious care. They may, perhaps, after
painful talk, be glad to get these neces-
s for themselves; but they have no long-
l, generous prescience and local states-
ip, which looks beyond the little space
me that parish vestrymen can compass
preciate.

reason for this failure is the want of full
tary interest. Apart from a few isolated
ocieties, there are not in all London
ly a thousand men who live in their own
ld houses: other freeholders are few, and
public bodies and non-residents. The
tion generally are mere tenants, often in
rd or even fourth degree, on terms extend-
om seven days to twelve months and
years. Commercial buildings, and most
ng-houses rated at above 300*l.* a year,
ased or underleased for seven years or
the tenant doing all repairs; but the
ous system of agreements for a shorter
rapidly extending upwards in the scale
tial.

s the general population is a mobile
nt, and not a stable mass, and but a small
ty take any active part in parish business.

These are the vestrymen, who hold as leasehold property a large number of the smaller London houses, and who often make it their chief business to prevent, and not to undertake and forward, necessary public works. The street paving, lighting, and road-making, are directed by these people; and the state of the small thoroughfares, in Clerkenwell and Shoreditch for example, shows that leaseholders are not a class to be entrusted with the interests of the public, or even, when there is a need for generous consideration, with their own. The conduct of parochial affairs is left, however, to these little tradesmen, and to speculating builders, and a few surveyors and solicitors of the same inferior grade. These men, the lower quality of popular intelligence, promoted to transactions much beyond their usual experience and to duties far above their comprehension, are the local governments and administrators of the largest and most wealthy city in the world.

For more than forty years there has been lamentable want of a conservative, foreseeing care for public works in London. A full quarter of a century after the necessity for arterial drainage, for the Thames Embankment, and for the Holborn Viaduct, had been obvious to all the world, these works at length were undertaken; a whole generation having been denied the use of them, and left in needless danger and discomfort. Each work is, for a metropolis, an ordinary undertaking, save indeed in its excessive costliness and show. The Embankments are inferior in length to those of a provincial town in France, and yet they have been made to look absurdly self-important and pretentious. The new Viaduct is level, which is all that could be wanted; but besides it is a monument of coarse expensiveness, with a ridiculous pretence of patronage of art. The citizens of London make the Viaduct a demonstration of their wealth, and of their want of wit to use it.

Before the first Reform Bill, London and its environs received from every Government imperial and judicious care. It was then evidently understood that highways were a public need, and should be planned with forethought for extended local intercourse. On both sides of the Thames the town was girt by a succession of wide avenues, laid out with generous judgment, that refused to spoil a great improvement for the sake of some minute economy. North of the river, the Commercial-road, the City and New roads, the New North-road, the Seven Sisters-road, Camden, Caledonian, and Finchley roads, and Highgate Archway; and on the Southwark side, the Kent and Dover roads, and all the avenues that radiate from the Surrey Obelisk, are like 'imperial works, and worthy kings.' But since the Government has lost its healthy despotism, scarcely a mile of thoroughly suburban road, apart from public parks and promenades, has been laid out as a main public thoroughfare. Streets at the rate of fifty miles a year have been constructed, not as thoroughfares, however, but as 'frontages,' and with regard alone to each small plot of land, which is described as an 'estate.' There is no thought about the gradients and continuity of roads and streets, or of an avenue or great highway. The only things considered are the rentals and the Building Acts. Suburban London is a tangle of small streets that lead to nothing but the score or two of houses in each line of frontage; and in many places for a mile each way no leading and continuous thoroughfare occurs. The Board of Works, a delegation from the parish vestries, is engaged in rectifying crooked corners and extending narrow lanes in central, close-built London; but, while all this little work is going on, the great suburban districts, owing to the habitual neglect and want of circumspection of the Board, are constantly supplying them with further opportunity for opening needful avenues, through finished neighbourhoods, in the most expensive way. Instead of carefully anticipating the advance of building work round London, and providing broad and leading thoroughfares in all directions, everything is left to chance, or to the smallest and most selfish interests; and the Board, with all its peddling and expensive works, is falling year by year more distantly behind the public need. They even fail to guard the public rights which Parliament a century ago had granted. Thus, the Acts for the formation of the road from Paddington to Finsbury provided that no houses should be built within 50 ft. of the road. On the abolition of the toll-gates it was enacted that any building within this limit should be treated by the parish vestries as a common nuisance, and removed. This, during the existence of select vestries, saved the open space; but on the passing of Hobhouse's Act, the little tradesmen, wishing to increase the area of rating, tacitly permitted the encroachment of, first, unsubstantial and then solid structures, in advance of the original building line. The Board of Works has now to be applied to for permission to build over the front gardens. This permission is, on some parts of the line, habitually granted; and throughout, wherever dwelling-houses are converted into shops, encroachments are continually made. For anything the Board of Works or any local Board has done, there will be lost to London the important right of an extended open space as large as a suburban park, and the continued opportunity for making what might be the longest, finest boulevard in Europe.

The reason of it all is leasehold tenure. The inhabitants of London have no pride or satisfaction in the place; they only wish to make their fortunes by its help, and then to get away from it as soon as possible. But why not move at once? Of the four millions who inhabit Greater London not a thousandth part have any permanent, substantial interest in the land or buildings. The whole population suffer from an evil custom which some hundreds only are persisting in to their own hurt, not knowing why, and which they never care to make the subject of inquiry. Each year the population, in sheer misery of home existence, is, as we have said, becoming more unsettled and inclined to move; and in a few years' time the tendency of men will be nomadic. As it is, they live in booths that scarcely can deserve the name of houses Their best remedy will be migration: let them, having learnt the cause of all their suffering, decide by acclamation to remove, and quit the place entirely. The proprietors can still retain their piles of half-burnt clay and matchwood, and in a ghastly wilderness of hollow, empty houses, they may sit at gaping doors and melancholy windows, and in sorrow beg their bread as showmen and joint fabricators of the biggest and the ugliest folly that has been inflicted on the world."

"And now that we have carefully discussed the leasehold system, have described its evil influence, and have pointed out the safe and only cure, we may refer appropriately to the interests of art. House building by the people is the first great opportunity for art, and houses for the working-classes, built, and designed in building, by the working-men themselves, have always been its elementary progressive school. Of architecture as an art the public are entirely ignorant. There is some small scholastic and still smaller antiquarian knowledge, which gentlemen occasionally demonstrate at Institutes and Architectural Societies. With such persons architecture is a luxury, a 'fine art,' for superior people to design and criticise; and to amuse these people, and the public who accept their dicta, millions annually are spent in travesties of art. On every other question that affects their daily lives, it is supposed that Englishmen are apt to form an independent, practical opinion of their own; the art of building, then, should hardly be excepted. They reproach the 'architectural profession,' not discerning that their own neglect of homely art has made this counterfeit profession possible. Were the public in like manner to abstain from ordinary reading, and then pride themselves on their superiority to literary knowledge, this would be regarded as absurd. Yet men who may for years have little use for literary gifts have daily need of building, and are subject to its influence for good or evil. As the public grow more wise, they will repudiate vain ignorance of building work; they will at all times recognise its dignity, and with delight they will appreciate its value and its power.

All men of sense and sympathy will spend their money in some way at home, and the first care of every man should be to understand the fabric of his house. To go beyond, and be a virtuoso in the arts of Italy and Greece, when everything is barbarous at home, is an absurd neglect of opportunity. In popular domestic architecture, with a systematic freehold tenure, art, constantly employed in combination with utility, would be enduring, dignified, and reticent. Men's intellects when occupied about such work would be ennobled, and the house itself would every year be so improved as to command the higher price spontaneously offered for judicious and artistic work, superior to fashion.

On the other hand, the leasehold system is,

m the "Ethics of Urban Leaseholds." London: & Stoughton. 1879. This is a vigorous denuncia- the system of building on leasehold tenure. The this system, which has the effect of slowly, but handing over to a comparatively few individuals umulations of the people, we have long pro- gainst. We agree, therefore, of course, with the n of the writer, and with much that he says; but nxiety to strengthen his case, he has made some nts which an able opponent, as it seems to us, uickly demolish. We trust the pamphlet will be l considered.

in art, in policy, and in all things that affect the character of men, an obvious injury and failure, and it must ere long be superseded. The substantial tenure that will take its place is nothing new or complex, but the earliest, the simplest, and most dignified on record. Abraham, although a stranger, would not 'take' Machpelah even as a gift,—he bought it as a burial-place; and David equally repudiated an uncertain tenure. Our fine Mediæval buildings were on freehold land, and art has wholly perished from the scene of leasehold tenure. If we return to unsophisticated freeholds, art will certainly revive; each householder will seek to make his home more beautiful and excellent, and by this exercise of noble care he will obtain a corresponding increment of honour and of self-respect.

Nothing whatever has been said, or can be said, in rational defence of leasehold tenure. It is a custom wholly destitute of merit, and without beneficence. It is alike injurious to the freeholder, and to those who build, and buy, and rent the houses, and inhabit them. It degrades the moral tone and spirit of the people, it prevents municipal reform, it is a constant and increasing injury to the workmen and the poor, and in poetic building art the whole of London is its pattern card. Is, then, the system worth preserving?"

FIREPROOF WOOD.

AT the meeting of the British Association recently held at Sheffield, amongst the many novelties that came before that learned and scientific body was one relating to the preserving of wood from fire, which bears evidence on the face of it of being of great importance; namely, a method of treating wood in such a manner that it shall become non-inflammable, and as pliable as a piece of paper, in proportion to the substance operated on, and at a comparatively trifling cost, not requiring expensive machinery, but by a simple process that involves only a nominal outlay, the thing can be successfully worked. The inventor is Colonel P. P. De la Sala, and amongst the various models and specimens exhibited by him at the Cutlers' Hall, Sheffield, before the Association, were non-inflammable wood for building purposes, pliable wood, fretwork, besides shavings of non-inflammable wood for the manufacture of mats, rope, &c., and other inventions.

"The groundwork of Colonel De la Sala's invention consists," says the *Timber Trades Journal*, "of, if not absolutely destroying, at any rate modifying the brittle and inflammable properties of dry vegetable substances, either in their compact or fibrous state. The inventor thus explains his peculiar method, already patented:—'Though all alkaline compounds reveal the property of rendering vegetable matter more or less pliable and non-inflammable, I preferably make use of carbonates of fixed alkalies in the following way. I dissolve in cold or warm clear water carbonates of potash or soda, or I make use of them in a solution of filtered water heated to the boiling point, and add hydrate of lime to this solution, graduating the strength so as not to exceed a specific gravity of 1·060 if potash is used, or 1·050 when soda is used. In the first case the strength of the solution corresponds to about 30 grains of hydrate of potash to the fluid ounce, or about 20 grains of hydrate of soda to the fluid ounce. Wood to be used in naval construction and in buildings or structures of wood on land, as well as vessels and land buildings already constructed, can be rendered fireproof by saturating the floors and decks and all exposed woodwork with alkaline lyes, and when dry the wood may be white-washed, painted, or varnished in the usual way.'

This is simple enough, and if the process went no farther, the value of it as a safeguard against fire would be inestimable. The mere fact of being able at a trifling cost to render all the woodwork in a house or ship non-combustible would, we have no doubt, lead to its general adoption, and the saving in fire insurances would compensate for the trouble and expense in having it done. One would think, when it became known and had undergone public tests, the insurance companies would require its adoption for their own interest, and it certainly would be for the benefit of the occupier to have his abode made proof against the devouring element.

With reference to larger timber, the inventor goes on further to state:—'For boards, planks, or thicker pieces of timber, I graduate the time of immersion so as to form a coating of from one-sixteenth to one-eighth of an inch, which can be obtained in from four to twelve hours, according to the more or less porous nature of the wood, or the compactness of its fibre. I consider a coating of about one-eighth of an inch deep to be a sufficient fire protection for all kinds of timber for building purposes, as the spread of fire and great conflagrations generally originate in relatively small causes, such as burning cinders, dropped sparks from fireplaces, matches accidentally ignited, inflamed liquids, candles left burning; but the fireproof coating can be made deeper, or even go through the whole timber, in the event of its being considered desirable to combine great flexibility with absolute non-inflammability. In this case I make use of hydraulic or other pressure, so as to force the alkaline lyes through the wood to the extent desired.'

When veneers are operated upon, it seems they are immediately afterwards rolled between steel rollers, or pressed between steel plates. Wood thus treated, says Colonel De la Sala, is proof *against any ordinary heat.*

The timber trade generally, however little they care what becomes of the wood after it leaves their premises, are nevertheless much interested in their lighter stock of prepared floorings, panelling, mouldings, window frames, &c., being so far unlikely to take fire as to render extra precautions and assurance unnecessary. Besides, if this invention is publicly approved, it is at the timber yards the planks, &c., would most likely have to be operated on, at least to be of general utility, otherwise an additional expense, let alone delay, would be thrown on the builder who undertook, we will say, to construct a house with uninflammable timber. But if with his order to the timber merchant for suitable stuff he could also request it might be made fireproof, what facilities there would be for thus ensuring the safety of dwellings!"

Whether the invention will really accomplish as much as the originator claims for it, experience only will show. There may be considerable value in this process for destroying combustibility, but it remains to be seen whether it is better than every other mode of treating wood for the same objects, *and at the same cost.*

ANTIQUITIES OF FINGAL.

ST. DOULOUGH'S.*

I CANNOT now remember when it was that I first took a pleasure in roaming about my native Fingal. It is a great many years since I brought home to my mother from Killester graveyard the produce of the trees which grew there in rich luxuriance to make elder-berry jam, but the fact is painfully impressed upon me from the gross ingratitude with which my efforts to please were treated by my parent when she heard of the locality from whence I brought my botanical offerings; and the loss of her sugar and trouble (sugar in those days was much dearer than now, "preserving lump" being at least 1s. the pound), for she could not think of keeping the confection, no matter how well preserved.

The little church made an easy copy for an effective sketch, as did Artane, old Clontarf Castle, with its Norman keep (and funny entrance and Gothic windows, like a stable turned religious! — before William Vitruvius Morrison restored it), Kilbarrack, Kinsaley, Carrickhill, and Howth; but the crowning gem was and is St. Doulough's. I regret to say I have no sketch-book now extant older than one of 1844; but I remember distinctly making drawings of these places as far back as 1836.

In 1856 I had the honour of being admitted a member of the St. Patrick's Society for the Study of Ecclesiology, and, as it was almost considered a *sine qua non* of membership to read a paper, I, with considerable diffidence, suggested the subject of St. Doulough's, which was at once kindly sanctioned by the council. Having made most careful and elaborate measurements of the unique buildings, and drawings of the well and St. Catherine's Pond, I read my paper at the May meeting of the society, in the Royal Irish Institution, College-street, and had the pleasure of seeing it published in their proceedings, illustrated with reduced copies of my drawings.

I am not aware whether the attention that was drawn to the state of St. Doulough's had anything to do with its repair, but I felt much flattered when, two years afterwards, I was asked to assist (with a committee then in process of formation, consisting of some of the greatest authorities on such subjects) in devising the best means of rescuing the ancient remains from ruin. Meetings were held. My views were with the most courteous consideration, and were assisted by Drs. Petrie, Reeves, Todd, and other *savants*, and in August, 1859, my first report was received at a meeting in the library of the Royal Irish Academy, when it was decided to collect subscriptions. Thanks were voted to me in January, 1860, for my gratuitous services and exertions, and the work of reparation commenced in the month of March following.

These buildings, to which I will now have the pleasure of calling the reader's attention, appear to have interested several writers of eminence, and, in common with other similar stone-roofed structures in Ireland, much has been written about them, although very little a satisfactory nature can be said to have been arrived at.

I have read nearly all the authors who have treated on the buildings at St. Doulough's, and I find in some cases the most conflicting statements, whilst in others the writers appear to have merely followed in the beaten path of their predecessors. The name of Doulough is spelt differently by almost every author. Ledwich, in his "Antiquities of Ireland" (second edition, 1803), says,—"St. Tulloch or St. Doulough is a corruption of St. Olave. Now, St. Olave was born in 993, and died at the age of thirty-five, so that this chapel could not be older than the beginning of the eleventh century." On this Lanigan (vol. iii. pp. 359, remarks:—"The doctor had no right to take the Irish nation of St. Doulagh, or rather Doulach, and give him to the Danes, as he does at page 147, where he says that Doulach is, v. *ut sup.* But St. Doulagh was an Irishman, son of Amalgad, son of Sinell, &c., and his memory was revered on the 17th of November in the spot called *Clochar*, on which the church is situated. The Doctor might have learned this much even from Archdall (at St. Doulough) without introducing his favourite Danes, and on inquiry he could have found that St. Doulough must have lived a very long time before St. Olave was born. He refers to Harris ("History of Dublin," p. 86) who says that there was St. Olave's Church at end of Fishamble-street, vulgarly called St. Tulloch's, or, he adds, St. Doulach's. But Harris makes no mention of St. Doulach's in Fingal, with which place, vulgarly-named St. Tulloch's had nothing to do.

In some of the works that I have examined on the subject I find a statement so far-fetched that it is worth noticing here. St. Doulough is described as:—

"A curacy in diocese of Dublin, sit. in bar. Coolock, co. Dublin, prov. Leinster, about four miles N.E. the metropolis. It has been long noted for a well dedicated to the Virgin Mary, adjoining to which is a small place called St. Catherine's Pond. The church here is worthy attention. It is one of those few structures in this kingdom erected from the beginning of the eighth to close of the eleventh century, and in a different style of architecture from any at this day to be found either in Britain or the western parts of Europe, being evidently built in imitation of the original Christian churches in the southern countries taken from the ancient heathen temples of the Greeks and Romans; and which, probably, were introduced into this island by the Greek and Roman clergy, who retired from their native countries on the arrival of the Gothic Vandals into the Roman Empire. These churches now remaining in Ireland are all remarkably small, seldom exceeding 40 ft. in length and 20 in breadth, being covered with circular stone arches, under stone pediment roofs, and the walls and arches frequently ornamented with columns and pilasters, in rude imitation of the Corinthian and Doric orders. They are, however, in respect to their far superior to anything erected during the beginning of the latter ages when the Gothic method of building was introduced from Britain."—The "Gazetteer of Ireland," also "Post-Chaise Companion," 1805, in which above copied almost *verbatim.*

In each of the foregoing, which are similar in tone to others I have met with, it will be remarked that the writers distinctly lead one to believe that the building at St. Doulough's, as well as the other similarly stone-roofed structures in Ireland, were copied from the heathen temples of the Greeks and Romans. I have looked in vain for anything bearing the slightest resemblance to the Doric or Corinthian order, neither pilasters, nor anything approaching columnar architecture met my eye, and I am at a loss to account for the strange manner in which these writers describe this building.

* From a paper by Mr. John S. Sloane, architect, read before the St. Patrick's Society for the Study of Ecclesiology; with additions of a later date; quoted from the *Irish Builder.*

pproach to the ancient edifice is through avenue, at the commencement of which, the side of the road from Dublin to le, is a stone cross of somewhat singular the arms of which are very short, in- g towards their extremities like those of se cross. It is of a very coarse granite, any sculpture or ornament, and stands sed stylobate of two steps. In D'Alton's y of the County of Dublin" it is stated s is one of a series of crosses that served the mearing or boundary of the chapelry ealy. In Lewis's "Topographical Dic- " I find that this cross formerly stood e south door of the building. My own agrees with D'Alton.

now endeavour to describe this very building. Approaching it, the most nt spectator cannot fail in being im- by the singularity of the structure. An tion of it furnishes the ecclesiologist ich food for conjecture as to the probable es of the founders, and it is much to be d that in the present day we have little conjecture to guide us.

as it is, it contains seven separate nts and three stairs, and the number of n in the west end would indicate the e of a timber floor at one time, and nall rooms. The only entrance now re- is through a very low pointed doorway, in a sort of porch, projecting like a buttress from the south-west corner wer. This doorway is merely an opening ornament or moulding of any kind, it I had fixed in 1860 a massive door e, with wrought-iron Mediæval hinges, furniture, but I do not believe it to riginal entrance. Through it you enter vaulted apartment, now lighted by two , one above the other; a chapel con- what is generally and traditionally be- be the altar-tomb of St. Doulough. this is an arched opening, through he tomb can be seen from the eastern , probably for the use of communicants. the altar or tomb and this opening sage pierced through the massive wall, and leading to the principal apartment uilding, which is 21 ft. 7 in. in length, g 9 ft. 9 in. in width, and to the apex aulted roof, 16 ft. This chamber occu- length of one portion of the building, ades all under the tower, the vault of s groined with the rudest masonry, liernes or ribs; it was formerly by four windows, one of which has and dressings of sandstone, beauti- ought, and is in good preservation; it later date than other portions of the ; the jambs are without splay, and I to have been placed there about the n century, as its style would mark that The principal window also is in good tion; it is of a very Early Decorated id has dressings and mullions of fine e; the central shaft appears to have oken at some remote period, and re- by a shaft of red granite or sandstone d foreign to the locality. The north and other south window had been ; the remains of their tracery is soft ne or oolite. In clearing out the accumu- bbish of the floor the central shaft of dow was found and restored to its pro- tion. The stone used in the tracery of of the windows must have been brought onsiderable distance, nothing of the kind in the country or its neighbourhood.

king the many repairs entrusted to me committee in 1859, and studiously avoid- hing like restoration, excepting so far ing built-up doors and windows, many concealed or covered up became re- and when it was decided to build a new —a work that my increased and peculiar onal engagements prevented my under- —the ancient arrangements brought to the preparing of the old works added to the already perplexing nature of the * Two separate hagioscopes or squints exposed, one in two parts commanding east chamber, and one in the extra- bevelled-off north-west angle; also a square-head door in the corner beside r hagioscope, and three square openings with well-preserved bevelled dressings of limestone; the larger hagioscope and door are in the pointed arch springing from corbelling in the east angle of the tower and abutting on similar corbelling in the west angle, and a second pointed arch springing from the north-west bevelled angle. These works date long subsequently to the other buildings, but plainly indicate the residence of an anchoret in the cell over the little chapel in which is the altar tomb, and from which is a separate stair and square-headed doorway. There is no evidence of the style or extent of the building for the use of which these corbelled arches were erected, the small square two-light squint gives on the tomb, whilst the square openings at the side were no doubt for the purpose of conveying food to the inmate, and for confession, ventilation, &c. In many places I have seen additional buildings or aisles added on to the original ancient structure, as at Killiney and Howth, and these arches would show that such an aisle was erected here; but there are no means now of arriving at what may have been its extent or architectural elevation, unless we attempt to draw some conclusion from the square and bevelled corbelled stones, two of which appear at the west end and others at the sides. They may have formed supports for the eaves of an L-shaped addition demolished to make room for the church, the removal of which in 1861 afforded the opportunity of seeing that portion of the old building.

Very careful photographs were taken by my old friend, Mr. William Allen, of Henry-street, an accomplished amateur, who evinced a great interest in the proceedings, and spared neither time, expense, nor trouble in furnishing the committee and myself with pictures that much facilitated the work, and remain as faithful records of the building, and from these principally have been made the sketches with which I propose to illustrate the remaining portions of this paper. The success of the executive portion of the undertaking was altogether due to the energy of the incumbent, the Rev. William Studdert Kennedy, M.A., who had much uphill work to surmount and annoyances to face that it is not in my province to do more than mention; but I have no hesitation in stating that if it were not for him there would be little remaining of St. Doulough's to-day.

ARCHITECTURE.—UNIVERSITY COLLEGE, LONDON.

Professor T. Hayter Lewis having received leave of absence, the Council have appointed Mr. T. Roger Smith to lecture during the approaching session at the College in Gower-street. The programme of the lectures remains substantially the same as in previous years, but with the addition of a separate course of lectures on modern practice. This will be delivered by Mr. Roger Smith, on successive Monday evenings, and will include considerations of planning for special purposes, the ordinary routine of building operations, estimates, quantities, contracts, the conduct of works, the adjustment of accounts, professional charges, the London Building Act, the Model Bye-Laws, light and air, litigation about contracts and buildings, professional evidence, arbitrations, dilapidations, surveys, failure of buildings, valuations, and miscellaneous professional duties.

City of London College: Evening Classes for Young Men.—The prospectus of this Institution has been published, stating that the new session commences on Monday, October 6. The inaugural address will be given by the Bishop of Bedford, Bishop Suffragan of London, on Thursday evening, October 9, the subject being "Books, and how to use them." A glance at the prospectus shows that the council of the college are extending its curriculum, the array of classes being greater than in any previous session. The need of a much larger building has been proved, and it is hoped that the exertions of the Council to obtain a site for a new college will soon be successful. Why do not some of the wealthy citizens of this great metropolis, emulating the example set by many in several provincial towns, come forward with a portion of the fortune which they have amassed, and provide a worthy building for the express purpose of improving the young men on whom they depend for the proper conduct of their business?

THE TRADE-UNION CONGRESS IN EDINBURGH.

We conclude our notes* of this Congress, which came to a close on Saturday last. It is regarded by its promoters as the most successful gathering of the kind which has ever been held.

Compensation for Injuries.—Mr. John Burnett, of the Amalgamated Society of Engineers, London, in introducing this subject, said it was first brought before the House of Commons by Mr. Macdonald, who had made the subject almost a life study, and who had early decided to treat the matter distinctly as a matter of principle, and to lay down a clear and distinct principle in reference to his measure which workmen could easily understand, and which could not be easily turned aside by mere legal subtleties. It was the duty of the Congress to justify the estimation in which it held his Bill, and his conduct on this question, by passing some strong resolution in support of the action which he had taken, and which would encourage him to continue his action in the future, until the position of workmen, in respect of compensation, should be exactly the same as that of any other citizen in the United Kingdom who claimed compensation for injury sustained by the negligence of a servant. He moved:—

"That, in the opinion of this Congress, the Compensation Bill of Mr. Macdonald lays down the only just principle that can be applied in the construction of such a measure, inasmuch as it provides that in any action raised by a workman or his family for injuries or loss of life sustained while following his employment, it shall be no ground of defence that the person by whose negligence the injury or loss of life is alleged to have been caused was engaged in common employment with the person injured or killed, or that the risk of injury or loss of life is voluntarily incurred by the person injured or killed."

The question, he said, was now in such a position that they could not accept any compromise. It might be said by some that the Bill went very much too far, that they would never get it accepted, and that it was not practicable; and those persons might, therefore, advise them to go in for some other Bill which was in reality a compromise between the existing system and the principle which Mr. Macdonald's Bill laid down. Now, he did not think that was the time for the acceptance of any compromise. At any rate, if compromise there was to be, it should be made in Parliament, and not in the Congress. If they supported Mr. Macdonald with all their might, and with all the strength of their unions, and by a thoroughgoing resolution like this, they would be doing something which would have effect, and would produce some measure that would place the workman, in respect to his right to compensation, on a more satisfactory footing than it stood at the present time.

Mr. Gill, Aberdeen, seconded the resolution, which was supported by Mr. Shipton, who pointed out that by the Bill they did not ask for any new law on the subject, but merely that workmen should not be exempted from the ordinary legal position of their fellow-citizens. He urged upon workmen the necessity for forwarding this principle, not only in Congress, but wherever they could give it practical effect by influencing members of Parliament or constituencies.

Mr. Guile also supported the Bill, on the ground, as he thought, that it would be a great blessing to the country at large. If employers were made liable for bad machinery and for bad material, even in the case of injury to their own workmen, there would be greater care taken not to put bad iron into boilers and ships, where they knew that for the sake of cheapness it was now done. He hoped Mr. Macdonald would be able to work out this Bill until the working-man could feel when he went into his workshop that at least there was somebody made to care for his safety and his health.

The resolution was also supported by Mr. Thom, joiner, Edinburgh, and Mr. Williams (of the Operative Association of Plasterers), Birmingham, the last-named delegate asserting that a large number of the accidents, say in the building trade, were preventible by care on the part of those concerned, and such as would, if this Bill were adopted, give right of compensation to the injured.

Mr. Evans denied that Mr. Macdonald was the first to introduce this question into the House of Commons, for until the question had been taken up by the Trade Congress it had never been heard of. Those whom he (Mr.

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ew church was built by Mr. Douglas, of Har- et, from a design by Messrs. Lanyon, Lynn, & nd consecrated on the 25th of January, 1865, by ishop of Dublin; it very ingeniously utilises the es, &c. See *Dublin Builder* of February, 1865.

* See p. 1067, *ante*.

Evans) represented, viz., the railway servants, were anxious above everything that a measure should be passed which should enable them, or their wives and children, to receive compensation where, through the wrong action of those who employed them, they were injured, and their wives and children, it might be, left destitute. But, at the same time, they were anxious to see a measure passed which should be practicable. Between Mr. Brassey's Bill and that of Mr. Macdonald there was this distinction: the former would give all that Mr. Williams asked for; Mr. Macdonald's Bill would give that which workmen as a body did not ask for.

After a great deal of somewhat heated discussion, in which Mr. Macdonald, M.P., took part, the motion was put to the meeting, and carried unanimously, and a vote of thanks was accorded to Mr. Macdonald for his services, with the request that he would "continue his efforts until a satisfactory measure is passed into law."

The Unions and Arbitration.—On Wednesday, the 17th inst., the proceedings commenced with an address by Mr. R. S. Wright, barrister-at-law, who said he had been glad to find that the Congress was disposed to widen its programme, and to consider other questions than those which specially and directly affected labour alone. There could be little doubt about the wisdom of such a course. It was beginning to be more strongly felt by them, and by the public, that there was no real antagonism between them and capital, or between them and land. And it was one of the principal uses of such a meeting as that, that, thanks to the press and its representatives, they are brought more face to face with public opinion. The public learned what the best and fairest employers, like Mr. Brassey, had already learned, and what some of them had not feared to say, that the leaders of unions were easy and reasonable to deal with; that they were more engaged in moderating disputes and strikes than in promoting them; that without the unions and trades' councils the conflicts between capital and labour would be far worse and more ruinous than they were; and that the unions rendered most important service in reducing the burden of poor relief. Some reference had been already made to this last point by Mr. Prior, and the information which he gave might, with great advantage, be enlarged. He found from Mr. Howell's book on capital and labour that the union of ironfounders in the ten years ending 1876, with an average of 11,000 members, paid over a quarter of a million of money for relief of the unemployed, for superannuation, sick, funerals, and accidents, altogether apart from strikes or trade disputes. Similar amounts were known to have been paid by other societies. It was probably not an exaggerated estimate that all the unions together paid a million of money annually for those purposes; and a great part of this sum directly relieved the poor-rates. It would be well if they would compile and publish as complete accounts as possible of this kind. People generally were apt to be very sensible of anything which relieved the rates. There was one other suggestion which he wished to make with reference to what he might call their own special affairs, and that was with reference to strikes. He did not believe that there was any one there who ever desired a strike, or did anything but deplore it as a ruinous necessity which had to be sometimes faced, like war, for fear of worse. Strikes were, no doubt, sometimes a necessity, but they were at best a barbarous necessity, especially as carried on in the teeth of a public opinion which was generally hostile. He believed that very much more could be done by organised arbitration than had yet been done. The necessity was to get public opinion on the right side, and he believed that the means existed for doing this. What was really wanted was something in the nature of the Nottingham Board, which should be in continuous operation, and which should from week to week, or from month to month, meet and consider the circumstances of the time, and fix what was a fair wage for the time being, under all the circumstances of the particular trade. There was, generally speaking, at any given time in any given trade, what might be called the fair rate of wages for that trade at that time, and it could be settled by a mixed board who wish to settle it. There was a sense in which it was true to say that there was such a thing as a fair rate of wages,—a fair price of an article,—as distinguished from the lowest that could be asked or the highest that could be exacted. Now, it would generally be easy for a mixed board of employers and employed to say in any particular place and trade what was a fair wage or list or log, and that had often been done, as in Nottingham. What he wanted specially to suggest was, that they should establish in London, as the centre of public opinion, a supreme general board of appeal, who should support or overrule the decisions of the local boards. If such a central board were proposed, he thought they would have no difficulty in securing the services on it of the ablest and most impartial men in the country,—say such men (he took their names at random) as Mr. Mundella, Mr. Brassey, Lord Derby, Mr. Dale, Mr. Kettle, Mr. Harrison, Mr. Crompton, and many others who would command public confidence. If either side struck against the decision of such a board of appeal, that side would have great difficulty in making good its ground. The great point was that decisions of the local boards under such a system would not be isolated, but would proceed from week to week or month to month upon a local and practical knowledge of the condition of each trade. They would gradually succeed in establishing principles or rules, which isolated strikes did not.

The Land Laws.—On the motion of Mr. Ball, the following resolution was adopted:—

"That this Congress is of opinion that the land-laws at present in force in Great Britain and Ireland are manifestly unjust, and are opposed to the best interests of the people by divorcing the peasantry from the soil, diminishing labour, restricting production, and causing the nation to depend largely for its food supply on foreign importations, thus wasting its wealth in the purchase of food from abroad which might with advantage be produced at home: we therefore resolve that the reform of the land-laws shall at once be added to the Parliamentary programme, and that it shall be the duty of the Parliamentary Committee to use every legitimate effort to secure the earliest and best possible legislation on this important subject."

Codification of the Criminal Laws.—Mr. D. Guile read a paper prepared by Mr. George Howell on this subject, and it was resolved, on the motion of Mr. Kennedy, Glasgow,—

"That the draft codification of the Criminal Law now before Parliament, though by no means perfect as a code, is, notwithstanding, a great step of reform, and that the Congress, while insisting strongly that the clauses affecting the liberty of the people of these realms should be jealously watched and carefully altered to secure and enlarge those liberties, and the right of public meeting must not be interfered with: we therefore urge upon her Majesty's Government the necessity of passing such code next session, and not suffer this reform in the laws to be delayed."

The Jury Bill.—Mr. H. R. King, London, moved,—

"That it be an instruction to the next Parliamentary Committee to renew the exertions for the passing of the Jury Bill prepared by Mr. Henry Crompton, for lowering the qualification of jurymen, and providing reasonable payment for services rendered."

Mr. Williams moved as an amendment,—That the Bill be referred to the Parliamentary Committee, with the following instruction,—

"That during the interval previous to the meeting of the Congress next year they shall obtain the decision of the different trades' representatives; and furthermore, that a Jury Bill may be drafted that shall be applicable to Scotland and Ireland."

The amendment was adopted by 34 to 20.

Factory and Workshop Inspectors.—Mr. Davey, Gateshead, moved,—

"That it be an instruction to the Parliamentary Committee to renew their efforts with, if possible, increased energy, to secure the appointment of an additional number of sub-inspectors, composed of practical working men, to be under the control of the inspectors or sub-inspectors."

The motion having been seconded,

Mr. Harry, Manchester, proposed as an amendment the addition of the words "and practical women."

Considerable discussion took place as to the desirability or not of having women inspectors for establishments in which females were employed. Mr. Broadhurst, who objected to the proposal, remarked that the conditions for inspectors were something preposterous, and that the reason for this was that the appointments were intended for retired officers in the Army and Navy—men in the possession of pensions, amounting in many cases to hundreds of pounds.

The discussion was continued on Thursday, when the motion as amended was carried by 49 to 37 votes.

Mr. Bradshaw, of Manchester, then read a paper entitled "Africa: the Remedy for the Trade Depression of England."

Representation at the Congress.—Mr. Memmot, Sheffield, intimated that since a statement had been made on the subject, there had been an addition of 16,800 to the membership represented at the Congress, making the total number 558,692.

The Patent Laws.—On the motion of Memmot, it was resolved:—

"That, in the opinion of this Congress, the plac the Patent Laws of this country upon a satisfactory fo should be no longer delayed, and this meeting inst the Parliamentary Committee to continue its effo secure to the inventor, by reasonable payments, the b of his invention."

Bankruptcy Laws.—On the motion of Whalley, Blackburn, it was resolved:—

"That it be an instruction to the Parliamentary mittee from this Congress to watch any Bankrupte that may be brought before Parliament, and to urge clause or clauses be inserted, making wages under first charge on any bankrupt's estate."

Certificates for Enginemen.—Mr. Rhodes a paper on this subject, in the outset of w he stated that the Government had been to take such steps as might seem best to vent incompetent persons taking charg either steam-engines or boilers, the incom tency of the persons in charge being the cause of machinery accidents and boiler sions. The Government admitted that thing should be done to make life and pro more safe. The only question with them what was the wisest thing to do. So fa Government and the Congress were agreed his opinion, the wisest thing to do was to the inspection of boilers compulsory, the of each inspection to be left at the Bo Trade, or some other place appointed b Government; while the next best thing would be to ensure the efficient and management of both engines and boilers, could only be obtained by the thorough tr of the men entrusted with such machinery moved,—

"That this Congress tenders its warmest thanks Thomas Burt, M.P., for the manner in which he int his resolution on the 29th April, and that we are opinion that no person should be allowed to take either of a steam-engine or boiler until he ha examined by a properly constituted Board of Exa and obtained a certificate of competency from the and that the Parliamentary Committee take such to them shall seem best, during the next session of ment, to bring the matter to a successful issue."

The motion was adopted.

Church School Books and Trade Unions.—Simmons, Maidstone, then called the att of the Congress to a certain book wh printed and issued by the National Soc Westminster to the National Church Sch England and Wales. He read extracts fr books used in schools, from which the fol are quoted:—

"All attempts of Government to regulate by rate of wages are useless and mischievous. But s hurtful, and much more frequent, is the interferen another quarter; that is, when men who are no governors, and have no legal authority, combine to control their neighbours, and to dictate to e what wages he shall pay or receive, and how he s pose of his property. . . . Most of the people kingdom reckon themselves freemen, and boast liberty, and profess to be ready to fight and to die than submit to slavery. They look down with contempt on the Russian bondmen or serfs, and slave, and on subjects of the despotic Govern Turkey or Persia. And yet many of these peop to subject themselves to a tyranny more arbitr more cruel than that of the worst Government world. They submit to be ruled by tyrants wh allow them to choose how they shall employ their their skill, or their strength. These unhappy pe those who have anything to do with *Trade Un Combinations.* There will generally be found a workmen some idle and ill-disposed persons, who and endeavour to excite others to envy, against who earns more than the usual wages. In this way t persuade a great number of their fellow-workmen themselves into a combination, and appoint these as their rulers, under the title of committee-m business of these committee-men is to make law government of the combination, and to punish all w them. There are four laws which belong to *all* tions. 1st, that every member shall obey the ord committee; secondly, that no member shall work pany with any one who is not a member of the com or work for any master who resists its orders; that no member shall work after a stated pri by themselves; and fourthly, that every membe pay a weekly sum for the expenses of the com A part, often a large part, of this tax is taken by mittee-men for themselves. And generally there added laws forbidding any one to work by th or to earn more than a stated sum, or to do m a certain amount of work in a day or a week; and prohibiting a master from taking or discharging a men without the consent of the combination, using in his manufactory any process or any mac they do not approve of. The committee-men ha acquired their power, keep it by intimidation violence to the persons and property of those wh them, or who refuse to join them. And any m disobeys them is punished by what is called a is, by refusing to work for him, and by preventin else from doing so."

The clergy (Mr. Simmons continued) had working men to friendly conferences or unions. When they saw this book, did strike them that some of the clergy h studying Shakspeare to some advantage he said, "I can smile, and murder while I He moved as follows:—

ention of this Congress having been directed to icles upon trade-unions printed in the National chool reading-book, standard 3, the Congress e statements contained in these articles to be d this Congress, learning that the National eading-book is in general use in the National the country, earnestly hopes that the articles of will be immediately eliminated, and that it truction to the Parliamentary Committee to interview with the Archbishop of Canterbury, of the National Society, so that a deputation upon his Grace to point out to him the injus- unfounded statements being daily taught to in the National Schools."

s since been officially intimated on the he National Society that the book in is about to be withdrawn.]

, Strikes, and Arbitration.—At the even- ing, the following resolutions were

his meeting is firmly convinced of the efficiency of trade-unions as a means of securing to the of the United Kingdom a fair share in the their labour, and therefore urges the men and onging to the various trades to extend and their own particular organisations."

is meeting desires to express its regret at the ourrence of lock-outs and strikes, and is anxious future disputes which cannot be settled in an anner between the parties concerned, they to a properly-constituted Board of Arbitration, th parties can be fairly represented."

ion of Trade Societies.—This subject ussed at great length on Friday, when ht, Liverpool, moved:—

his Congress considers the time has arrived ort should be made to draw together the various isations of the United Kingdom into a Fede- n. The object of the Federation at first shall nation of a fund for the maintenance of the se-hours system' as a recognised day's work; les of rules for the government of the Federa- to every recognised body of working men in Kingdom by the secretary of the Parliamentary accompanied by a small circular urging upon cessity of joining the Federation, and request- er not later than the last day of this year, the ent to the office in London. If, on the receipts urns, it is found that societies whose aggregate ount to 100,000 members are favourable, the mbers of the Parliamentary Committee shall a conference, to be held at the most suitable rising delegates from those societies who may in their adhesion to join the Federation, for e of electing officers, and doing what other y be required for the successful launching of ion."

tzpatrick, Liverpool, contended that thing to be aimed at was the perfect- heal organisation. He moved as an nt:—

is Congress is of opinion that confederation of organisations of the country is of the greatest but considers that the best method of the desired result is by having, in the first brough local federations; and that the Parlia- mmittee be instructed to give every assistance ver to encourage such local federation."

division being taken, the resolution ied by twenty-eight votes against t given for the amendment.

afternoon the delegates went on an o Dalmeny, the seat of the Earl of

ngress concluded its proceedings on The first subject taken was

Labour.—Mr. Jones, Bristol, moved,—

the opinion of this Congress, the action of nent, as instanced at the Shepton Mallet gaol, to convert our prisons into large workshops, ly interfering with free labour, and creating etition in certain branches of industry, at the he ratepaying community; and that the Par- committee be instructed to take steps to check plained of."

tion was unanimously adopted.

ation and its Relation to Trade Unions.— nes, Birmingham, moved as follows:—

s Congress desires to maintain friendly rela- n dealt and the Co-operative Congress, be- the principles of co-operation, both in produc- ributive development, are calculated to be of age to the class to which the members of trade- st exclusively belong; and strongly recom- -operative societies to conduct their business, ith their employers, on principles that may es, and to acknowledge the rate of wages paid districts in which the stores are established."

on, he submitted, was brought into to assist labour, and the societies t pervert its primary intention by unter to the trade-unions.

ne, Saltburn, seconded the resolu- h, after some remarks in advocacy of on from Mr. Bailey, Preston, and y, and a plea from Mr. Thom, Edin- ainst anything like competition be- operation and trade-unionism, was ly adopted.

Representation in Parliament.—It was on the motion of Mr. Cotton,—

s Congress declares that it is high time the bour were properly represented in Parliament, ands all trade-unions to do the utmost in their rm competent men of their own order to Par- the advancement of manhood suffrage as the resentation."

Women's Trade Unions.—Mr. Count, Bristol, moved, and Miss Merrick, Bristol, seconded, the following resolution, which was unanimously adopted,—

"That in the opinion of this Congress it is highly desirable that the various trade societies and trade councils in the United Kingdom should give their aid and support to movements calculated to improve the social condition of women and children engaged in all descriptions of industry."

International Labour Congress.—Mr. Weiler, London, moved,—

"That the Parliamentary Committee be instructed to carry on, as far as possible, a constant correspondence with the Labour Associations of other countries, for the purpose of establishing friendly relations, and by that means to prepare for the holding of an International Labour Congress at the earliest possible opportunity."

This was seconded by Mr. Bray, who incidentally alluded to the fact that frequently when strikes occurred foreign workmen were brought over to this country, who would not come if they were aware of the true state of matters in the trade affected at the time. The resolution was carried by acclamation.

Place of Next Meeting of Congress.—Mr. Shorrocks, as representing the Manchester and Salford Trades' Council, invited the Congress to hold its next meeting in Manchester, and proposed that such invitation be accepted.

Mr. Mottershead, London, seconded the motion.

Mr. Clark, Liverpool, proposed that the next Congress be held in Dublin, which was seconded by Mr. Guile, London.

On a division, 54 voted for Dublin and 17 for Manchester, and it was accordingly resolved that the next meeting be held in the former city.

NEW ARCHITECTURAL FACES IN PATERNOSTER-ROW.

MESSRS. MOZLEY'S NEW BUILDINGS.

Old Paternoster-row could boast of more ornamental books than ornamental buildings, but this historical centre for the productions of authors is in course of external reconstruction and improvement. A handsome building for Messrs. Mozley & Smith, the well-known publishers, is on the verge of completion. It has a frontage to Paternoster-row, 56 ft. in height and 36 ft. in width, the upper portions being built with Portland and Conflan stone, the latter from a French quarry. The frontage of the ground floor, which consists of shops for the business of the firm, is carried up on piers of Serpentine marble. There is a bold cornice above the ground floor. The front terminates in a cornice, surmounted by two dormers. There is some carving in the pediments of the dormers, consisting of shields and other devices. There are also vases at the angles, and between the dormers.

The architects are Messrs. Taylor & Locke, of St. Michael's House, Basinghall-street, and Mr. Richard Conder, of Ball's Pond-road, is the contractor.

THE WELDON VIADUCT.

We have to record the completion of an important work in connexion with the doubling of the London and South-Western Railway Company's narrow-gauge line of railway to the West of England, viz., the doubling of the Weldon Viaduct, two miles west of Okehampton station. The viaduct is constructed of iron, in six spans of 90 ft. each, the height in the middle being about 160 ft. The viaduct has been doubled, at a cost of about 15,000*l.*, from the designs of the company's chief engineer, Mr. W. Jacomb, M. Inst. C.E., by Messrs. Head, Wrightson, & Co., of Stockton-on-Tees, under the supervision of the company's district engineer, Mr. B. J. Fisher, M. Inst. C.E, and although a work of great magnitude, and attended with many risks, has been carried out with such care that no mishap of any kind in connexion with it has occurred.

The new widened portion of the viaduct was last week inspected, on behalf of the Board of Trade, by Major Gen. Hutchison, R.E., and subjected by him to very severe tests, which entirely satisfied him of the strength and stability of the structure. The work has been carried out for the contractors by their representative, Mr. Clark. The doubling of the line of railway from the Weldon Viaduct to Lidford is in a very forward state, and will be ready for opening in a few weeks, when the London and South-Western Company will have a complete double line from London as far as Lidford towards Plymouth, they having during the last few years doubled their line from Exeter to Weldon, twenty-eight miles, the remaining section, now nearly completed, from Weldon to Lidford, being a further length of eight miles.

IRISH NOTES.

A mortuary chapel was dedicated, a few days ago, at the well-known cemetery of Glasnevin in Dublin. It will be known as the Chapel of the Resurrection of our Lord. Its dimensions are,—length, 79 ft. by 29 ft. 6 in. wide; across transepts, 47 ft. by 21 ft. 6 in. Inside, the walls are divided by bays of clustered columns, each bay having triple arcades. The ceiling is coved and divided into compartments by moulded arches springing from carved capitals. The windows are filled with stained glass, and the floor laid with marble mosaic. The structure is of granite, with Portland stone dressings. Its cost is 8,000*l.* Mr. J. J. M'Carthy, R.H.A., of Dublin, was the architect, and Mr. William Murphy, of Dame-street, Dublin, the contractor.

A new townhall is being built at Pembroke, a suburb of Dublin. It is Geometrical Gothic in character, and has been designed by Mr. E. H. Carson, architect, of Harcourt-street, Dublin. Mr. Patrick Monks, of the same city, is the contractor. The building has nearly approached completion.

The new swivel bridge over the river Liffey, near the Custom House at Dublin, was opened on the 26th ult. It was designed by Mr. Bindon B. Stoney, engineer, of Dublin, and the foundations and stonework generally have been carried out by Mr. W. J. Doherty. The ironwork has been supplied by the Skerne Ironworks Co., Limited, Darlington, and put *in situ* under the superintendence of their engineer, Mr. Nabholz.

New Police Barracks are to be erected at the corner of Store-street and Talbot-street, Dublin, at a cost of some 4,000*l.* Mr. J. M. D. Bermingham, Great Brunswick-street, supplied the quantities, and there were twenty-five tenders sent in. These ranged from 5,350*l.* to 4,170*l.*, which last-mentioned sum was Mr. George Tyrrell's. He is to do the work.

The building trade in Dublin is, at present, in an exceedingly depressed state.

Lord Brabazon has offered, at his own expense, to build a new Market-hall at Bray, co. Wicklow. The sum of 4,000*l.* is to be expended.

A new church is in progress at the convent of the Good Shepherd, at Ballynafaigh, near Belfast. Mr. Alexander M'Alister, of Belfast, is the architect, and Messrs. Silo & Matthews, of the same town, are the builders. Mr. M'Alister is also the architect of the Sisters of Mercy's new convent in Joy-street and Sussex-place, Belfast. Messrs. James & Jacob Guilee, of that town, are building it.

Sir Gerard G. Aylmer, bart., has just presented a fine new organ to the parish church of Donadea, in the diocese of Kildare. It has been erected by Messrs. Telford & Telford, of St. Stephen's-green, Dublin.

The works at St. Coleman's College, Newry, are now complete, and the college is opened. The works, which have occupied a couple of years, are from the designs of the late Mr. Timothy Hevey, architect, of Belfast. Messrs. M'Shane & Lavery were the contractors.

At Cork it is intended to put a wrought-iron swing-bridge over the river Lee. Tenders for the work have been obtained by the corporation of the city.

THE REV. MR. HIBBS.

Sir,—Let me add to the letter in your last issue that in the year 1856 the Rev. Mr. Hibbs built and opened a church for Church of England people residing in Edinburgh, hoping to be reimbursed by public subscription, the present Marquis of Cholmondeley being one of the trustees; but being opposed, through the *Record* opening its columns to malevolence, Mr. Hibbs had to find the money,—3,000*l.* and upwards,—himself. The architects for this church were Messrs. Hay, of Liverpool, under whose direction a handsome church, though not a large one, was erected. The present respected incumbent is the Rev. Mr. Talon, formerly of Islington, and one of the principal supporters the well-known author and scholar, Mr. W. F. Skene, on whom the University of Oxford has recently conferred the honorary degree of LL.D.

A. B.

THE DANGEROUS STRUCTURE IN THE HAYMARKET.

At the Marlborough-street Police-court on the 19th inst., Mr. Jesse Fagg, bootmaker, of 29, Haymarket, appeared before Mr. Mansfield in answer to a summons taken out against him by the Metropolitan Board of Works, for permitting some portion of his premises to remain in a dangerous condition. The case was before the magistrate some time ago,* when he dismissed the summons on the ground that the wall had been shored up. There were also several other summonses in connexion with houses in the vicinity.

Mr. Grain appeared for the Metropolitan Board of Works; Mr. Tatlock for the Civil Service Supply Association, the owners of 28, Haymarket; Mr. Houghton for Messrs. Kirk & Randall, the builders; and Mr. Green for Mr. Fagg.

In the matter of the summons against the owner of No. 27, formal evidence of insecurity of the party-wall was given, and the magistrate made an order for its demolition. The same course was adopted with regard to the house No. 1, Arundel-place.

With regard to No. 29, Haymarket, Mr. Grain said that No. 1, Arundel-place, abutted upon the back of Mr. Fagg's premises. Over a vault on the latter was an archway in a very unsafe condition, being built merely of loose bricks. The remains of a chimney on No. 28, which supported the arch, had been ordered to be removed, but that could not be done with safety until the arch was demolished.

Mr. Houghton, as representing the contractors, said they were afraid to instruct their workmen to carry out the magistrate's order.

Mr. Green suggested that the magistrate should inspect the premises in question, after which Mr. Fagg would be ready to submit to any order that might be made.

Mr. Grain and Mr. Tatlock concurred in the suggestion, and the magistrate said he would hear evidence on the subject, and afterwards view the premises.

Mr. Robert Walker, District Surveyor, explained by means of plans and photographs the position of the party-wall between 28 and 29, Haymarket. He said the wall was cracked, rotten, and bulging, and had been constructed contrary to the provisions of the Building Act. It was very defective and insecure. The shoring had not added to its security, as it was impossible to wedge it. If the arch were to fall it would probably bring down the contiguous house in Arundel-place.

Cross-examined. — The wall bulged about 30 ft. from the ground. The arch had not become more secure by the removal of the chimney-stack from the basement of the arch, and might fall at any moment.

By Mr. Tatlock.—The progress of the works at 28 had been stopped in consequence of the danger.

Mr. Charles F. Hayward, District Surveyor of St. Giles's-in-the-Fields, gave corroborative evidence, as did also Mr. Edmund Woodthorpe.

Mr. Thomas Verity, architect to the Stores, said that it was unsafe for the contractors' men to be on the premises owing to the condition of the party-wall. The contractors had refused to go on.

Mr. Randall, of the firm of Kirk & Randall, said that owing to the condition of the wall he had given his foreman orders to stop the work and pay off the men.

Some other evidence having been taken, the case was adjourned until Saturday last, when the solicitor for the Board of Works stated that since Friday night the south wall had given way.

The foreman of the works saw the wall that morning. There were several cracks in the wall since Friday. The wall was bulging out between two shores.

Other corroborative evidence having been given,

Mr. Bigham addressed the magistrate on behalf of Mr. Fagg, of No. 29, Haymarket, contending that the wall was quite safe, free from danger, and ought not to be pulled down.

On the part of the Co-operative Stores, Counsel stated that the directors considered that if it were necessary for the wall to be taken down, it would be unfair that they should do so without the adjoining owner taking his share of the expense. He addressed the magistrate at length in opposition to the evidence brought forward in support of the summonses.

Mr. Mansfield said he went to the place, and after examining it, he considersd, as one of the witnesses said, that if a tempest or anything of that kind occurred, there might be danger. There were cracks in the wall, but as to the amount of immediate danger he would not like to give an opinion.

Mr. C. Sewell, surveyor, was called, and stated that he considered there was no danger from the wall, nor did he consider it a dangerous structure.

The case was again adjourned.

* See the remarks of Mr. Robert Walker, district surveyor, recently published in the *Builder* (pp. 1035, 1049, *ante*).

DEPOPULATION OF THE HOLBORN DISTRICT.

The medical officer of health to the Board of Works for the Holborn District, in his Report to the Board on the sanitary conditions of the district, states that in consequence of public improvements a considerable displacement of the population has taken place in certain parts of the district. For instance, for the new thoroughfare from the West End to Shoreditch, no fewer than 2,000 of the inhabitants have been displaced, and under Torrens's Act seventeen houses in the rear of Gray's Inn-road have been demolished, they being unfit for habitation, and nine pulled down to widen the thoroughfare, these twenty-six houses being occupied by about 300 persons.

The site scheduled by Mr. Lewis H. Isaacs, the Surveyor to the Board, on the proposed application of Mr. Secretary Cross's Bill for artisans' dwellings, and in which it was proposed to deal with 239 houses, inhabited by 3,661 persons, many of whom are in great poverty, and, owing to want of cleanliness, in many instances in a state of filth, is being looked after and action taken; but there is still another part which requires the immediate attention not only of the Holborn District Board of Works, but also of the Corporation of London and of the Home Secretary, viz., under the provisions of the Holborn Valley Improvement Act, the City Corporation are obliged to erect dwellings for the working and poorer classes in lieu of those taken down for the Holborn Valley and Viaduct improvements on the site of Union-court, &c. The Corporation did erect dwellings for about 200 persons, whereas the Act provides that they should erect dwellings for nearly 2,000 persons. Not only this, but they have blocked up the thoroughfare of Union-court, not touched Bleeding Hart-yard, cut off the right of way from Bleeding Hart-yard, and left 1,800 persons still unprovided for.

Memorial Reredos.—All Saints' Church, Monkokehampton, has had its new reredos dedicated. Monkokehampton is situate up the little river Okement, some two or three miles from Hatherleigh. The reredos is the gift of the Right Hon. Sir Stafford H. Northcote, bart., the Chancellor of the Exchequer, in memory of his late brother, the Rev. Henry Moubray Northcote, formerly the rector of Monkokehampton. The reredos, in its lower parts, is of plain Caen stone ashlar, corbelled out, just above the table, by brackets in the same material. These carry the re-table, which is of moulded and polished Ogwell stone,—a warm, red variety of Devonshire marble. The structure above is composed wholly of English oak, save that the columns—the fleur-de-lis ornamentations, and some pateræ, &c.,—are of inlaid American walnut, and consists of three definite compartments above the re-table; the central one rises up with a sharp gable. This upon its apex has a column, towering still higher, surmounted by a sculptured figure. The statuette represents St. Michael trampling upon the Devil, whilst, with wings uplifted, the saint transfixes the King of all Evil by the point of his cross-like lance to the ground. The other portions are carried up by buttresses, surmounted, in each instance, by crocketed pinnacles. Between these run carved crestings, and pierced and open panelling. The central panel contains a vesica, having in its centre a plain cross, surrounded by glory. The side compartments are in keeping with the central ones. The reredos is the design of Mr. R. Medley Fulford, architect, and has been made by Mr. Harry Hems.

IMPROVED DWELLINGS FOR LABOURERS.

Brighton.—At the annual meeting of Brighton District Association for improving Dwellings of the Industrious Classes, the tors' report was adopted, and a dividend of per share declared. Mr. Colbatch-Clark elected a director in the room of Dr. resigned.

Liverpool.—In the annual report of the pool Labourers' Dwellings Company, which presented to the directors at the annual me it was stated the working for the year h the whole, been satisfactory. In consequ of the depression in trade, the gross received during the past year show diminution when compared with the the year 1878, but notwithstanding the decrease amounted to 51*l.* 1s. 6d., the re still exceeded those of any of the pre years. By a reduction in the expenses, in the item of repairs, the directors were en to show a profit for the past year of 780*l.* 1 as compared with 766*l.* 7*s.* for the pre year; adding to this sum the balance of 71*l.* brought forward from last year, there sum of 851*l.* 16s. 10d. available for div The directors recommended that the s 827*l.* should be applied in payment of dend of 10s. per share, being at the rate cent. per annum, and that the bala 24*l.* 16s. 10d. should be carried forward year.——In connexion with what is kn the Nash Grove Scheme, under the A Dwellings Act, the Liverpool Town recently resolved "That an application b to the Local Government Board for a m tion of the Nash Grove Scheme, on the b the Borough Engineer's Report, set out Health Committee's proceedings." He s Council were aware that, under the A Dwellings Act, Nash Grove, when clear to be laid out in a set form of terrace but when the land was advertised there an offer made. They now asked the E to prepare a scheme, under which they offer the land for sale for labourers' dw the sole restriction being that the dw should be erected according to the bye-l Building Acts of the Corporation. If t were so laid out, accommodation would vided for about 920 persons, giving an of five persons to each house. Forme accommodation was for about 1,100 p and there would be less crowding if th were built according to the Corporati than if erected according to the scheme Local Government Board.

Marlborough. — A number of cotte labourers are now being erected on th leigh Estate, near Marlborough, Wilts, perty of Sir John D. Astley, bart., M.P. dwelling has an entrance-porch, staircase room, scullery, pantry, and three be The outbuildings comprise coal and wood piggeries, and watercloset, with a wa to each cottage. Similar cottages h been erected at Sunningdale, Berks Mr. Savory, and on the Wroxham Ha near Norwich for Mr. E. S. Trafford, designs of Mr. J. Birch, of London, who the Society of Arts prize for such desig

MASTERS AND MEN.

Newcastle-on-Tyne.—At a meeting ployers in the building trade in Newca on the 15th inst., it was unanimously that on and after the 1st of November wages in the trade be reduced 1½d. per

Greenock.—On the 15th inst. the slaters of Greenock struck work aga duction of their wages from 7d. to hour.

Ecclesiastical Art Exhibition, S During the Church Congress, which ta at Swansea early next month, an exh ecclesiastical art will be held on a s extended scale. Several of the leading have promised contributions of eccl silversmiths' and goldsmiths' work, chalices, patens, flagons, alms-dish specimens of ornamental brasswor carving, encaustic tiles, &c., will also b whilst stained glass will be well repre a number of examples with which dows of the hall in which the exhibitio held will be temporarily glazed.

ES TOWN-HALL COMPETITION.

Having inserted the letter of "Esprit s," I trust you will extend the same the following remarks:—

er was made in writing to the Board by dox professional to perform the services for a commission of 4 per cent. upon ay; why, then, should they, dealing as with the involuntary contributions of payers, give more? Surely "Esprit de does not represent "the spirit of the body," nor is the profession reduced to ssity of picketing, *à la* trade-unionism; b, the "profession" may well "lose co.

uld be borne in mind that the architec- ork in question must of necessity be tively plain and simple; the bulk of the ill be for brickwork, which has risen in ry much within a few years, so much a 4 per cent. commission now would the architect's fees to about the same 5 per cent. would have done a few go.

A CHIP FROM THE BOARD.

E SCHOOL OF WOOD-CARVING.

Of all the jejune schemes put forward mblance of reforms, the School of Wood- is the poorest. Till about the beginning ntury, wood-carving was a very common on, so common, indeed, that the occupa- "carver and gilder" were always asso- And why was this? Because, till com- was introduced, the ornaments of and glass frames were carved. In fact, occurred, all decorative ornaments in at least the greater portion, were carved . With the introduction of "composi- ne wood-carver's occupation was gone, decline of wood-carving may have had ng to do with Chantrey becoming a for wood-carving was his early occupa- In Gibbons's time the wood-carver great demand, and we had wood- Now, that there is so little de- r them, it is of no use making them. are already enough for what is re- If there were any great demand r art wood-carvers it would easily plied. The difficulty of turning art od is very slight; some artists do this being aware of it. The carving of much easier than that of marble. Young s could easily make themselves wood- if it were worth their while; but art of the higher order is not in the slightest Does the School of Wood-carving pro- make wood-carvers and send them to oss to be hired? If it does, I fear its will have to offer themselves in vain. the use of technical education if men, very face of its teaching, act as if a of political economy had never been ed. And what do the wood-carvers, yes, say, we wonder, to the unconstitu- roceeding and interference with private ise? Not much, because they know that e of little, if any, avail.

METER.

E OLE IN THE WALL, KENSINGTON GARDENS.

INGTON is surely worthy of a better e to the gardens than that small door the worn-out tree, in that sly old corner, those two red-brick buttresses leading palace. The paths are now being re- d and beautified, but the entrance is a disgrace. And then as to getting to it mwell-road West, there are no thorough- rthy the name; and as to the High- near Kensington House, it is so narrow pavement as to be impassable on a fine Surely the Kensingtonians are a slow- people.

A NEW KENSINGTONIAN.

PRIME COST.

You will, I think, confer a favour by granting solicit from your professional readers a reply to tion,—What is the generally-accepted interpreta- "prime cost" as applied to provisions of money al articles in a builder's contract? My experience he term has by degrees become somewhat am- in practice and diverted from its true meaning, cost, and that some uncertainty prevails in its on by the building trades. So much do I feel this hink it a subject worthy of serious considera- the profession, in order to bring about uniformity ce.

THOMAS HARRIS, F.R.I.B.A.

THE LONDON SCHOOL BOARD AND ITS SURVEYORS.

AFTER an absence from town for several weeks my attention has been drawn to a letter in your issue of the 30th of August reflecting upon the conduct of the London School Board in the matter of electing its surveyors.

The Board will have much to answer for when the members meet their constituents at the re-election in November next. Why, sir, the other day I heard a ratepayer vehemently assert that the Board had no right to spend the ratepayers' money in prosecuting a man for fraudulently falsifying his books with a view of defrauding the Board, simply on the ground that the arbitrator found out the falsification, and the Board sustained no loss thereby; and now it seems "Ratepayer" has found new ground for complaint against the Board.

After facetiously remarking on the School Board "it was seriously proposed to substitute 'thin' for 'thick' post-cards," &c., he goes on to criticise the conduct of the Board with regard to the election of surveyors, and he says,—"I may mention there were five original surveyors appointed seven years ago, but the circular was sent to thirteen surveyors." In this your correspondent only states a half-truth, because the whole of the thirteen to whom the circulars were sent had been, or were at the time, on the staff of surveyors to the Board. Such being the case, all "Ratepayer's" other strictures come to nought.

The simple facts are these, so far as the erection of new buildings is concerned, the Board thought as its work was becoming much smaller in extent that it was not necessary to employ so large a number of surveyors; also that a saving would be effected if all the work were put into the hands of one surveyor, and sent out the "circulars to the thirteen" with the result as mentioned by "Ratepayer." "After much deliberation" the Board (doubtless under the advice of its architect) thought it would be better not to bind itself to one surveyor, and as one of them had offered to do a fourth of the work at one per cent. the Board accepted his offer, and then by "another circular" an offer was made to three of the other "three-quarter per cent. gentlemen" to take the other three-fourths of the work, and was accepted.

After the above statement "you will no doubt agree with *me* that a much more simple business-like way" could not have been adopted.

ONE OF THE THIRTEEN.

DARTFORD SURVEYORSHIP.

SIR,—The accompanying is a list showing the professions of the unsuccessful candidates. Surely the Highway Board have little to justify their choice with such a list to choose from. The sooner such practical jokes are done away with the better, and doubtless making them public in your valuable journal will tend to do so in time.

Civil engineers, 6; surveyors, 10; clerks of works, 3; draughtsman, 1; architects and surveyors, 6; estate agent, 1; contractors, 2; builders, 3; assistant surveyors, 3; surveyors to highway and local boards, 7; sergeant-major, R.E., 1; farmer, 1; farm-bailiff, 1; assistant engineer and water manager, 1; manager to tile works, 1; relieving officer, 1; no profession stated, 1.

For myself, I have been selected very many times, but have always found local influence too strong,—in fact, I hold a letter from one Board stating that the *only* reason for my non-success was the influence of a local candidate.

ANOTHER VICTIM.

BRICKMASTERS' MEETING.

SIR,—Permit me to answer, through the medium of your paper, the numerous inquiries, conjectures, and surmises respecting the brickmasters' meeting at the Hop Exchange on the 4th inst.

I had nothing whatever to do with its organisation, neither did I attend it, nor send a deputy.

WILLIAM THOMAS WISEMAN,
Sole Agent for large Brick Manufacturers.

GREENOCK MUNICIPAL BUILDINGS COMPETITION.

AT a meeting of the Greenock Town Council held on Monday last, it was resolved, on the motion of the Provost, that,—

"The Town Council, having carefully considered the special report by Mr. Charles Barry, London, upon the plans sent in for competition for the proposed Municipal Buildings; also the report and estimates of Mr. Robert Scott, measurer, Glasgow, on the six sets of plans placed highest in order by Mr. Barry; also the report and financial statement prepared by Messrs. Turnbull & Hamilton, hereby fix the order of merit as follows:—First, 'Art and Science'; second, 'Omega'; third, 'Let Greenock flourish.' Further, hereby select the author of the first plan to carry out the buildings on the understanding that he furnish the necessary contract, plans, and working drawings of the buildings as may be modified and finally approved of, without additional commission; and that he give a written guarantee that the contract price of the modified plans shall not exceed 80,000*l*. Further, that it be remitted to the town Works Committee and Police Commissioners with full powers, if they see fit, to make such modification and re-arrangement of the buildings as they may deem necessary to suit the different departments, and, when so arranged, to have schedules prepared and offers taken in for the said buildings."

The Town Clerk then read out the names of the authors of the three plans selected as follows:—"Art and Science," Messrs. H. & E. Barclay, architects, 136, Wellington-street, Glasgow; "Omega," Mr. Beatson Habershon, architect, Roseneath, Ealing, Middlesex; "Let Greenock flourish," Messrs. Wm. Lanahie, Moffat, & Aitken, architects, 12, North St. David-street, Edinburgh.

Before the decision had been arrived at, Mr. Barry, in the interest of the profession, made an earnest appeal to the Town Council to induce them to reconsider their determination to pay the architect of the proposed new buildings only 4 *per cent.* instead of the usual 5. His letter, to which we may return, was duly considered, but the Council came to the conclusion that they could not then "alter the rate of commission upon which all the competing architects had sent in their plans."

CHURCH-BUILDING NEWS.

Painswick.—Painswick Church has been re-opened, after internal restoration, at a cost of 1,300*l*. An unsightly old gallery has been removed, the old high-backed pews have been replaced by modern ones, the floor has been re-laid with Minton's tiles, the organ has been removed from the old gallery to the lady-chapel, the belfry has been raised a story, and an approach to it made from without; the roof has been re-leaded, and many other details of reparation have been carried out.

Pitton.—The restoration of the chapel of St. Peter, Pitton, has been commenced. The work contemplated includes the re-building of most of the walls, the erection of an aisle and vestry, and the re-forming and heightening of the tower, which, it seems, was never finished. The building committee have accepted tenders and signed a contract with Mr. William Crook, of Tower-hill, West Dean, to carry out the work (with the exception of the tower) for 1,126*l*. Mr. Crook has agreed with the Ecclesiastical Commissioners to effect the restoration of the chancel for 300*l*.

Arngask.—The parish church of Arngask, Perth, has been opened, after restoration. Mr. H. Deas, of Damhead, was the principal contractor.

Poplar.—A new church, to be called All Hallows, is being built by the Ecclesiastical Commissioners in the East India Dock-road, the funds for purchasing the site, &c., having been derived from the proceeds of the sale of the materials and a portion of the site of the church of All Hallows, Bread-street, City, recently taken down, a sum of 9,000*l*. having been set aside for the purpose. A parochial district has been assigned to the new church out of the parish of St. Michael and All Angels, Bromley.

Todber.—Todber Church, Wilts, has been re-built and re-opened for public worship, after having been closed and disused for seven or eight years. The work has been done at the cost of the Duchess of Westminster. The old building was of three periods. The nave was Early English, and the chancel was Perpendicular; but there were traces of a far earlier period in two curious fragments of apparently an old Saxon cross, the larger stone having formed a quoin at the south-west corner of the old nave, being therefore slightly weather-worn on two of its faces, but the mortar had preserved the old carvings on the other sides in a perfect state. The carvings may represent the Tree of Life, or a vine branch, a bunch of grapes being clearly discernible on the smaller fragment. The rector is anxious that these old stones should be properly treated and preserved, and with that object proposes to place them in what seems to have been their original form of a churchyard cross. The remains of an old small round-headed Saxon window were also found. The re-building has been a careful restoration, retaining the quaint old tower intact, only now strengthened and supported by two buttresses at the south-east and south-west angles, the base of the tower forming the porch and entrance to the nave. The north wall of the nave has been slightly projected, giving more space within. The chancel retains its old proportions; a chancel arch of Bath stone gives additional dignity to the appearance inside, and a small vestry has been added on the north side. One of the Early English two-light windows has been replaced in the north wall of the chancel, and filled with some stained glass (by the firm of Messrs. Lavers, Barraud, & Westlake) representing the Good Shepherd.

Horstead.—Horstead Church, Norfolk, dedicated to All Saints, and which was in a very bad state of repair from age and decay, has undergone restoration, or what is really re-building, and after having been closed for about fourteen months during the carrying on of the work, has been re-opened for service. The architect was Mr. R. M. Phipson, F.S.A., and the contractors were Messrs. Cornish & Gaymer, of North Walsham. Architecturally, the old lines have been carefully followed, and novelties and innovations eschewed. Previously the piers and

arches and nearly the whole building were of brick, in a tottering condition. These have all been rebuilt, with the exception of the tower, the belfry, and north wall, which have, however, been repaired where necessary. The church, the outer walls of which are faced with flint, with stone dressings, now consists of a nave, chancel, south aisle, south chapel (dedicated to St. Nicholas, and forming a portion of the chancel), and south porch. The nave is divided from the chancel by four stone arches of Decorated character. Its roof is of pitch pine, wagon-headed, with curved trusses at intervals over the pillars. The chancel has a panelled ceiling divided by mouldings. Open benches of pitch pine supersede the old seats in the nave, and the fittings of the chancel are of oak. The end window of the chapel is the old one restored and refixed. All the other windows are glazed with clear glass, in geometrical patterns, except the east window, which is glazed with tinted cathedral glass, painted glass representing the four evangelists being inserted in the corresponding number of central lights. Where not covered with monumental stones, which have been carefully relaid, the flooring consists of Minton's encaustic tiles. The church is provided with underground heating apparatus, by Ward, of Diss. For the whole work the cost has been about 2,100*l.*

Black Notley.—The parish church of SS. Peter and Paul, Black Notley, Essex, has been re-opened, after restoration under the direction of Mr. A. W. Blomfield, architect. The building is of Norman date. The nave and chancel have been re-roofed, and the old square pews have been replaced by open oak benches. The broken pavement has been taken up, and encaustic tiles have been laid throughout the church. There is a new altar-table, and a new pulpit, while the old lectern has been replaced by a brass one. Several new windows have been added, among them an east window of stained glass, executed by Messrs. Heaton, Butler, & Bayne, of London, the old one having been placed in the west end of the church. An elaborately-carved oak chancel screen has been erected in imitation of one which it is believed formerly stood in the same place, and an oak porch has also been added. The carving has been done by Mr. Polley, of Coggeshall. There is a new vestry; and a peal of five bells, cast by Messrs. Warner & Sons, of London, have been put into the tower. The cost of the works amounted to 2,500*l.* Mr. James Brown, of Braintree, was the contractor. In carrying out the works the remains of a sedilia were discovered under the plaster on the north side of the chancel. It was formed of deeply moulded oak work, and has been carefully repaired and reinstated.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Haydock.—A new Roman Catholic chapel and schools have been opened at Haydock. The buildings are of a plain and unpretending character, being of red brick, with red stone facings. One wing of the building will be used as schools. The whole of the work has been executed by Mr. Michael Hague, from designs furnished by Messrs. Goldie & Child, architects, London.

Southwark.—It is stated that it is intended to complete the tower and spire of St. George's Cathedral, Southwark, according to the original design of Pugin, who was the architect of the building. The work is to be done as a tribute to the memory of the late Rev. Dr. Doyle, the provost of Southwark, whose death recently took place, and who devoted the energies of the best years of his life to the building of the cathedral church.

Derby.—The lady-chapel of St. Mary's Roman Catholic Church, Derby, has been opened. The six "stations of the cross" in the lady-chapel have now been restored, and, with the eight on the aisle-walls previously renovated make up the fourteen stations of "The Way of the Cross."

Dublin.—A new Roman Catholic church, dedicated to St. Agatha, is about to be erected in North William-street, Dublin. Mr. Byrne is the architect.

Ballingarry.—On the 7th inst. the new Church of the Immaculate Conception, Ballingarry, co. Limerick, was consecrated. The church is thirteenth-century Gothic in style, and comprises nave with north aisle, north and south transepts, chancel with lateral chapels, and tower standing in the angle between the nave and south transept. The baptistery is situated at the west end of the north aisle, and the sacristy on the north side of the chancel. The south side of the nave is lighted by a long unbroken range of lancet lights. The windows are of the "rose" type, and all the gables are surmounted by floriated crosses. Cork red marble pillars, with carved and moulded bases, bands, and capitals, mark the interior subdivisions of the edifice. The tower and spire are each carried up in four stages. The angles of the lowest stage of the spire are crowned with floriated wrought-iron crosses. All the roofs are of open timber work, stained and varnished. The total length within the walls is 118 ft., the width across the nave and north aisle is 39 ft.; across the transepts, 63 ft. The height from the floor to the ridge of the roof of the nave is 50 ft. The altars and reredos are fashioned of Caen stone and marble. The high altar is sculptured with a representation of the Last Supper, with angels in the niches. On the altar stands a highly-carved tabernacle. The reredos behind the altar is divided into panels enclosed within polished marble shafts containing carved groups representing the Annunciation, the Visitation, the Nativity of our Lord, the adoration of the Magi, the presentation in the Temple, and the coronation of the Blessed Virgin on the altar. The pulpit is of Caen stone and marble, and is supported on clustered shafts, and sculptured with groups representing the Sermon on the Mount, St. John preaching in the Wildnerness, St. Patrick preaching to the Irish Chiefs, and St. Dominic and St. Francis preaching. The floors are laid with encaustic and other tiles. The architect is Mr. J. J. M'Carthy, R.H.A.; the contractor being Mr. Michael Walsh, of Foynes. The high altar and tabernacle were supplied by Messrs. Early & Powell, Dublin, and the side altars and Communion railing by Neil & Pearse, Dublin.

SCHOOL BOARD SCHOOLS.

Smethwick.—New Board schools have just been opened in Smethwick. They occupy a site bounded on the one side by Corbett-street, and on the other by Ballott-street, and containing in the whole 4,840 square yards. The buildings are constructed in the Gothic style, with red bricks and stone window-sills, &c. The arches to the window and door openings are of rubbed and ganged bricks, and terra-cotta has been introduced for label mouldings, strings, and ornamental dressings to the window-heads and gables. The schools are built in two blocks, the first block being used for the boys and girls, and the second block for the infants. The boys' and girls' school consist each of a principal room, 66 ft. long and 22 ft. wide, and two class-rooms, 20 ft. square. The infants' school is 55 ft. 6 in. long and 26 ft. wide, with a wing 25 ft. 6 in. long, and 10 ft. wide; also a class-room, 26 ft. by 18 ft., and a babies' room, 22 ft. by 15 ft. The roofs are covered with brown tiles, and have wrought, stained, and varnished principals exposed to view, and ceiled at the collar-beams. The buildings have been erected from the designs and under the superintendence of the architects to the Board, Messrs. Sharp, of Cherry-street, Birmingham, by Mr. J. Hartley, builder, of Small Heath, and will accommodate 726 children.

Pollokshields.—New schools in Melville-street, Pollokshields, have been opened by the Govan School Board. The buildings will accommodate 800 scholars, boys and girls, and the cost is ascertained to be about 6,000*l.* The site affords ample play-grounds on each side of the school, so that the light all round has been secured. The play-grounds have large covered sheds and other conveniences, and the establishment includes a cottage for the caretaker. The tradesmen engaged in the building were:—Mr. Alexander Bruce, mason; Mr. Robert Carmichael, joiner; Mr. John M'Feat, plumber; Mr. James Miller, plasterer; Mr. Thomas Muir, slater; Messrs. Smith & Bodys, painters; Messrs. Kean & Wardrop, tilework; Messrs. James Cormack & Son, heating apparatus; Messrs. D. & G. Graham, gasfittings; Messrs. George Smith & Co., buildings. The buildings have been erected from the plans of Messrs. H. & D. Barclay, architects.

Cirencester.—Early in 1878 designs were invited by the Cirencester School Board for the building of schools, and about thirty architects sent in drawings. Mr. Capel N. Tripp, of Gloucester, was chosen the architect, and the schools are now completed, and were opened on the 22nd inst. The buildings are designe accommodate 200 boys, 180 girls, and infants, with residences for master and mist The residences, which are well placed fo proper supervision of the several approa are comfortable and compact, and co sitting-room, kitchen, and the usual offices three bedrooms on the first-floor. The build are in the Tudor style, and are constructe local stone, with Bath stone dressings, roofs being covered with Broseley The lighting in the principal rooms is effe by means of the Wigham patent gas-bur The works have been carried out under supervision of the architect, by Mr. G Drew, contractor, of Chalford; Messrs Caudle and I. Greenslade being respect clerk of the works and contractor's fore The ironwork has been executed by Mr Chew, of Stroud, and Alexander and Thomp of Cirencester. The gas-fittings are by Mes S. Gillman & Sons; the Wigham fittings Messrs. Edmundson & Co., London; the paving to playgrounds and approaches by George Melsom, Bristol; and the desks school-fittings are by Messrs. Colman & C dinning, Norwich. The amount of the build contract for the work was 5,161*l.* 16s. 9d.

STAINED GLASS.

Dunfermline.—One of the triplet wind adjoining the north entrance of Dunfer Abbey has been filled with stained glass memorial to the wife of Mr. Thomas Spowa Broomhead. The main portion of the de has for its subject "The Agony in the Garc The design and execution are by Messrs. Ja Ballantine & Son, of Edinburgh.

Tetbury.—In memory of the late M Brooks, a stained glass window has just inserted in the parish church. It consis four lights and tracery. In the four l lights are representations of two par of our Lord, viz., the Talents and the Five and Five Foolish Virgins. The subjects a two parts, occupying the central panels of light, thus forming double groups, the Ta as a pair on one side of the window, and Five Wise and Five Foolish Virgins the other The windows were designed and executed Messrs. Heaton, Butler, & Bayne.

Auchterarder.—A stained-glass window, ha for its subject "Christ as the Good Sheph has been placed in the Free Church, Auc arder, by Mr. W. L. Young, solicitor, in me of his parents. The window is by M Ballantine & Son, Edinburgh.

Maidenhead.—Some time ago two lights the east window of St. Mark's Church, Ma head, were filled with stained glass in me of the late Mrs. Malyon. The window has been completed, Mr. J. Hibbert having p lights in memory of his sister, the late Hibbert. The subjects are—"The Bapti "The Crucifixion," "The Descent from Cross," and "The Resurrection." The win is by Messrs. Clayton & Bell.

Walsham-le-Willows.—A stained-glass wi has just been fixed in the west end of the p church of Walsham-le-Willows. It has f subject "The Good Samaritan," and is the of Messrs. Lavers, Barraud, & West London.

Curry Mallet.—A stained glass windo memory of the late Mr. Weaver, has just placed in the north aisle of Curry Mallet Ch It was supplied by Messrs. Beer & Co., Exe

Walton (Liverpool).—In memory of the Mr. George Fowler, a stained glass win designed by Mr. Henry Holiday, of Hampa has been placed in the new church of St. the Evangelist, Walton. It consists of lights, with figures of St. Paul and St. Ste

Stratford-on-Avon.—Messrs. Lavers, Bar & Westlake have added another light in American window over Shakspeare's ton the church of the Holy Trinity, Stratfor Avon. This window is being subscribed exclusively by American visitors to the last resting-place. It will cost about $1 There are eight lights, seven of which are finished. The subject is Shakspeare's S Ages, all illustrated from the Old Testame

Needlework.—An exhibition of embro executed by the Royal School of Art Nee work will be held in Birmingham earl December in connexion with the Art Gal Committee.

PROVINCIAL NEWS.

rd.—The new Town-hall for Stretford, gachester, was opened on the 13th inst. ilding stands on the site of the old hall, rs a much larger area. It is in what is d as the Victorian Gothic style, being ted of Droylsden red bricks, relieved by stone bands, carved strings, and orna- arved and corbelled main cornice. In ce of the front elevation a tower rises ght of 100 ft., and in this Messrs. W. H. & Co., of Salford, have placed a clock, illuminated dials of which are 6 ft. in ic. Granite columns have been used for low mullions and the jambs of the front . The building has been erected by Holt, Cheetham, from the design of Mr. ofthouse, Stretford.

onards.—The committee of the Hert- Seaside Convalescent Home have d the tender of Mr. Ebenezer Lawrence, for the erection of a new building on an site at Bo-peep, St. Leonards, at an d cost of 4,627*l.* The building is in- o accommodate forty patients.

a.—The memorial-stone of new offices verseers of the parish of Portsea took the 16th inst. The building has been it to harmonise with the new offices of tsea Island Guardians, which it will im- ly adjoin, facing St. Michael's-road. It constructed of Fareham red bricks, ath stone dressings. The contract, mounts to 1,875*l.*, has been entrusted D. W. Lewis, builder, of Southsea, and as have been prepared by Mr. Charles ghton, architect, of Southsea.

sor.—St. George's Chapel, Windsor, has -opened, after cleansing. The whole of ne and woodwork in the choir, nave, nd chapels has been cleaned and dusted. me necessary to entirely scaffold the und the vaulted tracery of the roof, r with the crosses and badges, have eansed and restored, and the colours and portions have been revived. The work ne by Mr. J. V. Cooper, the contractor, the direction of the Surveyor to the , Mr. A. Y. Nutt.

hester.—The Gentlemen's Concert Hall s been remodelled internally, under the n of Mr. Edward Salomans, architect. ting of the hall has been wholly re- d. Formerly there was accommodation 0 persons, but in future there will be r only 818. In place of the benches ly in use, new chairs, upholstered in , are being supplied. The lighting, heat- ventilating appliances have also been d. In the concert-hall a large amount g has been introduced in the decorations, wall panels have been filled in with a which gives the illusion of a damask l. The idea was suggested by Mr. s. New French concrete tiles have d in the vestibule, and a plain concrete the entrance-hall. The structural ons in the building have been carried er the personal superintendence of Mr. s, by Messrs. Torrens, builders, Man- and Mr. James Lamb, of John Dalton- as executed the painting and decorating It is estimated that an outlay of nearly 0 as been incurred.

—Several important street improve- re in contemplation at Bath, at a total imated at 20,000*l.* The following are the items included in the scheme:—Old reet, 4,103*l.*; Somerset-buildings, 4,897*l.*; e of 3 and 4, Old Bond-street, 4,000*l.*; 19, Somerset-buildings, 1,150*l.*; 22 and erset-buildings, 1,850*l.*; improvement street, 2,500*l.*; Claverton-street, 660*l.*; ons in ditto, 300*l.*; legal and surveyor's 00*l.*; contingencies, 340*l.*

ng.—The memorial-stone of the new ll, free library, reading-rooms, and of science and art, the foundations of re now in progress, will be laid with rites, on the 14th of October, by the Carnarvon.

—During the last few weeks the old te Hall, Halifax, has undergone a com- ansformation. For about twenty years een used and known as the Temperance ut as the Halifax Temperance Society oved to the Central Hall, Union-street, o further use for the building, and Mr. ldsworth has taken the premises upon a se, and converted the hall into a sale-room. The building, once known as Northgate House, was formerly the residence of the Lister family; but the large hall was erected in 1836-7, for Miss Lister, of Shibden Hall, at the time when the dwelling-house was made into an hotel and posting-house. The architect was Mr. Harper, of York. A builder named Nelson did the mason-work, and Mr. W. Shaw, of Halifax, was the plasterer. Mr. Bancroft, of Halifax, who is now doing the work for Mr. Holdsworth, was at that time in the employ of Mr. Shaw, and did a portion of the work. The joiner was Mr. T. Hainsworth. The house, built in the old coaching days, had stabling for seventy or eighty horses, and it afterwards became a noted posting-house. Northgate House, with the large hall and offices, were arranged on the T-cross plan, the hall, with the offices behind, being the cross portion of the letter, and what is now the Northgate Hotel being the other portion. The front of the hall originally was in the Italian style, and had a large balustrade in front, supported by pillars. Afterwards the house was adapted as a hotel, and the hall let for public meetings. For many years, too, the building was used as a music-hall. Mr. Holdsworth has made many alterations, having had the gallery and orchestra pulled out; and the portico has been removed. The work has been done under the superintendence of Mr. Buckley, architect.

Hanley.—On the 18th inst. the formal presentation of a drinking-fountain and trough was made to the Mayor and Corporation on behalf of the borough. It has been erected at the junction of the Bucknall New-road and the Bucknall Old-road. It has been made of granite by Messrs. John Freeman & Sons, Penryn, Cornwall, at the expense of Mr. Godfrey Wedgwood, and bears the following inscription:—"To man and beast, all akin. G. Wedgwood. 1879."

Brighton.—The Brighton Town Council, at their meeting on the 17th inst., adopted a report from a committee recommending that Parliamentary powers should be applied for to establish a public *abattoir* in the town, to supersede the present slaughter-houses, and to obviate cattle-driving in the streets. Public opinion has long called for this improvement, and the painful impression recently caused by a London gentleman being gored to death in the streets has served to show the great necessity for it.

Whitby.—The opening of the West-Cliff Saloon took place on the 17th inst. Mr. Julius Mayhew, of London, prepared the plans for the new saloon and grounds, and the execution of them has been carried out under the superintendence of that gentleman and Mr. E. H. Smales, the local architect; Mr. John White, of Whitby, being the contractor for the work. Mr. G. Trueman, of Whitby, has done the painting, gilding, and decorating. The structure is built of brick, relieved with stone dressings and carving. The style of architecture is that of the Queen Anne period. In front of the building, and facing the sea, there is a commodious promenade. The large assembly-room is a lofty and spacious apartment, and will seat nearly 1,000 people. There are, in addition, a suite of apartments, comprising news-room, billiard-room, smoke-room, refreshment-bar, &c., which, as well as the principal hall, have all extensive sea-views.

Reservoirs for London.—The water-examiner, Col. Bolton, says in his last report:—"The construction by the Grand Junction Waterworks of additional impounding and subsiding reservoirs near to the intake at Hampton (which are much needed to avoid taking in water when floods prevail) is progressing; the first reservoir will occupy nearly 12 acres of land, and there will be, when full, a water surface of 10 acres, and a depth of water 22 ft. This reservoir is constructed to contain 45,000,000 gallons uncontaminated by floods. The company contemplate the formation of filters at these works with pumping machinery for the purpose of supplying their low-level district direct from Hampton, instead of from Kew Bridge as at present. Arrangements have been entered into for laying a line of 30-inch main from Twickenham to Notting Hill, in connexion with this object. At the Kew Bridge Works an additional filter of three-quarters of an acre has been provided, and the re-construction of the existing filters, with storage reservoirs, having been now completed, should tend greatly to improve this Company's supply."

Books.

His Excellency the Ambassador Extraordinary. In three volumes. London: R. Bentley & Son. 1879.

We do not pretend to notice novels, as a rule, although the scope of the *Builder* is wide, but "His Excellency the Ambassador," just now sent to us, is so sprinkled throughout with matters Architectural and Social that, being besides a book of great merit, we have no hesitation in commending it to our readers for perusal. Moreover, we are disposed to assert, without knowing the fact, that it is written by an architect. Not long ago we showed that we had in the profession a dramatic poet of more than average merit, and if our belief be correct as to the authorship in the present case, the profession includes in its ranks a moralist and satirist of a very high order who is at the same time a powerful descriptive writer. Whether the book will be accepted as a successful novel we are not prepared to say. The amount of mysticism which it mixes with plain straightforward realism gives an air of unreality to the story and lessens its effect, but we can unhesitatingly affirm that, having commenced it, we were forced to go through with it, and moreover to read every sentence of it with care. The writer is well acquainted with the slums which an age of selfishness and ignorance has left us as a legacy, and describes them with freshness and graphic power. Here is part of what he says of "Sweetbriar-gardens":—

"The unhappy woman who has been the means of making these personages acquainted having long before escaped from out of the reach of their ungentle conversation, perhaps in some dismay, the Sergeant leads his companion, not through the market throng, but by less tumultuous ways, to the dismal slum which is his field of labour. It consists of a main thoroughfare, about 20 ft. wide, with a number of branch alleys on each side, whose width varies from 10 ft. to 4 ft. The main street is called Sweetbriar-gardens, and the name is all that is left of the memory of fresh air and flowers.

The houses are squalid to the uttermost extreme. There is scarcely a family in the whole area which possesses for its home more than a single room; in many instances one room will hold two families, or three.

But even a settlement so unfavourably circumstanced as this is frequently found to be endowed, although scarcely by a bountiful Providence, with a certain compensating agency of its kind; and it is the fortune of Sweetbriar-gardens to have two of these, one at each end. In a word, 'the Sun in Heaven' stands at one extremity, and 'the Pilgrim's Rest' at the other; and, inasmuch as the gardens are not only a short thoroughfare, but a straight one, it happens that the imposing façade of the Sun in Heaven, situated on the opposite side of a cross street, agreeably closes the vista in one direction, while that of the Pilgrim's Rest, similarly situated in the other, serves the same hospitable purpose there. Indeed, when the gas-lamps of these two *restaurants* are fully lighted on a winter's evening, they so effectually illuminate the whole length of the gardens, that the parish, if so disposed, might dispense with street-lamps, and thus save something considerable. Not only so, but both of these temples of refreshment are likewise temples of song; and the inhabitants of Sweetbriar-gardens have a satisfactory choice provided for them, by a friendly arrangement which subsists between the landlords, whereby they can have comic vocalism and Charity's Entire at one end, or sentimental minstrelsy and Mercy's Entire at the other; the liquors of both establishments being somewhat suspiciously, if not superfluously, proclaimed in large gold lettering to be genuine.

'These taverns,' says the Viscount Malign, contemplating the little crowds of happy men and women at their doors, 'must be a great blessing to the locality, Sergeant. To the work-worn labouring man, repelled from his dark unsavoury den in one of these unlovely houses, they offer brightness and gaiety, laughter and music, and—what do they give him to drink?'

'Salted porter and watered aquafortis,' says the Sergeant.

'Just so; ingenious stimulants which drown dull care by at once assuaging thirst and provoking it. The people of this place are mightily obliged, no doubt, to Messrs. Charity and Mercy.

I think I am acquainted with the gentlemen in high society. I think I have seen them, and listened to their beneficent opinions, in the very legislature.'

'No doubt,' says Sergeant Jollybuff.

'And if he who makes two blades of grass to grow,' continues the Viscount, 'where but one grew before, is a benefactor to his species, what shall we say of him who brings a bumper of such excellent liquor to Sweetbriar-gardens where no liquor at all could ever have found its way without him? I suppose the devil built these taverns?'

'I fancy it was the brewers, sir, I fancy it was; the devil may have been so polite as to lay the foundation-stone, but I think the brewers could do very well without him in a place like this.'

'I think so too.'"

The author is not convinced as to the great superiority of the nineteenth century over its predecessors:—

"'But,' says the priest, 'surely man makes progress?'.

'Little that I see, Monsignore. There are increasing numbers of men and women on the surface of this planet of yours; and they are able to communicate together more freely; but what else do you speak of? The bulk of them, in all lands alike, are just the coarse barbarians that they ever were; within ten miles of any metropolis of empire there are masses of men and women as hopelessly ignorant of all philosophy, all religion, all progressive knowledge, as are the savages of the far northern steppes, or of the far western forests. The typical peasant of whatever land you may name is the typical peasant of all lands; and, what is more, of all ages. Not only is there attached to every centre of modern civilisation an uncultured fringe as obscene as, in the days of Charlemagne, of Cæsar, of Sesostris, made the world hideous; but in what respect are your modern grandees more grand than those? Here and there you have a handful of men who are learned and polished; but where was there a time when no such handfuls of men existed just like these? And in what respect are the men of the present superior to the men of the past? If in anything, only in the mere superficialities of discovery. You can weigh the sun; girdle the earth with the electric wire; map out the mountains on the moon; presage the storm; convert fuel into force: but can you make a blade of grass to grow? or trace the tree in the seed? or put your bridle in the north wind's mouth? or scatter the snow? Or can you, more than Socrates could do, divine the thoughts of a man, or interpret the dreams of a woman?'"

One of the principal characters in the novel is an æsthetic ecclesiastical architect, one Georgius Oldhausen, on whose idiosyncracies and weaknesses the writer dwells with evident gusto, and the portrait, though extravagant, is amusing. Georgius has to build a church in a cleared part of the "Gardens," and this is how he manages it:—

"The building of the Abbey Church in Sweetbriar-gardens is progressing satisfactorily, and the time has come for considering the arrangement of the conventual establishment in connexion therewith. And now Master Georgius, the architect, and Monsignore Saint-Paul, the director, have at length come to disagree.

'Your rooms,' says Monsignore, 'seem to me to be made almost as uncomfortable as they possibly can be.'

'Why, of course!' exclaims the astonished artist, fixing his glass somewhat indignantly in his eye, 'what you call uncomfortable I call quaint.'

'Very possibly I should call it the same; but, my dear sir, *cui bono?*'

'*Cui bono?*' answers the architect, contemptuously; 'that's what all modern people say; that's the horrible mistake of the whole modern world; we shall never recover the tone of the old men till we get rid of such jargon. Now, just for an instance, imagine the fathers of this abbey of ours going in for washhand-basins!' He drops his eye-glass in sheer dismay at such an idea.

'Why not?'

'Why not? I said washhand-basins! and jugs—just think of it!' says the architect, refixing his glass—'jugs!'

'What would you have, Mr. Oldhausen?'

'A laver, of course.'

'In what form?'

'A stone trough, of course; outside the refectory door.'

'At which gentlemen are to put their heads under the pump, I suppose.'

'Pump? No! Do you suppose we shall have pumps? They can put their heads into the laver if they want. But I don't agree with much of that; the old men didn't encourage any of that unnecessary affectation.'

'Soap, I suppose, you would interdict.'

'Well, soap, you know, ain't architecture; but if I were abbot, they should have very little of it, I can tell you.' He drops his eye-glass here with a determined air.

'Well?'

'Well, I am going in for squints, squinches, and slypes.'

'Structural matters, I suppose?'

'Partly; squints I consider to be the very essence of conventual arrangement.'

'Do you mean bagioscopes?'

'You may call them what you like, I call them squints in plain aboriginal language. I want everybody to see the altar, you know, from everywhere—dormitory, refectory, solar, cellar, kitchen, squillery, buttery, sewery, turnpike, and bartisan; I don't mean to let their duty be ever out of their sight, you know. When I think of such an arrangement, Lord! I don't know that I shan't go over myself as soon as the country has a decent place like this abbey for a fellow to go over into.' The eye-glass is now being refixed in an absent way.

'Just so. Well? I think I understand you.'

'Well, I don't think you do, but never mind. Then I go in for squinches; they're structural, certainly; very quaint; the quaintest thing out. I wouldn't have a corner without a squinch for anything.'

'Would you not?'

'No; an architect who doesn't use squinches is not an artist at all.'

'I hope they do no harm, at any rate.'

Master Georgius drops his glass, scorning to answer a remark so unbecoming; and feeling that he can scarcely threaten, even metaphorically, to punch the head of a Prelatic Chaplain of the Vatican, he changes the subject. 'Perhaps you don't,' he says, 'believe in slypes.'

'I remember the slype at my college; a narrow, dirty, disagreeable passage-way; is that what you mean?'

'As for being narrow, that's the primary charm of such a thing; and it ought to be crooked if you can get it.'

'All strait gate, I suppose, and narrow way.'

'Certainly; and as for being dirty, that depends upon the weather. The word "disagreeable" I can't say that I understand. I call our new streets disagreeable if you like—great wide gaping gullets without a bit of quaintness to be had from end to end; everything seen at such a horrible distance, you know. I wouldn't allow any street to be more, if I had my way, than about 7 ft. wide; and I would have an angle of 45° at least at every 50 ft.'"

The self-sufficiency of Master Georgius, contradicting everybody, even when they seek to agree with him, is lovely. However, he is not "half a bad fellow," and ultimately determines on going in for Greek as the right thing.

After making the foregoing quotations, because they best suit our pages, we are forced to say that they do not adequately represent the real power and purpose of the book, which shows a remarkable knowledge of the human heart, and establishes the right of the author to be considered a moralist of no ordinary acuteness and power.

VARIORUM.

In an illustrated notice of Flaxman, given in *Social Notes*, Mr. Cave Thomas says:—"'The uneventful lives of artists' is a common platitude. Whereas the execution of grand works in painting and sculpture is amongst the greatest events in history, and the thinking world shows that it considers them to be so by its undying appreciation. Of all the eventful history of Mediæval Italy, its art events are beyond all compare the greatest; and now that all her stage properties and pageantry are relegated to oblivion, her poets and artists reign supreme. To common minds an event is only some occurrence which strikes them between the eyes of consciousness with mischievous violence. Such passively witness the virtue of the modest and unobtrusively progressive, but pass it by with very slight, if any, consideration. Thus it was with the genius of John Flaxman, whose life was, in the better sense of eventfulness, grandly eventful, but who was allowed to enter into European fame before Englishmen had adequately recognised what manner of they had as a glorious possession. In for an estimate of Flaxman's genius, we must lose sight of the nature of his constitution delicate frame emancipated his intellect left it supreme. His works, therefore, alth they manifest to the full a spiritual and captive excellence, often lack, especially larger, some degree of physical complete This is a defect; for perfect art, as the pe manhood, consists in the combination o two. Art to be complete must be perfect in form and spirit. It is useless to urge the intellectual conception is, in all the art 'better part'; for should a beautiful thoug sent forth imperfectly embodied, it is sent halt and limping to the world, and fully jus the reproaches of criticism. To note a thought would be sufficient if the different did not demand special forms of expression perfection in those forms. But such a as that of Flaxman descending upon a which had been, till his coming, of the earthy, breathed into it at last the breath o and for this benefaction we must be dev thankful."

Miscellanea.

The Number of the Jews.—In conn with the accounts and illustrations we given from time to time of new synago erected in different parts of the world, details respecting the distribution of the all over the world, published by the Society for the Promotion of Christianity a the Jews, will be found interesting. The number of the Hebrew race to-day is shor be about what it was in the days of King —between six and seven millions. There Europe, according to the latest statistic formation, about five millions; in Asia, 20 in African, over 80,000; in America, fr million to a million and a half. More tha of the European Jews (2,621,000) resi Russia; 1,375,000 in Austria (of whom 57 in the Polish province of Galicia); 512,(Germany (61,000 in the Polish provin Posen); Roumania is credited with 274,00 Turkey with 100,000. There are 70,0 Holland, 50,000 in England, 49,000 in Fra 35,000 in Italy; Spain and Portugal ha tween 2,000 and 4,000; 1,800 in Sweden, Norway. Nothing is said about Denma Switzerland. The number of Jewish reside Berlin is given at 45,000,—nearly as many as whole of France, and more than in Italy, S Portugal, and the Scandinavian peninsula gether. The population of Jerusalem is giv 7,000 Mahomedans, 5,000 Christians, and h Jews; these last are classified as Ge Spanish, or Arabic Jews. The report giv details concerning America, except that in York there are thirty synagogues.

"Undercutting."—We have been giv understand that the architect referred to the above heading in our columns last week informed (1) that the Board had not tied t selves to any particular architect, and that wanted to get a fresh one, and one wh made economy in planning and constructio especial study, because they were dissat with what their past building expenditur come to; and (2), that before trying the of an advertisement, they would like to b nished with full particulars of the cost, &c a number of schools which had achieved thing more than a local repatation for the expensive construction. The heading "U cutting" referred rather to the action o Board in offering 2½ per cent. than to the munication from the architect.

Memorial, St. George's Chapel, Wind —A memorial of the late King of the Bel has been placed by her Majesty the Qu St. George's Chapel, Windsor Castle. I white marble statue, sculptured in the ate Mr. J. E. Boehm, the figure of King Le being rather larger than life-size, and of s aspect. His late Majesty is represented we his robes (which are decorated with the b of the Order of the Garter), with star on b sword by his side, and holding a regal sc in the left hand. The statue is raised upo ornamental pedestal of white veined ma with porphyry base, and upon the front th a tablet bearing an inscription.

Queen's Bench and Horsemonger-Prisons.—It is stated that the work of down the Queen's Bench Prison will be aced within the next few days, and ne contractors have engaged to have ilding demolished and the materials away in the course of about three . In answer to the advertisement issued er Majesty's Office of Works inviting , there were, it appears, upwards of 150 sent in from builders, dealers in build- terials, and others. It has been ascer- that the bricks forming the building are nch superior character to the ordinary bricks manufactured in the present day, o in excellent condition. The demolition semonger-lane Gaol, on the opposite side road, was completed last week, with the ion of the outer walls, and the block on st side of the main entrance, formerly warders' apartments. It is stated that of builders, who have already erected of buildings in flats in South London, pared to purchase the site. It is to be however, that an open space will be ed as a public recreation-ground.

e.—According to the *World*, they are cting in Rome, in the old Botanical s of the Lunhara, a museum, which will d the Museo Tiberino, and in which will ed all the objects of art brought to light works of the Tiber. The conservatory transformed into a gallery, where the rescoes recently discovered at the Far- will find a fitting home; and in other the museum will be installed the statues, iefs, and sculptures found in the Tiber or banks. Special *salles* will be reserved ections of gold, silver, and bronze coins. mismatic collection already formed is h, containing, as it does, some extremely ns of the Republic, the Empire, and the apacy.

Memento of the Franco-German The monument raised at Père la Chaise State to the memory of the 2,000 French killed during the siege of Paris, 1870-71, completed. On one face is inscribed ment élevé par l'État aux Soldats morts le Siége, 1870-71"; on another, es militaires, Loi du 4 Avril, 1873." The is adorned with sculptured garlands of and oak-leaves, and with wreaths, and four angles stand as many allegorical representing a soldier of the line, a an artilleryman, and a mobile.

Explosion.—On Tuesday last an explo- gas occurred at Ethelred House, Avenue- t. John's Wood. The house, which is a , was being fitted for the reception of nt, and on Monday the chandeliers were On the workmen entering the house the orning, one of them applied a light of the burners in the parlour, when a losion followed, and the men were thrown and one, Michael Conelly, aged 48, had broken. All the glass in the house was ed, the balustrades were torn down, and ircases wrecked. The gas had been left ight.

dow Gardening.—Last week a number nds assembled in the Wesleyan Mission- Oakdale, Seacombe, to witness the dis- n of prizes for the best gardens and r-plants in connexion with the new work- n's cottages there. These cottages, built Ellis, a member of the local Board, afford greater economy in construction, in fuel, and good ventilation; besides there is attached a nice plot of garden, from the number of prizes awarded, ing nearly twenty, are evidently appre- by the tenants.

atorium.—A company for the purpose of g a Hydropathic establishment and sana- on the well-known Clent Hills, Worces- , has been organised. The capital of the y is 50,000*l.*, divided into 10,000 shares ach. Mr. David Mackenzie is the com- secretary, and the architect is Mr. F. an Smith, of Stourbridge and Birming-

ing of St. Paul's Gardens.—The included between St. Paul's Cathedral railing which surrounds it having been in ornamental gardens by the Corpora- London, were on Monday last thrown o the public. We have already given articulars.

Death of Mr. P. F. Poole, R.A.—The death is announced on the 22nd inst., at Hampstead, of Mr. Paul Falconer Poole, R.A., in his seventy-fourth year. Mr. Poole was a native of Bristol, and was, to a very large extent, self-taught. His name was first brought into prominence in 1843, when he exhibited at the Royal Academy his picture of "Solomon Eagle calling the People of London to Repentance during the Great Plague." He was elected to the minor honours of the Royal Academy in 1846, and attained the full rank of Academician in 1861.

How to Encourage the Arts.—Until now the only municipal buildings in Paris decorated by means of paintings were churches and *mairies*. Henceforward, however, the new schools will participate in the sum of 300,000 francs annually voted in the budget of the City for the commissioning of works of fine art. The administration are preparing the conditions of a competition for pictorial decorations in the schools of Paris.

Crieff Parish Church.—In response to an advertisement for plans for a new parish church at Crieff, to accommodate 1,000 persons, twenty architects, principally from Edinburgh, Glasgow, and Dundee, submitted plans for competition. The first premium was awarded to Mr. McLeran, London, and the second to Mr. N. Macara, Darlington.

The Building Trade in Paris is reported to be particularly flourishing at present. In the first half of last month upwards of seventy-three new buildings were commenced, and a considerable number of new building authorisations had been applied for. All the large firms were employing their full complement of men.

The Opening of the Sydney Exhibition. The ceremony of opening the Sydney International Exhibition was performed on the 17th inst., by Lord Augustus Loftus, the Governor of New South Wales. The day was observed as a public holiday, and the streets were densely crowded by the townspeople and visitors from all parts.

A Presentation.—On the 22nd inst. a marble timepiece was presented by the workmen in the employ of Messrs. W. & E. Curtis, builders, to their foreman of painters, Mr. J. A. Martin, in recognition of the impartial manner in which he discharges his various duties.

Birkbeck Literary and Scientific Institution, Southampton-buildings, Chancery-lane. —The fifty-seventh session of this Institution will commence on Wednesday next, on which occasion the inaugural address will be delivered by Canon Farrar.

Dewsbury.—At a meeting of the Sewerage Committee of the Corporation of Dewsbury, held on the 10th inst., Mr. Algernon K. Balls, of Bradford, was appointed Deputy-Borough Engineer, from eighty-five candidates.

Mr. J. Dick Peddie, of the firm of Peddie & Kinnear, architects, Edinburgh, is a candidate for the representation of the Kilmarnock burghs in Parliament.

TENDERS

For alterations and additions to 6, Atkinson-place, Brixton-road. Mr. R. Cruwys, architect:—

Maxwell Bros.	£148 0 0
Drury	125 10 0
Smart	126 0 0
Headon (accepted with modifications).	

For building shop on forecourt, 120, Rye-lane, Peckham, for Mr. G. Skinner. Mr. G. Edwards, architect:—

Richardson	£275 0 0
Buckland & Co.	238 0 0
Cullum	230 0 0
George	215 0 0

For bar-fittings at the Carpenters' Arms, Princess-street, Edgware-road, for Mr. H. Gordon. Mr. J. O. Cook, architect:—

Pierce	£291 0 0
Helling	216 10 0
Watts	184 0 0
Warne	182 0 0
Harris	175 10 0
Edwards	174 0 0

For the erection of an additional warehouse, at the Refinery, King Edward street, Mile-end New Town, for Mr. E. L. V. Schwier. Mr. John Hudson, architect:—

Wyard	£1,547 0 0
Atherton & Latta	1,300 0 0
Little	1,197 0 0
Hearle & Son	1,193 0 0
McFarland	1,163 0 0
Johnson	1,107 0 0
Howard	1,083 0 0

For the erection of a temporary church, Addison Park, for the Rev. William Handcock. Mr. Robert Kevill, architect:—

Kent (accepted)	£1,125 0 0

For a new vicarage-house for Christ Church district, Malvern. Messrs. Haddon Bros., architects. Quantities supplied:—

If outside walls are faced with coursed stone rubble masonry:—

Groome	£3,390 0 0
Cullis	2,863 0 0
Edwards	2,842 0 0
Godwin	2,779 0 0
Kendrick	2,773 4 0
Kings	2,691 17 1
Pritchard & Feltham	2,595 0 0
Lissamon	2,531 5 0
Osborn	2,500 0 0
Everal	2,499 0 0
Crowe	2,475 0 0
Thomas	2,434 0 0
Davis	2,370 0 0
Smith & Durbin	2,338 7 8
Newell	2,336 0 0
Jones & Co.	2,310 0 0

If outside walls are faced with pressed red bricks:—

Groome	£3,178 0 0
Kings	2,617 17 7
Edwards	2,616 18 0
Cullis	2,548 0 0
Kendrick	2,534 14 0
Godwin	2,526 0 0
Crowe	2,355 0 0
Osborn	2,350 0 0
Davis	2,265 0 0
Thomas	2,245 0 0
Everal	2,239 0 0
Pritchard & Co.	2,225 0 0
Newell	2,204 0 0
Smith & Durbin	2,191 8 7
Lissamon	2,148 10 0
Jones & Co. (accepted)	2,111 0 0
Atkinson (too late and informal)	2,073 19 11

For rebuilding No. 36, Bow-street, Covent-garden, for Mrs. May. Mr. J. E. Woodard, architect. Quantities by Mr. Henry Lovegrove:—

Wood	£3,850 0 0
Crisp & Tomlin	2,437 0 0
Bishop & Hooper	2,299 0 0
Cullum	2,286 0 0
Sims	2,287 0 0
Castle	2,275 0 0
Tyerman	2,236 0 0
Parish	2,216 0 0
Smith	2,199 0 0
Holliday	2,195 0 0
Warr	2,182 0 0
Jones & Co.	2,178 0 0
Birch & Moore	2,157 0 0
Langmead & Way	2,115 0 0
Nightingale	2,112 0 0
Raymes	2,058 0 0
Beale	2,000 0 0
Stephenson	1,996 0 0

For Wesleyan chapel and schools, Shifnal. Mr. H. T. Fleeming, architect:—

Bowler	£3,725 10 0
Bate	3,650 0 0
Cadman	3,569 10 0
Nevett Bros.	3,475 0 0
Collins	3,462 11 6
R. & J. Millington	3,281 0 0
Horsman & Co.	3,236 0 0
Smitheman	3,204 0 0
Crutchley	3,198 7 7
Bentlestone	3,175 11 8
Guest	3,077 0 0
Jones	3,070 0 0
Wiley	3,051 3 0
Lucas	2,982 18 0
Paterson & Sons	2,978 0 0
Lissamon	2,966 10 0
Trow & Sons	2,895 0 0
Pritchard & Feltham	2,885 6 0
Birrell	2,824 0 0
Dawson & Bradney	2,877 0 0
Gethin	2,864 5 0
Yates (accepted)	2,844 0 0

For new stables, &c., at Church-end, Finchley, for Mr. Stephens. Mr. Constable, architect. Mr. D. Brown, surveyor:—

Childerhoime & Co.	£3,960 0 0
Plowman	3,850 0 0
Brass	3,841 0 0
Cooper	3,670 0 0
Priestley	3,529 0 0
McLachlan & Sons	3,490 0 0
Simpson & Son	3,399 0 0
Colls & Sons	3,300 0 0
Longmire & Burge	3,290 0 0

For erecting house and stabling, Battle, Sussex, for Mr. C. Sheppard. Mr. W. L. Vernon, architect:—

Coussens	£2,310 0 0
Morgan	2,260 0 0
Cruttenden	2,233 0 0
Vidler	2,173 0 0
Womersley	1,941 0 0

For new premises in Throgmorton-avenue, London, for the Provincial Bank of Ireland. Mr. Edward Salter, architect. Quantities supplied by Mr. Stoner:—

Rider & Son	£10,3 8 0 0
Trollope & Son	10,225 0 0
Bass	10,189 0 0
Smith & Son	10,169 0 0
Browne & Robinson	10,048 0 0
Holland & Hannen	9,990 0 0
Higgs & Hill	9,798 0 0
Macey & Son	9,420 0 0
King & Son (accepted)	8,840 0 0

For new premises for the London and County Banking Company, High Barnet. Mr. Edward Salter, architect:—

Miller	£2,235 10 0
Rider & Son	2,088 0 0
Cocks	2,083 0 0
Baughen (accepted)	1,900 0 0

For general repairs at the Running Horse livery stables, Blackfriars-road, for Mr. J. McQuin Denyer. Mr. Robert Reid, architect:—

Whitby (accepted)	£562 0 0

For an artesian well, and engine, pump, and gear work, at St. Olave's Union Infirmary, Rotherhithe. Messrs. H. Saxon Snell & Son, architects:—

	Design No. 1.	Design No. 2.
Taylor & Co.	£2,079 6 0	£2,627 6 0
Waygood & Co.	1,817 15 0	2,225 15 0
Young & Co.	1,747 17 6	2,262 7 6
Pontifex & Wood	1,676 0 0	1,887 10 0
Tilley	1,562 4 0	1,875 6 0*

* Accepted.

For boiler-house and boiler at the above building:—

Land & Co.	£742 0 0
Taylor & Co.	430 0 0
Pontifex & Wood	375 0 0
Bamford	370 0 0
Potter	366 8 6
May	346 0 0
Waygood	330 0 0
Young & Co.	318 0 0
Tilley	315 4 6
Bennett (accepted)	265 0 0

For fire-mains and hose at the above buildings:—

Scott & Son	£492 0 0
Turner & Co.	456 0 0
Merryweather	358 10 0
Suffield	355 16 0
Potter & Sons	347 10 0
Bunnett & Co.	325 0 0
Taylor & Co.	310 0 0
Benham & Sons	302 0 0
Pontifex & Wood	300 0 0
Young & Co.	286 5 0
Land & Co.	285 5 0
Berry & Sons	264 0 0
May Bros.	264 0 0
Shand & Mason (accepted)	260 2 3

For hydraulic lifts at the above building:—

	Chain-lifts.	Direct-acting Lifts.
Scott & Son	£ —	£994 0 0
Emmerson & Co.	850 0 0	—
Taylor & Co.	830 0 0	—
Glenfield & Co.	743 0 0	—
Hydraulic Engineering Co.	645 0 0	685 0 0
Bunnett & Co.	450 0 0	650 0 0
Waygood & Co.	550 0 0	650 0 0
Berry & Sons	630 0 0	—
Young & Co.	—	575 0 0
Waller & Co.	543 0 0	—
Smith & Stevens	501 15 0	—
Turner & Co.	500 0 0	—
Benham & Sons	470 0 0	—
Hosking	384 10 0	460 0 0*
Potter & Sons	450 0 0	—
Pontifex & Wood	—	400 0 0
May Bros.	325 0 0	—

* Accepted.

For the new church of the Oratory, South Kensington. Mr. Gribble, architect:—

Holland & Hannen	£65,410 0 0
Kirk & Randall	61,745 0 0
Trollope & Sons	58,481 0 0
Perry & Co.	58,109 0 0
Peto Bros.	53,973 0 0
Shaw	50,526 0 0

For proposed new parochial schools, Little Russell-street, Bloomsbury. Mr. J. Peacock, architect. Messrs. Gardiner, Son, & Theobald, surveyors:—

Lathey Bros.	£3,350 0 0
Downs	3,327 0 0
Toms	3,267 0 0
Langmead & Way	3,197 0 0
Nightingale	3,080 0 0
Adamson	2,980 0 0

For the erection of Wesleyan school building, Chapel-street, Luton. Messrs. J. R. Brown & Humphreys, architects. Quantities by the architects:—

Staines & Son	£6,158 0 0
Goss	5,947 3 8
Miskin	5,635 0 0
J. & T. Davis	5,634 0 0
Taylor & Grist	5,636 0 0
Front	5,569 0 0
Smart Bros.	5,371 14 0
Rayment & Son	5,160 0 0
Dunham	5,150 0 0
Lissamon	5,027 0 0

For pulling down and rebuilding the Waterman's Arms, High-street, Southampton, for Mr. H. Scrace. Mr. W. B. Hill, architect:—

Stevens & Son	£984 0 0
Bailey	850 0 0
Holt	794 0 0
Rowland	760 0 0
Bull & Sons	699 0 0
Crook (accepted)	677 10 0

For the erection of a hotel in Wellington-street, Leicester, to be called The De Montfort, for Mr. W. V. Cockshaw. Messrs. Stephens, architects:—

Bland & Sons	£1,389 0 0
Bray	1,347 0 0
Stevens	1,179 0 0
Tyrrell	1,151 0 0
Bass	1,145 0 0
J. Mason	1,144 0 0
T. Mason	1,129 0 0
Bland & Sons	1,120 0 0
Rudkin	1,099 0 0
Billington	1,028 0 0
Minchen & Law	949 0 0

For road and sewer making, for the British Land Company (Limited), on their estate at Walthamstow. Mr. Henry B. Michell, surveyor:—

Crockett	£3,590 0 0
Acock	3,586 0 0
M'Kenzie & Co.	3,484 0 0
Keeble	3,377 0 0
Killingback	3,200 0 0
Peill	2,950 0 0
Bloomfield	2,800 0 0
Wilson	2,671 0 0
Pizzey	2,559 0 0
Dunmore	2,475 0 0
Jackson	2,345 0 0
Richardson (accepted)	2,150 0 0

For erecting York Hotel, Hastings, for Mr. M. J. Jennings:—

Dartnall	£2,350 0 0
Rowland & Son	2,293 0 0
Coussens	2,120 0 0
Cruttenden	2,045 0 0
Jones & Co.	2,035 0 0
Eldridge	2,000 0 0
Vidler	1,992 0 0
Womersley	1,967 0 0

For road and sewer making, for the British Land Company (Limited), on their estate at East Barnet. Mr. Henry B. Michell, surveyor:—

Acock	£1,385 0 0
Killingback	1,308 0 0
Crockett	1,250 0 0
Keeble	1,239 0 0
M'Kenzie & Co.	1,060 0 0
Dunmore	988 0 0
Pizzey	968 0 0
Jackson (accepted)	950 0 0

For road and sewer making, for the British Land Company (Limited), on their Ashdown Park estate, Worthing:—

Thompson & Son	£2,420 0 0
Dunmore	2,348 0 0
Jackson	1,900 0 0
Smith	1,890 0 0
Lund & Son	1,800 0 0
Richardson	1,700 0 0
Peill (accepted)	1,695 0 0

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The Builder.

Vol. XXXVII. No. 1913. Saturday, October 4, 1879.

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The Forests of the North.

O a country like Great Britain, which depends so largely for her supplies of building woods upon foreign sources, a brief account of the extent and conditions of the Scandinavian woods and forests cannot fail to be of some interest. The amount of timber annually exported from Sweden is enormous, reaching to 150 million cubic feet. The precise for three years are as follow:—

	1874.	1875.	1876.
...nd planks 'of			
... pine (c.ft.)...	83,004,079	82,118,073	93,792,008
...f rafters (c.ft.)	17,918,934	14,517,826	17,601,735
...d spars (no.)	607,720	476,069	604,308
... (no.)	13,242,693	7,410,169	10,288,921
...f beech (no.) .	27,243,388	23,303,856	27,102,187
...f oak (no.) ...	1,636,548	1,288,397	1,058,631

... Norway and Sweden have been very ...y described in detail by writers who ...pparently spared no pains in collecting ...ation, the former country by Dr. O. J. ... and the latter by Dr. Elis Sidenbladh.

...it 20 per cent. of the whole superficial ... Norway, or 64,000 square kilomètres, are ...ed to be occupied by forests, which are ...oned thus throughout the kingdom:—

...sania and Hamar district	27,000	square kilos.
...hausand	9,000	,, ,,
...n	2,000	,, ,,
...bjem	12,000	,, ,,
...ture of Nordland	9,000	,, ,,
...ture of Tromsö and Finmark	5,100	,, ,,

... different portions of the country are ...d very unequally, the western seaboard ...very sparingly furnished with trees, even ... head of the fiords, and the coast itself ...ost bare of timber. The prefecture of ...ger is perhaps the poorest in forest ..., and, with the exception of its most ... portion, to the east of Skjoldfiord, can ...ly furnish enough for its own wants for ...g purposes, so that the inhabitants have ...ain nearly all that they require from the ...n side of the kingdom. The seaboard of ...rn Bergenhus is also very unfurnished ...imber, except at the interior heads of the ... and the same want of wood is felt, ...n in a less degree, in northern Bergenhus ...omsdal. Peat is largely burnt in these ...icts as fuel. The majority of the forests of ...tern Norway are found in the neighbourhood of the rivers Tista, Drammselv, Glommen, ...cienselv, and in the northern part of the ...y, near the head of Trondhjem Fiord, and ... valley of the Namsen, in the same pre...ge; along the course of the Vessen, in the province of Nordland, and those of the Målselv and Bardoelv in that of Tromsö. There is little doubt, however, that fully half of Norway was densely wooded in ancient times, not only in the south, but also on the westerly coast, and this great decrease was due to the reckless destruction of timber that has taken place in the country for centuries past. During the civil wars of the twelth and thirteenth centuries, and the wars with the Hanseatic Towns in the fourteenth and fifteenth centuries, large tracts of forest were burnt down, and especially on the seaboard, and it has been found impossible to replace them, partly from the exposed and stormy climate, and partly from the mischief done to the growing trees by the herds of sheep and goats which wander about at their own free will. Even in the eastern parts of Norway there is a perceptible diminution of forest trees, owing to the waste of wood used for heating farmhouses and châlets; indeed, it is considered that through want of supervision, the altitude of forest growth has been lowered. The authorities do not appear to have been insensible to this waste of the riches of the kingdom, and, indeed, ever since the middle of the sixteenth century, it has been attempted to check this waste by legislative forestry enactments, which were applied equally to the State forests as to those owned by private individuals. As regards the latter, in particular, the laws seem to have done very little good, but rather to have given rise to protests and complaints against the restrictions. To such discontent did they give rise that the last of these laws was finally repealed in 1836, since when there has been no restriction whatever as to the cutting of timber, and although up to 1860 it was limited to privileged saw-mill companies, it is now free to anybody to cut as he likes. When the kingdom of Norway was consolidated at the end of the ninth century, all the *almenninger*, or those lands which were not claimed by any private owner, were declared the property of the State, but the people were given the right to take away from the land as much wood as they wanted for building purposes and fuel. About the beginning of the fourteenth century timber assumed a commercial value, and the State then began cutting down for selling purposes, though even then each commune had the first right to taking the wood as far as was necessary for its own wants. There was, however, very little system applied to the forest cutting, the trees not being even marked, so that the State woods, called *almenningskoge*, became diminished, and quite insufficient to supply the wants of the inhabitants. Incendiary fires, too, were not uncommon, and, as time went on, serious complications and lawsuits sprang up between the private owners and the communes, which encroached on the rights of the former. Whenever any great financial crisis happened, such as that which took place at the beginning of the last century, a decree was passed authorising the sale of the State woods, and this occasionally took place until 1821, when everything of the kind was strictly prohibited. The prohibition, however, was taken off in 1848, and the sale of woods and forests went on until 1863, when it was again stopped, and it has never since been renewed. Singularly enough, the rights of the people to cutting wood were never interfered with by the forests being sold and changing hands, and they are still guarded with great jealousy on the part of the inhabitants, who nominate a commission to look after and protect these rights. Great changes are impending in Norway as to the legal condition of the *almenninger*, and after 1884 they will all be divided and cease to exist as such, whilst those portions belonging to the inhabitants who have the right of cutting will become what is called *bygdealmenning*, or land common to the inhabitants of the parish.

There are certain owners of forests in Norway, in addition to the *almenninger*, in the shape of public bodies, such as the Trust Fund for public instruction, the silver-mine establishment at Kongsberg, and an extensive legacy trust of a M. Angell at Trondhjem, all of which own large tracts of wood. Like the State forests, these are administered by a Forest Board founded in 1857, and composed of ten directors and seventeen assistant directors. The Kongsberg mines, however, appoint their own superintendent. They altogether comprise about 7,000 square kilomètres, or about one-ninth of the whole forest area, and furnish a great deal more timber than those forests which are in private hands, for the reason that they are better looked after.

The bulk of the Norwegian forests is composed almost exclusively of fir (*Abies excelsa*) and pine (*Pinus sylvestris*), though in small patches are found also the white alder, the beech (*Fagus sylvatica*), and the oak. The pine is universal, growing in the south at an altitude of 2,800 ft.; in North Gredbrandsdal (62° lat.), of 2,700 ft.; in the Trondjhem district (63° to 65° lat.), of 1,950 ft.; in Nordland, of 1,500 ft.; and in Finmark (70° lat.), of rarely more than 600 ft. or 700 ft., above the sea-level. The fir is found chiefly in the eastern part of the country, and in the Trondjhem district. On the western coast, it is not met with wild south of 62° latitude, though there are plantations of it in several localities. The only places where it is met with wild are in the peninsula of Hordaland, at Mo, and at Voss (66° 38' lat., 4° 5' long.). On the other hand, north of Cape Stat, it grows on the islands along the coast as far as 65° latitude; but beyond that it is seldom seen, and certainly not in the form of forest growth. In Eastern Finmark, however, it is found in South Varanger, near Lake Kjolmejavre (69° 30' lat.), but in separate groups, and not as a continuous forest. In some parts of southern Norway, the fir grows at the same elevation as the pine, though in general its limit is from 200 to 300 ft. below it. Both pine and fir attain very respectable dimensions, though it must be confessed that, as the roads are extended and improved throughout the country, there is a

gradual disappearance of the larger growths. At North Aurdal, in Valders, there are still two fir-trees, called "the sisters," which, when measured as far back as 1864, were 90 ft. in height and 3½ ft. in diameter at 4 ft. from the ground. But in Northern Norway and Finmark both trees grow to a less height, though they attain a pretty considerable girth. In Selbo there was cut down, the year before last, a pine over 100 ft. in height and 4 ft. in diameter at the same distance above the ground. The age of this tree was probably from 175 to 180 years. The period required by both pine and fir to arrive at the dimensions when they are fit for cutting down for building purposes, varies very much, according to the situation of the forests. The rate of growth is greatest in the young trees, and it naturally decreases as the tree gets older.

THE RELATION BETWEEN WAGES AND DIVIDENDS.

In our last number we gave some account of the statements made by the chairmen of some of the most important railway companies at the recent half-yearly meetings. The point of view chiefly illustrated was the relation between the depression in trade, from which all classes of the community are suffering, and the falling off of the gross revenues of the companies.

There is, however, another point of view, of more permanent, and therefore of really more serious, interest, as to which the speeches of the several chairmen have been remarkable for a unanimous reticence. We refer to the degree of compensation which has been obtained for the reduction of income by the corresponding reduction of expenditure. And closely connected with this is the question of the relation between net earnings and capital. We have a good deal of detailed information on these heads furnished in the various reports. But there has been no attempt to grasp the subject as a whole; and the figures actually given, though enough to enable those who can compare them with the Board of Trade returns year after year to institute an instructive comparison, are so varied in their detail that no general result can be attained without some serious and comprehensive work of an analytical nature.

Taken in the block, the falling off in the aggregate gross incomes of the twenty principal railway companies of the United Kingdom has been 702,007*l*. There has at the same time been a decrease in working expenses of 473,394*l*., leaving a decrease of net profit of 228,601*l*. for the half-year. This is a decrease of 1·8 per cent. on half the annual net profit of 1878. It has been arrived at by the difference between a decrease of 2·5 per cent. in the gross income of the lines in question, and a decrease of 3·2 per cent. in the working expenditure. The figures may vary slightly if the comparison be made between the corresponding half-years; but we have taken half the annual return from the Board of Trade accounts, which do not distinguish the half-years. The proportion as between the different items will be much the same, and we can rely on the figures of the Board of Trade.

It follows that the whole economy effected by the reduction of wages, and by such reduction in the cost of materials as may have been effected during the half-year, is only 0·7 per cent. on the working expenditure of 1878; the reduction of cost being 3·2 per cent., and the reduction of income, and presumably of work done, being 2·5 per cent. It is not immediately ascertainable over how much increase of capital the decrease of net earning has to be really distributed. The increase of capital in 1878 was, on the average of all the lines of the United Kingdom, 2·1 per cent.; so that the increase for the first half of the year will probably not fall far short of 1 per cent.

That after all the trouble caused by the reduction of wages there should not have been effected a net reduction in the working expenditure of the great Railway Companies, in proportion to the work actually done, of more than ¾ per cent., is probably a more serious outlook than the question of the decline of gross income for the year. It will be remembered that in what we said as to the strike on the Midland line we expressed the most pointed doubt whether the reduction of 5 per cent. in wages would produce a corresponding reduction in expenditure. The figures we have given show conclusively that our anticipation was correct.

The net receipts on the Railways of the United Kingdom in 1878 amounted to 29,673,000*l*., being 558,000*l*. more than in 1877. Thus the difference, or movement, for the half-year just expired, has been about as much to the bad, as that of the corresponding half-year in 1878 was to the good. It is, however, only a difference of about 2 per cent. per annum either way, a tax on his profits which the shareholder could not feel, in itself, to be ruinous.

But the cost of an average mile of railway in the United Kingdom, which in 1877 stood at 39,472*l*., had risen by the close of 1878 to 40,301*l*., or by more than 2½ per cent. And this is a permanent rise. If the same rate of increase of capital be taken for the past half of 1879, the loss to the shareholder will have amounted to more than double that shown as loss of net profit, as the additional sum which he ought to have received to pay interest on his additional capital, is more than the actual loss. The fact that we have to indicate this loss by the preceding sentence, instead of by a single line of figures, is enough to prove that these explanations of the state of the subject are not so well kept up to the mark as ought to be the case.

Another point comes out from the comparison of the increases and decreases of receipts and cost on the different lines, which at present seem to mock analysis. It is probable that it indicates one of those tests of the good or bad management of railways which may, when fully understood, prove of great value to the shareholders. As yet we can only call attention to the fact.

The London and North-Western, with a reduction of gross income of 148,000*l*. for the half-year, on a gross annual income, in 1878, of 9,390,000*l*., has economised 137,000*l*., or 92 per cent. of its loss, in working expenses. The North Staffordshire, losing 12,240*l*., has saved 17,857*l*., or 145 per cent. of its loss, being thus 5,600*l*. to the good. A certain relation may be perceived if we take out the percentages of saving as compared to loss of traffic. Thus the Lancashire and Yorkshire have recouped 66 per cent., the North-Eastern 61, and the Sheffield and Manchester 58½ per cent., of their losses by their savings.

On the other hand, the Great Northern, with an additional income of 66,000*l*., has increased its working expenses by only 32 per cent. of that increase; and the Great Eastern, with an additional income of 40,000*l*., has increased its working expenses by only 18½ per cent. of that sum. These are lines of approximately similar description of traffic, so that they may be taken as affording examples of the relation borne to the economy effected under somewhat similar conditions, on an increasing and on a decreasing income.

Among passenger lines, the London and South-Western has had an increase in working expenses which swallows up 85 per cent. of its 50,000*l*. of additional traffic. But the London and Brighton has spent 420*l*. more to earn 30,000*l*. less. The South-Eastern has economised 20 per cent. out of its loss of 44,000*l*. The London, Chatham, and Dover has economised 22½ per cent. out of its loss of 14,600*l*., And the two Metropolitan lines, taken together, have spent 3,900*l*. less, in order to earn 5,300*l*. more, than in the corresponding half of 1878.

We are anxious not to be in too great a hurry to draw an inference from these figures. We are content at present to give to the shareholder an additional element of contemplation by showing the per-centage relation of the figures which are already in his hands. It must be remembered that the rate of wages differs in different parts of the country, and also that the cost of working any line is affected to a considerable extent by the volume of the traffic. It is possible that the corrections which are due to these differences, if we had the means of making them, would explain the slight differences in similar groups of lines, such as the Lancashire and Yorkshire, the Midland, the North-Eastern, and the Sheffield and Manchester railways. In other cases it can hardly be doubted that such figures as those of the London and North-Western returns point to a loss of non-remunerative traffic; while the difference of the advantage acquired by the Great Eastern and by the London and South-Western lines, in their respective increases of 40,000*l*. and 50,00 of traffic, is very noteworthy. The steady g in earning power of the purely passenger lir which are on the increase in their gross incom when compared with the small saving of London, Chatham, and Dover, and the ex cost of the London and Brighton, on a decrea revenue, points, we suggest, to the cost of cc petition, as it prevents each company fr diminishing the number of its trains in prog tion to the diminution of traffic. To take one or two carriages does not make much di rence in the cost per train-mile. On the ot hand, when freight does not come freight-tra are not run. Our columns are hardly the pl for a more full analysis of these pregnant fa But we think it important to call attention the valuable results that may be obtained such an analysis.

On the whole survey, it cannot be denied t the elasticity of the system under a perioc general depression has been surprising. should be remembered that one unseen elem of diminution of net receipts to the compa may be traced to this depression, and tha the gravitation of the passenger traffic towa the third class. It does not necessarily fo that this is a net loss to the companies. example, it is probable that the third-class senger traffic to such a place as Bourneme pays better than the first-class, because a riage may be run the whole distance to c only two or three of the latter, while that wi conveys the third-class passengers may be f over and over again in the journey. This, h ever, is rather a matter of competition tha necessary cost, as no company ought to carriages that are not on the average fa filled, and, as a rule, only do run them in o to divert passengers from other lines. Elasti is visible everywhere. The thing wanted develope their resources aright, and, above to nip in the bud the over-active elasticit capital outlay.

ORNAMENTATION OF THE HOUSEH AND THE PARIS EXHIBITION.

It is a theory which is happily now than ever generally recognised, that instru is the direct road to the accomplishmen the smallest, as well as the highest, a But, desirous as each of us may be to k Socrates's wise definition of his own pos possesses as much meaning, if not indeed n in the present day, than it did in those cla days. "What I do know," the sage remarked that I know nothing," and in the advanc the sciences this position is essentially the most among us. It is a fable of old Æs re-sung by the later fabulists, La Font and Gay, that characteristic fable of the man and his sons; we all remember the l tage he left them on his death-bed—a which, he said, dig and till, and search, fi contains a treasure you will find. Produc movement, and labour are always profitable, always for the present, at least for the fu a fact which in the midst of the existing pression which weighs on the commercial must not be overlooked, and a fact whi particularly striking in such an exhibitio that at present open in the Palais de l'Indus in which the products of the industrial a ance of the sciences are so largely represer and which to the student forms a small enc pædia in action of the studies he is purs There are, without doubt, many scientific who collect their facts for the mere plea of continuing their researches, without the suggesting itself to them of drawing prac consequences from their application; but seekers have their use, and the intelligen ventor who is not slow to avail himself of means thus placed at his disposal, has n than once had to thank the patient labou workers in the rich and still unreaped harve science. An exhibition such as this, an which we have already spoken, affords nume instances of this collaboration, in which practical element has been skilfully applie the discoveries of science. Such noticeab remarkable in the modern production of necessities which the exigencies of mo existence have so increased about us that and poor alike can enjoy, in comparative grees, the pleasure of luxury, a quality haps as difficult to define as can be imagi In the days of Aurelain silk, was a lux enjoyed alone by empresses, but now it is Sunday costume of every artisan's wife.

close of the fourteenth century, murmurs
re raised against the extravagance of the
een of France, Isabella of Bavaria, in pos-
sing two *chemises* of linen; in the following
tury the noblest courtiers did not know the
of handkerchiefs, and instances of this
ure might with ease be continued.

fenceforward, however, economic science
solved this question of luxury: when it is
natural result of work and ease, when it is
yed in common with thrift and the accumu-
on of capital, it is a proof of prosperity; but,
the other hand, when it is fictitious, the
lt of false pride or vanity, to be in accordance
h fashion, when it can be traced to the
effects of an administration or a govern-
t, erroneously urging extravagance "for
good of trade" and the encouragement of
stry, from every point of view such luxury
be deplored, and leads to consequences of
ch, perhaps, the present condition of the com-
cial world is only one example. It is but
t (in spite of Lord Burghley's recently ex-
sed opinion on this point) that each of us
ld enjoy a degree of luxury relative to our
lition, without detriment to that reasonable
nomy which allows us to continue the habits
each have contracted. The two degrees of
ry, that which alone remains satisfied at
utmost expenditure, or that which remains
ented by a small outlay, are not ill-repre-
ed in the Palais de l'Industrie, particularly
at group of the classification which refers
he adornment of the house, though, truth
tell, the exhibits, excepting always the
utiful and costly works of some of the
-known upholsterers, in their reproductions
revival of the cabinets, dressers and cre-
es of the Renaissance, or in the hangings
tapestries "style Louis Treize," appa-
ly supply more subject for reflection on
t to avoid than on what to purchase; we,
ed, hardly envy the imagined happy pos-
r of any piece of the endless show of
sely and finely painted pottery and porce-
and shapeless vases, and plates, and cups
saucers, and "artistic bronzes," the gilt
ney-pieces, and the gaudy clocks, as to
h, the more the French are abused, the
they seem determined to thrust them into
world, and all the hundred other so-called
ects of art" which, in each succeeding
ch exhibition, continue to offend the person
aste.

the present day, exception made in the
of the small, but happily increasing, number
ouses in which the evidences of good taste
o be met, the mass may be divided into two
es: the too bare and the too crowded,
h in each case, according to the taste of
occupants, resemble either the furnished
ng or the curiosity-dealer's shop. A want
idence of some degree of luxury denotes,
rule, the empty mind, the thoughts absent
the home, idleness on the part of the occu-
s, and as such a room is entered a sensation
ill strikes the observant mind.

th a choice to be made in such a bazaar as
now open in the Palais de l'Industrie, for
ch it must really be looked upon, how would
possible for any but those gifted with that
rience and knowledge and perceptive power
h constitute the possession of taste, to avoid
ucing an effect so often to be met with in
ouses of our friends, but which, with all
boasted taste, is even oftener to be met
in the *appartements* of the French?
ce our first Great Exhibition of 1851, when
and suddenly awoke to a consciousness of
nsatisfactory condition in artistic matters,
a revolution in the matter of what it has
decided shall be called "household taste"
been effected as can scarcely be paralleled.
rica within a few years has taken up as
nly, even if not more warmly, the question,
on both sides of the Atlantic writers and
shers have been busy in producing works
as may propagate the knowledge of a sort
taste." Such cannot be said for the Con-
t, where the traditions of "Conservatoire"
iously conserve, among all but the numerous
ptions, the wildest and most mistaken views
erning "household taste."

n unfortunate extreme, it is true, has been
bed in England when second-rate up-
erers fill the advertisement pages of our
pals with the careful delineations of their
signed but pompously-designated "Early
ish" mirrors and sideboards, their shoddy
p-covered tables, and bracket shelves and
er-cupboards; but, on the Continent, and in such an exhibition as that at present open in Paris, it is alone the person of means who is enabled to possess an object or piece of furniture in good style; those possessors of taste who have not at their command a long purse, and who seek in more modest simplicity the elegance which they demand, are sorely tried, and find it almost impossible, except perhaps in the broker's shop, to satisfy their desires.

To mention, in the exhibition at present being held in the Champs Elysées, any one or more of the numerous specimens of the furniture-maker's art would be worse than invidious; the old names come again to the front, not a little increased in number by the various models of furniture intended for double uses, many carrying out precisely that bean-ideal of usefulness spoken of by Goldsmith,—

"A bed by night, a chest of drawers by day,"

whose construction has before now puzzled more than one ingenious schoolboy.* Intended for the small quarters which French people seem so particularly attached to, such useful pieces of furniture would scarcely recommend themselves to our English idea of comfort; but certainly the facility of the management and the neatness of their effect are fascinating, if not to the pocket, at least to the eye. We cannot attempt to mention the hundred accessories in the ornamentation of the household here presented: the pottery and porcelain for daily use, the mirrors and the glass ware. We must say, however, of one firm, distinguished for its skill in this latter beautiful art,—Messrs. Salviati,—that their products (as exhibited in the pavilion prepared for the reception of the President of the Republic), cannot be looked upon as having advanced in taste since the day, not so many years since, when their beautiful Murano glass deceived the wary dealers of Wardour-street.

* Or resembling that mysterious piece of furniture which Dickens has immortalised, and which, in resembling a bookcase, was in reality a bedstead.

FROM THE BANKS OF THE SEINE.

In the quiet town in which Viollet-le-Duc died, and where he has left some of the last traces of his work as a restorer (in the Protestant cathedral of Lausanne), his earthly remains will rest. The simplicity which has marked the whole of his long and active career was reverently observed in the funeral of the eminent architect, round whose grave were gathered many of his old friends, but no addresses were delivered, a mark of respect paid to the last wishes of the simple-minded artist. It is always interesting to know the steps taken by great minds in preparation for their end, and through the kindness of Mdme. Viollet-le-Duc, the testamentary wishes of the deceased architect have been made known to the vice-president of the Société Nationale des Architectes de France, of which he was the active president. Seven years ago the following letter was addressed to his lawyer by the deceased:—

"July 10, 1872.

"Dear Sir,—It is each one's duty to prepare for all eventualities, and the sole thing which, during my lifetime, would torment me, would be the thought of the platitudes which good people would believe themselves obliged to say over my tomb.—Ever yours,

"Viollet-le-Duc."

This letter contained the following instructions:—"I desire that my funeral shall be of the simplest character, without any affectation, merely that the obligatory formalities shall be fulfilled, nothing more. If I die while travelling I desire that my body may be left and interred in the place of my decease, and that my heirs may be thus spared the transport of a useless and troublesome corpse. Wherever I may be buried I desire that over my grave no addresses may be made, and that a simple slab shall cover me, bearing simply my name, 'Eugène Viollet-le-Duc, born January 27, 1814, died ——.' Signed, 'Viollet-le-Duc.'"

The energy of the artist who has thus been so suddenly snatched away can scarcely be more characteristically proved than by mentioning the fact that in the course of the few short weeks' leisure he was able to enjoy from time to time in the mountain air of Switzerland, he was preparing a minute topographical study of Mont Blanc, while only within a week or so has been advertised as "in the press" a new work by M. Viollet-le-Duc, one of his valuable series of "Histories," the "*Histoire d'un Dessinateur.*"

The death of this illustrious Frenchman has scarcely more occupied the attention of the public than the recent *fêtes* at Perpignan in honour of François Arago, to whom the world owes the determination (in the midst of a war between Spain and France) of the diameter of the earth, on which has been founded the whole metric system in use on the Continent, and on which depends the decimal system of calculation which, sooner or later, must be adopted by all civilised countries. Arago's life, in its earliest years one series of exciting adventures, was ever devoted to the cause of science. He was a student not alone contented with being a great *savant*, but determined to make his science useful to the world; a wise and ardent politician who never failed to utter his opinion, founded in the sound school of experience, whenever in the early days of this century the great questions of the marine, canals, and railroads were brought before the Chamber. It was by his recommendation that national recompenses were decreed to Vicat, one of the inventors of hydraulic cement, and to Daguerre, one of the pioneers in photography; it is to Arago's influence that the artistic world owes the Government purchase of the cabinet of M. Du Sommerard, now the precious collection of the Musée de Cluny; while his Parliamentary reports on the Seine navigation, on the necessity for the establishment of railroads in France, and on the fortification of Paris, have been justly considered as masterpieces of logic and science. It is the memory of this great man which has been celebrated in the unveiling at Perpignan of M. Mercié's excellent statue of Arago, and throughout France, in the hearts of all scientific students and philanthropists.

But science in France possesses many forms, and the science of life is no less honoured on the banks of the Seine than is its more generally acknowledged relation, the science of the laboratory and the observatory. With the end of September and the arrival of the first chilly evenings, earlier this year than usual, the watering-places, after their short season, are being deserted; Paris is again receiving its faithful inhabitants, and the artistic world is re-assembling in the capital. We cannot unfortunately here wait with pleasurable expectation for the opening of an exhibition at this time of the year like that held at Burlington House each winter, or in the Grosvenor Gallery, and by the various minor societies,—a strange fact in an art capital passionately fond of exhibitions; and so the artistic world throws itself into theatrical interest, and the active doings of the painters, the sculptors, and the architects are set aside till the spring, when the talk in the *ateliers* of the Salon and the Prix de Rome begins to again attract the attention of that comparatively limited number of thinkers which we are apt to call the public.

The winter theatrical season has commenced, and the mediocre success of the few new pieces that have so far appeared only the more predisposes one to welcome the old favourites, the revival of past successes. Foremost among these has been the representation of George Sand's charming pastoral play of "Claudie" in the quiet little Cluny Theatre in the classic Quartier Latin, under the shadow of the more classic ruins of Julian's Thermæ and the Cluny Museum, and within but a few steps of the Luxembourg Gardens and the humble lodging in which George Sand passed her romantic youth; and here has been revived "Claudie," which, twenty years ago, was first represented at the Porte-Saint-Martin, when poor Fechter took the part of the sentimental *Sylvain*. It has been a treat to the more refined public this simple play undisturbed by the usual falsely-delineated life of "society," a piece breathing all that poetic idealism which George Sand's brother artists, such painters as Mason and Millet, Breton and Walker, have so successfully thrown into their glowing canvasses. Those who may cry out at the want of realistic truth in this poetic representation of country existence may be right, but we none the less admire this conventional power which has thrown such a romance round the hard-working existence of the sower and the reaper, who seem at the present moment more than ever entitled to our sympathy. The first night of this revival of "Claudie" was a characteristic scene, and one those present will long remember, as they will the sympathetic homage paid to the romantic authoress in the sculptured delineation crowned

amidst the costumed representatives of her numerous creations; the pedestal buried in luxurious flowers, which by a delicate attention had been specially sent by Mdme. Maurice Sand from George Sand's old garden at Nohant.

But notwithstanding that old favourites are being successfully revived in Paris, amidst the thankful acknowledgments of the people of taste, there are not wanting on the part of the Parisians instances of ingratitude; the disappearance of the old Théâtre Italien, transformed into a huge insurance-office, will long remain a blot on the artistic reputation of Paris society. Feeling unjustified satisfaction with their own meagre performances at M. Garnier's grand and gaudy New Opera-house, the Parisians have allowed one of the chief features of their winter season to pass away, and Paris will no longer hear the delicious strains of Rossini, of Donizetti, of Bellini, and of Mozart, interpreted with Italian gusto in the liquid tongue in which their *libretti* were composed. The house has been gutted, and the façades (for the building stood alone) refaced, and, truth to tell, beautified; the masons are busily at work, and before long the transformation will have taken place.

Long before the Avenue de l'Opéra cut its pretentious way through the labyrinth of historic streets round this Théâtre Italien, how often must Thackeray have seen the opera-cloaks and carriages whisk by, from the window of Terre's inn, in the rue Neuve des Petits Champs, that street,—

> "For which no rhyme our language yields
> The New-street of the Little Fields;
> And here's an inn not rich and splendid,
> But still in comfortable case;
> The which in youth I oft attended,
> To eat a bowl of Bouillabaisse."*

And how changed is the façade, perhaps, as we have already said, for the better, but alas! no longer the façade of the Théâtre Italien, but the well-restored home of a prosperous insurance company, from the scaffold-cased sides of which, only the other day, might have been seen fluttering the mangled bills of the last performances.

Lovers of acting had last Saturday an agreeable and rare treat in hearing the justly famous Italian actress, Ristori, for one night, at the Théâtre des Nations, on the occasion of a charity fête in favour of some suffering Alsaciens. Though on her way through Paris to Denmark, the generous heart of Ristori, who too well remembers the Austrian occupation of her beloved "Venezia," sympathised with the sufferers in those severed provinces of Alsace-Lorraine, and that is why, after she had been absent from Paris for more than ten years, we were able last Saturday to applaud the really great artist in the magnificent third act of Schiller's "Maria Stuarda." Whether or not the French critics present acknowledged the fact, it was impossible for the unbiassed observer not to remark the strangely different character of the tragic power of the veteran but still vigorous artist, and that to be seen in the best French theatres. The country which boasts a Clairon, a Mdlle. Mars, and a Rachel, cannot now with justice produce a rival to Ristori, or even her gifted and rising contemporary, Giacinta Pezzana, whom the Parisians have not yet heard. The round ring of Ristori's measured Italian,—so well known to the London public,—forms a marked contrast to the sing-song cadence of the French stage, and Mr. Matthew Arnold could not fail to have felt on last Saturday night, satisfied that this, his recently-expressed complaint against the delivery on the Franch stage, was justified.

A special treat is held out in the recently-published programme for October of a series of historical *matinées*, or morning performances, which are divided into two classes, plays representing and produced in certain epochs of French history, and a second series of international *matinées*. In the former we are to have represented a piece of the Gaulish period, by the distinguished historian, M. Henri Martin; then follow representative plays of the Renaissance, the reign of Louis XIII. (with pieces by Corneille and Scarron); that of Louis XIV. (Molière and Racine); Louis XV., Louis XVI. (the "Marriage of Figaro," by Beaumarchais); and the Revolution (Joseph Chenier's "Charles IX."). The international series is to comprise translations and adaptations from the drama of Greece, Rome, India, England ("Henry VIII." and "The Merry Wives"), Russia, China, Germany, Italy, Denmark, and Spain,—this latter in a piece by Lopez da Vega. Here is a programme tempting indeed, and a suggestion to some of our distracted managers unable to find attractive novelty. It may be observed that this is not the first season in Paris of these characteristic morning performances.

* This Bouillabaise a noble dish is,—
A sort of soup or broth or brew,
A hotch-potch of all sorts of fishes
That Greenwich never could outdo;
Green herbs, red peppers, mussels, saffern,
Soles, onions, garlic, roach, and dace,
All these you eat at Terre's tavern,
In that one dish of Bouillabaisse.'
Thackeray's Ballads.

ANCIENT RUINS OF COLORADO.*

The ground examined by Mr. Jackson is in part the same and everywhere similar to that traversed by Mr. Holmes, and is bordered by Indian reservations. The country, as sketched by Mr. Holmes, is barren, cut up by "labyrinthine cañons," which "head close to the Dolores on the north, and ramify the plateaux in every direction with an interminable series of deep desolate gorges, and wide barren valleys. There is not a living stream throughout this whole region. During the summer months water occurs in but very few places,—generally in pockets, sometimes in springs, where the excess, if any, is soon swallowed up by the hot and thirsty sands." In winter, however, the showers rapidly gather in the main channels, and rush down in great but short-lived floods. The ruins on the McElmo and Hovenweep consist of cliff houses and cave dwellings, and are like those already described. At the angle formed by the junction of the McElmo and the Hovenweep cañons, upon the summit of the "Mesa," are some very curious remains. These consist of small squares, measuring about 3 ft. by 5 ft., arranged in rows 2 ft. and 3 ft. deep, facing to various points of the compass, and formed by thin slabs of sand-rock set on edge. There are also a few circles. They occupy the whole of a level area of about 22½ acres, only joined to the main plateau by a narrow neck, across which a wall formerly extended. It is conjectured, in the absence of any other explanation, that they were graves; but nothing whatever beyond a thin layer of vegetable charcoal has been met with in any of them. Similar groups of rectangles are found scattered throughout the whole region, in the valleys as well as on the Mesa tops.

Remains of round watch-towers on the elevated plateaux, often far from water, are frequent, and form another important feature. Being situated in regions where cultivation and permanent residence are impossible, it seems likely that they were the places of look-out and refuge of shepherds, who brought their flocks to graze.

Among the more important ruins in the main valley of the San Juan, are those of an extensive quadrangular and somewhat massive stone building, of extreme antiquity, to judge by its crumbled state. The rooms are arranged round, and converge towards, a semicircular series of seven chambers, enclosing a central room of the same form. This building had a river frontage of 158 ft., and beyond it can be traced rectangular corrals or inclosures within adobe walls, which, it is conjectured, were used for cattle. In the bluff immediately underneath is a row of "rock-shelters" occupying, as usual, a niche formed by the weathering of a soft stratum between harder rocks, assisted perhaps by digging. The niche, about 300 ft. long and 6 ft. deep, contains the remains of numerous small dwellings, averaging about 6 ft. square, and in which it is barely possible to stand upright, communicating together by small windows. Very numerous dwellings of this kind, situated in almost inaccessible positions, occur in the bluffs which closely border the river. "One group consists of a row of three small houses built upon a ledge running horizontally along the perpendicular face of the bluff, about 60 ft. above the trail immediately below it. The ledge was so narrow that the buildings occupied every available inch of its surface. . . . . No possible means of access were discernible, and if ladders were ever used they were taller than any of the trees available for that purpose now growing in this vicinity."

One of the most striking, perhaps, from its position, of all the cave dwellings, is situated at the back of a wide-mouthed semicircular cave, 100 ft. in depth. The houses in this case were considerably larger than usual, and one-storied. The arrangement of the rooms implies that there were workshops and kitchens in common, and eleven smaller dwelling-chambers. From certain round holes drilled in the rocky floor, it is inferred that the people were acquainted with the use of the loom, and grooves worn in the rock are thought to indicate the manner in which the stone implements were shaped and polished. "The masonry displayed in the construction of the walls is very creditable; a symmetrical curve is preserved throughout the whole line, and every portion perfectly plumb; the subdivisions are at right angles to the front. The stones employed are of the size used in all similar structures, and are roughly broken to a uniform size. More attention seems to have been paid to securing a smooth appearance upon the exterior than the interior surfaces, the clay cement being spread to a perfectly plane surface, something like a modern stucco finish."

In the Rio de Chelly, which is a small tributary entering the San Juan Valley from the south, is another remarkable ruin. In a bend of the valley is a recess, 70 ft. above the dried-up bed of the stream, and overhung by a massive wall of sandstone, in which was found a "cave-town." The cave-town consisted of a solidly-constructed central round tower, and grouped about this were some seventy-five rooms, the whole arrangement of the buildings appearing admirably adapted for defence.

In a side cañon of the same valley, comparatively perfect remains of a two-storied house were found. This was perched as usual in a small niche in the rocky cliffs, and was only accessible by a long flight of stairs cut in the smooth rock.

Epsom Creek, another tributary of the San Juan, enters its valley from the opposite side to the Rio de Chelley, and also contains in one of its lateral cañons a numerous group of ruins. Most of these are mere single-roomed, smoke blackened "cubby-holes." "In one instance a bluff, several hundred feet in height, contains half a dozen small houses sandwiched in it at various strata, the highest being 150 ft. above the valley. Each consists of but one room, and one of them is a perfect specimen of adobe plastered masonry, hardly a crack appearing upon its smoothly-stuccoed surface." Near the entrance to this cañon is a square tower, built on a large and now perfectly inaccessible boulder. In the Epsom valley itself, among others, are the almost effaced ruins of a considerable town, including several round towers and large rectangular buildings.

The Montezuma cañon, also on the north side of the San Juan valley, is merely a narrow gorge, 1,500 ft. deep, and with precipitous sides. The bed of the stream, when surveyed, contained but a few stagnant pools, and was densely thicketed with oak, brush, and tangled vines. Yet this narrow valley Mr. Jackson describes as having been once thickly populated. "We had gone but a few rods before we commenced picking up pieces of pottery and meeting other evidences of former occupation. Within three miles a cave-shelter appeared, and then, as the valley widened, it was dotted in many places with mounds thickly strewn over with the ever-accompanying ceramic handiwork of the ancient people, whose footsteps we were following, which occurred so frequently, and to such an extent as to excite astonishment at the numbers the narrow valley must have supported." Many of the dwellings can only be approached by means of steps or small foot-holes cut in the smooth sandstone, and other stairways seem to have been made, as means of escape from enemies, up the nearly perpendicular sides of the cañon. About half way up the Montezuma cañon a second cañon intersects it, when the bottoms widen, and are 200 yards or 300 yards across, and "are literally covered with ruins, evidently those of an extensive settlement or community." "The ruins consist entirely of great solid mounds of rocky *débris* piled up in rectangular masses, covered with earth and a brush-growth, bearing every indication of extreme age; just how old is about impossible to tell as to say how old the rocks in this cañon are. This group is a mile in length in the middle of the valley-space, and upon both sides of the wash. Each separate building would cover a space, generally, of 100 ft. square; they are seldom divided into more than two or four apartments. Relics were abundant, broken pottery and arrow-points being especially plentiful and of excellent quality." Still farther up, the cañon increases to 500 and 800 yards in wid

* See p. 823, *ante*.

nd promontories extend partly across it, or ave been washed into mounds by the stream. ach of these,—sixteen to eighteen in number ithin a distance of fifteen miles,—is crowned ith ruins of old and massive stone-built ructures, which commanded a clear look-out and down the cañon. These structures, now a complete state of ruin and overgrown, were ctangular, and from 30 ft. by 50 ft. to 100 ft. 200 ft. square, and consisted of a mass of all rooms arranged without any appearance order, and conforming to the irregularities of e surface on which they are built. One of ese is singular in the possession of a wall aversing a spur or bench running out from the omontory for 200 ft., and elevated 10 ft. above e valley. Among the *débris* once forming this ll are seven stones still standing, 7 ft. high ove ground; and abutting on one side of this ll are the remains of what were, perhaps, tle inclosures. About the lower ends of these owns" were a number of the small cliff-uses. One of these, in an exceedingly good te of preservation, occupied a deep oval le in a block of sandstone,—perched about ft. above the valley. Ruins of other large uare buildings occur abundantly in the wider ct of the valley beyond, and about them all mense quantities of pottery and flint arrow-ads lie scattered.

A separate chapter deals with the finest ruins all in the little-known Chaco cañon in rthern New Mexico. They are situated out seventy to eighty miles south of the n Juan group, and in a somewhat desolate ntry.

The buildings are large, many-chambered fices, similar in construction to the modern ebles, but built more solidly and with greater e. Eleven of these ancient pueblos are cribed. In plan they are, with two excep-ns, perfectly rectangular, and occupy either or three sides of a courtyard. They vary ch in size, and probably more so in age. The gest is 544 ft. in length and 314 ft. wide. e stones employed average about the size of rdinary brick; but as the larger pieces were uniform, the interstices were built in with pieces of sandstone, so closely and com-tly fitted together that the joints are only ble when the observer is quite near. "A mortar was used plentifully within the body the wall, but does not appear anywhere upon surface. Great pains were taken in the con-uction of the doorways, the stones being more ular in size, and the corners dressed down to fect right angles." In some cases the masonry mposed of very small stones, compactly ed, without any cement appearing on the face, as many as 450 pieces appearing in a are yard. Other examples of masonry show fectly equal rectangular stones, of the size form of bricks, and between these are in e cases layers of smaller tile-like pieces, alling the tile-layers in Roman walls.

ne of these, and this not one of the larger , is estimated to have accommodated some inhabitants. They all comprise estufas, the eat pueblo possessing as many as twenty of se. The enclosed courtyards in front of the dings present very irregular and broken aces, as if they had been occupied by erground apartments, now fallen in, and it emarkable that the Moquis at the present work in such underground rooms, as much warmth in winter as for coolness in summer. y were built of four stories, in terraces, ess to which can only be had from the out-by ladders, and, with a further view to nce, the outer walls were only pierced with small windows.

Much of the wood-work remains in some of pueblos, and in one of the largest the floor bers project 4 ft. or 5 ft. through the outer l on the shady side of the house, as if nded to support a balcony. Lieutenant pson, who visited the ruins of the pueblo of ttro Kettle in 1849, describes a ceiling of one he rooms, which seems to have since dis-eared. "The ceiling showed two main ms laid transversely. On these, longitudi-y, are a number of smaller ones in juxta-tion, the ends being tied together by a ces of woody fibre, the interstices chinked with small stones. On these again, trans-ely, in close contact, was a kind of lathing he odour and appearance of cedar, all in a l state of preservation."

oticeable features in the vicinity of all the s are the mounds or refuse heaps, consisting nly of broken pottery and flint. Systematic research in the foundations of the ruins, which appear to be filled in to a considerable depth, and in these heaps, would probably throw a flood of light upon the history and habits of the people. No excavations have yet been made, and only hasty explorations, and there is every reason to suppose that the remains beneath the ground are of far greater importance than those which still stand above.

The pottery is especially remarkable. "All who have ever visited the region of the ancient ruins, which covers all of New Mexico and Arizona, and portions of adjacent territory, have been impressed with the vast quantities of shattered pottery scattered over the whole land, sometimes where not even a ruin now remains, its more enduring nature enabling it to long outlive all other examples of the handiwork of the makers." The prevailing ornament is based upon the Etruscan key-border with a step-like break in one of its members. More rarely the key-border is perfectly Etruscan, and the well-known Greek scroll border is used. A few of the vessels are perfect, and their form is simple and not without dignity.

Five plates of the modern pottery of the Moqui pueblos are engraved, and it is impossible to help contrasting the excellent ornamentation and simple outlines of the one, with the crudeness and bizarre forms of the other.

It is difficult to conjecture at what date any of these buildings were constructed. Mr. Holmes considers that the cliff and cave dwellings were occupied until at least as late as the Spanish Conquest, and that the pueblos are more ancient. The depth and position in which some of the remains are buried, especially pieces of excellently-painted pottery, preclude any very recent period, while, on the other hand, the preservation of wood indicates no vast antiquity. It seems certain, therefore, that the remains belong to different periods extending over many centuries.

It is evident that, owing to some unknown cause, a change occurred in the habits of the ancient people, and that they forsook the handsome and spacious pueblos, perhaps to seek safer and less conspicuous abodes; for from certain indications, the nearly inaccessible cave-dwellings seem to have been occupied more recently than other ruins. It appears as if it had become of paramount importance to them that their abodes should be impregnable and concealed. No speculations on this point are hazarded by the authors, but the suggestion is likely to occur to the reader whether the extremely defensive position may have been taken up owing to pressure of wilder and more warlike neighbours of the East, as they became restless, and migrated in front of the first colonisations of America from Europe. J. S. G.

SMALL CULTURE ON A GREAT SCALE.

The *Times* of the 23rd ult. contains a very interesting account of the results of what our French neighbours call *la petite culture* in the Isle of Axholme, a portion of the previous bed of the sea won to the support of agriculture by the unceasing toil of successive generations, where the attachment of the small owner to his hereditary acres, or fractions of an acre, appears to be as strong as it is in the rural districts of France. It would not be doing justice to the account either to abstract it or to make mere extracts from it. It well deserves careful study on the part of all those who are aware of the various questions now on the carpet, or in the air, regarding the holding and the yield of land. But we cannot refrain from noting one or two points which struck us on perusal of the paper.

The first of these is, that in order to succeed, small cultivation must be what its name implies. It must not be an attempt to carry on large cultivation, as to area, by small means, as to capital and labour. No outcome of recent experience is more sure than that there is a great economy in the execution of certain agricultural operations on a large scale. That there are other operations in which the advantage of personal interest and close proximity to home are greater than those insured by the use of labour-saving machinery is no doubt true. But the thing required is, to understand exactly the advantages and disadvantages of what, in point of fact, differ in no respect from the two occupations of gardening and of farming.

For example, some years ago, the greater pulverisation and turning over which could be obtained by the use of the spade, instead of that of the plough, were considered to be so valuable as to compensate the labourer for the much greater cost of spade-labour, as compared with horse-ploughing. In some soils and for some crops there is every reason to suppose that this estimate was correct. But the case is altogether altered by the introduction of the steam plough, the scarifier, and the other mechanical means for pulverising the soil. The balance of efficacy is entirely changed. It is now in the same scale as the balance of economy. The subsoil can be far more efficiently reached by steam culture than it can be by hand culture, unless at such an extra expense as to be practically prohibitory; and not only so, but the no less considerable item of saved time has to be taken into account. The essence of spade labour is that it should be gradually applied. If a large amount of work has to be done by the spade, either a large number of labourers has to be employed, or the progress is painfully slow. Now, the breaking up of the ground and preparing it for new crops, the very moment that the old crops are reaped, is an essential element of good farming, and one which is in favour of steam culture and against hand culture to an enormous extent. In small intersecting pieces of land, such as those at Axholme, steam culture is out of the question. It demands a large area of land under the same treatment at the same time; that is to say, it requires a certain size of holding.

Again, not only does small culture demand more human labour than great culture, but it requires that labour to be of a more costly description. For unless the owner-cultivator makes more out of the land by his work than a common labourer does, he is in no whit superior to the common labourer. He may, indeed, have the satisfaction of saying, "The field is my own!" But he pays a heavy price in toil for that satisfaction. It may well be doubted whether it is worth his while. In no respect is it a benefit to the nation. This is the case where, as at Axholme, the main business of the small owner is the cultivation of the land. Quite the opposite is the case with regard to the cottage-garden. The labour bestowed upon that is an unfelt toil. An hour in the day, bestowed on the garden, for 300 days out of the year, would be rather a recreation than a hardship to many a cottager. But that hour a day would represent a month's work, and indeed much more than a month's work, in the year. For in the labour of petty culture it is the constant tendance, and the apt attention to little things at the exact moment that is proper, which are of value, rather than steady or rapid work. The actual amount of digging in the year will be small, and so distributed as to be almost unfelt as a toil. It is the constant application of the light work, which adds so little to the sheer toil of the gardener, which makes garden culture answer. Thus the requirements of the field and the garden are reversed; and the method of culture, and the size of ownership, that pay best for the one, pay worst for the other.

There is another element of comparison which it demands a case like that of Axholme to display. Of all the toil of the labourer, that which it is most desirable to diminish by mechanical aid, or by other means, is the toil of walking to and from his work. In the cottage garden this toil is at the minimum. When the holdings form the more serious part of the business of life, as in the case in question, it is at a maximum. So keen, we are told, is the competition for land, that space is grudged for trees,—for hedges,—for barns,—for boundaries,—we suppose for roads. Thus the distance of daily walk added to the daily toil is great. And that is the case not for the man alone, but for the carriage of the produce to the barn, to the thrashing-floor, or to the spot which, in a normal farm, would be as central as possible for the produce.

When we say that absence of hedges means absence of birds, and that absence of birds means abundance of slugs, snails, grubs, beetles, wire-worms, caterpillers, and the whole vast army of foes to the farmer, we may be told that the objection applies to some large farms also. Unfortunately it does. But in that case it may be expected that experience will be a teacher. In the case of the numerous small holdings, the absence of hedges is a necessary evil.

If these considerations are duly weighed, it will become evident that the introduction of labour-saving machinery is an element of primary

importance in the economical determination of the size of farms. It is admitted that agriculture is not a subject with which we can afford to trifle or to play. We can afford a smile at the foreign economists who have lately discovered that Peel and Cobden were the gravediggers of England. But that that ill-omened term will justly apply to those persons who seek, by appeal to class-prejudices, or by attempting artificial interference with a set of circumstances which is not in the power of legislation to control, to introduce nostrums in the way of tenure or of culture of land. Each locality, each climate, each soil has its own requisites. Each kind of culture demands its special method. For some culture nothing can compete with the steam-plough. For some nothing can replace the daily care of man, even if that care be only required for the fraction of an hour in the day. All these things require to be known by persons who desire wisely to talk about the land question. And in nine cases out of ten it is not by talking, but by actual facts, that this question must settle itself.

EIGHT YEARS' COAL PRODUCTION.

The late five years have not witnessed that wonderful growth in the production of coal which has been witnessed in similar periods previously; but the maintenance of the output so largely is one of the most remarkable of the records of the coal-trade. Production in the coal trade is often found to creep forward for years, and then to bound. In 1854, for instance, the coal production of the United Kingdom was scarcely 65,000,000 tons, from 2,440 collieries; but in ten years there was an increase of close upon 50 per cent. in the production of coal. Between 1865 and 1870 there was an addition of twelve million tons to the output of coal; but in the next period of five years the increase was twenty-one million tons; and in the later years there has been practically no increase. There have been similar fluctuations in the number of collieries, the tendency being in times of prosperity for the trade towards the opening out of considerable numbers of additional collieries, and in periods of dull trade the output is obtained from as few collieries as possible. In addition to these changes there are others in the proportion of coal contributed to the total by the different producing districts,—changes brought about by the growth of new consuming industries, or by variations in the modes of disposal of the output of the collieries. It may be instructive to carry a comparison over more than five years in this particular, so as to show the effect of the great demand for coal which set in eight years ago, and of the practical retrogression which has for a year been known. Tabulating the returns from the various districts for three years which illustrate the changes fully, we have the following contrast of the productions of the various districts at three periods, as under:

	1871. Million Tons.	1875. Million Tons.	1878. Million Tons.
Northumberland and Durham	29	32	30
Yorkshire	12¾	15¼	15½
Wales	16½	16½	19½
Scotland	15¼	18½	17⅞
Lancashire	13½	17	18
Derbyshire	5½	7	7
Cumberland	1¼	1¼	1¼
Notts. and Warwick	3	4	5
Stafford and Worcester	11½	14½	13
Cheshire	⅝	½	½
Shropshire	1¼	1¼	⅝
Gloucester and Somerset	2	1¾	1⅜
Leicestershire	½	1	1
Ireland	⅛	⅛	⅛
Total, with fractions	117½	131¾	132½

This table shows roughly the variation in the output of coal. Between 1871 and 1875 the chief increase in the production of coal was in the northern, the Yorkshire, the Scottish, and the Lancastrian coal-fields, the great bulk of the increase being due, in the three first instances, to the intense demand for iron, and in the latter largely to the prosperity of manufacturing industries in Lancashire. Whilst this growth was going on there was a falling off in the production in one or two coal-fields, such as Cheshire, Gloucester, and Somerset; and it is important to notice that the increase generally in the localities where it chiefly took place was accompanied by a more than corresponding enlargement of the number of collieries. The 117½ million tons of coal were produced, in 1871, from 2,885 collieries; but 131¾ million tons of 1875 were extracted from 3,933 collieries, so that the increase in the latter was more than that of the production. Bearing in mind the table above which shows the variation in the production of coal between 1875 and 1878, let us now shew, in a condensed form, the change in the number of collieries in that time, and the proportion found in each of the coal-fields at the end of the period of prosperity, and at the latest date for which we have official figures. The following table shows in brief the variation in the number of collieries:—

	1875.	1878.
North-Eastern District	347	370
Yorkshire	523	530
Wales and Monmouth	630	567
Scotland	566	534
Lancashire	588	522
Derbyshire	255	237
Cheshire	37	33
Cumberland and Westmoreland	39	34
Notts. and Warwick	77	75
Stafford and Worcester	599	582
Leicester	25	28
Shropshire, Gloucester, and Somerset	194	205
Ireland	53	50
	3,933	3,767

With the exceptions of Northumberland and Durham and Yorkshire we have a decrease in the number of collieries in all the important contributories to the coal output, but in several of the districts there is with that decrease an enlargement of the output, so that the average production of each colliery is raised to nearer what it was seven years ago. The table of production shows that the chief falling off has been in the great northern coal-field, in Scotland, and in Staffordshire; and in every case it may be traced to the lessened production and manufacture of iron. The great iron-making centre of Wales has in the interval developed its export coal trade so greatly that there is not only no declension, but a very great increase in the output. And in localities where that trade is decaying,—in Shropshire and in Gloucester, for instance,—there is a dwindling of the coal trade with that of its great supporter,—iron smelting and manufacture.

In all probability we shall find, when the statistics of the current year are available, that there has been a further fall in the production of coal; and probably it will then be found that the effect of the dulness in the iron and manufacturing trades is overcome. The intense demand for coal raised the production sixteen million tons, and it has now fallen off two million tons, and may again show a declension at the end of the year. It is apparent, also, that one effect of that "coal fever," and of the after-dulness has been to exchange the extent in which the different districts contributed to the total, and it may be said that the change is in the direction of extracting more from the fullest coal-basins. South Wales, which, according to the report of the Coal Commissioners of 1871, has a coalfield holding one-third of the available seams in the kingdom, is increasing its output largely; and in some portions at least of the great northern coalfield there is a shrinkage, owing to the exhaustion or thinning of some of its noted seams. These variations in the yield are to be expected as new fields are developed, or as sources of consumption are altered or find fresh channels of supply. Except in the enlargement of the output there is less change in the coal production than might have been expected; for, in spite of the heavy incidence of the Mines Regulation Act, prices have fallen to the level from which they rose eight or nine years ago, and the wages of the workmen have followed. The number of collieries is also diminished; the tendency which had been marked of the royalty-rents to rise is now checked; and, except so far as profits are now at best precarious, the coal trade may be supposed to have fallen to the low level from which it was raised by the great demand for iron and for manufactured goods. It seems clear that, so far as prices and production are concerned, the full force of the ebb-tide is known, and when any movement shows itself generally, it will be in the nature of recovery, however slight; but in the large amount of unproductive collieries, in those that might be speedily brought into use if the demand justified it, and in the large amount of unemployed labour, there are guarantees that for some time to come cheapness of fuel may be depended upon.

ON THE PROGRESS OF IRON AND STEEL AS CONSTRUCTIVE MATERIALS.

BY MR. J. A. PICTON, F.S.A., LIVERPOOL.*

The working and employment of metals have from the earliest ages exercised a most important influence on the progress of the human race. The ancient poets celebrated in song the golden and silver ages, typifying what was supposed to be the primitive state of innocence and purity of our early fathers; but the real advance and progress of humanity commenced with the use of iron. It would be hardly possible to exaggerate its importance in the economy of human affairs. The employment of iron is a crucial test of the civilisation of any people at any period of history. Without it, art and science are comparatively unknown, and progress, except to a very limited extent, is impossible. With the free use of iron commenced the dawn of the arts of life. Every invention which contributes to material comfort, every pursuit which tends to elevate humanity, is connected with the employment of iron. A little reflection will show that this must of necessity be the case. The progress of man, whether physical, mental, or moral, is intimately connected with his conquest and mastery of the material elements by which he is surrounded. For this purpose no instrument has anything like the potency which belongs to iron. It is iron which digs the mine, iron which ploughs the land, iron which reaps the harvest, iron machinery which grinds the corn. It is iron which fells the timber, iron which converts it into building material or decorative furniture. Every department of industry, every art of life, is dependent on iron. It is iron which out of the rough marble block brings forth forms of beauty and life. It is iron which quarries the stone and shapes it into stately piles of magnificence and grandeur. The exercise of man's constructive faculty to any extent would be impossible without this instrument. What infinite forms of utility or beauty does it assume, from the delicate trinkets of a lady's boudoir, the minute hair-spring of a watch, even a dinner card of invitation, up to the ponderous plating of an ironclad, or the mighty percussive stroke of the steam forge hammer. Nature has placed in the hands of the human race no power so potent as steam, which in less than a hundred years has changed the aspect of the world to a greater extent than in all the ages which have gone before; but without iron the steam-engine would have been an impossibility. The modern developments of the applications of iron surpass all which have gone before, and are daily extending in magnitude and importance. The railway, with its locomotive speeding along with arrow-like swiftness, the mighty steamship ploughing the ocean with it thousands of tons of merchandise, the telegraph wire, like Ariel, putting a girdle round the earth and annihilating time in bringing together distant regions, are amongst the latest illustrations of what we owe to iron. The object of this paper is shortly to illustrate the development and progress of iron and steel as constructive materials. A rapid glance at their history to the present time may aid us in indicating the lines along which their utilisation in future is likely to be carried.

Few of the material substances of which the solar system and the earth are composed are more widely diffused than iron. It has been discovered to exist in the solar atmosphere and in that of others of the heavenly bodies. As a mineral, it is found in various combinations over a large part of the crust of the earth. It gives its colour to the great Triassic and Devonian systems of rocks. In the living world it is equally diffusive. It imparts its lovely tint to the rose, the flush on the cheek of beauty is owing to its influence. "The ruddy drops that warm the heart" derive their colour from the presence of iron. Abundant as it is in nature, it was one of the latest metals brought into use. Flint and stone during countless ages constituted the implements and tools of mankind, succeeded by the heroic age by bronze, the manufacture of which was carried to a high degree of perfection and beauty.

* Read at a recent meeting of the Iron and Steel Institute.

The earliest mention of iron is found in the Book of Genesis (iv. 22), where we are told that Tubal-cain was "an instructor of every artificer in brass [or bronze] and iron." The Hebrew word is בַּרְזֶל, *barzel*, from a root signifying hardness and strength. We read also of the iron bedstead of Og, king of Bashan, and of Sisera's 900 chariots of iron, 1,300 years before our era.

In the time of Agamemnon iron was not in general use. No implements or weapons of this metal have been found in the remains of Mycenæ or of Troy. A large iron plate, however, has been discovered in one of the Egyptian pyramids. In the time of Homer iron was a rare and costly commodity, more highly prized than gold. The poet never mentions it as the material of armour or weapons, which were entirely of bronze; but in two passages in the "Iliad," iron axes are mentioned as valuable prizes in the athletic games. Iron was not employed for weapons by the Romans before the time of Hannibal in the second Punic war, but, once adopted, the practical genius of the Roman people perceived its advantages, and entered upon its manufacture with avidity. It is not probable that either the Greeks or the Asiatics knew the process of extracting iron from the ore. Both iron and steel are found occasionally in a native condition, principally of meteoric origin. Hence, it is supposed, originated the Greek name for iron, *σίδηρος*, from the same root as *sidus*, the Latin for the starry heavens.

The Romans in Britain practised the art of extracting the metal from the ore on a large scale. Their works were principally carried on in what is now the Forest of Dean, in Gloucestershire, and that of Anderida, in Sussex, in both of which enormous quantities of scoriæ and cinders have been found. Their imperfect methods were unable to fuse the ore so as to produce cast iron, and it is probable that the metal was refined by several processes before it was finally adapted for use. The mines had been previously worked; for Cæsar on his arrival found the Britains in possession of iron, though it was employed more for ornament than use. This imperfect method continued down to the sixteenth century, when the introduction of the blast-furnace led to the production of cast iron, the manufacture of which was for a long time principally fed from the scoriæ and cinder-heaps left by the Romans.

Once adopted, the superiority of iron over every other metal for tools and implements led to the suppression of all other materials for that purpose, and the use of iron entered upon a progressive career, which has extended with the advance of society in an ever-increasing ratio. One of the first purposes to which iron was applied was that of weapons and armour, the manufacture of which attained in the Middle Ages a very high degree of excellence; the sunberks of chain mail of the most intricate and delicate patterns, the chased and inlaid suits of armour, constantly changing its form, exercised the ingenuity of the armourers, and exhibit in the remains left to us a large amount of ingenuity and artistic skill. Offensive weapons were equally elaborated. The Toledo poniard and the Damascus scimitar had a world-wide reputation; and even in England the Sheffield *thwittle* in the time of Chaucer had become famous for its quality. Ironwork at this period was of the most elaborate description. The locks and keys, the hinges and bolts, the smith's work in gates and screens, exceed in beauty anything of the kind which has since been produced. Many specimens remain both in England and on the Continent, amongst which may be mentioned the ironwork in the church of St. Gudule at Brussels, the well-cover by Quentin Matsys at Antwerp, and, though of a much later date, the beautiful park-gates at Hampton Court. The introduction of cast iron into general use in the seventeenth century effected a considerable change in the application of the metal. Its cheapness led to its extended use in the household economy of daily life: fire-grates, stoves, pots and pans, gates, palisades, pipes, &c. This was, no doubt, in many respects a great advantage, but it had a very injurious effect on the art of the smith, superseding skill and ingenuity by the deadening process of routine in cast work, and substituting cheapness for excellence. From the seventeenth century, onwards, the use of iron in works of magnitude became much more general. Wrought iron having to be worked by hand, was necessarily limited in the size and weight of its productions, but cast iron was capable of applications of a more extended character. In 1755, Smeaton first used large pieces of cast iron for mill and engine work. From that period a leading part has been taken in this country in the development of constructions in iron. It has been well said that the triumphs of iron are principally due to Englishmen; they were the inventors of the steam-engine, the railway, the locomotive, iron ships, steamboats, the steam hammer, the telegraph wire, the cast and wrought iron bridges, the ironclads, the monster guns, iron roofs, iron tunnels. One of the first employments of iron on a large scale was in the construction of bridges. In the sixteenth century a proposition was made by Italian engineers to construct a bridge in cast-iron, but the scheme proved abortive. In 1755 an iron bridge was projected at Lyons, to consist of three arches of 82 ft. span. Part of the work was actually prepared and put together in the builder's yard, but from some cause not recorded this attempt was also abandoned, and a timber bridge substituted. In 1777 the first iron bridge in England was designed by Mr. Thomas Pritchard, an architect of Shrewsbury, was constructed by Mr. Abraham Darby, of Coalbrook Dale, and erected over the Severn at Broseley in 1779. The span is 100 ft., the arch nearly semicircular. Soon after this date the idea of constructing bridges in wrought-iron occurred to several French engineers, and several designs were prepared for works at Paris and elsewhere, but they were not carried out. In 1795 another cast-iron bridge was constructed over the Severn, at Buildwas, by Thomas Telford, 130 ft. span. The boldest conception, however, was the cast-iron bridge over the Wear, connecting Monkwearmouth with Sunderland, which was designed by the celebrated Thomas Paine, and was opened in 1796. It consists of a single arch, 236 ft. span, with a versed sine of 34 ft. For grandeur of idea, lightness of effect, and economy of material, it has never been surpassed. From that period to the present, the construction of iron bridges has proceeded in an ever-increasing ratio, until they have come, in works of magnitude, almost entirely to supersede stone. For some years cast-iron bridges had all the sway, constructed either with voussoirs or arch ribs, but have more recently been almost entirely abandoned for structures in wrought-iron. Then followed the suspension-bridge, of which probably the most graceful specimen is Telford's beautiful structure over the Menai Strait. This was originally designed in 1814 to span the river Mersey at Runcorn, on the site now occupied by the railway bridge; but the means were not forthcoming, and the project slept until revived in 1819 for the new site, and was completed in 1825.

The rapid development of the railway system, from its initiation by George Stephenson in 1830, has called out all the resources of the engineering mind, and led to bridges and viaducts of great boldness and skill. One of the most celebrated of these is the tubular bridge over the Menai, having two spans of 460 ft. and two of 230 ft. each. A vast amount of experiment, calculation, and research was expended on this design, which no doubt answers its purpose, but with an expenditure of material and an unsightliness of effect which seems to have deterred others from following in its wake.

The lattice railway bridge over the Mersey at Runcorn, designed by the late Mr. Baker for the London and North-Western line, is a fine specimen of economy of material and efficiency in the result. Specimens of railway bridges abound on every side, and have developed the capabilities of iron to a wonderful extent. The two largest, probably, are the viaduct over the St. Lawrence, which consists of twenty-four spans of 242 ft. each, and the more recent one over the Tay at Dundee. The latter is the most remarkable specimen of iron bridge building which has yet been constructed. It is two miles in length, consisting of eighty-five spans of various dimensions, eleven being 245 ft. between the supports. The construction comprises plate, bowstring, and lattice girders in wrought-iron, with cast-iron columns and piers in combination with brickwork and masonry. These are, however, to be surpassed in boldness of design by that projected over the Frith of Forth, the designs for which are not yet published.

The railway system has given an amazing impulse to iron construction, but it may be said with truth that it is itself the outcome of the development of iron. Consider for a moment what railways have done for the world. Sanguine expectations were entertained at their inception as to the future results, but it is almost needless to say that these expectations have been realised a hundred,—nay, a thousand-fold. What the formation of the grand old highways throughout Europe did for the Romans, the great road-makers of antiquity, the railway system has done for modern society, but in a far higher degree. It has changed the map of Europe; it has altered the boundaries of States; it has revolutionised the art and practice of war; it has given new directions to trade and commerce. Practically it has levelled the lofty summits of the Alps, and reduced the distance between the Atlantic and the Pacific oceans to a mere question of a few days. It has changed the centres of industry, opened up new sources of wealth and employment, created populous towns where existed only desolate wastes, brought the wild beauties of the lakes and mountains within reach of the toiling multitudes. It is gradually softening prejudices, provincialisms, and peculiarities, and paving the way for the access of that coming time,—

> "When man to man, the warld o'er,
> Shall brithers be for a' that."

It is not too much to say that in a very important sense we owe all this to iron and its development. Without iron these expectations would have been an idle dream; with it the results have become a sober reality.

The motive power and initiative of these grand conceptions is the force of steam, harnessed down and pressed into the service of humanity by genius and skill. I have already said that without iron steam-power would have been an impossibility. The progress in each department has gone on *pari passu*. Every improvement in the manufacture of iron has given additional facilities to the steam-engine, whilst steam-power has given an impulse to the production of iron, which has gone on increasing in more than a geometrical proportion. This will apply to all classes of machinery, of which iron may be considered the body, and steam the nervous energy which gives life and motion. The introduction of machinery on any scale of importance is of comparatively recent date, not reaching much further back than a century; yet now we see machinery entering into every manufacture, cheapening the prices of the necessaries, and administering to the comforts, of life. Of all this, iron is the basis and essential element.

Let us now turn to another department, in which, perhaps, more gigantic strides have been made in the use of iron than in any other; I mean its application to naval affairs. The "wooden walls" of Old England were formerly the nation's boast, the "hearts of oak" of our tars was the sentiment of every nautical ditty. All this has passed away like a dream, and timber ships, with the exception of small craft for inland and coasting trade, are as obsolete as the canoes of our remote forefathers.

One of the first to introduce iron into ship-building was Mr. Fairbairn of Manchester, who in 1830 built three iron steam vessels for the Forth and Clyde Canal Company, and subsequently many others for use at home and abroad. The first sea-going iron ship was the *Richard Cobden*, built in 1844, at Liverpool, by James Hodgson & Co.; she was 136 ft. in length, and 522 tons burden, builder's measurement. Some years elapsed before the example was followed to any extent, when by a sudden impulse, and with common consent, timber was abandoned and iron became the order of the day. With the facilities afforded by iron, enormous progress has been made in naval architecture. The *Great Eastern* steamship was built in 1858 on the Thames. Her dimensions are 679 ft. 6 in. in length, 82 ft. 8 in. beam, and 48 ft. in. depth, fitted with screw engines of 1,600 horse power, and paddle engines of 1,000. Probably she was in advance of her time, the skill in her arrangements not being equal to the grandeur of the conception, but the tendency of late years has been to increase the dimensions, particularly in length. The latest development has been shown in the *Arizona* of Liverpool, of the Guion Line, and the *Orient* of London, of the Australian Line, both recently built on the Clyde, of dimensions nearly alike. The *City of Berlin*, of the Inman Line, and the *Britannic* and *Germanic* of the White Star Line, are little, if at all, inferior in size. The *Orient* has a registered tonnage of 5,400 tons, with a displacement of 9,500. Her length is

445 ft. 6 in., 46 ft. 6 in. beam, depth 35 ft. It will be observed that whilst the length of the *Great Eastern* is about eight times her breadth of beam, the length of the *Orient* is nearly ten times her width.

The application of iron to ships of war has probably exceeded the progress in any other department, if we consider the enormous masses of iron employed, and the crucial experiments to which they are subjected. A modern turreted ironclad, with her 10 in. or 12 in. coating of solid metal, her engines of many thousand horse-power, her almost automatic machinery for performing every naval operation, her capacity for destruction in the immense armament she carries, presents a representation of the state of modern society, both in its scientific and social aspects, perhaps as striking and illustrative as can be anywhere found. Closely connected with this is the application of iron to the purposes of war, whether by land or sea. Within the last few years the contest between the aggressive power of ordnance on the one hand, and the defensive power of iron-plating on the other, has been carried to an almost inconceivable extent. The calibre of the gun is increased to pierce the plating, and the thickness of the plating is increased to resist the impact, so that we have arrived at guns of 100 tons and upwards, with projectiles of nearly 1,000 lb. weight, resisted by armour-plates 10 in. to 12 in. thick. At what point the contest is to end no man can foresee. Iron, also, is being largely utilised for defensive purposes by land. At the present time the new fort now in construction for the defence of the river Mersey is to have wrought-iron plates for the protection of the gunners, some of which are 20 ft. long by 11 ft. in height and 8 in. in thickness, weighing 26 tons each. When we look at the ironclads, the rams, the torpedoes, the turrets, the large guns by sea, and the plated forts, the railways, telegraphs, and other appurtenances by land, we see that iron plays an important, perhaps the most important, part in modern warfare.

But whilst iron has thus so largely been employed for the purposes of destruction and defence, on the other hand it has given facilities for mutual intercourse and peaceful co-operation never before known. The railways I have already mentioned; but we must not forget the telegraph-wires which encompass our globe, and form, so to speak, the nervous system of the world. It is iron, and the modern facilities for its manipulation, which enable us so to bridge over space and annihilate time.

The subject is so vast, that I might go on enumerating to an almost boundless extent the various uses and applications of iron, which are constantly increasing in their adaptation to every purpose of human society, but time will not permit. I will only notice the progress of iron in another department, that of building construction. The old materials for building were stone, brick, and timber, and with these, especially the first, some of the noblest monuments of art and skill have been constructed. Iron, in ancient times, played a very subordinate part in building. It is only in modern structures that its advantages have been appreciated. At first cast iron was employed for columns and struts supporting weight, and subsequently for girders and beams, but the treacherous nature of the material when subjected to cross strain rendered its use very hazardous. By degrees wrought iron, by means of improved machinery for rolling, was rendered adaptable for building purposes. A great impulse was given to its employment by the construction of the Crystal Palace in Hyde Park in 1851, in which, for almost the first time, the design was adapted to the nature of the new material. This led the way to further improvements. Rolling-mills were constructed to manufacture girders and joists of lengths and sections not previously attempted, and the result has been the employment of wrought iron to a very large extent in roofs and floors. Concurrently with this progressive movement, the demand for roofs of very large span in railway stations has stimulated design, and led to the construction of iron roofs of a magnitude never before contemplated; the width of span in several cases approaching 300 ft., and the large areas covered, as in the stations of St. Pancras, at Birmingham, and at Lime-street, Liverpool, are such as cast into the shade all former constructions of a like kind.

Iron floors have not in England been adopted to any very large extent, but in France, especially in the new quarters of Paris, they are almost universal. The girders and joists are of rolled iron, with iron laths dropped in between, on which is spread a coating of concrete, rendering the structure perfectly fireproof. Iron lends itself readily to the construction of dome roofs, of which recent specimens are found in the Reading-room of the British Museum, and in the one recently erected in connexion with the Free Public Library, Liverpool.

I have endeavoured in the above remarks to give a rapid sketch of the lines along which the progress of iron construction has been advancing. I will conclude with a few words on the direction in which these lines are leading us.

Notwithstanding the enormous development of railways both at home and abroad, and the depression consequent on excessive and imprudent expenditure, there can be no doubt that the railway system has still a great future in store. There yet remains much land to be possessed. European enterprise will never cease until all the lines of intercourse where commerce finds its way are provided with railways. The adoption of steel for rails, thanks to the genius and enterprise of Sir H. Bessemer, Dr. Siemens, and others, has much facilitated these operations, and holds out to the British manufacturers the prospect of a profitable employment of their capital. Machinery, whether locomotive or manufacturing, is undergoing a constant but quiet revolution, consisting in improved economy of materials, rapidity of motion, and increased efficiency. Iron ships, especially steamships, are increasing in size and power, to which the introduction of steel plates will impart greatly-increased advantages. In warlike affairs, whether the contest between armour-plating and armour-piercing has reached its acme I will not take upon myself to say. The final decision of the problem is one of great interest as to the future employment of iron for such purposes.

The facilities of iron, especially wrought iron, for all engineering constructions are more and more appreciated year by year; but, with some few exceptions, there is a great defect runs through them all in the absence of anything of æsthetic taste in the designs. The ancient motto for building was "Strength, commodity, beauty." The two first have been attended to almost to the entire neglect of the third. This, I cannot help thinking, is a great mistake. The grand engineering works with which the surface of our country is studded should have a dignified and noble aspect. They should minister to the sense of beauty and fitness, as well as to that of strength and power; but too frequently the reverse is the case. I will refer to an instance or two. The railway-viaducts built by Brunel over the rivers at Chepstow and Saltash are grand specimens of constructive skill, but their aspect is repulsive in the extreme. Let any one compare London Bridge, with the graceful curves of its arches and its simple yet elegant design, with the iron bridge of Blackfriars, or, still worse, with the railway-bridges crossing the Thames; the contrast will be found painful in the extreme.

The railway-bridge at Runcorn, by Mr. Baker, with its light iron lattice-work, and the sweeping lines of the viaducts on each side, is a fine and noble structure. Telford's suspension-bridges at Conway and the Menai are charming in their outline and fairy-like in their construction, whilst their neighbours, the tubular bridges, are the very incarnation of ugliness. This is a defect not inherent in the material; for iron readily lends itself to any shape of beauty. It rather arises from contempt or inadvertence, looking at strength and power as the only elements required. Let us hope that a better spirit may be evoked, and that our future engineering works in iron may be as distinguished for beauty of design as they are now renowned for grandeur and efficiency.

In architecture, properly so called, iron is, doubtless, destined to play a very important part. Hitherto architects as a body have neglected iron. When employed they have striven to hide it from sight, and seem to apologise to themselves and the world for being obliged to use it instead of brick or stone. Its use, however, is being forced upon us, and on every side we are met with iron sheds, iron churches, iron houses. The designs of these are usually hideous to behold; but why should this be so? Why should architects not face the difficulty, and instead of letting iron master them, convert it into their handmaid and servant? The Mediævalists followed a different course. They took the material which lay before them, and, by a happy audacity in design, and skill in construction, they produced effects which, for composition of masses, picturesqueness of outline, and brilliance of inventiveness, have ever since been the admiration of the world.

Looking to the future, there can be no doubt that iron is every day becoming a more important factor in the world's affairs. The ages of stone and bronze, the times of darkness and ignorance, have passed away, and with the use of iron came in power, and knowledge, and light. It is destined to work yet greater wonders. It is its mission, sent by a gracious Providence, to lighten man's labours, to give him the mastery over Nature, to enable him to explore her secrets, to comprehend her laws and turn them to the best advantage for the welfare of humanity. The ages of gold and silver may serve for the theme of the poet's fancy or the dream of the enthusiast, but the age of knowledge, and progress, and power, and wisdom is the age of iron.

THE MERCERS' COMPANY'S NEW BUILDINGS IN THE POULTRY.

It will be remembered that the buildings in the Poultry, between Ironmonger-lane and Old Jewry, belonging to the Mercers' Company, were, a short time ago, taken down, in order to admit of the widening of the thoroughfare. The buildings included the sculptured entrance to the Mercers' Chapel. The rebuilding of the premises, as set back, is now in progress, and when completed they will form another addition to the substantial structures which have recently been erected immediately adjacent. The new buildings will have a frontage to the Poultry upwards of 150 ft. in length from Ironmonger-lane to Old Jewry, and will be between 70 ft. and 80 ft. in height, being carried to a depth of nearly 80 ft. at the Ironmonger-lane end. With the exception of the central portion, which is intended to form the entrance to the Mercers' Chapel, the ground-floor portion of the building will consist of large shops, carried up with polished Aberdeen granite piers, and surmounted by arches and spandrels of similar material. The upper portions of the elevation will be in Portland stone, with polished granite window-shafts and ornamentation from the first-floor to the top of the building. The entrances to the upper parts of the building are at the angles of Ironmonger-lane and Old Jewry respectively, and consist of piers and arches in granite.

The entrance to the Mercers' Chapel in the central portion of the elevation will be a prominent feature. In taking down this part of the old structure, care was taken to remove the several pieces of stonework containing the sculpture without injury. The different blocks were laid on the floor of the colonnade leading to the chapel and the hall, in the exact position which they presented to the Poultry before being taken down, where they now remain; and drawings are being taken of them with the view of the whole of the figures and the carving and sculpture being again executed. In the new building the entrance to the chapel from the Poultry leads into a vestibule, the walls of which are faced with carved arches in Dumfries stone, and fluted pilasters of the same material. This again leads to an inner vestibule of larger dimensions, from which the chapel is approached, as well as the hall of the company above, by a staircase on the west side of the vestibule. It is stated that the estimated cost of the whole of the buildings is upwards of 70,000*l*.

Mr. Williamson (architect to the Company) is the architect, and Messrs. Ashby & Horner are the contractors.

Victoria School of Design.—The annual Exhibition of the Schools of Design in Victoria was opened in July, under the auspices of the Technological Commission, in the new hall of the Ballarat Public Library, which was thrown open to the public, for the first time, on that occasion. The following schools forwarded exhibits:—Ballarat East, Ballarat West, Trades'-hall, Geelong, Collingwood, South Richmond, Hawthorn, Brunswick, Clunes, Prahran, St. Kilda (girls), Geelong (girls), Richmond, Hotham, South Melbourne, Coburg, Fitzroy, Talbot, and Sandhurst. The distribution of prizes took place on the 5th of August. The following are the names of the judges:—Messrs. O. R. Campbell, J. M'Kennal, P. Oakden, A. R. Johnson, Von Guerard, H. B. Moore, C. Newbery, Bodycomb, J. Hicks, T. Buncle, and H. R. Caselli.

NOTES ON THE MEDIÆVAL MOOTE-HALL, ST. ALBAN'S.*

Amongst the other antiquities of St. Alban's, e Mediæval Town-house may perhaps claim me attention from those who are interested in 'e history of the ancient borough. This edifice mentioned in some old deeds, existing in the orporation archives, in such a way as to mark position as far back as the year 1412. The est of the documents referred to is dated 20th ay, twenty-seventh year of Henry VIII. It scribes "a tenement with a garden, formerly lled two shops, situated in the Flesh-market [*in foro ubi carnes venduntur*], close to Bother-gstok, between the tenement now belonging Roger Semer, lately to John Yong, on the th, and a tenement called Le Stok-house, herwise called Le Moote-hall, on the north, d it abuts on the public street [*in regiam m*] on two sides." In a second deed, dated 12th of October, fifth of Henry VIII., the me tenement is described as two shops, John ng being the owner, and it is said to face e king's highway on one side, and Bothelstrete the other. The building on the north is nply called Le Stok-house. In two earlier cuments, one dated the 18th of March, enty-first of Henry VII., and the other ndlemas-day, fourteenth Henry IV., the same nement is said to "abut on one side on a tain lane [*quandam venellam*] called Bothel-ete [Bothelestrate]," and for Le Stok-house have the expression "a certain shop [*quan-m shopam*] called Le Stok-house." A glance the locality will show that these descriptions etty clearly define the position of the Moote-ll of pre-Reformation times. The tenement, the north of which it was situated, must ve occupied the site of the modern King's ad Inn. The Flesh-market (elsewhere called Shambles, and the Butchery), is Market-eet; and Bothelstrete must be another name Dagnal-street, or the eastern portion of it; *gnelestrete*, however, or *Dagenhalestrate*, is other Mediæval appellation of the thorough-e (Gest. Abb., i., 472). Thus the Moote-hall the reigns of Henry IV. and Henry VIII. is ntified in site with the old Town-hall, now upied mainly as the printing-office of the *rts Advertiser*. And we find it here associated th some curious obsolete names, which it may haps be interesting to examine. It is called Stok-house; is close to Botheling-stok, and uts on Bothel-strete, as well as on the Flesh-rket. Botheling-stok seems to be named the deeds as a well-known landmark; d it may perhaps be reasonably conjectured t it was a stock of wood, or stone, marking a nt in the boundary line, which runs here ween the parishes of St. Peter and St. Alban ce St. Andrew's). The name is suggestive of non times, the word *botl* in Anglo-Saxon nifying "a dwelling," and *botling* "a little elling." It is found in several local names, in Wall-bottle (*i.e.*, the dwelling on the Picts' all), in Northumberland; and Bottle-end galogous to *Towns-end*), a hamlet in Essex. e appellation Bothelstrete seems to be the y to the explanation of Botheling-stok; it is obably another form of Bottle-street, and ans "the street of habitations" (the word treet" by itself signifying simply a paved ad, as in Watling-street). It is likely that ese names date back to the first establish-nt of the churches and parishes by Abbot lsin (946-955), who, we learn, gathered the cleus of a population around the Cheaping-ad, or market, and assisted the settlers in ilding houses with materials and money est. Abb., i., 22). In these times some stock, stone, might be set up to mark the angle, ere the boundary line of the parishes turned the Flesh-market, and from the locality ottle-street) in which it stood, it might be signated as Bottle-stok, or Bottling-stok, with ich Botheling-stok is nearly identical. This y be illustrated by reference to a Saxon arter, still extant, dated A.D. 962, by which ng Edgar grants the parish of St. Margaret, estminster (then of enormous extent), to the bey of St. Peter (Westminster Abbey). In e recital of the boundaries two of these Stocks e mentioned, thus,—"First from the Thames ong Merfleet to Pollen Stock"; and again,—Following the road to the old Stock of St. ndrew's church."† These considerations suggest an explanation of the term Le Stok-house; it seems probable that the Moote-hall was so called at some early period, as being the well-known house close to the boundary Stok, which perhaps stood against it. This way of designating a public building may be compared with "Christofore by the Stokkis" (*i.e.*, the church of St. Christopher by the Stocks), in Arnold's "Customs of London." The Stokkis here, however, are the penal instrument.

That the Town-house should be called "a certain shop" is somewhat strange. As the word can hardly be a synonym for burgage or tenement, we may perhaps suppose that a portion of the lower story of the Moote-hall was occupied as a shop, or that stalls or shops were erected against it, and so the term was loosely applied to the whole building. (The Mediæval shop-counter was usually outside the house.) It may perhaps be worth noting that there is a stock of very hard stone, at a short distance from the old Town-hall in Dagnall-street; but this, according to information, is not a parish mark, and was once the mounting-stone in the old Blue Boar hostelry close at hand.

The oak skeleton of the existing timber and plaster building (no doubt identical with that which was secured to the corporation by the charter of Edward VI.) is probably as old as Henry VIII.'s reign. Previously, the original Moote-hall may have been rebuilt more than once. The name implies that it was used for mootes, or public meetings (A.S., *Gemot*), folk-motes, or town-motes, in connexion presumably with the government of the town. Such a building, we may suppose, would be required, as soon as the town had any organisation, after public courts ceased to be held in the open air. Abbot Wulsin, and his Saxon successors, may have governed the town by a *reeve* or an *alderman*, who collected the dues, and took care that the abbot's *soc-men* performed their services. There may, however, have been no Town-house till about the Norman period. The Domesday Survey mentions forty-six burgesses who were holders of land, possessing together half a hide (about fifty acres); the Abbot's Vill of St. Alban being rated at ten hides (about 1,000 acres).

The rise of boroughs under an abbey is ably described by Mr. Green (in his "History of the English People"), who says that "The transition from a state of pure serfage to an imperfect freedom was silent and gradual. . . . the first settlers being wholly at the abbot's mercy. Within the four crosses, which bounded the abbot's domain, land and water were his, and folk-mote was held before the abbot's officer, who received the horn, the symbol of office, from him." But in the reign of Henry I., he states of the town which grew up under the monastery of St. Edmundsbury, "Rude as the borough was, it had preserved its right of meeting in full assembly of the town for government, and law and justice were administered in the presence of the burgesses, and the accused acquitted or condemned by the oath of his neighbours." These statements are probably in a great degree applicable to St. Alban's at these early periods. The royal charters of the abbey throw little or no light on the origin of the borough and its customs. The Norman kings simply grant to the abbot and convent "jurisdiction over all men and lands within the town, or borough, and without it [*Super omnes homines et terras infra burgum et extra*]." The charter of Henry II. gives "to the Church of St. Alban the town of St. Alban, with the market, and all the liberty which a borough ought to have" (*villam St. Albani cum foro et omni libertate quam burgus debet habere*). The latter expression would seem to imply a defined borough, having certain privileges, which were committed to the guardianship of the abbot.

Probably as soon as a Moote-hall existed, justice was administered in it by a bailiff (*ballivus*), the general Norman designation of an executive officer. London itself was governed by *baylifs* as late as the fifth year of Richard I., and it may be worth noting that, in the ninth of King John, Hugh de St. Albans was one of the wardens (*custodes*), who were chief magistrates of London in succession to the *baylifs* (Arnold's "Chronicle"). In the reign of Henry I., it appears town-courts, or *hustings*, were generally held every week, and summoned by a bell. In Henry II.'s reign it was probably a part of the duty of the bailiff of St. Alban's to select four jurors for presenting reputed offenders for trial by ordeal, burgesses generally being exempt from trial by battle. After the year 1216, the Town-mote witnessed no more of these sadly grotesque proceedings. Probably the ordinance of the *assize of arms* in 1181 imposed a new duty on the bailiff here, that of reporting that the free-men of the borough were duly provided with the iron helmet and lance, with which all burgesses were to serve in defence of the realm, when summoned. In 1215 we may picture the Stok-house as the scene of a full Town-mote, held for the purpose of "swearing to the great charter," which among its other famous provisions "confirmed to all boroughs and towns their liberties and free customs."

In Henry III.'s reign, we meet with some indication of the corporate character of the town in an incident related by Matthew Paris, from which it appears that the town was held directly responsible to the king for a homicide committed in it. The substance of the story is, that in 1255 Gregory de Stokes, the constable of Hertford Castle, being envious of the warlike reputation of the burghers, made a boast that with seven followers he would enter the Albanian precincts at night in spite of the defences. He did so, but paid dearly for his temerity. A party of the townsmen, headed by a butcher (*Carnifex*), taking the intruder for a robber bent on serious mischief, seized him and his groome, shackled them, and the next morning struck off their heads, which they fixed on poles (*in terrorem*) at the four extremities of the town. When this was reported to the king he amerced the town in a fine of one hundred marks, which was quickly paid ("Historia Major," Matt. Paris, p. 1640). The amount of this fine, equivalent perhaps to 1,000*l.* at the present day, is some evidence of the prosperous condition of the community who had to pay it, as well as of its corporate responsibility. The abbot, John de Hertford, is not mentioned in the transaction. The apportioning of this mulct would doubtless be the business of some meeting at Le Stok-house. As this was the flourishing period of craft guilds, which, in succession to the earlier Frith and Merchant guilds, had much influence in fostering borough freedom, we may perhaps be warranted in believing that such now existed at St. Alban's, although the evidence is not complete. There was a Fryth Wood at the north end of the town (Gest. Abb., iii., 320), which may perhaps indicate a Frith Guild. A piece of land on the Hatfield-road, toward Beamond's Farm, retained in Charles I.'s reign the name of Little-guild Hill. And *Gylefelde* (Registrum, i., 99), is probably a corruption of Guild Field. For a later period we have the testimony of Walsingham, who relates that "in 1377 a new guild arose, whose patron saint was the protomartyr. When his shrine was carried abroad, the whole brotherhood were bound to follow it in their liveries, twelve of the strongest bearing torches ("Chronicon Angliæ," p. 146). This fraternity is stated, in the document called "Annotations on the Monuments," to have held its religious meetings in the nave of the abbey church, at the altar of St. Mary at the Pillar, and to have been composed of persons both of the higher and middle classes. A high-class guild, whose patron saint was St. John the Baptist, met at St. Peter's Church. And a third, called the Guild of the Holy Trinity, "composed of about 200 men and women of the middle class [*mediocrium*], assembled periodically, with their chaplain, in the north transept of the abbey, where they had church furniture of their own, including a hearse-cloth, or pall, for their funerals." The chapel of All Souls, which existed in the town, is likely to have been connected with some guild; its wardens are mentioned in "Registrum J. Whethamstede," i., 99. The main purpose of these Mediæval associations appears to have been to promote the interests of crafts and trades under the auspices of religion. Those which have been mentioned had ceased to exist in 1428. (See "Altars, Monuments, and Tombs," by Mr. R. R. Lloyd, p. 17).*

The Parkes Museum of Hygiene.—This Museum was re-opened on Wednesday, October 1st, on the occasion of the inaugural *conversazione* of the Medical School at University College. A new and enlarged edition of the descriptive catalogue of the Museum has been issued, and to which we will take an opportunity to refer. The Museum is open on Tuesdays, Thursdays, and Saturdays, free.

By the Rev. H. Fowler, M.A.

† See Notes on St. Margaret's, Westminster, by Mr. H. Birch, A.R.I.B.A.

* To be continued.

PROGRESS AT THE NEW LAW COURTS

The works at the "Royal Courts of Justice," as we believe the new Law Courts are to be officially styled, are making rapid progress, as the wayfarers of the Strand and Carey-street cannot but have noticed for some time past. But the advance which has been made within the last few months can be fully realised only by those who have lately had the opportunity of spending a couple of hours on the ladders and scaffolds, and in the masons' shops enclosed within the flaringly be-postered hoarding. By the courtesy of Mr. F. Clarke, the able and energetic superintendent foreman of masons, such an opportunity presented itself to us on Monday last, and we proceed to jot down a few notes of what was then seen and heard.

There are now about 550 masons employed on the works. They all work until half-past five in the evening, and many work overtime. To pass through the long ranges of sheds, with the men busily engaged at their "bankers," some at work on large corbels or springers, others on voussoirs, capitals, and quoins, or on portions of piers, jambs, or tracery, is to witness a remarkable sight, especially when the approach of night necessitates the illumination of the sheds by hundreds of gas-jets. But the visitor, if unprovided with visor or spectacles of wire gauze, must look out for his eyes, for chips,—among them some rather heavy ones,—fly off by the thousand in all directions. Notwithstanding that the men at work in the sheds are practically at work in the open air, with merely a roof over them, they nevertheless breathe an atmosphere which is heavily and visibly laden with fine particles of stone; yet not one man did we see wearing a respirator.

Of the total of 550 masons at work, seventy are Germans, who have remained on the job since they came over (with about 160 more of their compatriots) to take the places vacated by the English masons by the strike which ended so disastrously for the strikers,—not that all the loss was on *their* side, however. There have been, as will be inferred, as many as 230 German masons employed by Messrs. Bull & Sons at one time, but the majority of them have now left the job, some to remain in England in other employment, others to return to Germany to get married or set up in business for themselves with the savings they had accumulated in England, and many to enter upon the compulsory military service of the Fatherland. Mr. Rees, of Ludwigsburg, an architectural student who had acquired practical knowledge by working at the "banker," and who came over in charge of some German masons at an early period of the strike, under an engagement with Messrs. Bull, was well spoken of for the energy and ability he had shown as foreman over his countrymen. A German workman, who showed marked ability and capacity, has been appointed deputy foreman over his compatriots, who, as would be expected, all work together; but one half of the shed in which they labour is appropriated to British masons, over whom the German foremen also exercise overseership. Things now go on very amicably, we were informed, and if the relations subsisting between some of the German and English masons are, to use a political expression, somewhat "strained," there seems to be no imminent danger of conflict. Rigid discipline has to be, and is, maintained. Many of the British masons employed are non-union men, but unionists, non-unionists, or Germans, they are all first-class workmen, and those who show exceptional skill are, we were informed, advanced as opportunities offer, no matter what may be their nationality or their views as to unionism. The Germans, we were assured,—and our eyesight did not belie the assurance,—are as skilful masons as those whose want of foresight has brought upon them the competition of foreign labour.

It will be remembered that, during the strike, many of the German masons took their meals and slept on the premises; but since the strike terminated the number of Germans at work has greatly decreased, owing to the reasons before stated; and of those who remained, comparatively few stayed on the premises all night. Within the last week, however, the progress of the works has made it necessary that even these few should "clear out" of their sleeping-berths, and they now find lodgings elsewhere. Comparatively few labourers are employed in the masons' shops, the men themselves lifting their stones and turning them upon the "bankers." Labourers are employed in bringing the roughly-shaped stones to the "bankers" and in removing them when they have been worked, and to facilitate this, tramways are laid down throughout the entire length of the shops. The masons also rub their own mouldings. There are over 100 "fixers" and fitters constantly at work, and a number of picked men have been told off for doing the stone vaulting, of which there is a great deal, on staircases and in corridors, besides that of the central hall. We may here add, in this connexion, that some of the corridors, and many of the apartments,—such, for instance, as those below the floors of the courts,—will be vaulted with Messrs. Dennett's concrete material.

The contractors' "plant" throughout is the completest and best obtainable, and there is no lack of it. Without particularising at any length, we may note that the stone-working machinery includes a large number of rubbing-tables, moulding-machines (principally Hunter's patent), large dry-cutting saws (Hunter's patent), saw-frames, and lathes. The whole of this machinery is kept at work until nine o'clock in the evening, the attendants being for the most part labourers who have obtained advancement for intelligence and reliability. The motive-power is furnished by a couple of large boilers and a fine pair of horizontal engines, by Messrs. Wheatley, Kirk, & Price, of Manchester. To facilitate the hoisting of materials and the fixing of the masonry, a large number of overhead travellers are continually traversing the numerous gantries, propelled either by steam or by hand power. These are simple in construction and working, and are supplemented by numerous steam and manual derrick cranes, and steam barrel hoists.

Such has been the progress lately made with the buildings, that many of the courts are now roof-high, and in a short time they will be covered in. We need not here enter into a detailed description of the plan, having previously done so on more than one occasion.* Suffice it to say that the courts are ranged round the great central hall, the vaulting of which has lately been commenced, the main ribs having already been carried upward 9 ft. or 10 ft. from the springing. This work will be proceeded with without intermission, subject in some degree, of course, to the weather. It may be mentioned that the ribs will be in Portland stone, Corsham being used for the filling in. If the coming winter be an "open" one, without long-continued and severe frosts, it is anticipated that before the expiration of 1880, the whole of the buildings, including the central hall, will be ready for roofing. At the present time, the eastern portion of the main block is boarded ready for the slater and plumber, and a few days hence will see the wet effectually excluded from this portion of the buildings. Further, more than half of the buildings east of the central hall are roof-high. West of the central hall the works are not so far advanced, but they are being energetically proceeded with, and with favourable weather a great deal will be accomplished within the next six months. The Carey-street portions of the buildings are well advanced. Such was the severity of the weather last winter, that for sixteen weeks hardly a stroke of work could be done by the masons or bricklayers. To pass from the bricklayers to their work, we would say that the red brickwork in the areas between the courts is well worth the visitor's notice, the whole of the bricks having been manufactured by the contractors, and especially cut to gauge for the arcaded work, which is full of variety in design.

Mr. Street is, we think, to be congratulated on the fact that his work is being carried out by a firm of such enterprise and resource as Messrs. Bull & Sons have shown themselves to be.

We may mention, in conclusion, that Mr. Wallis is the chief clerk of the works, Mr. Moore being his deputy. Mr. Margetson is the foreman of carvers, and the contractors' general foreman is Mr. Thomas Epps.

Birmingham School of Landscape Art.—The annual exhibition of the works of members and students of this society has been opened, in the Lecture-hall of the Young Men's Christian Association, Needless-alley. The exhibition, which is well spoken of by the local journals, will remain open for several weeks.

* A plan of the court floor was published in the volume of the *Builder* for 1870, p. 668.

THE SIMPLON TUNNEL.

The gigantic tunnel of the St. Gotthard Railway has not yet been completed, and already there is every prospect of the plan of piercing the Alps in a third place being realised. German perseverance and German means were principally instrumental in the construction of the St. Gotthard tunnel, an undertaking deemed at first almost impossible. Now French enterprise is anxious to construct the Simplon tunnel, in order to preserve for French railways the English and Belgian traffic, and to prevent the transmission of the products of Eastern and North-eastern France to Italy and the East, on German lines, through the St. Gotthard.

A Simplon Railway Company was formed as early as 1874, which, in the meantime, has completed the line from Lausanne through the valley of the Rhone to Brieg, at the foot of the Simplon. Men such as Freycinet, Léon Say, Gambetta, and Grévy, are using every effort to remove the many difficulties still in the way of making the construction of the proposed Simplon railway a reality. It is even reported that it is their intention to submit to the French Chambers a resolution by which France will bind herself to furnish to the company a subvention of 1,920,000*l*. On the other hand, it is stated that the Italian Government is willing to connect the foot of the Simplon at Isella with Arona on Lake Maggiore, and the termination there of the Upper Italian Railways, by a line of railway involving an outlay of 1,120,000*l*. We learn the following from the *Archiv für Post und Telegraphie* respecting the tunnel to be driven through the Simplon between Brieg and Isella.

Although the proposed tunnel will be somewhat longer than those of the Mont Cenis and the St. Gotthard, it will be possible to construct it under more favourable circumstances, and work it on more advantageous conditions, than either of its two predecessors. The entrances to the St. Gotthard and Mont Cenis tunnels have both a great altitude; the former 3,779 ft., the latter 5,117 ft., above sea-level. In consequence, it was possible to arrive at the respective entrances only by zigzag-approaches, the rapid rise, morever, necessitating the supply of very great traction-power. The Simplon tunnel, on the contrary, enters the mountain chain at a very low elevation. The railway running from Lausanne through the lower part of the Rhone valley is perfectly straight, and has no curves worth speaking of, its rise being in no place more than 1 in 100. At its exit at the southern slopes of the mountain, in the valley of the Diviera, the ascent is, however, steeper, being 13 in 100. As a matter of fact, after the completion of the tunnel, the highest elevation of the line connecting Paris with Milan will be, not at the Simplon, but at some point between Dijon and Lausanne. In consequence, moreover, of the low level of the tunnel, the line will be less liable to frequent interruptions by snow in winter, to which the routes of the Mont Cenis and St. Gotthard are exposed.

Experienced geologists are of opinion that the granite and other intervening rocks of the Simplon are less hard and compact, and that the percolation of water is of a less critical nature, than of the St. Gotthard and Mont Cenis. The Rhone on the Swiss and the Diviera on the Italian side of the tunnel, will supply the water-power required for boring operations, while, thanks to the moderate climate of the canton Wallis, the works are not exposed to the liability of being deprived of their motive power during severe winters, as has frequently been the case during the construction of the two other tunnels.

The Simplon tunnel will be eleven miles and a half long, as compared with the nine miles and one-third of the St. Gotthard, and the seven miles and a half of the Mont Cenis tunnel. It is intended to proceed with the work of boring at the rate of from ten to eleven yards per day. Should this somewhat sanguine calculation be realised, the completion of the tunnel might be expected in seven years, or even less.

As to cost, the estimated expenses have been set down at 3,200,000*l*., of which 2,960,000*l*. would be required for the construction of the tunnel itself, being at the rate of rather over 250,000*l*. per mile. This estimate appears somewhat high compared with the cost of the St. Gotthard tunnel, which is only 152,000*l*. per mile. The sum of 40,000*l*. is set apart for completing the route to the tunnel, and 200,000*l*. for

structing a great international station at eg, similar to that at Modane, on the Mont is Railway.

The financial risk, as far as the company is cerned, is very small. It is proposed to e only 540,000*l.* by subscription, the other 20,000*l.* being furnished to the undertakers he following manner:—The Federal Govern- nt will contribute 180,000*l.*; the canton of adt, 200,000*l.*; the canton of Wallis, 40,000*l.*; cantons of Bern, Freiburg, and Geneva, 0,000*l.*; the Swiss Western Railway Com- y, which will derive great benefits from the tunnel, 200,000*l.*; and, finally, France, 0,000*l.*

STATUES OF THE REPUBLIC: A COMPETITION.

A COMPETITION is invited for the erection of monumental statues of the French Republic. designs for the first statue are to be handed t the door of the École des Beaux Arts ich gives on to the Quai Malaquais) any before midday of October 6th. On the wing day the competitors will proceed to a mittee-room at the Tuileries (Pavillon de e), and there elect five jurymen. The od of election will be the same as that rved at political elections; if the candidates ot obtain an absolute majority there will be *ilotage*, and those who have a relative rity will be elected by the second vote. the competitors are left to arrange the tion among themselves, no influence in high ters will be brought to bear, they can and select their own judges. The second statue be raised on the Rond-Point of Courbevoie, e the bronze of Napoleon I. in his *rédingote* was placed when it was removed from the mn Vendôme to make room for another e representing the founder of the Bonaparte sty dressed as Julius Cæsar! The site at bevoie will be familiar to all who know it is the summit of the hill commanding Avenue de Neuilly and the Avenue de la de Armée. The statue will stand in a t line with the central arch of the Arc de mphe and the triumphal arch in the Place arrousel, behind the Tuileries. But for its nce from Paris, the site is admirable.

THE NEW DOCK EXTENSIONS ON THE MERSEY.

he annual report of Mr. G. F. Lyster, neer to the dock works on the Mersey, h has just been issued, is an interesting ment, as showing the magnitude of the docks and extensions at present in pro-s, both on the Liverpool and Birkenhead of the river. The engineer gives par- ars of the new dock-works going forward, at the north and the south end of the port, he Liverpool side; and here it may be ved that when these works are finished river frontage of the docks, from north to , will be between eight and nine miles in h. Among the new works in progress at orth end are a steam dock and its branches, graving-docks, an extension and deepening e Canada Basin, and the construction of a dock, called the Langton Dock. In addi- to these works the engineer states that sion is being made at the adjoining Hus- n Dock for the cattle trade, the accommo- n to be provided occupying an area of 1 square yards; and of this area, 4,531 re yards are covered with sheds and ings for the reception of cattle from tries not under restriction by the Govern- . The remainder of the area is also red with cattle-sheds and buildings speci- intended for use as a foreign animals f. In this portion there is a slaughter- e, 155 ft. long and 33 ft. wide, with a -room over of similar dimensions. The rt states that the new works at the n end include a canal dock, a new graving- , the enlargement of the Herculaneum -tide Dock, and a new dock north of the ulaneum Half-tide Dock. The works going ard on the Birkenhead side comprise very nsive wharfs and buildings for the accom- ation of the cattle trade, these works ring an area of 40,000 square yards. The neer adds, that the expenditure during the for dock works at the north end of Liver- was 347,000*l.*, and at the south end 00*l.*; and in addition to the foregoing there was a still further expenditure on new streets, jetties, lairages and slaughter-houses, and land- ing-stages and approaches, bringing up the total expenditure during the year, on the Liver- pool side, to 580,845*l.* The total expenditure on the Birkenhead side was 69,861*l.*

ROYAL WELSH WAREHOUSE, NEWTOWN, MONTGOMERYSHIRE.

THE new building which to travellers on the Cambrian Railway forms so conspicuous an object when nearing the Newtown Station, has been opened. The proprietor, Mr. Pryce Jones, having purchased the entire plot of land on the north side of the road, it is intended to lay out the area unoccupied by the actual building as ornamental grounds, which, with the co-operation of the Cambrian Railway Company, who, with Mr. Pryce Jones, are the joint owners of the road, will materially enhance the appearance of the neighbourhood.

The style of architecture adopted is Palladian.

The materials with which the building has been constructed are for the external walls a very deep red brick, from the Garth Ruabon Fire-Clay Works, as also from the Vron Brick-yard, Newtown, the quality of the workmanship being of a good order. The cornices, strings, sills, architraves, and all other moulded work, are of polished Minera stone. The columns supporting the entablature of the entrance portico are of polished red Shap granite, and are each 12 ft. in length in one stone; the piers bear the arms of England, Scotland, Ireland, and Wales, whilst the pediment contains a group representing "commerce" and "industry," which, together with the other carving, has been executed by Mr. Rogerson, of Liverpool.

The several floors are devoted to the different branches and requirements of the trade, each being under the immediate supervision of the heads of departments. The basement, which has a lift to each of the several floors, contains the receiving and forwarding departments.

This floor, moreover, contains the printing-press of the establishment, the proprietor now executing his entire printing.

The ground-floor, which is elevated about eight steps above the street level, has a spacious approach, in harmony with the character of the edifice. Entered through a circular vestibule with marble mosaic pavement are the counting-house and offices for the several departments. The area of this floor is 100 ft. long by a width of 53 ft., and a height of 17 ft., thus forming an imposing room, which is divided into bays by iron columns, supporting moulded timber beams. Round these columns are arranged in a novel manner piles of Welsh tweeds and flannels in stands and cases, each case holding one hundred pieces. The office screen and other furniture are executed in polished baywood and pitch pine.

The approach from this floor to that immediately above is by a staircase, 19 ft. wide, with a central and two side flights of pitch pine, panelled in similar material, with iron balusters of special design, and carved newels, with terminals emblematic of the dragon of Wales. The first floor is devoted to the Welsh shawl department, homespun, and fancy-dress materials. To the second floor is allotted the warehousing of woollen goods and tweeds of a heavy nature.

The contractors for the works and fittings were Mr. Edward Williams, of Newton; for the heavy ironwork, Messrs. Rankin & Co., of Liverpool; the lift is by Messrs. Pendleton & Co.; the heating has been executed by Messrs. J. R. Cooper & Sons; the gas and water fittings are by Messrs. Francis & Co., of Newton; the wrought-iron entrance-gates by Messrs. Freeman & Collier, of Manchester; and the marble mosaic is by Messrs. Burke & Co., of London. The cost has been 13,000*l.*

Mr. David Walker, of Liverpool, was the architect; the late Mr. Wm. Laidlaw, clerk of the works.

The Post in Paris.—The Ministers of Public Works and Posts and Telegraphs have commissioned the architect, M. Guadet, to proceed to London and Berlin, to study the arrangements of the head-offices of the postal and telegraph services in those cities, in view of the contemplated re-organisation of the same establishments in Paris.

PUBLIC OFFICES FOR THE MANOR OF ASTON, WARWICKSHIRE.

THE designs for public offices, library, and baths, submitted in competition to the Local Board for the Manor of Aston, were referred by the Board to Mr. Waterhouse, A.R.A., as professional referee, and that gentleman selected the design submitted by Messrs. Alexander & Henman, a view of which we publish.

The Board confirmed the selection, and after some alterations in the arrangements had been made, directed the architects to obtain tenders for the work, the lowest of which amounted to about 22,000*l.* for the whole of the buildings.

The continued depression in the trade of the district has led the Board to determine only to erect the office buildings at present, and, in view of such a contingency, the offices, the library, the baths, and the stables were designed as entirely distinct buildings, each capable of being erected without reference to the others.

The accompanying plans show the office buildings, as altered, with the main entrance in Albert-road. Passing through an open porch and vestibule, a central corridor is arrived at, the principal staircase ascending immediately opposite to the entrance, there being a spacious hall at the intersection of the main corridors.

On the right of the corridor in the front are two offices for rate-collectors, with strong-room. In the other front are rooms for medical officer, two offices for sanitary officer, waiting-room, surveyor's office with strong-room, drawing-office, plan-room, building surveyor's office, &c.

The principal staircase, as mentioned, commences to ascend opposite to the main entrance. The back staircase, ascending from the basement to the attic floor, is by the side of the principal staircase.

On the first floor the corridors are over those on the ground-floor, and here we have offices for the clerk, with large strong-room, waiting-room, the board-room, and another committee room.

The board-room is irregular in shape, being placed at the angle of the building. It will be noticed that it takes the form of the letter V, the board-room being separated by a colonnade and sliding doors from ante-rooms.

In the basement are the housekeeper's sitting-room, kitchen, scullery, pantry, coal-cellar, stores, and so on.

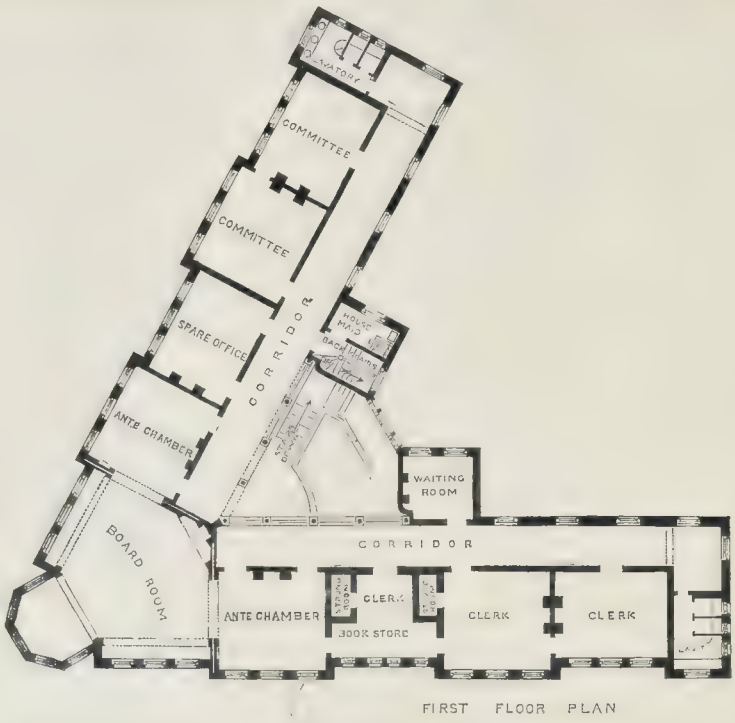
There is a side entrance from the street to the housekeeper's department, and to the yard and back buildings. The lift goes from basement to attics, and is accessible on each intermediate floor also.

In the basement is also the fire-engine department, consisting of two fire-engine houses, stores for hose, &c., and firemen's room.

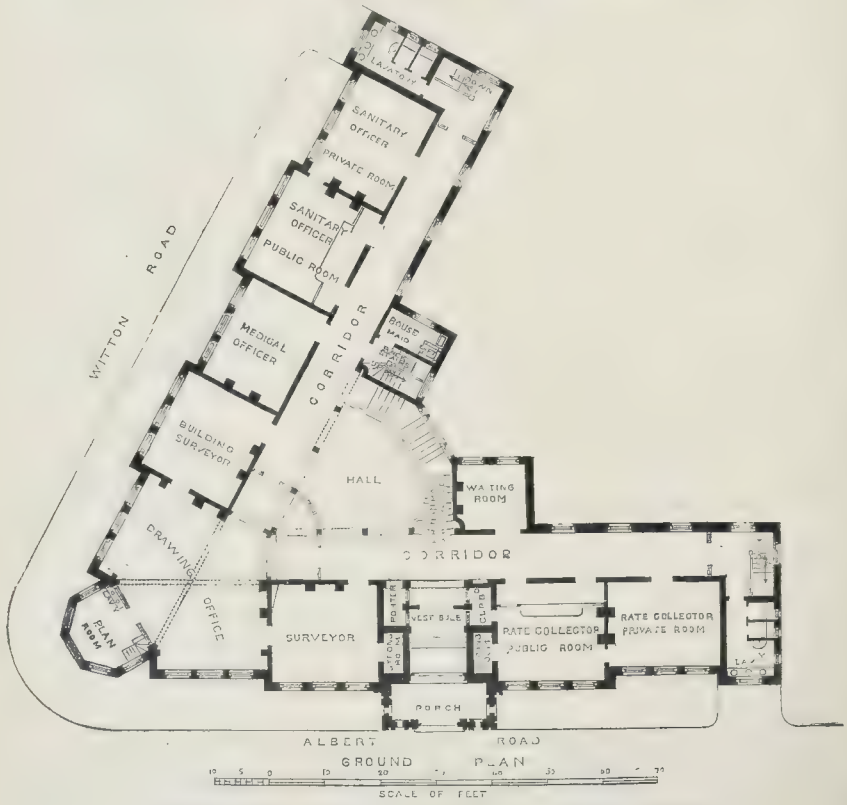
On the attic floor are three bed-rooms for housekeeper, and four separate rooms for clerks, stores, and such like.

The partnership hitherto existing between Messrs. J. W. Alexander & William Henman having been dissolved, it has been arranged, with the sanction of the Building Committee, that Mr. W. Henman, architect, who now has offices at 37, Waterloo-street, Birmingham, shall undertake the entire responsibility of carrying out these works.

Birmingham Sanitary Supply Association (Limited).—At a meeting of the directors of this Association, held on the 23rd ult., Councillor White in the chair, the balance-sheet showed a net profit that would enable the directors to pay a five per cent. dividend on the paid-up capital, but it was decided to create a reserve fund. The manager's report was read by the hon. sec. (Councillor Sam. Edwards), and showed that there was required an organisation of this kind in the town. Numerous cases of illness had come under the notice of the Association, and houses by the score existed wherein the sanitary appliances were in a deplorably defective condition, the state of the drains and sewers being wretched in the extreme. Many of these were houses, too, for which 70*l.* to 100*l.* a year rentals were paid. In one house nine persons had been seriously affected, in another five, in another three, and in many houses individual cases of serious illness had been traced to the drains. The company had ventilated many public buildings and private residences, and had executed sanitary work for some of the hospitals, public schools, and other similar institutions of the town. It was decided to take steps to issue more shares.



FIRST FLOOR PLAN



GROUND PLAN

SCALE OF FEET

ASTON PUBLIC OFFICES.—*Plans of Building as in Progress of Execution.*



PUBLIC OFFICES AND BATHS FOR ASTON, WARWICKSHIRE. THE SELECTED DESIGN.—Messrs. Alexander & Henman, Architects.



BALLIOL COLLEGE, NEW HALL: OXFORD.—MR. WATERHOUSE, A.R.A., ARCHITECT.

BALLIOL COLLEGE NEW HALL.

HE new Hall at Balliol College, Oxford, of h we give an illustration, was opened on 16th of January, 1877. The growth of the ge had made the accommodation of the old so inadequate that it was resolved to replace one much larger, and in doing so to con- the process of repairing and rebuilding the ous portions of the college which had been m some years back and carried on almost inuously.

he structure now under notice, erected from designs of Mr. Waterhouse, A.R.A., stands he north end of the college garden on a piece round acquired for the purpose, and is in Decorated style. The stones used were Tis- and Bath, and the roof is covered with a slates.

he hall (90 ft. by 36 ft.) is on the floor, and is approached by a flight of y steps from the garden. Ascending you pass beneath an open arch with diment above it, the spandrels of which filled with tracery, into the vestibule, or ns, as it was anciently called, a portion of h has been divided off to form a serving- . This occupies one structural bay of the and is separated from it by an oaken n. Above the vestibule is the gallery, wing the usual ancient arrangement.

he hall is divided longitudinally into seven , all of which, but the westernmost, two three-light traceried windows, which internally segmental curtain arches. At east end is the high table, which is placed dais, raised by two steps above the general level. Behind the dais is a piece of high panelling, with a canopy the whole width e hall, and in the centre of this panelling is loor for the use of the Fellows; while, to add rtance to that portion of the hall, the lateral ows are more deeply recessed. Above the by is a large four-light traceried window.

e roof is somewhat flatter in pitch than was st contemplated, owing to the necessity of oting the ancient lights of the adjoining erty. It is constructed of oak, and shows mbers to the ridge-piece. The curved rib ch principal is of the four-centred form, h was dictated by the necessarily flat pitch e roof, and the spaces between the beams filled with tracery, to give interest to the ing. The corbels which support the es are enriched with shields carved with arms of benefactors. The hall is sur- ed with a dado of oak panelling, which ies the window-cills. It has two fire-places. e windows are filled with quarry-glazing, osed of conventional foliage, from the ns of the architect; and in the dais win- shields of painted glass have been intro- d, bearing the arms of notable persons noted with the college.

low the hall are the common-room, kitchen, offices. Two entrances provide access to part of the building, the easternmost one of h leads to the common-room (30 ft. by ..), whence a newel staircase communi- with the dais. Here some fine Jacobean lling has been utilised to line the walls. It taken from the old chapel. Next to the non-room is the lecture-room, and thence aircase leads to a large chemical labora- The other entrance leads to the buttery shop, stores, wine and beer cellars, and balcony on the east wall of the kitchen, e supplies are procured by the college nts, by means of a lift, without in any way fering with the kitchen. The kitchen is l with every modern convenience of the kind, and close to it there is a large bakery, a spacious oven, larders, mess-room for the nts, and scullery. There are lifts from the en to the serving-room, and from the ry to the hall. Below the steps to the nce-archway is a flight of steps leading e areas, which give access for tradesmen e kitchen and cellars.

rious other works have been carried on taneously. Fisher-buildings, which pre- d such a dilapidated appearance, have been rated, and the rooms, especially the upper s, made more comfortable and cheery by and enlarged windows. The old hall has converted into a library for the under- nates, and massive bookcases have been nged round the room, which will eventually a second tier. In the windows some very old Flemish glass, which was taken from ld chapel, has been fixed. Communication between the library and master's lodge has been established by opening an ancient doorway, which had been blocked up. The old kitchens have been converted into suites of rooms for Fellows, and the old buttery and pantries have been transformed into a lecture-room.

The contractor for the works was Mr. P. Horsman, of Wolverhampton, and Mr. Simmonds was clerk of the works.

TEWKESBURY ABBEY CHURCH RESTORATIONS.

Tewkesbury Abbey Church was re-opened with some ceremony last week. We have on several previous occasions spoken of this interesting building and the works in progress; notably in our volume for 1877, wherein will be found a view of the interior, with some sketches of details, and several articles on the subject.*

The restoration was commenced by the late Sir G. G. Scott, and has been since carried on by Messrs. Scott, Messrs. Collins & Cullis being the contractors.

The whole of the nave has been cleared of the modern plaster and whitewash, and the defects have been made good, the interior masonry repaired, and the stone pavement laid on a former and lower level, that adopted being the level of the fifteenth century, which is 6 in. above the original and earliest floor-level, and in carrying out this work the step which marked the position of the rood-screen separating the conventual portion of the edifice from the parish church was discovered, and has been restored. The floors of the transepts, ambulatories, and chapels have been made good. The next item is a comprehensive one. It alludes to the choir stalls and screens, the font, pulpit, &c. Of the ancient stalls a sufficient number remain to complete the back row on both sides of the new arrangement, and considerable portions of the stall backs or screens which rose above them are also in existence. These are works of the fourteenth century, and were probably executed just after the completion of the choir. The stalls have been restored to their original position beneath the tower, and the ancient screens erected above them. Only a sufficient length of the latter remained for the north side, and this alone has been ordered by the committee, the funds not being sufficient for the new screen required on the south side. The total expenditure needed for the complete re-arrangement of the choir amounts to between 700*l.* and 800*l.*, of which the committee are only able to undertake a very small portion at present. The base and shaft of the font, of Decorated date, have been restored, and a new marble bowl, agreeing in size with the ancient part, will shortly be substituted for a bowl of mean appearance, belonging to the eighteenth century. The lofty covering of carved wood for the font was designed from an ancient fragment of the fourteenth century wood-work remaining in the abbey. This, as well as the bowl, is the gift of Mrs. B. T. Moore. The chantry chapels have only been repaired wherever necessary, as it was not thought advisable to attempt their complete restoration. The ancient altar slab of Purbeck marble, referred to by Dingley as the largest in the kingdom, being 13 ft. 3 in. long and 3 ft. 6 in. wide, had been sawn into two pieces and made use of as seats in the porch. It has been refitted as an altar-table in massive oak frame-work at the expense of Earl Beauchamp, who has also presented handsome altar coverings. The tile-pavement at the eastern end of the choir has been completed, the tiles being exact reproductions by Mr. W. Godwin, of Lugwardine, of those which have been found in excavation. Upon these tiles appear the arms of the founders—the Fitzhamons, Clares, Despencers, Beauchamps, Nevilles, Berkeley, Abergavenny, De Bohun, and many other illustrious families. Each of the graves that were identified has been marked by placing over it tiles bearing the arms, &c., of the occupant of the grave, and in the centre of the tiles is placed a sepulchral brass bearing a suitable inscription, done in the style and letters of the period at which the death occurred. The chapel of St. James, to the east of the north transept, built about the middle of the thirteenth century by Prior Sipton, has been restored by the Provincial Grand Lodge of the Freemasons of Gloucestershire. Some pressing repairs are also being carried out in the Early English chapel of St. Nicholas, but not to the extent of anything like complete restoration. This chapel and that of St. James had been completely built in and shut off from the church by a thick wall of masonry, but are now once more opened to the church, and form architectural features of unusual beauty and interest. The seven windows of the choir clearstory, of most beautiful design, have been restored both inside and outside. The roofs of the ambulatory chapels have also been repaired, and the traceried window overlooking the site of the lady-chapel has been restored. The old historical organ, which was purchased for Magdalen College Chapel in 1637, and removed thence to Hampton Court by Oliver Cromwell, has been removed to beneath the north arch of the central tower, above the screen forming the back of the stalls. The fine old case has been strictly preserved, a very small addition being made to its lower part to adapt it to its new position. It is of great value and beauty, and from its details must be one of the earliest in the country. We now come to the series of bosses at the intersections of the ribs in the groined roof of the nave. The roof is a good specimen of English carving, and in connexion with the cathedrals of Gloucester and Tewkesbury combines some of the finest features of Mediæval carving. The design is evidently the work of one mind, but the smaller details must not be looked into, for each workman in carrying out the original design seems to have thrown into his portion of the work his own individuality and peculiarities. The central bosses are illustrative of the life of Christ. The roof of the nave, with these bosses, has been decorated in an arrangement of browns, greens, and gold, by Mr. Gambier Parry, and Mr. Clay working under his supervision. The stonework of the roof was dressed with Mr. Gambier Parry's encaustic preparation.

These are the restorations which have been carried out, at a cost of upwards of 9,000*l.*, about a quarter of which sum has been subscribed by Tewkesbury itself. But much still remains to be done; in the interior, the sedilia and monumental chapels require reparation. In the monumental chapels it is proposed simply to repair wherever it is needed, but not to restore. Choir-screens, a pulpit, seats, and other fittings, must be provided. A reredos is desired; and the choir clearstory windows ought, in some places, to be carefully restored. The exterior of the church requires repairs to roofs, tower, parapet of choir, masonry and glazing of the west window of the nave, repairs to windows generally, new north doors, restoration of ancient archway of north transept, new roofs to south aisle, and general exterior repairs, &c. The estimated cost of these is about 6,770*l.*

* Vol. xxxv., pp. 361, 375, 393, &c.

ANCIENT MOUNDS SIMULATING ANIMAL FORMS.

At the International Congress of "Americans," held in Brussels last week, Dr. Phené, F.S.A., read a paper in French, entitled, if we translate it, "On Comparisons and Analogues of the Mounds simulating Animal Forms in Europe and Asia with those in America," which was illustrated with a number of drawings and representations of mounds by photographs and other pictorial figures. The author confined himself chiefly to an enumeration of such mounds as he had discovered, together with the principal features of the localities, and such information as might enable other explorers to compare the results of their own investigations with his, and thus, possibly, to arrive at some conclusions, sooner or later, as to the people by whom, or the periods in which some, at least, of these remarkable and little understood emblems were formed. He was bound to give, he said, what was due in every respect, both in point of time and extent of discovery and research, precedence to the great American explorers, Messrs. Squire, Lapham, Davis, and others, the results of whose labours have been from time to time made known through contributions from those authors in the "Smithsonian Contributions to Knowledge," by very carefully-figured representations, and by minute measurements, proving beyond question that these mounds were, for the most part, remains of wonderfully-modelled forms of animals, both as to correctness of proportion and enormous dimension; the most perfect and beautiful of all, probably, being the vast figure of a serpent with a triangular mouth or head, facing a mound

of sacrifice, and which serpent, if its convolutions were unfolded, would measure 1,000 ft. in length. These American mounds simulated a great variety of forms besides that of the serpent; those of quadrupeds, apparently, in some cases unmistakably. Professor Rupert Jones had forwarded to him (Dr. Phené) some time since a sketch of a mammoth or elephant, so figured and distinctly capable of identity; some from the lapse of ages and the effects of rain and weather were not, of course, capable of identity as to the exact animal represented, and consequently they assumed the forms of vast saurians, with flattened or shapeless projections, perhaps originally so formed, perhaps once representing outlines of carefully-modelled members of quadrupeds. There were also birds; some rude outlines which might once have represented the human figure; and other forms besides those of animals, as crosses and emblems, the meaning of which, if perfect, would not at this day be understood, as we know nothing of the people who constructed them.

The author observed that he had not been led to make his own researches from these discoveries in America. At the time he was prosecuting investigations which resulted in the greatest success, he was quite unaware of any such discoveries as those he had just enumerated. He was led to make his inquiries from the question being undetermined amongst British antiquaries, as to whether the serpent was an object of worship with the early inhabitants of Britain or not; and he had nothing to go upon but vague suggestions and semblances drawn from the position of stones here and there on the great moors of England, Scotland, and Ireland, which stones, when they did assume an approach to such device, were generally found to have been removed from their original positions, and must, by the merest accident, have been found as they now are. The only unmistakable form that he could rely on in Britain up to that date was that discovered by Dr. Borlase in Cornwall, and engraved by him in his work on the antiquities of that county. That form was serpentine, and was composed partly of earth forming a mound, partly by stones, so that it was possible that some of the curious positions of stones considered by former antiquaries to have represented the serpent had once done so, that the mounds had been removed for agricultural purposes, and hence the uncertain positions of the stones.

At the same time that he was pursuing his researches, with little or no indications to aid him, Mr. William Simpson,* to whom he was then unknown, and who was at that time as equally unaware as himself of the discoveries in America, and knew nothing of so-called animal mounds or of any such ancient simulations, except those in rude sculptures on the rocks and in caves in India, discovered in China some very remarkable mounds, which, though not in the forms of animals, were curiously enough in forms which happened to have been those which had led him (Dr. Phené) to make his own researches, and had, in addition to this, discovered long winding serpentine avenues leading to the great tomb temples of the Ming dynasty, also in China, both sides of which were apparently guarded by enormous stone effigies of all the larger quadrupeds known in the East. The serpent did not appear,—so far as he was able to discover,—among these forms, but the way was a serpent, the tomb temple being the head, and this, no doubt, was the explanation of that special myth of Chrisna and his followers when he was hard pressed by an enemy taking refuge inside a serpent's head. There seemed no question that these serpentine ways did represent the serpent, as the word "Lung" (pronounced Loong) was equivalent to serpent, and these winding ways were so named, as Mr. Simpson discovered, on inspecting the tomb of the first of the Ming dynasty at Nanking. The same idea was evidently emblemed in the vast simulations of animals in the mounds in America, and these carved simulatiens in China. The mounds he had referred to as discovered by Mr. Simpson, and as being of the same forms as the forms which had led him (Dr. Phené) to make his researches, were also tombs, and the information Mr. Simpson had given him amounted to this: the mounds placed in the great Necropolis in China over poor men were single cones; those over great and wealthy had three points, the summit being divided into three portions, and near the latter were found large animal forms in stone. Dr. Oliver, a learned writer on ancient customs, had stated that the mountains in Britain were resorted to for the performance of rites connected with the early religion of the land, and that of these mountains the single peak was sacred, the dual peak more so, and the triple-peaked mountain so in particular. On triple-peaked mountain so in particular. On this alone, he (Dr. Phené) had commenced the prosecution of his investigations, and in almost every case of a triple-peaked mountain he had found an animal form, generally that of the serpent, in its vicinity.

Mr. Squire had figured two of the largest forms of serpents in America, as constructed,—the one of earth, in a continuous and solid form, the other of earthen mounds placed at uniform distances, in a curved line, of great length and beautifully symmetrical, simulating a serpent, and each form having the same representations of symbols at the head. He (the author of the paper) had found the serpent in both these forms in Britain. They were each distinctly defined, and in every case they were proved to be sepulchral, from the remains in them. They could all be shown to be of the highest antiquity. In the head of one of those in the solid or continuous form was a triangular chamber formed by three vast blocks of granite, in which were evidences of a grand cremation. Cremation was also, in some instances, found to have been used in the separate mounds, which appeared either to have formed a serpent necropolis, a new mound being formed on the death of each member of a tribe, or one interment of a number of persons at the same time, a separate mound placed over each of so many followers who had fallen with or in defence of a chief of a serpent tribe, so called, or emblemed, as, for instance, the Snake Indians in America are to this day. Both in Europe and Asia he had found such forms, not only like the great serpent ways of India discovered by Mr. Simpson, not only mounds constructed as he had described, but also mounds formed partly of soil or stones, sometimes both added on to other portions of a form, which latter was sometimes cut into shape, sometimes, probably, a mere natural simulation, and in some cases completely natural forms and even mountains, so unmistakably adopted as places for worship of the serpent that doubt as to the cause of selection could not exist, as in the serpentine mountain of Pergamos in Asia Minor, where Esculapius had his grandest temple, and in every such case vast sepulchral remains existed, showing the importance of the spot. These always contained remains of the highest antiquity, in each country in which he had discovered them. He had found them in Scotland, England, Wales, Brittany, and the Pyrenees; also in Greece and Asia Minor, and in the islands of the Levant. In several cases, where the mounds had eluded the notice of treasure-searchers, portions were found where lithic arrangements showed even a careful representation of the positions of the bones of the animal. These discoveries had been made in the presence of many persons, at various periods, and separate accounts had appeared from time to time, in the leading English and Scottish journals. The exact details were proved by photographs taken on the spot, and exhibited to the meeting. Similar additions to natural mounds as well as natural simulations were referred to in America, as Lapham's Peak, &c.

* Special artist to the *Illustrated London News*.

LECTURES IN CONNEXION WITH FREE LIBRARIES.

At the recent meeting of the Library Association of the United Kingdom, in Manchester Town-hall, the following paper on "Lectures in connexion with Free Libraries," by Mr. W. H. Bailey, member of the Salford Free Library Committee, was read. We endorse it, and send it into circulation:—

The subject which I have ventured to bring before this Congress is, the more beneficial use of the free libraries of the large towns of this country. Can we, by any means, increase the value of these libraries to those for whom they were established?

Of late years, among municipal governors, there has been an increasing higher and nobler conception of civil life; and it seems to me that if we want evidence of this civilisation we may find it, not only by observing the sanitary wisdom exhibited in the streets and lanes of the town, but we may go still farther to the source of this wisdom,—to its ultimate cause,—and receive evidence from the silent witnesses on the well-stocked shelves of the town's free library. According to the number and respectability of such witnesses so shall our verdict be. A free library in the manufacturing districts is the working men's university; and this is becoming more definitely so than it was a few years ago.

Let me make this clearer. Twenty-five years ago the suburbs of Manchester were a mile and a half from this building, and there existed very few of what are known as "look-up shops"; the shopkeeper lived on the premises; the merchant resided not very far away, within walking distance of his warehouse. But now every day at sunset, the sole inhabitant of the town is the artisan. The small manufacturer is rapidly ceasing to exist. Articles are not now made; they are manufactured. Men are no required to pull at the oar; they are wanted to hold the rudder. Our works are now hug places. Division of labour and the right o scientific use of force will continue to mak their dimensions increase. The capitalist live in the country, and the workman lives near th factory. Railways, telegraphs, tramcars, a assist at this process of disintegration.

A writer on the United States says that i Boston "the purse-proud people are said to her together more than anywhere else, and scarcel associate with any but their own class." "Suc a city," Plato would have said, "must neces sarily become two cities, the one composed o the poor and the other of the rich, dwelling i constant conspiracy one against another." W have no fear of a condition like this; but w all know that much of the fierce conflict betwee labour and capital would be leavened by wisdo if we had less dense ignorance of commercia laws among the contending parties. Some ma think that this alteration of the character o the populations of our large towns may no exactly be within the scope of our inquiry; ye as our main object is to diffuse knowledge, seems but proper that anything that tends lower the mental vitality of a town should b worthy of our consideration. This phase of th question should give more zest to the educa tionalist, and a clearer conception of duty those citizens who earn their wealth in th towns, but who spend their money and the leisure elsewhere. If we choose, we can mak our noble free libraries active, living, movin and breathing factors in our national educatio "A man," says Carlyle, "has not now to g away where a professor is actually speaking because, in most cases, he can get his doctrin out of him through his books, and can read it a read it again and again, and study it. I don know that I know of any way in which the whol facts of a subject may be more complete taken in, if our studies are moulded in co formity with it."

"Books," says Hazlitt, "we owe everythi to their contents on this side of barbarism Books are being manufactured by the ton; ev the man of culture, who may be familiar wi the roads and lanes down which to direct h walks, is often perplexed at the infinite choic and much time is lost in making the best sel tion. Life is short, and that sort of labou bewildering as it is to the man of letters, somewhat an appalling maze to the young m who has but just mastered the mere rudimen of education. We have in our free libraries th requisite tools of great value. How shall we mak them available and more known to those w are anxious and willing to use them? How sh we make the books more accessible, their exa value in relation to each other more apparen How shall we guide the student from the wor lessness of some of the misleading paste, gum, a solder encyclopædias to those books which a to the world's store of knowledge? The val of these questions will be still more appare when we consider that many of the books in e libraries are only useful as indications of t state or measure of the knowledge treated up up to the time of their publication, mere m stones of mental progress, sometimes regist of ignorance. The intellectual hurricane wh has swept over the world during the last fi years, the great increase in the number critical investigators in every department thought, the new discoveries, the rejection the false and the finding of the true, all info ns that in a library a good guide becomes a m important personage as years roll on.

The late Sir James Simpson, the emin physician, in alluding to the advancement learning in that branch of which he was distinguished a member, said that "so gr

ɔn the progress in his own time, that the ɔoks used by him as a student were ɔ to him in middle age." Is it requisite ɔ instances where our own experience ɔs abundance of them? That the free ɔis of Manchester and Salford are highly ɔiated by the public is evident from the ɔ reports issued by the committees, show- ɔ their users number hundreds of thou- ɔ I do not hesitate to say that the libraries ɔ doing all the valuable work they might ɔ to assert that so long as they fall short so long will they fail to fulfil their ɔ—that mission wherein to fail, however ɔ little, is lamentable in proportion to ɔleness of the end in view. Is not that ɔ noble mission whose object is to supple- ɔ the education of the public schools, to ɔ all the means of attaining that mental ɔ ral enlightenment which thus far has ɔ to be the birthright of the rich alone, ɔ ch is now within the grasp of any who ɔ ire it? But is this mission being fulfilled? ɔ t. From the figures given in their last ɔ by the Free Libraries Committees of Man- ɔ and Salford, I find that in Manchester the ɔ of books borrowed during the year ɔ was 513,019, of which 287,722 were ɔ The number of books borrowed from ɔ ford Free Libraries during the same ɔ was 242,962, no less than 200,308 of ɔ eing novels. From these figures it ɔ erefore appear that in Manchester con- ɔ y more than half of the books read were ɔ f fiction, whilst in Salford the difference ɔ these works and the solid literature ɔ the extraordinary proportion of five- ɔ That some good may be derived from ɔ usal of novels is unquestionable. The ɔ reads "Robinson Crusoe" will later on ɔ wingstone, Burton, Baker, Wallace, and ɔ reat travellers. Thackeray, Dickens, ɔ ollope have created an atmosphere in ɔ rpulent beadledom, humbug, and im- ɔ cannot breathe. By all means let good ɔ novels be read. I wish to be emphatic ɔ this opinion, as I have been charged ɔ oking upon light literature with some ɔ nce. Permit me to say that the man ɔ poetry or fiction, can perform surgical ɔ ns on social deformities shall be my ɔ , and I will be his meek and lowly ɔ Caricature has done something for ɔ . *A scientific sneer is of more value than ɔ urclad.* It is, however, evident that ɔ raries are not accomplishing that educa- ɔ nission which is the root idea of their ɔ ment. Until we have more reading of ɔ nd refining literature, the full measure ɔ public utility will not be gained. Among ɔ ny ways by which the public value of ɔ aries may be increased, there is one ɔ venture to believe, would be highly ɔ l, and that is the establishment of ɔ in connexion with them. The books ɔ re on the shelves; they are also cata- ɔ and the catalogues can be purchased ɔ all sum. So far, good. But this is by ɔ is all that is necessary. A library must ɔ atalogue as a lock must have a key, and ɔ er the catalogue is the more serviceable ɔ library become. But a catalogue, how- ɔ d it may be, will still leave much to be ɔ if it is to be made purchasable by the ɔ . It cannot undertake to distinguish the ɔ rom the trashy in books, nor group ɔ all that is lying hidden in them on any ɔ ar subject. It cannot indicate courses ɔ g for those who desire to improve them- ɔ , it may be, a score of different ways, ɔ it do much to assist the specialist. Yet, ɔ ch information as this is supplied to the ɔ no just impression of the capabilities of ɔ ry can be conveyed, and, therefore, the ɔ nt of its usefulness cannot be attained. ɔ information cannot be supplied by means ɔ atalogues, it follows that there is need ɔ other method of showing to the public ɔ e library's possessions consist of. I ɔ hat the best method of doing this would ɔ ake every library a basis for a series of ɔ on the books which it contains. These ɔ would require a definite subject; but ɔ of being treatises on that subject they ɔ authoritative estimations of the exact ɔ d usefulness of every book on the sub- ɔ ich the library possessed. They would ɔ t those books which related its history, ɔ , growth, and development in modern ɔ those which would give that general ɔ of the subject which every fairly-educated person would be anxious to possess; those which would carry the reader, or the student, on to more advanced and exact knowledge; those which would cast collateral light on the question; those which contained the latest conjecture or discovery; and so on, according to the requirements of the subject chosen. We should thus obtain by degrees courses of reading in every branch of literature which, if afterwards inserted as an appendix in the catalogues, would be the most valuable and useful commentary on their contents that could be made. The Free Libraries Act and the Libraries Amendment Act, I believe, give sufficient power to local authorities to spend money for the purpose I have named; indeed, although in Liverpool and Wolverhampton the library committees are not working in the direction I have indicated, the public rooms in those towns, I am given to understand, are free to lecturers who work in connexion with the libraries. The details of the scheme would vary in each particular district. In most towns there are public rooms in the same building in which the books are stored. At present sums varying from 2*l.* to 5*l.* a night are charged for the use of these rooms, even for educational purposes, and where there has been no charge for admission.

In these days, fifty to one hundred and fifty thousand pounds per annum are spent with composure for the annual maintenance of the police and the workhouses of a town. Contrast this with the amount spent in any town on free libraries and education, and let us ask ourselves if we have arrived at what Herbert Spencer called knowledge of differences. It sometimes seems to me that we have not even got past that primitive stage which enables us to grasp the difference between a pebble and a boulder stone.

As an employer of labour in many ways, I am not afraid of foreign competition in these districts under even unequal conditions.

I claim for the people here the possession of those qualities that have made this country great and free; there is work yet, but it requires not the figures of statistical societies to tell us that in these bad times the man who goes first to the wall is the man of the little brain, of no imagination, and whose untrained faculties perpetually mortgage the morrow. "In the sweat of the brow is the mind, as well as the body, to eat its bread." Bearing in mind this saying of Archdeacon Hare's, I can congratulate those men who with divine ambition have created free libraries in our large towns. They have done much good, and I am confident that the spirit of humanity, which impelled them in the past, does not sleep; and I feel that, if there be any value in what I have said, some beneficial result will follow.

We have plenty of work to do yet, not only to enable us to hold our own against foreign rivals in trade, but also to enable the dwellers of the cottages to use this beautiful world in a respectful manner, and to taste some of its sweets, which can only be done by the study of those refinements of life which are to be found in the arts of peace.

NEW DEEP-WATER QUAY AT QUEENSTOWN.

The first concrete block of the new deep-water quay at Queenstown was lowered into its position, in the presence of the Mayor and Corporation of Cork, on the 4th ult. The quay will be 600 ft. long and 40 ft. wide, and the estimated cost of constructing it is 30,000*l.* The event was one of the most important that has taken place within the city or harbour for many years, and great commercial advantages are expected when the work is completed. At the lowest state of the tide there will be 27 ft. of water, and this will enable Transatlantic steamers to come alongside at any state of the tide, and discharge into the wagons of the railway company, thus getting rid of the obstacle which always prevented Transatlantic steamer companies from loading and discharging at Queenstown. In the construction, about 140 concrete blocks will be used, each 20 ft. in depth and 8 ft. in thickness, and 12 ft. frontage, weighing close on 120 tons each, and as these blocks are made at a wharf a considerable distance from the proposed quay, it was necessary for the contractor to have floating sheers to carry out the work. The block was lifted at the wharf and suspended about midway in the water, then floated to its position and lowered. The floating-sheers, with the machinery for lifting, were designed and constructed by Charles Powis & Co., of Millwall Pier, London. The hull is 90 ft. long, 32 ft. wide, 9 ft. 10 in. deep fore, and 13 ft. 10 in. aft. The sheer-legs are fixed at the fore-end, together with powerful pulley-blocks and chains for raising and lowering. At the after-end of the hull are constructed six water-tanks, capable of holding 150 tons of water, to act as a counterbalance to the block. To these tanks a centrifugal pump is connected, so that they can be filled when raising the block, and emptied when lowering it, and by this means the hull can, at all times, be kept on an even keel. The machinery consists of a locomotive boiler, and a pair of 8-horse power horizontal engines, connected by gearing to two drums, each 7 ft. long by 4 ft. in diameter, and strong chains pass over two powerful pulley-blocks which are attached to the upper part of the sheer-legs, the lower pulley-blocks being fitted to massive forged beams, the ends of which are slotted out to receive the lifting-bars, and by this means the huge block is suspended from four points and kept perfectly level. The engines drive a pair of screw-propellers, which considerably assist in working the sheers into position.* The whole machinery worked most smoothly, and the massive block was lowered with an ease that gave great satisfaction to all concerned. Subsequently the divers went down and saw the block laid in its proper bed. The engineer is Mr. P. Barry, and the contractor Mr. J. Delany, of Cork; whilst Messrs. Charles Powis & Co., as already said, supplied the machinery.

A FIND AT POMPEII.

On the 24th ult. the 1,800th anniversary of the destruction of Pompeii was celebrated in the buried city, and the day was made additionally memorable by such a revelation of the treasures still awaiting the investigator as will never be forgotten by those who were present. The *Times* correspondent gives the following graphic account of this remarkable find:—"The opening ceremonial ended, a bell rang to summon people to the excavations. In different parts of the ninth region ten chambers were to be opened and their contents revealed, and there was an eager rush from all points. It is impossible to describe the intense expectation on every face as the first picks struck the ground, or the scene around each place to be excavated. Crowds were pressing round every opening; people were perched all along the tops of the broken walls to the eminent peril of their limbs, and groups were thickly gathered along the higher unexcavated level, and on every other point of vantage. Each room to be excavated had been cleared of the upper falling-in, leaving about 4 ft. to be removed. The indications given by the preparatory work in one of the larger rooms having been particularly favourable, I took my station there, and witnessed in the course of three hours, as the various objects peeped forth from the scoriæ one by one and were taken up, such a revelation as I shall never forget. For the first five minutes there was a breathless silence as the men worked, then, as the scoriæ fell away, part of a green object became visible. In a moment the workmen's hands had cleared the space around it, and amid deafening cheers a small bronze horse, 9 in. in length, was held aloft. Then a large amphora appeared; then two bronze vases, one with handles; then a large iron key, and as each in turn was lifted high for all to see, '*Bene! bene!*' burst in a chorus of hearty satisfaction from the people. A list, with the briefest description of the things which then followed in rapid succession, would fill a column. There were at least a dozen bronze vases of different shapes, sizes, and uses, with and without handles, and in one a number of bronze coins oxidised together, and many other coins were found at intervals during the excavation. There were many handsome bronze fibulæ, several bronze bracelets, a number of rings, many terra-cotta vases, tazze, and amphoræ, and a remarkable number of little terra-cotta water-cups for bird-cages, various kitchen utensils, a spit, forks and knives of iron, a bronze bottle, a number of little bronze bells, a dagger with ivory handle, a knife with ivory handle, a bronze casserole, and a terra-cotta money-box." Among other remains, a splendid bronze candelabrum was come upon. In short,

* We will give a view of the Sheers in our next.

from noon till three o'clock a continued succession of objects were revealed. In one room a skeleton was found, and in the smallest chamber opened four were discovered huddled together.

THE SOCIAL SCIENCE CONGRESS IN MANCHESTER.

The twenty-third annual congress of the National Association for the Promotion of Social Science was commenced on Wednesday in the new Town-hall, Manchester, under the presidency of the Right Rev. Dr. Fraser, bishop of the diocese, who delivered a very able inaugural address. We quote a few passages:—I invite you, then, to consider with me some of the problems involved in the social condition of great cities; and I shall illustrate my positions, as I severally take them up, mainly by facts and figures supplied by Manchester, about which I know more than about any other great city. Within a radius of five miles of this place of our meeting there must be aggregated a population of probably 750,000 persons, of whom about 370,000 would be in Manchester, 170,000 or 180,000 in Salford, and the rest in suburban townships with local self-government,—still called villages in Lancashire, though in the south of England they would be considered of importance enough probably to be represented in Parliament. For some of the necessaries of social life,—such as gas and water,—these suburban districts are indebted to the great central municipalities, Manchester and Salford, with which they are locally connected; others, such as education and relief of the poor, they provide for themselves; but still, for practical purposes, the whole may be regarded as one great, but imperfectly organised, community. It is already so large and so complex that I should regard with positive dismay the prospect of any considerable accession to its numbers or magnitude. The distribution of the population in these great industrial centres is peculiar, and seems to follow a kind of law, and is an important element to be borne in mind when we are considering the social condition of the people. Things have undergone an almost entire change in the last half-century. Fifty years ago the wealthiest merchants in Manchester lived in the heart of the town, in streets in which to-day there is not a single gentleman's residence. Tradesmen lived over their shops; manufacturers found existence tolerable under the smoke of their tall chimneys, surrounded by the cottages of their workpeople. The suburbs which now stretch out their long lengths, or are dotted with handsome detached villas on every side of Manchester, did not exist. Life, perhaps, was rougher and less refined; but there was more contact of class with class, more intercourse and sympathy between masters and men, fewer of those chasms across which we make many futile attempts to throw bridges, and which constitute sometimes such insuperable difficulties in the way of large and effective schemes of social improvement. Distance is an important element in the problem of moral, as well as of physical attraction. Never was the proverb so true as to-day, that "the one half of the world knows not how the other half lives." Now, all these conditions are changed. You will hardly find one of our wealthiest men living within two miles of his place of business or of the Exchange. The shopkeepers have migrated into the suburban townships. The centre of the city at night is a mass of unoccupied tenements. The working class and the poor still cluster thickly together in some of the murkiest and dismallest quarters of the town, with nobody, perhaps, living among them above their own social level, except the doctor and the clergyman; and though we are slowly trying, and to some extent successfully, to remedy this evil, in too many parishes, and those the very poorest, there is no parsonage-house, and the clergyman not unnaturally prefers to locate himself and his family where he can see the sun a little oftener, and breathe a purer air. A large proportion of the working class, however, under the pressure of recent street improvements, which have been going on so extensively amongst us for the last ten years, have, like the rich and well-to-do, migrated to the suburbs, though not to the same suburbs, and if the houses which are provided for them by speculative builders at the high rent of 5s. or 6s. a week were a little more roomy, and of a more solid construction, and erected under stricter sanitary regulations, the change no doubt would be beneficial to all concerned. But, speaking generally, in those suburbs the working class still dwell, as a class, apart, and are even further removed in distance from their employers than before. While the houses have seldom more than two bedrooms, so that it is almost impossible to bring up in them a large mixed family with due regard to health and decency, and, being built outside the boundary within which the fear of the Manchester Corporation's excellent regulations prevail, they are often so flimsy of construction, and put together with such unseasoned materials, and erected with such supreme contempt of the recognised conditions of a healthy life, that a change which might have been of great social benefit to the class concerned has been a change of very questionable advantage indeed. Still, these are the facts of the case in most of our great centres of population; and a most important body of facts, in their social consequences, they are. They are the conditions, partly physical, partly economical, and partly moral, under which the problems of society are to be worked out, if possible, to their true solution. . . . . Good health in towns may be said to depend on four primary conditions,—a good water supply, good drainage, good air, well-constructed and wholesome homes. I would premise that a great number of misleading ideas lurk under what I may call the "fallacy of averages." By the exertions of the two corporations I believe that the death-rate in Manchester and Salford has been very sensibly reduced, and does not now exceed much more than 20 or 22 per 1,000 under normal circumstances; and for some time past we have been wonderfully free from epidemic or infectious disease. But, as I have often heard the late Mr. Cawley, M.P. for Salford, who, from his knowledge as a civil engineer, could speak accurately on the subject, state at meetings on sanitary subjects, that while the rate of mortality in Higher Broughton, the salubrious level on which he and I lived, did not exceed 10 or 12 per 1,000, there were courts and alleys in Salford where it would rise as high as 60 or 70. And you lose this disparity of facts when you come to strike an average, which of course does not represent any actual fact at all. The chief difficulty in dealing with these great and important questions affecting the public health arises from the fact that municipal bodies and local boards rarely attack the evil till it has become intolerable; and, when they do attack it, they find it encumbered with so many vested interests, or acquired rights, that it is almost impossible to deal with it effectively, except at a cost which is enough to frighten them from dealing with it at all. It is this difficulty that has rendered the Act for preventing the pollution of rivers in many places practically inoperative. . . . I am not quite sure to what extent the masses of our working classes in Manchester are gainers by that displacement to which I have already referred, and by which they have been compelled to migrate from the centre of the town to the suburbs. Externally, and while the houses are new, the gain looks considerable, and, of course, it is an immense benefit to the health and also to the morals of the community that the corporation have succeeded in closing, I believe, every one of the cellar dwellings, which once existed by hundreds, and which were centres of disease and, partly as a result of the unhealthy conditions under which the people lived, of vice in so many forms. But, an instructive pamphlet, entitled "Urban Leaseholds," does not give a very cheering picture of these modern suburban "houses made of half-baked clay and mud and compo, with raw shrinking timber, gaping joiner's work, foul chimneys, unsound roofs, damp basement rooms, and inefficient drains." "Ædiles," says the pamphlet from which I have taken this quotation, "are everywhere wanted. Not merely the existing public surveyors, but officers armed with effectual powers to prevent the erection of all dwellings unfit for human habitation, and to make fit those now unfit, at the expense of the owners and builders. Deterrents should be raised against bad buildings." All I say is, for goodness sake do not let us have a new set of officials. Arm those who exist already with effective powers if they do not already possess them. I know from my own personal experience that our two corporations are vigilant in this respect; but an extract that I will presently read from a communication that I have received from the admirable medical officer of the Manchester Corporation is enough to show that more is required to be done in this direction. I am afraid that just now, owing to short time and want of employment and diminished wages, a good deal of overcrowding could be discovered in Manchester for the sake of saving rent and fuel and put two and sometimes three families crowding into one tenement, which under ordinary circumstances would only be occupied by one. There is a difficulty in knowing how to deal with such cases, to which the poverty, not the will of the people, is consenting. It would be harsh, or might be impossible at such a crisis, to enforce the usual regulations; and the most that can be done till good times return seems to be to exercise a more than ordinary vigilance to prevent the outbreak of anything like epidemic disease in consequence of such overcrowding. This is one of the frequent cases in which necessity must be allowed to break away from the control of law. I spoke just now of a communication which I have received from Mr. Leigh, the medical officer of the Manchester Corporation, in which he summarises the work effected by the health committee, which was appointed a ten years ago, and under its energetic chairman has been fruitful of good results to the city . . . Mr. Leigh concludes his interesting letter with a few highly instructive remarks. Coming from an officer of his ability and experience, I commend them very earnestly to the attention of the Congress. "The point," he says, "to which I would specially call attention are, first, by legal action and the provision of adequate inspection to secure a better class of houses for the residence of the poor. The houses in the centre of Manchester, extending over an area of more than 600 acres, have been and are removed for the improvement of the city and the exigencies of commerce, that the dwelling-houses only number on an average nine to the acre over this space. The remainder of the city, up to its boundary, is now nearly covered, so that any considerable increase of house-room for the working-classes connected with Manchester must be erected in the suburban districts. At present, the houses, as a rule, rise directly from the surface of the ground, without any intervening air space. The walls are excessively thin, and the mortar of the poorest quality. Such houses are necessarily damp, and cannot be productive of rheumatism, heart disease, and bronchitic affections. An air space and a basement should be insisted on, and no means adopted for preventing the rise of moisture in the walls, which should be thicker and of better quality."

The following items were on the programme for Thursday,—

Health Department.—Paper by Mr. A. [illegible] land on the question, "What are the [illegible] resulting to health from the growth, or, the boundaries of municipalities, of suburban districts, without due regulation and control?" By Mr. Baldwin Latham, on "The Influence of sewage irrigation works upon public health;" and by Mr. C. Estcourt, on "The pollution of the air."

Art Department.—Paper by Mr. G. F. W[illegible] R.A., on the question, "What is the effect of amateur influence upon art progress? What subjects are most suitable for the picture decorations of public buildings in this country, and with whom should the selection rest?" By Mr. T. C. Horsfall, on "By what means can workpeople in large towns be induced to study examples of good art?" and by Mr. C. Balfour Brown, on "Artistic copyright."

BEDFORDSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

At the last monthly meeting of this Society Canon Haddock, one of the honorary secretaries, reported upon a recent discovery made at Sandy, which was brought to his notice by Mr. Leeds Smith. In excavating for sand on "Tower-hill," west of the Great Northern Railway near Sandy station, two leaden coffins were found side by side, at a depth of from 3 ft. 4 ft. below the surface,—one measuring 6 ft. and the other 5 ft. 6 in. in length, and about 14 in. wide.

On the 16th ult. the members had an excursion into Northamptonshire. Journeying from Bedford to Wellingborough by train, they drove thence to "Chester House," close to a Roman camp near Irchester, where they were met by the Rev. R. S. Baker, rector of Harrold, who, five years since, before the Northamptonshire Society, read an elaborate description of the vessels and coffins found the previous

...conestone diggers in the cemetery outside ...p, and who last year took a prominent ...conducting the diggings made under ...pices of that society around and on a ...of the camp, the results of which he ...lained to the company by the aid of a ...nibiting at the same time a large collec... ...building stones, some of them apparently ...of a temple, sculptured figures, an upper ...er millstone, and other relics of this ...and military occupation, which are for ...ent kept in an outhouse of the farm. ...Haddock having acknowledged Mr. ...kindness and the valuable information ...riven, the road was taken for Irchester ... Here the vicar, the Rev. J. Monk, ...joined at the camp, led the way to ...rior, and proceeded to read a paper ...story and leading features of the fabric. ...alk round he called attention to the ... of a fine priest's doorway, lately ...ed beneath a monument on the north ...the chancel, the erection of which ...ly accounts for its having been blocked ...tions of the rood-screen have also been ...found hidden behind the sides of hideous ...ews, several of which still disfigure the ...d form a striking contrast with the ... original open seats. Next on the list ...much-admired church of Rushden, upon ...e vicar, the Rev. J. F. Barker, made ...marks, inviting attention to the restora... ...g carried on under the direction of ...don M. Hills, architect, London. The ...richness of detail characterising this ...not only in the lofty tower and tapering ...t in every part of the building, justly ...but of the category even of Northamp... ...churches. Whether (says the *Bedford...ires*) the curious "straining arch," which ...e nave, and has now for safety's sake ...eated within the tower arch, really ...the general effect or detracts from it, ... open question. After a hasty luncheon ...Green Dragon, Higham Ferrers, the ...and its adjuncts, the grammar school, ...s. House were successively examined, ... A. J. Forster, of Farndish, in the ...of the vicar, acting as conductor. Visits ...sequently paid to Irthlingborough and ... churches.

DANGEROUS STRUCTURE IN THE HAYMARKET.

... Marlborough-street Police Court, on ... ult., the hearing of the adjourned ... taken out by the Metropolitan Board ... against Mr. Jesse Fagg, of 29, Hay... ...or permitting a portion of his premises ... a dangerous condition, was proceeded ...fore Mr. Mansfield, the magistrate. ...articulars of the case have already ... in the *Builder*.*

... rain appeared for the Metropolitan ... Works; Mr. Tatlock for the Civil Ser... ...ly Association, the owners of 28, Hay... Mr. Houghton for Messrs. Kirk & ... the builders; Mr. Bingham and Mr. ... Mr. Fagg.

... harles Sewell, architect and surveyor, ...cross-examined at the previous hearing, ... alled, and in re-examination by Mr. ... stated that since the last hearing he ... the party-wall in question and was not ...discover any new cracks, neither could ...hat the old ones had extended. The ... supports of the archway were amply ... to sustain it, without the use of the ...shoring, which latter was useless, as it ... ing no weight.

... illiam Harvey, called and examined by ... ham, said he was an architect and sur... ...eighteen years' experience. Had per... ...examined the party-wall both on Mr. ...de and on the side belonging to the ...vice Stores. In his opinion the wall ...dangerous, and was not likely to fall. ...ks were in fair condition, and the ...as hard. The absence of footings to ... lid not necessarily render it a dangerous ... The shoring of the arch was suffi... ...d when the works in progress on the ...e of the wall were completed, such ...ould be removed with safety. Assuming ...e was a bulging of the wall to the ex... ...in. at a height of 30 ft., that would not, ...nion, constitute an element of danger. ...xamined by Mr. Grain, witness ad...

* See pp. 1035, 1049, and 1088, *ante*.

mitted that the absence of footings to a wall was a defect constituting an element of danger under certain circumstances. If the wall were in the condition described by Mr. Woodthorpe, the absence of footings would render it dangerous. The bulge in the wall was a defect, but it was not an element of danger.

Re-examined by Mr. Bingham.—The old party-wall, in point of fact, was considerably thicker than it would be if rebuilt in accordance with the Building Act, and its extra thickness would compensate to some extent for the absence of footings.

Mr. Thomas Hovenden, examined by Mr. Bingham, said he was an architect and surveyor, of twenty-five years' experience. At present the alleged dangerous structure was in no danger of falling. The bricks were fair in quality, though they were not pressed bricks, and the mortar was very fair. The wall bulged in part at the east end. Had examined the wall of the arch and found it was 14 in. thick. The disrepair and irregularities of the wall did not constitute elements of danger which would lead a practical man to suppose that the wall was a dangerous structure.

Cross-examined by Mr. Grain.—The earth and rubbish at the foot of the wall on the Civil Service Stores side could be removed with perfect safety, and the works of the new buildings proceeded with without danger to the workmen of Messrs. Kirk & Randall. If the earth were removed, the wall would stand perfectly safe for any reasonable time.

Mr. Worthington, examined by Mr. Bingham, said he was an architect and surveyor, of thirty years' experience. Had examined the party-wall in question, and found it to be in a very fair condition on Mr. Fagg's side; but on the Civil Service Stores side it had been very much neglected, and had been carelessly treated in the course of taking down the old buildings at 28, Haymarket. The bricks and mortar were in very fair condition. The bulging of the wall was not so serious as to render it likely that the wall would fall if not shored. The shoring of the arch internally was more than sufficient, and could be removed with perfect safety on the conclusion of the building operations next door. Was convinced that the arch was of more than 4½ in. work. The wall was perfectly safe, and the vibration of the engine used to hoist the materials would not be sufficient to cause it to fall. The wall might, in the eyes of a novice, be dangerous, but not in the eyes of an experienced practical man.

Cross-examined by Mr. Grain.—Did not consider Mr. Woodthorpe a novice.

Mr. Goodchild, examined by Mr. Bingham, said he was an architect and surveyor, of twenty-five years' experience. Had examined the wall in question on both sides. Had found a slight bellying or bulging in it, but that was not an element of danger. The wall was, in part, in a bad state on the side of the Civil Service Stores, the joists having, apparently, been roughly torn out of it when the adjoining building was demolished, instead of being sawn off; but the damage so done was worse in appearance than in fact.

Mr. Smith, examined by Mr. Bingham, said he was a surveyor, of twenty-seven years' experience in London. Had seen the cracks and bulge in the wall, but did not consider that they constituted elements of danger. The wall was not at all likely to fall.

By the Magistrate.—Attributed the bulging of the wall to its age and to some slight settlements.

Mr. David Thomas Child, called by Mr. Bingham, said he was an architect, of thirty-five years' standing, and, as a surveyor to a fire office, had had great experience as to dangerous structures. Considered the party-wall and the arch perfectly safe.

Mr. Shepherd was the last witness called. Examined by Mr. Bingham, he said he was a builder and contractor, of twenty-two years' experience, and he had had a great deal to do with pulling down and re-building old party-walls. It was by no means an uncommon thing to find old party-walls without footings. In his opinion, as a practical man, he did not believe that the wall would fall if the shoring were removed. The shoring had been imperfectly done, but it was unnecessary.

At this point the case was adjourned until Saturday, when the magistrate,

Mr. Mansfield, in giving his decision, observed that Mr. Walker, the District Surveyor, appeared to have greatly misunderstood the decision which he (the magistrate) had come to when the case was lately before him on another summons. Mr. Walker had no doubt very great and important responsibilities to bear in fulfilling his duties as District Surveyor, but it did not necessarily follow that, because a magistrate refused to condemn an alleged dangerous structure, the professional reputation of the District Surveyor was impugned. The magistrate had to administer the law, and before he could order the demolition of a wall or other structure he must be convinced, by the evidence adduced, that the structure was dangerous. Just as there were said to be some "mad doctors" who were too ready to pronounce everybody whom they examined to be insane, so there might also be architects and surveyors who would too hastily condemn old party walls or other structures. He, as a magistrate, had to go by the evidence, and Mr. Sewell's evidence on the occasion of the hearing of the previous summons was so strong and emphatic that it induced him (Mr. Mansfield) to pause before he acceded to Mr. Walker's request to order the demolition of the structure. It was not denied at the hearing of the former summons that the wall was shored up, and that there was no immediate danger, and the decision which he (the magistrate) then came to had been completely verified in the result, for the building had not fallen down. The matter had now, however, come before him in a different form, and much additional evidence had been adduced on both sides. That additional evidence had been given, he felt sure, with the most perfect candour and honesty by both sets of witnesses, and therefore, in giving his decision on the case, it must not be supposed that he meant to reflect upon or to discredit the witnesses called by the side against which he was going to decide. There was no dispute as to the facts of the case. The whole of the evidence consisted of opinions, and the opinions given on each side were diametrically opposed. He had come to the conclusion that the structures were unsafe, although it might not be capable of mathematical demonstration that they were dangerous. Mathematical proof was not always obtainable. People were convicted of various offences against the law on circumstantial evidence; why, then, should not an alleged dangerous wall be condemned in the same manner? He felt bound, for the public safety, to order the demolition of the wall.

Mr. Green, on behalf of Mr. Fagg, asked that the order might be made under the 73rd section of the Building Act, which provided that the work was to be done to the satisfaction of the District Surveyor, or that of "such *other* surveyor" as the Board might appoint.

The Magistrate, however, said he had every confidence that Mr. Walker would act impartially in the matter, and the usual order would be made.

On the part of the Metropolitan Board of Works, an application was made for costs; but

Mr. Mansfield said he could not entertain the application.

Sir,—This case is now ended, in the only way which was possible from the first,—an order for the dangerous structures to be taken down.

It is not for me to comment on the evidence given by other architects and surveyors as to what constitutes an *element of danger* in a structure, though I certainly heard some singular opinions on construction during the trial; but I can, without hesitation, assert that *not one* of the witnesses on the other side would have taken the responsibility of giving a certificate that the structures were safe *without the shores*.

An unfair attempt was made to try and prove that I had an animus in the case. My reply is, that I suggested to the parties that they should secure the structures under an award, and I held the dangerous-structure notice over *for three weeks* on my own responsibility, and it was not till Mr. Sewell, Mr. Fagg's architect, wrote me a threatening letter, requesting me to get the adjoining builders to shore up his client's house, and till I heard that Mr. Stevenson's singular award said that an overhanging party-wall without foundations or footings, resting on sand, could be raised, that I took any steps in the matter.

I may add that Mr. Fagg walked into my office just before the first day of trial, cheque-book in hand, and wished to know how much I wanted to help him in the case.

ROBERT WALKER.

Fleet-street Improvements. — We hear that the Improvement Committee of Commissioners of Sewers, to whom it was referred to do what was necessary, in view of the contemplated raising of a building on the site of the premises lately removed to the corner of Bell-yard, Fleet-street, have determined to serve the usual notice for compulsorily setting back the frontage so as to be in a line with the New Law Courts.—*City Press*.

THE COMMISSION QUESTION AT GREENOCK.

We have already mentioned the endeavour made by the professional referee in the Greenock competition to obtain a revision of the Town Council's arrangement to pay the successful competitor 4 per cent. for his services as architect, instead of the customary 5 per cent. The following is a copy of the letter on the subject which was addressed to the Provost. It may be usefully considered by other public bodies who are proposing to effect a saving by cutting down the architect's honorarium :—

"Now that you have my report, and before the names are known of the authors of the designs I have recommended, it seems the right time for me to write to you on the subject on which I had some conversation with you while at Greenock, viz., the offer of the Town Council to pay the architect (whoever he may be) of the new buildings only 4 per cent. instead of the usual and well-recognised 5 per cent.

It is true that the said rate of 5 per cent. is to some extent an arbitrary one, as it is good remuneration in some cases, and a very unremunerative one in others; as, for instance, in small works with much detail or special contrivance in them; but it has been long accepted as the most convenient arrangement, so that both architects and employers know exactly the results of their connexion. Unless, therefore, some very strong reason exists for a departure from it, any departure is, I venture to think, most unadvisable, and calculated to lower the feeling of responsibility of the architect, or, if he is not strictly honest, to tempt him to accept from indirect sources that which he may well consider his legitimate right; while, on the other hand, the very fractional difference of 1 per cent. on the cost of a building can be no important saving to the employer. I am, of course, well aware that inasmuch as fifty architects sent in designs well knowing that 4 per cent. only was offered, the successful one will be bound to accept it as a condition of his employment; but may I suggest that such reasoning is not likely to commend itself to a public body, who must desire not so much to save a small sum of money as to maintain the position professionally of the gentleman into whose hands, as their architect, they must confide so much?

May I further suggest the parallel case of a patient seeking advice important to his health at the hands of a physician, or a client consulting a solicitor on matters which may affect his position in life or his personal honour? In neither of such cases would it be thought possible to offer less than the recognised fee. It is surely the same with an architect, who holds, as it were, the position of trustee between his employers and the tradesmen employed, and whose duty is equally to see that the former is not wronged by overcharge, and the tradesmen are fairly paid for the work they do.

Now, in the Greenock buildings there is evidently no reason for thinking they will call for less than usual professional skill and professional knowledge; indeed, they require more than the average of these qualities, for they are far from simple, embracing as they do many very separate requirements, and because the building has to contain accommodation for many very diverse purposes.

In a memorandum issued, the Council say they find that many and large buildings have been executed in the neighbourhood of Greenock where the architect has been contented to accept 4 per cent. I cannot, of course, suppose that these have been otherwise than honestly dealt with, but it may well be that the times of great depression through which we have passed for some years, and are still passing, may have induced or compelled professional men to accept less than their ordinary commission; but this again will, I am sure, be felt an unworthy argument for such a public body as the Greenock Town Council to use or act upon.

Let me, then, as a perfectly independent person, but as one thoroughly acquainted, from the experience of many years, with the working of my profession, urge the Town Council (before any names of competitors are known) to do the graceful act of reconsidering their first impressions, and to announce that, on considering the whole subject, they are ready to pay the architect they employ the usual commission of 5 per cent.

I made some inquiries while in Greenock of the cases in which 4 per cent. had been paid to the architects, and as far as I could learn they were cases of comparatively simple buildings, such as factories, warehouses, Board schools, and the like; all buildings of far less importance, and involving far less labour and responsibility, than must be the case with the new Municipal Buildings.

I have to ask your pardon for thus intruding, as it were, unasked advice, but I hope you will think that anxiety for the due honour and professional status of all members of the profession to which I have devoted my life and an active experience of thirty years, is a sufficient justification.

Charles Barry."

PURE WATER FOR SWINDON.

Under the above heading we noticed at the time* a report of the Directory of the Swindon Waterworks Company, Limited, submitted to their shareholders on the 4th of February, 1878, in which they announced their having entered into a contract with Mr. J. H. Porter, for the application of his patent (the Porter-Clark process) to the softening and filtration of the water-supply of Swindon, adding that they "felt that, having the supply of this increasing town under their control, it is their duty and their best policy to give the inhabitants the purest water in their power."

Certainly, we may well wish that this sense of duty on the part of the directors of the Swindon Waterworks Company were emulated and acted upon by some others, elsewhere; and it is satisfactory to read in a local journal, the *Wilts and Gloucestershire Standard*, that thanks to "the liberal hand with which the company has grappled with the difficulty," "the very acme of perfection has been at length attained." The supply is described as being exquisitely pure and bright for drinking; soft, and everything that the most fastidious can desire for the tea-pot or the wash-tub, and for all those other domestic uses for which water is the essential element. It is further "explained, for the information of all caterers for public health," that the mode of so effectually purifying and softening what is naturally good and wholesome water, is the "Porter-Clark" process, of which, together with the original process of Dr. Clark, we gave a very full description in our issue of December 15, 1877, in connexion with works then being carried out at the County Asylums at Banstead and at Chartham.

We are glad to know that after two years' experience of the working of this process at those asylums, the visiting justices of Kent and Middlesex have recently, by resolution and by certificate, expressed their satisfaction with the process as having answered, down to the present time, the purposes for which it was intended. The water from the deep wells in the chalk at Banstead and Chartham is of 16 deg. and 17 deg. of hardness, and reduced by the softening process to 3½ deg. The water supply of Swindon is still harder, and being collected from springs at the surface, in an open reservoir at the foot of a wooded ravine, the degree of hardness is more or less modified by a varying quantity of surface water, which brings with it varying quantities of earthy and vegetable matters rendering filtration necessary.

As we explained on a former occasion already referred to, by Mr. Porter's combination of softening with filtration, he utilises the pure precipitate of carbonate of lime itself as the medium of filtration; and when viewed in relation to waters containing vegetable or other organic matters, it is agreeable to know that this pure medium is constantly renewed, the cloths of the filters being, by a very simple and neat arrangement, removed altogether with their adherent deposit, and speedily replaced by clean ones. There is no half-measure of scraping or brushing in place, but the cloths are quickly removed, and have their interstices rinsed free from everything. Once the people in charge have acquired the skill that comes of habit, the operation of tending the filtering machines is very easy, influenced, of course, by the degree of impurity in the water.

The Porter-Clark process has an important sphere of usefulness in manufactories, where space is commonly so valuable, and where the waste of fuel by the incrustation of steam boilers amounts in many cases to more than 1,000 tons per annum, not to speak of the cost of periodically chipping off the calcareous conductor with which the boiler is lined.

We understand that Mr. Porter's system is in course of being erected at the works of the Indiarubber and Telegraph Company at Silvertown, to the extent of treating continuously night and day, 12,000 gallons of water per hour within a space above the pumping engine 40 ft. by 30 ft.

At the paper-mill of Mr. Lloyd, at Sittingbourne, and at the sugar-refinery of Mr. Duncan in London, experience, we are told, has evidently its value for industrial purposes, and upon a large scale; and in these days of dearth and competition in trade it is well to know how profit may be saved if it cannot be gained.

* February 2nd, 1878.

A NOTE ON FACTS AS TO LONDON WATER-SUPPLY.

Sir,—The subject of the water-supply of London is one with which it is especially dangerous to meddle, without full knowledge of the facts of the case.

No one doubts the importance of giving every Londoner a supply of the best attainable water at the lowest possible price.

But few people know either what are the facts of the case, or what is being done in the way of improvement. First, as to

COST.

Water now costs almost exactly 6s. 6d. per annum for every unit of the London population. This cost is thus made up:—

	s
1. Interest and dividend on capital...	4
2. Pumping and filtering	0
3. All other expenses	1
Per head, per annum ...	6

The first item arises from a division of 3 per cent. per annum on the average capital. This is considerably less than the standard dividends. The precedent for compulsorily purchase of water stock is that of the award to Stockton and Middlesbrough Corporation. This gave twenty-five years' purchase of the statutory dividend, *plus* 45 per cent. for compensation. Compulsory purchase of the London Water Companies, on the principles now laid down, would therefore raise the first item per head to 6s. or 7s. per head.

With regard to pumping and filtering, the only change contemplated would be to increase the cost of filtering.

With regard to other charges,—on which Mr. Fawcett proposed to save 100,000*l.*, or 1*s.* per head,—that gentleman should be told that this sum is rather more than the *whole* cost, including directors' fees, except what goes to the head of "maintenance." He thus proposes to collect water-rates, and carry on office-work, for nothing!

The working costs vary from 21·3d. per head in East London, to 49d. per head, in the Kew Junction district. It is possible that a little economy may be effected in some districts. But this can only be done, not by blending, but by further *dividing* the management, so as to divide the supply according to zones of use, as is done by the New River Company.

QUANTITY.

The supply of 32 gallons per head per day throughout the year, rising to 37 in the hot months, is now regarded as *too ample*, rather than too small.

By the introduction of a constant supply the quantity may be reduced by about one-fifth. This would save 5d. per head per annum on pumping and filtering. But the cost of the fittings would involve an extra cost to the owners or occupiers of 13d. per head. So the extra cost would fall on *some one* for this change.

QUALITY.

The average quantity of solid matter in London water supply, *taken from the mains*, in 1877 was one part in 3,500.

In the water pumped from deep wells in the chalk, in Kent, the quantity of solid matter is *one part in* 2,500!

The water of the three companies which get their water from the Thames at Hampton is not distinguishable by chemical analysis from that of the two which take it from the Lea at Molesey. It may be desirable to test the supply of the former three higher up; but

stinct chemical or medical evidence to
at this is the case.
eport of Dr. M. Tidy to the Society of
Officers of the Board of Health, gives
h of the water *taken from the mains* of
rent companies, which yield the above

al source of the chief pollution of the
IN THE CISTERNS from foul air, blacks,
orption of gaseous matter.
emedy is, constant supply as far as
; abolishing cisterns; and medical IN-
i.

s neither dividend nor political capital
n made in this way, it is only the real
reformer, who has studied the subject,
lift up his voice in the matter.
f 563,000 houses in the companies' dis-
onstant supply is now given to 128,704,
h 76,853 have been so supplied since
, 1873. The *onus* here does not lie on
panies, but on the house-owners and
s, who object to the expense of changing
tings. C. E.

ORGANISATION OF EMIGRATION.

—As the subject of *emigration* will, in all
nity, force itself more and more upon the
n of the Legislature, a few suggestions
ence to its organisation may not be in-
ne; for emigration on a large scale, with-
ganisation, would only aggravate the
ses of the emigrants.
f the first needs of the unemployed
n is a record of the excess and deficiency
ur in different localities, not only in
d, but in the colonies. Information of
d required, with regard to these latter,
e obtained from the ever-obliging agents-
; and if you, sir, could devote a corner
valuable journal to the registry of such
tion, under the heading, "Labour
," you would confer a great boon upon
king population of this country.
ust be clear to every one that emigration
a necessity when population begins to
the demand for labour; but this, it should
llected, may be the condition of some of
nies as well as of the mother country;
migrate to colonies in straits similar to
the old land would be both absurd and
unless, indeed, the emigration should be
d as a co-operative community under
sidency of capital, and in all respects, as
unity, proportioned and complete in
for one commodity all the colonies have
viz., land.
ust disabuse men's minds of the notion
s mere transfer of human beings from
t of the world to another can improve
circumstances. There is, first of all, the
.of getting to the new country, and
migrants find on their arrival that there
bour is already in excess, and they be
funds, what is to become of them?
ew state would not be one whit better
eir first. It is true that there would be
s of acres of outlying land to be culti-
But land requires patience and an out-
apital before it will afford means of sub-
. Who shall furnish the capital? Here,
e may perceive that there is an oppor-
for capitalists to come to the rescue, and
nise co-operative companies of emigrants.
pitalist would purchase lands and assist
igrants with means during its cultivation
ain conditions, which should, of course,
ly remunerative for the aid lent. The
l Governments might themselves find
would be to their interests to be the
ists to such communities of emigrants, and
would also be a means of rapidly increasing
wth and wealth of their colonies.
d not "home colonisation" be effected
o some extent, on the same plan? If it
the expenses of transit would be saved.
a suggestion which I put forward some
since in these pages, and also in the
l of the Society of Arts. Of course, this
; is not to be confounded with that for the
tion of waste lands. It is a project for a
rcial enterprise, in which the *petite cul-*
ight have a fair and wider trial.
constitution of any sub-colony such as
have described, should be proportioned in
ments, and no hands should be permitted
icipate in any organisation of this kind
nd above those absolutely required for its
t working. W. CAVE THOMAS.

CASH PROVISIONS IN CONTRACTS.

SIR,—Having during the last few years prepared in London and provincial towns as many extras and omissions bills as any quantity surveyor, although doing very little at present, I beg to say, in answer to the letter in last week's *Builder*, headed "Prime Cost," that I find the general accepted interpretation of prime or first cost to be the amount of the merchant's invoice, after deducting the "trade discount," but not deducting the 2½ per cent. "cash discount" allowed if cash is paid by the contractor, thus:—

Say, Benham & Son's account for stoves	£50	0	0
Deduct trade discount, say 10 per cent.	5	0	0
Net amount of merchant's invoice, being prime or first cost	£45	0	0
Deduct cash discount, 2½ per cent.	1	2	6
Total amount of cash paid by contractor	£43	17	6

Trade discounts, of course, vary. Take, for instance, the trade discount off iron pipes (gas and water), which has been known to be as much as 50 per cent. off the list or invoice price; but when the market value of the metal (iron) has been at a very high price per ton, the list prices have been the net prices, or prime cost, until the market, like a ship, "rights itself," or, in other words, the market recovers its equilibrium.

In "measuring up" or adjusting extras and omissions bills, to the net amount of the merchant's invoice has to be added the usual "builder's profit" of 15 per cent.; that is to say, if the builder has, in the first instance, added 15 per cent. to the amount of the cash provision. To ascertain this, a blank copy of the lithographed bills of quantities should always be priced and moneyed out, and deposited under seal with the architect previously to signing the agreement specification and drawings, and only opened for the purpose of valuing the extras and omissions.

If the wording in the lithographed bills of quantities, or the specification, is,—"Provide the P. C. amount of ten pounds for [say] encaustic tile pavement, and allow for profit," the adjustment would stand thus:—

Omission:—			
Cash provision, ten pounds	£10	0	0
Add builder's profit, 15 per cent.	1	10	0
Total amount of omission	£11	10	0
Addition or Extra:—			
To net amount of, say, Burke & Co.'s account for pavement, after deducting trade discount, if any, but not deducting the 2½ per cent. cash discount, if cash is paid by the builder	10	15	0
Add builder's profit, 15 per cent.	1	12	3
Total amount of extra	£12	7	3

But if, upon referring to the priced bills of quantities, it is found only 5 per cent. has been added to the cash provision of the builder in the first instance in framing his estimate, then only 5 per cent. builder's profit is recognised, and if no profit at all has been added, then no builder's profit is allowed upon the net amount of the merchant's invoice. Further, if the wording in the lithographed bills of quantities or specification is,—"Provide the P. C. amount of ten pounds for [say] stoves, and allow for profit and fixing," the value of the fixing or setting (sometimes day work, which would include profit) has to be allowed, in addition to the amount of the merchant's invoice for stoves.

Again, where the cash amount provided is not all expended, the merchant's invoice and profit, amounting to only 8*l.*, and the provision being 10*l.*, the difference between the two amounts should be omitted in the omissions bill + the 15 per cent. = 2*l.* 6*s.*, total amount of omission, unless a smaller amount of per-centage has been carried to the cash provision in the first instance.

It is certainly at all times preferable, if practicable, to deal only with the difference between the cash provision and the merchant's invoice, the quantity or measuring surveyor being paid a per-centage upon the total amounts of the extra and omission bills,—the larger the amount of those bills the greater the expense, or cost, to an architect's client.

I would ask what per-centage is the recognised "builder's profit" to be added to the prime cost of the merchant's invoice. I always added on 12½ per cent. as profit to the cash provisions, until a London quantity surveyor representing the architect, and I representing the contractor, altered my 12½ per cent. builder's profit on the merchant's invoice in my bill of extras to 15 per cent. In that instance the wording in the lithographed bills of quantities was, "Provide the P. C. amount of ten pounds *including* profit." The "builder's profit," of course, had then to be allowed out of the cash provision of 10*l.* upon the amount expended, and only the net amount of 10*l.* omitted.

When provisions are for labour and materials, *i.e.*, rods of brickwork, cube yards of concrete, or digging, and the wording in the lithographed bills of quantities is, "Provide two rods of brickwork, to be expended as directed by the architect," the recognised prime cost per rod of the brickwork is then the price it is valued at by the contractor in the lithographed bills of quantities supposed to have been deposited with the architect to form a schedule of prices to value extras and omissions by; but if the architect instructs the quantity surveyor to insert the market value per rod in the lithographed bills of quantities, which would read thus, "Provide two rods of brickwork at fifteen pounds per rod P. C. [assuming that to be the market value per rod], and allow for profit," the prime cost per rod of the brickwork would then be your 15*l.* This also prevents the fraud of the provision for brickwork being valued in the bills of quantities at a lower price per rod than the market value, when it is thought probable the whole of the provision for brickwork would not be required, and consequently there would be an omission.

I have known provisions of brickwork to be as much as 50 rods with cube yards of concrete, "dig and cart," and cube sets of fir in proportion. This is when a large quantity of underpinning is anticipated, or it is assumed party walls have to be rebuilt, and an architect wishes to furnish his client with an inclusive estimate; but even then I would venture to suggest a lump sum. "Cash provision" is preferable, for this work can always be valued on the site, approximately, by a competent surveyor. When the wording in the bills of quantities is "allow" (not "provide"),—for instance, "Allow for cutting away, attending upon, and making good after all trades, and in all trades, including gasfitter and bellhanger,"—this the contractor, or his representative, places his own valuation against, and that, or any other "sporting item" (*i.e.*, may be worth more, or may be worth less), where the word "allow" occurs, cannot be re-opened when the bill of extras and omissions has to be adjusted, but the contractor's valuation is final and binding. WILLIAM H. PIPE.

THE POOR IN ENGLAND.

SIR,—It is not clear how the particulars of the career of the Rev. Richard Hibbs, given by your correspondent Mr. Ward, can interest your readers unless in connexion with some practical scheme for the diminution of poverty; and it is surprising that no hint at the nature of his plans is given in the letter of that gentleman. When a man having novel ideas to make public chooses the crowd of promenaders in Regent's Park as his audience, one cannot help being struck with the inadequacy of that audience for the reception of any great and valuable proposition; while, if the proposition is foolish and impracticable, one can hardly see why those who go there for a Sunday afternoon's stroll should be pestered with it.

However, as Mr. Ward has shown that the training of this clergyman has been different from that which is common, it would be unfair to judge his mode of proceeding by common rules; and one feels that it is quite possible for him to have seen some things connected with his subject which have escaped the notice of ordinary men. Pray let me ask your correspondent, who evidently knows Mr. Hibbs's views, and seems to agree with them, to give such a short statement of the measures which he advocates as may enable us to judge whether they are worth studying in detail. I need hardly say that, before such an audience as your columns can command, the assumption that a good and practicable scheme will be met with ignorant prejudice, or will be stifled by self-interest, would be out of place. On the contrary, it seems to me that the vast body of men engaged in the arts of construction are more likely than any other class to understand any plain statement bearing on the condition and prospects of the poor, and they are very unlikely to be troubled with any belief in the perfection of our arrangements for the prevention of distress, or for dealing with it where it exists. THOS. BLASHILL.

Bad Water.—Through contamination of the water supply at the Female Orphans' Home, Jersey, an epidemic of gastric fever has broken out, and six children have died out of forty-five who were attacked. This mortality has been increased by an outbreak of measles, which affected fifty-one children, eleven of whom have died.——A whole family has been poisoned at Banstead, Surrey, through drinking impure water from a tank or well. One of the children has already died, and the other members of the family are lying dangerously ill. The Epsom rural sanitary authority ordered the well to be immediately closed.

APPOINTMENT OF SURVEYOR OF HIGHWAYS, DARTFORD DISTRICT.

Sir,—Having had my attention drawn to two letters in your issue of the 13th of September relative to the above appointment, I think it but right that the public should be informed of the true state of affairs; and as your correspondent who signs himself "Fair Play" has taken upon himself to publish that which is not true (in error, I hope) when he states, "*I told him that one of the waywardens told me to apply for the place*," I most distinctly say I did not tell him anything of the kind. What I did say during the time of the election was: On one occasion, when at Bromley, I met one of the waywardens (whom I knew some years ago), who asked me "what I was now doing"; on my answering, "I was about leaving the surveyorship of highways of the Bromley district," he (the waywarden) said, "Are you going in for ours?" My reply was, "Which is 'ours'?" His answer was, "Dartford." I then said, "When it comes out I intend to do so." I did not see that gentleman again until a few minutes before the election; the only remark passed was, "There are so many applications it will be necessary for the Board to meet much earlier."

I most distinctly say I did not canvass personally or by letter any member of the Board.

Both your correspondents "Fair Play" and "A Candidate" seem under the impression I was a *local* man, and it was determined I should be elected in spite of all good and worthy applicants, whether qualified or not.

As regards qualifications, allow me to inform them that my experience in road surveying commenced in the year 1856, since which I have had about thirteen years' experience in that particular business, and I hold good testimonials from all my appointments. I have twelve lying in front of me at this time from our neighbouring gentry, speaking in the highest terms of my abilities. Are these all forgeries? Let your correspondents pause and consider ere again scattering such insinuations both against a Board and a more successful candidate than themselves. Fair criticism I advocate; but they have descended to a much lower level than that.

I may add, when I was selected by the Bromley Board, I sent my application, with six testimonials, to the clerk, saw no member of the Board until I entered their Boardroom, neither canvassed by letter nor otherwise, and was elected in preference to three other selected candidates, *all local men*, nor had I been in the county even for twelve or thirteen years.

I trust you will allow me the privilege of vindicating myself, more especially when I tell you I have had the misfortune to lose my arm, now some twenty years ago.

R. B. Stephens, the Successful Candidate.

STAINES TOWN-HALL.

Sir,—In reply to your correspondent, "Esprit de Corps," I am in a position to know that over 160 applications have already been made for conditions; I had to wait till fresh copies were printed, the first 160 having been distributed.

The building required is only plain, straightforward work, no carving being needed, and, consequently, no artistic drawings wanted.

I shall be glad if the letter of "Esprit de Corps" has the effect of preventing further competition, as I am afraid there are already too many striving for the honour and glory to be gained by the successful candidate.

One who intends to Compete.

THE LIVERPOOL MASTER BUILDERS' ASSOCIATION AND WAGES.

Sir,—This Association has given notice to the operatives in the building trade that the following reductions in the wages will be made, to come into operation after March 31, 1880:—Masons from 8½d. per hour to 7½d. per hour; bricklayers, 8½d. to 7½d.; plasterers, 8½d. to 7½d.; joiners and carpenters, 7½d. to 6½d. in the summer,—8½d. to 7½d. in the winter; plumbers, 8½d. to 7½d.; and the wages of the operative painters (after February 29th, 1880) will be 6½d. per hour instead of 7½d. as at present.

W. Knox, Secretary.

CIRCULAR-SAW GUARD.

An ingenious arrangement to prevent accidents with circular saws, which require incessant watchfulness on the part of the operatives, has been invented by Mr. J. B. Lakeman, her Majesty's Inspector of Factories, central metropolitan division, who has presented it freely to the public in their interest, and has in no way protected it by patent right. From a lengthened experience of the many severe and fatal accidents arising from circular saws, Mr. Lakeman frequently suggested a fence, but was too often told that his ideas were Utopian. But upon representing the case to Messrs. Richard Garrett & Sons, of the Leiston Works, Suffolk, they generously set to work to perfect Mr. Lakeman's ideas, and have produced an effectual guard against accidents from circular saws.

The guard consists of three pieces, namely:—The mortise-plate secured by three bolts to the fence; a radial arm, which is secured and adjusted vertically into the mortise-plate by means of nut and collar; and the covering-plate, which is secured and adjusted laterally in the radial arm, in conformity with the adjustment of the saw-fence, by means of the thumb-screw. Where several saws of various diameters are used in the same bench, it is advisable to have two or, perhaps, three covering-plates, graduating in size to cover the whole series of saws. The apparatus, as described, is in its mode of fixing exceedingly simple. It is to be recommended on account of its simplicity, its cheapness, its immovability when fixed, and for its perfect freedom from being obstructive to the sawyer.

HOSPITALS.

London.—University College Hospital was re-opened on the 22nd ult., having been closed for a period of seven weeks for alterations and enlargement. For some time previously the managing committee had felt the need of more accommodation, and by pulling down partition walls, giving portions of the wide landings in the north wing to the wards, and moving the sleeping apartments of the majority of the nurses and assistants to some adjoining houses, room for forty additional patients has been obtained, and the number of beds available for urgent cases increased from 160 to 200. Advantage has been taken of the opportunity afforded by the removal of all the patients to make some important improvements in the sanitary arrangements of the hospital. Old brick drains have been replaced by stoneware pipes, and means have been taken to prevent the admission of sewer-gas into the building. The sinks, &c., formerly within the wards, are now placed in closets built outside, and the walls and woodwork throughout the interior of the hospital have received a coat of Griffiths's silicate paint. Attention has also been given to the improvement of the ventilation. In the basement, where the various kinds of baths for the treatment of skin diseases obtained through the exertions of the late Dr. Tilbury Fox are placed, there have been no material changes. The operating-room has been enlarged by a method of constructing the folding-doors, devised by Mr. N. H. Nixon, the secretary. By sliding the doors out into the corridor and inserting an extra movable door, a considerable addition is made to the space in the pit for the operators, while half the width of the corridor remains as a passage. Another alteration for the benefit of the patients has been effected by making an apartment under one end of the operating-room gallery, in which chloroform may be administered to the patient. The sufferer will thus be spared the trying ordeal of seeing the students before the operation begins, and will be already insensible when wheeled into the theatre on the operating-table. Many changes have been made on the top floor. Here the children's ward is now placed, and what was possible has been done for their comfort; but to make this room pleasant and cheerful for the little inmates some pictures and other things are still needed. On this floor a room has been fitted with iron racks, in which the patients' clothes, after fumigation, can be stored until the owners leave, light suits being supplied for the men to wear during the time they are in the hospital. In the north wing are wards carefully isolated, in which any cases of erysipelas or other contagious diseases may be treated. These alterations have been carried out by Mr. W. A. Scurrah from the plans of the two architects, Mr. A. Blomfield and Mr. Shepard, and the cost, including the new beds, furniture, &c., will probably be about 3,500*l.*

Wolverhampton.—At the Wolverhampton and Staffordshire General Hospital, the governors have just provided new laundry buildings, which are situated just below the dispensary department at the rear of the hospital. The premises consist of three rooms on the ground floor, the interiors of which have been fitted up by Messrs. Bradford & Co., Manchester, with their steam washing and drying apparatus. The dirty linen from the hospital is first taken into the wash-house, where it is placed in closed washing-boxes filled with soap and water, and which are kept constantly rotating at a very rapid rate by means of steam power. After undergoing this process for about fifteen minutes they are taken out and each article put through the rollers at the top of the boxes so as to squeeze out the dirty water. They are next placed in a combination rinsing-machine, consisting of two compartments or open boxes. In the first box the clothes are thoroughly rinsed in fresh water, and then, after being again passed through the rollers, are placed in the second box, which is filled with blue water. From here they are taken, after the water has been wrung out of them, and placed in a kind of open iron cylinder, with a thick cone-shaped shaft in the centre, termed a hydro-extractor. The wet linen is packed tightly round the central shaft and then the cylinder is set in motion at the rate of about 700 revolutions per minute. This creates a strong, fan-like current of air, and has the effect of compressing the wet linen to such a degree as to force out nearly every particle of moisture it contains. After this the articles are taken to the drying-room. Here they are opened out and hung upon a of large clothes-horses, which are then ru slides into a closed-up chamber, with an wire-work bottom, situated over the in the basement of the building. The from the boiler is supplemented by a num hot-air pipes, and in this way the drying p is very quickly and efficiently completed. the drying-room the clothes are taken to laundry, where a patent mangle, also worl steam, is in constant motion, and here the v articles are mangled and folded ready fo The total expense of fitting up the mac and erecting the new buildings has amount about 1,000*l.*

CHURCH-BUILDING NEWS.

Sawley.—Sawley Church, Yorkshire, has rebuilt upon its old site and consecrated b Bishop of Ripon. With some extension church, which is dedicated to St. Micha All Angels, consists of chancel, nave, ves the north side, and porch on the south. new church is Early Decorated in style, built of local stone, and covered with slates. The nave fittings are in pine, the and chancel fittings are of oak. The r and stonework of the pulpit are of S limestone. The old font is fixed on new The stained glass in the east window is th of Mr. Wormald, the subject being "The Shepherd." The total cost of the chur been a little over 2,000*l.* Mr. Birchall, of has been the architect, and Mr. Grain Otley, the contractor.

Brinkworth.—The chancel of Brink Church has been re-opened, after restora accordance with the designs and plan under the supervision of Messrs. Middle Son, architects, Cheltenham; the cont being Mr. William Jones, of Gloucester. viously the chancel was in a most dated state, the side walls being as m 14 in. out of the perpendicular, the roof en decayed, and the flooring gone. The wall been rebuilt, but care has been taken to u old material, the windows being carefull served, the stones numbered as they were down, and replaced in precisely their ol tion. The stones of the doorway were t with similar care. The roof is of panelle intended shortly to be decorated with co and the floor is of encaustic tiles from M Minton's. The east window, which is specimen of Perpendicular work, has bee with stained glass by Mr. de Quetteville a brothers and sister as a memorial of their pa Messrs. Hardman, of Birmingham, execut window. On the removal of some of the wash, remains of colour were traced, a one of the piers to the nave a complete p figure was discovered.

Tarfside.—The foundation-stone of Episcopal Church at Tarfside, Glenesk, ha laid by Lord Forbes, at whose sole exper structure is to be built, as a memorial relative, the late Bishop Forbes. Lil buildings that preceded it, it is dedica St. Drostane, who about the ninth c laboured in Glenesk. At the request lordship Messrs. Matthews & Mackenzie, tects, Aberdeen, prepared the necessary The general style is Early Gothic, of a character, in keeping with the material used. The church consists of a nave, 46 21 ft.; a chancel, 21 ft. by 15 ft.; with circular apse at the east end 19 ft. in dia It is to be built of the finest granite that obtained in the neighbourhood, the c stones being prepared in and brought Aberdeen, coming by rail to Laurenc whence they are carted to Tarfside. north side of the chancel will be a vestry entry to the church is obtained by a p the south-west corner. The roof will be a one, with rafters of pitch-pine, staine varnished. The apse will be lighted by stained-glass windows. The figure will h of our Saviour as the Good Shepherd; right will be St. Andrew, and on th St. Peter. The contractors for the b are:—Mason, Mr. Alex. Crabb, Brechin; Mr. A. Dures, jun., Brechin; plumbers, C. Wood & Co., Montrose; slaters, Mes Wishart & Sons, Caldhame; plasterer, Crabb, Brechin; painter and glazier, Donald, Aberdeen. Mr. S. Porter, Tarfs superintendent of works.

Bampton.—The interior of Bampton church has recently been undergoing

alterations and repairs. The columns naive generations have been greatly by the addition of plaster, variously and latterly with yellow and black this has been cleared off, and the composed of the well-known Beer nd in their own natural beauty. The l capitals are also seen to advantage. fagle, the tithe impropriator, defrayed ses of the works in the chancel. has been done by Messrs. Pearse &

ING CHURCH-BUILDING NEWS

The United Presbyterian Church, Tain been re-opened, after having been modelled internally from designs by atosh, architect, Inverness.

igh.—A new Baptist Chapel has been Hatherleigh, Devon. It has been om the designs of Mr. J. B. Horne, hic in style, the materials used being ative Cleave stone, with lighter facings same quarries. The total length of g is 60 ft., breadth 28 ft., and height to gable 40 ft., and it will accommo- t 500 persons. Messrs. Petherick Hatherleigh, have been the builders, Knowles has attended to the glazing ing.

—The foundation-stone of a new Con- l church at Milton, near Hanley, was he 1st ult. Mr. A. R. Wood, of is the architect, Mr. Bennett, of being the builder. Accommodation rovided for 225 persons. The cost is at upwards of 800*l.* The general talian in character, carried out with d bricks, and terra-cotta and stone Hill & Hey's syphon ventilators are

ls.—The memorial stone of a new esbyterian Church was laid at on the 16th ult. The church is to rom designs by Messrs. Thornton Thomson, Edinburgh, in the Early yle, with area and gallery on three rather with galleries on all sides, as gallery, with accommodation for sixty set behind the pulpit. It is to accom- 30 persons in all, with session-house, ies' room, and large hall for Sabbath- ol and other meetings. A prominent ill be a spire 120 ft. high. The ire Messrs. Murray & Co., Galashiels.

ury.—A new Wesleyan chapel, at Hill, Shrewsbury, was opened on The building has been erected from plied by Mr. G. B. Ford, architect, the builders being Messrs. W. & J. New-street, Frankwell, Shrewsbury. l will accommodate 630 persons.

uerne.—The foundation stone of a new Chapel has been laid in this village. ding is being erected from plans pre- d Mr. George Shakeshaft, of Ashton, by es Tew, of Stoke Bruerne. The site northern part of the village, and ntiguous to the old chapel. The build- e of red and white bricks, and is to ate about 180 worshippers, being just e number which the present chapel The cost will be about 300*l.*

l.—The memorial stones of a new Chapel in Walton-road, Kirkdale, have The new edifice, which is intended ongregation at present worshipping in et Chapel, will be built in the Italian walls being faced with the best Ruabon ith dressings of local stone. The arranged on a transeptal plan, the 70 ft. by 50 ft. inside, and the width transepts 64 ft. 6 in. The building amodate 1,100 worshippers, and the whole, including boundary walls and commission, will be about 4,600*l.* The ave been prepared by Messrs. William on & Son, of Burnley, under whose dence the work will be carried out. ractor is Mr. Samuel Webster, of

e.—The erection of a new school- the Wesleyans of Boscombe has just menced. It is being erected at the he site for the proposed permanent ich is to be hereafter erected. The uilding will be in the Early English will be 33 ft. by 21 ft. internally. n, of Liverpool, is the architect, and s, of Winton, is the builder.

Longton.—Zion Chapel, Longton, has been re-opened, after alterations and re-decoration. The general decoration of the chapel has been done by Mr. G. H. Plant, of Longton, and the whole of the works executed from the plans, specifications, and details prepared by Mr. W. Wood, architect, Longton.

Chartham.—The memorial-stones of a new Wesleyan chapel at Chartham, Kent, have been laid. The chapel is intended to seat 240 persons, but this can be increased by throwing into it a schoolroom which will provide for about 100 more. The architect is Mr. Ranger, and the total cost will be 600*l.* The style is Gothic.

SCHOOL-BUILDING NEWS.

Hindley Green.—On the 23rd ult. the foundation stone of new National schools at Hindley Green, near Wigan, was laid by Mr. Thos. Kirkpatrick, J.P. Accommodation will be provided for 150 children. The site of the building has been given by Mr. Kirkpatrick. The cost of the building is estimated at about 1,100*l.*

Kettering.—The memorial stones of a new Wesleyan school, to be erected in Rockingham-road, Kettering, have been laid. The building, which is also to be utilised as a mission chapel, will contain one large room, 60 ft. by 30 ft., and a class-room, 14 ft. by 12 ft., together with the necessary outbuildings. The style will be Gothic, of a simple character. The architect is Mr. R. Johnson, of Melton Mowbray, and the contractors Messrs. S. Mawby (carpentry), and Mr. J. Coltman (brickwork). The total cost will be 590*l.* The contract for the minister's house, which will be begun immediately upon the completion of the school, is 615*l.* A site has been reserved for a new chapel.

Wolverhampton.—On the 13th ult. the foundation stone of a new school-church, which is being erected at Springfields, Wolverhampton, was laid by Mr. Robert P. Walker. The structure is intended to serve as a school-church, and will be 80 ft. long by 27 ft. wide, the side walls 17 ft. high, and the total height to ceiling 25 ft. The work is being carried out by Messrs. G. & F. Higham, from the designs and under the superintendence of Mr. T. H. Fleeming, architect. The estimated cost is about 1,100*l.* The walls will be faced externally with red pressed bricks.

Winchester.—The buildings of "Winchester Modern School," which is intended for the sons of people belonging to the middle classes, are now near completion. They occupy a prominent site on the west of the Romsey-road, on a spot overlooking the Berkshire hills and the Itchen Valley, the Isle of Wight, &c. The land taken is some twelve acres in extent. The style is a combination of modern and semi-Tudor architecture. Mr. T. Stopher is the architect, and the contract has been carried out by Messrs. Carter, of Winchester. The cost of the land, with the buildings at present constructed, is about 10,000*l.*

Henley-on-Thames.—The National schools at Henley-on-Thames were re-opened on the 13th ult. after enlargement. The new buildings consist of an entrance-lobby; school-room, 54 ft. by 24 ft.; class-room, 21 ft. 5 in. by 15 ft.; with lavatory and offices, and they will accommodate 202 scholars. The entire cost will be about 600*l.* The new work is of brick and flint, with a tiled roof, and has been erected by Mr. Weyman, builder, Henley, under the superintendence of Mr. W. Wing, architect, Henley.

VARIORUM.

"The Model Locomotive Engineer, Fireman, and Engine Boy," by Michael Reynolds (Crosby Lockwood & Co.), gives a little history of the pioneer locomotive engines and their inventors, and a project for the establishment of certificates of qualification in the running service of railways. It agreeably combines amusement with instruction, and is well calculated to fire the ambition and increase the efficiency of those to whom it is more particularly addressed. Mr. Reynolds's fitness for the task is well known.——"The Four Old Lodges, Founders of Modern Freemasonry and their Descendants," by R. Freke Gould, recently published at Spencer's Masonic Depôt, is a record of the progress of the craft in England down to the union in 1813.——"Notes on the Scenery and Geology of Ireland," by T. Mellard Reade, F.R.I.B.A., is a reprint from the Proceedings of the Liverpool Geological Society (Liverpool: Tinling & Co.).——The "Transactions of the Manchester Statistical Society," 1878-79, contains some papers on important subjects well treated,—for example, the Depression of Trade, by Mr. Elijah Helm; the Relations of Capital and Labour, by Mr. Geo. H. Pownall; and Economical Aspects of the Land Question, by Mr. W. Summers, M.A.——The October number of the *Nineteenth Century* includes the first of a series of "Familiar Letters on Modern England," by Karl Hillebrand. The writer is acute and cultured, and evidently seeks to be impartial.——"House and Home" improves in its literary matter, but we cannot say so much for its portraits. The fear of being so presented to a curious public would deter many from efforts to be eminent.——From *The Great Industries of Great Britain* for October, we get some memoranda as to American locks:—"When good work abounds spurious imitations of it are sure to be plentiful; but the old effort to discredit all the numberless productions of Birmingham, by calling them 'Brummagem goods,' was not more unjust and foolish than is the more recent habit of condemning as trumpery all the ingenious novelties introduced by American manufacturers. Instead of sneering at them, English manufacturers, if they are wise, will follow the example of the Americans. By their inventive wit and their mechanical tact they are superseding us, for instance, in the lock trade. They will turn out a serviceable lock and key which they can afford to sell for two or three cents, or we can buy from them another which is cheap at a thousand dollars. A curious specimen of the latter sort is the chronometric lock, the history of which may be given in Mr. Bain's words:—'The thief-proof safes of the United States,' he says, 'are, I believe, admittedly superior in quality to those manufactured in Europe; and, when burglars effected an entrance into a bank, they found they could not drill the safe in the time at their disposal; so they adopted a different mode of robbery. The gang seized and gagged the whole household. They then presented a pistol at the head of the manager and demanded the keys of the safe; and, as generally man will do anything to save his life, they got the keys, plundered the safe, locked it again, and made off, leaving the family gagged. Many burglaries of this kind have occurred in the United States. To prevent such a case happening, the chronometric lock has been invented. It is a mixture of a lock and a timepiece, and may also be a combination lock. Suppose the hour of closing the bank is five o'clock in the afternoon, and ten o'clock next morning that for opening it: the manager, when he goes to close the safe, sets the clock-work of the lock to ten o'clock next morning, and then locks the door of the safe. That done, it is impossible for any one to unlock the door until next day. The key is of no use till the usual hour for opening the bank, when the chronometric arrangement in the lock drops a bolt, and permits the key to turn and the door to be opened.' That particular lock is, perhaps, more ingenious than generally useful; but it illustrates the smartness with which the Americans contrive to meet every want, and threaten to render obsolete the older arrangements with which our own manufacturers think we ought to be satisfied because they were good enough for our forefathers."——The new number of the *Magazine of Art* speaks of Mrs. Butler, *née* Thompson:—"Miss Thompson was born at Lausanne, on the border of the Lake of Geneva. Her mother, during the winter of her daughter's birth, cultivated her favourite art of landscape-painting, and the natural pictures of the snowy mountains and the ice-bound lake, set as they often were in magnificent sunsets, were the first objects that caught the child's eyes. Charles Dickens, the close friend of Elizabeth Thompson's father, was the companion of this Swiss sojourn. All her early years were divided between Italy and England, the almost uninterrupted sunshine of the Eastern Riviera of Genoa brightening her winter quarters, while the heart of the English country was usually her summer residence. Country life, with the companionship of a sister, and with perfect freedom to run about on the hills of Nervi, or in the fields of Kent, to watch the horses at their farm-house work, and even, it is whispered, to play cricket on the village-green, formed a healthy contrast to the studies which were vigorously pursued from the age of five to that of seventeen, under the sole tutorship of Mr. Thompson, who (himself educated at Cambridge, and possessed of an independent fortune) entirely devoted himself to the training of his

two daughters. That they should be good swimmers, good billiard-players, and good marks-women with a pistol, entered into the scheme of 'accomplishments' which he resolved to give them. The familiarity with animal life was peculiarly favourable to the Rosa-Bonheur aspirations of the little girl, while the free, demonstrative, and expressive character of the Italian peasantry stimulated her singularly keen power of observation. Her father was early struck by this power, and developed it watchfully and constantly, drawing the child's attention especially to outward manifestations of character. There is much that is dramatic in Italian life, and nowhere could the faculty peculiarly belonging to the artistic, as apart from that which pertains to the more meditative literary talent, the faculty of objective observation, find greater scope than there. The dramatic power which was afterwards shown in the faces of the men in 'The Roll-Call' and 'Quatre Bras' germinated in those early days."—Cassell's *Family Magazine* says, as to the population of New York,—"After a three years' rule of the colony which he had subdued, Colonel Nicolls was superseded in 1667 by Francis Lovelace. In October, 1673, the Dutch recaptured the town, and held it till the ensuing February, when it was restored by treaty to Great Britain, whose possession of it remained thenceforth undisturbed, till 1783 made it independent in common with the whole of the United States. Its subsequent history is too well known to need repetition; but the statistics of its growth are worthy of a passing glance before concluding. In 1656 the population was 1,000; in 1664, 1,500; in 1673, 2,500; in 1690, 4,302; in 1731, 8,629; in 1771, 21,163; in 1773, 21,876; in 1786, 23,614; in 1790, 33,131; in 1800, 60,489. But while the lapse of nearly two centuries barely carried the total above 60,000, the seventy-eight years which have since passed, have raised it to the astounding figure of 1,170,142, a rapidity of increase to which Europe can furnish no parallel."

Miscellanea.

The Artisans' Institute and Technical School.—The trustees of this Institute, 29, Castle-street, Upper St. Martin's-lane, have published a report for the year 1878-9, and ask support for another year. The report says:—"In order to render the classes more useful, an announcement was made early in the session that apprentices would be admitted free on producing letters of recommendation from their employers. Although all those who have attended these classes during the last five years have strongly expressed their sense of the benefit they have derived,—many obtaining advantages in wages and position which would otherwise have been out of their reach,—this could not be generally known to the public. The tangible value of such instruction is not yet so obvious as to make apprentices or their parents willing to pay fees for such instruction. This is not expected even in Switzerland or Germany, where primary and technical instruction has been widely known and appreciated for many years. Such schools are not found on the Continent to be self-supporting, and are liberally supported by municipal bodies and the State. It is not, then, reasonable to expect that the Artisans' Institute should be self-supporting, or that our apprentices and workmen should pay more than very moderate fees, if any." The trustees re-opened the classes on Wednesday last, and they intend to increase their number in accordance with requests made to them by intending students.

Fall of a Scaffold.—On the 25th ult., a serious accident happened in Newton-villas, Kilburn. A pole snapped asunder, and the whole of the scaffolding that was supported by it fell outwards, carrying a staging about 20 ft. from the ground with it. Four men who were standing on the staging were precipitated below with great violence; two of them,—Charles Wharton, 40, and Henry Wildman, 23,—sustained fractures of the arm and thigh, and several lacerated scalp wounds, necessitating their removal to the hospital.

A New Congregational School, serving temporarily as a school-chapel, is to be erected forthwith at Carnforth. The site is a good one, and a larger chapel is intended to be built hereafter, adjoining the school. Messrs. Hetherington & Oliver, of Carlisle, are the architects.

Quebec Dock Labourers.—We have previously had occasion to remark on the exorbitant rates of wages demanded and obtained by the Quebec Dock labourers, through the tyranny exercised by their trade-union, miscalled the "Labourers' Benevolent Association." From recent advices from Quebec, it appears that this association, not content with hampering the trade of the port by their excessive charges, are resolved to prevent other labourers, not being members of their society, from working at lower rates. A new society of French labourers, entitled "L'Union Canadienne," mustering some 3,000 members, has recently been formed, with the object of taking work at lower rates than the old association, viz., $1·50 to $2·50 per day, instead of the $4 which have hitherto been exacted by the "Benevolent Association." About the middle of last month the new society, making a parade of its forces, came into contact with the rival body, and a riot of a most disgraceful character was the result, in which more than one life was sacrificed, and a number of persons seriously injured. A sort of anarchy appears to have reigned in a portion of the town during the fight, as shops were freely sacked, and peaceable citizens assaulted, while the police and civic authorities seem to have contented themselves with looking on and holding councils. There is doubtless blame to be attached to both sides, and the settlement of a trade dispute in such a primeval manner is by no means creditable to Quebec, but for the sake of the trade of the port, in which the timber trade here are deeply interested, we sincerely hope that steps will be taken to suppress the tyranny of the Labourers' Benevolent Association, and permit a fair field and no favour to men who are willing and able to do the work at a fair and reasonable wage.—*Timber Trade Journal.*

Commercial Education: Guildhall Library.—The Guildhall Library is known as a liberal institution, with a good general library for literary students, and a free public library. Attached to the latter is, however, a department likewise under the care of Mr. W. H. Overall, the librarian, which is well calculated to do practical good. Some call it the Commercial Reference Library, and it has a convenient catalogue. It contains, for instance, what is much wanted,—a good supply of English, American, colonial, and foreign directories, and the Corporation have taken great trouble to get some of these. There is also a good set of bank directories, very useful for reference as to the standing of firms. A set of reference-books on commerce, the arts, agriculture, trade products, accompanies the collection, with many works on banking, currency, exchanges. With what there is in the special library, and the further stores in the general library, the inquirer will find everything that is necessary to give the theoretical part of a commercial education freely at his disposal.

Scaffold Accident.—On Monday, Dr. Hardwicke held an inquiry at the Coroner's Court, St. Pancras, into the cause of death of Hicks Durant, aged 31, carpenter, which took place under distressing circumstance at the Literary Institute, Swain's-lane, Highgate, on Thursday, the 25th ult. From the evidence given by Richard Filbee it appeared that the deceased was in the employ of Messrs. Southcott, builders, and was engaged with others in the reparation of the above institution. At abont five o'clock on the day mentioned, deceased was in the act of handing up some planks, while standing on the scaffolding, to a fellow-workman, but being a little "larkish" he made a slip, and was precipitated headlong into the roadway,—a distance of about 30 ft. He was taken to the police-station, but expired on his arrival there. The jury returned a verdict of "Accidental death," adding that the builders were not to blame in the matter.

A Prussian Railway Bridge.—A very long railway bridge in Germany is now on the point of completion. It crosses the river Vistola near Grandenz, and rests upon twelve piers. The length from the commencement of the first to the end of the last pier is 1,443 mètres, or nearly a mile.

The Jewish Synagogue at Szolyva, Hungary, is the upper story of a bathing establishment. At the New Year celebration the floor of the portion reserved for women gave way, and a frightful scene ensued. Twenty women and children were killed, and as many injured.

Cornish Antiquities.—Mr. W. Borlase communication to the *Athenæum*, says,—"I the past fortnight I have explored another which has proved to be one of unusual in It is situated in the tenement of Tregasea the village of St. Just, and measures 40 ft. in diameter. In common with nea the Cornish tumuli, it is surrounded by a stones which form the basement of the b To all appearance it had been fully ex before, a broad trench having been dri stone-carriers into the centre. A little south-west of this point, however, we f flat rock, on which had been constructed a cist. In this, mouth downwards, and wed by small stones, stood an urn, the bott which had been crushed into the vessel weight of the roofing stone, which had out of its place. The total height of th which has been completely restored, is with a diameter of 16 in. at the mouth, and at the bulge (7 in. below the rim), from point spring two handles, each 5 in. in h The whole of the upper portion is ornam with double indented lines arranged in or acute angles, or in a diamond form bottom is only 6 in. in diameter, and up inside of it there stands out in relief quarter to half an inch high) the distinct of a cross, chamfered or bevelled at the with arms of equal length, which do no to the sides of the vessel. It has evident made with considerable care and trouble no mere conventional ornament for the p of quartering the circle. Mr. Greenwel two or three instances of similar crosses been found in Wilts and Dorset, account for them has hitherto defie ingenuity of archæologists. Immediately the cist in which the urn stood, on the west side, was the end wall of a very fine chral chamber, one of the stones projectin which formed also a portion of the roof cist. The chamber communicated with t side of the mound, and the sides and roo composed of fine granite slabs. It m 11 ft. 6 in. in length, and the height w 6 in. The floor, as at Ballowal, was strew ashes, and the burned bones of a full human subject, amongst which was a qu of broken pottery and a long sandstone perforated at one end, and used, perhaps whetstone. At the north-east end chamber was a raised platform, formed flat stones, both under and upon which bones were found.

National Habits of Providence.—"A portant subject of a National Provident for sickness and old age, to be administe the Government through its Post-offi otherwise, has lately been brought bef public on several occasions, as by Mr. Je Randall (a member of the executive com of the Howard Association), and by th W. L. Blackley (rector of North W Hants). The latter is the author of a v paper on the subject recently inserted *Nineteenth Century*.

It is there shown that a large proportion of rates and of pauperism could easily be avoided b obligation that every youth shall, from eighteen t one, or thereabouts, pay to the Government (say the Post-office Savings Bank Department) the sum 15*l.* once for all, or 2*s.* per week for three years, be *poor-rate free, for life.* This being done, would the average, fully suffice to allow a *repayment*, in of 8*s.* per week during sickness, at any period, a sion of 4*s.* per week during the remainder of attaining the age of seventy. Yet here, some ob "paternal" legislation have raised the bray of and selfishness.

For *at present* the law actually comp provident and industrious to pay a gr *more* than 15*l.* each, in a lifetime, for and the vicious.

Accident at the Bow-street Court.—Tuesday, Dr. Hardwicke held an inques Middlesex Hospital relative to the d John Torkington, aged 18, of 65, Edith Chelsea, who died from injuries received building of the new Bow-street Police The deceased, a bricklayer, was in the en Messrs. Smith & Son, builders, of Pimli it was his duty on the 19th inst. to land which was full of bricks on a stage 30 the ground. On going to land one of rows, which had gone a little too high, h his footing, and fell down on to a bar was standing on the ground. He was pr much injured and taken to the hospita he died on Friday last from the effe fractured spine. The jury returned a v Accidental death.

rveys in America.—An undertaking of national importance has been organised in United States, in the shape of a national n of surveys, which will commence its ns almost immediately, under the leader- of Mr. Clarence King and a staff of twenty tific assistants. The objects of the under- g are to explore and systematically diag- the sources of national wealth in those sive western regions which have as yet been yed only in a haphazard way; and with iew work will begin by thoroughly examin- he great central mineral belt that runs gh Colorado, Utah, Nevada, and California. y scientific questions will at first give to economic inquiries, which are considered pressing. The programme includes a gh investigation of all coal and iron de- , with the extent and direction of the veins cious metals. The information thusgained rove very valuable, not only to Americans, lso to British and other investors, who will le to verify from official sources any pro- ns of mining properties before they risk money in a speculative or adventurers' m. In addition to these objects, it is ed to survey and classify the public lands, connexion with this branch of the commis- great amount of interesting ethnological thnographical matter will be forthcoming. rvey of the surface and underground pro- s in an exhaustive manner has long been a ratum in the States; for, though a land settled by a patent, in the case of mineral t merely gives the holder of a patent a g right to the land, and thus opens the endless disputes.—*Engineer.*

ient Monuments in Churches.—Mr. d Simcox complains of the desecration of t monuments in churches which have been t or restored, as so many are in these . The church he has in view in writing is mersetshire, at Butleigh, a few miles from cient town and well-known Abbey of nbury. In that church, in 1624, was l a fine mural marble monument, with kneeling on cushions, crest, and family f arms, and a long inscription of the ed,—a Mr. Thomas Simcox, an ancestor who at that time owned the manor of gh, and is fully described in Collinson's rsetshire History" of 1791. On going the said monument the other day, after trouble and search he found the broken nts under a wooden granary in the s premises, where, on going to it, accom- by the squire (Mr. Ralph Neville Gren- te M.P. for Somerset), his brother, the nd servants, the latter brought out the agments.

iders' Clerks' Benevolent Institution. ection of a pensioner on the funds of the Institution took place at the offices, 27, gdon-street, on the 30th of September, omas F. Rider, president, in the chair, ded by Messrs. T. Stirling, W. Hewitt, eystone, E. Brooks, J. Robson, &c. There wo candidates, viz., Mr. J. S. Fairley and A. Coulson, the poll resulting in favour former, who was declared duly elected. of thanks were passed in favour of the eers, Messrs. T. Stirling and B. C. Cox, riefly responded, and to Mr. Rider, ledging the important services he had ed to the Institution.

ol of Hygiene.—The Council of the y Institute of Great Britain have decided lish a School of Hygiene in London, to ed during the month of November next. lowing gentlemen have been appointed t lecturers:—*Preventive Medicine*, Dr. Richardson, F.R.S. *Practical Sanitary* (a) Medical and Chemical, Professor ; (b) Engineering and Construction, Douglas Galton, F.R.S. *Jurisprudence itary Law*, Mr. W. H. Michael, Q.C. It losed that each session shall occupy welve lectures. The school will be open asses, and to persons of either sex.

.—Messrs. Bunnett & Co. (Limited), en instructed by the Great Western Company to fix their patent lift at the ation Buildings, Penzance. That firm engaged in fixing their lift at the ity College Hospital.

ew Town Hall has just been opened on Walden. It is the free gift to the nts of Mr. Alderman G. S. Gibson, whose family have long been connected town.

An "Iron" Church destroyed by Fire.—Shortly before twelve o'clock on the 25th ult., the fire brigade received information of the outbreak of a fire at St. Patrick's Church, Providence-place, Earl's-court-road, Kensington, of which the Rev. M. Ben-Oliel is the rector. In a short time three steam fire-engines and a manual arrived on the spot, and every effort was made to subdue the flames, which by this time had secured a hold upon the contents of the building. The church, which was constructed of corrugated iron, was completely burned out. A house adjoining, occupied by the Rev. W. Tulford, sustained considerable injured. These so-called iron churches, the erection of which is permitted by the Board of Works temporarily, are for the most part delusions and snares. The real framework is actually of wood, of slight scantlings, and the iron angle-pieces and horizontal rails are secured to the wood. The skeleton ought properly to be of iron wholly, with such wood as is absolutely necessary secured to it.

Examinations in Technical Education The City and Guilds of London Institute for the Advancement of Technical Education has just issued particulars of the examinations to be held under its direction, the first of which will take place in May next. Provision has already been made for examinations to be conducted in twenty-six subjects. No steps, however, will apparently be taken to provide immediately a staff of teachers, so that intending competitors will for the present stand in need of such help as may be available. There is notably one work which is calculated to be of service both in view of this movement and of the larger range of effort to which it points, viz., the *Technical Educator*, published in four volumes by Messrs. Cassell, Petter, Galpin, & Co. A re-issue in monthly parts of this work is opportunley commenced this month.

Bangor Cathedral.—The work of restoring the nave and chapter-room is being actively proceeded with, and the building in its entirety is expected to be opened early in the year. A curious recumbent figure, believed to mark the grave of an ancestor of the Penrhyn family, has been discovered under the chapter-room, and some old tiles were also found there.

TENDERS

For fire-hose and fittings at the Holborn Union Infirmary, Highgate:—

May Bros.	£285	14	0
Scott & Son	215	0	0
Suffield	198	0	0
Young & Co.	131	0	0
Berry & Son	130	0	0
Beck & Co.	115	4	6
Pontifex & Wood	115	0	0
Shand & Mason (accepted)	92	9	0

For road and sewer making at Woodford, Essex, for Mr. G. R. Holland:—

Richardson	£700	0	0
Dunmore	650	0	0
Pizzey	582	10	0
Wilson	531	9	0
Jackson (accepted)	530	0	0

For alterations and additions to the Wesleyan day-school, Southborough. Mr. S. W. Houghton, architect:—

Pannett & Sons	£265	10	0
Willicombe & Oakley	188	0	0
Gallard & Son (accepted)	181	10	0

For the cabinet fittings at the Ship, Vauxhall Bridge-road. Mr. H. I. Newton, architect:—

Godden (accepted)	£145	0	0

For the erection of Wesleyan school, Waller-street, Luton. Messrs. J. R. Brown & Humphreys, architects. Quantities by the architects:—

Goss	£792	11	11
Gillham	787	10	0
Taylor & Grist	738	0	0
J. & T. Davis	697	0	0
W. Dunham	691	4	0
Smart Bros.	638	6	0
Lissaman	623	15	0
D. Dunham	615	0	0
Rayment & Son (accepted)	569	0	0

For the erection of new boundary walls to the Butchers' Almshouses, Walham-green, for the Butchers' Charitable Institution. Mr. W. E. Stoner, surveyor:—

Lidstone	£222	0	0
Simpson	211	13	0
Stoner	207	17	0
Wilson & Exton	205	0	0

For the erection of shops at Albion-terrace, Kilburn Rise. Mr. Edward Monson, jun., architect:—

Beach (accepted)	£4,400	0	0

For pulling down and rebuilding the Bald-Faced Stag public-house, East End, Finchley. Revised estimate. Mr. H. R. Cotton, architect. Quantities by Mr. A. J. Gate:—

Toms (accepted)	£3,100	0	0

For rebuilding No. 1, Church-street, Stoke Newington Mr. H. R. Cotton, architect:—

Andrews	£1,270	0	0
Toms (accepted)	1,200	0	0

For alterations in converting a house into a shop, High Barnet, for Mrs. Gibson. Mr. E. Egan, architect:—

Butler	£338	0	0
Miller (accepted)	330	0	0

For the erection of carcasses, and partial completion of three shops on the site of the Manor Offices, Hackney, for Messrs. Webb & Dashwood. Messrs. Waymouth & Son, architects:—

Sawyer	£3,760	0	0
Harper	3,680	0	0
Smith & Son	2,989	0	0
Sheffield & Prebble	2,967	0	0
Shurmur	2,389	0	0

For alterations and additions to the St. James's School Clapton. Messrs. C. & W. Humphreys, architects:—

Shurmur (accepted)	£189	0	0

For alterations to 184, High-street, Stoke Newington. Mr. John Groom, architect:—

Shurmur	£144	0	0
Lamble	139	0	0
Stapleton	135	10	0

For the erection of Primitive Methodist chapel and school, Cross Keys, Newport, Monmouthshire. Mr. J. Wills, architect:—

Prosser	£1,950	0	0
Thomas	1,800	0	0
Limbrick	1,598	0	0
Lewis	1,595	0	0
Parfitt (accepted)	1,515	0	0
Jones	1,496	0	0

For house at Newham-in-Cleveland, for Mr. John Mills. Messrs. Alexander & Henman, architects. Quantities by Mr. Charles Henman. (First Contract):—

Perks Brothers	£7,424	0	0
Craggs & Benson	6,487	0	0
Barry	6,305	3	0
Inglis	6,155	0	0
Hammond & Chandler	6,146	9	1
Davidson	5,948	6	9
Heckle	5,928	0	0
Johnson	5,820	0	0

For Church of St. John, Stillington, Stockton-on-Tees. Messrs. Alexander & Henman, architects. Quantities by Mr. Charles Henman:—

Lazenby	£3,196	5	0
Inglis & Peak	3,100	0	0
Agar	3,069	0	0
Dickinson	3,054	0	0
Wilkinson	3,039	0	0
Foster	2,761	0	0
Craggs & Benson	2,700	0	0
Davison	2,655	0	0
Smirk	2,650	0	0
Caldcleugh	2,604	0	0
Grant	2,475	0	0
Yeo	2,350	0	0
Perks Brothers	2,257	6	0
Boyd & Harwood	2,246	0	0

For first portion of new workshops, Eagle Works, Tooley-street. Mr. Horace T. Bonner, architect:—

Jerrard	£339	0	0
Bird	335	0	0
Potten	244	0	0
Higgs (accepted)	239	9	0

For outside painting and repairs at Lewisham Workhouse. Mr. Horace T. Bonner, architect:—

Taylor & Son (accepted)	£157	0	0

For new water service:—

Taylor & Son (accepted)	39	10	0

For the erection of music-hall, Greenwich (exclusive of decoration) called the Red Lion, for Mr. B. Phillips. Messrs. Stewart Bros., architects. Quantities prepared by Mr. R. Peters:—

Thompson	£1,057	0	0
Watson & Dennett	1,019	0	0
Went & Perkins	955	0	0
Higgs (accepted)	935	0	0

For repairs and decorations to St. George's Church, Hanover-square. Mr. A. J. Bolton, architect:—
Homann & Sons, accepted.

For re-erection of a portion of warehouse premises, 104, 106, and 108, Curtain-road, Shoreditch, for Messrs. Parker Bros. Mr. J. Hamilton, architect:—

Hayworth	£2,175	0	0
Harper	2,125	0	0
Shurmur	2,043	0	0
Little	1,829	0	0
Boyce	1,789	0	0
Wood	1,781	0	0
Crabb	1,700	0	0

For rebuilding of No. 25, Upper-street, Islington, for Mr. Morris. Mr. W. J. Worthington, architect:—

Jones	£1,560	0	0
Banford	1,450	0	0
Pocock	1,444	0	0
Taylor	1,319	0	0
Sharman	1,300	0	0
Lamble (accepted)	1,265	0	0

For new premises, Bethnal-green-road, for Mr. Whitmore. Mr. F. Holsworth, architect:—

Hammond	£3,920	0	0
Williams & Sons	3,560	0	0
Forrest	3,547	0	0
Drew	3,505	0	0
Marr	3,491	0	0
F. & F. J. Wood	3,440	0	0
Mark	3,433	0	0
Conder	3,295	0	0

For the erection of new schools at Amberley-road, Marylebone Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. T. Thornton Green:—

Boyce	£5,833	0	0
Higgs & Hill	5,765	0	0
Kirk & Randall	5,434	0	0
Wall, Brothers	5,373	0	0
Tongue	5,257	0	0
Scrivener & Co.	5,206	0	0
Hook & Oldrey	5,118	0	0

For vicarage-house, at Kenn, Somerset. Mr. J. H. Spencer, architect. Quantities supplied by Mr. W. L. Bernard :—

Trevena	£2,156	0	0
Wescombe	2,099	0	0
Fox	1,889	0	0
Perry & Harvey	1,886	0	0
Hawkins	1,715	0	0
Drake	1,677	11	1
Hill & Summerhayes	1,668	7	6
Rendell & Sons	1,650	0	0
Wilcox	1,569	0	0
Green	1,465	10	0

For new wing and stables, and general decoration, at 40, Stockwell-road, for Mr. H. Croskie :—

W. Mitchell & Co. (accepted) £394 0 0

For works of sewerage and water supply for Trefriw, Penmachno, and Dolwyddelen, for the Llanrwst Sanitary Authority. Mr. T. Roberts, engineer :—

	Penmachno.	Dolwyddelen.	Trefriw.
J. B. Jones	£1,507	£1,820	£1,840
Jeffreys	1,868	1,900	1,390
E. & R. Jones*	1,561	1,594	1,694
Bugbird	1,423	1,804	1,720
R. Jones	—	1,650	—
Mackintosh	1,908	2,450	2,683
Conway	2,619	3,938	3,917
Beasley	—	—	2,835
Hughes	1,592	1,897	1,955
Pitt	—	—	6,148
Morton	—	1,855	—
Beardsell & Co.	1,544	1,921	2,008
W. Jones	—	1,893	—
Pritchard	—	2,600	—
For water supply only :—			
Pontifex & Wood	483	772	615

* Accepted.

P.S. The contractor whose tender was accepted about two months ago failed before the contract was signed, and the Sanitary Authority had to invite fresh tenders.

For new factory, Newington-causeway, for Messrs. Crescens, Robinson, & Co. Mr. F. Chambers, architect. Quantities by Mr. S. P. Raggett :—

Browne & Robinson	£23,240	0	0
Ashby & Horner	23,330	0	0
Downs & Co.	22,700	0	0
Conder	22,498	0	0
Colls & Son	22,397	0	0
Brass	21,747	0	0
Holland & Hannen	21,265	0	0
Rider	21,180	0	0
Macey & Son	21,039	0	0
Greenwood	20,700	0	0
Scrivener & Co.	20,485	0	0

For rebuilding No. 95, New Bond-street, for Mr. Wertheimer. Mr. A. M. Ridge, architect. Quantities by Hovenden, Heath, & Berridge :—

Hosking	£7,838	0	0
Nightingale	6,895	0	0
Brass	6,309	0	0
Kirk	6,301	0	0
Robinson	6,274	0	0
Browne & Robinson	6,232	0	0
Morter	5,918	0	0
Scrivener & Co.	5,826	0	0

For new Catholic schools at Leamington. Mr. J. R. Donnelly, architect. Quantities by Mr. J. Mansell :—

Parnell	£1,454	0	0
Smith	1,400	0	0
Loughten	1,350	0	0
Mills	1,285	14	0
Fell	1,275	0	0
Gascoyne (accepted)	1,240	0	0

For mission chapel and school-room, Cirencester-street, Paddington, for the Rev. R. T. West. Messrs. R. H. Carpenter & B. Ingelow, architects. Quantities by Mr. W. Smith :—

		Allowance for old materials.
Cox	£4,632	£10
Guy	3,995	25
Hobson	3,646	20
Patman & Fotheringham	3,644	10
Manley	3,607	39
Staines & Son	3,586	18
Scott	3,455	35

For painting, repairs, &c., to Brandon House, Streatham Hill, for Mr. C. Greenhill. Mr. E. Leuchars, architect. Quantities not supplied :—

Brewer	£376	0	0
Franks	338	0	0
Trenaman	304	0	0
M'Lachlan & Sons	296	0	0

For municipal buildings, Hastings. Mr. W. Andrews, architect. Quantities by Strudwick & Mennie :—

Martin	£14,687	0	0
Hermes	14,395	0	0
Jenkins	14,000	0	0
Woodall	13,810	0	0
Womersley	13,750	0	0
Reeve	13,700	0	0
Loneley	13,660	0	0
Vidler	13,510	0	0
Rodda	13,487	0	0
Nightingale	13,181	0	0
Dartnall	13,175	0	0
Bradd & Co.	13,110	0	0
Cruttenden	12,995	0	0
C. & E. Hannan	12,970	0	0
Jones (accepted)	12,180	0	0

For new stables, at the Royal Standard, Victoria-street, Pimlico, for Mr. Wake. Mr. H. I. Newton, architect :—

Hatchman	£474	0	0
Beales	438	0	0
Godden	405	0	0
Anley	394	0	0
Taylor	378	0	0
Lamble (accepted)	339	0	0

For alterations to house, High-street, High Barnet, for Mrs. Gibson :—

Butler	£338	0	0
Mellor (accepted)	330	0	0

For house, in Victoria-road, New Barnet, for Mr. E. Dickinson :—

Butler (accepted)	£515	0	0

For alterations and additions to farm buildings, at Beckjay, for Mr. John Rocke. Mr. T. Evans, architect :—

Grosvenor	£1,580	13	0
Williams (accepted)	1,000	0	0
Price & Deakin	983	0	0

For sundry works, at Coppins, Iver, Bucks, for Mr. J. E. Taylor. Messrs. Tarring & Wilkinson, architects :—

For erecting porch and bay-windows to dining-room and staircase :—			
Fassnidge & Son	£465	0	0
For staircase and hall panellings, &c. :—			
Perry & Co.	£611	0	0

For 2,650 ft. of 4-ft. by 2-ft. 9-in. brick sewer, in Scrubs-lane, Hammersmith, for the Fulham District Board of Works. Mr. Alfred C. Bean, engineer :—

	Stock bricks.	Gault bricks.
Mears	£3,600	£8,975
Nowell & Robson	8,475	8,800
Keeble	8,150	8,500
Willams, Son, & Wallington	7,380	7,780
Hatton & Co.	4,850	—

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TO CORRESPONDENTS.

Erratum.—For "Weldon Viaduct" (p. 1087, *ante*), read *Wo Viaduct.*

T. R.—P. J.—C. M.—A. P. H.—H. F.—J. J.—J. O. C.—C. H. H. C. V.—C. F. L.—J. J. H.—P. Bros.—H. C. B.—W. S. & A. J. H.—H. S. N.—J. H. S.—T. & W.—W. P.—J. L.—A. P.—H. —J. D.—R. M.—S. & Son.—J. S.—A. R.—A Working Man.—L. Co.—D. W.—D. F. L.—G. S. A.—W. H.—S. R. L.—H. H. week).—A. L. (next week).—G. Bros. (should send list of name amounts).—U. K. (particulars not enclosed).

All statements of facts, lists of tenders, &c. must be accomp by the name and address of the sender, not necessarily publication.

We are compelled to decline pointing out books and p addresses.

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Bath Freestone in Blocks of all s warranted sound, and delivered at any Po Railway Station.—YOCKNEY & COMPA Sole Owners of the CORSHAM DO QUARRY, Corsham, Wilts, to whom all let should be addressed. [Advt.]

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The Builder.

Vol. XXXVII. No. 1914. Saturday, October 11, 1879.

ILLUSTRATIONS.

Sketches in Illustration of Paper on "Buildings and Landscape," by Mr. H. H. Statham: Social Science Congress (Two Double-page Lithographs

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Art at the Social Science Congress.

THE Manchester Congress has come to an end. The Social Science Association has not been very well supported by the townspeople, and the Congress will scarcely be deemed successful in a financial point of view. Some valuable papers, however, have been read and discussed. As usual, we confine ourselves to ...s of the most interesting of the matters ...ht forward in the departments of Health ...rt, under their own headings.

... proceedings of the Art Section during ...ongress can hardly be said to have led to ... very definite results, though there have ...some interesting discussions elicited. Mr. ...'s paper on the question of the subjects to ...osen for the decoration of public buildings ...ot, unfortunately, read by himself, and his ...ce and that of the president of the sec... were not calculated to give much impetus ... opening of the proceedings, though there ... fairly good attendance. Mr. Watts's ... seemed to us to fail in definite purpose, ...h containing much that was interesting; ...articular object of the paper, the sug...on as to what class of subjects should be ..., was hardly really entered upon, and the ...subjects which were in the course of the ... suggested were two of such opposite ...tions as rather to confuse the hearer's ... in regard to Mr. Watts's real intention. ...amed the "*Te Deum*," and a very fine ...ject it is for church decoration, but hardly ...y other class of building (taking religious ...g for what it is at present); and he also ...d such subjects as the loss of the *Birken*... and the manning of a life-boat, and these ...are admirable subjects for a painter, but it ... be manifest that they require a perfectly ...ent style of treatment from the "*Te* ...," which latter would lend itself admirably ...ch a broad and conventional treatment as ...best *media* for mural painting demand, ... such subjects as the *Birkenhead* could ... be treated realistically,—they would look ...d in any other treatment; and as Mr. ... had specially dwelt on the necessity of a ...ntional style for mural painting, it seems ...hat its unsuitability to this class of modern ...ct should have been overlooked. Mr. T. C. ...all's paper the same day, considering how ...ing-men may be induced to purchase such ...class works of art, or reproductions of ..., as might be had at a reasonable rate, was a paper conceived in an admirably sensible and practical spirit, or at least, if any one might have thought its suggestions not quite practicable, it would only be because it is so difficult to find people ready to take up such movements in so simple, true, and unpretending a spirit as that which animated the reader of this paper.

Mr. Horsfall's idea was that the working classes were not only very much in want of some guidance in their choice of drawings to ornament their walls (a matter on which they were really not indifferent), but that they also wanted some definite information as to the price for which really good art in the shape of engravings and photographs could often be had; that a working man would hardly venture into a shop in which he would expect to find himself offered only things which were entirely beyond his means, and perhaps given the cold shoulder when he asked for works at a cheaper rate. It was suggested, accordingly, that a society should be formed which should engage the co-operation of some respectable print-seller, who should offer such engravings and other works as could be offered, frames included, at a price within the means of those for whose benefit the scheme was intended; that the subjects should be such as had passed the *imprimatur* of the society as representing art of a really good class, and that all the prices should be legibly marked on them. There might, we think, be a little difficulty in persuading people to accept the *imprimatur* of a committee of taste, which this really would be; for there is a great objection generally among any class of society to be drilled in their taste, though it might sometimes be very good for others besides working-men; but there is really something suggestive in the idea, and it is probable that there would be a much more frequent purchase of good specimens of art by the working classes if they knew exactly where to go for them, and for what price they could obtain them. Mr. Horsfall, at any rate, deserves thanks for the trouble he took in drawing up such a scheme; and we may add a word in passing in recognition of the admirable work which this gentleman is doing in Manchester in endeavouring to promote a taste for art among the poorer classes of the town, and to bring it within their reach in various ways.

Mr. Murgatroyd's paper on the possibility of advantageous interference by Government in securing the improvement of street architecture was a most moderate and well-considered one, containing nothing unpractical or impracticable; his ideas, in fact, hardly went further than a wish for the establishment of a thoroughly good Building Act in Manchester, and of a decisive power on the part of the Corporation of putting a veto on any building which was really such as to be an eyesore in the streets of the town. As to the desirability of such a negative power of control, most of the meeting were agreed, though Mr. Chatfeild Clarke instanced a case in his own experience which served to show that there might be difficulty and embarrassment for the advising architect of a corporation in carrying out even so restricted a system of interference as that. However, Mr. Clarke's case was, we must think, an exceptional one, and we certainly retain our own opinion in favour of negative control over street architecture at all events. The paper read by Mr. Statham in the afternoon of the same day we give, with a reproduction of the lithographed illustrations which were handed to the audience.

Saturday morning's debate on the possible moral improvement of the drama drew a much larger audience than any of the previous ones, and it is significant to note the fact that the only large audiences in this section were drawn by this subject and Mr. Hallé's paper on the musical progress of the last thirty years, though these were the two subjects which came least decidedly under the denomination of "Art" as usually understood, and which were least definite in their aim. The fact is, we suppose, that these subjects "come home to men's business and bosoms" in this country more; and it certainly seems to confirm the opinion which was expressed by Mr. Darbyshire at one of the meetings, that this is essentially not an artistic country, when we find so little interest excited by the discussion of subjects, such as street architecture and the State aid of Government to Art, which are of such real and practical importance, and open the way for so much decided action if it were once settled what course such action should take. The paper on the latter subject, by Mr. Comyns Carr, was a very well-considered and thoughtful essay, to some of the points in which we may, perhaps, be able to return. Sir Coutts Lindsay's very admirable address we need only here call attention to as well worth reading, and certainly comparing advantageously with any other address which has been delivered in connexion with the Art Department of the Association.

ON THE RELATION OF FINE ART TO SOCIAL SCIENCE.*

IT is unnecessary on the present occasion to urge any plea for the development of that region of the human intellect which is comprised under the term Art. There was a time in Great Britain, and that not long past, when it would have been the duty of your president to put forth his best endeavours to such a purpose: the cultivation of art was narrow, partial, and one-sided; a great segment of the circle left arid, and the part that Providence has allotted to art in the progress of mankind miserably ignored. In this respect the mind of the nation has undergone a great change, and I need only point to the fact that we are here to-day, and to the proceedings of the meetings of this society during the last half-dozen years, as a convincing proof of the altered judgment of the country.

* By Sir Coutts Lindsay, bart., as president of the Fine Art Section, Manchester Congress.

In enumerating the chief areas that form the region of art, and which may justly come under our consideration to-day, it is not that I suppose any single mind can deal with them in detail, but that it is well to keep before us the vast extent of the realm over which art holds rule.

First and foremost stands Poetry, with all her works of fiction; she is probably the oldest, as well as the noblest, of the sisterhood. Then Music. These two address themselves most clearly to humanity, inasmuch as they require no machinery, saving what Nature gives, to make their influence felt. After this the triune arts of Architecture, Sculpture, and Painting, which, although they appeal to us through the eye, cannot exist excepting by a process of construction wherein mechanical knowledge becomes a necessity. Under these great heads all minor arts must rank, in number so great that they are found interwoven with most of the civilising labour under the sun. It is in these concrete developments that humanity derives an infinite refinement, producing and reproducing by combination; for instance, as is found on the Stage, where each of the arts takes a due share, and where the whole circle may be fairly enlisted to produce one work.

I have said that it is impossible for me to deal with a region so vast in any proportion to its magnitude; time is wanting, and the necessary extent of knowledge. But I will, by your permission, touch upon each separate art as it appears desirable, and dwell most closely on matters belonging directly to my own profession. I entertain a lively satisfaction in the knowledge that my endeavour is destined to have a better fulfilment where the gaps in my line of thought are likely to be most visible through the support of Mr. Hallé and Mr. Watts. They will trace the progress of music, and of mural decoration in this country, but their lectures will probably have one defect,—a defect their audience should make good; they are not likely to do justice to the guiding influence each has had on his own profession, and without the consideration of which a review of music and painting in the present generation must be very incomplete.

It cannot be too constantly remembered by those who seek to understand or direct the art of their day that art, no less than science, grows by a natural law of development out of the stem of the past, but with this difference: the tree of science never dies back; its shoots are more permanent than the oak; it may cease to spread, but it cannot dwindle. Art, on the contrary, flourishes or dies down with the race that creates it; it can never cease out of the world, for it lives in the soul of man, but it does not augment, like science, which is not so much a product of humanity as a growing perception of nature. Art is the vital production of man; science, man's perception of God's creation. Let us also remember that art is a reflex of the times and the race to which it belongs, and that no art can flourish out of harmony with its own age; that all arts react on each other, while they take a common complexion from their times; and that, consequently, to understand one it is necessary to possess an intelligent perception of all; also that it is as impossible to resuscitate a past development of art as to revive the dead by injecting living blood into their veins. If these principles be true (and they are championed by reason and experience), they point to certain courses in the pursuit of art likely to lead to the happiest results, and to others again in which genius, perseverance, and faith may labour in vain, or with such results as are rather a misfortune than an advantage to the individual and the community.

It is not difficult to mark this truth by offering you two illustrious examples from among my own friends, both of whom are now dead. Be it understood, however, that the failure I shall first speak of came not from the want of personal distinction; he whom I shall cite, on the contrary, stood high on the hill of fame, but his works never took root, and seem to have died out of the thoughts of men even whilst his kindly face still lives fresh in the memory of his friends. Thus it was with John Gibson, who was a master among the sculptors of his day. I knew him well, and loved him very well; he was a man of great genius and infinite diligence; he attempted to resuscitate Greek sculpture, and surrendered his living thoughts to the tyranny of the past. He thought, worked, and produced as such a one might have done who took his morning's inspiration in the temple of the Parthenon, when the old gods were still believed to fire the thoughts of men. Such was his bent, and can you be surprised if he failed? We drink of the age we live in, even with our mother's milk, and can no more think or produce as a Greek than we can crack a joke with Aristophanes or kiss the hand of Cleopatra.

And now I see in my mind's eye the faces of certain of my friends. They shake their heads. They say, "What, are you a renegade to the teaching of the greatest art the world has known?" God forbid. I would study on my knees before it, could that do reverence to the dead, but I will not surrender them my being. Let me rather wrest from them what they have to yield, and acquire the perfect expression of their art, its sublime beauty, its dignity, and human truth. I would mould these into a new end, and leave their old purposes fulfilled as they were, to mark the epoch of their own day. In such a temper should we approach all art that has left its record on the past. Let it instruct us, but never dominate. The living are the heirs of the dead: let them give to us, not we to them.

The other illustration I am pleased to name, both because he was my friend, and also that his name underwent some eclipse before his death, through certain defects in his character as a man of affairs. He suffered in health, and ultimately fell into the decline which brought him to a premature death; yet, if I mistake not, the art of our times will always be associated with the name of Stevens. No man was more deeply imbued than he with the teaching of the greatest art that Christianity has created. He learned and was profoundly versed in the art of Michelangelo and Raffaelle, but he did not lose his identity in the study of these masters. He knew how to make what he learned subservient to his own spirit and to the spirit of his time. Although he has left but few examples of his work, his genius will long influence our English school, and his greatest work, the monument he wrought to the memory of the Duke of Wellington in St. Paul's, will certainly form an epoch in the sculpture of our country. These two men were each endowed by nature with genius, energy, and a great love of their calling. One strayed backwards on a path that leads to no bourne, and was lost among the shades of antiquity; the other, gifted with a finer sense of truth, marched with his age, and has achieved a place among the worthies of his race.

I have detained you some minutes whilst illustrating a principle I have ventured to set forth, because the question whether to study past art or to ignore it is now constantly mooted. A large section of modern artists look down upon the works of the past as idols that should have no influence in the living world, whilst others bow down and worship blindly. Fie upon both extremes! What! shall we ignore the accumulated knowledge of bygone humanity, and match our scraps against the stores of ages? Or, again, shall we lay our ear close to the graves and wait for our inspiration from dead men? For our honour's sake, let us do neither. Are we not the heirs of past knowledge? If so, we are bound to use it to a fresh issue. Study from the past no less than from the present, from art no less than from nature; but be your inspiration of the present, and your work for the future.

You will observe that in this survey I have enrolled Poetry at the head of all art. I think no review can be otherwise complete or harmonious with the truth, and most especially, no review of the art of our race. The creative mind exercises itself in various directions, yet always in the same spirit; the poet works under like conditions with other artists, develops kindred faculties, suffers from similar defects, appeals to the same public, and is honoured with the same renown. To sever Poetry from her sister arts is to deprive her of her supremacy, and cripple the whole college.

It has been urged against the English race that it is deficient in artistic power, and that, having produced no great schools of art during the flower of its youth, or the strength of its early manhood (when art takes the van), no development is likely to appear when the season of productiveness has gone by. I must confess that these considerations have often seemed to me very discouraging; but, after reviewing the matter in a broader light, I perceived that they gave but a false aspect of our mental progress. The truth is, that the active principle of art in England was diverted by circumstances from music, architecture, sculpture, and painting, and held aloof from them by the force of histori events over which it had no control. It fo its expression in poetry alone. The rich ab dance of great works that have arisen in t art is unequalled by any other race or tong Let this suffice to account for any deficienc the other arts, and for which deficiency suffer no diminution of honour. Power there and of the highest order, to which our Eng poetry can bear testimony; and since the m of England is now set in the path of the ot arts, there is no achievement, however lofty, t she is not capable of accomplishing if she lab with all her might.

I propose to make a rapid survey of the fi of this country during the present generati I take the mean of life rather than any measu of time; for each generation fulfils itself dur its own life, and offers a fresh departure to generation which follows,—a departure accep or neglected in proportion to the mental ene of the race. The chiefs in art of our day still alive and accomplishing their tasks. T have gathered round them each his own foll ing, and these have spread their influe through the land. As the stream fertilises current grows languid; whilst a new generat and a new impulse must arise. If I mist not, it already hurries us onwards to fr destinies.

The poetry of the present generation ha marked character of its own, one widely differ to that of its immediate predecessor. The wo of our fathers reflected the mental and phys struggles of a revolution; its unflinching defiant tone was due to the energy of principles which were in conflict; they fou with sword and pen alike, for the mastery of world. Scott and Southey, Shelley and By were all of them fierce and uncompromis partisans; there is a ring of steel in whatsoe they wrote, and it sounds like the challeng trumpets from hostile camps; even the templative mind of Wordsworth was not alw uninfluenced by the clang of events that w rushing onwards. At the close of that gi strife came a period of profound repose, from the midst of such grateful rest the pres generation took its poetic inspiration.

Of all the living poets, Tennyson is the h exponent of our times, as he is the Laureate, only by appointment, but through the sympa of his fellows. I scarcely think that there is record the life of any poet so completely harmony with his generation, for which reas he has enjoyed a more universal popula than has fallen to the lot of others. Those w are my contemporaries will remember the mediate recognition he obtained. Sentimen and not action, was the keynote of his son there was no sound of battle in the quiet when he first charmed the ears of men. W the repose of these latter times came renew thought, a fresh stir throughout its elemen a whisper of uncertain things arose in mental atmosphere, but with no definite be and that phase has its exponent in Brownin whose complex verse and recondite thoug are unlike anything else that has been tempted in poetry.

I name these two poets, because they se ts embody the spirit of their generation. H I would remind the audience that I am speak of my generation, and that I address those w have attained with me to middle life. We m not forget that a younger army is now in field, along with us, who will by and by t the van as the old battalions fall out. Sw burne and Rossetti are of this younger gene tion, and their works undoubtedly claim sy pathy with a section of the educated public works that are coloured to the newest complex of thought. There is one other of the young poets I will name, because I believe him possess a higher originality; I allude to Mor His early works are tinged by the influence others, but in his latter poems he has cast hi self free from sentiment, and writes in a fre and manly spirit that will mark, I trust, temper of the rising generation.

In what I have said I must guard again your supposing that I have allotted praise blame to any one. I am merely endeavour to point out those who have influenced poetry, as I hope also to do, as far as I am ab with regard to other arts. There are certa poets of whom I myself entertain the highe opinion, whom I have not even mention because their generation has not accepted th works. Amongst these I would consider Tay as the chief,—his poem of "Philip van Artevel

to my thinking, of the highest order, and , I believe, receive a more complete recog- on hereafter.

fear it must be admitted that England has a poor school of music. The early promise she gave was not fulfilled, and it withered ccountably in the last century. How Handel, was almost an Englishman, and who pro- ed his finest works for us, should have left upils that might be called a school, is to a source of astonishment; for, whilst our has originated but little music, it is amongst most appreciative in Europe. No doubt it ld not be difficult to make out a roll of lish musicians, and dub it by the title of ol; also a long list of oratorios and operas, e of which you may have heard others speak r listened to on occasion, but few of them can ounted among the masterpieces of music, nor they fit to represent the nation. There is a g exception to this general deficiency in ur Sullivan, the composer of the "Light of World." This work has gained for his us a European reputation, and I fervently e he will write others as fine, and become founder of a great school of music.

he Prince of Wales and the Duke of Edin- gh have bent their energy to the construc- of a school at South Kensington, and this ome of their efforts has enabled Sullivan egin his teaching. His success in the retta called "Pinafore" has been prodigious. nk it much to be deplored, however, if it aces him from the nobler type of music that e his reputation. In the sister arts we may r with equanimity one or other artist fall to ver level; but in music masters are scarce, such a loss is irreparable. I fear that as as the public desire trivial works, so long composers produce them. They are the ants of the public, and a quick appreciation ots them to labour for the popular taste. A in number of musicians, however, imbued the finer teaching of the German school, done much to educate our generation. Mr. was among the first to urge on this task, h he still continues with an energy and city beyond praise. Under his guidance ical music has chased all other from your and in London the Monday Popular Con- are crowded with enthusiastic admirers of ame school.

t I trench on the ground which my friend allé will himself occupy later on in our edings. His paper promises to be of the est interest to all who have the future of at heart, and they are in a large majority is city.

turning to architecture, you will at once ive that it has been overwhelmed with the of our generation. Churches in thousands been constructed over the breadth of the our old cities are crowded with new public ings; vast sums have been expended in the ration of our cathedrals; whole districts been laid under bricks and mortar. ghout the country, railway stations are ered like peas over a floor; parish churches been rebuilt, gentlemen's houses enlarged, this has proceeded for many years with breathless prosperity of the nation. The that has been done is prodigious, and very d in quality; art is sometimes forgotten in urry of construction, but much fine work een produced for all that. Architecture in storical aspect is the best understood of ine arts in this country, and its English ssors are some of the most learned in pe. Were a foreign architect, however, to any large centre of life in England, he inevitably be struck with the very curious me of our architecture he would pass on way from the station to the hotel. The n itself is a combination of iron, stone, and , without any architectural proportion,—a construction to keep out wind and weather. nd its gates he enters on the outskirts of own, swarming with life. He sees a long of small hutches, more fitted for rabbits for men, each hutch a square of dingy s, pierced with five or seven holes which as door and windows; each has an excres- e at its back. He sees house after house, street after street multiplied with the s similarity of a feverish dream. "Good " says he, "are these the dwellings of the igent British workman? How thus lodged e acquire moral training or mental vivacity? sh architecture takes no heed of the stic life of the working-man; a million boxes are turned out to pattern, and seven million souls thrust in. Bravo! here is a manufacturing nation with a vengeance." His cab now plunges with a crowd of others into another quarter; the street widens, and bears evidence of some sympathy with human life; the houses are built, not turned out by the gross. This was the High-street in the time of the Georges; here are marks of wealth and comfort; mahogany shines resplendent from the interiors; the windows are not numerous (such houses were constructed to avoid the window-tax, that incubus on the architecture of its time). There is a precision about these buildings, the chimneys stand like sentries along the roof, there is absolutely no ornament, and little architecture of any kind. These ugly but comfortable dwellings stretch for some distance along the road, interspersed with more modern structures. By and by a new building of the best Elizabethan period comes in view, and our foreigner nods his head approvingly. He passes an Italian villa; on one side of the road rises a Swiss châlet of portentous size; on the other a mushroom of feudal architecture, with battlemented towers in grim miniature. 'Ah!' exclaims our friend, perplexed, and his eyebrows rise into his hat. An Indian pagoda, a Chinese joss-house, and two Gothic churches follow next; then half a dozen gin-palaces, Early English chapels, a music-hall smiling on a Greek pediment, and many shops, dwelling-houses, and villas hurry past his view in wild confusion. The cab turns into another street, massed with lofty buildings of such varied architecture and lavish decoration that our friend collapses in his cab. He sees dimly a vista of gigantic chimneys and huge buildings that appear all eyes; he grows faint, and is glad to reach the shelter of his hotel, to gather up his ideas. What a perplexed medley they must be! What a mass of labour and riches go to make up the gigantic hotch-potch he has beheld!

The intelligent foreigner, when he has a little recovered his spirits, seeks Mr. Smith, the architect of the town, who takes him to view the public buildings. Here his mind is again thrown into disorder. The cathedral is a treasury of Gothic architecture: its restoration has been conducted with excellent judgment and knowledge. Mr. Smith proves himself to be well versed in all the branches of his profession. "How can such a man be the architect of such a town?" murmurs our friend to himself. So saying, he comes to an open space, crowned by a town-hall of Palladian architecture that is admirable in proportion and detail. "This was designed by my colleague Mr. Jones," says Smith; "you may have passed his house on the way from the station,—a cottage in the Swiss style." Our poor friend gasps, clutches at the nearest lamp-post, and hurries back to his hotel. During his stay in England he beholds a multitude of new buildings in every style, from the Egyptian to the last new French composite, that have risen up without prejudice or preference of any kind, like mushrooms in a fertile soil. Writing to a friend at Paris, he expresses himself on the subject:—"Our *confrères* in England are too cosmopolitan in their tastes, and too unfettered in their choice of design, to have any architecture of their own; they are learned, however, in all others." This truth, therefore, appears, that the present has no architecture, but culls from past times with the most perfect indifference. England does not stand alone in this respect; the same tendency is more or less visible in the rest of Europe.

The architecture of our age has yet to be constituted, and this is the heart of the matter. Why do architects neglect to address themselves to so great a work? As we enumerate the chief architectures of the world we name them after certain races, Egyptian, Assyrian, Greek, Roman, Byzantine, Lombard, Gothic, and so forth. Each of these races fulfilled its own genius, but the works of all were conceived to meet peculiar necessities of construction, which were the conditions on which they built. Rock-building continued in use so long as the imperfect construction of architecture could not of itself support its own weight; the Early Egyptian architecture never lost its character. Assyrian art owed its aspect to unbaked brick faced with slabs of stone; whilst the Greek orders took shape from the varied strength of supporting columns made to sustain a superincumbent weight. A just proportion of strength was the gauge of harmony. The discovery of the arch, again, developed a new form of architecture which we may call Roman, for the Romans were the first to make the arch the chief feature in construction. The use of fired brick, the invention of the dome, the Gothic arch and half-arch in the form of buttress, all had their part in new developments, and varied the constructions of the world. There is little doubt but that in our own age a new epoch is upon us, brought about by the novel uses of iron and glass. It is to no purpose that the old art abhors the new materials; iron, steel, and glass will not be ignored, and must, finally, dominate, by reason of their superiority for constructive purposes.

For my part, I see nothing to regret, but enough to fire our architects with a noble resolution to wield worthily the greater powers that the age has given into their hands. The Greeks met a new epoch with fresh invention; are we less capable of great efforts? Is our courage less prompt than theirs? If not, let us be up and stirring, lest our children look back on us with contempt, and tell how their sires were too weak to grapple with the great destiny that Providence placed within their grasp, and abandoned their duties to their more sturdy progeny.

The problems that science has set the architects of to-day may be difficult and perplexing; though the means of solution are not far from reach. The principal questions appear to be the following:—

1. An adaptation of harmonious forms that shall bear just proportion to the strength and nature of new materials.

2. How and in what proportion old and new materials shall be combined.

3. How to decorate the new architecture with reasonable ornament.

Science will be our best ally in the solution of these questions; she accumulates fresh forces to our resource every day. We are still in the infancy of machine labour; it is as yet impossible to pass the influence of an individual mind into machine-work, but the time may come when the iron hand of the engine shall respond as delicately to the guidance of the human will as fingers of flesh and blood; and when science and art are thus knit together results cannot fail to follow of which the world as yet has no conception.*

A TREATISE ON CONCRETE.†

This is a new and considerably enlarged edition of a work by an engineer whose name is chiefly known in connexion with Portland cement, the best basis of concrete. The appearance of such a considerable book as this on a subject which can have no interest except for those practically concerned in it, is one of the indications of the increasing importance attached to concrete, and its probably still more extensive employment in building operations, if not in what may be more specially called "architecture."

Mr. Reid does not in all cases give due credit to those who have been pioneers in the study of the use of concrete, and the principle of its manufacture and application. He is rather taken up with the subject as now treated, and in regard to this he is a very efficient and thorough exponent. The difference between the concrete making of to-day and of earlier efforts lies mainly in the use of cement instead of limes, and the far greater importance now attached to the selection of the "aggregates" or particles for combination, and the more scientific precision aimed at in the method of combining them so as to ensure the closest and most enduring compact possible. Concrete is in fact now, more than ever, what it was defined to be by the editor of this journal many years ago, "rubble walling on a small scale"; for in the case of the best-constructed concrete the materials are now really selected in regard to their special fitness for bonding with each other and with the cement matrix, and though this bonding is a wholesale operation, it is a different thing from the old and primitive system of tipping the materials from a height of so many feet, and trusting them to do their own mixing under these circumstances. The description, however, which is given on the second page of the chapter headed "What is Concrete?" of the method of making concrete in some parts of Italy, is perhaps carrying this assimilation to miniature walling a little too far, and reads very

* To be continued.

† A Practical Treatise on Natural and Artificial Concrete, its Varieties and Constructive Adaptations. By Henry Reid, author of the "Science and Art of the Manufacture of Portland Cement." New edition. Spon & Co., London and New York. 1879.

curiously. "The aggregate is placed upon a board whereon is prepared a paste of lime, which is carefully handled so as to produce a thin film or coating of lime on the gravel or stone. The action required to accomplish this is similar in character to the process of coating confectionery. By this means of manipulation all the surfaces of the aggregate are, as it were, painted, but not too thickly, with a sufficiently adhesive covering to produce, when the pieces are brought in close enough contact, a compact concrete without any superfluity or deficiency of matrix." One would be curious to know how long the process took per cubic foot of walling, and how much per cent. of the surfaces thus "painted" really came in contact. The object in bringing forward the method seems to be to emphasise the idea as to the importance of full contact of the materials and of a right proportion between the aggregate and the matrix. Economy, of course, dictates the employment of the cement in the smallest proportion necessary for complete and permanent cohesion; and other practical considerations point in the same direction, for a superfluity of cement can hardly be any advantage, and may prove even a disadvantage to the combined strength of the concrete. Looking at it from this point of view, it is almost difficult to understand how the happy-go-lucky system often adopted of throwing the materials together could have produced a satisfactory result, when it actually left almost to chance that which is now known to require the most careful consideration and care. And now our present author discountenances handsetting altogether when the best work is required, and maintains the desirability of mechanical impact as the only means of gaining the most perfect accretion and the greatest strength available from the materials.

Mr. Reid classifies concrete work under seven different heads, which may be briefly recited as follow:—

1. Ordinary foundation concrete.
2. Concrete for streets and roadways.
3. Floor-concrete, generally in combination with iron girders.
4. Concrete for building.
5. Concrete in sewer and drainage works.
6. Concrete for paving purposes.
7. Concrete in the form of pipes.

The two last-named applications of the material include its subsequent treatment with solutions of silicates. Of the first application of the material the author truly observes that there is often an utter disregard of the principles which should regulate the selection of the materials, while the concrete used for streets is now very carefully prepared, partly owing to the necessity for having a thoroughly sound and solid base for the asphalte pavement which has come into use lately. We may add that, of course, the foundation of a street is almost always necessarily under the superintendence of a competent engineer or surveyor; whereas what is called concrete in house foundations is frequently put in by irresponsible builders with whom any sort of pudding of stones and cement, pitched in anyhow, passes for concrete. The author's description (p. 38) of the kind of concrete-laying which he saw in process not long since in the centre of the city of London, as the foundation for carrying the weight of a large building, is amusing enough, and, we have no doubt, a perfectly accurate description, not only of this case, but of many others. In regard to the third application, for floors, we are glad to see that Mr. Reid gives a word of caution in reference to the very liberal ideas which some architects seem to have formed as to the capability of concrete to uphold itself, over floors of considerable area, purely by its own tenacity. There is no doubt that it has in some fortunate cases been found to do so; but to trust to a material of that nature for resisting the tensile strain to which the under-side of such a flooring is subjected is a very risky thing, and it is creditable to some of our largest Portland cement makers that they have consistently deprecated the idea of their material being fit for such a purpose, and have warned their customers that unsupported concrete used in this way cannot safely be trusted to. Mr. Reid gives up to 10 ft. or 12 ft. as a safe limit for monolithic floors, but even then thinks that they require considerable precaution. It would have been well if a word had been said as to the importance, when iron is employed as the stiffener to the concrete, of having it entirely imbedded, so as to suffer as little as possible from variations of temperature and consequent expansion and contraction; and we are somewhat surprised to find neither here, nor in the subsequent chapter on constructive applications of concrete, any mention of Mr. Thaddeus Hyatt's admirably simple, effective, and scientific method of combining iron with concrete. We call it specially scientific, because it places the iron exactly where its strength is wanted to supplement the concrete, and does not waste the smallest section of it where the concrete is sufficiently strong without it. In regard to the building of concrete houses, we may note that the author expresses considerable distrust of houses erected by casting the material in frames, and, at all events, considers that they are frequently built with very insufficient care either as to the quality of the concrete or the accurate adjustment of the frames. He recommends, until Portland cement and its product in the form of concrete have been more perfectly studied, that it would be wiser and safer to build concrete houses on the block system, "ensuring thereby the quality of the materials before any serious structural outlay has been incurred." By the "block system," of course, is meant building with blocks of concrete. Upon this we must merely observe, that though such a system makes (when the concrete is good) an admirably stable and durable work, it removes what at present is the main inducement to the employment of concrete for house-building, economy, and is, moreover, an abandonment of the chief characteristic of concrete. It cannot be pretended that concrete blocks, made first and then bonded like large masonry, can well be less costly than average stonework, unless in exceptional circumstances; it certainly must be more costly than average brickwork; and though Mr. Reid thinks that the frame system of concrete building is not really cheaper than brick (in which in many localities experience contradicts him), he admits that it has important claims as "providing against some of the difficulties surrounding the vexed question of skilled labour and its erratic and suicidal tendencies"; and this difficulty is, of course, not touched by the block system.

Before quitting this chapter on "Matrices" or bases for concrete (in which, of course, Portland cement occupies the chief share of attention), we cannot but express the same regret which we had to express in noticing the author's previous book on Portland cement,—the want of logical arrangement and method, and the apparent confusion of expression in regard to the experiments noted and the deductions to be drawn from them. It is really impossible sometimes to make out what the writer is driving at. On p. 62 we are told that the presence of carbonic acid in Portland cement has an injurious tendency (as, of course, it has), and "the following experiments were made with the view of ascertaining its extent and character": the experiments consisting in laying out certain qualities of Portland cement on a floor for considerable periods, and then giving the amount of carbonic acid which on analysis was found to have been taken up from the atmosphere. This is not an experiment showing the "extent and character" of the "injurious tendency" of carbonic acid, for there is no test given of strength at the end of the periods of exposure; all we learn from it is that *if* carbonic acid is injurious, Portland cement should not be exposed so as to absorb it before use. And in the remarks a few pages further on, in regard to the importance of the quality of fineness, the first two experiments (page 67) are tabulated so as to appear to be contradictory, until we discover that they have been expressed the inverse way to one another; and, after that, we are still in confusion as to the author's real drift, as, after he has just been speaking of the superior value of fine cement (on which he again enlarges further on), we find in his two first experiments the higher breaking tests recorded against the *coarser* qualities. The fact that the copy sent to us had a number of pages transposed in binding increased, no doubt, the apparent confusion; but even after with some difficulty eliminating this source of error, we still found a want of clearness and method which would render it exceedingly difficult for the reader to find out what conclusions the author really meant to convey: and this want of perspicacity and logical arrangement is a serious defect in a book dealing with an intricate practical subject involving a great many statistics.

The chapter on "aggregates," and the following one on machines for reducing them, are considerable interest, and the latter is fu illustrated. The author divides such machin into four groups,—crushers, squeezers, impacto and abradors or triturators. The first class now nearly out of date; the second is b known by Blake's Crusher, not illustrated (we p sume, as too well known); some of those wh are illustrated are of considerable interest. is rather alarming at first to read, under third head of impactors, that "'Patterso Elephant Stamper' is at the present time cre ing some sensation in the mining districts this country"; but the machine so named really a beautiful contrivance, its main pc being the conservation of power and the avc ance at the same time of jar to the machine the storing-up of all superfluous force, excess of which, when inadvertently applied conserved in the springs to which the hamm heads are attached, and the force used is alw proportionate to the work to be done at moment. Among the triturating-machi "Motte's Universal Crusher" is to be noted mechanical appliance of the pestle-and-mor principle in a very simple and effective mann In speaking of aggregates, the author c attention to the importance of removing d of cleaning or washing the aggregates before use,—a very important point which seldom attended to except under the pressure competent and careful supervision, and wh is, of course, a refinement of modern prac not dreamed of in the old days of concr making.

We must pass over the remarks on Eng concrete industries, merely drawing attent to what is said in recommendation of the pa "Victoria stone," an agglomerate, as mos our readers are probably aware, of comparativ fine granite particles in a matrix of Portl cement; the section of a briquette of the st (plate 2) is certainly a much more satisfac object to the eye of an architect than are illustrations in the same chapter of the dream ornamental (?) objects manufactured in this terial, and which would go far to make us v that its production were an impossibility. B better, or worse, are some remarks in the in ductory chapter in regard to the architect or artistic value of such artificial material Ransome's stone. It may not be able to c pete in price, we are told, with average nat building stones, "but it affords great facili for the preparation of ornamental blocks cost much less than handwork, and with gr and unerring accuracy." There is someth almost pathetic in the innocent and unconsc manner in which an engineer will cite as advantage that which all artists are painfu aware has killed modern decorative art, power of and the rage (we cannot ca "taste") for cheap mechanical multiplica whereby all life and interest are removed f decorative design, and it is reduced from ar to a trade. But we do not expect Mr. Reid enter upon this question. He is, how rather bent on referring to architecture for he has taken up strongly the "Lasc system of construction," and given, with el expression of satisfaction, a view of the Q Anne house erected by Mr. Lascelles the Paris Exhibition last year, with sham brick jointing, and its pilasters st ing on corbels,—a piece of architect absurdity to which it is utterly astonishing that Mr. Norman Shaw, who has shown hir so often a fine architectural artist, should lent himself. Mr. Reid is not only quite delig with this application of concrete, but he is pared to lecture every one who does not his admiration. He tells us that "the ar architect, who pins his faith in true old-fashi style to existing usage," will say, "There a bricks used in such a building as that prod under the Lascelles system of construction how can you build a house without brick We beg leave to say that the artistic arch is not quite such a fool as that, and the knows a good deal more of the matter Mr. Reid can tell him. The fact is (a pointed out when noticing Mr. Lascelles's some time ago) that the system of pinning faith to existing usage is exactly the very which Mr. Lascelles and his architectura adjutor have themselves committed, by tre their new material in imitation of bricks tiles, publishing designs for sham old cottages in a style which arose out of perf different materials of construction, and eve viving, apparently just because it *was* old, a

rm of cottage plan long condemned by some of e best judges of the sanitary conditions of plan. ne treatment of concrete architecturally, as a ilding material, is a matter of great interest, t the true architectural expression of the aterial will never be arrived at by imitating ick and tile work, and Mr. Reid should urn a little more about what constitutes archi-ctural design and architectural style before livering himself with so much confidence on e subject.

The cement-concrete tiles of Messrs. Patteson, ich the author also notices, form a very good plication of concrete in an ornamental form, ch better in design, certainly, than most of vases and pedestals and other painful things viously illustrated. The rest of the chapter constructive concrete applications is occupied h the practical forms of concrete building nstruction, mainly, however, with two forms y, Hornblower's patent fireproof floors, and h's patent Z-blocks. The former, as our ders are aware, is a system of concrete ring, combined with hollow terra cotta or clay, with an iron girder or beam at intervals hin a fireclay tube, so as to be protected m the action of the fire. The floor is a very d and complete one, but expensive, and it y certainly be questioned whether the rather plicated construction involved is it realises r qualities either of strength or of fire-resist-e beyond what are secured by Mr. Hyatt's pler process, although for buildings in ch cost is not a main consideration it is haps the most complete and finished form of proof flooring. The latter depends, it is true, he concrete being of the best quality, but ler this condition its tests for fire-resistance e shown extraordinary results. Lish's lock system is a means of building hollow crete walls with a bond at regular intervals, building materials being concrete blocks not a Z-shape, but approaching that, so that h block forms part of the face on either side he wall and a connecting band across, the l being thus divided into hollow compartments. s seems a method of building having much tary merit and simplicity, though it can lly have the advantage over more ordinary ding methods in point of economy. There nother methods of using concrete as a build-material which might, as it seems to us, have equal claim to notice in Mr. Reid's treatise. recommend the book to those interested in crete, as an important contribution to the ect, containing much valuable and, as we ave, reliable information, though a book ewhat spoiled by the want of literary method ch we have commented upon.

LONDON IN RED.

AN is an imitative animal; no doubt of it. re are more echoes than voices in the world; oubt of that either. When one low-spirited e of humanity threw himself into eternity he Monument, another followed suit from Duke of York's Column in less than a week; we might go on illustrating the fact in the e striking way to the extent of one of our Classic columns. The last indication, how-, of this imitative faculty, which is a rable one, shall suffice. The glowing ct of the comfortable red brick houses, plenty of sash-bars and ornamental sage opped brick, which have sprung up in and t and all round the metropolis, so fired the gination of the owner of a drab cement-red front that orders were given, and in than no time the desert blossomed like the and from head to foot, from roof to pave-t, the whole surface was made red. So far e know, it was Lady Herbert of Lea, in rave-square, who was the first to commence brightening process, and for a time society gered and stared. Quickly recovering itself, ver, it proceeded to imitate, and now in all tions the artistic mind is showing itself in on the front of the house, and making ything *couleur de rose*. In the immediate bourhood of this daring innovation a dozen ples have donned the same coloured uni-, and Lord John Manners's pillar-posts ling hard by look like little drummer-boys he same regiment. Here and there a er genius shows itself in two colours, and e house the capitals of the Doric columns ing the porch actually exhibit contrasting In another district brown takes the place ne-colour to the extent of the ground-floor, and what the movement may actually lead to in the way of external polychromy it is hard to say. At the present moment, however, the colour first mentioned, and plenty of it, is the order of the day. "*Faites votre jeu, rouge gagne.*" The epidemic is spreading, fast as another scarlet fever is known to do, and ere it run its course there seems every reason to believe it will, like Macbeth's hand, with a difference,—

> "The multitudinous town incarnardine,
> Making the drab—one red."

WORKMEN IN PARIS.

At a time when an activity is remarkable in the building trade of Paris such as almost recalls the palmy days of the Second Empire and the reign of M. Haussmann, when the builders', in the midst of the general depression, is the only branch of trade in a satisfactory condition, sadly showing the inaccuracy of that oft-quoted Parisian proverb, "*Quand va le bâtiment, tout va,*"—at a time when such is the press of work that the Limousins, the bricklayers and masons who usually return home at this season, have yet before them many weeks' occupation, the professional world of the capital has been disturbed by a series of strikes which have suddenly commenced. Four trades have struck or threatened to strike within a few days,—the carpenters, the joiners, the dyers, and the *fumistes*, or flue-builders. Our English contractors and manufacturers may sympathise with their French brethren, for they know only too well the difficulties to which such incidents lead. The carpenters asked (for fortunately this strike is now arranged) for an augmentation of a franc a day. It may be easily seen that the contractors who had made their contracts according to the existing rate of wages saw themselves somewhat thrown out in their calculations, and asked their men to accept the augmentation when the works at present in course of progress were more sufficiently advanced, that is, after the 1st of January next, but the men refused, and the strike continued. To the credit of the masters, this disagreeable position was soon settled. The contractors met in their "syndical chamber" in the Rue Constantine, about a hundred strong; and, after a stormy debate of two hours' duration, determined, by vote, to accede to the claims of the men. The carpenters' strike is therefore terminated, if not to the entire satisfaction of all round, at least to the owners of property, who, paying as they do in most of the localities in which houses are being built excessive rents, are desirous to have a return on their outlay in the shortest possible time. Want of rapidity is not to be remarked in the Parisian builder (in spite of which "Jerry-building" is unknown) and five-storied stone houses which, but a few weeks ago, were only having their cellars laid, will probably be occupied by next spring. Indeed, the Aladdin-like manner in which a line of houses rises in Paris, where plaster and stucco are rarely if ever used, their place being taken by hand-sculptured and lavishly-used ornaments, is certainly miraculous.

In 1848 the carpenters received four francs a day, about 3s. 2d. In 1876 their wages were raised to five francs, 4s.; they struck, asking for an increase of a franc, but before the strike was terminated they advanced their claim to two francs daily. After three months' entire cessation of work, the contractors gave in. So that taking into account this, and the new increase, we see that the carpenters have succeeded in gaining an augmentation of three francs in less than three years.

The joiners' strike so far appears only to be in a state of embryo. They also demand an increase of a franc a day, and the suppression of sub-contracting, and over-time paid double. The work at this moment being, as we have already stated, particularly pressing, the contractors have been exacting from their men extra hours, and this they have refused to continue; so far they have not openly struck, but when the usual knocking-off hour comes they put away their tools and disappear without a word. Their demand for an increase of salary is based on the growing dearness of living and the expense of their tools, which obliges them to invest at least 10*l.*; further, these require constant reparation, and the men ask that instead of the six francs they at present get they may have seven francs (about 5s. 4d.); they further, as above stated, want the piecework given to a gang of workmen and not to one man, who often sub-contracts and executes bad and cheaper work. They further ask that their day's work may not be more than ten hours, and this for obvious reasons. According to the report of their delegate, it would appear that no fewer than 5,000 men are out of work in Paris alone. As we write these lines no arrangement has yet been made, and a manifesto has within a day or two been circulating among the joiners, by which they have agreed that if the contractors do not accept their conditions, they, the joiners, will suspend all work.

The strike of the *fumistes*, the flue-builders, offers some curious features; of all the trades which depend on the builder, theirs is that most favoured. Working by the day, that is, in summer from six to six and in winter from daylight to sunset, their wages are always the same, short day, long day, on an average 6 francs 25 centimes, 5s.; average, we say, as there are workmen who gain only 5 francs a day, 4s., and others who have 8 francs 50 centimes, nearly 7s.; as they work all the year round, their income is superior to that of many clerks, and night-work is paid 50 per cent. extra. The men now ask for 7 francs a day to all their members without distinction of their capacities. Notwithstanding that the contractors have shown them their own difficult position, the men have so far refused to listen to them.

At a time when, as we have already remarked, the building trade of Paris is more than usually active, the always important question of the necessity of arrangements for the prevention of loss of life by imperfect scaffolding, has been agitated. For some time past these accidents have been too frequent, and the leader-writer of our foreign contemporary, the *Petit Journal*, Thomas Grimm, not many days since reverted to this important question; want of precautions, quite as much as increased activity in the trade, is the cause of many of these deplorable accidents, and the press having urged the necessity of a strong network round the scaffolding, there seems now a possibility of the question receiving its due consideration. That in most cases the fault, as the contractors never fail to argue, rests with the unfortunate victim, is only too true; custom renders the workman careless, but, at the same time, this being the case, it is the duty of the foreman to suppress, as far as possible, the chances of accident. Here in Paris the scaffoldings such as are habitually used are, if strong and serviceable, excessively primitive; indeed, all the processes, even with the modern appliances of iron beams and almost entire abolition of wood connected with the erection of a house, are of this nature; as an instance, bricks and smaller stones are passed to a second floor by a series of workmen, who hand the bricks, two by two, one to another. The workman who lives on his daily wages is in a position deserving much sympathy; his wife and children must, even in case of accident which necessitates momentarily cessation of work, rely on a trifling indemnity, which is in the greater part of cases grudgingly bestowed by the employer; as the law decides no fixed sum, and the matter is left to the generosity of the employer, suffering and discontent are frequent. A remedy for such a position ought to be found. A recent accident, in which a young person in leaning too far out of a window fell into the street below (a rare accident, fortunately, here in Paris), reminds us of the custom, almost universally adopted here, of placing a bar of support across the window, at about the height of the middle of the body; we in England have not adopted this excellent innovation, by which the pleasure of looking out of the window is rendered, without the expense of a balcony, almost entirely free from danger. Far from destroying the appearance of the façade, this bar breaks the monotony of the series of square holes, which in the present day take the place of the elaborately designed and conceived window of the past.

We hear much now of the degeneracy of modern workmen, and the effects of mechanical production, and the fact is sadly enough undeniable that each branch of industry in the present day tends to become more and more specialised, and its operations sub-divided among a certain number of routine-drilled mechanics, the direct influence of the increased use of machinery. This, in a country like the United States, has led to such strange results that it is with difficulty one is able to find,—this instance

taken as one among many others, —a watch-maker who can repair a slightly-injured watch; it will be done probably only by some newly-arrived immigrant or some of the rapidly-dying-out old-fashioned tradesmen who belong to the day when everything was imported from "the old country." Waltham and Newark, and their machine-made watch factories, absorb the immigrants as they arrive, and each workman becomes, after a time, little better than a machine capable of turning out in the course of the day so many of the special portions that may be entrusted to his care. But to return to Europe, the old system of apprenticeship is dying out rapidly, and only exists in force, probably, in the country towns and villages. In days not so very long ago, a master workman would have in his shop one, two, or three apprentices, who were almost as his sons, who lived in the house, and, under the direction of their humble master, were transformed in due course of time into able workmen. Into this patriarchal and excellent order of progression, in which traditional secrets have been jealously handed down from the most distant ages, the modern requirements of trade have rudely broken. The small workshop is fast disappearing, and as for the factory workshop it forms a school in which far from the best education is given to the young. A revolution, and one not for the better, has been operated in the old system of apprenticeship by the practices of modern industry, and a remedy must be sought. The existence of the smaller workshops is necessary, since they insure to a large class that inestimable of all advantages—independence. Our apprentices' schools are not able to cope with the difficulty which presents itself in every civilised country. An article in a French contemporary spoke not long since of the *Société de Protection aux Apprentis*, the (Society for the Protection of Apprentices), and more particularly of a society affording "paternal assistance to the children employed in the industry of artificial flowers and feathers." This society is represented in each manufactory by a delegate whose duty it is to encourage the children in their intellectual and moral, as much as their professional, development. This delegate is not a spy, still less a competitor, desirous to surprise any secrets, the society choosing its delegate to one workshop from a different profession; without actually entering the workshop, he serves as a friend to the child, and a valuable auxiliary to the patron. The initiation given by the association to which we have referred,* deserves attention, as affording a means of remedy to an ill which may have not a little influence on the existing depreciation and suffering of commerce.

HEALTH QUESTIONS AS DISCUSSED AT THE MANCHESTER CONGRESS.

On Thursday, the 2nd inst., Mr. F. S. Powell presided, and Mr. Alfred Haviland delivered an address on the special question, "What are the evils resulting to health from the growth outside the boundaries of the municipalities of suburban districts without due regulation and control?" He said he was medical officer of health over a very large area. He believed altogether he had about as many villages and towns under his charge as there were days in the year, and 1,000 square miles to go over. Some two years ago this subject came forcibly before him, and he read a paper before the Society of Medical Officers of Health on the distribution of zymotic disease from epidemic centres. In that paper he proved that there were in large areas certain epidemic centres. From each centre there were certain circles around showing that the spread of the disease from the centre was in the inverse ratio of the distance, speaking generally. First of all he took Northampton as an epidemic centre, and then took all the sub-districts and circles around, and it was very remarkable as showing how the zymotic diseases lessened in fatality as the distance increased from that centre. He showed that in Northamptonshire there were comparatively large market-towns with bad sanitary regulations, where zymotic diseases were hardly ever absent. These facts had impressed upon him the necessity of there being but one law. There should be no distinction between urban and rural authorities. No improvement would be witnessed till it was made compulsory that the powers enjoyed by urban authorities were enjoyed also by rural authorities. Even in the matter of scavenging, so necessary in towns, there was the greatest difficulty in getting it carried out in rural districts, on account of people being afraid of the expense. When these districts were invaded by disease of an epidemic character, the people had no means of meeting it. The Association should take up this matter, and strongly impress upon the Government the necessity of making it compulsory that urban powers should be carried into rural districts. Rural authorities should have the same powers as were enjoyed by urban authorities, in order that they might secure proper drainage and a thorough supervision of houses. They wanted more inspectors; they wanted more intelligent men who would do their duty well without any reference to self-interest. It was impossible for one man to superintend a large and growing community of 50,000 inhabitants.

Dr. Hardwicke (coroner, Middlesex) said it was a mistake to think that living in the country was so much more advantageous in a sanitary point of view, as was thought by the working classes to a great extent, than living in towns. There was a danger in leaving a town which was under proper management, and going to a small place where sanitary conditions were far worse and the evils to which they were exposed were far greater than in large towns. What was wanted was to have the same law made applicable to rural parishes as was in force in towns with regard to building inspection and other matters.

Mr. Baldwin Latham, C.E., said this was a question that must be dealt with sooner or later. There could be no doubt as to the evils that existed in rural parishes. He could not conceive why a man living in the country should not have his house as healthy and habitable as a man living in a large town, and yet it was notorious that rural authorities had no control whatever over building operations. Builders might build upon any plans they liked, and use whatever materials they pleased, and there were no regulations as to drainage. The consequence was that the health of the inhabitants was injured, and the death-rate fluctuated to a great extent when they were visited with zymotic diseases. He held that, with reference to regulations for buildings and general sanitary control, they should be assimilated, and that what applied to urban districts should also apply to suburban districts.

Dr. Seaton (Nottingham) thought a great deal of mischief resulted from the present regulations not being strictly carried out. It was one thing to have powers and another to carry them out.

Mr. Fuller (chairman of the Withington Local Board of Health) said he had occupied the position of chairman of a rural sanitary authority having power over an area larger than the superficial area of Manchester, and which had lately been converted into an urban district. He thought the change had proved of very great advantage in the district. Within a circle of a very few miles round Manchester there were twenty separate local authorities. It was not at all likely that those authorities would act upon uniform principles. Their bye-laws would be different, as also would be the extent to which they would be carried out. He thought there should be uniformity of action in sanitary matters all over this area. The best thing that could happen would be the absorption of all the local boards in the immediate neighbourhood of Manchester by the Manchester corporation.

Professor Gairdner (Glasgow) said that for nine years he was medical officer of health for Glasgow, and he had abundant opportunities of observing the evils referred to by Mr. Haviland. He was not quite certain that if they endowed the rural authorities with the same powers as urban authorities they should meet the difficulty which existed. One of the great obstacles was the want of co-operation on the part of authorities. It was difficult to get co-operation on the part of authorities who stood related to these matters on account of their having antagonistic interests very often. Although Glasgow bore an evil reputation from a sanitary point of view, he believed he was right in saying that some of the greatest risks the city ran arose from badly-conducted suburbs. The mere extension of urban powers to suburban districts would hardly do what was desired. What was wanted was a scheme of inclusion, which would enable all the authorities that ought naturally to co-operate in dealing with epidemic disease t
do so.

Captain Douglas Galton, F.R.S., said h
quite agreed with Professor Gairdner as to th
desirableness of inclusion, but the difficulty wa
as to how they were to adopt the limits of tha
inclusion. As was shown by the Bishop of Man
chester on the previous evening, there was
tendency on the part of the people to leave th
towns and go to live in the country, in orde
that they might get a purer air; but they to
often fell into fresh difficulties, because ther
was no proper control over the building of th
houses, and the sanitary matters were too ofte
ignored. It was not at all clear that in order
secure health they need move out of towns an
go into the country. In St. Ann's, Soho, Londo
the population was 331 to the acre, and th
death-rate there was 24 per 1,000. At Eltha
the population was one per acre, and the deat
rate was 18 per 1,000. In certain model lod
ing-houses in London the population was 1,1
to the acre, and the death-rate was only fr
16 to 18 per 1,000. So they would see that
was not at all necessary to have a count
residence in order to enjoy good health. T
fact was that if in building houses in tow
they would adopt the plan of so arrangi
houses either one over another, or taking ce
that there should not be community of
through the buildings, but that there should
a free circulation of air all round the house
and that there should be no refuse matter h
in their vicinity,—if they attended to th
matters they would have a higher standard
health in the town population, just as they wo
have in the country, and even better. Not t
it was not better to live in the country if th
could have all the attributes of health wh
the country afforded. The whole difficulty
in the want of education on the part of
people. In the towns they had the advant
of having educated and duly qualified medi
officers of health, and surveyors and inspect
of nuisances; in the country very often t
had less-educated persons to look after
health of the districts. What was chiefly wan
was to raise the tone of education in sanit
matters throughout the country.

Mr. H. H. Collins (district surveyor for pa
the City of London) said that until the pe
were more educated Acts of Parliament w
do little good.

The Chairman said he must congratulate
section on the most interesting discussion
had had. He could not help contrasting
reluctance they found in England on the pa
suburban districts to be incorporated with ur
districts with the anxiety they found in Ame
on the part of rural districts to be so inco
rated. He believed the difference betw
urban laws and rural laws was much less
was commonly supposed. If they attempte
impose upon the whole of the country distr
every section of every Act, or attempted to
pose every section of every bye-law relatin
urban districts upon rural districts, they w
meet with great opposition in the Hous
Commons on the part of the members
represented suburban districts. If it was f
that there was a possibility of passing thr
Parliament a Bill containing new powers
particular districts, it would lead increasi
to private Bill legislation, and if there wa
thing to which he objected more than anoth
was that miserable system of each town ha
its own private Act. He held that we ough
have in England one common set of laws
reference to buildings. Although the la
the same, the bye-laws need not be the san
if they went to a purely agricultural di
they need not have the same rigid bye
which must necessarily prevail in towns.
the other hand, there were bye-laws which c
to be more strict in rural districts than in
towns. In times of epidemic the hospital i
town ought to be accessible to people
lived in the suburban districts. Power ou
be given to the authorities, — to sub
authorities,—to send infected patients t
great central hospital. The great diffi
they had to deal with in reference to
authorities was the narrowness of their
and, consequently, the limited salaries
those authorities were able to give to
officers. He wished to have put in forc
more extensively than at present the p
given by various statutes, to have office
common. There was no reason why diff
districts should not have a common ma
officer of health or a common surveyor. B,

* The offices of this Société d'Assistance paternelle are in the Rue de Lancry, Paris; the president, M. R. Turney, 36, Boulevard de Sebastopol, Paris.

ans they would secure two advantages,—they uld secure higher ability and uniformity of ctice over a considerable area.

Mr. Haviland moved,—"That this section ommends the council to memorialise the vernment that, in order to lessen the evils ulting to health from the growth of suburban ricts outside the boundaries of municipali-, powers be obtained to bring both the nicipal area and the suburban district under control of one sanitary authority."

Professor Gairdner (Glasgow) seconded the tion, and it was carried.

Influence of Sewage Farms on Public Health.

Mr. Baldwin Latham, C.E., read a paper on he influence of sewage farms on public lth." He drew attention to the fact that arge number of sewage farms had been ablished throughout the country, and that nvestigation into the condition of the health hose residing in the neighbourhood of those ns, or working or living on them, showed, ond doubt, that sewage farms were not judicial to health. In the case of the ydon Sewage Farm it was shown that the th-rate of the district in which the farm located for the ten years previously to the age being taken on to the land averaged 6 per 1,000 per annum; the zymotic death- was 2·5 per 1,000, the fever death-rate was per 1,000, and the diarrhœa death-rate was per 1,000. For eighteen years subsequently the sewage being taken on to the farm, the eral mortality of the district was 15·09, the notic death-rate 2·75 per 1,000, the fever th-rate 0·32 per 1,000, and the diarrhœa th-rate 0·86 per 1,000. He urged that if the thiness of sewage farms could only be fully ised, towns would not be mulcted in the y expenses which they now have to pay by ion of the opposition to the establishment of works, and also for the alleged damage to cent land which had often to be paid when was acquired under compulsory powers for age purposes.

Alderman Thompson said the Corporation of chester conceived that the best principle to t in dealing with sewage was an inter- ent system of precipitation. If gentlemen d suggest a better or cheaper way they ld be glad to adopt it.

After some discussion,

the Chairman, in summing up, said it was rly proved that a sewage farm might be paratively harmless to the health of the hbourhood, but at the same time they must it that there might be a certain amount of ger arise from the neglect or mismanage- t of such a farm.

On Friday, Mr. F. S. Powell, as president of section, delivered his address. In the course he said he held that in regard to the evils e dealt with, any pollution of the air, such an make a common nuisance, either in stink dust, or which causes coughing, should be d a nuisance injurious to health, and come er the Nuisance Act. Dr. Smith estimated sulphur poured into the air in the course welve months by the consumption of coal ur manufactories, ironworks, steam-engines, houses at no less than one million of tons. rs were entertained "that the evil cannot be pletely cured until some means are found fixing the sulphurous vapour which the bustion of a certain amount of coal neces- ly evolves." But the mischief might at least mitigated, and it was indolence to neglect ntages which were at hand until science ld have devised and mechanical genius ied out in practice a complete remedy. re were other indirect evils. There was the ect of cleanliness where excessive toil alone lered cleanliness practicable; there was the and degrading acquiescence in base phy- l surroundings; there was the incentive to nkenness from the depressing influences of atmosphere; and, to refer in one word to the cantile aspect of this question, there was the ossibility of raising our people to due artistic ibility when their lives were passed in the t of monotonous gloom. Let any man el from one of our smoke-ridden manufac- ng towns and stand on the heights which mand the city of Lyons, and let him feel rise, if he could, that the English workman surpassed by the French in the delicacy of ints, the harmony of his colours, or the grace is designs. Among the reforms was the stration of sickness, which tended to keep the lic and the central sanitary authority constantly aware of the state of the public health in every part of the country. He rejoiced to find that the Sale of Food and Drugs Act of the present year had removed a great magisterial difficulty by fixing a standard of strength. People were now for the most part secure against the intermixture of noxious ingredients in their daily food. We must, however, pay regard to the fact that the circumstances of districts widely differed, and that regulations essential for security in London and Manchester would be vexatious interferences in lesser communities and in rural districts. Mr. Powell also approved of the Act passed last session at the instance of Mr. Marten, which conferred on the Local Government Board power to compel the formation of cemeteries as occasion arose, and without the severe limitations which had hitherto attended the closing of graveyards. To this new task the sanitary authority, urban or rural, would doubtless prove fully adequate, and the national scandal, accompanied with danger to public health, of overcrowded churchyards would by slow but sure degrees cease to exist. There was one question of wide-reaching importance which would be asked in future years, which must engage public attention and might influence the action of the Legislature. It was present to the minds of all intelligent parents, though probably not yet discussed in connexion with compulsory enactments of Parliament or subordinate authorities, namely, how far the existing severe pressure in many elementary schools and in the higher education produced, or would hereafter produce, mischievous effects on the well-being of the pupils. In America considerable apprehension had been entertained, especially with reference to the more sensitive and delicate organisation of girls. "School life in its influence on sight and figure" had already been investigated by a master-hand,—Dr. Liebreich. In conclusion, Mr. Powell urged that these subjects ought to be taken as one great whole, not as separate and sometimes conflicting problems. The construction of works for water supply in the case of urban districts should be on a large scale, either by combination between lesser communities or by contribution to them of water collected by towns of greater size. The water supply should be constant. Underground sources of supply should be diligently sought, and more freely made use of. As to sewage, no single system was suitable for every district, and in lending the public money the time of repayment of the loan should be so calculated as to give a wide margin, not only for the natural decay of the works, but for the advance of science, which might render them antiquated. In the metropolis, reform in the supply or distribution of water was accepted by Government and Parliament as a necessity and a duty. But agreement on this necessity had not been arrived at without conflict.

Business was resumed in the Health Department, and

The Sanitary Condition of the Houses of the Middle Classes

was discussed. The special question for consideration was,—"What are the best means of improving the sanitary condition of existing houses of the middle classes, and the best mode of building so as to combine sanitary and commercial value?" and a paper was read upon the subject by Mr. Joseph Corbett, sanitary engineer and architect (Manchester). He said the improvement of existing houses would include the remedy of acknowledged defects, such as leaky or ill-arranged sewers; also the addition of sanitary comforts, such as improved warming and ventilation. Municipal or other health regulations scarcely touched existing dwellings; and it was very difficult for a tenant to compel his landlord to remedy even very serious defects. Stringent local regulations, firmly and judiciously enforced, formed the best practicable means of improving middle-class dwellings.

Dr. E. M. Smeaton (medical officer of health, Nottingham) also read a paper upon the subject. He pointed out what was required in the arrangement and construction of the drainage in new houses in Nottingham, and discussed how far it was necessary to modify these requirements in endeavouring to secure the improvement of houses of older construction. With regard to the colouring of wall-papers with arsenical pigments, he said that was a sanitary defect common in middle-class houses. His attention had been forcibly drawn to the matter by certain cases of arsenical poisoning which had occurred from this cause in his own district, and he doubted not that cases of a similar nature were more frequent than was generally supposed. There could be no question as to the desirableness of using papers devoid of this poisonous colouring matter, and of urging this as one of the sanitary improvements needed in the houses of the middle classes.

Mr. M. H. Judge (London), thought they had not arrived at the point when they could call upon the Legislature to compel middle-class people to carry out any stated rules. They interfered with the poor, perhaps, because they could not offer any opposition. What was required was to educate the people with regard to sanitary matters as well as in other matters.

Mr. Baldwin Latham said it appeared that they were only just beginning to understand the real causes of many of the evils from which society suffered. There were certain movements of subterraneous waters which often proved a fruitful source of disease. Where there was the least amount of ground water present, disease was most rife. It was remarkable that in years like this, when for months we had had a steady downpour, we had an abnormal death-rate, for speaking generally all wet years were healthy years, and all dry years unhealthy. Very many of the evils from which we suffered were due to imperfect drainage works and house connexions that were carried out in our towns. He expressed himself in favour of the system of living in "flats," as in London and Scotland, remarking that it would be found, upon examination, to be more economical and healthy than the system commonly adopted. He condemned the practice of sleeping in rooms on the ground floor and in underground apartments.

Mr. M. J. Fox (Lymm) said he believed they did not know all the evils that arose in houses from ill-constructed sewers. Chronic headache was invariably found where there was an ill-constructed closet in a house. He was strongly in favour of the placing of baths in dwelling-houses. He should like it to be made compulsory upon every builder or owner of property to have a bath put into every house he erected. The great leading principle of house safety was disconnexion from the sewer, and the proper ventilation of pipes through which noxious gases pass.

Mr. H. H. Collins said that until people educated themselves to understand that sanitary was synonymous with commercial value, existing or future houses would not be erected with due regard to healthy considerations. As the result of twenty-five years' active practice of sanitary work, he held that the evils of bad drainage might be remedied at comparatively small expense. He believed that 25*l.* to 30*l.* expenditure would be all that was required to effect a complete ventilation in a medium-sized house. If people were only educated to the importance of this subject, the present legislation would be sufficient. It was to the interest both of occupiers and owners of houses to keep their premises in good sanitary condition.

Dr. Fox moved, "That this section, whilst not prepared to recommend at the present time an entire conformity of rural to urban powers, is, nevertheless, firmly of opinion that such distinction is maintained with serious disadvantage to the community in regard to control of new buildings, and they would urge the council to recommend to the Local Government Board the logical and practical necessity that exists in regard to health in any future amendment of the law for enacting and imposing building laws that shall be of equal obligation on both town and country."

Dr. Haviland seconded the motion, and it was carried.

An English Spelling Reform Association has been established, and proposes to collect, arrange, and distribute information on the subject of spelling reform; to collect works on spelling reform, and to preserve copies of articles bearing on the subject from periodicals; to institute and watch experiments on teaching to read, spell, and pronounce, with reformed systems; and to promote lectures and public meetings for the purpose of imparting information on spelling reform, and for memorialising public bodies in its favour. In view of the great number of considerations which will have to be weighed before adopting any one mode of reconstituting English orthography, the Spelling Reform Association abstains for the present from recommending any particular scheme. If the Association proceed cautiously and wisely, it may effect improvements.

THE DECORATION OF PUBLIC BUILDINGS:

STREET ARCHITECTURE.

In the Art Department of the Social Science Congress on the 2nd inst., the special question for consideration was, "What subjects are most suitable for the pictorial decoration of public buildings in this country, and on whom should the selection rest?" and in connexion with it a paper by Mr. G. F. Watts, R.A., on "The Decoration of Public Buildings," was read by Mr. Boyes, the active secretary of the department.

Mr. Watts said that the interest taken in art by Manchester was among the most encouraging signs of the times. It was not much that art should be the fashion with those who were at a loss how to get rid of time, but a strong desire for its presence in cities devoted to manufacture, like Manchester and Liverpool, proved in them a real sense of its value,—a value greater to an overworked nation than to any other, as no thoughtful mind could doubt. To provide interest and pleasure for a weary and disquieted population (interest and pleasure that could only tend to develop the finer qualities) was one of the wisest uses to which our energies could be applied, and had become a duty to all who had any patriotic feeling. To propose art as a panacea for all such evils as intemperance and the like would be absurd; but art and music, setting aside their value as supplying the places of amusement which our age had outgrown, were at least healthful influences and necessary portions of that general education in which alone there was hope. Public buildings might be turned into great picture-books, leading to considerable cultivation, in addition to affording a permanent source of pleasure. Nor would our gain end there. Art itself had need of the opportunities that would be so afforded for its best development. The truest and most natural expression of painting and sculpture was called forth in their alliance with architecture, each being really imperfect in itself, and each requiring the aid of the other to render the harmony perfect. Having put in a plea for art in connexion with church decoration, remarking that in church decoration the artist found the greatest and noblest opportunities, Mr. Watts observed that the growing conviction that it was of all things important to provide amusement and interest for the overstrained population at large had given rise to a strong opinion that music and art must come more and more into every-day life; not as trifles to be taken up when there was nothing else to do, but as occupations as necessary to our well-being as eating, drinking, sleeping, and working,—essential parts, in fact, of our social existence. Music of the very best kind was really widely known and cared for, and to give a similar advantage to art wider and more popular opportunities of instructing and improving the decoration of public buildings were necessary. The best national school of decorative art could only be created by means of the decoration of national buildings. This was important at the present moment for the sake of the progress of art; important also as a valuable source of instructive amusement to a hard-working population; and further, important as regarded the future of any town, by giving it dignity in the eyes of strangers and foreigners, and life even after its manufactories might be silent and dead. Nor should Art present herself to Manchester merely as one of the "Graces." When a certain natural sense of art died out, no handiwork would be done with pleasure, and therefore nothing would be really well done. The progress of invention was bringing mechanical aid more and more into use, and usurping more and more the place of the skilled workman's eye and hand. The inevitable must be accepted, and we must submit to the dynasty of machinery, although the fact remained that, wherever its rule extended, coldness and death replaced pulsation and life. We might in any case direct our efforts so as to maintain the life of art in work as long as possible. From the most material point of view, if we depended upon machinery alone, we could not hope to maintain pre-eminence in workmanship, and earnest attention to what belonged to the human and artistic qualities of any work, and the careful cultivation of all such, became a matter of peculiar importance in a manufacturing city. To nurture and develop national art and song, not as a luxury, but as a necessity to the people, should be the earnest task of all who had leisure and means. Yet, without the habitual presence of art in the decoration of public buildings, it could only be a luxury unknown in every-day life, and valueless to the history of the nation. It might also be said that by reason of the absence of art from its natural place, viz., the walls of our public buildings, many fine historical subjects that needed large space and large treatment had never been delineated at all, and some of the greatest qualities of our national character, such as solidity, manliness, sense of right and duty, courage in danger, perseverance under difficulties, &c., had been chronicled in literature, but were left untold to us in the language of art. It was, however, easier to lament than to avert, to pull down than to construct. It might, perhaps, therefore, be permitted to suggest an experiment that need not be costly. What he would suggest was the building of a music-room, large, yet perfectly simple in structure, to be decorated with simple designs, wholly carried out and completed, fitted, and ornamented by students and workmen. They should proceed, of course, under direction and supervision, encouragement being especially given to workmen for the elaboration of all the structural parts, no matter how long a time they might take in completion. This room should be devoted (even, perhaps, before the final perfecting of its decoration) to the performance of the music most essentially peculiar to England, music but too little valued in these days, part-songs, glees, madrigals, &c. The walls of the room should be painted by students with copies of the best and simplest examples known to us; or better still, they might here enlarge and reproduce some of the really admirable designs that appeared in the *Graphic* and other illustrated papers,—contemporary subjects for the most part, such as "Manning the Lifeboat," &c. Were these to prove failures, no matter; the walls could be used over and over again, as slates were at school. Perhaps, so encouraged, and with such exercise-ground for his faculties, the human soul that now toiled at his dull work amid smoke and grime might develope extraordinary qualities, bringing to bear upon his new interest a more hearty exertion than was common to those who lived in ease and luxury, and perchance producing magnificent though somewhat stern and rugged results, from which a great national school might spring hereafter. A national art in a large sense was necessary to our future position in history, and it was probable that with due encouragement, such an art, fraught with great vigour and character, might yet arise.

An interesting discussion ensued.

Mr. G. Aitchison was of opinion that the decoration of public buildings might be more extensively indulged in, such towns as Manchester and Liverpool being in a position easily to devote a small portion of the enormous wealth contained in them to that purpose. The difficulty to be contended with was the climate of England, and the smoke and dust of large towns. He hoped to see many public buildings decorated with highly interesting historical or local subjects in mosaic,—the material which he considered most suitable.

Professor Walker (Owens College) considered that if in elementary schools some little indication of right principles were implanted by means of even a few lessons or lecture lessons, there would be implanted in the national mind a germ which would ultimately bring forth good fruit.

Mr. Statham remarked that attention to art in our primary schools would in the next generation produce good results.

Mr. Alderman J. Thompson bore testimony to the value which the labours of the Association and the suggestions made at the Liverpool meeting had been to those who had taken an interest in the erection, and more especially the decoration, of the Town-hall.

The Chairman (Mr. W. Agnew) in closing the discussion, gave it as his opinion that much might be looked for from an encouragement of a system of teaching with respect to art matters in our primary schools. The style of decoration which he thought most suitable for our public buildings was mosaic.

Mr. T. C. Horsfall read a paper on "By what means can the inhabitants of large towns be induced to buy examples of good art?" of which the following is a summary:—Photographs, photo-engravings, and chromo-lithographs of good pictures are now so cheap that well-paid workpeople can afford to buy several such copies every year. The crowds of workpeople round printsellers' windows show that good pictures have some interest for workpeople. Why is it that, as a rule, only worthless engravings and coloured prints are found in the houses? The chief reasons probably are that few workpeople know that some copies of good pictures are cheap, and they do not know enough about the subjects of the pictures they see to care very deeply for them. For while one of the functions of pictures is to give pleasure by beautiful form and colour, pictures, as simple beautiful things, cannot compete with flowers and clouds. To have enduring interest, pictures must excite thought and feeling, and they can only do this when the things which they represent are familiar to us, or closely connected with things which are familiar to us. At present owing to workpeople's ignorance of the subject of the noblest kind of pictures, only pictures which cannot interest any one deeply, interest many of them at all. But if the cultured workpeople is to be deeply influenced by art those pictures which, when understood, have the greatest power to interest, must be made intelligible to them. I suggest that in every town a number of people conversant with art should select such good cheap copies of pictures as they think can be made interesting to workpeople by explanation, and that they have printed on slips of paper,—one of which should be sold with each copy,—a statement of the reasons for choosing it, a brief criticism of its merits and defects, an explanation of any incident or thing which it represents, and of the connexion existing between what it represents and incidents or things known to most workpeople; the price of the copy and of a simple frame for it. If printsellers would not sell the chosen copies and the printed slips, a collection could be placed in the local picture-gallery, arrangements be made for their being sold by the local agent of the Society for the Diffusion of Useful Knowledge. In Manchester, the work of choosing and explaining copies of pictures would probably be undertaken by a committee of the Art Museum, who have already undertaken to provide all the pictures in this collection with explanation and criticism.

Street Architecture.

On the 3rd inst. Mr. J. Murgatroyd, F.R.I.B.A. read a paper on the question, "Is it possible or desirable to establish regulations for the improvement of street architecture and for the prevention of the disfigurement of towns and cities?" He said the regulations which might be made divided themselves naturally into two classes,—(1) Those having for their object the regulation of the line of frontage, the enforcement of such methods of construction as would tend to check the spread of fire and disease, and the determination of such further methods of construction as to materials and strength as would tend to the safety of the public and the inhabitants of the buildings; and (2) Those having for their object the enforcement of some predetermined design as regarded the architectural treatment of a whole street or of certain distinct sections of it, or, as a smaller aim still, the ensuring of a certain minimum standard of excellence of design in individual buildings. As regarded the first class, the objects sought would appear to fall very properly under the jurisdiction of the local authorities, who already all over the kingdom had taken them in hand more or less successfully. As to the second part of his subject, we found that the architectural charm in old cities lay in the absence of formality and monotony, and he argued that we had made a great mistake in planning our new streets as regarded their direction by making them straight, and as regarded their interaction by making them at right angles. He came to the general conclusion that it was desirable that the local authorities should regulate the position, width, and angles of intersection of streets; that they should determine an average height for the elevations of the buildings; that they should within reasonable limits permit, but not too profusely, the project of balconies and oriel windows, so as not to interfere with the access of light to the street. He thought also that it was desirable that elevations of proposed buildings should be submitted to the local authorities, and that they should have a power to veto the carrying out of any design which was not sufficiently good for the neighbourhood, it always being understood that an appeal from their decision should be referred to some architect of known ability, whose proclivities were not be adverse to the style of building proposed. Beyond that he did not think it desirable that any authority should travel.

A lengthy discussion ensued.—Mr. H. C. Boyes as of opinion that in such matters as street ardings and girder bridges wholesome control ight be exercised; but he did not think that would be possible or desirable to establish gulations as to what style of architecture ould be adopted in any street or city. That uld be an undue infringement of the liberty the subject, and, if established, would have a ndency to reduce everything to the dead level monotony.—Mr. T. C. Clarke remarked that submitting of one architect's plans to other, as was suggested in the paper, had an found to work badly. He did not assent the opinion that streets should always be rved. We suffered much from the girder dges and other monstrosities which were ing perpetrated.—Mr. Statham agreed with ich that had been said about the horrible aightness of modern streets, but deprecated empts to introduce picturesqueness by means forming winding streets. Such picturesque- ss would always betray itself as a produced ect.—Mr. G. Aitchison expressed his non- ncurrence in the idea of making all the houses any given general plan in even a short eet, and advocated the use in house-building polished granite or glazed ornamental icks.—The Chairman, the Hon. Dudley For- ne, said he did not think they could enforce n any private parties who were laying out ir lands the necessity of following the line of uty, considering the value of land. A great l, as regarded street architecture, must end on public taste, controlled by the judg- nt of an appreciative populace.

RICKS AND STONE FROM FURNACE SLAG.

n our earlier volumes many suggestions were ade for the utilisation of the enormous amount scoria or refuse produced by blast-furnaces various parts of the country, and we have n accounts of various endeavours made to g this about with good effect. Some time e, Mr. Charles Wood, of Middlesbrough-on- a, directed his attention to the utilisation of unproductive material, and after about five rs of study, experiment, and practical re- ch, he has succeeded in effecting the conver- of blast-furnace slag into various forms, in applying it to several industrial pur- es upon a practical and commercial scale; has succeeded in utilising it for the manu- ure of building-bricks, concrete, cement, tar, and slag-wool. The various processes onversion and manufacture are carried on er Mr. Wood's management at the Cleveland Works at Middlesbrough, which, together n the adjoining Tees Iron Works, belong to srs. Gilkes, Wilson, Pease, & Co., of which er works Mr. Wood is also the manager; from le the slag is obtained. At the iron works slag is run from the blast furnaces into two erent machines, one of which produces a se kind of shingle, and the other a fine l. For making shingle the liquid slag is run ct from the blast furnaces on to a circular zontal rotative table, composed of thick s of iron kept cool by having water circu- d through them. The table, which revolves ly, carries the slag round to a certain point, which time it has solidified. At that point ncounters a stream of water, which further s it, and soon after it comes against a set crapers, which break it up and clear it off table, delivering it into wagons placed w, and which convey it away. For pro- ng slag-sand, the slag is run from the blast ace into a hollow wheel revolving upon a zontal axis, and fitted with iron buckets le. A bath of water is maintained inside wheel at the bottom, and is kept in a state iolent agitation by the revolving action. As molten slag enters the body of water it is ediately disintegrated and assumes the of sand, the water taking up the heat the molten slag and giving it off in the e of steam. A constant flow of water is otained into the machine, and the sand is rated from it and elevated to the top of the hine by the bucket-plates, which are perfo- d. Arrived at the upper part of the hine, the slag sand is dropped into a spout, thence finds its way into wooden wagons, which it is conveyed to the slag works for ufacture.

he slag works occupy a main building, ft. long, 50 ft. wide, and five stories high, with basement beneath, and engine-house, boiler-house, and other accessories annexed. This building was constructed of slag cement concrete, composed of four parts of slag-shingle to one part of cement, and it forms a very solid and comparatively indestructible structure. The slag-sand is brought here from the blast-furnace, and is tipped into stores below, whence it is elevated to the top floor, by means of a hoist, which is fitted with an automatic safety-brake, designed by Mr. Wood. The special manufacture in this building is that of bricks, and in carrying this out two machines are used, one having been designed by Mr. J. J. Bodmer, and the other by Mr. Wood. For the Wood machine the sand is delivered into a hopper, through a coarse screen, which retains any pieces of slag or other substances which may have found their way into the sand. Arrived at the floor below, the sand is automatically measured on a revolving cylinder, divided on the outside and placed at the bottom of the hopper. From another hopper selenitic lime, in powder, is also measured by a similar contrivance, and the two substances unite in one shoot, where they become mixed in the proportion of ten parts of sand to one of lime. The mixture is carried down through a hopper into the pug-mill of the brick-making machine, where the two substances are further incorporated. This machine was designed by Mr. Wood, and is the outcome of considerable experience with another machine, which it has to some extent superseded. Mr. Wood's brick-machine has a horizontal circular rotating moulding-table, which contains six pairs of moulds, four bricks being pressed at the same time. During the time of pressing, which is effected by direct mechanical pressure, the table remains stationary, and at the same time four other moulds are being filled, and the remaining four are delivering the pressed bricks. As they are delivered they are taken off the machine by two girls, and are removed to an air-drying shed, the machine producing from 11,000 to 12,000 bricks per day. There they remain for a week or ten days, after which they are stacked in the open air to harden, which occupies another five weeks or so, when the bricks are ready for the market. The bricks thus produced are very tough. They do not split when a nail is driven into them, and are largely used for interior work, for which they are well adapted from the regularity of their surface and other qualities. They find a good market in London, and are not subject to breakage in transit. According to a certificate recently issued from Kirkaldy's testing works, some bricks taken from a stock three years old were not crushed until a pressure of 21 tons had been reached; others taken from a stock four months old were crushed with nine tons pressure, thus showing not only unusual toughness and strength, but that they were greatly improved by age.

In another department the manufacture of artificial stone is carried on, the stone being moulded into chimney-pieces, window-heads, balustrading, and outside ornamental builders' work generally. The stone is composed of two parts and a half of finely pulverised slag and two parts and a half of ground brick to one part of Portland cement. The mixture is run into moulds, and sets quickly, the articles being ready for the market in four or five days. Besides bricks and stone articles, the slag is used for making mortar, cement, and concrete. The mortar is a mixture of slag and common lime, the cement being composed of the same materials, with the addition of iron oxides. Slag cement also forms the subject of a recent invention by Mr. Frederick Ransome, who has produced some very remarkable results. His cement consists of a mixture of slag-sand and carbonate of lime, in the proportion of two parts of lime to one part of slag-sand. These are burnt together, and experiments show the result to be a cement possessing nearly 30 per cent. greater strength than Portland cement.

City of London School Competition.—At the meeting of the Court of Common Council, on the 2nd inst., special premiums of 50*l.* were voted to the authors of "L," "Move," and "Palmam qui meruit ferat," for the ability shown in those designs. "L" is by Messrs. Oliver & Leeson, of Newcastle-upon-Tyne; "Move," by Messrs. J. & S. Flint Clarkson, of Great Ormond-street, London. Mr. Deputy Fowler gave notice of a motion to allow 50*l.* to each of the unsuccessful competitors.

"BUILDINGS AND LANDSCAPE."

We reproduce this week the sketches in illustration of the paper under the above title read by Mr. H. H. Statham in the Art Section of the Social Science Congress at Manchester on the 3rd inst. The following is the substance of the paper:—

No one will deny that the position and character of the buildings introduced into a landscape have some influence on the landscape itself, good or bad, according as the building is designed and placed so as to compose well with the lines of the landscape and harmonise with its character, or the reverse. To make an effort towards the former is almost a social duty, since, though the comfort of the house as a residence concerns the owner and his friends only, its appearance in the landscape concerns all who pass by. The picturesque relation of buildings to landscape depends, however, on qualities difficult to define, and is largely influenced by association. Mr. Herbert Spencer, in an essay on "The Sources of Architectural Types," has endeavoured to frame a theory of the subject. He says that he was struck by the incongruity, in a landscape in one of our exhibitions, produced by the introduction of a symmetrical Greek building in a mountainous and somewhat wild landscape, and considered that in such a case the artist had sinned against that unity which is essential to a good picture. When the other constituents of a landscape, he says, have irregular forms, the structures introduced must have irregular forms, that they may seem to form part of the landscape. "A castle," he continues, "which is more irregular than any other kind of building, pleases most when seated amid crags and precipices, while a castle on a plain seems an incongruity. The partly regular and partly irregular forms of our old farmhouses and our gabled Gothic manors and abbeys appear quite in harmony with an undulating wooded country. In towns we prefer symmetrical architecture, and in towns it produces in us no feeling of incongruity, because all surrounding things, men, horses, and vehicles, are symmetrical also." His conclusion is that in the choice of such forms men are unconsciously influenced by the forms around them.

This simple and consistent theory has the drawback of some other very consistent theories,—it is in opposition to the facts. If it be true that men are thus influenced in architectural design by their surroundings, how is it that so many of the Greek temples are actually found on broken and irregular sites, and that the Parthenon itself, the most minutely symmetrical building in existence, stands on a precipitous and irregular crag? Again, let it be true that a castle appears suitable on a precipitous site, and is out of place on a plain, this cannot be because the castle is "the most irregular form of building," as it very frequently is quite the reverse; and on the other hand the farmhouse or cottage may be as irregular as you please, but yet will not appear suitable on a craggy site. We must look a little more into the matter to get the true philosophy of it.

In the particular case of the Greek temple it may be observed at once that the method of connecting it with the landscape has something to do with the result. If we plant a symmetrical Greek temple right on a stretch of broken ground (as in fig. 1 of the sketches), no doubt it will seem in too harsh contrast with the scene. If, however, we place it on an artificial platform, and connect this platform gradually with the landscape by paths and flights of steps (fig. 2), the abruptness of the transition is carried off, and the building seems quite in its place. After having once established this necessary connexion between the building and the landscape, it may be said that the contrast between the lines of the building and of the landscape is rather an advantage than otherwise in point of effect, and that the rough and irregular lines of the landscape give the more emphasis to the graceful and humanising expression of the building. As an instance of this we may take the scene fig. 3, from Claude's "Liber Veritatis," where the temple is placed on the crag and the castellated architecture below, and where the temple in this position seems to impart a peculiar elegance and grace of expression to the landscape. In fig. 4 I have drawn the same landscape again, reversing the architecture and placing a castle on the top of the crag; but I think it is at least an open question whether the composition is improved thereby.

To consider the subject more generally it

may be said that the relation of the building, and especially of the domestic building, to the landscape is threefold in its nature. There is the relation of character and association, of material, and of position or composition. Character and association form conjointly the first element, for they are in fact nearly inseparable, and the influence of association is what really explains the connexion between castles and rocky landscapes, which as a fact is indisputable, although the reason assigned for it by Mr. Herbert Spencer is untenable. A castle is by association and in appearance a building intended as a stronghold, either a refuge in a comparatively inaccessible position or a defence placed in a commanding position. If we place a building imitating this stronghold style on a plain and amid obviously peaceful or pastoral surroundings, it does at once appear out of place, because such strength and massiveness are thrown away on a building placed in a situation unfit for the purposes of defence, and in which there is no such exposure to the weather as to render extra thickness and massiveness necessary for resisting the action of tempest, for this again is part of the association which renders the castle character most suitable in an exposed situation. In fig. 5, representing Udny Castle in Scotland (before the recent alterations and additions), the aspect of the castle, though it is symmetrical enough, seems quite out of keeping with the smooth lawn from which it rises; we expect to see such a building situated rather as indicated in fig. 6. Borthwick Castle (fig. 7) illustrates the natural and suitable position of a building of this character. Fig. 8 is a composition by Repton, the landscape-gardener, who has been immortalised by Jane Austen,* and is a good instance of the false and pretentious in architectural character. It is of course an imitation castle, and offends our taste not only from this fact but from the utter unsuitability of its position, for even in the Middle Ages people understood the conditions of fortification better than to place a castle amid woods which would have given cover for an attacking party up to its very walls. And it may be further said that Spencer's theory in regard to the subject is so far from true, that (as Mr. Fergusson has pointed out) the irregular piles of many of the French Gothic cathedrals and churches only appear well in the midst of the clinging masses of town houses and would be almost monstrosities in the country, while it is certain that the symmetrical lines of Classic architecture harmonise well enough with the undulating wooded country of Poussin and Claude, as in another example from the "Liber Veritatis" (fig. 9).

The relation between building and landscape as regards material turns very much upon the use, as far as possible, of the natural building material of the district, which, as soon as the first rawness of new material is worn off, is sure to harmonise with the prevalent tone of the landscape in a way in which artificial material brought from other localities never can. If we suppose that in such a quiet rural nook as is shown in fig. 10, the old houses, simply built of stone and timber, are condemned by an improving landlord, who proceeds to procure patent compressed bricks from Staffordshire, and ornamental iron crestings from Birmingham, and builds a new streaky-zebra house (fig. 11) in place of the old ones, the harmony of the landscape is at once destroyed; artificial materials, upon which "the smell of fire hath passed," and which glare with raw colour and wriggle in curious angles, have been introduced on the scene, and its characteristic unity of effect and of feeling has vanished.

The most interesting phase of the subject, however, is that which concerns the position of the building and of its lines in reference to the leading features and lines of the landscape,—what painters call the composition of the whole. And here we shall find that nearly all practice and example lead to the conclusion that the effect is best when the building is in opposition to the lines of the landscape. Where we have the most craggy and precipitous landscape, there we require low heavy masses of building which seem to be a part of the rock (fig. 12); their higher elevation would only make them seem insecure. Where we have a low level landscape (fig. 13) whose successive distances make horizontal lines across the picture, there we find the spire rises with much effect, its aspiring lines the more emphasised (as in the flat county of Lincolnshire) by the horizontal lines of the landscape. Fig. 14 shows the outlines of a composition of Turner's, of Salisbury, where the manner of making the vertical lines of the spire cut across the horizontal line of the long low hill behind is obviously intentional, and whether existing in nature, or composed by the painter, is equally to our purpose as an illustration. Fig. 15 is from a rough sketch from Richard Wilson's sketch-book, where the uneven nature of the hilly landscape contrasts with the low level lines of the buildings. Fig. 16 is from a book preserved in the library of the Institute of Architects, the sketch-book of an English architect on the Rhine some two centuries since, and appears a peculiarly pleasing and happy instance of harmony between the buildings and the landscape, the castle frowning from the top of the hill, the church amid its belt of trees reposing peacefully at the foot. Claude's composition (fig. 17), again from the "Liber Veritatis," shows a similar kind of disposition; the Classic temple at the foot of the hill, the Mediæval castle at the top; and fig. 18, a rough sketch of the Château d'Amboise in France, reminds us how special circumstances influence character in these things, for here we see the tower reaching down a firm foot to the base of the hill and guarding the precipice, while the less defensible domestic buildings are placed in security at the top. Fig. 19, the Villa Madama, near Rome, is an example of the good effect that may be produced by horizontal lines in a building cutting against the sloping lines of the hill, the horizontality of the building, if we may so speak, being increased by the contrast. In fig. 20 two kinds of contrast are combined; the lines of the landscape are from Turner's view of Greville, but I have altered the architecture: here again the spire is seen rising from the flat country and the low clumps of trees, and the horizontal building occupies the side of the hill and is contrasted by its slope and by the vertical lines of the poplars; and by the observe that the small tower added to the building is kept at the extremity furthest from the hill-side; had it been otherwise, it would merely have appeared to be crowded into the hill.

The influence of buildings in adding to or decreasing the scale of a landscape is very considerable. In Claude's composition (fig. 21), we see how, having placed a castle near the foreground, he gives so much increased value and extent to the middle distance by the similar building on the shore of the bay, and in fact, in the absence of colour or other means of giving aërial perspective, this distant building would really almost govern the perspective and proportion of the scene, and we could make it seem more or less extensive by diminishing or increasing the size of the castle. In fig. 22 I have shown an instance from my own experience of a building, a reservoir for water, completely dwarfing the scale of a landscape by being designed exactly like a common form of small cottage with a chimney at one end, and without any detail whatever from which to judge of its size, which could only be ascertained on close inspection. Had it, even with the same general outline, been broken up by buttresses, &c., as indicated in fig. 23, this falsifying of scale would have been avoided. Fig. 24 is another bit of real landscape familiar to me, and which always gave me pleasure merely from the peculiarly happy manner in which the house (a common-place one enough in itself) is placed exactly at the point where the scene seems to require; this will be at once evident on comparing it with the duplicate of the same view (fig. 25), where the house is moved to another position. In other respects too the house may affect the whole feeling of the scene; if it occupies (fig. 26) a sheltered position at the base of the hill, there is a feeling of repose and retirement imparted to the whole; if on the contrary we place the building conspicuously on a spur of the hill (fig. 27), we give to the landscape at once an expression of alertness and outlook which alters its whole character. The two next illustrations perhaps come more strictly under the head of character than of composition; but their object is to illustrate how in a quiet lake-scene we may have a house of graceful villa character and with no apparent force of style, while if we are called to build one in a bleak situation on the seashore, we must discard all graceful details, we must have a character as solid as possible, broad masses of wall, small windows, the base of the wall battered, everything which can increase the idea of solidity and power of resistance to winds and waves: and here again a[ssoci]ation comes in, for the peculiar fitness of th[e] rounded surfaces and of the spreading base derived really from such buildings as lig[ht] houses, upon which, when they have to st[and] absolutely among the waves, such characteris[tics] have been impressed in obedience to practical necessity, and thus become a language for [the] expression of sea-coast architecture.

The two sketches, 30 and 31, indicate roughly the principle upon which a mansion on a g[reat] scale may be systematically connected with [the] landscape; instead of merely placing the ho[use] on the rising ground, we may have first a [ter]race a story lower, still architecturally form[al] then a garden on the next level, laid out s[till] metrically so as still to correspond more [or] less with the architecture; the next level [to] bring us down into an informal and irregular garden which by almost insensible gradat[ion] will be connected with plantations and [with] the natural landscape; and thus the mans[ion] instead of appearing an interloper on the sc[ene] will seem gradually to arise almost necessa[rily] out of the landscape, of which it will appear to be only the natural development.

The small sketch (32) is added as a curiosity; it is copied from the initial letter of a fifteenth century MS. in Lambeth Palace Library, [and] was one of the very few indications I [could] find, among such sources, of any intent[ion] landscape and building composition. [Though] the position of the distant spire, rising just [over] of the angle formed by the two lines of [the] is really bad composition, but the fact [of] being so placed was obviously intentional [and] with the idea of producing a good effect.

Before quitting the subject, it may be observed that there is no idea, in offering these remarks of laying down rules about a subject in [which] to which absolute demonstration is of [course] impossible; still less of doing anything [more] than give a few hints and suggestions [on a] subject on which a book might very well be written. But the subject will certainly [receive] more consideration than it has received, [and] there is one special reason why architects [and] those who employ the services of architects should give it more attention, viz., that all building operations while in progress involve the temporary spoliation of the landscape, and are at [the] time a source of disfigurement to the scene; becomes therefore the more incumbent on [us] to design and place our building that when [the] contractor's plant is cleared away, the ground put in order, and the building has lost the effect peculiar to new buildings, it may be [found] that in the end a permanent source of picturesque interest has been added to the landscape, in lieu of a permanent eyesore.

* *Vide* "Mansfield Park."

THE PARIS CHAMBER OF COMMERCE

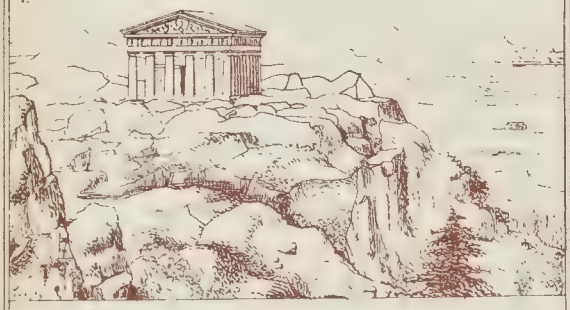
The Paris Chamber of Commerce, [built] under the third empire, is built upon the [site] occupied in the eleventh century by the church of St. Bartholomew and St. Peter of Arcis. [The] ruins of these buildings were discovered, [at] mètres below the surface, in digging the foundations for the present edifice. The business of the Chamber of Commerce was formerly carried on at the Exchange, but owing to the increase of trade, the Council of the Department of the Seine resolved upon the erection of the new building, its design and superintendence being entrusted to M. A. N. Bailly, member of the Institute.

Our illustration represents the staircase, one of the handsomest recently constructed in Paris. The steps, counter-steps, and balustrades are of polished stone, brought from Isère, and glazed, resembling marble. In the four niches at the top of the staircase are allegorical figures presenting mechanical and industrial Art, time and terrestrial Commerce. Above the doors are sculptured the arms of France and of Paris.

The building covers an area of 4,125 square mètres, and the total cost exceeds 270,000

An Electric Mining Lamp.—A [number] of gentlemen lately witnessed Mr. Geo[rge] André's electric mining-lamp in operation, the atmosphere being excluded from the light, risk of explosion, with its disastrous effects, avoided, and this is attained advantageously economically, for the light emitted is of [great] power, and the cost is said to be far less than that of safety lamps or candles.

1.



SKETCHES ILLUSTRATION OF PAPER ON
BUILDINGS AND LANDSCAPE BY H. H. STATHAM
ART SECTION SOCIAL SCIENCE CONGRESS 1879

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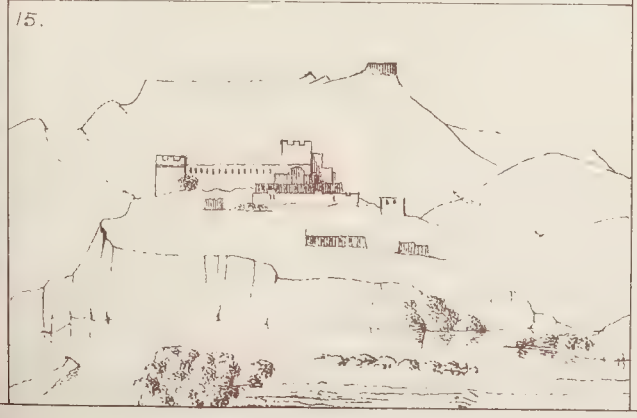
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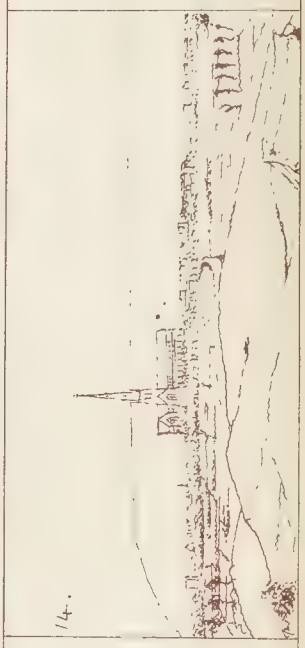



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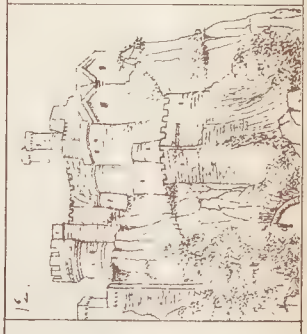

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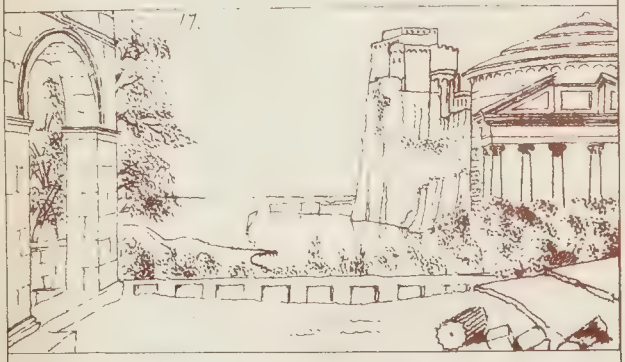

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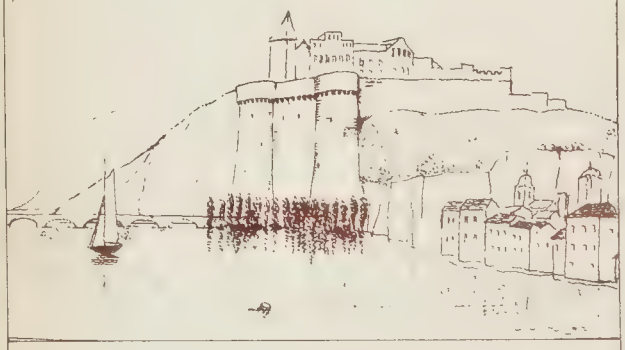
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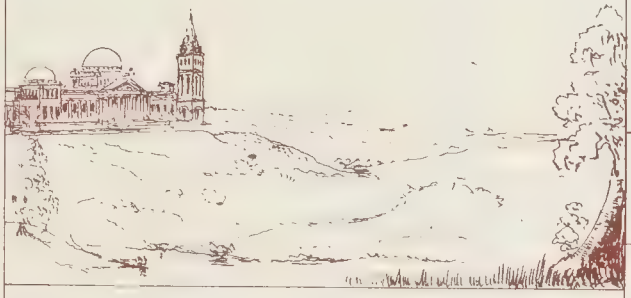
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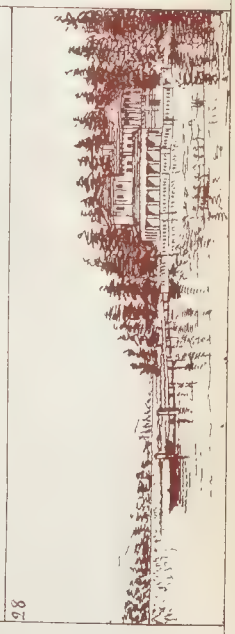
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28



THE PARIS CHAMBER OF COMMERCE: STAIRCASE.—Monsieur A. N. Bailly, Architect.

E DRAMA AS A MORAL TEACHER.*

the course of human progress a new idea
ns to grow slowly, gradually gathers strength,
e being passed in whispers from ear to ear,
some man, bolder than his fellows, cries it
l in the market-place. For a moment the
d is startled; but if the idea be good and
quickly assimilates it, and goes on its
refreshed and strengthened. An illustra-
of this may be seen in the change of atti-
of the Church towards the Stage during
ast two or three hundred years. I say the
ch, because the Church is the one sole
e and origin of all the persecution to which
s have been subjected. There was a time
t it refused Christian burial to actors.
e was a preacher in Scotland once who
red that the theatre was literally the pit of
and that the Devil and his imps held high
ry there; and as there are thousands who
receive for truth whatever they may hear
the pulpit, so his congregation proved their
in him by burning to the ground the only
re they could get at. The incendiarism
not only wicked, but stupid; for a little
more or less, would not have inconvenienced
supposed occupants of the house. Even in
own time congregations have been warned
r to enter a theatre; accidents in theatres,
gh which many lives have been lost, have
pointed at as manifestations of Divine
. A strange connexion has been suggested
een the facts of the centre of London con-
ng the largest number of theatres and also
largest number of what are called haunts
oe. No conclusion, however, was drawn
the fact that the same district contained
the largest number of churches. It is,
d, refreshing to turn from such exhibitions
norance to the utterances of the more
ened preachers of the present day. One
n by the Rev. Mr. Haweis was not a
e of the stage,—the stage needs no de-
—but a scathing indictment against those
brethren who would thank their God that
had never been inside a theatre nor known
or, and then vilify both without a scruple.
strikes one most in this prejudice against
tage is not its wickedness, but its utter
mess. The theatre is neither moral nor
al. For want of a better word let us
t neutral. The dramatic art conveys
y to an audience: *that play* may be
or immoral; but if immoral, is, there-
the dramatic art to be abolished?
such an argument, and what shall
ve left? Some naughty boy says "damn":
the art of speech! A wicked corre-
ence is being carried on: down with the
fice and telegraph! An artist paints an
nt picture: let no man paint again on
f death! To call the theatre immoral, is
cal as to call the telegraph-wire immoral.
means of expression, and the strongest
ave. No art can convey a thought so
ly and so powerfully as the "youngest of
ster arts, where all the graces join." If,
bjection cannot be taken against the art,
see whether anything can be said against
ays and the players. As to the plays of the
t day, it certainly does not appear that
rious charge could be upheld against their
tone. In fact, no immoral play could be
sful in a moral age. Besides, the very
ity of stage-representation will always
t the worst play from being as bad as
rst book, or the worst anything which can
died in the privacy of one's chamber. As
players, it has always appeared to me a
of unpardonable impertinence to discuss
private characters. The public interest
actor should be confined to his perform-
n the stage. Not that actors need fear
rison with any other class. They are as
nd as bad, for they are members of the
human family. But even if they were
than their fellow men, it would have to
ved that they are so because of their
. Now, I believe it to be a fact that no
ever creates either the good or evil
es of a man; but every calling may give
act colouring to those qualities. Besides,
ctor's character were markedly affected
profession, actors would be all, more or
like; but there are all shades and varieties
n and women amongst us. We have
and gentlemen by birth and education,—
refined, accomplished, and high-minded; we have also some whose education and training have been of a somewhat elementary character. We have broad freethinkers, regular church-goers, high and low; and we can also boast of a few narrow-minded bigots. We are, in short, an epitome of the world at large. Why, then, this outcry for dramatic reform? Amongst those who cry out for this reform are honest, intelligent, disinterested men,—men of high culture, who recognise in the theatre a powerful engine of education, a glorious means of increasing the sum of human happiness, and who see that it is not producing the amount or quality of work of which it is capable. To such men every actor who loves and honours his art will hold out his hand. With such men he will gladly consult and labour. And it is to be hoped that from the actor such men will not disdain to learn a lesson. Let me say, then, that what the stage wants is not reform, but free development. A child whose growth is stunted by insufficient and unwholesome food, air, and by cruelty, does not want to be recreated; he wants free scope allowed to his natural development by plenty of food and air, and by kindness. This is just what we want. Let young preachers undo the evil done by the preachers of the past; let them teach their congregations to respect the actor's art as they do the painter's or the musician's; let them familiarise their flocks with the works of the best dramatic authors; let them wash out of their brains the notion that anything unworthy necessarily attaches to the theatre and its belongings. Let them go to the theatre themselves, and speak of it as they find it. Compulsory education will, unconsciously, do us an enormous amount of good; for as enlightenment spreads, the taste for the higher class of plays will spread also. Many managers are, unfortunately, actuated solely by the desire to make money. The shilling of the vulgar is exactly of the same value as the shilling of the cultured; and as there are so many more of the former why should the manager cater for the few and not for the many? Let education equalise the numbers, and the same mercenary motive will cause the production of higher-class plays. Let us have justice and freedom from attack, and let the education of the masses raise their intelligence: that is all we ask from the outside world. The rest we can, and will in time, do ourselves. The great difficulty is to find a sufficient number of competent managers. There are plenty of them who are tradesmen, and whose only object is to make money; but, although I would not have a manager lose sight of his pecuniary interests, I think he should make the interests of his art his first consideration. To judge of a play or an actor solely by the amount of money either draws is as unjust as it is unwise. The public must often be given time to discover merits which may not prove attractive at the first glance. Let me give an instance. Some forty-one years ago there appeared at the Théâtre Français a girl of seventeen. She played some half a dozen classical parts in the tragedies of Corneille and Racine. It was in July and August, and the receipts of the house averaged 15*l.* or 20*l.* Now, had this occurred in London, at a theatre managed on the money-making principle, this young lady would have been politely bowed out, and, perhaps, never been heard of again. But at the Français they do not make money their first consideration, and this girl continued acting into the cooler weather, the result being that by November the theatre could not hold the people who crowded to see her. The name of this transcendent genius was Rachel. We have no Rachels now, but I could mention some of our best performers who were neglected for years by managers too ignorant or indolent to discover a talent which accident at last brought forth. As to new dramatic authors, their case is just as bad. One of our most admired dramatists was discovered by an actor of good position, who tried for eight years, in vain, to procure him a hearing. An accident at last led to the production of one of his comedies, and he flashed into fame. Upon this success another comedy of his was immediately accepted by a manager who had rejected it before. Plays will sometimes not find a market for twenty or thirty years after they have been written, a long time out of an author's life. Let managers take an interest in discovering new talent in authors and actors, and in cultivating and training it, and the stage would make rapid strides towards a higher degree of excellence. There are managers who do all that can possibly be required of them; but their power is limited to the very few theatres under their control, and it is too much to ask one man to run such risks as the course I have pointed out would entail. A carefully-produced play will sometimes bring with it a loss of 3,000*l.* and upwards. The dread of such a prospect is enough to blind one's judgment in the choice of plays and players. But I am convinced that a plan could be devised by which a number of the best actors and actresses might co-operate to establish a theatre which should have all the advantages and merits of the Théâtre Français, and should also be a source of profit to its members, without the aid of State subvention or outside subscriptions. Such a plan, however, would have to be worked out by those who have a thorough and special knowledge of the stage, *i.e.*, by actors.

In the course of the discussion which followed,

Mr. Traice (Manchester) urged that the performance of stage plays had a highly educational effect upon the young, and induced them to study the human character and the aims and objects of life. He contended that modern plays, although they might be very silly and pointless, were rarely immoral or indecent. There was, he thought, no justification for the wholesale denunciation of the stage of to-day. He concurred with Sheridan that there are valetudinarians in morals as well as in health, and that the State was not bound to legislate for them.

Mr. Freeland remarked that the character of the supply depended upon the demand. If there was a healthy demand there would be a healthy supply. Nothing could have produced a more profound effect upon large masses of the people than the performance of the sensational drama of "Drink," founded upon Emile Zola's novel, "L'Assommoir."

Mr. T. C. Horsfall concurred in the views of other speakers, that the effect of the drama, where it gave truthful representations, was beneficial. He was in favour of some supervision over the stage, and referred to the Comédie Française as a striking example of the advantages of supervision. At the same time, he believed that in this country State control in theatrical matters would be objectionable, and would not be tolerated.

The Bishop of Manchester reminded those who had spoken of the powerful effects of some sensational plays, that though Alexander wept over the drama, he was not turned from the cruelties of his warfare; and it was doubtful whether King Thebaw had not melting moments from the same cause before murdering his nearest relations. The Dramatic Reform Association, of which he (the Bishop) was a member, seemed to be working in the right direction, but its effects were very slow to manifest themselves. An archdeacon in a distant county once told him that he had been deterred through life from gaming by having seen "The Gamester" played in his youth. He (the Bishop) was at school in two Shropshire towns which were visited by the Staunton Company,—the best local company of actors he ever saw,—and both Dr. Butler and Dr. Rowley allowed their good boys to go once a month to see the play. He did not remember in the plays he then witnessed, anything that shocked the moral sentiments proper to a schoolboy, and he distinctly recognised the influence of that company on his mind and character as one of the formative influences that had not been for harm, but for good. Apparently there was a healthier moral taste in the middle and lower classes of this community than in the upper, whose moral standard was half conventional. He noticed that the worst type of plays in London appeared during "the season." He believed those enacted during the winter, which were mainly attended by the middle classes, were, from the moral point of view, healthier entertainments than those presented to more fashionable audiences. He could not accept Mr. Statham's view that the play should always represent life as it is. On the other hand, it was from the fact that they did not preach that Shakspeare's plays derived their moral power. Some sort of censorship of the stage seemed to be a social necessity, but he did not know that the present censorship was always exercised with the utmost wisdom or in the exact direction he would prefer.

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* Mr. Hermann Vezin, read in the Art Section, ster Congress.

New Theatre, Geneva.—The new theatre, built at a cost of 5,000,000*f.* from the proceeds of the Brunswick legacy, was opened on the 2nd, with the performance of "William Tell."

A NEW PHASE OF THE QUESTION OF ARCHITECTURAL RESTORATION.*

The religious movement started in England forty years ago, though splendidly evangelical, and characterised throughout by high fervour and fine feeling, appears to us now, after this lapse of time and change of circumstance, to have brought into play a number of influences that acted very hurtfully upon the ecclesiastical art that went before it and lived with it. That art was the art of our forefathers who wrought for the temple, not the mart: who did whatsoever thing they did for the praise of achievement or the expression of religious feeling; and it might have been expected that from a movement whose deepest meaning implied a return to old-time forms of faith should come the nurture and advancement, not degradation and extinction, of the only reliable monuments of mediæval life. But it is impossible to consider the grounds of that departure from the broad lines of belief without acknowledging that though it gave to our Church first of all in our century a passion and a purpose, it was catholic only in its creed, and came unattended by any true knowledge of or love for the art of the past. Indeed, it was then, least of all, easy to convince men that in those pieces of ancient days by which they were surrounded, and in which the living past of their nation had written its enduring history, they had a real, a solid possession. Art, in those days of catholic revival, took no abiding-place side by side with Religion as a kindred and sister spirit, nor yet as a helpmeet and handmaiden; or, if it did, it was but the art of childish frippery which the lesser guardians of religion accumulated about it and within it, and which, I make bold to say, will one day, without injury to the essential thing in it, be swept out of it, once and for ever. The cathedral as the foremost limit of ecclesiastical government was brought then into the active life of the church; but the effort to accommodate its chapels and aisles to the uses of the guilds and brotherhoods for whom they were in the early days designed was, at first and in the main still is, unattended by any reverence for the inheritance they contained in history and art. That history and that art, though priceless to us now as relics of that past which is or should yet be alive with us, and a part of us, was never then set over against the needs of evangelical organisation. Where the preservation of an ancient work that was a genuine piece of art was inconsistent with the principles of use, or appeared to be so, the principle of preservation had to give way.

Truly it was a hard saying, and few could bear it, that religion and art were one in aim and end, even as the past and present were one in life and purpose, and that the art of yesterday could not be desecrated without injury to the religion of to-day. And shall we not say, who look out over the ruin of so much that gave the old craftsmen joy in the thought of being remembered, that such desecration has been complete? Forty years in England have seen buildings of inestimable beauty and historical value robbed of all their history and well-nigh all their beauty. Almost every art monument about which men would think it worth while to contend has fallen beneath the "restorer's" chisel and the "restorer's" pick. Already the day is with us and is far spent when we see, with tears in our eyes, that so far as it has lain within our reach to do so we have despoiled our country of much that its monuments contained of sweetness of outline and tenderness of colour; have stripped our England of much that made it in special sense *our* England,—the England we love,—the England of English art and history.

And all this indifference to the art of our forefathers was at the beginning and still is due to a wholly false sense of our relation to the past. But day by day it is coming to us to see that the past is not buried by us or to us, and that we cannot afford to regard its thought and feeling as we contemplate the masquerade or carnival, which, though interesting and curious to study, is foreign to our habits and alien to our sympathies. The past is, indeed, not a dead thing to us which we may bury out of our sight as we bury the dead, dry blossom of the tree when the fruit comes, saying "Where would be the flower's place could it continue?" The past is alive with us and a part of our growth; we breathe its breath as well as our own; and thus it asks from us as careful treatment of the relics it leaves in its trace as we accord to the creations of our own day. Nay more, for, unlike the art-treasures of the present, the relics of the past are an inheritance we receive from the hands of those who wrought them and Time together.

And if for the rest it be objected that this is a new way of regarding our possession in the past, and that our forefathers did not act towards the art-works of their ancestors as we would have men act towards those which we inherit from them, I answer it is indeed new, and that it is well for our age that it, of all others, has at last alighted upon this heightened way of looking at whatsoever work of an enduring kind has gone before it. Our forefathers who erased the history that lay written in the monuments they restored were able to leave history in the gap, and so to enrich where they altered; but we, because endowed with no style peculiar to our age, or because compelled to revive in modern days the dead false image of an Early English or Norman style, can only falsify and dishonour where we touch. Shall we not say, then, it is a good thing that even after the ruin of so much that was beautiful in all art,—and that is, in all life,—we, at least, of all Englishmen, should awake to see the untouched and untouchable sanctity that lies enshrined in a work of ancient days, wrought for the passion of pursuit, and alive with the spirit of the deeds done in the days of its own doing? Shall we not further say that to labour for the staying of the desecration and final extinction of those records in stone, by which we know in what fashion our fathers lived and moved and thought and talked, and in how far they were men swayed by like passions with ourselves, is so good a work that we know no gratitude deeper than that we owe to its pioneers? And if it be asked me to say who were those pioneers, can I hesitate in reply? I have spoken of our attitude to our possession in the past as a thing altogether new, and I add that it is the clear outcome of the altered spirit infused into English life through the poetry of Tennyson and Morris and the painting of Rossetti and Burne-Jones. Here are artists who by sheer skill of manipulation would surely have done honour in their works to any age or country, but who, above all excellence of technique, have this one thing to distinguish them: that first of all in the days of English art they have taught men that to reverence the past is the only true way to lay hold of the present. Whilst in unalterable harmony with the spirit of their own age, and knowing well whither it is tending, they have set up such a picture of Mediæval life as is not dead to our sympathies, but alive with a new life,—its own name and ours,—and thus they have taught us to be happy (as Mr. Morris himself puts it), not in the enjoyment of the small corner of art peculiar to our own day, and doomed, it may be, to a speedy end, but in the possession of all art past and present, and in which the whole world may have its share. And so, as I say, it *is* a new thing that, as the outcome of all this personal interest in the past, we should look with other eyes on the monuments of patient bygone design. Ours is now, I verily believe, a view of the past, and of our right in it, that will one day infallibly triumph. The persons are very few who fail to see that those pieces of the art of our forefathers by which we are surrounded, because valuable to study and firing to enthusiasm, should be saved from falsification and forgery. The persons are few, and, because deaf to æsthetic pleas, must be left to the slow but certain educating influences of time.

I ask your pardon for touching in this way upon a question involving so many issues, but I have done so because it has appeared needful to accentuate our altered attitude to the past in order that we might return with warmer sympathy to the one practical difficulty which at this stage of the movement remains to us; that is, how best to give effect to our desire that such of our ancient buildings as are still unimpaired may be saved from desecration and extinction at the hands of the mistaken, the irreverent, and the vulgar? When an ancient church, which is the property of the nation, is threatened with restoration, our process of protest is twofold. First, we appeal on moral grounds to the guardians of the fabric, showing in what measure the contemplated changes may be subversive of our interests in history and art; next, we have recourse to whatsoever legal rights the people of the parish in which it stands may possess, to save it from the rapacity of those who would rob it of its identity as record. Now, I ask you to traverse with me few general considerations going to show what extent the first of these two forms protest is of any genuine avail; and further, what manner we may bring about such amendment of the law as will enlarge the sphe of the second, or supersede it with a better.

When, in 1877, a few gentlemen in Lond joined hands in an endeavour to form such body as should serve as a distinct rallying-poi for the genuine feeling that lay, little expres wherever there were art-treasures to desp they recognised at the onset the inevita limitations of their scheme. Their work had be negative rather than positive. They co ask no direct help from law, which might its possession in the money interest, but not the art that attached to the ancient churches the nation. The main business of the Soci for the Protection of Ancient Buildings, that undoubtedly a very useful one, was to ro public opinion to the loss we were sustaining the demolition of buildings rich in memor and sacred, therefore, as precious, indeed pr less, heirlooms, many of them beautiful as as valuable, and such as we were never lik to produce again. Beyond these lines the w of the society could not go, but because, limi though they were, they embraced many meth of operation, I shall ask you to follow whilst, as an humble officer of the society, one who claims to know something of its of procedure, I detail the stages of its actio

First of all, upon receiving information c contemplated restoration, the society requ from the correspondent it has appointed for district in which the building stands, a finis tabular statement, giving a complete descrip of the fabric and its points of architectu archæological, and antiquarian interest, setting forth the kind and extent of the posed changes. The working committee considers the case in question, not merel the broad enounced tests of the society, but t its own individual merits. Sometimes the c mittee feels that it can afford to pass the m by with a smile, in the assurance that no h is meant to be done; sometimes the destruc entailed appears so limited, and the neces for some preservative work so urgent, that found hard to decide how far the prop restoration is justifiable; and sometimes wanton desire for change, veiled unde artistic pretence, and the outcome of wha been fitly termed a "cynically-brutal" spi vandalism, leaves no choice to the comm but to take some action, earnestly and at if art is to be saved her offspring, and the century the lasting disgrace of rapacity. such an event as I have last instanced, society, following the lines of the police Richelieu, first employs all measures to ciliate; and thereupon the secretary us addresses to the restoration committee a perate letter, showing wherein the society reason to fear that the contemplated al tion of the structure under their care be destructive of its artistic and histo character. The reception given to this munication is sometimes very curious. In cases the protest of the society occasions abandonment of the project; more frequ it is handed by the committee to the arch employed upon the work, with the resu bringing about a modification of the ob obnoxious scheme; still oftener,—as in case of the protest against the restor of the collegiate church of Southwell Mi and the further case of the abbey c of St. Alban,—it is summarily consigned, the exchange of some barely civil messa the home of very dead letters provided Commissioners for the opinions of those question their right to do what they like what they conceive to be their own. But ing to conciliate, the society sometime recourse, and that justly, to the other amiable limb of the Cardinal's policy, advises the use of all honest means to By exciting (through the agency of the paper press, the dissemination of pamphlet the like) a very strong public feeling favo to its principles, it retards the growth subscription-list, through whose strength the work can be undertaken. This is, pe the most satisfying process of protest, be on the whole the most enduring. But even it fails the society in the achievem its ends, and money in abundance is coming to help on a work of desecrat

* By Mr. T. H. Hall Caine. Read at the Manchester Congress of the Social Science Association, Art Section.

d, it may be, by the strength of unwise and pursued in the teeth of all reasonable nt,—something may yet be done. The n of the living attaching to the church as at Grasmere, in the case of Words-'s parish church, be induced to veto the t of the clergy; or the landed proprietors tain rights in the chapels of a church, as rmskirk, to cast in their influence with the ition. All this and more may be done by society with the happy result of ultimate is.

re is another form of protest, however, which I must dwell if my paper is to go ything in the progress of this movement, namely, which the people themselves in vestry, and which there is a disposition now to override. And here arises the y, "What are the parishioners' rights in parish church?" The days are not far t when the omnipotence of the vestry was for an instant questioned, whether the proposed to it were the removal of the y from the carved Jacobean pulpit, or the tution of a stouter bell-rope. Fitting, and beautiful it seemed that if, for the f greater convenience, or because of inhe- ight, or from whatsoever other cause first of asioned, the charge of a national church ned with the people of the parish in whose it was erected, the control of it should to them also. But day by day we are ng to our cost that ecclesiastical law, ch it may impose responsibilities upon us itodians, can grant us no rights as parish- , and that the yearly form of asking our on to its transactions is a mere mockery r impotency, and a grim farce played off out of the abundance of its strength. ng by recent rulings, the vestry of the has no legislative power which the Con- y Court of the clergy may not overrule. court may pay a kind of regard to the of the parishioners as manifested in their y meetings, but it is not bound by their tions. It claims the prerogative of weigh- e evidence and of determining what is for the parishioners on the whole, and in ng run better than the people can do it emselves. It may even impose increased se upon the parish for the maintenance of undertaken in utter defiance of the s of the parishioners.

d this powerlessness of the people, and this me rule of the clergy, cannot but be thought ersive of our interests at this stage of our ment, when we see well whither for forty the rule of the clergy has been tending. njury it inflicts upon our ancient churches t be better illustrated than by the briefest ment of the circumstances which have led, with, I make bold to say, abiding to those who have triumphed, the resto- . of the parish church at Ormskirk. eologists will not need to be told of the es, valuable alike to art and history, gathered about that venerable edifice; or reminded that in view of the ruin of very in it that made our country the richer and urer by the so much the more treasure, it hes yet a further proof that where triumph s sacrilege and failure the touch of a nt hand, the victory is not always to trong nor the race to the swift. Three les to amend Ormskirk Church have been ied within the past three years. The asked for authority to take away the in the nave, chancel, and Bickerstaffe el, and place therein new and more con- nt seats; the second prayed for leave to up the flooring of the church, and after ding for ventilation to relay the same at a level. No decisive opposition was made ese proposals by the parishioners, and I merely to add with respect to them that mple phrase of the citation relating to the nd level of the flooring was made the nd for the removal of 4 ft. deep of human ns intramurally buried over the entire of the church. I make now no appeal to feelings, the deepest and holiest perhaps ow, which would have us encompass with gious awe all that pertains to the grimmest ry of life,—death, namely, and burial. It not fall immediately within my scheme to ou to contemplate this ghastly spectacle, ied by no sanitary necessity, of God's ruthlessly torn open, and thousands of cast out of it of persons who grew up assed away amid its shadows. I have a direct and practical purpose. A further faculty was applied for to remove, amongst other things, the galleries running round the sides of the nave. Now, twice previously, the proposal to do this work had been defeated by the parishioners in vestries convened by the vicar and his wardens. In the teeth, however, of this emphatic expression of public opinion, the matter was pushed into the Consistory Court, where, after an inquiry which elicited only the more decisively the strength of feeling opposed to the project, the faculty was decreed. The people of Ormskirk indignantly thrust out the churchwardens who had favoured the application, but it is a fact that the vicar re-appointed them in his own right (leaving the parishioners without churchwardens) and began the work of destruction at six o'clock the following morning. I shall not ask you to follow me through that decree, whose wonderful text, as illogical as ill-informed, I have before me as I write; but I ask you to observe the ruling,—its legality I do not question,—that the Consistory Court is not bound by the resolutions of the parishioners in vestry, and may therefore thrust upon the parish any decree whatever; and I ask you further to say what then is the mockery of consulting the people in the vestry at all if it is not a consecrated travestie on the innocent pastime known to the unwary as "heads I win, tails you lose"?

What remains the substantial outcome of this inquiry is that now we have awakened public opinion to the necessity for protection we should devise some other means, swifter in its operation and surer in its end, to give effect to our principles, than any the Society for the Protection of Ancient Buildings has found available. The power of the parishioners is, as we have seen, valueless, and even were it otherwise, I am not sure that it would be usually reliable. What I think I see clearest of all is that the national church is the national property, and that the whole English people have a right, an individual and a collective possession, in the churches that belong to the State. It has been found expedient to vest divisional interests in bodies made up half of clergy and half of laity, but the nation has never ceded its legislative rights. The tenure of the custodians of our churches is one of trust, far more sharply defined than the tenure of the holders of the land, which is now seen to be in very large measure submissive to the national will. Why, then, may not our ancient churches be protected by law? I have, by the kindness of its promoter, looked through Sir John Lubbock's Bill for the Protection of Ancient Monuments, and I see no reason why all those ancient churches about which men would think it worth while to contend, should not also be scheduled and brought within the control of the Commissioners appointed under its jurisdiction. The necessity of use appears to me in no way incompatible with such a law of preservation.

To conclude: if the past is indeed alive with us, and a part of our growth; if it has any value for us that makes it a good thing that we should touch with reverent hands the relics it leaves in its trace, then it is a duty we owe in the present, if only in acknowledgment of our inheritance in the past, to bequeath unimpaired to the future those pieces of ancient days which are as much its property as our own. Yes, we owe it to those who come after us that they should see, as we have seen, the great works done in the days of our fathers, and in the old time before them.

Herrmann's Patent Malt-Kiln Floors.—Specimens of these floors were to be seen in the recent exhibition at the Agricultural Hall. They profess to be a solution of an important problem in malt-drying, viz., a rigid and practically indestructible floor, offering more space for the upward passage of heated air than any other kiln-floor. They are constructed of wire, in the form of large hurdles, with spaces of barely $\frac{1}{10}$ in. between the wires, which run side by side in a longitudinal direction, and have no wire crossing at right angles, as in the old plaited or woven wire floors. At intervals of about 3 in., the wires are wound round iron rods $\frac{1}{16}$ in. in diameter, the rods running at right angles to the direction of the wires, and the result being an exceedingly strong and an extremely rigid and almost indestructible floor, which requires no special means of fastening to the simple supporting structure, this latter merely consisting of longitudinal rods of flat bar iron and of light transverse beams.

CONDITION OF DUBLIN.

Mr. Rawlinson, C.B., and Dr. M'Cabe, Local Government Board Inspector, the Commissioners appointed under Royal warrant to inquire into the sewerage and draining of Dublin and its sanitary condition, are sitting in the City-hall. In the opening of the proceedings, the Chief Commissioner stated that they were not precluded from inquiring into other causes which might affect the health of the city besides the main drainage and the state of the Liffey. He observed that there were many theories as to the causes of disease, but he had been obliged to come to the conclusion that the principal cause was some neglect in the construction and management of the houses. He hoped that the report of the Commissioners would contain such practical recommendations as would lead to a removal of the conditions under which purity of atmosphere was impossible.

At a subsequent sitting, Mr. Boyle, C.E., secretary to the Public Health Committee, was examined, and made an interesting statement as to the number and condition of the houses in Dublin. He divided them into five classes. The first class, those of a rateable value under 10*l.*, numbered 4,000; the second, over 10*l.* and under 20*l.* per annum, 6,000; the third, over 20*l.* and under 45*l.* per annum, 9,000; over 45*l.* and under 75*l.* per annum, 4,000; over 75*l.* rateable value, 962. There are 24,000 houses in the city, inhabited by 230,000 people. The average is ten persons for each house. The number of houses let in tenements extends over the first three classes, but the actual number in the third class is 400. The total number of tenement houses is 9,760. They are all drained, though some of them imperfectly. Special care has been given to their sanitary improvement, especially house drainage. There are very few that have not effective drainage. About eighty of them cover an acre, but in some instances he found 242 on an acre. The next highest number was 207. He found a considerable extent inhabited by 70,000 people, with a density of about 154 to the acre. He has been intimately connected with the sanitary condition of Dublin since the year 1866. He found at that time 1,379 houses without sanitary accommodation of any kind. Mr. Rawlinson observed that in the year 1850 he found in a town in England, with a population of 25,000, no fewer than 18,000 persons without any sanitary accommodation. Mr. Boyle further stated that the average number of persons in the tenement houses was thirteen or fourteen, but in some houses in Church-street he found no fewer than seventy-eight. He valued one house at 10*l.* a year, but it was let at 4*l.* 10*s.* a week. The committee had to close that house in consequence of its insanitary condition. They had great difficulty in changing the habits of the people, even where they provided sanitary requisites for them, but nevertheless a very decided improvement had been effected. There is no public slaughter-house at present in the city, but plans are being prepared for erecting some. He had reported strongly against cowsheds. He did not think that under the artisans' dwellings scheme they could provide rooms for that class of persons. There are 2,360 tenement houses in the city, with 30,000 people living in them, which are unfit for human habitation, and if other accommodation could be found for the people he should not hesitate to depopulate those houses. The only effect of preventing them from overcrowding would be that they would go to other places and overcrowd them. No slaughter-houses licensed before 1851 could be suppressed without compensating the owner, and most of them were in localities where they should not exist. The sanitary authority proposed to have a house-to-house inspection of the whole city by competent persons, who would detect any imperfections. He thought the causes of the high death-rate in Dublin were—first, the class of dwellings mentioned; secondly, the saturation of the soil on which they stood with organic matter, which had been going on for 150 or 200 years, and the huddling of the houses together. There were three kinds of soil on which the houses were built. First was the alluvium, which was of the worst kind; where that soil existed disease was most prevalent, and during the epidemic of cholera it was in these places of the worst type. The next soil was granite, which was also unhealthy, and the third and best was clay. He thought the crowding of houses and saturation of the soil were the greatest causes of disease.

On the 2nd inst. the principal witness ex-

amined was Dr. Grimshaw, the Registrar-General. He gave details of the death-rate, noticing the excessive mortality of children, and the fact that the general mortality was greater within what was called the healthy ages,—between thirty-five and fifty-five,—and less in the more unhealthy ages. It was not excessive from diarrhœa or from zymotic diseases. There had not been much typhus fever in Dublin, but a good deal of typhoid. He did not think that the excess of mortality in Dublin was due to the number of persons who came from the country for medical advice because of the extensive medical school in the city, as he believed that in many cases they were cured, and in cases where the cure was hopeless they returned to the country to die, as people did not like to die in a strange place. He assigned among the causes for disease the accumulation of refuse, bad scavenging of the streets, and the existence of slaughterhouses and manure-yards. After the introduction of the Vartry water the mortality for two years was less, but was now higher than before. Mr. Boyle, secretary of the Public Health Committee, was further examined, and recommended that the corporation should take charge of domestic scavenging, and that a separate charge should be made for it in each case according to a certain scale. Mr. Rawlinson disapproved the recommendation, and suggested that, as regards scavenging, the Local Government Board in England, though at first reluctant to do so, agreed to lend money for the supply of the necessary plans and appliances for carrying on the work, which was a great advantage to corporate bodies. Mr. Boyle was directed to bring the suggestion under the notice of the Local Government Board of Ireland. The appointment of a police magistrate to take charge of sanitary cases only was also strongly urged.

THE NEW ROYAL LUNATIC ASYLUM, DUNDEE.

The directors of the Dundee Royal Lunatic Asylum have for several years past greatly felt the necessity of providing additional accommodation, and as the present asylum at the top of Albert-street was being rapidly surrounded by dwelling-houses and other erections, they saw it would be impossible to further extend their present buildings, and accordingly looked out for a site which would be suitable in every respect for new buildings. In 1875 the directors acquired the farm of Westgreen, on the Invergowrie Estate, which extends to 78 acres, for the site of the new asylum. They subsequently purchased 17 acres of the adjoining farm of Whitelawston. The whole extent of ground acquired thus amounts to 95 acres. The site of the new asylum is situated near Liff, and commands a fine prospect of the river Tay and the surrounding country. In due course, Messrs. Edward & Robertson, architects, Dundee, were entrusted with the work of preparing the plans of the buildings, and these have met with the approval of the Lunacy Board. According to the *Dundee Courier's* description of the plans, the southern portion of the ground will be reserved for agricultural purposes, the asylum buildings being situated on the north. Accesses are provided to the institution from the Liff and Invergowrie-road on the west, and from the Liff and Dundee-road on the north. The institution consists of two main buildings, one being for pauper and the other for private patients. Both the buildings are to be in the Scotch Baronial style. The largest building, which is for pauper patients, is situated on the west portion of the ground, and has its entrance from the north, but the line of frontage faces the south. It consists of two stories, each story being 13 ft. in height. Immediately after entering the building the visitor comes upon the vestibule and corridor, the latter being 9 ft. wide. Facing the vestibule is the grocer's store, while on the west side of the corridor are a medical consulting-room and a dispensary, and on the east side are the porter's room and waiting-room. Passages lead from the corridor to the main part of the building, and adjoining these passages are the bath-rooms, stores, servants' accommodation, kitchen, and scullery. In the centre of the front of the building is a spacious dining-hall, 85 ft. by 51 ft., and 20 ft. in height. From the dining-hall corridors run east and west, the apartments on the west part of the building being for males, and those on the east part being for females. Adjoining these corridors are single rooms and day-rooms, lavatories being provided in buildings abutting. At either end of the main building are wings running north and south. The wing on the south side will be used as an infirmary, while that on the north side will be set apart for refractory patients. To the north of each of the wings will be detached buildings. Those on the side occupied by the male patients will be used as tradesmen's workshops, while on the side occupied by the females will be a laundry, washinghouse, &c. On the latter side are the furnaces and boilers for supplying the whole building with hot water and steam, and a pipe will convey the steam to the scullery, where all the meat is to be cooked by steam. To the east of the washing-house and laundry, apartments are provided for patients capable of washing, &c. In rear of the rooms on each side of the dining-hall is a large court, where the patients of each sex will take exercise. The first floor is reached by two staircases on either side. On this floor, above the dining-hall is an amusement-room, of about the same dimensions as the hall. The accommodation on the east and west sides of the amusement-hall is the same as on the ground floor, with the exception that the rooms over the day-rooms are used as dormitories. The portion over the entrance is used as a store-room, matron's rooms, and house servants' apartments. The building for the pauper patients has a frontage of about 600 ft., while the end wings have a frontage of about 300 ft. The front elevation has ten crow-stepped gables. Over the centre part of the frontage are corbelled turrets, which are surmounted by a *flèche* rising to a height of nearly 100 ft. The staircases on either side are carried up in the form of towers, being also surmounted by turrets. In front of the single rooms are verandahs, in which the patients may enjoy themselves in wet weather. The number of patients that can be accommodated in the pauper asylum is 300,—140 males and 160 females.

The private asylum, which consists of three stories, each 13 ft. in height, is situated on the east portion of the ground, and to the east of the main building. This building has also its main entrance from the north. On the ground floor are apartments for males and females, those for the males being on the west side, and those for the females being on the east. On the female side of the house is provided dining-room, drawing-room, and work-room accommodation, and on the male side there are a reading and writing room, dining-room, and billiard-room. In this building is an assembly-room, or theatre, 54 ft. by 30 ft., and having a small gallery at the east end. The whole of the first and second floor are used as single rooms and bedrooms. In the centre of the front building there is also a tower, having five stories, and rising to a height of nearly 100 ft. The corners of the tower are surmounted by corbelled turrets, and at each end is a gablet, ornamented and having turrets. Seventy patients can be accommodated in this building, so that the new asylum will provide accommodation for 870 patients. Single-room accommodation is provided for about 40 per cent. of all the patients.

The chapel is situated in the north-west corner of the ground. It is built in the Gothic style, and has an entrance facing the east. Over the entrance is a four-light traceried window, and there is also a belfry. The chapel consists of nave, two aisles, and apse, the aisles being separated from the nave by arcades of three bays. The chapel is 33 ft. in height, and will accommodate between 300 and 400 people. The medical superintendent's house is situated to the south and east of the buildings.

At present only the pauper asylum and one of the lodges are being built, the estimated cost of which is 42,000*l*. When the whole plans have been carried out the total cost will be about 60,000*l*.

The mason work of the building now being erected is almost completed, and it is expected that in the course of twelve months the establishment will be opened.

The contractors are,—Messrs. Mann & Myles, masons; Gauld & Laburn, slaters; David Brown, plumber; J. & W. Kines, gasfitters; Garvie & Farquharson, joiners; J. & W. Martin, plasterers; Thomson, Son, & Co., ironfounders; John Bryden, bellhanger. Mr. John Haggart is clerk of works.

The foundation-stone was laid with Masonic honours on the 17th of September by Lord Ramsay, Right Worshipful Grand Master of the Provincial Grand Lodge of Forfar.

STAINED GLASS IN EXETER CATHEDRAL.

At the last annual meeting of the Exe[ter] Diocesan Architectural Society,

Mr. F. Drake read a paper on "[The] Ancient Stained Glass in Exeter Cathedra[l]" which was illustrated by a large numb[er] of drawings and paintings. Mr. Dra[ke] first referred to the works of the late [Rev.] Charles Winston. He then observed that it w[as] his intention to take his hearers first to [the] clearstory windows of the choir, then desce[nd] to the choir-aisle windows, and finally take[a] somewhat hurried look at the great east windo[w]. He thought that there could be little do[ubt] that the clearstory windows of the choir w[ere] filled with glass of a uniform design,—figu[res] beneath canopies and with tracery of a patte[rn]. The beautiful effect of such treatment might [be] imperfectly judged from the remaining wind[ows] although it had suffered severely from the ig[no]rant over-attention of centuries of glazi[ng]. The ground-work to the figures and canopies [in] all those windows had interlaced geometr[ic] bands running over oak, ivy, &c. The windo[ws] west of the transepts were glazed at a la[ter] period, and enriched with the most beaut[iful] specimens of the art immediately follow[ing] upon the discovery of yellow stain. Two pi[ers] only remained *in situ*. All the glories of figu[res] and canopies, and subjects, inscriptions, [etc.] were gone, yet portions were left which hel[ped] to form an idea as to the glazing. One of [the] two pieces remaining was identical with that [at] Temple Rothley, Leicester, so that the datal[ion] the glazing of the nave clearstory would be [in] early part of the reign of Edward IV. In [the] choir-aisle windows there were six pairs, as [far] so far as the pattern of the stonework [was] concerned, having bold borders. Much of [the] tracery of those beautiful pattern windows [re]mained, but the lights, alas! were cut up in[to] kind of sausage pattern. The ancient glass in [the] chapels of St. Gabriel and St. Mary Magda[lene] remained, so far as the north of the one and [the] south of the other were concerned. It was [re]moved into the east windows, but, so far [as] regarded St. Gabriel's Chapel, it had been [the] privilege to put the glass back into its pl[ace]. The grand east window received new stonew[ork] in the Perpendicular style of architecture [in] 1390. At that time the glass of the ea[st] window was altered by one Lyon, of Exeter, [to] suit the new circumstances, and the best thi[ng] of the city were due to Lyon for the satisfac[tory] manner in which he did the work. The ob[ject] resulted in the erection of a nine-light in[stead] place of a six-light window. The early g[lass] was placed in the six outer lights, and to m[ake] up the deficiency in length, dwarf canopies w[ere] placed beneath the figures and coats of a[rms] emblazoned thereunder. Besides the six o[ld] figures there was much of the tracery-glas[s] an early character. The window suffered m[uch] in an attempted restoration in 1751. Head[s] the true Georgian type were put upon [the] figures, and the canopies were much tamp[ered] with. The shields of arms in the tracery [do] not belong to the window. It was probable [that] in the general rummaging of old gear in 18[th] when between 300 ft. and 400 ft. of sta[ined] glass was taken out of the chapter-house to [be] "worked up" in repairing existing windo[ws] those shields were amongst it. The window[s] both clearstory and choir aisle were of [the] character, executed upon one general plan, [and] were subordinated to the beauty of the buil[ding] and the delicacy of the window tracery. T[his] did not appear to have been the least atte[mpt] on the part of the architect to produce gr[eat] effects of colour, but, on the contrary, ai[med] seemed to have desired was toning and s[ub]lowing of the light which poured in floods [on] the beauties of his glorious building. In [the] clusion, Mr. Drake alluded to the severe los[s] cathedral had sustained in the death of A[rch]deacon Freeman, at whose suggestion [the] examination was made. The immediate [re]of his interest in this part of the fabric [is] found in the side windows of the lady-chap[el], the memory of Bishop Phillpotts. Had the [late] deacon lived, the poor skeleton of a clear[story] window, still, Mr. Drake hoped, reposing in [the] chamber behind the Minstrels' Gallery, w[ould] ere this have been restored to its old be[auty] and its old place, and the glorious old [east] window would be far on its way to restora[tion] —a consummation dear to his heart and ha[rd] the full and hearty concurrence of Sir Gi[lbert] Scott.

UNIVERSITY COLLEGE, BRISTOL.

ENGINEERING.

NIVERSITY COLLEGE, Bristol, will shortly mence its fourth session. The calendar, ch is before us, states that there were 448 ents in the college in the second session; in the third, 576, of whom 355 were men 221 women: 172 came in the daytime, and in the evening. Good progress is being e by the Engineering Department, which is gned to afford a thorough scientific educa- for students intending to become mechanical vil engineers, surveyors or architects. The se for engineering is such that students can ue it during the six winter months of each , and the Council of the College have nged with the leading civil and manufac- ng engineers in the neighbourhood to receive heir offices and workshops during the mer months students whose position rela- y to the firms would be that of articled ls. Many of the recent developments in scheme of instruction in the College are gned to meet the wants of this department. essor Main will this year be assisted by H. S. H. Shaw, M.I.M.E., in giving the es on engineering. Mr. Shaw has been a nt of the College since its first opening, after a long course of success, was first by than 1,000 marks in the final competition Whitworth scholars in their fourth year, tly held, thus securing the chief prizes, nting to 300*l.*

the ordinary course on chemistry and in laboratory care is taken to explain the ical composition and properties of the more rtant materials employed in construction, ffects of the atmosphere on them, and the ical principles involved in sewerage and ation.

THE DUNDEE "BUFFET."

e "Buffet," a handsome restaurant, has been opened in Dundee. It was projected r. Rickard, the proprietor of the Royal ish Hotel. The work has been carried out the designs and under the superintendence r. George S. Aitken, architect.

entrance to the principal room is in the of a circular porch of polished oak; the portion of which is inlaid with brass ssed panels, the upper glazed with leaded and the floor laid with encaustic tiles. oom to which this gives access has on the a buffet and counter, and to the left a of boxes; at the extreme end is a pro- g fireplace with recessed seats, and ning this the service kitchen, communi- g with the hotel kitchen by a lift. All the rs are of polished oak.

buffet is in two stages, the lower having ted doors with marble top; the upper a nuous series of mirrors, with decorated s at intervals; the centre and ends are d of shafted canopies with German and m pottery in the gablet recesses; the diate portions are finished with balus- l parapets. The counter has a marble ith carved panelled oak front and massive ng shafts. The boxes are formed of oak ng with balustraded divisions and bench- The seats are upholstered in crimson , the tables being of marble with specially- ed cast-iron stands. Above the seats are uous mirrors, with decorated panels be- and brackets for quaint pottery and . On this side is a specially-designed ase. The end wall of the room, in which ated the fireplace, is similarly treated with rs and decorated panels.

fireplace is of oak, projecting 4 ft. from all, supported on shafts carrying cornice loping roof,—on this roof are German Settles are arranged at each side. The are of Victoria red marble, the ingoings ca tiles, and the dog-grate bronze and iron.

service kitchen adjoining is enclosed by panelling, and contains steam cooking- atus, hot and cold water appliances, and unicates with the hotel coffee-room and n by a lift. At the end of the kitchen, and ng out of the restaurant, is a smoking- the walls and ceilings finished in Keene's t, and the flooring of French tiles. The of this room is procured on the one side an embossed plate window to the exterior, the other from a glazed screen of tinted plate with painted subjects thereon. The ceiling of the restaurant is panelled with wood mouldings, with a decorated ground-work. The windows have screens of leaded work with subjects in colour appropriate to the place. Artificial lighting is provided by two pendants of combined cut glass and polished brass in the centre, and ten corresponding wall-brackets at the sides and ends.

SWANSEA.

Artisans' Dwellings. — Important improvements have been carried out in this town under the Artisans' Dwellings Act, 1875, and some notorious dens of prostitution and vice are now in course of removal. At a recent special meeting of the Town Council the subject was discussed, and the following resolution adopted *nem. dis.*:—"That the common seal be affixed to a receipt for the sum of 61,546*l.*, being the remainder of a sum of 76,546*l.* some time since agreed to be advanced by the Public Works Loan Commissioners, for carrying into execution the improvement scheme framed under the provisions of the Artisans and Labourers' Dwellings Improvement Act, 1875; and also to a certificate authorising the payment of the above sum to the borough treasurer, or his order."

A new church has been erected at Llansamlet, near Swansea, and was consecrated on Monday. It is built of local stone, in the Early English Gothic style, and has cost 6,500*l.* The length of the nave is 80 ft.; the width, 24 ft.; and the height of the ridge, 47 ft.; the chancel measures 35 ft. by 24 ft., and is 24 ft. high; and the dimensions of the vestry are 26 ft. by 13 ft. The clearstory windows have circular lights, trefoil, quatrefoil, and sexfoil, surrounded by label mouldings. The east window measures 22 ft. by 12 ft., and contains ornamental tracery, and there is a three-light window at the west end, 18 ft. by 9 ft. The roof, which is of circular form, is of pitch-pine, stained and varnished, with match-board covering; and the arches are supported by massive pillars of Bath stone. Ultimately a tower is to be built. The architect was Mr. Clarke, of Briton Ferry.

RE "SCHOOL OF ART WOOD-CARVING."

SIR,—I can but think that the letter of "Meter" in your recent issue (p. 1089) should not be allowed to pass unnoticed, as it is calculated in my estimation to place the matter before the public in an entirely false light. "Meter" describes the school as a "jejune scheme put forward in the semblance of reform," in answer to which allow me to state that the promoters of the School of Art Wood-carving deservedly have the name for being eminently practical men, and I therefore see little reason to doubt that their earnestness and energy, assisted by the persevering endeavours of that superior workman, Signor Bulletti, and his industrious pupils, will result in the production of some thorough artist wood-carvers. "Meter" alleges that the cause of the decline of wood-carving in this country was the introduction of "compo impressions," in place of carving, to ornament looking-glass frames, &c. Does "Meter" think that because an art has chanced to become degraded, or even extinct, it is useless to attempt its revival? Art history tells a different tale. But to practice, as I know your space is valuable. "Meter" says "the difficulty of turning art into wood is very slight." In this one point I wish heartily to concur with him; but I cannot help thinking that the difficulty of turning wood into art is quite another matter, and as our wood-carvers in England do not show any signs of becoming artists, the sooner some of our young artists turn their energies to wood-carving, the sooner shall we expect to see England regaining her former position of eminence in this beautiful art. ANSELMO.

Crystal Palace.—Comte Thomas de Ragiout is still engaged in carrying out his idea of establishing, at the Crystal Palace, Sydenham, a permanent international exhibition, where visitors of every nationality would be certain of finding the choicest specimens of contemporary industry and art. The Bavarian Minister of the Interior promises to direct his attention to the enterprise; the Munich Artists' Association promises to exert all its influence on behalf of it; and the Vienna Artists' Association also undertakes to urge Austrian artists to aid the enterprise.

OPENING OF THE PICTON READING-ROOM, LIVERPOOL.

AN interesting ceremony took place in Liverpool on Wednesday, when the new Public Reading-room which has been named after Mr. J. A. Picton, the chairman of the Library Committee, was formally opened. The honour paid to Mr. Picton on this occasion has an interest for our professional readers as an honour paid to one of the oldest members of the profession in England, who has given proof that a successful practising architect need not be only an architect, or confine his interest to the drawing-board, since Mr. Picton has not only been a most active and efficient member of the Liverpool Corporation, and of all committees and associations having the welfare of Liverpool in view, but has made himself known far beyond the limits of his own town as a man of much general information in literary and philological subjects. The ceremony of opening consisted of the presentation of an address on behalf of the Library Committee, and another on behalf of the Liverpool Architectural Society, who sent a large deputation, including most of their leading members, to do honour to their colleague on the occasion. The Mayor and members of the Town Council and the representatives of the architectural profession having met in a room in the adjoining Free Library building, walked in procession to the door of the new reading-room; the door was opened with a silver key, subsequently presented to Mr. Picton as a memorial of the event, and the company having entered the reading-room, where a large audience was assembled, the room was declared by the Mayor to be open, and the two addresses were read and presented. Mr. Picton replied at considerable length and with remarkable clearness and distinctness, both of voice and style, giving a few statistics as to the history of the free library movement in Liverpool, and making some appropriate and well-expressed remarks in regard to the importance of such a reading-room to the town, and the benefits that might be expected from it. Subsequently an afternoon banquet was given to Mr. Picton in St. George's Hall. There was evidently hearty feeling on the occasion, and while we congratulate Mr. Picton on this recognition by his townsfolk of his services to the town, we may at the same time express our approbation of the system of thus perpetuating the names of eminent citizens by attaching them permanently to important public buildings, a very appropriate manner of keeping up the recollection of those who have contributed to the improvement and progress of the town.

The building which has been thus opened is a circular one with a Corinthian colonnade surrounding it, and internally is domed and surrounded by a double tier of bookcases with return cases at intervals projecting towards the centre of the room; a gallery runs round to give access to the upper cases. The internal architectural treatment is very simple, and the ceiling would look better for a little coloured decoration to relieve it, which is perhaps intended ultimately. Practically the room seems admirably adapted for its purpose. It possesses, indeed, a remarkable echo, so great that hearers in some parts of the room literally heard all the speeches twice over; but as a reading-room is not for speaking in, this is not so serious a defect as it would otherwise be. Externally the appearance of the building is very agreeable and refined, and the effect of the Classic architectural detail was enhanced on this occasion by the introduction of shrubs in flower-pots between the columns and in the niches of the wall of the *cella*, with a very pretty result. The architect of the building is Mr. Sherlock, of Liverpool.

THE IRON BRIDGE.

SIR,—The centenary of many a thing less interesting than the "Iron Bridge" has been commemorated with much rejoicing; but here no notice was taken of the fact that this, the first iron bridge ever constructed (and from which this little town takes its name), was, on the 1st of September, one hundred years old. The bridge is a fine piece of construction and execution, owing to this it has suffered but little damage in the period of its existence. Perhaps in another hundred years more notice will be taken of it. C. G.

Ironbridge, Salop.

LIVERPOOL ARCHITECTURAL SOCIETY.

At the first meeting of the thirty-second session of the Liverpool Architectural Society, the President, Mr. Henry Sumners, F.R.I.B.A., delivered an address. After remarking that the position of the society, with regard to numbers and finances, was very satisfactory, Mr. Sumners proceeded to refer to a variety of subjects of interest to the profession. The prevailing commercial depression had, he said, affected architects as well as others. It was now to be hoped that a turn for the better would be felt, and that the architects, and consequently the building trades, would soon feel the benefit of the change. It was very satisfactory to learn from the papers and opinions expressed at the recent Trade Union Congress that a very much more conciliatory feeling pervaded their councils, although it was sad to find that during the year 1878 no less a sum than 260,000*l.* had been drawn from the pockets of the working-men in the payment of benefits to distressed members of trades. It was to be hoped that the working-men had learnt a lesson from the past, and would forbear to scotch the wheel of progress in its early revolutions. Mr. Sumners next referred to the question of local and national water supply, and then touched upon a variety of local building operations, remarking in this connexion that it was gratifying to find that in spite of bad times, works of an architectural character were in progress which would effect a marked improvement in the appearance of the streets. Notwithstanding that a great deal had been said in disparagement of the town in regard to its architectural features, he thought that Liverpool would favourably compare with many other towns, and if it did not in some instances, it had been the fault of those into whose hands the direction and settlement of works affecting its beauty had been placed, and not in the want of appreciation and desire of the many for such works as would benefit and improve the town. Who was to blame, for instance, for the mismanaged inutility and positively non-beautifying waste of land in the costly arrangement of the approaches to the Landing Stage; for the jumble of edifices dedicated to art, literature, and science, on sites evidently unfitted for them, and thus obviously destroying the architectural effect of each other; for the misplacing of the huge figures of men, the knowledge of whose works and teachings alone should have been a guide as to the architectural effect of their position; for the further disfigurement, in more ways than one, of the Walker Art Gallery, by the introduction of subjects so inappropriate, inartistic, and ridiculous that for the sake of art they ought to be taken down; for the miserable fountain for the west-side of St. George's Hall, remaining still in its present state of hideous disfigurement; and for the apparent inability to devote the high level to any other purpose than a monster cab-stand? Who was to be responsible for the site of the proposed cathedral? Rumour within the last few days had stated that it was to be on the land in Myrtle-street, opposite the Gymnasium, and that the premises of the Art Club were to be removed; but surely this was not true, as the site was too small. He (Mr. Sumners) suggested the consideration of a site which might be obtained on St. James's Mount by the removal of the houses and the lowering of the bank. In his opinion there was no site in the town with regard to aspect and surroundings so suitable, and it ought to be obtained for such a purpose for comparatively little cost.

Mr. J. A. Picton said that, notwithstanding all that had been said by the president, he was not afraid of bringing strangers to see in Liverpool some of the beauties of architecture, and indeed many of the works of his friend Mr. Sumners were worthy of commendation. Mr. Sumners had delivered an excellent address, and he (Mr. Picton) had very great pleasure in moving a vote of thanks to him.

Mr. Boult seconded the motion, which was cordially passed.

Duffield.—The Local Government Board have consented to the formation of Duffield into a special drainage district by the Belper Rural Sanitary Authority. The area of the proposed district comprises about 500 acres. The sewage is to be disposed of by irrigation on ten acres of land belonging to Lord Scarsdale, and the cost of the scheme is estimated at 3,000*l.* Mr. Geo. Thompson, of Derby, is the engineer.

THE TILES AT MUCHELNEY ABBEY, SOMERSETSHIRE.

Sir,—In Mr. T. Shelmerdine's illustrated and very interesting paper on this matter (see your issue of the 27th ultimo), attention is drawn to some charming old Early English tiles existing at Muchelney Abbey. In my own little collection of tiles, dating from Pompeii, A.D. 79 downwards, I have several thirteenth-century Somersetshire tiles, in two colours, of precisely the same design as those Mr. Shelmerdine has drawn us on plate p. 1,077; and in the Luttrell Chapel at Dunster Church, and again, if I mistake not, at Cleeve Abbey, hard by, there are many more similar examples.

The illustration of an elephant upon one of the tiles at Muchelney is most interesting, but it would be satisfactory to know whether Mr. Shelmerdine has good authority for assuming it to be older than the elephant carved upon one of the *misericordes* at Exeter Cathedral. The latter is amongst a series of fifty marvellously perfect oak carvings, all of them Early English, save one, perhaps, which seems somewhat later in character. At least I ought, I almost fear, to have written in the past tense as to precise numbers, and to have said there were fifty of them; for one of these singularly beautiful and unique examples of woodwork seems to have been surreptitiously removed from the cathedral within the last twelve months. The *misereres* in question were carved under the direction of Bishop Bruere, who ruled the diocese A.D. 1224-44. The Exeter elephant, unlike the Somersetshire one, is not an "elephant and castle," and, curious to relate, has the hocks of the hinder legs turned the reverse way to how they really are in nature. If the tiles at Muchelney date earlier than 1224, then the elephant thereon may claim seniority to the Exeter one, but not, I think, without.

Harry Hems.

ST. PAUL'S GARDENS; OR, THE GREAT UNWASHED.

Walk into the garden, said St. Paul's to the city, my old and modern garden, divided off in bits: you can come a little nearer now, to view my Corinth stones; the paths are somewhat zigzag, to avoid the ancient tombs. It is a pretty garden, I said to old St. Paul's, but let our engines wash your sooty face and walls; blanched streaks and patches here and there add not to renown, we see the same on dirty boys, just where the tears run down. Ablution vigorous will give a pleasing sight, and show our sable saint washed down clean and white.* Whiteness a halo of purity lends, to beauty tends: so don't remain dirty, like your neighbour, old Thames.

R. T.

OBSTRUCTION OF LIGHT.

M'MILLAN *v.* BRASS.

In this case (in the Chancery Division, Oct. 1) the plaintiff sought to restrain the defendants, the well-known builders and contractors, from proceeding with the new Post-office Savings' Bank buildings in Knightrider-street, so as to darken his premises. In addition to the order asked to prevent the defendants proceeding further with the buildings, the Court was asked to direct that they should be reduced to the height of those formerly occupying the ground.

Mr. Locock Webb, Q.C., and Mr. Thos. Brett appeared for the plaintiff.

The Solicitor-General and Mr. Dryden, for the Post-office authorities, declined to assent to any arrangement which would have the effect of stopping the buildings; but, on the other hand, offered to undertake to pull down any part of them if the Court should so order in November next.

On that understanding the matter stood over accordingly.

DEFALCATIONS BY A BUILDER'S CLERK.

At the Wednesbury Police Court, last week, Arthur Callender (22), clerk, was charged with embezzling moneys belonging to his employer, Mr. John James Trow, builder and contractor, Wednesbury.

The prosecutor stated that the prisoner had been in his employ as a clerk until September 6th. For about two years he had been employed on a contract under the South Staffordshire Waterworks Company at Hednesford. It was part of his duty to make up the wages accounts and pay the men their wages. On September 3rd, a cheque for 25*l.* was sent to the prisoner, to pay wages. On the 6th ult. he furnished an account showing that he had paid wages amounting to 21*l.* 2*s.* 11*d.*, and handed over a balance of 3*l.* 17*s.* 1*d.* In the same accounts, which should be signed by the men, he saw two names which purported to be those of J. Brindley and H. Williams.

Edwin Darby said he was a labourer, and had been employed at Sheepwash, Hednesford, during the past four months, and he had been paid at the rate of 4*d.* an hour and not 4½*d.* He had not seen any labourers named Brindley and Williams employed, neither did he know them.

John Bradford said he was a bricklayer, employed by Mr. Trow, at Sheepwash, Hednesford, from August 19th to September 6th, and was paid at the rate of 7*d.* an hour and not 7½*d.* Since August 19th there had only been one bricklayer at work besides himself, and also two labourers.

The Bench remanded the accused.

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* Fishmongers' Hall is kept clean and white.

CHURCH-BUILDING NEWS.

Heswall.—The new parish church of Heswall which is situated close to the Dee, and three miles from Parkgate, has been consecrated by Bishop Kelly, on behalf of the Bishop of Chester. The church, which is dedicated to St. Jose and St. Peter, has sitting accommodation for 500 persons. It is in the Early Decorated sty and the work has been carried out to harmonize with the old tower, which is left standing. T material used is a fine red sandstone from quarry in the neighbourhood. The chancel laid with mosaic pavement, the work of Messrs. Rust & Co., of the Albert Embankment, Londo The pulpit is of red sandstone, with serpentine columns and alabaster coping. The roof, pe and other work are of varnished pitched pi The general tiling of the edifice has be executed by Messrs. Craven, Dunhill, & Co., Ir bridge, Shropshire; the heating apparatus h been supplied by Messrs. J. R. Cooper, Lond road, Liverpool; and the plumbing and furni ing by Mr. B. Knight, Dale-street. It is tended to erect on the east-side of the churc small chapel, but this part of the work has b deferred for want of funds. Mr. James F. Doy of Liverpool, was the architect; and the co tractor for the whole work Mr. Hugh Ya of Everton. The cost of the edifice is ab 5,000*l.*

Sebergham, near Carlisle.—The parish chu is now being restored and partly re-pewed, It is of very old foundation, but has lost most its ancient features in past re-constructi About eighty years since an ugly tower added, and five large debased windows inser in the south side, and a west gallery added, flat plastered ceiling. The rough casting has b recently removed, disclosing several early lan windows of admirable proportion, and some doorways. Three lancet windows in the east will be restored on the old lines; traces of th windows are still existent: they were cut av to insert the present ugly Tudor window wooden tracery and vulgar stained glass. architect is Mr. D. Brade, of Kendal, and contractor Mr. Laing, of Sebergham.

Doddiscombsleigh.—The parish church of Michael, Doddiscombsleigh, Devon, was opened on the 25th ult., after restoration. church, which is principally of the Perpendic period, with a western embattled tower north and south aisles, is chiefly noted for ancient stained glass which the north aisle tains. Remains of an earlier church sug themselves in the quaint little deeply-splay Norman window in the tower, and there is Early English two-light window in the n aisle. The nave and aisles are divided f each other by arcades of four bays, the st work being of Beer stone. The old font Norman one,—plain, save that it has a ca mould worked around it. The restoration been carried out from the designs and under superintendence of Mr. Edward Ashw architect, Exeter, and the main portion of work has been done by Mr. Thomas Digg builder, of Doddiscombsleigh. The ca bosses in the roof and upon the wall-plates by Mr. Harry Hems, of Exeter. The ancient stained-glass windows, which were sad state of dilapidation, have been rest gratuitously by Messrs. Clayton & Bell. cost of the work,—which, as far as it has ceeded, has been upwards of 900*l.*,—has undertaken by the rector, the Rev. J. Buckingham, who has been aided by subs tions from the landowners and others, inclu Sir Lawrence Palk, Mr. E. Byrom, Col. Wal Mr. A. Gibbs, and Mrs. Gibbs. Much ren to be done, namely, the re-seating the ch church, with the thorough repair of the t and other parts of the building, the co which is estimated to be at least 300*l.*

Messrs. Bellman & Ivey, of Wign street, have been honoured by an appoint as scagliola marble manufacturers to her Maj the Queen.

Miscellanea.

he Moorfields Tabernacle.—Mr. T. C. e tells us that Mr. Coleman, of 9, Tottenham- ce, Tottenham, has for sale a very in- iting memorial of the celebrated George efield,—the counterpart of the original to him of the Tabernacle and adjoining erty, and that the deed possesses double est from the fact of its bearing the seal signature of "George Whitefield" himself, a carefully-drawn plan of the property. ndenture is dated the 16th of March, 1753, nforms us that "John Brown, of the parish . Peter, Cornhill, Merchant," for the sum 0*l.*, paid by "the Reverend George Whit- of the parish of St. Luke, Middlesex, ," doth "demise, lease and to farm let" m the said Whitfield, a certain messuage other premises in the parish of St. Luke, n or near a certain piece of ground for- known by the name of the Farthing Pie- ," having a tenement called the Barking upon the east, the gardens, &c. of the on hunt's house on the west, and the ge, &c., leading from Windmill-hill to n on the north and south; the whole ying an area within the dimensions of 165 ft. south, 204 ft. north, and 88 ft. nd west, and upon a portion of the estate own on the plan) is included "all that on or building *now standing*, or being on commonly called or known by the name 'Tabernacle,' &c.; the whole being let years, at "the yearly rent or sum of illings and sixpence of lawful money of Britain," free of taxes, &c., and subject usual covenants by Whitfield to repair, ne note is worthy of record. Throughout dy of the deed the name is spelt as three in London named after him are spelt,— field," but George clearly signs himself efield."

iety of Engineers.—At a meeting of ciety, held on Monday evening last, in ciety's Hall, Victoria-street, Westminster, P. Spice, president, in the chair, a paper ad by Mr. Thomas Andrews, on "The h of Wrought-iron Railway Axles." In cing the subject, the author gave a brief sketch of the Wortley Ironworks, d, at which works some of the first rail- les used at the commencement of the system were made. He then proceeded nerate a series of practical experiments e had conducted with a view of showing at resistance which best fagotted scrap e capable of offering to sudden strains, sidered at some length the question of Steel as a material for axles. The strongly advocated the adoption of form test for axles. It is announced r. Perry F. Nursey has resigned his ment as secretary, after many years' and that Mr. Graham Smith has pointed his successor. Mr. R. P. Spice, ident of the Society, in a circular which n issued, explains that Mr. Nursey has his appointment owing to his services been sought and obtained as editor of a ; contemporary. Mr. Spice, in the name ciety, says, "We feel that he is entitled armest praise for his assiduous applica- the ability which he has always dis- the discharge of the duties devolving , and we regret the loss of his services."

rts for the People.—A meeting con- the mayor, Alderman Collings, to con- propriety of providing cheap concerts people, has been held in Birmingham. or, who presided, explained the scope cts of the movement. Experience had at high-class music would attract and popular audiences, and there was reason that if the prices of admission could ed on a scale to bring them within the the artisan classes a large number of ho were now debarred from attending od concerts would be glad to avail es of the opportunity afforded them. idea of the scheme was cheap concerts wn-hall to begin with, the prices being possible. A resolution approving the uggestions was adopted, and a com- med for carrying out the scheme.

gton House.—Another attempt to roperty has failed. It was put up for ction on Tuesday by Messrs. Driver & bought in at 179,000*l.* The reserve understood to be 200,000*l.*

The Turners' Company.—On Thursday last (9th) the prizes awarded by this Company to the authors of works sent in competition were presented to the several gainers by the Lord Mayor. The awards in the *Wood* Competition were:—First prize, silver medal, freedom, and complete copy of Holtzapffel's "Turning and Mechanical Manipulation," J. G. Norris, 42, Cowper-street, City-road; second, bronze medal, three guineas, E. Hellens, 45, Stamford-road, Kingsland-road; third, first certificate of merit and three guineas, A. Foster, 66, Compton-buildings, Goswell-road; fourth, second certificate of merit and three guineas, F. Froud, jun., 43, Holly-street, Dalston; fifth, third certificate of merit and three guineas, A. Capell, 79, Milton-street, Dorset-square; sixth, three guineas, J. S. Coulson, Kirkgate, Thursk. The remaining nine prizes of two guineas each were awarded to S. Thwaites, 38, St. James's-road, Hackney; G. Garner, Carpenters' Arms, Anne's-place, Hackney-road; W. Gleeson, 119, Clifton-street, Roach, Cardiff; H. Burbage, West Orchard, Coventry; T. Macdonald, 4, Chapel-house-place, Millwall; J. Hegley, 28, Ivy-lane, Hoxton; F. Nickolay, 43, Rupert-street, Haymarket; H. Turner, 58, Whitefriars-lane, Coventry; and F. G. Holly, 88, Belsover-street, W. In the *Stone* Competition, the prizes awarded were:—First (same as in wood competition), D. Penny, Old-street, E.C.; special, V. Albertaldi, 3, High-street, City-road; second, bronze medal and books, W. Pearse, 14A, Grosvenor-street, Westminster; third, first certificate of merit and two guineas, W. Coulman, West-hill, St. Mary Church, Torquay; fourth, second certificate of merit and one guinea, James Boden, jun., The Heights, Matlock Bath; fifth, third certificate of merit and one guinea, J. Boden, sen., marble works, Matlock Bath; and sixth, one guinea, F. S. Powell, Salterton-place, Egham.

The Forth Bridge.—The directors of the Forth Bridge Company have, the *Scotsman* understands, accepted tenders for the construction of this great engineering work. The directors invited offers from some half-dozen firms of acknowledged standing; and of the tenders submitted in compliance with this invitation, the directors decided to accept the following:—Messrs. William Arrol & Co., Dalmarnock Ironworks, Glasgow, the contractors for the Caledonian Railway Bridge over the Clyde; and Messrs. Vickers & Sons, steel manufacturers, Sheffield. With the exception of the steel chains, on which the structure is to be supported, the whole undertaking has been placed in the hands of Messrs. Arrol & Co. The steel chains are to be supplied by Messrs. Vickers & Son. It is thought that the bridge will be finished in six or seven years.

London Central District School.—The managers of this school held an extraordinary meeting at the offices, Basinghall-street, on Monday last, Mr. P. McKiolay, C.C., chairman, presiding. The House Committee, under date of September 30th, reported that Messrs. Higgs & Hill, whose tender (13,420*l.*) had been accepted for the building of certain day-rooms and probationary wards at the schools at Hanwell, had asked to be relieved from finding sureties for the fulfilment of the Tender. The committee had declined to assent to the request, and recommended the managers to approve this course. The Clerk said that since the report, Messrs. Higgs & Hill had written to say that they were willing to find sureties, and the motion having been withdrawn, the contract was signed.

New Fruit and Vegetable Market.—The *City Press* of Wednesday last states that the Markets Committee of the Corporation of London, having received proposals for the erection of a new fruit and vegetable market at Smithfield, have accepted the tender of Messrs. John Mowlem & Co., at 109,000*l.* The market is to be erected from the designs prepared in the City Architect's office, to harmonise generally with the central markets for meat, poultry, and provisions, already erected at Smithfield.

House-Building in New York.—During the eight months ending on the 31st of August there were 1,458 houses erected, at a total cost of $16,351,512, against 1,128, at a cost of $10,702,200 in the corresponding period of 1878, showing an increase of 322 houses built and $5,649,312 expenditure in favour of the present year. In the same period of 1879 there were 1,071 houses rebuilt or altered, at a cost of $2,568,616, against 943 at a cost of $2,918,147 in the parallel period of 1878.

Caution.—A man is perambulating the country calling himself a "patentee analyst," and offering recipes of colours and glazes to brick, tile, and earthenware manufacturers. Our readers, if favoured with a visit from this ingenious individual, before they part with any money, would do well to make careful inquiry if he is to be found at the address he gives.

Llanbadoc School Board, Mon.—On Thursday, the 2nd inst., the above Board held their monthly meeting at the Old Town-hall, Usk, when the plans submitted in limited competition by Mr. E. A. Lansdowne, architect, Newport, for new schools at Usk and Glascoed, were selected.

The new Theatre Bellecour, at Lyons, has cost 3,000,000f., and has been built by M. Guimet (whose father made a fortune out of "washing-blue"), and some other Lyons merchants. The new theatre is somewhat in the style of Covent Garden, London. The theatre will have no permanent *troupe*, with the exception of a *corps-de-ballet*, an orchestra, and choruses.

The Dusseldorf Academy.—The inauguration of the new building of the Academy of Arts of Düsseldorf will take place on the 20th inst. The architect is Herr Hermann Riffart. A view and description of the building were given in the volume of the *Builder* for 1877, pp. 344-46.

Dumbarton Masons.—The masons employed by one or two of the largest builders in Dumbarton have started work at a reduction of ½d. per hour in their wages. The masters wanted to reduce them from 7d. per hour to 6d., and to introduce fortnightly pays; but the men struck, and afterwards agreed to take 6½d. and fortnightly pays, to which the masters assented.

The Ilkeston School Board recently invited designs from five architects for their first block of school buildings to accommodate 600 children. Of these architects they have now appointed Mr. Tait, of Leicester, conditionally on his embodying the wishes of the Board in a design not exceeding in cost 4,000*l.*

Photographic Society.—The exhibition of this Society, now open at the Water-Colour Society, Pall-mall East, well deserves a visit from those who take an interest in this art.

TENDERS

For the erection of eight dwelling-houses at Dilston-grove, Rotherhithe. Messrs. Herbert Bean & Co., architects:—

Parish	£2,300 0 0
Castle	2,199 0 0
Tarrant & Sons	2,143 0 0
Hobbs	2,095 0 0
Marsland	2,046 0 0
Teesdale	2,020 0 0
Sharpe & Mills	1,995 0 0
Wilkins	1,927 0 0
Buttley	1,880 0 0
Lunden	1,859 0 0
Vaughan	1,840 0 0
Warr	1,795 0 0
Downs & Co.	1,790 0 0
Bullers	1,730 0 0
Winter	1,720 0 0
Almond	1,710 0 0
Stubbs	1,710 0 0
Balaam, Bros.	1,700 0 0
Etheridge	1,695 0 0
Webb	1,675 0 0
Crisp & Temlin	1,447 0 0
Chafin	1,440 0 0

For the construction of roads and sewers on the Cadogan and Hans Place estates. Mr. W. Forbes F. Ashdown, engineer:—

Keeble	£1,513 0 0
Nowell & Robson	1,293 0 0
Mowlem & Co.	1,265 0 0
Killingback	1,220 0 0
Ford (accepted)	995 0 0

For the erection of a detached villa on the St. Margaret's Building Estate, Rochester, Kent, for Mr. W. H. Judd:—

Naylar (accepted)	£1,150 0 0

For alterations to the Duke of York, Ormond-yard, St. James's, for Mr. Dilling:—

Ashley	£310 0 0
Eaton	265 0 0
Marr (accepted)	242 0 0

For alterations and additions to No. 9, Little White Lion-street, Seven Dials, for Messrs. Combe & Co. Mr. H. E. Cotton, architect:—

Toms (accepted)	£420 0 0

For the erection of church-room for the parish of St. Leonard, Heston, Middlesex. Mr. Edward Monson, jun., architect:—

Gammage	£801 16 0
Hiscock	590 0 0
Nye	586 0 0
Hunt	550 0 0
Harris	547 12 0
Brunsden (accepted)	534 0 0

For additions to the West Ham Union, Leytonstone-road. Mr. L. Angell, architect :—

Webster	£14,499	0	0
Perry & Co.	14,359	0	0
Crisp & Tomlin	13,867	0	0
Jones	13,850	0	0
Wall	13,507	0	0
Prout	13,501	0	0
Grimwood & Sons	13,463	0	0
Morter	13,430	0	0
Crabb	13,329	0	0
Atherton & Latta	12,834	0	0
Cox	12,830	0	0
Nightingale	12,733	0	0
Hatton	11,860	0	0
Gregar	11,649	0	0

For alterations to Infirm Women's Wards and paving a yard at St. Marylebone Workhouse, for the Guardians of the Poor of St. Marylebone. Messrs. H. Saxon Snell & Son, architects :—

Purden	£685	0	0 !
Garrod & Smith	648	0	0
French	644	18	0
Howard	580	0	0
Morris	575	0	0
Williams & Son	520	0	0
Bamford	475	0	0
Hall, Bros. (accepted)	377	0	0 !

For the erection of the third asylum for the county of Surrey. Mr. G. H. Howell, architect. Quantities by Mr. John Scott and Messrs. Widnell & Trollope :—

Holland & Hannen	£215,430	0	0
Trollope & Sons	213,675	0	0
Peto, Bros.	208,191	0	0
Higgs & Hill	206,789	0	0
Farnell & Son	206,000	0	0
Browne & Robinson	203,697	0	0
Brass	202,851	0	0
Kirk & Parry	200,774	0	0
Chappell	198,640	0	0

For stabling and other works, Fawkham Manor, Kent, for Mr. H. B. Hohler. Mr. F. Boreham, architect :—

Horlock (accepted)	£241	0	0

For painting, graining, and papering seven houses in Geraldine-road, East-hill, Wandsworth, for Messrs. E. & G. Neal. Mr. P. Murfin, surveyor :—

Horton (accepted)	£420	0	0

For the erection of new farm-buildings, St. Mary's, Hoo, Kent :—

Naylar (accepted)	£893	0	0

For the erection of an additional school-building, with outbuildings and fittings, &c., complete, in rear of No. 71, Stepney-green. Messrs. Davis & Emmanuel, architects. Quantities supplied by Mr. H. P. Foster :—

Brass	£1,988	0	0
Wall	1,950	0	0
Williams & Son	1,930	0	0
Cox	1,917	0	0
Wood	1,876	0	0
Rider & Son	1,838	0	0
Grover (accepted)	1,833	0	0

For repairs and alterations to Aged Pilgrims' Friend Society's Asylum, Camberwell. Mr. Robert P. Whellock, architect :—

Hawkes, accepted.

For the erection of offices in Lime-street, for Mr. Lang. Mr. William Wimble, architect. Quantities supplied :—

Dove, Bros.	£6,476	0	0
Scrivener & Co.	6,242	0	0
Morter	6,192	0	0
Laurence	6,110	0	0
Colls & Son	6,059	0	0
Brass	5,953	0	0
M'Lachlan & Sons (accepted)	5,931	0	0

For additions, alterations, and repairs at Messrs. Adey & White's brewery, St. Alban's. Messrs. Field & Burnet, architects :—

Wilson & Exton	£1,122	0	0
Burgoyne & Son	1,022	0	0
Miskin	994	0	0

For erecting parsonage-house at Christchurch, Hants, for the Congregational Building Committee. Messrs. Kemp-Welch & Pinder, architects. Quantities supplied by the architects :—

Davis & Son	£1,039	0	0
M'William	1,025	0	0
Ellison, Bros.	993	0	0
Hoare, Bros., & Walden	975	0	0
Jenkins & Son	930	0	0
Walden (accepted)	856	0	0

For the erection of baths and washhouses at Rotherhithe, for the Vestry of the parish. Messrs. George Elkington & Son, architects. Quantities by Messrs. Franklin & Andrews :—

Dickerson	£23,700	0	0
Croaker	22,885	0	0
Tarrant & Sons	22,733	0	0
Batley	22,709	0	0
Braid & Co.	22,500	0	0
Fish & Co.	22,370	0	0
Lintield	22,240	0	0
Elkington	21,749	0	0
Perry & Co.	21,479	0	0
Nightingale	20,947	0	0
Wall	20,350	0	0
Greenwood	20,300	0	0
Crisp & Tomlin	19,912	0	0
Rider & Son	19,843	0	0
Stevenson	19,840	0	0
Shepphard	19,735	0	0

For alterations and additions at 4, York-street, St. James's, for Mr. Beaton. Mr. D. Haylock, architect :—

Uff (accepted)	£745	0	0

For the Hamlet Valley sewer extension for the South-end Local Board. Mr. B. R. Harrington, surveyor :—

Firmin, Hill, & Co.	£1,342	0	0
Storey & Co.	1,242	15	7
Marshall	1,056	0	0
Strachan & Co. (accepted)	800	0	0

For the erection of premises in connexion with Balham Congregational Church. Messrs. Searle, Son, & Hayes, architects. Quantities by Mr. F. Downing :—

Belham & Co.	£2,325	0	0
Macey	2,096	0	0
Higgs & Hill	2,084	0	0
Adamson & Co.	2,081	0	0
Dove, Bros.	1,995	0	0
Wilson & Exton	1,977	0	0
Chandler	1,799	0	0

For rebuilding farm-buildings at Westerland Farm-Maridon, near Paignton, Devon. Messrs. Tarring & Wilkinson, architects :—

Wills, Bros.	£828	0	0
Vanstone & Mumford	797	10	0
Goss	796	15	4
Evans	779	0	0
Vanstone	729	0	0
Davis, Bros. (accepted)	666	0	0

For additions to warehouse, Southwark Bridge-road, for Mr. F. H. Grey. Mr. E. H. Burnell, architect. Quantities supplied :—

Stoner	£2,811	0	0 !
Down	1,580	0	0
Crosker	1,569	0	0
Abraham	1,559	0	0
Palmer	1,549	0	0
Larke	1,518	0	0
Sargeant	1,533	0	0
Cardus	1,400	0	0
Outhwaite & Son	1,340	0	0 !

Municipal Buildings, Hastings.—For "Bradd & Co." read "Braid & Co."

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1915. SATURDAY, OCTOBER 18, 1879.

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Morals and Manners: in the Play and at the Play.

NY discussion as to the power of the drama as a moral teacher is likely to take a more direct and practical turn if it follows on after certain clear ideas have been arrived at respecting what naturally comes before us as a previous question, the power of the arts generally, —of Fine Art in any of its festations, in exerting a truly modifying nce upon character. This previous ques- cannot be better considered than on occasion when the drama has to be dicated upon; for the drama, as we know, properly represented and worthily, ves a combination of all the arts, and participant in the influence of all and , be it salutary or mischievous. Lyric y and music are called in, if only to furnish sional embellishment. Landscape-painting shes scenery, and scenery may combine landscape, exhibitions of architectural ts, distant and near at hand, both accu- y and engagingly, if only due study be ed; and what need is there to speak of the varied opportunities for management of r, composition, grouping, and pose,—the e resources of the historical painter and sculptor,—in the living panoramas of the . Superinduced upon all are the qualifica- which an orator describes as the very soul atory and eloquence,—

> "Art and words and worth,
> Action and utterance, and the power of speech,
> To stir men's blood."

s in the fact that the drama is an art wed with that power of articulate speech h especially distinguishes responsible hu- ity, that its bearing on morality seems liarly open to challenge; but it does not its characteristics as an art in common others, though it may give enhancement extension to those characteristics.

he function of the arts generally is to address sensibility to beauty, taking this sensibility s very widest significance as responsive to y imaginative excitement, from the ludicrous e sublime; to address this sensibility, which ns to stimulate and in natural course to elope, and to cultivate, which means to refine The development of interest in such plea- s has an inevitable tendency to re-act upon intelligence; the influence in this direction ariously positive in various arts, but a certain rged basis of intelligence is indispensable every advance in appreciation of the witty the elegant, the beautiful. There is truth in this for even such arts as may seem to draw least upon the intellectual powers; let us say, for instance, without invidiousness, in the cases of devotees to quartettes or blue china. How far the observation applies to such arts as poetry or historical painting it is not necessary to say. We touch here upon a certain indirect influence of the arts upon morals; as the occupation with interests that are at once both innocent and edifying, that involve no discomfort or damage to others, and that in many cases are naturally or necessarily participated in by many peace- fully together, at the very lowest point of view, withdraws so much time from the chances of being abused, and prepares for the withdrawal of more thereafter. To put the matter bluntly, when people are being innocently, at least, and to a greater or less degree instructively, enter- tained, they are out of mischief for the time, and acquiring a taste that at some future time, also, may keep them out of mischief.

We do not, however, get very far in this way towards the appreciation of the fine arts as very important moral agencies,—as capable of giving a distinct moral set to the sympathies, to the character,—character which, by its very derivation, implies somewhat permanently graven, not movable like disposition, or habitually in flux like humour.

Lorenzo seems to pay but a left-handed com- pliment to *Jessica* when he explains the effect she finds from sweet music by that produced upon

> "A wild and wanton herd,
> Or race of youthful and unhandled colts. . . .
> By the sweet power of music;"

but he speaks to very philosophical purpose as he goes on,—

> "—— therefore the poet
> Did feign that Orpheus drew trees, stones and floods;
> Since nought so stockish, hard, and full of rage,
> But music for the time doth change his nature."

Even so,—*for the time;* but we are in search of somewhat that will affect, let us say, even a class that should not be calumniously described as "stockish, hard, and full of rage" with the blessed permanence of harmony and order. We turn to another poet,—Shakspeare's own "capricious poet, honest Ovid,"—and we have an enunciation well worn in many a citation, but still worthy of further analysis: "Faith- fully to have studied the liberal arts, he tells us, softens the manners, and does not permit men to be violent." If this be true we are approaching what we are in search of,—the reclamation of the "rough." For, let us look facts fairly in the face. If we are still to admit the division of our population into the two nations which once gave a second title to a political or politic novel, the line of demarcation will not run between agriculture and manufacture, and assuredly not between the closely inosculating classes of the well-to-do and the poor, or the capitalist and labourer, but between the civilised and orderly, and an unhappy understratum of population whose limits are sharply enough de- fined on one side by the course of criminal law, but on the other and the better shades off towards the pauperism that is the fittest subject for commiseration as due to misfortune in later life or to the miserable circumstances that en- tangled their victims as soon as life began; and if we are to be just we shall not exclude from the class which partakes of the worst characteristics of "roughs" considerable num- bers who have no poverty to palliate their faults of coarse behaviour and unfitting language. A few stray examples of the genuine "rough" may cause discomfort in a country district or a small town, which is a standing annoyance, but it is only the inhabitant of one of our larger cities who can perfectly, and how painfully, realise the numbers, the universal distribution, and the moral unculture of the class,—who becomes conscious how serious a proportion they may form in any of those crowds that come to- gether in a moment, as if out of the ground when an accident or casual disturbance in appearance interrupts for a few minutes the orderly flow of busy human traffic in our streets. The infallible symptom of this wretched social disarrangement is audible language,—equivalent of the mark of the Beast, and which seems to involve condemnation as utter and as hopeless. We ask our poet,—our professor of one of the very noblest arts,—but he, alas! tells us that for art to have a chance of influencing the Roughs,—the *feros*,—it must not only be art which is "ingenuous,"—refined, but studied also with that faithful assiduity which will result in familiarity and even in accomplishment. This is, in fact to refer us for our remedy to the School Board; but the School Board has enough to do to secure the mastery of the three primary Rs, and if a fourth is added it is of a utilitarian character — Roasting. The advice, however, at least puts us upon the task of doing what we can to eradicate such art as there is about the world, that is not ingenuous, not refined,—that is, in fact, coarse, and therefore not, properly speaking, art at all, but a false pretence and a mischievous impersonation of art. Can nothing be done to relieve our walls and hoardings of pictorial advertisements, which are hateful and horrible in every sense,—representations of brutality and violence, of moral and physical degradation, or of exhibitions that are absurd and approach as nearly to hideousness as any- thing can that is not absolutely gross? Architects will do a public service if they will reserve a veto upon the displays which are made on the erections that protect the public from no annoy- ance of dust or what not while their works are proceeding, so offensive as these pictures of whatever is provocative of moral disgust. This, in fact, brings us at once to the consideration of what is made a standing objection to the drama, its liability to tender to the world in the guise and with the pretensions of elaborate art, a pabulum which is only fitted to debase the taste and deprave the morals. No one of candour, that entitles to take part in any discussion, will think of ignoring or denying that talent and

almost genius,—almost but never quite,—have found evil exercise in mixing poison with works of marvellous creative power, and where no definite evil intent is in question, the drama, like some literature and some periodical newspapers, has been too ready to minister vulgar excitement to vulgar tastes. It is to be feared that competition literary, and even more conspicuously pictorial, has within the last few years caused acts and scenes of simple bloodshed and accident to be presented too liberally to a world that lies outside the orbit of circulation of the "Penny Dreadful."

But these depraved and depraving tendencies and appetites do in fact only demonstrate the very restlessness of spirit which it is presumed to be the function and the force of truly fine art to harmonise.

The problem, therefore, complex enough no doubt, seems to be to promote the elevation of art to a truly refined pitch and standard and then to secure that it shall not only be accessible to all the classes whom it is most desirable to influence, but to lead up these classes to a disposition and an eagerness to avail themselves of this accessibility. Now, it is in vain to expect that such a lively craving for what is best can be created immediately. The pilgrims on their way to the lofter summits of art must be allowed an indulgently circuitous route and many an intermediate resting-place. The main difficulty in this pilgrims' progress also is to get the adventurers clear through or clear out of the slough of despond at the beginning, at the same time that we take good care of a worthy prospective reward. But veritable fine art stoops condescendingly, accommodatingly, to meet the advances of those who can only start from even the very lowest platform. Three of the arts are especially adapted for welcoming and fostering the most unpromising neophytes of beauty; these are music, including song, and painting and the drama. As regards music, we may say that, like its own harmonious scale, there is no repellent interruption between the most rudimentary forms and the highest summits that musical genius has attained to. The author, whoever he was, for he was not Dibdin, of "Here a sheer hulk lies poor Tom Bowling," joins hands through many an intermediate link with Handel and Beethoven, with Palestrina and Mozart, and the roughest sailor whose heart is warmed by this beautiful song as the hearts of our soldiers were warmed in the days of the Mutiny by "Bonnie Annie Laurie," gives proof of the vitality within him of sensibility to beauty which opportunities might expand like a germ of noblest enjoyment.

Painting, again, is an art which has attractions for those who stand but at the very verge of intellectual culture, at the same time that, in its highest manifestations, it challenges the highest powers of appreciation. Criticism, be it admitted, is apt to be over-fastidious, or rather fastidious out of place; it too often assumes a right to grumble at every picture which cannot claim to such merit as would make the National Gallery its due and ultimate destination. But second, third, and fourth rate pictures, even in second, third, and fourth rate taste, may still have a share of beauty in their degree, and satisfy those who have a right to be satisfied, and deserve to be satisfied, with what beauty they can appreciate,—and we may add afford,—and waiting better things. It certainly seems a pity that exhibitions of paintings of a class that may be widely popular, should not be constantly accessible in the midst of those localities where the humanising influence of the arts is most required. The solution of this difficulty must be in some measure an architectural solution,—a matter of sites and structures to begin with. As regards the subjects of paintings to be exhibited, and the class, it were well to avoid an overdose of Gian Bellini, or Botticelli, and Carlo Crivelli and the like, or even of Titian and Rembrandt. Landscapes in oil and water colour, and those in style that are of the less sophisticated, appeal to very simple but very sincere sensibilities; and then whoever has observed what clusters gather to what pictures are displayed in the shop-windows, well know that subjects of adventurous and violent incident, where there is some story that is obvious, or a story to be made out, divide attraction with incidents of every-day and even common-place life,—anecdotal pictures of Frith, Faed, Nicol, Leslie, &c. The same observations hold good for the drama: it appeals to even those who never derived a hint of knowledge from a printed page; and here again dramas, and the representation of dramas, may be many degrees, indeed, below the standard which accurate and elevated taste is disposed to tolerate for itself, but still may be well deserving of toleration. Let any of us turn back to the literature which charmed us in youth, or even in early manhood, and much of which was then received unhesitatingly as Classic for all time,—and we may be indulgent to predilections that embrace enthusiastically a partisanship for productions that we now ourselves are wearied by. Not that we must shut our eyes to the fact that a progress from bad to worse is possible, as well as the happier progress from bad to better.

Now, in the case of any other art,—of painting let us say, or of music, nothing tends so much to secure that the progress of taste shall be in the right direction as some experience in practice, if only in but vague attempts. No such suggestion is thought of as recommending a plunge into the dreary and desperate experiments of private theatricals; but there still remain exercises which may be pursued among friends without any tedious or expensive arrangements and apparatus, and that will sharpen wits and correct sensibilities to the most refined effects in a manner which will secure the better applause for the better dramatic performance. The practice of frank and expressive reading aloud and recitation in the presence of others who are to be united to criticise and correct is a resource for leisure hours that is open to all, and if persevered in for a little time will not only cultivate a taste for poetical subjects and familiarise with poetical forms of expression, but will attune the ear to the perception of refinements of enunciation and emphasis which will speedily make slovenliness of delivery, and vulgar rant unbearable. In no respect does stage differ from stage,—nay, in no more important respect even on the best stage does one actor or actress stand distinguished from the rest than in the delicacy and force of management of the human voice in the expressive delivery of English sentences which have been composed in order to give opportunity for the display of the full power and finest graces of the voice. Much may be hoped for the future, if we can confidently hope that the thousands who are now at school are in any proportion really learning to read, to transfer visible sentences into audible somewhat less mechanically than the press transfers the ink from the type to the paper. But still we come back to the requirement of a stage established under such conditions of permanence that it shall command uniform excellence in all its departments of acting, and present a standard of refined accomp'ishment that can never exist but occasionally and precariously among companies of ever-dissolving and re-arranging elements,—elements that dissolve and are rearranged so constantly in obedience to a primary requirement that the leading stars shall "have no fellows in the firmament."

As regards progressive excellence in plays themselves, the world in this art as in others must be dependent very largely on the contingencies of the appearance of specific genius,—though something may perhaps be done to favour the chances of genius being allowed its indispensable opportunity. It is naturally by the multiplication, not by the restriction, of dramatic performances that the manifestation of dramatic faculty of distinguished quality may be expected to emerge from time to time.

As regards the progress of the Drama, rather in the direction of harmlessness at least, and then of true moral influence rather than towards debasing and corrupting exhibitions which we all know are very distinct possibilities, there may be a point assuredly at which it is necessary for positive legal control and interference by censorship, or otherwise; but the sooner such control is superseded by the force of public opinion and right feeling the better, even though it may be convenient in such cases for a censorship to be the agency for giving prompt effect to the public, the popular will. There may seem to be more difficulty in preventing the spread of mischief from such plays as justly are allowed very high dramatic merit, but which tend to engage the sympathies for character that does not truly deserve them. The observation does not apply merely to such plays as dwell upon,—it may be said gloat over,—incidents, topics, social pests, and social misfortunes, which are better behind a veil than in the glare of the footlights, that will carry us back to the time when

> "The modest fan was lifted up no more
> And virgins laugh'd at what they blush'd before."

Plays of this kind are often importations, and we know not whether if they are produced in a country where marriages are arranged with no reference to the personal predilections of those principally concerned, there may not be a true moral value in the forcible exhibition of the consequences of arrangements of mere sordid convenience in the later inevitable revolt of the sympathies. But let us take the case of the "School for Scandal" in which the part of *Charles Surface* is a parallel,—in fainter colours, no doubt,—to the *Tom Jones* of the novelist. His brighter characteristics are certainly thrown into unfairly brilliant relief by contrast with the so heartily blackened hypocrite, his brother *Joseph*, who replaces the *Blifil* of Fielding. But he is a thoroughly good-for-nothing fellow, and how little he possesses the finer feelings which his hypocritical brother professes, appears in the scene of the discovery of *Lady Teazle*. His coarse enjoyment of the humiliation of both wife and husband ought to revolt the spectators, who, however, doubtless have been so led on to favour him, that they usually acquiesce in and applaud his dismissal with the honours and rewards of a hero and a gentleman. All that can be said is, that Sheridan, in lashing one set of vices let off too easily another set that he had greater tenderness for,—compounded in fact

> "For sins he was inclined to
> By damning those he had no mind to."—*Hudibras.*

But his lash comes down heavily and effectively, and the class of culprits to which the scape-grace belongs come in for their share of castigatory attention in many another play. So it is that only the very greatest writers of fiction, of all, whether in poetry or prose, and on the stage or off it, can be relied upon for keeping all moral characteristics in due relation, and however they may distribute good or ill fortune, allowing no ambiguity at all to rest on the relative merits and demerits, elevation or baseness of the characters and actions that they set before us. The dramatists and poets generally may admit this, and must be allowed a fair retort upon the professed moralists, who are mortal also, and if put severely under examination will prove as often it may be, to fail in the far simpler task of classifying abstract forms of heinousness and excellence and adjusting a duly graduated scale of applause and reprobation.

The dramatist again, may be forward to claim that from the very nature of his instrument he has the power of bringing home the sense of right and wrong to a far more comprehensive variety of cases than the teachings of the moralist can embrace, and that so far as his teaching is good it must tell with all the force that is accumulated upon example as compared with precept. He claims, in fact, the prerogative which Horace asserts for Homer in comparison with the Stoics,—as teaching both more comprehensively and better than Chrysippus and Crantor, what is beautiful and what base,—what expedient and what not so:—

> "Qui, quid sit pulchrum, quid turpe, quid utile, quid non,
> Plenius ac melius Chrysippo et Crantore dicit."

But here it is precisely that we have an expression of the influence of fiction, on the stage or off, upon morals. Fictitious examples will cultivate our sense of what is prudent or imprudent, what is handsome and honourable, or base and degrading; but in doing so it cannot be counted upon any more than Lorenzo's music for changing our nature more than for the time. The very fact that the lessons which are presented to us are fictitious deprives them of the true pungency and penetration of proper examples. The influence, let it be frankly allowed, does not go deep enough to take immediate effect upon motives,—that is, upon the ultimate sanction of morals in last resort. To appreciate moral distinctions as matters of taste is one thing, to feel them as matters of principle is another. The difference is as great as when we attempt to substitute a theory of prudence or enlightened self-interest in the place of a conscientious sense of duty. Not as a matter of good taste any more than from a prudential motive has a steersman allowed himself to be suffocated at the wheel in order to save the passengers of a burning ship rather than leap overboard, and save himself by swimming. But if the sense of what is right and what is wrong is not in itself conscientious resolution, it is a necessary prelimi-

nary, and it is the most natural and most favourable introduction to it. The sense of what true heroism is must at least precede the practical sympathy which impels to the heroic. What is true of heroism is true of all other moral qualities;—that the most truly excellent are susceptible, under treatment by a poet, of giving him his effects of most perfect beauty; and that his most effective contrasts must infallibly be obtained from whatever is morally most to be condemned, gives the rule for all intermediate gradations, and makes it certain that an art, which, like the drama, deals so directly with all human habits and passions under circumstances ever varied, must rely at last upon a scale of taste that is coincident with that of morals.

It is time for our homily to close; in days when evolution is held to account for all the mysteries of nature we can only be applauded for going to the fountain-head,—to the nursery,—for a concluding illustration. The wiser controllers of discipline there will tell us that, crude as the theory may seem, it is necessary that the crude humanity there dealt with should be in the first instance addressed by physical pleasure and pain,—that respect must rest on a basis of possible discomfort, and love, alas! be first promoted by what is kind in a tangible, not to say a tasteable form, by tip or tartlet. Further we listen, with respect, as we are told, that rebukes of misconduct as naughty and still more as wicked, are mere *brutum fulmen*; they refer to a sanction and a standard that are as yet far beyond the infant ken. Not so disapproval which is expressed in terms which may be called æsthetic,—which check misbehaviour, as unpleasant, as not pretty, as disfiguring, and so forth. In due time the identity of the beautiful with the good will be spontaneously recognised, and then the denunciation of ill-doing as either punishable or vulgar may be dispensed with.

The moral influence which can be ascribed to the drama comes in intermediately between that which is exerted by the coarse agency of law and bitter consequences of imprudence, and that which is due to the ripening sense of responsibility in its most elevated appreciation; it comes in intermediately,—may come in most effectively, and looking at the existing conditions of society, we are much disposed to say, must come in indispensably.

THE CONFLICTING CLAIMS OF ART, HEALTH, AND COMMERCE.

Correspondence from Rome mentions the proposal of a plan for connecting the ancient capital of Europe directly with the sea, by means of the railway to the mouth of the Tiber, and an improvement of what is now called the Port of Fiumicino. The subject is one of extraordinary interest, from many points of view. In this neighbourhood was discovered a fragment which, though reduced to the state of head and trunk alone, is perhaps the most beautiful of all the relics of Grecian art yet yielded to the explorer by the rich graveyard of Italy. We refer to the Cupid of Centocelle, as to which we think little doubt can be entertained that it is a Greek copy, of the purest time of Grecian art, of the famous Cupid of Praxiteles,—the *chef d'œuvre* of that immortal sculptor. There is a cast of this statue (or was some time since) in the fine collection at the Crystal Palace; and there is a very beautiful photograph of the original among the collection of the Berlin Photographic Company. The lovely Psyche, at Naples, in a yet more mutilated condition, forms a pendant to this noble marble, which almost breathes with the expression of the brightest youthful beauty. We must be pardoned for the forgetfulness of statistical and sanitary data caused by the suggestion, by this find, of what may yet be lying hidden in the sands of the delta of the Tiber, to reward the toil of the building of the harbour.

With whatever novelty the expression Porto di Roma,—or Rome-a-port,—may strike on the ear of the Englishman of the nineteenth century, the idea of a direct communication with the sea, involving of course the construction and maintenance of a proper port, is as old as regal Rome itself. The arrival of grain-laden vessels from Africa in the very city has been an object repeatedly proposed, and at times, if we remember rightly, actually attained. The great drawback has been the unending character of the work. The improvement of the Tiber has been like the weaving of the web of Penelope. We can form but little idea, from acquaintance with our tideless seas, of the difficulties with which the engineer has to struggle on the banks of the almost tideless Mediterranean. Three objects, of almost equal importance, are set before the hydraulic engineer, whether he be called to work on the Rhone, the Tiber, the Po, or the Brenta. First, he is expected to carry off the rapid floods, arising from rainfall, or from snow melting on the Alps or the Apennines, which are often of very sudden rise and irresistible fury. Secondly, he must do that for which Rome is now calling, restore or keep open a port. Thirdly, he has to struggle with the fever and malaria that find a constant home wherever the river deposits of Italy are encroaching on the sea. As one or another of these three objects is pursued, one or other of the remaining requisites may for a time be neglected; until, as it never fails to do, it revenges itself. Then perchance work done, and well done, for one object alone, has to be undone and done over again. The records of the city of Venice afford ample examples of the truth of this remark.

The Italian rivers,—and we may add the Nile and the Danube,—differ from those of tidal coasts in the fact that there is no great tidal wave to keep them to their proper depth. In the Thames the removal of obstacles to the navigation by the Thames Conservancy Board has now been so far advanced, that the river is, in most parts below bridge, not only maintaining but increasing its depth. We do not know how far attention has been called to the silent and inconspicuous action of the Metropolitan Board of Works, in placing certain sills across the stair-ways to the river, and in inserting little cubes of granite in the interstices of the balustrades. But these measures have been found necessary; and they show, to those who can ascertain physical facts by means of slight indications, that the high-water level of the Thames is on the rise. As far as we have been able to ascertain, the river is now rising something like an inch per annum at Westminster. And it is likely to rise considerably higher, to the advantage of the navigation, though the Londoners must look out for proper protection against the vernal and autumnal high tides.

The watershed of the Tiber is more extensive than that of the Thames. The former is estimated at 6,455 square miles, the latter at 5,163, or, including the basin of the Medway, at 6,160 square miles. The rainfall over the Thames basin is averaged at 30 in., that of the basin of the Tiber is stated by Venturoli as 34·8 in., which is the amount registered at Perugia. But the quantity of water which runs down the Thames is only estimated, in the sixth report of the Rivers Pollution Commission, at 6·67 in. in the year. That flowing down the Tiber is estimated by Venturoli at 27·3 in. per year. The irregularity of the discharge of the latter river, however, is something of which we have but little experience in this country. In a recent tabulation of the Italian rivers, compiled by the Ministry of Public Works, while the mean flow of the Tiber is calculated at 169 metric tons per second, the minimum is 100 and the maximum 2,800 metric tons per second. The disproportion, wide as is the range, is not exceptional among Italian rivers.

Under these unusual conditions of feed and of discharge, it is not surprising that the delta of the Tiber gains rapidly on the sea. The advance made since the Christian era is measured by the obliteration of the ports of Trajan and of Claudius. According to plans collected by Sir John Rennie, the gain of the shore is about 2 yards per annum; but this is not so much the advance of a projecting delta as a gradual gain over a whole line of seaboard, extending over a great curve of more than 110 miles chord, stretching from Cape Farnesio to Cape d'Anzo.

It is clear that any serious effort to construct a permanent port on this shifting shore-line can only have a chance of success if it is conducted with a full knowledge of, and in due accordance with, those great operations on the course of the Tiber through Rome which have of late excited such vigorous criticisms and counter-criticisms in English and in Italian journals. The plea raised by an English writer of fiction for the preservation of monuments of which it is the pride of Italy that she is the trustee for the world, is one that strikes a responsive chord in our breasts. But even a deeper note would vibrate if we could present to our readers anything of a picture of the misery and disease caused in Rome by the overflow of the Tiber. Here, as we observed before, we see the different interests which the engineer is called on to protect, in conflict. Health demands one thing; art another; commerce yet a third. How is Father Tiber to be induced to satisfy the conflicting claimants?

If we have not followed the example of other English journals in protesting against the contingent damage to the Farnese Gardens and to certain architectural monuments in Rome likely to be effected by the drainage of the city, it has been not from any want of interest in the question, but from a personal acquaintance with the Italian people, and from a professional knowledge of the care, pain, and anxiety with which the Government have collected the advice of the most eminent of the engineers of Italy, the cradle of engineering, as to the best mode of averting the worst evils attendant on the floods of the Tiber. As to the people, it is impossible to have lived for years among them without being aware that under all the misery and degradation attendant on the subjection to foreign and to domestic tyranny, the memory of the ancient grandeur and the relics of the high civilisation of Italy are never absent among them. Would that English people were as careful of their ancient monuments! Avebury would, in that case, be at this moment as unrivalled a memorial of the gigantic work of a race of megalithic builders as the world could boast. Would that English laws and English legislators had been inspired with such a sense of the duty of the men of the present as trustees for those of the future, as is the case with the Italian laws as to the remains of *antichita*. The only opposition with which such a public benefactor as Sir John Lubbock would then have had to contend would have been the statement that legislation was unnecessary, when there were no foreign Vandals on the soil; that England was proud of the past, prehistoric no less than historic; and that he was no worthy son of England who would make a quarry or a limekiln of her noblest monuments. So, however, it is in Italy. We speak, of course, without prejudice to the thriving manufacture of antiquities of every sort, adapted to foreign taste, and made for foreign purchasers. That, indeed, is a matter not confined to Italy, as our own "Flint Jack" could testify. Nor do we deny that money might be powerful to induce the noble, or even the peasant, to part with those precious relics which the law forbids him to destroy or to sell to the stranger. But in spite of all this, the strong veneration for the past, the appreciation of art as art, and of antiquity as antiquity, is as usual a feature in the Italian, as is his admiration of nature, and his passionate love for the pure air and beautiful scenery of his own lovely land.

In 1876 a report was made to the Supreme Council of Public Works at Rome (we pause to remark on the total absence of any corresponding institution in Great Britain) by a Commission which had been nominated to inquire into the means of preventing inundation from the Tiber in the city of Rome. Nineteen plans were exhibited by the Commission, and information as to the steps which had been taken for the protection of other cities, notably, Paris, Lyons, and Verona, are contained in the voluminous report. All such projects as,—at the expense of twenty minutes of reflection, a sheet of paper, and a penny stamp,—have been freely offered, in the columns of the daily press, as to floods and water-supply in England, were exhaustively discussed by the Commission. The chief of these were,—(1) The re-wooding of the banks of the river; (2) the formation of store-lakes, or basins of reserve; (3) total deviation of the course of the Tiber; (4) partial diversion of its water; (5) limitation of the flow of water allowed to enter the channel through the city; (6) rectification of the channel; (7) additions to the bridging and lateral defences of the river.

As to these projects, the reporter of the Commission, Signor Pareto, points out that it is the duty of the Minister of Agriculture to watch over the protection of existing woods and forests, and to encourage new plantations; although the operation of any proceedings of this nature would be slow in its effect.

As to store-basins, of which we have heard not a little for our own supply, the great authority is the Memoir of Commander Lombardini on Inundations in France, which was

published at Milan in 1858. After the disastrous floods of 1816 and 1856, it was proposed to form numerous store-basins in France, after the pattern of those which have been formed by the banks of Pinay and La Roche, on the course of the Upper Loire, which serve for the irrigation of the plains of Forez. As many as eighty-eight store-lakes were proposed by M. Comoy, on the the Upper Loire and its affluents alone. One of them, near St. Etienne, retained by a bank 54 ft. high, was commenced in 1861; but the water was afterwards used as a motive force. Signor Lombardini remarks that the cost of the basins proposed would have amounted to 2,600,000*l.* to store an aggregate quantity of 520 millions of metric tons of water. That would be equal to a pound sterling for the storage of 200 tons. In the Indian tanks and artificial lakes, from 20,000 tons to 70,000 tons of water per annum are stored per pound sterling of capital outlay. The cost of land, in the case of the Tiber, would be excessive. The charge of maintaining lofty banks, and of interfering with the natural periods of the floods of the various affluents, would be considerable, and this set of schemes was definitely condemned.

Total diversion, in the case of Rome, is impracticable. The consistency of the soil is so slight that on the construction of a new channel a powerful stream would cut its own course, and the cost of making bridges and keeping up communication would be excessive. The abandonment of the actual bed through the city would be a fertile source of malaria even if it were filled up. Rome would have been rendered uninhabitable during the progress of the works. Water carriage would be stopped, drainage would have to be constructed, and what, the Italians farther say, would Rome be without the Tiber!

A partial diversion of the Tiber was attempted by the Emperor Trajan; and Pliny recounts how the river burst the banks the emperor had made, and spread a deep flood. Some antiquaries are of opinion that the canal of Fiumicino, intended to put the port of Claudius in connexion with Rome,—a precursor of the present project,—is here intended. Each plan for partial diversion and for restriction of the water allowed to come within the walls has to contend with special difficulties, on architectural, orographical, and geological grounds,—difficulties more numerous and complicated in the case of Rome than perhaps in any other spot in the world.

The Commission was thus reduced to the less heroic expedients of the clearing the channel of the Tiber within the city from the numerous existing obstacles (including the curve by the Farnese Gardens), and the walling the channel within, and embanking it without, the city, in such a manner as to contain the greatest floods. The dimensions determined were as follow.—The "urban trunk of the Tiber,"—that is to say, its channel through Rome,—is to have a minimum width of 109 ft.; the walls are to rise to the height of 55 ft. 3 in. above the zero of the Ripetta hydrometer; and the bed of the river is to have an even gradient of 1 in 2,500, or a little over 2 ft. per mile. This channel has been designed on the principle that it would be sufficient to discharge a flood equal to that which occurred in the year 1598. This was the highest rise registered in Rome, rising 8 ft. higher than did the disastrous flood of 1870.

It will be seen from the foregoing indication of the measures taken by the Italian Government for the protection of Rome from the terrible disasters of the Tiber flood, that questions of an æsthetic kind must be subordinated to the first great point of popular safety. We may speak of drainage as a sanitary matter; but to throw up a bulwark against a flood rushing down at the rate of nearly 3,000 metric tons per second is a matter of life and death to many, and of primary urgency to all the inhabitants of the lower-lying districts of Rome. Melancholy as it may be to witness the destruction or removal of any ancient monuments, we may, at least, take comfort from the reflection that nothing of the kind is likely to occur in Italy from either wantonness or neglect. If the engineer and the antiquary come into conflict, it is the former to whom, as the representative not only of public health but of public safety, the precedence must be given in this case; and as most of the Italian engineers,—or at least many of them,—are architects, we may feel pretty sure that all that can be done for the protection of monuments will be done, even if it be the removal of a fountain, stone by stone, and its re-erection on another spot.

It is with the fuller information that has been gathered by the Commission on the Inundations of the Tiber before them that the Italian Ministry of Public Works will be able to form a definite judgment as to the proper steps to be adopted with reference to Rome-a-port. Whatever information was possessed by the engineers of Claudius and of Trajan, there is no doubt that those of the present king of Italy will have enriched it with the fruit of minuter researches. There is evidence, both on the Tuscan and on the Adriatic shores of Italy, of two distinct movements which have occurred since the time of the formation of Rome, or, indeed, since that earlier time when what is now the valley of the Po was an arm of the Mediterranean. There has been a steady gain of the land on the sea, which has amounted to some 2,000 square miles in the basins of the Po, the Adige, and the Brenta, since our era; and which, on the Fiumicino shore, is going on at about the rate of two yards in the year. But together with this has occurred a series of upheavals and depressions, which, in Venetia, have even attained the depth of 143 yards; the gradual progress of which has checked or hastened the advance of the shore line at any particular epoch. The rate of depression now going on in the neighbourhood of Rimini is estimated, from observations made by the engineers Lanciani and Paoli, at from 5·6 to 7·2 inches per century. It is obvious that to collect all the available information on this point is an essential preliminary to any wise outlay for the formation of a new port. Constant attention must be given to the maintenance of the depth of water. It is only by recognising that there must be a certain amount of deposit removed every year, that a new port at Fiumicinio can escape the fate of the more ancient ports of Trajan and of Claudius.

While the depression occurring on the Adriatic shore of Italy is said to be constant, though slow, we can bear personal testimony to the fact that movements are alternate on the western shore of the Peninsula. The case of the Temple at Pozzuoli is well known. The alternate depression and elevation of the columns of that structure are proved by the sign of the action of boring molluscs; and, indeed, form almost the A, B, C, of the geological doctrine of contemporary change. It is almost unnecessary to cite the admirable account given by Lyell, in the "Principles of Geology," of this celebrated temple, an account which has neither required nor received any alteration in the tenth edition of that work. In the earthquake of 1858, which had the chief seat of its destructive energy in Calabria and Basilicata, when many buildings were overthrown, and many people perished, the entire circumference of the Bay of Naples, from Sorrento to Baiæ and Misenum, was elevated during the night from 6 in. to 8 in. above its former level, as was apparent from the line of mark of animal and vegetable life on the rocks that lined the bay. Nor did the ground thus raised subside to its former level,—certainly for six years,—or, we believe, up to the present time. We refer to this as showing how wide must be the information of the architect or engineer to whom the execution of such a project as making a port for Rome can be safely entrusted.

That such a scheme is not, however, one to be pooh-poohed is evident from the prices which are cited for transport by land to Rome. At present, we are told by the correspondent of the *Standard*, the difference in cost of transport to Rome for goods of the least valuable class, between the ports of Naples, of Civita Vecchia, and of Fiumicino, is as follows:—From Naples, 16 francs 96 centimes per ton; from Civita Vecchia, 7 francs 48 centimes; from Fiumicino, 3 francs 64 centimes. According to the English rates, there can be no doubt that for such objects as corn,—the conveying of which to the city has always been a great object of anxiety on the part of the rulers of Rome,—a franc and a half would prove an amply remunerating price, if harbour, wharf walls, and railway service were duly combined.

Another point of view deserves a word of comment as connected with the subject we have repeatedly discussed, the influences of the improvement of artillery on the safety of urban sites. Rome is only 20 kilomètres, or 12½ English miles, distant, as the crow flies, from the sea. The new Krupp cannons are said to have attained a range of 24 kilomètres. Considering the question of the depth of water and the distance from the shore within which an ironclad carrying enormous guns may safely approach, it may be said that this is only a sort of fringe of danger, and that the more so as the Italians themselves possess some of the biggest ships, and largest and heaviest guns, in the world, as yet. Still, there is a question of possibility,—mere possibility of mischief should not be allowed, when Rome is the objection. Any works of port construction in Fiumicino must also be works of efficient coast defence.

For us and for the greater part of our readers, perhaps the most immediately interesting part of the subject is that which relates to art. As far as we can judge from experience, art-treasures of rare interest may be expected to be found in any excavations on the site of the Claudian port. At the same time the architectural, the engineering, and the sanitary portions of the enterprise are each attended with difficulty, and are thus each a subject of interest. Nor is it the least of the marvels of the day to see a repetition of the work of the Emperor Claudius proposed under the reign of Humbert of Savoy, and under the Pontificate of Leo XIII.

THE SCHOOL BOARDS ON THEIR TRIAL.

The members of the London School Board are about to seek a new lease of power, such as it is, and the journals are full of arguments for and against the recent policy of the Board. We do not intend to appear as advocate on either side. The matter will no doubt be fully thrashed out, and (while it is not the same thing as saying that the right course will be taken) there is no doubt that the vote of the majority will carry the day.

The subject, however, is one of which many details are so familiar to our own pages, that it is hardly possible to allow the approach of the 26th of November to pass in silence. The question of economy, whether as regards the provision of the fit number of seats and no more, or as regards the cost per head, will no doubt be fully debated in the coming fortnight; and we shall rejoice if, on this point, public opinion takes a definite form.

We also desire that, on any future occasion of providing school accommodation, that important question of light, to which we have called attention, should not be neglected. The marvellous coincidence which, in our number for October 4, we showed to exist between our own recommendations on this head and those which have been adopted as normal for the schools of Wirtemberg, is a fact that should add no little weight to our previous recommendations.

We wish, however, to call attention to one point which we have not seen yet brought before public notice. We hear something of "results," —as betokened by paper work, and by the outcome of competitive examination. The value of these results is usually discussed solely on what may be called competitive data. There is another result which we are anxious to ascertain. Apart from literature,—from reading and writing and cyphering,—what is the general outcome of the last seven years of compulsory education? Are our boys and girls visibly the better for what has been done for them? Do they look less like savages, and more like civilised beings? If so, is the physique of the civilised being equal to that of the savage?

Some of these questions might be readily answered by the registers of the schools, were they properly kept, that is, were they kept on the principle that the main object of education is to develop, not one faculty or another facility, but the future men and women of England. Thus let us take weight and stature as two of those points as to the increase of which registers ought to be kept. Dr. Roberts has shown us, in his "Manual of Anthropometry," that out of 7,709 public school boys, naval and military cadets, and medical and university students, the average height attained at the age of 20 was 69·13 in. The average weight, at the same time, was 152·67 lb.; and the average chest girth was 35·25 in. It is true that this girth (which only increases to an average of 36 in. by the age of 25) is more than 10 per cent. below the Greek canon of manly proportion. To say nothing of a Hercules, a Mercury or a Cupid of the height of 69·13 in. would have been sculptured by Phidias or Praxiteles with a chest-girth of 39·5 in. But passing over that, let us take the average of 13,931 youths of the same

age out of the artisan class in the English towns. Here we find a height of 66·31 in., a weight of 130·6 lb., and a chest-girth of 30·86 in. The deficiency in the latter is here more lamentable. By the Greek canon the average chest-girth ought to be 37·88 in. Thus artisan youths are 18 per cent. below the proportion of graceful humanity in this important dimension. How far, then, let us ask, are the School Board and other schools doing their duty to England by rearing studious young men? Or what is the influence, for good or for evil, on the urban and on the rustic population, of compulsory education? We fear it will be replied that the facts are not collected for answer. But is there any excuse for the want of such a register? Are we in earnest? Do we want to train the men and women of the future, or is there only a scramble between denomination and no denomination to collect as many lambs as possible out of their neighbours' folds?

In the same way let us ask,—What is the effect of what has already been done on the manners and aspect of the children,—on all that would strike a foreigner or a stranger on meeting them as they rush out of school? We are disposed to think that this will depend rather on the master or mistress than on anything else. As we write, we hear the rush and the babble of the dismissal of children from a school in which, during the past twelve months, a certain improvement in aspect and manner has been noted. How far is this general? It cannot be ascertained by the tape and the scale-beam. But the tape and the scale-beam give certain data, which are very closely connected with those qualities which are estimated by the eye and by the ear, but which cannot be more directly measured.

Again, in eight or nine years there is time for a sort of first crop of the new seedlings to have been planted out. How have they sped, with reference to their predecessors? Are they better labourers, better grooms, better men-servants, better soldiers, better in all the callings by which nine out of ten of our youth have to earn their bread? Are they better cooks, better housemaids, better nurses, better domestic servants of all kinds,—better wives for the working man,—better mothers for his children? Here again height, and weight, and bulk may tell us something. But we should like to have the impartial testimony of those who know what young people ought to be, and who have been long trying to make those under their charge what they ought to be, as to these things. Are the children turned out by the schools better, or worse, or much the same, in these respects? If they are not better the highest functions of education must have been neglected for the paper-work fidgeting of the brain.

We should like to see these vital questions of the real, practical, natural outcome of our present method of education taken up by the press, by the pulpit, and by the stage; and echoed by the people in a voice of thunder. We are not underrating the schoolmaster. Far from it. But it is the testimony of all those most entitled to respect as to such subjects that the training of a child is of far more importance than the actual teaching. The greater part of the positive teaching of the school frequently evaporates. What remains is the educated faculty for learning,—for self-teaching. We can appeal with some confidence to the educated young men of the day, whether the result of severe competitive work is not to cram the memory, *for a time*, with much that it never retains afterwards,—if not to give a permanent dislike to all examination subjects? It is possible that the more elementary be the education given, the less will that be the case; but as to that we are without sufficient data for forming a judgment. What we do feel, and that pretty strongly, is that in any case where there may be a division of opinion as to suffrages to be given to this or to that candidate, the weight of our recommendation should be thrown into the scale of him who is intelligently and practically desirous of seeing our schools justified by results, in the best sense of the word, and who will look rather to training than to teaching,—rather to the development of the healthy, orderly, active, moral fathers and mothers of the future, than to "standards" and "payments by results."

The Trevethin School Board, Mon., have instructed their architect, Mr. E. A. Lansdowne, to prepare plans for schools to accommodate 300 children, with master's house, all offices, and boundary-walls.

ON THE RELATION OF FINE ART TO SOCIAL SCIENCE.*

I MUST now pass on to the consideration of sculpture, which offers man one of the noblest modes of expression: witness the works of the Parthenon, that overtop anything that the world has produced in art.

There are many causes why sculpture should languish in this country, and I fear me they are not to be wholly overcome. They arise less from a want of appreciation than from the habits bred in our inclement atmosphere. Sculpture is through birth an alien to all Northern climates, and has but small sympathy with domestic life; she languishes in the family circle, and developes most kindly among races that pass their lives in public resorts, while her best patron is the State. Those who look to the hearth as the centre of life can never love her; where there are firesides there will be few statues. For other reasons, also, she is not in sympathy with the tendency of the English mind; she is the exponent of abstract ideas, and does not deal with complex thought; she is supreme in her own sphere, and queen of heroic action, but she cannot bend like the genial spirit of Painting to the sweet trivialities of daily life.

I do not think it possible that a great school of sculpture can ever flourish in this country, although England has had, and will yet produce, many famous sculptors. A Constitutional Government (how I hate the term in connexion with art!) is often niggardly, ignorant, and meddlesome; yet sculpture should be more dependent for its support on national than on individual employment.

If you glance over the list of our Royal Academicians, you will at once see how small a part sculpture possesses in the favour of that body. The Academy comprises ten painters to one sculptor, and, in its Exhibition, sculpture is allotted one ill-lighted hall beside the vestibule of the building, whilst the great gallery and a dozen more rooms are crowded with paintings. On the opening day eager crowds throng about the works of our favourite painters, whilst the sculpture-room is made a passage or place of *rendezvous* for scattered parties to reunite and chat over their neighbours' dresses. Lately, when a portion of Stevens's great work for St. Paul's was exhibited, none but a few artists and men of letters gave it any due homage; the general public did not bestow on it even a passing glance.

There is no love of sculpture in the nation, and, what is equally discouraging to our sculptors, the dignity of their art is ignored by their fellow Academicians, who have omitted to provide in the Academy even an elementary school of sculpture to guide the early efforts of its students.

This want of sympathy and encouragement has naturally often caused the English sculptor to be untrue to his art; his noblest impulses become frozen by indifference. He says to himself, "Let me accomplish the commissions I receive in the spirit of traffic; I can make my art a prosperous business, and live respectably in my street. The busts of successful aldermen or of local magnates afford the best opportunities of a money success; if they give but little scope to art, they furnish at least a very good remuneration for labour." This kind of blight is fatal, although common enough to sculptors who have been baulked of their first aim in life; it is not uncommon even among painters, although they have seldom any excuse for it except their own incapacity to rise.

There are several materials in which the sculptor labours to embody his conceptions; some are better fitted than others to our climate and to the kind of work most in harmony with the public taste; to these materials English art has lately most wisely directed its efforts. Marble was formerly the material most generally used, to the exclusion of all others, although none can be worse fitted to our climate, for marble loses both purity and colour on exposure to the weather, and crumbles after a time into a blunt and shapeless mass. Nor does it harmonise with the interior of our houses, where the diffused light from our large windows gives a cold and shadowless aspect; in fact, we have not the advantage of sufficient change of light and shade, either indoors or out of doors, in this country to do justice to works in marble.

Of all materials bronze is the best fitted for a Northern climate; it adapts itself to miniature as well as to colossal groups, and is capable of exquisite finish, although a different finish from that of marble.

The weather, so far from doing it injury, adds beauty to its colour, whilst it retains its sharpness of form for almost any length of time. Light and shade are not essential to works in bronze as to those in marble, and the colour of bronze is more in harmony with the interior of our houses.

Marochetti, an Italian, who worked in England, gave a great impetus to the use of bronze, and often adopted it in portraiture as well as in ideal subjects. He was not, to my mind, a really great artist, but he did us a service in this matter. Mr. Boëhm works much in the same metal, and with admirable finish and execution.

Another material that has become popular of late years all over Europe is terra-cotta, which is well-adapted to our country; of all substances it is most ductile, its colour is under control, and its substance is sufficiently durable (although not so fitted for the open air as for the house). Terra-cotta is very suitable for domestic subjects and for the imitation of tissues. While it is less susceptible of finish, it is capable of a livelier freedom of execution than any other material, and retains the mark of the sculptor's hand absolutely on its surface. Those who have lately visited the rooms of the Royal Academy will remember the terra-cottas of Boëhm and Dalou, the French sculptor; they are both truly admirable in their character.

The greater familiarity of artists with these more varied materials has had an excellent consequence on the sculpture of our day. The old custom of leaving the ultimate embodiment of the idea to the mechanical labour of a workman is now discredited. A sculptor of twenty years ago, although supposed to work in marble, but seldom touched it himself. When his clay model was completed his work was done; the marble statue was merely a copy of his clay, and not in any sense an original work. No doubt he made a pretence to do something with the chisel, but that was a myth of the profession. He had none of the workman's knowledge nor of the handicraft of marble work. Now all this is different; the marble of our sculptors passes through their own hands, and receives the impress of their genius.

I have expressed my doubts as to any great development in the future of sculpture, yet I think all will admit that it has made a uniform advance of late years, and has been practised by many men of mark. It is the public I mistrust, not the genius of our artists. Before I pass on to the consideration of painting, I will call your attention to the renewal of a noble practice of the old Italian school. Our painters and sculptors now begin to produce in both arts alike, acquiring fresh knowledge in the one for the practice of the other. Sir Frederick Leighton, Mr. Watts, and Mr. Richmond have each taken first rank among the sculptors as well as among the painters of their time.

There is great likelihood that this double pursuit will become common, and its effect will be to elevate the practice of both arts to a higher standard.

From sculpture we finally turn to painting, which is at present the spoilt child of the nation. Its growth has been abundant, its vitality great, its appetite omnivorous, and its taste varied. To give you a just appreciation of its progress I must, I fear, detain you a short time with the painters of the last century.

Reynolds and his fellows are considered the fathers of our modern school, and against their influence the late revival in art has been mainly directed. In order to understand them we should consider the public for which they worked. The love of art did not then extend beyond the highest classes, and was chiefly confined to young Englishmen of family, who made what was called "the Grand Tour," to refine their manners and cultivate their taste; this was a necessary part of polite education. When such a one returned home, art served him as an occupation and pursuit; he became a patron and collector; the knowledge that he had acquired in his journeys through Europe became his stock-in-trade for after-life; he had taken his diploma as fine gentleman and a *dilettante*. No doubt a great number of this class acquired a very extensive knowledge and a highly-cultivated taste, which was cosmopolitan and eclectic, but without a particle of enthusiasm. The very name of *dilettanti* by

* By Sir Coutts Lindsay, bart. See p. 1123, *ante*.

which they were equally known in Italy and England, sufficiently marks their character.

Painting was dependent for support on these fashionables; they formed a *coterie*, and not a public, and the works produced under their patronage took the tone from them. The young artist of that day would have looked blankly in the face of any friend who alluded to the public in connexion with art, but the mention of a patron would have brought the light to the artist's eye and the colour to his cheek.

Although I am about to point out to you some defects of Reynolds, I will yield to none in my admiration for his genius; he knew more on the theory and practice of the schools than any painter of his day, and made magnificent use of his knowledge in the number and beauty of his own works. Alas! in common with his fellows, he seldom sought Nature face to face, and never properly studied the grammar of his profession; he was culpably negligent in drawing, and became a reckless experimentalist in various modes of painting, so that some of his finest works have almost vanished from the canvas. These deficiencies, which he shared with his contemporaries, arose partly from the confined atmosphere in which art was forced to breathe. The approval of a few men of taste being all that was necessary for success, artists were not numerous enough to form any standard of excellence among themselves. They were content to carry on the traditions of the Italian and Dutch schools, but did not perceive that although these traditions are invaluable and are the common heritage of art, they fade into mere tricks of style if deprived of the guiding hand of Nature, which alone can give vitality to theory, and on which all the great traditions of past schools are founded.

I say that this defect lay at the root of our school from the beginning, and that Reynolds, Gainsborough, and even Hogarth, are responsible for the premature decline which is evident in the works of Lawrence and his fellow-painters.

As time went on, the conditions of art grew to be more and more artificial; its phraseology was constantly in the mouth of those who could neither understand nor practise what they talked of; style, tone, *chiaroscuro*, treatment, handling, became household terms with those who were unable to paint a head properly on its shoulders, or place arms and body together, without perpetrating some hideous deformity. I will say no more about this transition-time, which was a slough of despond, now dispelled, I trust, never to return.

Painting did not spring by any sudden effort from this abasement; it developed its knowledge along with that of the nation, for gradually the public increased its familiarity with the art-treasures of Europe (the Continent being at last free to Englishmen), till, after being the most insulated people in Europe, we became a nation of tourists and travellers.

The light of history and criticism was now directed to the great European art-revivals of the fourteenth and fifteenth centuries; Germany, France, and England launched many works on this subject, and the public press re-echoed their opinions. In the meantime a number of young artists had grown into manhood, and a fresh life began to blossom in our schools.

Here many familiar names occur to me, and will rise to the memory of my audience: Turner, who stood alone; Mulready, Eastlake, Landseer, Maclise, Phillip, the elder Leslie; these are, alas! no more; others, who are still living, most of them risen to be general officers in the ranks of art, with their honours thick upon them. It would be useless for me to marshal all these before you, having no time to say anything worthy of their works. This must fall to the duty of some future historian of English painting, and I will confine my observations to those who have given any new bias or fresh impulse. Such is not, however, of necessity the mark of a great artist. Turner, the greatest master of landscape that has ever lived, left no pupils, no teachings, and but a fitful influence on present art. No doubt he has found a prophet in Mr. Ruskin to interpret him to the world. How far the prophet and his divinity would agree on the truth of the sacred books that have been compiled, could they have argued their contents after his apotheosis, I will not say. There are many proofs that Turner was a man of masculine sense and constant purpose, and I wish, at any rate, he could have given us some revelation at first-hand on his own thoughts and works.

The influence of Haydon, who lived early in the present century, must never be forgotten. He did more for the revival of art than any other man, for he was the first to break the lethargy that bound our school, and to urge it into noble action. You are all, I have no doubt, familiar with the story of his life through the fine biography by Tom Taylor, and you will remember the energy and courage with which he fought an unequal fight against the sordid spirit that was then reigning; how he became champion and martyr of the ideal art of the world. You cannot forget how despair itself only increased the vigour of his attack against the shams of his day, and how, although faulty and extravagant in his private life, he yet remained true to his purpose to the last. One service of his is beyond price: he secured for the nation the marbles of the Parthenon, which might have been shamefully sold out of the country but for his efforts. Fierce misfortune, brought upon him by his own faults rather than through the action of his enemies, hurried him to a violent end, and he never lived to enjoy the honours he deserved. Of his excellence as a painter there is not much to say, for his works are too incomplete and ill-sustained to be great; occasionally, on his gigantic canvases, there are fine parts, and in his painting of the "Raising of Lazarus" (a colossal composition) the figure of the dead-alive, drawing aside the grave-clothes from his awful face, is among the most sublime passages of art.

It was partly owing to the efforts of Haydon that the Government offered prizes for the cartoons exhibited in competition at Westminster Hall. In this competition young men carried off all the prizes; the three first were taken by Armitage, Watts, and Herbert. From that time mural decorations were no longer unknown to the country. The new hall at Lincoln's Inn Fields was painted by Mr. Watts in fresco, in which he represents Jurisprudence, and brings into one composition the great lawgivers of the world.

The frescoes in the Houses of Parliament are not very successful, although they were a step in the right direction, and include the works of several painters. Sir Frederick Leighton, the accomplished president of the Royal Academy, has given Lyndhurst, in Hampshire, a mural painting of great merit, and he is now at work on the walls of the South Kensington Museum. I myself have some experience in mural decoration, having decorated Dorchester House for Mr. Holford.

But, although these and other endeavours have been made in the practice of art, I cannot flatter my hearers with the immediate prospect of any great development in mural decoration; it is the noblest of all forms of painting, yet it has only now begun to be acceptable to the minds of those who could give it encouragement—I mean the corporations of our great cities. Still I would not pass by without hearty acknowledgment what you in this your Manchester Town Hall have so ably planned and begun. It will be well if you by your example can inspire other corporations to follow in your path, and to fill the blank spaces of their buildings which now gape to receive their appropriate life: they have but to speak the word, and within three years their public halls shall be aglow with life and colour; they will have made a noble addition to the heritage of our city, and done an honourable achievement in the sight of England.

I pass on to Sir Edwin Landseer, as one of the few who have opened a new path. No man before has ever painted animals with a like inspiration. As Æsop sang so he painted; birds and beasts are true to the very life, yet they seem endowed with the soul of man; but it is human soul of the artist that speaks through his animals, and bids us love, hate, despise, or pity these creatures, in harmony with the large heart of the painter.

Marks, Briton Rivière, and many others have followed in his track.

Wilkie must always have disciples in the English school; when can he ever be without them? I think never, so long as Englishmen love home and household life. Faed treads in the same path, and many other younger painters, too numerous to name. Frith follows a somewhat similar direction, although he inclines rather to the spirit of satire which is characteristic of Hogarth. His "Derby Day" (whatever may be said against it) is a very remarkable work.

The elder Leslie is an exponent of a branch of painting that is very popular in England, and has a large number of followers; it is what may be called illustrative art,—it touches on the historical on the one side, and on the domestic on the other, and resembles the novel in literature. Of all classes this seems to be the most popular both with artists and with the public.

In landscape, our painters are very numerous, and have little affinity to each other; so that this art in England is scarcely capable of classification. And here I may remark that to follow the outline of English painting is beset with many difficulties not likely to arise in the study of any other school. The relation of master and pupil does not exist with us as in other countries; there is, therefore, no affiliation to assist our work. It is only possible to gather artists into certain sections, and to do more would be to enter on a detailed history.

One of these groups which we will now consider originated the so-called pre-Raffaellite movement. The epithet is an unmeaning one, but, as it is generally applied and accepted, it is sufficient. The influence of this group of men has been felt far and wide, and has impressed the imagination of the public in a very remarkable manner.

I pointed out a while since, when speaking of Reynolds, that English painters were during his times under subjection to the Italian and Dutch schools, and dependent on a class of men wedded to scholastic ideas, the result being the abandonment of the knowledge derived from nature, and a narrow dogmatism based on what are called the canons of art. I said that a school of painting, founded on such a basis, must narrow more and more with age, and must end by producing dead conventionalities instead of living truth. I pointed out, however, that our school was gradually shaking itself clear of these influences, and I mentioned some among many painters whose labours were adding fresh lustre to our school long before the pre-Raffaellites were heard of; yet there is no doubt that there still continued a strong taint of conventionality and falsehood in the practice of our art, and the pre-Raffaellite movement was the result.

Half a dozen young men set themselves to the reconsideration of art; the outcome of their thought appeared to them a revelation; and the consequence a mission.

They worked with the zeal and fanaticism of religious enthusiasts; their creed involved the denial of everything the English school had hitherto held sacred. They accepted Nature alone to be their future guide and Bible, and in it they beheld the condemnation of all art except the earliest art of Italy. These men threw themselves passionately into the study of the natural, and had implicit faith in the all-teaching of Nature without assistance from the stores of past knowledge: they soon became the observed of all observers, and the accepted prophets of the hour; they produced a number of most interesting works, replete with excellence and truth on the one side, whilst wanting in the first principles of art on the other; they grasped truth with the right hand, and put it aside with the left.

It is much to be regretted that this attempt at reformation was not headed by some man of mature knowledge, rather than a knot of enthusiastic youths, who knew little of art, but who felt the evils above measure which they had set themselves to overcome. They did not perceive in their passionate desire for truth that she lived even in the evils they condemned, and that Truth was true, although the partial distortion of her features made her aspect seem false. We must console ourselves with the reflection that at the age when men grow wise they seldom lead revolutions, but direct them to the best advantage, and that in the end truth prospers.

Holman Hunt, Millais, Burne-Jones, Rossetti, and several others were the apostles of the movement. You are probably acquainted with their early works, and also with what they now do. Their present works are the best proofs of how their faith has enlarged and their knowledge deepened with time. The career of Millais, in particular, has been one of constant advance. I will not say he has gained the complete balance of art which lies between true knowledge of nature and of theoretical learning. Nature was his first love, and she will also be his last, and for this she has rewarded him with a truth and power unsurpassed by any painter of whatever time.

Burne-Jones did not take a prominent share in the first efforts of the pre-Raffaellites, as

since that time the development of his genius has been slow and independent of outer influences. He has been accused of a want of harmony with the spirit of our times. In this I cannot agree. I think, on the contrary, that he is in the closest sympathy with a large section of present thought, represented also by the younger poets of our day,—a section of thought in conflict, no doubt, with others that are also powerful, but destined to influence the future very largely both in art and literature. The tie that at one time existed between Burne-Jones and his pre-Raffaellite fellows cannot have been owing to any common views in art; that bond must have been due rather to early friendship and good-fellowship. The principles of his art are opposed to theirs, and his works more removed from the measure of their excellence with each advance he has made. The public are only now becoming familiar with his works through the exhibitions of the Grosvenor, and I am happy at the opportunity I have been able to afford for such a result. He and certain others whom I shall name are advancing in the same direction. Mr. Watts stands pre-eminent among them, and may, I think, be considered their chief, both from his maturer age, the extent of his knowledge, the dignity of his works, and the authority he enjoys among all sections of artists. Painting and poetry are nobly blended in the efforts of these men.

I have said in a former part of this lecture that art is the reflection of the national mind, and that for many generations the poems of the nation were its only creative development; that the earliest national efforts in painting and sculpture were reflections of older schools; and since then I have shown that painting has pushed her excursions into many fields of labour with great honour and success, but in the highest flight (in poetic painting) she has not hitherto made progress. It is in this field, if I mistake not, that this phalanx of painters will advance the banner of our school.

As I approach the names of these friends, I find my task grow more and more perplexing. It is difficult for me to speak of my co-mates in art, or to marshal them as they might themselves desire. I do not, however, think that Leighton, Poynter, Burne-Jones, and Richmond would desire better than to rank in the same company as Watts; they are all men who are poets in their painting, and who, had they lived 200 years ago, when painting yet languished here in oppression, would have made their thoughts to blaze in type as they now glow on canvas. Times change, and the means of expression vary. Now one, now the other art becomes the chosen organ of poetic thought, but the creative faculty of the human mind will never cease, and must find a fitting tongue in all ages for its divine theme,—the beauty and wisdom of God's creation.

In the survey that I have attempted of the arts in England during our generation, my endeavour must appear even more imperfect to myself than it can do to others. I have said much that is perforce partial and incomplete, and I have left much unconsidered that deserved attention. The extent of the subject and the limited time at my disposal must be my excuse to you and to myself. I might have confined my lecture to such matters as I felt best able to cope with, yet I earnestly desired to place before you, so far as it was possible, a review of art in her aggregate life, and in so doing to insist on the unity of the whole. One spirit alone inspires these varied forms. Like the gods of old, she appears under numerous manifestations and many attributes, yet to the initiated she is known by one name, and that is Poetry. The soaring architecture, the breathing statue, the glowing canvas, the poet's song, the music that can ravish away the hearts of men, are but the creation of her spirit. We call her by divers names, and court her in many forms, but she is one spirit, yesterday, to-day, and for ever.

Granites.—Mr. D. D. Fenning, of the Shap, Dalbeattie, and Ross of Mull quarries, complains that in describing buildings in London the granite used is often termed Aberdeen or Peterhead, in cases where it ought to be called Shap, Mull, Cornwall, or Dalbeattie. The granite at the Grand Hotel, Charing-cross, he says, is not Red Aberdeen nor Peterhead, but Ross of Mull from his quarries; that used in the new Mercers' Hall buildings in the Poultry is Grey Dalbeattie and Red Mull, wrought and supplied by himself.

EDINBURGH.

St. Mary's Cathedral is approaching completion, and Thursday, the 30th instant, has been fixed upon for the consecration. The temporary screen which shut off the nave from the transept and choir has been removed, and the whole vista is now open to view. As seen from the western portal the effect is impressive, and a sense of the harmony of proportion, and the beauty and appropriateness of the detail which pervades the whole structure, gains strength as the spectator advances. We shall take a glance at the salient features of the interior. The nave consists of seven bays, including that which overlaps the west aisle of the transept; these are marked off by cylindrical and octagonal piers alternately, the caps of which are carved with conventional foliage. The triforium is divided into two openings in each bay, having cusped arch-heads and mouldings ornamented with the dog-tooth enrichment. In the clear-story there is in each bay a pair of two-light windows with quatrefoil headings, and the outer mouldings are carved in a bold and effective manner, no two being alike. Above the caps of the main piers are carved corbels, from which spring moulded shafts, and above the apex of the arches are smaller corbels carrying single shafts. The shafts rise to the springing of the vaulting-ribs, the grooving of which is executed in oak, whilst that of the aisles is carried out in concrete, with stone ribs. The aisle-windows consist of coupled lancets, and the west window of four lancets divided by clustered shaft with foliated caps, and above these is a wheel-window carved and ornamented, which is flanked on each side by a circular panel containing an angel, carved in high relief. Against the north-west pier of the tower is to be placed a pulpit of close-grained red sandstone of beautiful texture, procured from Dumfriesshire. Dividing the nave from the transepts is a screen, 4 ft. 6 in. high, of alabaster, with shafts of red coloured marble and carved caps. The screen is enriched with inlaid panels and richly moulded; it is the work of Messrs. Farmer & Brindley, of London, who have also executed the reredos hereafter referred to. The floor of the transept is paved with Godwin's tiles, having a red background and buff enrichment, which are lined out in patterns by narrow stripes of white marble. Under the tower, to the right and left, are three tiers of stalls for the clergy and choir, these are formed of walnut, and are decorated with carving. The organ, by Willis, of London, is being placed in the north transept, and will be worked by an engine heated by gas. The gable lights of the transept are most effective features, and differ in design; that to the south consists of three lancets separated by massive clustered shafts, and above is a rose-window with very bold tracery, 24 ft. in diameter. The northern window is of two lancets, and the upper portion consists of a wheel-window of the same dimensions as the other, but with lighter tracery. The choir is divided into four bays, by clustered shafts, the centre shaft being more massive than the other two. The vaulting, which is of stone, is carried by shafts springing from carved corbels, and it is subdivided from two larger vaults into four minor ones. The triforium consists of two arches embraced under a larger, and the clearstory windows are of three lights, the centre one rising above the flanking ones. The east window is a triple lancet deeply recessed, and rising to a height of 54 ft. from the ground. The floors of the second and third bays of the choir are each raised by two steps of black marble, the landing stages being paved in a similar manner to the floor of the transept. Upon the second landing is placed the altar-rail of metal, picked out in gold and silver, and on either side are elaborate gas standards. Five more steps lead up to the altar, behind which is a richly-decorated reredos, formed of alabaster, inlaid with coloured marbles. It consists of a central gablet, in which is a deeply moulded arch, to contain a relievo of the Crucifixion by Miss Grant, niece of the late president of the Royal Academy. The gablet is crocketed, and surmounted by an elaborate cross, and on either side are wings, upon which figures of angels are to be placed. The choir-aisles are screened off by a light and graceful grille, of wrought iron, by Skidmore, of Coventry, which has gas-lights in the cresting. This is to be coloured and parcel-gilt, similarly to the altar-rail. Several of the aisle-windows are filled with stained glass by Mr. C. E. Kemp, of London, which is of a rich but subdued tone. The south clearstory of the nave has been entirely filled in with coloured glass, which is rather crude in colour, and not quite appropriate to the situation. One of the windows in the choir is to be dedicated to the memory of Sir Gilbert Scott, the funds for which have been contributed by those employed on the building; and scaffolding has been erected preparatory to filling in the great west window with coloured glass. A peal of ten bells, the largest of which weighs 42 cwt., by Taylor, of Loughborough, has been placed in the tower. A volunteer ringing-club has been formed, who are at present practising with dummies. While displaying no marked peculiarities or originality of treatment, the building as a whole is highly satisfactory, and is by far the finest ecclesiastical edifice erected in Scotland since the Reformation.

The scaffolding has been taken from the façade of the Caledonian Insurance Company's office, and the unsatisfactory effect of the narrow central projection is now evident.

Upon the opposite side of George-street there has been erected a very imposing block for a business firm. It has been designed by Mr. Hamilton Beattie, who seems to have derived his inspiration from Heidelberg. The detail is varied, and has been carefully considered, and the treatment of the fenestration is dignified. There are three stages above the main cornice, which are each reduced in breadth, giving to the skyline the effect of a gable. This portion of the elevation is perhaps rather overdone for the situation, and its effect is not quite happy when seen in flank; but, upon the whole, the building has a freshness about it which is better than the dull repetition seen elsewhere.

In Cambridge-street, one of the most expensive and conspicuous of the new Board schools is in progress, and will soon be ready for the roof. It has been designed by Mr. Wilson, the architect to the Board, who has adopted the chamfer-and-splay style of Gothic, in which lintels are cut into the semblance of depressed pointed arches, and mouldings are conspicuous by their rarity. The building is greatly inferior in character to others erected for the Board in less important positions.

The Roman Catholic School in Niddry-street having been objected to by the Government Inspectors, it has been resolved by the trustees to erect new buildings more in accordance with modern requirements. The new schools are in course of erection in the Cow-gate, at the foot of Blackfriars-street. The new school-house has been designed by Mr. Robert Morham, jun., and will accommodate 300 pupils. The elevation consists of two stories, with a recessed centre, and projecting gables at each end. The windows are all mullioned, those on the ground-floor having transoms, and the centre and end windows on the upper floors have pointed arches. The cost of the building will be over 3,000*l*.

The old houses which formed Teviot-row are being pulled down to make way for the northern portion of the new university buildings, which embraces the principal elevation. The contract for this portion of the building has been secured by Messrs. Beattie.

The new Infirmary is receiving the last touches preparatory to its inauguration on the 28th inst. These two large structures, standing side by side, will impart quite a new aspect to this part of the city, and will form marked features as viewed from the neighbouring heights. Other additions to these features will be the spire of the Argyle-place United Presbyterian church in course of erection, and to the westward the tower of the St. Peter's-place Free church, which was originally carried up only to the wall head, but which is now being completed from the design of Mr. Pilkington. The design of the former church is as poor as that of the latter is bold and eccentric. The number of spires and towers in Edinburgh will be not the least remarkable of its characteristics. There are several others only built to the first stage which may be expected to be completed ere long.

The transformation of the Edinburgh Theatre into a Theological Hall for the United Presbyterian body is almost effected. The class-rooms are to be ready for the reception of the students next month, and in two months thereafter the Synod-hall is expected to be finished. This hall will be 109 ft. long by 70 ft. wide, with a height of 36 ft. The area is to be devoted to

the members of Synod, and the seats will be raised as they recede from the centre. A gallery is carried round the interior excepting the part at the end, where the moderator's platform is placed. This gallery is calculated to accommodate an audience of 2,000. Fire-cocks have been fitted up on all the landings, and other precautions adopted, with a view to protection against fire. The staircases at the corners of the building, by which access is given to the upper floors, show a somewhat novel mode of construction. These have been executed by Messrs. Stuart & Co., Edinburgh, in what they call granite concrete, being a composition of broken granite and cement, similar to that employed by the same firm in the formation of the excellent pavement recently laid down on the south side of Princes street. This material is said to have been subjected to severe tests for tensile strain. One step made of it was, when eight weeks old, keyed into a wall, and, we are told, only gave way under a load of 19 cwt., placed at the extreme end; while another, two months older, held its own under 32 cwt., applied 1 ft. nearer the point of support. It is also claimed that the diffusion of granite pellets through the mass gives great capability for resisting tear and wear, the juxtaposition of the cement matrix at the same time preventing the surface from acquiring a dangerous glaze. Another advantage is the facility with which slabs or steps of any size or shape can be constructed, and that at something like half the cost of good stone. In the staircase here in question there are 324 steps, which hang 5 ft. clear of the walls. The landings at each flat, constructed of the same material, consist of entire slabs, measuring 18 ft. by 9 ft., or 16 ft. by 13 ft. Each rests on three walls, a wrought-iron beam carried under the front, by way of extra precaution, though so far, it would appear, those beams show no appearance of having any weight to carry. The cost of the re-construction, which has been carried out on the plans of Mr. John Burnet, Glasgow, is expected to be fully 20,000*l.*, which, with the purchase price of the theatre, makes the total cost of the new hall, offices, &c., 47,000*l.* The only alterations effected upon the exterior are the filling in of the large semi-circular arched windows, with tracery, and the conversion of the two side-doors into windows. The tracery consists of a central mullion, with a circular opening at the heading, and a transom half-way up. The upper portion of the great doorway has been filled in with similar tracery. The tracery has had the effect of giving scale to the elevation, in which respect the original design was defective.

ART ADMINISTRATION IN ENGLAND.

On this subject Mr. J. Comyns Carr read a paper at the Manchester Congress, in the Art Department. He remarked at the outset that Society in all the principal European countries had already committed itself to the acceptance of some measure of State intervention in artistic concerns, and it therefore seemed to him to be more consistent with the useful objects which the Social Science Association had in view to proceed at once to discuss the form which such intervention should take than to attempt to deal with those artists who believed that all official direction or encouragement was hostile to the progress of art, or with those politicians who were unwilling to acknowledge that the State could rightly assume those controlling functions; for if we glanced for a moment at the history of this question we should find that we had already advanced too far to think of retreat. During the last two centuries there had been a growing tendency to give public recognition to the interests of art, and to acknowledge its claims upon the attention of the State. That this tendency should have manifested itself less clearly in England than elsewhere was due to causes which were not far to seek. The need of organisation did not arise until the powers of production had reached a certain stage of development, and we must not forget that English art in its modern form is even now only in its first youth. Owing to various influences, social, political, and religious, the birth of the English school was deferred until a comparatively recent date, and for a long period its efforts were confined within such narrow limits that there was no pressing need for the application of any comprehensive scheme of national support or control. It was in France that we found the earliest and most complete development of the principles of art administration, and it was therefore to France we must turn if we would rightly understand how the conception of a national existence for art had gradually assumed its modern shape and importance. Having traced the origin of art administration in France, and pointed to the circumstances which led to the establishment of the Royal Academy in this country in 1768, he continued:—The establishment of this body has unquestionably exercised a powerful influence over the progress of English art. From the date of its creation the previously existing societies rapidly declined in power, and henceforth the action or resistance of the Royal Academy was destined to become an important factor in every effort that has been made to develope the principles of art administration. Most unfortunately, however, both for itself and for the public, the Royal Academy has ever been guided by a narrow and impoverished conception of the duties which it had undertaken to discharge. Practically enjoying the prestige and position of a national institution, it has persistently refused to place itself in frank alliance with the State. Entrusted from the first with the control of English art education, it has allowed itself to be out-stripped by the art schools of nearly every capital in Europe, and so notorious in this respect has been the inferiority of its system that several of its most distinguished members, including the accomplished president who now so ably governs its proceedings, have been forced to seek abroad the technical training needed to fit them for the practice of their profession. By its heedlessness or indifference to the wide social significance of artistic training as an influence upon the manners and material prosperity of the country, it has been forced to witness without initiating the only comprehensive system of art education which we now possess; and again, in the conduct of the annual exhibition, at once the most popular and the most profitable of its functions, it has so managed its affairs as to virtually exclude the representation of water-colour painting,—the one branch of art which is of truly national growth. If I advert to these shortcomings at the present time it is in no spirit of hostility towards the institution as it now exists, and with no wish to undervalue the efforts which it has already made, or is about to make, towards a reform of its proceedings. My sole object is to point out that the existence of the Royal Academy has been at every epoch in its history a powerful obstacle to the establishment of a national system of art administration; and that from the date of its origin down to the present time it has persistently refused to entertain those larger responsibilities, which have arisen out of the growing needs of the English school. Nor has this attitude of jealous isolation been assumed without ample warning both from its own members and from independent authority. In the early days of its existence the field was absolutely clear, and the Academy then possessed an opportunity, which is never likely to recur, of placing itself at the head of every new development of artistic ideas. The late Mr. Dyce, who was sent abroad to examine into the system of foreign schools, has recorded his opinion that, "if the Academy were to do its duty there would be no occasion for the schools at South Kensington"; but it is perhaps on the whole a fortunate circumstance that the Academy has taken a different conception of its duty, for to the indifference which it displayed on this occasion we owe the first effort of the nation in its corporate capacity to establish a public department devoted to the culture of art. To the initiative of Haydon, whose persistent efforts resulted in the Parliamentary Committee of 1836; to the intelligent patronage of the late Prince Consort, by whose counsel the South Kensington estate was acquired for the nation; and last, though not least, to the energy of Sir Henry Cole, England must ever be indebted for the South Kensington establishment, — an establishment which has grown up in the face of the ridicule of a large section of the press and the hostile criticism of Parliament, but which is now in many of its features an object of envy to many of the foremost nations in Europe. It is important to observe that this establishment at South Kensington, with its museum and its schools, is at present the only art institution in England directly connected with the State. The Academy, as we have seen, is a body existing under Royal patronage, which acknowledges no kind of responsibility either to Parliament or to the public. The British Museum, the National Gallery, and the National Portrait Gallery own a somewhat nearer relationship to the central authority. They avowedly exist for the benefit of the public, and they are supported by funds drawn from the public purse; but it nevertheless remains an indisputable fact that the conduct of these institutions is not immediately susceptible to Parliamentary criticism and control. Not that Parliament does not enjoy the right to inquire into their proceedings, but that there is no one in Parliament who is really competent to answer on their behalf. They are governed directly by a system of trustees, some of whom are hereditary, others elective, and others again exercising their functions in virtue of an official position. It is by means of this fiction of *ex-officio* trusteeship that these several institutions are supposed to be connected with the Government. Other departments of State have their accredited representatives both in the Cabinet and in the councils of the nation; but in the case of art the system of representation is merely parenthetical. By some strange irony of fate the cause of education shares with the cattle plague the attention of the Privy Council, and as a branch of education the Schools of Design and the South Kensington Museum fall under the same authority. But if our systems of art administration were merely anomalous it might be quietly accepted as characteristic of the genius of our race, and thus be allowed to pass unchallenged. Unhappily, however, it is in practice productive of results in the highest degree inimical to the interests involved. From the fact that art has no accredited representative in the national councils it follows as an inevitable consequence that the real arbiter of its destinies is the Treasury, and too often the Treasury clerk. The Treasury is, of course, in the last resort the most powerful influence in determining the material circumstances of every department of State, but in every case save that of art the Department has a representative to whom its interests are entrusted, and who knows its necessities and can plead its cause. Here alone the Treasury is left to decide for itself how much shall be given, or how much withheld, without having its actions checked by any responsible authority. And as a natural consequence it gives only what it cannot withhold, and gives most liberally to those applicants who are the most importunate. In the interest of these institutions themselves, and still more in the interests of the public, the time has surely arrived when the cause of art can rightly claim the dignity of direct representation in the Government. If it is yet too soon to hope for a Minister of Art in England, it is surely not too soon to urge that the combined interests of art and general education shall be organised as a department of the State, and that its management shall no longer be left to the clumsy machinery of the Privy Council. And if we are to seek for the model upon which this might be done, we have only to turn again to the example of France, where the general direction of the fine arts forms one of the main divisions of the Ministry of Public Instruction. It may, perhaps, be thought that my proposal aims at the sweeping destruction of the several systems by which the different institutions of art in England are now controlled. By no means. There are merits inherent in the mode of government by trustees, which obtains in the cases of the National Gallery and the British Museum, which I should be the first to acknowledge, and there may possibly be certain virtues,—though I confess they have not been made clear,—in the constitution of the Royal Academy. What I desire is, not the destruction of these separate forms of government, but their combination under a central authority. It is time that these several institutions should be directly responsible to some minister, who in turn should be directly responsible to Parliament and the public; it is time also that when every department of the State is eagerly competing for its share of the public expenditure, art should no longer be unrepresented. I am convinced that the regular and methodical criticism of these institutions which would follow from this centralisation of authority would be in the highest degree favourable to the advancement of art. It would create what now scarcely exists in England,—an organised public opinion capable of being directed to the serious consideration of artistic questions; and it would further enable the expression of the public re-

quirements to be brought home promptly and with effect to the responsible managers of our several institutions. Does any one suppose that if the British Museum were subject even to the measure of direct control exercised over South Kensington, that the inexhaustible treasures stowed away in the Print-room could so long have been kept from view? That they have been so concealed for years, and that even now their existence is only known to a limited circle, is due solely to the fact that no sufficient pressure has been brought to bear either upon the trustees or upon the Government. With no one in the Cabinet directly concerned to represent the interests of art, the Government has been constantly able to defer the necessary arrangements for affording increased accommodation; and the trustees in their turn have found in the inaction of the Government a ready excuse for keeping these treasures out of sight. This is only one instance out of many that might be quoted in illustration of the defects of our present incoherent system. A further evil, from the public point of view, is the increased expense which this divided authority entails. The spectacle of one department bidding against another in public auction-rooms has not been altogether unknown; and it is notorious that, in more than one direction, South Kensington is engaged in repeating at the national cost what the British Museum has already achieved. It is notorious also that experts in different departments are prevented by our present system from employing their knowledge to the best advantage. South Kensington has, perhaps, to buy an object of art whose value could best be appraised by an official in Bloomsbury; but the separation of these two systems is at present hostile to the free interchange of counsel and advice. These are some few of the practical evils that a better system of art administration might avail to remove. But is it too much to hope that when the nation in its corporate capacity had found a means of making itself heard upon questions of art something might also be done which is not now attempted towards the encouragement of the higher forms of design? The problem as to whether the patronage of the State can raise the character of our school and the condition of our artists is yet unsolved; but until some effort has been made towards its solution, I at least shall cherish the hope and the belief that the State here possesses a great and noble sphere of action.

NOTES ON THE MEDIÆVAL MOOTE-HALL, ST. ALBAN'S.*

What special trades were associated in guilds at St. Alban's we can but conjecture. The *Cordewaneres-row* (now called by its other Mediæval name of *French-row*), and the Leather Market (named in a document), seemed to indicate that leather-working was one of the staples (the cordwainers were workers in Cordovan leather). There were also tan-pits in St. Michael's; and after the first battle of St. Alban's, Henry VI. took refuge in the house of a tanner (*frunitoris cujusdam*), (Regist., i., 160). The manufacture of wax candles (*cierges*) for the monastery was, perhaps, a considerable business, and carried on near the Waxhouse Gate. The fulling, and probably the dying of cloth, in connexion with the fulling-mills of the abbey, was another. There were wool merchants here in 1407, for John Pykot, *mercator lanarum*, of St. Alban's, was a benefactor to the abbey in that year (Lib. Benefact., fol. 137). The masons employed on the works of the abbey may have formed a guild. There is evidence of the services of some of them being engaged by Henry III. for his work at Westminster, a good proof of their high repute at that period. St. Alban's is not, of course, to be put in comparison with such places as Coventry and Leicester, whose Mediæval guildhalls still remain, but there is nothing improbable in the supposition that the guilds named in the documents used the Stok-house as their guildhall for business and social gatherings.

The Moote-hall must have gained increased importance in 1306, if, as is probable, it then witnessed the election of two burgesses,—Simon de Trewych and Adam Ettestile,—to serve in Edward I.'s Parliament, held at Carlisle. It is observable that there is no trace of this in the abbey records, nor of the three returns of burgesses in Edward II.'s reign, witnessed according to Chauncy, by the Rolls of Parliament. It was, perhaps, hardly to be expected that the progress of the borough would be noticed in the Monastic Chronicles, except when this came into collision with the abbot's feudal prerogatives. Such collision, we know, did unfortunately occur, and then the affairs of the town occupy a considerable place in the annals. It is beside our purpose here to enter into the details of the struggle which commenced with the Hand-mill disturbances in 1274 (in the rule of Abbot Roger de Nortone), and terminated in repression of the violent commotions connected with the Wat Tyler revolt in 1381; but, as bearing on the fortunes of the Stok-house, we may mention the following facts:—After the hostile demonstrations at Holiwell-gate in 1326, Abbot Hugh de Eversden embodied his concessions to the town in an indenture, by which the bounds of the borough (now mentioned for the first time) were to be renewed by twenty-four sworn burgesses, whose names are recorded. The Assize of Bread and Ale was to be held by their presentment. The bailiff of the town was to make executions without the intromission of the bailiff of the Liberty. Two burgesses were to be returned to each Parliament, and the townsmen were to attend the Abbot's Hundred Court when summoned. It was determined that "the bounds of the borough reached from Gonnerston [or Gonnelstone, perhaps Gonwellstone] to the Bercherie [Sheepfold] of Kingsbury, and thence to the corner of Downe-heg [or Town-hedge], and thence to the corner of Tonmandich (Townsman's-ditch], and thence to the Grange of St. Peter, and thence to Barnetwode [now Bernard's-heath], and thence to Stone-crouch; thence to the corner of Cemetery of St. Peter, towards the east; thence as far as the Grange of John, son of Richard Baldwyne [probably where the Peacock Inn now stands]; thence by Tonmandich as far as to Sopwellelane; thence to the croft of John de Hamptone; thence to Grenelane-hend, and thence to Eywode-lane (leading to St. Julian's Hospital); and thence to Holiwelle-brugge [Holywell Bridge], by the stream of the river." (Gesta Abbat. ii., 166.) This line, it appears, is the same as that laid down in the map of Benjamin Hare, dated 1634, and still preserved in the Council Chamber of the Corporation. The area included is given by him as 202 acres. The borough privileges would seem never to have reached any higher point till the dissolution of the monastery.

The burgesses returned in the second year of Edward III. were Roger Rayson and John Sterthop. In 1358 there was a Roger Reyson residing in Chirche-street (now George-street). We learn that burgesses in Parliament at this period were usually subsidised by their electors at the rate of 2s. a day (about 30s. present value), a burden which some boroughs escaped by ceasing to make returns. The town now consisted of four wards, for four constables of the peace were appointed by Abbot Richard Walyngford, "one for each of the four wards" (Gesta Abbat. ii., 205). During this disturbed period there was a common chest (*cista communis*) of the burgesses (with three keys), which was doubtless deposited in the Stok-house, as also the silver seal of the borough (*sigillum commune*); the device is not recorded. These after a fierce fray in the market, terminating in an indictment before the king's justiciars of Trailbaton, are stated to have been given up to Abbot Richard Walyngford, who cancelled the charter (Gesta Abbat. ii., 255). The *quernes* were now surrendered and deposited in the floor of the *forensic locutory* of the Abbey (adjoining the western portion of the south aisle of the nave). The silver seal was afterwards destroyed and used for the repair of the shrine (Gesta Abbat. ii., 260). The locutory was rifled of the *quernes* in the tumults which took place in connexion with the insurrection already alluded to. It is with reference to these tumults that the first express mention of the Moote-hall occurs in the records. At the trial of the unfortunate William Grindecob and his associates, in October, 1381, after the empanelling of the three juries, Sir Robert Tresylian, the king's justiciar, is described as "sitting before the bench of justice at the Moote-halle in the town" (*sedens pro tribunali in villa apud le Moote-halle*) (Walsingham's "Chronicon Angliæ," p. 320, Roll's series). Thus we have distinct testimony to the existence of the edifice in Richard II.'s reign, and its use as a place for administering justice. Whether the seneschal, or hundreder, ever held his Liberty Courts here, or invariably at the Great Gate-house, adjoining which was his official residence, appears uncertain. The charters extorted from Abbot Thomas de la Mare, we find, related mainly to the claim of common pasture along certain highways, the hunting game in certain closes and lanes, and fishing in the river, also the right to possess *quernes*. The manumission of the abbot's bondsmen (*nativi*) was also separately conceded. As is well known, all these charters were annulled upon the king's judicial visit to the town.

The elective franchise ceased to be exercised after 1332, and never revived till the period when the history of the modern borough commences with the charter of incorporation granted by Edward VI., A.D. 1553. This important historical document concerns our present subject only so far as it connects the Mediæval Moote-hall with the old building still existing. It is noticeable that this charter introduces the edifice with a remarkable name. In it (section 22) "A certain house in the town, commonly called Le Charnell House, otherwise Le Townhouse," is assigned to "the mayor and burgesses for their Common Hall." (Newcome has quoted the word as *Chancel-house*, but he is clearly in error.) How the Moote-hall acquired so strange an appellation seems difficult to conjecture. It may possibly have some connexion with the great plague or sweating sickness of the year 1349, which, according to Walsingham ("Chron. Aug.," p. 27), swept off nine-tenths of the population of the kingdom. Abbot Michael de Mentmore and forty-seven of his monks were among the victims at St. Alban's. Possibly, under this terrible pressure, some cemetery, or charnel, was made in the rear of the Town-house, which thus may have acquired the name of Le Charnell-house, from its proximity to this receptacle of the dead. Such places of interment were sometimes built over in the Middle Ages, for we learn that the convent of the *Chartreuse* (Charter-house) was erected on a graveyard given by Sir Walter Manny to the citizens of London during the same visitation.

Of the Mediæval edifice little remains to be said. Its site from Henry IV.'s to Henry VIII.'s reign is identified by the documents already referred to, and the earliest Stok-house is likely to have stood on the same spot. On the supposition that the existing old building contains in its massive timber framework structural features of Henry VIII.'s period, it may be asserted that the pre-Reformation Moote-hall was, including its offices, about 100 ft. long, and had a frontage towards the Flesh-market of about 35 ft. Its upper story projected about 2 ft. over the lower, as may be seen. The entrance to the existing hall was on the south side. The Mediæval Town-halls had usually a *counter*, or prison cells in the basement. The "Counter House" is a name given to this building in the seventeenth century. It may be doubted whether the wooden dome or rotunda in the roof, once surmounted by a lantern, belonged to the pre-Reformation building; but the arched oak principals, which formed the ceiling of the hall, may well be of that period. The main portion of the upper story appears to have been built as one chamber, and the arrangement of the wooden partition to separate the Quarter Sessions Court from the Council Chamber to have been an alteration made in 1651, when the Liberty justices removed their sessions here from the Gate-house. There was perhaps once a bell-cot on the roof. The present building has been modernised in appearance by the alteration of the windows since 1829, but the original eastern window once contained, according to Clutterbuck, eight shields of arms, in stained glass, which are described by him. One of these is important in its bearing on the antiquity of the building. It contained, in heraldic quarterings, the arms of Castile, Leon, Arragon, and Sicily, a coat which is assigned by heralds to Queen Catherine of Arragon. This shield could hardly have been put up later than 1530, and perhaps indicates approximately the date of the rebuilding of Le Stok-house in Henry VIII.'s reign.

These incomplete notes may perhaps be appropriately concluded with the names of some of the bailiffs of St. Alban's, which have survived in documents. They occur mostly in the later period, and in connexion with benefactions to the abbey. In 1359 John Baldewyne. He is probably the person whose grange is named in the indenture of the bounds of the borough. In 1386, Richard Walyngford. He was *mawinus villanorum*, and took a leading part in the rising of 1381; was then imprisoned, and after-

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* By the Rev. H. Fowler, M.A. See p. 1103, *ante*.

wards pardoned. Subsequently he rendered some substantial services to Abbots John Moote and William Heyworth ("Liber Benefactorum," fol. 136). Circ. 1400, Thomas Fayrman. His monumental brass, representing him in his merchant's gown (he is named as a merchant in the inscription), also his wife Alice, still exists in the north aisle of the presbytery of the abbey. He was admitted to the Lay Fraternity of the Monastery in 1410. He bequeathed ten marks to the rebuilding of the cloisters, and 20*l.* from the proceeds of the sale of "Boterwik-farm," as a legacy to the convent. He seems to have been educated in the abbey school, for he is termed *alumpnus noster* ("Lib. Benef.," fol. 138). His widow gave a hundred shillings for making a stained-glass window on the north side of the church, representing the martyrdom of St. Alban. In 1410, William Eccleshale; in 1412, Thomas Heyne; in 1429, William Toode, whose name has been discovered by Mr. R. R. Lloyd beneath a distemper painting on a pillar in the nave of the abbey church. He was one of the feoffees of the clock-house in 1426. His wives, Emma and Johanna, were both benefactresses to the abbey. In 1452, Henry Dypere. He was a witness to Sir Thomas Baringtone's surrender of the Swanburnes estate to Abbot John Wethamstede (Registrum, i., 101). In 1472, Thomas Ferrars (armiger); he was son-in-law to the seneschal, William Westby. In 1483, William Smyth (armiger).

WALTHAM ABBEY.

Waltham Abbey, or Waltham Holy Cross, is a town on the borders of Essex and Herts, and is adjacent to the hamlet of Waltham Cross, the site of a well-known monument. Whether the existing building at Waltham Abbey, now the parish church, is the work completed by Harold just before the Conquest or not has been a much disputed question which has been treated of before in these pages, and may be found fully discussed in the *Gentleman's Magazine*, 1859-60. Mr. E. A. Freeman, in his paper before the members of the Archæological Congress at Cambridge, under the presidency of Mr. A. J. Beresford-Hope, M.P., said the present church is essentially the nave of King Harold, but underwent a change of foundation under Henry II., and also some alterations. The early history of the church is well known. Earl Harold, finding the Church of Tovi the Proud inadequate for its purpose, built a splendid church, and richly endowed it, and put it into the hands of secular priests (but did not found an abbey); this was consecrated May 3rd, 1060, but the foundation charter is not dated till 1062. The foundation of Harold for secular canons lasted till 1177, when Henry II. changed the college into an abbey of regular canons of the order of Augustine. The then dean, Guy the Red (who played a part on the king's side in the history of Thomas of Canterbury), being bribed to resign, Henry II. added the then necessary refectory, dormitory, cloister, &c., and, it is thought, also repaired four clearstory windows on the north side; probably, also, the north doorway into the destroyed cloister. Matthew Paris says a consecration of the church took place in 1242, which implied that the choir was rebuilt in the Early English style. In the fourteenth century a barbarous idea arose to recast the interior, but fortunately was only executed in the westernmost bays of the nave. During the Decorated time the western front was finished in a beautiful manner, also the chapel on the south side of the nave. This is the last alteration, excepting one or two Perpendicular windows inserted. At the dissolution, the monastic part of the abbey was pulled down, excepting the central tower, which fell down in the reign of Philip and Mary, when the parish built the present tower, destroying the west front. Harold's body was translated from Sussex to Waltham at the time of William's coronation. Mr. Parker did not agree with Mr. Freeman, but thought the whole of the existing work was of the twelfth century. Mr. Burges agreed with Mr. Freeman in his opinions.

The nave only now remains, the arches and piers having zigzag and spiral lines, like those of Durham. The triforium is open to the aisles, and is of single bold arches, as at Southwell, or the church of the Abbaye aux Hommes at Caen; the clearstory is triplet, as usual; the back of the triforium arch is seen from the aisles rising from a sort of stilt, while the pier arch itself is merely recessed as a secondary order in a sort of bridge across it. It rather recalls the arrangement of Oxford Cathedral and parts of Romsey Abbey. In the church is an Elizabethan monument, with effigies of Sir E. Denny and wife. After the restorations by Mr. Burges the church was re-opened in 1860, having a new roof, an imitation of that at Peterborough Cathedral, the only example of contemporary date. The signs of the zodiac occupy the middle compartments, and on each side are the labours of the several months, taken from nature by Mr. Poynter, R.A. Excepting the main arch, the east end is new, the windows having stained glass by Powell, with the rather doubtful introduction of figures from Æsop's Fables. Such are, no doubt, to be found both here and on the Continent, but not above the altar.

The only remains of the Abbey domestic buildings are a low bridge of three arches, and a fine pointed archway by the river Lea. Farmer, on p. 7 of his book, published in 1735, says:—"The church is after a Gothick manner, in which the columns are either too massey, in form of vast pillars, or as slender as poles, having capitals without any certain dimensions. The building being rather large than neat, firm than fair, very dark, 'the design of those days to raise devotion,' save that it was helped again with artificial lights, and it is observed by all artists, and the most curious, to stand the exactest east and west of any other in Great Brittain. The large pillars thereof are twisted with indentings, formerly filled with brass or other metals. In the time of the Civil Wars, 1645, there was the picture of Harold in the north window of the church, which was superstitiously beat down. In 1641, Charles I. came the last time to Waltham with Earl Carlisle, who wished him to grant a bridge toll for cattle, in order to repair the Abbey, which was granted, provided his great prelate, Bishop Laud, consented. When Laud heard the king had been applied to before him he refused consent, therefore the ruinous state continued. Henry III. used often to retire to Waltham Abbey. It was the monks of Waltham that Sir H. Colt caught in a deer-trap and presented to Henry VIII."

If we assume the other three arches to have been the same in width as the one now remaining at the east end, we then obtain the dimensions of the central tower which fell down and was replaced by the present one, at the west end, in order to re-hang the bells, but falling short of funds, the bells had to be sold in order to finish the tower. As the north-west corner-stone of the north transept was found by Mr. Burges in its original position, and the choir was 90 ft. long, and without side aisles, we can obtain the original plan of the Abbey. The remains of Edward I. remained in the Abbey fifteen weeks before interment in Westminster. A. B. P.

*** The measured drawings by Mr. A. B. Plummer, which we have reproduced, obtained the premium offered by the Architectural Union Company through the committee of the Architectural Association, to be competed for by members of that body.

SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE, NORTHUMBERLAND AVENUE.

The new buildings for this Society, which were described at some length on the occasion of a visit by the Architectural Association in March last (see p. 347, *ante*), are now completed, and have been taken possession of by the society. The wholesale department has been in work for the past month, and the official occupation has taken place this week. The formal opening is, however, deferred until the beginning of November, to allow the complete fitting and furnishing of the retail-shop.

Our view represents the main portion of the building, but does not show the whole extent of it. The fronts are of Portland stone. From the nature of the foundation (which was first ascertained by boring) it was found necessary to carry the concrete intended to bear the main enclosing walls down to the level of the London clay, or 45 ft. below the paving line adjacent in Northumberland-avenue, a layer of concrete, 6 ft. thick, being placed over the whole of the remainder of the site. This part of the work was carried out under a separate contract, by Mr. George Shaw. The pulsometer pump proved of great service here, as was mentioned at the time.

The buildings have been erected by Messrs. W. Cubitt & Co., the whole of the works being done from the designs and under the direction of Mr. John Gibson, of Westminster. The corner entrance leads into the spacious and lofty retail-shop, from which there is immediate communication to galleries on two sides, the whole being well lighted from the large front windows, which are formed in bronze metal to a special design, in the manner shown by the view, with the object of obtaining space for display at the angles, as well as in the ordinary manner.

The Board-room over is a handsome room, and adjoining are the necessary rooms for committees, secretaries, waiting, &c., the main approach to which is by the principal staircase and the entrance in Great Scotland-yard; although communication has been made through the retail-shop.

To meet the requirements of the Metropolitan Building Act, the buildings are divided by party-walls into three blocks, access being had through double iron doors on each floor. In connexion with the retail-shop is the "grants department," the remainder of the "centre" block being occupied on the ground-story by waiting and messenger's rooms and offices, and directly over these are the accountant's and clerks' offices, tract-room, &c., on the mezzanine story.

The end block in Great Scotland-yard is devoted on the ground-floor to the wholesale entrance and shop, the receiving and delivery room, counter space, &c., special arrangements having been made for the receipt and delivery of goods, and two large lifts communicate with all the floors, worked by a gas-engine, a smaller hand-lift being used for samples, and another for the use of the accountant's department. In the basement are the wholesale and retail packing-rooms, strong-rooms, boiler vaults, and space for warehousing.

The resident's rooms are on the second floor of the front block, and the necessary accommodation for the members, the officials, and the staff is conveniently arranged. The remainder of the building is used for working space, for the storage of bound books and sheet stock, the whole of the warehouses being spacious and light. The three blocks are heated separately by hot-water pipes and coils, with the addition of fireplaces where necessary. The services for the artificial gas-lighting are also separate, and communication exists in each block from top to bottom and with the street.

Our readers may possibly find interest in some few facts relating to the venerable Society of whose new house we have given a picture.

It owed its foundation to the Right Hon. Lord Guildford, Sir Humphrey Mackworth, Mr. Justice Hook, the Rev. Dr. Thomas Bray, and Colonel Maynard Colchester, who met together on the 8th of March, 1698-9 to consult ("under the conduct of Divine providence and assistance") how they might be able, by due and lawful methods, to promote Christian knowledge. They were moved, as they said, by the consideration that the growth of vice and immorality was greatly owing to gross ignorance of the Christian religion. These good men were shortly joined by Robert Nelson,—a highly honoured name. Robert Nelson subscribed 8*l.* annually to the funds of the Society, was a constant attendant at its meetings, and a valuable contributor to its publications; and in his will dated 18th December, 1714, scarcely a month before his death, he styled himself "an unworthy member" of the Society, and bequeathed to it its first legacy of 100*l.*

Three important designs have from the first formed the Society's great and leading objects.

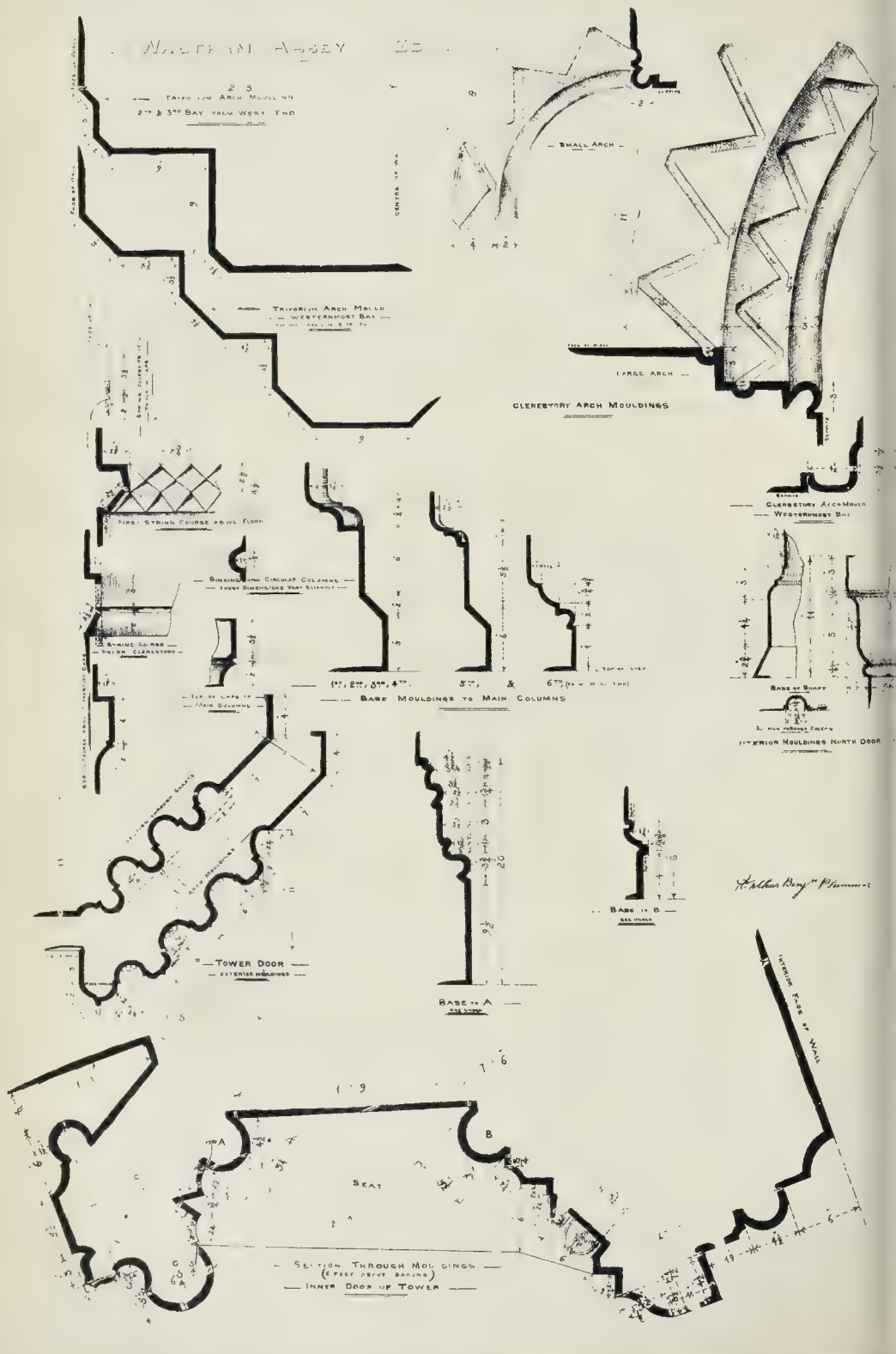
1. The education of the poor in the principles of the Church of England.

2. The preparation and circulation of books and tracts, especially of the Bible and Book of Common Prayer, in English and many other languages.

3. Granting assistance towards promoting Christian knowledge in the colonies and dependencies of the British Empire.

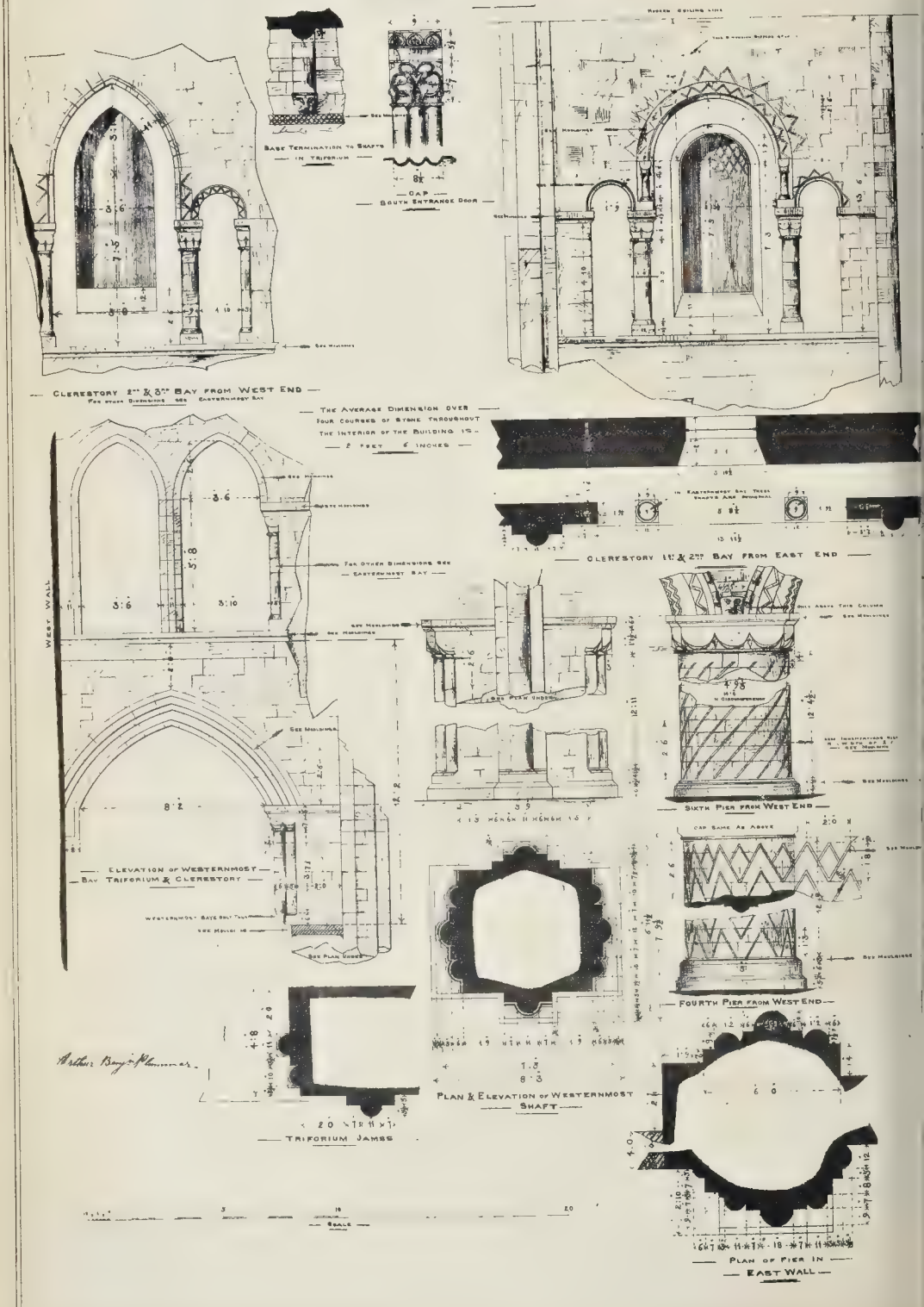
The activity with which the Society carried on its educational work may be estimated from the fact that by the year 1741 nearly 2,000 charity schools had been established, through the means of the Society, in Great Britain and Ireland. For 113 years, that is till the year 1811, when the National Society was founded, the work of promoting Church education among the poor depended in a very great degree on the exertions of this Society.

Its most recent work in the cause of national

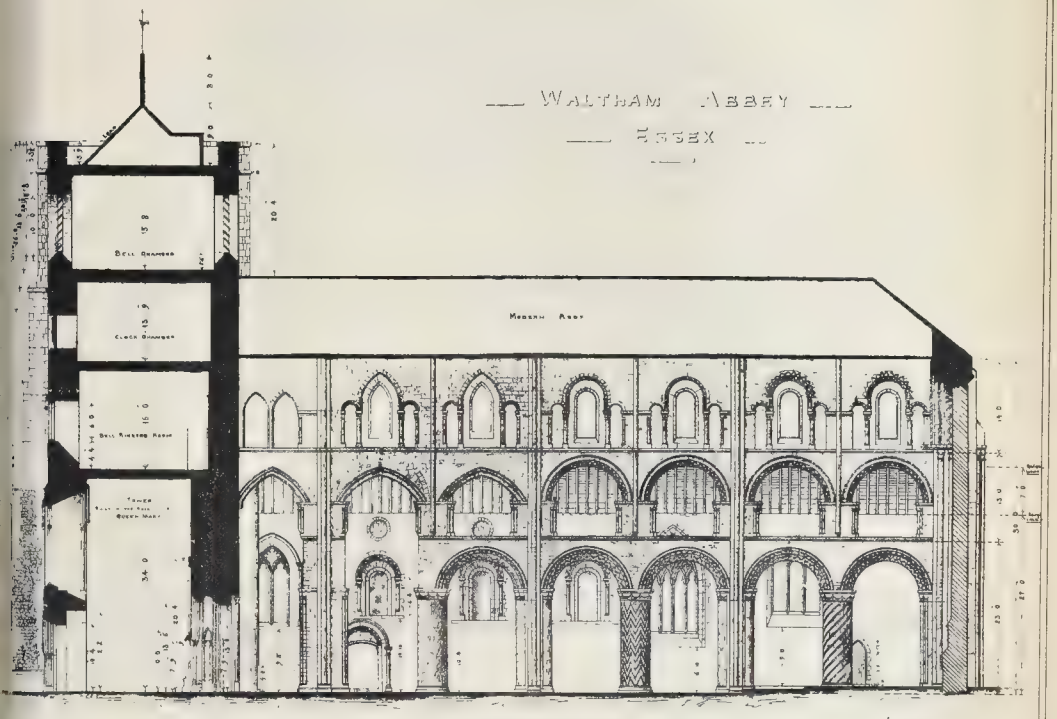

Triforium Arch Mould
2nd & 3rd Bay from West End
Triforium Arch Mould
Westernmost Bay
First String Course above Floor
String Course
under Clerestory
Sinkings from Circular Columns
Base Mouldings to Main Columns
Small Arch
Large Arch
Clerestory Arch Moulds
Westernmost Bay
Base of Shaft
Interior Mouldings North Door
Tower Door
Exterior Mouldings
Base to A
Base to B
Seat
Section Through Mouldings
(6 feet above Basing)
Inner Door of Tower
Interior Face of Wall



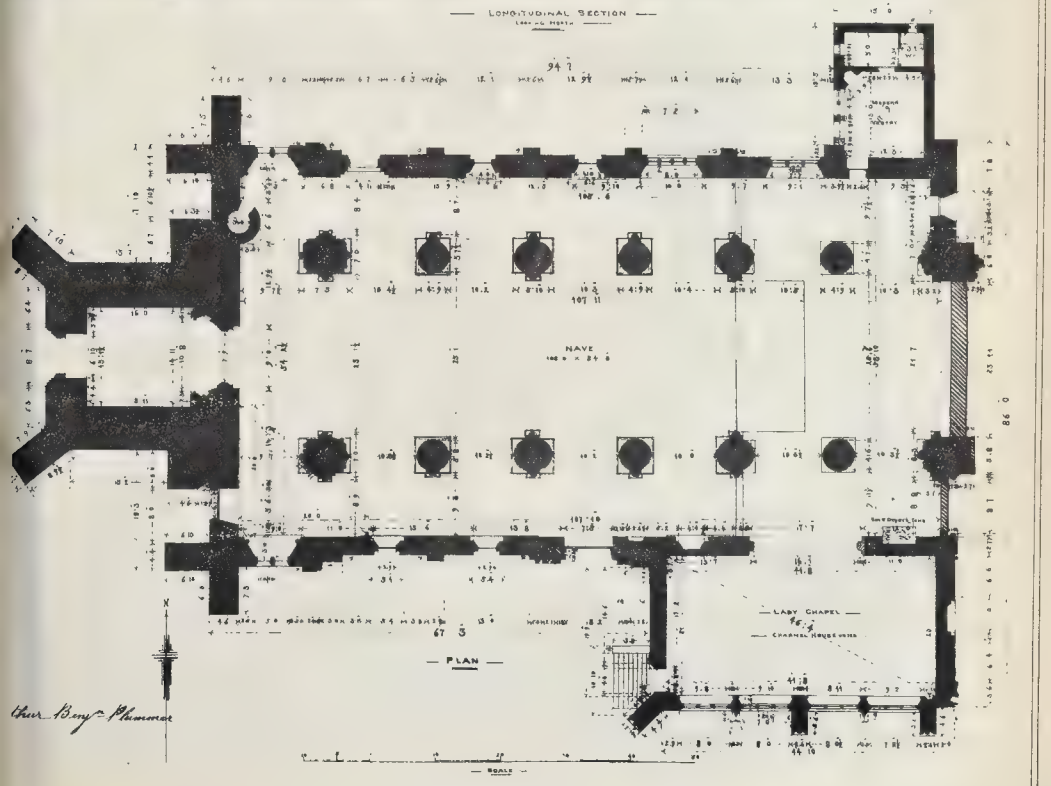
WALTHAM ABBEY, ESSEX



WALTHAM ABBEY
ESSEX



LONGITUDINAL SECTION



PLAN

Thos. Barry Plummer

SCALE



SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE, NORTHUMBERLAND AVENUE.
Mr. John Gibson, Architect.

ucation of the poor has been the devotion of 000*l.* to the erection and establishment of a urch of England training college in the ghbourhood of London for 100 school-istresses. This is now in progress.

The Society has been from the first, and continues to be, the great Bible and Prayer-book iety of the Church, and it spends a very ge portion of its income every year in supying these books, in strong plain bindings, 3 in a great variety of languages, either ntuitously, or below cost price. About 10,000*l.* re so spent last year. The number of Bibles d Testaments and Prayer-books issued in the ar was more than half a million.

The Society was the first Church of England iety for missions to the heathen. The work spreading the Gospel abroad soon became so eat as to render it necessary for the members the original society to found a distinct corcation for the purpose; this they did in 1701, en they procured the Royal Charter for the undation of the Society for the Propagation of Gospel in foreign parts. But though part the work has thus been otherwise provided for, Society continues to devote a large part of annual receipts to the endowing of new sees, training of native clergy in the colonies and pendencies of the empire, the building of urches and schools, and almost every object which the bishops of the seventy colonial and ssionary dioceses need aid from the mother untry.

We obtain some account of the circumstances der which the new house was built from the ciety's last report. It was no mere love of ange, it is stated, certainly no ambition for eless and costly display, that led the Standing mmittee to recommend, and the Society to prove, of a removal from the late offices d the erection of new premises on a new site. e very serious hindrances to the usefulness the Society and to the carrying on of its ensive business, arising from the inconvenice and insufficiency of its late premises in gard of position and arrangement, were for ars constantly forced upon the attention of who were engaged in the details of the siness.

The treasurers, with the standing and finance mmittees, felt it to be their duty to place ese facts before a general meeting of the ciety; which was done in April, 1876. They ommended a removal, and informed the eting that a fund under the control of the urt of Chancery, the capital of which could t be expended by the Society, though its vestments might be changed, was found to be ally available for the purchase of a site, and e erection of buildings. This fund at that ue invested amounted to about 96,000*l.* The ciety's sanction to the scheme of removal as given, and the Standing Committee was thorised "to select and purchase a suitable e, with a view to the erection on it of a new use for the Society." This was on the understanding that in no case should the entire cost the site and buildings exceed the amount of e fund above referred to.

A magnificent freehold site in Northumberland renue was, in accordance with this resolution, quired by the Standing Committee, for the m of 40,500*l.*; and the Standing Committee as then, in October, 1876, authorised by the ciety to proceed to build suitable premises, e proviso already made as to the total cost of e and buildings being repeated.

The Board of Works made it a condition of the le of the site that the building to be erected ould have a handsome classical front of ne, marble, or granite. The architect succeeded in designing a building which satisfied e requirements of the Board, and the cost of hich, including some very expensive but cessary works of substructure, amounted to der 42,000*l.* Thus the total cost of site and ildings, including architect's commission, is me 11,000*l.* below the limit fixed by the neral meeting of the Society. Of course, to e sum mentioned must be added the cost of rious fittings and furniture, and of removal, r which purposes the fund named is not avail-le; but should the bookselling business conue to thrive as it is now doing, the whole these extra expenses will be covered in tle more than a year by the profits of the siness.

The premises in Lincoln's Inn-fields will now sold and the proceeds invested by the Charity mmissioners, to replace in part what was ken from the fund mentioned above, which has been transferred by the Court of Chancery into their hands. A good price may be expected for these premises, as the value of property in the neighbourhood is improved by the proximity of the New Law Courts. The balance of the amount withdrawn from the fund will be simply a reinvestment in a freehold property of great and annually increasing value. And the income which previously accrued to the charitable funds of the Society in the form of dividends will now be received in the form of an enhanced rent paid over from the bookselling business to the charitable funds of the Society. It is confidently anticipated that a large increase in the returns from the business will follow the change in its headquarters, and will more than provide for the payment of the rent.

HEALTH QUESTIONS AS DISCUSSED AT THE SOCIAL SCIENCE CONGRESS.*

Domestic Water Supply.

A PAPER on this subject was read by Dr. Stevenson Macadam (Edinburgh). He said all natural waters contained more or less saline ingredients, and all possessed a greater or less amount of organic matter besides gases in solution. Neither the saline nor the organic matters were necessarily impurities. They might be the natural constituents of wholesome waters. For cleansing purposes there was a decided disadvantage in hard water. For cooking purposes a comparatively soft water was advantageous. All waters when exposed to the air became more or less impregnated with organisms, especially in the warmer months of the year and in the warmer situations in the house. The common notion that soft waters acted more upon lead than hard waters was erroneous. He urged the importance of cleaning cisterns regularly, as a sediment was often found in them which contained sand and clay, accompanied by lime and much carbonate of lead in fine division, and a rapid influx of water might stir up the sediment and render the water very deleterious. Water for town supply should not be collected in the neighbourhood of populous places, either from the surface or from wells. Three-fourths of the well-waters in populous places were contaminated with sewage, and were unwholesome. Districts having hard waters were more likely to be influenced by the progress of agriculture, because they were more flat, whilst soft water districts, being more hilly as a rule, were less capable of being turned to arable purposes, and hence remained strictly pastoral. The drawback to soft water districts was the presence of more or less peat, which communicated a greater or less tinge of colour to the water, but slight impregnation of the water with peat should not be considered objectionable, as it was not unwholesome. Many towns were supplied with the so-called peaty water, including Glasgow, Aberdeen, and Inverness, and there was absolutely no proof whatever of any noxious quality being derived therefrom.

The Chairman (Mr. F. S. Powell) wished to know how far hard water could practically be made soft water, and how far any noxious ingredients, whether chemical or vegetable, could be got rid of either by filtration in houses privately or by filtration by the local authority?

Mr. Machin (Manchester) said the use of vessels consisting of lead in connexion with water for drinking purposes ought to be avoided, as it was fraught with danger.

Dr. Fox (Lymm) strongly condemned surface wells, remarking that they were abominable sources of supply as a rule.

Captain Douglas Galton said it was customary with many people to filter water in their houses, and they went on using the filter month after month without thinking of the state it was in. If there were any impurities in the water, the impurities, of course, got into the filter, and thus if the water was allowed to go on passing through the impure matter in the filter, they introduced evils far greater than might result from drinking the water without using a filter at all.

Dr. Macadam, in reply, said they had got into the system of lead cisterns, and he did not think they should easily get rid of them. Slate cisterns would no doubt be preferable. He did not approve of zinc cisterns for containing water for drinking or culinary purposes. As to earthenware cisterns, if they were glazed with common salt they would be safe, but if they were glazed with lead their use would be prejudicial to health. Hard water might be rendered soft by Dr. Clarke's process of adding lime to it. He did not think it would be safe for any chemist to say that by any process of filtration or chemical treatment they could render a contaminated and unwholesome water safe and potable. He was dead against filtration. Filters were sources of contamination. When they passed a couple of gallons, say, of water through a filter—be it charcoal, a sponge, or any other material—the intention was that all the impurities should be left in the filtering material. This went on day by day, and in the course of a short time the suspended matter in the filter would be in a state of putrescence. People went on for years without paying any attention to the state of the filter, and the results could only be very serious.

Professor D. T. Ansted (London) contributed a paper upon this subject, and said he did not propose the supply of small communities, except where water could be taken from channels near at hand. It did not seem to him that extraordinary provision could be made consistent with the economic working of any system. Local streams or wells must be resorted to, care being taken by some central authority that the former were not fouled by manufacturing waste, and that the latter yielded potable water, free from drainage into them of sewage, or from the influence of churchyards. As the average quantity of water used for all purposes did not exceed twenty gallons per day per head of the population, it was easy to calculate that a rainfall of a quarter of an inch in a year over the whole of England would much more than supply this demand. The difficulty of the question was not in the supply, but in the distribution. He pointed out that the storage of river-water, taken from a point low down in its course, had not been attempted in England, and there was still a large unused water supply from the sources of our large rivers that might with advantage be impounded for the benefit of the towns on the river course. There was also a very large supply available from the many smaller streams, whose drainage area varied from 1 to 500 square acres, that might be utilised in the same way, being impounded and delivered by gravitation. The various lakes in the Lake district afforded a resource practically inexhaustible. As a rule, well-water must be considered doubtful until it is proved to be good. Besides the sources of water supply that existed in our rivers, there was a large underground store that might be safely drawn upon where circumstances were favourable. For the purposes of national supply both were needed, and the selection in every case should be made on public grounds.

The Mortality of the Rich and Poor.

Dr. Drysdale (London) read a paper on "The Mortality of the Rich and the Poor; Emigration, what it can do and what it cannot." He asked how it came that in Great Britain, in the face of improvements in every direction in the domain of hygiene, there still remained a death-rate in our cities ranging from 30 down to 20 per 1,000 of the population annually? The real cause of the non-effect of the countless hygienic advances was indigence. The author collected information concerning 48,044 children of the well-to-do classes in England and Wales, including members of the legal, clerical, and medical professions, as well as of the nobility and gentry. He found from these inquiries that, in the first year of life, only 80·45 per 1,000 deaths occurred among the infants of the easy classes in this country, as against 149·49 among the children of the general population. The death-rate, then, of the children of the comfortable classes being 80 per 1,000 in their first year, we found it to be 240 per 1,000 in cities like Manchester and Liverpool, and as high as 300 in the poorer quarters of our cities, and in Berlin actually 500. He opposed emigration as a remedy for distress, contending that the case of Ireland was the only instance in which emigration had lessened a population. It destroyed the balance of the sexes in both old countries and new ones, and it left old countries a disproportion of non-producers to support, which was the reason England and Germany were depressed, while France was the most thriving country in Europe.

A discussion followed, in which Dr. Fox, Mr. Storr, Miss Helena Downing (London), Miss Becker, Mr. A. H. Safford (London), and other speakers took part. It was urged that great

* See p. 1123, *ante*.

evils resulted from overcrowding, and it was most desirable that steps should be taken to ameliorate the condition of the poor, especially as in the majority of cases the greatest amount of suffering was generally entailed upon women.

The concluding meeting of the congress was held on the 8th inst., when reports were presented by the secretaries of the various departments giving details as to the attendance, the character of the papers contributed, and the discussions that took place thereon. So far as the general attendance is concerned there was a very large falling off as compared with any previous congress. The total number of tickets sold was about 650 as against 1,500 at the congress held in Manchester thirteen years ago, and about 1,000 at the meeting last year at Cheltenham. In one respect the congress was quite as successful as any of its predecessors, and that is with regard to the nature of the subjects dealt with, the style in which they were treated, and the discussions that took place in the various departments. At a meeting of the council, Mr. G. W. Hastings in the chair, the committee of council of the Association was re-appointed to act jointly with a committee of council of the British Association on the subject of State medicine and the administration of the sanitary law, and an invitation from the town council of the city of Edinburgh to hold the next congress in that city was accepted. Mr. G. P. Neison, the hon. general secretary, tendered his resignation, which was accepted; and the council passed a resolution expressing their thanks to him for his strenuous and invaluable services to the Association. Votes of thanks were passed, to the Bishop of Manchester for his opening address, to the Dean of Manchester for his sermon, to the mayor and corporation for the use of the new Town-hall for the purposes of the congress, and to others who had offered facilities for carrying out the arrangements of the congress. At the general meeting which was subsequently held in the mayor's reception-room, Mr. Hastings, chairman of the counsel, presiding, the report of the council was submitted and approved. In the course of the afternoon several excursions took place. A number of the members visited Worsley coalmine; others went to Rochdale and inspected the co-operative stores there; and a third party paid a visit to Oldham and Hyde for the purpose of witnessing the working of a new smoke-consuming apparatus which has been brought into use at different works in those places. On the 9th inst. there was an excursion to Chatsworth and Haddon Hall.

HELP THE GIRLS.

A FREE SCHOOL OF ART.

Last summer a well-known French writer, M. Louis Enault, drew the attention of the gay world of Paris to this subject. He says, to quote his own words in another language:—If we look around us in the world we live in, we are painfully impressed by the growing difficulty of the position of the girls of the middle class,—the poorer middle class in society,—such as the daughters of clerks in public offices and banks; and also those of men belonging to the liberal professions, such as briefless barristers and general practitioners whose patients are sparsely scattered about,—men, in fact, who often, for reasons independent of their industry or talent, have not found means of becoming millionaires, and who are obliged every morning to recommence that terrible struggle so aptly called the "battle of life." Their children are infinitely worse off than a workman's daughter, whose father can apprentice her to a trade that provides her with the means of gaining her own living; but these poor gentlefolks cannot let their daughters go out as dressmakers, or serve behind a counter: so youth, full of ardour and ambition, eats its heart out in despair at an enforced idleness it detests. That the evil is real, that it is great, all admit. But a remedy seems possible, and it is this: to supervise and direct towards certain branches of *industrial art* the education of girls who really want to profit by it. Note well, I say *industrial art* as rendering the exact sense of what I mean, for I have no wish to see augmented the already huge number of female artists [he is referring, of course, to France], for where one succeeds 200 vegetate, replacing talent by pretension, and more still fall into want. The *industrial arts* open to women a field less vast, but more certain; they cannot aim so high, but arrive at a more practical end, and which affords them an easy access to a multitude of honourable and lucrative professions.

But the industrial arts cannot themselves be tackled without a real and serious knowledge of drawing, which is to art what the alphabet is to reading. It is, then, by a school of drawing one must begin; and it is this school that ought to be rendered easy of access to girls of respectable position, whilst fully impressing on them from the first day that they are only to traverse the phase of pure art and that industrial art is the veritable end and aim. A school of this kind, and capable of rendering much service, exists in Paris. In 1802 a woman whose life was a long succession of acts of abnegation, the Countess de Montizon, founded at her own expense in the Rue de la Harpe a national school of design for young girls; her hope being that her *protégées* would end by obtaining lucrative employment in painting on earthenware, porcelain, paper, fans, engraving on copper and wood, modelling in clay, enamelling, making lace, or artificial flowers,—in a word, in the numerous departments which owe their perfection to taste, natural elegance, innate refinement, and the delicate manipulation of the persons who devote themselves to this work. The beginning of the institution was most modest; the pupils were at first only two in number. The founder herself gave the drawing-lessons on the face and grouping, whilst a friend, a professor, gave his help in landscape and flower painting. After ten years of incessant struggle and effort the Countess de Montizon was informed that the Emperor (Napoleon I.) having heard of this noble work, had awarded her institution the title of Imperial School, and had had it inscribed on the Budget. The moment of her greatest difficulties was over, and an era of prosperous development began. One may now say that since that time the school styled alternately Imperialist, Royalist, or National, has ever gone on prospering.

After many migrations, we find it to-day at No. 10, Rue de la Seine, in the old printing-offices of the *Journal des Débats*,—a splendid spot for it,—vast, airy, and situated in the midst of gardens. Receiving an equalised light from a skylight, the middle of the room is reserved for plaster models from animate and inanimate objects, and all round, at given distances, are placed the students, divided into categories Here the water-colour students and painters in oil; there those who are engraving on copper or wood; and, farther on still, the modellers who are moulding the grey clay into shape. Nothing is more interesting than to contemplate all these young girls, with their bright, intelligent faces, attentive to the work in hand, and not losing a word that falls from the mouth of their instructor. As the examinations approach, they work with redoubled zeal,—it becomes a veritable beehive, but without noise, and never was more order allied to more energy.

Madame de Montizon, the founder of this institution, was also the first manager, from 1802 to 1820. Her daughters then undertook the direction until 1848, when they were replaced by the most illustrious female artist of this century, Mademoiselle Rosa Bonheur, who remained at the head of this establishment until 1861, shedding over it the lustre of her great name. Since then this free school of drawing has been managed by Mdlle. Marandon de Montzel, a woman of noble intellect and heart, who has made it the object of her life, and her constant solicitude. It is to her devotion, as well as to the enlightened and intellectual protection of the administration of the "Beaux Arts," that the remarkable progress accomplished by this institution latterly must be attributed. Thus entirely free teaching in drawing and all appertaining to it is given at this moment to 200 young girls from twelve to twenty-five years of age. Several classes of incontestable usefulness have also lately been grafted on to lead, to guide the pupils in the path of decorative application, and to help them to educe practical results from the lessons they have received. They can also acquire the multiplied knowledge indispensable to those who desire to adopt the profession of teachers themselves. There is no need to keep insisting on the veritable Godsend such instruction given gratuitously by eminent professors is to girls; it constitutes a professional education as strong as it is complete, and enables those who profit by it to see open before them a multitude of paths which assures to them two things most precious to women,—the dignity and independence of a useful and honourable life.

Thus far I have quoted some parts of Mr Enault's interesting article, and it shows how much hold this subject has taken on the public mind in the brilliant capital of France. But here the mass of girls entirely unprovided for is much larger than in France, impecunious marriages being here so much more numerous the advantage or disadvantages of which I do not enter upon beyond saying that after all they may draw hearts really devoted to each other nearer together, and elevate with noble motives to work, and to develope natures that might have rusted in inglorious ease. The assistance that is thus necessitated for such a much larger number also necessitates an institution on a much broader basis, and the incorporation of a free SCHOOL OF ART, pure and simple with the school of industrial art. It may be objected what is the use of agitating this question? Have we not already various valuable institutions with this end in view? Undoubtedly: but on looking at the different programmes, I see that there is none *entirely free*, not one in which the fees amount to less than 5*l.* a year a sum that as I write it appears to be so trivial that it seems ridiculous to object to it. Well I know many families of reduced means, gentlefolks by birth and breeding, who yet would not be able always, when the time to pay the fees came, to scrape that sum together, or, if even the fees could be paid, to go on paying the cost of the somewhat expensive *materials* any kind of art work requires. In this entirely free school, not only would I have fees abolished, but actual help given to those whose delicate constitutions would prevent them attending the classes continuously during the worst and most inclement months of the year, or whom the care of ailing parents would retain at home, by providing them with a sufficient quantity of material necessary for the prosecution of their studies. Inspection of their work by the Council on their return to the classes would prove whether they were worthy recipients of the aid afforded them. The Council also would soon be able to distinguish those in the school of Industrial Art who showed the germs of talent destined, properly cultured, to add lustre at some future time to the English school of painting and sculpture. These could then be drafted into the incorporated "School of Art," and those who became prize medallists perhaps sent on to Rome for two or three years, where they should be maintained till their art-education is completed. Out of the sum raised to found the new institution, a fund should be set apart for the keeping up in Rome a respectable and well supervised home for these English girls, thus sent out; the establishment to be managed by well-known and responsible persons, and to be under the supervision of a committee in Rome composed of some of the best known people, and including our ambassador, some of the clergy doctors, and bankers.

But then comes the vital question, how is the money to be got, and where is it to come from

1. By actual donations.
2. Yearly subscriptions.
3. A subsidy from Government.

This is a work that should enlist the sympathies of all, but especially those of women who in hourly enjoyment of many good things should feel their hearts "go out" to these poor children who see their youth,—their beauty —and their chance of a happy home fading away, and have no prospect before them but the dull routine of poverty which brings on mental deterioration and mouldiness, or who may be whirled away by some irresistible temptation, and sink into a gulf, from which socially, there is so seldom any extrication. It appeals, I say, to wealthy women,—to those whose lot it is to be clothed in "silken raiment and live in ivory palaces." It is for them to take up and urge on a work like this by actual donations and personal effort; and to the big and puissant in art, too, who have made for tunes by the exercise of their talents, that should especially come home; and soon with energy, and even without help from the State an institution would be founded of incalculable benefit to a large class of deserving strugglers.

C. S.

New Glasgow Theatre.—Mr. J. L. Toole the comedian, on Saturday afternoon laid the memorial-stone of a new theatre being erected in Glasgow, for Mr. E. L. Knapp. The theatre which is named the Royalty, will accommodate 2,000 people.

THE LIVERPOOL ARCHITECTURAL SOCIETY AND MR. PICTON.

In our notice of the opening of the Picton ading-room, in our last, we mentioned that e ceremony included the presentation to Mr. cton of an address from the Liverpool Archi-ctural Society. The following gentlemen com-sed the deputation from the Society:—Messrs. Sumners (president), F. W. Hornblower ecretary), Joseph Boult, James Montgomery, mes M. Hay, G. E. Graham, Thomas Shelmer-ne, jun., William H. Hay, Chas. Aldridge, erbert Fry, Charles Wise, William Parslow, s. Rhind, Thos. Cook, H. H. Statham, and rancis A. Holme. The address, which was antifully illuminated by Mr. J. O. Marples, as as follows:—

To James Allanson Picton, esq., Fellow of the Society of Antiquaries, London, and of the Liverpool Architectural Society, &c.

We, the undersigned, on behalf of the Fellows d Associates of the Liverpool Architectural ociety, desire to join with our fellow-townsmen acknowledging your public services, especially connexion with the Free Public Library, useum, and Gallery of Art, over the manage-ent of which you have assiduously presided ith zeal, ability, and efficiency for more than quarter of a century. We cordially join in e expression of the public sentiment on the bligations you have conferred on the town, and e intellectual culture and scholarly research splayed in your communications to various arned societies, and in your 'History of Liver-ol.'

And we take this opportunity of recognising me valuable service you rendered the archi-ctural profession more than thirty years ago actively co-operating with the founders of r Society, and through the many subsequent ears personally fostering its growth and velopment, and enabling it to attain the posi-on it now occupies as the oldest Architectural ociety out of London.

Though municipal and other duties have tely interfered to deprive the Society of that otive personal co-operation which has been so neficial in the past, the Fellows and Associates annot be unmindful of the value of those bours, the benefits of which they fully appre-ate, and through us tender you the thanks of e Society, and express their best wishes for ur truest happiness.

HENRY SUMNERS, President.
CHARLES ALDRIDGE, } Vice-Presidents.
FRANCIS A. HOLME, }
JAMES MONTGOMERY, Treasurer.
GEO. HORNBLOWER, Librarian.
F. W. HORNBLOWER, Hon. Secretary.

COUNCIL:

CHAS. ALDRIGE,	JAMES RHIND,
THOS. COOK,	W. H. WRIGHTMAN,
JAS. M. HAY,	F. W. HORNBLOWER,
WM. PARSLOW,	CHAS. WISE.
JAS. F. DOYLE,	

Mr. Picton, in reply, according to the local *Post*, said:—I feel it an honour to have belonged o a profession like the profession of architecture, which I spent with pleasure and some little rofit a good many years of my life; and I am roud to recognise in their kind feeling towards ne this day a remembrance of the many happy ays that we have spent together in former ears. Several of you,—many of you,—have ttained to positions of respectability and fame n connexion with your profession, and you have one wisely and well in not shutting yourselves p in conclave, but you meet together to dis-eminate the light of your knowledge and art hrough the world. Depend upon it the more rt is understood by the public the better it vill be for the profession. I believe there is great future for art in this country, and espe-ially for the art of architecture. I wish you all rosperity and progress in the noble profession o which you belong; and I feel personally much ndebted to you for your kind expression of eeling on this occasion. And now I have a very leasant and important duty to perform, and it s to propose a cordial vote of thanks to his worship the Mayor, for his kindness in presiding n this occasion, and for his general conduct hroughout the whole of his career as mayor, which is now drawing, I am sorry to say, to a lose. I am proud to say that the mayors of Liverpool have, without any exception that I know of, always conducted themselves as cour-eous gentlemen, and I am sure the office has ost none of its lustre under the sway of the gentleman who now stands before you. Whether in regard to this institution or any other which has had to claim the kindness of his worship, or whether it be in any public business he has to transact, he has done it with a kindness and courtesy which has enhanced the value of what he has done for us; and I am sure when he retires into private life he will be followed by the good wishes and hearty congratulations of all the inhabitants of this great community.

Mr. Sumners seconded the vote, observing that he had the greater pleasure in doing so from the fact that the Mayor was *ex officio* vice-president of the Architectural Society, of which he (Mr. Sumners) was president.

The vote having been carried by acclamation, the Mayor returned thanks, and the proceedings terminated.

"THE POOR OF ENGLAND."

SIR,—I see that certain remarks of mine in your columns on the "Poor of England" have raised comment in various of your contemporaries. This induces me to send you a few more remarks, as I do not think it well that the assertion made by so many foreign critics should continue to be made that England is the worst country in the world to be poor in.

It is now unfortunately a fact, and there are many reasons that tend to perpetuate it. Of course, our climate is very trying, and exposure to it, which, in the case of the very poor, is inevitable, renders the lot of the poor more miserable than elsewhere it would be, as in the climate of Italy, for instance. Again, preponderating accumulations of wealth such as exist here render poverty greater by contrast. I could say much about political economy, all the inquiries in which are directed to the one view of *how to make a nation rich*. A huge hoard of wealth is Adam Smith's paradise terrestrial. He is indifferent as to how the treasure is placed, provided only it be so placed as to grow greater. The weakness or the strength of the economist's doctrine generally is not my present object. I notice it merely to point out that such an overwhelming attention to property, and the way to augment it, at last becomes nothing less than a *cultus* and worship. It generates a contempt of poverty, or a fulsome pity for it. This spirit pervading society adds, in a degree quite incalculable, to the natural burden of poverty. What is physically not light to bear becomes in addition intolerable to the spirit of man, and adds a transcendental weight of misery to the soul.

Many good people will say, Was there ever a land of so much benevolence as England for the sick in hospitals, for the poor in relief organisation, and for the "labouring poor" in the condescension of great folk, which is a sort of wealthy patting on the back of the artisan? Added to this Liberals in and out of Parliament have legalised insubordination by trade-unions, and have coquetted with manhood suffrage, till, like Frankenstein, they are afraid of the monster they have conjured up. The patting and cosseting is really a most insulting development of the contempt or morbid pity felt at heart by the rich for the lower order. It may not be conscious in many, but it is none the less a fact on that account. The motives of contempt, pity, and fear are all of them at once discreditable and likely to lead to danger. They are the symptoms in the body politic of unmistakable disease.

In the last paragraph I have used advisedly the phrase, "labouring poor," because Burke has some sensible remarks on that phrase in his "Letters on a Regicide Peace." He calls it "a puling jargon," and, so it is; and he adds, "it is not as innocent as it is foolish." The phrase, it appears, had only just come into vogue in Burke's day, and he is indignant that the term *poor* should be applied to any man who is strong and lives by his labour.

He pointed out that labour is man's "common doom," and that if it be a curse it comes from the Father of Blessings, and has many alleviations. He might have added that not to labour is a far greater curse. He goes on, "I do not call a healthy young man, cheerful in his mind, and vigorous in his arms,—I cannot call such a man poor; I cannot pity my kind as a kind merely because they are men. This affected pity only tends to dissatisfy them with their condition, &c." Perhaps when Burke says this somebody may be content to listen to it, who would incline to sneer it down if emanating from the mouth of a contemporary. Old authorities have at least this advantage, that they may sometimes stop the mouth of living flippancy.

The casual poor ought certainly to be better provided for than they are. One thing ought to be altered at once,—this very winter, if possible. It is a social scandal that the casual poor should have to apply through the police for a night's shelter. It is the inhumanising of inhumanity. Its existence goes to prove that contempt for poverty which I have said above dominates the minds of the well-to-do classes throughout England.

It places the poor in a quite false relation to the police force. It must react unfavourably on the spirit of the constabulary as a body, whose function it is to repress disorder and crime, and to protect (not insult) the poorest man, just as fully and as respectfully as the richest in the land. This cannot be if you turn them into doorkeepers to the workhouse.

The poor are naturally prone to regard the police with an evil eye, even when strictly limited to their own province and special duties; but if you let them dabble in the distribution of charity you will render them justly odious to the honest poor, you will largely increase the feeling of natural antagonism, and, above all, you insult honest people, for you brand poverty overtly as criminal when you send a poor man or woman for relief to a police-station, where the drunkard, pickpocket, thief, and burglar should alone be seen.

I do hope that this scandal may be put down promptly. It certainly betrays to the world, by an outward and hatefully visible sign and act, the debased spirit in which Englishmen on an average regard poverty. Dupaty says, "Les pauvres, selon les gens riches, sont partout une espèce mitoyenne entre eux et les animaux, et ils leur paraissent bien près de ces derniers."

This ought to cease in a country where dogs and cats and horses have a special society to protect them. That nobody has yet raised an outcry shows how correct Dupaty was.

C. A. WARD.

THE NEW COVERED CARRIAGE-WAY AT KING'S-CROSS STATION.

THE Great Northern Railway Company have just erected a light and handsome new iron covered carriage-way in front of their station at King's-cross, in order to afford additional protection to passengers arriving at and leaving the station. The carriage-way extends across the entire width of the station-frontage, which somewhat relieves its heavy and monotonous character. The carriage-way, which extends about 40 ft. southwards of the station, rests on the south side on twelve iron columns with capitals, above which are again fluted columns and trusses, brackets and lattice-work springing from that part of the columns immediately above the capitals, a projecting cornice running along the entire length of the structure. The columns are all surmounted by ornamental finials, these being double at the east and west angles respectively. The cornice is surmounted by a light iron cresting. The carriage-way is covered in by a roof of wood and glass, supported by light iron ribs, rods, and girders, springing respectively from the station wall, and the iron columns already named in front of the carriage-way. The whole is painted in pale blue and French white. The extreme height of the carriage-way is 30 ft. The floor under the carriage-way is being laid with diagonal wood pavement. Messrs. Kirk & Randall are the contractors, the structure having been designed by Mr. Johnson, the company's engineer. It has cost about 3,000*l*.

It is stated that the unsightly angular piece of land in front of the station, extending to Euston-road, is about to be laid out as a garden, it being considered unsafe to erect any heavy buildings upon it, in consequence of the Metropolitan Railway passing immediately under. Otherwise, it is said that the station would long ago have been extended to the Euston-road boundary.

The Forth Bridge.—The exact figures for the amounts of the contracts for the Forth Bridge are,—Messrs. Arroll & Co., Glasgow, for the general structural work, 870,000*l*.; and Messrs. Vickers, Sons, & Co. (Limited), Sheffield, for the steel chains, which will weigh 10,000 tons, 210,000*l*. The bridge will thus cost upwards of a million sterling.



FLOATING SHEERS FOR LOWERING CONCRETE BLOCKS.

MESSRS POWIS & CO.'S SHEERS FOR LOWERING CONCRETE BLOCKS.

In the construction of the new deep-water quay at Queenstown, as recently mentioned, about 140 concrete blocks will be used, each 20 ft. in depth and 8 ft. in thickness, and 12 ft. frontage, weighing close on 120 tons each, and as these blocks are made at a wharf a considerable distance from the proposed quay, it was necessary for the contractor to have floating sheers to carry out the work. The block was lifted at the wharf and suspended about midway in the water, then floated to its position and lowered. We said that the floating-sheers, with the machinery for lifting, were designed and constructed by Charles Powis & Co., of Millwall Pier, London, and we now give a view of them as seen at work. We may repeat, from the description already published (p. 1113, *ante*) that the hull is 90 ft. long, 32 ft. wide, 9 ft. 10 in. deep fore, and 13 ft. 10 in. aft. The sheer-legs are fixed at the fore-end, together with powerful pulley-blocks and chains for raising and lowering. At the after-end of the hull are constructed six water-tanks, capable of holding 150 tons of water, to act as a counter-balance to the block. To these tanks a centrifugal pump is connected, so that they can be filled when raising the block, and emptied when lowering it, and by this means the hull can, at all times, be kept on an even keel.

The Annual Dinner, Builders' Benevolent Institution.—The thirty-second anniversary dinner in aid of the funds of this excellent Institution will take place at the Freemasons' Tavern, Great Queen-street, on Thursday, November 6th. Mr. F. J. Dove, the president, will be in the chair, and will, we have no doubt, be ably supported in his efforts on behalf of the Institution, and not only on that occasion, but throughout his year of office.

NEW INDUSTRIAL DWELLINGS IN KENNINGTON ROAD.

The erection of a large block of industrial dwellings has just been commenced in Kennington-road. The site is at the junction of Kennington-road and Lambeth-road, and consists of the ground upon which, for many years past has stood Surrey Lodge, a well-known old Surrey mansion. After the family to whom it formerly belonged left it, it came into the possession of the magistrates for the county of Surrey, and was for several years occupied by them as public offices. But for some time past it has been unoccupied, and was recently publicly offered for sale. It has now come into the possession of the "South London Dwellings Company," who have purchased the property from the Surrey county authorities, with the intention of erecting dwellings for the working classes on the site. The old mansion has already been cleared away, and the excavations for the foundations of the new buildings are now in progress.

The buildings will have a frontage to Kennington-road of 130 ft. in length, and to Lambeth-road of 150 ft. They will be Gothic in character, and built of red brick. In addition to the ground-floor portion of the structure, which is to consist of shops, there will be four floors containing tenements. The buildings will be carried to a depth of 30 ft. from the Kennington-road and Lambeth-road frontages respectively, one half of the tenements fronting the two roads, and the other half facing the open area within the ground purchased, from which they will all be reached by a Gothic gateway in Kennington-road, uniform with the architectural character of the shops. Immediately above the shops the two elevations will have a broad band of red glazed tiles, carried across both frontages. The first-floor will contain a range of twelve windows in the Kennington-road frontage, and a range of fourteen similar windows in the Lambeth-road frontage. The windows of the upper floors will be segment-headed, and between the windows of each floor there will be ornamental brickwork. The main body of the building will be 60 ft. in height, whilst at the north boundary of the Kennington-road frontage, at the junction with Kennington-road and Lambeth-road, and at the west boundary in Lambeth-road, there will be octagonal towers, rising to a height of 93 ft. The central portion of the Kennington-road elevation, and also the Lambeth-road frontage, will terminate by a step gable, between 75 ft. and 80 ft. in height. There will be six shops on the ground-floor of the Kennington-road frontage, and twelve shops in the Lambeth-road frontage, with a coffee-tavern at the corner of the two roads. There will be about 200 tenements on the several floors, containing two, three, and four apartments each. The building will have an open flat roof, and at the top there will be a laundry with drying-rooms.

Amongst a portion of the inhabitants of the neighbourhood, some dissatisfaction has been expressed at such a block of buildings being erected there, on the alleged ground that they will injure property in the locality. The county authorities are said to have refused an offer (amounting to nearly what they have received for the property) for the purpose of converting the mansion and grounds into a charitable institution.

The architect of the buildings is Mr. E. Hoole, of Russell-square, and the contractor is Mr. W. Smith, of the Eldon Works, Harleyford-road. Mr. Willoughby is the clerk of the works.

Size of the Oak in Britain.—The Rev. B. Edwards says,—"There is one at Newland, Gloucestershire, which measures 47 ft. 6 in. in girth. I believe this to be the largest, and am anxious to know if it is."

TIREMENT OF MR. E. H. WOOLRYCH.

The retirement of Mr. Woolrych, for many ars a metropolitan police magistrate, which k place on Wednesday, the 8th inst., at the stminster police-court, is worthy of notice in se pages, on account of the attention he voted to the elucidation and administration the Metropolitan Local Management and tropolitan Building Act. Mr. Woolrych, o was appointed a police magistrate in 1861, ted the Metropolitan Local Management Act l the Building Act of 1855, a second edition which has been lately published, and we derstand that he proposes to issue, in a com- te form, illustrated with notes, the whole of Acts relating to the municipal government the metropolis.

Mr. Woolrych will be remembered by all who l to practise before him, as a painstaking l accurate lawyer, and an impartial judge.

THE NEW CONNECTING ROOF AT THE CITY MEAT AND POULTRY MARKETS.

The new roof at the Central Meat and Poultry rkets which has for some time been in pro- ss for the purpose of protecting those attend- e the markets from inclement weather, when ssing from one market to the other, is now ost completed. The central portion of the f is uniform in width and height with that lr the Central Avenue of the Meat Market, nnecting that market westward with the ultry Market. It contains arched ribs uniform lh those in the Central Avenue, the sides ng similarly enclosed with glass, and the lhed portion covered in with slates, and sur- unted on each side by four ornamental venti- rs. The roadway between the two markets ach side of the new roof just described, has been covered in to the width of 20 ft., the reme width of the entire covered way being lat 60 ft. The two last-named portions are ried up to the cornice of the east and west ls of the two markets, the north and south s respectively being enclosed by ornamental elling and lattice work, and covered in by tern lights in six bays, filled in with opaque ss.

Mr. Horace Jones, the City architect, de- ed the roof, the contractors being Messrs. lland & Hannen. The cost is upwards of 00l.

LIVERPOOL WATER SUPPLY.

FAILURE OF THE BOOTLE BORE-HOLE.

T a recent meeting of the Water Committee the Liverpool Town Council, the Water Engi- r, Mr. G. F. Deacon, submitted the following ort on the boring experiments at Bootle:—

n the 4th of April, 1877, Messrs. Mather & Platt, of hester, entered into a contract with the Corporation re a hole on the site of the existing works at Bootle ft. deep, and to supply engines and place pumps in the bore, 400 ft. from the surface, capable of ing from it a daily supply of 1,428,000 gallons. By use of their patent apparatus for separating the e water from the lower the contractors promised the yield of the old well should not be influenced by ping from the new well. In his letter, dated March 2, , to the chairman of the Water Committee, the engi- expressed his conviction that by pumping from new well the yield of the old well would be greatly nished. He also anticipated an increased proportion olorides if large volumes of water were pumped from rest a depth. The boring having been completed depth of 1,000 ft., Messrs. Mather & Platt wrote July 30, 1878, that there were "practically three e impervious divisions passed through,—1st, at 268 ft. surface; 2nd, at 636 ft. from surface; 3rd, at ft. from surface." And on the 2nd of August, 1878, wrote "we have so far met with even greater success we anticipated, and every foot bored deeper will, we ve, largely increase the resources for a better water ly." By the instructions of the Water Committee engineer reported upon this letter on the 26th of ust, 1878. In this report he differed entirely from nclusions arrived at by the promoters of the works respect to the success of the undertaking up to that , and made the following observation:—"After ly examining the whole of the strata passed through, onjunction with the other records made during the ress of the boring, the engineer sees no reason to ge the opinion expressed before the work was enced, — that the proposed apparatus, wherever d is not likely to prevent the pumping in the new hole from ultimately influencing the yield of the old ." On the 30th of August, 1878, Messrs. Mather & t wrote:—"We are quite satisfied that the yield of the r below 640 ft. from the surface will far exceed the g power of the pumps,—that is, the rocks lying from ft. to 1,000 ft. contain an ample supply." The h of borehole exposed for percolation between these ts would have been 360 ft. In order, however, to the principle to its fullest extent, the Corporation ed with Messrs. Mather & Platt to continue the ng to a depth of 1,500 ft. from the surface, and on 13th December, 1878, the work was completed to this h. With the object of placing the watertight appa- ratus well below the bottom of the old borehole, which is 629 ft. from the surface, the Water Committee decided to allow the watertight joint to be placed anywhere between 806 ft. and 1,000 ft., thus including one of the "great impervious divisions" referred to in Messrs. Mather & Platt's letter of the 30th July, 1878. On December 30th, 1878, Messrs. Mather & Platt elected to place the joint at 835 ft. from the surface, thus leaving 465 ft. of borehole exposed for percolation, or 105 ft. more than the length which, on the 30th August, 1878, they stated would yield more water than the pumps could lift. The engines and pumps were accordingly proceeded with. The workmanship is excellent, and does credit to the contractors; but the engineer is not yet in a position to report upon the efficiency of the engines. On the 25th September pumping was commenced. The result was a complete failure to realise the conditions proposed by the promoters. The yield of the new well was only one-fourth the quantity which the pumps were designed to lift, and which the contractors had promised, and the yield of the old well was at once seriously diminished. For the week ending the 6th inst., when the pumping was continuous, the yield of the new well was 359,234 gallons a day, and the loss in the old well 75,503 gallons a day, leaving a net gain of 283,731 gallons a day. As in all such cases, the yield of the new well slightly increased at first, and for the week ending the 28th inst. it had risen to 402,268 gallons a day, while the yield of the old well had fallen off to the extent of 112,837 gallons a day, thus leaving a net gain of 289,431 gallons instead of the 1,428,000 gallons promised. The borough analyst's report upon the quality of the water is satisfactory, except as regards hardness and proportion of chlorine. The hardness is 17·9, being much higher than the hardness of any other Liverpool public well when first used. The chlorine is 6·1 parts per 100,000, a proportion in itself not objectionable, but 65 per cent. greater than the quantity in the old well. The absence of nitrogen as nitrates indicates a strong probability that this chlorine is derived from sea water rather than from sewage, and it would therefore appear that the fear expressed in the engineer's letter of March 2nd, 1878, is being verified even sooner than was anticipated. At the present low rate of yield, however, the increase of chlorine is likely to be very slow. The total maximum yield of the new and old well is now 1,761,945 gallons a day, and this quantity can be pumped by the old engine. The cost of working the new engines and pumps at the present time exceeds the rate of 1,200*l.* a year, exclusive of repairs, and as it is now clearly proved that the lower waters cannot be cut off from the upper waters, the utility of maintaining them in operation, after a sufficiently long trial has been made, is not apparent. At a trifling cost, a tunnel, 7 ft. long, might be driven from the old well to the new borehole, and the full benefit of the new works could thus be obtained without the cost, to say nothing of the ultimate risk attending the working of the new pumps.

In the course of the discussion which ensued,

Mr. Deacon said that the cost of the experiment had been from 18,000*l.* to 20,000*l.*

Mr. Garnett.—I suppose we may consider it now as a complete failure. If we have spent that sum on the experiment, it is nothing very ruinous, and we can only regret it has not been successful.

Alderman Bennett said that as the new borehole was yielding more and more he thought it was very premature to come to the decision that it was a failure. Mr. Mather told him that some time must elapse before they could get at the quantity it would yield.

The Chairman reminded Alderman Bennett that there was a watertight joint between the upper and lower waters, and that Mr. Mather had told them that the pumping from below would not affect the water above, but the extra quantity yielded by the new borehole was being taken from the old well.

It was agreed that the water-engineer's report should be printed and circulated among the members of the Council.

The issue of the foregoing report has led to a great deal of additional correspondence between Mr. Deacon and Messrs. Mather & Platt, who complain that the bore-hole has not yet been fairly tested.

MASTERS AND MEN.

SUB-CONTRACTORS.

Messrs. Mark Patrick & Sons, builders, Westminster-bridge-road, were summoned before Mr. Barstow, Clerkenwell, by George Brewis, carpenter, of Bayham-street, Camden-town, to show cause why they should not pay him a week's wage earned of them as a carpenter at a building being erected at Islington.

Mr. Crispe, barrister, attended for the prosecution, and Mr. Ricketts defended.

This prosecution was taken up by the Amalgamated Society of Carpenters, and raised a most important question not only to employers of labour, but to the workmen themselves. The question to be decided was whether a master builder having taken a contract to erect and complete a building, and being paid for so doing, could sublet his contract to other parties, whom he paid, and whether he was then answerable to the workmen engaged, but who were engaged to and worked for the sub-contractor. In this case it was not denied that the defendants had taken a contract to erect a building at Islington, and that they had sublet the carpentering work to a man named Euston. The complainant, whilst out looking for employment, came across the building in question, and seeing a board which announced the fact that the defendants were the ostensible builders, and knowing that they were in a large way of business, applied for work. He was at once engaged, and was given a ticket that belonged to the defendants, and his time was taken by the defendants' foreman. On pay-day he attended at the cashier's office on the works, and heard his name called. When he presented himself and asked for his wages, he was informed that he was not one of the defendants' workmen, but that he was engaged by the sub-contractor. Subsequently he applied to the latter person, and received the sum of 7*s.*, being informed that was all that could be paid that week. He again applied at the defendants' office for payment, believing that he was employed by them, and that the sub-contractor was only their foreman, and being refused, he placed the matter in the hands of the Amalgamated Society of Carpenters, of which he is a member, and hence these proceedings.

Mr. Crispe contended that the defendants were liable, for when the complainant went to the building in question he saw a painted board announcing the fact that they were the builders, and holding themselves out as liable for all consequences. The defendants' foreman engaged him, and took his time, and it was a mere subterfuge for them when the work was done to put forward a man of straw, and pretend that he was the person liable for the wages. If they were not liable, why did their servants take the workmen's time, give them metal tickets, showing they were engaged on the building, and measure up the work?

Mr. Ricketts handed to the magistrate the contract signed by Euston, in which he agreed to do all the carpentering work at the building in question to their satisfaction, and at a specified price. In that contract he undertook to find men to do the work and pay them, all the defendants having to do was to find materials and money for him as he got on with the work. He also produced receipts showing that the sub-contractor had received large sums of money from the defendants. Mr. Ricketts added that the reason why the defendants' foreman gave the sub-contractors' men tickets was that he should know how many men were employed on the work, so that when the sub-contractor went to the master for what was known in the trade as a "draw," he should not receive more money than was due to him for the work he and his assistants had done. It was a well-known rule in the building trade that the original contractors sublet their work, and many of the large contractors now in existence had risen to their present sphere from having successfully carried out their works and engagements as sub-contractors.

Mr. Barstow remarked that from his experience in the different police-courts in which he had sat, and from other causes, he knew that some contractors, even in a large way of business, did sub-let their contracts. There was nothing unreasonable in their so doing. In this case it was clearly proved to his satisfaction that the defendants had sub-let the carpentering work at the building in question, and had paid the sub-contractor for the work he did as it proceeded. It was also clear to him that the complainant was not engaged by the defendants, but by the sub-contractor, and therefore he, without any hesitation, should dismiss the summons.

UNDER THE METROPOLITAN BUILDING ACT.

WHAT IS A PUBLIC BUILDING?

At the Worship-street Police-court, on the 7th inst., before Mr. Bushby, a case was heard, "The District Surveyor for East Hackney (North) *v.* Willmott," which involved the inquiry above.

It was stated that the defendant had executed certain works in alterations and additions to Upton House, for its conversion to a truant school for the School Board for London, and the present summons was in respect of alleged irregularities under the Metropolitan Building Act, 1855.

The District Surveyor contended that this was, under section 3, a public building at the date the works were executed, and either that the whole of the staircases and walls should be made to conform to the requirements of sections 22 and 30; or if section 9 shut out this contention, then that the principal staircase, which had been altered, should be made in conformity with section 22 to the extent to which it had been altered.

The Magistrate held that although in some senses this might be considered in its present use a public building, yet it was built for and was occupied as a private dwelling-house up to the time of its being acquired by the Board. He considered that it still bore that character, and did not become by reason of the change of occupation a public building contemplated by the Act. The Act seemed to him to mean by "public building" a building erected *de novo* for a public purpose.

Summons dismissed. Case granted.

GREAT DISPARITY IN BUILDERS' TENDERS.

THE NEW VEGETABLE MARKET.

The tenders for the New Vegetable Market, about to be erected by the Corporation, as laid before the council last week, when the tender of Messrs. Mowlem & Co. was accepted, were strongly illustrative of the variations in the calculations of builders when tendering for one and the same undertaking. There were twenty-three tenders from builders, all of whom are well known as respectable firms in the metropolis; and the successful competitors offered to do the work for 109,850*l.* The highest tender sent in was 166,666*l.* From this sum the various tenders ranged down to 141,000*l.*, 132,000*l.*, 122,000*l.*, 116,000*l.*, and 114,000*l.* It may be added, as showing the close resemblance of the calculations of some of those who sent in tenders, that two of the tenders were within 20*l.* of each other in amount, one being 116,787*l.*, and the other 116,767*l.*, whilst another was 116,368. Amongst those who sent in tenders were Messrs. Higgs & Hill, Webster, Kirk & Parry, Holland & Hannen, Peto Brothers, and others. The tender of Messrs. Peto Brothers was the next lowest to that of Messrs. Mowlem & Co., being 114,447*l.*

NEW BYE-LAWS UNDER THE BUILDINGS ACT AMENDMENT ACT.

The Bye-laws made by the Metropolitan Board of Works under the provisions of the Metropolis Management and Building Acts Amendment Act, 1878, section 16, have been confirmed by the Secretary of State.

They have been greatly improved both in form and substance, especially by the last revision, and may be considered a satisfactory addition to the Building Regulations for the Metropolis. They must be looked upon as extending the provisions of the 1855 Act, the Act and Bye-Laws being read together.

THE SUNDAY SOCIETY AND THE COMMON COUNCIL.

A well-attended meeting, convened by the Sunday Society, was held on Wednesday, at the Guildhall Tavern, in connexion with the proposal now before the Common Council, to open the free library in the City on Sundays. The Rev. Canon Shuttleworth presided, and in an opening address denied that there was any truth in the assumption that the City is depopulated on Sundays. As a canon of St. Paul's he had some right to speak on this subject; and though for years his feeling had been opposed to the object of the Society, he had recently come to see that the advantage of contending effectually with the evil influences which unfortunately were at work on Sundays, and bringing religion into the homes of the poor, was to open museums and libraries on Sundays.

Mr. Mark H. Judge, honorary secretary of the Sunday Society, in speaking of the recent conference at Manchester, announced, amid cheers, that on Sunday next the Royal Institution, with its collection of the works of modern artists, will be open to the public, free.

Dr. Lewin Hill, of the General Post office, proposed, and Mr. Jas. Thompson, of the Temple, seconded, a strong resolution in favour of the opening, which was carried.

THE SCHOOL OF WOOD-CARVING.

Sir,—It is a very frequent and, to the thoughtful, transparent device, when a position cannot be assailed by argument, to attribute "misleading" to your opponent. Your correspondent, "Anselmo," has not assailed my leading position even with the shadow of an argument, viz., the position that no kind of fine art ever was developed by any other means than that of a demand, a very considerable demand, upon the part of the public for its exercise, and that no art ever was or ever will be revived but by precisely the self-same means. And for any set of men, however practical they may be reputed to be, to attempt to accomplish what they propose by any other plan, stamps them as ignorant of political economy and of the history of art. I will defy your correspondent to adduce any one single instance in the history of art of an art being either developed or revived by the means which his "eminently practical men" have instituted. There is even evidence that the instigators of the "school" had a lurking suspicion of its *woodenheadedness* by that final clause in the prospectus which provides for the purchase of its pupils' works! Oh, shade of Adam Smith!

Statesmen are nervously timid, they tell you, of rendering State aid to art, and yet we have a colossal Art Department, unconstitutionally subsidised, according to their own showing, by the State, and now a departmental workshop for the production and purchase of *wood-carving!* All this savours of Continental procedure and centralised government. It is remarkable, very remarkable; for one head of the Janus informs us that France is jealous of the superiority of our Art Department and means to imitate us; whilst the other head as emphatically informs us that, unless we imitate the technical institutions of France, and invite French artists over, the case of the English artisan is hopeless!

The cause of the decline of wood-carving is that of the decline of every art; it declines when its exercise is no longer required. Wood-carving is no longer required in ecclesiastical and civil decoration as it was of old time; it is no longer required upon frames, glass frames, and furniture as it used to be. Only let our wealthy people again require wood-carving, as they did of old, and the art will revive without any such institution as that of the School of Wood-carving. The school which is above all others needed in respect to art is a school of common sense for the public and our would-be art-instructors.

But could you even give your public common sense and an immaculate taste, the question of cheapness would still touchingly appeal to the pocket. The beauty of the best wood-carving does not inhere in the wood, but the art with which the wood is for the nonce endowed; as much art, if not as much skill, can be exhibited in *composition;* in respect to the figure, more; for wood is a thankless and intractable material in the rendering of "flesh." The best figures ever carved in wood are a long way, a very long way, behind the art of the best figures in ivory, marble, or bronze. In the fitness of things it would seem, curiously enough, that art in timber is destined to render, best, *foliage* and *fruit*. For the figure its limits are very little beyond the art of "figure-heads." And should the public really require this kind of thing in wood to any greater extent than at present, there is plenty of art talent afloat in the country to supply it without having recourse to such an institution as that of the School of Wood-carving.

It is one who, as you may probably know, sir, is thoroughly and practically acquainted with wood-carving, who, in conclusion, inquires,—to whom the imputation of misleading properly belongs, to the supporters of the School of Wood-carving, or to your humble servant?

Meter.

THE APPLICANTS FOR SURVEYORSHIPS.

The following may be of some interest to your readers as showing, in reply to an advertisement for a surveyor for South Stockton, what sort of applicants replied thereto:—

9 architects, 18 surveyors, 6 assistant surveyors, 8 civil engineers, 1 mechanical engineer, 1 colliery surveyor, 2 farmers, 1 retired from Civil Service, 1 in the Civil Service, 1 member of Ratepayers' Association, 1 railway manager, 3 joiners, 1 contractor, 7 builders, 1 draughtsman, 1 manager of lead mine, 1 foreman of works, 1 sergeant, 6 inspectors of nuisances, 4 nothing in particular, 1 foreman in a timber yard (!) and one of the selected candidates.

The above is an accurate description: comment is needless. F.

MERCERS' COMPANY'S NEW BUILDINGS, POULTRY.

Sir,—In your admirable notice of the buildings in the Poultry and Ironmonger-lane for the above Company, you state:—"The entrance to the Mercers' Chapel will be a prominent feature, the walls of the vestibule of which are faced with carved arches in Dumfries stone."

This work was specified by the architect to be performed in Red Corsehill stone, and this has been done, the stone being supplied by myself, as previously agreed. Dumfries is a much coarser-grained stone than the Corsebill.

Samuel Trickett.

VARIORUM.

The *Plan Lisible*, or *Guide-Répertoire de Paris*, is a well-executed map of Paris, with an index to all the streets and localities of the French capital, comprising the whole of the city within the *enceinte*. The map, as is usual, is divided into squares for easy orientation, is excellently printed *on linen*, and is neatly folded between stout boards, of a size that will admit of the little book being readily slipped into the breast-pocket. Those who wish for a reliable guide to spelling correctly the names of places in Paris (an acquisition not generally possessed) will do well to consult the index, which likewise supplies directions as to where to find a given spot on the map. The professional man and the man of business, the tourist or he whom chance may strand on the banks of the Seine, will find this little *Guide* an indispensable companion.——"A Guide to Modelling in Clay and Wax; or, Sculptural Art Made Easy for Beginners," by Morton Edwards, a little book just now published by Lechertier, Barbe, & Co., is exactly what it professes to be. Mr. Edwards is a practising sculptor, and knows exactly the sort of information which beginners, unable to obtain personal advice, absolutely need. A more delightful occupation and accomplishment than modelling cannot be conceived, and this *brochure* sent down to a country-house should have the effect of setting some of the young people to work with pleasure and advantage.——The same publishers (Lechertier & Co.) have issued a book called "Painted Tapestry and its Application to Interior Decoration," by Julien Godon. It includes a very interesting historical account of tapestry and practical lessons in the, so-called, tapestry painting with liquid colour. It is well translated by Mr. B. Bucknall, architect, and should lead to the use of such hangings in England. The title is a misnomer, and likely to induce prejudice against the work. The cheap imitation of tapestry by means of colour is open to valid objection. But to the use of painted canvas, pretending to be nothing but what it is, there can be no possible objection; in fact, it is mode of decoration which in some cases may b very conveniently and usefully applied, and th publication before us gives much practical in formation as to the mode of proceeding those who may feel inclined to work at i Proper colours have been prepared, and canva which fulfils all the required conditions can no be had.——Mr. William Tirebuck has in th press, for immediate publication, a pamphl on the works of William Daniels, a remarkabl Liverpool artist of the Rembrandt order, wh has five portraits in South Kensington. Amon his most important works are three represent tions of Shylock; a portrait of Charles Kean Hamlet; and Sir Giles Overreach, Macbet Falstaff, Bardolph, and the Prisoner of Chillon

Miscellanea.

Manchester Mechanics' Institution. At the second annual joint *conversaziones* the Manchester Mechanics' Institution Scien Classes and the Science Association the ch was taken by Mr. E. T. Bellhouse, one of t vice-presidents, who said the real strength the institution consisted in its strong positi as an efficient educational association,—its d schools, evening classes, examinations, its syst of competition for prizes, its co-operation w the Government Science and Art Departme and the Society of Arts, its library of 14,0 volumes, reading and news rooms, afford opportunities and incentives to advancement knowledge and training. He found that fr September, 1878, to September, 1879, unc twelve heads in the science department th had been 593 pupils, the largest number bei 185 in the architectural and mechanical drawi and practical geometry classes. In the department there had been 100 pupils, and t total attendance for the year had been 6 New classes for the teaching of organic c mistry and metallurgy are being formed, t these would make the syllabus of the institut complete as regarded the scope of the Whitwo scholarships. The library had recently b enriched by the presentation of 534 volum from the library of the late Sir William Fa bairn, which had been presented by his s Sir Thomas Fairbairn. Professor Unwin, Cooper's-hill College, near Windsor, had gi the institution 20*l.* worth of models, made Williamson, of Kendal, illustrative of machi details, and additions to their teaching ap ances had been received from other gentlem Mr. Bellhouse suggested that arrangem should be made for the science students to v various engineering and other works in the c

Depreciation in the Value of some La At the sale of the Hippenscombe Estate 830 acres at Hungerford on Wednesday b week, Mr. Edwin Smith, the auctioneer, nounced that this estate was purchased by a tion by the late Mr. Wheble in 1834 for 13,00 the tithe being then about 50*l.* a year. It let on lease at 55*l.* till 1876, when the rent reduced to 250*l.* When questioned concern the present tithe the auctioneer was obliged acknowledge that since the Tithe Commutati Act of 1836, when the tithe was commuted 130*l.*, with the present high averages the ti had increased to 150*l.*, the Ecclesiastical C missioners paying 10*l.* towards the land which was 50*l.* Upon that statement there raised a cry of "shame." The property ultimately sold to Mr. Bates, M.P., for 6,70 about one-half of the original price. We h that several other properties of about 1,200 a are likely to be brought into the market, a tenants can be found.—*Metropolitan.*

Ecclesiastical Art Exhibition, Swan In connexion with the Church Congress hel Swansea last week, there was an exhibition "ecclesiastical art" in the Agricultural E St. Helen's-road. The entrance-hall was h with copies of notable church brasses and minated texts. To the right was the stal Messrs. Cox & Son, who made a good disp There was a good show of gold, silver, jewelled ecclesiastical work sent by Me Thomason & Co., art metal workers, and a q tity of plate by Messrs. Keith & Co. Am the items of interest in the loan collection some monumental brass rubbings, lent by Henry E. Franks, and a carved ivory diptyc passages in the life of our Saviour,—Nu berg, thirteenth century, lent by Sir Wa Williams Wynn.

Paris Notes in "The Parisian."—One of the largest of the dry goods stores of Paris was visited last Monday by 64,921 persons, and the money taken amounted to 1,135,372f. 80c. There were sold 400,000f. worth of silk, 7,000f. worth of umbrellas, 35,000f. worth of artificial flowers, and 25,000f. worth of fichus. The ladies were making their provisions for the winter season.——Nearly 100 designs for the statue of the Republic that is to adorn the place du Château d'Eau have been sent in to the Ecole des Beaux-Arts. This exhibition was opened to the public on October 10. Throughout the winter and spring we shall have a succession of similar "*concours*" for sculpture and painting ordered by the Ville de Paris.——The question of an exhibition of specimens of all the Gaulish coins in existence is under consideration at the Ministry of Public Instruction.——The *Figaro* is establishing telephonic communication with all the theatres in Paris, so that you can call in at the *Figaro's* Salle des Dépêches and engage your seats at the Odéon, for instance, without wasting two hours in crossing the water, and perhaps finding that there are no seats after all.——During the subscription to the new Crédit Foncier Loan, the Rue Neuve des Capucines has presented a curious aspect. From six o'clock the previous evening groups began to form round the door, and when the bureaux opened at ten o'clock there were thousands of people massed on the side-walk. The subscribers were mostly poor people, who took good care of their purses, for there were in the crowd plenty who were willing to subscribe with other people's money.

The Liverpool Engineering Society.—The eighty-third meeting of this society was held at the Royal Institution, Colquitt-street, on the 8th inst., Mr. M. E. Yeatman, M.A., president, in the chair. A paper on "Cast-Iron for Engineering Purposes" was read by Mr. John J. Grodie, C.E. In a brief introductory historical sketch, reference was made to Smeaton, Savory, Wilkinson, Murdoch, and others, who were among the first to make use of cast-iron for bridges, machinery, &c.; but it was shown that until the time of the valuable experiments of Messrs. Fairbairn and Hodgkinson, in 1827 to 1849, comparatively little progress was made in the application of iron castings for large structures. Those experiments, together with subsequent experiments of Mr. Hodgkinson, made in 1849, at the request of the Royal Commission on Railway Structures, were shown to have been the starting-point for the extensive application of the material for columns, short-span girders, &c., now in such general use.

Manchester Architectural Association.—The third annual *conversazione* of this Association was held on Tuesday evening in the Memorial Hall, Albert-square, and was attended by a large number of the members and their friends. Great efforts had been made by the committee in the arrangement of the objects exhibited. Messrs. Hart, Son, Peard, & Co. contributed silver, brass, and plated goods for ecclesiastical use, and similar articles were lent by Messrs. Cox & Sons, London, and Messrs. Roman & Collier, Manchester. The new Doulton ware was exhibited by the makers, Messrs. Doulton & Co., Lambeth, and it attracted much attention. Cartoons for stained-glass windows by Moore, of London, and Messrs. Barraud, & Westlake; sketches of old buildings by Langham, of Manchester; and water-colour drawings by Selim Rothwell and Edge Nattrass were also contributed. In the course of the evening Mr. James Murgatroyd, the president of the Society, delivered a short address, in which he referred to the work the society was doing in the interests of architecture.

Glasgow Institute of Fine Arts.—The members of the Glasgow Institute of Fine Arts held their annual meeting in the Accountants' Hall of that city on the 10th inst., when Mr. J. Stewart occupied the chair. It appeared from the council's report that the Institute had been incorporated under "The Companies Act," and that the capital stock had increased to £1,017. 17s. 8d. The chairman, in moving the adoption of the report, mentioned that the present exhibition had been highly successful, in spite of the depression of trade. He also stated that the new buildings in course of erection for the Institute at Windsor-place would be more commodious in every way than the Corporation Galleries. The Marquis of Bute had consented to become president, in room of Sir Daniel Macnee, P.R.S.A., who had retired.

Obituary.—Mr. Augustus Frederick Livesay, an architect who practised in Portsmouth, has just died at his residence, near Ventnor, Isle of Wight, of apoplexy, in his 72nd year. He was the son of Mr. John Livesay, Professor of Mathematics and Drawing at the Royal Naval College, Portsmouth, and he was articled to Mr. James Adams, architect, who had himself been a pupil of Sir John Soane. He was in good repute as an estimating surveyor, and, we understand, prepared the estimates for the new fortifications, barracks, and other extensive Government buildings in the South-Western District and the Channel Islands. Mr. Livesay also did much work for Ventnor. He projected the railway from Ryde, and about thirty years ago established, as a private speculation, gas-works and waterworks for supplying the town. Mr. Livesay was elected a Fellow of the Royal Institute of British Architects in 1866.

The Building Trade.—Mr. J. H. Colls writes:—By reference to those journals of last week which have to do with the building trade it will be found that between thirty and forty contracts were let, amounting to a total of about one million of money; and, as these were all within a radius of a few miles from London, it would appear that in this particular department there is likely to be a fair amount of work during the winter season, especially when it is remembered that it is becoming more and more the custom to arrange for the best work privately with the builder, so that the amount of those works does not get published in the trade journals. Perhaps, as the state of trade is now the most constant topic of conversation, the above facts may be worth publishing.

Broomfield, Kent.—The parish church of Broomfield, Kent, is about to undergo a thorough restoration. The works to the nave and tower, which comprise a new vestry and heating vault, new entrance-porch, new roof and parapet to tower, oak seating and new flooring throughout, and general repairs, will be carried out under the superintendence of Mr. G. M. Hills, architect, and at the sole expense of Mrs. P. Wykeham Martin, of Leeds Castle, widow of the late Mr. P. Wykeham Martin, late M.P. for Rochester, whose remains are deposited in the family vault in this church. The chancel restoration consisting of new roof, floor seating, &c., will be carried out under the directions of Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, and at the expense of that body; the total cost of the works are estimated at 1,400*l.* Mr. J. G. Naylar, of Rochester, is the contractor.

Nelson's Pillar, Dublin.—Mr. Joseph Maguire, architect, writes to the *Freeman's Journal* as follows:—"Seeing the great improvements that our esteemed member, Sir A. Guinness, is at present carrying out at St. Stephen's-green, might one suggest the idea of having removed to the centre of that site that fine pile of building, Nelson's Pillar, Sackville-street? I believe that not only would the altered site be appreciated by our fellow-citizens, but it would open up a street that might well be termed the Broadway of Dublin, and also give a clear line of street from Capel-street to the Northern Terminus, Amiens-street. As a proof of the feasibility of carrying out such a work I refer to the military tower at the Royal Hospital, Kilmainham, and which formerly stood at Barrack, now Victoria Bridge."

Effect of Bad Trade on Rateable Value. At the meeting of the Prestwich Union Board of Guardians on the 9th inst., the clerk stated that the rateable value of the Union during this year had increased to the extent of 15,000*l.*, against an increase of from 25,000*l.* to 30,000*l.* for some years previously. In two of the townships in the Union the new railway and workhouse extensions had helped to maintain the value of the Union, and in Failsworth only had there been a decrease in rateable value, consequent upon the stoppage of several large works there.

Light.—At the School of Art, Hastings (presented by Mr. Brassey to the town, and of which we gave a view some time ago), owing to the proximity of the Cliff the light was defective in some of the rooms, especially the Picture Gallery. To remedy this, Mr. Brassey ordered a number of Chappuis' reflectors, and they have been fitted up under instructions of the architect, Mr. H. Vernon, with, as we understand, excellent effect.

TENDERS

For the Metropolitan Vegetable Market, for the Corporation of the City of London. Mr. Horace Jones, architect:—

Martin & Wells	£168,686 0 0
Higgs & Hill	141,941 0 0
Webster	135,000 0 0
Groome	132,011 0 0
Braid & Co.	131,975 0 0
Nightingale	129,971 0 0
Chappell	129,460 0 0
R. & E. Smith	126,000 0 0
Conder	125,675 0 0
Rider & Son	125,988 0 0
Vernon & Co.	123,900 0 0
Kirk & Perry	123,000 0 0
Sheffield	122,873 0 0
Perry & Co.	119,989 0 0
Holland & Hannen	119,880 0 0
Stevenson	119,767 0 0
Green & Burleigh	116,787 0 0
Shaw	116,368 0 0
Kirk & Randall	114,746 0 0
Peto Bros.	114,447 0 0
Mowlem & Co.	109,959 0 0

For the machinery for the baths and washhouses, Rotherhithe:—

Deane	£1,809 0 0
Middleton & Co.	4,093 0 0
Strode & Co.	4,100 0 0
Clements & Co.	3,960 0 0
F. G. & R. Vigor	3,827 0 0
Rosser & Russell	3,650 0 0
Woolner, Smith, & Co.	3,650 0 0
Bushy	3,375 0 0
Oliver & Co.	3,305 0 0
Fraser Bros.	3,290 0 0
J. & F. May	3,280 0 0
Hayward Tyler & Co.	2,830 0 0
R. H. Williams & Son	2,743 0 0

For the erection of villa residence, with coachhouse and stable, Norbury, for Mr. E. Fletcher. Mr. John Farrer, architect. Quantities by the architect:—

	House.	Stable, &c.
Bragg	£3,120 0 0	£—
Smith	2,995 0 0	415
Ennor, Julian, & Co.	2,950 0 0	350
Bowyer & Sons	2,904 0 0	389
Conder	2,879 0 0	344
Nottle	2,863 6 4	330
Lawrence	2,743 0 0	364
J. Smith	2,732 0 0	353

For works, Great Winchester-street and Austin Friars, for Col. J. S. Clitherow. Mr. W. Moseley, architect:—

Williams	£341 0 0
Gunn	297 4 0
Holmes & Son	276 0 0
Thompson	210 8 0

For works, Old Kent-road. Mr. J. L. Stewart, architect:—

Thompson	£417 15 0

For works at Lynton-road Chapel, Bermondsey. Mr. J. Lawrance, architect:—

Pickerton	£545 10 0
Wilkins	537 0 0
Campkin	518 0 0
Buller	477 0 0
Castle	396 0 0
Appleby	393 0 0
Thompson	363 0 0

For extension of Convalescent Home at Norbiton, for the Metropolitan Convalescent Institution. Messrs. H. Saxon Snell & Sons, architects:—

	Plan No. 1.	Plan No. 2.
Wall Bros.	£2,200 0 0	£1,703 0 0
Morris	2,174 10 0	1,653 10 0
Oldrudge	2,131 0 0	1,696 0 0
Bamford	1,995 0 0	1,555 0 0
Mudie	1,994 0 0	1,473 0 0
Gibson	1,970 0 0	1,560 0 0
Williams & Son	1,963 0 0	1,530 0 0
Crockett	1,838 0 0	1,478 0 0

For alterations at the Queen's Head and Artichoke, Albany-street, Regent's Park, for Mr. G. A. Russell. Mr. James Robert Furniss, architect:—

Arnold	£1,550 0 0
Grimwood & Sons	1,493 0 0
Edgley	1,405 0 0
Temple & Forster	1,394 0 0
Gould & Brand	1,375 0 0
White	1,297 0 0
Anley	1,270 0 0

For alterations to the Old Oak Tavern, Mansfield-road, Kentish-town, for Mr. W. Turner. Mr. James Robert Furniss, architect:—

Beastead & Son	£2,450 0 0
Gill	2,447 0 0
Anley	2,425 0 0
White	2,389 0 0
Grimwood & Sons	2,333 0 0
Palmer	1,999 0 0

For the erection of a detached residence on the Whitgift Estate, Addiscombe, Croydon, for Dr. Smith. Mr. D. R. Dale, architect:—

Hobbs	£2,540 0 0
Dale	2,350 0 0
Lee	2,283 0 0

For the erection of a villa residence, Thornton Heath, for Mr. F. Collis. Mr. D. R. Dale, architect:—
Dale (accepted).

For alterations and additions to No. 12, Westbourne-grove, Bayswater, for Mr. William Owen. Mr. J. W. Chapman, architect:—

		Lifts.
Hook & Oldrey	£1,231	£146
Hearn	1,097	106
Drew & Cadman	1,080	71

For pulling down and rebuilding Nos. 7 & 8, Bloomsbury-square. Mr. C. F. Hayward, architect. Quantities by Mr. S. J. Thacker:—

Parsons	£5,370	0	0
Adamson	4,975	0	0
Smith	4,839	0	0
Bellham	4,550	0	0
Greenwood	4,493	0	0
McLachlan & Sons	4,444	0	0
Braid & Co.	4,250	0	0
Stevenson	4,209	0	0
Chapman	4,120	0	0
Prout	3,947	0	0

For the construction of road and sewer on the Castle Bar Estate, Ealing, for Mr. George Penn. Messrs. Walter Graves & Hulbert, surveyors. Quantities supplied:—

Haynes	£2,900	0	0
Neave & Son	2,584	0	0
Killingback	2,500	0	0
Keeble	2,395	0	0
Jackson	2,279	0	0
Mears	2,100	0	0
Nye (too late)	1,885	0	0

For taking down and rebuilding No. 27, Bow-lane, City, for Mr. William Cooke. Messrs. Walter Graves & Hulbert, architects. Quantities supplied:—

Hook & Oldrey	£1,855	0	0
Green	1,751	0	0
J. & J. Greenwood	1,657	0	0
Hunt	1,629	0	0
Boyce	1,623	0	0
Anley	1,576	0	0
Toms	1,529	0	0
Ramsay	1,497	0	0

For works at the Admiral Keppel, 232, Hoxton-street, Hoxton, for Mr. Henry Hall. Mr. Rowland Plumbe, architect:—

Merritt & Ashby	£2,848	0	0
Langmead & Way	2,560	0	0
Browne & Robinson	2,389	0	0
Eaton	2,357	0	0
Cox	2,348	0	0
Marr	2,304	0	0
Morter	2,290	0	0

For new house, stables, &c., at Wilmington, near Bexley, for Mr. W. Ratcliffe. Messrs. Joseph & Pearson, architects. Quantities not supplied:—

Horsman	£1,850	0	0
McLachlan & Sons	1,830	0	0
Tomlin	1,597	0	0
Otway	1,545	0	0
Taylor	1,200	0	0
Hunt	995	0	0

For new post-office buildings for the Corporation of Ipswich. Mr. J. Johnson, architects. Quantities supplied by Messrs. Linsdell & Giffard:—

Jones & Co. (revised tender*)	£9,236	0	0

* Accepted.

For alterations to Carlyle House, Chelsea, for Mr. F. Coleman. Mr. R. Price, architect. No quantities supplied.—

Gillow & Co.	£490	0	0
Nightingale	447	0	0
Smith	442	0	0
McLachlan & Sons	429	0	0

For alterations and additions to premises, for the Briton Life Association, Agar-street, Strand. Quantities supplied. Mr. Alfred Bovill, architect:—

W. & L. Smith	£817	0	0
Barrie Bros.	719	0	0
Macey	702	0	0
Ryder	628	0	0

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All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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VOL. XXXVII. No. 1916. SATURDAY, OCTOBER 25, 1879.

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Squalor.

IF it be asked in what single word the evils most hostile to the architect can be summed up, what word can be more appropriate than squalor? Defining a condition in itself detestable, squalor is no less hateful for the unseen evils of which it is the outcome than it is for its own melancholy and depressing aspect. The word denotes absence of beauty, the negation of artistic or industrial effort, neglect both moral and physical, sanitary danger, financial ruin. In this last respect, indeed, as is the case in the vigorous fungoid growths which indicate the decay of the vegetable substances on which they feed, squalor is very costly,—costly to those who suffer from its causes. This cost may indeed, at times, be the source of a large and unhallowed gain to the pockets of the proprietors of squalid abodes. Against this, however, has to be set the far greater loss to the community at large that arises from the maintenance of nurseries of disease. And although we have no right to step in between the owner of the rookery, and what ought to be his conscience, we may be permitted to express strong doubts as to the advantage ultimately gained from money thus earned. Proverbial wisdom, at all events, is in favour of such a doubt.

It is not out of our province to endeavour to trace the chief causes of a squalid appearance in houses; since it is from a full knowledge of evil that we may best learn how to avoid it. Squalor, then, is the outward expression of hopeless and unrelieved poverty. But it is not needful for the poor man's house to be squalid. On the contrary, with industry and care, and the bright service of a healthy wife, the tiniest cottage may at times be an abode in which the most dainty could pass a short time with pleasure. On the other hand, many houses become squalid without the excuse, miserable as it is, of abject poverty. Thus, while we may fairly rank poverty as a main cause of squalor, this must be understood of unresisted poverty. It is in fact, rather neglect, than absolute absence of money, which is the chief cause. Cleaning is neglected; and whatever be the building, and however it be finished and furnished, in which constant cleaning is omitted, dust accumulates, unexplained stains make their appearance; and a progress, more or less rapid as the case may be, sets up towards decay and dilapidation.

In this downward progress no element, in our climate, is more powerful a cause of mischief than damp. Damp weeps in grievous stains from the walls. Damp rots the floors and the carpets, swells the windows till they refuse to open or close, disarranges the fitting of the doors, causes the wall-papers to rise up in flabby blisters, and blends the whole complexion of the house, within and without, into a sort of grimy unity of discomfort and beggary.

This action of damp may be traced to several causes. Very frequently the builder so commences his work that he may be thought to make a special provision for ensuring the constant presence of damp. On an impervious soil he will sink a hole for the foundations, which will be freely exposed to catch any rain or surface water, but which is entirely unprovided with a drain. Thus he ensures the advantage of keeping the footings and lower courses of the walls standing in a sort of bath or well, and the upper walls, in consequence, are never thoroughly dry. Or, in a pervious soil, he boldly excavates for the basement floor, the walls of which he makes to serve at the same time as retaining walls for the outer sandy earth. The drip of the roof, the escape of the rainwater pipes, and very often a dripping tap just outside the house, keep the jacket of pervious soil immediately without the basement wall perpetually supplied with water; and thus the lower part of the house is as thoroughly damp as if it were built in a hole in the clay.

Again, neglect of the roof is a very constant cause of damp. Our roofing, as a rule, is probably in a more primitive condition than any part of our building. And if we use the word "primitive," it must rather imply retrogression than stagnation. As far as our experience goes, it is seldom that roofs are now made which in any way approach the excellence of those leaden roofs with which we have made acquaintance on many a lofty minster, abbey, or cathedral tower. No doubt a lead roof is a very costly one. But cost was a less primary consideration with the builders of our old church-building times than is now the case. It may also be questioned whether, in the case of roofing, first cost be not least cost. An example which at the moment recurs to memory is that of the roof of the tower of Tewkesbury Abbey. The large square tower has a partly flat, partly slightly inclined roof, surrounded with a parapet, and covered with lead. To the protection thus accorded, no doubt, the preservation of this portion of the edifice is in great measure to be attributed. It would be difficult to substitute any other covering on a part of a building where snow accumulates and water drifts, that would so thoroughly keep dry, not only what is under the roof, but also the walls which support it.

If we compare the water-tight and durable protection of the ancient leaden roofing to the shelter given by either tiles or slate, we shall see at once how much of the absolute weather-proof efficiency of the building is sacrificed to effect a money saving, which, of course, is a very considerable item. Neither tiles nor slates are laid so as to be absolutely water-tight. They lap over each other, so that in no part of the roof there is, or ought to be, less than two thicknesses of slate, or an unbroken thickness of tile. And so long as rain falls vertically, or nearly so, it will run from edge to surface of tile after tile, or slate after slate, and make its way to the gutter without entering the roof. But the case is altered if we have anything of such weather as is frequent in more southern latitudes. If a swirling wind accompany a heavy rainfall, it will often carry a stream of water *up* over a portion of a roof. Neither tiles nor slates are then water-tight. Against any such action of the elements the protection which those materials afford is most inefficient. If a strong upward draught from the gutter or eaves be kept up for some time steadily, the downpour of water into the house may be a considerable proportion of that which falls over the portion of its roof so exposed.

It is well known to builders, especially in the case of churches, that snow at times makes its way upwards, by the aid of drifting wind, into tiled roofs. Experience points out the advantage, in order to avoid this cause of damp, of laying roof tiles in hay. The plan, however useful for this purpose, is hardly one that can be considered to denote a very advanced condition of the art of roof-building.

These dangers beset tiled or slated roofs of ordinary design and fair execution. But there is another source of mischief which affects these roofs. There is a danger usually arising from scamping; that is to say, from neglect. But sometimes it arises from ignorance, and sometimes, unless a certain class of men are very much calumniated, from design,—the design to provide work, or as it is called, to make a job. Thus, if any repair is required in a roof, and the workmen who go to investigate or to mend the damage are allowed to walk over the roof, unprotected by planks or ladders, the chances are in favour of their making two leaks while they stop one. The mere weight of the man, if allowed to come directly on a tile or slate, will very likely crack it. That the upper and the under layer should thus be pierced by the same crack is perhaps rather probable than otherwise. Again, a nail or peg left out, not to say a pick of a slater's hammer, is quite enough to establish at least a source of damp in a rafter or a principal, and thus to lead to the sagging of the roof, the admission of more wet, and to the general increase of damp and advance of decay.

Stucco, plaster, and rough cast are highly favourable to the retention of damp, and to the progress of decay. Sometimes these materials are so absorbent as to subject the house which they adorn to a sort of permanent hydropathic treatment. Or, again, they may admit of a gentle percolation of water between the wall and its slovenly jacket, which has the same effect. The use of bricks made of certain clays,—among which the gault has an evil prominence,—is also conducive to damp. If the

tourist will note those parts of England where it is common to give to the houses a vertical facing of tiles, he will see the indication of the use of pervious bricks. The tile, being so much thinner, is vitrified to some extent in the kiln, and thus does not present an absorbent surface. The tile facing thus keeps the brickwork dry,—except in the case of wet drifting before the wind.

The only place in which we remember, at the moment, that a sort of artificial squalor is habitually produced in new building, is the bright little city of Turin. It must be remembered that in condemning the external use of stucco, and plaster of all kinds, we speak of them as they ordinarily exist in England. In Italy the face is altogether different. Good Scagliola, in Italy, is at times almost indistinguishable from marble, for the pilasters and internal adornments of a church. Again, fresco painting, which is almost an unattainable art in England, is habitually to be found in houses even of very modest proportions in Italy. We are inclined to attribute the great difference between the work of the plasterer in England and in Italy, not so much to the superiority of the Italian limes as to the method adopted by the Italian architects for their treatment, which is diametrically opposite to that familiar to ourselves. With us it is usually considered important to use lime as freshly slaked as possible for mortar. In the specifications prepared by Mr. Brunel, to which the utmost care was given, and as to which every new discovery made by experience was carefully made to apply, the provisions were very strict as to the use of lime actually hot from the process of slaking. The Italian builder, on the contrary, commences his work by digging a pit, in which the lime is thrown and covered with water perhaps two years before it is used. We may have mentioned this before. It is a matter of very great interest, to which we are anxious to attract the attention of the architect and of the builder. When we see the condition of the mortar in old Roman work in this country,—we may cite Rochester, St. Alban's, and Guildford, as places where the old Roman work may be found set in a mortar which is as hard as stone,—the question arises, Did not the Italian builders import their national mode of mixing mortar, as well as their national form of brick, into Britain? When we find that, by some means or other, the Roman work is as durable in England as it is in Italy, this question deserves very serious attention.

To return, however, to what we were saying as to Turin. It is the custom in that city to build houses of a certain importance of brick, which is in some way either roughened or plastered over with clay or brick earth, so as to give a good hold for a subsequent coat of cement. We cannot speak with more precision as to the actual process. But we can speak as to the pictorial effect. It is, we believe, intended that this rough surface shall dry for some six months before the cement is applied. But it not unfrequently happens that the house, when built, is unsold or unlet, or from some other cause left unplastered. In a very short time it then assumes the appearance of extreme old age; and many important buildings in Turin are, or were some years ago, invested with this squalid halo of a spurious antiquity.

We must not omit to mention the vigorous action of the various species of the organic kingdom in producing squalor. The instincts of dogs are unusually opposed to the durability of iron railings, when they are fixed so near to the ground as to come within the reach of the mischief constantly effected by these animals. It would be a great triumph for the advocates of evolution by natural selection if the obnoxious habits of the canine race could be improved by education. Then those cheerful and active citizens of the world, to whom we would be the last to grudge food or shelter, the sparrows, instead of paying rent for the shelter afforded them by the eaves of the house, become at times very mischievous tenants, by building in a rain-water head, or by bringing sticks, straw, and feathers that choke the down pipes, and cause overflow and permanent damp. But it is the vegetable kingdom which is the chief cause of squalor. Dry rot, we believe, is due to the growth of microscopic fungus. Decay of all kinds is hastened, if not caused, by the activity of the growth of the more obscure acrogenous plants. Walls that are permanently damp become coated with the various species of marchantia,—that green leprosy which is so picturesque in a wood, or on the rocks that overhang a waterfall, but so obnoxious on a garden wall, on the side of a sunken area, or in any way in close vicinity to human abode. The forms of lichens, mosses, and fungi are many; and even epiphytic ferns will sometimes make a lodgment in a gutter or under a tile, and contribute to the dilapidations of a house.

As to ivy, it is a moot point. We do not venture to offer an opinion without great hesitation. There is no doubt that ivy is one of the worst possible neighbours to the garden, owing to the hospitable shelter which it affords to snails, slugs, and insects of all kinds. But we have known many ancient houses so long and so warmly coated with ivy that we feel rather disposed to regard it as a friend than as a foe to the builder. If ivy be banished from the walls of the house, it bids fair to be banished altogether. For on the garden walls either pears, stone-fruit, roses, or wistaria, or some other kind of climbing and flowering plant, will generally be more desirable than ivy, besides the objection as to slugs. And, as to trees, ivy should not be allowed on their trunks to grow by those who prize a well-grown tree. To the fir tribe especially, the clinging embrace of the ivy is always pernicious, and, if left undisturbed, ultimately fatal.

A question has arisen on which it will be well for the architect to hold counsel with the forester. We mean as to the determination of the species of trees which should be planted within a small distance of houses. We are now more particularly referring to towns. There is no doubt that a fine open boulevard, or wide street, in which an avenue of well-grown trees has ample room to flourish between the footpaths and the main road, is one of the greatest ornaments of a city. The urban pictorial effect is admirable. It is hardly necessary to cite the case of Paris, or the still more striking example of Bordeaux. On the other hand, in narrow streets with small houses, the overshadowing growth of quickly-growing trees is a frequent cause of squalor. Such trees as the occidental plane, which is of extraordinarily rapid growth, or indeed, any of the plane or sycamore tribe, shed easily their broad leaves, which are discoloured and patched with black stains long before the leaves of the beech or of the elm betoken the approach of winter, and which fill the areas and passages with a damp unwholesome carpet of decaying vegetable matter. Perhaps the only English leaf, except the spines of the fir tribe, which is perfectly wholesome when fallen, is that of the beech. The beech leaves dry, instead of rotting, and form a good material for stuffing mattresses. But the growth of the beech, which spreads its roots on the surface of the ground, is unsuitable for the vicinity of houses, and the limbs of the tree are said to be brittle, though we should question if they are so brittle as those of the elm, which easily decay during winter. Certainly they are far less brittle than those of the acacia, so frequently planted as an urban tree, in spite of its creeping roots and its habit of throwing up suckers. In the beautiful park of the Marquis of Ailesbury, at Savernake, near Marlborough, are many furlongs of clipped beech hedges, which retain their dry brown leaves until they are displaced by the fresh growth of the following spring.

We are convinced that the subject of town planting is one that demands very serious attention. To stick in a tree, irrespective of the question of how high that tree is to grow, how soon it will attain its height, and how house, or road, or path will be affected by drip in rainy weather, by falling leaves, or by the pushing action of the roots, is indefensible. Here we may take a leaf out of the book of our ancestors. The tree which they were most in the habit of planting in close vicinity to their houses was one in which these defects did not occur. The yew is extremely slow in its growth. It endures clipping enough to keep it in the same shape, and of almost the same size, for centuries. It does not throw down a mass of rotten leaves; but the needles which it sheds are as dry and wholesome as the leaves of the beech. It affords a most hospitable shelter for birds. The yew was encouraged in England, as is well known, as the best material for the ancient weapon of the country. Now that the bow is no longer used for purposes of defence, the funereal associations connected with the tree, from the fact that it was so constantly planted in churchyards, have led us to neglect, or dislike, its presence. But we must plead for the yew as a tree suitable for garden shelter and for urban cultivation,—a tree which is not likely to be a cause of squalor. Next to the yew, when juniper, cedar, or tamarisk are not to be obtained, we call attention to the May, or white thorn, as a tree that attains only a dwarf stature in extreme old age, as well as affording the most lovely flowers and most fragrant breath in spring.

This question of urban planting is, indeed, closely connected with that of exposure of the walls of a dwelling-house to sun and air. It is highly important to health that this necessity should be kept in view by the builder; and the squalor which arises from its neglect constitutes a mute appeal on the part of the abode for better treatment. Sunken areas, narrow alleys, walls shadowing walls,—all those contrivances to which the builder is so apt to resort when ground becomes of great value, tend to squalor. They encourage damp, they harbour parasitic growth, they form seed-beds for the germs of fever, as well as for the species of parasitic vegetation. To allow the rays of the sun to strike, so far as the latitude of the place admits, on every wall of a dwelling, and to allow a full sweep of wind to eddy round, so as to dry the walls in the absence of the sun, are sanitary requisites of the first importance. And squalor is an indication of the neglect of sanitary requisites.

It is hardly necessary to add that a main cause of squalor, as well as of ultimate cost, is the neglect of prompt, real, and efficient repair. We have spoken of the cracked tile or the pierced slate; but over all the handiwork of the builder is it necessary to exercise a constant vigilance, which repays its own cost a hundred fold. Broken windows stuffed with rags have been of old times the very type of squalor. Damp is let in, light is kept out, and the whole household is educated in the school of makeshift. Sixpennyworth of paint may preserve costly timbers from damp and decay. The glazier, the painter, the plumber, the plasterer, are too often looked upon as so many ogres by the tenant of an old or a neglected house. Nevertheless, to avoid calling in these tradesmen when the exercise of their craft is needed, is a miserable economy. It is like hesitating to call in a medical man on the first threat of serious disease; or burning a lawyer's letter, instead of taking advice as to its menace.

It must, we think, be admitted that whatever conflict may arise, as we have lately seen that at times it does, between the claims of art, of economy, and of health, no such discord can exist with regard to the prevention of squalor. That evil is alike obnoxious from each point of view. Nor is the moral effect to be forgotten. It is by no means sure that this is not the most serious of all. Whether we regard the helpless indolence that makes no effort to prevent the home from becoming squalid, or the depressing and degrading effect of squalor on the tastes and habits, the result is equally to be deprecated. If cleanliness be, according to the old proverb, next to godliness, it cannot be denied that squalor is the herald of disease and wears the livery of crime.

THE ARCHITECTURAL ASSOCIATION.

We are asked to mention, and willingly do so, that owing to the alteration of premises now going on, the session of the Architectural Association will not commence until Friday, the 21st of November, when the president will deliver his address to the members. The *conversazione* will take place on Friday, December 5th. The cards of invitation will be sent out shortly.

The Library will be open as usual on Friday, October 31st. The first meeting of the classes will be held on Friday, November 28th.

The Town-hall for Limehouse.—On the 21st inst. the foundation-stone of the Town-hall for Limehouse was laid. The site adjoins the parish church. The frontage of the new town-hall will be about 80 ft., and the building will be Italian in style, faced with white brick and Portland stone dressings. The first floor, which will contain the board-room, will be 70 ft. by 40 ft. The cost of the freehold and leasehold interests in the site for the building amounted to 2,300*l.*, and the contract for the building itself is 10,000*l.* The works have been undertaken by Mr. J. H. Johnson, of Limehouse, the architects being Messrs. A. & C. Harston.

ABOUT TOWERS.

Milton, when he turns in *L'Allegro* from the joys of the country to those of the town, introduces the latter by the line,—

"Tower'd cities please us then,—"

as if, to his mind, the presence of towers were the leading characteristic of the city; though, perhaps, in reality he was merely looking for the most comprehensive and picturesque epithet which would summon up in one word the picture of a piled-up and crowded city. As usual with him, his epithet exactly produces the effect arrived at, though it is curious to find, in a poet with so little Mediævalism about him as Milton, and so thoroughly belonging to the Renaissance world, an epithet so peculiarly characteristic of a Mediæval city, a character which the succeeding reference to the tournament certainly keeps up. It is, however, evidently the crowded effect of a Mediæval towered city which was in the poet's mind,—a city where the needs of fortification and of compression within a comparatively limited intramural area gave rise to a piling of towers close upon one another, towers of defence and towers of architectural adornment closely crowded together, and producing the effect conveyed in the epithet of the poet. It is only to such a city that his epithet, in all its picturesque force, really applies. London has many towers and spires, but hardly any one would say that the phrase "towered cities" suggested to his mind such a city as London. It is the Mediæval, not the modern city, that is called up before us.

And, in fact, it is not in the most highly civilised and cultured periods that architecture has shown the greatest predilection for shooting up into towers. From the time of the great initial effort at Babel, the tower has been more or less the result of a dissatisfaction with the existing state of things,—a desire to escape; a feeling either that this earth was very insecure and subject to violence, and that a refuge was desirable; or a feeling that earth was beneath our care,—a thing to be spurned and despised, and consequently architecture took the upspringing form which pointed to something higher. The first of these influences was of a practical nature, and showed itself in towers of defence and offence such as those of the Mediæval families of North Italy; the second was a matter of expression only, and showed itself in the towers and spires of Gothic ecclesiastical architecture. There is another influence under which towers have become fashionable in modern times, which we may leave for the moment.

With the tower for purposes of defence, including those of outlook, we have little to do in modern times. Cannon-shot would make short work of them in the first capacity, and heliograph signals and balloons have superseded them in the second capacity. But the tower, as a means of architectural effect and expression, will always remain an important element in architecture. It is the great agent for giving importance to buildings otherwise insignificant in appearance, for producing variation of skyline, for giving effect to a building when seen from a distance, and even for enabling it to be seen from a distance at all. And this is instinctively so much felt that modern architects and their clients are constantly seeking excuses for introducing a tower even when the practical exigencies of the building would hardly have seemed to afford the least hint for such an addition.

There must have been a radically different feeling on this point in the days when what we now call Classic architecture grew into being. Even the Egyptian pylons and pyramids can hardly be called towers in an architectural sense; and when columnar architecture was perfected in Greece, these features had no further life, and no representation in the features of Grecian architecture. It was in accordance with the Greek character, which was so eminently logical, analytical, marked by common-sense and keen æsthetic perception, but with little or nothing of aspiration, that in their architecture the idea of upspringing and rising above the practical level of building should be entirely wanting. So completely is this the case, that their architecture seems even to refuse to ally itself with any such vertical or upspringing feature, and the few efforts that have been made, as in some modern classical churches, to associate tower or spire with columnar architecture have generally proved failures, sometimes one may say even absurdities. This is not merely the effect of association, which has never accustomed the eye to such a combination. It is the result of the completely finite and self-contained character of Greek columnar architecture, which, when completed with its horizontal entablature members, is so entirely without any suggestion for further development upward that nothing can be done with it in this way except by either placing one design upon another in an unconnected and arbitrary manner, or by designing a tower building which might stand beside the columnar building and harmonise with it in style, but which could hardly have any architectural connexion with it.

The former is the manner in which the attempt has chiefly been made, of which St. Pancras tower (the church, of course, not the station) is the most typically absurd example. The latter attempt has seldom been deliberately made, and perhaps never with entire success; Wren, of course, came nearest to it, and some of his steeples are real architectural inventions in this way, of great beauty and picturesqueness, though even in these it may be questioned whether the problem of making a tower, derived from essentially horizontal architecture, appear quite natural or inevitable, has been solved; there is even about these graceful compositions too much the appearance of composition, of forcibly compelling the details of the style into a form to which they do not naturally lead.

The architectural tower of Mediæval architecture (as distinguished from the military tower), probably arose in the first instance from practical conditions. It was the bell tower of the early basilican churches, and in this capacity had generally no architectural combination with the church, but merely stood beside it. And in Italy, a country in which architectural design and construction were never grasped as a whole, as in France, Germany, and England they were, this tradition of the separate tower was for the most part retained, and the tower and church never grew into real architectural unity. This was partly owing to the general retention in Italy of forms arising out of Classic architecture, and the marked return to such forms at the Renaissance. In an architecture where so much of the spirit of horizontality was always maintained, it was very difficult to incorporate the tower with the rest of the design; it must inevitably appear rather as an accompaniment than an integral part of the building.

It is, however, when the tower combines with the building that its real value as a source of architectural expression is obtained. And as far as external effect is concerned, the Mediæval architects reached the highest and most effective use of the tower when they placed it as the central object at the crossing of their great churches. In such a position the tower seems the appropriate culmination of the whole; the opposing masses of building on its four sides give it ample apparent abatment to the eye, the sloping lines of the roofs lead up to it, and it forms the centre and crown of a pyramidal composition. This entirely satisfactory artistic effect is, however, unfortunately confined to the exterior. When we look at the interior, and see the slight mass of the arcades which have to receive the distributed thrust of the tower; the manner in which it is seated, so to speak, on four posts at its four angles, the narrow central area which it allows, and the narrow funnel-like opening which it shows above the crossing if any considerable part of its height is left open to view from within, we feel that the centre tower is a mistake for internal effect, and that we either lose the impression of its height within the building, or, if we retain that, we are equally impressed with its narrowness. The true form for covering the crossing of a church is the dome or lantern, since then we get nearly equal value internally and externally, and gain an extension or widening of the floor-area at the central point of the plan, just where it is wanted for effect as well as for convenience. If we must have a tower at the centre, then it is best to treat it in spire-form, the spire rising the moment the tower is clear of the roofs. In this way a greater appearance of lightness at least is produced, more suitable for a feature which is standing upon arches; and moreover as the spire is admittedly a form for external effect only, there is the less feeling of loss of space and of effect than in the case of a large tower which encloses much space within its walls, and yet does so in a way that is by no means available for internal effect. The method of crowning the central feature in the Houses of Parliament may be cited as an excellent example of consideration for internal and external effect at the same time in such a feature; the light spire-like treatment of the exterior being sufficient to give it architectural prominence externally without hanging any undue weight over the central area. This feature, it is true, scarcely comes under the head of towers; we refer to it as an instance of a treatment more suitable to all the conditions of a centre crossing than planting a tower upon it, though perhaps nothing can equal the effect of the tower in such a position as an external object, if we dismiss from our consideration the interior architecture.

As a general rule, it may be said that the central position of a tower either in a façade or over a crossing produces the more grandiose effect, and the side or angle position the most picturesque effect. As a rule, however, nearly all the practical conditions are adverse to the central position in either case. When planted on a crossing, the necessity of free space and passage under the tower almost inevitably results in its having a very inadequate substructure; and though the Norman builders endeavoured to escape this practical drawback by their grand and solid pier walls (rather than piers) for carrying the tower, as at Tewkesbury and elsewhere, even this amount of substructure was not secured without encumbering the interior space considerably. And when a tower is planted in the centre of a façade, as is now a favourite plan in town-hall designs, it is rarely that this is achieved without interfering with the plan of the front portion of the building more or less. The consciousness of this difficulty produces amusing results in competition drawings for town-halls, where competitors are so often desirous of placing an effective tower in the centre of their front, and at the same time carefully avoid showing on the plan any piers which would materially interfere with the rooms; and so when the plan comes to be examined by an "expert," it is found that these large and striking towers have next to nothing to stand upon.

From these practical considerations it becomes pretty evident that in most cases, however we may admire the tower as a central object and climax of the composition, such a position is seldom the best for the building practically, and that the best result in regard to the sum total is gained rather by an angle position. And there are certain architectural advantages even in such a position, the most important of which is this, that when at an angle of the building the tower can much better be brought up straight from the ground as a complete feature. A centre tower cannot be so treated without producing a central projection which interferes with the apparent length of the façade; it cannot of course be set back from the front, which would have a very bad effect, and it can hardly be marked in a powerful manner except by considerable projection beyond the line of the building. This is no drawback at the angle, but it is so in the centre. There is the option of treating the tower flush with the main line of building, and not disengaging it till it clears the roof; but this is only making what may be called half a tower. The tower should connect itself, of course, with the horizontal stages of the main building, more or less, or it will appear too isolated; but it should stand out as a separate feature with its own base, otherwise it becomes only an addition of a semi-domestic type; picturesque, but wanting in grandeur and dignity.

Endless, almost, are the forms and character of treatment which have been given to towers in different styles of building, and which it would be quite impossible to characterise in an article. There may, however, be distinguished two main principles of treatment, under one or other of which most towers will be found to come. There is that in which the whole of the tower is treated as a surface for decorative expression, and that in which the main portion consists of a stalk carrying a more or less architecturally treated upper stage. The first is represented by such a tower as that over the crossing at Lincoln, and is, in fact, the form usually found in our Mediæval church towers; the latter is represented by some of the semi-Gothic Italian towers, those at Verona and the well-known one at Venice: and the two classes of tower are found nearly side by side in the Houses of Parliament. The method in which they are contrasted in that admirably-designed building

gives the true cue to the meaning of these two classes of treatment. The first is the ornamental or expressional tower, the latter the practical one. Whenever a tower is built for the purpose of carrying up into the air an upper story intended for some special practical purpose, whether for outlook, for a clock, for bells, or for a head of water, then the true architectural expression of such a tower is that furnished by the North Italian type: a massive comparatively unadorned shaft, the object of which is simply to carry up to the required height the working stage of the tower, as we may call it. Such a tower need not necessarily be regarded as in any way inferior in architectural effect to the other type of tower; on the contrary, it is often admirable in its effect and expression, but it is nevertheless essentially a utilitarian tower. A tower designed for this kind of object, besides being kept decidedly plain for the greater part of its height, usually leads naturally to a treatment involving vertical lines and a spreading or overhanging upper stage. The tower built purely for pomp and expression, on the contrary, almost invariably and inevitably takes the form of a structure more or less diminishing or falling in as it rises. The extent to which this reduction in width should be carried depends a great deal upon the nature of the design and detail of the tower; but in general it may be said that it is much better to err in deficiency than in excess in this particular.

We alluded above to a special cause which has operated to bring towers into fashion again in the architecture of the present day in this country. What we were thinking of was the great prevalence of architectural competitions for almost every important work. The aim of every competitor, as a rule, is to cut out the others by producing something more striking than the rest, and the great means of achieving this is by the introduction of big towers. The consequence is that when we go to see a set of competition drawings for almost any description of important building, our first impression is that which is said to have been expressed by an eminent judge on going to look at the Law Courts competition designs,—"I see a great many fine towers, but where are the courts?" In this way towers are forced into buildings where they are not required, and which sometimes would even look better without them. The usual excuse is a clock, which in such a building as a Town-hall is a valid excuse; besides which, so important a building as a Town-hall in a large city may even have its claim to a tower marking the main entrance, as a mere matter of architectural dignity, even without the practical excuse of the clock. But in many smaller buildings of that class, or of other classes, there is a determination now to have towers without sufficient reference to reason and morality. The ingenuity of the architect is best shown when, wishing to add to his building the unquestionably fine effect of a great tower, he can so manipulate his plan and arrangement as not only to turn his tower to really practical purpose, but to make it appear as if this purpose were really best served by a tower, and that the feature arose naturally out of the requirements of the building. For example, if we remember right, one or two of the competitors in that same Law Courts competition made a record or muniment tower a feature in their design; and this was a very fine and suitable use for a tower, providing nearly unlimited room for the purpose without crowding up the ground, and in a very æsthetically effective manner, as showing from a distance the abode of the historic records of the country,—an object of so much natural interest to its inhabitants. This may suggest some consideration as to what are the conditions under which towers may be introduced in our modern cities without violation of suitability or of true architectural economy. It may be admitted that a building of the largest class and of the highest public importance has a right to a grand tower (if that be the feeling of the architect) at its principal point, merely as a source of pompous effect, just as we have robes at a royal procession or reception for effect alone, and which no one would think of choosing for his wearing as mere matter of convenience or usefulness. Other buildings of semi-public or official character are at present often given a tower, or something approaching to it, with little or no pretence of reason, more especially in the case of buildings, the objects of which are purely business-like and prosaic. Churches may be supposed to have a traditional right to towers, though in the case of ordinary-sized churches where the building fund is limited, it seems to us that far too large a proportion of money is frequently spent on a tower, which might have been much more sensibly employed in adding to the comfort of the congregation in a practical manner, by more comfortable fittings, and better warming and ventilation. *Apropos* of this, we heard one day of a blunt criticism on this subject on the part of a wealthy inhabitant of a district who was applied to by the clergyman of the neighbouring church for assistance towards completing the tower, and was told in reply that any funds that could be raised would be better expended in paying off the debt on the building "than in adding a still uglier tower to an already ugly church." There are, perhaps, not a few instances in which such a criticism might apply both on economic and æsthetic grounds. To return, however, to the subject; towers to dwelling-houses are generally regarded by the occupants of the houses as a great addition to their dignity, and in the case of a large mansion a tower is a great advantage architecturally as a means of diversifying the outline, but there should be some obvious reason for its introduction in the arrangements of the house, either as a smoking-room, a prospect tower, or an access to part of the roof. This it is not difficult to give in a house of large dimensions, not easy in a smaller house; and the so-called towers often added to the design of what are in fact mere boxes, by means of a purposeless carrying up of the wall and the superposition of a mansarde roof, are really vulgarities of domestic architecture which should be avoided if there is good taste on the part of either architect or client. There is, however, one possible way in which domestic architecture in towns might furnish the most natural suggestion for towers carried out on a perfectly practical basis; that is, in the event of houses in flats assuming any important place in the scheme of our domestic town architecture. With the modern improvements in lifts as means of vertical progression, it might be perfectly practicable and practical to erect something like towers of Pisa (not leaning) as successive stages of dwellings, affording scope for really beautiful architectural effect of the most ornate description, and in a manner directly arising out of the practical conditions of the building, so that we might thus be pleased by "towered cities" of a different type from those indicated in Milton's verse, not less picturesque and interesting, and suggesting more civilised associations, the towered architecture of modern culture and social economy in place of that of Mediæval rapine.

OBITUARY.

The Warden of Sackville College, East Grinstead, Dr. Henry Rogers, was found dead in his bed on Saturday last, the 18th inst., and inquiries have shown that he died by his own hand, a bottle which had contained prussic acid being found by his side, a sad ending to a somewhat singular life. Dr. Rogers had travelled much and was a man of considerable acquirements, reading with ease in Latin, German, French, Spanish, and Italian. He founded a cottage hospital close to his then residence in the early days of that movement, and assisted Mr. Chas. Hill, F.S.A., and some other gentlemen of the neighbourhood, in establishing the East Grinstead Dispensary. At Sackville College, where he effected many improvements, he had made an interesting collection of books, prints, and relics connected with its history. It is to be hoped his successor may have taste and judgment to preserve the collection. What led to the fatal act on the part of Dr. Rogers is not known to us. He had recently lost much of both eyesight and hearing, and was possessed by a melancholy idea that he should die in poverty; the depression may have become too great to be borne. He was a lineal descendant, we may add, of Theodore, "the unfortunate King of Corsica."

City and Guilds Institute.—The City and Guilds of London Institute for the Advancement of Technical Education announce the opening of their technical classes at Cowper-street School, Finsbury. An inaugural lecture, free, will be delivered by Mr. Ayrton, on Saturday, November 1, at eight p.m., on "The Improvement Science can effect in our Trades, and in the Condition of our Workmen."

THE KITCHEN AND THE PARIS EXHIBITION OF 1879.

Far more than is generally admitted, the feeling of hesitation to which that most eminent of writers on the science of the kitchen, Brillat-Savarin, confessed, in laying before the world his studies on a subject he considered they might treat as trivial, a feeling which doubtless only too successfully prevented Johnson from publishing that promised cookery-book which we have been assured he believed himself so qualified to write, far more than is generally admitted, such sentiments interfere with the due consideration of a subject as important as the management of the kitchen, on the manipulation of which depends so largely the happiness of our existence. It is too often the custom in our country to treat the subject as one specially suited for the display of wit, of anecdote, and that very questionable but much respected knowledge of certain choice dishes, the properly pronounced nomenclature of which pre-supposes an acquaintance with the French language and the French capital. Such, at least, may be said of the last generation; the rising generation in its indifference has fallen, perhaps, somewhat into the opposite extreme, and between these two points the question is left to the discussion of the ladies. Not but what the columns of our papers are constantly occupied by lengthy disquisitions on the value and necessity of intelligence in the kitchen, suggested perhaps by the opening of some branch of the School of Cookery, or by the publication of some one of the numerous housekeepers' manuals which now often appear in the most serious publishers' lists.

While we in England are showing an evident desire that our kitchen economy and our knowledge of the art of cookery may be improved, our neighbours the French, it is impossible to deny, cannot be said to hold the same position that they did a generation ago. Even they themselves complain of this decadence, and hail,—Oh, shades of Carême and Company!—the formation of a school of cookery in Paris; and yet never has intelligence been more brought to bear upon the various necessaries and utensils in use in the kitchen.

Far greater importance and consideration may yet be given to the question of its management than has heretofore been accorded to the question, and among the many errors which afflict human society, to the injury of the family, few may be mentioned as more fatal than the habitual custom of classing the operations of the kitchen among the purely material cares of the household, and hence abandoning them entirely to mercenary hands. It is not our intention to open a discussion between the materialists and the spiritualists in the matter of pots and pans; but it is a truism, and therefore requires no demonstration, that we can alone live by eating, and without life neither sensation nor thought can exist. We must, therefore, eat to feel, to think, and to work. Now, it is evident that the good and bad quality of the food, possessing a direct influence on the system, the brain, and the heart, act also on our sentiments, our ideas, and our actions, as a fertile or poor soil influences the growth of the plant. Cultivation has changed the simple into a double flower; its different mode of feeding has changed the wild cat into the domestic cat.

As each family, therefore, esteems it a matter of interest to preserve in good health all its members, it becomes an absolute necessity to seriously consider the management of the kitchen by aiding in every possible manner all the material and moral advantages which result from personal supervision; and once let it be understood that extravagance profits no one, and a first and important step will have been made.

It may be easily imagined that no industrial exhibition could open in Paris without a large share of its space being devoted to the kitchen. The Great Exhibition of last year afforded visitors the opportunity of judging the kitchen appliances of most of the countries of the world; but in the midst of the thousand other attractive novelties, it can be easily understood how so apparently familiar a feature received but a scanty share of its due attention. In this year's Exhibition at the Palace de l'Industrie, though we are, unfortunately, unable to compare the exhibits of several foreign countries, it is an easier task to take into consideration the different culinary appliances which, only within the last few years, have been brought before the public; and such a study is not alone

interesting to the housekeeper, but merits the attention of the practical man and the architect, who, in the present day, it may be observed, sometimes seems scarcely disposed to sufficiently consider, in the interest of his clients, this important feature of the household, in which too often traditionary and very questionable customs are continued.

Apart from its recognised importance, the kitchen has, with some, and very properly, a fascination entirely separate from its usual interest. We know of more than one great house in England where the kitchen is daily visited, not alone by the mistress, but by the master, who inspects there the *menu* of the day, and who gathers from the head-cook the bones for his favourite dogs after their long walk. We all remember in our youth the attractiveness of the lower regions, and the brightness and order of the dresser and the mantel-shelf when work was over; and when we read of those kitchens of the old abbeys through which a river would be diverted, bringing with its stream the fish for the abbot's table, and look back in our museums at the magnificent utensils used in those early days; when we reflect how much interest we all take in the results of the kitchen manipulations, we are inclined to think that we do not pay anything like sufficient attention to the susceptibility of the kitchen to architectural consideration.

A problem which, before considering the supply of the absolute necessities of good ventilation and ample light, so essential to the gastronomic manipulation, presents itself to the thoughtful architect, is the position of the kitchen; separated, and at the same time connected, with the rest of the house to render both the service and the personal supervision easy, and yet prevent the possibility of any kitchen odours reaching the dwelling-rooms. We in England almost invariably place our kitchens in the lower parts of the house,—a system which also prevails, wherever practicable, in France, and in Italy and America,—with what consequence often to the nerves of sensitive people, and always to the comfort and health of our servants, is only too well known. In some rare cases the kitchen may be found at the top of the house, by which means no odours can enter the dwelling-rooms, but the difficulties of service are by this means increased. It may, however, be said in favour of this little-tried system that the modern use of the lift has greatly facilitated this position of the kitchen.

In French houses, where the "flat system" is so universally adopted, kitchen and dwelling-rooms are all on the same floor, and, let it be said to the credit of the French architects, the kitchen, when well kept, is not the least attractive of the features of the Parisian *appartement*. Where such a plan is feasible, and with due care taken to prevent the entrance into the house of bad smells, the kitchen on the same floor as the dining-room offers many advantages, both for the ease of the service, the greater certainty of personal supervision, and the perfection of the condition in which the food is placed on the table.

And now, after thus only too hastily touching on this important question of the position of the kitchen, let us pass in review some of the various systems and culinary appliances exhibited in the Palais de l'Industrie. Within a few years the very general use of gas has surprisingly simplified the management of the kitchen, but now the aid of steam has come to further assist the housekeeper, though, let it be said, more in the preparation of food for large establishments than for the small family circle. With the use of steam there is no longer any need for the range, fireplace, calorifer, or stove; all that is visible is a line of pots of various sizes suspended to a number of slender columns. In the adjacent room is placed the steam generator, put into communication with the pots by means of two pipes which pass under the floor. One of these pipes receives the steam, the other takes it back, and thus the temperature round the cauldron is constantly maintained, and each moment increased in this circular movement of the heated steam; the mechanism, in fact, greatly resembles the human system, the machine not unfittingly representing the heart, and the pipes the arteries and veins leading the blood to and bringing it away from the lungs. In such a kitchen may be seen boiling gently huge cauldrons containing many gallons of liquid, without any fire being visible. The large pot-lid opens and shuts, and remains at any desired angle without any difficulty by means of a counterpoise to which it is attached, while the whole cauldron can be turned down on its pivots, to be inspected or emptied, by a child, so easy is its action. Steam cookery becomes especially advantageous when more than 200 or 300 persons have to be fed, and this advantage naturally increases in proportion to the amount of food supplied. Nothing shows more the utility of this system of cooking by steam than the ease with which a dinner for 3,000 persons can be prepared, with an immense saving of combustible and service, only a few hands being necessary to manage the pots. In some of the many religious establishments abroad, the Sisters of Charity are able themselves to cook for their convent and for a large number of pensioners; while in more than one penitentiary the children do their own cooking by the aid of steam. It would seem, in fact, that the invention (for such it fairly may be called) came from the convent, and, being used throughout the many religious communities of France, was eventually adopted in the barracks for the cookery of the army; and at the present moment the perfected system which the engineer, Egrot, exhibited last year, and now exhibits at the Palais de l'Industrie, is in use in numerous commercial and private establishments, manufactories, hotels, and restaurants.

After steam comes undoubtedly gas, the use of which is now being rapidly adopted, thanks to the many ingenious and far from costly stoves which the various rival inventors have placed before the public, and advertisements of which our own columns contain. The cleanliness and handiness, the ease of its management, have long recommended gas, and the old objection which existed during its first application, of imparting a flavour to the food cooked by it, has now been completely obviated. A kitchen gas-stove is now placed within the power of the most modest purse, and certainly its advantage, whether for boiling, roasting, grilling, or what not, cannot be too highly spoken of.

With the use of gas, to mention its various applications to the manipulations of the kitchen, in the ingenious automatic roasting-jacks, and other inventions here exhibited, would require more space than lies at our disposal. In the midst of such general spread of the use of gas, the epicures of the past may pull wry faces, and sigh for the blazing wood-fire of their youth, but the practical age has discovered that time is indeed money, and economy is gain. The days are gone by when the exquisite taste of the gastronome could detect in the venison the improper flavour of the *floated* wood before which the tempting haunch has been roasted.

But in this matter of economy, the poor have it but rarely in their power to use gas, while among the rich there still continue to exist many fervent adherents to the old faith, and who refuse to patronise gas as a cooking agent. For both of these may be recommended the interminable list of cast-iron kitchen-ranges,—probably so called from their extraordinary property of "ranging" from the lowest and most accessible of prices to the apparently most exorbitant, but whose appliances are certainly fascinating. When the range which is so commonly used in England and America is carefully kept at a moderate heat, it forms as admirable a cooking-appliance as can be imagined, but the ease with which it lends itself in unintelligent and careless hands to the most reckless extravagance in fuel forms one of its chief demerits. And here a word may not not be out of place on this important question of economy of fuel, the disregard of which forms so marked a contrast between the English and American, and the French or Italian household.

The coal-bill of the English family is always a formidable item, and the replenishing of the too-often ill-constructed and unhealthily situated coal-cellar, is a matter of apparently constant recurrence. At all hours of the day, in summer as in winter, in our moderate-sized middle-class houses, it is by no means unusual to hear the sturdily-wielded kitchen-poker violently raking out the range or stove, preparatory to the piling on of fresh combustible; this noisy process, it is stated, being necessary for the making up of a bright red fire for meal-time. Volumes of ill-consumed smoke naturally accompany this process, charging the atmosphere with its unburnt and hence wasted carbon, and requiring the periodical visit of the sweep, while, from the difficulty of its being lighted, the fire is sedulously kept up all day, whether wanted or not. Such is the habitual procedure in the English kitchen.

Abroad, such a system would ill agree with the thrifty habits of the natives. There, the use of charcoal is almost universal, and attended with the most satisfactory results. Putting Italy aside, and the country villages of France and Belgium, in all of which still reign the archaic hearth and its lavish expenditure of picturesque and imperfect logs, we speak of the ordinary Parisian kitchen,—such a kitchen as is to be found in every *appartement*, from the smallest rented to the highest. There the stove, placed in a room the size of which naturally depends on the capabilities of the house or rather flat, is a simple tile-stove, furnished with a certain number of holes, each of which has its grating and its ash-box, two or three holes for the ordinary pots, one large hole for the national *pot-au-feu*, a long oblong hole for the fish-pot, or the iron or what not. Underneath the stove, or wherever convenience suggests, is placed the box or other appliance to contain the charcoal, than which, dirty as it is in appearance, nothing is hygienically cleaner; the lighting of the fire is the simplest possible process, by the aid of a few scraps of rosined stick or paper and the bellows. The first smoke and fumes are carried up the chimney, and in four or five minutes' time one has at one's disposal a cherry-red fire, such as with coal requires much space, labour, and waste to attain. The cost is trifling in the fuel; there is no smoke, no pots consequently blackened; no soot; no food spoiled by the gaseous flavour of a flary coal. The fire once made use of, if necessary, is almost instantaneously put out by a special cover, or, if it is required, kept on at small cost either by fresh charcoal or by the aid of a machine-made fuel, termed *charbon de Paris*, a mixture of charcoal dust and earth, and such as is largely used under another name, if we mistake not, on all our railway lines. The facility with which the tile-stove can be kept clean, a damp sponge being only necessary to wipe away any dirt; its agreeable effect when alight, its unobtrusive utility, its cheapness in the first place, the small space it takes up, never fail to charm the foreigner who is fortunate enough in residing in the capital, to be able to leave his hôtel and take an *appartement*. With the invariable adjunct of the sink, and a constant flow of water, in the newer houses, for it is chiefly in these that such kitchens as we describe * are to be found, a plentiful supply of shelves, a cupboard, a safe, and other conveniences, a French kitchen offers a contrast to the ordinary English kitchen with which it is impossible for the most insular Britisher not to be struck.

We have been led far from the Exhibition and its kitchen exhibits: suffice it to say, that of such stoves as those we have above mentioned there are not a few examples, all at very moderate rates, from 1*l.* upwards; of cast-iron stoves burning coal and coke, also at very reasonable rates, there are a number, all excellent and worthy recommendation; indeed, the patriotic housekeeper who knows the expense of the regulation English kitchen-range would be sorely tempted, if she were on the point of furnishing her new home, by the small-priced, large, and serviceable ranges shown in the French Exhibition at present open. In all modesty, we would advise our stove and kitchen range makers to carefully keep an eye on their foreign competitors, who at any moment might take from them a large portion of their, even as it is, hard-won profits. Many years since an eminent manufacturer in this important branch of our commerce, assured us that it was but British prejudice and want of energy on the part of our neighbours that prevented the English public from using only foreign stoves. Since then, both in England and abroad, improvement has steadily progressed in the trade of each.

The petroleum stoves, which have, within almost a few months, been so greatly perfected as to enable, for example, a piece of bread to be toasted above their flame without the slightest disagreeable flavour being imparted; the innumerable spirit-lamps and portable cooking-machines, which so exactly suit the foreign mode of life; the patent coffee-pots; the small and costless stoves, by which, even with the use of charcoal, can be roasted whole joints and fowls as well as by the open sea-coal or wood-fire; and the hundred other appliances, not neglecting the very impracticable apparatus

* An excellent dinner for ten or twelve people can be easily prepared in such a kitchen little more than 6 ft. square.

which figured so conspicuously at last year's Exhibition, and here is relegated to a forgotten corner, for concentrating and utilising the sun's rays,—when they are to be found,—should all be noticed by the visitor.

Arrived at this point, with so many inventions for the benefit of both rich and poor, it may be asked what has become of the joyous old kitchen of the past, and its huge fireplace, in which crackled and spluttered under the blackened and antique pot on the still blacker hook, the old logs lighting up the barely-decipherable arms or the allegorical emblem of the old fire-plate, glistening on the polished dogs, and flashing in the lustred glaze of the quaint Dutch tiles? All has passed away, and with it the old ingleside and circle of friends and relations that gathered round the blaze, while the wind and the rain or the snow whistled and drove against the ill-shut casement and the rattling doors. Those days have passed and now we demand in their place the even wider-spread application of the teachings of science to our art and to our industry.

BERWICK-ON-TWEED.

Coursing due north, the traveller, after leaving Newcastle, may know no stoppage till he hears the name of the old Border town ring in his ears, and a confused army of little lights is scattered about, if it be night, whilst the daytime gives him passing glimpses of where "gloom the dark broad seas" such as Ulysses knew, of the villages that lie low on the shore, and of the wonderful viaducts and bridges that lurk about the borders of the two countries. Berwick is one of the towns which are decaying to some extent in importance, but which cannot be obliterated. Rail at Berwick as you will for its electoral corruption, or point to its comparative want of trade, and the memories of its past reproach you. The old royal borough has interest for all who know its value in the past,—its antiquity, its associations, the fights it has seen, the tokens of its strength,—all give to Berwick an importance its size would not entitle it to. It is to a large extent unchanging, though changing; like its Tweed, its components are renewed, but its total knows little variance from age to age. You enter its still streets, and you feel as if you had stepped into a past century,—as if you had gone back into the locality of one of the towns in Scott's novels,—and till you leave the town you retain the idea. How largely the description of Berwick in the past would serve for that of the present may be in part indicated, and in the process the points of divergence may be shortly traced.

Forty years ago, the town, "of Saxon or Teutonic origin," an ancient Scots' town, then a free one, then a bone contended for often and dropped ever and anon in the fight,—forty years ago Berwick-on-Tweed was losing its claims to remembrance as a warlike place. The gates and drawbridge still stood, the "cannon had for some time been removed to Leith." The ruined castle was the principal object of attraction to the antiquary in the town. The fine bridge of hewn stone is indicated, with its many pillars and their outlets. The corporation was composed of mayor, recorder, bailiff, and burgesses, whilst the burgess-elected aldermen were life magistrates. It had two members, returned by 699 electors. Its trade was of salmon, and in grain; and it was a bonded port for "timber, wines, and colonial produce," as often were then "prosperous commercial seaports" like itself. The flat-roofed Gothic church is described, and in addition there were the "high meeting-house and the low meeting-house," two chapels for the United Associate Synod, and Baptist, Methodist, and Catholic chapels. It had its valuable schools, a newspaper, and its inhabitants numbered 8,920 in 1831 for the parish, the number for the borough being 13,801. Tweedmouth had its extensive iron-foundry, and "railway connexion with the neighbouring coal-mines," whilst Spittal was "chiefly inhabited by fishermen and colliers," and a railroad is described as "running through the main street." In those days the one bank was that of Batson, Berry, & Co.; there were many fishmongers; a couple of linen-weavers lingered; and a good many nail-makers. The custom-house had a staff of four; there were seven coaches passing through the town, and many carriers called there; whilst "regular traders" sailed and called on the passage between Hull, Newcastle, and Leith; and the Berwick Shipping Co.'s vessels, six in number, sailed twice a week in summer to London. In these facts is outlined the Berwick of forty years ago, and many of them still hold good as describing the town of our own time.

The extent of the borough is now 7,048 acres; the population at the last census was 13,282, so that the borough, as a whole, has known a slight declension; the number of inhabited houses was at the same period 2,102; and it still returns its two members,—the number of the electors being 1,336 in 1871, and 1,348 at the latest period for which we have returns,—1877. It is comparatively a rich place,—the property and profits assessed to the income-tax under the several heads being in the total about 162,000*l*. It is not a large shipping port,—some twenty-three vessels entering yearly, only of a tonnage of 6,407,—to foreign countries; whilst the home trade makes the total about 261 vessels and the tonnage 32,339. There belong to the port twenty-six vessels,—three of them steamers,—of a total tonnage of 2,213. But in addition Berwick is a great fishing port,—owning 540 boats registered under the Sea Fisheries Act, and requiring 2,245 men and boys to work them. Shipbuilding is still carried on at the old port,—the number and tonnage of vessels built being in a recent year two vessels of 278 tons in the aggregate. The coal-mines of the district still yield their output, but it is comparatively small; and the subsidiary industries of the town, the port, and the district have to a large extent unchanged during the years that have elapsed in the period over which the comparison referred to is drawn. There was down to a very recent period little or no attempt to develop the industries of the port, and thus the town dragged its trade along,—falling back in the race as other boroughs and ports developed themselves.

There has been a slight change in the grim old Border town within the last few years, and for the better. It has shaken off some of the evil habits it had acquired, and especially in electoral matters. It is acquiring at the present time, in its district, fresh railway facilities, and there is much more evident than there was an intention to make the most of the natural resources of the town. But it is also certain that Berwick lacks some of the pre-requisites for great and rapid growth; and without a very large addition to its resources and its trading facilities, the dry rot that had, through age and infirmity, entered into it will prevent at least any marked growth. It is, without some great commercial cause, difficult to overcome the tendencies to decay in ancient towns, and to this rule the exceptions are few. If this dictum be thought a harsh one it may be readily justified, and in the case in point its truth may be proved by an industrial map of the kingdom. There are few industrial tokens in or about Berwick except those that have been thus shortly indicated, and at the present time there does not seem any very marked tendency to plant new ones. The town should be the centre of a vast agricultural and fishing district, and its position on the great northern route should benefit it materially; but of recent years these advantages have not been made the most of, although in this respect there is a change becoming more and more apparent. It is true that this is partly forced upon the old town, for to stand still is to fall back in the race now-a-days,—a maxim applicable to communities as well as to individuals. Berwick needs to take heart, and to develop its own advantages,—to cultivate both land and sea,—to introduce scientific improvements into its fishing industries, and to make itself more known as a centre for agriculturists. It needs, moreover, that its local governors should energetically use their influence for the well-being of their borough in sanitary, social, and industrial matters, and with this the future of Berwick would be more prosperous than the past has been, and more worthy of the repute of the famous old Border town.

Hartshead—The restoration of the Norman church at Hartshead, Yorkshire, has been decided upon, and the work is to be entrusted to Mr. W. S. Barber, architect, Halifax. It is stated that none of the ancient work, nor of the well-preserved old oak, will suffer by the restoration. The old roof and the fine oaken pews will be untouched, and respect will be shown for the ancient monuments which it is essential should be preserved. The expense of restoring the chancel will be borne by the lay impropriator, Sir George Armytage, bart.

FROM THE BANKS OF THE SEINE.

The recent strikes in the building trade have, it can easily be imagined, been the chief source of interest in the professional world here. In the early part of the week no little apprehension was felt at the announcement that these were only the precursors of a sudden cessation of work on the part of all the branches of the trade, and that the stone-carvers, the roughcasters, the painters, the plumbers, and the locksmiths were all about to demand an augmentation of wages. Fortunately, however, this proves to a great extent untrue, though it is feared that such a proceeding is alone a matter of time. An important meeting was held in the course of the week by the joiners, who have now definitely struck, and in which firmness in their demands was enjoined on all the members out on strike. It would appear that the masters have agreed to the increase of wages, but energetically express their right to retain the power of putting out their work, and paying every fortnight. The joiners declare that they, of all the trades employed by the builder, are the hardest worked, and therefore comparatively the worst paid. The position, as we write these lines, has not as yet changed, and we shall probably have to wait some days before any arrangement is made. It cannot be too deeply regretted that such a misunderstanding should have arisen, and whenever these strikes occur, whether at home or abroad, the many burning questions connected with the relations between the employers and the employed never fail to be unsatisfactorily discussed.

Whether the men are wise, even as respects themselves, in striking, is a question which can scarcely admit of discussion; though the workman may gain momentarily, his fellows soon obtain an increase, and the old relative position is reached with the additional inconvenience of a rise in the price of necessities. The immediate effect of the recent strikes in the building trade in Paris will shortly be felt in the rise of rents, which it will be impossible for the proprietors to avoid, and so in course of time the workmen will only suffer through their want of thought.

While this sad antagonism is being fought out in the building trade, in the artistic world, fortunately, no such feelings are expressed, the only antagonism existing taking rather the form of wholesome emulation. Last week was marked by two competitions, both important and interesting, as showing the power of the artistic world of this artistic capital. There are cynics who say that competitions never bring forth the right men; it may be so, and certainly this view seems to receive some degree of confirmation in the result of the two competitions to which we are referring.

The first of these is the exhibition at the French Institute of a number of landscape-painters who have competed for the prize founded by Mdme. Esther Troyon. More than fifty artists competed, the subject given being not an uninspiring one,—a shepherd leading to pasture a flock of goats near to a watercourse sheltered by overhanging oaks. The judges who had on Saturday to award the Troyon prize for the best landscape must have found it as difficult to determine as it would have been had their duty consisted in giving the award to the worst picture. The great art of landscape composition is just now entirely neglected in France, notwithstanding that the French claim in Claude and Gaspar Poussin that they have produced,—as, indeed, they lay claim in all spheres of art,—the greatest masters. To the credit of French painters and critics, they were the first to regard as a great teacher the English landscape-painter, Constable; and they at one time were enthusiastic admirers of Martin and Danby. The exquisite painter of the forest of Fontainebleau, Diaz, aspired occasionally to invent and compose landscapes, assuming to glow with the superb mystery of Venetian artists, those finest of all landscape-painters, who caught their inspiration from the distant view of the Cadore mountains, and the occasional trip into the lovely country, on *terra firma*, to the north-west of their gorgeous architectural home. But the French just now, notwithstanding their warm appreciation of the landscape introduced into the lovely pictures of Breton and Millet, confine themselves to the realisation of agreeable but common-place scenes, and seem to despair of any attempt even to emulate the poetic effects of Troyon, Rousseau, and Corot.

A very much more important competition

has also at this moment to be determined, that for the colossal monument to be erected on the Place du Château d'Eau, to commemorate the establishment of the French Republic; a monumental work which is to exceed in importance any sculptural achievement since the tomb of the De Medici, at Florence. As many as seventy-eight ambitious competitors have regarded themselves as equal to the great work, and as many, with the exception of two or three, have altogether failed to show themselves in any way competent to carry out so "big" an undertaking. A very limited acquaintance with French art will allow any one at a distance to imagine the sort of design that Parisian artists would consider appropriate to do eternal honour to the triumph of any of their own pet theories; and if the time should ever come when they in their gratitude should determine to erect an enormous statue to our own countryman, Mr. Worth, we can believe that they would, with easy adaptability, utilise precisely the same attributes with which they so lovingly and lavishly surround all their decorative triumphs and historical glories, to which end we strongly suspect MM. Bernard and Larche and M. Gautherin's exceedingly grand and collaborated design is the one most likely to be selected for the purpose. Certainly, in modern days, we cannot recall an instance where architect and sculptor have worked so affectionately together, and so immeasurably superior is this design to all others exhibited that we are disposed to think that if it were not for this great work the jurors could not have found another design,—not even M. Dalou's from London,—that would justify them in arriving at a decision.

In this competition for the colossal statue of the Republic to be erected on the Place du Château d'Eau, out of the seventy-eight models three have been chosen; for the competition is only a preliminary one, and MM. Gautherin, Morice, and Soitout will by next spring have to execute, a third the natural size, that is, some 7 ft. high, another model of the figure of the Republic. Among the six honourable mentions accorded appears the name of M. Dalou, the merits of whose excellent and spirited group have gained considerable applause since the first day's impression. But the enlargement to colossal proportions of his model it was alleged would hardly be satisfactory; we hope that M. Dalou will exhibit his talented work at next year's Royal Academy.

With the return of the winter commence again the long hours of study; in a few days the École des Beaux Arts opens for its new term of 1879–1880. It is curious to see in the number of young artists admitted to the École, 970 painters, sculptors, engravers, and architects,—that these latter alone are to the number of 536. We may, indeed, envy these happy aspirants to fame, for whose professional and intellectual development such a tempting and complete series of lectures is offered. These are to the number of sixteen:—Drawing, anatomy, history and archæology, sculpture, perspective, æsthetics, and history of art (this course by M. Taine); in the section of architecture,—mathematics, descriptive geometry, stereotomy, or preparing of plans; geology, physics, and chemistry; construction, perspective, legislation in architecture; history of architecture; theory of ornament: with a number of courses of lectures common to the painters, the sculptors, and the architects, on ornamental drawing, and decorative art. There are eleven *ateliers* or work-rooms; three for painting, three for sculpture, three for architecture, one for engraving on copper, the last for medal engraving,— all directed by eminent artists: Cabanel, Lehmann, and Bougereau, Laisne, Andre, and Guadet, among the painters and architects; while a fine-art library and a museum of copies and casts are entirely at the disposition of the pupils. Such is the course of instruction given gratuitously by the École des Beaux Arts, and certainly the details would tend to show the reason for that technical superiority of the foreign artist, about which Mr. Poynter not long since spoke so warmly.

We are offered for the coming Parisian season a number of artistic novelties that bid fair to be both attractive and instructive. In the first place, by the indefatigable energy of M. Turquet, the Under-Secretary of State for the Fine Arts (why do we not in England have our Under Home-Secretary specially to look after artistic matters?), orders have been given to the authorities of the Historic Monuments Commission to collect all the working drawings and plans left by the late M. Viollet-le-Duc at the different points at which he was so industriously occupied in his conscientious restorations. We may look forward with the certainty of enjoying a rare treat in this exhibition of the works of an architect whose unaided skill as an artist, as a draughtsman, and a master of technical detail, is familiar to the profession, and whose teachings have produced not a little effect on the younger generation of our architects. Such an idea of collecting after his death the sketches and works of an artist cannot be too highly commended, and here in Paris almost invariably follows the decease of a well-known painter or architect. In England our exhibitions of the collected works of deceased masters have always proved successful, and the promised exhibition of Prouts and Hunts will certainly be one of the features of the coming London winter season. A correct judgment of an artist's power is materially assisted by the facility of comparison afforded by such exhibitions. And, *apropos* of Viollet-le-Duc's collected works, the Institute of British Architects should arrange to bring together the many exquisite sketches existing of the late Mr. Edward Blore, which we do not hesitate to say would form a remarkable exhibition.

Of the Museum of Comparative Sculpture and Architecture, which is, we believe, at present steadily progressing, we have already spoken, but we are promised for a period less distant the opening of the permanent exhibition of what the French call the "Garde Meuble,"—a function in some guise filled (in the keeping of the Crown regalia) by our Tower of London. The new exhibition promises to be a substantial addition to the many other attractive shows of this capital. There are to be four large rooms, all hung with the traditionary studious green hangings, but in this case of silk. The first of these rooms is to form the library, the second a work-room, specially set aside for the use of painters, designers, and amateurs, who will be duly authorised to study or reproduce any of the exhibits. The two remaining rooms will be occupied by various pieces of old furniture, but the principal feature of the exhibition, indeed of the Garde Meuble (a species of Government Pantechnicon) is the superb historical pieces of tapestry which it has possessed ever since the days when Henri Quatre established that great industry in France. These tapestries will be shown in series of three months, in order to lay them successively before the public. The six large pieces in the principal room were reproduced from cartoons by Miguard at the Gobelins Works, from 1690 to 1694. In the second room there are four other pieces, also allegorical, by Lebrun. The Garde Meuble, it may be remarked, possesses no less than 800 pieces of tapestry.

The series of strikes, from which we 'in England seem for the moment to be happily free, but which have proved already so serious in Belgium, are progressing here in France, particularly crippling at an important period the building trade. So far from the difficulties having been arranged, they are only becoming more complicated; and now a fresh source of dispute has arisen in the matter of the prices fixed by what is called here the "*série*"; in explanation of which it may be stated that once a building in Paris is completed, it is the custom for the contractor to have the work verified, and the detailed result is presented to the client; this memorandum (technically termed *mémoire en demande*) is again verified by the agent of the client, but only with a view to seeing if the prices set down by the contractor tally with those which the municipality of Paris have allotted for such work; if all is satisfactory, the memorandum is duly approved. It would appear that a generation or so since, the "*série*" was not accessible to the public, and it was only in 1840 that M. Morel collected in book-form the official prices; this tariff existed till M. Haussmann regularly established, by a council of architects, the "*Série des Prix de la Ville*;" since then (1865) a reduction has been made in the prices, and as late as 1878 a new *série* was settled; it was, therefore, fully expected that on this tariff the present season would rest; the strike has now come, and the *serie* will again have to be revised, entailing with it innumerable difficulties direct and indirect.

The Earl of Bradford has offered to present to the Walsall Town Council 46 acres of land for a recreation-ground.

THE TRADE IMPROVEMENT.

Reversing the poetic aphorism, in one sense, but fulfilling it in another, the star of trade is deriving benefit in the East from the West. If it be true that "westward the star of empire wends its way," it is at the same time true that the East benefits largely from it. America has become prosperous, and that prosperity is being reflected on British trade. We have for the last few months had to purchase large quantities of breadstuffs from the United States and from Canada, and these countries are now beginning to take in iron, steel, and other of our productions, so that there is a fuller demand for our goods than has been known for years. To meet the low demand that existed we had lessened very greatly our production, and we had lessened also our prices, so that when this rush of American wants came into our market it necessarily found a very marked result follow. Hence prices rose rapidly, and though they have not retained the whole of the speculative improvement then gained, they are yet changed (where product was free for sale at market rates),—changed from often unprofitable prices to very high prices in comparison, and prices that necessarily pay. The first benefit, a benefit which is scarcely known beyond the limits of those who are concerned in the trade, was reaped quietly by some of the chemical manufacturers who supply American houses. Then the long-depressed tin plate-makers felt a slight improvement in their trade, and after this the wave of prosperity gathered strength and burst in on the crude iron market with almost a flooding effect, driving up prices and stimulating production.

The intense dulness into which the iron trade had fallen may be readily conceived when it is stated that in the Cleveland district more than one half of the furnaces were idle; that in Scotland a rather larger proportion was idle; that in South Staffordshire only two dozen furnaces out of a total of 147 were at work; and that in other districts there were large numbers of furnaces idle. Prices were at a lower ebb than had been known for years, and demand was greatly reduced by the falling off in the German requirements, owing to the imposition of heavy duties. Thus, the market was at its flattest, and the American demand came as a great inflater. It is certain that that demand was on a large scale, for in September we shipped 32,000 tons of pig iron to the United States, or about as much as during the whole of last year; that our iron rail exports rose from nothing to 8,400 tons; and that in nearly all classes of iron there was a very large increase. It was to be expected that these large shipments would affect prices, more especially as they were the forerunners of others. Since the close of September the shipments have been on an increased scale, and with stocks declining it was inevitable that we should have a rise in prices, and an attempt to increase the extent of the production. Hence prices began to rise, and it is certain that speculators who had money idle at the bankers' began to rush into a trade of which they knew little or nothing, so that an abnormal inflation of prices began to take place. When prices of iron had risen more than 50 per cent. this inflation had attained its maximum, and in consequence there has been an after-fall, which will cause for a time the tidal trade-wave to retreat, but to return and reach a still greater height when it has gathered strength. Meantime, the effects of the revival in trade are manifest. Our exports have swollen largely; furnaces and forges are being put into operation in most of the iron-producing districts; and there is necessarily a very greatly increased demand for ironstone, for coal, and for lime; and a considerably larger number of workmen are now employed in smelting, in mining, and in manufacturing iron. Nor does the influence of the revival end here, for it spreads to the great carrying systems, and will cause the traffic returns to show a speedy increase after two years of dwindling, and thus the influence of that revival already permeates whole districts.

But it is not only in the iron and steel trades that that revival is felt. The great prosperity of the United states has enlarged the purchasing power of her people, and we have a double benefit from this. Not only do we ship more of certain classes of goods, but we have also less competition to meet with from the United States makers of certain articles in neutral

markets; and thus it is noticeable that we are shipping to some Continental countries larger quantities of some goods. For instance, of steam-engines considerable shipments were made a year or so ago from the United States to Russia; but now that the American needs are greater, we derive the benefit of the Russian orders, and there is a most satisfactory growth in our shipments to the Russian ports during the last few months. Generally, it may be said, that during the first few months of the present year we sent out much diminished values of our goods; but in the last few weeks the great increase in quantity and the swelling in price have caused the value to bulk out very considerably, and hence our exports for the year promise much better than they did. As our foreign trades grow our home trade will very speedily respond, for with trade as with water, the circle widens as the time passes, and a very slight impetus is distributed over a very large ground. But it must of necessity take some time, for the effects of prolonged depression are not overcome in a day. But when once the impetus is given to the wheel of trade, the momentum is long before it is lost; and this is so with that which takes its start from the United States. Again, taking the iron trade as an example, it may be said that whilst prices were falling manufacturers of iron kept their stocks as low as possible; but now that the tendency is towards an increase, it is inevitable that there should be a change, and not only is this the case at home, but abroad. This applies to iron in its many shapes, and thus there is now a comparatively large demand for iron goods, sellers being anxious to place orders before prices rise. The same is true in regard to other trades, and if this continue for a short time longer, we may fairly say that we have more than passed the worst, and that we have entered upon a path of improvement in trade. It is none the less welcome because it has been so long looked for, and it comes at a time when the labour market was almost at an extremity. It is tolerably certain that in some of the iron-making districts of the north the poor-law system has broken down beneath the mass of poverty, and if even there is an immediate benefit from the trade revival as full as it was expected to be, it is to be feared that the coming winter will still be a hard one, and hence the revival of trade comes not before its great need has been felt. It is too soon to speculate as to the extent to which the various districts of the country will be benefited; it seems probable that the ironmaking districts will reap the first benefit, but after it has once been so gained, it must spread to all the trades that depend upon the masses. The mineral industries are now benefiting, and if that benefit continues the north will become again prosperous, and will again become so large a consumer of the products of other parts of the country, that the trading and agricultural distress, of which so much has been written, and which has affected all classes, may soon be expected to be at an end.

THE SANITARY CONDITION OF DUBLIN.

We recently* gave a few notes of the evidence adduced during the first two or three sittings of the Royal Commissioners appointed to inquire into the sewerage and drainage of the city of Dublin. The Commissioners are Mr. Robert Rawlinson, C.B., and Dr. McCabe, Inspector to the Local Government Board. We append some additional extracts from the evidence.

Mr. Parker Neville, the City Engineer, stated that since the abandonment of the main drainage scheme of 1870 the township of Rathmines and Pembroke had obtained an Act enabling them to carry out an independent system of drainage for themselves, and they were carrying it out. He had gone over all the estimates of the main drainage scheme of 1870, and believed that, altered to meet existing circumstances and prices, it could be carried out for the city for 350,000*l*., and of that 50,000*l*. could be saved if the proposed storage reservoir at the North Bull were abandoned, as he believed might be done.

Mr. Commissioner Rawlinson.—Have you estimated the probable cost to the citizens of removing street refuse and domestic scavenging under the New Public Health Act?

Mr. Neville.—I have no data for an estimate, but I think the scavenging will cost from 35,000*l*. to 40,000*l*. a year. Hitherto the Corporation have had about 12,000*l*. a year for street scavenging. There never has been enough of money to keep the streets clean, and the cost of carrying the refuse and the difficulty of getting rid of it are very great. If the cleaning of the ashpits were taken out of the hands of the tenants and done by the authorities, it would add very considerably to the cost of scavenging the city; but, on the other hand, it would be well done, and, as against the rate which would have to be imposed, the tenant would save what he at present paid for getting the work done.

Mr. Neville, in answer to Mr. McCabe, said a very small portion of Dublin was unsewered. He was perfectly sure the house-drains constructed under the direction of the Corporation officers were all right, but that did not amount to one-half or one-third. For instance, in Mountjoy-square, out of fifty-nine or sixty houses, there were only seventeen houses with proper drains. Any sickness that occurred in the district was not owing to the main sewer, which was quite sweet, but from the defective house-drains. He did not think that was an exceptional case. A very considerable proportion of the best class of houses in Dublin were as defectively sewered as the poorer ones. All the sewers were now being ventilated by ventilators in the centre of the street.

At a subsequent sitting, Mr. Neville detailed the direction of the proposed main sewers and intercepting sewers. The northern high-level sewer commenced near Arbour-hill and was discharged at the North Bull, where there was a reservoir. He intended to do away with that reservoir, which would be a saving of 50,000*l*. The southern high-level sewer began in Lower Mount-street, and joined the northern at the head of Sackville-street. Witness described the course of the intended low-level and intercepting sewers.

The Chairman.—I had better say now that I very heartily approve of the adoption of the circular form for sewers of this character in preference to the egg-shape. I think you have done very wisely to adopt the circular. Is there any part of the work that will be specially difficult in consequence of quicksands or defective stratification?

Mr. Neville.—I do not think we shall meet any difficulties that way. The estimate of the cost of intercepting sewers was 300,000*l*., that was omitting the reservoir and the pumping power capitalised. The diameters of the proposed outfall sewer at Clontarf was 9 ft. by 7 ft. The grade of the sewer was 2 ft. per mile in the two miles.

The Chairman said 2 ft. per mile for engineering purposes, especially when impeded by the tide, was absolutely for all practical purposes level; they could have no scouring velocity there unless perfectly free from the tide. He knew instances where the fall had been done away with for the purpose of lifting the sewer out of the tide.

Examination continued.—You have had very wide experience now in the city of Dublin, and you have contemplated for some years this large expenditure upon what is called the purification of the Liffey. Do you think the Liffey is really as dangerous to the health of the citizens of Dublin as many persons say it is?

Mr. Neville.—I do not think the state of the Liffey is so injurious to the health of the citizens as the state of the dwelling-houses of the poor.

Do you think if the citizens of Dublin were to content themselves in expending a third of a million upon out-fall sewers, and consider that they had then done their duty by the city, that they would have removed the principal cause of disease?

Mr. Neville.—I think they are bound to do that.

If the main drainage system was completed, would you think the sanitary arrangements of the city satisfactory without the other improvements you speak of?

Mr. Neville.—No, I think the state of the streets and rears of houses has more to do with the high death-rate than the drainage.

Mr. Rawlinson said that the tenements of Dublin were just as bad as it was possible for places to be in which human beings were supposed to reside. At the same time he must say he had not seen anything worse in Dublin than he had seen in what was called rich England. He was happy to say that exposure in other places had been followed by improvement, and he sincerely hoped the exposure which would now take place in Dublin would lead to a better state of things. It was impossible for language to describe anything worse than certain portions of the tenement districts of Dublin. The houses were not fit for animals, let alone human beings. They were not worth one year's purchase.

Mr. Charles Cameron, Medical Superintendent Officer of Health to the Dublin Sanitary Authorities, was examined by Dr. MacCabe, and said he was the senior sanitary officer of the Corporation, having been appointed in 1862. He analysed the sewage from all the main sewers discharged into the Liffey before the introduction of the Vartry water. The only change that had since occurred in it was an increased extent of dilution from the greater amount of water. The mud now deposited on the foreshores of the river containing sewage matter and *detritus* from the soil evolved noxious gases, consisting chiefly of carbonic acid, marsh gas, sulphuretted hydrogen, and the putrid and simple ammonias. He had found every form of life in the water.

Mr. Rawlinson.—In the London mud of the Thames there is a small red worm which multiplies by millions, and is peculiar to sewage water. Have you that in the Liffey water?

Witness.—We have. I have no doubt whatever that the gases from the Liffey exercise an injurious effect upon the banks of the river and near them. I am aware that the rate of mortality amongst those who live on the banks is not high; but my opinion is that the river does exercise an injurious influence upon the health of the city generally on account of the gases evolved. At the same time those noxious gases are to a very large extent oxidised by the very open space near the river. I attribute the lower mortality on the banks to the superior class of houses there in which people of the highest respectability reside all the year round, and which ought not to be compared with houses in Church-street and Plunket-street, but with houses having similar hygienic conditions in every respect save the contiguity of the river. I think it would be desirable to have intercepting sewers. I am of opinion that cities built on rivers with estuaries into which sewage matter is conveyed are more or less unhealthy. Dublin occupies a naturally unhealthy situation, many of the basement stories of houses being several feet below high-water mark. If the city sewage could not be conveyed out to sands several miles distant, I think the farther down the estuary it is brought the better.

To Dr. McCabe.—After having examined premises of all classes, I have come to the conclusion that the immense majority of the houses in Dublin are imperfectly sewered, and the sewers badly made. In fact, the house-drains are as bad as bad can be. As a rule, water-closets are not properly trapped and ventilated.

What is your opinion of the tenement houses of Dublin?

Mr. Cameron.—I cannot express as favourable an opinion of them as of the water supply. A very large proportion of them are in a most deplorable state, and overcrowded. We are constantly endeavouring to limit the number of occupants of rooms, but it would almost require a policeman at every house to prevent overcrowding. Great credit is due to the company who have established industrial dwellings, but the people who inhabit them are persons who pay rents of from 3s. 6d. to 6s. a week, and are not those who give the sanitary authorities trouble at all. The persons I speak of are those who pay from 8d. to 2s. 6d. a week rent, and who number at least 10,000. There is no provision for these except cottages built by two or three private persons. From the tenements of these persons disease is at present spread in every quarter, and for their benefit I think the municipality should provide houses of the smallest description containing one, or, at most, two rooms, and which could be let at from 1s. 6d. to 2s. 6d. a week. Mr. Kenny has erected some comfortable cottages in James's-street, the rent of which is 2s. 6d. a week. An immense number of persons at present pay 1s. 6d. a week for one room, and sometimes they get two. The Corporation could not provide two rooms at 1s. 6d. a week without losing heavily, but I think they should provide small cottages of the kind. It should be the most important work in which they could engage. Eminent citizens might do something to provide a limited number of houses, but it would not be fair to expect too much from them. Our mortality largely depends upon diseases of the organs of respiration caused by damp, which would be diminished in the

* See p. 1137, *ante*.

streets if every street were paved, but as that would involve an enormous expense it is not likely to be done.

Alderman McDermott, chairman of the Artisans' Dwellings Committee, was examined in reference to the action of the Corporation taken under the Artisans' Dwellings Act. He said that the Act, having been passed in the year 1876, the Medical Officer of Health reported twelve unhealthy areas. Of these the committee selected two to commence operations on. One of those selected was the Coombe, which, as one of the worst areas in Dublin, the committee considered an excellent one to test the scheme. The scheme was confirmed by the Local Government Board in May, 1877. 20,000*l.* was applied for and obtained in February, 1878. The Corporation valuator made an award of 11,149*l.*, and the arbitrator awarded 14,421*l.* The committee expected to commence operations at once. The number of inhabitants on this area had been 1,000, and it was proposed to provide accommodation for 1,100 people. No large businesses were carried on in this area. There were no public-houses, and the Corporation had thus not been obliged to pay large compensation for profits. It was estimated that with legal expenses, &c., the total cost to the Corporation would be about 17,000*l.* Only 5,000*l.* or 6,000*l.* would be realised. The remaining 12,000*l.* would be provided by taxation, at the rate of ¼d. in the pound for fifty years.

Mr. Richard Hassard, C.E., next tendered himself for examination as to his scheme for the drainage of Dublin. He proposed to collect all the sewage of Dublin, to remove it to a point on the north side of the city, and then to deliver it at a point into the sea on the east side of the Hill of Howth. This plan would not involve the expense that might be supposed. In the month of August, 1874, he had written to the Corporation undertaking to carry out the plan for 340,000*l.* for the works. The letter was marked "read," and no answer was sent to it. The Corporation were authorised to raise 350,000*l.* for the purpose, and his plan was, therefore, within the amount. Mr. Hassard then read a statement of his plan:—It only dealt with the sewage of the metropolis and the townships of Kilmainham, Drumcondra, and Clontarf, the townships of Rathmines and Pembroke having commenced to construct a drainage system for themselves. Mr. Hassard proposed to make five great main sewers for the north and south sides of the city and townships connected with it. These would be united by one passing under the Liffey, and would have inclinations varying from 8 ft. to 2 ft. 8 in. per mile, and would effectually intercept the sewage of the whole locality. The sewage from these would be received at a pumping-station at Clontarf, where it would be pumped to a height of 27 ft. into a main outfall sewer proposed to be carried by Raheny, along the Howth-road, and through the Hill of Howth by a tunnel about a mile long, until it ran out at a point about a quarter of a mile to the south of Pucks Rocks on the Nose of Howth. The outfall would be about 3 ft. below mean high-water mark, and the sewage would be delivered in a constant stream into a deep and rapid tidal current, at a place where there is no breach or foreshore on which sewage could be deposited, the cliffs being lofty and going down into deep water. The main outfall sewer would be eight miles and a half long, and would have a fall of 1 ft. 6 in. per mile. An engine working up to 360-horse power would be required for the pumping, and the annual expense of pumping would be about 3,600*l.* The cost of the entire scheme would be 422,000*l.* The population of the city and townships being about 272,000, the cost per head would be about 31s.

Mr. Palles, C.E., was examined on the 7th inst., and gave details of his scheme for metropolitan drainage. He mentioned that by a resolution of the Corporation, of August, 1874, Mr. Cotton, the Local Government Board inspector, Mr. Price, C.E., and himself, were appointed to examine plans for the purification of the Liffey. They made a report which had already been put in evidence by Mr. Neville. The plan he now submitted was a modification of what was put forward in that report. They proposed to utilise the outfall sewer at present in course of construction by the Rathmines and Pembroke Commissioners, and which discharged at the White Bank on the north side of the South Wall of the Liffey, using that sewer for the discharge of the whole of the sewage of the southern district of the city and Kilmainham township. A storage reservoir would be required at the White Bank, and the outfall of the sewer should be carried 800 yards further down, so as to discharge into the river channel about three-eighths of a mile inside Poolbeg Lighthouse. It was proposed that the sewage should be discharged only during the four hours when the ebb-tide ran strongest. The sewage of the north side of the city they would deliver into a concrete reservoir, to be constructed on the east side of the new docks, from which it would be discharged into the deep-water channel of the river during three hours of the strongest ebb. The whole sewage would thus be carried out to sea, and from the way in which the tidal currents ran outside Poolbeg he maintained that it would not come back. High-level intercepting sewers would have to be constructed on the north and south sides of the city, by which the sewage would be collected from the existing sewers, and conducted in the one case to the reservoir at the new docks, and in the other to the new Rathmines and Pembroke township sewer. The cost would be 224,445*l.*, which would include the capitalisation of the expense of pumping the sewage of the lower district of the city, and also a payment of 15,000*l.* to the Rathmines and Pembroke Commissioners for the use of their sewer. Interest on the cost, at 5 per cent., would be 11,222*l.* A rate of 4d. in the pound on the valuation of the districts proposed to be drained would give 11,250*l.*

To Dr. Norwood.—He did not propose to utilise the sewage.

Mr. Price, C.E., was examined in support of the scheme, with which he was associated with Mr. Palles, and stated one advantage of it was that the mixing of the sewage with the salt water of the river would take place in still water, whereas in the case of an outfall below Poolbeg, the waves caused by south-easterly winds would throw the sewage back. He believed the effect of the mixture of salt water was to render the sewage harmless.

Mr. Rawlinson said there was strong evidence the other way,—namely, that the product of a mixture of sewage with salt water was more injurious than the result of a similar amount of sewage mixed with fresh water. The present depth of the river channel was due to dredging, and the probability was that if that operation were discontinued it would fill up again. Therefore the Port and Docks Board would look with jealousy upon any scheme that would affect the depth of the river channel.

Mr. W. J. Doherty, C.E., contractor for the rebuilding of the Carlisle Bridge, said he had for a long time taken a great interest in the main drainage question, and possessed some knowledge of it, having on two occasions tendered for the plans for carrying out the drainage of Dublin. In 1873 he tendered for 775,000*l.*, which was 100,500*l.* under the next lowest tender; and again, in 1874, for 480,000*l.* It was now admitted that the most economical method of drainage was to discharge the sewage into the sea. The utilisation of sewage was now an admittedly exploded theory. Dublin was naturally divided into two portions by the River Liffey, and he, therefore, proposed that there should be two outfalls, one on the north side and the other on the south side. His estimate for his scheme was 250,000*l.*, and he would undertake to carry it out himself for that figure.

To Dr. Norwood.—His plan provided for Drumcondra, but not for Clontarf, which would carry out a drainage scheme of its own at a cheaper rate than by joining the scheme. He thought that part of the city of Dublin could be drained into the Rathmines sewer.

Mr. Rawlinson said he would like to impress on all the engineers that no magnificent or grand plan was wanted. The question was, what would be adequate to meet the requirements at the least cost? He did not care about a grand scheme unless it produced grander results than a plain one.

Mr. Doherty said the cost of materials was now very much lower than in 1873, when the estimated cost of the drainage scheme was 775,000*l.* Iron, for instance, was then 12*l.* a ton, now it was 5*l.*

Mr. Rawlinson said the city had had a great escape from a great increase of taxation to carry out that very expensive plan.

On the 9th inst., the Commissioners proceeded to view the sites of the proposed outfalls of the several drainage projects that have been suggested to them.

Mr. James Dillon, C.E., was one of the witnesses examined on the 10th inst. He said he was Vice-President of the Institution of Civil Engineers in Ireland. He had been familiar with the Liffey for the last twenty-five years, having had his offices on Ormond-quay, opposite to the river Poddle. The Liffey, in his opinion, was a very small factor in the high death-rate. He did not consider the Corporation to blame for the present state of the river, their funds being insufficient to enable them to deal with it. From a table of death-rates which he had prepared from official returns, it appeared that the city death-rate per 1,000 of the population from July, 1876, to December, 1878, was 29·1 north of the Liffey, and 39·9 south of it. Along the entire north line of quays it was only 16·97 per 1,000 compared with 22·1 along the south line of quays. In some fifteen streets forming a junction at right-angles with the north line of quays, the death-rate was 24·90 as compared with 27·5 in corresponding streets joining the south line of quays. The average death-rate of the city was 30·5 per 1,000. The average death-rate of the north line of quays and their branch streets was 20·93 as compared with 24·8 on the south line of quays. In winter, when the Liffey was least offensive and most harmless, the city death-rate was highest. The condition of the streets, tenement-houses, and house-drains was a more important factor in the high death-rate, as it was highest in the localities where those matters were most neglected. There were 105 miles of streets, of an average breadth of 25 ft., or 13,860,000 square feet, exclusive of back yards and alleys. The greater portion of that immense surface, which was six times greater than the entire Liffey from above Island-bridge to the Custom-house, was allowed when the death-rate was highest to remain for days together covered with mud, all kinds of human and animal refuse, and decayed vegetable matter. The abatement of this great source of disease should take precedence of any other work, as it would take less time and money to carry out, and with it should be included private scavenging. He was of opinion that the dirty habits and drunkenness of the people were chiefly due to overcrowding.

Mr. John Griffiths, assistant engineer of the Port and Docks Board, was examined at considerable length by the chairman as to the nature and present condition of the river and port of Dublin generally, the set of the tides, and a variety of other engineering details. In the course of his evidence he stated that the Board would make their Parliamentary powers for the preservation of the port stronger than they were at present, if they could. If Mr. Hassard's scheme, having an outfall at Howth, were carried out, nothing would come back into the port of Dublin, but the sewage would be carried past Howth harbour, and those in charge of its interests would have to look to them.

The inquiry was continued on the 13th, 14th, 15th, and 16th inst., and brought to a conclusion on the 17th. A great deal of valuable evidence was adduced in corroboration of that which we have already given. At the close of the inquiry, the Commissioners expressed their indebtedness to the numerous witnesses who had appeared before them, Mr. Rawlinson remarking that it would be the duty of the Commissioners to recommend to the Corporation efficient practical measures, and at the same time to take care not to forget the question of cash. They should not let ambition run away with them by putting before the Corporation a magnificent scheme if it was not absolutely and essentially necessary for the health and welfare of the citizens; and they should cautiously examine any estimates that should be put before them, in order to see whether they might not be reduced so as to produce the greatest amount of benefit to the city at the least possible cost.

We greatly regret to have to announce the sudden death of Mr. William Jerrold Dixon, who was acting as secretary to the Royal Commission. The lamented event, the result of heart disease, took place on Monday. During his short sojourn in Dublin he had endeared himself to a large circle of friends by his brilliant talents and frank and generous disposition. Mr. Dixon was the eldest son of Mr. Hepworth Dixon. He was a member of the Bar, and had already given promise of a useful public career. His health had suffered of late years, owing to his prolonged immersion in the ornamental water in Regent's-park on the occasion when so many lives were lost by the breaking of the ice.

ST. PANCRAS WORKMEN'S EXHIBITION.

We are unfeignedly sorry that we cannot join in that loud chorus of compliments and expressions of admiration which have followed the opening of the St. Pancras Workmen's Industrial Exhibition in Drummond-street, Hampstead-road. It has its good side. It doubtless will encourage a few ingenious and persevering people to spend usefully some of their spare time, and will obtain for a few clever workers the admiration of some of their neighbours; but we have a strong conviction that it is calculated to do more harm than good. To set up for public inspection such an exhibition of pictorial art as is here made, without comment or protest or warning of any sort, is to educate the public taste downwards. The works may be very creditable to the individual artists, considering the circumstances under which they were produced, but to set them up to the public gaze except as examples of what to avoid is an utter mistake and public injury. There are two or three creditable drawings amongst them, but these are lost amidst their dismal surroundings. Amongst the models, too, there are some terrible atrocities, prominently exposed. We unwillingly make these observations,—indeed, we have withheld them for a week; but it seems to us a duty that some words of protest should be uttered as a warning to other local committees. We willingly add that there are some good specimens of carving (which formed part of the recent Westminster Exhibition) and of cabinet work. The building in which the exhibition is held, the Tolmers-square Institute, is intended to accommodate a Sunday School, Penny Bank, Library, and People's Café, and includes a Lecture-hall to seat 700 persons. It has been erected mainly by the efforts of the congregation of Tolmers-square Church, and has cost 10,000*l.*, including the site. The immediate population consists chiefly of the working classes, and help is wanted. The Rev. Arthur Hall is chairman of the acting committee.

THE REBUILDING OF ANDERTON'S HOTEL.

Although Anderton's Hotel in Fleet-street is one of the oldest and best-known hostelries in the metropolis, it has hitherto been, externally, a plain and unpretending structure. This, however, is no longer the case. During the last twelve months it has been in course of rebuilding, and within the past few days its new elevation has been completed, revealing the most prominent architectural structure in Fleet-street. The hotel as rebuilt has been very materially enlarged, and now ranks as one of the most spacious establishments of this character in London, two adjoining properties having been secured for the purposes of its enlargement. The materials of the Fleet-street frontage consist of fine red brick with Portland stone windows and dressings, very elaborately carved. The east and west sides of the elevation are carried to a height of 78 ft., the central portion being 62 ft. high, and the entire width 52 ft. The ground-floor facing Fleet-street consists of two large shops, one on each side of the hotel entrance. Above there are five floors, all devoted to the purposes of the hotel proper, as well as the rear of the ground-floor, and the whole of a deep and extensive basement. The east and west portions of the elevation contain double mullion windows, the windows of the second floor having on each side and in the centre fluted columns and arched heads, enclosing a profusion of carving, whilst beneath the second and fourth floor windows there are ornamentally-carved brick panels. These portions of the elevation are surmounted by crescent-formed gables, having stone copings and finials. The central portion of the elevation contains bay-windows, and immediately above the first-floor windows are the arms of the Goldsmiths' Company, who are the freeholders of the site. A prominent feature in the elevation is a bold balustrade and balcony, which is carried across the building at the foot of the first-floor windows.

The hotel is approached by an arched-entrance in polished granite, leading into a corridor, 67 ft. long, 10 ft. wide, and 14 ft. high, with pilasters on either side, the floor of the corridor being laid with ornamental encaustic tiles. A special feature in the basement is a large crypt or banqueting-room, 51 ft. by 37 ft., and 20 ft. high. This apartment is primarily intended for the use of the Masonic fraternity, for whom other apartments have likewise been provided. The crypt has a parquet floor, with a skylight in the ceiling, and a sunlight for use in the evening. Immediately adjoining is an ante-room 18 ft. square. On the ground-floor there is a coffee-room, 26 ft. by 20 ft., and 14 ft. high, also a large dining-room, 60 ft. by 40 ft., and the same height as the coffee-room, together with a spacious Masonic lodge-room, having stained-glass windows and decorations, into which are introduced the emblems of the craft. The mezzanine floor, between the ground and first-floors, in the rear of the building, contains a large banqueting-room, 78 ft. by 32 ft., and 14 ft. high. This apartment is also intended to be used as the Masons' chapter-room. Adjoining is a spacious serving-room and ante-room. A stone staircase, 18 ft. square, carried down to the basement, and up to the top of the building, leads to the upper floors. It is covered in with a glass dome. The first-floor contains a ladies' coffee-room, 36 ft. by 20 ft.; three drawing-rooms, each 20 ft. by 16 ft. and overlooking Fleet-street; together with several bedrooms and bath-rooms. The second floor contains a spacious saloon, 40 ft. long by 25 ft. wide, suitable for large dining parties, with serving-room adjoining, also a drawing-room and several bedrooms. The kitchen is on the third floor. It is 43 ft. in length, 26 ft. in width, and 12 ft. high, and fitted with apparatus and cooking machinery, by Messrs. Jones & Dray, of Leicester-square. In connexion with it there is a lift from the basement, worked by steam power, and furnished by Messrs. Bunnett & Co., of Queen-street, Cheapside. The other portions of this floor, and the whole of the fourth and fifth floors, contain bedrooms, which, altogether, are 110 in number. The extreme depth of the building from Fleet-street is 150 ft. and the average width 72 ft.

The architects are Messrs. Ford & Hesketh, of Aldermanbury, and the contractors Messrs. Browne & Robinson. Mr. Robert King is clerk of the works, and Mr. W. Serle, foreman. The estimated cost of the building is from 35,000*l.* to 40,000*l.*

THE CORNELIUS MONUMENT, DÜSSELDORF.

When, on the 24th of June, 1869, on the occasion of the fifteenth anniversary of the foundation of the Düsseldorf Academy of Arts, that city perpetuated the memory of the eminent director of the Academy, Wilhelm Schadow, by erecting a colossal bust in his honour, it was felt by the artists and lovers of art who were present at the commemoration that it was due to the merits of his predecessor in office, Peter von Cornelius, to place a monument also to him.

Cornelius, one of the most eminent of his age, was born at Düsseldorf, on September 16, 1787. He lost his father, who was inspector of the picture gallery in that city, when he was but sixteen years of age. His parent had given him a superior education, and encouraged the boy's early passion for art. Though at the father's death the family was left in straitened circumstances, his mother resolutely refused to remove him from his chosen profession, and the young artist pursued his studies with redoubled zeal. He was soon able to produce designs of his own, and at the age of nineteen he was employed to paint the cupola of the old church of Neuss, near Düsseldorf, his work displaying considerable grandeur of conception. In 1810 he removed to Frankfurt, where he commenced a series of designs illustrative of Goethe's "Faust." Cornelius soon after went to Rome, which he did not leave till 1819. In Rome he found stanch friends in a kindred genius, Friedrich Overbeck, and others. The circle there formed devoted themselves to the regeneration of German art, an object which they were permitted to attain. Encouragement was given to this school by the then Prussian Consul-General at Rome, M. Bartholdy, who employed its leading members to paint the walls of his villa. To Cornelius two of the frescoes were assigned, "Joseph interpreting the Dream of Pharaoh's Chief Butler," and "Joseph recognising his Brethren." These paintings excited so much admiration that the Marquis Massini commissioned Cornelius to adorn his residence with a series of frescoes from the "Divina Commedia" of Dante. This work he was not destined to accomplish, for, though he prepared the designs, before he could carry them out he received an invitation from the Crown Prince of Bavaria, afterwards King Ludwig, to execute the frescoes in the newly-erected Glyptothek in Munich. At the same time he was appointed Director of the Düsseldorf Academy.

His first task, on assuming that important office, was to remodel the Academy; and he then proceeded to Munich. The frescoes he there painted were not completed until 1830. While this great undertaking was in progress, Cornelius commenced another work, the painting in fresco the walls of the new Ludwigskirche. The most important picture is the "Last Judgment." The execution of those works was the cause of his resigning the post of Director of the Düsseldorf Academy, as soon as he had established it on a satisfactory basis. Shortly after he became Director of the Munich Academy of Arts. In 1841 Cornelius was invited to Berlin by Friedrich Wilhelm IV. of Prussia to paint some frescoes in the Campo Santo. But before completing his cartoons he again visited Rome, and there some of the designs were prepared. They are well known by engravings, as well as those for the Massini villa, for the *Nibelungen-Lied*, and the *Gerusalemme Liberata* of Tasso. Cornelius also superintended the painting of the frescoes in the Berlin Museum, for which the cartoons had been prepared by Schinkel. It is also worthy of mention that the design for the baptismal shield presented by the King of Prussia to the Prince of Wales was made by Cornelius.

The works of Cornelius are on the largest scale, treat of the loftiest themes, and are designed with grandeur befitting their magnitude and elevated aim. Cornelius was one of those who considered that fresco was the most suitable material to carry out an artist's conceptions. The regeneration of German art which he effected especially entitled him to the gratitude of his nation, and the resolution to erect a fitting monument to the memory of the master was the first acknowledgment of such indebtedness. The funds, therefore, for its erection soon flowed in, among the more liberal subscribers being the King of Prussia, the ministry of the day, Düsseldorf and other art cities, especially Vienna. The fact of Cornelius having been born in Düsseldorf, and of a good deal of his activity having been devoted to his native town, and to the resuscitation of the art-school which had before been much neglected, contributed not a little to the success with which the undertaking was carried out. The municipality of Düsseldorf, the Düsseldorf Art-Union for Rhineland and Westphalia, as well as the club known as the "Malkasten," contributed most handsomely.

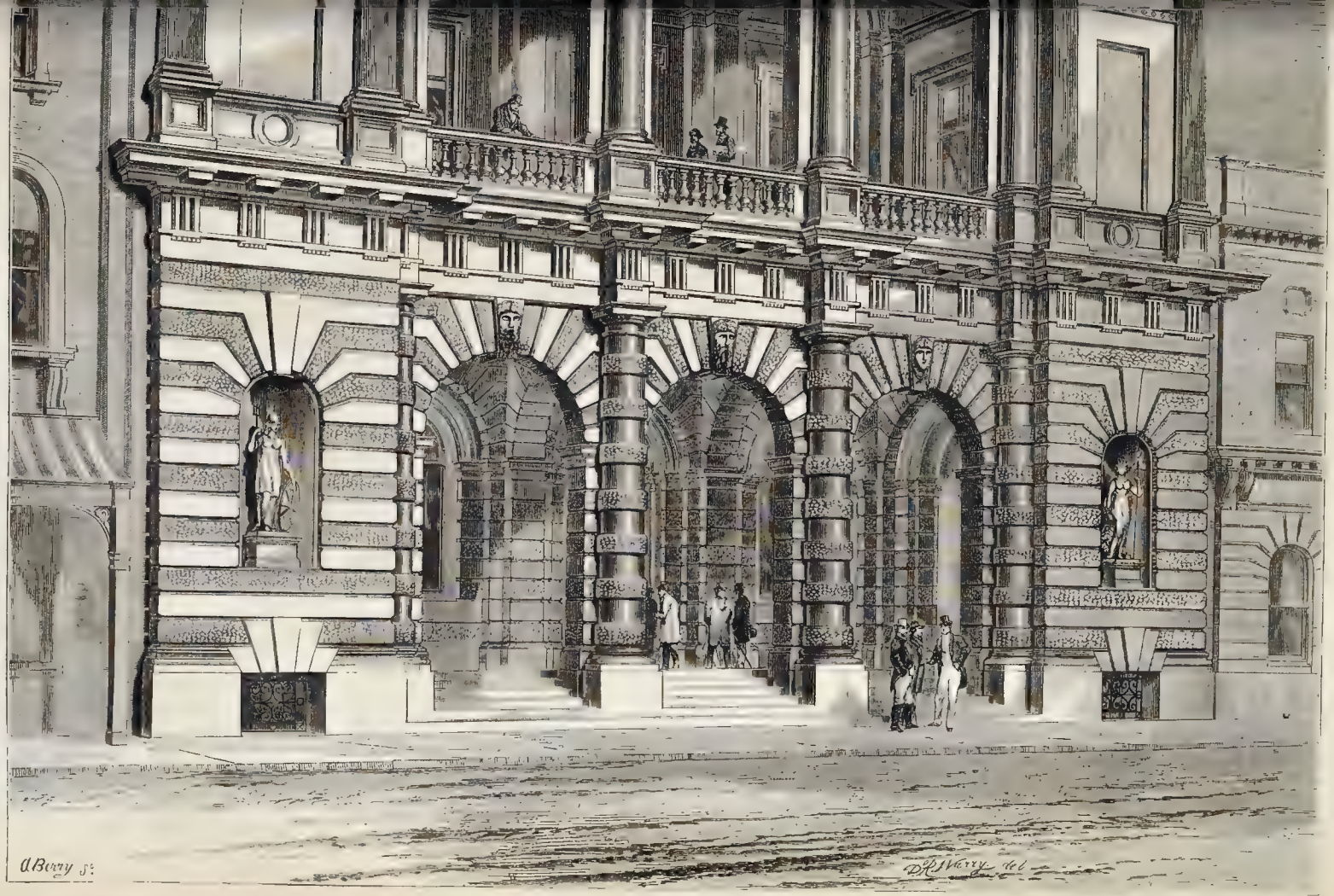
Amongst a very great number of competitors for the monument, Professor Adolf Donndorf, of Dresden, now at Stuttgart, carried off the palm. The work took some years to complete, so that only on the 24th of June of this year, the sixtieth anniversary of the Academy, could the statue be unveiled. The monument rises upon a granite base in pleasing rhythmical proportions. The statue is above life-size, and conveys happily the expression of the intellectual superiority and plain, forcible characteristics of the master. Donndorf has represented him in the ordinary every-day garb of civic life, giving us the man as he was. Although Cornelius was small of stature, the by no means easy task has been happily solved,—namely, while faithfully reproducing his personal appearance in posture and expression, of imparting to the statue an artistically rounded sympathetic impression. The classically-draped civic mantle, held up by the left hand, encloses in powerful lines a short stature, the right hand holding with an expressive movement the transmitter of great ideas, the crayon or pencil.

The base is adorned right and left by two seated figures, life-size, representing Poesy and Religion, which effectually surmount the harmoniously membered lower portion of the monument, and at the same time represent the two directions of art which the late master pursued. The beautiful face of Poesy looks up enthusiastically, while Religion, in a more sober and fitting form, characterises the no less important tendency of Cornelius. Only quite recently, with the erection of the Berlin National Gallery, has it been possible to worthily place the cartoons for the frescoes intended for the Campo Santo of Berlin (the greatest creation of the master after his call to Berlin in 1841). The sculptor has not omitted to record on tablets inserted in the wreath of laurel and oak, the names of the



THE CORNELIUS MONUMENT, DUSSELDORF.—Professor Adolf Donndorf, Sculptor.





UNION BANK OF AUSTRALIA, MELBOURNE: PRINCIPAL FAÇADE.—Mr. Macvicar Anderson, Architect.

four cities in which Cornelius principally worked. The upper pedestal, of granite, bears on its front a bronze relief representing Painting resting pensively on a mystic sphinx, and holding in the left hand palette and brush. On the reverse side, also in relief, are Italia and Germania, the former, a figure fully developed, handing a wreath to the latter, personified by a young girlish form. Above these figures are medallions of Michelangelo and Albrecht Dürer.

The base, finally, shows us "Faust and Helena," combining romantic German thought with the spirit of classic times.

THE UNION BANK OF AUSTRALIA: NEW PREMISES IN MELBOURNE.

The building of which we give an illustration is now in course of erection on an important site in Collins-street, with a frontage to that thoroughfare of 66 ft. and a depth of about 320 ft. This site was bought from the Crown in the early days of Melbourne for 16*l.*, and was recently sold by the heirs of the original purchaser for no less a sum than 33,000*l.* It is now being entirely covered with the new banking-offices, the arrangements of which have been designed and are being carried out by the local architects of the bank, Messrs. Smith & Johnson, of Melbourne. The principal façade to Collins-street, which we illustrate, was designed by Mr. Macvicar Anderson, of London, who furnished complete working and detail drawings for its execution. The comparatively restricted frontage suggested the treatment of the recessed arcaded entrance, with the view of enlarging the apparent width of the façade. The material adopted for the lower story is Harcourt grey granite; for the upper portion, including the pavilion turrets, Tasmanian brown freestone; and for the columns and pilasters of the Corinthian order, polished red granite from Peterhead. The niches on the lower story are to be occupied by statues representing Great Britain and Australia, which, as well as the bas-relief subjects on the upper story, are being sculptured by Mr. Robert Jackson, of Maidavale.

THE NEW BUILDING BYE-LAWS.

The following are the bye-laws made by the Metropolitan Board of Works under the provisions of the Metropolis Management and Building Acts Amendment Act, 1878, sect. 16:—

1.—*Foundations and Sites of Buildings.*

No house, building, or other erection, shall be erected upon any site or portion of any site which shall have been filled up or covered with any material impregnated or mixed with any fæcal, animal, or vegetable matter, or which shall have been filled up or covered with dust, or slop, or other refuse, or in or upon which any such matter or refuse shall have been deposited, unless and until such matter or refuse shall have been properly removed, by excavation or otherwise, from such site. Any holes caused by such excavation must, if not used for a basement or cellar, be filled in with hard brick or dry rubbish.

The site of every house or building shall be covered with a layer of good concrete, at least 6 in thick, and smoothed on the upper surface, unless the site thereof be gravel, sand, or natural virgin soil.

The foundations of the walls of every house or building shall be formed of a bed of good concrete, not less than 9 in. thick, and projecting at least 4 in. on each side of the lowest course of footings of such walls. If the site be upon a natural bed of gravel, concrete will not be required.

The concrete must be composed of clean gravel, broken hard brick, properly burnt ballast, or other hard material to be approved by the district surveyor, well mixed with fresh-burnt lime or cement in the proportions of one of lime to six, and one of cement to eight, of the other material.

The foregoing bye-law shall not apply to any building or other erection to be used as a stable or shed, provided that such erection shall not be used for any public entertainment or assembly of persons, or as a dwelling or sleeping place.

2.—*Description and Quality of the Substances of Walls.*

The external walls of every house, building, or other erection, shall, except in the case of concrete buildings, be constructed of good, hard, sound, well-burnt bricks, or of stone, and shall be put together with good mortar or good cement.

Similar bricks shall be used in the portions of party and cross walls below the surface or level of the ground, and above the roof, including the chimney-stacks. Cutters or salms may be used in arches over recesses and openings in, or faces of, external walls.

Stone used for the construction of walls must be free from vents, cracks, and sand-holes, and be laid on its natural bed.

The mortar to be used must be composed of fresh-burnt lime and clean sharp sand or grit, without earthy matter, in the proportions of one of lime to three of sand or grit.

The cement to be used must be Portland cement, or other cement of equal quality mixed with clean sharp sand or grit, in the proportions of one of cement to four of sand or grit.

Burnt ballast or broken brick may be substituted for sand or grit, provided such material be properly mixed with lime in a mortar-mill.

Every wall of a house or building shall have a damp course throughout its whole thickness, of asphalte, or other material impervious to moisture. The damp course in external walls shall be at a height of 1 ft. above the level of the ground directly abutting upon the external wall, and in the party or internal walls at a level of not less than 6 in. below that of the lowest floor.

The top of every party-wall and parapet-wall shall be finished with one course of hard, well-burnt bricks set on edge, in cement, or by a coping of any other waterproof and fire-resisting material, properly secured.

3.—*Duties of District Surveyors.*

It shall be the duty of each district surveyor, on receiving notice of the commencement of any house, building, or other erection, or of any alteration or addition, or on his becoming aware that any house, building, or other erection, or any alteration or addition, is being proceeded with, to see that the provisions of the foregoing bye-laws are duly observed (except in cases where the Board may have dispensed with the observance thereof), and to see that the terms and conditions upon which any dispensation may have been granted are complied with.

4.—*Fees to be paid to District Surveyors.*

The district surveyor shall, in respect of the erection of any house or other building, be entitled to receive the sum of 5*s.*, the same to be taken and deemed to be a fee due to such district surveyor in respect of the duties imposed upon him by the Metropolis Management and Building Acts Amendment Act, 1878, and these bye-laws; such fee to be payable in the manner and at the time prescribed by section 51 of the Metropolitan Building Act, 1855. The district surveyor shall also, in every case where, in respect of any breach of these bye-laws or of the above Act of Parliament, an application shall be made by him to a Justice, and an order made thereon, be in like manner entitled to receive the sum of 10*s.*, in addition to the before-mentioned fee of 5*s.*

5.—*Deposit of Plans and Sections.*

On notice being given to a district surveyor of the intended erection, re-erection, alteration of, or addition to a public building, or a building to which section 66 of the Metropolitan Building Act, 1855, applies, it shall be the duty of the person giving such notice to deposit plans and sections of such erection, re-erection, alteration, or addition, with the district surveyor. Such plans and sections shall be of sufficient detail to show the construction.

On notice being given to the district surveyor of the intended erection or alteration of or addition to any house, building, or other erection, other than a public building, the district surveyor may, if he think fit so to do, by notice in writing, require the person giving such notice to produce a plan or plans and sections of any such house, building, or other erection, or of the intended alterations or additions thereto, for his inspection.

6.—*Penalties.*

In case of any breach of any of the provisions contained in these bye-laws, the offender shall be liable for each offence to a penalty not exceeding 3*l.*, and, in each case of a continuing offence, to a further penalty not exceeding 3*s.* for each day after notice thereof from the Board or the district surveyor.

In any case, if the Board think it expedient, they may dispense with the observance of any of the foregoing bye-laws, or any part thereof, upon such terms and conditions as they may think proper, and in case of the non-observance of any terms and conditions upon which the Board may have dispensed with the observance of any of the foregoing bye-laws, then such proceedings may be taken and such liabilities shall be incurred as if no such dispensation had been granted.

Sealed by order,
J. B. Wakefield, *Clerk to the Board.*
Spring Gardens, October 3, 1879.

"I confirm the oregoing bye-laws,
Rd. Assheton Cross,
One of Her Majesty's Principal Secretaries of State.
Whitehall, October 6, 1879."

NEW COLLEGE, CHAPEL, OXFORD.

The work of restoration at this chapel is now near completion, and consists of an entirely new oak roof, richly moulded. There are seven bays, with two principals next the east and west walls. The spandrels are filled in with tracery, and life-size figures are carved at the end of each hammer-beam, with wings. There is also a moulded wall-plate, in which carved patterns are inserted the entire length. The principals spring from the old stone corbels. After being cleaned, they were found to be coloured with red, blue, and gold, and the original pattern has been retained. The wall-space between each principal on the north and south sides has been covered with moulded tracery springing from the stone corbels. The rafters are in keeping with the remainder of the work, and the whole is covered with oak boards in narrow widths, and on these are fitted, with the view of supporting the felting, stout deal boards to receive the lead. The stone pinnacles of the chapel, which were very much decayed, have been carefully pointed, none of the old stone having been removed. A few new finials have been placed where the old ones were quite gone, but as little as possible has been done to destroy the features of the old work. New oak roofs over-laid with lead are put on the two ante-chapels. Internally the whole of the old plaster has been removed, as it covered the stone dressings, which had been hacked for the purpose of forming a key to the plastering. The walls have been re-plastered, so as to show the stone dressings, and the windows, which have been thoroughly cleaned, are now seen to great advantage. The screen through which the choir is entered is of oak, of elaborate design, and stands upon eight marble bases; posts supporting the organ-gallery, with moulded ribs springing from each upright, and carved spandrels. The fine old oak doors which formerly formed part of the screen have been restored, and are now fixed in their original positions. It was discovered that the reredos was in a very bad state; as soon as the plaster was taken off the canopies, all the stone divisions were found to have been much damaged, just sufficient remaining to denote the original design. The sedilia and piscina have also been restored, together with the credence on the north side; these were found almost knocked to pieces, but they have been replaced as near as possible to what was considered the original design. It only remains now to fill the niches with figures to make this part of the work perfect and complete. The small lights in the tracery retain the original painted glass of 1386, and are adorned with curious figures. A carved and moulded stone recess has been designed and fixed on the north side under the easternmost windows to receive the "Wykham Crozier"; it is lined with oak, with door and glass panels. All the floor, which is of stone and marble, has been taken up and relaid. In removing the old wall framing was discovered a doorway in good preservation leading to the vestry or robing-room, and this, together with the room, has been restored and a new oak door placed thereto. The canopy work over the stalls is rich in tracery, and there is a carved oak cresting running the entire length. The ends of the stalls are very massive, the carved work comprising tracery and poppy-heads from very fine examples, figures at the elbows, &c. The figures at the east end represent the four evangelists, and those at the west end (north and south) the founders and the reigning monarch. The new organ-case is elaborately moulded and carved to correspond with the old work. The hot-water pipes have been re-arranged and a new boiler is fixed. The whole of the works have been carried out from the designs of the late Sir George Gilbert Scott. Mr. Shaw, of London, is the contractor for the roofs and general work, and Messrs. Farmer & Brindley executed the seating, canopy work, screen, reredos, sedilia, &c.; and Mr. Thompson, of Peterborough, the organ-case. The warming and gas-fittings have been supplied by Messrs. Gill & Co., of Oxford, and the whole undertaking has been superintended by Mr. H. Roome, as clerk of the works. The entire cost will be about 25,000*l.* The robing-room adjoining the chapel is being restored to its original character by Messrs. Symm & Co., of Oxford, and the tessellated tiled flooring is being reinstated. The oak roof is also being restored

NEW THEATRES FOR GLASGOW.

Three new theatres are on the *tapis* in Glasgow. The one which calls for notice at the present time is that in course of construction in Sauchiehall-street, almost opposite to the Gaiety, which came into existence about six years ago. The new structure is called the Royalty theatre, and is being built by a company who have secured as manager Mr. E. L. Knapp, of the recently burned-down Theatre Royal, of Glasgow. The commemoration stone was, as we mentioned in our last, laid by Mr. J. L. Toole, the popular comedian, in presence of an audience which included representatives of all classes of the Glasgow community.

The first-floor of the new block of buildings is almost entirely devoted to the theatre, which is to be,—in length, 109 ft.; in breadth, 56 ft.; and from the pit floor to the apex in the ceiling, 44 ft. Ample stage accommodation has been arranged for; and the area will be laid out in the manner now generally observed by theatre architects. Behind the orchestra, which, by the way, will be hidden from public view, there will be seven rows of stalls; at the rear of these, eight other rows; and behind these again will be the pit, divided into a dozen benches. A horse-shoe balcony will be erected over the pit. This balcony will have a dress circle, an ordinary circle, and a promenade nearly all round. An amphitheatre and gallery will also form part of the auditorium, which will provide seats for nearly 2,000 persons. The building, which rises to four stories, will, when completed, have an ornate and, at the same time, substantial appearance. There is a perfect series of entrances and exits all round.

The architect of the theatre is Mr. James Thomson, St. Vincent-street; and the builder, Mr. John Devlin, Pollockshields. The internal arrangements of the theatre were designed by Mr. Matcham.

The two other theatre projects are the rebuilding of the Theatre Royal, burned down last January; and the reconstruction of the Gaiety, which has proved far too small for Mr. Bernard's requirements. Mr. Bernard has obtained plans, and a commencement is to be made with the building after the pantomime, which usually closes at the end of January.

SANITARY CONGRESS AT CROYDON.

EXHIBITION OF SANITARY APPLIANCES.

The Autumn Congress of the Sanitary Institute commenced on Tuesday afternoon in Croydon. After a luncheon in the Public Hall, Mr. Drummond, chairman of the Local Board, formally opened the extensive and interesting exhibition of sanitary appliances which has been brought together, partly in the covered portion of the Skating-rink in Park-lane, but chiefly in a large marquee adjoining the rink and the Central Croydon railway station. There are no fewer than 189 stands or stalls, containing upwards of 700 separate exhibits, some of which, however, have really nothing whatever to do with the avowed object of the exhibition. Of the somewhat heterogeneous collection of appliances connected with heating, lighting, ventilation, water supply, water-closet arrangements, sewage and refuse disposal, &c., here brought together, we can only say that it consists for the most part of inventions and appliances which have been in use for some time past with good results. Of absolute novelty there is little to be seen, but the exhibition, taken as a whole, strikingly exemplifies the increased amount of skill and enterprise which has been of late years brought to bear by our manufacturers with the view of helping to provide healthy homes for all classes of the community. It is but right to add that many of the contrivances exhibited contain improvements which have been devised or suggested by architects, engineers, and medical officers of health. We cannot specially notice more than a few of the exhibits.

Taking the stands in their numerical order, we note that at Stand 2 Messrs. Potter & Sons, of Oxford-street, exhibit Mr. H. Saxon Snell's patent ventilating hot-water open fire-grate, the "Thermhydric"; while next door, the well-known firm of Gillow & Co. (Stand 3) exhibit an enclosed lavatory. Messrs. William Woollams & Co. (Stand 18) exhibit some effectively-designed wall-papers coloured with pigments entirely free from arsenic. Two of the specimens have bright green grounds. Mr. Edward Howard, of Upper Baker-street, shows (Stand 19) the improved patent duplex lid and automatic flusher for water-closets, the patented invention of Mr. H. Saxon Snell. These closets are self-ventilating, and have, we understand, been largely used in various public and private buildings. At Stand 43, Messrs. G. Waller & Co., of Southwark, exhibit ventilators, penstocks, and other apparatus for sewers. The Concrete Apparatus Company (Stand 61) show Henley's patent revolving and self-fastening concrete apparatus, which possesses the great merit of simplicity. The same exhibitors show Henley's patent window frames, sashes, and fastenings. Stand 64 is occupied by Messrs. Dreyfus & Co., who exhibit heating apparatus. The Silicate Paint Company, Charlton, exhibit on Stand 73 an assortment of their well-known non-poisonous paints and colours, with specimens of work treated with them. At Stand 78, Mr. W. H. Lascelles exhibits one of his patent movable wooden huts, as provided for the War Department; and, at Stand 86, he shows several interesting specialities in concrete. Firstly, we may mention some red concrete slab paving and kerbing,—the latter protected against the abrasion of cart-wheels by a cast-iron angle-piece secured by bolts passing through the blocks. The paving and kerbing, which Mr. Lascelles says can be supplied much cheaper than York flags and granite kerbing, are about to be practically tried in St. Luke's parish. Mr. Lascelles also exhibits a concrete bath, made in one piece, perfectly impervious to water; and, among other things, a new concrete floor, which, while it is asserted to be perfectly fireproof, is, he states, cheaper than an ordinary timber floor. This floor has been devised, we understand, at the suggestion of Mr. Norman Shaw. The flooring surface consists of red slabs of concrete, 1¼ in. thick, and measuring 3 ft. by 2 ft., or any other more convenient size. These slabs rest directly on concrete joists (which can be moulded or chamfered to any design) about 8 ft. long, having a scantling of 6 in. by 4 in. The joists (which are stiffened internally by strips of iron) rest upon cross beams consisting of rolled-iron joists or wrought-iron girders embedded in concrete. The joists and the undersides of the flooring-slabs are left exposed, lath and plaster being dispensed with entirely. A floor of this kind can be provided, according to Mr. Lascelles, at 1s. per foot super. At Stand 79, Messrs. Beard, Dent, & Hellyer exhibit water-closets, lavatories, traps, and other sanitary apparatus; and next door, Stand 80, Messrs. Clark, Hunt, & Co., exhibit "Abbotsford" stoves, a kitchener, &c. Stand 87 is occupied by Messrs. Henry Doulton & Co., who, in addition to a fine show of their now well-known art pottery in Doulton ware, exhibit a large variety of sanitary pottery and stoneware, together with water-closets, urinals, lavatories, baths, and water fittings of all descriptions. Their "Lambeth" improved "wash-out" closet, with patent regulating supply-valve, possesses some good points. Mr. George Jennings, of Stangate, is the holder of Stand 88, and exhibits a good representative collection of his baths, lavatories, water-closets, urinals, and sanitary fittings generally. At Stand 93, Messrs. John Finch & Co., of Buckingham-street, Strand, exhibit bath, lavatory, and water-closet fittings; and close by (Stand 99) Messrs. Henry Sharpe, Jones, & Co., of Poole, show a number of specimens of their "rock concrete" tubes for drainage and other purposes. At Stand No. 100, Messrs. Hamilton & Co. have one or two specialities in the way of prismoidal pavement and stall-board lights. Messrs. Edward Brooke & Sons, Huddersfield, exhibit (Stand 109) patent invert blocks, subsoil pipes, traps, &c. The Abyssinian tube-wells are shown by Messrs. Le Grand & Sutcliff on Stand 126. Messrs. Jones & Willis, of Birmingham (Stand 143) exhibit wrought metal gasfittings and the patent "Hesperus" lamp. Ventilating tubes and cowls, syphons, and foul-air extractors are shown by the Patent Tube Company (Stand 151); while at Stand 153 the Hygienic Stove and Grate Company, Birmingham, exhibit their patent hygienic ventilating stove. Stand 155 is occupied by Mr. D. T. Bostel with his Brighton "Excelsior" water-closet, and at the next stand Mr. H. Owen, of South Kensington, exhibits his patent double and single-trapped and ventilated water-closets. The Sanitary Appliance Company (Stand 160) exhibit Morrell's patent cinder-sifting ash-closets. Messrs. John Bolding & Sons have a good display of baths, water-closets, and lavatories (Stand 162). At Stand 164 Messrs. Keen & Son, of Croydon, exhibit a trapless water-closet fixed in connexion with an open soil-pipe, and a quantity of Gay's impenetrable paint (for which they are the local agents), as used by the Post-office authorities for the pillar letter-boxes. Messrs. Doulton & Watts (Stand 167) exhibit their patent Manganores carbon filter (Dr. Bernays's patent). Another well-known Lambeth firm, Messrs. James Stiff & Son (Stand 169), shows a number of ventilating bricks, chimney-cowls, Soper's "Hospital Drain Disinfector," Weaver's ventilating sewer-air trap, Dr. Bird's "Eureka" sewer-traps, and other sanitary appliances. Messrs. W. Ramsey & Co. (Limited) exhibit (Stand 170) closets, lavatories, &c.; and at the next stand (171) Messrs. J. Edmundson & Co. show Wigham's patent atmospheric gas machine, and their own patent pendulum electric house-bells. Messrs. Wilcock & Co., of Burmantofts, Leeds (Stand 175), make a good display of glazed bricks and faïence for structural purposes, together with some decorative terra-cotta work in panels, &c., and a large and useful assortment of stoneware drain-pipes and traps, among which we must mention their "Yorkshire double syphon ventilated sewer-trap," the invention of Dr. Copley Woodhead.

Visitors to the exhibition (which will remain open until the 8th of November) should not forget to visit Stand 113, where the Ladies' Sanitary Association have on sale their very useful sanitary publications.

In the evening, at the Public Hall, Dr. B. W. Richardson, F.R.S., president of the Congress, delivered his inaugural address, entitled "Salutland, an Ideal of a Healthy People." He sought to show that, under proper hygienic conditions, a man ought to live for one hundred years. That, he said, was the anatomical estimate of human life. After a reference to his former proposal* for the erection of an ideal city of health, Dr. Richardson proceeded to create "an ideal people that shall show a model longevity; a people that shall have an ordinary term of life of 100, and prospective term of 120 years." He sketched out his people of "Salutland" as a people dwelling in the fiftieth year of the twenty-first century of the Christian era in a point of the earth's surface lying to the extreme south of the region fancifully called New America. The land he pictured as having been peopled 100 years at the time he gives their history, and he sketches their lives. They have never engaged in war, they have no centre of Government, all their cities being equal, and they practise the cardinal virtues of the Christian religion in loving their neighbours as themselves. In regard to their social and domestic life, he puts it that "it is considered that a centre of life containing, in a limited space, more than 100,000 people, is a danger, is in truth, for all purposes of health, unmanageable. Death, they hold, is the shadow of birth, and if large communities be admitted in which people are herded together, the shadow may be calculated with as much accuracy as an eclipse. Five separate dwelling-houses to an acre of land, and five persons to a separate dwelling-house, is the densest population allowed. The houses, large and small, are all built, with varieties only of artistic design, on arches which raise them from the ground; the bedrooms are disconnected altogether from the living-rooms; gardens are all around, and gardens are on the roofs. In the midst of the towns the eye is struck with the cultivation of fruit-trees that prevails. The towns of Salutland might be called, as ancient Norwich once was called, the towns or cities of orchards. Throughout all the country the land is under cultivation of the most perfect kind for cereal produce and fruit and vegetables. Through this cultivation there are interspersed magnificent parks and glades, in which harmless animals of the most beautiful kind are free to wander. Every tameable animal is there, and all animals are objects of singular and lively interest. The rivers and lakes are filled with varied kinds of fish, and every sort of bird that can be collected, retained, and naturalised on the land is also to be seen. A man, woman, or child who for wanton pleasure should hunt down or torture one of the inferior creatures would be cast out of society, while the idea of having the dumb creature killed and hung up in open shops to bleed and be quartered and cooked for human beings to live on would be treated with as much disgust as we should now treat the practice of the owners of those African shambles for human remains which Professor Huxley, in one of his most charming books, has so faithfully recopied to illustrate the history of a past civilisation. Animals are, notwithstanding, still used by our model people. Their fleeces are used for clothing, their milk for food, and many of them are made to work. The elephant works with an intelligence and skill that is almost human, and with a power that is superhuman, so that he is one of the most useful and faithful, and best-beloved of all the lower animals in the land. He is the rival of the horse, which is also much cared for, and is bred in a state of great perfection for bearing the rider, to which duty he is mainly consigned. He is in much request; for all persons in Salutland, male and female, are consummate in the saddle; their country, which contains vast and fertile plains, divided by splendid roads, and their atmosphere, which, except during a short periodical rainy season, is mild and dry, being remarkably suitable for horse exercise. The roads leading from one part of the country to the other are maintained in the most perfect efficiency, smooth in all parts, and dry as our best asphalte of to-day. Transit along these highways on horseback and by velocipede has supplanted most other modes of personal conveyance. The lines of railway, once so general, have lapsed now into conveyance for heavy goods mainly. The cost of coal has rendered steam locomotive power very limited, while aërial locomotion has replaced steam-propelled carriages in a marked degree." In this land there would be no workhouses or gaols, and Dr. Richardson entered fully into the

* See *Builder* for 1875, pp. 923, 955.

fanciful day-by-day work, and described the people as in the keenest enjoyment of life. One reason of their acquired health would be that they had mastered the pestilential diseases. An epidemic from pollution of air, of water, of food, would be with them impossible. The hereditary tendencies to disease would be either lost altogether or so nearly eradicated as to be practically removed. Thus, with the fewest accidental exceptions, the men and women would attain the sacred age. Their death-rate would be normal and constant, at eight in the thousand per year, and death itself, painless, final sleep, would be hardly more than departure to rest when the day of work was done. He traced out at length the measures by which he believed this could be attained by a thoughtful and studious people, and gave suggestions with regard to the conversion of man to be a frugiverous or fruit-eating animal, urging that life was greatly shortened by the overwork thrown upon the stomach.

On Wednesday Dr. Alfred Carpenter, the President of Section I., Sanitary Science and Preventive Medicine, opened the proceedings of that department of the Congress by the delivery of an able address. The remainder of the day was devoted to the reading and discussion of papers. Professor de Chaumont, F.R.S., and Dr. Horace Swete, read papers treating of water analysis. Dr. Norman Kerr dealt with the subject of the prevention of mortality from alcohol. Papers were also submitted by Mr. T. Nichols, on "Infant Mortality"; by Mr. H. C. Burdett, on "Hospital Questions"; and by Dr. Strong, on "The Necessity of Pure Air in Living and Sleeping Rooms." In the evening a *conversazione* was given in the Public Hall.

On Thursday, Captain Douglas Galton delivered an opening address as President of Section II., Engineering and Sanitary Construction. The remainder of the day was appropriated by papers and discussions in the same section, and in the evening Professor Corfield lectured on "Sanitary Fallacies."

Friday was to be devoted to Section III., Meteorology and Geology, the Congress being brought to a close by a public dinner.

We shall return to the proceedings of the Congress.

OLDHAM TOWN-HALL EXTENSION.

On the 15th inst. the extensive additions which have just been made to the Town-hall of Oldham were formally opened by the mayor.

The new building is situated in Greaves-street, at the rear of the old Town-hall, and connected therewith by a flight of steps leading from the present staircase and opening out into a spacious hall in the new structure. The Greaves-street elevation is entirely of stone, and is in the Classic style, with square columns and capitals of the Corinthian order. The main feature of the design consists, first, of a boldly-treated and massive basement, the upper mouldings of which indicate the level of the ground-floor. Above the basement the columns run through two stories, and carry the main architrave and cornice, which is surmounted by an open balustrade with solid piers at intervals. Near the centre of this elevation is the entrance for magistrates and advocates, which is recessed from the other part, over this are the windows which light the main hall, which extends back to Mill-street. A prominent feature in this elevation are the two ventilating turrets from the cells. Between the wall columns are the ground and first-floor windows, the former with square heads, the latter with circular arches.

Internally, the sub-basement is occupied by a large cellar and the necessary flues, &c., connected therewith. The basement is entirely devoted to police purposes. On the ground-floor there is an entrance from Greaves-street to the new building, which will be used principally by the magistrates and advocates attending the borough court. This floor is connected with the old town-hall by a corridor 8 ft. wide. This corridor opens into the large hall, 56 ft. by 20 ft. At one end is the staircase from Greaves-street before referred to, and which is shut off from the hall by a panelled screen. The grand staircase leading to the upper floors is at the other end of the hall. The body of the borough police-court is on this floor, and behind the same, up to Greaves-street, is the magistrates' retiring-room, 22 ft. by 19 ft. 6 in., with private lavatory accommodation, and magistrates' clerk's room, 13 ft. 6 in. by 13 ft. 6 in. On this floor there is also a dining-hall, 40 ft. by 27 ft., and private office for the chief constable, conveniently arranged with separate staircase to police department; also retiring-room for advocates attending the borough court, and a committee-room, 27 ft. by 16 ft. The first floor is also connected with the old part by a corridor, 8 ft. wide, approached by a wide flight of steps from the staircase in the old Town-hall. This corridor opens into the main hall, from which access is gained to the Council-chamber, upper part of police-court, committee-room, &c. The council-chamber is 47 ft. by 27 ft., behind which is the mayor's parlour, which is formed out of the old council-chamber. On this floor are the offices of the town clerk's department.

The grand staircase window, having the area of 180 superficial feet, is divided by two deep mullions, intersected by three horizontally arranged, again subdivided in such form that gives semblance of couplet windows with their respective fanlights. The window thus contains eighteen openings in all, and has been filled in with stained glass, the lower part containing six allegorical figures, intended to represent Art, Science, Industry, Commerce, Spinning, and Mechanism. Above these are shields bearing the arms of the principal manufacturing towns of Lancashire. Above the central divisional line of openings the scheme of subject matter is essentially historical in its connexion with the town and suburbs of Oldham. Arranged in chronological order are the figures of Hugh de Oldham, Bishop of Exeter, and founder of Manchester Grammar School; R. Langley, connected with the rebuilding of the parish church of Oldham, 1476; Chadderton, first master of Emmanuel College, Cambridge; J. Assheton, Esq., of Chadderton, founder of Grammar School in Oldham; J. Cudworth, Werneth Hall, Lord of the Manor; Sir W. Horton, High Sheriff, 1775. Surmounting these, and corresponding in number with the lower lights, are the heraldic emblazonment of each of these local celebrities, with the arms of the duchy of Lancaster as a central feature.

The heating and ventilating arrangements were entrusted to, and have been carried out by, Messrs. Haden & Son, of Manchester and Trowbridge, the warming being upon the hot water low-pressure principle.

The following is the list of contractors:—Foundations, &c.—Excavation and drainage, Mr. Harrison McDonald, Oldham; brickwork, Messrs. Wrigley Brothers, Oldham; stonework, Messrs. Squire Dunkerley, Son, & Co., Oldham; carpenter's work and ironwork, Messrs. Charles Schofield & Co., Oldham. Main buildings.—Whole contract, Mr. W. A. Peters, Rochdale, builder. Sub-contractors: Brickwork, Messrs. J. & O. Partington, Middleton Junction; stonework, Messrs. Squire Dunkerley, Son, & Co., Oldham; carpenter and joiner's work, Mr. A. W. Peters, Rochdale; slating, Mr. David Jackson, Oldham; plumbing and glazing, Messrs. Sharples, Buckley, & Co., Oldham; painting, Mr. W. Best, Rochdale; wrought-iron railing, gates, Mr. Joseph Reyner, Oldham; plastering, Mr. Nicholas Rigby, Rochdale; stone-carving, Mr. Bonehill, Manchester; plasterers' modelling, Mr. Bromley, Liverpool. Fittings and Fixtures.—Furniture to Borough Court council-chamber, mayor's parlour, magistrates' and town clerk's rooms, and other offices, &c., Mr. James Lamb, Manchester; fittings to police department, &c., Mr. W. A. Peters, Rochdale; lavatory and water-closet fittings, &c., Mr. John Kershaw, Heywood; grates, chimney-pieces, and tiled hearths, Messrs. Scott Bros. & Co., Oldham; carpets, painting, and decorating, Mr. James Lamb, Manchester; hinges, window fasteners, &c., Mr. John Petrie, Rochdale; stained glass windows, Messrs. R. B. Edmundson & Son, of Manchester; cooking ranges, &c., Messrs. Wilson & Son, Manchester; gasfittings, Messrs. Winfield & Co., Birmingham; tiles, pavements, Messrs. Minton, Hollins, & Co., Burslem; heating and warming apparatus, Messrs. Haden & Son, Trowbridge; strong-room doors, Messrs. Samuel Chatwood & Co. (Limited), Bolton.

The whole of the works have been carried out from the plans and under the superintendence of Mr. George Woodhouse, architect, Bolton, and Mr. Edward Potts, architect, Oldham, Mr. James Martin having acted as clerk of the works.

The cost of the whole of the alterations, including furnishing and decoration, has been about 24,000*l*.

IRISH NOTES.

The O'Connell Monument for Dublin has been for several years the theme of public discontent. The lamented death of Mr. Foley and other causes have delayed its completion. Although thirty-two years have passed since O'Connell's death, neither pedestal nor statue has yet appeared upon the site in Sackville-street. Recently, Mr. Brock, the sculptor, met the Monument Committee by arrangement and reported progress. Mr. Brock stated that he had had the statue in hand twelve months, and hoped to complete it by the time he originally specified, *i.e.*, in two years hence. The circular relief was complete, and some of it cast in bronze; he had also nearly finished one of the sitting figures, and another was in hand, whilst the statue of O'Connell himself was well advanced. The late Mr. Foley had originally draped this figure in a cloak, but the folds were heavy, and the late sculptor had requested him (Mr. Brock) to take them off. Unfortunately, Mr. Foley died ere this could be done. The committee authorised Mr. Brock to make this alteration, and the discussion next turned upon the material to be used for the base. Irish granite was proposed, but it was pointed out that the Four Courts, built of that material 100 years ago, in its present condition showed how quickly that material became disintegrated. Further, the granite of the Grattan and Prince Consort monuments had "gone" the same way. The excellent standing powers of Irish limestone were then referred to, and the feeling was unanimous that limestone was superior to granite. It was remarked that in the old churchyards throughout the country granite invariably was found unable to resist the atmosphere, whilst the limestone was as good as the day it left the chisel. An inferior sort of limestone was obtained from the Skerries; the best, perhaps, was found at Tullamore. Holy Cross Abbey, in Tipperary, was built of limestone in 1100, and all the stones therein are as sharp as on the day they were quarried. The pure white limestone from the coast of Antrim was also referred to, as well as the beautiful geological specimens at the College of Science, Dublin. It was resolved to apply for tenders for the pedestal, the material specified being the best Irish limestone.

The Commercial Union Assurance Company are about to build extensive new premises at the corner of College-green and Grafton-street. Mr. T. N. Deane, of Dublin, is the architect, and Messrs. Wardrop & Sons are the contractors.

The want of a suitable bathing-place having long been severely felt in Dublin, it is now proposed to erect a bathing establishment at Clontarf, a suburb readily reached from Dublin by tram-car. Mr. Sloane, the engineer, has made plans for this, and a company has been formed. The scheme embraces a bath, elliptical on plan, the diameter being in the proportion of ·1500 to ·9500. There will be 13 ft. depth of water at the deepest places. The part devoted to men will contain 450,000 gallons, and the ladies' portion 151,000 gallons. It is proposed to concrete the whole, and, further, to use Mr. Lascelles's patent concrete slabs in the construction of all the dressing-rooms and offices.

Plans have been prepared by Messrs. O'Neill & Byrne, architects, of Dublin, for the new church of St. Agatha, to be erected in North William-street, at a cost of 8,000*l*.

In a recent number of the *Builder* (Aug. 23) Mr. Harry Hems quoted several amusing instances in which architects had been deceived by believing modern work to be old. A correspondent in the *Irish Builder*, the other day, tells an even odder story on the same topic. He says:—"In the ancient collegiate church of St. Mary, at Youghal, is a very fine pulpit, carved, and bearing considerable appearance of antiquity, but the man who made it was living a few years ago, and may, perhaps, be living still. He was working at some repair inside the pulpit when it so happened that, in 1860, a certain nobleman, looking at the interesting restorations made in the church by the Rev. Samuel Hayman, and observing to a friend, 'The head does not ache that designed that pulpit,' was considerably startled by the head in question appearing over the desk and saying, 'Why, then, my lord, my head does ache; and I would like a something to drink your lordship's health this morning,'—a request that, after a hearty laugh, was complied with."

Some fine new premises have been erected in

Henry-street, Dublin, from the designs of Mr. G. P. Beater, architect, of Lower Sackville-street. Mr. George F. Tyrrell, also of Dublin, being the builder.

New schools have been built at Malabide, just outside Dublin, from the designs of Mr. James Bell, architect. Mr. Nicholas Brady was the builder.

A new wing, to be known as the "Madeline," at the Adelaide Hospital, Peter-street, was opened last week by the Marquis of Abercorn. Messrs. J. & W. Beckett, South King-street, Dublin, were the contractors. The cost has been 14,000*l*.

Some interesting archæological finds have occurred at Donnybrook. Some workmen were excavating for foundations for proposed new buildings, and came across a large quantity of human skeletons in a perfect state; a two-edged sword, two daggers (all of early workmanship), and a number of copper coins, the dates and superscriptions upon which were entirely obliterated. Fully eight cartloads of bones have been removed for interment, and many still remain. In the Middle Ages the outside of Dublin was but too frequently the scene of many fierce conflicts.

Tenders have been invited for additions to Pallas, the seat of the Earl of Westmeath, in county Galway. Mr. G. C. Ashlin, of 41, Westmoreland-street, Dublin, is the architect for the works in question.

New baths and washhouses, at a cost of about 4,000*l*., have been built in Peter's-hill, Belfast, and have just been opened by the mayor of that town.

New schools, from the plans of Mr. James Price, architect, are to be built at Greystones, co. Wicklow. The foundation-stone is laid. Mr. R. Ludlow is the builder. Mr. Price has also designed a new mansion for Major-General Dobbs, and this is now being erected at Greystones. Mr. G. F. Tyrrell is the builder. Near to it Mr. Tyrrell is also building another fine house, for Mr. W. Pidgeon, of Athlone. For this Mr. J. H. Bridgford is the architect.

At Drumree, co. Meath, a new glebe-house is being built, from the designs of Mr. J. F. Fuller, architect, of Dublin.

Under the superintendence of Mr. T. N. Deane, architect, the parish church at Roscrea, co. Tipperary, is being restored.

It is proposed to build sixteen blocks of first-class houses at Carrigmahon, a lovely site just outside Cork, situated between Monkstown and Glenbrook, and overlooking the river Lee. The plans have been prepared by Mr. Kearns Deane Roche, architect, of South-mall, Cork.

Plans have been submitted by Mr. W. Lewis, C.E., for the building of a new railway, on the narrow-gauge principle, between Dublin and Baltinglass, co. Wicklow. The distance will be thirty-nine miles, and the probable cost, 207,000*l*.

MECHANICS' INSTITUTE, PUDSEY, NEAR LEEDS.

A short time ago, the committee of the above Institute invited architects to submit plans for a new building, and offered premiums for the best three designs. In response to this invitation, eighteen sets of plans were received, and after they had been duly considered, the first premium was awarded to Messrs. Hope & Jardine, architects, of Bradford, who were accordingly appointed to carry out their plans; and on Monday, October 6th, the foundation-stone of the new institute was laid by Mr. Wm. Dibb Scales, of Pudsey, in the presence of a large number of the inhabitants.

The new Institute, which is to be erected at the junction of Low Town-road and Wavergreen (two of the principal streets of the town), will be in the Gothic style of architecture, and one of its principal features will be a square tower having a slated spire rising to the height of 110 ft. This tower is placed at the corner of the two streets just mentioned, and in the base of it, a little above the street level, is the principal entrance, the doorway being deeply recessed, and having a moulded and arched head.

The building will contain on the basement floor a large room to be used for public tea parties, with kitchen, scullery, and stove-room adjoining, and also four class-rooms, lavatory, &c., all of ample size and well-lighted.

On the ground-floor are a news-room, 34 ft. by 24 ft.; a library, 24 ft. by 16 ft.; a conversation or smoke room, 29 ft. by 16 ft.; a committee-room, two class-rooms, a lavatory, and a secretary's room.

On the first floor, which is reached by a stone staircase, 5 ft. wide, are a large public hall, 56 ft. by 40 ft., with ante-rooms adjoining, a ladies' cloak-room, and a science lecture-theatre, capable of seating 120 persons.

The public hall, which is 32 ft. high, has a gallery round three sides, entered from the second-floor level, and will seat (including gallery) 650 persons.

In addition to the gallery of the public hall, there are on the second floor a large room, partly lighted from the roof, to be used for the art classes, and a class-room adjoining.

The different works have been let as follows:—Excavators' and masons' work, Mr. Jas. Smith, of Bradford; carpenters' and joiners', Messrs. A. & J. Briggs, of Bradford; plumbers' and glaziers', Mr. J. Wilcock, of Pudsey; plasterers', Mr. Wm. Tattersall, Bradford; slaters', Mr. Jas. Smithies, Bradford; painters', Mr. W. Sims, Pudsey.

The amount allowed to be spent, according to the instructions to competing architects, was 3,000*l*., and the cost of the works as contracted for, including the library fittings and the seats for the public hall, is within 50*l*. of that amount.

DERBY MECHANICS' INSTITUTION: AN EPOCH.

The present must be regarded as an important epoch in the history of the Derby Mechanics' Institution. When founded nearly half a century ago its promoters purchased a building and some little spare ground in the Wardwick for 1,500*l*. Situated in the centre of the town, the site of the Institute buildings has gradually increased in value, until now the trustees and managing committee find themselves possessed of a valuable property. The Wardwick is the principal thoroughfare leading from the Market-place and Post-office in the direction of a populous neighbourhood at the west of the town. Owing to the extreme narrowness of the street opposite the Institute buildings the corporation have purchased a strip of the land on which the building stands for the purpose of widening it. It may be remarked *en passant* that adjoining the Institute premises, and further from the town, stands the new Free Library and Museum, erected by Mr. M. T. Bass, M.P., at a cost of over 20,000*l*. and opened in June last. The building purchased in 1833 by the founders of the Mechanics' Institute, which has since been used for the library and news-room, is now in the course of being pulled down. Separating it from the Free Library stands the Lecture-hall, also the property of the Institute, used now solely for public concerts, dramatic performances, &c., which was erected by public subscription. Considerable public interest is manifested in the course which will be taken by the managing committee, in whose hands the future of the Institute may be said to lie. The sum of 7,250*l*. has already been received by the trustees from the Corporation for compulsory sale of the strip of land which will be thrown into the street. It is not too much to say that no little dissatisfaction has been felt for some years at the way the committee have managed the affairs entrusted to them, for although there are few persons living who contributed towards the funds for the establishment of the institution, yet it is felt to be a public concern, from which the present generation should derive considerable benefit. The committee intend to erect another building of some kind for the uses of the members; but not even the members themselves have any knowledge of its character,—whether all the money will be spent in bricks and mortar, or whether a portion of the funds in hand will be reserved for other purposes. Owing, perhaps, to a feeling of indifference on the part of the members, the committee, which is re-elected year after year without opposition, have the disposal of the money in their own hands. At the last quarterly meeting but one of the members, a resolution was brought forward by the managing committee which, if carried, would have given them power to view plans for a new building and decide on which to adopt without further consultation of the members. This, however, was lost by a fluke, and an amendment was carried instead, providing that the chosen plans should be approved of by a general meeting of the members before being definitively adopted. This amendment, even though more satisfactory than the resolution, was not, for obvious reasons, all that could be desired. Much better would it have been if a special committee had been appointed of gentlemen well acquainted with building matters rather than leaving it to a ponderous committee of thirty men who have no special knowledge which would fit them to recommend plans for adoption. However, the amendment was carried, but at the next quarterly meeting (held recently) the committee mustered in force, and managed to negative the amendment carried at the previous meeting, and carry the original proposition. Thus at present the committee have the matter all in their own hands, and will in due course build something to their taste, and perhaps what they consider most suited to the requirements of the members. But a proof may be given of the failure of the present managing committee (a majority of the members of which have been in power for years) to carry out the original design of the founders of the Institute, which design was certainly a worthy one. When the appeal for subscriptions in 1833 was made the committee in power then said, "One leading object is the more extended diffusion of useful knowledge among the working classes. The means contemplated for the accomplishment of this object depend upon the arrangement of classes for the separate and systematic instruction of the members in the various branches of the arts and sciences, without which the pursuits of the members will be desultory and unprofitable." This object the present committee make no attempt to carry out. Classes were duly established after 1833, but many years ago they fell into desuetude, and the sole benefit the members now receive is from the reading-room and library. As stated above, the new Free Library is only a few yards off, and it is felt that the committee might very well turn their attention to that which for so many years they have ignored, the institution and continuance of classes for "systematic instruction of the members in the various branches of the arts and sciences." For years past the Institute has been the quiet and comfortable resort of men who have passed the busy period of life, and who require some snug room in which they can peruse the news of the day. The institution has just secured a new lease of life. The present is, as stated in our opening words, an epoch in its existence. From this point it goes on in a noble work of offering to its members an opportunity of securing an education in various sciences, and in art, or it relapses into a luxurious rendezvous for a number of old fogeys to read ephemeral literature. Surely there is public spirit enough in Derby to put matters into the right groove.

BERGER-ROAD SCHOOL, HOMERTON.

One of the most important (though not the largest) schools built by the Board was publicly opened by Sir Charles Reed, on Friday, the 19th inst., in the Berger-road, Homerton. It is situated at the junction of Shepherd's-lane, overlooking the works of Messrs. Berger, &c., consists of a handsome block of buildings in the Queen Anne style of architecture, having dressings in red brick and Portland stone, the ground floor being "rusticated" in red brick, and the remainder faced in picked stocks. In each of the gables, both back and front, are panels of fruit and flowers in carved brick (executed by M'Culloch), and in the centre of the roof, which is covered with Broseley tiles,—the junctions of the four principal chimney-stacks is treated in an effective manner. The building is in three stories, the infants being on the ground, boys on the first and girls on the second floors, with a covered play-ground in the roof. Each floor contains six lofty class-rooms (with babies' room in addition to the infants) together with ample cloak-rooms, lavatories, teachers' rooms, &c., the principal corridors being paved with French mosaic tiles. A special feature is the central hall, an apartment about 25 ft. high, lighted from the street by five circular-headed windows, and having a columnar arcade on the rear-side, with gallery over, giving easy access to the boys' and girls' departments. The ceiling is formed in panels by the girders supporting an upper play-ground carried by cast cantilever trusses, which, together with the columns, dados, &c., are all finished in Keene's cement. The school will accommodate 1,200 children, the boys and girls being taught by adult teachers on the German system, the infants only having pupil-teachers. In the rear are extensive p

grounds, fitted with all the usual gymnastic appliances, and having the sanitary conveniences and schoolkeeper's house in convenient proximity. The school was erected by Mr. Grover, of Wilton Works, New North-road, from the designs of Mr. E. R. Robson, F.S.A., the architect of the Board, the clerk of the works being Mr. Ellson, and the cost of the building was 12,366*l*.

CORPORATION-STREET SCHOOLS, NEWCASTLE-ON-TYNE.

From a very humble beginning these schools have attained an importance little contemplated by their promoters. A short time since Lord Hartington opened the new Science and Art Rooms, which complete the scheme for the present. Accommodation is now provided for upwards of 1,400 scholars, who are received as infants, and can, if they like, rise step by step till they can matriculate for the London University.

The Science and Art Rooms give accommodation for about 400 students, and consist of chemical laboratory for thirty-six students, with professor's and weighing room; chemical lecture-room; natural science class-rooms; modelling, painting, and antique rooms for art students; with various other class-rooms for general purposes. There is also provision made for classes to learn cooking. On the ground is a large gymnasium.

The works were carried out by Mr. Humphrey Atkinson, contractor, of Blaydon-on-Tyne, from the designs and under the superintendence of Messrs. Oliver & Leeson, architects, of Newcastle-on-Tyne.

GLASGOW CHRISTIAN INSTITUTE.

The new Christian Institute at Glasgow, which was opened the other day with some ceremony, adds another to the many handsome buildings that adorn the commercial metropolis of Scotland. The work was commenced in January, 1878, and it is only now that it has received the finishing touches. Standing alone on a site in Bothwell-street, which rises with a gentle slope from some of the leading thoroughfares of the city, the building has a good effect. The front elevation is five stories in height, and the ground occupied is 96 ft. 6 in. by 100 ft. The style of architecture is Gothic; and the general appearance is enhanced by figure-carving. Over the main entrance in Bothwell-street a spire rises to a height of 126 ft. On the second story it is flanked with circular turrets, and the two end bays of the front project from the main line, and are finished with gables. On either side of the principal entrance, on the level of first-floor, there are full-sized figures of Knox and Tyndale, and over each of the first-floor windows figure-heads are carved, representing Cranmer, Wishart, Wycliffe, Luther, Calvin, Melancthon, and Zwingle. A broad band of diaper-work is placed under the second-floor windows, which, as in all the floors, are divided with moulded shafts and carved capitals, while circular and traceried windows are placed in the end gables.

The structure affords all the varied accommodation which such an institution demands. There are a large and a small hall, a library and reading-room, a gymnasium, 36 ft. by 27 ft.; numerous ante-rooms, including lavatories, &c., furnished and fitted up with all the latest improvements. The hall is designed for lectures and public meetings, and will accommodate close on 1,000 persons. It is behind the main building, has a circular timber roof, divided into panels, two rows of which are filled on each side with stained glass.

The site on which the building has been erected cost 14,000*l*., and the other expenditure, including furnishings, reaches nearly 20,000*l*. A sum of 28,000*l*. has been subscribed, and it is expected the debt will soon be cleared off. The scheme for the erection of the structure, which was arranged seven years ago, is the combined effort of the various Christian associations in Glasgow, and these bodies have been nobly assisted in their work by many leading men in the west of Scotland, including Mr. John Burns, of the Cunard Company, and Dr. James A. Campbell. Mr. John McLeod is the architect.

Viollet-le-Duc.—The *Gazette des Architectes et du Bâtiment*, Oct. 5th, contains, with several notices of the late M. Viollet-le-Duc, a complete list of his published works.

DIMINUTION OF THE DEATH-RATE BY TOWN IMPROVEMENTS.

Mr. James Morrison, chairman of the Committee of Management of the Glasgow Improvement Trust, has just laid before the trustees some observations on the rate of mortality in that city, and on the results of the measures taken by the municipal authorities to reduce the same. Appended to his letter is a series of interesting tables and calculations, bringing out the comparative rate of decrease of the death-rate in the chief towns of Scotland and England. These tables have been extracted from the official returns of the Registrar-General, and he points out that they prove that solid progress has been made in Glasgow and other large cities during the last six years, as contrasted with the six years preceding. "The general efforts to which the City of Glasgow Improvement Act gave such a powerful impetus to grapple with a high death-rate in large centres of population, through greater attention to sanitary measures, is marked in each in almost the exact proportion of the energy and extent of the efforts made, the most successful of these communities being, as a rule, those which have taken advantage of Local Improvement Acts or the Artisans' Dwellings Act. It is fair to state that some of the towns are in process of carrying out changes that should reduce (by ordinary human calculation) their future returns." The first table gives the comparative death-rates in the eight principal Scottish towns, and also in the eight chief centres of population in England, during the periods 1867-72 and 1873-8, and the results brought out are as follow:—

	Average Death-rate per 1,000.		Reduction.	Increase.	Per-centage of Improvement.
	1867-72.	1873-8.			
Glasgow.....	30·6	27·3	3·3	—	10·7
Edinburgh...	25·8	22·1	3·7	—	14·3
Dundee	27·7	24·4	3·3	—	11·9
Aberdeen ...	22·5	21·7	0·8	—	3·5
Greenock ...	28·9	26·2	2·7	—	9·3
Paisley	28·5	29·3	—	0 8	—
Leith	24·6	22·2	2·4	—	9·7
Perth	23·1	24·3	—	1·2	—
London	23·6	22·7	0 9	—	3·8
Birmingham	24·2	24·0	—	0 7	—
Liverpool ...	31·1	28·1	3·0	—	9·6
Manchester..	31·2	29·1	2·1	—	6·7
Salford	27·9	29 0	—	1·1	—
Bradford ...	26·1	24·5	1·6	—	6·1
Leeds.....	27·3	25·6	1·7	—	6·2
Sheffield.....	27·1	24·7	2·4	—	8·8

Another table has been drawn up, showing the "lesser number of deaths calculated in proportion to population in the sixteen large towns in England and Scotland," on a comparison between the two periods of six years each. The results are, in Edinburgh, 4,764 fewer deaths; Dundee, 2,718; Glasgow, 10,590; Leith, 750; Liverpool, 9,336; Greenock, 1,116; Sheffield, 3,900; Manchester, 4,500; Leeds, 2,940; Bradford, 1,638; London, 18,720; and Aberdeen, 456,—in all, a total of 61,428 less deaths in six years. In Birmingham, Salford, Paisley, and Perth, where the death-rate increased, the balance is, of course, the other way.

COMPETITIONS.

Southport Convalescent Hospital.—The Board of Governors of the Cotton Districts Convalescent fund have awarded the first premium of 100*l*. to the authors of "Santé,"—Messrs. H. J. Paull and A. A. Bonella, of 9, Montague-street, Russell-square, London; and the second premium of 50*l*. to the authors of "Experience,"—Messrs. Oliver & Leeson, of Newcastle-upon-Tyne. Mr. Alfred Waterhouse examined and reported upon the twenty-three designs submitted in competition, and the Board awarded accordingly. The building will cost about 25,000*l*.

St. Mary's Church, Woolwich.—This was a private competition. The competitors were Messrs. J. W. Walter, Woolwich; T. N. Laslett, Woolwich; E. F. C. Clarke, London; Jas. Brooks, London. The church is to seat 1,000 persons, and to cost 12,000*l*. The design by Mr. Brooks has been accepted, but part of the design (towers, &c.) is to be omitted.

SKETCHES ABOUT ALGIERS.

Mr. Fredk. Inderwick, Q.C., gives more notes of a vacation ramble in and about Algiers, an extract from which may interest some of our readers. When an idler goes abroad for his annual outing he still idles; but the heavily-worked barrister or architect, when out for his well-earned holiday, still finds some sort of work necessary to make the leisure really enjoyable;—

The Road to Miliana.—During our enforced sojourn at Boughari the hot, we went a few miles to visit Boghar the cold, a large fortress, in the centre of which Abd-el-Kadir's observatory, a little square watch-tower, still remains in the hands of his enemies. But as it rained hard during the whole of our visit to Boghar, and the coolness of the air after the heat of the plain was too great to render much of it agreeable, its attractions were, I fear, lost upon us. Far otherwise, however, the native village above the inn at Boughari, with its teeming population, its hundreds of shops, its baths, and its *cafés*, its veiled and its unveiled women, its slaving negroes, its jolly negresses, and its entire absence of anything French or European. At length, however, our driver's fever being subdued, one of the horses having recovered, and the other being replaced by a good strong bay which we bought in the market for 105 francs, and a further journey towards the interior being impracticable, we bade adieu to the village of Boughari, and made our way towards Miliana.

A Beautiful City.—A city planted on a hill, in a garden of citron and wild olives, perfumed with groves of orange, fed with a hundred cool and limpid streams, and luxuriant with the fig and the grape, its clean-kept streets perfect in the shade of the overhanging trees, whose roots are moistened by the rippling waters, and in whose branches innumerable birds are singing; surmounted by the loftiest of the Atlas range, and itself overhanging the burning and expansive plain of the Chetif; surrounded by mighty forests, where the perfumed and gigantic cedars are a home for the hyena, the panther, and the lion; enlivened by the ever-changing population, who bask in the sunny quietude of its terraces, or go their way in peace under the grateful shadow of its trees; with a climate of Europe amid a foliage of Africa; the sanatorium of the French army, the delight of the Arab heart, an oasis of quiet, of coolness, of luxuriance, and of beauty; such is Miliana, the loveliest of Algerian towns. In winter its winds may be cold, and its roads may be bleak, its streams may be swollen into rivers, and its rivers into floods, but let this sweet little city be seen in the time of its glory, in the time of the summer heat, and no praise is too great for its freshness, no eulogy too high for its beauty. On entering the gates of this old Roman city of Miliana, it presents the appearance of a charming country town. The birds sing in the trees; there are market-gardens filled with vegetables and marked out with tables of reeds, upon which the figs and grapes are drying in the sun; there is a club, a horticultural garden, rich in European plants, that grow as in our own country; and the temperature is fresh and cool: so cool, indeed, is it, that a friend of mine, who had been ever since his arrival stationed at Miliana, declared that Algiers was an imposition, for that he came from Paris to Africa expressly in search of heat, and had never yet been able to find anything warmer than the Champs Elysées in the month of June.

Visit to an Arab Chief.—During our stay at Miliana we received an invitation to visit Bouhalem-ben-Cherifa, a native chieftain of considerable military prowess, of great local importance, and a valuable ally of the French, owing to certain pecuniary arrangements in relation to the collection of taxes, which had long since been made between them. He lived with his family and his retainers some twenty miles across the plain of the Chetif, and as there was no beaten track, and the route was intricate after a certain distance, he sent two of his establishment to escort us on the way. The road lay at the foot of that portion of the Atlas range most frequented by the lion, the panther, and the wild boar, and the scene of many of the most thrilling exploits of Jules Gerard, Boenbonnel, and the celebrated lion-hunters of Algeria. It swarmed with game.

An Arab Household.—The Bashagar himself was at the moment absent on business at Algiers, but we were received, and the honours of the house were done, by his brother, an old weather-beaten warrior of some seventy summers, deco-

rated with the Cross of the Legion of Honour, dignified and majestic as all Arab chiefs, but who, if not a most consummate scoundrel, was grossly libelled by a most villanous countenance and a wall-eye. He met us at the door of the dwelling, attended by his kadi and all the members of his family. The cavaliers with us, two of whom were his nephews and sons of Bou-halem, advanced and were kissed by him on the forehead. We shook hands after the manner of the country, that is to say, we touched each others fingers and put them to our lips, and, sitting on the carpets spread for our reception, took a preliminary cup of coffee from the kadi and looked about. The house, which was of the true Moorish construction, with internal court-yards, marble halls, and fountains everywhere scattered about, stood at the end of a grove of vines trained over wooden laths, as in Italy, and surrounded by hundreds of orange and lemon trees, the boughs breaking down under the weight of the fruit. The interior of the dwelling-house, which had only one story above the basement, was profusely carved and decorated with gold and paint, and had numerous rooms, very low in pitch, filled with Turkey and Arab carpets, which communicated with each other in most eccentric and incomprehensible fashion. The stairs were like ladders, made of wood, and both steep and irregular. The principal court-yard, round which the reception-rooms and those of the women were placed, was occupied in the centre by a large marble fountain, while everywhere around was seen a metal hand, being alike a symbol of the house of Bou-halem and an emblem of destiny intimating to the pious Mussulman to beware of his doings as the hand of fate is continually impending over him.

VALUE OF PROPERTY IN LIVERPOOL.

An assessor and jury were occupied for two days last week, at St. George's Hall, Liverpool, in considering the value of certain land and premises in Key-street, Liverpool (the property of the executors of the late James Hodgson), required by the Lancashire and Yorkshire Railway Company, in connexion with improvements and the extension of Tithebarn-street Station. The area is 1,098 square yards, and the following were the valuations made by gentlemen on behalf of the railway company:—Mr. Shelmerdine, 10,640*l.*; Mr. J. A. Picton, 10,863*l.*; Mr. W. H. Picton, 10,866*l.*; Mr. W. H. Weightman, 10,867*l.*; and Mr. Elias Dorning, of Manchester, 10,872*l.* The valuations for the owners were as follow:—Mr. Cornelius Sherlock, 19,973*l.*; Mr. Edmund Kirby, 20,250*l.*; and Mr. Wainwright, 21,212*l.* Mr. Kirby produced plans of a large block of offices, designed by him to be built on one of the sites twelve years ago. The jury ultimately assessed the value of the property at 18,637*l.* By the award of the jury the claimants have also the power of disposing of the two spirit licences attached to the property, worth upwards of 1,500*l.*

SCOTCH FIR.

At the twenty-sixth annual meeting of the Scottish Arboricultural Society, held on the 7th inst. in Edinburgh, a paper was read from Mr. M'Laren, Hopetoun, with reference to the deterioration which, the writer alleged, has taken place in the quality of Scotch fir during late years. Mr. M'Laren gave it as his opinion that the true native Scotch fir was not degenerating in the least, but that its counterfeits were on the increase was, he thought, unquestionable, and the tendency would still be more and more in that direction, thereby depriving the real Scotch tree of its character and worth. When they found vast native forests being cut down, and so many varieties of the fir in the market, it was easy to see how the home-grown seed would get mixed up with the foreign, making it difficult to distinguish the spurious plants from the real in the nurseries, and if discussion led to the characteristics of the different varieties being more easily distinguished, a great point would have been gained.

Mr. M'Corquodale, Scone, said that it might be asked how it was that plants reared from the true native Highland pine seed showed indication of constitutional degeneracy before they arrived at fifty years of age, when planted in the south of Scotland and in England, whereas one would imagine that such a change should rather prove favourable for preventing degeneracy. It was, however, a well-known fact that the Scotch pine did not thrive in the south. His own conviction on the whole matter was that it was the subsoil and the climate that produced the excellency of the Scotch pine timber, and his firm belief was that the tree was not degenerating. There were characteristics in the Highland subsoil that were necessary for the production of that rich resinous timber that were not to be found in the subsoils in the south of Scotland, except occasionally in muirish subsoils.

Mr. M'Gregor, Dunkeld, said that his experience led him to agree with Mr. M'Corquodale. The soil, no doubt, had a great effect on the trees, for in plantations there were often clumps which fell off, while in the rest of the forest the timber grew up with all the characteristics of Scotch pine. He further gave it as his opinion that Scotch fir was hardly fit for use for house-building purposes till it was between eighty and a hundred years old.

Mr. France thought there was no degeneracy in Scotch fir, and that objection to use of this timber often arose from the wood being cut down in an immature state.

ST. JAMES'S THEATRE.

The fulsome, ignorant * rubbish which some of the newspapers published at the re-opening of this theatre has done much harm, because all intelligent visitors who go there, instead of admiring what is really a well-upholstered, bright, and comfortable auditorium, experience a feeling of disappointment. Having seen it actually asserted in respectable newspapers that so magnificent a temple to the drama had never before been erected, they find with surprise, on entering, the wretched old *rococo* ceiling, and the original fronts of the upper boxes and amphitheatre retained, while the new front to the enlarged dress-circle is entirely different in style. The same must be said of the handsome proscenium, the most artistic part of the alterations; and the difference distresses the cultivated eye. One of the new arrangements is positively dangerous, and should receive further consideration immediately: we allude to the approach to the upper boxes, a narrow steep staircase from the street, where a loose stair-rod or a false step would inevitably produce a catastrophe. What would occur in the event of a panic and sudden rush of a number of persons down these stairs, the treads of which are not so wide as those of the commonest dwelling-house, can scarcely be contemplated with equanimity. As to the *foyer*, with pictures, of which much has been said, and which, in plain English, simply means that access is given from the vestibule to a picture-dealer's gallery where a clerk attends with a list of prices to do business, we should scarcely be disposed to recommend an imitation elsewhere. It only leads to a number of persons moving out of their seats between the acts, to the great annoyance of the remainder who are contented to sit still. We have no pleasure in making these remarks, and have nothing but the heartiest good wishes for the success of Messrs. Hare & Kendal's undertaking. We would rather have pointed only to the handsomely-furnished vestibule and the comfort of the majority of the seats within; but when such preposterous claims are made by unwise friends, it is necessary that some one should speak out to prevent other managers from supposing that such statements are universally accepted.

"The Queen's Shilling," with which the house opened, is very entertaining, and deserves, and will doubtless command, a long succession of audiences. Mr. and Mrs. Kendal and Mr. Hare are seen at their best, and all know how good that is. The *mise en scène* is good, and the minor parts are very well played.

The Alexandra Estate, Muswell Hill.—This picturesque freehold estate, comprising some 270 acres, is for sale. The property stretches from the Wood-green station, on the Great Northern Railway on the one side, to the pretty district of Muswell-hill on the other, and has been laid out for building purposes, the roads and the sewers and surface drains having been constructed. Mr. E. E. Croucher, of Southampton-buildings, will give particulars.

* *E. g.*, one important morning paper describes the exterior of the theatre as being in the Romanesque style!

THE ALEXANDRA THEATRE, LIVERPOOL.

The Royal Alexandra Theatre, Liverpool, wa re-opened on Monday evening last, after bein enlarged by two-thirds of its former dimension The floor of the theatre has been lowered 8 f and some portion of the roof raised 11ft. Th height of the ceiling from orchestra to floor 51 ft.; from cellar to mezzanine, 9 ft. 6 in from mezzanine to stage, 7 ft. 6 in.; from stag to flyrail, 42 ft. 3 in.; and from flyrail to grid iron, 23 ft. 2 in. The pit, which was before co siderably above the level of Lime-street, is no lowered to about the level of the roadway. Th lowering of the floor enables the space of th pit to be extended back under the dress-circl the former pit-bar and offices being removed f that purpose. In addition to this the pit also extended under the dress-circle at the sid so as to embrace a great deal of the space whic was formerly used as a crush-room. Beyon this a new crush-room has been formed by th absorption of the small street or covered passag which formed the carriage-approach to th theatre. The approach for vehicles has no been extended into Coal-street. The enlarg ment of the pit as described will enable it accommodate 800, instead of 300 people. T theatre in its new form will accommodate 2,5 persons.

Mr. John Brunton, the scenic artist, h painted a new act-drop, and a figure-subject c go over the proscenium to screen the spa created by the deepening of the stage. T painted decorations and gilding have be carried out by Mr. E. Bell, of Lisson-grov London. The contractors for the general buil ing works have been Messrs. Jones & Son Liverpool; for the ceiling and box fronts a other plaster work, Messrs. Jackson & Son London; for the new stage and machinery, M Mears, Liverpool; and for the seating and u holstery work, Messrs. Urquhart & Adamso Liverpool. The whole of the works have be carried out under the direction of Mr. C. Phipps, F.S.A.; Mr. Wm. Browne having act as clerk of the works.

THE ELECTRIC LIGHT IN THE BRITISH MUSEUM.

On Monday evening members of the Pre were invited to meet the authorities of t British Museum to witness Siemens Brothe Dynamo-Electric Light Apparatus in action the Reading-room of that institution. Th apparatus produces an electric current causing an armature or cylinder of insulat copper wire to revolve near the poles of electro-magnet. The current so induced in t coils of the armature is made to traverse al the coils of the electro-magnet, so that its mag netic intensity is increased. In this way t current and magnetism go on mutually rei forcing each other until a very strong current accumulated. Thus, in the case of the dynam electric machine, there is no weakening of magne in the course of time, and the light can therefo always be reproduced of the same intensity when the apparatus is first erected. The i portant step from the magneto-electric to t dynamo-electric machine is due to Dr. Siemen and Sir Charles Wheatstone, and the value this and other recent improvements is that t cost of production is much less and the volu of light is vastly increased with less drivi power than by any other apparatus yet intr duced. The dynamo-electric machine wh connected with an electric lamp or regulat and caused to revolve at its proper speed, giv a clear, powerful, and, it is said, very economic light, which compares favourably, as regar expense, with candles, oil, and gas of equivale power, and is becoming every week mo extensively used for the lighting of factori building-yards, foundries, &c., or in fact wher ever gas was formerly applied.

For two weeks the experiment of lighting t British Museum with this electric light has be tried. Many alterations have been made in t position of the lamps with the view of obtainin the best result. We have not space at th moment to go further into the matter beyo saying that the vast apartment was lighted all parts most efficiently for all purposes. The was some flickering and irregularity of light, we have seen elsewhere on similar occasion but these defects were said to be remediabl It is not proposed at present to open the roo

t night; but when the light is perfected and nder control, it will be used on foggy days, nd to lengthen the daytime for reading by n hour or so in the winter.

SURVEYORSHIP ITEMS.

Liverpool.—It is stated by the local *Post* that he Health Committee have issued a draft report n the rearrangement of the borough engineer's taff, which states that the organisation and fficiency of the staff in all departments, xcept the sewerage department, are gene- ally satisfactory. This department is to be econstructed. As to the position of the deputy- orough engineer, the committee, having regard o Mr. Davies's service of upwards of forty years, ntend to relieve him from the more active and esponsible duties of the office, retaining him on he staff of the Corporation at 400*l.* per annum, eing two-thirds of his present salary, with he understanding that he affords to the ealth Committee from time to time, when alled upon, any information or assistance ey may require. The duties hitherto erformed by Mr. Davies will be divided mongst the several departments. The com- ittee have placed in the position of super- tendent of the sewerage department, Mr. John homas Wood, at present assistant to the chief ad surveyor, his salary to be 200*l.* per annum; nd have appointed Mr. Oliver Stainton Pilking- n to assist in the sewerage and road surveyor's partments at a salary of 100*l.* per annum. ive district sewerage inspectors are to be em- oyed, whose salaries are to be at the rate of 0*l.* per annum each.

CASES UNDER THE BUILDING ACT.

HE DISTRICT SURVEYOR FOR EAST HACKNEY (NORTH) *v.* PREEDY.

In this case, at the Worship-street Police- urt, before Mr. Hosack, the defendant had rected a shop at the corner of Pratt's-road and urton road, and in advance of the line of nts in Blurton-road, and another shop adjoin- g, the ground-floor of which was entered from urton-road and the basement from Pratt's- ad, and the District Surveyor contended that ey were both contrary to sec. 26, rule 5, of e Metropolitan Building Act, 1855. The agistrate had visited the premises, and decided at the corner shop was situate in Pratt's-road, d it was not necessary that it should conform the line of fronts in Blurton-road. The ad- ining shop he considered situated in Blurton- ad, and granted an order under the section med in respect of it.

In another case, a dwelling at the corner of derfield and Blurton roads was decided to be uated in Elderfield-road, and not subject to e line of fronts in Blurton-road, although tered from the latter.

PROVINCIAL NEWS.

Smethwick.—The new public buildings at methwick, commenced in the early part of the esent year, are now rapidly approaching com- etion. They consist of library, gas-offices, d Petty Sessions Court, and adjoin the Public ll erected a few years ago. The style of the ilding is Gothic, with some modifications, ich render it more in accordance with the l buildings. The material used in the exterior the building is red brick, the front elevation ing freely treated with Bath stone, richly rved by Messrs. Naylor Brothers, Aston. er the gas-offices is that portion of the build- g set apart for use as a Petty Sessions Court. ere is a separate entrance to the library and ading-room, which is 52 ft. by 26 ft., with a rarian's room, 17 ft. by 14 ft., the woodwork ing stained and varnished. In connexion th the library there is a store-room, which tends under the ground-floor of the whole ck of buildings. The estimated cost of the ildings is 4,500*l.* They are being erected by ssrs. Harley & Son, contractors, Smethwick, der the supervision of Mr. Yeoville Thomason, chitect, Birmingham.

Walton.—The Local Board for Walton, near verpool, having applied to the Local Govern- nt Board for sanction to borrow 2,000*l.* for rks of sewerage in their district, Captain bert C. T. Hildyard held an inquiry on the inst., by direction of the Local Government Board, at the Public Offices, Walton, in reference to the application. Mr. Edwin Smith, clerk to the Walton Board, and Mr. G. W. Goodison, engineer, attended. No ratepayers appeared to oppose the scheme.

Birkenhead.—Mr. Thomas Brassey, M.P., on the 9th inst. distributed the prizes to the successful students of the Birkenhead School of Art. The report of the head-master (Mr. J. Bentley) stated that the numbers attending the various classes had been affected by the prevailing depression in trade more than in any previous year. The total number of students attending all classes showed a decrease of forty-five from last year. The evening classes had been attended by 156, and the morning classes by 64 students, total 220; showing a decrease of 31 in the night classes, and 14 in the day classes. The annual Government examinations, conducted by means of papers, were held on the 1st and 2nd of May, when 129 candidates were examined in one or more of the four subjects comprised in the second grade, viz.:—Freehand drawing, model drawing, practical geometry, and linear perspective. 217 papers were worked, of which 80 only were successfully passed by 56 candidates; of these 24 received the mark "excellent," and were awarded Government prizes, and 32 the mark "good" obtain certificates of proficiency. The number of full certificates gained this year,—that is, students who have passed the four subjects in one or more years, is 13. In the advanced local art examinations, for which students of the school alone are eligible, was attained a good average of success. 9 were examined, and 5 were successful, viz.:—1 in architecture, 2 in perspective,—1 obtaining a Queen's prize, and 2 in modelling in clay from the living model. In the advanced section, ten prizes were awarded, and ten works were selected by the examiners and retained for national competition, five of which were rewarded, obtaining two bronze medals and three Queen's prizes. In the elementary section, five prizes were awarded, making a total award of 17 third-grade prizes for the year, as against 12 in 1878 and 9 in 1877. The financial statement, read by Mr. H. H. Laird, was satisfactory, showing an increase in the subscriptions, and also notifying that the Laird Memorial Committee had contributed 240*l.* for the purpose of giving local prizes every year.

Holyhead.—The report of Dr. W. Ogle, who was sent to Holyhead by the Local Government Board to make inquiry into the circumstances under which small-pox and diphtheria appeared and was prevalent in the neighbourhood a few months back, has just been published. In it he says that he was unable to detect signs of any serious attempt to deal with nuisances, however gross and palpable, and that it is, therefore, not surprising that the death-rate of Holyhead sub-district has been on an average 23·6 per 1,000 for the last seven years.

Wolverhampton.—A report on suggested public improvements in the Horse Fair at Wolverhampton has been issued by the Public Works Committee of the Corporation. It states that at a meeting of the committee on the 11th August the advisability of purchasing a block of buildings, containing 2,563 yards of land, on the north side of the Horse Fair, was considered, and it was suggested that the Mayor should purchase the property for a reasonable figure, and then offer it to the Corporation. The Mayor had since bought the property for 3,360*l.*, for which sum he was willing to re-dispose of it to the Corporation. The committee recommended the Corporation to accept the offer, which was considered a liberal one. By purchasing the property and other adjacent properties, the Corporation would be in a position to block up the street known as the Horse Fair, thereby acquiring about 1,200 yards of building land; and the property in the possession of the Corporation in North-street might then be laid out in a most advantageous manner by making a street in a direct line from North-street to Canal-street, with a branch to St. Peter's-walk, giving good frontages and ample back land for buildings.

Dudley.—At a meeting of the Dudley Town Council, on the 7th inst., the report of the Sewerage Committee recommended the acceptance of a tender of 479*l.* 17*s.* from Messrs. Pontifex & Wood, of London, for sluice-cocks, air-valves, boxes, and other castings; and also a tender from the same firm amounting to 1,590*l.*, for laying down and jointing the cast-iron pipes and fittings for the general sewerage of the borough. The Mayor, in moving the adoption of the report, referred to the proposed appointment of a clerk of the works and to the agreement made with Mr. Marten, engineer, who would receive 4 per cent. upon the outlay, 40,000*l.*, and his commission would be limited to this amount, so that if the cost should exceed the sum estimated no further commission would be paid. Alderman George Bagott called attention to the cost which might be incurred by owners of property in connecting their drains. As there were 10,051 houses in the borough the cost would be enormous, and Mr. Marten might receive, in addition to his commission, thousands of pounds if the outlay should be, as he understood, something like 3*l.* a house. Alderman Smith stated that in regard to the engineer charging commission upon connecting houses with the main drain it was resolved that Mr. Marten should not be entitled to commission on any private connexion to the main sewers unless the Corporation should for any special purpose consider it necessary to appoint him to inspect these works, or unless a private owner himself should call upon him to decide any point which required his decision. Anything which the borough surveyor could do would not be at the cost of one farthing to owners of property.

Worcester.—At a meeting of the Worcester Town Council on the 7th inst., the City Chamberlain, in accordance with the strong recommendation of Mr. Clayton (of the firm of Clayton & Bell), proposed the acceptance of the tender of Mr. John Taylor, of Birmingham, for decorating the interior of the Guildhall and the entablature in front, at the sum of 454*l.* 10*s.* The non-selection of a local decorator's tender by the Restoration Committee had caused some dissatisfaction in the city, and gave rise to considerable discussion in the Council, but a majority endorsed the action taken by the committee, and the tender was accepted. ——Mr. Wintle's tender for erecting stone walls on the east and west sides of the land purchased for the extension of the cemetery, at the sum of 579*l.* 4*s.* 6*d.*, was accepted.—— Additional land at the cemetery was ordered to be laid out, and application was directed to be made to the Lords of the Treasury for their sanction for a loan of 1,000*l.* for cemetery purposes.

RE SCHOOL OF ART WOOD-CARVING.

Sir,—Now that your correspondent "Meter" condescends to explain his position so clearly, I shall have very little trouble in adducing *facts*, as arguments, in contravention of his sweeping *assertions*. "Meter" says, "No kind of fine art ever was developed by any other means than that of a demand." At this moment I have in my mind the revival of what may certainly rank as fine-art productions, I allude to the praiseworthy efforts of Messrs. Doulton & Co., in which I think it must be admitted that they have excited enough sympathy in the public mind to unloose the people's purse-strings; and I am glad to think that the enterprise which has initiated a new era in the history of English pottery manufacture has proved a financial success. I can see no reason why that which the enterprise of a firm can do in one branch of art may not be attained by a number of practical men in another branch, namely, fine-art carving in wood.

"Meter" characterises wood as "a thankless and intractable material." If your correspondent will take the trouble to pay a visit to South Kensington Museum, and look at some French and Italian carvings in wood of the human form there exhibited, he will probably feel bound to admit that, for richness of effect in the rendering of the flesh, and in finish, it would be difficult to equal them in any other material; and, as I have entered so far into detail, I may say that there is every reason in favour of wood holding its own in high art, because, whereas in wood the artist executes his own idea from first to last, it is not so with some more favourite materials which are less tractable. In marble the artist is obliged to intrust his clay model, first to the hands of the moulder, and then to the tender mercies of a kind of automatic machine, called a pointer.

In the case of bronze, after casting in the metal, it is again subjected to another process,—chasing; otherwise, smoothing down and destroying all fine surface detail.

Now, although, of course, I do not for one moment advocate the use of wood in place of the above-mentioned materials, I think I have

shown that wood, far from being an "intractable" material may be termed most tractable and useful for decorative purposes, retaining for centuries the last life-giving touches of the artist.

Of course, it remains to be proved with what measure of appreciation the work of Signor Bulletti and his pupils will be received by the public; but, with regard to the present demand for fine-art wood-carving, I may state that, to my certain knowledge, a leading firm of decorators has within the last month, found it necessary to send to Paris to get an order executed. Can anything prove more clearly the deficiencies of our own workmen? And why does "Meter" persistently attack a system which seeks to supply what is necessary, if we ever intend to employ Englishmen on art-works in England, instead of men of almost every other nation under the sun, as we have hitherto been obliged to do.

I think that in times like these, when our great political economists are crying out that we cannot continue to send so much money from the country without disastrous results to the working-classes at home, it is necessary that those who have the welfare of the nation at heart should not waste time in prematurely discussing the particular merits or demerits of this or that innovation, but should encourage anything that appears likely to act as an incentive to the higher development of any art or industry among our native British workmen.

ANSELMO.

SIR COUTTS LINDSAY ON SCULPTURE.

SIR,—I cannot conceive how Sir Coutts Lindsay could have formed such an opinion as that which he has expressed in the following paragraph in your last issue:—

"The great familiarity of artists with these more varied materials has had an excellent consequence on the sculpture of our day. The old custom of leaving the ultimate embodiment of the idea to the mechanical labour of a workman is now discredited. A sculptor of twenty years ago, although supposed to work in marble, but seldom touched it himself. When his clay model was finished, his work was done; the marble statue was merely a copy of his clay, and not in any sense an original work. No doubt he made a pretence to do something with the chisel, but that was a myth of the profession. He had none of the workman's knowledge, nor of the handicraft of marble work. Now all this is different; the marble of our sculptors passes through their hands, and receives the impress of their genius."

As a sculptor I do not hesitate for a moment to refute the whole of the above paragraph as misleading the public regarding the sculptor's art. How can Sir Coutts reconcile "the old custom of leaving the ultimate embodiment of the idea to the mechanical labour of a workman" with "when his clay model was completed, his work was done; the marble statue was merely a copy of the clay"? When a sculptor place a model in the hands of a "workman" to copy, how can he entrust him with the "ultimate embodiment of the idea" when it has already been accomplished by himself in the model? Should any person do so, as Sir Coutts Lindsay asserts, he must therefore become an impostor and a quack, who defrauds the public by palming off works upon them which are not his own. Very few such men were in vogue over twenty years ago. Besides, it is not merely a mechanical process to copy a model correctly. Whatever mechanism may be required, it is only to reduce the shapeless mass of marble to an approximate form of the model by what is usually termed pointing; and he who copies the model, whether it be the sculptor himself or his assistant, should be an artist in every sense of the word. By the sculptors of twenty years ago, does Sir Coutts mean Foley, Weeks, Gibson, McDowall, Behnes, &c., men whom I know to have been excellent carvers? Does he, then, think that it was a "myth of the profession" for the above well-known sculptors (and I could mention many more) to take up the chisel and put the last finishing touches to the marble? It is certainly a "myth of the profession" to think that the sculptors of to-day are more able to pass the marble through their own hands, and put the "impress of their genius" on it than the older ones. No living sculptor, of even moderate repute, can possibly dispense with assistance in the finish of his works in marble, and also in modelling.

Had Sir Coutts-Lindsay happened to inquire into the surreptitious mode by which some persons who falsely call themselves sculptors obtain patronage, and the way by which they get their work executed by the true artist, he would then have struck at the root of the greatest evil our art has been subject to for the last twenty years. There are at the present moment in London some half a dozen of these men thriving at the expense of other men's brains, and by the fraud thus played on the public they have a reputation almost equal to our best sculptors, while the artist at whose expense his fame has been made is left to perish in obscurity.

I see no reason why art should not have the same advantage as other learned professions by being under the immediate protection of the Legislature, to the exclusion of all impostors.

J. MILO GRIFFITH.

SCHEME OF PROVINCIAL GEOGRAPHICAL MUSEUMS.

SIR,—These popular educational museums stand in exactly the same relation to the geographical ignorance (adult ignorance) of the many as the Royal Geographical Society of London stands to the geographical learning of the very few. Their important object is to instruct, familiarise, and to disseminate geographical knowledge to the people generally. No town in the United Kingdom, therefore (and especially no seaport town), having a population of 50,000, should be without such a popular educational museum, or spacious room, opened free to the public for their use and for reference, containing everything, in short, essential to the acquisition of geographical knowledge. Weekly popular geographical lectures should be given free, by amateur geographers, resident within the town. Provincial museums have a far greater importance than provincial geographical societies. The former widely embrace and directly enlighten the masses indiscriminately, while the latter are necessarily restricted to the few, and those composed of the middle class alone. In this sense the provincial geographical museum may be said to be a national institution, forming a portion of the great national education of the future!

AUGUSTUS J. HARVEY.

ROARING WATER-PIPES.

SIR,—I live in Hanover-gardens, Kennington-park, and am awoke every morning between five and six o'clock (two hours before I wish to rise) by the noise of the water passing through the pipes to the cistern. I have applied to the Vauxhall and Southwark Company that supply this district, but to no effect. It seems beyond their comprehension. Perhaps you might give some information as to the cause of it. I think they have too much force at work, as the pipe burst a short time back, deluging the kitchen. It also seems necessary to open the roads pretty often. Let it be what it may, I am awfully annoyed by it.

A CONSTANT READER.

*** Our present correspondent is not the only person who complains to us of the same annoyance. Will the water-companies take the matter into their consideration, and devise some means to avoid it? At any rate, the delivery might be made a little later.

DAMP.

SIR,—Can any of your readers explain the reason of, and a remedy for, dampness which exhibits itself on some of the walls of my house, under the following circumstances?

The house was built over two years ago, and after the walls were plastered they were left to dry for two or three months. Fires were then kept up for a further period of three months, by which time the walls appeared thoroughly dry, and were then papered. During the following summer (1878) there was not a sign of dampness even at the wettest periods, but as the cold weather approached I found, after the gas had been lighted, and unless the door of the room was kept *wide* open, that on different parts of the walls (and about on a level with the gas jets) much dampness showed itself. This continued during the whole of the winter in spite of large fires, and disappeared again in the spring. There were no symptoms of dampness during the late wet summer season, but now that the weather has become colder I am troubled with this dampness as badly as ever. As soon as the gas is turned down, or the door opened *wide*, the walls become apparently dry again. My dining-room, where, perhaps, this dampness is most observable (and not entirely on the *outside* walls), is ventilated by a Boyle's patent close to the ceiling, and by two 3-in. pipes coming from outside and carried up inside the room to about 5 ft. from the floor. I have tried closing one or both of these ventilating pipes, but without effect on the walls. Builders and others whom I have consulted have been unable to explain the reason of this continued dampness. Of course the heat of the gas will tend to dry out moisture from the walls, but this is no explanation in my case.

R. M.

*** The cause of the dampness in this case is obviously the condensation of the moisture resulting from the combustion of the gas. Proper ventilation of the burners should, we think, prevent it.

STAINED GLASS.

Hagley.—One of the south windows in the chancel of the parish church has been filled with stained glass, by Messrs. Clayton & Bell, of London, depicting the Early Christians' surrender of their worldly goods, which they sold and laid the price at the apostles' feet, as recorded towards the end of the fourth chapter of the Acts. Beneath are the following words: "Neither said any of them that ought of the things which he possessed was his own." "To the glory of God and the loved memory of George William, fourth Baron Lyttelton. Born March 31, 1817. Died April 19, 1876."

Clevedon.—The large west window of Clevedon Church, Somerset, has recently been filled with stained glass. The subjects illustrated are, in the upper part, "The Transfiguration of Our Lord," and below, the subject of "The Last Supper." The window was designed and executed by Messrs. Heaton, Butler, & Bayne.

Brighton.—A stained-glass window has been recently erected in St. Anne's Church, Brighton. The subjects illustrated are "The Nativity," and "The Angels appearing to the Shepherds." The window was designed and executed by Messrs. Heaton, Butler, & Bayne.

Portsea. — Among the Munich windows erected by Messrs. Mayer & Co., we may mention one that has just been fixed in St. Mark's Church, Portsea. It is a single lancet on the south side of the chancel, about 9 ft. high and 2 ft. wide, containing ornamental glass with, in the centre panel, a carefully-executed head.

LIGHTNING CONDUCTORS.

THE delegates nominated in 1878 to consider the possibility of formulating the existing knowledge on the subject of the protection of property from damage by electricity, and the advisability of preparing and issuing a general code of rules for the erection of lightning conductors, have held several meetings, and have already collected, firstly, from the manufacturers of lightning conductors; and, secondly, from the members of the Royal Institute of British Architects, a large amount of practical information. Anxious, however, that the report should be as trustworthy and as exhaustive as possible, they invite correspondence upon the following points:—

"Full details of accidents by lightning, stating especially whether the building struck had a conductor or not. If there was a conductor, state its dimensions, construction, mode of attachment to building, whether its top was pointed, distance of its upper terminal from the point struck, nature and extent of the connexion between the conductor and the earth, and whether the earth was dry or moist, whether the conductor was itself injured, &c., whether the conductor or the point struck was the most salient object in the vicinity. Information is also desired either verbally or by sketches, as to the position of metal spouting and lead roofing relatively to the point struck and to the conductor.

Details of the thickest piece of metal melted by a flash of lightning are much needed.

Unimpeachable evidence of the failure of conductors much desired, as such failures would be extremely instructive."

Replies should be addressed to Mr. G. J. Symons, 30, Great George-street, Westminster.

Proposed Free Library for Preston.—The Preston Town Council has held a special meeting to consider the offer of the Harris trustees to grant 70,000*l.* for the erection and maintenance of a free library. Mr. Alderman Gilbertson, in moving that the offer be accepted, stated that the cost of the site might possibly be more than 25,000*l.*; its value, when cleared, would probably be about 17,000*l.*, upon which would be erected a building that would cost 50,000*l.*, and a further sum of 20,000*l.* would be voted for the foundation and endowment of the library. The cost of maintenance was computed at about 1,200*l.* a year, of which sum 900*l.* had already been provided for, so that there was 250*l.*, which would be about covered by an extra rate of 1d. in the pound. Alderman Hibbert seconded the motion, which was carried.

NEW CLUBHOUSES.

Leigh.—The Right Hon. R. A. Cross, Home Secretary, recently opened the new building of the Leigh Conservative Club.

Southport.—The Southport Reform Club was formally opened by Sir W. Vernon Harcourt, M.P., on the 2nd inst. The new clubhouse, which has been erected by a limited liability company, is situated at the junction of Eastbank-street and Queen Anne-street. The building, which is Italian in style, is three stories in height, and has a frontage to Eastbank-street of 40 ft., and to Queen Anne-street of 90 ft. The two fronts are faced with pressed bricks, relieved with polished and carved Longridge stone dressed and ornamental bricks. The Eastbank-street front is surmounted by a massive stone cornice and parapet at a height of 40 ft. from the ground, and the roof of this portion of the building is finished with ornamental iron cresting. Upon the ground floor provision is made for two shops, right and left of the main entrance-hall, and also six spacious rooms, which are let as offices; underneath these are store-cellars. The entrance-hall is 9 ft. wide, and the upper rooms are approached by a staircase on the right of the hall, which occupies a space 4 ft. by 20 ft., which is lighted in the day-time by a large lantern-light in the roof. On the first-floor is a billiard-room, 38 ft. by 24 ft.; on this floor are also a smoke-room, news-room, 6 ft. by 20 ft.; kitchen, and committee-room. On the upper floor is a billiard-room the same size as the one below, but more lofty, having coved ceiling finished in panels, and surmounted by a lantern-light of cut and embossed plate-glass, at a height of 23 ft. from the floor. There are also on this floor a smoke-room, cloak-room, and an assembly-room, 40 ft. by 26 ft.; this room has also a lofty coved and panelled ceiling. The building, which has cost about 10,030*l.*, inclusive of the site, has been erected from designs furnished by Mr. T. H. Lodge, architect, Southport, under whose supervision the whole of the works have been carried out. The contractors were Messrs. Whitehead & Foster, of Southport.

CHURCH-BUILDING NEWS.

St. Teath.—The parish church of St. Teath is now being restored, and it is intended to reopen it on the 6th prox. During the progress of the work, fragments of Norman masonry,—the remains of an earlier church,—have been discovered. These have been carefully preserved; and all other ancient work not in a state of absolute decay has been retained in the restoration. The endeavour in the restoration of the church has been to keep whatever is historically or architecturally interesting, whether of pre- or post-Reformation date. Gothic and Jacobean work has each a place, therefore, in this restored church. The aisles are fitted with benches, made up chiefly of the old oak, and in the chancel stalls and other furniture the ancient materials are also employed. Some of the walls were more than 1 ft. out of the perpendicular. These have been made sound and straight, and the portions of windows which were decayed have been taken out and replaced with new granite or polyphant stone. Little remains of the original stained glass of the windows, but such fragments as there are will be restored by Mr. Fouracre, of Plymouth, who is executing the new glazing. The new carving is by Mr. Hems, of Exeter. The contractor for the restoration is Mr. Wiffin, of Bradford, North Devon, who is carrying out the work under the direction of Mr. Hine, architect, Plymouth.

Iddesleigh.—The parish church of Iddesleigh, North Devon, has lately been re-opened, after restoration, at a cost of 1,500*l.*, under the direction of Mr. C. S. Adye, architect, Bradford-on-Avon. The whole of the old box-pews and the west gallery have been removed, and the body of the church seated with open benches of oak of rich design. The arcade has been brought back to the perpendicular, and the foundations carefully underpinned. The chancel arch and the corresponding arch in the aisle have been replaced, the south and east walls of the chancel have been rebuilt and are pierced with windows of a date corresponding with the rest of the church. The whole of the north windows and the south windows of the nave have new tracery worked in accordance with the remains of the old tracery. The whole of the roofs have been replaced in their original position, and boarded with oak boarding, all missing parts of the cornices and ribs having been replaced with new, worked to match the remains of the original portions. The whole of the work has been carried out by Messrs. Medland, Grant, & Eastmond, builders, Great Torrington, and the stone carving has been done by Mr. Harry Hems, of Exeter.

Wolverhampton.—The foundation-stone of the new school-church of St. Stephen, Springfields, Wolverhampton, has been laid. The new building will be 80 ft. long by 27 ft. wide, the side-wall 17 ft. high, and the total height to ceiling 25 ft. The chancel is formed by partitioning off a part of the building at the east end by a screen, which will by a simple arrangement of curtains or shutters, be effectually shut off from the schoolroom during the week. The steps up into this part will also be used as a gallery for the younger children in the school. An additional room, 17 ft. by 14 ft., will be placed at the south-west corner, to be used as a vestry on Sundays, with access to the entrance-lobby, and as a class-room on week-days, opening direct into the school-room. All the walls are faced externally and internally with patent pressed red bricks, relieved by moulded and white brick bands, no stone whatever being used except for the window-sills. The floors throughout are boarded, and the principal timbers of the roof will be wrought, stained, and varnished. The work is being carried out by Messrs. G. & F. Higham, builders, at a cost at about 1,500*l.*, from the designs and under the superintendence of Mr. T. H. Fleeming, architect, Wolverhampton.

Maidford.—The parish church of Maidford has been re-opened, after restoration. The church is in the Early English style, and consists of a nave, south aisle, porch, and chancel, with a tower containing two bells. The church, which had not been restored since the year 1818, had latterly fallen into a dilapidated condition, and a short time since the rector, the Rev. W. Egerton Tapp, with the assistance of his churchwardens and parishioners, determined to make an effort to renovate it. The principal feature in the work has been the re-flooring and re-seating of the church. The old red tiles have been replaced by Maw's tiles, while the old oaken pews have been done away with, and open sittings of pitch-pine, varnished, have been substituted. By the new sittings additional accommodation has been provided for about twenty worshippers, the church now seating about 120. The pulpit, reading-desk, and lectern are all new, the lectern being the gift of Mr. Leopold Staunton. The font, which is carved in Caen stone, is the work of Mr. Phillips, of Northampton, who also carved the reading-desk, pulpit, and lectern. The windows throughout the church are new, and in each window new mullions have been added. These were the work of Mr. J. Goldby, of Duston. The tower has been re-pointed, and new louvre windows added. Mr. Heath, of Eaton-square, London, was the contractor. The cost of the restoration will be about 400*l.*

NEW CEMETERIES.

Burslem.—The new cemetery for the borough of Burslem has been consecrated by the Bishop of Lichfield. The Local Government Board constituted the late Local Board of Health a Burial Board for the parish of Burslem in 1873, Mr. F. Tennant being the prime mover in the effort to obtain a cemetery. They shortly afterwards began to look out for a suitable site, and ultimately fixed upon a piece of land about 28 acres in extent fronting Nettlebank, at the extreme boundary of the parish on the Smallthorne side. The land was purchased from the Rev. Walter Sneyd for 7,000*l.*, and about 10,000*l.* has been spent in erecting substantial boundary-walls, a registrar's office and lodge on the Smallthorne side, and a lodge at the North-road entrance, draining the ground, laying out walks, and planting shrubs. By the advice of Mr. Holland, of the Burials Acts Office, it was decided to lay out 5½ acres for burial purposes, reserving the rest and laying it out ornamentally as a kind of recreation-ground. Much of the work was done by the late Local Board, and it has been continued by the Corporation.

Knighton.—The Church portion of the new cemetery at Knighton was consecrated by the Bishop of Hereford on the 16th of September. The cemetery is situated on the western side of the church, and has been laid out under the supervision of Mr. Thomas Gough, architect and surveyor for the Burial Board. The cemetery is equally divided between the Church and the Nonconformists,—the Church taking the eastern and the Nonconformists the western portion. The original cost of the land was 625*l.*; building boundary-walls, levelling ground, and making walks, 450*l.*; building lych-gates, with cost of iron gates, two entrances, 150*l.*; extra work and incidental expenses, 75*l.*; total cost, 1,300*l.* The contractors were Messrs. Williams & Jones.

Books.

The Higher Life in Art; with a Chapter on Hobgoblins by the Great Masters. By Wyke Bayliss, F.S.A. London: David Bogue.

We have always had a kindly and sympathetic feeling for the writings of Mr. Wyke Bayliss about art, partly because he is an artist, and in his own walk a gifted one, and not a mere writer; partly because all he says obviously comes from heart-felt conviction, and is not mere superficial prating. At the same time we must confess that, from a literary point of view, his writings seem a little too odd and incoherent in style, and too vague in expression, to be of the value which their author's sincerity and good intent might have seemed to promise. We noticed a previous book, by the same author, not long ago, at some length ("The Witness of Art"), because of the fine feeling which was to be found in it, and in spite of much eccentricity both of thought and literary form. In taking up the present book we encounter the same literary drawbacks, and it does not appear to us that the author has really much more to say than he has already said in his previous work, but that he is repeating much the same reflections in different words and under different images and symbols. Of the latter, indeed, the book chiefly consists; and though symbol and metaphor afford often a very effective way of putting truths about art as well as about other things, a book which is all symbol and metaphor, and in which the writer seems to avoid saying anything in plain English, has an irritating effect on the mind, even when the meaning of the metaphors is obvious enough. Hardly any one who was exacting in regard to literary style, hardly any one who represented the highest class of literary culture, would look upon the reading through of such a book as in the main anything but a "bore," although he would be pleased and refreshed every now and then by a gush of genuine feeling, or a happy thought in criticism, which would compel him, in spite of himself, to think kindly of the author. There are other classes of readers, especially young students with strong aspirations about art and not very logically trained minds, to whom much of Mr. Bayliss's reflections will no doubt be delightful reading, and they will probably not read them without getting some good out of them.

The real point of the book, if we rightly read the author's meaning (and if we do not, we think he must take *some* of the blame), is to recommend to artists, professed or amateur, a higher and more serious aim than is generally implied in the expression "art for art's sake," in the feeling that art is really the means of drawing us closer to Nature and to a higher life and a higher holiness, and to the love and the comprehension of each other. "The higher life is also the love of art, but it is art for Nature's sake. It is the love of art because art brings us into the presence of something greater and better than ourselves. Leontes and Florizel are dear to us because of our manhood and our youth, Perdita and Hermione because there are still girls and women like them in the world. It is thus only that art touches our lives. Laying its hand upon us and upon Nature, it brings us a little closer together,—and so we are brought closer to God." This is very beautifully said, and is perfectly true, if we bear in mind that it is only so long as art is really striving after Nature, and not after mystic beauty and goodness, that it can lead us "up to Nature's God." This is, we believe, what Mr. Wyke Bayliss also means, but his practice and preaching are not always in keeping, for in his writing, at least, he is very mystical. Some of his remarks as to the way in which the poet helps the painter, and becomes his interpreter, are well put; and there is one passage in which this subject is brought in in connexion with

architecture, and with the author's own practice as an artist (which has lain chiefly in reproducing in colour the poetry of architecture), which we will quote, as interesting in itself and falling in specially with our own subject:—

"Perhaps the architect is the *lusus naturæ* of whom I spoke at first,—one, that is, who is both poet and artist. Of this I am quite sure, that every fine cathedral is the artistic embodiment of some poetic conception. And so I try to get at this conception,—to read back from the architect's work into the architect's mind, and learn something, if ever so little, of his spirit before venturing to become in my turn an interpreter to others. Thus, for every cathedral that I paint for other eyes to look upon, I write down some words for myself only,—words that shall be to me like one of our old examination papers, that must be mastered before another step is taken,—words that shall put to the test whether I am really going to paint, however imperfectly, the true thing, or a false conception of it. This is the true meaning of the verses you see everywhere in my sketch-books and on the margins of my drawings, and that, I confess, are no adornment. But they are very useful. I scarcely know which is of the greater value to me, my fourteen pentameters or my two-foot rule. I know only that I would not willingly paint a cathedral without both of them. The principle of it is very simple. Whatever is painted should be painted for the sake of the highest beauty it possesses. Man, for the mind that is in him; landscape, that we might therefore praise the Lord and declare his goodness to the children of men; flowers, for their delicacy and colour,—we cannot paint their perfume, or that too should be added; the cathedral, for its forest of tall pillars. Yes! if it is Chartres or Milan, but not if it is Treves. In Treves there are no pillars, but huge piers of stone; it is a quarry rather than a forest. *Strong with the savage splendour of rude walls*, don't you see? The march is already begun; five steps are taken almost before I can get the two-foot rule out of my pocket."

This certainly helps to explain to us why there is something more than the two-foot rule in Mr. Bayliss's paintings of the interior effects of cathedrals. He gets, however, into somewhat of a muddle sometimes with his poetic illustrations. In one place there is a contrast drawn between the spirit of Ben Jonson's lines, beginning, "I sent thee late a rosy wreath," and the melancholy turn of Byron's verse, from the stanzas introduced in "Childe Harold," "I send the lilies given to me"; and Mr. Bayliss's conclusion is that there are two Cupids, and that Byron had got hold of the wrong one, "the son of Nox and Erebus." Mr. Bayliss seems to have forgotten that these lines were addressed by Byron to his sister, and that Cupid had nothing to do in the matter.

Mr. Bayliss is very much to the point in some remarks upon the Royal Academy, the members of which, he says, have the same difficulty, year by year, of "being judges in a contest in which they are themselves competitors." It is a pity that all his remarks are not as simply worded and as straight to the point as these upon a practical question. Riddles and fairy-tales form possibly a good method of instructing children, but grown people are apt to become impatient of them.

Improvements in Singapore.—The Singapore *Auction Gazette* says,—The Public Works Department is likely to be fully engaged for some time to come. The new jail is progressing rapidly, and the boundary wall being partly completed, an inspection of the site shows the extent of work in process. The grounds cover a space of about eleven acres, which should insure the health of those inclosed within the walls. Opposite the jail it is proposed to erect the much-needed new hospital, and probably next year will see that work begun. The Teluk Ayer Bay reclamations, and new road to Tanjong Pager will soon be commenced, and besides the convenience to commerce, the appearance of the town from the sea will be greatly improved, it being intended,—as in the case of Collyer Quay,—to insist on uniformity of architecture in the buildings fronting the sea. An excellent idea has also been suggested by the surveyor-general which should have the support of the landowners, namely, to cut a road from opposite the works of Mr. J. M. Lyon to the Tajong Paggar road, between Mount Wallich and Mount Erskine.

Miscellanea.

New Temple at Palenque.—M. F. Maler describes in *La Nature* some important results obtained by him in a recent visit to the famous Mexican ruins of Palenque. He found hundreds of houses, partly standing, partly demolished; small bridges; aqueducts. M. Maler describes one of his new discoveries,—a temple hitherto ignored, which contains in its sanctuary a mysterious sculpture with a figure of a cross, affording much food for thought to American archæologists. The new temple is close to the Temple of the Cross (known long ago), and the Temple of the Trophy. It is built entirely of calcareous ashlars, dressed along the edges. The façade, or external part of the vestibule, once formed, like the two neighbouring temples, by four pillars which support the stone roof, has, unfortunately, already yielded to the sad work of vegetation, which is to be regretted, as the pillars were generally ornamented with superb figures in stucco, richly painted. The bottom of the sanctuary, in the central chamber, is adorned with sculptures, the most curious at Palenque. They are executed on three slabs of calcareous stone, of 1 mètre 81 centimètres in height, by 2 mètres 89 centimètres in total breadth. The two pillars which support the vault of the sanctuary were formerly, as in the other temples, decorated with sculptured figures on large slabs of calcareous stone, which, unfortunately, have disappeared. On a species of pedestal rises a cross, of a design even more striking than that of the neighbouring temple, so well known. The cross is surmounted by a strange head, bearing on its neck a collar with a medallion. Above the cross is seated a bird with a hieroglyphical head; to the right, a man is placed on a graceful leaf ornament. There are four rows of *Katun* (or magic writing signs) on the right and left of the group.

Cocoa Houses and Coffee Taverns are being provided all over the country. We notice that at Bagillt a commodious building has been opened as a cocoa-house and working-men's club combined. The late Mr. Ellis Eyton, formerly M.P. for the Flint Boroughs, subscribed during his lifetime a sum of 210*l.* towards the formation of a working-men's club, but that subscription would have lain dormant had it not been for the action of Mr. A. O. Walker, of the firm of Messrs. Walkers, Parker, & Co., of Chester and Bagillt Lead Works, who, with other gentlemen, during last summer set themselves to work and brought forward a scheme for the incorporation of a cocoa-house company with the working-men's club. The capital is fixed at 2,000*l*, but the whole of that amount has not so far been called up. The building has been erected on a piece of land of which Mr. Adam Eyton, of Llanerchymor, granted a lease for ninety-nine years at a nominal rent. The building is three stories high, and its architect is Mr. Bibby, of Flint, and the builder was Mr. L. Howell.——At Redruth, the chief promoters of the proposed temperance hall and coffee-tavern at Redruth have met at the office of Mr. Hicks, architect, and signed the contract for the new buildings, which are to be in the Gothic style. The cost will be about 700*l.* The builders are Messrs. Gray & Hodge.

Asserted Cottage-building Mania, Liverpool.—A correspondent of the Liverpool *Daily Post* writes in reference to the immense number of cottages, or workmen's houses, in the course of erection on the borders of the town, whilst there is a vast number of such dwellings finished but unlet. Speaking of one particular neighbourhood, the writer says:—"The fiat has gone forth, as I understand, and all the horrors of 'cabined, cribbed, confined' cottages, and rows on rows of narrow streets, may be expected, where still is to be seen one of the most select of the very few choice spots left open and suitable for country residences within walking distance of Liverpool. I think I hear the owners of these beautiful mansions and villas exclaim, 'Truly the Goths and Vandals are upon us.' Though I am personally unknown to these owners, and neither have property there nor live in the neighbourhood, my sympathies are largely interested on their behalf, and I should rejoice if this contemplated work of spoliation could be arrested. By what mysterious process these cottages are made to pay, in the face of the facts stated, in the face of these terrible times of empty houses and empty pockets, is almost beyond my wits to conjecture."

Hospitals.—The General Lying-in Hospital in York-road, Lambeth, which has been closed this year, while extensive alterations and additions were being made, was opened again for the reception of in-patients on the 20th inst. The progress of medical and sanitary science having shown that much in the building was faulty, the committee invited Surgeon-major De Chaumont, Professor of Hygiene at Netley, to report upon the state of the building. The recommendations contained in his report, and other alterations, have now been carried out, under the direction of Mr. Eassie, C.E. In the wards at the floor-level, on the inner surface of the walls, and opposite the outside air-bricks, conical air-bricks of wood have been inserted. Owing to the conical shape of the perforations, the diameter of each boring being greatest on the surface of the brick inside the room, the air enters freely without causing draught. In the winter this current of air, impinging upon the hot-water pipes, is warmed as it enters. Assisting air-inlets are placed at the ceiling level. The outlets for vitiated air are valves opening into the flues, and shafts direct from the ceiling to the outer air. In the lying-in wards the windows are made in horizontal sections, which can all be opened at the same moment by the turning of a rod, so that the ward can be flushed with air instantaneously. The warming of this building will be effected by low-pressure hot-water pipes, and there are besides open fireplaces. The floors of the wards have been planed down, and the surface of the wood has been dressed with a coating of parafin to fill the pores of the wood and prevent the absorption of anything deleterious, and as the walls and ceilings have been covered with a washable paint, it would be possible, without damage to the rest of the building, to wash any ward out thoroughly with a stream of water from a hose. The system of drainage has been reconstructed; the old drains under the house have all been removed, the waste-pipes of sinks and baths have been disconnected from the drain, soil-pipes taken outside the house, and ventilated to the roof, and other sanitary improvements effected. In order to keep the drains clean, a large volume of water is discharged into them periodically and automatically from the roof, level, on Field's system. The works have been carried out by Mr. Jennings.

The New Theatre at Geneva has been opened. In beauty and extent it ranks next to the opera-houses of Paris and Vienna. In external appearance it greatly resembles that of Paris, being built in the same style of architecture. The upper part of the staircase walls and the ceiling are richly painted; one scene by M. de Beaumont, depicts the Four Seasons; another, by M. Dufaux, the Four Elements; and M. Léon Gand has contributed several allegorical figures of merit. The auditorium is in keeping with the rest of the house. The form of the galleries, the prevailing tint (light chamois on a red ground), and the style of ornamentation are in excellent taste. The three tiers of galleries have an outward inclination, the lowest tier being in advance of the highest. The auditorium is lighted by a splendid lustre with 400 bronze burners. The seats are upholstered in red velvet, and the lower parts of the walls are papered or painted to match. While every precaution has been taken to prevent fires, the amplest facilities for exit are provided, and the theatre can be emptied of its occupants in a few minutes, so numerous are the doors, and so spacious are the staircases and corridors. The cost of this temple of Thespis has been defrayed from the proceeds of the Brunswick legacy, and, including the value of the land on which it is built, exceeds 5,000,000 f. It is, of course, the property of the city of Geneva, and for a year at least will be managed by the municipality, in order that they may ascertain by actual experience the extent to which it will be necessary thereafter to subsidise the lessee.

"Talking to the Man at the Helm."—Mr. H. A. Severn's mariner's compass causes an electric bell to be rung whenever the vessel is off her course. The captain of the ship sets the index hands to a certain angle, allowing the steersman a given latitude for deviation either to port or starboard. Should the ship be steered off her course beyond the limit allowed on either side an electric alarm-bell rings, and continues ringing until the right course is resumed.—*Electrician.*

Roads in Paris. — A lady [who visited aris in 1835 prophesied that in process of time would be possible to drive,—nay, even walk, -through its crowded streets without the aid ther of aromatic vinegar or Eau de Cologne. he process of time to which that lady referred now, perhaps, approaching its fulfilment. The unicipal Council of Paris is bent upon providing e city with every convenience, and the conse- ence is that you cannot walk ten minutes in rdly any direction without coming to a gaping ench or a barred street. Paris is now turned side down even to a greater extent than it as at the time of the Exhibition last year. ren the Quai Voltaire, formerly one of the ost peaceful and dignified spots in Paris, is a ey to plumbers and navvies. The unification the sewers, the laying down of pipes for nveying the water of the Dhuys and the anne, and the laying of tubes for a pneumatic legraph are all being carried on at the same ne. Finally, the beneficent Municipal Council as decided that footpaths or side-walks shall be nceforward obligatory. The expense of the ying of new streets has to be borne by the ndowners. Most of them finding that this pense was heavy enough, for landlords are, overbially, a mean and cheeseparing gang, fused to incur the expense of paving or phalting the side-walk. The consequence is at in Paris of 1879 there are scores of streets thout any side-walk. Now the landowners obliged to pay half the cost and the Ville Paris will pay the other half, and soon there ill not be a single street in Paris without a e-walk, and we shall all be happier and better -m.—*Parisian.*

The Employment of Girls in Brickyards. the weekly meeting of the West Bromwich ard of Guardians on the 6th inst., upon the estion of the remission of school fees being ught forward, the relieving officer for Old- ry presented a case in which fees were applied on behalf of a girl whose sisters were em- yed in a brickyard. In reply to the clerk, relieving officer said there was reason to lieve that the girl in respect to whom the s were asked would eventually be sent to rk in a brickyard. The clerk advised that fees should not be allowed under such cir- mstances. The Rev. J. J. Daly objected to , stating that the moral tone of girls working brickyards was generally fair. Mr. Blades ught girls might do a very much worse ig. Brickyards were conducted in a different y to what they were years ago. The clerk d they should not encourage parents to send ir children to brickyards, and he had simply gested that the relieving officer should en- vour to get the parents of the child in ques- n to send the girl out to service. Ultimately fees were allowed.

The Proposed National Museum, Dublin. the 15th inst. Mr. John M'Curdy, president the Royal Institute of Architects of Ireland, mpanied by some other members of the titute, waited upon the Chief Secretary at blin Castle in reference to the plans for the tional Museum of Art and Science, which is replace the Royal Dublin Society's Depart- nts. The object of the deputation was to ress upon the Chief Secretary that neither South Kensington officials nor the Board of rks should have the exclusive preparation of plans for the new Museum in Dublin, but there should be an open competition for best plan, with liberty to the Irish architects ake part in it. The Chief Secretary stated he was induced to believe that the decision the matter rested with the English Depart- t; but he would represent the opinion of deputation, which he certainly did not think easonable, to the proper quarter.

ery Civil.—It would be difficult to imagine ore humorous precaution against robbery that recently adopted by a practical New rker, who, on leaving town, placed con- uously in his "hall-way" a large placard conceived:—"To robbers and thieves. All plate and other valuables have been sent to National Deposit Company. The trunks ain only some worn-out clothing, which will ut of little use to you. The keys you will to the left on the table in the parlour, in you should doubt my statement. You will find there a cheque, payable to bearer, for dollars, to indemnify you for your disappoint- and loss of time. Please wipe your feet he mat, and do not drop any candle-grease he carpet!"

State of Labour in Europe.—The American Consuls in many of the principal towns of England, France, Germany, Belgium, Denmark, Italy, Holland, and other countries, were instructed to make careful inquiries into the state of labour, rates of wages, habits of the working-classes, &c., and have embodied the results in reports to Secretary Evarts. Much valuable information has thus been collected, an analysis of which, with criticism, appears in this week's *Capital and Labour*, an advance copy of the volume of reports having been sent to that journal from the Treasury Department at Washington.

School Playgrounds.—We are glad to find that the School Board has passed the following resolutions:—That a special committee be appointed to consider to what extent, and under what regulations, the Board may, either with or without the co-operation of voluntary societies, open the playgrounds of the Board schools on Saturdays and out of ordinary school-hours." The Board some time ago affirmed the principle that the playgrounds of the schools should be utilised as far as possible for the benefit of children residing in the neighbourhoods out of school-hours. It is to be hoped it will now be carried out.

St. Leonards-on-Sea.—On Tuesday, the 14th inst., Mr. Thomas Brassey, M.P., and Mrs. Brassey, opened the new buildings which have been erected for the Warrior-square Concert-room Company, Limited. The buildings consist of a large hall, 96 ft. by 57 ft., and several smaller rooms available for club purposes, dressing-rooms, &c., and for small meetings, for which the large hall would not be required. There is also a considerable extent of cellarage accommodation. The works have been carried out by Mr. F. Cruttenden, of St. Leonards, under the superintendence of the architects of the company, Messrs. Richard A. Hill and W. L. Vernon, at a cost exceeding 10,000*l.*

Pharaoh's Army in the Red Sea.—Abbé Meigne has traced the course of the Children of Israel day by day, in accordance with new *data*, and he asks the Christian world, since the spot is now known where the Egyptians were swallowed up, with "the horse and his rider," chariot, and everything, to subscribe the requisite funds to enable excavations to be made and "the relics of the army overcome by the Almighty himself to be brought to light." The Abbé will undertake the work if he succeeds in getting together 300,000*l.*, "because the finding of the remains of Pharaoh's army would be a powerful reason in favour of the truth of the Holy Scriptures."

Size of the Oak in England.—Mr. C. A. Ward says,—"The Rev. Basil Edwards is anxious to know if he is correct in supposing the Newland oak, of 47 ft. 6 in. in girth, to be the largest in England. Certainly it is not. The Cowthorp oak, in Yorkshire, more than 100 years in decay, has a girth of 60 ft., almost as much as the base of the late Eddystone Lighthouse. In 1718 it covered half an acre; a branch at that date torn off yielded five tons of timber." The inquiry of a recent correspondent as to the greatest height attained by the oak in England still remains unanswered. One specimen, 100 ft. in height, was named.

Rapid Artesian Boring.—At Johnson's cement works, Cliff, near Gravesend, Messrs. Le Grand & Sutcliff have driven a patent Abyssinian tube well by their new process. It was commenced at twelve o'clock on Monday, and by Wednesday afternoon 100 ft. was reached, through clay, gravel, and chalk. The time occupied in reaching this depth included three stoppages to pump samples of water, viz., at 64 ft., 77 ft., and 100 ft. respectively.

New Hospital for Newark.—A determination having been arrived at to erect a new hospital for Newark and the district, plans were solicited by the committee and referred to the surgeons of the establishment and Mr. Mawson. They selected three sets of plans,—those of Mr. Goddard, of Lincoln; Messrs. Freeman & Naylor, of Derby; and Mr. Bliss Sanders, of Nottingham; and eventually the plans of Mr. Sanders have been selected for execution.

The Bronze Metal Sashes referred to in our notice last week of the new building of the Society for Promoting Christian Knowledge were, we are informed, the work of Messrs. Bunnett & Co., 90, Queen-street. In the list of tenders this week we see this company's tender, 7,500*l.*, has been accepted for hydraulic lifts and other engineering work for the Asylum for Imbeciles at Darenth.

TENDERS

For engineering work at the Asylum for Imbeciles, Darenth, Kent, including tanks, water mains, and hydrants, hot-water circulations, main, steam, and gas pipes, lifts, sanitary and other fittings, for the Managers of the Metropolitan Asylum District. Messrs. A. C. Harston, architects:—

Stidder	£10,710	0	0
Bacon	10,199	0	0
Benham	9,995	0	0
Wontner Smith	8,970	0	0
Bower	8,964	0	0
Vigor	8,573	0	0
Siebe & Gorman	8,500	0	0
May	7,993	0	0
Clements	7,890	0	0
Lowcock	7,800	0	0
Dennis	7,789	0	0
Bunnett (accepted)	7,500	10	0

For joinery and fittings at the Asylum:—

Niblett	£1,941	0	0!
Gloucester Wagon Co.	1,284	5	3
Lascelles	1,253	0	0
Aviss	1,198	0	0
Mackey	1,129	0	0
Gumbrell	1,115	0	0
Emery	1,112	0	0
Braid	1,059	0	0
Avard	999	0	0
Adcock	939	0	0
Quinn (accepted)	700	0	0!

For pulling down and rebuilding warehouse, No. 23, Newgate-street, for Messrs. Drury, Jones, & Timberlake. Mr. G. Brinsley, architect. Quantities by Messrs. Strudwick & Mennier:—

Lingell, jun.	£3,890	0	0
Aitchison & Walker	3,610	0	0
Batley	3,545	0	0
Macey	3,515	0	0
Patman & Fotheringham	3,357	0	0
Howard & Newell	3,293	0	0
Parker & Ewins	3,270	0	0
Castle	3,249	0	0
Wilson & Exton	3,239	0	0
Green & King	3,230	0	0
Braid & Co.	3,200	0	0
Martin, Wells, & Co.	3,200	0	0
Priddle	3,200	0	0
Waynut	3,120	0	0
Beale	2,956	0	0
Nightingale	2,921	0	0

For restoring and enlarging Horne Church, Surrey. Mr. Gordon M. Hills, architect. Quantities by Mr. W. Smith:—

Cox	£2,428	0	0
Longley	2,290	0	0
Carrathers	2,233	0	0
Woods	2,100	0	0
Beale	1,910	0	0
Dives	1,819	0	0
Wallace	1,557	10	0

For shop-fronts and fittings in Finsbury Park-road, for Mr. R. D. Sadley. Mr. J. Groome, architect.:—

Smith, Bros.	£550	0	0
Nicholls & Co.	498	0	0
Shurmur	495	0	0

For rebuilding house and new bakehouse for Mr. Hands, at Roade, near Northampton. Exclusive of old materials to be converted, and building stone to be excavated for on the site. Mr. John Ingman, architect:—

Ireson	£400	0	0
Mardi	315	0	0
Goodridge	297	0	0

For erecting residence at Bexhill, for Mr. Henry Rose Sweer. Messrs. F. & J. Plowman, architects:—

Reeve	£660	0	0
Phillips & Co.	611	0	0
Ockenden	579	6	0
Parker	569	8	0
Vidler	524	0	0
Lambert	513	14	1

For alterations and repairs at Church-row Schools, Bethnal-green. Messrs. T. & W. Stone, architects:—

Beal	£570	0	0
Wire	540	18	9
Thomerson & Son	495	10	0
Howard	483	0	0
Higgs (accepted)	421	17	8

For alterations to No. 4, Slater-street, Commercial-road:—

Higgs (accepted).

For erecting new church of St. Andrew, Rowbarton, Taunton. Mr. J. Houghton Spencer, architect:—

Stephens & Bastow	£2,938	0	0
Escott	2,692	0	0
Wiscombe	2,643	0	0
Dinham & Verrier	2,254	0	0
Spiller (accepted)	2,190	0	0
Trevenna	2,024	0	0

For the erection of bullock-store, Southampton. Mr. Arthur Martin, architect:—

Dowdall	£375	0	0
Young	360	0	0
Sanders	247	10	0
Cole (accepted)	229	14	0

For the erection of new circus, Southampton, for Messrs. Batty. Mr. Arthur Martin, architect. Quantities by the architect:—

Watts (accepted)	£1,079	0	0

For shops and offices, Nos. 27 and 28, Jewin-street. Messrs. Ford & Hesketh, architects:—

Browne & Robinson	£3,360	0	0
Ashby & Horner	3,346	0	0
Ashby Bros.	3,276	0	0
Mark	3,150	0	0
Brass	3,135	0	0
Conder	2,999	0	0
Nightingale	2,981	0	0
Crabb (accepted)	2,919	0	0

For new schools, at Waterloo-road, Lambeth, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber :—

Williams & Son	£5,980	0	0
Shepherd	5,863	0	0
Downs	5,721	0	0
Brass	5,658	0	0
Thompson	5,535	0	0
Higgs & Hill	5,497	0	0
Tyerman	5,461	0	0
Grover	5,443	0	0
Hook & Oldrey	5,435	0	0
Marsland	5,345	0	0

For the construction of about six miles and a half of sewers, with the manholes, tanks, &c., for the Local Board for the District of Belgrave, near Leicester. Contract No. 1. Mr. Edward F. Stephens, engineer :—

Mackenzie & Co.	£11,200	0	0
Benton & Woodiwiss	10,233	8	3
Fotherby & Son	9,834	13	0
Bell	9,297	12	11
Botterill	9,255	0	0
Taylor	9,188	4	8
May & Facey	9,073	13	0
Wade	8,750	0	0
Small & Sons	8,547	13	0
Dodds & Co.	8,426	2	11
Nelson & Co.	8,295	0	0
Brannan, Kelly, & Co.	8,022	0	0
Coker & Sons	7,817	1	0
Young & Williams	7,700	0	0
Ethidge	7,654	12	0
Stevenson	7,680	0	0
J. & G. Tomlinson	7,680	0	0
Moss	7,519	3	0
Dowell & Co	7,500	0	0
Cox	7,408	0	0
Greenwood	7,325	0	0
Rayner	7,310	0	0
Cawdery & Sons	7,253	9	0
Wood & Son	6,978	0	0
Smart & Son	6,950	0	0
Dovener & Quesnel	6,600	0	0
Godfrey	6,545	8	9
Hickman & Son	6,486	0	0
W. & A. Rudkin	6,439	0	0
Dowitt	6,423	0	0
Holland	6,000	0	0
Atkinson	5,686	0	0
Lea (accepted)	5,530	0	0
Gowens	5,488	17	6

For the erection of an engine-house and boiler-house on the Irrigation Ground, Melton-road, Belgrave. Contract No. 2 :—

Greenwood	£614	0	0
Moss	598	7	0
Lincham	586	10	0
Minchin & Law	562	0	0
Butteriss	510	0	0
Smith	505	10	0
Major	463	0	0
Cooper	450	13	0
Flude	428	0	0
W. & A. Rudkin	421	0	0
Cox	395	10	0
Duxbury & Son (accepted)	390	0	0

For works at the Murray Arms, St. Paul's-road, Camden-square. Mr. J. R. Furniss, architect :—

Rowell	£1,400	0	0
White	1,290	0	0
Marks	1,239	0	0
Edgely	1,220	0	0
Grimwood & Sons	1,197	0	0
Temple & Foster	1,123	0	0
Anley	1,070	0	0

For shop-front and fittings at No. 3, King-street, Hammersmith. Mr. E. Clarke, architect :—

Sage	£795	0	0
Trent Bros.	750	0	0
Colls	718	0	0
Mark	718	0	0
Priestley	650	0	0
Howard	563	0	0

For the erection of a curate's residence at Ladock, Cornwall, for the Rev. Canon Wise :—

Julian & Sons (accepted)	£1,400	0	0

For new lavatories, retiring-rooms, &c., at the Vestry Hall, Turnham-green, for the Chiswick Commissioners :—

Sim	£499	0	0
Whitman	495	0	0
Nye	494	0	0
Haynes	480	0	0
Brumsden (accepted)	467	0	0
Haynes	450	0	0
Hatton & Co.	425	0	0

For factories for Chiswick Wall-Paper Works, Turnham-green, for Mr. Arthur Sanderson. Quantities by Mr. W. B. Catherwood & Mr. Bagg :—

Smith & Co.	£11,699	0	0
Trollope & Sons	10,572	0	0
Bywaters	10,404	0	0
Holland & Hannen	10,383	0	0
Nightingale	9,991	0	0
Lawrence	9,847	0	0
Colls & Sons	9,618	0	0

For shops, Charing-cross, for Mr. Davis. Mr. Willis, architect :—

Clemence	£537	0	0
King & Son	535	0	0
Aitchison & Walker	475	0	0

For the erection of a pair of houses in the Carlisle-road, Romford, Essex, for Mr. Joseph Taylor. M. G. Sparrow Harrison, architect :—

Bennett (accepted)	£415	0	0

For the erection of two villa residences and out-buildings complete, in the Alexandra-road, Penzance, Cornwall, for Mr. Samuel Elliott. Mr. J. W. Trounson, architect :—

Julian & Sons (accepted)	£2,350	0	0

"*Admiral Keppel*," *Hoxton.*—J. & H. Cocks (not "Cox"), accepted, 2,248*l.*

SIR,—With reference to your remarks upon the disparity in the tenders sent in for the work to be done at the New Vegetable Market, permit us to inform you that the "Martin & Wells" mentioned in your list are in no way connected with us. MARTIN, WELLS, & Co.
Buckingham Palace-road.

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H. H.—D. & D.—B. & A.—U. R.—W. H. L.—O. M. S.—A. L.—W. C. T.—H. N.—J. T.—E. P.—H. W.—A. M.—R. C. P.—C. H.—H. J. H.—D.—R. N.—Concrete Co.—H. J. S.—F. G. H.—W. H. P.—J. M. G.—L. & N.—E. A.—R. A. H.—W. A. P.—G. I. H.—W. S.—A.—H. & O.—F. J. P.—W. B.—C. & R.—T. R.—J. N. J. & Son.—W. B.—W. McL.—R. M. H.—B. D. (no).—F. H. (next week).—J. F. (a book containing patterns was published not long ago, and mentioned in our columns).—W. S. & Co. (send particulars yourselves and then your names may be correctly given. Architect of he had sent the list himself his own name could have been included). We have not the power of divination).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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Manufacturers of
CHARLES COLLINGE'S PATENT
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Self-Acting "FALL DOWN" GATE STOPS,
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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

VOL. XXXVII. No. 1917. SATURDAY, NOVEMBER 1, 1879.

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Exhibition of Sanitary Appliances, Croydon.



WE have already mentioned a number of the articles in the Exhibition of Sanitary Appliances opened in Croydon in connexion with the Congress of the Sanitary Institute; but the collection is such a good one that we deem it desirable to say a little more on the subject, and to speak again of some of the exhibits. The collection will remain open till the 8th inst., and we have no hesitation in advising architects and others interested in buildings and healthful arrangements to pay it a visit, and, beyond that, to remember what they see and apply what is good when the opportunity occurs.

S. & E. Ransome & Co. show, at Stand 5, specimens of their artificial stone, porous stone indurated by their solutions for preserving stone, and other specialities. These have been tested for some years, and evidence should now be forthcoming either for or against.

Hammond & Hussey, ironmongers, Stand 8, appear to have brought all their shop here, including some very good things; but this is not what we look for at such exhibitions. We want specialities.

Woollams & Co.'s excellent paperhangings, Stand 18; H. Saxon Snell's valuable duplex-lid water-closets, exhibited by E. Howard at Stand 19; Knell's Imperial window, described on another page; and Ellison's useful conical ventilators, Stand 45, we need only name in this second review. Mr. E. S. Hindley, of Bourton, Dorset (Stand 37), exhibits vertical boilers and steam-engines, together with a circular-saw bench, with boring-table.

Not mentioned by us last week in noticing Messrs. G. Waller & Co.'s exhibits (Stand 43), is a series of drain and gully cleaning tools, with improved spring bayonet joints.

Ewart & Son's Empress ventilators can be examined at Stand 49. Numerous other cowls, deflectors, and ventilators will be found in other parts of this collection, and compared.

For Symonds's patent automatic ventilator (exhibited in action by Mr. John Gaunt at Stand 56) it is claimed that the appliance affords a means whereby uniformity of temperature may be maintained without trouble. The ventilator is governed by a thermometer in electrical connexion with a small battery. It is stated to be applicable to the ventilation of theatres and public-halls, as well as to horticultural buildings, and is worth examination.

Mr. Thomas Waller (Stand 60) exhibits several appliances for heating and ventilation, and an important model of a hospital ventilated on his system, to which we referred in describing a similar exhibition elsewhere.

The exposition provided by the Concrete Apparatus Co., Stand 61, of Henley's patent, admits of full examination, and enables us to say that it possesses considerable advantages. It is easily set up without stays, and should extend the use of this excellent, and, in many situations, economic building material. The core for flues, which has an arrangement to lessen its diameter, so that it may be easily withdrawn from the material and raised for further use, is ingenious. Henley's sash-fastenings at the same stand are simple and good.

The Patent Victoria Stone has now been tested for ten years. Stop at Stand 62, and look at it.

Dreyfus & Co., at Stand 64, show their apparatus for drying rooms. Where time is an object, and health is deemed worth a little expenditure, it will be used.

The Silicate Paint Company, at Stand 73, show specimens of their various non-poisonous paints and permanent whites. The value of these materials ought to be known by this time, but it takes a long time to introduce a new thing.

Adams's adjustable faulight openers, are included in his exhibit at Stand 75: they answer very well where adopted. He also has, for French casements, a water-bar and a good three-throw bolt and fastener. Of his other exhibits we can only mention a very strong and simple door-spring and an excellent sash-fastener.

Among Messrs. Beard, Dent, & Hellyer's exhibits (Stand 79), briefly referred to last week, we may here mention their valve-closets, as applied in the royal palaces and many mansions and public buildings; their "Vortex" closet and trap in one piece of earthenware; their patent "Sluice" apparatus for water-closets and slop-sinks; and their "Cataract" supply or flushing-cistern for closets. This firm also exhibits water-waste preventers, urinals, lavatories, slop-sinks, and a useful nursery sink in one piece of white earthenware.

Doulton & Co. have a capital collection of their productions at Stand 87, as previously mentioned. Their fine-art pottery brightens up the whole affair, and shows how healthful is the beautiful.

The exhibition made by George Jenniags, at Stand 88, we have also mentioned in general terms, but two or three new things deserve special allusion. He has fitted up a bath-room, for instance, to show what can be done where space is an object; the washing-stand here includes a universal shampooing arrangement, which is very ingenious and clever. A concealed convenience for private billiard-rooms is also noteworthy; as is his intermittent flushing system, wherein the properties of the syphon are admirably utilised.

Smith & Co. (Old Kent-road) exhibit, at Stand 89, specimens of Innes's patent drain-pipe, sanitary stoneware, and terra-cotta, which show that they use an excellent clay and good moulds.

The rock-concrete tubes, manufactured by Sharpe, Jones, & Co., of which we have had occasion to speak lately, may be examined at Stand 99.

When you reach Stand 100, where Hamilton & Co. exhibit their patent Prismoidal Pavement and Floor Lights, go into the little dark room adjoining, and see how the rays of light through their lenses are directed by means of the angle at which they are moulded.

Brooke & Sons have some good Invert Blocks at Stand 109; W. Eassie, C.E., shows many instructive specimens of Bad Plumbing at Stand 115; and W. & S. Carsley exhibit Jewell's System of House Drainage and Ventilation at 124.

Legrand & Sutcliff, whose illustrations of their Abyssinian Tube Wells, Stand 126, we mentioned, have found abundance of water at Croydon. As at the Exhibition building the water-level stands 37 ft. below the surface; they drove a second tube in close proximity to the waterworks, and in about one hour went down between 30 ft. and 40 ft., the water rising to within 10 ft. of the surface, and coming from the chalk springs. The rapidity with which this favourable result was obtained caused much interest in the neighbourhood.

Mr. Thomas Ollis, of Liverpool, exhibits (Stand 128) a pillar letter-box, fitted with his automatic indicator showing the time of the next collection of letters. This little invention is exceedingly simple, consisting of a small revolving enamelled iron dial, figured in black on a white ground, with the times the box is cleared. A small aperture is made in the door of the letter-box only just large enough to show at once one time of clearance. Supposing the indicator to show that the next collection of letters will be made at 9 a.m., the postman, coming at that time, opens the box, takes out the letters, and shuts the door. The shutting of the door causes the indicating dial to make a partial revolution, showing that the next clearance of letters will be made (say) at 10.45 a.m. The general adoption of this invention would be of great public convenience.

At Stand 132, G. E. Pritchett, F.S.A., exhibits examples of Cellular Building. The walls are formed of agricultural drain-pipes, with a sinking on one side in the direction of their length,

so that they fit into one another when put together with mortar or cement. Horizontal joints are thus avoided; lightness and dryness are obtained. The pipes may, of course, be used for the passage of air, cold or warm. When used in the shape of floors, the old Roman mode of heating may be resorted to.

John Warner & Sons have a capital stand, No. 150, and the same may be said for Hayward Tyler & Co., No. 157.

Among the exhibits of the Patent Tube Company (Stand 151), we would direct special attention to Hancock & Heath's patent "Actual Measure Liquid Meter," which is shown at work. It is claimed for it (1) that it is an actual and positive measure; (2) that it works at any pressure, from a drip to 200 lb. per square inch; (3) that there are no bearings in the liquid; (4) that there are no bearings or stuffing-boxes; and (5) that there is no by-pass. It is simple in construction, and is worth the attention of water companies and users.

Messrs. J. G. Stidder & Co. (Stand 158), show a collection of their patent closets, urinals, bath-fittings, and water-waste preventers. Their side outlet closet, and, indeed, the whole of their exhibits, are well worth inspection.

The Sanitary Appliance Company exhibit at 160 Morrell's well-known and esteemed Patent Cinder-sifting Ash Closet. It utilises house ashes, throws the dust over the soil on each use of the closet, and leaves the cinders ready for reburning.

Pearson's patent trapless twin-basin water-closet (exhibited by Messrs. Capper, Sons, & Co., Stand 165), is the outcome, we believe, of continuous experiments in a large business establishment wherein more than 200 male and female assistants reside. In its latest form it includes a new method of connexion with the soil-trap, doing away with the old putty joint.

James Stiff & Sons at 169 show, together with their well-known sanitary appliances in stoneware and terra cotta, various drain disinfectors.

Wilcock & Co. make an exhibition at Stand 175, both constructive and decorative, which ought to bring orders. It includes, with capital sanitary ware, faïence in art designs, and glazed bricks, both white and coloured.

The Broomhall Brick and Tile Company have a stand, though we do not find the number of it in the catalogue, and exhibit their excellent patent roofing tiles, damp-proof course, and a specimen wall formed of concrete, and faced with their blocks. All these materials have passed the stage of inquiry.

We have surely said enough to justify our advice at starting.

GERMAN STUDY OF ITALIAN ART.

While it is to the *renaissance* of art in Italy that modern Europe primarily owes her knowledge of the earlier art of the great period of Grecian sculpture and architecture, it is to Germany that England and France may be said to be, in the first instance, chiefly indebted for their appreciation of the art of Italy herself. Winkelmann, at all events, was the first writer who, in his "History of Ancient Art," showed with what method and in what spirit it was possible to interpret the monuments of Greece and of Rome. The work of Winkelmann was received "like a revelation." Learned Germany threw her energies into the pursuit of the study thus inaugurated; and, in order to drink at the fountain-head, established at Rome, in the Capitol itself, an archæological school for German students. The German Institute at Rome has recently celebrated its fiftieth anniversary. The venerable M. Hengen presides over the epigraphic studies, and M. Helbig has charge of what is called "figured (or pictorial) archæology." Two works of great interest have been recently published by M. Helbig on the buried cities of Campania, under the titles "Wandgemälde der vom Vesuv verschütteten Städte Campaniens," and "Untersachungen über die Campanische Wandmalerei." M. Gaston Boissier, of the Académie Française, has given a charming paper on the subject of M. Helbig's dissertations in the number of the *Revue des Deux Mondes* for the 1st of October, our references to which, made under the impression of personal recollections of Pompeii itself, and of the numerous works in its illustration which adorn the literature of Italy, as well as that of our own country, will, we trust, prove of considerable interest.

At the present moment, indeed, M. Helbig has for a time turned his attention from the study of ancient art to that of prehistoric archæology. He has not failed to provoke criticism and comment by this temporary change of pursuit. How, it has been asked, could he abandon the solid ground of classic antiquity for the shadowy vagueness of prehistoric times? How can he quit the study of the *chefs-d'œuvre* of Phidias and of Polycletus for that of bronze celts and flint arrow-heads? In his latest work, "Die Italiker in des Poebene," M. Helbig has replied to these objections. After a long study of the art of the early Italians, he has turned to the subject of their industries. He has thought that it was incomplete to neglect the study of what is necessary to existence itself while engaged in the investigation of that which adds grace and beauty to life. Thus from artists he has come down to workmen; and in his desire to give a history of *work* among ancient nations, he has endeavoured to remount towards the origin of those nations, and to learn how they began to make use of metals, and to model in clay. In excavations in Upper Italy, in those strata known by the people of the country as *terramara*, relics have recently been discovered of a primitive society in which the use of iron was unknown. M. Helbig thinks that these relics are those of an early Aryan race, which he calls Italic, who were the ancestors of the Sabines, the Umbrians, the Oscans, and the Latins. In the great westward movement of race, he considers that these people, pressing ahead of those of their numbers whom they left to colonise Greece, settled in the plains of the Po, and were the veritable progenitors of the Romans. In the references of Homer to the priests of Dodona, who slept on the earth, and who never washed their feet, and in the ceremonies,—lingering as late as the reign of the Emperor Gordian, — of the *fratres Arvales*, performed by them when introducing an instrument of iron into their sacred grove, M. Helbig thinks that we may trace survivals of the habits or the rites of the people of the age of bronze.

The subject, however (to which the recent commemoration of the eighteenth centenary of the destruction of Pompeii gives unusual interest at this moment), to which M. Boissier chiefly directs attention, is that of the mural paintings of the Campanian cities. M. Helbig has published two works on the paintings of Herculaneum and of Pompeii, which are complemental to each other. One of these is a detailed catalogue, with descriptions as minute as possible, of these works of ancient art; which are classified, as far as possible, according to the subjects. In the other, the author discusses the questions arising from the study of the paintings, especially inquiring as to the school of the artists who produced them, and the degree of originality belonging to that school.

In the catalogue, no fewer than 1,968 paintings are classed and described. Of these, rather more than 1,400, or about three-quarters of the whole, are of a mythological character, or represent the adventures of the gods, or the legends of the heroic age. The proportionate numbers may be taken to indicate the degree to which the religious element entered into the life of the ancient Campanians. It was at the time when Christianity was first beginning to spread through the empire that the mural records of Pompeii were sealed up for the instruction of our own age. The landing of St. Paul at Pozzuoli (on the side of the Bay of Naples opposite to that occupied by Pompeii) took place twenty-two years before the overthrow of the latter city. But the only allusions which have been yet found on the walls of the buried cities to the Christian faith take the form of caricature. The immense difficulty with which the early preachers of Christianity had to struggle is illustrated in a remarkable degree by the observation of the constant representation, to the eyes of the children of Italy, of their gods and heroes. On these paintings the eyes of the children were fixed in youth. They were admired long before they were understood. They entered into the very life of the people, and they were naturally the objects of the fierce attacks of the Fathers of the Church.

It was, however, rather as emotional than as religious objects that the mass of these mural paintings should most truly be regarded. As the masters of the Rennaissance found tolerance for free studies of the nude, or of subjects more questionable than the nude, if they christened them by the sacred names of "Lot and his Daughters," "Joseph and the Wife of Potiphar," or "Susannah and the Elders," so did the Classic painters obtain whatever excuse was required for a free play of their amatory pencils by the use of the venerated names of Jupiter, of Apollo, or of Venus, even when they were coupled with those of Io, of Danae, or of Leda, of Daphne and of Adonis. Mythology lent a conventional propriety to works of art that were directly intended to stimulate the passional emotions. Of this nature, we find, were the great majority of the frescoes of Pompeii, even without taking note of those which the remarkable prudery of King Ferdinand II. walled up in a private apartment in the Museo Borbonico in Naples.

The remaining pictures, which are not of a mythological character, are either paintings of animals, dead or alive, landscape, or *genre*.

Among these, two well-distinguished classes are to be noted. In one, the subject, however simple, is treated with a certain elevation of sentiment. The laws of composition are regarded. Personages are so opposed to each other as to gain by the contrast. The painter has sought truth; but he has not denied himself the liberty of embellishing it. Amongst the numerous aspects possible he has chosen the most agreeable. Women are frequently represented,—at play, at the toilette, drawing, fishing, singing, dancing, or listening to tales of love. The attitudes are natural and graceful. The painter is an idealist. He has chiefly sought to represent beauty. In the other class of paintings realism dominates. The artist has taken no pains to select or to compose. He has taken his subjects at hazard from daily life, as it passed before him. He shows us the shops of the bakers, the mills of the fullers, athletes, gladiators, vulgar scenes of love-making, where the women wear those *toupets* which were the fashion at Rome under the Flavian emperors. This difference of style is so general that even among the pictures removed to the secret museum M. Helbig distinguishes those of a realist, and those of an idealist, style of impropriety.

The question arises whether this difference of treatment is to be attributed to the strife of two schools of art for public favour. M. Helbig is not of opinion that such is the case. Side by side with the differences pointed out are to be found yet more striking resemblances. The pictures resemble, far more than they differ from, each other. There are different degrees of skill, but there is but little evidence of difference of method or of doctrine. The difference in execution is attributed by the German scholars to the different situations in which the two classes of pictures are to be found.

In face of reality the artist became a realist. Thus if the master of the house was a passionate frequenter of the amphitheatre or of the circus, his walls would be adorned by representations of the combat or of the race, of gladiators or of athletes. Thus the fullers, the bakers, the innkeepers, the fishmongers of Pompeii adorned their shops and their dwellings with scenes appropriate to their respective trades. The working men with hooded tunics, just like the frocks of the mendicant monks at the present day, seated opposite each other at a small table; the sunburnt soldier, in enormous boots, covered with an ample cloak, who holds out his glass gaily to the inn-keeper, with the words, "*Da fridam pusillam*" (a little cold water); the women, scantily dressed, with their hair arranged in such strange curls; all these are the people of the country, reproduced to the life by the artist. We can imagine them to-day but little changed, in the streets of Castellamare or of Naples. As to that, by the way, M. Boissier has omitted to mention that the wild savage beauty which characterises many of the female faces and figures, and that in the mythological scenes as much as, or more than, those of daily life, yet lingers in the vicinity. Dark-eyed women, crowned with a full tiara of their own black hair, tressed in a mode peculiar to themselves, may yet be met with by those who are up betimes enough to catch them going to early mass,—walking like goddesses over the Piano di Sorrento, or in not a few nooks of the Apennines. Beauty, everywhere as rare as it is precious, is sharply localised in the Italian peninsula. In England the type of female beauty,—or at least what passes for such,—has changed since the commencement of our serial portraiture. The beauties of the reign of

Charles II. differ, as much in type and in feature as in attire, from those of the time of the Valois kings of France. We look in vain on the walls of the Academy of to-day for the graceful women of Reynolds or of Gainsborough. But in Italy it is not so. There may be the *lionne* of the hour, seen on the Corso at Rome, or on the Chiaja at Naples, no doubt, with her hair cut in the most boyish roughness, or dyed with the most fashionable hideousness. But for him who knows where to seek, the models of the great artists, not only of the Renaissance but of the Classic times, are to be found in their hereditary nooks. The colossal grandeur of the Venus of Melos lingers among the wives of the fishermen of Magna Grecia, of Bari, and the southward trending coast. The delicate features and peeping eyes of the angels and Madonne of Perugino yet characterise the women who are the descendants of that painter's models. The massive features and eagle glance and beak of the Roman type are unchanged among the Trasteverni; and at Sessa, near to Gaeta, lived and moved, not so many years ago, the very model of the Madonna of Santo Sisto. Among all these and others, local types of Italian beauty, the faun-like stare of the women of Sorrento is peculiar to themselves. We find it represented in the heroines of the mythological scenes on the walls of Pompeii.

In these scenes, moreover, is to be remarked one of the great features of what we may call the mercantile art of Italy of the present day. The great rule is reproduction. Whether we take the "Sacrifice of Iphigenia," the "Rape of Helen," the "Departure of Briseis from the Tent of Achilles," or any other of the best known and most famous classical groups, the idea is always the same. The head of Achilles may have more or less of sorrowful grandeur, according to the genius of the painter, but the motive of the group is always alike. Some famous painting or statue, represented over and over again,—in copies of copies of copies,—was the original of each mural group. It may be said that the painter worked as much by heart, in the sense of rote, as did the *improvisatore*. As the language of Homer, or as the odes of Horace, were repeated from mouth to mouth,—often, no doubt, with quaint attempts to reproduce the exquisite grace or the rolling music of the original, so was it with the ideals of the great artists of Greece, freely reflected on the fresco work of the Pompeian artist.

We fully agree with M. Helbig in attributing the motives of the great majority of the mural paintings of Pompeii to a Grecian rather than a Latin source. It must be remembered that we are here in the country of Virgil. The little room in which the great Latin poet breathed his last is, indeed, shown at Brindisi, on the opposite shore of the Peninsula. But what is called the tomb of Virgil still exists near the mouth of the Possilippo tunnel, and is visible from the hills above Pompeii. And the name of Virgil has clung so closely to the Campanian soil that in the dark ages of monkish ignorance it echoes as that of a mighty magician, who founded on a magic egg that Castel d'Uovo that yet guards the harbour of Naples. It is thus a remarkable confirmation of the Grecian origin of the paintings of Pompeii that in the entire catalogued number of nearly 2,000, but five are included that represent incidents from the "Æneid." And of these one is a caricature, in which a young ape, in a coat of a mail, and embarrassed by a sword, carries an old ape on his shoulder, and leads a little ape by the hand. It is thus that the Pompeian artist represents the flight, from burning Troy, of the ancestor of the Julian *gens*. In another case, the same is taken from the 12th Æneid. Iapyx, the old surgeon, is extracting the dart from the leg of Æneas, while Venus, descending from heaven, brings the magic dittany that was to effect the cure. The subject is poorly wrought out: the attitudes of the figures are constrained, the grouping is awkward,—the artist was certainly not at home in the work. The contrast is very great between this painting and that of the "Sacrifice of Iphigenia,"—one of the finest, and also one of the best preserved, yet discovered at Pompeii. This painting, as well by its excellence as by the peculiar defect of representing the less important actors on the scene, Diomedes and Ulysses, as smaller than Agamemnon and Calchas, is attributable to an ancient period of art, for its design, if not for its execution. But the antique style of treatment is rare, and the great majority of the paintings are attributed by M. Helbig to a Hellenistic or Alexandrian school.

It is probably rather to the influence of the taste of the time than to that of the school of the artists that we must attribute the fact that the painters of the Campanian cities selected their subjects rather from idyllic and elegiac, than from dramatic, poetry. Love, as represented by Euripides in Phædra, is a tyrant who rides on a lion. It is as a mixture of gallantry and of sentiment that Love was regarded most complacently by the luxurious Campanians. Œnone abandoned by Paris, Ariadne deserted by Theseus, Adonis dying in the arms of Venus, are among the most favourite subjects for representation. But the artists have taken care that the grief or the melancholy which they indicate shall not interfere with the beauty of the heroines. "Their despair," says M. Boissier, "assumes very elegant attitudes: they are inconsolable, but charmingly dressed. They wear collars and double bracelets, and their hair is bound in golden nets. Rarely, moreover, does there fail to appear, in some corner of the picture, a mocking little Cupid who adds a laughing grace to the scene, if it threatens to be too severe." The *Amoretti* are in greater abundance on the walls of Pompeii than they are even in the eighteenth-century scenes of Watteau or of Boucher. They form the court and guard of Venus, they serve at her toilette, they present her with jewels, they lead Mars to her presence, they steal away his helmet and sword. They mourn over Adonis. They conduct Diana to the cavern where Endymion is asleep. They whisper mischief in the ears of the traitorous Paris, or Theseus. In many paintings there are no actors but *Amoretti*. They occupy themselves in every craft, sport, or study. They dance, they sing, they romp. They guide a car drawn by swans. They harness a pair of lions or of tigers. They strip the clusters of grapes from the vines; they tread them in the wine-press. They grind corn in a rude mill, of which the revolving beam is drawn by a little donkey wreathed with garlands. They buy, sell, go to the market, and are so fond of fishing with the line that they often induce some fair nymph to share this gentle toil.

One of the prettiest of these scenes is that of "Loves to sell." An old woman is taking a little *Amoretto* out of a cage, holding him by the wings, like a tame bird, and offering him to a girl, who has already provided herself with a pet of that charming and insinuating race.

This idyllic treatment tends to lower the religious ideas of the celestial scenes, and to present them rather under the guise of fable than of truth. Thus, in the "Judgment of Paris," Venus openly flirts with the shepherd, like a Roman woman of fashion. While Polyphemus is deploring his solitude on the sea coast, an *amoretto* arrives on a dolphin, who presents him with a *billet-doux* from Galatea. Mars and Venus have taken the precaution of stationing a watch-dog to give warning of any intrusion on their *tête-à-tête*. Narcissus, instead of looking into the rocky pool in which he met his fate, is regarding his reflection in an elegant basin, which an *amoretto* is filling with water from a long-necked vase.

Some of the most famous pictures of antiquity are recognisable, according to the very probable opinion of M. Helbig, among the mythological or allegorical groups. The two famous pictures of Nicias, Andromeda and Io, are among them. The first is twice reproduced at Pompeii, in extraordinary proportions; the second, only once found there, has been also represented in the house of Livia, in the Palatine. Two little frescoes at Pompeii represent Medea when about to murder her children. These are regarded as imperfect copies of the *chef-d'œuvre* of Timomachus. By the side of Medea her two sons are playing at pitch and toss under the care of their pedagogue. This subtle contrast is thought to be taken from the original picture. Medea is but feebly rendered; but at Herculaneum is found a Medea on a larger scale, in which the mingled emotions of grief, rage, and vengeance are represented by the touch of genius. This figure, which is alone, is one of the finest relics of ancient painting. By comparing the noble treatment of the Sorceress, as thus preserved, with the grace of the subsidiary figures in the group at Pompeii, we may obtain some idea of the character of the pictures of Timomachus.

We regret to part from the pleasant company of the German Professor and of the French Academician. The subject is one of a charm that is unique. No rolling back of the shadows of the past is so sudden and so complete, though but for a little space, as that which enables us to realise how the Campanians of 1800 years ago lived, and loved, and dwelt. To those who are familiar with the exquisite beauty of the scenes which they inhabited, with the charm of the climate, with the appliances that make the six midsummer weeks, in which it is too hot, not only to work, but even to think seriously, a period of luxurious indolence and delight, such studies as those of the German archæologists have a rare value. The old, old, story of human life is told, over and over again, by the painters of Pompeii. But it is told, not in the language of modern Europe, or of northern climates, but with all the inexplicable charm of the music of Horace.

A HOME OF PRE-RAFFAELLITE ART.

The recent discovery of the foundations of the temple of Apollo, on the site of which was built, more than twelve hundred years since, the far-famed abbey of Monte Cassino (already referred to in these columns) and the communication of this interesting fact to the French Academy of Inscriptions and Belles-Lettres,* have strangely enough passed without having attracted their merited share of attention. The interest of the monastery which the learned St. Benedict founded in the wild Abruzzi district, and during the deepest shades of those dark ages which succeeded the foundation of the Christian religion, appeals not alone to the archæologist, the churchman, the artist, and the historian, but to the literary student and the Classical scholar, whose debt of gratitude can never be sufficiently paid to the patient Benedictine monks, whose uninterrupted task, from their earliest foundation, had been to collect and transcribe the manuscripts in their possession, and to whom the modern world owes, to quote Hallam, "almost all we do possess of Latin classical literature, with the exception of more ancient manuscripts."

Our debt of gratitude to the Benedictines is the deeper when we consider that they preserved in written integrity the Latin tongue, long after it ceased to be a living language, during the centuries when all but a few churchmen were plunged in ignorance, unable to sign their names,—an era in which Charlemagne and Alfred the Great were startling exceptions, in a period overshadowed by the gloomy cloud,—that only darkness which exists,—ignorance, as the noble sentiment of Shakspeare has so simply expressed it. Such a position was further rendered almost unavoidable by the rarity of books and their extreme costliness. When, in the beginning of the seventh century, the Egyptian papyrus, which had been for so many centuries used by the scribes, ceased to be imported into Europe, there appears to have been almost a total want of writing materials until the close of the tenth century, when linen-made paper began slowly to supplant the small supply of parchment, a material so costly that more than one ancient work has been erased, and hence for ever lost, in order that the precious skin might be re-used. Such *palimpsests* are now treasured in our national collections, but their interest and history were discovered only some two centuries ago. The copying of books thus painfully and laboriously continued for generations, at length, in the fourteenth century, became a branch of trade; indeed, booksellers appear to have existed as early as the twelfth century, and by the following century we find in the Italian universities numerous professional copyists.

But thus brought to within a few years of the invention of printing, we are far from the distant days when St. Benedict penetrated, in the sixth century, to the still paganised and undisturbed corner of Italy which now bears the name of Monte Cassino, where in his day existed a temple of Apollo, the remains of which have recently been laid bare. Here the earnest monk founded a chapel to St. John the Baptist, and here he gathered about him his few faithful followers, by whom, on his death, his bones were laid by the side of those of his sister, Sta. Scholastica, after a life of struggle against the

* It was in these terms that Dom Anselme Cap'et, a French Benedictine of Monte Cassino, wrote to the Academy not long since:—"At the moment that I pen this letter, have just been laid bare, within the precincts of the abbey, the bases of the old Temple of Apollo. This splendid discovery has filled us with joy. The base is certainly Roman, and an inscription, in magnificent characters, exhumed at the same time, will serve to fix the date of the monument."

tide of barbarism which in its impetuous advance was overthrowing the last remaining vestiges of past civilisation, the whole fabric of its creation, history, literature, art, and poetry. It was during such times that St. Benedict gathered round him a few monks, and enjoined on them the obligation of manual labour and intellectual work. These monks, to use the language of M. Chavin de Malan, were to clear Europe by agriculture and by preaching; as missionaries and labourers they were to accomplish their double task.

Monte Cassino, the cradle of the children of St. Benedict, received the last sigh of the pagan worship in Italy, and it saw founded on its summit the mother-house of all the monasteries of the West; it was amidst these rocks that letters, flying before the advancing tide of barbarism, succeeded in hiding the writings of Homer, of Aristotle, of Plato, of Herodotus, of Virgil, Tacitus, and Livy,—the whole genius of antiquity. It was at Monte Cassino, among those men who had quitted all the grandeur and pleasures of the world to honour in silence and solitude the labour of the hand, till then abandoned to menial slaves, that St. Benedict applied in principle, and published, his rules for monastic life, destined to become the general law of all the monks of the West.

Such was the life work of the early Christian saint, the founder of Monte Cassino; but hidden away as was this home of learning on the classic road that runs from Rome to Capua, in the quiet country of the Abruzzi, Monte Cassino was to suffer from the stormy vicissitudes of the dark ages. Too lengthy would it be to tell in detail how the monastery was successively sacked and pillaged, the monks dispersed, or how again they returned and with them the continuation of their patient toils; how Carloman, the son of Charles Martel and brother of Pepin, retired to the quiet of these cloisters; and how lived and laboured the good Paul Warnefriede, the author of the history of the Lombards, to whose active influence is to be traced the spread of letters in France; for Charlemagne, who had appreciated his learning, on a visit to Monte Cassino had invited him to his court with other monks, who sowed the seeds of learning and of letters throughout Germany and the Western Empire. Placed as the monastery was in a strong position, we find it played no mean part in the great quarrels between the Empire and the Papacy, and each succeeding abbot was as much a political character as a learned ecclesiastic. In the midst of this turmoil, the monks toiled on, volume after volume was saved from destruction, chronicle after chronicle continued, and the quiet life of the cloister remained undisturbed, in its shadow moulding more than one famous antiquary, Muratori and Mabillon foremost among the number. So the monastery existed peacefully till the Revolution disturbed its calm; but though the monks were dispersed and their property seized, Monte Cassino remained untouched; its architectural features and its valuable library a rich mine of information for the patient archæological scholar; its interesting copy of Dante of 1343, among other invaluable illuminated documents, its copies of Norman laws, and its collection of antique charters, diplomas, treaties, and other documents connected with the history of the Normans and the Angevins. The painful toils of the scribe of the Middle Ages have now been supplanted by the printing-press and lithography, and more than one choice work has been published at Monte Cassino* within the last few years; the "Illustrious Women" of Boccaccio, an Italian translation of the fourteenth century, being foremost among these; while the worthy monks have lovingly reproduced, by the aid of chromolithography, not a few of the choice works of art they possess in their early missals.

But it is not alone a literary and archæological fame that Monte Cassino possesses. In the history of art more influence is traceable to the early encouragement given within its walls to the Greek painters than is generally admitted; and it is to the careful studies of the Abbate Luigi Tosti, the historian of Monte Cassino, that we owe the knowledge of this fact. The eleventh century was the golden age of the monastery of St. Benedict, and, under the active rule of Desiderius, Monte Cassino marked for itself a point in the history, not alone of the church, but of art and letters. Desiderius, to quote Tosti's words, the forerunner of the love for the arts which was shown in later times by the popes, summoned to a council in his abbey all, even from distant Byzantium, who were skilled in a knowledge of the beautiful. Painters, sculptors, architects, and musical composers flocked to this happy abode, and in the midst of the turmoil of strife concerning investiture and simony, absorbed in the ideal of Christian art, they raised a basilica which, from its mountain-top, could salute with a mother's pride the far-off beginnings of Santa Maria del Fiore.

The last few years in Monte Cassino have seen a revival of these days of the past, and the monastery which saw the loving and lovely labours of the fresco-painters and the illuminatists of the century that preceded Giotto and Fra Angelico, is now glowing with the work of a number of modern Benedictine monks, inspired, as far as is possible in the midst of this busy nineteenth century, with the tradition of those pre-Raffaellite days.

The recent visit of a correspondent of the *Gazetta di Torino* has enabled us to gather from a source, excellently informed, some interesting facts connected with the Monte Cassino of the nineteenth century, but the critical appreciation we quote always under the strictest reserve.

At Monte Cassino has been revived in all its glory the Christian art of the pre-Raffaellite days that preceded and were contemporary with the labours of Cimabue and Giotto, Simon Memmi, Taddeo Gaddi, the Orcagna, Benozzi Gozzoli, and the Da Gubbio. The doubtfully successful labours which Overbeck and his enthusiastic contemporaries attempted, have been continued. The Benedictines have sustained the struggle of Christian art against modern art, and have constituted a school. The head of this school in Germany is Don Desiderius Lenz, at present at Monte Cassino, where he directs and assists the works which the Benedictines have recently, and at great expense, commenced, aided in their labours by Dom Gabriel Wieger, Dom Lucas Steinetz, and Dom Leander Haller, religious painters, all Germans, who have set themselves to this task of love to ornament the spot actually inhabited by St. Benedict himself and his disciples.

This portion of the monastery, from the earliest times, has been constantly held in veneration, and for this reason probably left untouched; it remained buried in the midst of the grandiose edifice which crowns Monte Cassino. Earthquakes and the excesses of revolution came at the beginning of this century to destroy the pile, when France expelled the Bourbons, and, *more solito*, Bonaparte sacked the abbey,—for the injury and ruin are not alone Mediæval. The damage was successfully repaired, but the injury caused by the earthquake of 1875 was such that the fathers felt the absolute necessity of restoring the convent from top to bottom, the more so as the centenary of St. Benedict was approaching, in fact, is to be celebrated next year.

It was thus that they bethought themselves of restoring for this artistic and religious solemnity the earliest portion of the monastery, a building which had remained almost hidden under the ruins.

The expenses of this undertaking have been, as may be imagined, considerable, and the 200,000 lire (8,000*l.*) that have been necessary, it has been difficult to collect, but the order has succeeded in terminating the designs. On the scanty indications afforded by the Dialogue of St. Gregory have been discovered and unearthed the foundations and the plan of the dormitory of "il Santo" and the entrance-door of the former dwelling of the early Benedictines, together with a portion of the old Roman tower occupied by the founder of the order. Inspired by the antique renown of Monte Cassino, the order has determined to make of the approaching centenary not alone a religious, but an artistic rejoicing.

At Beuron the Benedictines have a school of art in which are educated a number of painters, sculptors, and architects; these the Padri Cassinesi have called in to their aid, and, for three years past, the fathers have come thence to work and transform the ancient and modest primitive dwelling-place of the simple-minded St. Benedict into a grandiose monument, such as monuments were in the days when whole nations zealously helped in the erection of cathedrals, sanctuaries, and abbeys.

The Benedictines are eager to renew the artistic miracles of the dark ages, to erect a stupendous edifice which shall be worthy of "il Santo," whose memory is fraught with interest as a pioneer of civilisation, a benefactor of art and of letters.

The buildings, which are at present almost on the point of being completed, are divided into two, the upper and the lower; in the upper of these, in addition to the architectural work executed in the beautiful travertine which has been used in the rest of this historic monument, each room is painted in fresco, executed in accordance with the canons of the school anterior to Raffaelle. The subjects of these paintings have been naturally taken from the life of St. Benedict and the Bible, and these legends depicted on the walls are not an unmeaning series of paintings, lacking, as does so much pseudo-religious work, the smallest spark of veneration, possessing no artistic value. There is to be remarked in them all a perfect unity of conception, such as is noticeable in much that the German artists produce, and such as the Italians have not as yet succeeded in obtaining. They are all Benedictine artists, the authors of these works, and all Germans. Their names have been already mentioned.

The pictures of the upper building represent, in order, the most remarkable events of the life of St. Benedict; the representation of the death of this holy man is the work of the Fathers Gabriel Wieger and Steiner. According to our authority, these *affreschi* have all the truth of the work of the old day, and breathe a life which few have succeeded in obtaining among the modern fresco-painters, even in Belgium and Germany.

Two rooms are already entirely completed, and the cartoons for the whole have been prepared. The principal room, which is in the old tower, will be decorated with a more important fresco, in which will appear SS. Benedict and Scholastica, and the Virgin Mary. In the ante-chamber is a David playing before Saul, the work of D. Desiderius Lenz and D. Haller.

The visitor who will be present at Monte Cassino at the approaching centenary will have enjoyed an intellectual treat if, in addition to the inspection of the wonderful old monastery, its library and its frescoes, he can induce the Padre Priore,—an American,—to play on the organ of the convent one of his numerous compositions so well known to the musical amateurs of England and France. The panorama which one enjoys from the eminence of Monte Cassino is impressive. On the hill-side, winding between two mountains, the road which leads to Mola di Gaeta, below the abbey, the quaint and historic castle of San Germano, and the quiet, peaceful plain. On the slopes of the surrounding hill are a few miserable hamlets, alas! haunted by the spectre, typhus, the scourge of the uncultivated wastes of the rich Italian peninsula.

In the travellers' book are to be seen the names of Umberto of Savoy (the reigning King of Italy), of William E. Gladstone, and of Henry Wadsworth Longfellow, by whose pen is traced a poem.

* It is to the Benedictines that we owe the first reproduction of the Bayeux tapestry, thus opening up a new field of archæological research.

SANITARY ENGINEERING.*

The President of the Congress, Dr. Richardson, has explained to you in his lucid address that the life of man on this globe might reasonably be expected to extend far beyond that to which he now ordinarily attains, provided he were removed from all the conditions unfavourable to long life which encompass him. Of these conditions some are hereditary, some arise from habits, and are personal to the individual. But there is another large class of conditions which are the direct result of the circumstances to which man is exposed in consequence of living in communities. All living beings are in a continual condition of change, which results in their throwing off from the body matters which poison earth, air, and water, unless space, time, and opportunity are afforded for the counteraction of these deleterious effects. Epidemic diseases are observed to occur in very different degrees of intensity at different periods, amongst groups of population exposed to certain unhealthy conditions. Sometimes they take the form of pestilences, and immediately afterwards, the conditions remaining the same, they subside and all but disappear, again to renew their ravages at some future period. A careful examination of their phenomena has led to the discovery that whilst we have no knowledge of the causes which made these epidemics break out at one time and not

* By Captain Douglas Galton, F.R.S., read at the Sanitary Science Congress, at Croydon.

at another, there are certain well-defined conditions which influence most materially not only their actual intensity, but also their frequency. Thus, intermittent fever was observed to disappear from places which it formerly ravaged after drainage of the soil and improved cultivation. It was next discovered that by cleanliness, fresh air, and diminished crowding the worst forms of pestilential fever, which used to commit ravages similar to those of the plague, disappeared entirely from English gaols. The breathing of foul air contaminated by the breath of other persons appears to be the special agent which predisposes people to consumption and diseases of that class. Zymotic diseases,—namely, fevers, diarrhœa, cholera, dysentery, &c.,—are most intensely active where there is overcrowding, and the repeated breathing of air already breathed, such air being further contaminated by moisture and exhalations from the skin. It is to the physiologist and the chemist that we must look for the causes from which these baneful effects arise, and what are the conditions which should be altered to prevent or remove them. The engineer steps in after these causes have been pointed out, and it is for him to design the methods of prevention or removal. Five hundred years ago the population of the whole kingdom was only equal to the present population of the metropolis. When the first recorded census was taken in 1801, the population of England and Wales was less than 9,000,000.; it has now reached nearly 25,000,000. We are crowded together as we were never crowded before; our pursuits are more sedentary, our habits more luxurious. Houses increase in number, land is more valuable, the green fields more remote; our children are reared among bricks and paving-stones. It is daily becoming more and more impossible in the question of health for any one member of a community to separate his interest from that of his neighbours. If he places his house away from others, the air which he breathes may receive contamination from the neighbouring district; the dirty water which he throws away may pollute the stream from which his neighbours draw their supply; and when a population congregates into towns, the influence of the proceedings of each individual on his neighbour becomes strongly apparent. On these and similar grounds it is the interest of every person in a community that every other member of the community should live under conditions favourable to health. Each year, as the population increases and as dwellings multiply, so does the importance of promoting these conditions increase; and so long as preventible diseases exist throughout the country we must not delude ourselves with the idea that we have done more than touch the borders of sanitary improvement. Books innumerable have been written upon the question. Physiologists have invented every conceivable theory; patentees have invented every conceivable description of apparatus; engineers, architects, and builders, overwhelm you with professions of their knowledge of sanitary principles, and millions of money have been spent in furthering the schemes they have devised; and yet, in spite of all these efforts, there are few houses and very few towns where you would not easily detect some grievous sanitary blunders. I believe this to be due, in the first place, to the fact that the majority of men prefer anything to thinking for themselves. They like to obtain their knowledge as they do their hats—from a shop, ready made. In the second place, the sanitary education of the country has not been brought into a system. People seem to have thought that sanitary knowledge could be picked up anyhow. Yet the problems which the sanitary engineer and architect are called on to solve require for their solution a knowledge of the higher branches of physics, chemistry, geology, meteorology, and kindred sciences, and entail as close habits of observation as any other branch of the engineering profession. In the third place, it has always seemed to me that the system under which the Government advances money for sanitary works, whilst of great *primâ facie* advantage in one point of view, yet has its disadvantageous aspect. But it may be asked, What is sanitary knowledge? It is frequently assumed that drainage and water-supply are the principal subjects which are embraced in the term; but these only make up a small part of the subject. At the present time there does not exist any treatise which brings to a focus the various problems of mechanical and physical science, upon which sanitary knowledge is based. The variety of these problems will be best illustrated by a few instances. A sanitarian tells us that health depends on pure air and pure water. If a site is to be selected, it requires a consideration of its position with respect to its surroundings. It requires a knowledge of the temperature of the air and of the soil; what are the prevailing winds; what is the amount and incidence of the rainfall; and what is the percolative capacity of the soil. The engineer cannot interfere with the general conditions of a climate, but he may produce important changes in the immediate surroundings of a locality; he may modify the condition and temperature of the soil; he may control atmospheric damp; he may arrange for the rapid removal of rainfall, or he may cause the rainfall to be retained in the soil, to be given out gradually in springs, instead of passing away in torrents to flood the neighbouring districts. In the Island of Ascension, the power of retention of water in the soil exercised by the planting of trees was exemplified. That island formed a convenient point for ships to call at for obtaining water on their way home from the East Indies. It was a barren rock, to which formerly the water had to be conveyed in ships. About fifty years ago trees were planted on the island. These have thriven, and now the rain which falls, instead of passing away at once into the atmosphere by evaporation, is retained in a sufficient quantity to enable the water to be collected for the supply of the ships which call at the island. The engineer may modify the incidence of disease. Algeria, perhaps, offers some of the best illustrations of the manner in which engineering operations have remedied the evils of the proximity of marshes. Bona stands on a hill overlooking the sea; a plain of a deep rich vegetable soil extends southward from it, but little raised above the sea level. The plain receives not only the rainfall which falls on its surface, but the water from adjacent mountains, and is consequently saturated with wet. The population living on or near this plain suffered intensely from fever; entire regiments were destroyed by death and disease. It was at last determined to drain the plain. The result of this work was an immediate reduction of the sick and death-rate. Fondouc, in Algeria, is situated on sloping ground, immediately above the marshy plain of the Mitidja; mountain ranges rise immediately behind it. It was first occupied in 1844, and in the succeeding year half the population was swept away by fevers and dysentery. During the first twenty years the mortality was 10 per cent. The surrounding marsh has since been drained and cultivated, and the mortality now is 20 per 1,000. Similar instances may be quoted from our own possessions in India. In the northern Doab districts in the north-west provinces of India the excessive fever mortality for which these districts were noted has been mitigated by extensive drainage works, by means of which the water which formerly stagnated in the land is now led away by continuously-flowing streams. When a site has been selected, it is necessary to consider the question of the subsoil. The air does not cease where the ground begins, but air permeates the ground and occupies every space not filled by solid matter or by water. Thus it is the same thing to build on a dry gravelly soil, where the interstices between the stones are naturally somewhat large, as to build over a stratum of air. The air moves in and out of the soil in proportion to barometric pressure, and with reference to the wind. If there is much water in the soil, the air carries with it watery vapours, and is cold, and such a site is called damp. A site with a high-water level is, as a rule, more unhealthy than a site with a low-water level; but a site with a fluctuating water-level is most unhealthy. The sanitary engineer can control the water-level in the soil, or construct works to remedy the evils of a wet site. There is also a considerable quantity of carbonic acid in the soil. It varies at different depths; it has been found to vary greatly even in localities in close proximity. The processes going on in the soil in these several places are therefore probably very different, and each will have its influence on the ground air. One evil arising from a foul subsoil is very apparent. In cold weather the temperature of a house is warmer than that of the outer air. If a house is built on soil containing deleterious matters, the impure air will be drawn into the house by the action of the warm air of the house. The sanitary constructor takes measures to check the passage of air between the house and the ground under and around it. What can be more dangerous, what more wicked, than the everyday proceedings, in the metropolis and elsewhere, of those persons who purchase a building site, who extract from it the healthy clean gravel and sand which it contains, allow the hole to be filled up with rubbish, and then proceed to build upon it? When the site has been selected, the sanitary architect has to consider how he will distribute buildings over it. The deteriorating effect of residence in towns has been frequently noticed. It has been calculated that of the adult population of London, 53 per cent.; of that of Birmingham, 49 per cent.; of that of Manchester, 50 per cent.; and of Liverpool, 62 per cent. were immigrants from the country settled in the town, and that the majority of the incomers were men and women in the prime of life. The mortality in these four towns averaged 26 per 1,000, against 19 per 1,000 in the adjacent country districts, the mortality of persons under the age of fifteen being 40·7 per 1,000 in these towns, against 22 per 1,000 in the country districts. When we consider the causes of low health in towns, it becomes apparent that the extraordinary degree of unhealthiness is unnecessary. The superior healthiness of the model lodging-houses is due in a measure to the careful provision of sanitary arrangements, but principally to the fact that the numerous stories in these buildings, whilst affording accommodation for a dense population on a limited area, are provided with free through ventilation, and allow of ample space all round for the circulation of air, as well as to the fact that impurities are not allowed to be retained in the open area round them. The next step in knowledge of sanitary construction is to learn how to obtain pure air in a building. What is pure air? What are the impurities which make the air of a town so different from the fresh air of the country? The volume of sulphurous acid from coal thrown up by our fires into London air is enormous. A cubic yard of London air has been found to contain 19 grains of sulphurous acid. The street dust and mud are full of ammonia, from horse-dung. The gases from the sewers pour into the town air. Our civilisation compels us to live in houses, and to maintain a temperature different from that out of doors. What are the conditions as to change under which we exist out of doors? The movement of the air is stated in the Registrar-General's reports to be about twelve miles an hour on an average, or rather more than 17 ft. per second. It will rarely be much below 6 ft. per second. In a room the conditions are very different. In barracks, in a temperate climate, 600 cubic feet is the space allotted by regulation to each soldier; and when in hospital, from 1,000 to 2,500 cubic feet to each patient. If it were desired to supply in a room a volume of fresh air comparable with that supplied out of doors, it would be necessary to change the air of the room from once to five times in every minute, but this would be a practical impossibility; and even if it were possible, would entail conditions very disagreeable to the occupants. Hence, to maintain the comfort and temperature we desire indoors, we sacrifice purity of air. Therefore, however impure the outer air is, that of our houses is less pure; and it may be accepted as an axiom that by the best ventilating arrangements we can only get air of a certain standard of impurity, and that any ventilating arrangements are only makeshifts to assist in remedying the evils to which we are exposed from the necessity of obtaining an atmosphere in our houses different in temperature from that of the outer air. On the other hand, why should we not do our best to obtain as pure air as we can? It has been recently shown that the soot and many deleterious matters from smoke may be easily removed by passing the smoke through spray on its way to the chimney. This would remove much impurity from town air; but until such a system of purifying town air is adopted, we can improve the air in our houses by removing the suspended matter from the inflowing air by filtration. Moreover, these suspended matters exist in much smaller quantities at an altitude; at 100 ft. they are greatly diminished, at 300 ft. the air is comparatively pure. In Paris, the air for the Legislative Assembly is drawn down from a height of 100 ft., so as to be taken from a point above many of the impurities of the town atmosphere. That is a reasonable and sensible arrangement, and might be usefully adopted in public buildings in towns. In the Houses of Parliament, the so-called fresh air is taken from courtyards

on the street level, from which horse traffic is not excluded. It may be summed up that, whatever the cubic space, the air in a confined space occupied by living beings may be assumed to attain a permanent degree of purity, or rather impurity. One of the chief difficulties of ventilation arises from the draughts occasioned thereby. Every one approves of ventilation in theory, but practically no one likes to perceive any movement of air. The open fireplace creates circulation of air in a room with closed doors and windows. The air is drawn along the floor towards the grate; it is then warmed by the heat which pervades all objects near the fire, and part is carried up the chimney with the smoke, whilst the remainder, partly in consequence of the warmth it has acquired from the fire, and partly owing to the impetus created in its movement towards the fire, flows upwards towards the ceiling near the chimney-breast. It passes along the ceiling, and, as it cools in its progress towards the opposite wall, descends to the floor, to be again drawn towards the fireplace. Thus the open fire, whilst continually removing a certain quantity of air from the room, which must be replaced by fresh air, causes an efficient circulation of the air remaining in the room. Moreover, a room warmed by an open fire is pleasanter than a room warmed by hot-water pipes. A warm body radiates heat to a colder body near to it. The heat rays from a flame or from incandescent matter pass through the air without heating it; they warm the solid bodies upon which they impinge, and these warm the air. With complicated buildings, such as theatres, legislative assemblies, prisons, &c, the problems of ventilation are more difficult and intricate, but all are based on the same principles of the movement of air. Another group of questions relating to sanitary construction are: What are the best materials for the house, and the best distribution of those materials? How can the less pure air from the ground be prevented from entering the house through the basement? What is the effect of the porosity of materials on the health of the inmates of a house? What is the law which regulates the loss of heat through walls and windows, skylights and roofs? One instance of the sanitary importance of the quality of materials will suffice here. Dust and impurities adhere less to glass of a good quality than to glass of a bad quality, because the surface of the latter becomes rough much more rapidly than the surface of glass of good quality. But there is one branch of work connected with water supply and drainage in which practical knowledge is especially necessary, and which has not been so prominently considered as it should be. I mean the details of the plumber's work, and the work connected with house-drains. However well you may design your house-drains, the whole of your design may be rendered nugatory by apparently trifling mistakes or carelessness in the details. Public attention has been so largely directed to water supply and drainage that I cannot refrain from offering a few remarks upon these subjects, which at the present time necessarily fill the public mind. We derive our whole water supply from rainfall. If it falls on an impervious surface, it runs off in rivers above ground; if it falls on a pervious surface, it runs off underground in rivers whose direction of flow will depend on the geological formation. However much our population may grow, we cannot, therefore, increase our supply; but we may store it and utilise it if we obtain a knowledge of where it falls and where it flows to. It is thus the function of the sanitary engineer to trace the course of these water supplies. But rain does not fall equally over the whole country. On the contrary, as has been so well shown by Mr. Symons, there is in some localities in England an enormous surplus, and in other localities a bare supply, and the incidence of these supplies has no reference to the spread of population over the country; thus it requires something beyond local organisation to arrange for a distribution of the supply in accordance with the relative wants of the country. It is on these grounds essentially the duty of the Government to take up this question. The Government have taken into their hands the more theoretical question as to when storms may be expected; but they have not taken in hand the question which has an enormously greater practical importance, viz., that of watching over our water supplies, although it is on the careful use of these that the health of the whole country depends. The first step towards obtaining a clear understanding of the question is to bring all the information on this subject to a focus. At the present time there are certain important public departments, the information collected by which bears materially on the sanitary condition of the country; and yet these departments are scattered about indiscriminately, as if with the intention of preventing the information they already possess, and could so easily add to, from being brought to any useful focus. The departments to which I allude are,—First, the Ordnance Survey; second, the Geological Survey; third, the Registrar-General's Department; and fourth, the Meteorological Office. The first step is to bring these departments under one general head, so that the information they can severally afford may be properly correlated; and the Local Government Board would seem to be the department under which they would most naturally fall. On the question of sewage, time would not allow me to enter; it is sufficient to say that this must remain always a problem for the sanitary engineer, because no one system of sewage could be adopted universally; the peculiarities of different localities require different methods of treatment. Where land at a reasonable price can be procured, with favourable natural gradients, with soil of a suitable quality and in a sufficient quantity, a sewage farm, if properly conducted, is apparently the best method of disposing of water-carried sewage. In the case of towns where land is not readily obtained at a moderate price, some of the processes, based upon subsidence, precipitation, or filtration, produce a sufficiently purified effluent for discharge, without injurious results, into watercourses and rivers, provided the volume of water into which it is discharged is of sufficient magnitude to effect a considerable dilution. But, as a rule, no profit can be derived at present from sewage utilisation. My object in this *résumé* has been to endeavour to show how extensive is the field of knowledge which has to be traversed by those who undertake the duty of building healthy houses, and of watching over the arrangements for securing the health of towns. The acquisition of sanitary knowledge covers a vast area of ground, and requires special study. The universities of Oxford, Cambridge, and London instituted examinations in public health, but with little success; few candidates came forward, and indeed no candidates offered themselves for Oxford and London at the last examination. Until some means of obtaining the education can be afforded, it is of little avail to establish examinations, or to offer to give degrees. The Sanitary Institute, whose *raison d'être* is to promote sanitary progress, has from the first recognised the importance of developing sanitary education, and has now decided to come forward as its champion. With this object the Sanitary Institute proposes to organise a course of lectures to be delivered in the practical branches of this question during the coming winter, and in this effort they are about to make for the public good, the Council trust they will receive the support of all those interested in sanitary progress. There is, however, a further step required in order to produce throughout the country a due recognition of the importance of sanitary knowledge, and this step should be at once taken. The medical officers of health, who are the advisers of the local authorities on questions connected with public health, have obtained a title to their position in the medical profession by virtue of certificates from qualified Boards of Examiners. But local surveyors, whose duty it is to advise local authorities on matters of sanitary construction, are not required to produce any such certificate of qualification. The summary of the conclusions to which I would lead you in this address are, therefore—1. That endeavours should be made to cause the adoption in educational establishments of courses of systematic education in sanitary science for those who undertake the business of sanitary construction. 2. That no person should be appointed to the office of surveyor of a Local Board or Corporation without a certificate from some duly-qualified educational institution of proficiency in practical sanitary science.

Paisley Drainage. — The new drainage scheme for the southern portion of the town of Paisley has been "inaugurated." The works have cost about 10,000*l*. Mr. Peter Quin was the contractor.

METEOROLOGY, GEOLOGY, AND HOUSE BUILDING.*

I PURPOSE taking the branches of science mentioned on our programme and pointing out some of the points of contact between these branches of science and sanitary practice. Let us take, first, temperature. Meteorologists can tell us the range of temperature to which we are liable in this country; but who will point to even one house so constructed as to resist equally well extremes of heat and of cold? As regards the majority of houses, built solely in order to be sold, it is patent to every one that this consideration is entirely neglected. The walls are so thin that they allow the internal temperature in summer to run up to 80 degrees or more, and in winter down far below freezing. There is rarely any outlet for the foul and heated air when it has found its way up the staircases; landlords never think of providing outside venetian blinds, and the rooms which face the sun become veritable heat-traps. Everybody knows that foul and heated air ascends, and yet (owing to the rare adoption of French windows) nineteen-twentieths of all the rooms in England have no outlet within 1 ft. 6 in. or 2 ft. of the ceiling, where, consequently, there is a permanent stratum of foul and heated air; and, as if with a desire to aggravate this evil, a quantity of gas is burned in the rooms, and the deoxygenised air rises into this stratum, and remains there. Perhaps, if it were possible to compel every builder to remain for an hour with his head close to the ceiling of the rooms he built, an alteration would not be long deferred; unless, indeed, the foul air killed them all. Everybody knows all this, but few indeed are the cases in which any attempt is made to remedy the evil. In cold seasons it is equally discreditable to hear on all sides complaints of the inconveniences arising from frozen water-pipes, and from their leakage when a thaw follows. This reminds me of another case in which a little meteorology would have saved several hundred pounds and much inconvenience. An engineer laid out the waterworks of an inland English town, and, either from economy or want of experience, he put his mains only 1 ft. below the ground. He made no inquiries as to the temperature of the soil at that depth. A great frost came; the temperature at 1 ft. went below 32 degrees, and so large a proportion of his pipes was burst that it was virtually a case of new mains throughout the town. Another winter accompaniment which has occurred for hundreds of years is always a source of great confusion,—I mean a heavy fall of snow. No one seems to know what is to be done, and the last idea is in many respects the worst. The tramway companies introduced the plan of scattering salt in order to dissolve the snow, and the owners of private houses have imitated them by scattering salt on the pathways in front of their houses. The result is that the pavements are covered with rotten slush of an excessively low temperature, so cold as to lame dogs temporarily when passing over it, as to be injurious even to the well-shod, and almost unbearable to the shoeless wanderer. It would be very little trouble to sweep this soft slush into the gutters, and I think any one using salt and not removing the resultant slush should be not only liable to a small fine, but should infallibly be fined. There is one subject upon which I am desirous of speaking somewhat strongly, but which is not exactly meteorological. It is the terrible unhealthiness of our churches, theatres, and other places of public assembly. I am no chemist, or I would put before you the results of the analysis of the air in many public gatherings; but no figures are needed to prove what everybody knows. As regards churches, it is not for me to apportion the blame between ecclesiastical architects and churchwardens; but I cannot understand a preacher looking at the gradual drowsiness spreading over his congregation and not reflecting that it is quite as much the natural result of poisoning by bad air as of any lack of interest in his ministrations. I should not be at all surprised to learn that the opening of a few ventilators in the roofs of some of our churches was found to produce, not only more attention on the part of the congregation, but an increase in the amount of the collections. I am not prepared to say that all theatres are badly ventilated, and I have not much experience of the galleries, but I went once into the top

* From a paper on the subject by Mr. G. J. Symons, F.R.S. Read at the Croydon Sanitary Congress.

gallery of a building which we were told was to combine the good qualities of all such-like edifices,—I mean the New Opera-house at Paris,—and the heat and foulness of the compound which the audience had to breathe were such that I cannot understand any one going there a second time. At more than one place of amusement a very rough-and-ready but effective cure for this evil has been adopted by constructing the roof upon a framework which can be rolled off so as to leave the audience roofless for a few minutes. I doubt, however, whether our medical friends would not consider such a remedy worse than the disease. I do not myself presume to advocate any mode of ventilation, but may, perhaps, be allowed to suggest the question, whether it is advisable to trust (as is at present generally done) wholly to the current generated by the difference in the specific gravity of fresh and effete air. There are two reasons for distrusting this mode of ensuring ventilation: first, in order to ensure its greatest efficiency, the path of the inflowing air must be as free from friction as possible, and freedom from friction is too often co-existent with draughts; secondly, ventilation, depending on differences of temperature, or more strictly upon differences of specific gravity, is evidently least efficient in hot weather,—the very time when the general public are most clamorous for an extra supply of pure air. People of the *cui bono* class are, I believe, yearly becoming more rare, but there are thousands still who would doubt what possible use it could be to know how many miles of wind blew over Greenwich yesterday, and a still larger number would fail to see what possible bearing such a fact could have on sanitary matters. Mr. Haviland, however, would tell us that both the direction and strength of the wind ought to be considered in laying out the plan of a town or of large additions to existing ones; and in the past, if not in the present, great care was taken that country residences were protected from objectionable winds by belts of trees. Moreover, questions of ventilation, both for public buildings and especially for hospitals, are almost wholly determined by means of small air-meters, which are merely delicate anemometers. Lastly, it is a rather curious fact that upon the summit of that modern Tower of Babel, the Queen Anne mansions, Mr. Hankey has put an anemometer. I wish he would put another in the courtyard, and publish the records of both. Joking apart, I hold that if premises are to be carried to that height, the street must be proportionately wider; for the air in a street of ordinary width, but with buildings of that height on each side, would scarcely ever be changed; its only purification would be by the passage of such portion of the rainfall as escaped falling against the houses. The notion of walking through a future London composed of streets of their present width, and houses as high as Mr. Hankey's, is the reverse of agreeable. Take, again, ozone. I am not going into the chemical question, nor the strictly meteorological one; but in spite of all the demonstrations of the inutility and inaccuracy of the old-fashioned ozone test-papers, I think that they were giving us more useful information than we seem likely to obtain from the more scientific methods which have been declared to be alone of any use. We want some rough-and-ready test of the purity and healthiness of the air in different localities, but at present I know of none. Among several objections urged against the value of the indications given by the ozone paper, the most serious is this:—Chemists of high position said that there was no certainty that the discoloration was in the least degree due to ozone, and I believe proved their case by tinting the papers by half a dozen processes when no ozone was present. Perhaps, however, we shall find that the papers give us useful information, even if they tell us nothing about ozone. I once arranged with friends residing in various parts of the metropolis,—one in the City, one at Whitehall, others at Chelsea, Notting-hill, Blackheath, Camden Town, and Camberwell,—for three months' continuous observations of the amount of ozone. We took all the steps that we could to secure uniformity, even taking the precaution of cutting each ozone slip into portions, so that all the stations used the same slip on the same day. At the end of the month the portions were returned to me and mounted as one slip for each day. That they in the least indicated the amount of ozone I am not going to assert; but this I can safely say, that no matter from what direction the wind blew, the papers in that quadrant of the metropolis first reached by the wind were always more darkly tinted than those in the centre or in the opposite quadrant; those at the central stations were scarcely ever tinted. Similar results, were, I believe, obtained by Mr. Glaisher during the cholera epidemic in 1854, and, though no special arrangements were made to ensure identity of paper, I do not think that the accuracy of the results was thereby vitiated. That there is a wide difference in the healthiness of different localities is indisputable, and that there is more in it than is revealed by either barometers, thermometers, hydrometers, rain-gauges, or weathercocks, is equally certain. Something may be learned by the chemical analysis of large volumes of air; something, indeed a good deal, is being learned at Paris by drawing a stream of air over glycerine, and examining microscopically the particles of dust deposited. But we want something more handy. It is too bad that there should be no easy means of determining the relative life-supporting properties of the air in Hyde Park and Seven-dials. And now with regard to mists and miasma, before proceeding to consider mists in their relation to public health, I take one moment to say that if any of my hearers have ever seen in this country the presiding genius of mists,—I mean the *ignis fatuus*, or "will o' the wisp," I shall be greatly obliged by their favouring me with full particulars. I only make this request because, in the course of a long search, I have not met with one person who has seen it. Here, however, we are concerned with mists and their influence upon health. You doubtless remember the remark of the country doctor, who, walking up a hill, passed from the valley mist into the clear air on the hill-side, and, turning to his companion, remarked that that white sheet covered all his best patients. I wish we had statistics of the mortality in some of our old monasteries,—Fountains, Tintern, or Rievaulx,—for the localities are equally noticeable for their beauty and their mists; and although the regularity of the monastic life might conduce to longevity, I should have thought such damp localities very ill-adapted for such residents. It is often suggested that our ancestors were stronger than we are, and that, as much of their time was spent in the open air and in hunting, they were less susceptible to the sanitary evils of their houses and castles. But the monks, even those who were not actually studious, did not lead by any means an equally active, open-air life. Were they, then, able to throw off the effects of damps and mists, or did they fall victims to them without knowing the cause? We, however, with all our nineteenth-century artificial and high-pressure life, know perfectly well that a "lovely spot enbosomed in trees and encircled by hills," is usually characterised by a damp, misty, cold, and stagnant atmosphere. We know that these conditions are not adapted for vigorous health; and yet how many persons will rush blindfold into the arms of the doctor, simply for the sake of a pretty view! Persons generally select residences, and the sites for new ones, when the weather is fine and the sun is shining. There is no reason for their discontinuing the practice, but many selections would, I think, be abandoned if they would spend an hour or two of the twilight and night in examining the distribution of the mists in the locality. You may think I attach undue importance to mists, and I will, therefore, give you a short chapter of personal history. A relative had a great desire to spend his autumn holiday in a beautiful, hilly, and well-wooded part of England. Unable to obtain quarters on the high ground, he was induced to take a very clean little cottage on low ground; not, however, very near the river which ran through the little town. At first, four of the family went down, and three of them were speedily attacked with diarrhœa; another relative followed, and was similarly attacked; and finally I arrived myself. I was told of the state of affairs, and advised not to touch the water,—on which all the blame was laid. The last train had left; and, moreover, I felt desirous of investigating the case. After dark we went out for a little stroll, and found the air excessively damp; in fact, there was a white sheet over the whole place. Next morning I was as ill as the rest of the party. I had with me some permanganate of potash, and tested the water from two or three sources with it; but the colour remained absolutely unchanged; so I suppose there was not much the matter with the water. One of the party started off after a doctor: the doctor was out, but the assistant said directly, "Oh no; it is not the water; strangers are almost always attacked like that, but they soon get better, or else they go away. You see," he added, "this valley is supposed to have been under sea-water not long ago, and all the fields from here to the coast are terribly misty and agueish." I need hardly add that it was not many hours before the whole party migrated to a high, dry, and sandy soil; but it was only by sleeping in the locality that the evil was incurred, and had we only seen the spot by daylight scarcely a suspicion of evil would have crossed any one's mind. Closely connected with the existence of mists is the amount of evaporation, a subject upon which we are in nearly the same unsatisfactory condition as I have explained to exist respecting ozone. Some very elaborate, rather costly, and I believe extremely important observations upon this subject, were commenced more than ten years since, and have been conducted under the supervision of Mr. Rogers Field. We are still waiting for his full report on the subject. . . . . Lastly, I come to the rain—and here the points of contact with everyday life and with sanitary matters are so numerous that it is hard to know where to begin and harder still to know when to stop. The amount of rain is, I need hardly say, a most important element in all sewage questions: I say "all" advisedly, because even where attempts are made to exclude rain-water from the sewers, no one claims to have succeeded perfectly; and even if he did, the rain question would very likely come in again as affecting the administration of a sewage farm. The remarkable absence of some classes of diseases during the period in 1879 when summer was expected to occur may have been partly due to low temperature, partly to the absence of the usual supply of unwholesome fruit; but I think part must also be ascribed to the scouring of the streets and drains by the superabundant rains. And there is something else washed by the rain, greatly to the sanitary advantage of residents in towns—I mean the air. . . . . As to the bearing of geology on sanitary matters I think there is only one point upon which I need offer any remarks. The theory which I desire to submit will probably strike you as being wrong, if not ridiculous. It is this: a house on a clay soil is not necessarily more unhealthy than one on gravel. One great mistake in house building, both in town and country, is in grudging a few courses of bricks, and so letting some of the rooms be at, or close to, the level of the soil. With reference to the relative merits of clay and gravel, I would just submit two facts,—(1) the clay under a well-drained house becomes so dry as to be almost dusty; and (2) although the probabilities are in favour of gravel becoming even dryer than clay, yet should any offensive matter get into a bed of gravel, it would circulate more rapidly than in clay. With reference to gravel and clay I may give one hint, based upon experience which I regret, but which may be useful to others, though it is another chapter of personal history. Upwards of twenty years since, my father was suffering from consumption, and after two or three places had been tried, the physician and medical attendant advised that he should go to the upper part of Richmond, because it was high,—it was away from the river, and on the gravel. A suitable house was found, and it was considered very satisfactory, because near to it some new houses were to be built, the foundations had been excavated, and all the removed soil was a fine gravel. The patient became rapidly worse, and after one or two consultations he was removed to Blackheath, where he speedily improved, and lived through the subsequent winter. Some time after taking the Richmond house, we found that the gravel was not only of no advantage, but, as it appeared to us, the reverse, for there was a thin layer of gravel lying on a bed of clay, as was shortly proved by the foundations, which I have just mentioned, being found with several inches of stagnant water in them. All this is doubtless very obvious; but, at any rate, it may save others distress by warning them not to be satisfied with a merely superficial layer of gravel.

Dublin.—A three-light window has been placed in Christ Church, Leeson-park, Dublin, in memory of the late Dr. Palmer. Three events from the Life of Joseph are illustrated in the glass, which has been designed and executed by Messrs. Heaton, Butler, & Bayne.

THE DANGERS OF BAD PLUMBING.*

During the Exhibition which was held in Leamington in 1877, I contributed some remarkable specimens of mal-construction in plumbing, and also some curious examples of leaden pipes into which holes had been gnawed by rats while seeking ingress to a house. I also showed several pieces of sheet lead which had been completely perforated by worms that had previously destroyed the unseasoned roof boarding underneath. In the present Exhibition I have laid upon a table some still more remarkable examples of defective and dangerous plumbing; and I may add that each specimen which I exhibit has been associated with death and disaster in some shape or other. In the few remarks which I will now proceed to make, I will endeavour to classify under the heads of Imperfect Jointing and Improper Treatment of Wastes, the sources of some of the evils complained of, so that each specimen may point its moral.

Imperfect Jointing.

These faults will mostly be found in soil-pipes. For instance, there is the slip-joint, properly so called, in which one portion of the soil-pipe has simply been dropped into another, without any filling-up material or solder. A necessary result of this is that the sewer-gas escapes at all times into the house, when the soil-pipe has to be erected in the interior of the house in the ordinary wall chases. Even when the soil-pipe had been led outside the house I have come across notable examples in which the sewer-air has escaped from these open joints, and found an entrance into the house by way of the open windows. Cases of death due to this improper delivery of soil are very common indeed, and the victims are mostly servants who sleep in attics, the windows of which open above these pipes. Sometimes, even when the joints have been properly made with solder, but when the soil-pipes inside the house have been insufficiently tacked to the wall or insufficiently supported, the weight of the soil-pipe has sufficed, by dragging action, to open the joints, with the usual bad consequences. It is not an uncommon occurrence to lay bare soil-pipe joints which have been made with putty, and tied over with canvas; or red-lead joints, without the slightest attempt at soldering; and when these joints were dry an open annular seam has appeared, which has allowed an exit for the sewer-air. Joints of this description are almost invariably found in the older class of houses, and I have exhibited, on several occasions, pieces of soil-pipe, not more than 2 ft. in length, upon which could be noticed each one of these samples of improper jointing. I need hardly say that faults of this kind are mainly attributable to the carelessness of the workman, who has been content with the worst of patching, instead of insisting upon an entire replacement of the worn-out pipe, as was his duty. I am only too well aware that very often the builder has orders from the owner to carry out the very cheapest repairs; but this ought not to be a valid excuse, because it is neither workmanlike nor businesslike to treat so serious a matter as a soil-pipe in this way, and he ought to know very well that a soil-pipe cannot fulfil its duty properly unless it can sustain a column of water inside without trickling at the joints; and when the builder observes, upon taking down the casing, that a pipe has become eaten into holes by sewer-air, or abnormally thin, he should know that no amount of patching he can devise will remedy the defects, seen and unseen, in such a case.

The corrosion of soil-pipes into holes is almost entirely due to the action of sewer-gas, and will always be found present in some portion or other of an old soil-pipe which has never been ventilated. Where disinfectants of certain kinds are freely used, the decay of the lead is greatly accelerated. When a soil-pipe of this description is laid bare, the safest way is at once to remove it, and to replace it by a drawn lead soil-pipe of proper thickness, duly ventilated by a continuation of the same diameter of pipe up to the roof, remote as possible from windows and chimneys.

There is another thing which a builder has a perfect right to refuse to do, and that is to lead the soil from a water-closet into a rain-water pipe which descends inside the house, or has its extremity near any window. This is a very frequent cause of illness, even when such a rain-water pipe, made to do double duty, is led outside the house; as, for the most part, it will be found that the upper extremity delivers foul air perilously near the inmates. During the past year I have known cases of death traced to this very fault. The evil factor in such improper treatment is multiplied when the pipe has not been made of lead, but only of lengths of thin cast-iron down-pipe, which cannot properly be jointed or made air-tight. I say that no responsible builder should ever consent to the erection of such inadequate soil-piping, or only upon the specification of an architect or engineer who dare risk it under certain conditions. Nor ought any one to make use of an iron soil-pipe outside the house, unless it be thoroughly disconnected at the foot, and a current of fresh air thus continually passed through it.

Improper Deliveries of Wastes.

A very large percentage of the waste-pipes of sinks are led direct into the drain, with only a bell trap inside the room, which is oftener than otherwise broken, or with its upper portion removed for the convenience of passing down, quicker than is needful, the pantry and other sink wastes. As a result of this, and especially in butler's rooms, where he perforce sleeps, in order to be close to the strong-room, a regular highway for foul air is established into the rooms, bringing with it sicknesses of many kinds. It is the same too often with housekeepers' rooms and servants' halls, in which sinks have been placed, and servants who are often obliged to pass the greater part of the day in such rooms suffer in consequence. The only remedy against this state of things is to cause the sink to deliver over the trapping water of an open gully outside the house, no matter what distance the pipe may have to go to reach the exterior of the building, and to provide, as well, a trap underneath the sink itself, in order to keep out the cold air and the effluvium arising from the decomposing wastes in the gully. This latter is a point which is often overlooked.

The above state of things is sufficiently bad, especially in a large household, too profusely equipped with sinks in the basement; but it is, perhaps, nothing to be compared to the improper entries of housemaids' sinks into soil-pipes or D-traps of closets. In nearly every instance when a foul smell is discernible upstairs it will be found to arise from this improper connexion between these wastes and the soil system. I am not now speaking of properly-constructed housemaids' sinks, with ventilated traps underneath, which are purposely constructed for the removal of bed-chamber slops of all kinds, because these may be allowed in such cases to enter a properly-ventilated soil-pipe; but I refer rather to sinks merely intended to remove away the drips from hot and cold water taps, in which case the danger is greatly enhanced by the sinks being placed in passages close to bedrooms and in proximity to the great air-shafts formed by the staircases. These kinds of sinks should invariably deliver in the open air, and may sometimes be conveniently and safely led to the upper head of a rain-water pipe.

Another disgraceful system which obtains in many houses, even of very modern construction, is the leading of the cistern-waste or overflow into the trap of a closet. I have this year exhibited some startling examples of this dangerous practice, and I must most earnestly call attention to the fact that drinking-water is contaminated in this way to an extent which must be incredible to any one who has not made the sanitary inspection of houses his special study. I have come to the conclusion that the wisest way to avoid the dangers consequent upon this improper treatment of a cistern-waste is to treat the latter as an overflow, and point it through the wall in all cases where a standing-waste cannot be led to deliver in the open air.

The few remarks which I have made upon the subject of the delivery of housemaids' sinks into the D traps and P traps of closets are equally applicable to the wastes and overflows of baths. An examination of my pilloried specimens will show that this practice is far too common. One can observe there the traps of closets, into one of which have been led the waste of a cistern supplying drinking and closet-flushing water, the waste of the housemaid's sink, and the waste and overflow of a bath. As may be observed there also, the wastes of baths, sinks, and cisterns have been taken into both cheeks of one D trap. It is bad enough to place the bath in the same room as a closet, and I wonder how architects can persist in this evil association, but it is something horrible to think that the delivery of the bath-waste is into the very foulest conduit. And yet this latter mistake is one very constantly practised by plumbers who at least ought to know better, and who ought to feel themselves in a position to refuse to carry out such a practice, even if ordered to do so by a clerk of works. I have known instances in which death has entered a household by way of a bath-pipe thus dangerously connected, the danger being enhanced by the frequent contiguity of bath-rooms to bed-rooms.

Nor can it be said that these errors of judgment, or worse, apply only to old houses, for I exhibit samples of closet-traps, with bath, cistern, and sink entries, which are palpably but lately from the plumber's hands. In the majority of cases the excuse cannot be urged that these mistakes have been perpetrated in order to save money or to scamp the workmanship, because many of these traps are really excellent specimens of skilled labour, and in some of them the wonder is how the painstaking workman could have brought his soldering-iron into play at the wiped joints in so small a space. The faults are entirely, in such instances, due to total ignorance of sanitary principles, and to a slavish following out of the traditions of the workshop.

When we come to the water-closet itself, we are all bound to admit that there is a great deal still to be done in providing a faultless apparatus. Most horrible examples of death-dealing closets are to be found, especially in the area vaults of our best town houses. I should, above all, like to see abolished the filthy D trap, with its furrings of fœcal matter, the huge iron container, with its linings of ancient ordure, and the trap at the foot of the soil-pipe, with its excremental cess-pit. I would even like to see abolished all traps whatsoever to closets, and I am convinced that if plumbers will only follow the lead of our more advanced sanitarians in this respect, or at least more largely patronise the earthenware closets, that much solid good and absence from disease would accrue to the community. It is almost criminal for builders still to persist in the use of the pan-closet, which, to my knowledge, was condemned by Mr. Chadwick nearly forty years ago, and how they can insist on fixing this dangerous contrivance without a ventilating pipe, is more than I can fairly understand. I will not believe for a moment that its use is continued in order to sell the D trap with it, the making of which occupies the time of the apprentices, or to provide for a regularly recurring bill of repairs; but those who persist in its use lay themselves open to the charge that they are introduced for no other purpose. I think the sole reason for the patronage it obtains is to be found in ignorance, and a false estimate of its economy and cheapness of erection. And I am persuaded that if our builders would only take to heart the lessons taught by the inspection of the much better articles seen at the present day in sanitary exhibitions, they would refuse to have anything more to do with it.

There is another fault concomitant with the use of nearly all closets, and that is the leading of the waste of the tray or safe under the apparatus into the closet-trap. It is almost invariably taken there in the commoner houses, and in a very large percentage also of the better-class houses even yet, and one-half the smells which encounter one on entering into a closet-room is due to this lamentable want of common sense and forethought in dealing with the closet essentials.

It is, perhaps, somewhat too much to expect that our tradesmen are all acquainted with the necessity for the disconnexion of the house-drains from the sewer by means of any of the numerous disconnection traps, constructed on various systems, now in the market. But until such a trap is provided between the house and the sewer, at some part of the house-drain, the work has been only half done. Nor can there be obtained any absolute safeguard from sewer-air or house-drain gas, or any thorough ventilation of the horizontal drain or vertical pipes, until some method of absolute disconnexion be practised, and fresh air taken in at such a trap in order to be discharged at the ventilating pipes. No plumber, however perfect his work, can hope to witness really satisfactory results from his labour until this disconnexion has been achieved.

* By Mr. W. Eassie, C.E. Illustrated by samples in the Exhibition of Sanitary Appliances at Croydon.

"SANITARY FALLACIES."*

Sanitary science, properly so-called, is a branch of medicine, or, perhaps, I should rather say, a sister science to pathology, for it is the science which studies the causes of diseases, and its place among the sciences is between those of physiology,—the science of life,—and pathology,—the science of disease. We see, therefore, how it is that sanitary science, or hygiene, could only become a science in quite recent times, as it was impossible that it should be scientifically studied until physiology and pathology, upon which it is based, became scientific themselves. The more a branch of knowledge approaches to the character of a true science the more readily are fallacies detected. Although even in the highest science, the most certain branch of human knowledge, mathematics, in connexion with which one would think no fallacies could exist, these are still to be found keeping their hold upon the minds of a certain class of investigators, as witness,—the supporters of the theory that the earth is flat and that the sun goes round it, the circle-squarers, and the searchers after perpetual motion. If in the highest and most perfect science the power of fallacies does not cease to exist, can it be wondered at that in the youngest, which I will not, however, call the most imperfect, although fallacies which reigned triumphantly while it was yet only an art,—the art of preserving the health,—and before it became really worthy to be dignified by the name of a science, have been exposed, there are still many others which have a certain, and, in some instances, a most important influence upon the mind of large masses of the community,—an influence necessarily for evil? On the other hand, I must point out at once that what is necessary and inevitable in one generation, or at one period of time, may be a mischievous fallacy at a future period and in an advanced state of knowledge. . . . . .

This grand fallacy, the mistaken union of theology and medicine, continued through Mediæval times; and as late as the year 1511, Henry VIII. ordered that physicians and surgeons should be examined by a bishop or vicar-general, with the assistance, it is true, of "such expert persons as they shall think desirable," while the power of granting the degree of Doctor of Medicine remained in the hands of certain high ecclesiastical dignitaries, to a much later period, even if it does not nominally exist now. Through all these dark ages, when the principles of preventive medicine laid down by Hippocrates, Galen, and Celsus were unknown to the multitude, and untaught and unpractised by those whose business it was to teach and practise them,—when (more shame to them still) the regulations laid down in that book of which they were the jealous guardians, to which they alone had access, of which they proclaimed themselves the expounders and the teachers, were neglected as completely as if they had never been ordained,—filth reigned supreme, the dirty houses were crowded together in narrow streets and courts; the rushes which formed a carpet for the floors were never removed, but piled layer on layer, forming a series of filthy strata often many years old; no attempt was made to check the spread of infectious diseases by the isolation of the sick or by any of the other methods prescribed by Moses; and what was the result? In those ages, and the succeeding ones,—the partakers too in the results brought about by this lamentable and gigantic fallacy,—plagues held triumphant sway. In the fourteenth century, the Black Death, after travelling over the eastern part of the Old World, reached Europe, and soon arrived in England. It spread over the whole country, and caused such a frightful mortality, that only a tenth of the inhabitants are believed to have remained alive, while "Europe is supposed to have lost an aggregate of 40,000,000" (Dr. Guy). As I have pointed out elsewhere, the only people whom this disease seemed to spare, were those who, however imperfectly, followed the regulations prescribed by Moses, the Jews, whose immunity was so marked that they were accused of spreading the disease by poisoning the water, and were burnt alive by thousands in various parts of Europe. The Black Death reappeared as the Oriental Plague during the sixteenth and seventeenth centuries, and the last time that it appeared in England, in the year 1665, it killed between 70,000 and 80,000 persons in London alone.

But besides the Oriental Plague, a frightful prevalence of other diseases, some of which, as the "sweating sickness," are now unknown; while others, as typhus, scurvy, influenza, dysentery, cholera, and even small-pox, have lost much of their terror, must be included among the consequences of the fallacy which had overspread the world. This fallacy was removed by the gradual divorce of medicine and theology; and the seventeenth century, which had seen the last of the Oriental Plague as far as England was concerned, saw anatomy raised to the position of a science, by the labours of Vesalius, of Eustachius, of Fallopius, of Malphighi, of Glisson, of Sylvius, of Willis, and of others, almost all of whose names are worthily preserved for ever in the names given to various parts of the body, and saw physiology receive the grand impetus given to it by the discovery of the circulation of the blood by William Harvey, and scientific chemistry begin gradually to emerge from the Arabian alchemy.

Thus began again the reign of rational medicine, and from that time to this, the study of methods for the prevention of diseases has been pursued, and in many instances with remarkable success. But although we have got again into the right path, there is, as may be expected, seeing the short time that we have been in it, a vast amount of ignorance prevailing in connexion even with the rudimentary principles of sanitary science, and the ignorant multitude are too often led astray by specious fallacies, propounded with some show of reason, and often with great bombast, by persons who have no right to speak with authority on such matters at all, and who are at best "blind leaders of the blind"; but this, we may rest assured, will always be the case, as is shown by the example of mathematical science that I have already instanced. All that we can do, therefore, is to point out such fallacies as they arise, and to warn those who are in danger of being misled by them.

Against all sanitary improvements whatever we find one argument continually brought—that things have gone on in the same way for many years, and there is no reason why they should be changed; that our forefathers from generation to generation lived under unsanitary conditions, and why should we not do the same? That cholera, or enteric fever, or diphtheria has never broken out in a place, or in a particular house, and so it need not be expected! Such are the forms in which this argument meets us at every turn; but those who use it forget that our forefathers died in those places; they forget that in all places which have been made cleaner, from which refuse matters have been removed more speedily, where overcrowding has been abated, where more efficient drainage arrangements have been carried out, the general death-rate has been lowered. When they say that because such a disease as enteric fever has not appeared in a place, therefore it never will, they forget that when cholera or enteric fever is introduced into a place where the conditions are favourable for its spread, where the air is tainted and the water-supply rendered impure with excremental pollution,—that in that place, although such diseases may have been absent for so long that their existence has been almost forgotten, they will spread like wildfire and decimate the population. They forget, in fact, that people who are living in the midst of general unsanitary conditions are in a worse plight than people living in the crater of an extinct volcano, for not only may any one of the severest epidemic diseases break out among them at any time, but they are continually sacrificing unnecessary victims to the demon filth. I have mentioned some of the communicable fevers. Now what I believe to be an important fallacy still exists in connexion with the poisons of these diseases.

It was formerly thought, and was maintained by Trousseau, that the poisons of these diseases might originate anywhere, at any time under suitable conditions,—the specious argument being that having arisen somewhere, at some time or another, there is no reason why they should not originate anywhere or at any time. Without entering into the vexed question of the nature of the poison of such diseases, I will merely point out that this belief is now almost universally scouted with regard to the majority of such diseases. How many persons are there who believe that small-pox or scarlet fever, measles or whooping-cough, arise independently of previous cases of these diseases? And yet we find not a few, supported by the weight of great authority, who believe in the spontaneous origination of the poisons of typhus and enteric fevers, of diphtheria and of cholera. The arguments brought forward to support this position are most of them fallacious in the extreme, and I am bound to say that the arguments advanced to prove the *de novo* origination of the poison of enteric fever are of themselves sufficient to render it in the highest degree improbable. They are, indeed, so weak that no one really capable of judging the value of a scientific argument could from them come to any other conclusion than that the position was untenable. But a practical and very serious mischief has arisen from the spread of these doctrines. We are told that enteric fever is not contagious, and we are told distinctly in so many words that it is rarely, if ever, communicated from person to person: we are told that in the great majority of instances the poison of this disease originates *de novo* in decomposing excremental filth; we are told that the intestinal discharges of patients suffering from this disease do not contain the poison of the disease, although they may be more prone to the special decomposition by which the poison is produced, and the result of all this is, that a large number (I will not say the majority, for I hope it is not so) of the medical practitioners throughout the country take no pains to destroy the poison of this disease at its source,—the virus-laden discharges of the intestinal canal. It might be thought that after people were told that living under bad conditions as regards the removal of filth would engender enteric fever among them, they would be even more careful to prevent the possibility of its appearance than if they were told that it would certainly spread if brought to them while living under such conditions; but this is not so, and for the simple reason that the people know well enough that enteric fever does not arise under these conditions. They may be deceived about the general death-rate, but they know perfectly well that a field may have the richest possible soil, may be well-manured and well-watered, but that no wheat will grow in it unless the seed is sown,—that a place may be in the most unsanitary condition conceivable for many years, and that enteric fever will not spring up in it. And when they are told that it will, they do not recognise this as a fallacy, but jump to the conclusion that the whole of sanitary science is a philosophical fancy, not worthy the attention of practical people.

But there is still a great fallacy abroad in connexion with the question of the removal of refuse matters from the vicinity of habitations. People talk and write as if the water-carriage system and the conservancy systems stood upon the same footing,—the principle of the one being the *immediate* removal of excretal matters from houses, and that of all the others being, as their name indicates, the keeping of such matters in and about the house for a certain time. The one is a correct principle, the other is a false one; and it is no argument at all to say that where the water-carriage system is badly carried out, the result may be worse than where the conservancy system is carefully managed. In sanitary matters, as well as in everything else, we should follow correct principles. If we do not, but by arguments equally specious and fallacious try to persuade ourselves that "practically speaking" (according to the cant phraseology of the day), better results may be obtained by following false principles, nothing is more certain than that by an inexorable law of nature true principles will assert their position, and we shall be punished for our mistake by being landed in difficulties greater than we had to contend with at the outset. It is a very old and often-exposed fallacy to argue against the use of a thing from the abuse of it, and to argue against the water-carriage system because when surface-drains have been called upon to do the duty of sewers, for which they were not intended, and of which they are not capable, or because the sewage has been turned into the water-courses, which have thus become unfit to supply water for domestic purposes, is an excellent example of this kind of fallacy. I do not say that a well-managed conservancy system is not better than a badly-managed one, nor far better than no system at all, nor do I say that there are not places where the difficulty of carrying out a water-carriage system are not so great as to be almost, if not quite, insurmountable; but I do say that in towns where a

* From an address delivered before the Sanitary Congress at Croydon, by Professor W. H. Corfield, M.D.

water-carriage system is possible, there is no room for choice in the matter. The mischiefs that have been traced to the water-carriage system have occurred from the abuse of it, and not from the proper use of it. Sewer air, about which so much has been written, is injurious when it is collected in badly-ventilated sewers and allowed to escape from them into the houses; but in an impervious sewer with a proper fall, sufficiently flushed and efficiently ventilated, the noxious ingredients of sewer air are scarcely formed at all, and the air of the sewer is hardly appreciably different from that in the street, while its foulness bears no comparison to that of the atmosphere of many inhabited rooms. The proper way to ventilate sewers is to have a sufficient number of openings leading into them from the surface of the roads, as has been demonstrated over and over again, but I see that the ridiculous practice of having, as far as possible, air-tight sewers, and connecting them with the flues of furnaces, notwithstanding that the fallacy of it was exposed by the Health of Towns Commissioners in 1843, and has been pointed out over and over again ever since, still has its advocates. The Commissioners pointed out that in the first place the action of the furnaces was at times so strong as to draw all the water out of the traps on the house-drains, and at other times so ineffectual that the air from the sewers was drawn into the houses through the unsealed traps. They pointed out, too, that in a case where some of the sewers in Battersea had been connected with the furnace of some soap-works, on one occasion coal-gas escaped from a main into the sewer (as has frequently happened since, and not so long ago in the neighbourhood of Great George street, Westminster), and an explosion occurred which blew the works to pieces.

Another important matter in which we are liable to be led astray by false principles, is that of the supply of water for domestic purposes. A man deservedly eminent in his own branch of medicine, told the public not so long ago, from a position that lent weight to his words, that water-analysts and medical officers of health had all gone wrong about water: that the small quantities of organic matter that were discovered in water were matters of no importance at all, that all water, however pure it was, was contaminated with organic matter as soon as it got into our mouths; that the greater part of our food consisted of organic matter, and that it was ridiculous to condemn a drinking water because it contained small quantities of organic matters. The obvious fallacy of such arguments must be patent to all who have thought upon the subject at all, but to the multitudes who allow others to think for them, such fallacies coming from the mouth of one whose words were entitled to be listened to with respect, were calculated to do a vast amount of mischief. There are organic matters *and* organic matters, and it is not because beef and mutton are good for food that putrifying filth, in however small a quantity, coming from sources likely to be tainted with the poisons of specific diseases, is to be tolerated in water for domestic use; and this leads me to speak of a still greater fallacy in connexion with the water supply. We are told that it is not necessary to go to the purest sources for water; we are told that we may take a water that has been once polluted, filter it and give it to the people to drink, that it is a "practically wholesome" water, that no harm can be shown to have resulted from it, and so forth, and we are given averages of its composition to prove that it is "reasonably pure" to be used; but it is not averages we want,—we want to know the quality of the worst samples that are supplied. It is ridiculous to tell a man that the average quality of the water given him to drink is good, if on one day in the year he gets water that is "quite unfit for dietetic purposes." But the people are awakening to this matter. They will not be put off by such specious arguments and fallacious reasonings, but they will insist on the "practical" carrying into effect of the true principle as laid down by Mr. John Simon.—"It ought to be an absolute condition for a public water supply that it should be uncontaminable by drainage." . . . . .

Although I do not mean to enter into a statistical discussion, I will mention one or two serious statistical fallacies that are very prevalent, and out of which much capital is made. We are told that in spite of sanitary improvements, the death-rate remains the same; now, considering that "the mortality of the City of London was at the rate of 80 per 1,000 in the latter half of the seventeenth century, and 50 in the eighteenth, against 24 in the present day" (Farr), this statement seems rather audacious. We are also told that the death-rate of London is and has been for some time practically stationary, but since the density of the population is increasing, the death-rate ought to be increasing, whereas it is actually diminishing. Dr. Farr shows that the death-rate of London (calculating from its density), ought to be 35·2 per thousand per annum, whereas it is now under 23. Again, we are told that the death-rate from zymotic diseases is stationary; but surely the wonder is that it is not increasing rapidly.

Yet another statistical fallacy:—the death-rate of London is very low indeed; we are positively told that this is due to the influx of healthy lives from the country! whereas, as a matter of fact, they make an almost inappreciable difference in the death-rate. The annual influx of immigrants forms in time a permanent addition to the population, but as their death-rate (say that of persons over twenty years of age), differs but little from that of the community at large, or from that of persons under twenty years of age, they scarcely affect the general death-rate themselves at all; if we are required to debit London with the deaths of persons under twenty years of age, of whom the immigrants may be said to be the survivors, we must also credit the population of London with the additional population, under twenty years of age, which would result from an annual number of births equal to that of the immigrants, and of the persons under twenty whose deaths we have taken into account. Thus it can be easily shown that the death-rate is hardly affected at all by immigration.

ART EXHIBITION AT BRISTOL.

The rooms of the Bristol Academy of Fine Arts are at present occupied by a loan exhibition of works of art, chiefly the contribution of residents in the locality. There is a great deal of variety in the class of objects contributed, the exhibition including oil-paintings by old and modern painters, water-colours, fans, embroidery, lace, and wood and metal work. From an educational point of view (and the object of the exhibition we take to be, in part at least, educational) the collection would, perhaps, have been more valuable if it had been a little more restricted in its aims, and if there had been an adequate illustration of one or two classes of art production instead of a rather inadequate display of a variety of different objects. Perhaps if the exhibition, which we believe is, or is intended to be, an annual one, were devoted every alternate year to the higher arts of painting and sculpture, and in the intermediate years to industrial or decorative art, the result would be more satisfactory, especially as there would then be more time to collect or get promises of the loan of works for exhibition, each class of work being represented once in two years instead of once a year. The list of oil paintings this year contains many great names, but very few of them are represented by what can be called their best work; and some of the works which have the greatest names attached to them appear to us to have rather questionable claims to their professed lineage. It is, however, an ungracious task, when owners have kindly lent pictures, in the genuine character of which they probably implicitly believe, to attempt to throw doubt upon them, and take away their value; we are content in general terms to recommend to the visitors to the Bristol Exhibition a little healthy scepticism about some of the paintings. The strong point of the exhibition is embroidery and lace, the latter especially. The lace contributions include some of the most beautiful and valuable specimens we have seen for a long time, and they are well arranged and classified, and the catalogue gives a little more information in regard to them than is the case in reference to other classes of work.

This matter of the catalogue is one in which our Bristol friends may be recommended to attempt a little improvement. The catalogue issued we found full of mistakes, in initials or spelling, as to the names of eminent artists, and even of the names of the lenders of pictures; and the information given is very meagre. The small and not very good collection of fans might have been of some interest if the specimens had been dated approximately, which might have been done probably in most cases; and the same in regard to the embroidery, of which many of the specimens were admirable; but there is nothing to tell the student when and where they were made, and thus give some historical interest to the collection. Another year we would recommend a smaller and more carefully selected exhibition, and a *catalogue raisonnée*.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

We shall betray no secrets by stating that the opening meeting of the Institute of Architects will not take place until the first Monday in December, instead of November, when it is usual for the president to deliver his inaugural address. This postponement is due to somewhat important alterations to the building in which the Institute is located. These alterations have been in active progress during the last four months, under the charge of a committee, composed of Mr. Edward Barry, R.A., Mr. Henry Currey, Mr. Macvicar Anderson, and Mr. William H. White. The preparation of the necessary drawings, and the superintendence of the work, have been undertaken by Mr. Anderson, who, however, made an early stipulation that he should be permitted to give his assistance gratuitously, and who, throughout, has received the support of his colleagues on the council. Much longer time has been spent over the reconstruction of the ceiling of the meeting-room than had been anticipated, owing, it is said, to the character of the original construction. There is consequently no intention to paint the walls until next summer. Messrs. Holland & Hannen have executed the contract for the work, and what little ornamentation has been introduced is from the workshops of Messrs. Jackson & Sons.

The re-arrangement of the library will entail a large amount of labour, and it is not likely that it can be got ready for the use of members until the opening meeting, on the 1st of December. The re-arrangement is to be done under the care of the library committee, which numbers among its members Professor Donaldson, Mr. James Fergusson, Mr. Penrose, Mr. Wyatt Papworth, and Mr. Hansard, who is its chairman.

UNWHOLESOME DWELLINGS IN VIENNA.

The sanitary authorities of the Austrian capital have only just published their report for the year 1878; and the *Journal d'Hygiène*, the organ of the Société Française d'Hygiène, has, with commendable promptitude, reproduced some of the more salient facts. We are thus informed that, in the course of the year, 894 houses were reported for excessive dampness, and 85 as overcrowded; 116 were recognised as in a ruinous or unsuitable condition, while 49 did not occupy a sufficient area to be considered habitable. Such figures, if they truly represent the condition of the town, would lead us to infer that the Viennese are comparatively a very fortunate people. These facts read pleasantly when placed in juxtaposition with, for instance, the reports of the sittings of the Royal Commission appointed to inquire into the sanitary condition of Dublin, and the contaminations of the Liffey. Still, the details given of the condition of Vienna are not attractive. The overcrowding in the Austrian capital is excessive. Inhabitants were discovered living in thirty-four cellars. One house is reported as having been neither cleaned nor ventilated for a whole year. The condition of the atmosphere was beyond the endurance of even the most hardened inspectors. In another instance, four men were found sleeping in a room that barely contained 500 cubic feet. Eight persons were living in another room, and fourteen in a third chamber. When compared with such cities as London, Paris, and Brussels, the annual mortality at Vienna is high, even taking the figures given, for it amounts to 26·5 per thousand of the population. And we are, moreover, forced to believe that the registration is lax. Vienna must have changed immensely since we knew it if these figures give anything like a true notion of its sanitary condition.

Govanhill.—The memorial-stone of the Cathcart United Presbyterian Church, Govanhill, near Glasgow, was laid on the 6th ult. The cost of the church will be about 5,300*l.*

FRENCH AND FLEMISH GALLERY.

The twenty-seventh winter exhibition in this gallery, which opened this week, has little of the interest which has sometimes attached even to these intermediate exhibitions at this gallery, which have generally, however, been inferior to the Spring ones. That the proprietors have not found it very easy to fit out an exhibition may be inferred from the fact that De Neuville's "Le Bourget" occupies the centre place on one of the walls, though it has been exhibited in the same rooms not long since. No one, certainly, would object to see the picture a second time, for it is in fact one of the most thoroughly successful battle-pictures that has ever been painted; still, its re-appearance, after so short an absence, is significant. Professor Muller's picture of "Mecca Pilgrims" (78), has the same qualities as the larger work by him, which was in the gallery a few months back, but the precise title of which we have forgotten; this work has perhaps less force and originality than its predecessor, but is more agreeable in tone and composition, and is remarkable for the success with which extreme realism is obtained without hardness. De Haas sends a fine and solid study of "Cattle" (136), and Schreyer's "Arab Horseman" (21) is spirited and powerful, though less real. There really seems to be nothing in the collection calling for or suggesting special comment; some of the names that have been for some time favourites at this exhibition are represented by works in their usual respective styles; Seignac's "Preparing for School" (29), and Schloesser's "Village Politicians" (47), may be noticed, and there are other small *genre* pictures of similar type and varying excellence. Miss Clara Montalba, we observe, has sent two English subjects, "Southwark Bridge" and "Off Erith," painted, however, with nearly the same tones as her well-known Venetian scenes. But the collection as a whole does not compare well with those of former days.

THE ECONOMIES EFFECTED BY THE PRINCIPAL RAILWAYS DURING THE LAST HALF-YEAR.

We commented, in a recent number, on the need of analysing the returns of decreased income and decreased expenditure on the English railways; and we showed, to some extent, that a certain general movement underlay what seemed, at first sight, to be purely capricious variations in both gross and net returns. The interest excited by the subject has led us to give some further attention to it. And the upshot is that we have now to point out how a perfectly definite and intelligible scale may be framed, on which it is possible to rank the returns of every company that are worth the pains of investigating.

We may take the opportunity of remarking that the issue, for so many years, of the annual general report to the Board of Trade on railways by Sir Henry Tyler had assumed so stereotyped a form, that it was quite possible to anticipate it almost to a line as soon as the "Railway Returns," on which the report was based, were accessible. This wearisome sameness has led us, and no doubt has led many other persons, to omit for some time paying due attention to the "General Report" for the year 1878. This, which is signed by Henry G. Calcraft and R. Giffen, gives evidence of very able and patient attention; and analyses the facts of the returns in the manner of which the example was first set by Mr. Fleming. The "Railway Returns" are no longer a sufficient guide to the student of the subject, as he will miss much suggestive information if he fails to procure the "General Report." In fact, although Messrs. Giffen and Calcraft are unable to contend with the total absence of information as to *work done* on the various lines, expressed in ton-mileage, they have done all that could be done, without possessing this essential item, to throw light on the movement of the year. Such statements as that which they make of the comparative increase on capital account during the year cannot be too clearly brought before the public. In 1878 the extent of the railway system was increased by 1·5 per cent.; the capital by 3·6 per cent., and the cost per mile by 2·1 per cent. At the same time, the gross receipts decreased 0·2 per cent., and the working costs decreased 2·0 per cent. This gives an increase of net revenue of 1·9 per cent., as applicable to an increase of capital of 3·6 per cent.; giving a diminution of the percentage of net earnings to capital of from 4·32 to 4·25 per cent. At the same time, the diminution of the dividend on ordinary capital was still more serious, being from 4·51 to 4·32 per cent., or very nearly 10d. in the pound of dividend.

Returning now to that tabulation of the twenty principal railways referred to in our former number to which we have reduced the published data, we find that the lines readily fall into four groups. These are,—

Passenger lines of increasing traffic.
Passenger lines (chiefly) of decreasing traffic.
Mixed trunk lines of increasing traffic.
Mixed trunk lines of decreasing traffic.

Of the first group we have the Metropolitan and Metropolitan District lines. The traffic of the former increased 0·2, that of the latter, 3·0, per cent., in the first half-year of 1879. The expenditure of the first decreased 1·7, and that of the second 3·0, per cent. Thus the economy of the Metropolitan line was 1·9 more, and the economy of the Metropolitan District was 6·0 per cent. more in the past half-year than in 1878. This is manifestly due chiefly to the better filling of the trains.

For passenger lines of decreasing traffic we cite the South-Eastern, the London and Brighton, and the London, Chatham, and Dover, which are, to some extent, competing lines. The receipts of the South-Eastern fell off 4·3 per cent.; those of the Brighton, 1·9 per cent.; those of the London, Chatham, and Dover, 2·5 per cent. The working expenses of the first were diminished 2·0 per cent.; those of the second increased 0·08 per cent.; those of the third decreased 1·02 per cent. It results that the economy of working was diminished on three lines by 2·3, 2·0, and 1·4 per cent. respectively. The cause we take to be the diminution in passengers, while the competition between the companies prevented the diminution in train-mileage being made to correspond.

In the third category the Great Northern line increased its receipts by 4·2 per cent., and its expenditure by 2·4 per cent. The Midland line increased its receipts by 1·0 per cent., and decreased its expenditure by 1·2 per cent. The Great Eastern has increased receipts 2·6 per cent., and expenditure by 1·9 per cent. The London and South-Western has increased receipts by 3·6 per cent., and expenditure by 5·8 per cent. The resulting economic difference is that the Great Northern has worked 1·8 per cent.; the Midland, 2·2 per cent.; the Great Eastern, 1·7 per cent. cheaper; and the London and South-Western 2·6 per cent. dearer, in the first half of this year than in 1878. But as the South-Western derives 60 per cent. of its traffic from passengers, it ought probably more properly to be ranked with the Brighton, South-Eastern, and London, Chatham, and Dover, to which the economic movement is similar, than with the coal-carrying lines. It cannot exactly be ranked in either of the groups. In the case of the other three lines, the diminution in general costliness is no doubt due (in addition to causes common to all the lines) to the discontinuance of trains in proportion to the decrease of freight.

In the fourth group the London and North-Western has earned 3·1 per cent., and spent 5·4 per cent. less than in 1878. The Great Western has earned 2·5 per cent. less, and spent 4·5 per cent. less. The North-Eastern has earned 10·2 per cent. less, and spent 11·2 per cent. less. The resulting improvement in economy of working is 2·3 per cent. in the case of the first, 2·5 per cent. in that of the second, and 1·0 per cent. as in the case of the third line. The results of increased, compared to those of decreased, traffic on all these mineral-carrying lines, show very distinctly how closely the working cost of the non-passenger traffic treads on the heels of income from that source.

We are aware that it is not exactly the same thing to show the differences between percentages on income and on expenditure, and to take a step further, and reduce the whole to terms of gross income. But as an approximation to what is going on, we think the method we have adopted is sufficient. It is, we hope, plain and clear, and gives results which are highly suggestive as comparative, if not positive, indications of the relative value of the different classes of business carried on by the railways cited.

The lines which derive their chief income from passengers have a marvellous elasticity on an increasing traffic,—which disappears almost entirely when the volume of the traffic is declining. The reason is that the trains now running would accommodate many more passengers, in more cases, than are actually carried. And even when the carriages are filled, as is often the case on the Metropolitan lines, the addition of one vehicle to each train would form an almost inappreciable item of additional working charge, while it would allow of an immense increase of return. We shall be within the mark if we say that an increase of cost of 3d. per train mile, under such circumstances, might be accompanied by an increased earning of 5s. or 6s. per train mile,—the differences going all to profit. *Per contra*, the saving would be comparatively inappreciable, with a shrinking traffic, unless trains were discontinued, which the Companies shrink from doing.

As to the heavy traffic no more trains are made up than are required. There is no inducement for so doing, such as exists in the case of the passenger traffic. Thus the average mineral receipts per train mile on the North-Eastern Railway, in 1877, are calculated by Mr. Fleming in his Index to our Railway System, at 2s. 4¼d. per mile. The expenditure per train mile is given by the same authority at 38·95d., or 3s. 3d. nearly. That is an average expenditure; but then the mineral-trains are the heaviest that run. Now, if this be a correct representation of the case, it is very clear how a considerable saving would be effected by the discontinuance of such trains. It is impossible to speak with certitude in the absence of ton-mileage returns, but taking the traffic of this line all round, we find working expenses only diminished 11·2 per cent. against a diminution of 10·2 per cent. in the gross income. We again invite all those of our readers who take interest in the prosperity of railways to ponder these figures. A range of economy of from 2·3 per cent. to the bad to 6·0 per cent. to the good is not a feature to be passed over in silence.

THE POST OFFICE.

When anything becomes part and parcel of our domestic system and our daily habits, it is rather difficult to regard it from an outside point of view. We may notice carefully certain defects or advantages in details, but the thing as a whole is quite beyond the scope of our ordinary vision. It is thus with the Post-office. We receive our letters with extraordinary regularity. If a slight delay occurs in the delivery of a telegraphic message, we feel that a little hitch has occurred in our domestic system; and we impress upon our servants the necessity of investing their wages in the Post-office Savings-bank without a thought of the immense organisation of which it forms a part; for the Post-office of the present day is undoubtedly an organisation of immense size and wonderful perfection. Take it all in all, it is perhaps the most satisfactory of any of the Government departments of this country. Its work is carried on with fewer hitches than that of any other office, and it has become one of the most indispensable parts of the social system of modern England. It is, as it at present exists, a wonderful witness of the organising power of the modern generation; for if it be looked at, so to speak, from the outside, if we raise ourselves above it, and observe how it ramifies out into the most secluded nooks of the country districts, and how its agents are scattered over the wild islands of the north and west; how messages are flashed from town to town, and how it receives the savings of thousands of the poorer of our population, we shall form a proper idea of this great and beneficial organisation.

To form, however, a more vivid idea of the working of the Post-office, it is not uninteresting to take note of the last report of the Postmaster-General, especially as some hints may be gathered from it which should not be thrown away on men of business.

And, first, it is quite fitting that we should mention the building operations of the past year; that is, of the year from April 1st, 1878, to March 31st, 1879. Perhaps the most important work now being executed under the auspices of the Postmaster-General is the new Central Savings Bank in Queen Victoria-street. Great progress has been made with this building, and a hope is expressed that the works may be completed in time for the staff to be moved into the building by the end of the current financial year. When this is completed one of the most important factors for promoting thrift among the less wealthy of the community will have a

proper and worthy centre. We are glad to observe, too, that in the metropolitan postal district,—to turn to another branch,—several improved letter-carriers' sorting-offices have been, or are in course of being, provided; for, of all the officials of the Post-office who deserve to be comfortably housed, none are more worthy of attention than the letter-carriers of London, who have to be on their feet, in all weathers, at all hours, and who are a singularly intelligent and respectable body of men. At Glasgow, too, the new Post-office has made great progress, and a large part of it is now occupied. Nothing could be better than the situation of this office in Queen-square, and it will be found a great boon to tourists, placed as it is in the most hotel-frequented part of Glasgow. In the provinces generally the Post-office is engaged in many important building operations. Indeed, new post-offices have just been completed, or are nearly fit for operation, or are already planned, in no fewer than twenty-five large towns. We forbear to mention all of these, but we may give the names of half a dozen of the most important, which are Cork, Reading, Walsall, Blackburn, Manchester, and Southampton.

Turning to some matters of detail, we find that the gradual use of branch office and receiving-house letter-boxes, opening from the outside, is being proceeded with in London and Glasgow. By this means newspapers and book-packets, as well as letters, can be posted when the offices are closed. This will be a great convenience to many who wish, for example, to post their book-packets on a Sunday or late at night. But why London and Glasgow are alone, at present, to have the benefit of this arrangement we are rather at a loss to conceive, for the change cannot be an undertaking which involves any large expenditure. Liverpool, however, is being compensated in another way, for in that town receiving-offices and sub-post-offices have been fitted with enamelled plates, which, being very conspicuous, are likely to be of great use.

Of course, to turn to another part of this subject, the number of letters increased considerably during the past year, and, what with an increase of population and the spread of education, is certain to continue to do so. For the number of letters shows an increase of 3·7 per cent., and that of post-cards of 9 per cent., the latter fact showing how largely this convenient system is employed, for that 9 per cent. means an increase of nearly nine millions and a quarter of post-cards delivered. The general increase of all sorts, whether cards, letters, or parcels, is over 58,000,000. And it is curious, when on this subject, to note that the letters delivered weekly in London form rather more than the fourth of all the letters delivered in the United Kingdom, and are more than thrice as numerous as the letters delivered in Scotland. This gives some indication of the immense quantity of work which has to be done by all the officials in the London offices. And we may further add, as a specimen of the immensity of our modern commerce, that the largest number of letters received daily by one firm is about 3,000.

Perhaps one of the most extraordinary features in connexion with the Post-office is the carelessness which is displayed in sending money or valuables without taking any precautions by registration or otherwise. To some extent this may be set down as a kind of confidence in the Post-office officials. But be that as it may, under the regulation which came into force in January, 1878, that undelivered letters and packets found to contain money, or valuables easily convertible into money, if unregistered, are charged a fee of 2d. and returned to the senders, more than 38,000 letters or packets have been so returned.

Then, again, we find that more than 18,000 articles of different kinds reached the returned-letter offices without covers or addresses, showing, as the report very properly points out, that the necessity for the use of strong wrappers and for careful packing is not yet sufficiently recognised by the public. Still more curious is it to observe that over 22,000 letters were posted during the past year without addresses, containing more than 8,000*l.* worth of cash, cheques, banknotes, bills of exchange, &c. Perhaps, compared with the vast number of letters sent, this may not be considered a very large proportion; but it shows, nevertheless, that not a little carelessness still exists in the transmission of money or valuables. And here we may allude to another fact which is not without direct interest to ourselves, since we gladly think some of our readers forward their *Builder* to their friends abroad,—and this is, that more than 200,000 newspapers were detained, on account of some infringement of the regulations, which had been posted for foreign parts, showing an increase of 17,000 over the previous year.

We now turn for a short space to the Telegraph department. And here, in spite of the depression in trade, we find that there has been an increase,—not a very large one, it is true,—in the number of messages sent. But that this increase was only small, somewhat over 300,000 messages, may partly, no doubt, be attributed to the fact that the private wire business shows a satisfactory increase, the revenue from this source at the end of the year being more than 63,000*l.* And in connexion with this department we note with much satisfaction that the process of superseding over-house by under-ground wires in the metropolis and other large towns has been continued, and that up to the end of the year 320 miles of over-house wire had been changed to the other method. And it is satisfactory to find that, in spite of these and other what may be termed extraordinary expenses, the net revenue of this department amounts to 257,000*l.* Some day, therefore, we may possibly have sixpenny telegrams, but we do not feel any particular desire for this change. Sixpence is as prohibitive a charge for ordinary messages as 1s., and 6d. does not bring the telegraph any nearer the poor, so that we doubt if sixpenny telegrams would be much real benefit to the community, and they would probably result in a loss to the revenue. Our grandchildren will no doubt, however, see telegrams at 1d. each.

FROM THE BANKS OF THE SEINE.

The troubles which have disturbed the professional world of Paris within the last week threaten, so far from promising a satisfactory conclusion, to take even more serious proportions; animated meetings are held from time to time by masters and men; *ultra* views are expressed on both sides, concessions are made, but the main quarrel continues, and at the present moment, most of the other trades on which the French builder relies, and not already out on strike, threaten to take this step. The plumbers, the bricklayers, and the sawyers have all demanded an increase of wages, while the joiners have not yet resumed work. It may be easily conceived, at this period of activity, how the contractors are tried. Fortunately at the last moment the struggle promises to slacken in fierceness, and a few mutual concessions made would doubtless soon bring together the masters and men, who rely, as we must all do, so completely on each other's aid. The occurrence of the strike has led to the revival of more than one of these specious and fair-seeming projects which at such times are invariably brought forward, and which, unfortunately, only produce the effect of widening the existing distance between the employers and the employed. In the course of the many meetings held, one speaker, after a warm appeal with regard to the situation (from the men's point of view), laid before his auditors a full explanation of the plan, up to this time alone hinted at as the aim of the workmen in their recent resistance, of "the complete abolition of all masters." In the enthusiastic opinion of "Citizen" Cazelles, the speaker above referred to, a writer for a paper much read among the labouring classes, nothing would be easier than the execution of this scheme. All that will be necessary, according to the expounder of this simple theory, will be to obtain from the whole corporation a small monthly sum raised on the augmentation obtained through the strike. This money, placed in the hands of the trades-committee, would serve to open workshops throughout the capital, and before ten years had passed the masters would have disappeared; the yards and shops alone containing brothers at last enjoying the "integral product" of their labour. The orator, warming to his subject, announced that the moment was near at hand when, thanks to the union of all the trades-committees, the federation of all the corporations, the organisation in existence throughout Paris would soon spread, not alone to the provinces, but as a gigantic network over all nations. The world then would be in the hands of the labourer alone, the now poorer classes would then be the masters, and the masters themselves, rendered a useless institution, would cease to exist! Certain figures quoted by "Citizen" Cazelles in support his Utopian theories in reality only prove the value of association. The hatters of Paris, by a weekly subscription of a penny, have been able to collect more than 20,000*l.* since the last war, nine years ago; and there are, it would appear, only 3,000 hatters in Paris. We need scarcely follow further the socialist views that have been expressed in the course of the recent meetings. Within a short time has been called into existence a permanent committee of aid for all present *and future* strikes. Whenever, within the last generation, similar troubles have arisen in France, these theories made their appearance, never to receive a satisfactory conclusion.

A short but suggestive paragraph not long since appeared in many of the Parisian journals, reproduced without further comment by several English newspapers, to the effect that within the last month had been opened a photographic workshop above the Print-room of the Bibliothèque Nationale, a step taken in view of the preservation by reproduction of those rare prints communicated to the public. To those who are interested in the proper conservation and respect of all works of art, such a step on the part of the French Library authorities must doubtless have appeared, indeed, an advance in the right direction; but to those familiar with the quaint old Print-room of the Rue Richelieu (almost untouched since the days of its owner, the *dilettante* Cardinal Mazarin, whose bust, above which floats the effective *capello* and its tassels, occupies a well-designed niche at one end of the low-ceilinged room), such an announcement cannot fail to have been, even if agreeable, somewhat surprising. The ill-lighted, and, truth to tell, very inadequately-suited room, in which are preserved the precious and more or less familiar treasures of the Print department, is, considering that Paris is regarded as the great art capital of the world, at all hours strangely unoccupied,—a fact, it is true, by no means disagreeable to the student, but only after reflection somewhat puzzling. That wear and tear must destroy in time many treasures is unquestionable, but it may be said of the Print-room of the French National Library that more injury is done to the marvels it contains by the want of care with which the prints are kept than by public reference. We have ourselves often had occasion, in turning over the volumes containing some sources of reference, to bewail the want of due attention to the preservation of superb impressions, yearly losing their beauty by the mere friction which, as is known to all familiar with books, sketches, and engravings, is unavoidable, where care has not been taken to prevent this. In the 800 volumes which compose the priceless collection of portraits of the French Print Department, more than one fine impression of some great work of the past, more than one masterpiece of the needle or the burin, is, to our certain knowledge, if not wasting its sweetness unknown, at least daily losing by friction and neglect its beauty. Is it these treasures that the Department propose to reproduce? We hope that such is the case. There exist among the portrait collections of every museum germs of artistic skill unknown to all but the very few. If the photographic studio recently established by the National Library is to aid in the reproduction and popularisation, with the assistance of the publishers, of such works, and many more of the unfamiliar treasures of the art of the past, the step taken by the French Administration is additionally worthy the gratitude of the artistic world, and the suggestion is one we would venture to bring to the notice of Mr. Bond and Mr. Reid, who have so often already shown at the British Museum an earnest desire to regard the wants of the studious public.

Old travellers on the Continent who have found Paris during the last fifty years no inconvenient spot to halt at on their road to more distant places of business or pleasure, will be surprised and sorry to hear that Galignani's Reading-room, in the Rue Rivoli, no longer exists; for some time past the formerly well-stocked tables, where the *Builder* and many other English artistic and technical journals were always to be found, have been gradually becoming less attractive and less well-supplied with literary *pabulum*, and within the last few weeks the well-remembered room, with its comfortable English sea-coal fireplace and well-arranged lounges, has ceased to warm and to repose the weary Britisher or the impatient American, the latter at least seeking the more congenial atmosphere of the *Herald* reading-

room in the Avenue de l'Opéra, where are to be found an enormous mass of American journals and a sufficiency of foreign publications to satisfy the most rapacious appetite for newspaper literature. This reading-room may now be said, and with astonishment must it be said, to be the only English reading-room in Paris; although it is only fair to mention that in the obscure neighbourhood of the Rue Montmartre there exists a very small but excellent English reading-room, to which all strangers are invited freely by the President and Council of the Young Men's Christian Association, an institution but too little known, and which owes its existence, we think, and certainly much of its prosperity, to the benevolence and thoughtfulness of the late Mr. George Moore, whose premature death at Carlisle will long be remembered with the deepest regret. Why does not some public benefactor present to Paris an institution like that of the princely Stampalia Querini at Venice, which, strangely enough, is without question the finest public reading-room in the world, not excepting the Cooper Institute at New York, which, owing to the benevolent liberality of its founder, possesses certain popular elements that to the fastidious reader form an objection? But the slight difficulty thrown in the way of the public entering the Venice reading-room, and the excessive comfort to be met with when that difficulty is removed, establish the advantage in favour of the European library.

ART IN DALSTON.

The small and rather dreary streets of Dalston are scarcely the places where one would go in search of an art collection. For when one who is not accustomed to the locality alights from the train at Dalston Junction, he appears to be very far from anything which savours of "sweetness and light." But a short time ago circumstances led us to pay a visit to this locality to look at some works of art belonging to an enthusiastic collector. Mr. O'Connell, the gentleman in question, possesses a considerable number of charming drawings by the old masters, and many valuable prints. He is also the fortunate owner of some excellent pictures. These he ascribes to the great Italian masters, and has spent half a lifetime in their identification. This publication is not, however, the place in which to enter into elaborate discussions of the *pros.* and *cons* of the identity of any particular works of art. In mentioning some of Mr. O'Connell's pictures, it must be borne in mind, therefore, that we are only giving his account of their history, and are offering no opinion, one way or the other, upon the absolute genuineness of each work of art, which could not be satisfactorily done in our limited space. The most noteworthy of the pictures which we had recently an opportunity of seeing, was "St. Jerome praying in the Wilderness," ascribed to Michelangelo. Whether the great Florentine was or was not the painter of this picture, there can be no question that it is an uncommonly fine work; it is on panel, in tempera, 12 in. high and 16 in. wide. On the back is an extract from a catalogue in which it is ascribed to Andrea del Sarto. The extract, there is very little doubt, is from the catalogue of Mr. Buchanan, who, in the beginning of the century, brought many fine works to this country. No. 45 in the catalogue of Lucien Bonaparte's collection is described in language very similar to that in which the present picture is mentioned (Buchanan's "Memoirs of Painting," vol. ii., p. 272). It is also noticeable, as Mr. O'Connell points out, that the drawing lent by Mr. W. Russell to the Grosvenor Gallery in 1877-78, No. 667, was a study of an arm, by Michelangelo, precisely similar to that of the saint in this picture. "Finally," says Mr. O'Connell, in his description of the work, "at the bottom of the stump of the tree on which the hat is placed the letters M. B. are to be seen, but the M. is a little obliterated." St. Jerome kneels in the centre, intently praying, whilst a book lies on the ground before him, and a lion is killing a bear behind him. Another most noticeable work is a portrait ascribed to Raffaelle, and supposed to be that of the poet Antonio Tebaldeo. Again, we may say in reference to this picture that, genuine Raffaelle or not, it is an exceedingly fine work. "The face is seen in three-quarter view, looking to the left of the spectator" (we quote from Mr. O'Connell's description); "he is dressed in a black vest, having lines of a darker colour or of braid about the shoulders, similar to what is seen in Raffaelle's own portrait at Florence. His beard and moustache are dark, long, and close, the imperial alone showing a slight tinge of grey. On his head is placed a round velvet cap, also striped with black bands. This cap being placed a little on one side, discloses an ample forehead. A frill about 1¼ in. wide surrounds the neck; a little to the right of the left temple the letters R. S. V. are faintly visible, and in one of the loops of the frill the date A.D. MDXV. is seen. The background is of a deep olive colour." We would also mention a painting ascribed to Titian, in very excellent preservation, which Mr. O'Connell states was found behind another picture some twenty years ago; the colouring is thoroughly in Titian's manner, and the picture represents the Centaur and Dejanira. This work is 2 ft. 3 in. high and 1 ft. 9½ in. wide, and we may repeat in regard to it that, true Titian or not, it has all his attributes, and is an excellent work of art. We should have been glad to notice some other of Mr. O'Connell's possessions, and to enter thoroughly into the evidence which he has collected in support of the genuineness of these works, had space and leisure allowed it. And we must express a hope that these works will find their way to some more accessible spot than Dalston, and be thoroughly criticised by those who have both the time and the knowledge so to do. But any lover of art will expend a pleasant hour or two in visiting Mr. O'Connell's collection. His address is No. 6, Laurel-street, Dalston.

THE FORESTS OF THE NORTH.*

In addition to the fir and the pine, which of course form the bulk of Norwegian forest growth, there is the birch (*Betula odorata*), which in West Finmark is found in considerable tracts, and occasionally in other parts of the country, amongst the clearings of the pine and fir woods. The limit of elevation, as far as its geographical distribution goes, is about 1,101 mètres (1 mètre = $1\frac{1}{10}$ yard) in Southern Norway, 600 to 700 mètres in Trondhjem district, and from 300 to 400 in Finmark. It is a pretty and well-grown tree, and is frequently met with growing to the height of 60 ft. to 70 ft., and with a diameter of 3 ft. or 4 ft. at its base. A good deal of birch wood is used as fuel, but it is a useful wood for cabinet-makers, and its outer bark is of value in many industrial occupations. The birch tree adds much to the scenic effects of the forest, with its long drooping clusters of branches, and is one of the most characteristic ornaments to a Norwegian valley. Some of the birch groups, indeed, have quite a celebrity throughout the country for their beauty, and not only their owners, but the whole of the population of the district, regard them with pride, naming them according to their fancy. There is a magnificent specimen of birch called the "Holsbirk" on the property of Hol, in Rennebu, in the prefecture of Southern Trondhjem. It is 68 ft. in height, and has a diameter of 5 ft. at 4 ft. above the ground. Any sacrilegious person who attempted to destroy or damage "Holsbirk" would have a bad time of it amongst the peasantry of the neighbourhood.

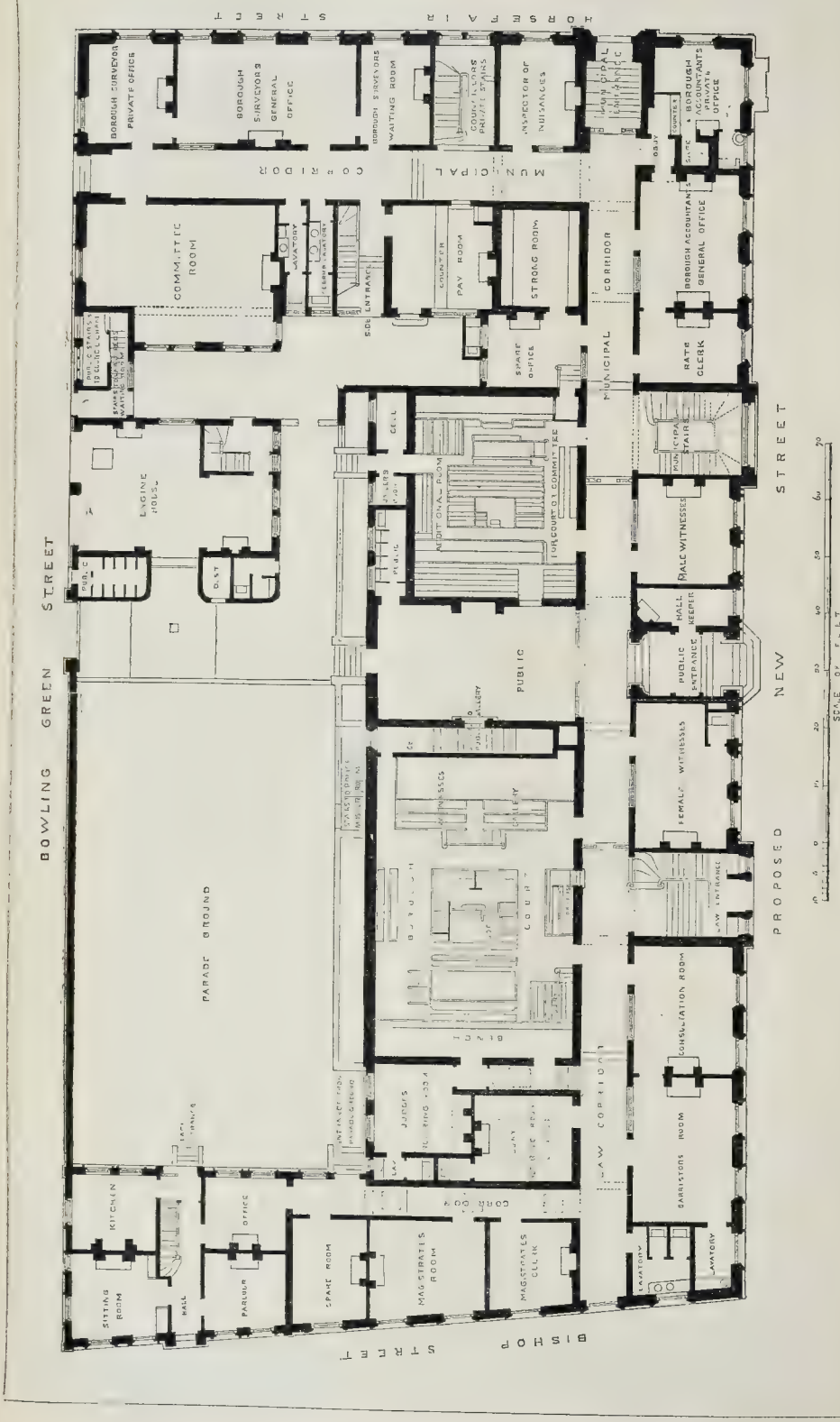
The other trees which help to make up a Norwegian forest, will not need much description. The alder (*Alnus incana*) is found at about the same limits of growth as the birch, and is met with pretty frequently as far north as West Finmark, attaining a height of about 60 ft., with a diameter averaging 1 ft. The variety of alder known as *Alnus glutinosa* is very much scarcer, and is principally found in the valleys by the side of the streams, where the ground is rather damp. It is never seen above the altitude of 250 to 300 mètres. The beech (*Fagus sylvatica*) never grows wild beyond 61° lat., but when planted and looked after, it is found as far north as 69°, at Stegen in Nordland, and also at Trondhjem (63° 26'), where it does very well. In the sixtieth degree of latitude it forms small forest groups at Tonsberg, Larvik, and Arendal, and further north at Bergen and Saeim. This is probably the most northerly *wild* birch wood in the world. There are two varieties of oaks that grow in Norway, those with sessile glands and the pedunculated oaks, the latter in small forest groups on the coast between Arendal and Flekkefjord. It ascends as far north as 63° in a wild state, but when planted flourishes at 66°. The hazel (*Corylus Avellana*) grows wild on the low grounds to the south of Trondhjemfiord, but north of that it is rare, though occasionally found as far as Stegen (68°), where its fruit ripens. The elm (*Ulmus montana*) is met with up to 67°, but as a rule never at an elevation higher than 500 to 600 mètres above the sea. It is an isolated tree, growing to 90 ft. or more; and the only example of an elm wood is at Solvorn, near one of the inland arms of the Sognefiord.

The willow (*Salix caprea*) has a much more extensive range, and is found even above the limits of the growth of the fir, as far north as Hammerfest (70° 37'), though only in the condition of bushes. But at Alten in Finmark (70°) it attains the height of 26 ft. and 1 ft. 3 in. in diameter. The poplar (*Populus tremula*) has an equally wide range, and in the southern parts of Norway is met with, though in rather a stunted growth, at the height of 900 mètres above the sea. But while in the low country it is 60 ft. high, it is little more than half of that at Alten (70°). The ash (*Fraxinus excelsior*), when wild, is not found further north than Molde in Romsdaal (62° 44'), but as a cultivated tree it flourishes even as far as the polar circle. The lime (*Tilia parvifolia*) has a somewhat higher range (62°) on the west coast to what it has on the eastern border, where it is one degree less. Cultivated, however, it reaches as far as Stegen (67° 56'). The mountain ash (*Sorbus aucuparia*) is common throughout the whole of Norway, and in ordinary summers it ripens well. With its pretty bunches of red berries, which attract multitudes of birds, it gives great colour and warmth to the hill-sides in winter.

Amongst the smaller class of trees which flourish in Norway may be mentioned the juniper (*Juniperus communis*), generally met with as a shrub, but occasionally, as at Selbo, in South Trondhjem, attaining the dignity and proportions of a small tree of 36 ft. high. It grows everywhere, even as far as the North Cape, exceeding the birch in this respect; but it requires a dry and the poorest of soils. Of osiers, there are nearly twenty varieties in Norway, as wild shrubs, growing at a considerable elevation on the mountains, and especially in a damp, boggy locality. The wild apple (*Pyrus malus*) is met with every here and there as far north as the island of Ytterö in Trondhjemfiord (63° 49'), though never more than 500 mètres above the sea. There are two varieties of wild cherry-tree (*Prunus avium* and *P. padus*), the former rather localised, and found principally in small woods at the head of the Sognefiord, while the latter is much more common and has a wider range, ripening as far north as Tanaels, in East Finmark (70° 20'). Besides these are the sloe (*Prunus spinosa*), growing up to 60°; the barberry (*Berberis vulgaris*), which extends four degrees farther north; the wild currants (*Ribes grossularia* and *R. rubrum*), the latter flourishing under the same conditions and limit as the fir; the wild raspberry (*Rubus idæus*), very common as far north as Finmark; and the blackberry, the only wild fruit in Norway which is looked upon as a property, and which in Tromsö and Finmark is a source of considerable revenue. Although not coming under the denomination of timber, it is fair to mention the numerous varieties of bilberry or whortleberry, and of cranberry (*vaccinium*), which grow in great abundance, and form such an agreeable addition to our culinary resources.

* See p. 1 95, *ante*.

Society of Medical Officers of Health.—The first meeting of the winter session of this society was held on the 17th ult. at the Rooms of the Social Science Association, Adam-street, Adelphi, when the new president, Mr. J. S. Bristowe, M.D., took the chair, and delivered his inaugural address. Premising that the prevention of diseases and injuries had far higher claims to be regarded as a science and to the gratitude of mankind than mere curative or palliative treatment of diseases or injuries which had already accrued, and admitting that for many diseases there were remedies which, if judiciously applied, were of inestimable value, he said he was satisfied that many afflictions which they professed to cure, and for the treatment of which definite rules were laid down in books, ran their allotted course in spite of all their remedies, and that in a large proportion of cases all their nicely-balanced combinations of drugs which they administered in the form of pills and potions might, for any good they did, as well be thrown to the dogs.



MUNICIPAL BUILDINGS, LEICESTER.—*Plan of Principal Floor.*



COUNCIL CHAMBER, LEICESTER MUNICIPAL BUILDINGS.



LEICESTER MUNICIPAL BUILDINGS.—Mr. F. J. Hames, Architect.

LEICESTER MUNICIPAL BUILDINGS.

Leicester has endowed itself with commodious Municipal Buildings, designed in the so-called Queen Anne style. We give a view of the exterior.

The chief entrance, in the centre of the building, is effective. On the iron railed gate the arms of the borough are placed upon shields. In the arch overhead, which is richly carved, is the Latin inscription, "*Nisi Dominus ædificaverit domum frustra laboraverunt qui ædificanteam.*" Above this, and stretching along several windows on the first-floor, is a balcony supported by massive stone brackets. On the gable of the window in the top story, above the doorway, the borough arms are repeated, the shield bearing the rose being picked out in colours, while a stone griffin surmounts the window as a finial. A carved stone cornice runs round the second story. The memorial-stone occupies a conspicuous position in the front of the building, and bears in coloured letters on a gilt ground an inscription, stating that the stone was laid by "Alderman William Kempson, Mayor of Leicester." All the external doors of the building proper are of wainscot oak, heavily moulded.

Internally, the rooms and accommodation for the Courts, the Council, the School Board, and the various officials connected with them are spacious and lofty.

The length of the building is 216 ft., by 118 ft. wide, and its height varies from 58 ft. to 80 ft. The clock-tower rises 145 ft. from the ground, and the clock-dials are 22 ft. in circumference. The chief entrance to the basement is from the front. On the basement and along the corridor are thirteen cells, eight for males and five for females, and close by is the police muster-room, which measures 56 ft. by 32 ft. At the Bishop-street side are cellars for coal and wood, and on the side facing the new street is an apartment for the heating apparatus, of which there are three, by Bacon, on the high-pressure principle, and pipes communicating with these run all through the building. From the police-station entrance are approached the waiting-room, the charge office, clerk's office, detectives', inspectors', and inspectors of nuisances' rooms, and lavatories, and on the right of the corridor are strong-room, a police store-room, a parlour, kitchen, pantry, and two bedrooms for the hall-keeper.

On the ground-floor, starting from the municipal entrance, in Horsefair-street, the borough accountant's private office is first reached, and next in order are his general offices, the rate-clerks' office, the municipal stairs, the male witnesses' room, the hall-keeper's apartments, and the public entrance from the new street. Then come the female witnesses' room, the law entrance, the barristers' robing-room, the magistrates' room, and lavatories. At the Bishop-street end are two rooms for the magistrates' clerks, and an office for the head constable, while at the end of the corridor is a door leading to Mr. Farndale's residence. Returning along the corridor there is the jury retiring-room, the judges' retiring-room, and the principal Borough or Crown Court. Passing the public hall is the second or Nisi Prius Court, and judges' retiring-room; a strong-room, directly over that in the basement; adjoining is a convenient room for the payment of wages to borough workmen and for other money transactions; then there are lavatories and the general committee-room. There are also in this corridor the private and general offices of the borough surveyor, the surveyor's waiting-offices, the councillors' private stairs, borough surveyor's plan-room, and the municipal entrance.

At the back of the building, in Bowling-green-street, is the large parade-ground for the police, measuring 120 ft. by 48 ft.; and at the Bishop-street end is the residence of the chief constable, Mr. Farndale, consisting of four rooms on the ground-floor and six bed-rooms on the second-floor. At the other end of the yard is the fire-brigade station, where accommodation has been provided for the engines and other apparatus belonging to the brigade. Provision has also been made for the drying of the hose, the cleaning of the engines, &c. Over the engine-house is a commodious dwelling-house for Mr. Johnson, the superintendent, which in cases of fire occurring will be found very convenient.

On the first-floor, at the Horsefair-street end, are the council chamber, the mayor's parlour and private room, and a vestibule at the end of the corridor. On the right are the councillors' retiring-room, office and strong-room for the use of the town clerk, and the entrance to the grand-jury gallery in the principal Borough Court. On this floor too are the School Board board-room, committee-room, and School Board clerk's offices, with cloak-room and lavatory, grand-jury stairs, grand-jury room, witnesses' room, School Board inspectors' room, the municipal stairs, town clerk's general and private offices, the second-floor staircase, lavatories, and the councillors' private staircase.

On the top floor is a large club-room measuring 68 ft. by 32 ft, with a retiring-room at one end.

The whole building is of Suffolk brick with Ketton stone dressings externally, while the internal stonework, with the exception of the staircases, is of Caen stone, most of it being heavily moulded and richly carved. The staircases are of Yorkshire stone, the balustrades and newels hatched with gold and surmounted by a handrail of polished brass.

By far the finest room in the building is the council chamber, the public entrance to which is in Horsefair-street. It measures 56 ft. by 32 ft. The ceiling is of a semicircular form, and is the finest piece of plaster-work in the building. Within moulded panels are the borough arms, and these are relieved and divided by other panels of various shapes, floral scrolls and devices. On a raised dais in two divisions, one a little lower than the other, are the chairs for the mayor and aldermen. In front of the chairs on both divisions of this platform, polished turned brass rails, crescent shaped, with writing desks on top, are placed. The town clerk's table is in the centre of this platform. In the centre of the chamber are the benches for the councillors, five in number; they are crescent-shaped, stuffed, and covered with Russia leather. Behind these, and a step above them, is the space reserved for the public. At the top of the room, and above the mayor's chair, are the national arms, with the motto "Semper eadem," which has so long occupied the same place in the old Guildhall. At this end also are the portraits of Wm. Heyricke, M.P. for Leicester 1600, 1605, 1620, a goldsmith and citizen of London, and of Robert Heyricke, mayor of Leicester 1584, 1593, 1605, M.P. for Leicester 1588. The portraits of Henry, Earl of Huntingdon, Lord Hastings Hungerford, and of Sir Thomas White, which were also in the old Town-hall, have been transferred along with the others to this room. In the right-hand wall of the room, looking from the top, is the fireplace, which is a special feature in the room. The jambs are of rouge marble, the cheeks or sides of coloured tiles, the hearth of brick-coloured tiles, and the fender of black marble. We give a view of the original design for this room, the arrangement of which has been a little altered in the execution.

Above the fireplace, in an elaborately-carved wainscot-oak frame, so made as to run into and appear part of the mantelpiece, is the portrait of Mr. T. Paget, with the following inscription cut in antique letters on the frame:—"Thomas Paget, of Humberstone, Esq., M.P. for Leicestershire, 1831—1832. First Mayor of Leicester under the Municipal Act, 1836, 1837." Close beside the fireplace, on the same side, are the seats of the reporters. On the left-hand wall of the room are four windows, and at the further end two, all of which are of stained glass, and bear the names of the mayors elected since 1836. The windows are 10 ft. high by about 5 ft. broad. The woodwork of the room is of wainscot-oak, and it is finished in a highly artistic manner. The dado, or lower part of the wall, rises 10 ft. from the floor, and is panelled throughout. There is a 2 ft. margin of oak round the floor, and in the recesses of the windows are coils of the pipes for heating the building, which will be covered with brass trellis work. The doors are richly carved. On the one at the public entrance is the motto, "Pro rege, lege, et grege," and on the door from the mayor's parlour into the council-chamber, "Salus populi suprema est lex." The gas-fittings consist of two gasceliers, having two rows of lights each, five in a circle. Entrance can be had to the council-chamber from the mayor's parlour and mayor's private room. The former of these is a very handsome, lofty, and well-lighted apartment. The walls are covered with a gilded paper, the dado with embossed leather. The most noticeable thing in the room is the massive polished walnut mantelpiece, and roomy fire-place. On one side of the mantelpiece is the motto, "God Speed the Right"; on the other, "Truth is Great, and will prevail." Here is the portrait of John Biggs, esq., M.P. for Leicester 1856 to 1862, mayor of Leicester in the years 1840, 1847, 1855. The general committee-room is spacious and well lighted, though the view from the windows is greatly blocked by the erection of the fire-brigade station. The ceiling is deal, heavily moulded, with plaster panels. The walls are size-coloured a bright yellow,—and might be improved were they toned down a little,—the dado is of a darker colour. An oak margin of 2 ft. also runs round the floor, which will be, like all the other public rooms, laid with Brussels carpets. The fireplace is of St. Ann's marble, and the mantelpiece of walnut, with mirrors at each side. The Crown or Borough Court measures 36 ft. by 58 ft. It is substantially and tastefully fitted up in wainscot-oak. The bench is roomy, the accommodation abundant, and all proper arrangements have been made for the judges and magistrates. On the right of the judge is the gallery, the lower part of which is ornamented with embossed gilded leather. Underneath the gallery is a sort of recess, partitioned off half way up from the court, for the convenience of barristers and their clients, for messengers, &c. The windows are in small squares fixed in lead, and the ventilation is assisted by the upper parts of them being made movable. At the far end of the court and near the ceiling is a bull's-eye window of stained glass. The accommodation for counsel, jury, and reporters is amply sufficient, but the space reserved for the public is not so large as might have been expected. The dock for the prisoners is right in front of the bench, and is surmounted by a polished brass railing. On the right hand is the witness-box, on the left the seats for the jury and reporters. The cells in the basement, as well as two provisional cells on the ground-floor, communicate with the courts by a flight of stairs. The public hall, for the convenience of parties waiting on the courts and by which the public obtain access to them, measures 34 ft. by 20 ft., and is very lofty. At the end facing Bowling-green-street, there are three stained-glass windows, divided in the centre by stone mullions. The window on the left of the entrance is a representation of Simon de Montfort, Earl of Leicester, his right hand resting on his side and his left upon his shield. The corridors are 8 ft. wide, arched, and the ground-floor is of a mosaic pattern, made of small stones prepared by the female convicts in Woking prison. In each corridor a hydrant is placed, to which hose can readily be attached in case of fire breaking out. The cells are 9 ft. by 6 ft., and are lofty and well ventilated.

The architect of the building was Mr. F. J. Hames; the contractor, Mr. Brass, of London. The plaster work was entrusted to Mr. Morrell, Leicester, and the general furnishing of the several offices to Mr. Gillow, London. The benches in the council chamber, the carpentering, &c., have been supplied by Mr. Christie, London; the stained glass by Messrs. Heaton, Butler, & Bayne, London. Messrs. Richardson, Ellson, & Co., Southwark, London, did the internal gasfittings; the outside lamps and other requisites in the lighting department not connected with the interior having been supplied and fitted up by Mr. F. Webb, Leicester. The bells for the clock-tower were cast by Messrs. Mears & Stainbank, London. The hour-bell is 21 cwt., note E; 4th quarter bell, 7 cwt.; 3rd quarter bell, 4½ cwt.; 2nd quarter bell, 4 cwt.; 1st quarter bell, 3½ cwt. On one side is a representation of the town's arms, with the following names underneath:—C. Harding, mayor; Mr. Millican, chairman of the building committee; J. Storey, town clerk; A.D. 1875; and, on the other side, F. J. Hames, architect; E. T. Loseby; and the names of the founders round the crown of the bells. The clock in the tower was manufactured by Mr. Loseby, Leicester. Mr. I. Pearce was foreman of the works for Messrs. Brass, and Mr. Vickers has acted as clerk of works on behalf of the Corporation.

The total cost may be called 51,000*l.*, including furniture.

Mr. Hames has laid out ornamental grounds in front of the building, and a handsome cast-iron fountain from his design has been erected there. The fountain was the gift of Mr. Hart, the high bailiff.

THE EDUCATION OF AN ARCHITECT.*

VITRUVIUS treats of the education of an architect, and sets forth the qualifications in a concise and satisfactory manner. It is not necessary to quote them, as they have often been alluded to, and are well known.

The student should produce certificates of having received at college or academy a liberal education.

Professor Cockerell considered that a liberal education was an essential preliminary to the study of architecture; and above all, the student should possess a sincere and ardent love of the beauties of nature. And next to nature, the great authors whose works had received the sanction and approval of bygone ages were to be carefully studied.]

Handicraft with the workman's tools, and mastery with the pencil, are essential to the architect; some of the most able architects had passed a year at the carpenter's bench. An architect without a practical knowledge of his profession is to be pitied, as his knowledge and genius will avail him but little. A practical knowledge enables him to see that his works are executed with integrity. Cicero reminds us that the main end of building is lodging, and other necessary uses of a house; and therefore the draught or contrivance of it should be suited accordingly.

Sir Henry Wotton's remark that "architecture can want no commendation where there are noble men or noble minds" is very significant, as the sentence embodies that which has been enforced by the earliest philosophers and writers. Cicero says all handicraftsmen have but a mean sort of calling, and all those trades are pitiful and low that purvey and cater for the satisfying men's pleasures,—fishmongers, butchers, cooks, perfumers, dancing-masters, &c.; but arts that have knowledge and skill in them, such as architecture, or the instruction and education of youth, are very creditable and commendable in those whose rank and condition are suited for such employments.

Sir Henry Wotton and Cicero, it will be observed, concur; the former requires noble minds for the study of architecture, and the latter commends architecture only to those whose rank and condition are suited for such employment. This clearly proves the folly of young men entering the profession of an architect without a certainty of 300*l.* a year, at least until they have obtained a permanent footing. Addison was sometimes very much troubled when he reflected upon the three great professions of divinity, law, and physic; how they are each of them overburdened with practitioners, and filled with multitudes of ingenious gentlemen that starve one another.

The dignity of the profession ought to be maintained in its integrity. If the mere acquisition of money is to be the grand object of a professional life, then any lucrative trade ranks in importance the same. On this subject Vitruvius gives a caution. He says that an architect should be above meanness in his dealings, and, what is of the highest importance, prevent avarice gaining an ascendancy over him; he should not be occupied with the thoughts of filling his coffers, nor with the desire of grasping everything in the shape of gain. The Institute of Architects very properly have enacted that the members shall not measure, value, or estimate any works for any building artificer, or receive any pecuniary consideration or emolument from any builder or other tradesman, whose works they have to superintend. The architect and surveyor can no more be coupled, than the sculptor and marble mason.

In early times the Greeks raised no objection to the public discussing matters connected with the government, but that which pertained to art. Plato informs us, "When it is necessary to settle anything respecting architecture, the architects are sent for and consulted about the buildings; and so with all other things which they think can be taught and learnt." The Greeks also considered that an architect should be paid for his advice; Socrates says, "It is not at all disgraceful to take money for giving advice about architecture or other arts." Nowadays an architect is seldom recompensed for his advice.

Architects of the present day are more captivated with what is brilliant than with what is solid, and prefer splendid negligence to laborious exactness. It should be remembered that labour is necessary to excellence. Natural historians assert that whatever is formed for long duration arrives slowly at its maturity. Thus the firmest timber is of tardy growth, and animals generally exceed each other in longevity in proportion to the time between their conception and their birth. The same observation has been extended to the offspring of the mind, for, as Shakspere says,—

> "Time will perfect
> A lab'ring thought."

Hasty compositions, however they please at first by flowery luxuriance, and spread in the sunshine of temporary favour, can seldom endure the change of seasons, but perish at the first blast of criticism or frost of neglect. When Apelles was reproached with the paucity of his productions, and the incessant attention with which he retouched his pieces, he condescended to make no other answer than that he painted for perpetuity.

The progress of many young men of genius has been impeded by altering the Classic and Mediæval architecture to their vague and uncertain ideas of beauty, instead of more closely adhering to the original models. The young architect having become fully versed in the rudiments, laws, and spirit of ancient architecture, should collect specimens, and amass a stock of ideas, to be combined and varied as occasion may require. Having made himself master of all that has been known and done before his time, he must now endeavour to rise above the past. He must regulate his taste and enlarge his imagination, and with all the models of antiquity, at home and abroad, before him, "he will," as Sir Joshua Reynolds says, "avoid that narrowness and poverty of conception which attends a bigoted admiration of a single master, and will cease to follow any favourite where he ceases to excel. Though the student will not resign himself blindly to any single authority, when he may have the advantage of consulting many, he must still be afraid of trusting his own judgment, and of deviating into any track when he cannot find the footsteps of some former master."

Unless an architect has the moral courage to frame his present and future practice upon the best periods of Classic and Mediæval architecture, he will most assuredly be following the shadow in lieu of the substance, and must rest contented to rank rather as an accomplished barber than as a celebrated architect. At the present period, proportion, also Classic and Mediæval architecture, are not only seldom alluded to, but actually ignored, architects preferring to act as mere decorators, whose performances, fortunately, will not endure longer than superficial works are generally expected to do. It is quite absurd to think that all regular architecture, which has taken thousands of years to perfect, is to be shunned for frivolities. We need not copy the past, but we may build upon it.

Proportion in building, be it remembered, can exist in perfection without architecture. A church may be well proportioned, with nave, aisles, transept, chancel, and the whole of the interior in harmony, and yet have its architecture and details in bad taste. In the square of Santa Maria Novella stands a church, built in the thirteenth century, which was thought by Michaelangelo to be so beautiful in the interior, that he distinguished it by the fond appellation of his spouse.

The recent discoveries of Dr. Schliemann prove, in the most certain manner, that the artistic genius of the epoch of Pericles did not come suddenly down from heaven, like Minerva from the head of Jove, but that it was the result of a school of domestic artists which had flourished for ages before it reached such perfection.

In a previous paper, read in 1874, I ventured to assert that the Greeks borrowed their ideas from buildings of stone, not from those of wood; they simply refined and reduced to order the works of former ages; this they accomplished with consummate ability. We have no spontaneous creations of architecture. Art did not spring up to perfection, but gradually rose. The sculpture of Greece was the growth of years, until Phidias carried it to the point beyond which it could not go.

Although every man is not a genius, still many are always advancing by slow and sure steps to the height of their profession. In science the greatest discoveries were made at an early age. Sir Isaac Newton was not twenty when he saw the apple fall to the ground. Harvey discovered the circulation of the blood at eighteen. Berkeley was only twenty-six when he published his essay on vision. Hartle great principle was developed in an inaugu dissertation at college. Hume wrote his tr tise on human nature while he was yet quite young man. Hobbes put forth his metaphysi system very soon after he quitted the service Lord Bacon. Galileo, Leibnitz, and Euler co menced their career of discovery quite youn it has been consequently thought that, bef the mind becomes set in its own opinions or t dogma of others, it can have vigour or elastic to throw off the load of prejudice.

Before claim can be made for an origi discovery, a most laborious research and inqui into the works of others and of former times necessary; invention, strictly speaking, bei little more than a new combination of form materials. Copying is denounced, yet it is c sidered that the greater the acquaintance w the works of those who have excelled, the m extensive will be the powers of invention.

If an architect aims at becoming acco plished, he must not rest content with simp doing his duty; he must strive to imitate t great masters, and surpass them.

Of all the branches of art to which man tu his attention there are none amongst the ma that point out more clearly the success stages and advances of learning and moral i provement, combined with intellectual ext sion, than that of architecture; for if we t to by-gone times we shall find, if we exam the history of any particular country, that learning spread its genial influence through land, architecture in that country rapidly proved at the same time, and in many cases far greater ratio than learning itself.

To arrive at excellence and become a gr master, an architect must avoid popular His style should be simple, pure, and correct contrasted with the florid, or over-decorated the careless, loose, and inaccurate. All deba styles are popular, as they fall within compass of ignorance. No young man ever learn his profession in an architect's of beyond copying drawings and specificatio His advancement is *nil*; and at the expirat of his articleship he has to commence educational career. Hard work in a right di tion will be the best inspiration, and a profo study of the architectural works of the times. He must commence as an imitator (w few can copy accurately) before he finishes career as an originator. A child is depend upon others when he cannot walk, but when can walk he discards assistance.

The *science* of architecture should be the acquired. The young architect will learn m practical information from the carpenter's be and the stonemason's yard than from bo Causes should be first sought before effects, more especially so as in architecture the or mental has always been considered to h emanated from the useful.

"The great object of an architect," s Wood, "is to determine in what manner, w means always in some degree limited, either the nature of the material to be employed, or customs of the country, he can combine bea with utility. The connexion of beauty, as effect, with the composition of the parts buildings, as the cause of that effect, is great end and object of the architect."

Peculiarities should be avoided, for even g men often commit great faults; and an archi ought to be able to commit his thoughts writing, prepare reports, and write a con specification of the several works; no man be great who is grossly illiterate.

Addison says, on this subject, when a has planned his discourse, he finds a great m thoughts rising out of every head that do offer themselves upon the general survey subject. His thoughts are at the same t more intelligible and better discover their and meaning when they are placed in t proper lights, and follow one another i regular series, than when they are thr together without order and connexion.

A knowledge of all the various styles of a tecture is essentially necessary; the archi must be an archæologist,—

> "Here's Nestor,
> Instructed by the antiquary times,
> He must—he is—he cannot be but wise."
> *Shakespear*

Among the qualifications required by Vitru of an architect, the talent of eloquence i named, and it has been even distrusted in fo times. It was occasioned by a consider building that the Athenians intended to e

* By Mr. W. Pettit Griffith, F.S.A. Read before the Liverpool Architectural Society, October 29th.

the execution of which two architects offered mselves to the people. The one, a fine aker, but not very expert in his art, charmed d dazzled the whole assembly by the elegant nner in which he expressed himself in plaining the plan he proposed to follow. The er, as bad an orator as he was excellent as architect, contented himself with telling the henians,—"*Men of Athens, I will do what he said.*"

No doubt that Vitruvius was wise in not inding eloquence among the qualifications for architect; it would in all probability have duced envy, and brought him to grief. story informs us that an architect created jealousy of an emperor through exhibiting re than ordinary talent, and was accordingly prived of his practice and living. The incident been thus related by Dr. Dodd in "Beauties History," 1803:—"In the reign of Tiberius sar, there was a portico at Rome that bowed wards on one side very much. A certain hitect undertook to set it right and straight; underpropped it every way on the upper part, d bound it about with thick cloths, and the ns and fleeces of sheep; and then, with the e of many engines, and a multitude of hands, restored it to its former uprightness, conry to the opinion of all men. Tiberius adted the fact, and envied the man; so that, ugh he gave him money, he forbade his me to be inserted in the annals, and afterds banished him the city."

although nature is the best teacher of colour, t, and shade, still a practical knowledge of spective is indispensable to the architect, numerous works have been published on the ject. Next to a model, a perspective view s a better idea of the real appearance of a ding than geometrical drawings, which are ly understood or appreciated by the public. ice the importance of taking lessons in er-colour drawing. An architect who can a landscape to his perspective views inses in a surprising manner his chance of cess.

he young architect should devote his attenn to the geometry of the ancients, as taught Pythagoras, Plato, Newton, Huygens, and r geometricians. This subject is at the sent day wholly neglected in the education an architect. It has been proved that the gious edifices of Egypt, Greece, Rome, and Middle Ages were designed and proportioned the ancient geometry. A certain amount of husiasm is essentially necessary, and love for art; all the education in the world will avail little if the architect be not his own ther.

n choosing a profession, a young man ought ave regard to his own peculiar nature and ins, so as to keep a due tenor and conency during his life, and not falter in the formance of his business. He must make a ticular business his study who would excel the practice of it. Attention to the mere tine of an office during three years will be of ing worth to a young architect, unless he otes his evenings to earnest study. All an architect can expect, or hope to accomh, will be by that plodding, patient, perseng process of accretion which builds the heap particle by particle, thought by thought, by fact, and by not wasting the invaluable ments of time called odd moments. This le of intellectual culture is not only more itable to body and soul, but affords a lesson hose who spend hours in frivolous amuseits, and *have no time* to learn anything.

is necessary that an architect should be to take out quantities, in order to check tradesmen's accounts, but by no means rable for him to supply builders with them. would place him in a false position, and roy his independence of action.

young architect ought by all means to r into competition; many eminent archis have gained their laurels by so doing. judge or umpire ought, of course, to be not impartial, but capable of giving a just sion; a mere picturesque drawing rendered ty by the artist is not to be the guiding ciple; the purposes for which the building tended should be the serious consideration. adaptation of every part, the sanitary ngements, the utility of the building, have to be considered; and, lastly, its external arance.

will be well to bear in mind that the duty he architect is to impart intelligence to his by means of form, colour being employed simply to render the mouldings and other features more clear; a distinction is thus made self-evident between an architect and a decorator. The proper use of good mouldings should be encouraged, as powerful temptations are offered to force the employment of colour, in lieu of form, upon the architecture of the day.

However mechanical it may be considered, after having practised sketching, which is often a natural gift, a neat, careful, and accurate method of drawing is essential. An accomplished architect may succeed mentally, without being a fine draughtsman; still he who can design and draw is doubly armed.

Sketching is very useful for obtaining general outlines and ideas, but it is of little use for practical purposes. The most successful architects, it will be found upon inquiry, have devoted time in drawing out from actual measurement the various details of Gothic architecture; without this industry on their part books would have rendered the profession but little assistance.

It has been urged that travelling is wholly unnecessary, and that prints and descriptions convey as complete a knowledge of celebrated buildings of antiquity as actual inspection. Crude and inherent attempts at execution would then bring the art itself into contempt. As a matter of fact, all students cannot command the advantages to be gained by visiting buildings abroad; in that case the works of Stuart and Revett, Taylor and Cresy, and others, are of great value and assistance.

> "Experience is by industry achieved,
> And perfected by the swift course of time."

The architectural student will never succeed, unless he, like the Mediæval architects, and in later times Sir C. Wren, studies the principles or developing causes of architecture. Having treated of this in former works, at some length, it is only necessary, on the present occasion, to direct the attention of young architects to the subject. The history of architecture, not the principles, should be taught in all schools. Popular treatises have been issued; but they have very imperfectly approached the subject, as they limit their instruction to the "five orders."

A taste for architecture forms a basis of every other artistic taste, and its principles form the basis of sculpture and all other plastic arts.

Plato very properly points to the folly of undertaking public and private works without having studied with good masters; he says, "If on examination we found that our masters had been good and famous, and that we have constructed, in conjunction with our masters, many and beautiful buildings, and many privately by ourselves after we had left our masters, in that case it would become men of sense to undertake public works; but if we were not able to show that we had a master, nor any building at all, or many and those of no account, it would surely in that case be foolish to attempt public works, and to exhort one another to undertake them."

The Scriptures urge that the master-builder of a new house must care for the whole building; but he that undertaketh to set it out, and paint it, must seek out fit things for the adornment thereof.

Shakspeare says, on this subject,—

> "When we mean to build,
> We first survey the plot, then draw the model,
> And when we see the figure of the house,
> Then must we rate the cost of the erection;
> Which, if we find outweighs ability,
> What do we then, but draw anew the model
> In fewer offices; or, at least desist
> To build at all?"

The educated architect, like Sir C. Wren, has the power of adapting his designs to circumstances, which the vulgar pretender cannot accomplish.

Finally, the true principles in Nature's works form an invaluable guide to the architect; and the best examples of art exhibited in either architecture, sculpture, or painting, are valuable only because nature has been understood and formed the true basis of action. The modern architect, to be worthy of the name, should be a perfect master of all the various phases of art, and ought by observation and careful drawing to be an expert in Classic, Gothic, and all architecture; and when out of leading strings, keeping Nature's principles always in view, he should be a slave to no style; and, if the architect, thus perfected by industry, perseverance, sound common-sense, and experience, should be blessed with good taste, he will require no master at his elbow, ancient or modern, but will soar far above all mediocrity, and leave behind him a name,—a bright star,—to inspire and to lead future generations to follow his glorious example, and to fill the architectural world with everlasting intelligence; the glory of that which is good of itself being eternal.

RAIN COLLECTED FROM ROOFS CONSIDERED AS A DOMESTIC WATER SUPPLY.

On this subject Mr. H. Sowerby Wallis read a paper at the Croydon Congress. He said:

For the use of towns the water can be brought in bulk, and having only to be distributed over a small area, the cost, though great, can be easily met, but in small villages and rural districts the cost of distribution would be so great that a supply in this manner is altogether out of the question. In these districts, however, the importance of a sufficient quantity of pure water for domestic purposes is very great, and seems to be only equalled by the difficulty of obtaining it. The usual sources of supply are the small streams and shallow wells; the streams are scarcely ever pure enough for drinking, and the wells are very frequently much too near cesspools and house-drains, to say nothing of the miscellaneous organic matter with which surface water must necessarily be polluted. This is not all; one well generally supplies several cottages, and the distance which the water has to be carried prevents it being used in anything like sufficient quantity for thorough cleanliness; and in hot and dry weather, when a plentiful supply is more than ever needed, the well often runs dry, or, at least, the scarcity of water causes frequent quarrels. Perhaps the simplest solution of the difficulty is storing the water which falls on the roofs, if a sufficient quantity can be obtained in this manner, and the object of my paper is to consider this question.

The average rainfall over the British Isles varies from about 20 in. to nearly 200 in. per annum. The largest amounts being recorded in the English Lake district, and in the mountainous districts of Wales and Scotland; and the smallest in the Eastern and Midland counties of England. I have selected four fairly representative stations with average rainfalls of approximately 22 in., 25 in., 35 in., and 45 in., on which I have based my calculations. Stations where the fall is much above 45 in. are only found in mountainous districts, which are generally rocky, and consequently there is no difficulty in obtaining a supply of water from the streams, which are numerous, and in such districts usually sufficiently pure. The two average falls, 22 in. and 25 in., may appear rather near each other in amount; my reason for adopting them was that the 22 in. was the lowest satisfactory average I knew of, obtained from a sufficiently large number of years, and 25 in. represents the fall over a larger part of the country than any other amount.

In dealing with my subject, I shall consider more particularly the supply of labourers' cottages; for, although pure water is as necessary to the middle and upper classes of the community, they have the matter more in their own hands, and can, as a rule, meet the necessary expense of procuring a good supply. Taking the average size of a cottage as 15 ft. by 20 ft., which I think is not far from correct, the average yield of water for a year, with a mean rainfall of 25 in., would be 3,900 gallons, or nearly 10·7 gallons per day; but this is without allowing anything for loss in collecting, which is considerable. From measurements of the flow of water from a tiled roof in average condition, I find that about 20 per cent. is lost. First, there is the water absorbed by the tiles; then a considerable quantity is held between the tiles by capillarity; and, lastly, some is lost by splashing off the edges of the roof and out of the gutters. On a slated roof, I believe the loss might be reduced to between five and ten per cent. Then, also, we must not calculate the supply only from the average rainfall, but from the fall in a dry year. Thus, at a station with a mean annual rainfall of 25 in., the amount in the driest year is about 17 in. This would yield 2,546 gallons. Deducting 20 per cent. for loss, 509 gallons, leaves an available supply of 2,037 gallons, or rather less than 5·6 gallons per day, which would be altogether inadequate for the use of four or five persons,—the presumed number of the inhabitants of the cottage.

With a mean rainfall of 30 in. we should have

an average supply of 10·3 gallons per day, and in the driest year 6·9 gallons.

With a 35 in. rainfall, 12·0 galls., and 7·7 galls. per day.
" 40 " " 14·5 " " 10·8 " "
" 45 " " 16·4 " " 13·1 " "

I have not been able to find anywhere a statement of the requisite quantity of water per head per day in rural districts. In towns the quantity varies from about twelve gallons to about fifty gallons; but there can be no comparison, as in towns a large proportion goes for trade supply and for general sanitary purposes; a great deal is wasted by bad fittings; and the amount used for the water-closets, which are almost unknown in country cottages, is, I believe, considerably more than half the quantity delivered to each house.

I think there can be little doubt that a cottage with an average supply of twelve gallons per day of pure water close to the house would be considerably better off than nine-tenths of the English cottages in their present condition; but this could only be obtained from the roof in places where the mean rainfall was 35 in. and upwards. In places where the rainfall was less, this method could only be adopted with satisfaction as a supplemental supply, or for potable water where there was another supply for cleansing purposes.

It is of considerable importance that the water collected on roofs be properly stored. A great deal might be said about the objection to storing in wooden butts or cisterns of any kind above ground, which are often exposed to the sun, and are liable to receive various impurities, the water becoming unfit for consumption after a very short time, and I believe it is from this cause that a great deal of the prejudice against rain-water as a beverage has arisen, for if properly stored, it is probably the most wholesome of all waters. The best receptacle is an underground tank or well, bricked at the sides and bottom, and lined with about half an inch of Portland cement, to prevent any possibility of loss from leakage, or pollution from the infiltration of impure water from the surrounding ground; the top should be domed over, leaving a man-hole, so that the tank may be occasionally cleaned; the man-hole should be covered with a slab of paving-stone laid in mortar, to prevent worms or other insects getting in and polluting the water. The pipes from the roof to the tank where they pass underground should be of glazed earthenware, and the joints made with cement, so as to be both watertight and impregnable to insects and other polluting matter from the outside. They should not go straight into the tank, but into a small receptacle beside it, in which any dead leaves or other matter carried down from the roof would be intercepted, so as not to reach the tank and decay in the water. This receptacle should be made with a closely-fitting movable cover, so that it could be occasionally cleaned, which would aid materially in keeping the water pure. The tank should also have a waste-pipe to allow any surplus water to escape, the end of which should be covered with a piece of perforated zinc or copper wire gauze to prevent frogs, mice, or other vermin having access to the water. A tank carefully constructed in this manner will not require cleaning more than once every two or three years.

THE SIMPLON TUNNEL.

In the *Builder* of the 4th of October, an article appeared, headed "The Simplon Tunnel," in which the length of the proposed tunnel is said to be eleven miles and a half, a length involving serious difficulties as to ventilation, if the trains are to be propelled through the tunnel by locomotive engines burning coal or coke in the usual way, carrying the heavy traffic by which only a proper return could be earned for the great outlay, and without which the undertaking must prove commercially a failure, however successful it may be as an engineering work.

There are, it is true, other modes of propelling trains besides the steam locomotive, several of which have been in practical use, but they have been superseded (even under circumstances favourable to their use) by the steam locomotive, which is the means of propulsion adopted in the longest tunnel now in use, namely the Mont Cenis Tunnel, and this was, no doubt, adopted after a full consideration of the different modes of propulsion. In the Mont Cenis Tunnel, even with the present very moderate traffic, some inconvenience is experienced from the deficiency of ventilation, and it must be borne in mind that the difficulties of ventilation increase in a much more rapid ratio than the lengths of tunnels.

The proved superiority of the steam locomotive, and the objection to the emission of smoke in a tunnel, seem to point to the advisability of adopting some mode of propulsion which, while it employs the locomotive as a means of producing the requisite power, does not render it necessary for it to enter the tunnel. This might be accomplished by constructing the approach to a tunnel with a rising gradient, up which a train could be propelled to such a height that it would, by its own weight, run down through the tunnel, which would be constructed with such a falling gradient that a train would run down at the required speed without an engine or without steam. It has been found by numerous and careful experiments that a train, without an engine, or with an engine having the steam shut off, will run down an incline of 1 in 100 at a speed of about thirty miles an hour, so this may be taken as a suitable gradient.

As trains could run by gravitation through the tunnel in only one direction, it would be necessary to have two tunnels, one for the "up" and one for the "down" traffic, but each might have only a single line. As the gradient would be such that trains could be propelled by locomotives up the incline, one tunnel could be completed and used for traffic in both directions to such an extent as the ventilation would allow, during the construction of the second tunnel. Thus, although the cost of two single tunnels would be greater than that of one double tunnel, its expenditure would be spread over a longer time, during the latter half of which the first tunnel would be earning a certain amount of revenue and developing the traffic.

In a tunnel 11½ miles long, the difference of level of the two ends, with a fall of 1 in 100, would be about 600 feet, and probably there would be no great difficulty in finding suitable positions for the entrances and outlets; indeed, from the description of the gradients in your paper, one of the tunnels would probably have better approaches than would the proposed double tunnel. (The entrances of the Mont Cenis tunnel are at such levels that, had the tunnel been made with a continuous fall, it would have had a gradient of 1 in 92, which would have answered admirably for working by gravitation.) The only additional difficulty in making a tunnel with a continuous fall would be that, during construction, the water would require to be pumped from the part of the tunnel inclining downwards from the upper entrance.

The tunnel being thus kept free from the smoke of engines it would only require ventilation sufficient to replace the comparatively insignificant quantity of air vitiated by the breath of passengers and others, and by the requisite lamps; and this amount of ventilation would be supplied by the currents caused by the passing trains acting as loosely fitting pistons propelling currents in the same direction as they themselves travel (as may be seen by the motions of the vapour issuing from any tunnel). These currents would be more rapid as the number of trains passing through increased, so that the ventilation would be to some extent self-regulating.

These currents would, of course, be induced by trains propelled by locomotives; but, beyond a certain length, the smoke would increase with the number of trains more rapidly than would the air-current.

Indeed, if in the Simplon Tunnel no means of artificial ventilation are provided, and the trains are propelled by locomotives burning coal or coke in the usual way, the ventilation will only admit of a very limited traffic.

John Mackenzie, A. M. Inst. C.E.

Tramways.—At the next meeting of the Society of Engineers, on Monday, the 3rd of November, a paper will be read on "Modern Tramway Construction," by Mr. Wilkinson Jones, of which the following is a synopsis:—Brief historic account of the introduction of the modern street tramway into England. Description of the present mode of construction on wooden sleepers. The Liverpool Tramways, Livesey's, Cockburn's, Muir's, Ransome & Rapier's, Kincaid's, Barker's, Winby & Levick's, Gowan's, and Aldred & Spielman's systems. General conclusions on the construction of tramways.

THE NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

I have no intention of entering on a gener criticism of the design of the new Natur History Museum, at South Kensington. T building is so complete, both internally a externally, that it must be accepted as accomplished fact, and practically no alter tions that would seriously affect the design a now possible, internally at least. There is, ho ever, one blemish in the external appearance the building, so serious as almost to destroy monumental character. While, as I believ there is still time to remedy it, to a gre extent at least, I am anxious to be allowed direct attention to it before it is too late.

It was bad enough to be forced to erect suc a building in a pit; but the error, such as was, has been immensely aggravated by th extreme feebleness of the design of its bas ment. According to present appearances th thickness of the walls of the lowest story, is a dimension that can only be expressed inches, while they are made to support tw stories of monumental dimensions, with deep recessed windows, and features of greater bol ness than is perhaps quite in accordance wit the material employed. That, however, is fault on the right side; but the apparent thi ness of the walls that support them is quit unpardonable.

To remedy this, it appears to me it wou only be necessary to set back the glass the windows of the basement till it is flush, nearly so, with that of the upper stories. Wit reveals 3 ft. or 4 ft. in depth (I have no dime sions I can quote), the basement would resum an appearance of strength quite sufficient t support the superstructure that now rests up it. To effect this, the rooms in the basemen must be encroached upon to a slight extent, bu as they are only store-rooms, or used as office this would be of very little consequence, whi as no structural alterations would be require the expense ought to be very slight indeed. We this change carried into effect, I feel convince that,—like the removal of the upper flight steps from the Albert Memorial,—it would d more than anything else to restore to this buil ing that monumental character in which, fro the weakness of its basement, it is at prese so lamentably deficient. Jas. Fergusson.

THE NEW CONNAUGHT THEATRE, IN HOLBORN.

The new theatre in Holborn, formerly know by the name of the Holborn Amphitheatre, b more recently converted into a skating-rink, w be opened this Saturday evening, after havin undergone an entire reconstruction internall at a cost of between 5,000*l.* and 6,000*l.* Th equestrian ring, when transformed into a skatin rink, was extended considerably beyond the ri boundary, occupying a large space under th lower box-tier. The entire space forming th rink has been relaid with a new flooring, restin upon joists, and the greater part of the ar converted into the pit circle, together with promenade at the rear, 12 ft. in width, carri entirely round. This portion of the house 67 ft. in width, and the same number of feet depth. The area is divided into three separa parts, the front portion nearest the stage co taining the orchestra-stalls or fauteuils, th immediately behind them the pit-stalls, t remaining space in the rear being the pit prope The whole of the floor-space from the front the fauteuils to the extreme rear of the pit covered with carpeting, as well as the floors every other part of the house, with the exce tion of the gallery. The orchestra-stalls cons of chairs, having black and gold frames, a upholstered in blue satin, with lift-up seats, t the purpose of facilitating ingress and egress. T seats in the pit-stalls, immediately behind, a covered with blue satin-cloth; whilst those in t pit are covered with American cloth. In imm diate connexion with this part of the house is saloon, 60 ft. in width. The fronts of the dre circle and upper tier are decorated with crims silk plush and gold enrichments, and the cha are covered with crimson velvet.

A new tier of private boxes has been co structed, the royal box, which is of large mensions, being in the centre. The whole the private boxes are hung with silk plush c tains, and a feature in this portion of t auditorium consists in there being internal co

nication between each box, in case of more n one box being required by any party of tors or their suite. In view of draughts the dom of this provision is doubtful. Attached the dress-circle there are a promenade and oon, uniform with that in connexion with the lle, whilst connected with the private boxes re are retiring-rooms and lavatories.

A new stage has been constructed, the scenium width being 30 ft. and the depth of stage 76 ft. Both below the stage-level and above, it is fitted with approved machinery working the scenery. The theatre is lighted seven sun-lights in the ceiling. It will seat audience of about 3,000 persons.

The structural alterations and general works re been carried out by Mr. E. Littlejohns, of seum-street, Bloomsbury, and the decorations furnishing by Mr. J. Lyon, of High Holborn. e whole of the gasfittings have been supplied Messrs. Defries & Co., of Houndsditch.

FLATS.

SIR,—Within the last few years a very decided ange has come over the speculative building London. On the one hand we see extrava- ice and costliness in great town mansions, th as those on the Cadogan Estate or the lsea Embankment, but, on the other, a move- nt has set in for providing residences on an nomical scale for the upper and middle sses. This latter consists in the erection of cks of flats. That the want of residences of s kind has long been felt is sufficiently proved the saying, current years ago, that one half he Londoners let lodgings to the other half; ilst to live in lodgings was generally synony- us with discomfort. The ordinary London se is quite unsuited for the purposes of ision into separate dwellings; every one in house must form a member, more or less mate, of the family for which the house was ginally built, and all attempts at division into er and lower parts, &c., are, as a rule, most uccessful and inconvenient.

The new flat-buildings have not only taken t in the crowded districts of Westminster Portman-square, where we should naturally st expect them, but the system is now eading in the more suburban neighbourhoods St. John's Wood and Kensington. The style building of the last fifty years, which has ded the suburbs with rows of "genteel as," "terraces," or "avenues," may be rded as on the decline, and in its place we e to see buildings erected, with proper regard onvenience and durability, and also having considerable influence on the architectural earance of the metropolis. With regard to s last consideration, we suppose it would be y difficult to point out any parallel instance Continental city possessing such extremely an and shabby suburbs as London. This is bably as much due to Londoners living to all earance in little separate houses as to the ses being of brick and stucco. However, h the increased scale of building, and erence in the internal arrangements under new system, this external meanness must rally disappear.

n addition to the regular flat buildings spring- up in different parts of London, one or two empts have been made to convert existing ses to the purpose, the best known instances which are the houses in the Cromwell-road, th Kensington. These, however, are hardly d specimens of what can be done with the inary London house. The owners of the perty have no doubt found the experiment ficiently satisfactory, but they certainly have much studied the requirements of their ants. The flats are of a most disconnected racter, the ground-floor ones have the blic passage to an upper set of rooms passing ough them, whilst the top sets of rooms are wo stories. Altogether we should imagine re-arrangement of the houses to be merely tative, in anticipation of their being restored their original use at some future date. In ther instance, in the neighbourhood of Wig- re-street, we notice that the owners of un- eable property offer to turn it into flats to intending tenants.

several features, adding very much to the fort of a flat, we are sorry to say are con- cuous by their absence in recent buildings. In majority of the Westminster ones, balconies ld have been agreeable additions, instead which the windows are high above the floor, and the view into the street is further blocked up by clumsy cornices and projections. With regard to outside appearance, the chimneys of a block of flats should be well and boldly treated, and instead of presenting the miserable array of chimney-pots of all shapes and sizes which disfigure Victoria-street, they should be carried up in a satisfactory manner to a considerable height, giving the top story fire-places sufficiently long flues. It is also a great mistake not to utilise the lower story for shops, wherever such an arrangement is possible. If the ground-floor of the Victoria-street houses had been used for this purpose, as was, we believe, originally intended, the effect of the street would have been much improved.

Considering the very great demand for flats which evidently exists, it is perhaps somewhat surprising that more provision is not made to meet it. The speculative builders themselves seem somewhat timid of venturing much in anything of the kind, and what they do is simply according to precedent. As a consequence, none of those refinements and luxuries which we expect in a flat are studied as they should be. Still, we may look for great improvements and progress within a few years' time, and the rising generation of Londoners will, in any case, live in a very different manner to that of their forefathers.

With regard to the rental of flats, it would appear that, in many instances, owners of such property must be deriving from 15 to 20 per cent. on their investment. In the Westminster neighbourhood flats are let on an average at 40*l.* per room a year; at South Kensington they fetch a little less; in the Baker-street district they are less still, about 25*l.* per room a year. In this rental everything is, of course, included, except gas and water. With the increase of competition, however, these figures, which represent about the same rental as that of an ordinary house containing the same accommodation, will naturally be much lowered; but at present the demand evidently exceeds the supply.

LONDONER.

GLASGOW INSTITUTE OF ARCHITECTS.

THE twelfth annual general meeting of the members of the Institute was held on the 21st ult., in the chambers of the secretary, St. Vincent-street. Mr. Campbell-Douglas, the president, occupied the chair, and there was a good attendance. The secretary read the annual report, and Mr. James Sellars, jun., the treasurer, submitted his statement, which were unanimously adopted. The abstract of accounts showed the funds to be in a satisfactory state. In the report it is stated:—

"The Institute resumed consideration of the desirableness of having a general Building Act for the United Kingdom, which was alluded to in last year's report. After mature deliberation the Institute agreed that a general Building Act for the United Kingdom was urgently required in the public interest. Messrs. Douglas and Honeyman, who were sent as a deputation in connexion with this matter to the Town Council of Glasgow, had repeated interviews with a committee of that body, when the views of the Institute on this subject were fully laid before the city authorities. In the proceedings before the Sheriff of Lanarkshire, under a remit from the Secretary of State for the Home Department, the Institute opposed,—both by appearance and by written objections,—the Provisional Order proposed by the Police Committee of the Town Council under 'the General Police Improvement (Scotland) Act, 1862,' and it is satisfactory to state that the sheriff reported against the provisional order. This Institute, and other kindred societies, sent a remonstrance to the Town Council of Greenock against limiting the rate of remuneration to 4 per cent., when inviting competition plans for their new municipal offices; but this remonstrance, like the others, was disregarded. The Institute Gold Medal, offered last year for the best design for a library and reading-room suited for a small town, was not awarded because the drawings lodged were not so meritorious as to justify it. A reward of books, however, was given instead. The President's Prize, for the best series of drawings illustrating the portico of St. Andrew's Church, was gained by by Mr. James Wilson, in the office of Messrs. D. M'Kissack and W. G. Rowan, architects, in Glasgow. For the ensuing year the Institute Medal will be awarded for 'the best design for a town residence, the building to form one of a terrace, say the corner house, No. 1, or the side of a square.'"

After some preliminary business, the Council of Management for the year was chosen, consisting of James Thomson, 83, Bath-street; John Baird, 113, West Regent-street; John M'Leod, 160, Hope-street; Matthew Forsyth, 191, West George-street; Campbell-Douglas, 266, St. Vincent-street; John Honeyman, 140, Bath-street; R. A. Bryden, 212, St. Vincent-street; Wm. Landless, 227, West George-street; Hugh Barclay, 136, Wellington-street; T. L. Watson, 108, West Regent-street. Before separating, a memorial from the secretary of the Stone Carvers' Association, urging in the interests of good workmanship that stone-carving should not be sub-let by builders, but should always be a direct contract with the architect, was read and favourably entertained by the Institute. A meeting of the Council of Management took place immediately after the general meeting of the Institute. Mr. Campbell-Douglas was re-elected president; Mr. James Thomson, 88, Bath-street, vice-president; Mr. James Sellars, jun., 266, St. Vincent-street, treasurer; Mr. John Burnet, 167, St. Vincent-street, auditor of professional accounts; and Mr. Wm. MacLean, writer, 196, St. Vincent-street, secretary.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE quarterly meeting of the Northern Architectural Association was held on Tuesday, the 21st ult., at Newcastle-on-Tyne, the president (Mr. T. Oliver) occupying the chair. The president formally opened the twenty-third session of the association by reading an address, in which he dealt with the commercial depression, and the prospects of revival, the "education question" and its bearings on architecture, the "Sunday opening question," &c. A vote of thanks was accorded to the president for his paper. Mr. Oswald, the vice-president, also read a paper, in which he said the existing collapse in the building trades was no doubt caused by the over-production during the preceding period of prosperity. The production of dwelling-houses (and he was speaking of them more particularly) was no doubt justified to some extent by the very great demand; but it was unduly encouraged by building societies, who made advances to speculators with little, if any, capital of their own. These advances were, in many cases, beyond the actual cost of the houses, and not only that, but beyond their value as security for the money advanced. Many of their inspectors or valuers, too, upon whose reports the directors relied, were interested themselves in getting large advances, and even where they were not interested they were often men who possessed little knowledge of the real value of property, which could only be gained by experience over a number of years.

LONDON SCHOOL BOARD: NEW WORKS.

AT the meeting of the London School Board, last week, the report of the Works Committee said, amongst other things,—

"The committee have invited tenders for the erection of a school to provide accommodation for 800 children, on the site in Lewisham-road (Greenwich), and recommend that, so soon as the plans shall have been approved by the Department, the lowest tender, that of Messrs. Atherton & Latta, of 71, Chrisp-street, Poplar, E., amounting to 6,170*l.*, be accepted, with the addition of 450*l.* for provisions. [Cost of site, so far as purchased (area, 41,220 square feet), 2,131*l.* 13s. Total cost per head. 8*l.* 5s. 6d.]

The committee have also invited tenders for the erection of a school to provide accommodation for 600 children, on the site in Waterloo-road, Lambeth, and recommend that, as soon as the plans shall have been approved by the Department, the lowest tender, that of Mr. J. Marsland, of 1, York-street, Walworth, S.E., amounting to 5,345*l.*, be accepted, with the addition of 375*l.* for provisions. [Cost of site (area, 13,520 square feet), 8,579*l.* 15s. Total cost per head, 9*l.* 10s. 8d.]

3. The committee have also invited tenders for the erection of a school to provide accommodation for 600 children, on the site in Amberley-road, Harrow-road (Marylebone), and recommend that, so soon as the plans shall have been approved by the Education Department,

the lowest tender, that of Messrs. Hook & Oldrey, of Cowley Wharf, Kensal-road, W., amounting to 5,118*l.*, be accepted, with the addition of 400*l.* for provisions. [Cost of site (area, 22,157 square feet), 4,026*l.* 4s. Total cost per head, 9*l.* 3s. 11d.]

4. The committee have also invited tenders for the enlargement of the school in Beresford-street, Walworth (Lambeth), by 600 places, and recommend that, so soon as the plans shall have been approved by the Department, the lowest tender, that of Mr. J. Tyerman, of 220, Walworth-road, S.E., amounting to 3,668*l.*, be accepted, with the addition of 400*l.* for provisions. [Cost of school building only (including provisions), 3,850*l.* Total cost per head of enlargement 6*l.* 15s. 7d.]"

The report was adopted.

ON THE SANITARY RESULTS OF PLANTING TREES IN TOWNS.

At the Social Science Congress, Manchester, Dr. Phené read a paper on this subject. The writer said that, during repeated visits to the Continent, he had directed his attention to the apparent difference of health of urban populations, in those parts where trees grew, and where they did not. The spaces often being confined enough in themselves to render similar ones oppressive in this country from want of ventilation, frequently had also the sky half screened by trees, evidently without producing any bad result, but the reverse, those living in the vicinity of trees always looking more healthy than their neighbours. He had closely observed what trees grew best in such confined spaces, and in result began his experiments in England as far back as 1850, by planting several streets in the style of the French boulevards, in a neighbourhood, which, though at a low level, was shown originally to have been quite healthy, but in which a number of small houses had for a long time back been erected, and in which houses fever and diseases of various kinds were frequent. The streets were in various positions, *i.e.*, from north to south and east to west. The houses were of many different styles and designs, including "Queen Anne," Gothic, and the ordinary London house with railed areas, and many again with no basements, and having the sitting-rooms nearly on a level with the original land, so that it was no exceptional or isolated case, but offered full scope for experiments. The levels, the subsoil (gravel), the vicinity to the Thames, and other conditions were exactly those which adjoining districts had, and yet the state of health was much more decidedly good in the streets so planted than in surrounding neighbourhoods. The streets were planted on each side, in the line of curb to the paving, so as to make no obstruction to carriages in the road-ways, nor to foot-passengers on the paved ways. They were planted with acacia trees, selected for having a bright green foliage, and so light and graceful that not only were the trees beautiful objects and refreshing to the sight, but in damp seasons did not harbour the moist atmosphere, as trees of a larger and denser foliage would do; this was also a tree that might be pruned to any form or size. In addition to this planting in the line of curb, the author had reserved slips of land in such streets as were less open to complete currents of air, and planted these the whole length of such streets with trees of various kinds, and so arranged as to include the earliest foliage-producing trees, with a gradual progression to the latest, so as to keep up a bright green foliage during the longest possible period, as the trees which were early in coming out lost their leaves at a correspondingly early date in London; and by this means the plantations were kept continually fresh. The result of his experience was, that quite independently of the condition of ill health which often prevailed in some of the neighbouring districts, from which the occupants of these planted streets were free, the same thing applied to periods of epidemic, when the large and wealthy neighbourhoods around, but further removed, were also seriously affected. He did not, of course, attribute the whole of the difference to the trees. He had exerted care in drainage and other sanitary improvements with, of course, beneficial results, but, on the one hand, the levels, subsoil, and exact position were shared by a large number of inhabitants other than those on the estate in question, and all the sanitary appliances and advantages were enjoyed by the wealthier neighbourhoods, and yet during thirty years he had not been able to trace a single case of fever or small-pox in any of the streets so planted, even when the epidemics were most serious around him, including districts occupied by the wealthy classes. Of late years vigorous sanitary reforms had been made in all the adjoining districts, but although they were much improved, a comparison of the health report would show results still favourable to the vicinity of the trees.

Dr. Phené then described the latest scientific experiments on the oxygenating property of trees, from which most beneficial results were manifest, and from which it was evident that the presence of fresh green foliage was a prime condition in the health of a dense urban population. Recent researches had entirely inverted the previously supposed knowledge as to what was called the respiration of plants, a term which was till lately applied to the vegetable property of absorbing carbonic acid and giving off oxygen. The respiration of the vegetable kingdom was now found to be identical with that of the animal,—that is to say, the vegetable, in common with the animal, absorbs oxygen, and gives off carbonic acid in the act of respiration. But the property previously known to be exercised by plants is in full force, though not as respiration. The power of absorbing carbonic acid given off by the animal, and eliminating health-giving oxygen for the animal's use, is a special function, and is due to the action of the chlorophyllian cells, *i.e.*, the cells in which the green matter which gives the colour to vegetation, and which is known as chlorophyll, is formed. This green matter is produced by the action of the sun's yellow rays alone, and is now found to be a living organism; indeed, when the green or chlorophyll is abstracted, it leaves behind a colourless material, identical with that which forms the base of animal bodies. These and many similar experiments, all bearing on this subject, have been worked out with great results by Claude Bernard and Schützenberger; and while the extraordinary fact is demonstrated that the base of vegetable and animal material, —so far, at least, as the cells go,—is the same, the necessity for access of the animal to vegetable vicinage becomes more absolutely certain.

The author then described experiments on the respiration of plants, and their process of respiration, with some of his own methods for avoiding loss of trees. He showed the absolute necessity for maintaining vigorous, healthy, green vegetation near dwellings, and the great importance of avoiding and removing fungi and that class of vegetation, as the latter was an absorbent of oxygen without possessing the power of reproducing it. Under this section of his subject he explained the beneficial effects to health arising from careful window-gardening in dense courts and alleys, it giving, as he pointed out a refined and wholesome amusement at the same time that it removes in reality by vital air that dejection (known among the upper classes as *ennui*, caused in their case by dense public assemblies, and with the poorer classes by rooms too fully occupied or unventilated) which so frequently leads to excess in the use of artificial stimulants. He described the effects and results of having trees planted in streets, and some of the difficulties he had encountered from personal and official distaste to them, together with the treatment he had found successful in propagating and maintaining trees in London, the area of his experiments extending from the Royal Free Hospital in Gray's-inn-road, the grounds of which he planted, to cheer the eyes of the patients, and other hospitals and places as far west as Brompton and Chelsea. He had been able to persuade very few persons to consider the matter or to adopt trees, but amongst those who had joined in his plans was Mr. Thomas Carlyle, who has not only had them planted in front of his house, but takes daily walks under those on Dr. Phené's property. The following is a list of the trees which, from experiments extending over thirty years, he has found grow in London, some of the most beautiful being those which grow with great rapidity and little attention.

Acer pseudo-platanus; Ailanthus glandulosa; Catalpa syringifolia; Fraxinus Europea; Gleditschia; Populus alba; Populus nigra; Populus Canadensis; Quercus cerris; Rhus typhinum; Robinia pseud-acacia; Tilia; Ulmus campestris; also the common ash, oak, elm, pink chestnut, copper beech (a fine specimen of which is in the rectory gardens, Chelsea), mulberry, thorn,—white and red; common and Oriental planes; and of shrubs, Ilex ovata, and other hollies; lilac, common and Persian; Euonymus, various; almond and wild plum; privet; aucuba, &c. plants, the Michaelmas daisy, blue iris, a common blue hyacinth, once planted, wo perpetuate themselves, and chrysanthemu grow vigorously. Garden walls, the aut said, should be kept covered with green foli for as long as possible, and the walls carefu cleaned each year. The wall shrubs which found grow best in London were the fig, vi American creeper, Irish and ground ivy, jasm and a few others.

It was important that as the leaves fall th should be collected and buried: by this mea the effects of decaying vegetable matter we avoided, and the leaves formed the lightest a most simple manure flowering plants could hav so that they were not only prevented doi injury, but were utilised. Lime used in mort old or new, was a good stimulant, and in clo yards and gardens, was inodorous and inoffe sive; next to this, bone manure, proper covered with soil, could be used without a personal annoyance, but lime judiciously us was the best, having in itself a purifying p perty.

In conclusion, the author expressed his debtedness, at all times that he sought his assi ance, to the kindness and urbanity of Masters, editor of the *Gardener's Chronicle*.

A discussion followed, which terminated in resolution by the section to advise the municip authorities of Manchester and other large tow to plant open spaces.

THE MOTIVE POWER FOR LIGHT AT TH BRITISH MUSEUM.

Having mentioned in our last the endeavo which are being made to apply efficiently t electric light in the British Museum, some our readers desire to know the character of t motive power employed, and we now give so particulars obtained from the proprietors. T motive power here, it seems, is supplied by t eight-horse semi-fixed engines constructed Messrs. Wallis & Steevens, of the North Ha Iron Works, Basingstoke. These engines poss some special features which render them pe liarly adapted for driving electric-lighting ap ratus, foremost among which is the regular of speed maintained by the governors w which they are fitted, which are of the cro armed central-weighted type, and extrem sensitive. This point,—viz., uniform speed,—is the utmost importance in electric lighting, as a variation causes a corresponding unsteadin in the light. We understand that Messrs. Wa & Steevens have just patented a new arran ment which will enable the governors to ma tain any particular rate of speed that may desired, the adjustment being made gradua and without stopping the engine. The engi at the British Museum are not yet fitted w this arrangement, but will be as soon as it been thoroughly tested at the works at Basi stoke. The makers inform us that they entert no doubt whatever that it will entirely fulfil conditions so much desired by electricians, v the power to increase or diminish the norm speed of the engine at pleasure according as lights require it, and then to maintain with p fect regularity the particular speed which found to give the best light. The engines as previously stated, each of eight-horse nomi power, but can, if required, be worked up nearly three times their nominal power. cylinders are $9\frac{1}{2}$ in. in diameter, and length of stroke is 12 in. Their normal sp at present is 125 revolutions per minu but the governors are fitted with cha pulleys, so that by stopping for a minute two to change the pulley the speed can be eit 125, 130, or 135 at pleasure. It is to do av with the necessity of stopping the engine make the change, and also to give a much wi range of adjustment, that Messrs. Wallis Steevens have contrived the new arrangem previously alluded to. The cylinders are ste jacketed, on the firm's improved plan making the jacket and liner separate, and fitt the liner into the jacket. The boilers have b tested by hydraulic pressure to 150 lb. square inch, *i.e.*, double the highest work pressure of 75 lb. to the inch. The fire-g area is 6 square feet, and the heating-surf is 165 square feet. The engines are fitted w the makers' now well-known patent annu space feed-water heater, which delivers the f water into the boiler at a temperature of a 205 degrees. The special features of

ater are, that the exhaust steam is not mixed th the feed-water; that the water is heated ter passing through the pump, thereby getting l of the difficulty of pumping very hot water; d that the whole of the heating-surface over nich the feed-water passes can be exposed for aning in less than five minutes, by the moval of two small covers. The power is ansmitted from the engines to the dynamo-ctric machines, in the following manner:— ross the machine-room runs a counter-shaft, which are fixed two pulleys on drums, each which is driven by a belt from the fly-wheel one of the engines. On this counter-shaft are ced seven other pulleys, from which belts ansmit the motion to the five dynamo-electric achines, which work the lights in the reading-om, and to the exciting and alternating cur-nt machines by which the other seven lights are rked, these last seven lights being all in one cuit.

OBITUARY.

Mr. David Moore, Architect.—We record the ath of this gentleman, which occurred last ek at his residence in Clarendon-road, Ken-ington, with much personal regret. Mr. Moore d done a larger amount of work without being ach heard of than some whose names are tter known. Thus in early life, in conjunction th the builders engaged, he made the plans the Guards' Club-house, and Ashburnham use, Piccadilly, and superintended the works. competition design by him for St. George's all, Liverpool, was high in the list of those med for selection. He was engaged in con-xion with many gentlemen's houses in Corn-all; amongst others, houses for Lord St. rmains and Sir Charles Lemon. After this was occupied with several parsonage-houses Sussex and elsewhere, and next upon Baron ll, Sir Richard Bulkeley's place, near Beau-aris. He did something also at Addington lace in Archbishop Howley's time, and at kington for Lord Aylesford. Very recently rebuilt the *Observer* office, and continued to nage the estates of Mr. Powell and Captain tton at Kilburn, the Isle of Thanet, and else-ere. In fact he was in harness nearly to the His intelligence, integrity, and kindly meanour always impressed his employers, and ined him great esteem. Mr. Moore was in his h year.

FIRTH COLLEGE SHEFFIELD.

Firth College, Sheffield, recently opened by nce Leopold, has been erected at a cost 20,000*l.*, and formally presented by Mr. rk Firth to the town. In addition to viding the college, Mr. Firth (who had eady shown his munificence by the pre-ntation of a public park to the town four ars ago) has also given 5,000*l.* towards an dowment fund, and this fund now reaches 000*l.* The money has been raised without ch difficulty, and so strongly has the Uni-sity scheme recommended itself that it is lieved that the endowment fund will soon ount to 25,000*l.*

The gift of the college will be of the greatest ue in helping the spread of university edu-ion in Sheffield and its vicinity. The college is t of a block of buildings erected on the line of street improvements in a wide thoroughfare, be called "Firth-street," in honour of the donor. e college stands at the corner of Bow-street, l is boldly treated. The building consists of arge lecture-hall, with galleries along three es, capable of holding 1,000 students. This l is to be used for lectures on literature and er popular subjects. On the same floor there another large hall for lectures on chemistry physics. The seats are placed tier on tier, so t every student can hear and see the lecturer h great distinctness, and the windows are fitted h revolving shutters, so that the light may be luded when experiments are being made. The lege is mainly built of Hudders-field stone.

Next the Firth College,—joining it, in fact,— nd the new School Board offices; the central tion of the block, the board-room, is a large, ndsome apartment, panelled with oak, and an enriched ceiling. On each side of the in entrance in Firth-street lie the Board ces. In the same range of buildings as the th College and their own offices, the School rd have provided two central schools for s and girls, and these are designed to give to picked pupils from other schools a higher possibly a technical education. The pile of buildings, of which Firth College is the chief feature, forms three sides of a quadrangle, and has cost 42,000*l.*

Prince Leopold made an admirable speech on the occasion of the opening of the buildings.

LAW OF LANDLORD AND TENANT.

The case of "Weir *v.* Preedy," involving questions of considerable importance as between landlords and tenants, was argued recently in the Southwark County Court, before Mr. H. J. Stoner. By an agreement, dated in 1876, the plaintiff let to the defendant a house in the Lambeth-road, for three years, and the defendant thereby covenanted "to keep the premises in good and sufficient repair during the tenancy." The house was an old one, and the roof was in a leaky state at the date of the agreement and until March of the present year. The plaintiff having refused to repair it, the defendant, by tarring it and otherwise, partially stopped the leakage, and prevented any damage to the house. It, however, turned out that the rafters in the roof were completely decayed and had sunk, and in March, 1879, the plaintiff, on a requisition from his superior landlord, without any communication with the defendant, put new rafters to the roof, and, in fact, completely renovated it, and also effected certain other improvements, at a cost altogether of 33*l.*, which sum he sought to recover from the defendant. It appeared, however, that the cost of repairing the roof alone would not have exceeded 10*l.*, and the plaintiff eventually limited his claim to that amount. His Honour, relying on "Williams *v.* Williams" (9 L.R., C.P., 659), decided that, even assuming that there had been a breach of the covenant, the plaintiff could only recover nominal damages, because, in consequence of the repairs having been executed, although by the plaintiff himself, there was at the time when the action was brought no longer any injury to the reversion, which is the measure of substantial damages in such cases. And on the remaining question, viz., as to whether or not there had been any breach of the defendant's covenant, his Honour decided that there had not, and in support of his decision cited the case of "Gutteridge *v.* Munyard" (7 C. and P., 129), in which Lord Chief Justice Tindal held that, "when an old house is demised with a covenant to repair, it is not meant that the house is to be restored in an improved state, or that the consequences of the elements should be averted, but the tenant has only the duty of keeping the house in the same state in which it was at the time of the demise." The verdict was entered for the defendant with costs.—*Times.*

NEW GASWORKS FOR BRISTOL.

The new works erected by the Bristol Gas Company at Stapleton are now finished and in operation. Owing to the rapid growth of the city, the old works in Canons' Marsh and St. Philip's were found quite insufficient to meet the growing demand for gas, and the directors, having secured about 40 acres of land at Stapleton, have been enabled to lay out new and extensive works. At present only a sixth part of the plan has been completed, but it is so arranged that as the demand arises the other sections can be added. The plan of the works was prepared by Mr. Walter Fiddes, C.E., the engineer of the company. The contractors are Messrs. John Aird & Son, of London, who undertook to complete the work by the 1st of November, operations being commenced on the 6th of January, and they succeeded in finishing the work by the 21st of October. The principal entrance to the works is in the Stapleton-road, but the works lie a considerable distance away from the main road, being approached by a newly-made roadway 700 or 800 yards long. This roadway crosses the Frome, and a bridge, erected by Messrs. Stephens & Bastow, crosses the stream.

The buildings at present erected consist of a retort-house, 225 ft. by 70 ft.; an engine, exhauster, and pump house, 80 ft. by 35 ft.; a boiler-house, 40 ft. by 35 ft.; a meter and purifying house combined, 180 ft. by 70 ft. The walls are of the local pennant stone, and the grey is relieved by brick dressings to the windows and rock-work dressings to the main arches, whilst the roofs are covered with double Roman tiles. The wrought-iron work of the roofs in the interior combines lightness with solidity. The retort-house is capable of making a million and a quarter cubic feet of gas a day. There are two scrubbers,—one being 70 ft. high and the other 45 ft. These two latter are approached by iron staircases. To get a good foundation for these scrubbers a depth of 25 ft. had to be excavated. In the engine, exhauster, and boiler-house there is a 16-horse power steam engine actuating an exhauster capable of exhausting 120,000 cubic feet of gas per hour. In the purifying-house there is a set of purifiers 180 ft. in length, and a station meter capable of registering 100,000 cubic feet of gas per hour. The gasholder tank is 162 ft. 6 in. long by 32 ft. deep. It is lined with brickwork and masonry. The gasholder itself is of the telescope pattern, and is stayed by eighteen iron columns with transverse girders, with intermediate and top caps. It is capable of containing a million and a quarter cubic feet of gas. Mr. Wm. Fiddes, son of the engineer-in-chief, has acted as resident engineer. Mr. Joseph Hall has been the chief representative of the contractors. The Cornish boilers are supplied by Messrs. Pigott & Co., of Birmingham; the 16-horse power high-pressure engine is supplied by Gwynne & Co., of London. The meter is made by Parkinson & Co., of London; the iron roofing is supplied by John Butler & Son, of Stanningley, near Leeds; and the whole of the ironwork of the retort benches by Messrs. Spittle, of Newport, Monmouthshire.

"HELP THE GIRLS."

Sir,—Would you kindly allow me, through your paper, to send my hearty thanks, in which I am sure my comrades in the battle of life will join, to "C. S.," who has written earnestly for help on our behalf? Perhaps a word from a struggler may show how much we need it. At this time, through bank failures and other causes, there are hundreds of girls seeking to maintain themselves by their own exertions, but who do not know what to do, nor where to go for aid. Will no one help us? Will no one put us in the way of obtaining work suited to our capacities and position?

I am the daughter of a poor clergyman, and since the age of eighteen have tried to ease the family burdens by going out as a governess. But it was no easy matter to obtain a situation, owing to my youth and my not being one of those fortunate certificated teachers who are carrying all before them. Also, it is an impossibility to meet the requirements of these times, in which a governess is required to teach English in all its branches, French grammatically and conversationally, German ditto, Italian, music (must be a good performer), drawing, singing, dancing, and elementary Latin; and the reward for that Herculean labour is from 25*l.* to 50*l.* per annum. Even the age of a governess must be within certain limits,—from twenty-five to thirty-five being generally preferred. Before then, one is snubbed with the scornful "too young," and after, with the still more unpleasant "too old." To obtain a situation one must advertise. A short advertisement in the *Times* amounts to 4*s.*,—wasted money, when the only answers are from agents, soliciting your half-crowns, on the ground that they have on their books some wonderful Lady So-and-So who requires a governess immediately with exactly your requirements, but who has just engaged some one by the time you reply. We cannot afford to keep advertising, and then arises the hopeless cry of "What are we to do?" It is only a minority of women who are gifted with such iron nerves that they can enjoy being present at operations, and who have the courage to prefix Dr. to their names. To be a nurse in a hospital is a noble and suitable work for women; but to some this is impossible through not being physically strong enough for it. Translation and copying are next tried, but publishers can only politely write back declining your kind offer. Being fond of drawing, and having learnt it for a few years, I should much have liked to try painting on china, but how could I obtain the necessary instruction and materials without money? I heard of a girl lately receiving an order for painting tiles, for each of which she was given a guinea. If the Mediæval fever continues, there might be an opening in that direction. Oh! the need is great, and it is true that despair is killing our hopes, and we grow bitter, and cry, "Oh! why was I born, if only to be a burden? Is this all life has to offer me?" Give us work to do, or show us where to obtain it, and we will go forth under our banner of "*Aide-toi, le ciel t'aidera.*"

I trust this proposition of "C. S." may meet with a speedy success. A Struggler.

COMPETITIONS.

Bradford Technical School.—The council of this institution having acquired a site opposite Mannville Chapel, in Horton-road, invited plans in open competition for the proposed building, and fifteen sets were sent in, which, by permission of the Free Library Committee, were allowed to be displayed on the walls of the Bradford Art Gallery, where for a period of ten days they were examined by the council, who do not seem to have thought it necessary to consult a professional referee. The conditions laid down by the council stipulated that not fewer than twenty-five rooms were required, among which were to be rooms for power and handloom weaving, dressing, twisting, and spinning, laboratory, and dyeing-rooms, workshop, demonstrator's room, five class-rooms for weaving, spinning, designing and mechanical and architectural drawing, besides four extra class-rooms. The rooms first-named are to be supplied with motive power, and were to be placed at a distance from the class-rooms, which, with the laboratory, &c., are to be *en suite*, and placed at the top of the building. The principal rooms in the new building will be a public lecture-hall to hold about 650 persons, with galleries and ante-rooms; a chemical lecture-hall for 120 persons; a museum and library, council chamber, secretary's offices, curator's rooms, &c. Separate entrances were to be provided for the school and more public portions of the building, and the best provision would be required for efficient lighting, heating, and ventilation. The building was also to be designed with a view to its future extension, and the estimated cost of the whole was not to exceed 12,000*l*. The architect whose design, based upon these requirements, was selected was to be entrusted with the execution of the building at a commission of five per cent.; the second and third designs receiving a premium of fifty and twenty-five guineas respectively. The design with the motto "Continental" was awarded the first position by the council, and was found to be the production of Messrs. Hope & Jardine, of Bradford. The design to which the second premium has been awarded bears the motto "Reims," and its authors are Messrs. T. H. & F. Healey. The third premium has been awarded to the design inscribed "Light and Air," by Messrs. Hargreaves & Bailey. Both these firms practise in Bradford. The first premiated design is in the Italian style. It is stated that the greater proportion of the subscriptions promised for the erection of the building have been paid to the treasurer, Mr. Henry Illingworth, and that the works will be commenced forthwith.

Wesleyan Chapel, St. Catherine's, Lincoln.—In response to the invitation for designs, over forty were sent in, and the one submitted by Mr. Charles Bell, of London, under motto, "The World is My Parish," has been selected for execution. The second named is by Messrs. Bellamy & Hardy, Lincoln. The cost is about 5,000*l*.

ROARING WATER-PIPES.

Sir,—I live at Loddiges-road, Hackney, E., and, like your correspondent, "A Constant Reader," suffer from the above, but my grievance is, I take it, a rather heavier one than his, since the pipes which run under the house which I occupy "roar" not only the first thing in the morning, but at every time throughout the day after any quantity of water has been drawn from the cistern, and upon Sunday afternoons, when one anticipates some slight rest, it is far from agreeable, owing to there having been a liberal use of water for domestic purposes, to have to listen to an unceasing monotony of sound resembling the roll of a muffled drum. I should be sorry to impute neglect to the company who give the supply, to the builder, or to any one else having connexion with the laying of the pipes or the construction of the house, but, nevertheless, I should be glad to hear of a remedy, and ask you to insert this note so that in the event of such a discovery being made it may extend its beneficent effects to the east as well as to other parts where the roaring water goeth up and down seeking whom it may disturb.

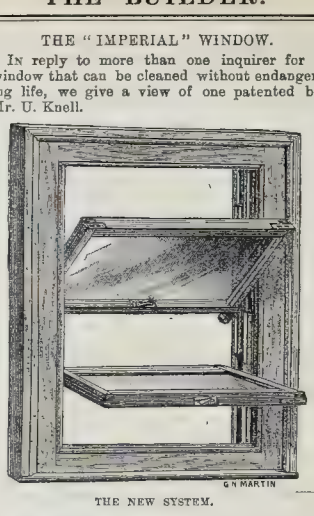
J. S. Howell.

Sir,—The remedy is easy: solder or otherwise fix a piece of lead pipe to the outlet of the ball valve, long enough to reach within about 6 in. of the bottom of cistern.

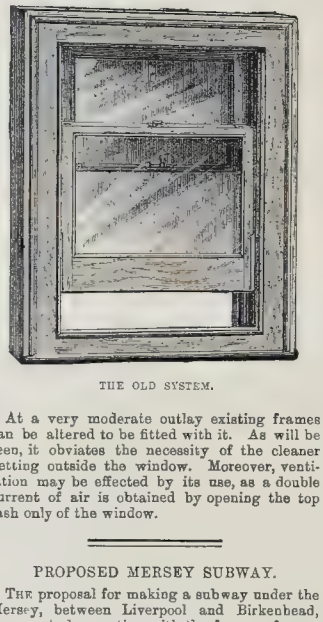
W. Dunkin, Plumber.

THE "IMPERIAL" WINDOW.

In reply to more than one inquirer for a window that can be cleaned without endangering life, we give a view of one patented by Mr. U. Knell.



THE NEW SYSTEM.



THE OLD SYSTEM.

At a very moderate outlay existing frames can be altered to be fitted with it. As will be seen, it obviates the necessity of the cleaner getting outside the window. Moreover, ventilation may be effected by its use, as a double current of air is obtained by opening the top sash only of the window.

PROPOSED MERSEY SUBWAY.

The proposal for making a subway under the Mersey, between Liverpool and Birkenhead, appears to be meeting with the favour of most of the public bodies concerned, and there seems to be a probability of steps being taken ere long to give effect to the scheme. When, in December last, it was announced that such a scheme was in contemplation, an influential committee was appointed, and that committee, after full deliberation, have decided (according to the *Liverpool Post*) to recommend the plan submitted by Mr. John Fowler, of London, in conjunction with Messrs. Low & Thompson, of Wrexham, as the best for carrying out the proposed scheme. By this plan the subway will consist of one tunnel, 27 ft. in width, commencing at the bottom of James-street, taking down one block of the Goree warehouses and going under the other. The subway as at present contemplated will take a turn round the north end of George's Dock, then run in front of the dock to St. George's Baths, whence it will extend in a straight line under the river, coming out under the middle of the Woodside Landing-stage. It will be continued from the river-side to the corner of Cleveland-street, will take a turn along that street, and terminate on a level with the dock quays at the junction of Canning-street and Taylor-street. In addition to the entrances named, on either side of the river steep inclines are proposed to be made for the convenience of foot-passengers and cabs near the Woodside Ferry and in Nova Scotia in Liverpool; failing inclines being provided, hydraulic li will be put in their place, by means of wh foot-passengers and carriages would be enabl to shorten the length of the subterrane passage considerably. The extension of t tunnel on either side is for the accommodati of heavy traffic, for which steep inclines wo be unsuitable. Nearly the whole of the tun will be through the solid sandstone rock, and engineering difficulties in making the subw are anticipated. At no place will there be l than 20 ft. of rock between the roof and t water, so that no danger from inundation leakage may be feared. The steepest gradi will be 1 in 27, and that only for a portion the distance, the gradient for the remain varying from 1 in 660 to 1 in 50 and 1 in The tunnel will be lined with white glaz bricks, and will be brilliantly lighted, probal by the electric light. The estimated cost 330,000*l*. for the works, and 135,000*l*. for t land and buildings, making a total of 465,000

It is proposed that the cost of the und taking should be raised under a guarantee the public bodies chiefly interested,—the Liv pool and Birkenhead Corporations, the Mers Docks and Harbour Board, and the railw companies. The Birkenhead corporation, represented by the town council, have agreed guarantee one-fourth of the required capit The idea is to make the concern a public tru the surplus income, after paying interest on t debt, to go towards paying off the original c of the undertaking, eventually enabling promoters to throw the subway open to t public as a free means of communication tween the two sides of the river.

THE SCHOOL OF WOOD CARVING.

Sir,—Your correspondent "Anselmo's" c is a bad case,—a very wooden case indeed; after exulting over my explicitness as affordi him his opportunity to overwhelm and annihil me with facts which would show that art been frequently developed and revived the same means as those adopted by the p moters of the School of Wood-carving, the o instance which its champion can hurl at is Doulton's pottery! Even in argument i evident that some people prefer Lamb and a fog. The instance adduced shows m amusingly, as well as convincingly, the utte untenable nature of his position, for the potte art has never died out in this country; th has always been a demand for it, and Doulton's success is due to spirited priv enterprise, not to a subsidised department, s to basing his art-efforts on the secure foun tions of drain-pipes. "Anselmo" has n therefore, as yet, brought forward a sin apposite argument against my "sweeping ass tions."

But if the potter's art has never died out this country, neither has the wood-carve Wood-carving is only cribbed, cabined, and c fined, because it is no longer in the same requ as of old. There must, however, still b demand, a limited demand, for it in cabi work, and there are many clever carvers London and the provinces who could prod fine work if they were commissioned. Th must also be a considerable School of Wo carving somewhere on the banks of the Tham the very same school, indeed, from wh Gibbons sprang: I need scarcely say that I re to the ship-carvers, the "figure-head" carve and when I speak of "figure-head" carving do so with no irreverence, for many of th spirited works are in their way works of a and unmistakable evidence that there is a liv talent for wood-carving in England, were th only an equally great demand for it in ot directions. But figure-heads would show th wood is an intractable material for flesh a drapery. Fancy Adam and Eve done in oa they might come out better in apple or pe tree, but even then the work would be lab lost, and the effort would be excluded from paradise of High Art. If wood had been wondrous material your correspondent e neously supposes it to be, the great artists wo have discovered the fact long since, and mark bronze, and ivory would not have been p ferred. The original touches of the best wo carvers have never been esteemed as wo preserving in the same enclosure with the fin works in sculpture.

As your correspondent is bent upon ask

stions instead of using argument, I may orm him that I am firmly opposed to the tem by which it is vainly attempted to relop art in this country, because it is a new-gled plan, a plan which was never adopted that purpose in the great art epochs, and ause it leads to a waste of a vast sum of ney, which, if it were properly and directly plied to the encouragement of art, and to ting an example to the unpatriotic wealthy, uld make England in a few years the greatest .ool of art in the world. If there were one rpose more than another for which the Depart-nt was instituted it was for the promotion of *plied* art, and if there were one production re than another on which the Department's neficial influence should have told long ere s, that one should have been wood-carving. t what are the facts? After more than a neration has lapsed, the Department acknow-ges its inadequacy by establishing a special ool for wood-carving.* The Department was ablished to render us independent of the eigners, and a foreigner has been appointed ster of the school. L'Académie Française Beaux Arts hangs out its title in one of our st public thoroughfares. And all this, be it membered, is in perfect harmony with the nted opinions of one of the Department's st practical men. All this shows how little istance can be placed upon the report that the nch are envious of our art institutions. If y were, they would not send coals to New-stle. My opposition is not exceptional, though may be more consistent than that of the tesmen who denounce the "cry" for State aid art.

am not so unpatriotic and servile when gland is writhing under difficulties as to be off with empty seemings. The "cry" for ter times is not to be stifled with sweetstuff. nation's interests must not be jeopardised h *dilettanti* playthings. We must have the l thing, and nothing but the real thing, and n possibly we shall be able to move ahead ain.

METER.

SIR,—Without entering into the controversy between Meter" and "Anselmo," permit me a word relative to ragraph in yours of October 25th. "Anselmo" says: I may state to my certain knowledge a leading firm of rators has within the last month found it necessary to l to Paris to get an order executed." Thinking the above misleading to some of your readers, me say the order alluded to was not a question of nt, but of *time*.

e one can expect an employer to find fifty to sixty -class artist-workmen available at a moment's notice, ll that could be got together, with available assistance, obtained, and to keep to the time the rest of the work sent to Paris; and, with all their resources, taxed ir energies to the utmost to keep pace with us. ad more time been allowed, the firm would have com-ted the order with home resources, and to my thinking, tor.

ONE WHO SENT WOOD TO BE CARVED IN PARIS.

THE MANAGEMENT OF ENGLAND'S ROADS.

SIR,—Do you remember, eleven and again ten ars ago my writing you on the then system road management, and offering certain sug-stions? The last paper appears in your ume for 1869, p. 230. Most of the suggestions n made are now law, and one or two with a ist in them, made into law as well, I wish w to write about.

One is the audit of the accounts: when I ote that paper there was no auditor of the counts; since that period the law has con-uted the Poor-Law Auditors auditors of the hway accounts. Now I have little doubt se gentlemen could detect a clerical error or illegal entry as well as any one, but I sub-t the full end and aim of a thorough audit is thereby accomplished, and that the sug-stion I made in 1869 is still the best; and, , the present system of audit is most expen-e: not only is the auditor paid extravagant ns, but he affixes expensive stamps to the counts he has audited. Now this is uncalled . My idea was, and is, that there should be an pecting surveyor, or surveyors, for a county, d that they should also audit the accounts. Duly alified men would, in passing over the roads, ect any misuse of materials or labour, and they audited the accounts would detect any-ng that was paid for too highly, and would ve a better chance of detecting embezzlement n any number of Poor-Law officials, however hly paid or ornamental. Again, the law orders inspection of the main roads,—a matter I have always pressed; but as if to show how the law and duties can be avoided, in one county policemen (!) are appointed to inspect main roads; in another, the magistrates appoint some of their own body; in another, the county buildings surveyor; and so on. The magistrates have passed roads as entitled to the county grant, though they have been so bad that they could not be travelled without danger, and at the time of the certificate being granted one highway board had two actions threatened, or actually brought against them, for damage caused to carriages through the state of the roads; and I could give another astounding instance in the same county. As for roads inspected by the police, the less said the better. Now all this should not be: the law should insist on properly-qualified men being appointed.

I have had occasion to refer to the management of roads in Cornwall, and I again refer to it as coming up more to my idea of what is sound and good. That county is divided into two parts for the purposes of the Act, and a duly qualified gentleman takes the inspection of the roads in one part, and another the other part; the work can thus be thoroughly supervised, and yet the annual cost is not more than, I think, 150*l*. Those gentlemen have lots of other work, and are thoroughly independent of the office. It rather amuses me, by the way, to notice how they get tutored into more independence, and even strictness, by thier being bullied by those bodies to whom they refuse certificates, the Truro Town Council, for instance, persisting, meeting after meeting, in ascribing improper motives to the inspecting surveyor.

I shortly repeat what I wrote in 1868. There should be a County Board, with one or two duly qualified inspecting surveyors, dependent on the size of the county, who should also act as auditors. "Thus the county would have a gentleman at hand to direct and advise; and it would have one system of road-making; unnecessary expense would be checked; and a power to keep the Highway Boards up to the work would be at hand."

PRO.

COMPETITIVE SANITARY SCHEMES.

SIR,—A correspondent has already drawn attention, through the columns of *Engineering*, to the action of the Penzance Rural Sanitary Authority in inviting competition schemes for sanitary works, under conditions which certainly justify doubts as to the sanity of the members of that Board. In this case, bad as it is, a premium of twenty guineas was offered "for the most approved design." What must, however, be said of the Matlock Local Board of Health, who now advertise for schemes of sewerage, with estimates, not only without offering a premium, but expressly stipulating that no scheme will necessarily be accepted, and that engineers will not be entitled to compensation for them? The question naturally arises whether competent engineers can be found, willing to lower themselves and their profession to the level at which both evidently stand in the estimation of sanitary authorities, by preparing and submitting sanitary schemes under such conditions. If not, the only solution possible is that, in such cases, inferior schemes, designed by incompetent quacks, and lacking the essentials of modern sanitary work, are adopted and eventually carried out. It should be remembered, too, that the safeguard afforded by a local government inquiry on the spot is not always ensured, as sanitary authorities are quite capable of carrying out defective and objectionable schemes by means of a rate levied in one year over the district affected, thus avoiding the necessity for a loan, and the unpleasant preliminary inquiry attendant thereon. I am, in fact, aware of instances in which the provisions of the Rivers Pollution Prevention Act are contravened, in new sewerage works, by this mode of procedure. Surely such matters as these are sufficiently important to justify a more active interference in local matters by the central health authority.

Concerning the guarding of professional interests, I fear that not much can be done. Sanitary engineers, important as their functions are, are as yet an ill-recognised body of workers, and do not possess that *esprit de corps* which is essential to the independence and well-being of the class. The Institution of Civil Engineers is too largely composed of engineers engaged in other branches of the profession, and the traditions of the body are not favourable to the claims of those practising more particularly in this new department. The Sanitary Institute, on the other hand, notwithstanding its high-flown pretensions, is not sufficiently practical in its aims to attract this section of the profession. Under these circumstances, reliance must be placed upon the good feeling and professional instincts of those who are alone capable of designing efficient sanitary works restraining them from entering upon such competitions as those to which I have referred. The competitive system, whatever its advantages may be as applied to large schemes and works of almost national importance, is entirely out of place in smaller matters. For my own part, I decline to lend even such countenance to it as is displayed in applying for the particulars which, in some instances, are stated to be available,—a course which, if universally followed, would soon put an end to a state of things which is rapidly gaining extension.

PROFESSIONAL.

BATH-ROOMS.

SIR,—It is refreshing to both mind and body to observe how general of late years it has become to supply a bath-room to all new houses of 100*l*. a year rent and upwards. Indeed, in some of the fresh suburban neighbourhoods they are put to houses of even 50*l*. rent. There is no doubt it pays the builder to do so, for in most dwellings there is some dressing-room, or small room in a wing, where a hot and cold bath can be placed, and respectable tenants will pay 5*l*. or 10*l*. extra rent in a moderate-sized house to secure the benefit.

I only wonder that landlords do not more generally and actively set to work and supply baths to the old houses as fast as they become vacant, or before. In St. John's-wood, for instance, how very few of the houses have the convenience, except those built within the last five or ten years. The same at Bayswater and Notting-hill and Brompton, until we rise to residences of 150*l*. a year or more. Many of the houses in Westbourne-terrace, Cleveland-square, and similar localities, though producing 200*l*. to 300*l*. a year on lease, are still without bath-rooms. But in the new neighbourhoods, even when not especially fashionable, such as St. Peter's-park (Paddington), Shepherd's-bush, Brixton, &c., we find bath-rooms in fresh houses down to 50*l*. rent, or occasionally lower.

It would be curious to inquire what proportion of the fashionable town-houses about Wimpole-street, Bryanstone-square, May-fair, and other West-end parts, are still unprovided.

SURVEYOR.

A VISIT FROM A DISTRICT SURVEYOR AND WHAT CAME OF IT.

SIR,—In the merry month of May last, Messrs. Snewin Brothers & Co., builders, of Upper Clapton, were honoured by a call from Mr. Meeson, the district surveyor, on private business. While in their office the district surveyor noticed a small zinc pipe fixed on the top of a gas-stove (where it had been placed several years back to carry off the foul air), and politely told the manager that the said pipe could not be allowed, being contrary to the Building Act, and that Messrs. Snewin Brothers & Co. were liable to a fine of 20*l*. The manager thinking he could stand a little foul air better than such a fine, removed the offending pipe without delay. On the 6th of September last, Messrs. Snewin Brothers & Co., received a registered letter containing a bill for a nominal fee of 7*s*. 6*d*. for certain alterations to office. They at once made inquiries at Spring-gardens, and found they were not liable for said fee, and wrote the district surveyor on the 24th of September to that effect, asking him if he would prefer to withdraw the claim or refer it to the Metropolitan Board of Works. Mr. Meeson's only reply to this was two summonses delivered by an official in blue from Worship-street, both dated 27th of September, one for having made certain alterations on the 14th of May without giving notice, and the other because the alterations made were not in accordance with the Act, and having incurred a penalty, in each case, not exceeding 20*l*.

Messrs. Snewin Brothers, & Co., being ordered to appear at Worship-street on Tuesday, the 7th of October, to answer the said complaints and to be further dealt with according to law, after waiting some hours in this popular but not very desirable place of public resort, the case was adjourned till Tuesday, the 14th of October, on which date, after again waiting a considerable time, it was announced that Mr. Meeson's cases would be taken next, and his worship, after a very patient examination of the various clauses of the Building Act, pointed out by Mr. Meeson as bearing upon the poor unfortunate pipe then in Court (which was admitted to have been in existence seven years), the worthy Magistrate remarked that he should be sorry to say the erection of the said pipe was not an infringement of the Act, inasmuch as it might in a certain sense be said to have been put there to carry off the products of combustion; but at the same time, he felt that as the surveyor had applied for a fee before proceeding for the penalties, he should deal lightly with the defendants, as it would be likely to cause serious public inconvenience if district surveyors were encouraged to apply at this Court for penalties against persons who believed they were not legally liable to pay the fees demanded. He should therefore inflict a fine upon the defendants of one penny, without costs!

S.

As a matter of fact, this school was established by a rate committee. So far as we know, the Department no control over it.—[ED.]

SKETCHING CLUB COMPETITION.

THE sixth annual competition of sketching clubs in connexion with London Schools of Art took place this week, the drawings being exhibited and adjudicated upon at the Dudley Gallery on the 28th ult., and left on view the morning after also. The clubs which took part in the competition were the "Gilbert," the Lambeth, the West London, and the Men's Sketching Club and Women's Sketching Club in connexion with South Kensington. The subjects named for competition were three in Painting, viz.:—

(*a*) Figure-subject,—"Fugitives."
(*b*) Landscape,—"After Rain."
(*c*) Animals,—"A Struggle."

And one in Sculpture (*d*),—"Victory."

Each member was limited to one sketch, and a prize was given for the best sketch for each of the four subjects above named, and also an award of honour to the club which should send the highest average of work.

The names of the authors of the successful sketches were not given when we saw the collection, and perhaps were not then known, as we presume the sketches are sent in anonymously. The award of honour for general average of merit was given to the Lambeth club, and rightly so; their work showed a greater proportion of sketches evincing artistic feeling and perception than those of any of the other clubs. The drawings were distinguished by numbers, and the amount of marks bestowed on them by the judges was also appended to each sketch; these amounts being awarded, as it seemed to us, a little capriciously in some instances. We entirely concur, however, in the first prize for subjects *a* and *b*. The former (No. 87) is a powerful sketch of a wagon and horses in full career over some very rough ground, driven by a man running by them in a state of excitement; the wagon containing two frightened people, whom we may suppose to be flying from some such tribulation as the sacking of their village by an enemy's soldiery. What we especially liked in this sketch was the evidence it gave of power to realise a subject with intensity, which is exactly where the majority of them are deficient. The prize *b* was a small landscape, No. 43, very quiet in subject and treatment, but showing much truth and delicacy of tone and aërial perspective. This drawing emanated from the West London Club, as did also the prize sketch *c*, a combat between two dogs and a bull, in which the bull has the best of it, both in the combative and in the artistic sense; indeed, the dogs are very bad, but the bull gained the prize, we presume. We hardly feel sure whether we should count this as the best of its class in the collection. About the prize for subject *d*, the model subject, there can be no question; it is by much the best of the models, and shows great spirit and originality. It is a small naked figure of a huntsman who has just been victor over a panther, and, kneeling on one knee, holds up the creature's decapitated head in triumph.

The general character of the sketches did not strike us as satisfactory even as the work (as we presume the majority are) of students, on account of the want of character and force in the conception of most of them. In an exhibition of work produced under such circumstances one does not, of course, expect great refinement of manipulation; but what we may expect to find in the work of those who take up art from love of it, is, with all drawbacks of execution, a certain spirit and earnestness of intention, and this, we must say, seemed to us to be remarkably wanting. In many instances the poverty of invention, and the utter want of any evidence that the artist had felt or endeavoured to give the reality of the subject he (or she) was illustrating, really surprised us. We should have thought that any one who cared enough for the pursuit of painting to have taken it up at all, must have had some innate feeling which would have led to something better than the mere "namby-pamby," in regard to idea and composition, of many of these drawings. This applies more especially to the figure studies, which were mostly of the weakest description; among the landscapes were many bits pleasing both in feeling and execution. Even among these, however, there were not a few which were absolutely vulgar in their staring and unreal colouring, some of which received a proportion of marks which certainly argues a great deal of good nature on the part of the judges. In future, if the competitors cannot come up to the refinement of manipulation in oil and water-colour, which only long and steady training can give, they might at least avoid courting notice by gamboge stems and foliage, with startling effects of light, such as can (fortunately) exist only on paper, and endeavour to convey some of the feeling, and not to "overstep the modesty," of nature.

The successful competitors, as we have since learnt, are,—for the figure-subject, Mrs. Sparkes, of the Lambeth Club; in landscape, Mr. H. E. Tidmarsh, of the West London Club; and for the Animal subject, Mr. E. R. Breach, of the same club. In the sculpture department (clay), the prize was given to Mr. H. Beere, Lambeth Club. The judges were Mr. G. D. Leslie, R.A., Mr. P. R. Morris, and Mr. Luke Fildes, A.R.A.

"RESTORATION" AT ST. ALBAN'S AND NEW COLLEGE.

SIR, — The new high-pitched roof at St. Alban's is now nearly finished, and nothing more need be said about it. I had a half-hour to spare on Saturday last, and seeing the scaffolding extend along the whole of the south side of the nave of the abbey, I thought I would avail myself of the opportunity of mounting to take a few accurate dimensions and particulars of the old brick corbel-tabling which runs along the eastern bays, and of which I had been able to take only an approximate sketch from the transept roof on a former occasion. This corbel-tabling was an unusually interesting feature, architecturally and historically. It was constructed of the old Roman brick, and was apparently of the Norman period, surmounted with a Mediæval string-course, placed there when the parapet superseded the old Norman overhanging eaves-course. It corresponded in character and workmanship with the clearstory windows in these bays. It had a character of its own of picturesque simplicity; and even supposing it to have been of later date, which is well-nigh impossible, it accorded well with the work of the clearstory and of the tower. To my dismay, I found the stonemason cleaning off a brand-new corbel-table of the whole length of the building. The last connecting link between the old and the new work having thus been taken away, some notification of the fact ought to be recorded, some protest ought to be raised, some explanation ought to be afforded to the outside world, however well those locally interested may rest content to sacrifice this transmission of their sacred trust. Where is the great Dictator who has so long watched over the interests of art in general, of architects in particular, and of St. Alban's in person, that such things are being done in open day upon this great national monument? Even the zealous watch-dogs, who are ever turning a tender and jealous eye towards the lambs of the flock, pay little regard to the depredations of the wolf.

As to what has been done at New College, it may seem ungrateful to make any reflection upon the truly noble work carried out in a most generous spirit by the present representatives of William of Wykeham's noble foundation, or upon the work of one, now passed from us, whose whole life was given to the pursuit of the highest forms of art, and to the successful study of our own indigenous architecture. I cannot, however, conceal my disappointment and distress when, in approaching New College from the west, some months ago, I saw the high-pitched lines of the new roof rising above the parapet of the old gable. Nor was I by any means reassured on entering the building. The unsatisfactory and inharmonious space between the top of the old reredos and the underside of the roof pointed painfully to the divergence from the original lines of the great Mediæval architect. There seems no reason for supposing the chapel ever to have been finished with a higher roof than that of the existing gables, whilst all the evidences, within as well as without, point conclusively to its having been finished with the lower pitch. Supposing this departure from the old lines to be a legitimate restoration, the slope of the gable externally ought unquestionably to have been altered to follow it.

Public and architectural interest must necessarily be centred in St. Alban's rather than in the later and more limited foundation at Oxford. In some respects I am more immediately concerned in the latter, claiming as I do kinship to its noble founder, and being interested in it by many personal ties and associations; and under the present state of the controversy between Restoration and Conservation I cannot refrain from expressing an opinion upon the matter. It is said to have been presented as a mere matter of choice between a simpler form of treatment, one probably in nearer accordance with the original and the more ornate form which has been carried out. Those who have been instrumental in choosing and carrying out that which was represented to them as the best can have no cause to reproach themselves with the result, although this result may present a lesson by no means useless to those who are ever striving after, though rarely attaining to, the right; and, in spite of this, Wykehamists may still rejoice in having effected dutifully and constitutionally one of the finest restorations of modern times. WILLIAM WHITE, F.S.A.

DAMP.

SIR,—Several years since I drew public attention to the effect of gas in producing damp walls, some proofs of which I gave in a paper under the above title, in your volume for 1875, p. 1189.

As the house described by "R. M." seems to be similar, as regards its history, to many others which are not subject to damp, it is possible that he is using gas excessively, so as to produce a very brilliant light for several hours together, or his walls may be finished with unusually hard plaster, or papered with glazed paper. All these conditions would tend to produce condensation of the water from combustion of gas.

The fact that the damp is checked by opening the door of the room shows that there is a great production of moisture, which is only carried off when there is such a thorough communication between the room and the passages as to render it practically useless for the purposes of a room. With the large fire, the Boyle's ventilator, and the upright pipes, there is really more chance of ventilation than is usual, though not more than every room ought to have for purification of its air.

I would suggest,—1. That some of the burners which are contrived for getting the most light out of a small quantity of gas should be used, together with clear or ground glass globes rather than such as are opaque; 2. That the gas all over the house should be turned down when not wanted; and 3. That the rooms complained of should, if necessary, be papered with a flock paper, or, at least, with one that is quite without smooth surface, so that by being a bad conductor of heat the condensation on its surface may be checked. THOS. BLASHILL.

SIR,—In reply to the letter of your correspondent in the *Builder* of the 25th of October we think that the whole of the plaster of the walls is certainly damp. The dampness appearing when the gas is alight is due to the fact that the heat of the gas above the burners is sufficient to draw it out, and as there are no means of it escaping, it is absorbed again by the plaster, to reappear the next evening when the gas is lighted again. The greater proof is that below the line of the gas the heat is not sufficient to extract it, and therefore it does not appear. The idea of your correspondent to open the door is quite correct, but the current of air through one aperture is not sufficient to allow the dampness to escape.

Our principle in drying a new house is not only during the process of drying to open the doors, but also the windows, so as to allow the dampness to escape. In keeping the windows or doors and windows shut, the damp extracted is simply absorbed again by the walls.

DREYFUS & Co.

ST. PANCRAS WORKMEN'S EXHIBITION.

SIR,—The Committee have decided to hold another Exhibition next October. It will be open to all within the Metropolitan districts, but will be restricted to exhibits completed or made during the twelve months preceding October, 1880. The Exhibition will be held in the same building as the present, viz., Tolmers-square Institute, Drummond-street, N.W., and intending exhibitors should send in their names, with application for space, as soon as possible, either to Mr. Meech, the hon. sec., 17, Harrington-street, N.W., or to me. It is hoped that this proposal will stimulate many during the winter months to make and exhibit articles which will be of pecuniary benefit to the exhibitors. ARTHUR HALL.

Liverpool Borough Engineership.—The Corporation of Liverpool have appointed Mr. Clement Dunscombe, M.A., C.E. (borough engineer of Derby) borough engineer of Liverpool, at a salary of 800*l.* per annum. There were 101 candidates for the office.

FREE-TRADE HALL, MANCHESTER.

ıg.—The Free-trade Hall, Manchester, enjoys the utation of being an example of successful application the science on ventilation.

n Friday evening, the 24th ult., when the hall was wded with a large political audience, the writer had an ortunity of judging as to whether the hall was worthy its reputation. Arriving at seven p.m., I succeeded, r some difficulty, in making my way to one of the areas ler the gallery. At 7·15 I commenced perspiring idly; the smell of organic emanations distinctly per-tible. At 7·40 in a complete bath of perspiration, the ell of organic exhalations very repugnant. At 8 the t was intolerable, and almost suffocating.

Under the gallery there appeared to be no provision for escape of the exhaled air, which cooled when in contact h the underside of the gallery and descended to be re-aled.

Was the inlet air heated? If so, sufficient allowance s not made for the excessive products of organic com-tion.

Perhaps the authorities of the Free-Trade Hall will at ie remedy these evils, so detracting from the hygienic racter of this noble hall,—the arena of so many torical debates.

B. H. Thwaite.

CHURCH-BUILDING NEWS.

Shenington.—Holy Trinity Church, Shen-gton, has been re-opened by the Bishop of rcester, after restoration. The church con-ts of a nave, chancel, north aisle, and a tower the western end of the nave. The north walls the nave and chancel, and the east end of the ncel, were rebuilt in the last century in the id and tasteless style of the period. The ancel has three fine Decorated windows of o lights on the south side, with flowing tracery d label mouldings on both faces. The re-ration includes the removal of the Norman ch which connected the nave and the chancel, d a pointed arch has been put in its place. e Norman arch, which is enriched with zigzag d cable mouldings, has been placed over an gan-chamber and vestry that has been erected the north side of the chancel. The east ndow has been raised 2 ft. The roof of nave is new, and of pitch pine, and the old timbers of the aisle roof have been covered h new boards. New tracery has been put in west window, and a new roof has been ected over the porch. The arcades which ide the aisle from the nave are Early English. e walls have been cleaned, and the south wall nted. The old-fashioned high pews have en place to low-set and roomy seats of pitch-e, and new choir stalls with carved heads ve been put in. The chancel has been laid h Godwin's encaustic tiles. The passages in e body of the church are laid with Stafford-ire tiles. The building is heated by Porrett's ating apparatus. New stone sills have been in the south windows. The architect was J. L. Pearson, A.R.A., of London, and the rk was carried out by Mr. Barrett, of Bloxham. e cost of the restoration will be about 1,400*l.*, d towards this sum 1,000*l.* has been sub-ribed.

Lee.—The new Church of St. Mildred, Burnt-l-hill, Lee, has been consecrated by the Bishop Rochester. The new parish is the outgrowth the rapidly-increasing districts of Christ urch and St. Margaret's, Lee. The Earl of rthbrook, lord of the manor, presented the , together with a donation of 2,500*l.* towards building fund. The building is Early Geo-tric in style, and consists of a nave, with th and south aisles, transepts, and chancel, h apsidal end and a porch or narthex at the stern extremity. It is faced with Kentish y lined with gault bricks, and the interior of walls is formed of cement concrete. A wer has yet to be added to the church. The hitect is Mr. Henry Elliott, of London; and contract has been carried out by Mr. Coles, lder, Croydon. The total cost of the building bout 6,000*l.*

South Bromley (Middlesex).—Lord Selborne laid the foundation-stone of the new church All Hallows, South Bromley. The site of new building is between Athol-street and king-road, close to the East India Docks. e population of the parish of St. Michael and Souls, South Bromley, has increased during past ten years from 8,000 to 20,000, and new district, which will be carved out of this ish, will have a population of about 10,000. church is to be in the Early English style, n designs by Mr. Ewan Christian, architect the Ecclesiastical Commissioners, and the lder is Mr. George Shaw. Accommodation 800 people will be provided, and there will a parsonage and a parish-room for Sunday-ool work and evening meetings. The site cost about 2,700*l.*, and the estimated outlay, uding this, is put at 14,700*l.* Towards this a grant of 2,000*l.* has been made from the Bishop of London's Fund; a sum of 8,000*l.* is expected from the proceeds of the sale of the site and fabric of All Hallows Church, Bread-street; 1,200*l.* will, it is believed, be granted by the Ecclesiastical Commissioners; and a donation of 500*l.* has been made by Mr. Abbott towards the cost of building a parsonage.

Bildeston.—Bildeston parish church has been re-opened, after restoration. The building is chiefly of Perpendicular date. Some portions of the exterior of the buttresses of the tower, and especially the roof, having from age and the action of the atmosphere become somewhat decayed, Mr. E. F. Bisshopp, architect, Ipswich, was called in, and he made an examination of the roof, and found many of the timbers in an exceedingly bad condition,—so bad that unless the whole of the roofs received immediate attention they would soon have become dangerous. The cause of the crumbling state of the most important parts of the wood-work is stated by the *Bury Post* to have been owing to the unaccountable manner in which the roofs were originally constructed, the work being so done as to admit water to percolate into the walls and on to the timbers, dry rot being the necessary consequence. It would appear that at some distant date the old roof was removed, with the exception of the tie-beams, cornices, and brackets, and a new roof substituted of a higher pitch. Mr. Bisshopp made various recommendations as to what was best to be done under the circumstances, and the parishioners felt that the work of restoration must be undertaken without delay. Mr. Hawkins, builder, Monks Eleigh, was the contractor. The roofs were entirely stripped, new work put in where necessary, and the whole close boarded, and slates have taken the place of the old lead covering. There are nine clearstory windows on each side, and advantage was taken of the opportunity of filling the tracery with cathedral glass, while the masonry, where necessary, has been repaired.

Gloucestershire.—Various works have lately been done to the chancel of Yate Church, at the cost of the rector, the Rev. A. Pontifex. The stonework has been repaired, and a tile pavement of the Campbell Company's antique make laid down. An east window, by Burlison & Grylls, has also been placed in memory of the rector's father, the works being done under the direction of Mr. Ralph Nevill, architect.

Godalming.—The parish church of Godalming was, on the 16th ult., re-opened by the Bishop of Winchester after enlargement and restoration. The modern aisles have been taken down and enlarged, and very needful repairs done to the eastern and ancient portion of the church. Some curious portions of an older church, including interesting fragments of colour, have been exposed to view and carefully preserved. The choir has been relaid with the old marble slabs and brasses, and new tiles of Godwin's make; the seats throughout, as well as the carved stalls, are of oak. The tower, which was in a very unsound condition, has been repaired, and the outside generally stripped of its stucco. The cost of the work has been about 6,000*l.*, the architects being the late Sir Gilbert Scott, succeeded by his son and Mr. Ralph Nevill, F.S.A. The builders were Messrs. Putney, of Dorking.

Talk-o'-th'-hill.—The new Church of St. Saviour, Talk, has been consecrated by the Bishop of Lichfield. It has been erected in a populous part of the ecclesiastical parish of Talk-o'-th'-hill, known as The Hollins, a considerable distance from the mother church. In the autumn of 1877 plans were prepared by Mr. F. W. Hunt, architect, of London, and a committee, consisting mainly of working men, was formed to carry them out. The church is built of timber framing, filled in with concrete, the outside timber being English oak, and pitch pine used internally. It is founded upon a stout oak sill, 12 in. square, and is firmly bolted and tied at all strain points. If the experiment succeeds, as there is every reason to believe it will, the difficult, but in this diocese interesting, problem of how to build upon an insecure foundation will, it is thought, have been satisfactorily worked out. The new building is in length 104 ft. and in width 55 ft. over the aisles, the chancel being 10 ft. less in width than the nave and the side aisles. Mr. Booth was the builder, and the first contract was for 2,658*l.* 1s. 10d., a second contract being for 390*l.* When completed, the edifice will contain the following accommodation: — Nave, 310 persons; north aisle, 80; south aisle, 84; south chancel aisle, 96; chancel, 46; total, 616; besides which, there are spacious vestries. The south chancel aisle has not yet been built, but can be added at any future time when requisite, so that the present accommodation is for 520. In addition to the builder's contract, an organ is to be supplied at a cost of 300*l.*, and, with the heating apparatus and other expenses, the total expenditure will reach 3,746*l.*

Harpsden.—The chancel of Harpsden Church, Henley, has been re-opened, after restoration. The glass of the east window has been replaced by a piece of work by Messrs. Powell, of Blackfriars, London. The centre represents "The Crucifixion," and the side-lights "The Agony in the Garden" and "Christ bearing the Cross" respectively. A reredos of open stonework rises from the base of the window. The centre of the reredos has a cross of alabaster; below is a stone ledge or re-table, upon which stand a pair of handsome brass candlesticks and flower-vases. The old table has been replaced by a larger one, resting upon a footpace of inlaid marbles. To the north and south sides, filling up the east wall, and in a line with the reredos, are mosaic panels, two on either side; those on the north side represent Isaiah and Micah, those on the south St. Luke and St. John; above these are quatrefoils containing the Annunciation and the Nativity. Below the mosaics, filling up the remainder of the east wall, are slabs of coloured marble, inlaid. The roof has been painted and the walls stencilled. A recess opposite the vestry-door contains a painting, nearly life-size, of St. Margaret, the patron saint; she is represented, in accordance with the legend, with palm-branch and cross, treading on a dragon. The works have been executed under the direction of Mr. Woodyer, architect.

Bristol.—The new church of St. Werburgh, Bristol, has been consecrated. It has been erected on a site at the end of Mina-road, Baptist mills, in a rapidly-increasing and very poor neighbourhood. The architect is Mr. J. Bevan, and Messrs. Wilkins & Sons were the builders. The only difference in the plans of the present church and those of the one that formerly stood at the corner of Small-street is that the new one has a chancel, which the old one had not, and that there is an alteration in the position of the turret, which was originally on the north-west angle of the tower, but it is now placed on the south-west angle. There were several reasons for this alteration. One was that it was thought to emphasise the building, and another because, structurally speaking, it would give additional support to the tower. The length of the new church is 79 ft., being 19 ft. longer than the old one; but the breadth is the same, namely, 59 ft. It consists of a nave, north and south aisles, chancel, organ-chamber on the south side of the chancel, vestry on the north side, western porch, and tower. The chancel is 20 ft. wide and 25 ft. long, and is paved with encaustic tiles. The organ-chamber, containing the old organ, renovated by Mr. Vowles, is 15 ft. by 17 ft., and the vestry 17 ft. by 12 ft. The nave is paved with tiles in geometric patterns, and is seated with pitch-pine open benches to accommodate 650 worshippers. The windows of the nave are five-light ones, cusped, of two designs alternating. The east window is of the same design as the others, but larger. It is filled with cathedral glass of positive colours, enriched by roundels. The glazing has been carried out by Mr. B. Gay. The exterior of the building is of freestone; the roof is covered with Broseley tiles, and the interior of the roof is of varnished pitch pine. The church is lighted by nine gas coronæ, supplied by Messrs. Jones & Willis. The building will be heated by means of hot-water apparatus, provided and fixed by Mr. Skinner, of Stoke's-croft. The whole of the monuments from the old church have been re-erected.

Water Orton.—The new parish church of Water Orton has been consecrated by the Lord Bishop of Worcester. The building has not yet been completed, owing to want of funds, and the building operations have been suspended. The total cost will exceed 3,500*l.*, of which 2,700*l.* has been subscribed, leaving 800*l.* yet to be subscribed. The church occupies a site near the railway station, given by Mr. G. D. W. Digby, Sherbourne, and consists of nave, north aisle, apsidal chancel, and organ-chamber. The nave is 54 ft. long, 20 ft. 6 in. wide, and 38 ft. high to the ridge of roof, the aisle being 8 ft. wide. The vestry is on the south

side of the chancel, with a vault underneath containing warming apparatus. At the west end of the aisle is the tower, terminated with a spire 100 ft. high. Accommodation is provided for 250 adults, and the building is so arranged that a south aisle can be built to accommodate fifty additional persons. The exterior is built with Derbyshire stone and Bath stone dressings, and the open-timbered roofs are covered with tiles. The floors are laid with tesselated tiles, and the seats are of pitch-pine, stained and varnished. The pulpit, reading-desk, and lectern, which are of oak, were supplied by Messrs. Jones & Willis, of Birmingham. The building is in the Decorated style, and was designed by Messrs. Bateman & Corser, architects, of Birmingham. Mr. Mottram, of Tamworth, was the builder, and Mr. Llewellyn has been the clerk of works.

Llansamlet.—On the 6th ult. the Bishop of St. David's consecrated the new church which has been erected at Llansamlet, to replace the ancient structure which had long been too straitened to meet the requirements of the parish. The site of the new church is on the same hillock as the old church, just outside the limits of the old graveyard, the ground being given free of cost by the Earl of Jersey. The structure is built of native stone, with Bath-stone dressings. It consists of nave, two aisles of five bays each, and large raised chancel. The interior roofing is of varnished pitch-pine, as well as the pews, pulpit, &c. The columns are of freestone. The building was taken in hand by three local builders in conjunction; but two fell away early, and the work was carried through by Mr. David Joshua, builder, Llansamlet. The cost of the structure is about 4,000*l.*

DISSENTING CHURCH-BUILDING NEWS.

Derby.—The new Central Primitive Methodist Church, Derby, situate at the junction of St. Peter's-churchyard with Green-lane, has been opened for use. The building is Italian in style, and is constructed of white bricks, with stone and terra-cotta dressings. At the south side there are two towers, and here access is obtained from the basement to the galleries. The entrance is in St. Peter's-churchyard, and is raised 5 ft. above the level of the street. The galleries are illuminated with gaslights hung from the ceiling, whilst the body of the chapel is surrounded with small gas-brackets, supplied by Mr. Lancaster. The chapel is calculated to seat 800 worshippers, and underneath it there is a large school-room, with class-rooms, &c. The cost of the site was 1,280*l.*, and the cost of the building, including furniture, fittings, and other requisites, will be about 5,000*l.* The work has been carried out by the contractor, Mr. George Pemberton, of Melbourne-street, from designs by Messrs. Giles & Brookhouse, architects.

Killinghall.—A new Wesleyan Chapel has lately been opened in the village of Killinghall, near Harrogate. The building is Gothic in style, the material used being pale coloured sandstone obtained from quarries in the immediate neighbourhood, and given by Messrs. Richard and Robert Pawson, of Killinghall. There is a class-room, which is to be used as a minister's vestry, containing separate outside entrances, also an improved heating apparatus and general store-room on the ground-floor. The heating apparatus has been supplied by Messrs. Truswell, of Sheffield. The school-room is built on an elevation, the stairs leading to which meet one of the chapel staircases at the half-pace, admitting of passage from the school-room without going outside the chapel. The school will afford accommodation for 70 or 80 scholars. The contracts have been carried out as follows:—Masonry, Mr. J. Simpson, Harrogate; joinery, Mr. W. Grainger, Killinghall; plastering, Mr. C. Fortune, Harrogate; painting and decorating, Messrs. Knowles & Son, Harrogate; slating, Mr. J. Baines, Ripon; plumbing and glazing, Mr. D. Smiddy, Morley. The architect is Mr. Wm. Croft, Killinghall. The total cost is about 1,200*l.*

Halifax.—Pellon-lane Baptist Chapel, Halifax, has been re-opened, having been restored after destruction by fire. The cost has been about 3,000*l.* Mr. W. H. D. Horsfall was the architect.

Sheffield.—Trinity Wesleyan Methodist Church, Highfield, Sheffield, has been completed and opened. It is Early English in style, and is built of Durnford Bridge stone, relieved with Hollington dressings. One of the most prominent features of the building is the tower and spire, at the intersection of Highfield-place and London-road. The tower is 70 ft. high, and is surmounted by a spire 65 ft. high. There are two entrances to the church, the principal one being reached by a flight of stone steps facing Highfield-place. The interior of the church is divided into a nave and aisles by arcades, composed of stone pillars, with carved capitals, and terra-cotta arches, above which there is a clearstory. There are three galleries, one over the main entrance to the building and one over each transept. The pews, which will accommodate 960 worshippers, are of pitch pine, and the floor is of wood, with the exception of the entrance and lobbies, which are paved with encaustic tiles. Out of the body of the church access is gained to the two vestries, one for the stewards and the other for the minister; and in the basement is a school-room 59 ft. square, with four class-rooms, 12 ft. by 16 ft. each; and a band-room, 29 ft. by 20 ft., as well as a kitchen and boilers. The architect is Mr. J. D. Webster; and the contractors are—Mr. W. Thompson, masons' work; Messrs. Dutton & Evans, joiners' work; Messrs. Hodkin & Jones, plasterers' work; Messrs. R. & J. Walker, plumbers' work; Mr. Wetherill, slaters' work; Mr. Robinson, painters' work; Messrs. Newton, Chambers, & Co., heating apparatus.

Banchory.—The foundation-stone of a new Free Church at the village of Banchory was laid on the 13th ult. The church, designed by Mr. Souter, architect, Aberdeen, is in the Early English style, will be seated for 700 persons, and will cost about 3,000*l.*

Dalkeith.—The building hitherto occupied by the East United Presbyterian congregation, Dalkeith, having been acquired by the Duke of Buccleuch for the purpose of improving the access to Dalkeith Palace and grounds, a new church is at present being erected for the congregation in Buccleuch-street. The architectural arrangement of the front elevation consists of a centre, flanked with two wings, the former rising prominently up. The windows are all semicircularly arched, and are decorated with moulded shafts, having richly carved capitals. The gables of the wing and centre are surmounted with corbelled and massively-moulded cornices. Large hall and class-room accommodation is conveniently provided towards the front of the building. The Lombardic style has been adopted by the architects, Messrs. R. Thornton Shiells & Thomson, Edinburgh, as being the most suitable for a public edifice standing contiguous to commercial buildings. The cost of the church, including officer's house, will be 6,000*l.*

Burton Latimer.—The Baptist chapel at Burton Latimer has been re-opened, after alterations which have cost 760*l.* The work has been done under the direction of Mr. R. Johnson, architect, Kettering, by Messrs. G. Simpson (carpentry), J. Glover and A. Ball (masonry).

Books.

The Science of Taste: a Treatise on its Principles. By G. L. With 105 illustrations by the author. London: E. Stanford, 1879.

"G. L.," who declines to give us his name on the title-page, but presents us, nevertheless, with his portrait facing it, means well, and has some ideas on the subject on which he writes, which are true, if not very new. But his title-page is a mistake to begin with. There is no "science" of taste, and all efforts to formulate one usually result in giving additional proofs of the fact. There are such things as "principles" of taste certainly, but they have not the definite character and the susceptibility of absolute proof which are the characteristics of scientific truths. Principles of taste, and of art-criticism, are themselves, in fact, more results than guides; they arise from the effort to formulate in general terms the conclusions and the feelings in which all finely-constituted and well-educated intellects appear to concur, in regard to what is in good or bad taste, what is æsthetically right or wrong in art. And it is certainly the fact that among people of real culture, and who are not carried away by fashions, there is far more of absolute agreement and certainty of opinion in regard to what is good and bad in art than is generally supposed by the mass of persons who like and dislike at haphazard; and there is no doubt that decided difference of opinion on works of art is, in a great many cases, the result of difference of knowledge. But this must not be pushed too far. Even among th who are really cultured persons there differences in predilection, with apparen equal reason on both sides, or, at least, eq reasoning power, which cannot be includ under any generalisation of principle: short, "doctors differ," on taste as on ot matters, though the differences betwe doctors who are really learned on t subject are, as we have implied, less than t mass of persons suppose. But even granti that the learned in taste always agree, and th only a sufficiency of knowledge is necessary order to arrive at a true taste, there is still "science" of taste, since the most refined tas based upon the most logical reasoning, will enable one to absolutely confute an infidel heretic in the matter. If a man denies that t angles of a triangle are equal to two rig angles, you can demonstrate his error him unanswerably. But if he prefers lan scape-painting on glass to flat mosaic, or if sees no harm in building up a pediment ornament where there is no roof behind, y may feel just as sure that he is wrong as the other case, but you cannot *prove* it him; your only final resource is to call him blockhead. You may tell him that a pedime with no roof behind it is a sham; but if he swers that he has no objection to sham provided they are ornamental, where are yo You may shrug your shoulders and shake the dust of your feet against him, but y cannot demonstrate to him that he is wron and you will have to leave him in the f persuasion that he has as good a right to opinion as yourself. Of course he has n but if taste were really a science, it would possible to prove that to him, which it obvioni is not.

The impossibility of insuring a good res by the mere consideration of principles is su ciently shown in the illustrations introduc into the book by the author. He gives (fig. a design for a park entrance, intended illustrate his theory that all entrances sho be arched, and he asks innocently whet this design, in which the centre gateway crowned by a kind of entablature in arc form, sent flying in the air without any sup structure, would not be a vast improvement the present architectural screen which forms entrance-gate at Hyde Park-corner. The lat structure is not immaculate, certainly; but architectural materials which have been cho for it, the forms of Classic columnar architectu are treated and combined with thorough ta and knowledge, and certainly, on the whole is a very elegant and pleasing design, and m suited to its purpose than many entrance-ga that one sees. The design which "G. L." off as an obvious improvement on it is positiv one of the worst designs we have ever seen ugly in itself, and absurdly false in principle some of its details, and put together withe apparently any knowledge or perception regard to the combination of architectural for and details. After seeing this, we can only s "Physician, heal thyself." It is a mista anyhow, to suppose that canons of taste can formulated which will be incontrovertible; when an author, who professes to aim at do so, and at showing us the only true, right, a unimpeachable foundation of taste, exemplif his results by such a thing as the illustrat we have referred to, we must be excused if feel that it would be waste of time to g farther or more serious consideration to a bo in which preaching and practice are so ho lessly at variance.

VARIORUM.

"Letter Painting Made Easy" by Jac Greig Badenoch, is the title of a little b published by Crosby Lockwood & Co. It gi a system for getting equal spaces and distanc and may be useful as an introductory work those who know nothing about the matter, b beyond this it cannot be said to go.——T current *Quarterly* includes a graphic and teresting notice of Albert Dürer and times.——A third edition has been published Jordan's "Tabulated Weights of Iron Steel" (Spon). It chiefly interests naval arc tects and shipbuilders.——The departure of *Gentleman's Magazine* from its original an quarian purpose has been often regretted, its late editor, Mr. Edward Walford, of Ball has resolved to start a new monthly, *Antiquary*, to take the plan of it, and also embrace a wider range of subjects. He

promises of good help. Mr. Elliot Stock, of Paternoster-row, is the publisher. There is, or at any rate was, not long ago, a periodical called the *Antiquary*, but of this Mr. Walford is doubtless aware. —— Early in the present year the proprietors of *Little Folks* Magazine instituted a prize competition for coloured copies of the "Little Folks' Painting Book," the prominent feature of the scheme being that all the books were eventually to be distributed among the Children's Hospitals, as a Christmas present from the young artists. In response to the invitation thus offered to the readers of *Little Folks*, many little hands have been busy for six months past, and during the closing days of the competition the number of books received by the editor has averaged as many as 500 *copies a day*, thus bringing up to *many thousands* the total number of Painting Books received.

Miscellanea.

Accident at the Severn Tunnel.—A serious accident has occurred to the works of the Severn tunnel, causing an entire cessation of the operations at the headings on the Monmouthshire and Gloucestershire banks of the river. About seven o'clock, on the 17th ult., just after a shift of fifty men had gone down the Black Rock shaft, a land spring burst in upon them. At first it only came in in a very small stream, but before it could be stopped a huge piece of rock fell out, and the water rushed into the works in an immense volume; the men who were employed some 40 ft. beyond had to be quick in getting out of the shaft, or they would have been drowned. Three powerful pumps, five of which throws a stream of fifty-five hogsheads per minute, were at once set to work, and continued working all day, but their force was insufficient to stop the rush of water, and the shaft soon became quite full. It is stated that in an 18-ft. working the water gained 13 ft. in an hour. The pumps, which have hitherto been able to check the inrush of water from the springs met with in the course of the work, were stopped at the end of twenty-three hours, and it is not expected that pumping will be resumed until the arrival of still more powerful pumps from Cornwall. It was known that the surrounding land was full of springs, but it was never anticipated that such a large one existed as such close proximity, although it is stated that the rock had been seen "weeping" for several days at the spot where the spring burst through. The boring from the Black Rock side had reached that from the New Passage side to within about 100 yards, and the drilling and blasting operations in the Black Rock boring could be heard by the men at work on the New Passage side, and it was expected that the two would have met in November had it not been for this unfortunate occurrence. Work is, of course, suspended in both borings, and compressed air is being forced down the New Passage shaft to prevent the water breaking down the partition. Some 300 men are thrown out of employ, and it is anticipated that some seven or eight months must elapse before the operations can be resumed. The works at the western portion of the tunnel at Caldicot have not been affected by the water, and they are in full operation.

Sun Symbols.—At a meeting of the Numismatic Society on Thursday, October 16, Mr. J. Evans, F.R.S., president, in the chair, a paper was read by Mr. Edward Thomas, F.R.S., in which he sought to give an explanation of the ancient symbol occurring on coins and elsewhere, and called by the Indians *swastika* (gammadic-cross). With this emblem Mr. Thomas also has given much attention to the subject) connected the triquetra of the coins of Lycia, that of Sicily, &c., and even the cross-like labyrinthine pattern of the early coins of Cnossus in Crete. In all these devices the latter saw embodiments of the primitive idea of solar motion, associated with its rolling or wheel-like projection. He traced the history of the representation of the sun on the monuments of Chaldæa and the East generally, from the simple ring to the wheel, and the rayed orb, to the terra-cotta discs brought by Dr. Schliemann from Hissarlik, Mr. Thomas traced several of these forms. The triquetra of legs was intimately connected with the Vedic tradition of the three steps of Vishnu, supposed to indicate the rising, the meridian, and the setting sun.

Enlargement of St. Pancras Workhouse There would seem to be now every probability that the guardians of St. Pancras will overcome the scruples of the Local Government Board, and thus avert the threatened enforcement of the order compelling them to obtain a site and erect an entirely new and additional workhouse, which would involve, it is estimated, an expenditure of from 100,000*l.* to 150,000*l.* At the last meeting of the Board of Guardians, the committee discussed with Dr. Bridges various propositions, and with respect to plans submitted and suggestions made, it was unanimously resolved,—"That the Board be recommended to make arrangements with a specially-qualified architect for the production of a sketch ground-plan of a proposal to provide accommodation upon the present workhouse site for about 2,500 inmates, by the demolition of certain portions of the existing buildings and erection in their place and on remaining spaces of new and more commodious blocks of buildings, and with the said plan, an approximate estimate be given of the cost of carrying out the scheme suggested." The report was adopted unanimously, and Mr. Bridgman, the architect who has already erected several of the present buildings of the workhouse, was at once instructed to produce the necessary plans without delay.

Proposed New Railway.—A meeting of landowners has been held at Lewes to consider a project for utilising the partly-constructed Ouse Valley Railway, lying between Sheffield Bridge and Hellingly. The district indicated is without railway accommodation, and the importance of the proposal attracted a large number of landowners to the meeting. A resolution was proposed by Mr. A. Donovan, and seconded by Sir Edmund Hornby, "That, in the opinion of this meeting, the construction of so much of the Ouse Valley lines of railway as would extend from a junction with the Lewes and East Grinstead Railway at Sheffield Bridge, in the parish of Newick, through Uckfield, Framfield, East Hoathly, and Chiddingly, and forming a junction at Hellingly with the Tunbridge Wells and Eastbourne Railway, would be a great public benefit, and that a committee be appointed for the purpose of taking the earliest opportunity of seeing the directors of the Brighton Railway Company, and report the result of such interview to an adjourned meeting." Such a line would give life to a considerable extent of country.

Tidal Navigation to Manchester.— A meeting has been held in Manchester for the purpose of considering the expediency of the proposal for the construction of a tidal navigation for sea-going steamers between Manchester and Liverpool. Mr. Hamilton Fulton, the engineer, explained the nature of the proposal, and stated that the length of the channel would be between Manchester and Liverpool about thirty-six miles. The minimum width of the navigation would be 200 ft., and the minimum depth at low-water spring tides would be 12 ft., or about 2 ft. more water than exists at low-water on the bar at the mouth of the Mersey. A basin would be provided at the Manchester end, of eighty-one acres, with 16,000 lineal feet of well-constructed quays and wharfs, and all requisites for shipping accommodation on a large scale. The estimated cost of the undertaking is 3,500,000*l.* Mr. George Hicks, of Manchester, presented a statement as to the probable revenue, which, if realised, would give a large return upon the proposed outlay.

The late Mr. Edward Blore.—The will, dated April 12, 1870, with two codicils, dated August 12, 1876, and July 31, 1879, of Mr. Edward Blore, late of 4, Manchester-square, who died on September 4th, was proved on the 11th ult. by the Rev. Edward William Blore, the son, Charles Keyser, and the Rev. Thomas Vere Bayne, the executors, the personal estate being sworn under 80,000*l.* The testator makes provision for his other children, and then gives the whole of his real estate and the residue of his personal estate to his son, the said Rev. Edward William Blore.

St. Bartholomew the Great, Smithfield A vestry of this parish has been held in the vestry-room of the church to appoint a surveyor to assist the overseers in valuing certain properties, viz., the Manchester Hotel; to make a poor rate, and on other business. The appointment of Mr. C. Richards (made by the overseers) as surveyor for the valuation of the Manchester Hotel property was approved by the vestry.

Damage by High Tides at Southport.—Exceptionally high tides have lately occurred at Southport, causing damage to a large extent to the promenade works now in progress. Messrs. Gripper & Bayliss, of Nottingham, are engaged in extending the promenade a distance of 1,470 yards, which work will cost the Corporation upwards of 50,000*l.*, the quantity of land to be enclosed being forty-two acres. On the 17th ult. many hundreds of tons of sand were washed away, the waves going right over the high embankment, the damage being estimated at 1,000*l.* The tide of the following day did still further damage, and that of the 19th increased it still more. Such was the force of the waves that most of the heavy rolling-stock was thrown off the rails, many of the wagons being rendered unfit for further use. A portion of a concrete wall was broken, and at one time it seemed that the whole embankment would be washed away.

New Town-hall, Bootle.—At the meeting of the Bootle Town Council on Wednesday evening, it was unanimously resolved,—"That the first premium of 50*l.* be awarded to Mr. J. Johnson, of 9, Queen Victoria-street, London, for his design for the new Town-hall, under motto 'Plan,' and the second premium of 25*l.* to Mr. John Lowe, of 22, Mansfield-chambers, Manchester, for his design under motto 'Experience B.'; that the Council erect a new Town-hall in accordance with Mr. Johnson's design 'Plan;' and that the General Purposes Committee be empowered to enter into negotiations with Mr. Johnson, and, if necessary, to invite tenders for the work, and that the work be taken in hand at once."

City of London College.—We are glad to find that H.R.H. the Duke of Connaught, following the steps of his illustrious father, the late Prince Consort, who took a lively interest in the institution, has consented to distribute the prizes to the students of the City of London College, Leadenhall-street, on Thursday evening, the 13th of November next. The main feature of this college is its evening classes, where the young men of the metropolis may improve themselves, and thus become more fit to perform the duties required of them by their employers, enabling the latter to contend successfully with the competition which is a characteristic of this era of the world's history.

Sunday Art Exhibition. — For a few Sundays the Aldersgate Gallery of Paintings will be open from two till five p.m., at Hamsell-street, Jewin-street, E.C. This collection, a temporary one, consists of works by and after the old masters, which have been generously placed at the disposal of the Committee of the Sunday Society. On Sunday next, in connexion with the opening of this, the fifth of the series of Sunday art exhibitions inaugurated by the society, the Rev. Wm. Rogers, rector of Bishopsgate, will deliver an address.

Liverpool Engineering Society. — The usual fortnightly meeting of this society was held at the Royal Institution, Colquitt-street, on Wednesday evening, the 22nd ult., Mr. A. Ross, vice-president, in the chair, when Mr. F. B. Salmon, M.I. and S.Inst., of the Birkenhead Forge, read a paper on "Homogeneity *v.* Welds in Iron and Steel."

Builders' Machinery at the Yorkshire Exhibition.—The judges have awarded F. W. Reynolds & Co., of Southwark-street, London, a prize medal for good workmanship and novelty of design of their builders' machinery and appliances.

TENDERS

For villa-residences (part only) Torrs-park, Ilfracombe, for Mr. W. Huxtable, Mr. W. Morgan Robbins, architect. Quantities by the architect:—

Parkin, Rowe, Vickery, & Avery (accepted)	£700 16 0

For pair of semi-detached villas, Torrs-park, Ilfracombe. Mr. W. Morgan Robbins, architect. Quantities by the architect:—

Horwood	£1,674 0 0
Parkin	1,582 0 0
Durke	1,575 0 0
Kellaway	1,562 0 0
Brooks (accepted)	1,543 0 0

For re-building No. 88, High-street, Ilfracombe, for Mr. Joshua Avery. Mr. W. Morgan Robbins, architect:—

Kellaway	£494 10 0
Durke	675 0 0
Horwood	575 0 0
Knill (amended and accepted)	550 0 0

For alterations at the Murray Arms, St. Paul's-road, Camden-square, for Mr. Morgan. Mr. J. R. Furniss, architect :—

Rowell	£1,400	0	0
White	1,290	0	0
Mark	1,230	0	0
Edgeley	1,220	0	0
Grimwood & Sons	1,197	0	0
Temple & Forster	1,123	0	0
Anley (accepted)	1,070	0	0

For the erection of dwelling-houses in Elmer's End-road, Anerley, for Mr. J. Jemini. Mr. St. John Hancock, architect :—

Palmer	£2,996	0	0
Woolton	2,297	0	0
Young *	1,715	0	0
Stoneham	1,597	0	0

* Subsequently modified and accepted.

For rebuilding No. 62, Robertson-street, Hastings, for Mr. E. Plummer. Messrs. Cross & Wells, architects :—

Harman	£3,290	0	0
Wood	3,280	0	0
Jenkins	3,232	0	0
Rodda	3,200	0	0
Jones	2,854	0	0
Geary	2,795	0	0
Womersley	2,780	0	0
Coussens	2,749	0	0
Cruttenden	2,730	0	0
Vidler	2,648	0	0

For a Cast-Iron Sewer Outfall, for Bournemouth Commissioners. Mr. G. R. Andrews, surveyor to the Commissioners :—

Saunders & White	£3,938	0	0
Hill & Co.	3,627	0	0
Howell	3,615	0	0
Pontifex & Wood (accepted)	2,920	0	0

For the completion of streets and construction of sewers in Derby, for the Derby Urban Sanitary Authority. Mr. Clement Dunscombe, engineer :—

No. 1	£2,062	0	0
No. 2	1,692	0	0
J. & G. Tomlinson (accepted)	1,553	10	0

For covering over last section of Markeaton Brook Course, from Sadler Gate-bridge to St. James-street, for the Derby Urban Sanitary Authority. Mr. Clement Dunscombe, engineer :—

No. 1	£3,445	0	0
No. 2	3,108	0	0
No. 3	1,837	2	6
No. 4	1,814	19	10
No. 5	1,677	12	8
No. 6	1,650	0	0
No. 7	1,580	0	0
No. 8	1,497	5	0
Bromage (accepted)	1,435	0	0

For building inspector's residence, housekeeper's cottage, boundary walling, and entrance-gates to Central Depôt, Ford-street, Derby. Contract No. 2. Mr. Clement Dunscombe, architect :—

No. 1	£1,530	0	0
No. 2	1,519	2	6
No. 3	1,410	0	0
Hall (accepted)	1,105	11	11

For cleaning and painting market-hall and butter-market, Derby. Mr. Clement Dunscombe, surveyor. Quantities supplied :—

No. 1	£325	0	0
No. 2	564	10	0
No. 3	558	15	0
No. 4	528	10	0
No. 5	491	0	0
No. 6	490	0	0
No. 7	469	0	0
No. 8	451	0	0
No. 9	388	5	6½
Smith & Walker (accepted)	375	0	0

For houses, &c., for Mr. J. Philp, Arkley, Barnet. Mr. E. W. Brookling, architect :—

Miller	£2,050	0	0
James	1,985	0	0
Baughan	1,960	0	0
Butler	1,925	0	0
Burdett (accepted)	1,793	0	0

For three pairs of semi-detached villa residences, Lewisham-park, for Mr. P. Hamilton :—

Barton	£9,450	0	0
Taylor & Son	8,200	0	0
Tomlin	8,120	0	0
Balaam	8,088	0	0
Taylor	8,000	0	0

For erecting warehouse in Milford-lane, Strand. Mr. Peter Dollar, architect; Mr. J. G. Raynes, surveyor :—

Higgs & Hill	£2,669	0	0
Dove Brothers	2,545	0	0
Johnson	2,485	0	0
Patman & Fotheringham	2,475	0	0
Bywaters	2,434	0	0
Macey	2,330	0	0
Langmead & Way	2,300	0	0
Scrivener	2,074	0	0

For alterations and repairs at the Windmill public-house, Leather-lane. Mr. W. Ansell, architect. No quantities supplied :—

Grimwood	£683	4	0
Golden	635	0	0
Oxford	625	0	0
Fearman	606	9	0
Macey	566	5	0
Browne	565	0	0
Langmead & Way	559	0	0
Beale	448	0	0

For small shop, No. 136, High-street, Ilfracombe, for Mr. George Vagges. Mr. W. Morgan Robbins, architect :—

Horwood	£420	0	0
Knill	407	0	0
Durke	349	0	0

For the erection of school for girls and infants, Westfields, Barnes. Mr. E. Matthews, architect. Quantities supplied :—

Aviss	£1,500	0	0
West & Perkins	1,479	0	0
Thompson	1,478	0	0
Grant	1,470	0	0
Hunt	1,470	0	0
Hinkley	1,443	0	0
Reading	1,430	0	0
Lindfield	1,409	0	0
Gyles	1,400	0	0
Hunt	1,353	0	0
Haynes	1,349	0	0
Williams	1,293	0	0
Warr	1,275	0	0
Raymes (accepted)	1,250	0	0

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E. T. B.—W. D. A. S.—L. W.—F. W. R.—E. T.—C. & W.—J. J. W.—J. F.—G. R. A.—R. H. S.—R. L. H.—H. W.—C. D.—W. W.—T. P.—J. S. R.—T. M. H. F.—F. B.—L. & W.—O. A.—C. D.—J. S. H.—A. H.—H. W.—L. & W.—A. S.—W. H. W.—T. W.—J. B. H.—G. J.—Mr. H.—E. & R. P.—J. L.—W. E.—Rev. A. H.—[letter illegible] owner (letter, from some wretched copying-machine, cannot be read without effort. We decline to try).—J. B. (smoky chimneys can be dealt with efficiently only by those on the spot).—A. S. (should have sent list of amounts).—City of London College (letter illegible. This seems to be the fashion just now).—W. H. L. (next week).

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The Builder.

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The Competition Question Re-opened.

PRINTED in another column will be found a circular which has been addressed by one of the Fellows of the Institute of Architects to his compeers, inviting renewed attention to the evils of the competition system, and stating his intention of taking motion on the subject during the ensuing session of the Institute, provided he can obtain the support of the general body of the Fellows in doing so.

The thanks of the profession are certainly due to any member who, like Mr. Porter, has the spirit to endeavour to inaugurate a reconsideration of this subject in the hope of lessening or removing the very serious disadvantages to the architectural profession and to modern architecture which the system of competition entails,—at all events, in the way in which it is now generally carried out, and in the proportions which it has assumed of late years. We have so often and strongly commented on this, that none of our readers will doubt that we should be in the main in sympathy with the objects aimed at in Mr. Porter's circular, and should be disposed to give all the support in our power to any such attempt to lead to a systematic action which may at least result in putting architectural competitions on a footing less unfair to the profession and less injurious to the interest of the art of architecture than they now are. At the same time, it is necessary to look carefully at both sides of the question before deciding on the line which can advantageously be taken on the subject, or hurriedly endorsing a view of it which might be found in the end impracticable.

The aspect of the question has changed very much since the time when the idea of inviting architects to compete for the privilege of carrying out a projected building first recommended itself to the non-professional mind. There would seem to have been three phases in the modern architectural competition system. The earliest was that of which we noticed records in some recently published biographical memoirs. Competition was then in a rough and crude state. There was no pretence of anonymous competing, or of unbiassed judgment on the part of the judges or clients. On the contrary, the open aim of the architect then seems, in most cases, to have been to bias the judgment of the committee or client in every possible way, and to obtain the work by special pleading and the exercise of personal influence with the most powerful members of the committee for whom the work was to be done. Subsequently, competition became recognised in higher quarters as a means of obtaining the best available ability for carrying out large and important buildings, and the best plan and design; with the ostensible profession (at all events) of unbiassed choice based entirely on the merits of the design submitted, and not on the personal influence of any competitor. From being, however, a rather exceptional course to which recurrence was had in the case of large and important works mainly, it has now come to be the rule rather than the exception with all public or semi-public bodies, large or small, important or contemptible, who want a new building. Clients who, in a private capacity, have occasion to employ an architect,—men who want to build dwelling-houses, for instance, still keep clear of it, partly because it would involve a good deal of time and trouble, partly because there still is in the minds of English gentlemen (in their non-official dealings) a certain sense of fairness in their relations with professional men, and a feeling that there would be something derogatory to their own dignity in inciting competition for their dwelling-houses, pitting a number of men against each other in the matter, and giving all but one their labour for their pains. Besides, a private person usually has some reason for employing one special architect; he goes to the same architect whom other members of his family have employed, as he goes to the family solicitor; or he has a friend in the profession whom he prefers to deal with rather than a stranger; or he has a certain definite taste of his own about architecture and decoration and furniture, and goes to the man whom he thinks best able to satisfy his own tastes. Formerly, of course, it might have been added, too, that an ordinary dwelling-house was too small a thing to be worth getting up a competition for; but this can hardly now be regarded as any reason against such a proceeding; for we now constantly see advertisements inviting competitions for buildings of no more size or importance than an average dwelling-house, small vestry-halls, village schools, and other such structures; those who are entrusted with the conduct of such works appearing to think that they would be wanting in public duty if they neglected to call upon all the architectural profession to vie with one another in producing the best plan and design, with certainty of absolute loss to all but one of the number, and no absolute certainty of satisfaction even to the successful candidate. As to the unfairness and ignorance with which such competitions are usually conducted, the dishonest partiality often shown, in spite of the most explicit professions of impartiality, the parsimonious character of the premiums offered, the continually-increasing demands, in the way of number and elaboration of drawings, made upon the unfortunate competitors, and the frequently totally unsatisfactory result in regard to the object nominally aimed at, the procuring of the best possible design, it is too old a story to require further comment here.

It is, however, useless to expect that there will be any improvement in this state of things as long as those who advertise competitions on the most grudging and unfair terms find so many gudgeons willing to swallow the bait. However unfair are the terms of a competition, however unreasonable the demands made, however they may be animadverted upon in our own columns either editorially or by indignant correspondents, it appears that no terms are so bad or so mean that there will not be found a considerable number of men ready to close with them: and though in the worst cases we may assume that the advertisers do not obtain the response of any leading men in the profession, there have not been wanting instances in which leading men, and in large numbers, have been found willing to enter into competitions, the advertised conditions of which were anything but what men of high professional standing might have claimed the right to expect. The explanation, of course, is that each man thinks that he has the chance of winning "the prize," and that if won, it is worth the drawbacks. But they do not seem at all alive to the fact that they are in such a case winning at the cost of general injury to the profession at large, which, if there were a proper *esprit de corps* among architects, ought in itself to be a serious consideration, even apart from the probability that this same injury may recoil upon themselves in other instances.

It is, in fact, just this want of *esprit de corps* which is at the bottom of a great deal of the mischief. The aim of Mr. Porter's circular seems to be in part to create an *esprit de corps* on this matter on the part of at least the leading members of the profession, most of whom are Fellows of the Institute; and perhaps all will be shortly, for we have recently observed that some of those who have for some time stood aloof from the representative body of architects have thought better of the matter and enrolled themselves. He wishes to induce all the Fellows to agree formally that they will enter into no competitions in which the competitors are not to be remunerated for the time and labour expended on the drawings. This, of course, means that they will enter into no open competitions. Whether or not it will be possible to induce all the body of Fellows to agree on such a determination we do not undertake to say; all we will commit ourselves to on that head, at present, is, that if a large majority of the Fellows are willing to do so, or to bind themselves to any reasonable course in order to limit the waste of labour in competitions, it appears to us that it would be an absolute moral duty on the part of the small minority to sink their differences and join in the general movement. The want of cohesion and joint action in the profession is a great source of weakness and loss of dignity, and is a constant subject of comment, of no agreeable kind, on the part of outsiders. No body of professional

men can expect to be fully respected who show no capacity for combined movement or for postponing the occasional advantage of individuals to the general good.

Granting that such an agreement could be come to, what would be its effect on the competition system? That depends a good deal on how far the younger and less distinguished members of the profession will follow the lead of the Institute Fellows. If they do so to any large extent, it will follow, as Mr. Porter implies, that architectural competition will be pretty well knocked on the head. If they do not, the result will be this,—that people who wish to have a competition will know that they cannot obtain the services of the leading architects without paying for them all, and they must in that case select a limited number, and this would probably be the course followed in regard to some of the larger buildings, for which open competitions are now advertised. Those who do not care to pay competitors, may count on the chance of unearthing a new genius among the younger and unknown men who have not cared to limit themselves by any condition of the sort.

If there were a probability that this latter result would often follow, it would not, we must admit, be a very consoling thing for the leading men who had upheld the dignity of the profession by refusing to compete, to see the work taken from them by an unknown man who had thus found the opportunity to make himself known. This has happened at times; we must say, however, that we regard it as an exceptional chance. It is very seldom, indeed, that a large competition, when properly conducted by competent judges, is gained by any one who had been entirely unknown previously.

We do not see, therefore, that this consideration need deter Fellows of the Institute from the very great advantage in regard to dignity in the eyes of the public, and the aggregate remuneration of the profession generally, which they would go far to secure by adopting such a course as that suggested in the circular referred to. But it must not, on the other hand, be forgotten that to close architectural competition entirely would remove one chance of gaining distinction from rising men who have their names to make. We will suggest one or two ways in which this difficulty might, perhaps, be met. We should naturally conclude that if the rule of payment for competition drawings were adopted, competitions on this footing would only be resorted to in the case of large and important public buildings. The committee who had to select the competitors would in that case almost certainly select men of known ability. In the case of important buildings, however, a committee might make it optional for men who wished to be allowed to compete to send a small preliminary sketch showing their general idea, from which it might be judged whether they could advantageously be invited to join in the competition. In the case of the Manchester Townhall, which is certainly one of the most successful results of a competition, it will be remembered that this plan was frankly adopted at the outset, and there was an open sketch competition, and then a limited competition from among the few selected as best from these, each of whom was paid a fair sum for the preparation of his drawings. And this idea seems to us to suggest a way out of the dilemma we are in, between allowing open competition to go on at the present ruinous rate, and stopping competition altogether. Members of the Institute might agree to decline to send complete drawings except for a fair remuneration, or they might decline to furnish, in an open competition, anything more than sketches sufficient to show their general idea, the scale and extent of which sketches might be limited by a general definition. Indeed, it is worth considering whether the idea of restricting competition drawings to sketches is not itself the best way out of the difficulty. It is a point specially worth considering, because the tendency of the promoters of competitions is to ask for more and more; they are not satisfied now without demanding working drawings and specifications, and minute estimates; and, as we recently said in reference to an important competition, a decided stand ought to be made against this, and a summary stop put to it.

There are two other points which we would press for consideration, if the matter is formally taken up by the Institute,—two stipulations which ought to be universally insisted upon. One is that the promoters of the competition bind themselves to employ a competent professional adviser, or, in the case of national works, a properly constituted jury, and to abide by their judgment: a point which we have urged so often that it is unnecessary to say anything more on the subject here. The other is that in no case should the premium of the selected architect be "merged in the commission." The premium is paid, or ought to be considered as paid, as a remuneration for the labour of the competition drawings; which, it may be said, are in no case available as working drawings, and cannot be so, because to make efficient working drawings the architect must be possessed of many details which he cannot possibly obtain till he comes into regular business relations with his clients, and must have studied and surveyed the site with a minuteness which is never possible for a mere "intending competitor." To merge the premium in the commission is, therefore, only genteel robbery of the successful architect at the outset of the work; and even if the premium is paid in addition, it rarely, under existing circumstances, really covers the cost of producing the drawings. This latter objection, however, would be lessened or removed if it were understood that the promoters of a competition were not to expect or demand working drawings, or anything approaching working drawings in elaboration.

One word more as to a proposition tacked on in a tentative note to the circular we have been referring to; the suggestion, namely, that the Institute might well at the same time consider the propriety of raising the recognised rate of commission from 5 to 6 per cent. We do not think that architecture is an over-paid profession, but we should not recommend opening that question at present. There has been a great deal of time and trouble expended in formulating and obtaining recognition of a scale of charges which is now fairly satisfactory, and it would look decidedly bad if the Institute were already to set about undoing its own work in this respect. Indeed, we feel certain that it would not be listened to by a majority either in the Council or in a general meeting. There is a much simpler way out of the matter, for those architects who have established such a reputation as to be in demand. The 5 per cent. is a minimum commission; there is nothing to prevent any architect who finds the demand for his services increasing, from demanding in time a higher per-centage. In fact, it would be better for modern architecture if some of our most successful men, who nominally carry out more buildings than they can ever really attend to properly, were to raise their terms to the point which they find the demand on them will justify, and pay themselves by higher terms rather than by multiplying commissions. The more there is free-trade in this matter the better, above the sacred level of 5 per cent. The latter is merely a minimum; and for architects of no more than average distinction and average ability it appears a fair remuneration, and (what is more to the purpose) the public are not disposed to increase it at present, except in return for unusual ability or unusual services.

The Crystal Palace. — Several schemes have been projected of late years with the view of increasing the value and usefulness of this undertaking. Mr. John Orrell Lever has now made a series of proposals for the restoration of the company to its former *prestige* and to a sound financial condition. Mr. Lever's proposals are three in number, and, in short, are:—First, to purchase the palace and property of the company for 205,000*l.*, the market price of the stock, subject to the further payment of 19,600*l.* a year for debenture interest; secondly, to lease the palace and property for a period of 7, 14, or 21 years, at a rental of 40,000*l.* a year, payable quarterly, in advance. This offer, if accepted, would pay the full interest on the six per cent. debenture and the seven per cent. preference capital, besides five per cent. to the holders of the "A" stock, and Mr. Lever also proposes to give season tickets to those who hold either 100*l.* "A" stock or 500*l.* "B" stock. His third offer is the same as No. 2, except that instead of Mr. Lever being personally the lessee, he would at his own cost form a new lessee company, with an influential and powerful council of administration. We earnestly recommend unanimity. A house divided against itself cannot stand.

THE EDUCATION QUESTION,

WITH SPECIAL VIEW TO THE ARCHITECT.

INDICATIONS rise up on every side that libe education must prepare to consider itself i state of siege. We may take our definition liberal education from an ancient as inc sive of whatever instruction is appropriate what he calls a free, that is, an independe man, and has a value which is quite apart fr conducing to a return in money. There may the greatest difference of opinion, as to the stud which should rightly be allowed a place wit this wide term of appropriateness, and there not an established scheme or curriculum t we do not find challenged from day to day open to severe criticism, for what it overdoes what it neglects entirely. The scientists are chief assailants, eager to replace large sectio of *belles lettres* by ologies, the study of wo by that of things,—as if words were not v important things,—and at least as earnest get a footing for the very latest hypothes which rivals aver are still on their probation, for what soundly and safely systematised kn ledge is their inheritance from scientific pre cessors. But other assailants from the scient platform are still more ambitious, and each fr his own place of standing is urgent that eve student should devote himself all but entirely a single study, and become, above all thin an accomplished specialist. All, however, se willing to join hands, in the first place, to for the ologies to the uttermost upon Universit in one direction and Board schools at t other, whatever other studies may suffer, a if the victims happen to be Greek and La literature, *vile damnum*, the regret will slightest of all.

The movement is passing over society like wave, and those who are interested in arc tecture especially, to leave the other arts asi cannot afford or will not do wisely to disrege it and to omit forming a distinct opinion as its truth or mischievousness. The architect appropriately educated and accomplished remote, indeed, from a rigid specialist. He in intimate relation to various sciences, various arts of every grade of distinction, a to society, even most of all in those of its ran where the liberal education which is in questi is or should be most rife. The controversi therefore, which are proceeding are between o friends. Science, our ally, has engaged in som thing like a quarrel, which, from our sympat with both parties, we prefer to regard as a m understanding only, with elegant literatur Fortunately we are not in the dilemma of havi to renounce Plato, *amicus* though he be, allegiance to Truth as *magis amicus*. O Platos are with us, happily, and may counted on to prove that Veritas is of their ov mind, if that be possible, or else, though it m not be in consequence of our own argument to alter their own minds, and come over to t side of Veritas.

Such, then, is the case; the Universities a under pressure, which is not all from witho to relax their demands upon graduates in respe of classical attainments, of Greek more par cularly; and the Physical Sciences are waiti eager at their gates to seize upon whatev sections of time and remnants of energy m thus be set free for other distribution. Scien here is a general term for a confederation t members of which may be expected to fall some contention among themselves when t distribution of the spoil is imminent. So t pupils of the Board schools are attracting general cross-fire from some who, like the frien and allies of Faulconbridge, are likely enough headstrong co-operation "to shoot into ea other's mouth." Standards 1, 2, 3, and so for are to be mulcted in favour of sciences which al growing much faster than the growth of t pupils. Hodge and his friends and his sistes are to be imbued with a theory of the deposities of that dew which it is their lot in life, " brush with hasty steps away to meet the su upon the upland lawn." If this is to be don the sooner the better; for recent signs imply th the tolerably long lease of one theory of dew ha nearly expired, and the scientists are likely disagree about granting another.

The fire is manifestly spreading all round, an it is coming so close and becoming so warm th it may be as well to anticipate its spreadin farther; it is not too soon to review some co siderations as to how far Liberal education distinguished from Professional can or should b pressed by the votary of architecture. W

limit the question to this art, though the other fine arts are equally involved, and the subject becomes more manageable if we are content to cut off a section from its infinity by bearing in mind chiefly the subject of classical study. There are many reasons for taking the discussion upon the basis of this art. In its practical relations it comes into closest contact both with the most purely mechanical arts and artisans, and then of necessity is involved in personal dealings with mankind, which, do what it will, are on a par at last with the merest commercial bargaining; on the other hand, it passes through the scale of the arts up to the most elevated and refined; its exercise is bound up with a control which is much the same as that of a commander of men, with discrimination both of talent and character in choice alike of instruments and allies, and then with the familiar social amenities and accomplishments which put one at ease, and even at advantage, in intercourse with men at the very summit of culture as well as at adjacent levels. So much is required here that the words of Rasselas may be suggested, "Enough! thou hast convinced me it is impossible ever to be *an architect*; tell me now," &c. However, we know well enough how these difficult conditions have been successfully and admirably fulfilled by more men than we can count on our fingers, and are the less indisposed to withhold from charging the ideal standard still further in favour of special classical attainments.

In the matter of these attainments there is a primary demand, as there is in every scheme of education, which it is desired should have a certain considerable scope. A great deal must be obligatory, whether the student has any liking or aptitude for it or not. Even as we have all had to learn our multiplication table, and alas! our tables from troy-weight to long measure, and irksome as the learning might be, and precarious as the retention, very right and proper it was that we should do so. But when we pass beyond the universally indispensable arithmetic, it is not easy to draw a very hard limiting line for the measure of knowledge of, say, geometry, algebra, and analysis, that must be insisted on for a man of liberal education in the first place, and then for a man who is to exercise a special liberal profession.

Some are very ready to insist upon a very advanced requisition indeed, on a theory that, useless as the acquisitions may be at any future time directly, they exercise and strengthen the mental faculties; but our difficulty is to find time and energy for the discipline of exercises which lead up to effective application. Laborious progress beyond a certain point in studies for which a pupil has the reverse of aptitude is wilful waste of energy. Where aptitude exists, which betrays itself in predilection as well as in facility of learning, by all means let the student have his head; he may without damage push on in directions and to a distance which are not to be thought of by the less specially endowed; but even so, observance of due proportion relatively to other demands upon application has to be attended to. Such well-considered proportion will give a primary and ever-present standard, and then the sense and instinct of harmony may be trusted to keep all in due subordination. Sooth to say,—putting degrees out of the question, the survey of a series of papers set even for matriculation impresses the conviction that what is so rigidly exacted can only force many young students to an unnatural pace,—an unnatural stride. There, however, is the barrier which has to be cleared, for the road to future advancement is only open beyond. So cleared it is at worse than risk of life and limb,—cleared very often at the expense not only of time wasted for any true educational purpose, but also of weakened energies and exhausted tone. A man with such endowments as those of Macaulay does not obtain a college fellowship, because from the turn of his faculties he finds a difficulty in complying with the conditions of mathematical attainments. A man of the good sense and resolution of Macaulay may decide that the strain upon him would be ill compensated even by success, and renounce a competition which he knows would at best be a squandering of time and strength in his case. But that men of very considerable powers have not always such sense and resolution seems to supply the true answer to the question which is so frequently asked,—"Whatever becomes in after-life of the vast majority of the wranglers, who seem to dive at once into endless hopeless eclipse, after blazing so brightly for a moment in the University lists?"

Some entrance, then, into mathematics is indispensable for all who would vindicate a claim to liberal education, whether in private or professional life. Our common tongue has liberally enriched itself with metaphorical expressions borrowed from the science which indeed sublies all accurate enunciation and reasoning; and if language is to be accurately understood, and gracefully as well as consistently employed, a mastery of the general terms, and even complex notions, of mathematical science must be attained, and knowledge at least of the method employed in dealing with their relations.

Thankful we may be that it is in no wise of necessity to plunge among the mazes of the differential calculus, even with Mr. Todhunter to lead us by the hand; but still there is vantage-ground for the man who has a conception of what the calculus deals with, and which is the way to fuller knowledge if he wants it. "The most useful knowledge at last," said Lord Palmerston, "is the knowledge where to go for knowledge." But we may supplement the dictum with the requirement for such a previous modicum of positive knowledge as will make the result of skilful and ready reference useful.

In any case, the men both of science and art must not shrink from the trouble of acquiring a certain amount of knowledge beyond what it is clearly and manifestly certain must come into use. Margin must be allowed for accidental extensions of demand, and something for the comfortable feeling of insurance against such accidents, and for the sense of power which is given by confidence in possession of a liberal reserve. With mental resources it is much the same as with Dr. Johnson's ideal orchard where he would have had "enough fruit to eat himself, enough to give away, and enough to fall from the trees and rot on the ground." The demand for mathematical knowledge which is made on the architect may justly exceed that which a university may fairly attest to be appropriate for those who, like the general run of undergraduates, never propose to put such acquirements to special application; but they are far, indeed, behind those of the mathematical specialist. Long may they remain so! Long may it be before students whose business is with realities are either driven or tempted to set foot upon the treacherous quagmire across which we are already watching with amazement the most advanced specialists in full cry after the vaporous glimmer of a geometry of four dimensions!

We suspect that the most mathematical architect who should be put on his candour to state and vindicate his limit of the useful, and should consent to

> "Deduct what is but vanity or dress,
> Or learning's luxury or idleness,"

would find even himself surprised by the moderateness of his demands. It may be doubted whether the Mediæevals would have been better architects for being better mathematicians; they poised the spire of Salisbury with daring success, which the mathematical professor Wren would probably never have attempted, as, indeed, the mathematicians of our day shake their heads at the arrangements by which he supposed that he improved its chances of permanent equilibrium. What the Mediæevals, it is manifest, did thoroughly master was descriptive geometry. The study in detail of what drawings are required to give a full representation of many of their works, even as decided on and executed, is enough to make the hair stand on end. The best check, indeed, upon waste of time upon mathematical labour is the combination of abstract study as soon as possible with practical application,—the practice which brings home forcibly the sense of the directions in which scientific aid is really required. "Knowledge," says Lord Bacon, "which is drawn from particulars entereth more easily into particulars again"; and let us add the corollary: knowledge which is gained, as it often must be gained in the abstract first, can never be relied upon as available at a moment until it has been more than once confronted with matters of fact,—constrained and committed to face and fight the concrete.

If the tendency of these remarks seems to be to relieve the mind from educational strain in one direction, it is in the interest of other studies which are at present threatened with possible injudicious reduction and depreciation, and especially of Greek and Latin language and literature.

But if these studies are to gain some of the vacated ground, or even hold their own, they must submit to as rigid a criticism of their purposes and processes. The kind and quantity of work that here has been matter of rigorous exaction, and of which a large proportion does not even claim approval as of supererogatory merit, is tremendous,—a strong word must be used in justice to severe experience,—and in its character excruciating. Fifty years may not suffice to blunt the memory of sufferings due to still-recurring exactions of original poetry in an unfamiliar language,—hexameters and pentameters, Alcaics and Sapphics,—and this from minds not simply destitute of original poetic fire, but incapable of transmitting or reflecting borrowed poetic rays. Greek and Latin verses have doubtless been written by modern Englishmen,—Latin verses especially,—which can be read with great pleasure, and deserve to live; but if they were all collected it may be doubted whether this profitable outcome of centuries of public-school and grammar-school mischief and misery would not leave many pages blank in a volume of a "Golden Treasury" series. Well might Pope denounce a system which, instead of educating,—that is, of educing,—the faculties of the mind, only shut up and encrusted them, and challenge the educator on production of his completed work,—

> "Now take him to develope if you can,
> And hew the block off and get out the man."

So time and energy may be set free in this direction also for more profitable employment; but when the scientists upon pure scientific pretensions lay claim to all this, and even more,—when we are summoned to make such sweeping surrender to the self-assertion of the physicists and biologists, and the speculators, who, having got hold of the nervous system at one end with their forceps, never doubt that they have firm material hold upon the senses and the soul as identified with the other,—when Greek and Latin literature,—when the history of the ancients in their politics and arts are denounced as unnecessary surplusage,—then, under provocation, we stand our ground, and, moreover, give notice that we can return the fire, not merely gun for gun, but from proper scientific artillery on our own side. Let us be bold to say that a play of Æschylus, an oration of Demosthenes, or a play of Terence, is quite as much a phenomenon as chloride of sodium or permanganate of anything the scientist pleases. Nay, we retort that they are structures of which the principle of order and coherence is as open to scientific analysis in the processes of their development and the correlation of their parts as the human body itself, and much more so than that of an anthropoid ape.

We are more concerned, however, to insist from a point of view of our own that a liberal education requires some knowledge of modern languages beyond the mere power of speaking them like a courier,—knowledge which is only obtainable through intimacy with the tongues from which we borrow expressions, our best expressions, for the complex ideas in morals and mental philosophy, in criticism and in art; from which also, and from which alone,—let the scientists mark it,—constantly progressive science can borrow an admirable and elegant nomenclature that sits upon it easily,—but that only lends its assistance to progress on the not unnatural condition of being understood without constant and encumbering interpretation. But, still more important, it will ever be the characteristic of the liberally-educated that they are imbued with a living sense of the progressive development, not only of our own country, but of general humanity. But history in this sense, the history of civilisation, is inextricably bound up with that of the Greeks and Romans on the one hand and of the Hebrew nation on the other. It is not merely that we trace by remote research the germs of civilisation as ultimately derived from these nations; their influence has always lived on more or less, and has been subject periodically to reinforcement and revival, and we can no more know our contemporaries, their passions and politics, their tastes and tendencies, without this familiarity with their antecedents,—even their remote antecedents,—than we can safely take a servant into our house without inquiry as to character. The currents of civilised vitality have passed into our veins fully as much through classic and Hebrew channels as through Anglo-Saxon, and all our best literature and best art are only at the command of those for instruction and enjoyment who have gained the key to the associations they appeal to at something better than second-hand.

C

There is one argument in favour of devoting some time to classical attainments which has force enough, but does not perhaps tell now so forcibly as in time gone by. What learning is in vogue, is in fashion, cannot but be attended to by those who purpose to consort with and in a certain sense to depend upon the classes who are conspicuous leaders of fashion and vogue. But if the House of Commons in any degree represents these, it is certain that classical allusions now fall somewhat flat there; Latin citations, other than the few which by privilege of age and long service are always accepted if not universally understood, are liable to miss fire, or the fire misses tinder, and even when the spark is relumed in the reporters' gallery, it often only flickers among misprints in the next morning's impression. But in whatever way what Mr. Grant Duff calls "the right education for those who have all the chances" may run the risk of being crowded out by multitude of the perfunctorily-educated, its value and its usefulness remain to the possessors. A knowledge which may be acquired even by those who are to lead the busiest lives, of the revolutions and progress in politics, literature, and art of Greece and Rome, will always secure a position within the circle,—not less distinguished because relatively contracted,—of the leaders of culture and the ultimate arbiters of refinement. The delight which such knowledge ministers in itself is also not to be left out of account, though our argument does not require it to be insisted on.

It is a problem for the educators and for those who have the power to enforce conditions upon educators, to determine how courses of study are to be arranged in order that knowledge of such a quality and such a scope shall put the scholar in the way of holding his own in society of the cultivated, and yet not disable him from duly prosecuting what studies lie more directly along the road to his special destination. If universities and schools will not ever,—if indeed they do not rapidly, do not at once,—appreciate the importance of this problem; if schoolmasters will teach scholars according to a theory which implies that they are all intended to be schoolmasters,—then the best course for a student may be to form and chiefly rely upon a curriculum decided by himself, and pursued, as now a very efficient course of study may be pursued, independently, to model his own education preparatory to living his own life.

An architect has demands upon his attention and his faculties of such variety and importunateness, that he can ill spare to have effective life curtailed by obligatory service to pedantry, either scientific or grammatical. But there is every reason in the world for giving help to the establishment of a general understanding that the special culture of an architect is superinduced upon, and is not in substitution of, the conditions of liberal education in the noblest and most generous sense. Let us take a wise word from Prince Hamlet,—

> "Sure he that made us with such large discourse
> Looking before and after, gave us not
> That capability and god-like reason
> To fust in us unused."

The education is liberal which tends to release us from the bondage of present space and present time, and puts this vaunted capability and reason to their proper exercise in "looking before and after,"—in the study of the characteristics of days gone by, which are the factors both of the present and the future.

MÉRYON'S ETCHINGS.

Charles Méryon, who died in neglect and privation eleven years ago, is the subject of the most recent of the resuscitations which it is so much the fashion to make just now, and which form the special work, apparently, of a certain school of critics who make up in individual self-sufficiency what they want in collective numbers. The resuscitation of a man of genius whose works have been neglected or forgotten is in itself, of course, a most desirable proceeding; but we confess to a wish sometimes that it could be done without the affected raptures, the "tall talk," and the absurd airs of superiority of knowledge over all the rest of the world, with which the works of the last newly-discovered genius are heralded by the art-critic of the period. It seems to be part of the *modus vivendi* of the gentlemen of this school to float themselves afresh from time to time by inflating a new artistic reputation on which they may buoy themselves up for public notice and admiration. Now it is a forgotten artist, now a forgotten poet, who is thus made a literary swimming-bladder for the critics, whose occupation would be gone if they did not find a new "cry" from time to time. This sort of thing is offensively illustrated in some of the notes and extracts prefixed to the catalogue: we find an extract from one writer, the author of a book on etching, who, after telling us that Méryon is "one of the immortals," adds "a few persons now living know this as well as I do, but these few belong to a small and highly cultivated class with which the great art-public has very little in common"; the writer himself being, of course, by implication, the centre and crown of this highly-cultivated class who look down from their ineffable height of perception upon the rest of the art-loving public. There is a good deal more of the same sort of thing doled out at the beginning of the catalogue, the effect of which is to incline one to rebel against such peremptory orders on our admiring faculty. If it is found by experience that the introduction of these æsthetic raptures really improves the sale of the works, it only shows how weak-headed most of the people who buy etchings must be. We should have thought the effect would rather be to disgust sensible people.

However, we are not by any means denying that Méryon was a very remarkable, within certain limits a great artist. It is the manner rather than the matter of the critics we object to; we do not quarrel with them for paying his work a high tribute of admiration, if they would only deliver their tidings like men of this world. Méryon belonged to a class of artists who are rather peculiar to France,—Georges Michel was another specimen of them,—men who seem to be artistically as well as socially "Bohemians," whose art, during their lifetime, belonged to and interested themselves alone, having a kind of weird element in it which made it little intelligible to Academicians and those who move in the beaten walks of art. There is a little about Méryon in common with our own Blake, though he was at the same time much more bounded in his conceptions, and much more successful and artistic in his execution than Blake generally was. He seems to have been, on the testimony of his drawings, mystically inclined, though his mysticism is of a very mild type compared with that of the illustrator of the Book of Job. The drawings which illustrate this quality are not, however, numerous or important in the collection which Messrs. Dowdeswell are now exhibiting in their rooms in Chancery-lane. The strong things in the collection are the views in Paris, which are partly pictorial and partly antiquarian; that is to say, some of them appear to be restorations, partly from the artist's own imagination, of bits of old Paris. One remarkable etching of this class is that numbered 16 in Messrs. Dowdeswell's catalogue, "Le Pont au Change vers 1784,"—the bridge in the middle distance, with an extraordinary accumulation of high narrow houses, tumbled together in a heap, seen beyond it, the river in the foreground, and, on the right, a great mass of black wall rising from the water and throwing an appropriate gloom over the whole sinister scene. In this massing of light and shade lies one of Méryon's strong points; and in this quality some of his etchings recall Rembrandt. Perhaps the finest thing in the collection is the view of Notre Dame from the east, the apsidal end, with its enormous spider-web flying buttresses, towards the spectator. The cathedral forms a dark mass against a light but not a calm sky; there is a wonderful feeling of melancholy about the whole, the nature and origin of which are alike difficult to define, but which we feel irresistibly in looking at the drawing, which illustrates perhaps better than any other in the collection what appears to us to be the special interest in Méryon's art, the expression of poetic feeling through the treatment of architectural subjects rather in regard to their general effect on the mind than their architectural detail. It is not merely the picturesque, but emphatically the *poetry*, of old buildings, which is represented in his best works, which may be defined as standing at the opposite extreme from such work as that of Hollar.

The principal portion of Méryon's etchings, as represented in the collection we are speaking of, consists of studies of buildings treated in this spirit, the melancholy side of the subject almost invariably prevailing: indeed, there is an almost tragic force and feeling in some of them. Among others of the most striking specimens may be mentioned "La Tour de l'Horloge" (60, 61, and 62), these impressions representing several states of the plate, of which it may be said, as of other plates in various states, that the latest and most worked states are, in some points, inferior to the previous ones; the second state (61) of these examples is the best; the fourth state (62) is spoiled by some eccentricities. "Le Petit Pont" (69) is a remarkably fine one, especially in the vivid effect of light on the foreground and on the thick-jointed wall of the quay on the left. "St. Étienne du Mont," of which there are several impressions, is more like an average study of architectural composition than most of the examples; in execution it is one of the finest, and shows more care bestowed on architectural detail than seems to have been usual with the artist. In execution Méryon's etchings have their own characteristics; there is less prominence of etched lines, more of massing of light and shadowed spaces, than in the works of some other celebrated etchers. Méryon could, when the subject demanded it, display great firmness and minuteness in the rendering of intricate and elaborate subjects; this is well illustrated in the view of "San Francisco" (24), and the "Collège Henri IV." (20-23), which latter is really a comprehensive view of Paris, with the college near the foreground. In both of these the delineation of the multiplicity of receding roofs and blocks of buildings is carried out with great care and minuteness, so that we can trace the lines of buildings and of streets far back into the picture; though along with this it is curious to remark that in the latter etching the representation of the masses of trees in the spaces near the foreground is singularly bad and blotchy; in fact, one can only recognise them for trees because no other interpretation can be put upon them. One of the most remarkable things in the collection is "Le Stryge" (72, 73), an architectural grotesque on a Gothic building, obviously an invention of the artist, and such a demon as even the real work of the Middle Ages can hardly show us, the force of the thing depending not upon elaborate and studied grotesqueness so much as on the remarkable and demoniacal expression imparted to it.

The Burlington Fine Arts Club, we understand, contemplates making a collected exhibition of Méryon's work, in which, no doubt, many etchings will be included which are not to be seen in the Chancery-lane collection. In the mean time we recommend attention to this latter collection on the part of those who wish to make the acquaintance of an artist of original power, and of a power displayed especially in architectural subjects.

NORTHERN NOOKS: DALKEITH.

The ancient and picturesque market-town of Dalkeith, in the county of Midlothian, which we had recently occasion to visit, is deserving, we think, of some notice in our pages, for it is a place of very considerable historical and political interest; and, what is more germane to the scope of our investigation, it is surrounded with certain of those difficult problems of social and sanitary science which are all too familiar to our readers, but which are, nevertheless, every day coming more persistently to the front. Like Windsor, Dalkeith is nothing without the palace. All the world knows, of course, that Dalkeith Palace is the principal residence in Scotland of his grace the Duke of Buccleuch and Queensberry; and that the ancient castle on the site of which it is built supplies the patrimonial designation to his noblest earldom, and the territorial title of his eldest son. The ancient market town, or rather burgh of barony, which adjoins the palace, is also the largest and most important town in the shire of the capital of Scotland.

The antiquity of Dalkeith is either lost in the hopeless obscurity of the prehistoric period, or must be gathered from the equally hopeless depths of the Scoto-Chronicon and the chartularies. The very etymology of the name is involved in dispute. The learned and erudite Chalmers tells us in "The Caledonia" that Dalkeith is compounded of *Dal*, a dale, and *Caethe*, confined or contracted, thus describing the peninsular character of its site between the two rivers. But, according to the best Gaelic authorities, this ancient territorial *nomen* is compounded of two words (*Dael-chatha*), which taken together signify a field of battle. There is no indication,

indeed, either in the history or traditions of the place, of any remarkable battle, such as Largs or Bannockburn, being fought on this precise spot. But it is highly probable that one of the next and most important fortresses to the "Castel of Edwinsburgh" in the great chain of successive duns and forts and feudal castles which intersected the country, would have had its full share of the sanguinary battles and fearful feuds which distinguished the archaic periods of Scottish history. We will not, however, dwell on this attractive theme, since the whole subject will soon belong to the domain of the Celtic chair in the University of Edinburgh.*

The first authentic account of Dalkeith occurs in a charter of King David I. (of saintly memory) to the abbey of Holyrood; and the information so obtained leads us to the conclusion that during the twelfth century (A.D. 1143-4), the manor of Dalkeith was in possession of the family of Graham. The "Gallant" Grahams, — by which martial *sobriquet* they were long distinguished in Scotland,—held possession of this important castle and manor for upwards of 200 years; and tradition tells us that they lived in great splendour, and took a prominent part in the wars and political intrigues of the time. "But no vestige," says the writer above mentioned, "of their greatness nor their grandeur now remains; and even the mouldering recumbent effigies which lie at this moment exposed within the ruined and roofless choir of St. Nicholas Church, and which were commonly regarded as memorials of that ancient family, have been proved by competent authorities to belong to a more recent age.†

To the Grahams succeeded the Douglases. By the marriage of Marjory Graham with William Douglas, of Lugton,—a hamlet still existing on the northern side of the river North Esk,—about the middle of the fourteenth century, the manor of Dalkeith and the extensive possessions of the Grahams were transferred to the Douglases, with whom these remained for nearly 300 years. It was during this period that the ancient castle of Dalkeith shone in the full splendour of its feudal supremacy; and, singular to say, the first historical notice of it during this period occurs in a passage of the Chronicles of Froissart, when that piquant, if not veracious, chronicler has occasion to describe the celebrated battle of Otterburn.‡ How often it was besieged and plundered and burned, and (to use a most expressive Scotch word) *harried*, it is out of our power to describe. During the reign of James II., it was successfully defended against the Earl of Morton, who had bound himself by an oath to destroy it; but it was that unprincipled politician, afterwards Regent of Scotland, who gave to the castle its celebrated nickname of "The Lion's Den."

To the Earls of Douglas succeeded the Douglasses, Earls of Morton, and to these last succeeded the Scotts, Earls of Buccleuch. The seventh Lord Morton being a devoted adherent of Charles II., whom he supplied in his wanderings with large sums of money, so exhausted his great resources that he was obliged to dispose of his estate of Dalkeith. This valuable estate was purchased in the year 1642 by Francis, second Earl of Buccleuch; and thus it happened that the noble castle and beautiful demesne of Dalkeith passed from the possession of the great Border family of the Douglasses to the equally celebrated Border family of the Scotts.§

From this period the history of the noble house of Buccleuch becomes closely interwoven with the history of England. We shall just mention further that on the death of Francis, second earl, in 1651, the estates devolved first to the Countess Mary, who married Walter Scott, of the House of Harden; and secondly, to her youngest sister the Countess Anne, who was married on the 20th of April, 1683, to the unfortunate James, Duke of Monmouth. On the day of their marriage they were created Duke and Duchess of Buccleuch. It was this celebrated Duchess Anne who built the present palace of Dalkeith, where she lived occasionally in a style of princely splendour; and where she died in the year 1732 in the eighty-first year of her age. She was buried in the aisle of Dalkeith Church.

We shall not attempt, within our present limits, to say anything descriptive of the modern Dalkeith Palace and its magnificent art treasures; but will rather proceed to record the few personal observations we were enabled to make respecting the town. In order, however, to preserve the continuity of our historical sketch, we will here indicate in a few sentences the process of legal transition by which Dalkeith emerged from the feudal superiority of the Duke of Buccleuch to its present rank as a burgh under the General Police Act (Scotland), 1869; or, in other words, the transition from the feudal administration of a Baron Bailie to the Municipal Government of twelve Commissioners of Police.

The character and public duties of a baron bailie are so well known to the readers of the Waverley novels that we need give no detailed account of them. Originally, as we have seen, the baronial right belonged to the family of Graham, subsequently to that of the Douglasses and the Earls of Morton. It is a singular fact that during the supremacy of the Regent Morton the barony and regality of Dalkeith possessed jurisdiction over about fifteen baronies, besides over many other lands and pertinents in more than twelve counties of Scotland, all of which were entirely governed and regulated by the superior and his bailies. On the abolition of hereditary jurisdiction, in the year 1747, or at least a few years afterwards, a statute was made ordaining the appointment of twelve trustees (of which the baron bailie was always one), who should have power to superintend the paving, cleaning, and lighting of the streets; and of supplying the inhabitants with water. Curious enough, the revenue for these purposes was provided for by the imposition of a tax upon the ale, porter, and beer of the parish! * The powers of this Act were continued and extended by subsequent statues; and so was Dalkeith governed, and, we believe, well and cheaply governed, under this statutory trust for the period of 120 years; until at length, after repeated rejection of the measure, the general Police Act was adopted in the year 1876.

Hardly any vestiges of the Mediæval antiquities are left for the study of the archæologist except the roofless choir and octagonal apse of the ancient church, which has now been appropriated as a mausoleum for the family of Buccleuch, as it had long before them been used by their ancestors and predecessors. The church itself has been restored. The market cross has disappeared; and there are not the slightest remains in the whole district of a holy well. Some fragmentary portions of a piscina and an altar-piece were shown us in an old house near the palace gate, with indications of a concealed staircase communicating with the chamber. Cromwell's orderly house, situated in Chapelwell-close, is still shown to strangers. A few sculptured stones are here and there observable ingrafted on modern houses; and, much to our astonishment, we observed several grotesque griffins built into the doorway arches and tower of the West Parish Kirk. Dalkeith is but a poor field for the antiquary,—unless, indeed, he may have the good fortune to cross the parish boundaries, and enter upon the Marquis of Lothian's romantic grounds, and explore the ancient Abbey of Newbattle.

We must now request the reader to accompany us in a cursory survey of the town; and for that purpose we shall ascend the nearest eminence, which happens to be the High Woods. Dalkeith, we immediately see, lies embosomed in the midst of a series of gentle heights,—for we can scarcely call them hills,—such as Elphinston, the Camphill, and the White Hill, flanked to the southward by the beautiful outline of the Pentland Hills in the distance. The town is built, as we have said, on a sort of miniature peninsula formed by the angular contact of the North and South Esk, which meeting of the waters occurs on the duke's pleasure-grounds about a mile below the palace. The general surface is tolerably level, except where intersected by the courses of these two mountain streams, which, during the wet seasons, assume the dignity of torrents. The whole district is literally embowered with woods and gardens, and glows with verdure; and the spires of the little town, rising amidst a cluster of blue-slated and red-tiled roofs, give it a singularly pleasing and picturesque aspect.

This peculiarity of its triangular site seems to govern the plan of the streets; for there is not, as far as we could observe, a rectangular plot in the whole of Dalkeith. Hence the numerous and picturesque irregularities everywhere visible in its street architecture, the projecting gables and recessed frontages, with all manner of decorated lintels, curious doorways and windows, cross-stepped dormers and gablets. The High-street, which is about half a mile in length, stretches in very diverse breadths from the palace gate to the railway station, runs in the direction of north-east and south-west, and stands, we were told, about 182 ft. above the level of the sea, from which Dalkeith is about four or five miles distant.

Proceeding westward from the palace gate, the first noteworthy building is the Corn Exchange, erected in 1854, from plans by Mr. D. Cousin, of Edinburgh, who was also, as we remember, architect of the Edinburgh and Leith Corn Exchanges,—all good examples of their class of structure. Dalkeith Exchange is a large hall, 170 ft. by 50 ft., with open-timbered roof about 40 ft. high, and a triangular-pitched roof. The gable front in the High-street is adorned with a panel containing the duke's coat of arms. The building cost nearly 4,000*l.*

On the opposite side of the High-street, which here debouches upon its broadest part, stands the parish church of Dalkeith, which we have previously mentioned as the restored ancient church of St. Nicholas. It is first described in a charter of Sir James Douglass, A.D. 1368, although it is more than probable the foundation of it is earlier (*circa* 1140), for the parsonage of Dalkeith formed part of the deanery of Restalrig, in the diocese of St. Andrews,—the archiepiscopal see of Scotland. It was first restored in 1560; again it was sadly neglected, and, in fact, suffered to fall into decay, but it was again restored in its present condition by the late Mr. David Bryce, R.S.A., in the year 1852, and considering that that architect's genius took the direction of the Renaissance, it is on the whole fairly successful. The style is the very heavy Scotch style of Glasgow and Jedburgh. The spire and clock tower are obviously too dumpy, and we were sorry to find that plaster and oil paint had been employed to disfigure the interior, where the gilding and stencilling work are also out of all place and character; the Greek lotus ornament, for example, being painted in a very *prononcé* chocolate colour round the lower members of the capitals of the Gothic pillars. We may add that the cumbrous and unsightly enclosure wall next the High-street ought to be removed with all practicable speed.

The West Church is what is termed a quoad sacra parish church, and is certainly a good building of its class, occupying one of the finest sites we have seen in Scotland. The spire is, perhaps, a little too attenuated, particularly when contrasted with the steeple of the parish church; and the mouldings of the tower and the dwarfed transepts are meagre enough. It is built, we observed, of a particularly fine sandstone, said to be from the Fife quarries. Two or three Presbyterian churches in Buccleuch-street and King's Park are worth noticing; one in particular, by Messrs. Thornton & Shiells.

The Roman Catholic chapel and schools a little higher up were built under the auspices of the late Marchioness of Lothian about a quarter of a century ago. The modern suburb of Eskbank, which lies beyond this, contains only a number of villa residences and a railway station, which we need not stay to particularise. The Public Schools are of the usual stereotyped character,—well planned, however, and fairly ventilated.

The town is tolerably well paved,—chiefly, of course, with the boulders from the bed of the neighbouring river; but the High-street possesses a broad belt of dressed whinstone cubes, extending from the palace gate to the railway station. The side pavements are also in tolerable order, and we are glad to observe that the scavenging is very good, if we except the slow and protracted process of emptying the ash-buckets into the dust-carts. On the other hand, we are sorry to report that the drainage is very bad. Dalkeith, for a small town, has a very pretty tendency towards labyrinths; as, for example, in the meal market (from which no less than five streets and wynds radiate) and some of the overcrowded closes branching from the High-street, and this perhaps is a disadvantage to the carrying through of any thorough system of drainage. But there ought to be no difficulty

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* See the "Statistical Account of Scotland," where the question is discussed with much ability by Mr. Peter Steel, M.A., Rector of the Grammar School. 8vo. Edinburgh: Blackwoods. 1825. Vol. i., p. 241. Compare also the excellent article on Dalkeith in Fullarton's "Gazetteer."

† There is a valuable monograph on the subject by the late James Drummond, R.S.A.

‡ See Johne's edition of Froissart, vol. i., p. 217, *et seq.*

§ See Dalrymple's Annals, vol. ii., p. 341.

* We are indebted to Mr. D. Jerdan, printer, of Dalkeith, for a sight of original copies of these Acts.

whatever with regard to the levels. Yet there is at this moment, in point of fact, no proper system of drainage in Dalkeith. No arterial sewer, for example, runs along the line of the High-street. Cross drains have been laid down at different times at different points of the river: one through the Chamberlain's grounds, close to the palace gate, one or two in the middle of the High-street,—all into the North Esk; while a solitary sewer has been laid from the Back-street into the South Esk. The Duke, we were told, got angry at all the Dalkeith drainage being poured into the North Esk, this beautiful river being made the receptacle of the whole parish sewage; for it passes, as we have seen, within 200 yards of the palace windows.

Up to this date almost the whole water-supply of Dalkeith consisted mainly of a remarkably fine spring well, accidentally discovered in re-opening an old coal-pit close to the river banks, and distributed through the town by a pair of pumps driven by the water-power of the mill-wheel. There was also a moderate supply derived from Lord Melville's grounds. These sources, however, at length became so defective that an arrangement was made with the Edinburgh Water Company to introduce a supply under their recent extension Act; and this water, which is brought from Moorfoot hills, was just introduced at the time of our visit. It is worth noting that ample provision is made for extinguishing fires in the town, the method employed being that of the well-known Kilmarnock fire-plugs.

The gas-supply seems defective both in quality and quantity. Much larger gas-works seem to be needed for the stretch of pipes, extending as these do from the village of Thornie-bank to Eskbank, and from the village of Lugton to Newbattle Abbey.

We have still something to say of the population and the municipal government, as well as the condition of the neighbouring villages.

FROM THE BANKS OF THE SEINE.

Of the gravity of the existing situation in the building trade of Paris we have already spoken more than once; nor can we as yet, unfortunately, foresee the end. Within the last week the position cannot be said to have in any way materially changed; but a fresh spoke has been put into the slackening wheel by the action taken, and the opinions expressed, at the recent Working Men's Congress at Marseilles. The violent and revolutionary, even openly socialistic views given vent to in the course of this congress are scarcely surprising, coming from the descendants of the old Greek colonists on the shores of the Mediterranean, whose home has so long been famous as the hotbed of reactionary ferment; but the influence of these warmly-expressed sentiments has been feeble in comparison with the pecuniary support sent from Marseilles by the congress to the Parisian brethren out on strike.

We were asked not long since by an accomplished English architect, more interested in the artistic than in the material side of building, and who had been passing some happy days on the banks of the Seine, perhaps for the dozenth time in his life, whether at the present moment there was any building of consequence being carried out in Paris. We are fortunately able to answer this question by the aid of some recently-published statistics regarding the Parisian building trade, which, as we have more than once already remarked, has never been more active than in this latter quarter of the now fast-closing year. It would appear that in the twenty *arrondissements*, or parishes, into which Paris is divided, since the 1st of January of this year until the 15th of last September, some 658 houses have been erected,—some 1,851 stories being built in stone, the remaining 1,042 stories in brick. In the seventeenth *arrondissement* the activity is the greatest, the artistic and wealthy *quartier* of the Parc Monceaux, where certainly,—together with a walk or drive along the Boulevard St. Germain,—we would advise every professional visitor to Paris to pass a day or two. But it is difficult to penetrate to any neighbourhood, however distant, without finding signs of the great activity of the building trade on the banks of the Seine, and the visitor who remembers Paris even during last year's Exhibition will find that many important changes have since taken place. As for public buildings, Paris, of all cities in the world, has least need for them; the Hôtel de Ville is rapidly approaching completion, and now, within the last few days, the proposal has come, not a moment too soon, to sweep away the old Hôtel des Postes, the muggy, cabined, cribbed, confined post-office of the Rue Jean-Jacques-Rousseau,—the same dark unimposing building into the courtyard of which rattled and jingled in the days gone by the quaint old diligences that bore the travellers from England, from America, and from everywhere, to Paris. The Rue Jean-Jacques-Rousseau (which, by the way, takes its name from the fact that that eminent philosopher once occupied there a humble lodging) of to-day is the same Rue Jean-Jacques-Rousseau that Thackeray has described so amusingly, and down which have jolted and tumbled ever so many of the distinguished visitors to Paris within the last few generations. And now the old Post-office is to be swept away, and no regret need it cause; the most important of all the Government services has been the last to receive attention and the promise of a home, and high time was it, when it is stated that in the Rue Jean Jacques Rousseau every day something like 1,200,000 objects,—200,000 letters and 1,000,000 newspapers and packages,—are received and distributed, the work employing some 8,000 agents, of whom 1,200 are postmen. Different days these from 100 years ago, when the "*petits poste*" occupied at Paris 117 postmen, and had 395 boxes. In 1865 the number of objects manipulated was 173,000,000, last year this sum surpassed 430,000,000, and all this the result of cheap postage. It is scarcely within our limits to discuss, still less to settle the dispute, which of the two, M. Emile de Girardin or the late lamented Rowland Hill, was the earlier to propose "penny postage;" but when Paris possesses, as she soon will, a worthy rival to St. Martin's-le-Grand, it will afford no little satisfaction to the survivor of the two eminent benefactors we have above mentioned, to see so visible a proof of the correctness of the theories which forty-seven years ago he laid before the public.

From the consideration of such a strange anomaly in modern Paris as an insufficient Post-office (from whose official inconvenience we have more than once, with how many another phlegmatic Britisher, had personally to suffer), it is a wide step to the shores of Britanny, but the recent visit of M. Turquet, Under-Secretary of State for Fine Arts, to Mont Saint-Michel, induces us to mention the cause of this round of inspection. M. Turquet has set on foot an inquiry, clamoured for, for some time past, on the causes of the difference which at present separates the administration of the highway department and the direction of that of the fine arts. Some while since the civil engineers commenced the construction of a dam, which is to connect the island on which the picturesque old pile is built, with the main land. Apart from the objection which may be taken from an artistic point of view, it appears that the establishment of this dam might bring about, if not the eventual demolition of two of the towers of the old line of fortifications, at least a great deterioration and injury to their bases. The fact that Mont Saint-Michel is classed among the historic monuments, and consequently protected, has led M. Turquet to institute a strict inquiry into the risks which the grand and familiar old castle, and its picturesque abbey and convent, would run, in consequence of the needless construction of the dam. We may assume that in such appreciative hands, every possible care will be taken to jealously protect so famous a feature of the architectural marvels of France.

From the banks of the Seine has recently risen a voice that will before long doubtless find an echo on the sandy banks of the eternal Nile; some days since MM. de Rozière, Le Blant, and M. Wallon were received by the ministers of foreign affairs and of public instruction in private audience. The worthy Academicians, in the name of the learned body they represented, have asked the two ministers to induce the Viceroy of Egypt to allow the French Government to again take up the archæological excavations which, within the last generation, have yielded such extraordinary results. The two ministers have certainly given their assent, in so far as concerns their efforts; but the sad and unexpected failure of the recent attempt of our Transatlantic cousins to bear off the twin obelisk to our Cleopatra's needle points rather ominously to the possibilities of success in the matter of Egyptian excavations; the bondholders cannot be expected to be enthusiastic archæologists. We sadly believe that the continuation of the invaluable researches of Layard, Bonomi, Champollion, Lepsius, Mariette, and many another ardent Egyptologist, will have to await the painful settlement of the "Eastern Question."

We have mentioned the familiar name of Mariette; did our space permit, we feel certain that we should interest more than one reader by condensing the instructive paper communicated not many days since by that eminent and revered Egyptologist on the question which we have above mentioned. We refer those interested to the report of the meeting of the Academy of Belles Lettres and Inscriptions, held on October 17th.

While still speaking of Egyptian subjects, let us not neglect to draw attention to the excellent example recently given by M. Revillont, the worthy curator of the Egyptian Museum at the Louvre, in attaching to every object under his watchful charge in the interesting rooms he administers, a label on which are mentioned the subject, the nature, and the origin of each object exhibited. Such a step is indeed an advance in the true direction of popular instruction, and much do we wish that not alone in the Louvre, but in every museum at home and abroad, such a method were adopted. The catalogue serves excellently for the stranger and the student to read at home and carefully annotate and interleave, but many a precious object is overlooked in even a series of visits, objects to which an indicative label would have sufficed to draw attention. Our South Kensington Museum authorities long since recognised the value of this system, which has transformed the treasure-house of Cromwell-road not alone into an illustrated but a plainly legible encyclopædia of art. We may welcome this new advance of the French museum authorities as one more step towards the simplification of that great work of the future, the classification and arranging in due order of the treasures which the past has handed down to us, and of which we year by year become more than ever obedient and faithful trustees for the future.

FROM THE BANKS OF THE RHINE.

THE OPENING OF THE NEW ACADEMY BUILDINGS, DÜSSELDORF.

The ceremony of throwing open the new buildings of the Düsseldorf Academy, although not quite completed, took place in the last days of October. We have already given a view of the edifice,* together with a few details of its architecture.

The Academy occupies a fortunate position, rising above the wide plain surrounding the city, and free on two sides, towards the Rhine and the parklike grounds of the Hofgarten, so that its best light will never be obstructed. On the other side, however, the building is bounded by a quarter which is not one of the most elegant of the town. As completed, the handiwork of the architect Riffart forms a long parallelogram containing large spaces for all requirements of the present school of art, having besides ample room to spare for future extensions, such as the art trade-schools, the establishment of which is intended. It will not be possible to form a correct idea of the exterior of the building until all the statuary with which it is to be adorned is placed in position. But the interior is finished, and may be called elegant and fitting.

Several high dignitaries of state were present at the opening ceremony, which took place in the Aula of the new Academy building, a room of moderate size, affording a charming view over the Hofgarten, the Rhine, and the country beyond. This room contains the best paintings remaining of the former celebrated collection, and was, besides, adorned with flowers and shrubs for the occasion. On one of the narrow sides has been placed the large picture of the "Ascension of the Virgin," by Rubens, in front of which the platform had been erected. The proceedings commenced with the performance of Beethoven's March and Chorus from the "Ruins of Athens." Professor Wislicenus, the president of the college of professors,—the Düsseldorf Academy has no official director,—followed with an address; and he was in turn succeeded by Herr von Puttkamer. The latter announced that Professors Wittich, Dücker, and Ittenbach, as well as the architects Herren

* See vol. xxxv. (1877), p. 346.

Riffart and Lieber, had been decorated, and that Herr E. Hütten, painter, and Herr Forberg, engraver, had been appointed professors. A very good speech was next delivered by Oberpräsident von Kühlwetter, in which the latter pointed out the influence of Düsseldorf art upon the industrial population of the Rhine countries. Referring to the three great creations of Frederick William III. of Prussia, the University of Bonn, the Academy of Düsseldorf, and the Polytechnic School of Aachen, he drew attention to the fact that those three institutions have helped to foster the national spirit in Western Prussia, and have not inconsiderably contributed towards the work of the unification of Germany. After various other shorter or longer addresses had been delivered by the representatives of various public bodies and art societies, the oration of the day was pronounced in an eloquent, if somewhat prolonged, speech, by Professor Woermann, professor of art history of the Academy. The academies of art of the last century, he said, had fallen into a certain degree of disrepute, and the word "academical" had acquired a bad sound, to such an extent that only through opposition against them the new German art, the art of Cornelius, Overbeck, and their coworkers, had arisen. The speaker then dwelt upon the origin of the first academy, and rejected the reproach of pedantry and love of empty forms advanced against it, by pointedly observing that each age brought forth its own abilities, and if times of narrow-mindedness had not given birth to high artistic natures, this was not the fault of academies. Professor Woermann then referred to the origin of the present Düsseldorf Academy, the appointment of Cornelius as its founder and director, and the principles upon which it was conducted,—principles which have been adhered to by his successor, Schadow, and the present head of the Academy. After entering at length into the various directions of art and its teachings, the speaker finally maintained that the Academy had been true all along to the principles laid down by Cornelius, and stated that it would continue to be faithful to them.

With this "oration of praise," as it would have been formerly described, and as pointed out by the speaker, and the performance of Händel's "Hallelujah" from the "Messias," the opening ceremony came to an end. In the afternoon a banquet, given by the Academy, took place. In the evening the art-club "Malkasten" hospitably threw open its rooms to official and non-official guests, when, as usual in art circles, the proceedings were of the most unofficial nature and on a most familiar footing.

It may be mentioned that the preliminary works for the art and industrial exhibition to be held at Düsseldorf in 1880 are proceeding rapidly.

HALF AN HOUR IN ST. PAUL'S.

A RECENT visit to St. Paul's Cathedral has afforded so signal a confirmation of the views which have been more than once advocated in the *Builder* as to the decoration of the sacred building, that we cannot do better than invite all those who take an interest in the subject to follow in our steps. We do not ask our readers to see with our eyes, or to accept our opinion as pedantically offered as decisive. But we beg them to look at the subject from the point of view which we indicate; and then to ask for the impartial verdict of their own taste.

The effect produced is due to the window recently erected to the memory of the late Dean Mansell, in that portion of the north-west of the cathedral which is used as a chapel for the early daily service. It is not our wish at this moment to enter into a minute criticism of the window itself. In common with those who hold what we regard as the orthodox artistic view on the subject, we are opposed to the principle of producing transparent pictures on glass, as opposed to the translucent mosaic of our earlier glass-stainers, or to the brilliant window jewelry of their successors. No doubt very beautiful effects have been produced by the modern German artists. Great delicacy of tint and shading, and admirable display of the motive of the artist, are no doubt secured by means of passing the light which renders his work visible through the very body of the picture. On the other hand, the perishable nature of the material, and the objection to admitting the light of a building through what does not profess to be a window, but a painting, are only two among the many objections which the lovers of old stained glass entertain to the new method. Objecting, then, to the theory of the window in question, we admit a certain degree of excellence in its execution. The subject is that known to ecclesiastical art as the incredulity of St. Thomas. The entire light is filled with an architectural composition of a tint between brown and yellow, in front of which four figures are represented, with distinctly drawn, and rather highly coloured, features and garments. We must remark that the idea of the transparent picture,—which is the main key to the composition,—is much interfered with by the leading of the faces of these figures. This black definition, which is one of the characteristic features of the true window jewelry, has a bad effect on the transparent picture. It introduces a style which is not only discordant with, but wholly and most unfortunately contrasted with, the treatment of the architectural work. Beyond this, which is probably an unavoidable disfigurement, unless very great expense is incurred, we think the general tint of the architecture too brown. The introduction of a heavy wreath in sculpture, coloured with the brightest imaginable tints of fruit or flowers, is, we conceive, on no possible plea to be either justified or pardoned. The best part of the window is the blazonry of the two escutcheons,—one bearing the arms of the deanery, the other the three mantelets of the family of Mansell, and the little peep of distant landscape which is shown through the upper arches of the gateway, or whatever the building in question may be called. These are, of their kind, admirable. For the figures, we cannot say much.

But if we are allowed thus to "hint a doubt and hesitate dislike" as to this particular window, the remark that we have to make as to the great improvement which it has effected in this part of the cathedral is only the more deserving of attention. The light admitted through the Mansell window, and through the two noble lights representing St. Peter and St. Paul, in a rich window jewelry which contrasts most forcibly with what we regard as the improper style of treatment, is rich and harmonious. Better, no doubt, it might be; but even under all disadvantages it transforms that part of the interior into what Wren no doubt intended it should be. The peculiarly cold look of the interior of St. Paul's is due, we have always been of opinion, to the excessively inappropriate character of the light admitted through the windows. It is impossible to look at these great, white, staring apertures without a painful effect being produced on the eye. And the effect on the architectural lines and forms is to chill and impoverish them. Add to this, that the clearstory windows are so obscured by gratings and projecting bars that hardly any light comes down from them to the floor of the cathedral, and the illumination which they afford in any part of the building is in no way proportionate to their apparent size.

But when the tinted light of stained glass is allowed to fall on the internal architecture, the sense of chill and poverty is altogether banished. The north-west corner of the cathedral looks like a Christian church, instead of a pagan mausoleum, the great difference being that of tint. This brings us back to our former proposition, made in these columns when first the subject of the internal decoration of St. Paul's was mooted. The first thing to be done is to fill the windows with richly-stained glass. We insisted on it that no attempt at chromatic decoration could be anything but a miserable failure, unless the future colour of the light to be admitted was first decided. And we now hold, with some confidence, what we in the first instance only suspected, namely, that the great architect knew thoroughly what he was about. Wren's interior, seen by the light of those coloured windows, of which the absence gives something of the effect of a barn to what may be otherwise the noblest and most carefully wrought out designs, needs little more to add to its beauty. Little as we care for the windows at the east end of St. Paul's, they are adornments and enrichments to the cathedral, regarded as media of illumination. If windows of proper character were supplied to St. Paul's, a very important part of the needed decoration of the interior would be done.

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 10th, 1879, when the president, Mr. William Sturge, will open the session with an address.

MUSEUMS OF ART: THEIR TEACHINGS AND OPPORTUNITIES.

THERE are so many contrasts between the past of things in this world and the present of them, and especially as regards art, that it would be a hard task, indeed, to compile even a list of them. In nothing, most assuredly, would greater difference be found, when gone into in detail, than in the fact of each one country or nationality being, in the past, a thing in itself, and a something apart from all others, round and about. What, for instance, could be more diverse and separated than the ways and artistic expression of old Egypt and antique Greece? To have travelled into and to have seen Egypt from Athens must then have been pretty much the same thing as the visit to another planet. Men and women were there in them both, it is true; but how different in their modes of expression, and how strange to the one must the other have been! That Greek and Egyptian were different men, expressing themselves each in his own way, seems trite and obvious enough, but it is wonderful to think of how little this is nowadays thought about; and still less is it considered how different things about us now are, and how strange it would be to find oneself in the precise position of the old Egyptian or the classic Greek. A traveller from Greek Athens to Egyptian Memphis must needs have found himself in an all but new world; but a tourist from London to Paris nowadays finds himself in pretty much the like sort of place, with surroundings and ideas differing but little from those he has but just left. Highways, streets, shops, goods, and fine art all but the same, and in not a few cases not to be distinguished one from another. And all this sameness of art expression—confining ourselves here to art—is rapidly extending itself and spreading itself all over Europe. It is, as we think, impossible to overestimate the import of this ever-extending uniformity and sameness of art feeling and expression. All is getting alike, and it is only in a collection or "museum" of antiquities that there is to be seen the evidences of how different nationalities express themselves, in form and colour, when obliged to do so, and when working indigenously, each country or nationality for itself.

And this it is which calls attention so impressively to the whole subject of museums, or collections of past and foreign art, as well as the indigenous art of the country which supports such institutions. In them, and for the most part in them only, can be got glimpses of a mode of art expression different from that which everywhere surrounds us. Many may, perhaps, have felt this when in such a room as that in the British Museum devoted solely to what is popularly termed "Etruscan" art and pottery. An examination of the remains of the past of things in this room will, if due attention be paid to them, completely transport the mind into a state of things as diverse from the present, and from the life about us, as it is perhaps possible for anything to do. We are sent back to another age and place.

Looking, therefore, at the matter of museums in this way, and from such starting-point, we cannot but think that the time will come when a much deeper and more abiding interest will be felt in the whole subject than is at present perhaps possible. They may, indeed, in time, come to be looked into as into open books of reference, for the seeing into things as they once were, and for the seeing into things even as they now are, though remote from us, and from our own ways of life and work. They will also, and this may be perhaps their chief work, put before us the evidences of the "individuality" of widely separated races of men, working as artists and workmen, under conditions different to our own, under other skies, and with different materials and tools. As matters now are, it is found not a little difficult to realise to the mind the special characteristics which go to make up a distant nationality, whether distant in time or space. Mere description, however vivid and truthful, will and can hardly do this. Nay, the very poetry and literature of a great and original race, as the Greeks, hardly give such due impression of the Greek man and his modes of work, as to be all sufficient, though they do so much. But a bust of a Greek hero, an engraved gem, or a sculptured procession, is found to afford at a glance a picture of the then state of things,—of faces, forms, costume, architecture, and even "manners,"—which nought else can give.

Now, looking at matters in this way, it has

often occurred to us whether or no some change for the better could or could not be made in our present museums, fitted up, as they for the most part are, with so multitudinous and miscellaneous a collection of all sorts of "antiquities," and of things that are curious. Take for example the British Museum. What is there not to be found in it,—in its public galleries, and in its vaults and storehouses? It is well to think of the now certain removal of a definite part of its contents to another locality and to a separate and distinct building especially put apart and built for it,—the Natural History Division, as it is termed,—an obviously quite distinct and separate thing from antiquities, and architecture, and sculpture, and from a vast collection and library of MSS. and books. To the public generally the British Museum is a vast repository, wherein may be found, if sufficient and diligent search be made, specimens of all and anything which any can possibly desire to see. This may, indeed be so; but in the not very far-off future this great institution will be necessarily limited to a somewhat narrower range of objects. We do not say what; but it is a little curious, if we but come to think of it with due attention, that the very word "architecture" can hardly be said to exist as one of the Museum's descriptive words. There are antiquities in plenty, and sculpture, but of architecture only a hint here and there.

Of the importance of remembering this when the "Natural History" is moved to South Kensington there is no doubt, for a vast space of unoccupied ground, and floor and wall space, will then be available for other and new purposes, and which will without doubt in time compel a more strictly scientific and artistic division and arrangement of the then contents of the museum. As things are, all has been simply accidental and as occasion served, and hardly any attempt,—if any,—has ever been made at a scientific or historical arrangement, or even at the confining all the antiquities got from any certain locality or building to one fixed spot. Much is lost by this, and more ample space can alone make matters in this respect better than they now are or have been. We call attention to this from the fact of the, in reality, limited range of the National Museum's work, though it seems at first sight so multifarious. Natural history is a very wide term indeed, and when all is gone from the British Museum that ranges itself under that wide heading, one half of the Museum galleries will be empty, and available for the reception of other objects coming under other "headings," whatever such may be. And this wide space it is which would seem to almost invite consideration to a more comprehensive and scientific appropriation of it, and to an effort perhaps to, in part, at least, fill up the gap we have hinted at.

We might here usefully for a moment, and by way of illustration, call attention to the small Bethnal-green Museum, and which, in its present state, may be said,—minus the library,—to epitomise the British Museum as it *first* started into life and activity. In that there is a little of everything and from everywhere, and it well bears out, at least, its title of a "museum," as that word is usually understood and applied. Some of the objects exhibited are quite unique, and not to be found elsewhere. Pictures of all sorts there are in plenty, and representations of objects, and ironwork, and pottery, and woven fabrics, and natural history, and a little architecture and sculpture, and "raw materials;" but of scientific idea or artistic sequence there is, in reality, no trace. And, what is more, perhaps, there is nothing specially applicable to the denizens of the locality in which the museum is situated, and the thought occurred to us more than once,—Could not a something have been attempted which the working artists of the locality would have more directly felt interest in and been practically benefited by? If but some special art-trade had been directly appealed to, and the details of such trade illustrated as far as could be, would it not have roused the attention of the workmen of Bethnal-green more thoroughly than the miscellaneous range of objects now on view, and so have led them on to other subjects? It may be perhaps too bold and too far off a thought to even hint at; but when we consider the intense interest which the actual working out of any object is found to elicit, especially from working men, but, as well as such, from however miscellaneous a crowd as is seen every day and at every street corner, and as is evidenced by the interested crowds collected round the windows of any tradesman at his work, might not some attempt be made here, at least, to not only encourage the drawing and copying of objects on paper, artistic or otherwise, but the actual working out of them? It is quite wonderful to see days and days at the British Museum, and even weeks, spent in the efforts, painstaking and industrious as they without doubt are, to finely and almost microscopically stipple an antique head, or arm, or hand, while the thought of the carving in material or sculpturing a hand, or a foot, or a head, would seem not to occur to any, even advanced, student. If this work in a museum did not interest the student, it most certainly would the spectators,—the "crowd," if the reader will. There is here a fine collection of ironwork, from a time when iron was thought about as a medium for art thought and expression, and a simple door-lock key is found, if duly looked at, to have been the result of much thought and painstaking, and skill of hand. If one, if not the chief, use of the antique be the copying in detail of it, and as a test of the student's power over form and expression, might not here the workman,—the artist-workman,—find his opportunity, not in the mere study of copying on paper some useful object, but in its realisation in material?

GARDENING AT HOME AND ABROAD.

M. Charles Blanc has recently published a remarkable essay, in which he is compelled to acknowledge that the French system of laying out public gardens has been abandoned by Frenchmen themselves, and preference given to that of the English school. Formerly a Frenchman planned out his garden as if it were a geometrical drawing, and even cut the branches of the trees so as to render their forms perfectly symmetrical. In those days our neighbours accused us of resorting to mere accident in the laying out of a garden. It was said that we gave the gardener copious libations of the strongest drink, and then, following his unsteady footsteps, traced a path wherever he might happen to reel. Hence the erratic and irregular appearance of the English garden. In France nature was allowed to play only a secondary part, while in England there was perhaps too much licence given to the freaks of fancy. Thus, in one celebrated English garden, there was a grotto to St. Augustine close to a dancing Dryad, a labyrinth of greenery, a Gothic edifice, a reduced copy of the Parthenon of Athens, a pyramid in honour of Congreve, and another to commemorate the memory of the Princess Amelia; a saloon dedicated to Nelson close to a temple of Venus, and a mausoleum to Signor Fido, a favourite Italian terrier! This heterogeneous conglomeration of eccentricities was an exaggeration against which it was necessary to re-act; while avoiding, on the other hand, the unnatural symmetry of the French school, as exemplified at Versailles and at the Tuileries. To effect this happy compromise, M. Charles Blanc recognises that nature should, and as a matter of fact has been taken for a model. What need have we for monuments, statues, columns, where nature can present to our contemplation all the unrivalled beauties of the vegetable kingdom, and show us, in natural creations, all the grace, the majesty, the delicacy, the force, the brilliant colouring, the infinite variety of world which our best artists can but feebly imitate. Cicero inquired why we should *construct* gardens, when it sufficed to plant, to water, and to nurture with love what would not fail to grow into the most charming and magnificent of resorts. What copy of antique statuary could rival in warmth the magnificent plants we import from China, Japan, or Virginia? Where is the vase that can equal the Chinese rose, with its scarlet blossom, its golden tints, its velvet surface?

The modern garden, consequently, presents to us nature alone, nature assisted in its developments by man, who has a knowledge of the natural laws. The qualities required to lay out a garden are those of the artist or the painter rather than that of the architect. To plan a public garden is to plan a vast picture, which will be contemplated from various points of view, and constantly present a different aspect as the walk through the garden is prolonged. Instead of tracing a geometrical plan on paper, the designer must foresee what will be the different perspectives, he must realise in his imagination what will be the various points of view to be obtained by the spectator who strolls through the garden which has to be called into existence. The spectator will not, as in olden times, expect to walk over grounds divided into compartments, on which an edifice of trees has been built, vaulted over here, opened out in other parts, surrounding a saloon of verdure, or forming a narrow passage leading to little harbours or cabinets of repose, the whole furnished with carpets of grass and fringes, and wainscotings embroidered with flowers,—we have now, on the contrary, for garden a landscape at once ideal and real, "embellished by that invisible fairy, Nature, guided by the genius of art."

To obtain, however, such result, a great knowledge of nature is required. Each tree has its peculiar physiognomy, its special altitude and attitude; in fact, its deportment expresses a sentiment which bears a direct connexion with its physical qualities, and at the same time expresses a human idea. Thus, some trees are qualified as majestic, proud, hardy, rough, wild, melancholy; and the designers of our parks and gardens must bear this symbolism in mind; must be careful, while preserving a natural aspect, to avoid any absurd combinations of trees that express these varied sentiments. Then, again, the same care and forethought must be displayed with regard to the effects of colour, and for this an intimate knowledge of the varieties of colours, tints, and changes, which a plant presents during the course of the year must be acquired, for what might blend and harmonise in spring might in no wise agree during the autumn. This is rendered more difficult by the importation of innumerable plants from the tropical regions which are still strange and unfamiliar to us. But, in all this, the surest way of avoiding a foolish blunder is to follow as closely as possible the laws of nature, planting on the summit of the hillock the trees that are found on elevations, and in lower portions the plants that thirst for humidity and thrive when sheltered. The observance of this principle, which seems so simple and yet requires so much knowledge in its application, will give to the garden a natural appearance, will insure the successful growth of the plants, and develop those mysterious harmonies of nature which we cannot too closely imitate.

FACILITATE THRIFT.

POST-OFFICE SAVINGS BANKS.

The establishment of Post-office savings-banks was undoubtedly a great incentive to thrift among the poorer of our vast population. For the investment of one economical person of some portion of the monthly or yearly earnings has a tendency to cause equal thrift among that person's friends and neighbours, and thus by degrees thrift of this sort becomes much more general; it gradually grows into an admirable custom and habit, and in course of time a large portion of the population becomes generally less wasteful. We have no intention here to preach a sermon upon this subject of a due and proper economy, but there is scarcely any one of the social habits of a people which is more largely conducive to individual and general comfort and happiness than that of putting by some portion of the daily earnings for the unforeseen requirements of the future. It is, therefore, very gratifying to find that, during the year 1878, 163 offices were added to the number of those (5,668 in 1877) which already transacted a bank business, and that equally with this increase of offices there was an increase of depositors and an increase of deposits (92,700 and 318,000*l.*).

On the other hand, considering the severity of last winter and the slackness of trade, it is not astonishing to find that the number of withdrawals over that of the year 1877 was 51,600; but it will be seen, from a comparison of these figures with those of the number of depositors, that the proportion of the latter is greater than that of withdrawers. Nor can we accept an explanation given by the Postmaster-General of the satisfactory progress of savings-bank business, that "it must be looked upon as due in a great measure to the numerous bank failures which have recently occurred." Because the number of these disasters has not been numerous enough to affect very largely the business of the savings-banks; nor is the general class of depositors in such banks as the City of Glasgow and the West of England Banks the class which would, in consequence of the financial alarm current last year, rush at once to place their money in savings-banks.

And in connexion with the subject of deposits

we are very glad to call attention to an arrangement which has been adopted by which navvies employed in the construction of several public works have now the opportunity afforded them of depositing money in the Post-office savings-banks. For navvies are, as a class, decidedly improvident; as a rule they are paid an excellent rate of wages, but they have something of the reckless and extravagant character of seamen about them, and think less about saving for the rainy-day, which is almost certain to come to a large number, than they should do. We should have been better pleased, however, if the Post-office could have given us some information as to the way in which this opportunity is used, and whether or not the system cannot be introduced still further in the case of large private firms. The workmen in some of the largest building and other firms in the metropolis and provincial towns are fully as entitled to special consideration as the navvies employed on certain public works.

And this point naturally leads to the consideration of the extension of the savings-bank business. Out of 13,763 post-offices at the end of 1877 in the United Kingdom, there are only 5,668 at which banking business is transacted; that is, at considerably less than half the offices, deposits cannot be received. And from what the report of the Postmaster-General states, it appears that the department considers this number sufficient for the wants of the community; for it is said, "it would seem that the facilities now afforded to the public are all that can reasonably be desired with due regard to the interests of the State," and the report continues, "it would, therefore, seem expedient that the collection of savings in retired and sparsely-populated districts should be left to the agency of Penny Banks." And as a confirmation of this view, the opinion of a schoolmaster in a large town is given, who states: "No doubt if special arrangements were made for receiving deposits at Post-offices, and, where practicable, for opening them in the evening, many more would deposit; but, to meet the unthrifty, the bank must be opened in the neighbourhood of their homes, and this can only be done by Penny Banks." Now this opinion seems to show that, although there must always be room enough for Penny Banks, yet that it would be well if Post-office savings-banks were more numerous, and if arrangements could be made for them to do business in the evening. At present there is an average of a Post-office savings-bank to every twenty-one square miles, and we confess we think that they might be more numerous. The "interests of the State" mean, we presume, the cost, and we do not see how the cost of these banks would weigh upon the State, when there are plenty of intelligent post-masters and post-mistresses who could receive deposits. It is quite certain that the more numerous these banks are the better, because there can be no doubt that just as the number of public-houses often afford opportunities for drinking, so will the number of banks afford chances of economy.

There is also yet another question of great importance in regard to which we gladly see that the officials are quite prepared for a change. And this is that the limit of deposits should not exist as at present. Now, as most know, after 150*l.* has been deposited no more can be paid in, and after the amount has reached 200*l.* no interest is given, and it is also a condition that not more than 30*l.* may be deposited in any one year. Now, why 30*l.* should be fixed on as a limit of yearly deposits is a mystery to us, and why say a 500*l.* limit could not be fixed upon it is equally difficult to see. Further, when the limit is reached the sum in the bank should be invested in Consols, unless the depositor on receiving notice to this effect desires to withdraw the money standing in his name. In Italy, for example,—not a country very remarkable for its social improvements,—we find that "facilities are afforded for transferring money to the public funds," and in France a Bill has already been brought into the assembly both for the introduction of the Post-office savings-banks and the conversion of deposits into Rentes without charge to depositors. And unless we are mistaken this latter course is always adopted in relation to the ordinary savings-banks in that country. We are afraid that the present Chancellor of the Exchequer is too much oppressed by the quickly approaching election to bring about any such change as this. Perhaps when this great cloud has passed away something may be done in the matter. It is all very well to say we ought to be thankful for the facilities which the Post-office already gives us in this respect, but past favours are in this case all the more reason for future increases of them. Still, from whatever point of view we regard the Post-office savings-banks, they must be considered a most satisfactory social feature.

NEW BUILDINGS IN EDINBURGH.

Last week two of the most important buildings ever erected in this city were inaugurated,—the new Royal Infirmary and the Cathedral of St. Mary.

It was expected that the presence of royalty would give *éclat* to the ceremony at the former, but as circumstances did not permit of this, the Lord Provost, assisted by the University Professors and other dignitaries, performed the task in a simple and satisfactory manner.

With the character and aspect of the buildings our readers have been made familiar, both by description and illustration; but we may here remind them that the style adopted by the architect, the late Mr. David Bryce, R.S.A., is an adaptation of the Scottish Domestic, and that the pavilion system of arrangement has been followed. The site, which slopes to the south, and overlooks the Meadow Park in that direction, extends to 11½ acres, of which 3½ are actually covered by the buildings. There are twelve medical wards, with accommodation for twenty-three patients in each; eighteen surgical wards, which each accommodate sixteen patients; and separate wards forthe treatment of erysipelas, ophthalmia, &c., accommodating in all 600 patients, besides nurses and medical attendants. The amount of space allowed for each patient varies from 2,350 to 2,380 cubic feet, which is considerably in excess of that allowed in St. Thomas's Hospital, London, where the allowance is 1,800 for each patient. The cost of this great pile will be about 350,000*l.*, and it is so arranged that future additions may easily be made if required. The contractors have completed the work within three months of the time specified. In December, 1870, we gave a view and plans of the buildings, and next week we will give some further account of them.

The site of the vacated Infirmary is central, and in close proximity to the University, and it is probable that the authorities will take the opportunity of effecting an improvement in that locality.

The Medical Officer of Health bears testimony to the noble results which have flowed from the improvements in the Old Town, a scheme which has not only improved the aspect of the city, but greatly benefited the health of the community. He says:—

"The death-rate of the districts operated upon by the Improvement Trust has become steadily lowered since the completion of the clearances. The decrease in the mortality is estimated at 5 per 1,000 of the estimated population. The diminution in the number of cases of fever and other infectious diseases has been still more striking. Some houses have been pulled down which furnished annually at least thirty cases of fever. It must be remembered that the Corporation have only been able this year to afford the districts which have been operated on the benefit of an ample supply of water. This will still further tell on the death-rate in future years. To sum up, Edinburgh, which before the operation of the Trust had the reputation of a city with a high death-rate, and which regularly suffered from epidemics from fever, has now a low death-rate, as seen from the following figures:—Death-rate per 1,000—1873, 24·77; 1874, 22·27; 1875, 23·17; 1876, 19·62; 1877, 20·86; 1878, 21·53; and fever epidemics are practically unknown."

The cost of these improvements to the ratepayers has been about the same as that voluntarily subscribed for the new Infirmary. Further improvements are called for, and such facts as those stated are weapons of power to beat down the opposition of the niggardly, who grudge taxation for whatever purpose.

The consecration of the cathedral was a most impressive ceremonial. Admission was by ticket, and the whole available space was occupied by a congregation estimated at over 2,500. There were 250 clergymen in the chancel, including 13 bishops. The choir was augmented by numbers of other choirs, both from England and Scotland, and the fine solos in Boyce's anthem, from 1 Kings vii. 13, were rendered in a truly devotional manner. The full force of the voices was brought out in Handel's majestic Hallelujah chorus, which resounded through the long-drawn aisles with fine effect. The acoustic properties are remarkably good for a building of the kind, but even the magnificent voice of the Bishop of Peterborough could not penetrate to every nook and cranny, so that the effect of his eloquent discourse was lost upon many who were eager to hear him. The beating of so large an interior, to the making up of which stone so largely contributes, was no mean task, but it has been accomplished in a wonderfully successful manner. On all hands were to be heard expressions of admiration of this noble pile. At the close of the service sixteen sycamore trees were planted by the bishops and other dignitaries within the precincts, along the sides of a walk to be designated the Bishop's Walk.

We have from time to time described the building as it progressed, and may here say that the following illustrations of it have appeared in past volumes of the *Builder*, viz.:—Exterior view of design at first selected, 1873, p. 167; interior view, 1873, p. 167; exterior view as executed, 1874, p. 1032; and plan, 1875, p. 51.

The monument to the late Dean Ramsay to the east of St. John's Church, and facing Princes-street, has been erected. It is a notable feature amongst the monuments of the City, alike as respects design, size, and richness of detail. It was designed by Mr. R. Anderson, A.R.S.A., and executed by Messrs. Farmer & Brindley, of London, and consists of a granite cross rising to a height of 26 ft. The base consists of three stages, each sloped inwards, and from these starts a richly-sculptured shaft, supporting a cross having a width of 8 ft. 6 in., the arms of which are bound together by four arcs of a circle having a diameter of 6 ft. The face of the cross is divided into panels, in which are inserted bas-reliefs. Those on the arms of the cross represent the Passion, Resurrection, and Ascension. And those on the shaft, six in number, set forth the acts of charity. The remainder of the shaft and cross is covered with sculptured ornament of the same type as that of the twelfth century, to be seen at Jedburgh Abbey. The granite is from Shap, in Cumberland, and the bronzes have been cast by Elkington.

A new Free Church is projected upon a site facing the south end of Wardie-road. If erected on the exact spot fixed upon, it will stand in the way of an extension of Wardie-road southward, an extension the advantages of which are obvious, and which, if not interfered with, is in the womb of the future. The idea seems to have been to secure the most conspicuous position for the church, but if placed a little to one side it would be sufficiently prominent, standing at an angle where two thoroughfares would cross.

Many positions have been occupied by buildings, to the ultimate detriment of a neighbourhood, which might have been prevented by timely warning.

ENGLISH SCULPTURE: A VINDICATION.

It is painful to notice the constant lament which is made over "the languishing condition of English sculpture"; and, certainly, looking at the forlorn aspect of the galleries of fine art supposed to be devoted to sculpture, the wail might seem more than justified. But it is presented in a manner leading to the conclusion,—as, indeed, is too often pronounced,—that for the most part, with a few noteworthy exceptions, sculpture has been a poor, sickly plant amongst us, unsuited to the genius of our artists; that sculpture is in a "past-praying-for," pitiable, hopeless sort of condition. Even if this were true, which we cannot admit, it would not be difficult to show that the blame does not rest with our sculptors as a class of artists unequal to the high demands which sculpture makes upon them, but with the hard, up-hill conditions under which they have had to struggle for the true manifestation of their genius, and too surely to fail so far as contributing anything like what they might have achieved towards the formation of a really noble school of English sculpture.

First, then, as to our sculptors themselves, and the implied inaptitude of the English for excellence in sculpture. We need not go back to Mediæval work,—as our concern is wholly with the moderns,—save to pass the remark that, perhaps, the saints and Madonnas, or other sculpture of our cathedrals, &c., exhibit as much grace, purity, and sweetness of expression as can be found in similar figures anywhere else, though we lay no particular stress upon this, as it is now almost impossible to tell precisely who were the designers, — who the workers, — in these Mediæval works; the wonder being that in the architecture and the cognate sculpture of the period, an excellence and

perfection were attained in their ecclesiastical development when painting seemed in its infancy, and sculpture as a secular art almost non-existent; but since these Mediæval periods it must be admitted that little native sculpture worthy of the name existed amongst us; and it would be difficult, perhaps, to fix upon any name, until we arrive at that of Flaxman, which could be regarded as in any degree claiming a marked place for sculpture in this country. His position as a great sculptor is willingly conceded, almost to the disparagement of his successors, and is never questioned by native or foreigner. While his inspiration was Classic Greek, yet he gave clear indications of an untrammelled power which made his work modern, and plastic to all those human sympathies which cling about our history and literature, and domestic and religious life; and it was precisely in this character that he may be called the father of modern English sculpture, and, as we contend, has had most worthy successors.

The case of Flaxman illustrates exactly what we have to say about the so-called failure of our English school. With him was the genius apparently equal to the highest demand which could be made upon it, but allowed to lie fallow, for the most part, in an atmosphere of non-appreciation. What great public works did he execute? what encouragement of the promise he gave of power in imaginative work of the highest order? As all know, Flaxman is chiefly to be known and studied in plaster models, never commissioned, and in "outlines" as book illustrations, to which he had to resort as a means of livelihood. Priceless these may be in their way, but had the time been ready for the man, what might he not have done under the spur and stimulus of healthy public appreciation and adequate encouragement? In him alone, not only the dawn, but the actual foundation of a noble English school might have been found which would have left no room for the after-reproaches to which we have become so accustomed. But these surrounding elements were wanting,—the opportunity was lost,—and herein lies the clue to the whole matter. England since the days of Flaxman has had a succession of sculptors,—not English alone as to nativity, but of our race and school,—who have exhibited nearly every power capable of rendering the art great, delightful, famous. If is needless to name the many, dead and living, who gave evidence of being able to sustain the glory of sculpture in its worthiest manner, but Chantrey, Bailey, Gibson, MacDowall, Lough, Foley, Stevens, among the departed will suffice. Sir Coutts Lindsay rightly pointed out that Gibson got on the wrong tack in seeking his inspiration so purely in the classic past, and in this failed to vivify his art, or touch the true chord which all art should, of being an interpreter of, and an inspiration of its own time. But the real failure all along in sustaining a great school of English sculpture has been very much as it was in the case of Flaxman. One more modern instance will suffice for all,—the greatest name, we take it, since Flaxman, nor yielding, in our opinion, even to his, that of Foley, whose lamented decease certainly was a loss in the ranks of our sculptors which has not yet been made good. As with Flaxman, so with Foley, — exhibiting in a high degree a rare power in ideal sculpture: witness his "Ino and Bacchus" and "The Mother,"—the grace, sweetness, and perfection of both works being such as would have made a world-wide reputation in a more fortunate era,—it is well known that he had to abandon, very largely, the production of ideal work, simply because it fell dead, uncommissioned, upon his hands, and had to resort to monumental portrait-work as best calculated for financial success, though happily, in this, by throwing into it the energy of his genius, he achieved a splendid success, his "Stonewall Jackson" and "General Outram" being perhaps unsurpassed as works of their class. But here, again, was ideal genius to a great extent lost, thrown away, for the want of the encouragement and patronage needful for its display. We might advert to numerous other names, and yet more melancholy instances, and point to the excellent promise of their early ideal work, which, in the unkindly atmosphere of their time, had little or no fruction; but the same tale recurs all through the history of modern sculpture,—not the want of men of genius of high order, but the blighting, deadening effect of an almost total want of public-spirited appreciation taking the form of honouring and rewarding their work by its being commissioned, and thus passing into the history of the country as one of the glories of the time.

This, then, is the point we enforce, that English sculpture has languished less from deficiency in our sculptors themselves than through the combination of conditions wholly fatal to the generous development of a great school of sculpture such as assuredly we might have had, had the circumstances been different. Artists must live, but this, as a rule, can only be by the public or private appreciation of their work in a way to secure adequate monetary success; for the fickle genius of art seldom draws its votaries from the wealthy and well-to-do classes who pursue art wholly and solely "for art's sake." Sculptors, however, of course, suffer in a peculiar degree from not being able to make their works a readily saleable commodity when thrown upon the market, as it were, to take their chance of purchasers. The study, labour, and expense involved in getting out the plaster model for exhibition cannot be gone through many times,—however glorious the conception,—if the result is *nil* in regard to getting a commission which will honourably pay. Hence, without ensured patronage sculpture must languish. Now, this sort of patronage can only arise from Governmental, Royal, Municipal, or Collegiate sources on the one hand, or the generous support of the wealthy and noble on the other. As far as the public good is concerned, in embuing all classes with a love for, and pride in art, the former is the preferable, and it cannot be regarded as other than a shame to England that, save to a very limited feeble extent, have Government, our great civic corporations and companies, or our noble collegiate institutions, given to sculpture the opportunity needed for its just development and display. With this, the response from our sculptors need have been nothing else than of the most noble and enduring kind, and there would have been no place for the reproach now heaped upon it that English sculpture has for the most part been rather a poor affair at the best.

Not only, then, is the failure of the English school,—if failure it can be called,—not to be ascribed to the lack of special genius on the part of our sculptors, but we would go further, and say that English sculpture has exhibited, in a rare degree, some of the best attributes of artistic work, which have been rather wanting in some foreign schools popularly regarded as far before our own. While preserving a good deal of the classic tradition and ideal with much advantage, it has yet exhibited a freshness, a naturalness, and, above all, a wonderful purity, sweetness, and even spirituality in the treatment of the nude which cannot easily elsewhere be matched. French sculpture in the nude seems too often pervaded by a *motif* that, to say the least, is too much of the flesh, fleshly, if nothing more; and the grace it displays, however facile, has something of the posing of coquetry about it as opposed to simple naturalness. About German sculpture there is a sombre gravity, almost severity, which too much diminishes its naturalness to make it an example to be followed. The modern Italian school has made great advance and shown some fine work, though lending itself to a good deal that can scarcely be called anything but frivolous. But, all things considered, we should be inclined to place the English school, for the characteristics we have named, in the first place. Not to mention Flaxman or Foley again in this connexion, we may well refer to the "Eves" of Bailey and MacDowall, the "Reading Girl" of the latter, the "Dorothea" of Bell, the "Sabrina" of Marshall, and the beautiful child-sculpture of Munro. Of all the fine arts, sculpture lends itself less easily to the meretricious, and any appeal to the sensational clap-trap power of catching ephemeral success, and in a marked degree English sculpture has happily remained free from any leaning to this indignity, though as to much, it must be honestly confessed that it can only be called mediocrity triumphant.

While, then, our lost opportunities from the causes we have named are irreparable, there is yet perhaps no reason to conclude but that if the sources of patronage were open in the directions we have pointed out, genius would be forthcoming equal to the demand.

There remains the important consideration, what are now the most legitimate subjects for our sculptors? Monumental art we need not particularly refer to as always furnishing a wide field for sculpture, both in subject and treatment. It may be of the highest, or very much the reverse, but its scope and character are too well defined to need for further remark here. It is not to be expected that there will be any uprise of religious art in sculpture in any great sense of the word. The genius of Protestantism and the modern spirit is against it, and though appearances are sometimes the contrary, we have, as a nation, happily, become too permeated with a belief in the spirituality of worship in Christianity as seen in the earliest and purest ages, to put much faith in art as an aid to religion, though, as a matter of sensuousness, the costly fanes, the splendid ritual, allied with all the glories of music, painting, and sculpture of some religious communions, would otherwise seem to offer a great opportunity for art. But the imperishable records of the sacred story will ever remain those which will furnish the most living embodiment of human hopes and interests through all their scale of pathos and sublimity, and hence, in some shape or form, must always exercise the highest influence in all art. The Classic Pantheon and mythology are less and less likely to furnish our artists with any real inspiration, and are as dead to us as the apocryphal legends of the saints. But if art, to be living, must be the outcome and expression of the actual human thought and emotion of our time, then we have, besides the sacred classics, the creations of our poets, dramatists, and imaginative writers of all grades; these yet live, and form our lives, and are interwoven with the struggle and heroism of everyday life, as well as with the greater epochs of history. These furnish endless resources for the inspiration of art. We would only advert to one instance as illustrating how two arts can become wedded in a mutual interest for all time, the beautiful sculptured group from Wordsworth's poem, "White Doe of Rhylstone."

A GERMAN VIEW OF CONTEMPORARY ARCHITECTURE AND INDUSTRIAL ART.

One of the principal causes of our undecided attempts in art is the feebleness of Architecture, the mother of all arts. The proper function of the mind, control over matter, is represented by art, and appears in an especially symbolic manner in architecture, which, not without intuitive appreciation, has been called "frozen music"; for, as music makes sensible æsthetically the limitation of time by space, so architecture makes us feel the limitation of space by time. This most universal and most abstract of the fine arts sets forth the most clearly of any the balance of parts, the harmony of proportions, which constitute the fundamental principle of all art. When architecture is poor, we may be sure taste is debased.

Architecture, however, is not only the theoretical principle, it is also the practical foundation of the plastic arts; for it prepares a dwelling for them. So soon as architecture is withdrawn from public buildings, and is found only in private life, art on a large scale becomes at once homeless and objectless, and a fugitive in its native land. For what, indeed, mean all the statues, all the historical pictures, which the artist elaborates in the quiet of his study, and which the State knows not where to place when purchased? A society which can do no better than locate even the productions of contemporary art in museums and picture-galleries is a society essentially inartistic; for such edifices are really not the fruit of art,—rather are they like cabinets of natural history, where the poor statues and pictures are mustered in groups and and series, like the stuffed animals in their glass cases. An artistic image needs an assembly-hall, a forum, a church, an hôtel de ville, a family hall, or indeed any artistically-bounded space, which of itself subserves a definite idea, and is thus distinguished from the commonplace of every-day life, as a stage upon which the intellectual life of art may expand and develope. But where are we to find such a frame at the present time? Never, perhaps, was there so much building as now, and never was architecture in such a low condition. One ruling idea, a common sentiment, no matter of what kind, whether of God or of man, of religion or of country, must animate the life of the people, if architecture is to flourish, and not to perish through want of a proper object. Where architecture has no true object, art is left without any solid foundation, is no longer fostered by the nation, and no longer re-acts upon the nation with an elevating and refining influence.

This is more or less the case at the present day. We have no longer an architecture because we have no longer a *cultus*, and we have no longer a *cultus* because the intellectual movement has departed from the Church and centred itself in humanism, which, however, is as yet invested with no recognised social form. The epoch of "religious art" is over, and religious feeling, however powerful, will not bring it back. This is the reason why all modern churches are but, as it were, disinterred corpses, which harmonise so little with the time that they borrow their style from every period, and exercise not the slightest influence over contemporary architecture. Such facts are enough to convince every one who is not blind that the religious feeling is dead; for a *cultus* which no longer manifests itself in monuments is already dismissed. It is in vain that our architects take refuge in all forms of building; a truly-monumental style is not one that is sought and found. It is spontaneous, and like the conception to which it must owe its birth. No single individual can suffice: a whole people is necessary for it to strike root. It grows, no man knows how, like the crystal. It arises from the common sentiment of a whole race, which is dominated by the same idea, and is striving towards the same goal. It is not the pyramids only which have been built by a whole people.

We live, then, in an interregnum, in which the constructor has lost the guiding principles and the aim of his art, and has ceased to have a perception of the fundamental law of art, and especially of building art,—grouping. Where the modern does not imitate and imitate badly, he builds barracks and factories, even when he fancies he is building palaces. There is no longer an organism, no longer a ruling idea, which divides his house into its several parts, where are no longer prominence and recess, no longer motive and climax. There is nothing but a wearisome series of lines and windows. In such a state of things it is vain to seek for guiding principles in architecture, for there are none to find, and industrial art is abandoned to hopeless confusion of ideas.

Further causes for this confusion which characterises modern industrial art are to be found in the increase of manufacture, the division of labour, and the employment of machinery. The objects of industrial art cannot but suffer from the piecemeal way in which they are produced. The more work is subdivided the more mechanical it becomes; in precise elaboration of parts the excellence of the *ensemble* is apt to be lost sight of, and art defeated. At least this is the case while our modern methods of production are yet new. The drawback is, however, only momentary, and will gradually disappear, and advantages quite as valuable as this drawback is injurious will arise as industry developes. Modern industries established with the view solely of immense production aimed at the greatest possible simplicity at first, and thus the objects manufactured were barbarously inartistic. This evil will, however, diminish more and more as machinery and technical processes are perfected. The highest embellishment comes at last to cost less trouble and labour than did at first the production of the most elegant forms. The caprice and individuality of hand-workmanship, indeed, disappear, but, on the other hand, technical perfection, the facility of multiplication, and consequent cheapness and accessibility to all, favour the spread of good art forms. When a thorough mastery of material is acquired in manufactures, then from the new methods of production will arise a true art style. This has, in fact, already commenced, and industrial taste, in spite of all hindrances, has for years been making decided progress.

Margate Sea Bathing Infirmary.—Prof. Erasmus Wilson is wisely acting as his own executor, and using his money in the public service. Last week he made a munificent offer to the court of directors of the Margate Sea Bathing Infirmary (for scrofula). Mr. Wilson announced through the chairman, Col. Creaton, his desire to erect at his own sole cost a new wing containing wards for nearly seventy patients, a tepid sea-water swimming-bath, and a chapel containing seats for 300 people. A resolution accepting with the warmest cordiality and gratitude this act of benevolence, the cost of which will probably exceed 20,000*l.*, was unanimously passed by the Court.

THE NEW BUILDINGS AT THE *TIMES* OFFICE.

The rebuilding of the *Times* office, which has been in progress during several years, is now approaching completion, the elevation of the north side of the quadrangle in Printing House-square, which forms the main block, having been covered in within the last few days, and the stone pediment which surmounts the elevation, enclosing the royal arms and groups of carving, is also nearly finished. The principal entrance to the printing department is in this block (the block facing Queen Victoria-street, where the editorial and advertisement departments are now conducted, having been completed some time ago), and here, above the spacious new doorway, in Portland stone and polished granite, the well-known white marble tablet with its inscription, presented to the *Times* proprietors many years ago, in commemoration of their exposure of a gigantic commercial fraud, has just been re-erected. The only old part of the building which has been allowed to remain standing is the west side of the quadrangle in Printing House-square; it is, however, in course of reconstruction internally, whilst a new roof is superseding the old one. In this part of the building, if we are rightly informed, the eminent owner of the property, Mr. John Walter, M.P., was born.

The foundation-stone of the new part was laid in February, 1872, by Mr. Macdonald, who was intimately associated with the "Walter Machine," and it is worthy of record that throughout the long period during which the buildings have been in progress there has been no interruption whatever to business as respects the daily production of the *Times*, or to the manufacture of the "Walter Machine," which is carried on in a factory in the Queen Victoria-street basement. It is satisfactory further to hear that from the commencement of the works to the present time there has been no accident. The structure is one of the strongest and most substantial in the metropolis, and it may be added that the whole of the bricks for the building were manufactured specially for the purpose on Mr. Walter's estate at Bearwood, in Berkshire.

The architect of the building is Mr. Deacon, who acts in a similar capacity for Mr. Walter on the Bearwood estate, where building to a considerable extent is said now to be in progress. The building from the first has been carried on by workmen in the employ of the owner, under the superintendence of Mr. Deacon and his assistants.

Within the last few days the electric light has been introduced into the "making-up room," a large apartment on the ground floor of the east side of the quadrangle in Printing House-square. The illuminating power is most effective, artificial daylight being apparently shed over the whole interior. The electric light has for some time past been in operation in the machine department of the establishment.

THE NEW BUILDINGS ON THE SITE OF ALL HALLOWS CHURCH, BREAD-STREET.

The new warehouses and other commercial premises which have been erected on the site of the ancient Church of All Hallows, where Milton was baptised, have just been completed. They are in the Queen Anne or Old English style, the materials being red brick, with Portland stone dressings. The principal frontage is in Watling-street, and is about 80 ft. long,—the same length as the old church which formerly stood upon the site. The elevation is carried up with ornamental brick piers, with panels inclosing devices and heads in terra cotta under the main cornice, and at the top of the second-floor windows. The building contains ground-floor and three lofty stories. Above the ground-floor there is an enriched frieze, containing moulded and artistic emblems and designs, upon which rests a cornice. The first and second floors contain two and three light mullion windows, having Portland stone shafts, a string being carried across the elevation above both floors. The elevation is surmounted by three lofty pediment gables, and two rounded gables, forming the third story, which has two-light mullion windows. The several gables inclose ornamental work in terra cotta. There are five wholesale sale-rooms on the ground-floor, with a central arched entrance to the premises on the upper floors. The brick piers and other parts of the elevation rest on granite bases. The Bread-street elevation is about 30 ft. in length, and uniform in its architectural character with the Watling-street frontage, and is surmounted in the centre by a pediment gable. At the angle of Watling-street and Bread-street there is a stone slab inserted in the wall, containing, in a circular niche, a sculptured bust of Milton, under which is the inscription "Milton," and "born in Bread-street, 1608. Baptised in Church of All Hallows, which formerly stood here, *ante* 1878."

The architect of the building is Mr. Alexander Peebles, of Salters'-hall-court, Cannon-street, and the contractors were Messrs. Scrivener & White. The buildings, and another immediately adjoining, cover an area of a little more than 30,000 ft., the site being sold for 32,000*l.*, out of the proceeds of which two or three new churches have already been erected in different suburbs of the metropolis. The buildings now in course of erection in Bread-street, immediately adjoining those described, consist of lofty warehouses and offices, in Portland and Bath stone, and containing four floors. They have a frontage 45 ft. in width, and are upwards of 50 ft. in height, with a deep basement. Mr. A. Peebles is the architect, and Mr. Morter, of Forest Gate, is the contractor.

NEW WORKS AT ST. BARTHOLOMEW'S HOSPITAL.

The new additions to St. Bartholomew's Hospital, consisting of a library, practical class-room, and museum, which have for some time been in course of erection in Giltspur-street, are now almost completed internally, and were opened on Monday last by the Prince and Princess of Wales.

The external features of the building, which presents a Classic elevation in Portland stone, have already been described. The buildings have been about two years in course of erection (the plans were signed by the contractor in September, 1877), and stand upon the site of some houses which fronted Giltspur-street. Although the new stone front is visible from Smithfield, the approach is through the old gate from the quadrangle built by Gibbs in 1730. The façade is nearly 100 ft. in length, and is 75 ft. in height from the pavement to the top of the balustrade. Within the building the basement contains spacious lavatories, a cloak-room, a students' meeting-room, and class-rooms. The walls are partly of glazed bricks, for the sake of light. In the upper parts of the building the walls are distempered in a light colour, with a chocolate dado. On the ground-floor is the library, containing an upper gallery, and capable of holding about 20,000 volumes; some of the cases for the books stand at a right angle to the walls, thus not only forming a large additional space for books, but also providing convenient recesses in the room. This apartment is 96 ft. long by 36 ft. wide and 20 ft. high. The floors and cases are of polished oak. On the first floor is a large room capable of being divided into two by a sliding-door. Along the walls are tables, with lamps and sinks, at which 150 students will be able to work with test-tubes and the other appliances for chemical analysis. Above this floor is a lofty well-lighted museum, somewhat larger than the library below, containing two galleries, in which it is intended to place the large and valuable collection of anatomical specimens. The floor of the museum is in wainscot parquetry, in narrow widths, diagonally laid, with pitch-pine borders. It was originally intended that the gallery-floors should consist of glass, but this has been abandoned, and they are now laid with pitch-pine. The air-tight glass cases are framed in ebonised mahogany. There is a lantern roof of glass and iron. The buildings have been designed by the architect to the hospital, Mr. Edward I'Anson. The builder was Mr. Brass, and the clerk of works, Mr. Streeter. The elaborate fittings have been executed by Messrs. Patman & Fotheringham, and the heating and ventilation by Messrs. Herring, of Chertsey.

The rebuilding of the medical theatre and school is to be commenced almost immediately This old block is only one story in height, but the buildings for the new theatres and school are to be carried to the same height as the library and museum, which they will immediately adjoin, and of which they will form a continuation in an eastward direction. There

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will be two new theatres, one for Anatomy, to accommodate 500 pupils; and one for Medicine, to seat 250. There will be a new dissecting-room, in which 250 students will be able to practise dissecting at one time. New professors' rooms will also be erected, and this part of the work is to be commenced next year. The old theatre will be taken down in a few weeks.*

NEW DOCKS FOR THE LONDON, CHATHAM, AND DOVER RAILWAY COMPANY.

The London, Chatham, and Dover Railway Company are about to enter into an important undertaking in connexion with their line of railway. The directors have just become the purchasers of a large area of land on the Medway, at Rochester. The site is said to be a space of nearly 100 acres. Upon a portion of this land the company contemplate the construction of extensive docks and wharfs for shipping purposes, whereby they propose to add materially to the traffic of the railway by inward and outward cargoes shipped at Rochester. The erection of large warehouses forms a part of the project, and also a spacious new station somewhere about the centre of the town of Rochester. The docks will be in direct connexion with the company's main line.

THE WIDENING OF GRAY'S-INN-ROAD.

The Metropolitan Board of Works are about to commence the works in connexion with the widening of Gray's-inn-road, which, although one of the busiest thoroughfares, as regards vehicular traffic between Holborn and the north, is at its southern extremity yet one of the narrowest and most inconvenient arteries in the metropolis. The opening out of the road will take place on the east side, and will extend from the corner of Holborn to the new Holborn Town-hall, which has just been erected at the angle of Clerkenwell-road, which forms part of the new thoroughfare leading from Oxford-street to Shoreditch. The first portion of the materials of the houses required to be removed in order to carry out the improvement are to be sold in a few days. They consist of two houses and shops having a frontage to Holborn of more than 20 ft. in width, thus admitting of Gray's-inn-road being widened to that extent, together with the materials of about twenty other houses and shops in the last-named thoroughfare running northwards. The materials of the remaining property, extending to the new town-hall, will be sold as the leases run out.

NEW TOWN-HALL FOR PAISLEY.

The foundation-stone of the new Town-hall for Paisley was laid on the 22nd ult. by Mrs. Clark, of Gateside, mother of the late Mr. George A. Clark, who bequeathed 20,000*l.* for the purpose of erecting the building. It seems that after purchasing the site, which is contiguous to the Abbey, it was found that the sum remaining in hand would be insufficient for the erection of an adequate building; but, with commendable generosity and public spirit, the Messrs. Clark, of the Anchor Thread Works (brothers of the deceased donor), offered to defray the additional cost. The total outlay will be between 40,000*l.* and 50,000*l.* The buildings will consist of a large hall occupying the centre of the block, 130 ft. long by 60 ft. wide, and affording accommodation for about 2,000 persons,—1,200 on the ground-floor, 400 in the balcony, and 400 in the upper gallery. There will also be a lesser hall, 53 ft. by 30 ft., calculated to seat about 300 persons. In addition to these, by the special direction of the deceased donor, there will be a public reading-room, smoke-room, &c. The main front and entrance to the new hall are in Abbey-close, and immediately facing the Abbey Church grounds. The contractors for the building are Messrs. Morrison & Mason, Glasgow. When completed, which is expected to be in about two years' time, the hall will be formally handed over to the magistrates and Town Council for the use of the town. The hall will have a large tower, with clock and peal of bells.

On the day of the ceremony, Provost Mackean, on behalf of the Town Council, presented Mrs. Clark with a gold trowel, bearing a suitable inscription. Messrs. Morrison & Mason, the builders, presented an ivory mallet, mounted with gold; and Mr. W. H. Lynn, the architect, presented a gold plumb-level.

Some additional particulars of the building, together with view and plans, will be found in our volume for last year (pp. 1118, 1121).

* In excavating for the foundations, two large stone coffins were discovered. One of them was preserved without breakage, and has been placed in a permanent position on the landing leading to the museum.

SCHLOSS TRAU'SNICHTS, LANDSHUT.

The castle or palace called "Trau'snichts" at Landshut, from the German words "Trau es nicht," "trust it not," is one of the most interesting buildings of its class in Germany. It was probably originally built as a castle, but although situated on a very lofty hill, it gained such an unenviable notoriety from the fact that whenever besieged it was invariably captured by the assailing party, that the advice "Trau es nicht" absolutely became its name, and it must have been given up as a fortress as early as the commencement of the sixteenth century, and from that time it became the chief residence of the Dukes of Bavaria before they removed their capital from Landshut to Munich.

Castle Trau'snichts is a large irregular building enclosing two courts, and is of every conceivable date. The principal tower shown in our illustration in itself probably contains work of three distinct dates, viz., the thirteenth, fifteenth, and sixteenth centuries. It is constructed of brick covered with plaster; the walls are of an immense thickness. The parapet at the top is painted with the oblique chequers peculiar to the Bavarian arms, and remains of decorative painting may be traced upon other parts of the plaster.

The interior of the building is remarkably interesting, especially the chapel, which contains some of the best examples of German sculpture of the latter part of the thirteenth century to be found anywhere. We intend giving an illustration of this remarkable chapel in a future number.

The stoves in some of the apartments are remarkably fine, several of them dating from the commencement of the sixteenth century. All the principal apartments are painted in fresco by Peter de Witte (or Candido), a Bavarian artist of the end of the sixteenth century. Although rather coarse, and now in a sad state of decay, these decorations are effective, and the arabesques well designed.

The castle is no longer used as a residence, but is still kept in fairly good order, and is the receptacle for official documents and records.

BROOKE CHURCH, RUTLAND.

The Brooke valley, though little visited, is one of the most interesting localities in the county of Rutland, and the church, though not large, is one of its most valuable ornaments. A wide extent of grass-covered mounds on the prettily-wooded margin of the "brook" marks the site of the only conventual establishment the county ever possessed, the Augustine Priory of St. Mary, at Brooke, and a beautiful Elizabethan gatehouse remains a memorial of a once magnificent mansion, built on the site of the monastery soon after the dissolution. It was the work of Sir Andrew Noel, whose taste in architecture (hereditary in the noble family of which he was the head) is evinced in this and other buildings in the neighbourhood, especially a second mansion at a short distance from Brooke. The older portion of the church,—the tower, nave, arcade, and south door and doorway, are of the Transition period, and are believed to be contemporary with, if they did not form a part of, the earliest conventual buildings. The more recent portions are of the time of James I., and contemporary with the work of Sir Andrew Noel, at the Priory. The church was at this period remodelled, on a plan not uncommon in churches of the period in the locality, the double nave and double chancel, and fitted with oak pewing and screens of great beauty, the "communion pews" of the chancel shown in our illustration, being of especial interest.

Amongst other curious remains in the church are a tapestry altar-cloth, a log-chest, and some fine locks and other ironwork.

The work of restoration, which was urgently needed, the church having fallen into dangerous dilapidation, has been caried out under the personal direction of the Right Hon. Gerard Noel, M.P., H. M.'s First Commissioner of Works, the necessary funds having been provided through the exertions of the Lady Augusta Noel.

The architects employed were,—for the chancel, Mr. Christian, architect to the Ecclesiastical Commissioners; and for the rest of the church, Mr. Tait, of Leicester.

HOUSE OF THE FOREST OF GLEN TANA, ABERDEENSHIRE.

This charming glen has history dating so far back as A.D. 800. Christianity was in the eleventh century introduced into this part of Scotland by Margaret, wife of Malcolm Ceanmore. The calendar of Scottish saints shows that the lands of Glen Tana were given to St. Lesmo as hermitage. Tradition still points out where he chose his cell, and on this picturesque spot there has always been a sequence of buildings suited to the varying habits of the times.

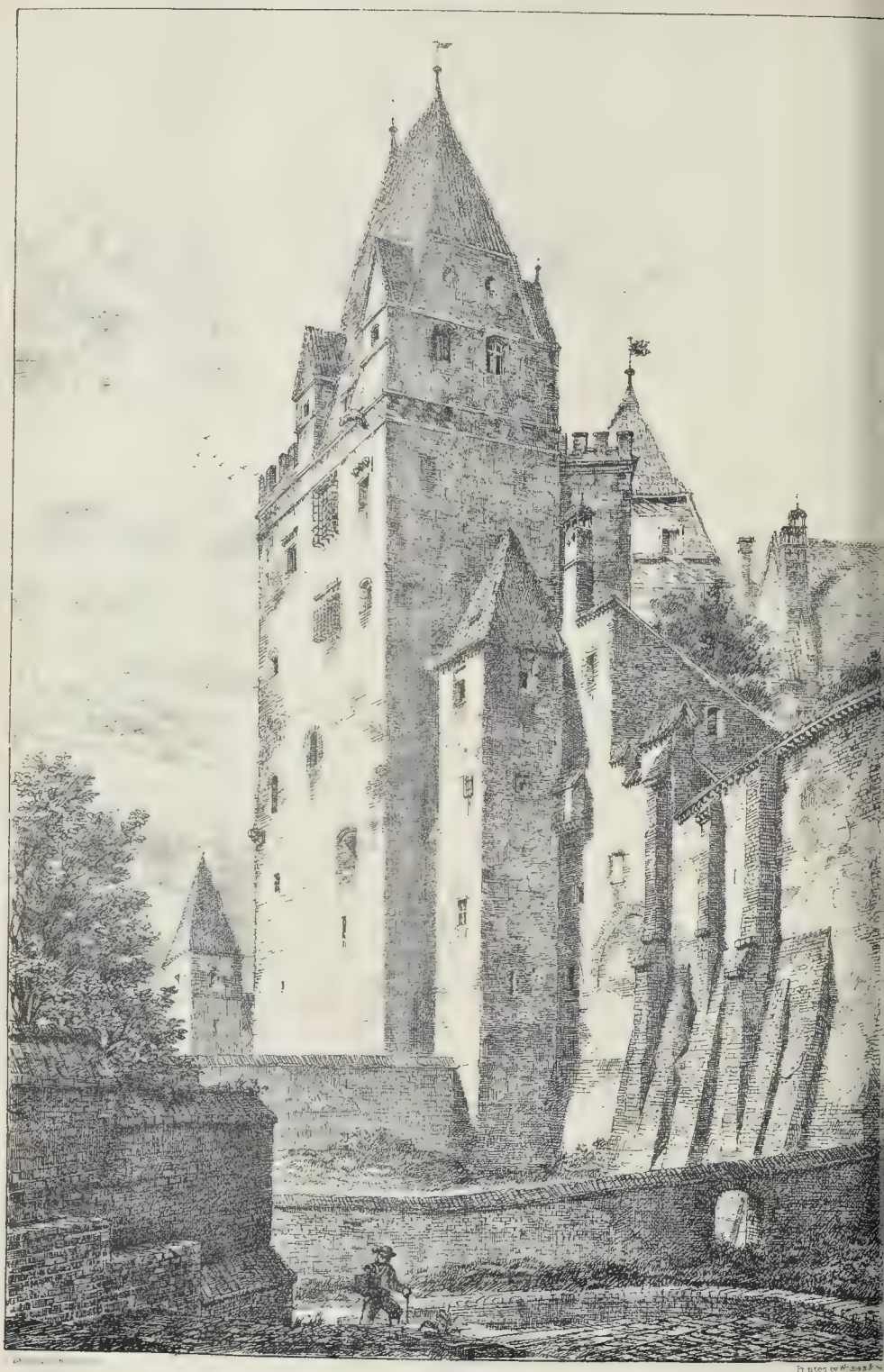
In later years an important addition to the then farm-house was made by the Earl of Southesk, who had taken a lease of the shootings. When the noble owner the Marquis of Huntly married the elder daughter of Mr. W. Cunliffe Brooks, M.P., the lease was made over to that gentleman, and then, under the superintendence of Mr. George Truefitt, architect, of Bloomsbury-square, London, additions were made which have perfected this residence in a very complete manner, the whole of the buildings seen in our engravings being his work, except the one gable at the extreme left hand. The builders were Messrs. Warrack & Daniel, of Aberdeen, and the clerk of works works was Mr. Stuart, of Camden-street, London.

The engraving shows the south-east view; the principal front is to the west, where there is the entrance verandah of unhewn pine stems. It overlooks one of the lawns, with its background of firs (showing glimpses of blue hills through their branches). Over the entrance is the hospitable motto, "PATET JANUA COR MAGIS." The drawing-room, 30 ft. 6 in. by 20 ft., and 14 ft. high, opens into the billiard-room, 30 ft by 22 ft. high (neither of these appears in our view), out of which last, passing through an ante-room, one comes to the ball-room. This fine apartment, to the left of the tower in the view, measures 60 ft. by 30 ft., exclusive of the large bay window and a recess for a bronze figure of Cassandra from the French Exhibition. The roof is an open one of pitch pine, the cusped principals rising from polished granite pillars from Birsmoor. The windows of this room are somewhat remarkable, being of ornamental tinted glass, with a large square in each of plate glass with bevelled edges. Out of the ball-room is an American bowling-alley, 90 ft by 30 ft., and over this eight bachelors' bedrooms, with bath-room and hot and cold water to each bedroom. The tower leading to these rooms, and as the gillies' entrance to the ball-room on state occasions, is one of the most noticeable features of Glen Tana, built like the rest of the house, all of grey granite from the forest.

The principal bed-rooms do not show in the engraving, except Mr. Brooks's, which is the one to the left with the projecting window and pointed roof.

Besides the house, Mr. Brooks has, with Mr Truefitt's aid, erected most complete stabling, kennels, deer larders, lodges, dairy, houses for the keepers, bridges, and almost everything that he could want or think of, including the charming little church of St. Lesmo, formed out of the ruins of the "old laird's house," as it was called; and here, on the 5th of November a few days before this number appears, Mr Brooks will have been married to the eldest daughter of Col. Davidson, and great rejoicings will have taken place in the neighbourhood, including a grand ball at the Marquis of Huntly's at Aboyne Castle, on the eventful evening, and bonfires that night on all the surrounding hills.

A Literary Memorial.—The little house on the banks of the New River at Colebrook-row, Islington, long inhabited by Charles Lamb and his sister, has been neatly renovated by its present occupier. At the suggestion of Mr. Butterfield, the district registrar, a gentleman of literary tastes and acquirements, Mr. Webb, the well-known manufacturer of artificial mineral waters, has had the word "Elia" inscribed on the front of the cottage.



SCHLOSS TRAU'SNICHTS, LANDSHUT.



P. Lafargue Photo-litho

BROOKE CHURCH, RUTLAND — RECENTLY RESTORED.



HOUSE OF THE FOREST OF GLEN TANA, ABERDEENSHIRE.—Mr. George Truefitt, Architect.

ON THE IMPROVEMENTS SCIENCE CAN EFFECT IN OUR TRADES AND IN THE CONDITION OF OUR WORKMEN.

CITY AND GUILDS OF LONDON INSTITUTE FOR THE ADVANCEMENT OF TECHNICAL EDUCATION.

The inaugural lecture of this Institute was delivered by Professor W. E. Ayrton on Saturday evening last, in the large hall of the Cowper-street Middle Class School, Finsbury. The hall, which is capable of seating 2,000 persons, was well filled, and the lecture, which was illustrated by a number of interesting experiments, was evidently much appreciated by the audience. We give the salient points of it.

Professor Ayrton commenced by saying, Trade is bad, horribly bad! The causes of this depression, which meets us on every side, it is not difficult to ascertain,—inability to compete with the foreigner in the production of what England consumes, combined with inability to trade economically in his own markets. We cannot, for example, now grow corn or rear cattle as economically as we can get them from America; so that while our land produces ten million quarters of wheat a year, we import as much as thirteen millions, whereas thirty years ago we grew fourteen millions (more, in fact, than at present), and imported only four million quarters per annum. On the other hand, the Americans can manufacture machinery cheaper than we can sell it to them, in consequence of their high import duty of about 30 per cent. We might say that this state of things arose from their having on the other side of the Atlantic vast pasture-lands, a good climate, and Protection; while we are cramped for room, inundated with rain, and luxuriate in the blessings of Free Trade. It is not, however, only the demand abroad for English commodities that we see slowly dying away, but we find that even in our own country we are being gradually undersold in those productions which depend not on pasture-lands, not on climate, but on the use of labour-saving machinery,—the result of human ingenuity. Our disappointment in witnessing the gradual disappearance of the foreign market for our manufactures may possibly be alleviated by our belief that the example we are setting of perfect freedom in trade will be ultimately for the world's good. But no ray of consolation can cheer the remembrance that our Coventry ribbon trade, that once famous industry created by ourselves, has well-nigh departed to Switzerland, in company with the silk-weaving industry of Lyons and Spitalfields. The Clerkenwell mechanic sees with no feeling of national pride the American machine-made watches pressing on his heels in the march of time. Even our trade in the bending of umbrella and stick handles is rapidly crossing the Atlantic, and several of our chemical industries are being absorbed by the Continent. And what about those devices, those Yankee notions, as we call them, in which machinery replaces the old cumbersome and uneconomical hand labour,—the sewing-machine, the type-writer, for clear and rapid correspondence, the electric pen, for superseding lithography, duplex and quadruplex systems of telegraphy, for multiplying the carrying capacity of a telegraph line, and that instrument for dispensing even with messengers, the telephone? Why, not only do these come to us now from America, but it was in that country that they all sprang into existence, with many brothers and sisters like themselves. I shall, no doubt, be answered that it was to that country that they all owed their birth because American labour is so dear, and, consequently, some means must be found to economise it. You might imagine from this there was in America a national evil,—dear labour,—and that machinery had to be devised to overcome its ill effects. But do high wages necessarily mean large selling price of manufactured goods? What foreman in this room, wishing to turn out articles well and cheaply, would prefer employing an ignorant Indian labourer at, say, 2d. a day wages, instead of an English mechanic, with his knowledge of tools, at 6s. a day? So, in the same way, a highly-paid American workman may, with his most ingenious labour-saving machinery, undersell the English in their own market. One of the things, therefore, which England requires, in order to regain her old commercial supremacy, is smaller cost of production of manufactured articles, a condition of things which, I think you see, is not at all incompatible with higher wages. In my British Association lecture to the workmen at Sheffield, this year, I have experimentally shown how an enormous economy can be effected in the consumption of coal, and, consequently, in the cost of generating power, and in the working of the metals, as well as in the expense of warming and lighting your buildings, by the employment of very large steam-engines and of natural sources of power, such as streams and waterfalls, and by conveying, through the agency of electricity, this power to the distant places where it is required to be used. For water-power, if sufficiently far away from a town, is often worth little or nothing, since the cost of conveying the work done on the spot over the hilly country to the markets more than compensates for the economy of using water instead of steam; but the waterfall, if utilised for transmitting power into the towns by electric currents, becomes much more economical than burning coal. Again, as I explained to my audience, work done by distributed power from a very large steam-engine, would be much cheaper than using a number of small steam-engines if only the power could be distributed without the great waste which always accompanies the friction of shafting, leather belts, tooth-wheels, &c. Now, if, by means of what is called a dynamo-electric machine, we convert the work done by the one large steam-engine into electricity on the spot, and convey, by means of wires, this electric current to different points, and there, with dynamo-machines worked backwards, we reconvert it into motive power, then the loss of energy by friction, &c., can with the special form of working I explained, be reduced to something like 30 per cent. At Sheffield it was the economy of utilising the present wasted natural sources of power that exist in our mountain streams that I urged on my large audience; to-night it is the utilisation of even a still more important dormant natural source of power,—man's brain,—that demands our close attention. It must sometimes have puzzled you why a successful professional man, one who has no manual skill, no strength of limb, earns by his work so much money, and, what is higher, so much fame. It must sometimes have struck you as, at the very least, rather hard that while you are toiling from morning to night, day after day, to gain only enough to live on, another, by the mere efforts of his thoughts, amasses a fortune. But you, no doubt, regard it as quite fair that a skilled mechanic should receive higher wages than a navvy. For you say that, although he has eyes and arms like yourself, and is, perhaps, the stronger of the two, still you can use your powers with a skill of which he knows nothing. Now, just as he has muscular strength, which, when cultivated, means wealth to himself and his country, so you have brain power, which only requires education to fit it to do useful work. But you will say, am I not forgetting that you have all been to school, and have received an education at least as good as is given in the Board schools? Consider, however, what is taught in these schools, where masses have to be educated. Is there time to teach reflection, to foster the reasoning power? Is there that training given you which should make you unwilling to follow any special routine method in your trade, unless you are convinced it cannot be improved on? And can you expect it to be otherwise, when the boys and girls leave at twelve or thirteen years old,—when the main object of the teacher, who is paid by results, is to cram the young until they are heavy enough to drop through the examining machine,—when occasionally the teaching is necessarily confined to the three R's solely because the Government inspector finds that other subjects are,—well, a little beyond his limited attainments? Again, what is the feeling boys and girls have at the National schools? If they succeed in their lessons, they look forward to becoming pupil-teachers; but if prizes do not fall to their share, they feel that teaching is not for them, and fall back on a trade; but how very few, if any, ever look to their studies as a means of making them educated workmen, instead of mere copying-machines! The consequence is that, when a lad is first apprenticed, he is merely an errand-boy, or fag, being fit, in fact, for little else. Subsequently, he is posted in one of the departments of the manufactory, his instructor being a man under whom he works; but this man, having his own work to attend to, has not time to teach, and, even were it not so, he could only show the boy the manual operations. When the piece of work on which the apprentice has been engaged is finished, it has to pass the foreman of the department,—generally a man who, through honesty, sobriety, and manipulative skill, has risen from the ranks of the workmen, and whose education has been of a character similar to that of those around him. The foreman's duties, of course, leave him no time,—even if he were competent,—to give instruction, and thus the lad goes on, probably working, quite mechanically, at only one small branch of his trade. In time, he becomes a journeyman; he may become a foreman, to govern others. Thus, the "rule of thumb,"—*i.e.*, each man working as his shopmates do,—proceeds, and thus ignorance of principle has been carried on from one generation to another. And things go on remaining very much as they are, merely because we have never seen them otherwise. The man or woman, then, instead of becoming an agent far above any machine,—in that there should be the possession of the reasoning power, which is a quality of no machine,—frequently finds him or herself, mentally, infinitely inferior to Babbage's calculating engine; bodily, quite unable to work with the accuracy and speed of, say, an automatic lathe for turning gun-stocks; and, from having a knowledge of only one narrow department of one restricted industry, is quite at the mercy of the fluctuation of trade for the means of subsistence. But do not let it, for a moment, be thought that I am regretting the Education Act of 1870, or am, in the least, blaming the necessary course taken by the School Boards, since nobody is more alive than they are themselves to the incompleteness of the present education of the English artisan. That may be seen from this year's report of the Educational Endowments Committee, in which it is recommended that the City parochial charities shall be employed for the establishment of technical schools, to be attended by boys and girls for the two years after leaving the existing schools; that is, during their fifteenth and sixteenth years. It is not necessary on the present occasion to refer to the suggested curriculum of such technical schools, beyond saying that it appears to be complete. It ought to be tolerably clear to every man that it is important for him to have a good knowledge of the fundamental principles that govern the processes employed in his own trade. For example, when it is remembered what great mechanical differences are produced in iron by the admixture of even small quantities of carbon and by varying the temperature of hardening and annealing, the steel manufacturer will see at once the importance of the study of chemistry to him. Many of us believe that steel is far better for our bridges than iron, but the fact that such very slight differences in the chemical composition and the mode of cooling change so marvellously the mechanical strength, without materially altering the weight or the general external appearance of the material, renders any system of testing the quality of the completed girders a difficult problem; and so, while on the one hand we are still chary of using steel for bridge purposes, on the other hand the chief manufacturers and chemists are closely turning their attention to the difficult problem of producing steel in large quantities of identically the same chemical and mechanical quality throughout. But something more than mere special knowledge is of importance to each man, for the object of education is to develop the mental powers; the acquisition of knowledge I regard as of but quite a secondary importance. Let a man but acquire the art of learning one subject properly, and the groundwork of his education is to a great extent completed, since he will naturally afterwards be always seeking for knowledge from books, from teachers, from nature, in all those branches which, at any time, may be of importance to him. It is of much importance that a correct notion of the real aim of education should be impressed on you to-night, when we are here to inaugurate the commencement of that wide scheme of technical education which the City and Guilds of London have, after mature deliberation, generously seen fit now to enter on. In the future we hope to have special classes for a variety of technical subjects, and we shall look to you, guided by your own wants, to choose for us, to a great extent, what those subjects shall be; but, just for the present, we must be contented with only a few branches of technical education. Do not, however, run away with the mistaken notion that, because I commence my first course of lectures on Monday next, in this building, on "Some of the Practical Applications of Electricity and Magnetism," therefore, if you are a watch-maker, or if you are a boiler-fitter, or if you are

a coach-builder, you can have no concern with what will be taught. Do not say, "I shall never put up an electric bell! And, as for electric lights, why, in these hard times, I have hardly money enough to pay for tallow candles!" If I were merely going to explain to you how an electric bell was made, and how it could be fitted up in the cheapest and, commercially, best way; or if, again, in my lectures after Christmas on "The Elementary Principles of Mechanics, as exemplified in our Clocks and Watches," I were merely going to tell you of mere dodgey ways of making cheaper watches, you might well say, if your particular trade were not concerned, "That's no good to me," and stay away. But when I tell you that, from the wide range of technical physical subjects from which the choice had to be made, electricity was selected to start with because it was a subject that had been so prominently before you of late, and the mechanical science of watches has been advertised to follow it because a watch is a machine you nearly all of you possess, and can, therefore, examine for yourselves; and when I assure you that the fundamental truths that will be elucidated by experiments from these branches of inquiry will be of no less importance in the advancement of carpentry, printing, and turning, than for improvements in electro-plating, watchmaking, and the allied trades, you will see that coming to these lectures is a duty which you owe to yourselves and to your country, and you will conclude, I hope, very many of you, that "Since the City is generous enough to offer its money to help my education, I have ambition enough to come and learn." Magneto-electricity, as you no doubt all know, was discovered by Faraday, and is one of the beautiful examples of the importance of studying elementary principles. Faraday was not a student at a university, spending money and time in learning the conventional accomplishments of a gentleman, but he was the son of a blacksmith who had, by hard work, to earn his own living. Faraday knew that motion could produce electricity with the ordinary glass electrical machine, and that the electricity so produced could, in its turn, set up motion, as in the pith-ball telegraph worked by Sir Francis Ronalds. He knew that difference of temperature could produce an electric current, and the electric current could in its turn produce heat, or difference of temperature. Consequently Faraday felt sure that, since an electric current can produce a magnet, a magnet must, in some way, be able to create an electric current. But his attempts were baffled time after time; failure, failure only, was the result; yet buoyed up with hope, still persevering with that dogged earnestness which is the characteristic of an Englishman, he at length arrived at this all-important, discovery,—to produce a current with magnet it is no use placing the magnet this way or that way relatively to the coil, but you must have *motion* of the one relatively to the other. When Faraday first made this discovery in 1831, I have no doubt many people thought it a very pretty scientific experiment, but not likely to be of any practical use. Yet to what a host of practical purposes has it been applied during the last forty years! We now see that the invention of the galvanic battery, such as we are using for producing the electric light in this hall, is beginning to sink in importance before magneto-electric induction; for how do we get those strong currents to produce the electric lights of the present day on the Thames Embankment, Waterloo Bridge, or nearer still, in Aldersgate Station? By magneto-electric induction. How do we get these sparks with this Ruhmkoff's coil, which enables us to imitate lightning on a small scale, and so to devise by experiment lightning-protectors for our telegraph lines? By magneto-electric induction. We might go on multiplying indefinitely examples to prove that a *general* knowledge of elementary principles is of the greatest importance to every man, whatever be his trade. George Stephenson, but a coal-miner, and yet the practical inventor of the present locomotive engine, understood that fully. No Institute for the Advancement of Technical Education was founded for him; no City companies lent him a helping hand; and yet he set himself to study the principles of mechanics when he had only just succeeded, with great difficulty, from his absence of leisure and instruction, in teaching himself to read and write, as he sat by the engine fire. The account of his experiments to discover a form of miner's safety-lamp is a living exemplification of the rule attributed to Bacon, but, in reality, given long before by the painter Leonardo da Vinci:—"Begin with observations, go on with experiments, and, supported by both, try to find a law and a cause." Starting with his own idea that, in order to prevent fire-damp exploding, it was necessary that the gas should pass through the lamp at a certain velocity, Stephenson arrived, after many experiments, at the all-important result, discovered quite independently by Sir Humphry Davy, that wire-gauze, if the meshes are of sufficient fineness, cuts a mass of gas into two portions, one of which can be ignited without the other catching fire or exploding. And, realising so fully as he did the advantages of education, it is not to be wondered at that he strained every nerve to have his son Robert well taught, and even sent him to the Edinburgh University, where, in six months, he is said to have acquired as much knowledge as takes many ordinary students three years to learn. And why to Edinburgh University, and not to some nearer English college? Because, at that time, there was no institution where the means of a man like George Stephenson, only one step removed in position from that of an ordinary miner, could obtain even a decent scientific education. And what has been the result of this cheap and general Scotch education spread over many years? Why, that we now see so many posts at home and abroad held by Scotchmen, just as we find a considerable portion of the more important positions in our manufactories occupied by young Germans, solely on account of the scientific training they have received. What were the feelings Professor Bell had when in England? He wrote to America:—

"If you want to know why inventors are more numerous in America than they are in England, come and live for six months in England. If you wish to know what it is to be brimful of ideas, and yet to be unable to have them executed, come to England. Masters, instead of encouraging invention, do all they can to put a stop to it, by charging the most exorbitant prices for experimental work, avowedly because they do not want such kind of work,—because it gives, they say, more trouble than it is worth."

And much more of the same nature. Now, granted, if you like, that this is much exaggerated; granted, even if you wish, that it arose from national prejudice; still, we must remember that Bell himself was an Englishman, and the inventor of one of the most wonderful instruments of modern times. Also we must not forget that George Stephenson's attempt to survey the route for the Liverpool and Lancashire Railway led to his being frequently stoned by the inhabitants of the property, who have since most largely benefited from his work; and that Sir Francis Ronalds's letter to the secretary of the English Admiralty, in 1816, describing the electric telegraph that Sir Francis has constructed, and successfully worked, led to an answer splendidly calculated to foster invention, viz.:—

"Mr. Barrow presents his compliments to Mr. Ronalds, and acquaints him, with reference to his note of the 3rd instant, that telegraphs of any kind are wholly unnecessary, and that no other than the one now in use" [the semaphore] "will be adopted."

If England is, then, so lamentably deficient in technical education, how is it that English engineers, English workmen, have hitherto been considered first in the world? Because we started earliest in the race; because we had an abundant supply of coal and iron; and, lastly, because we had indomitable energy; but Dr. Lyon Playfair, some years ago, asked this question, and the present depression in trade leads me to ask it again now:—

"Do you sincerely think that the country can continue in a career of prosperity, when she is the only leading State in Europe that is neglecting the higher education of the working classes, and of those men above them whose duty it is to superintend their labour? It is a truth incapable of being gainsaid, that science must be joined to practice in the advancing competition of the world, in order that a nation may retain the strength an energy of manhood; for States, like individuals, fall into decrepitude and decay."

Dr. Lyon Playfair has been answered; answered sooner, and in a more decided manner, than even he could have feared; and that reply is, No! our country has, indeed, not continued in its former state of prosperity. Years ago France, Germany, and, above all, Switzerland, set themselves the same question, but instead of waiting, like ourselves, for time to give the sad response, they foresaw it, and, by fostering technical education, have absorbed into their countries some of the industries of the world. The city and canton of Zurich, having once grasped that their system of national education was defective in modern practical science, vied with each other in providing funds for the complete equipment and support of a technical university. They did not, as Mr. Scott Russell tells us, ask themselves "What is the smallest and least costly scale on which we can begin to make good a few technical deficiencies?" but they asked themselves that other question, "What is there in the science, the philosophy, the learning, the art, and the practical skill of modern times, which can be learned and taught, but for which there is no adequate provision already made for teaching to our students in the universities of our land?" And yet another nation, small and apart from the world, a people, like the Swiss, dwelling in a mountainous country, and like them, too, dearly loving their pine-clad hills—the Japanese—have set us an example that our ambition should lead us to emulate. Much have we heard of Japanese art, much have we seen of Japanese lacquer, Japanese fans; but only a few of us are acquainted with the Japanese modern technical education. Ten years ago a feudal country, tyrannised over by barons, with power of life and death in their hands, distracted by the conflict between the rightful sovereign and their hereditary military usurper, that nation whom we regarded as barbarous, that nation of whose manners we were comparatively ignorant, whose very modes of thought are so different from our own that we can hardly be said to understand them now,—that people had but three years emerged from a state almost of slavery, when up grew, in its very midst, a technical college, with a staff of carefully-chosen English professors, with its laboratories, its class-rooms, museums, libraries, and workshops, costing Japan,—a poor country, be it remembered,—at least 12,000*l.* a year to support, and many thousands to build. And to enter and study at this college neither money, nor position, nor any qualification is necessary, but ability and desire to study; so that working at the lathe, or conning over their books in the class-room, or experimenting in the laboratory, may now be seen, side by side, the young noble and the young artisan. An example to emulate, did I say? The City companies have given us the opportunity; let us show that we appreciate it. They do not propose merely to teach each man his trade or business, for that he can best learn in the workshop or counting-house; nor have they any idea of merely grounding you in elementary arithmetic, since that you can learn at school; they do not start by building handsome edifices, although they have already subscribed many thousands for erecting in London a large central technical college; but what they have done is henceforth to put on one side more than 15,000*l.* a year of their own money to give you from now that education which will enable you to commence doing what George Stephenson, in these words, half a century ago, urged on you:—"Learn for yourselves, think for yourselves, make yourselves masters of principles, persevere, be industrious, and then there will be no fear for you."

The chairman, Mr. F. J. Bramwell, F.R.S., said that before formally asking the audience to thank Professor Ayrton for his able and instructive lecture, he wished to make a few observations on the objects which the City and Guilds of London Institute had in view. The promoters of that Institute had for a long time past earnestly desired to see some improvement in the technical education of English workmen. They had seen the old apprenticeship system dying out as mechanical appliances had been substituted for hand-labour, and they had felt that there was no adequate provision being made in this country to enable a workman to follow intelligently the principles which should guide him in the performance of his work. Hitherto the traditions of the workshop had been handed down from father to son, from one generation to another, and the workman of today had grown up knowing little more than the workmen in the same craft a century ago. But, notwithstanding, we in this country got on for many years better than our Continental neighbours, but not because we were in the right course, but because other nations were perhaps pursuing a worse course than we were. It was said, by Englishmen, in going through the Exhibition in Hyde Park in 1851, "What is there excelling that which England shows?" With regard to most things that boast was justified, but with regard to some other things English self-sufficiency received a rude shock in the Exhibition. Nevertheless, we went on trusting

n ourselves. We were the pioneers of railway ngineering. Men like George Stephenson, we aid, received no education in technical schools, nd it was no doubt true that the enormous trides which had been made in engineering in England had been made by men who were com- elled to be engineers because "they had got t in them and it was bound to come out f them." It was not the function of tech- ical education to teach a man his trade; it nerely sought to instruct him in the principles which underlay it,—to give him, in fact, a better ox of tools to work with. A sculptor could not e made by giving a man good tools, nor a ainter by giving another man a box of paints, lthough, of course, the sculptor could not work ithout tools, nor the painter without colours. cientific and technical teaching must be onjoined to careful observation and diligent ractice. Forty-seven years ago he (the chair- an) became an apprentice and wore a paper ap and fustian jacket, and he was quite sure hat whatever the amount of scientific teaching hich our workmen received, they must not ispense with the paper cap and fustian jacket. he City and Guilds of London Institute desired o do, unostentatiously, a great deal of good in romoting technical education as far as their eans would allow. They did not propose to tablish model workshops, because they believed hat, as a rule, such establishments, whether on he Continent or elsewhere, were mistakes, and ere really unnecessary as aids to instruction, xcept, perhaps, in weaving and one or two other dustries. The central institution, when carried to effect, would be a costly undertaking, and would require to be administered with great are and discrimination. The main object of uch central institution would be to further ducate those persons who had received instruc- on in the local technical classes, such as were en being inaugurated; to educate and train achers to take charge of such local classes; nd to give technical instruction to foremen, anagers, and principals. That was a serious ndertaking, and it was, of course, eminently esirable that it should not be brought forward an immature condition, seeing that it would a costly affair, and mistakes might involve e loss of a great deal of money. But while ose upon whom devolved the development of he scheme were carefully considering and ma- uring its details, and collecting funds for the ndowment of the central institution, they esired to make a beginning by the formation of cal classes in different parts of the metropolis. hey had no desire to compete,—on the contrary, ey shrank from competition,—with those odies which were already in existence with milar objects in view, and to two of them,— ing's College and University College,—the romoters of the Institute had resolved to render ssistance in the shape of pecuniary grants wards the cost of machinery they had in ope- tion. Again, they had taken over from the ociety of Arts,—that useful nursery-ground of so many good movements,—the Technological xaminations which that body had instituted, nd he (Mr. Bramwell) as chairman of the xecutive committee, had recently had the easure of signing one hundred certificates of erit granted to persons who had come forward those examinations. In conclusion, the chair- an asked the audience to thank the lecturer of he evening, and this they did most heartily, rofessor Ayrton saying a few words in acknow- dgment.

WATER IN EDINBURGH.

At a joint meeting of the Finance and Works Committee of Edinburgh and Dis- trict Water Trust held on the 8th ult., Sir ames Falshaw, it is reported, submitted a tatement, so far as completed, showing the arliamentary estimate and the actual cost of ach particular portion of the new Moorfoot aterworks. The expenditure in some instances as, it seems, slightly within the estimates; it, on the other hand, in respect of the outlay r land required and some other matters, the timates were considerably exceeded, the in- ease on land alone being something like ,000*l.* This item of expenditure, it was ointed out, was one over which the trustees id no control, seeing the sums paid for land ere fixed by arbitration. The total excess of tlay over estimated expenditure, so far as rived at, is fully 50,000*l.*; but that amount, it as explained, includes Parliamentary expenses, rchase of piping, &c., not mentioned in the estimates. Some 90,000*l.*, it was represented, would be required immediately in connexion with the works in hand and the construction of the Rosebery reservoir, while 4,000*l.* or 5,000*l.* a year would be needed for the extension of the town and district piping. It was (the *Scotsman* believes) agreed, after some discussion, to recommend the Trust, to give the law agent instructions to proceed with the preparation of a Bill, to be promoted in next session of Parliament, authorising the Trust to borrow an additional sum of 200,000*l.*

THE NAMELESS MONUMENT.

Down beside the old church chancel,
In a curious recess,
Nearly hid behind the pewing,
Lies in sculptured stateliness
A knight's effigy, whose title
No living soul can guess.

Some brave warrior of past ages,
And a famous man, no doubt,
Must he be, above whose relics
This memorial lies carved out.

Yet no motto or inscription,
Graven brass or herald sign,
Indicates his rank and prowess,
Or the kinship of his line.

Of a stern impassive aspect,
Martial mien and stalwart mould,
His marble counterfeit imports
A dauntless man and bold;
A man who, while he lived on earth,
Brook'd not to be controll'd.

In a closely-woven hauberk
Of chain-mail his limbs are cased,
Hangs his pointed shield beside him;
'Neath his head the helm is placed,
Which of yore with ladies' favours
Has in tourneys oft been graced.

At his feet a hound lies *couchant*,
Emblem of fidelity;
And his knee is bent, denoting
That he was, or else would be,
Like his peers, a soldier-pilgrim
Of the Cross,—beyond the sea.*

Slanting like a bar above him
Rests the two-edged sword he holds,
And his richly-broider'd surcoat
Garments him in graceful folds.

Sometimes through the painted windows
By the sun's bright glances shed,
Beamy splendours gild his armour,
O'er his face warm tinges spread;
Seems he more like one reposing
Than an image of the dead.

Norman lord of many a manor,
Here perchance his castle halls
Knew him as the proud oppressor
Of rebellious Saxon thralls;
Perhaps he built this church ordaining
For his sepulchre its walls.

Was he, think you, some Crusader,
Who defied the Paynim host,
When the lion-hearted Richard,—
Still Old England's valiant boast,—
Leagued with France, invaded Syria,
Conquering first the Cyprian coast?

Or might he, outliving Richard,
Have succumb'd with harness on
In less chivalrous emprises
Of the despicable John?

Ah! we know not. With the barons
On the field at Runnemede
He may else have urged the tyrant
Our great charter to concede;

And notwithstanding base aggression
In the following civil strife,
As a sacrifice to freedom
Have resign'd rank, lands, and life.

Who can tell? A generous impulse
Bids us his deserts assume,
And in reverent contemplation
His quench'd memory relume,
Though the shadows of six hundred years
O'erspread his nameless tomb.

John Cotton.

* Knights who had fought as Crusaders, or who were under a vow to do so, were usually represented, in the recumbent monuments of the time, with the legs inclined crosswise, the hand upon the hilt of the sword. When the sword was quite sheathed it was indicative of the pilgrimage having been performed; when grasped and partly drawn, it was to be inferred that an armed pilgrimage was about to be undertaken by the original of the effigy.—J. C.

CANONS OF SANITARY WORK.

Amongst the papers read at the Croydon Sanitary Congress was one by Dr. Alfred Carpenter on "The First Principles of Sanitary Work." We print the concluding portion of it, which should interest many of our readers:—

The basis upon which preventive medicine stands as a science is that of the particulate nature of contagia. It is the first canon law. There are several ways by means of which the natural order schizesporeæ may make itself felt, viz., by the air, the water, the earth, or the food. The contamination of the air in the neighbourhood of our dwelling-houses both above and below the level of the ground must be counteracted. The contamination is effected in two ways,—1, by the ordinary processes of decay which are always going on in organic nature; and 2, by the aggregation of living creatures. The higher the animal life is in the scale of creation the more injurious is the excreta of such animals, and that of man most of all. The remedy for these evils is ventilation; anything which impedes it is contrary to sanitary law. Motion is the second most important fact, and is the second law of sanitary work. Motion of both air and water is a principal law of sanitary work. Stagnant air in the house-drains of this town produced more or less evil in almost every house in the place until our local senators were convinced of the evil. It was in Croydon that the law for ventilating sewers was first put into operation by a local authority. But the local authority were then in advance of the intelligence of the people, and although the command was issued the work was not generally done until much more proof of its necessity was afforded. Now the ventilation of the sewer and of the house-drain is required by the law of the land, but it is not nearly so general as it should be. Those openings into sewers were at first called stink-pipes, and were sometimes taken away because they gave evidence that the law of motion was not complied with. The foul smell which came out showed that the sewer was a sewer of deposit, that it contained stagnant sewage; and the neighbour, like the ostrich of the desert, who when danger threatens hides its head, takes away the safety-valve and tries to smother up the evidence which the stink-pipe gives out, and sends it into somebody's house, instead of insisting upon the removal of the foul sewage from the sewer. No smell will ever arise from a properly-constructed sewer, and if there be such smell, it is conclusive proof that there is deposit either in that sewer or in some other in close communication with it, or in the soil around it. No stagnation, either of air or sewage, should be possible in any sewer. Assuming that sewers are necessities in a thickly-peopled neighbourhood, they must not be allowed to ventilate into houses; and now a third law comes into operation, viz., that it shall not be possible for air to pass directly from a sewer into any house until it has been dilated by pure air, and has had time to have its albuminoid matters oxidised. There must not be any communication directly between the sewer and the interior of the house. There is no occasion for any departure from this law, and it should never be allowed in practice. There is another danger which arises from sewers if they are not constructed of impervious materials; brick sewers are open to great objection when they pass through pervious soil in close proximity to houses. Unless they are very freely and efficiently ventilated, they contaminate the air of the subsoil of a town until it becomes a perfect hotbed of mischief. This is a frequent cause for the continuance of enthetic disease in districts in which the water-line rises and falls at distinct intervals. The way in which gases travel long distances underground is sometimes shown by the distance which coal-gas sometimes travels when a fracture has taken place in a gas-main. Sewer-gases, which only form in badly-constructed sewers, are just as penetrating. The products of decomposition find their way through the bricks into the soil, and then into the foundation of the houses. There are some houses in this town which are built over sewers, and which must sooner or later be dangerous to the occupants. The builders of such houses ought to be compelled to notify the fact to every incoming tenant. Ventilation should be provided in every case in which a trap has been fixed, otherwise stagnation must arise. This is another fundamental law. The next law is that sewage must

be utilised. It must be conveyed as soon as it is formed away from the neighbourhood of human beings. Disease is found to flourish most luxuriantly in sewage which is about to undergo putrefaction, but in which putrefaction is not actually established. The safety, as far as it is safe, of the old-fashioned cesspool out of doors arises from the fact that putrefaction is rapidly set up; but in the cesspool germs of mischief may find their way into wells and water-courses, and may do much harm. No sanitary authority ought on any pretence to allow a cesspool to exist within its jurisdiction. If there are no sewers, and I contend that they are not necessaries in a thinly-peopled district, excreta should be reserved in some utensil in contact with earth or some other deodoriser able to arrest the changes which otherwise must take place, and before the power of change can re-assert itself the material should be taken away and utilised in the ground. . . . Sewage which has been removed from the town by water-carriage must be applied at once to the land by means of surface-irrigation. This subject has been repeatedly mooted at congresses, and by inquiries made by Royal Commissioners and committees of both Houses of Parliament, and the general conclusion which has always been arrived at by unbiassed witnesses has been similar to that which was agreed to at the first sanitary congress ever held in this kingdom. In October, 1866, the Leamington Sewage Congress, after a long discussion in a large assembly of scientific and practical men, agreed to the following resolution:—"That the system of irrigation, when carried out in a scientific manner, removes the difficulty which now arises from the present noxious plan of polluting the rivers of England." A rider was added, which caused it to be unanimously accepted, viz.:—"But that there are circumstances in which other systems may be applicable." Thirteen years have passed away since that time, and I am still more convinced than ever of the truth of the following conclusions:—1. That sewers are necessities for crowded populations. 2. That having sewers, they are silent highways along which human excreta may be safely and efficiently removed by water-carriage. 3. That sewer-gases and smells from decomposing sewage are not necessities of the system. 4. That, if sewage be judiciously applied to land, the spread of enthetic disease by its means becomes an impossibility. 5. That after a proper application by surface-irrigation, the effluent water may be safely discharged into the nearest water-course. 6. That the application of sewage to land must be conducted on scientific principles, otherwise failure, first financially, and then by producing nuisance, will arise. 7. That a local board is the worst possible body to have the management of a sewage farm. The management requires an intimate acquaintance with several sciences,—with agriculture, with sale and barter, and an immediate personal command of capital; without these powers it cannot become a financial success. The manager of a sewage farm must be an autocrat, and not be liable to those attacks which are certain to be the lot of active members in a popularly-elected local board. The eighth conclusion which I have arrived at is, that a local authority, in providing for the utilisation of sewage by irrigation, must be prepared to pay the difference in value between the price of the land and its ordinary agricultural worth. One penny in the pound on each rate, or at the most 3d. for the year, ought to be amply sufficient for this purpose, as well as for the payment of interest on money sunk in unexhausted improvements. The ninth conclusion that I have come to is, that although sewage should be conveyed to the soil as rapidly as possible, rainfall should go to rivers. It is a wrong thing to conduct rainfall into sewers, as by this means a sewage farm is swamped with unnecessary water. Not that storm water from the streets of London should be sent into the Thames, or the washings of thickly-peopled cities at once into the water-way, but ordinary surface water should be strictly excluded, and when possible, the rain-water from house-roofs should go into the water-courses. This is a good reason for excluding sewers from thinly-peopled districts; ordinary sewers will only drain the subsoil, empty the water-courses, and dry up the smaller sources of our rivers, and produce as much evil in the subsoil as cesspools now do. They are serious blunders, too often perpetrated for the personal benefit of private individuals. The sixth great law of sanitary work is for sewer and water services to be decidedly separated, so that no interchange of either water or gases should be possible. Sewage soon decomposes iron, and if water-pipes are allowed to lie in sewers, and to occupy portions of cesspits on the roadside, or to be in communication at those points at which water is delivered into a house and slops and sewage removed, there can be no real safety for the people. I am sometimes astounded when I hear men who put themselves forward as sanitary authorities utterly ignore this fundamental law. The seventh law is that the individual house is the unit of sanitary work, that it is in each house and it is with each individual that the first action must be taken to diminish the power of the germs of disease to grow and produce their kind. But all these canon laws have their foundation upon the particulate nature of contagia, and it is by bearing this one fact in mind that sanitary work can produce sufficient fruit to be successful.

"COMPETITIONS" AND THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE following letter has been addressed to members of the Institute:—

"As the season is approaching when our Institute will again meet for its sessional deliberations, I intend at an opportune moment (if I can rely upon the support of the 'Fellows' generally) to call the attention of the Council to the subject of 'Competitions,' with a view to some practical steps being taken to minimise the evils arising from the competition system as at present practised.

Believing that the Institute is the only body that can with any hope of success deal with this subject, I venture to hope that the time may have arrived when the 'Fellows' (about 350 in number), as the elders of the Institute, will by some dignified act take the initiative, and determine from some given date to refrain from engaging in any open competition (or in any limited competition where a substantial honorarium is not offered to each competitor), and will make it incumbent on every 'Fellow' hereafter elected to sign a declaration that he will not engage in any open competition.

It is not too much to hope that such a course of action would ultimately lead to the discontinuance altogether of the 'competition system,' as committees would hesitate before advertising for designs if they felt sure that not a single 'Fellow' of the Institute would respond to such an appeal, and it is not unlikely that a large proportion of the Associates and the Members of other Architectural Societies would cheerfully follow the example set by the 'Fellows.'

One of the arguments (and it is a powerful one) at present used by those who engage in competitions, to justify their action, is that the 'Fellows' of the Institute have not hitherto discouraged the system, but rather, on the contrary, some of the most distinguished men are still found ready to engage in any competition of importance.

Open competition must be a serious loss to the profession as a body, as it may be taken for granted that few buildings of any importance are now erected without some architect being professionally employed, and consequently the whole expense of competition drawings and the time expended upon them is so much money absolutely thrown away, less the premiums (which are generally small) that may be paid to the successful competitors; and while it is difficult to estimate with any degree of accuracy the cost of competition drawings, it can be no exaggeration to say that very serious sums must have been lost in the several large competitions that have recently engaged the attention of the profession.

Small competitions are even more prejudicial to the well-being of the profession, because the number of competitors is often very numerous and the premiums small, and not unfrequently the payment of the premiums is the end of the matter. I may, as an instance of this, mention the Addiscombe-road Church competition, when seventy-five competitors responded to the invitation, and the work was never carried out, the premium of fifty guineas being the only remuneration paid.

Assuming the modest sum of 10*l.* as the average cost of each set of designs (and it would probably be three times that amount in many cases), the loss to the profession on this competition alone amounted to 700*l.*, and such instances are not uncommon, especially in church competitions. It is clear, therefore, that the amount annually lost by the profession through the competition system must be very large.

The total abolition of competitions would, I believe, do at least three things for the profession:—

1. Increase its dignity.

2. Materially improve the financial resources of its members.

3. Materially benefit the position and increase the remuneration paid to the architectural assistants in our offices.

I may at some future time place before you some important statistics relating to competitions; and in the meantime I shall be greatly obliged if you will favour me with any suggestions that may occur to you on the subject to which I have directed your notice, and specially inform me whether, in competitions where you have been successful in gaining the first premium, the works have been carried into execution with results wholly satisfactory to you, or whether the reverse has been the case.

I should also be glad to know that you sympathise with and would support the movement of the 'Fellows' in the action I have indicated, that I may regulate my further action accordingly.

THOMAS PORTER,
Fellow of the Royal Institute of British Architects."

P.S.—It may be worthy of consideration whether the Institute might not with propriety recognise a commission of 6 per cent. instead of 5 per cent. as a proper professional charge for "Fellows" to make in future on works carried out by them.

FIREPROOF FLOORS.

SIR,—I know the great interest you take in all that relates to concrete, and I am obliged to you for the notice you have so kindly given of my exhibits at the Sanitary Congress at Croydon. I should like to make the object of the new description of floor there shown clear to your numerous readers, and tell them the problem I am trying to solve.

It is proposed to build a house in London, with rooms averaging 24 ft. by 18 ft., to be let in flats, for separate occupation. The floors are wanted to be fireproof, waterproof, no wood to be used in their construction, and not to cost more than ordinary wooden joists, with floors and lath and plaster ceilings. There are plenty of schemes already in use for fulfilling all the conditions named except the last, and I know of no system by which incombustible floors can be made as cheaply as ordinary floors.

Your readers do not require to be told that all the systems at present in use are founded on the principle that wet concrete thrown on a core sets hard, and on removal of the core retains its position and forms a single slab the size of the room, which slab is sometimes strengthened by the insertion of iron; and this I will call the wet system.

Now, I propose to do away with the core and the mess and slop, with the fear of frost, the delay whilst setting, the waste of materials this system necessitates, and to bring a floor all ready to lay down on the job; and this I will call my patent dry system.

The room is 24 ft. long, and I place I-iron girders of the ordinary kind across it, which divide it into three bays, each 18 ft. by 8 ft.; then joists, 6 in. by 4 in., and 8 ft. long in the clear, are filled in over the whole floor, 18 in. apart, centre to centre. The tops of the joists are left flush with the top edges of the girders, and packed up from the bottom flange, so as not to let the girder project too far into the room below. The other ends of the joist are built into the wall. The joists are made of a mixture of clinker, breeze, and cement, ground together in a mill, and each joist has three pieces of iron, 2 in. wide and ⅛ in. thick, inserted in it vertically and equi-distant. The scantling of this iron, I know, seems very small, and to those who have not seen the wonderful addition to the strength of very thin pieces of iron when embedded in concrete it must sound absurd to talk of hoop-iron on edge,—for that is all it is,—carrying heavy weights; but concrete builders know it will do so, and you will quite see I cannot afford to throw anything away, as more than enough is waste, and before my coat is cut out my cloth will be all gone.

Well, then, these joists are cast in moulds fair on three sides, rough on the top side, and moulded on the two lower edges. After they have been made about a month, they may be safely sent by road or rail to any part of the kingdom.

I have made scantlings in this way for several of our leading architects, and sent them without injury to their various works for lintels, sills, window-mullions, and several other purposes; and the joists made in this way I have at Croydon were carted from Stratford, about twelve miles, without packing, and are not injured.

The joists being put in their position, 18 in. centre to centre, the 3 ft. by 2 ft. slabs are laid on them. Each slab covers two joists, and the joints are broken by beginning each alternate row with a half-slab. The slabs are 1½ in. thick of the same composition as the joists, with two pieces of iron, ⅛ in. in diameter, crossing them diagonally. They are made in iron moulds, gauged to a thickness, one side finished red for the upper surface, and the other white for the ceiling, and are bedded on the joists in cement.

Before the slabs which come over the I-girders are bedded down, a wooden box is suspended under the girder about the size of a beam, and this is filled in with concrete in the ordinary way. The beam might be brought on the ground embedded in concrete, and the one I have at Croydon was so brought, but the cost of lifting is much more than the trouble of filling in. If the work is done in winter, the filling-in of the beam might be deferred until the spring, as the floor is complete without it.

My exhibit at Croydon consists of a bay, 10 ft. long by 6 ft. wide, with a beam dividing it at the centre into two bays, each 8 ft. by 6 ft.; each bay has five 6 in. by 4 in. joists, and 1½ in. floor slabs, made as described.

The cost of the slabs is 6d. per foot super., and the cost of the joists 1s. per foot run. This would be about 9d. per foot super. if the joists were 2 ft. apart, which would be close enough for ordinary purposes; but the cost of delivery, fixing, and the two beams, would have to be added, which would bring the cost of the floor to about 1s. 3d. per foot super.

An ordinary floor, with joists and lath-and-plaster ceiling, would cost as much, or a little more, so that we have here a fireproof floor at the same cost as an ordinary combustible one.

Some might object to the joists showing. To meet this objection, I have some 1 in. slabs with a screw hole cast in each corner to screw into the concrete joists, and finished with lime and sand. I have done ceilings this way, and this would add about 6d. per foot superficial to the cost, but the alternate joist and long ceiling-panel look very well, and I think most people would now prefer it to the flat ceiling.

The red floor might either be left as it is, or covered with rugs, kamptulicon, or carpet. I have them in use each way, and they all look well. A carpet will last longer on this floor than on a wooden floor, and it is not damp or cold as one might suppose.

A suggestion has been made by a London insurance office that these floors would do capitally for granaries, and I have offered to load it with bags of corn at the close of the present exhibition, which will be November the 30th, to a breaking weight. As there are two days, I propose loading the other with gravel, and then, by actual experiment, I shall ascertain the weight they will safely carry; of course, by increasing the size of the iron core, the strength might be increased to any amount, but the best plan will be, to save needless cost, to determine the weight the floor has to carry, and allow a margin for contingencies. Thus a floor whose breaking weight is 10 cwt. to the superficial foot, might be loaded safely with 2½ cwt. to the foot, and so on.

This communication has been extended much beyond the length I intended when I commenced, but I want to make the matter clear to your practical readers, and I shall be glad to hear their opinions on the matter, and any questions briefly put I will answer with great pleasure.

W. H. Lascelles.

ENGLISH ENCAMPMENTS.

Sir,—These are yearly decreasing in extent; some of them, however, are complete. The following I describe from personal inspection.

1. In Cornwall, near St. Columb, Andinas Castle, two miles south-west of St. Columb, on a high hill; and in Dorsetshire, the Dorchester Amphitheatre, an extensive area, where the execution of a woman for the murder of her husband, early in the eighteenth century, occurred in the presence of a large number of spectators. In this county those camps which have been are ancient. No. 1. Poundbury Camp, half a mile west of Dorchester, an irregular parallelogram, 378 yards long and 347 yards broad. According to Camden, it is a Danish relic, for the Danes besieged Dorchester under King Sweyn. As it resembles that at Amesbury, Dr. Stukeley deemed it to be the work of Vespasian.

2. Maiden Castle Camp, one mile south-west of Dorchester, an irregular ellipsis, surrounded by treble ditches and ramparts. The extent of the works from east and west is 1,194 yards, the area in this direction 760 yards, from north to south 544 yards in extent and 275 in width. The vicinal way from Dorchester to Weymouth passes near the east side, and a way connects the west entrance with the Via Iceniana, which enters this county near Woodgate, and may be traced to Badbury, being crossed by Grimes's Ditch, north-east, near Woodgate's Inn.

3. Eggerdon Camp, nearly oval; in compass 7½ acres, on Eggerdon Hill, whence there is a Roman road to Dorchester.

4. Badbury Rings, near Wimborne, a Saxon work, according to Camden and Leland. It is circular in form, with treble ramparts and ditches, the circumference of the outer rampart being 1,738 yards. These camps are engraved in Hutchins's "Dorsetshire."

In Cornwall there are other notable camps and earthworks which are described and engraved in Borlase's "Antiquities," Lyson's Mag. Brit.,"vol. iii., and elsewhere. These relics include the little Dinas, in St. Anthony in Meneage, about 500 yards by 200; the Golden Camp in Probus; Carvoisa, one mile west of Grampound; Yerdby in Stratton, Blacketon in Morval, Castle Kynock, near Bodmin; Kelly Rounds, in St. Mabyn; and Warbston Burrows, with two entrances, and a tumulus within the area, eight miles from Launceston. Hoare's "Modern Wiltshire," vol. ii., contains engravings, p. 88, of Battlesbury and Scratchbury Hill camps, near Warminster. At p. 604, vol. vi., there is a plan of Old Sarum, 1,400 yards in the circumference of its oval area, with eastern entrance. The ditch round the central castle is 310 yards in circumference. At p. 605, there is an engraving of Old Sarum, seen from a distance eastward. These views are those in Hoare's "Antient Wiltshire."

Near Banbury, I have inspected several camps described in Beesley's "History of Banbury," A.D. 1841. These include:—1, Madmarston camp, near an ancient road, eastward, and the site of a town; 2, Castle Hill and Gredenton Hill, British camps near Brailes; 3, Arberry Hill and Rainsborough, British camps east of Banbury; 4, Ilberry camp; 5, Nadbury camp, on Edghill; 6, Tadmarton British camp, between Banbury and Hooknorton.

Crouch Hill, near Banbury, has a small circular entrenchment around its summit, which is artificial. The construction of British fortresses on plans combining facile communication with security, is a reason for believing that the ancient Britons were not mere barbarians. This part of Oxon comprised the north-east district of the territory of the Dobuni; and it is notable for the stone relics of Rollright stones, and the ancient mansions of Compton Wynyate, Broughton Castle, and Wroxton Abbey, &c. In Hampshire the camps on Old Winchester Hill, near Petersfield, and that near Winchester, on St. Catharine Hill, should be visited. The relics of the Bramdean pavement are preserved in the Winchester Museum. Danebury, near Nether-Wallop; Norsbury camp, near Wonston; and Bury Hill camp, near Andover, appear also in the Ordnance maps of Hants as extant.

In Morton's "Northamptonshire," folio, 1714, which contains a folding map showing the roads then extant, these camps are described, viz., at Mill Colton, near Barnewell; at Chester, Clifford Hill; at Hunsborough, near Daventry; at Guilsborough, Arbury, and Castle Dikes. In Ormerod's "Cheshire," vol. ii., Kelsborough and Ediabury camps are engraved. This latter camp was constructed by Ethelfleda A.D. 915, when Chester was enlarged by Ethelred. It contains 11 a. 3 r. 10 p. stat. measure; and is 250 yards broad and 400 long. The ditch is 10 yards wide, and the ramparts are 14 ft. high.

Thornbury British Camp is described in Duncomb's "Herefordshire," vol. ii., pp. 226-7, being nearly round, and containing 20 to 30 acres, with two entrances, south-west and north-east. At p. 173, the Roman camp of Sutton is described,—30 acres, single-ditched, with opposite entrances, north and south. It is four miles north of Hereford. The Herefordshire Beacon, which I reached easily from Malvern, is engraved in King's "Munimenta Antiqua," vol. i., with a plan; also Old Sarum and Badbury rings are engraved in it.

The "Antiquarian Repertory," 4to. (1809), vol. ii., p. 450, contains a plan of camps and intrenchments on Cockfield Fell,—1777,—in Durham, an area of 2a. 2r. 34p., surrounded by a ditch. Brewer, in the introduction to "Beauties of England and Wales," 8vo. (1818), describes various camps, including an Anglo-Saxon camp at Eaton, in Bedfordshire (p. 251), and he points out the differences between the camps of the Romans, Anglo-Saxons, and Danes.

The oval enclosure of Yevering Bell is engraved in Hutchins's "Northumberland" (H. N.), vol. i., p. 246. It should be ascended from the south-east, and not from the north, as I climbed it. The oval is 1,000 paces in circuit; the entrance on the south side. The remains of a wall surround the oval, built of flat, large stones, and without mortar,—four layers in depth probably,—and the east end of the area rises some few feet from the level of the plain. At a point almost due east a broadway appears, about three paces wide and thirty paces long in a straight direction, as if formed by an even pavement, extending thirty yards in ascent towards the crown of the hill. It is surrounded by the remains of another wall, forming a circle 180 paces in circuit, with a ditch within. Near its centre is a cairn of stones hollow in the centre, six paces in diameter (see H. N., p. 247). On the northern side of the mountain, I perceived the remains of trees, "a circumstance not to be found on any of the hills within view from the summit of Yavering Hill" (H. N., p. 248). This author attributed the work to the Saxons for fire worship; but Mr. E. Mackenzie ("View of Northumberland," vol. i., p. 378) deems it to have been a Druidical temple. It repays the pedestrian the labour of ascending to the summit.

I reached Yevering from Yetholm, proceeding to Wooler. On the 24th of August, 1845, I ascended Cheviot Mountain from this town by Fleshope, under Yevering. On the summit of Cheviot, I found a lake which is stated to be frozen over, even on Midsummer day, so as to bear sliders. There appeared to be the remains of a camp here also. In the "Tour of a Gentleman," &c., 1720, attributed to Daniel Defoe, this "Cheviot mountain lone" is described as meriting a visit.

Crossing the country from Belford, I found a camp on a hill near Wooler, at Ross Castle. Below is Chillingham Castle, notable for the toad discovered in a wall, and for the wild cattle in the park. In Thoroton's "History of Nottinghamshire," vol. ii., 4to., 1797 (pp. 175-61), Roman camps are described, which are mentioned in the "London Archæologia," vol. ix., p. 198, by Mr. Hayman Rooke.

In Allen's "Surrey and Sussex," 8vo., vol. ii., A.D. 1830, Cæsar's camp on St. George's Hill, Weybridge, is described. It communicated with a larger camp below at Oatlands. In vol. i., Cæsar's camp at Wimbledon,—which I described in the *Builder*, vol. xxx., No. 1529,—is mentioned as a circular encampment, with a double ditch, including an area of seven acres, with a diameter of 220 paces. In Dr. Stukeley's "Iter Curiosum" (1724), the Roman amphitheatre at Dorchester is described (Iter 6). This volume contains engravings of Oldbury Castle camp, in Wiltshire, Clarendon camp, near Salisbury, Martin's Hill camp in Somersetshire, and a geometrical ground-plot of the Dorchester amphitheatre, with four views; also views of Old Sarum, and one of Hedington camp, near the Wandsdyke; Aldchester camp, near Bicester, two views; Barrow Hill camp, near Leicester; Bere Regis camp; Cæsar's camp, upon Barham Down, and at Shepperton, in Surrey. On Wolsenbury Hill, near Brighton, and near Churchdown in the vicinity of Gloucester, I have inspected encampments. Mr. Pennant refers to one in Bulstrode Park as extant in his time. See "Annual Register," vol. xxv., p. 132.

C. C.

TRAMWAYS.

At a meeting of the Society of Engineers, held on Monday evening, November 3rd, in the Society's Hall, Victoria-street, Westminster Mr. R. P. Spice, president, in the chair, a paper was read by Mr. Wilkinson Jones on "Modern Tramway Construction." In introducing the subject, the author explained that the object of his paper was more to describe the various systems now in use than to suggest any modifications or improvements. He then proceeded to state that the first modern tramway was laid in New York, as far back as 1832, with a rail somewhat similar in section to that now in use, although considerably heavier, its weight having been as much as 98 lb. per yard. The introduction of the tramway into England, by George Francis Train, in 1860, was then referred to, and the development of the tramway system and the merits of the various rails employed from time to time briefly considered. The author considered that the failure of the Train system gave a check to the progress of tramways in this country, as it was not until 1868, when the Liverpool Tramways Act was passed, that tramways began to make much headway. He then proceeded to describe the present mode of constructing tramways with rails and wooden sleepers, and referred to the method designed by Mr. Robinson Souttar, which appeared to have much to recommend it, and especially alluded to the Liverpool tramways laid on Deacon's system. The various systems of metal ways were then described, and their respective merits pointed out: among these were mentioned Livesey's and Cockburn Muir's systems as laid in South America; Ransome and Rapier's and other cast-iron harbour tramways; Kincaid's system of rails with intermittent bearings; Barker's system of continuous sleeper as laid in Manchester; and Aldred & Spilman's system of reversible rail with cast-iron chairs. Some results of tests made with various rail sections were given, and the author concluded his paper

by a few remarks upon the nature of bearings, foundations, and fastenings, and pointing out the essentials of an ideal modern tramway. The subject was illustrated by plans.

FINE ART EXHIBITION, ALBERT HALL.

The Fine Art Exhibition at the Royal Albert Hall has been closed. Nearly 24,000 persons have paid for admission to the gallery, not to speak of the thousands who visited the collection on the occasion of concerts. Pictures to the amount of nearly 1,000*l.* were sold by exhibitors. We are glad to hear that the experiment will be repeated, and that steps will be taken immediately to obtain another collection. Artists should feel bound to aid the Council in this matter, and to maintain one gallery in London unconnected with any body of artists, and open to works of merit from any quarter. It might be desirable to invite the Council to devote a portion of the gallery to architectural drawings, there being now no means for the exhibition of such in London beyond the very limited space afforded by the Royal Academy.

THE CITY ARCHITECT'S OFFICE.

A report of the General Purposes Committee, authorised to be printed on October 2nd, states that the Court of Common Council, on November 28th, 1878, on the consideration of a report of the committee on the reference of June 20th, 1878, "to consider and report recommendations as to the matters comprised in the reference of June 29th, 1876, to consider the whole subject of artificers' prices and the employment of City tradesmen, and with sundry recommendations in relation thereto; also recommending the appointment of a surveyor of works at a salary of 300*l.* per annum," whilst agreeing with the general principle of the said report, expressed the opinion that, looking at the important questions raised therein, it was desirable to review the whole arrangements of the Architect's office, and instructed the committee, in conjunction with a representative to be appointed by each of the several committees of this Court, to carry out such review accordingly. The investigation of the question was referred to a special sub-committee, who report: "We are of opinion that the arrangements and staff of the architect's office should be generally approved as being satisfactory, except that an additional appointment should be made therein, to which we would more particularly allude hereafter. We are of opinion that the office of Superintendent of City Labourers, as at present constituted, should be abolished, and that in lieu thereof the Architect should be directed to appoint a foreman or foremen to superintend the execution of the various works, such foreman or foremen to be responsible to him, and under his control and appointment. We likewise recommend that several bills of artificers, to be from time to time submitted to the various committees for examination, should be certified by the Architect, who shall be responsible for the same. To enable this recommendation to be carried into effect, it would be necessary to make suitable provision for the examination of the details of the various bills, as to time and materials, by a competent person under the Architect's control, instead of, as hitherto, by the superintendent of City labourers, whose certificate has been deemed sufficient examination in these respects. With this view we recommend that a competent pricing or measuring clerk be appointed on a similar footing to the other clerks in the Architect's office, and under the same control, at a salary of not exceeding 300*l.* per annum, to examine as to time occupied and materials used on, or supplied for, the several works, and to check the several vouchers for the same. In submitting this recommendation your sub-committee desire to express their opinion that it will, if adopted, render unnecessary the appointment of a separate officer as surveyor of works, independent of the Architect." The committee also submit for adoption suggested arrangements for the execution of the ordinary artificers' works required for the corporation, and for ensuring their more efficient supervision.

The committee add:—"The several recommendations of our sub-committee have received from us due deliberation, and we now recommend them for adoption by the Court, except as to the mode of appointment of the proposed pricing or measuring clerk, who should, in our opinion, be appointed by this court, his duties, however, being performed under the control and direction of the Architect."

An appendix to the report contains a schedule of the duties of the "Architect and Surveyor," as agreed to by Common Council, February 9th, 1864; an extract from a report of the Officers and Clerks' Committee presented April 6th, 1876, varying the terms of the appointment, and statements from the City Architect as to his own duties and those of his staff.

NEW FOUNTAINS.

London.—The Broad-street Ward drinking-fountain was formally opened to the public on the 1st inst. We gave a view and description of the fountain (which it was at first proposed to erect near the site of the old pump in Bartholomew-lane) in our volume for last year, p. 353. It occupies a prominent site in Exchange-avenue, granted by the City Commissioners of Sewers, and has cost 850*l.*, towards which Mr. Alderman Ellis and the Drapers and Merchant Taylors' Companies have largely contributed. The base of the fountain is of polished Cornish granite, by Messrs. Freeman, of Penryn; it has four basins and four jets, which will be constantly running; and as it appeared by the report of the Drinking Fountains Association that more people drank at the fountain on the opposite front of the Exchange than at any other, there can be no doubt of the great public boon which has been granted by the benevolent action of the alderman and his supporters. Above the granite base is a bronze canopy by Messrs. Hart, Son, & Peard, designed to protect from the dirt and rain the sculptured group in white marble, entitled "Charity," from the chisel of M. Dalou. The architect is Mr. J. S. Edmeston. It should be added that the Drinking Fountains Association, at their own cost, erected the granite work, and supplied the plumbing, drainage, &c.

Leicester.—We briefly mentioned last week, in concluding our description of the new Leicester municipal buildings, that a fountain, the gift of Mr. Hart, the high bailiff, had been erected in the open space in front of the buildings, from a design by the architect, Mr. F. J. Hames. Some particulars of it may be of interest. The fountain has a basin 30 ft. in diameter, and 2 ft. 6 in. deep, formed of massive blocks of Shap granite, 14 ft. in length, and lined with white glazed bricks. A light iron railing runs round the basin, supported by eight polished Ross of Mull granite pilasters. The superstructure is of cast iron, bronzed, and stands on a rustic Ross of Mull granite base, 3 ft. thick, the total height being 23 ft. 6 in. It is in eighteen pieces, and weighs nine tons. Four Assyrian winged lions are represented as crouching at the base, and supporting fluted pillars and capitals, at the summit of which is the central basin, 9 ft. in diameter. Above this a centre-piece supports the smaller basin, which is 5 ft. in diameter, and in the centre of which a cluster of bulrushes is fixed. The exact cost of the fountain is unknown except to the donor, but it is estimated at 2,000*l.*, including the cost of laying out the land. There are three different systems of playing the fountain, which can be worked simultaneously or separately as desired. The water can be thrown out of the lions' mouths, out of the jugs in the central basin, or from five jets in the upper basin, which overflows into the larger one beneath. When all three are in operation it is very elegant, no less than between 5,000 and 6,000 gallons of water per hour are discharged.

THE MONUMENTS IN ST. PAUL'S.

Sir,—The other day I casually strolled into St. Paul's. Gazing on the monuments of the mighty dead, I was struck with amazement at the curious appearance of the marbles. What could it be? Inspecting more closely, and applying the sense of touch as confirmatory evidence, I discovered it was due to a layer of dust, almost sufficient, if deposited on the macadam of a West-end square, to deaden the roll of any amount of heavy traffic, and satisfy the craving for quiet of any noble person without the necessity for the laying down of straw or tan. Will any one adopt this suggestion? or direct the attention of the authorities of St. Paul's to what is a small matter in itself, but which, if neglected, may suggest a want of care to keep clean "the House of Prayer and the things contained therein."

R. E. Bray.

THE NEW BUILDING ACT AND BYE-LAWS FOR THE METROPOLIS.

Sir,—We note in your issue for the 25th ult. (p. 1179) that the bye-laws of the Metropolitan Board of Works under the New Building Act have received the sanction of the Home Secretary. It would be of interest to ourselves and your other readers if you would inform us when the Act and the bye-laws come into force.

A. & C. H.

*** The Act (41 and 42 Vict., ch. 32,—short title, "Metropolis Management and Building Acts Amendment Act, 1878") came into operation directly it was passed. (Section 6, Part I., commences with the words, "*From and after the passing of this Act*, no house or building," &c.). Section 15, Part II., enacts that "The Metropolitan Building Act, 1855, and the Acts amending the same, and this part of this Act, shall be construed together as one Act." Section 16 of this part of the Act gives the Metropolitan Board of Works power to make bye-laws with respect to sites, foundations, materials, and the duties and fees of District Surveyors, and provides that, "Any bye-law made in pursuance of this section, and any alteration, variation, and amendment made therein, and any repeal of a bye-law shall not be of any validity *until it has been confirmed* by one of her Majesty's principal secretaries of state," and before any such new bye-law or alteration in a bye-law can be confirmed, the Board are required by the Act to give two months' notice of their intention to apply for such confirmation. The bye-laws, as published in the *Builder* a fortnight ago, came into force immediately they had been confirmed, but (*vide* Section 17 of the Act) only apply to "any house, building, or other erection *begun to be constructed after the passing of this Act.*"

THE CORBEL TABLE AT ST. ALBAN'S.

Sir,—There is an old saying that one should believe nothing of what he hears, and not one half of what he sees. Mr. White, F.S.A., has made the discovery that a *Norman cornice* has been destroyed on the south side of the nave of the Abbey. This assertion is a sample of much that has been written during the past twelve months of our doings and misdoings.

The "Norman cornice" was built on a wall raised 5 ft. 6 in. in the thirteenth century, which was afterwards added to, and in itself was composed of some pieces of Roman tile, inserted for repairs, a course of bricks 9 in. by 4½ in. by 2¼ in., manufactured within the last fifty years, and the remainder common roofing tiles, and plastered.

This discovery may be ranked with the celebrated "Bill Stumps, his mark."

John Chapple.

HOW DO YOU SPELL IT?

Sir,—A dispute has arisen in my office as to the word "Claircolle," which is spelt in "Laxton's," 1878, on pages 140 and 306, in two different ways; and again, in "Atchley's," different still. I will, therefore, thank you to show us the correct way of spelling it.

Jas. Lawrence.

*** We should spell it "Clear-cole"; and it so appears in Gwilt's "Encyclopædia." The word is not to be found in ordinary dictionaries; and if the process were allowed to fall out of use except in specially "greasy" cases, we should express no regret.

MOSS AND BRICKWORK.

Sir,—Will any correspondent inform us what will effectually remove moss in brickwork prior to painting?

M. B. & Co.

BUILDING ACT CASES.

Sir,—In your issue of the 25th ult.,—"Cases under the Building Act,"—the name of Rushmore-road should be substituted for Blurton-road in the first paragraph; the premises in question being situate at the corner of Prattes-road and Rushmore-road.

J. Lovegrove.

The Duke and Duchess of Connaught at Brighton.—The entire illuminations and decorations on the occasion of the royal visit were entrusted to the firm of J. Defries & Son, and successfully carried out by that firm.

A SCHEME OF PROVINCIAL SAFE DEPOSIT INSTITUTIONS.

SIR, — Provincial Safe Deposit Institutions stand in exactly the same relation to the large provincial towns of the United Kingdom as the National Safe Deposit Company stands to the great metropolis. The scheme "that Government (and why not provincial corporations?) should erect large buildings for the custody and safe deposit of wills of living persons, and of private securities and valuables of private individuals," was printed and published for the first time in this country by the writer a few years prior to the very existence even of the above institution. The building of the above company is both fire-proof and burglar-proof. Here individuals are relieved from all harassing anxiety occasioned by the personal custody of their property and valuables, or their storage in repositories which are rarely fireproof or secure against the burglar. A vast amount of property, amounting to hundreds of millions, "payable to bearer" cannot be insured against fire; cannot, if stolen, be recovered from a *bonâ fide* holder, and cannot, if lost, be replaced. The miscellaneous deposits in these buildings comprise, besides jewels and plate, bills of lading, dock and other warrants, deeds, mortgages, policies of insurance, contracts, powers of attorney, deeds of trust, marriage settlements, certificates of birth and of death, leases, valuables letters, manuscripts, &c. Bankers decline all responsibility for the safe-keeping of valuable deposits, while a solicitor has a lien upon all securities deposited by his client. Few so-called fireproof safes are a complete protection against a great fire, or from the resolute attacks of a burglar. The company acts as trustee, and the head of a family, by deed during his lifetime, may transfer the whole or a portion of his property to the company to hold in trust for the benefit of his wife or children. The company being a corporation, never dies: so executes the trust, however long the time required. In the provinces such institutions would effect an annual saving of hundreds of thousands and even of millions of pounds, to say nothing of the enormous mass of misery and poverty prevented thereby.

AUGUSTUS J. HARVEY.

GAS BURNING.

CAN any of your readers inform me in particular, and all in general, whether there exist anything approaching the matter hereunder mentioned? The subject has occupied my thoughts lately. Many an anxious eye has cast sorrowful looks at ceilings immediately over gaslights, with the thought, accompanied with a sigh, of how soon the ceiling will become black. Glass bells, inverted saucers, &c., have only the effect of distributing the smoke. So my query amounts to this: has anything been invented to take the place of glass that will absorb the smoke, sulphur, condensed water, or whatever it is that settles upon the ceiling? It has occurred to me that tufa, pumice-stone, asbestos, or some other like material, might be prepared so as to absorb,—it would not without preparation absorb,—the deleterious products of gas; and which periodically might be cleansed either by washing or by burning in a bright fire, even a kitchen range. Should there not be already in existence such a benefit to be had, would it not be worth the while of some of your scientific readers or gas engineers to turn their thoughts and energies in that direction? The realisation of it would be certain to turn their copper coin into gold, and themselves into public benefactors. Such a material as I name would not be nearly so heavy as glass, and be less liable to break. I ask you to kindly place this idea before those who have greater opportunities to experimentalise than your humble correspondent.

Y.

ROARING WATER-PIPES.

SIR,—I would suggest as a cure that, if convenient, the supply-pipe be bent at the delivery end, or a curved piece be fastened on; this forms an air-chamber. I think if a piece of lead pipe leading towards the bottom of the cistern be fastened to the nose of the valve, as suggested in your last, there is danger of almost emptying the cistern when the water goes off. I have tried the same thing myself for the same noise, and I found it to act as mentioned.

F. MAYNARD, Plumber.

GRANITE IN DUBLIN.

SIR,—"Irish Notes," in the *Builder* for October 25th, contains a statement which if allowed to pass unquestioned is calculated to do us a great deal of harm as quarry-owners, workers, and exporters of Irish granite.

You say Irish granite was proposed for the pedestal of the O'Connell statue in Dublin, but that the Four Courts showed how quickly that material disintegrated, and that the granite of two other monuments had gone the same way. Now, sir, if you or any visitor to Dublin will look into the cemeteries, you will see there a great quantity of surface rock which is softer than many sandstones, and is really a rotten granite found in the vicinity of Dublin, and is used because it is so easily worked, no regard apparently being paid to any other quality; but this rubbish is only used locally, and it is too much to convey that, because it exists, all Irish granite is similar. If I mistake not, the great beds of kaolin found in Cornwall are decomposed granite, or its constituent felspar, and yet Cornish granite is being employed to build the Eddystone Lighthouse, and I appeal to the experienced designer of that work,—Mr. James Douglass, of the Trinity House,—whether he was not prepared to use our Bessbrook granite for the Eddystone had our tender been low enough.

THOS. M. H. FLYNN, Manager,
Bessbrook Granite Company.

MASTERS AND MEN.

Proposed Federation of Trade Unions.—The Parliamentary Committee of the Trade-Union Congress recently held in Edinburgh have issued a code of rules for the federation of trade unions. The circular proposes that the name shall be the "Federation of Organised Trade Societies." The object is to maintain the nine-hours system as a recognised day's work. The annual contribution to be 2s. per member. Should a sufficient number of unions agree to the proposal to constitute a federation of 100,000 members, the Parliamentary Committee will convene a conference, to elect officers and decide upon definite rules. The replies to the circulars are to be delivered by January 30th, 1880. After explaining the plans and purposes of the proposed federation, the committee say:

"The matter now rests with the trades. The word 'federation' has been on the lips of most of the trades for a considerable number of years. Much valuable time has been occupied and money spent in preparing the various schemes which have previously been before the unions. You now have a practical proposal before you. Let your decision, whatever it may be, settle the question for a time at least, and allow us to turn our attention to other important matters upon which we can agree. We have only to reiterate this advice,—do not think you can ever have a federation, worthy of the name, except it is based on sound financial principles."

DISSENTING CHURCH-BUILDING NEWS.

Finchley.—A new Baptist chapel has just been opened at the corner of Dale Grove, North Finchley. It has been erected by Messrs. Staines & Son, builders, Great Eastern-street, from the designs, and under the superintendence, of Mr. Morton M. Glover, architect, London. It is Gothic in style, the walls being of Kentish ragstone, with Bath stone dressings. The roof is of hammer-beam construction. Four vestries, with school-room over, are placed at the western end, behind the pulpit, but the building is so constructed, that, when more accommodation is needed and new school-rooms are built, the space now occupied by these can be added to the chapel. The accommodation at present is for 400 persons, without the galleries, which can be added at a future time, and the cost is about 4,000*l.*

Hanley. — The new Mission-hall in Union-street, in connexion with the Tabernacle Congregational Church (Rev. T. K. Higgs, M.A., pastor), was opened on the 3rd instant. The building stands in a densely-populated cottage quarter, and to be somewhat akin to its surroundings, the style adopted by the architect is plain Jacobean, relying for some picturesqueness on a varied outline. The present accommodation is for about 300 hearers, but provision has been made by which the north wall may in future be converted into a nave arcade (by simply removing the windows and walling between the piers), and a north aisle erected, with nearly 100 additional sittings, and with a second vestry or class-room beyond. The building is faced outside with the local red pressed bricks, and covered with red tiles, local bed stone being used. Internally it is lined with white brick, with red brick dado and strings. Mr. Sugden, of Leek, is the architect, and the works have been executed by Mr. G. Ellis, builder, of Hanley. The moulded bricks were supplied by Mr. Jabez Thompson, of Northwich, the terra-cotta by Messrs. Miles & Woodward, and the lead lights by Messrs. Brown & Boreham. The building is heated by the hot-air apparatus of Messrs. Haden, of Trowbridge and Manchester.

Books.

A Handbook to the Bible: being a Guide to the Study of the Holy Scriptures, derived from Ancient Monuments and Modern Exploration. By F. R. CONDER, C.E., and Lieutenant C. R. CONDER, R.E., late Commanding the Survey of Palestine. London: Longmans & Co.

THIS is a large book in a little space, and includes the results of much reading and travel. Mr. F. R. Conder, who is well and favourably known in journalistic circles, has long studied the subject, and Lieutenant Conder, his son, has had special opportunities in the Holy Land to fit himself for the production of the work. Its object is to lay before the students of Scripture, in an accessible form, the main results of the various important researches which have been carried on during the present century. The chronological arrangement is based on a careful collation of the Hebrew and Greek texts of the Bible; on the study of those latent references of Josephus which no copyist had any motive for altering; and on a comparison of those Biblical pedigrees which give five collateral lines from Jacob to the contemporaries of Moses, and four from that generation to the time of David. Such long-debated questions as that of the period of the abode of the Israelites in Egypt are elucidated by this application of the method of the genealogist to the unbroken lines of recorded descent; as it is contrary to experience to imagine that as many as fourtees generations can have succeded each other in 215 years. They are thus led to the conclusion, in this matter, that the Hebrew text is more accurate than the Septuagint.

The account of the weights, measures, and moneys of Palestine is based on the comparison of definite statements of the great Aramæan and Arabic writers with the weights of existing coins, and with the levels and dimensions of the Temple area at Jerusalem, and of the Galilean synagogues, as well as with itinerary distances. This is a particularly interesting and valuable part of the book. Every coin mentioned by name in the Bible, as well as a series of Hebrew coins, from one bearing the name of Eliashib "the Priest," down to the procuratorship of Pontius Pilate, have been drawn from examples now in the British Museum and elsewhere.

The ritual of the Temple has been illustrated from the full details preserved in the Mishna and arranged by Maimonides.

The physical and geographical description of the country is based on personal observation, and on the Trigonometrical Survey and other professional labours carried out by the various officers of Royal Engineers who have conducted explorations in Palestine during the last fifteen years. The maps will be found to contain much novel information, and will serve as a guide to the use of the large engraved survey map now in course of publication by the Palestine Exploration Fund.

It has been the main object of the writers, as far as possible, to avoid every expression of opinion, whether their own or that of any school of thinkers; and to supply first, facts, and secondly, careful references, by which the citation of those facts may be verified, and the inferences from them traced by the reader himself to the legitimate result. We can warmly commend the book, and augur for it a long-continued sale.

VARIORUM.

A NEW issue in parts has commenced of "Old and New London," an important and interesting work, of which we have before now spoken. With the first number of the new issue the publishers, Messrs. Cassell & Co., have given a capital map of modern London, worth more than the cost of the number.——The *Quiver* has taken the shape of a purely monthly publication, admitting consequently of improved arrangements. The first part thus issued is good and cheap.——The *Magazine of Art* has been permanently enlarged, and the proprietors offer money prizes to be competed for by art-students. ——The first volume of the *Boy's Own Paper* has been issued as the "Boy's Own Annual." It makes a handsome volume, containing an immense amount of amusing and wholesome reading, with no end of illustrations, and all for a few shillings. The facts that it is edited by Jas. Macaulay, M.D., and published at the *Leisure Hour* office, are sufficient guarantee.—— The *Richmond and Twickenham Times* is doing

good service to the cause of sanitation in the valley of the Thames by exposing and calling public attention to some of the worst of the plague-spots that still exist, and are a source of continual danger to the health of many favourite suburban residential localities. The sanitary condition of certain portions of Isleworth has long been a standing disgrace to the urban sanitary authority of Heston and Isleworth, which was created a local government district more than four years ago. In the Irish portion of the village the dangerous overcrowding and the utterly uninhabitable condition of many of the houses are notorious, but no attempts are made to abate the nuisance, which was recently and graphically described by our contemporary.——We get a paragraph on "Technical Education on the Continent" from *Cassell's Technical Educator* for November:—"The great number and variety of the sets of models for teaching practical art which are published on the Continent show their extensive use in the schools and the appreciation of the teachers. Such methods of illustration are not, however, confined to the mechanical arts, nor is the education of the workman on the Continent limited to the precise branches which he may require in his occupation. This arises from the circumstance that he has overcome the rougher and more irksome portions of study in his youth, and thus in maturer years he has time and mind to spare, so that as he passes through the garden of this world, he need not spend all his time in simply gathering sticks for his immediate use as fuel, but retains enough of the freedom or elasticity of youth to rejoice at the sight of the lovely flowers which ornament his path, to gather them and examine into their wonderful structure; he has time to study the elaborate construction of his own frame, and the natural history of the bird which gaily floats past him in the air. These studies tend to elevate and refine; they give the life of an artisan an aim beyond hewing wood and drawing water; they give him sources of happiness and amusement which he can take up after his day's toil,—amusements which can be pursued *at home, and in which his wife and children can partake*,—amusements which, as he walks to his work next morning, afford him happy reflection, thus causing him to meet his fellow-men with a cheerful and contented mien: how different from that of the man who in his shopmates only sees the boon-companions of the previous evening's carousal, on the details of which each in his sober moments looks back with shame! There is more religion, more morality, brought about by this popularising of science than many persons think. The man who has made the works of God his study during the week will not waste the morning of the Sabbath-day in listless idleness and the evening in smoking and drinking. He will look upon it as a day when, together with his family, he may undisturbedly contemplate God's works, and walk hand-in-hand to the house of prayer, realising the truth of the text, "Man doth not live by bread only, but by every word that proceedeth out of the mouth of the Lord doth man live." The subject of physiology is one of importance in the instruction of working men. We see many who, when a hinge of a door in their house happens to have given way, a board of the floor becomes loosened, or an article of furniture out of order, bring home with them the necessary screws, nails, &c., and at once set about repairing; but, owing to the neglect in their education, they know nothing of the "house they live in," the body in which their Creator has placed that spirit with which he has endowed them, and for the care of which he holds them responsible. They will learn that temperance in food and drink, cleanliness, and proper exercise will double the value of their own lives and those of their children."

Graving Docks in the Thames.—The works for the reconstruction and enlargement of Messrs. Fletcher, Son, & Fearnall's Upper Union Graving Dock, Limehouse, are now being proceeded with from the designs and under the direction of Mr. E. C. Homer, C.E., of Hackney It is proposed to lengthen the dock so that when finished it will be one of the largest on the river. The facilities afforded ships entering and leaving the dock will be greatly improved, as on either side of the entrance there will be a jetty extending well out into the river. The walls will be constructed in brickwork with a concrete backing, and the dock bottom in concrete 6 ft. in thickness, with a timber flooring.

Miscellanea.

Society of Arts.—The programme of this society for its 126th session has just been issued. It gives a list of the papers and lectures for the session, so far as they have been arranged. The following are the papers to be read at the evening meetings previously to Christmas:—November 26—"Suggestions for Dealing with the Sewage of London," by Major-general H. Y. D. Scott, C.B., F.R.S. December 3—"Apprenticeship: Scientific and Unscientific," by Sylvanus P. Thompson, D.Sc., professor of Applied Physics at University College, Bristol. December 10—"Art Vestiges in Afghanistan; the Results of some Recent Explorations in the Jellalabad Valley," by W. Simpson. December 17—"The Panama Canal," by Captain Bedford Pim, R.N., M.P. The dates of the papers after Christmas are not announced, but the following are among the subjects to be treated:—"Domestic Poisons," by Henry Carr; "Gas Furnaces and Kilns for Burning Pottery," by Herbert Guthrie, C.E.; "The Utilisation of Slag," by Charles Wood; "Art in Japan," by C. Pfoundes; "The Trade and Commerce of the Yenisei," by Henry Seebohm; "Modern Autographic Printing Processes," by Thomas Bolas, F.C.S.; "The History of the Art of Bookbinding," by Henry B. Wheatley, F.S.A.; "Art Ironwork," by J. W. Singer; "The History of Musical Pitch," by A. J. Ellis, F.R.S.; "The Recent History of Explosive Agents," by Professor Abel, C.B., F.R.S.; "Ireland and its Resources," by C. G. W. Lock; "The Future of Epping Forest," by William Paul, F.L.S. Three courses of "Cantor Lectures" are to be given. The first course is by Dr. Charles Graham, F.C.S., F.I.C., Professor of Chemical Technology at University College, London, on "The Chemistry of Bread and Bread-making"; the second, on the "Manufacture of India-rubber and Gutta-percha," by Thomas Bolas, F.C.S.; the third, by R. W. Edis, F.S.A., on "Art Decoration and Furniture." The first meeting of the session will be held on the 19th inst., when the opening address will be delivered by Lord Alfred S. Churchill, chairman of the council.

The Late Mr. George Smith, of Pimlico. The will (dated July 31st, 1874), with two codicils (dated August 7th, 1874, and March 3rd, 1876), of Mr. George Smith, formerly of Pimlico, builder and contractor, but late of Paddockhurst, Sussex, who died on August 27th last, was proved on the 15th ult. by Mr. John Clutton and Mr. Henry Skrine Law Hussey, the executors, the personal estate being sworn under 200,000*l.* The testator devises the Paddockhurst estate, with part of the Balcombe estate, to the use of his wife, Mrs. Charlotte Predice Smith, for life, with remainder to his eldest surviving son, David Macdonald Smith. After making bequests to his executors, nephew and niece, medical attendant, brother and sister, he leaves the residue of his property, real and personal, upon trust for his wife for life, and then for his five surviving children, with a share, upon trust, for the husband and children of his deceased daughter.

Town Refuse applied in the Reclamation of Waste Land.—On the invitation of the Health Committee of the Glasgow Town Council, a numerous company visited Houston Moss, Renfrewshire, on the 28th ult. The Corporation have obtained a lease of this stretch of waste land for thirty-one years, and are at present engaged in its reclamation. Over the moss a railway has been laid, and by this means the refuse from the city is distributed over its surface. The operations, which give employment to a considerable number of men, have already resulted in the taking in of about fourteen acres, which have this year yielded a good crop of potatoes.

The Crace Collection.—We are glad to learn that the trustees of the British Museum have purchased Mr. Crace's collection of maps, plans, and views of London, which has been on view for some months at the South Kensington Museum. We have more than once referred at length to the great value and interest of the collection, and have suggested its purchase on behalf of the public.

Rebuilding of Anderton's Hotel.—Let us add to our notice of this rebuilding that the floor in the crypt is of Arrowsmith's "Solid" Parquet; and that borders of the same have been laid in the Masonic and other rooms.

The Sanitary Condition of Board Schools.—It is not encouraging to sanitary reformers to learn that the quite recently erected and very expensive Board school in Greystoke-place (a narrow passage leading from Fetter-lane to Cursitor-street) has had to be temporarily closed owing to an outbreak of fever, in some part due (it is alleged by Dr. Sedgwick Saunders, Medical Officer of Health for the City) to its unsanitary condition. In reference to the subject of school sanitation generally, Dr. Saunders, strongly condemning the trough-closets which have been so largely used in Board and other schools, says, in a report to the City Commissioners of Sewers, "Under all and any circumstances this objectionable method of removing excreta is offensive to the senses, and as I have before advised, at particular seasons, such as a cholera visitation, &c., would be highly dangerous to health; they therefore should be only tolerated on the score of economy when the strictest precautions are observed for their effective flushing twice a day by a competent and trustworthy attendant. There is no difficulty whatever in providing trapped pan closets for children of all ages, and well-known mechanical appliances can be adapted for the cleanly and decent use of the same by an automatic apparatus, beyond the control of the most mischievous or wilful." It is within our own experience that where the school caretaker is negligent, these troughs are sometimes allowed to get quite full before being flushed.

Warning of Fire. — Various automatic arrangements to give warning of the commencement of a fire on premises have been devised from time to time. The last has been devised by M. Amédée Charpentier, and is described in *Galignani*. The apparatus is extremely simple, and its efficacy has been tested on many occasions. It consists of two fine copper wires, that is to say, good conductors of electricity, covered with a thin coating of some isolating substance which melts at a slight heat, or volatilises immediately, without leaving any adherent residue. The two wires thus prepared are placed side by side, and only separated by the isolating substance. Their length may be practically unlimited, according to the extent of the locality in which they are employed, whether houses, factories, workshops, hospitals, schools, &c. They are so fine that they may be fixed round a door, window, curtains, articles of furniture, &c., without being perceived, more especially if they are coloured the same shade as the groundwork they are applied to. The principle of their action is that when the isolating surface is melted the two wires come in contact and complete the circuit of a battery with which they are connected, and a series of alarm-bells are immediately sounded. A further security is afforded by the fact that these fine wires are knotted at frequent intervals, for it might happen that the heat which dissolved the coating might twist the wires apart, and thus the desired effect be prevented. With the knots such a result is impossible, as not only does the isolating substance melt, but the heat expands the metal so as to insure contact.

Waves and Currents of Industrial Progress.—This was the title of an interesting lecture delivered by Mr. G. Phillips Bevan, at the City of London College, on the 30th ult. After tracing the causes which are mainly at work in affecting the industrial progress of countries, Mr. Bevan went on to speak of particular branches of industry and the decline in them which has taken place in several parts of the country. Barrow-in-Furness and Crewe in particular afforded remarkable illustrations of an almost phenomenal accretion of prosperity to districts which a few years ago were unknown. Middlesbrough gave another case in point. Fifty years ago it was a "town" of a single house; suddenly, in the year 1850, when beds of ironstone were discovered in the neighbourhood, it sprang into one of 7,000, and has at the present day 70,000 houses. If, moreover, the new method of dephosphorising iron,—one of the latest scientific introductions,—turned out commercially successful, there was no knowing, said the lecturer, to what size Middlesbrough may grow within the next twenty years.

Art Exhibition in Glasgow. — On the 28th ult. the St. Mungo Art Society opened their fourth annual exhibition in the hall of the Rainbow Hotel. The exhibits number 106, of which forty are in oil and sixty in water-colours.

The Artisans' Dwellings Act and Overcrowding.—The Howard Association, in a circular just issued on overcrowding and crime, thus refers to Mr. Cross's Act:—"The large amount of overcrowding, both in town and country tenements, is a most fruitful source of crime and vice. Yet its remedy is a subject of the utmost practical difficulty. Mr. Cross, as Home Secretary, devoted most earnest endeavours to grapple with it, by means of the Artisans' Dwellings Act. But, unfortunately, this Act has in great degree become a failure, and has afresh exemplified the evils of mere permissive legislation. It was rendered applicable to all towns of 25,000 persons or upwards; that is to say, to about eighty towns. Recent able articles in the London and provincial and other journals, show that in about sixty towns it remains a dead letter. In eleven it has led to discussion. In two or three it has resulted in demolition of buildings, but not in their erection. So that it has even been perverted to great mischief. For it has both increased, by the demolitions, the previous overcrowding, and also, the demolitions have involved enormous expense."

Ely Cathedral.—A new lectern has been placed in the cathedral under the following circumstances. In 1850 Professor Goertz, of Louvain, designed new stalls for the choir of Antwerp Cathedral. In 1851 Mr. John Sutton, fellow commoner and organist of Jesus College, Cambridge (afterwards Sir John Sutton), visited Goertz at Louvain, and inspected the stall-work in the studio and cathedral; he was so struck with one of the stall-ends that he asked Goertz to make him a *facsimile*. Goertz took a saw, cut it off, and presented it to Mr. Sutton, saying he would have a copy made for the cathedral. Mr. Sutton brought the figure to Cambridge, but subsequently went to reside at Bruges, where he died. Before leaving he presented the figure to Mr. R. R. Rowe, who has now given it as a nave lectern to Ely. The figure represents a king placing his crown and money-bags under his feet and giving himself to a life of contemplation.—*Times*.

Liverpool Borough Engineership.—We understand there were 101 applicants for the post of Borough Engineer, and that the list is composed as follows:—

Civil Engineers in private practice	31
Borough Engineers and Surveyors	18
Assistant ditto	5
Architects and Surveyors	6
Resident and Superintending Engineers of Public Works	19
Architects' and Surveyors' Assistants and Draughtsmen	7
Contractors' Engineers	11
Clerks of Works	2
Director of Ironwork	1
Nail Manufacturer	1
	101

The numbers were reduced to 20 at the first sitting, and to six at the second, the names being:—Hart, St. Helen's; Gordon, Frankfort; Dunscombe, Derby; Barry, Liverpool; Blandy, London; Stayton, Chelsea. These were reduced at the next meeting to two,—Mr. G. J. Barry, of Liverpool, and Mr. C. Dunscombe, of Derby. Mr. Dunscombe was eventually elected, as we announced last week.

Something like a Clock!—At the Industrial Exhibition of Chaux-de-Fonds (canton of Neufchâtel), recently held, a clock was exhibited which is described as a perfect marvel of mechanism. It indicates hours, minutes, seconds, and half-seconds, the seven days of the week with their planets, each day of the month as it comes round, the decades, the twelve months with the signs of the zodiac, the number of days of the respective month, the sun's perihelium, the phases of the moon, the solar system, sunrise and sunset according to the calendar, the four seasons, the equinoxes, and the solstice. On the number VI of the dial are two chronometers of different systems, and the pendulum is a barometer. The clock strikes the hours and quarter-hours. After striking the hour it plays a tune, and by means of a mechanism the eight pieces of music which the work contains may be interchanged. The name of the artist workman is Rapin.

Pictures in Progress.—Mr. Frith, R.A., is engaged upon another serial work likely to interest the town. It will illustrate A Commercial Frand, and one of the pictures represents a trial at the Old Bailey, and includes portraits of some well-known magistrates and barristers.

Metropolitan Asylums Board.—At a meeting of this Board, on the 1st inst., Mr. Bradshaw moved a resolution to the effect that an architect to the Board should be appointed. He said that the fees paid to architects during the past three years amounted to 1,900*l*. In answer to a question Mr. Bradshaw said he did not mean the appointment of an architect at a fixed salary. Mr. Gilsworthy pointed out that they had had several solicitors, and he thought with advantage. What would be the scale of fees on which they would pay the architect? The matter was full of difficulty. Mr. Standring did not understand the motion. The Holborn Union paid an architect a nominal fee of 30*l*. per annum, and if they wanted anything done the Guardians had to pay separately for it. The motion was withdrawn.

Hexham.—The Board schools here, after undergoing extensive alterations and improvements, were re-opened last week for teaching purposes. Internally, the buildings have been completely altered in their arrangements in order to obtain proper supervision by the head teachers in their various departments. Cap-rooms, lavatories, and teachers' rooms have been added, and considerable additions made to the amount of window area. A complete system of ventilation and heating has also been provided. The works have been carried out by the following contractors, viz.:—Mr. Dodd, mason; Mr. Dodd, joiner; Mr. J. Baty, slater; Mr. J. Rutherford, plumber; Mr. J. Dinning, painter and glazier; Messrs. Davidson & Spencer, heating and ventilating apparatus. Mr. Edward Snowball acted as clerk of the works; and Messrs. Oliver & Leeson, of Newcastle-on-Tyne, were the architects.

City of London School.—There seems likely to be considerable delay in the erection of this proposed pile of buildings, even if it is ever erected. The promoters have not the money in hand to proceed with the works, the Act of Parliament empowering the Corporation to rebuild the school (owing to some oversight), containing no clauses to sanction the raising of the necessary funds. Some consideration ought surely to have been given to "ways and means" before giving so much needless trouble to competitors. We will not yet believe the report.

Builders' Benevolent Institution.—The thirty-second anniversary dinner of this Institution, held on Thursday evening, was, we are glad to be able to say, very successful, the subscriptions and donations announced amounting to 860*l*., of which no less a sum than 425*l*. was accounted for on the list of the chairman, Mr. F. J. Dove, President of the Institution, who very ably fulfilled the duties of the chair. We shall give a report of the proceedings next week.

Sion College.—The City Lands Committee of the Corporation have entered into an arrangement with the trustees of Sion College,—an ancient corporation of the clergy of the City, and certain other parishes in the diocese of London, by which a new hall and library will be built for the Fellows on the Victoria Embankment at the corner of the intended new street from the Embankment to Fleet-street, in lieu of the present college in London-wall.—*City Press*.

Butterton, near Leek.—A new spire has just been added to this church, as a memorial by the late Mrs. Byrone to her deceased aunt, Miss Ellen Gaunt. It is built of stone from the Sheen quarries in the neighbourhood by Messrs. Bassett & Wilson. The architect was Mr. Sugden, of Leek.

The "Observer" Office.—In mentioning this among the works of the late Mr. David Moore, the words "very recently" should not have been used. It was rebuilt in 1864. In later times the building was altered and rearranged for larger operations by Mr. T. Roger Smith.

TENDERS

For memorial church, Maesllwch Park, Glasbury, Radnorshire. Messrs. Haddon Bros., architects:—

Baker & Son	£2,500	0	0
King	2,338	0	0
Edwards	2,380	0	0
Price	2,300	0	0
Stephens & Bastow	2,268	0	0
Welsh	2,145	0	0
Williams	2,000	0	0
Bowers	1,990	0	0
Inwood	1,971	0	0
W. & J. Crowe (accepted)	1,947	0	0

For West Ham Union extension, Essex. Mr. Lewis Angell, architect. Quantities by Messrs. R. L. Curtis & Sons:—

Contract No. 1.

Webster	£14,499	0	0
Perry & Co.	14,359	0	0
Crisp	13,867	0	0
Jones & Co.	13,850	0	0
Wall	13,597	0	0
Prout	13,501	0	0
Grimwood	13,463	6	0
Morter	13,430	0	0
Crabb	13,329	0	0
Atherton & Latta	12,834	0	0
Cox (accepted)	12,630	0	0
Nightingale	12,733	0	0
Hatton	11,863	0	0
Gregar	11,649	0	0

Contract No. 2.

W. & H. Castle	£18,639	0	0
Jones & Co.	18,092	0	0
Palmer	18,071	0	0
Ennor, Julian, & Co.	17,970	0	0
F. & F. G. Wood	17,795	0	0
Garlick	17,720	0	0
Morter	17,521	0	0
Sheffield & Prebble	17,387	0	0
Nightingale	17,238	0	0
Cox	17,223	0	0
R. & E. Smith	17,010	0	0
Prout	16,996	0	0
Perry & Co.	16,862	0	0
Holland	16,350	0	0
Crabb	16,300	0	0
Atherton & Latta (accepted)	16,260	0	0

Small-pox Hospital.

Webb	£3,175	0	0
Wood	3,145	0	0
Castle	3,100	0	0
Jones & Co.	3,033	0	0
Perry & Co.	2,992	0	0
Linfield	2,957	0	0
Morter	2,892	0	0
Smith	2,883	0	0
Garlock	2,873	0	0
Palmer	2,840	0	0
Crabb	2,765	0	0
Holland	2,710	0	0
Atherton & Latta (accepted)	2,660	0	0
Judd	2,649	0	0

For culverting in a portion of the Stamford Brook portion of the sewerage works at Acton. Mr. C. Nicholson Lailey, surveyor:—

Nowell & Robson	£824	4	0!
Bell	686	18	8
Simmons	675	10	0
Killingback	657	2	3
Etheridge	612	17	4
Nobbs & Co.	584	10	0
Smith	580	6	4
Taylor	546	10	4
Hayes & Co.	539	17	0
Neave	533	15	0
Bloomfield	513	0	0
Meston (accepted)	490	0	0
Small & Sons	463	15	8!

For sewers at Acton Green. Mr. C. Nicholson Lailey, surveyor:—

Killingback	£839	5	0!
Nowell & Robson	722	10	0
Simmons	640	5	0
Bloomfield	603	5	2
Etheridge	599	2	0
Neave	580	2	6
Narroway	561	5	0
Taylor	549	5	0
Bell	504	10	0
Smith	416	0	0
Hayes & Co.	424	16	3
Nobbs & Co.	409	10	6
Small & Sons	401	5	10
Stodhard	380	0	0
Meston (accepted)	328	0	0!

For pair of semi-detached houses at Blackwater-road, Eastbourne, for Messrs. Geo. Tolhurst and James Noakes. Mr. A. Crisford, architect:—

Harding	£4,749	0	0
Stevens	3,884	0	0
Fowler	3,400	0	0
Cornwell (accepted)	3,150	0	0

For pulling down and rebuilding 24, Paris-street, Lambeth. Mr. A. Parnacott, architect:—

Davis & Drew	£335	0	0
Edwards	325	0	0
Scott	300	0	0
Elliott	285	0	0

For alterations and additions to Nos. 33 and 34, Queen-street, Brompton. Mr. George Edwards, architect:—

King	£275	0	0
Simpson & Co.	265	0	0
Richardson	255	0	0
Croft (accepted)	230	0	0

For water works, Ludlow. Mr. T. Curley, engineer. Quantities supplied:—

Powis, Parker, & Morris	£5,819	0	0
Morgan	4,972	14	7
Dowell & Co.	4,551	14	0
Cowder & Sons	4,410	0	0
Grosvenor	4,364	9	9
Rassell	4,261	16	10
Crow	4,168	0	0
Dawson	4,060	0	0
Walker	3,837	3	4
Nevett Bros.	3,840	0	0
Mackey	3,715	14	9
Hine	3,580	0	0
Davis (accepted)	3,555	15	3
Williams & Jenkins	3,551	18	2

Accepted for the restoration, after fire, of the Wiltshire Brewery, Hackney-road. Messrs. Scamell & Colyer, engineers:—

T. W. Smith & Son, *For Plant*.
Bennett & Son, *For Refrigerators*.
Lawrence & Co.

For alterations, painting, and decoration at the National Provident Institution, Gracechurch-street. Mr. T. E. Knightley, architect:—

Mansfield & Sons	£1,200 0 0
Kiddle & Son	1,195 0 0
Green & King	1,166 0 0
Pitman & Son	1,145 0 0
Colls & Son (accepted)	975 0 0

For carcass of a villa-residence at Sydenham, Mr. J. Hunter, architect:—

Alfatt & Thorn (accepted)	£335 0 0

For erection of new meter-house, workshops, and stores for the Folkestone Gas and Coke Company. Mr. Burgess J. Reeve, architect. Quantities supplied:—

		Credit old materials.
Brooks	£2,865 0 0	£85 0 0
Petts & Son	2,768 0 0	45 0 0
Payn	2,740 0 0	90 0 0
Clemmans	2,700 0 0	100 0 0
Hood	2,600 0 0	
Webster	2,670 0 0	74 0 0
Baker	2,560 0 0	77 0 0
Camburn & Co.	2,553 2 6	60 0 0
Prebble	2,532 0 0	
Dunk	2,628 0 0	50 0 0
Reason	2,450 0 0	45 0 0
Slade	2,400 0 0	50 0 0
Holdorn	2,400 0 0	60 0 0
Unwin (accepted)	2,358 0 0	45 0 0
Theobald	2,181 0 0	36 0 0

For erection of four cottages in Marshall-street, Folkestone. Mr. Burgess J. Reeve, architect:—

W. H. Hood	£850 0 0
Petts & Son	832 0 0
J. Hood	700 0 0
Slade	700 0 0
Reason	696 0 0
Prebble	684 0 0
Hall	675 0 0
Camburn & Co.	650 0 0
Philpott	646 0 0
Keeler	620 0 0
Jenner	620 0 0
Huson	600 0 0
Sims (accepted)	616 0 0

For alterations and additions to Wingate Villa, Canterbury-road, Folkestone, for Mr. T. G. Morrison. Mr. Burgess J. Reeve, architect:—

Petts & Son	£220 0 0
Dunk	180 0 0
Brooks (accepted)	172 0 0

For erecting a villa-residence in the Epping High-road, for Mr. J. Wyatt. Mr. H. Foster, architect:—

Somerville & Hill (accepted)	£1,350 0 0

For sewering, levelling, paving, &c., streets at North Woolwich, for the East Ham Local Board. Mr. H. Savage, surveyor. Quantities supplied:—

Nobbs & Co.	£5,600 15 11
Brickell	5,313 0 0
J. G. B. Marshall	5,120 14 5
Toole	4,946 0 7
Holloway	4,925 9 7
H. A. Marshall	4,814 18 6
Botterill	4,710 0 0
Bell	4,684 18 4
Marney	4,568 0 8
Rutty	4,409 12 11
John Jackson	4,268 3 9
Joseph Jackson (accepted)	4,224 11 5

For the erection of house, lodge, stables, and two cottages, Harefield, Romsey, for Mr. Thomas Strong. Mr. W. H. Mitchell, architect:—

Sims Bros.	£8,535 0 0
Mitchell Bros.	8,337 15 1
Puzey	8,089 1 10
Jones & Co.	7,723 0 0
Chapman	7,475 0 0
Stephens & Bastow	6,996 0 0
Egg & Hobbs	6,960 6 6
Stiff	6,784 0 0
Crook	6,737 0 0
Lawson & Stanley	6,645 8 8
Rowland	6,611 5 0
Sander	6,580 0 0
Stevens & Son	6,529 0 0
Bull & Son	6,430 0 0
William	6,225 13 11
Hale & Sons	6,165 0 0
Jenkins & Son (accepted)	5,989 0 0

For residence and stabling (exclusive of boundary walls, gates, &c.), Shorncliffe-road, Folkestone, for Mr. Medhurst. Mr. Reginald Pope, architect:—

Payn	£2,390 0 0
Holdom	1,875 0 0
Petts	1,758 0 0
Slade	1,585 0 0
Hood	1,580 0 0
Prebble	1,580 0 0
Clements	1,584 0 0
Camburn	1,560 0 0
Saunders	1,520 0 0
Baker	1,470 0 0
Moody (accepted)	1,448 0 0
Reason (withdrawn)	1,285 0 0

For lodge, Torrs-park, Ilfracombe, for Mr. R. Huxtable. Mr. W. Morgan Robbins, architect. Quantities by the architect:—

Horwood (for portion of works) accepted	£728 0 0

For detached villa, Torrs-park, Ilfracombe. Mr. W. Morgan Robbins, architect. Quantities by the architect:—

Horwood (accepted)	£830 0 0

For erecting and completing Stepney Emmanuel Mission Room, Ronald-street, Stepney. Mr. George Legg, architect:—

	Built in two portions.	Built at one time.
Conder	£1,694	£1,594
Morter	1,163	1,576
Little	1,667	1,671
Shurmur	1,647	1,539
F. & F. J. Wood	1,593	1,513

For shop front, 166, Shoreditch, for Mr. Richard Day:—

Shurmur	£250 0 0
Salter	248 0 0

For villa-residence in Buckingham-road, Woodford, Essex, for Mr. J. C. Aukland. Mr. J. R. Rogers, architect:—

Good Bros. (accepted).

For alterations at 274, Oxford-street, for Mr. Linscott. Mr. Daniel R. Dale, architect:—

Woodland (accepted)	£107 0 0

For the erection of four houses and shops on the Grove Estate, Leytonstone, for Mr. Stoffell. Mr. D. R. Dale, architect:—

Hoare (accepted)	£2,900 0 0
Hughes	2,880 0 0

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N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

Vol. XXXVII. No. 1919. Saturday, November 15, 1879.

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School Planning: Middle-Class Education.

SCHOOL BOARDS, and other parts of the modern machinery of Primary Education have done enough hard work to merit opprobrium from worthy ratepayers, and to excite dread visions of the country's ruin at the hands of an over-educated common people. Out of about a million and a half children presented for examination in Annual Grant Schools in 1878,—a few over 30,000 passed in reading in Standard VI., that is, were able to read with fluency and expression; about 30,000 could write a short theme or letter, or an easy paraphrase; but some 7,500 of these failed when tested in "proportion and fractions (vulgar and decimal)." It might be thought by an onlooker that these statistics should be a potent charm,—that their mere repetition might serve to banish care and panic, and that the middle-classes might surely possess their souls in peace and comfort for several years to come. That sort of evidence of arrears in Primary Education, and of dulness among the children of wage-paid people, might justify some contempt for middle-class renegades, who make much of the fact that "the English middle-classes are nearly the worst educated in the world," repeating thus word for word what Mr. Matthew Arnold, with most unpleasant candour, went out of his way to write in 1861, when reporting on popular education in France. Signs of coming changes have, however, become more and more decided in the course of the years since that was written, and apparently the descent has now been fairly begun. Notwithstanding much wavering and looking back, it will probably be continued at an accelerating pace, and will land us at last in a world in which the Commercial Academy will have no existence, where the announcement that a quarter of the scholars in Public Elementary Schools have passed in the three higher standards will be heard without uneasiness, and it will be a subject for satisfaction that England has

> "Bound herself by statute to secure,
> For all the children whom her soil maintains,
> The rudiments of letters, so that none
> . . . . . be forced
> To drudge through weary life without the aid
> Of intellectual implements and tools."

Mr. Cross, the Home Secretary, in opening the new Grammar School at Wigan last week, showed some of the changes which are taking place,—according to his custom, not emphasised by sounding rhetoric, which unfortunately is not at his command, but by the effective use of eloquent statistics:—

"I look upon it as absolutely essential that this question of secondary education should be carefully attended to. Every possible assistance should be given to those boys who show remarkable ability and industry, enabling them to rise from class to class. Under the Endowed Schools Act, the Commissioners have had considerable difficulties to contend with. Dealing with existing endowments,—some being endowments by persons who left lands which have become far more valuable than when they were originally left,—it has happened that in small places they have found vast endowments which they have not known what to do with, because there were no wants in the district to consume all the money; whilst, in populous places which have been comparatively poorly endowed, there were not endowments sufficient to meet the wants of those neighbourhoods. Nevertheless, they have done a great deal. They have powers under their Act, when they have satisfied the wants of the district, to apply the funds in other ways, and in this particular matter I think they have done good service. They have made 515 schemes, and those schemes absorb endowments to the extent of about 260,000*l.* a year. They have at the present moment under their consideration 170 schemes, which represent an income of 177,000*l.* a year; so that, altogether, we may say that 485 schools and institutions of a similar character have been dealt with, having endowments amounting to not very far short of 500,000*l.* a year. There are still some 490 schools to deal with, and an annual income of 168,000*l.*; and no doubt before long this great work will be practically completed. It is, however, no use having schools unless you have scholars in them, and it is most satisfactory that in all the schools renovated under the Endowed Schools Commission, the moment the scheme has had a fair start the increase in the number of scholars has been something enormous. There was a school at Newcastle, an excellent school, at least so far as it went at the time. It had only seventy scholars. It has passed through the mill of the Endowed Schools Commission, and has come out reinvigorated, and the scholars already number 490. There was a group of schools in Yorkshire which had an income, altogether, of about 4,000*l.* a year, and in which 300 scholars were educated. The number of scholars since those schools were remodelled has advanced nearly 1,000. In one of the hospitals at Hoxton, where twenty scholars were educated free out of the funds, there has been an entire remodelling, and instead of twenty scholars the present number is 1,094."

This tone of confidence in the present and the future has something cheering in it,—suggestive of success well hoped for and therefore likely to be attained,—which is better after all than a state of querulous acquiescence in the inevitable.

The problems to be solved by the combined efforts of statesmen, parents, schoolmasters, and architects might be enunciated in an informal way, in scanning the daily work and the range of studies of some vigorously-conducted middle-class school, which happened to be an example of what statesmen and many parents wish to become less and less rare. In the course of such a survey we should think specially—as would befit our function—of the way in which a capable architect would set about designing the building properly fitted for such a school,—so as to make of it a well-devised manufactory in which a skilful master-craftsman would find all the tools ready to his hand, by which some of the most active spirits of their time may be "battered to shape and use." The City of London School would supply somewhat conveniently such an illustration. "The object of the school is to furnish a liberal and useful education for the sons of respectable persons who are engaged in professional, commercial, or trading pursuits, without the necessity of removing them from the care and control of their parents." In other words, it is a good day-school, mainly for the class which is in the exact middle of the middle class,—for the sons of master-tradesmen, mostly in wholesale trade, and of that body of people who, though in receipt of salaries, have about the same social rank. Having nearly 700 scholars, there is a strong staff of teachers, and the boys have the sense of belonging to a great school, with some traditions and with a future, which has often a powerful influence in promoting some of the finer kinds of ambition. There would this week be a special additional reason for the selection. The competition for the new building, intended to be erected at the expense of the City on an acre and a half of City land on the Embankment just by Blackfriars Bridge, has not long been decided. When it was announced, the architectural profession was a good deal exercised. The profession is all too prone to enterprise and emulative tasks; and the magnificent site, and the interesting and difficult problem to be worked out upon it, piqued many into competing who had laid aside the habit, and others who had indulged in it but rarely. In our careful review of the fifty-three designs submitted in the competition (page 792, *ante*), we gave a preference to the design "Move,"—calling it "the best plan of those submitted, one of the cleverest plans we have seen,—the architectural treatment above the average, and peculiarly suited in character to the purpose of the building." This design proved thereafter to be one of six picked out for special reconsideration by the committee and a week or two ago the Court of Common Council awarded to its authors, Messrs. John & S. Flint Clarkson, a special premium "on account of the great ability shown in the design." We have made an exception to our ordinary rule, and considered that plans and a view of this design,—though it is not accepted for execution,—might with advantage be shown to our readers, seeing that in the nature of things so good a type of plan can hardly fail to be adopted in not a few cases, now that there is a probability of great day-schools being erected in considerable numbers in and about great towns. There are other types,—plans actually executed and prepared for execution,—which also deserve attention, and will receive it at our hands,—as time goes on, and the public interest in the subject brings it more and more to the front.

The scheme of pupils' work in the City of London School, although planned out in detail, cannot come fully into use until a suitable building is provided. The separate classes, the combined classes, the assembly in the hall, and the use of the playground are the salient features. For each boy in the school his class-room is in effect a little school under its own master; but the boys in each class-room will be made to feel themselves part of the whole

school, being assembled with the rest at least once a day. The class-master leaves his class-room, and the class goes out of his charge for a time, while a special lesson on some obligatory subject is being given,—for instance, when the French master comes on the scene. One lecture a week is given in the lecture-room to every scholar in natural science,—the classes most equal in standing being taken from their class-rooms and grouped for the purpose. A boy's day is broken into two sections, and each of these divided again by a short interval. At about a quarter to nine he may be expected to appear in the playground; at nine comes the summons to the general assembly in the hall—for prayers; then the dispersal into the class-rooms; a break of ten minutes or a quarter of an hour, and a visit to the playground about eleven; class-rooms again till twelve, and then the first section of the day is over. The ways from the hall to the class-rooms, and from them to the playground, must evidently be neither strait nor single. The playground plays an important part. While limbs are being warmed, and fresh air breathed in the playground, the used air can be cleared out and the class-rooms freshened, ready for the return of the boys after the interval. For any day-school in a considerable town an ample playground is not, however, merely a luxury conducive to health and comfort,—it is also absolutely necessary for good discipline. When there is play-space, it is possible to make it a rigid rule that every pupil shall remain on the premises, from the time of entry till the time of leaving. From half-past twelve the afternoon school continues to three, with a short interval in the middle of that time. The assembly in the hall for prayers may take place then. The final departure is a subject for drill. The boys having furnished themselves with coats, caps, and bags, and returned to their class-rooms, the building will be completely cleared in a few minutes after the order to leave is given. All the cloak-rooms should obviously be reached directly from the class-rooms, and wide corridors should lead to the principal entrance, which is the only entrance and exit for everybody belonging to the school. On Wednesday and Saturday, after twelve, all the younger boys take holiday, and such of the others as do not require lessons in the optional subjects. These lessons,—in German, drawing, and vocal music, for instance,—are given in large class-rooms formed by combining two or more.

The distance from which boys of this class come, and should or might come, to school; the applications for admission; the selection by test examinations; the ages at which pupils are admitted and their previous training; the ages at which pupils leave school, and the course of life chosen for them; the way in which the size of classes is affected by the ages of admission, by the removes, and by limits of age for remaining in certain classes; the obligatory and the optional studies; the school examinations; the university examinations for prizes and scholarships; the history of the school, holidays, boarding, and dining, and a host of other subjects, ought in good right to be well apprehended by an architect, in order that he may get and keep well in mind the exact type of school for which he is to supply a home. If something was said here in detail about almost every one of them some excellent educationists might read the whole with relish. A list of the acquirements of the ordinary intelligent boy, leaving what is known as the Latin class for business, between fifteen and sixteen years of age, may be of general interest, and must be considered sufficient by us at this time. His course of instruction will have comprised English, Latin (Cæsar, Ovid, Virgil), French, about three books of Euclid, algebra up to quadratic equations, arithmetic, writing, book-keeping, geography, history, and the elements of chemistry and natural philosophy. He will have had some training in vocal music; for it is obligatory in the lower classes, though optional in the part of the school which he will have reached. If likely to be useful to him in life, he has gone through a special course in the practical chemistry class-room; and has had drawing, and possibly German, lessons on the Wednesday and Saturday afternoons. Any description of the work in the higher classes would not stop short till the university was reached; and that part of the training,—although it is most necessary, because it improves the quality of the training lower down, and indeed throughout the school, and because it does something towards "uniting the various classes in the community by the strong bond of a common culture," and for plenty of other reasons, can, of course, only apply to a small per-centage of the scholars in the kind of intermediate school which we have immediately in view.

The following extracts, from the description furnished by the architects with the design now illustrated, will allow them to expound their views of what such a building should be. It is to be understood that we reproduce them in view of their bearing on the general subject of school planning, and not with reference to the recent competition (now closed):—

"The principal entrance is at the south-east corner;—a position selected, among other reasons, in order that the whole of the rooms devoted to administration may be in communication. These rooms are put in an unbroken line fronting the Embankment, so that all the windows would be reached by the sun, and would give a look-out over the road and the river. No other position for the entrance will allow this to be done. With the entrance in the centre of the façade, part of the rooms must be placed on one side of the entrance-hall and part on the other. The library, as it adjoins the committee-room, can be used as a waiting and special conference room, &c. A large clock-tower is placed over the entrance so as to give importance to it, and prevent the building being dwarfed by the adjoining hotel. The porter would control all entry to and exit from the building from his rooms on the right of the entrance-hall;—the book-room, the lift reaching every floor, and the porter's stairs carried down to the basement and up to the porter's residence at the top of the building, are placed on the same side of the entrance-hall. On the left side are the secretary's rooms,—and the rest of the administration occupies the remainder of the front next the river, the head-master's class-room being at the south-west angle, so that he may occupy the position between the administration and the other class-rooms.

The proper position for the hall, or large room for 1,000 persons, in which the school would meet for prayers, prize distributions, &c., would appear to be settled by the following consideration. The classes would pass in the *easiest possible* way from the hall to their respective class-rooms by several exits not interfering with each other, if the class-rooms were placed so as to surround the hall on every side. A large number of class-rooms deriving their principal light from the south, would not, however, be desirable; and, on this site, east class-rooms should be avoided, owing to the great height (between 80 ft. and 90 ft.) of the hotel adjoining. The larger number should be placed so as to derive their principal light from the north. The hall must, therefore, have its longer axis running east and west. As there will be only one story of class-rooms on the west, the end of the hall can be brought into view, in such a way that, although it is in the direct centre of the whole block of buildings, it will assert itself and largely influence,—as the largest and most important internal feature should do,—the external expression of the building. It should be specially designed for use as an auditorium, and have windows in all its walls, many of them carried fairly low down, so as to be available for additional classes, examinations, and other purposes. The walls would be pierced with thirteen doorways, a certain number in each of the four walls, ten being allowed for the use of the twenty classes of which the school is composed; so that only two classes would leave and enter by any one door, and the hall might thus be filled and cleared with the utmost ease and order.

The method of communication, between the different parts of the buildings, is almost decided on when courts have been placed on the north and south of the hall. For girdling corridors on two floors can then be well lighted in every portion. The west corridors on the ground floor would be lighted by windows placed above the roofs of the cloak-rooms, which are about 9 ft. in height, the height of the class-rooms and corridors on the same story being about 14 ft. A grand staircase would be a superfluity quite uncalled for by the uses of the building; but, as the south-east staircase would be used at times by ladies and others, there might be in it a little deviation from the plainness maintained elsewhere in the staircases, which are four in number,—one at each angle of the corridors. In order that the whole of the boys may reach the playgrounds from the ground-floor quickly and without confusion, double staircases would be provided in three positions,—making six staircases in all,—each staircase leading to the playgrounds being thus used by about 100 boys. The south-east and south-west staircases would be carried up to reach the lecture-room for natural science; 200 boys entering the room at the lower end near the lecturer's platform from the south-west staircase, and the other 200,—the remainder of the 400 for whom the lecture-room would be constructed,—reaching the upper level of the seats by means of the south-east staircase. The science class-rooms, laboratory, &c., would be reached from the south-west staircase.

The northern aspect having been settled upon as above described for the larger number of the class-rooms, they will consequently look out upon the open space on the north of the buildings,—quiet thus being secured without double windows. The class-rooms are on two floors only. Thirteen out of the twenty are on the same floor as the head-master's rooms and the hall; this will allow a ready classification into senior and junior departments if desired. A young boy, placed in the north-east class-room on the first floor, would pass on at the removes till he reached the west class-room on that floor and thereafter similarly on the principal floor he would pass from class-room to class-room in regular series, until he reached the head-master's class-room at the south-west corner of the building. The plan, therefore, expresses very simply the way in which progress in the school will be made. Every class-room is lighted from the left side of the desks. The three class-rooms in the centre of the west front can be combined so as to form one large room when necessary,—as for drawing lessons, being divided by double sliding doors. These class-rooms are lighted by lantern-lights, and two class-rooms adjoining could be similarly lighted if so large a number of top-lighted rooms should be deemed desirable. The lantern-lights would ordinarily be closed by wood-shutters at the ceiling level, but during the drawing lessons the shutters would be opened, and the lower portions of the windows in the west walls of the class-rooms would be closed by shutters. Two class-rooms at the north-west angle of the building on the ground floor, and the two over those on the first floor, have also double sliding-doors, so that these pairs of class-rooms can also be combined when required. As class-rooms arranged for being combined are not so serviceable as class-rooms wholly surrounded with brick walls, no more than the number decided upon as absolutely necessary should be formed. There are open-ings in more than one wall of the class-room, so that the air in them can be freshened at times by cross-currents.

Each class-room has its own entrance lobby and cloak-room, being in fact a kind of separate school. Cloak-rooms should not be less than 7 ft. 6 in. by 13 ft., for forty boys. They would contain for each boy,—in addition to the usual fittings,—a locker to hold a change of clothes, and a coil of hot-water pipes, so that damp clothes might be dried during the school-hours.

The dining-hall, for 200 boys, should be placed so that it may have windows overlooking the river, and have windows also in its north wall. With doors at both ends, only 100 boys need enter and leave by the same entrance. If the use of it as a dining-hall should be abandoned, four special class-rooms, each with the usual lobby and cloak-room, can be formed; or the eastern portion could be used for a smaller number of boys, and class-rooms formed out of the remainder.

The common room for assistant masters has been placed at the south-west angle of the building, so as to obtain cheerful aspects, and to take the utmost advantage of the prospects up and down the river. A top-lighted room, or a room without any look-out, would be most unsatisfactory for this purpose. A disposition to leave the class-rooms, and obtain a glimpse of something outside the school in the intervals, should be encouraged by the position, size, and appearance of the common room.

A large portion of the space under the buildings will form a covered playground, every portion of it well lighted. The open playground occupying the north portion of the site has a total area of 23,000 superficial feet. A covered way, on the east side of the open playground, leads from the covered playground to the latrines, which are placed at the north-east angle of the site.

The building is designed so as to have a well-

marked individual external appearance, and to be fairly dignified, although studiously simple. Red brick, red terra-cotta, and Portland stone would be used for all external faces. The architectural detail in the design bears resemblance to that in use in England at the beginning of the fifteenth century. There are already several other important buildings belonging to the City designed in this style. There would be no attempt to keep in a pedantic spirit to any precedent; but it would not seem inappropriate for the time of the original foundation of the school to be suggested by the general character of the architecture of the building. An existence of 450 years need not be forgotten, because the school will probably be still young at the expiration of a similar period.

It would be uncandid, and mere affectation, for any one at this stage to state, within say 5,000*l.*, the cost of the part of the building which is really essential to the working of the school. An outlay of about 50,000*l.* for buildings, exclusive of school-fittings,—that is, about 75*l.* per boy,—has been contemplated. The raising of the south-east corner, although not essential, would be most desirable on architectural and general grounds. The hotel is very lofty, and the school buildings should overtop it,—if not through the whole of the Embankment façade, at any rate in some decided way in the part immediately adjoining. The wall on the west side of the hotel is ugly and dull, therefore it should be shut out, so as not to be seen over or beyond the school buildings."

Such extracts may serve good purpose, when neatly trimmed down so as to treat only of general considerations, but need not deal with the minuter details, which have such a bad habit,—unless held sternly at arm's length,—of swarming round the gentle reader. Members of building committees, with or without amateur knowledge about drawings and architecture, may, in truth, be excused if at times they are "unable to see the landscape for the trees."

A plain-spoken,—that is, an ungracious,—person might say that the scholar who has the good fortune to be thoroughly trained in such a school, having one of the most valuable sites in London as his playground, having 75*l.* expended for him in building, and a further substantial sum for galleries, desks, and other fittings and furnishing, is evidently the subject of a handsome annual outlay on the part of the general public. By the balance-sheet it appears that salaries cost the City very nearly the total amount received as school-fees for the year, so that it would be necessary to increase the fees from 10*l.* 10s. per annum, if there were no endowments, subscriptions, or other funds, to draw upon for pensions, examinations, prizes, exhibitions, repairs, &c., to buildings, and the miscellaneous expenses for "rates, tithes, printing, brooms, winding clocks, sundry wages, &c." After dividing the annual outlay beyond the school-fees by the total number of scholars, it would be possible to represent that the boys' parents are receiving a further pleasant little annuity from neighbours and friends. A more careful analysis of the balance-sheet, and consideration of the whole question, might lead a courageous person to remark that, when any better way of using the surplus cash of past generations can be suggested, it will be possible to give the subject serious consideration. Giving permanence and liberal sustentation to schools, and securing thoroughness in the education in them, may, till then, be looked upon as not the most irrational method of making away with part of the money earned by the present generation, and paid over in order that it may go in directions which a dead hand has pointed out,—by good chance, directions useful to us moderns. But for that to happen we must have wit enough,—to know the main need of our time and of all times, to lay out well the main line of life, and to put capable pointsmen at the switches, encouraging them to take care that the best energies of our people, and the hoarded and still accumulating wealth, are kept on the right track,—not, as the result of neglect or blundering, shunted into the sidings.

Social Science Association.—There were 166 applicants for the office of Assistant-Secretary. A committee appointed to select three and report to the council, named Mr. W. R. Buck, Mr. F. Vincent Budge, and Mr. T. L. Clifford Smith. Ultimately Mr. Clifford Smith was appointed.

PROPOSED "RESTORATION" OF ST. MARK'S, VENICE.

The Society for the Protection of Ancient Buildings have certainly now come in for a *dignus vindice nodus*, if it be true that the reconstruction of the west front of St. Mark's, Venice, has been deliberately determined upon. The building which it is stated is thus threatened is perhaps, all things considered, the most historically interesting building since the Christian era. In it met the poetry of Eastern and of Western architecture; it is the great architectural record of the place once held by Venice, and by Venice alone, among post-Christian cities, as the medium of communication between the political aspirations of Mediæval Europe and the treasuries of "the exhaustless East." In St. Mark's, Oriental magnificence and Western refinement and architectural logic have joined hands. It is the most unique building of Europe; it represents a mingling of architectural splendours and (in a certain sense) incongruities such as we may look for in vain elsewhere. And now we are told that the hand of the restorer is to be wildly lifted up upon this building also.

If this be true, Horace's exclamation "*per fas et nefas*," is the only comment that can be made upon such a piece of Vandalism. And much as we have been disposed to quarrel with and criticise the proceedings of the Society above referred to, we may well say that if such an act of spoliation be really threatened, and if they can show that they are able to do anything effective towards averting it, they will have shown a *raison d'être* more convincing and satisfactory than they have shown as yet. Our hands would be employed willingly to strengthen those of any body of men who were bent on preventing the practical destruction, so far as its antiquarian interest goes, of any part of such a building as the great Venetian basilica,—in comparison with which the architectural and archæological interests of our own cathedrals may almost be called merely local. We are not, however, under the necessity of accepting implicitly the dicta and the information, on such a topic, of the Society for the Protection of Ancient Buildings, and fortunate it is on the whole that we are not. For truth compels us to say, with all due respect for its members individually, that the Society in question has shown such ill-regulated enthusiasms that we could hardly feel called upon to give utterance to any decided opinion based merely on its statements. They seem, in regard to the restoration of buildings, to be among the persons described by Chaucer, "who gladlie deemen to the badder end." No statement in regard to wilful and corrupt Vandalism is too bad for them to swallow; and so far from endeavouring to make allowance for the special circumstances which might seem to give a colour and a reasonable motive to any piece of restoration, their effort has really seemed to be deliberately to shut their eyes to any extenuating circumstances, and to make the very worst of every case, actual or hypothetical, which comes before them.

Fortunately, we have our own sources of information apart from the Society, and, from a letter we print elsewhere, it may be hoped that no such act of wholesale spoliation as the rebuilding or restoration of the front is in contemplation so far. What is proposed to be done, if our correspondent be correct, is a partial restoration or repair on a much smaller scale, and on the ground of alleged decay of the building at the points threatened with renovation. Even this is much to be regretted, and we may hope that any meddling with or modernising of the exterior is in reality unnecessary, and may be averted before it is too late, if not absolutely imperative. Whether the repair, to the extent threatened, is really imperative or not on practical grounds, only a special examination of the present condition of the building could enable one to say positively. From the best information as to its recent state which we have been able to collect, we must candidly say that we doubt the necessity even of the extent of the repair which is talked of, and are disposed to join with the Society in making a determined stand against it, unless its practical necessity is demonstrated beyond possibility of doubt.

The same number of the *Times* which contained mention of the meeting of the Society on this subject contained also a letter from Mr. Wallis, the well-known artist, who of late years has made Venetian subjects among his special studies. His testimony is an independent one, entirely unconnected (ostensibly at least) with that of the Society; and on more grounds than one his opinion is entitled to great weight. But it seems that persons who feel strongly, and on special grounds, on these matters, find it difficult to keep within the line. Mr. Wallis, for example, states that, according to his information, the west front "is to be restored forthwith." Again, he waxes enthusiastic on the beauty of the effect of the undulating surface of the floor in its original state, and says that an eminent English architect has expressed his opinion that the floor was originally and intentionally laid with this undulation of surface, and that the levelling of the floor in relaying the mosaic has been, therefore, an interference with the original design of the architects of the building. However much we sympathise with him in his denunciation of the stupidity with which the mosaic was disturbed without sufficient care being first taken to record and figure the design for relaying, we have not the slightest hesitation in saying that we are convinced that the undulating surface of the floor, about which so much sentiment has been talked, was simply the result of what may be called bad engineering, either in want of skill to keep the true level at the outset, or in want of necessary care to ensure the ground against subsidence from natural causes subsequently. The idea that the floor was intentionally laid out of level, and that this was regarded as a beauty, architecturally or symbolically, by the original builders, we can only deem a chimera of that unreasoning enthusiasm in whose eyes every mistake and every deformity becomes a beauty, provided a sufficiently long pedigree can be made out for it. The varied level of the floor was, no doubt, a curiosity of the building interesting in itself, and which we would not have seen wilfully disturbed. But if repair of the floor were necessary, to have deliberately relaid it out of level would have been an absurdity. It was a piece of clumsiness to begin with, only interesting as a record how clumsy the construction of a building in the Middle Ages could be. By adopting the other hypothesis, Mr. Wallis has much weakened the force of his otherwise valuable letter.

Our conclusion is, that it is a point of wisdom for all who are anxious about the preservation of ancient buildings to temper their enthusiasm by some admixture of practical common sense. The recent movement in regard to the protection of ancient buildings has been so deficient in this quality that it has compelled us, after years of protest on our own account against over-restoration and Vandalism, almost to seem to take the other side, as the side of truth, against the inaccurate and sweeping denunciations now brought against every one who attempts the slightest repair of an old building, even under the most pressing practical need of repair. It may be hoped that what it is proposed to do at St. Mark's does not go much further than what may be fairly called practical repair. If it is found that more than this is intended, our strongest protest will be entered against it, and we will join with the Society for the Protection of Ancient Buildings in demanding that the spoliator should stay his hand. But we cannot help adding that the protest of that society and of artists and others who support it will gain immensely in effect and in usefulness if they measure their expressions carefully, and learn the exact truth of the case before denouncing the parties concerned.

Since these remarks were in type, we have seen a copy of a memorial addressed by the Society to the Minister of Public Works of Italy, and which is about to be forwarded. It has our entire concurrence, and we earnestly trust it will have the desired effect of enlisting the Italian Government on the side of preservation.

It is stated that the Italian Government propose to erect a statue to Victor Emmanuel upon the Piazza San Marco, and for that purpose it is intended to remove one of the magnificent bronze wells which form such conspicuous features in the Piazza.

Sunderland Museum and Library.—These buildings, which have been already described in the *Builder*, were opened on the 6th inst. Messrs. J. & T. Tillman are the architects. We shall give illustrations of the buildings in an early number.

SECTARIAN ARCHITECTURE.

THE case of "Botterill and Another *v.* Whyte-head," which was tried at last Leeds assizes, before Lord Justice Bramwell, with the result of a verdict for the plaintiffs, came up again last week before Mr. Justice Hawkins and Baron Huddlestone, in the shape of a motion for a rule for a new trial on the part of the defendant, which the judges ultimately granted.

The case has some significance in reference to the practice of modern church architecture and the attitude of the clergy in relation thereto. The plaintiffs are architects at Hull, and the case, as some of our readers may remember, was an action for libel brought by them against a clergyman who had written to the custodians of Skirlaugh Church, in Yorkshire (the vicar and the squire's steward, to wit), protesting against the employment of the plaintiffs to restore the said church, on the ground that they were Wesleyans, and therefore could not understand the work. In the early days of the Camden Society and the ecclesiological craze such an opinion would have been a matter of course with every sound Churchman. We had hoped that clergymen were becoming a little more philosophical in the matter, and trust that we may, at any rate, regard the reverend defendant in this case as a "survival" rather than as a representative of the feeling of the majority of the clergy who concern themselves with architecture at present.

Whether the charge complained of be in fact libel or not does not so much concern us, and may at any rate be left to the decision of the lawyers. But one or two of the special expressions on the subject which were elicited from one side or the other in the course of its discussion are certainly suggestive of comment. The manner in which the objection to the employment of a Wesleyan architect in the treatment of a church was in the first instance urged by the clerical defendant in the case shows a curious confusion of ideas such as we have not unfrequently observed in relation to this subject. "The restoration of Skirlaugh church has fallen," it was said, "into the hands of an architect who is a Wesleyan, and can have no experience in church work. Can you not do something to avert the irreparable loss which must be caused if any of the masonry of this ancient gem of art is ignorantly tampered with?" Now, in this appeal two issues are raised which are in reality perfectly distinct from one another. The first part of the sentence suggests that the Dissenting architect can have no experience in church work; in other words, cannot have been accustomed to oversee the arrangements and the *appareil* supposed to be specially required in fitting out a building for a specific form of worship. This, though it need not necessarily be true, may very probably be so in many cases. The question so far is one of preparation for a special ritual; and as in the majority of cases the members of a religious community employ an architect of their own community, the probability would be that, as a matter of fact, an architect belonging to another community whose ideas of ritual were considerably different from those of members of the Established Church, might be reasonably supposed to be inadequately informed in regard to the requirements and fancies of the latter. The other half of the sentence introduces another kind of consideration. The fear lest the masonry of "an exquisite gem of art" should be "ignorantly tampered with" introduces the purely architectural side of the question, which is quite another matter. The masonry, in other words the architectural design, of a building, Gothic or Classic, sacred or secular, regarded as a work of art, is a subject the right understanding of which depends purely on architectural ability, and is not concerned with the question of religious creed or ritual at all. It is desirable to take an opportunity of saying this as plainly as possible, because there are still those in high places, architectural and clerical, who are ready to say otherwise, and the most absurd statements have been from time to time publicly made on this head. We remember not so long since an instance, where an eminent architect seriously told those who came to hear from him a lesson on church architecture, that no architect could design a chancel who was not inwardly convinced of the doctrine of the real presence in the Sacrament. This is an example of the length to which a purely ritual and sectarian view of architecture will carry even clever men. Given the conditions under which the ritual is to be performed and the signification attached to it, and the designing of a chancel, more especially when it is a *sine qui non* that it should be a reproduction of an existing architectural style, is a mere matter of archæological and constructional knowledge and of architectural taste and ability. Those who have habituated themselves to regard the subject from the conventional standard of ritualism (not using the word in any opprobrious sense) may have rendered themselves too prejudiced to see this; but it is the natural conclusion of any educated people who look at the matter in an unbiassed frame of mind: and it is not surprising that in the first trial of the case in question the learned judge should have expressed his opinion that "you might just as well say that an architect was not fit to repair or form an opinion upon a Grecian temple because he did not believe in Jupiter and Juno." It would have been more strictly correct, since a Grecian temple was referred to, to say "Zeus and Heré"; but there can be no doubt Lord Justice Bramwell's criticism expresses the common sense of the matter.

The architectural design and *ordonnance* of the Parthenon, the proportion of its parts, the optical corrections of its lines, and all its other beautiful refinements, have no relation of any kind to the character or the worship of Pallas Athené. They are simply artistic refinements which would be of equal importance and interest were the temple dedicated to an Egyptian dog-headed divinity, or to Christian worship of the purest kind. One might say, indeed, in a general way, that the architectural refinements of the building were better bestowed in the latter case, but that is all. *A fortiori*, then, it may be said that a Christian architect of one denomination can find no necessary difficulty in understanding and treating the architecture of a church built for another denomination, so far as we regard it as a work of architecture. Not having much sympathy ourselves with the attitude of the Dissenting mind of England towards æsthetics generally, we yet fail to see any obstacle to the thorough comprehension by a Wesleyan architect of the masonry and structural design of a Mediæval church, or of the style and feeling of its ornament. The objection, so far as we regard the building from an architectural point of view, is, in fact, too absurd to be worth discussion.

There is, however, the ritual point of view. The Churchman holds that there are certain symbolisms in true English ecclesiastical architecture which the Dissenting architect can by no means understand or work out with the proper feeling. We might say, in the first place, that a good deal of this symbolism is more fancy than fact, and that it is engrafted by the modern ecclesiological mind upon the ancient architecture, often on very slight and doubtful grounds. It might be added that the importance thus given to symbolism in church architecture is foolish and out of keeping with modern feeling and modern education, and that a little cold water thrown upon it occasionally would be no bad thing; but this, of course, is begging the question. The fact remains that a number of Churchmen do attach importance to symbolism, and require knowledge of and attention to it at the hands of their church architect. It may, however, surely be said that if the ritual and decorations of Pagan temples can be "got up" and understood by modern Christian architects, it is quite as easy for the Wesleyan architect to understand and to master the ritual requirements of the Established Church service. And, in fact, we more than suspect that these requirements are got up and dealt with successfully by architects who pass, even with the High Church party, for experts in church building, and who really are as far removed from serious interest or conviction in the matter as any Dissenter could be, but who study Church ritual from an æsthetic point of view, in order to meet the demands of people who have good and interesting work to give. These professional men are welcome to the clerical party, while Dissenting architects are not, simply because the former have learned the language and shibboleth of their clients, and can simulate the same feeling in regard to symbolism and ritual, and an acknowledged Dissenter generally cannot. People who have any special views prefer to be served by a man who is one of their own set, and appears to sympathise in their tastes and ends entirely; and that we take to be the whole meaning of the statement that Dissenting architects cannot understand Church architecture.

The actual difference which has existed between the treatment of revived Gothic by Wesleyans and Church-people is, of course, distinguishable, though the two are tending more and more to approach each other.

Dissenting bodies have been slow to take up the architecture which arose in the Mediæval church, and has been revived by the modern Mediæval church; and with a good many of the wealthier Dissenting bodies even now, the preference for Classic architecture has been retained, and their places of worship are distinguished by big columned porticos. The Wesleyan body, much nearer the Church in some of its feelings and traditions than other contemporary sects, was, we believe, the first to adopt the revived Gothic, and thus æsthetically follow in the wake of the Church; but there has generally been a tolerably marked difference between their modern Gothic and the modern Gothic of the ecclesiologists. The Wesleyan Gothic has generally been marked by larger windows, more commodious entrances, and a large roof of one span in place of the three-aisled arrangement. Their chapels have, in fact, shown the attempt to manipulate Gothic architecture so as to adapt it to practical considerations as felt at the present day, in a manner which church architecture of the Establishment certainly has hardly shown at all. Of course this arises partly from the fact that Wesleyanism is confessedly a modern development, and the Church revivalists confessedly look back to precedent. But it seems, when one comes to think of it, rather absurd that Church architects, whose greatest success has lain in accurate copying, should, for that very reason, look down upon Dissenting architects who have, not without success, attempted a new adaptation of the old style. The drawback to Wesleyan Gothic, on the other hand, is, that it has not infrequently shown a want of refinement in detail, perhaps referable to the fact that the set of persons who incline to any of the forms of Dissent in England are usually those in whom the religious feeling is more developed than the æsthetic, and the general taste of such a body is not so refined or exacting as that of the archæological connoisseur. In fact, next to the Roman Catholic, the English Church form of worship in its moderate (not in its *ultra*-ecclesiological) development is probably the most æsthetically-refined form of worship at present existing; and for a considerable period the style of modern English Gothic churches, though very antiquarian and imitative, was certainly a favourable contrast in regard to good taste and refinement of detail to that of most Dissenting buildings. But this has been very much altered of late years, and Dissenting architects have shown themselves as well acquainted with the refinements of Gothic design as any of their brethren of the orthodox pale. Perhaps the clerical defendant in the case which suggested these remarks was old-fashioned in his knowledge, and was unfairly gauging the Wesleyan architect of to-day by the Wesleyan architect of twenty years back, and *hinc illæ lachrymæ*.

THE ART OF THE TURNER.*

IT is now some years since we reviewed the first three volumes of a work of which the object is to present a comprehensive and exhaustive survey of a special branch of mechanical engineering. The title, which we have below cited, will be found in the Universal Catalogue of Books on Art, which gives the date 1847-1852 for the publication of the earlier volumes; with the name of C. Holtzapffel as the author. The present author, Mr. John Jacob Holtzapffel (who is master of the Worshipful Company of Turners), is now, as he explains, carrying towards completion a great work commenced by his well-known and highly-gifted father. A portion of a fourth volume was in print at the time of Mr. C. Holtzapffel's death. But on attempting to fill in the outlines laid down on the ground sketch of the book for this fourth volume, the author found that the portion left to his hand would hardly be in harmony with what had already been published. He, therefore, reluctantly cancelled the pages in type; and has

* Turning and Mechanical Manipulation, intended as a work of general reference and practical instruction on the Lathe. Vol. IV. The Principles and Practice of Hand or simple Turning. Illustrated by upwards of 750 woodcuts, drawn on the wood by the Author. By John Jacob Holtzapffel. Published for the Author at 64, Charing-cross, and 127, Long Acre, London. 1879.

the entire responsibility of the work now before us, as to which it is little enough to say that it well fulfils his object of, at the same time, giving elementary instruction, and yet containing sufficiently advanced information to render it acceptable, not only to the amateur, but to the practical engineer.

Considering that more than a quarter of a century has elapsed since the publication of the third volume, and that two more volumes are yet contemplated in order to complete the work, it will be useful to the reader, as well as fair to the authors, to say a few words as to the general design of this series of volumes.

The first of them deals with the materials which the vegetable, the animal, and the mineral kingdoms offer to the workman. The different natures of these materials, the objects to which they are respectively applicable, the structural differences of their physical character, and rules for their choice and preparation, are described. A practical description is given of a variety of processes for preparing, joining, and working these different materials, the general methods here discussed being those which do not require the use of tools with cutting-edges.

In the second volume the principles of construction, the modes of action, and the application of tools used by hand, are investigated, as well as those of machines derived from hand-tools. Chisels and planes, turning-tools, boring-tools, screw-cutting tools, saws, files, shears, and punches are described, as well as the modes of use; and an account is given of various machines in which the hand-processes are more or less closely followed.

The third volume deals with abrasive and miscellaneous processes, which cannot be accomplished with cutting-tools. These processes pass from the rough extreme of grinding to the most delicate finish of polishing. The two actions may be viewed as different applications of a process essentially the same. They are applied both to the production of form and to the embellishment of surface, and include the numerous cases in which, from the nature of the materials operated upon, and other causes, cutting-tools are altogether inapplicable. Varnishing and similar modes of finish are also referred to in this volume.

The fourth volume, which is now before us, was originally designed to contain descriptions of various lathes, and applications of numerous chucks, or apparatus for fixing objects to be wrought in the lathe. Elementary instruction in turning hard and soft woods, ivory, and metal, and also in saw-cutting, follows; with numerous practical examples,—some plain and simple, others difficult and complex,| to show how much may be done with hand-tools alone.

The fifth volume is to treat on the principles and practice of ornamental or complex turning. The use of the slide-rest with fixed tools here comes in. The important features of revolving cutters, used in the sliding-rest with the division-plate and over-head motion, various kinds of eccentric, oval, spherical, right-line, and other chucks; Ibbetson's geometric chuck; the Rose engine, and analagous contrivances, are referred to this portion of the work.

The sixth volume bears the modest title of the principles and practices of amateur mechanical engineering. Some more general and workmanlike adjective may well be substituted for the questionable term "amateur," if this volume prove a worthy complement to its predecessors. Lathes with sliding-rests for metal turning, self-acting and screw-cutting lathes, drilling-machines, planing-engines, key-grooving, slotting and paring machines, wheel-cutting and shaping engines, are here to be described; so that this volume may be expected to be intended to deal with that large and most important section of the appliances of the mechanical engineer on which the work of the inventor may be said to have been generalised. So much thought has been given to the mathematical principles of certain mechanical processes, that the tool reproduces, to a certain extent (as in the calculating-machine), the work of the brain; and the function of the workman is in a great measure reduced to that of tending the tools, driven as they are by steam power.

There is an index of twelve pages to the fourth volume. There is one index in common to the first three volumes; so that every effort has been made to render it as convenient as possible for the purchaser to acquire either the whole, or whichever part may especially interest him, of what will form, when complete, a veritable encyclopædia of the art of the turner.

In the introductory chapter on the principles and practice of hand-turning, Mr. Holtzapffel has not only commenced with that clear elementary statement which is so valuable to the student, but has moreover done so in a manner that will attract the attention of the general reader. The origin of the lathe, which has now become an engine capable of doing almost anything but talk, is no doubt to be traced to the wheel of the potter. The date of that invention, which, however simple in itself, thus contained the germs of the greatest mechanical invention, is as yet unknown. We are made aware, by the occurrence of hand-made and wheel-made pottery in successive deposits, that the art of forming and baking clay was practised, at least among certain tribes, long before they arrived at the use of the potter's wheel. Mr. Holtzapffel cites a passage from Herodotus (book iv., c. 36, Cary's translation), which speaks of the earth as "being made circular as if by a lathe." The reference in the book of Jeremiah (xviii. 3) to the potter who "wrought a work on the wheels," is one of the earliest distinct references to this mode of working that is usually cited. This, however, only takes us back to the commencement of the fifth century, B.C., which corresponds to the first or Archaic period of Greek fictile art, ranging from the commencement of Greek civilisation to B.C. 440. The earliest specimens of Archaic Greek work procured by the British Museum are vases from Athens and Melos. These are not only wheel-made, but are adorned with a variety of geometrical patterns painted in brown on an ash-coloured ground. Considerably earlier than these dates is the reference to the potter in the Book of Job, which is generally regarded as being as old as the fifteenth or sixteenth century before our era. It is true that one passage which may be compared with the formerly-cited allusion by Herodotus as to the succession of day and night (Job xxxviii. 13-15) is obscured by the introduction of the word "seal." No doubt the Hebrew word which concludes the first member of the fourteenth verse has the meaning seal. But "to complete" is another rendering of the root of the word; and in one passage in Leviticus (xv. 3), the expression, rendered by Gesenius "stop his flesh from flowing" hints at a translation more consistent with the idea that a reference is made in the place we have cited to the work of the potter, than with that of the use of an impress, which would require baking in order to be of any permanent value. Neither is the verb translated "It is turned," nor is the context, which refers to the succession of day and night, applicable to the word "seal."

Whatever, then, may be the date of the invention of the lathe, which we take to be, in its essence, a machine which gives motion to the object to be formed; that of its counterpart, the drill, on which the object to be formed is submitted to the action of a revolving tool, is shown by Mr. Holtzapffel to be represented on the walls of an early Egyptian tomb. The dynasty of kings to whose date the representation in question is attributed is not mentioned by Mr. Holtzapffel, nor have we at hand the fine work of Rosellini, "I Monumenti dell' Egitto e della Nubia," from which it is copied. But the unchanged forms of the hieroglyphics, as far back as they have yet been traced, and the sharp, perpendicular edges with which they are engraved on the serpentine and basalt of sarcophagi and statues, are mute witnesses of the use of the drill at a period of from 5,000 to 6,000 years ago, at the very least. We have a shadowy recollection, moreover, of an Egyptian representation of the potter's wheel; but now only indicate this part of the inquiry as one that will reward more minute investigation.

"The symmetrical beauty," says our author, "and necessity of the cylindrical form for the wants of mankind, in an endless variety of utensils and implements, the daily requisites of civilisation, in the construction of the tools and machines for manufactures, locomotion, and the spread of knowledge, are, it is submitted, too apparent to demand more than mere allusion, even in a volume devoted to its production in the practice of turning." It is to the desire to imitate natural objects, such as reeds and canes, globular fruit, eggs, pebbles, shells, and animal structures, that Mr. Holtzapffel seems inclined to attribute the origin of the lathe. With all due deference to an hereditary authority on the subject, we are more inclined to think that it was from a more practical application of skill that this grand appliance first arose. To roll a leaf, or a plastic substance of any kind, between the fingers; to roll a log, by the use of rude levers, over the ground; to apply a rough rolling-pin to form dough into cakes; to give revolution to a stick between the hands in order to produce fire by the friction of its point; were all so many natural steps towards the origination of the drill and of the lathe. And, as before hinted, it was the introduction of an axle in a wheel, whether used for the purpose of transport, or for those of manufacture, that did for the art of the turner what the thought and insight of Watt did, so many centuries later, for the steam engine.

Mr. Holtzapffel gives admirable sketches not only of Egyptian and Chinese drills, of extreme antiquity, but also of Indian, Persian, Arabian, and Chinese lathes. Notwithstanding the antiquity which is shown by the occurrence of this appliance amongst so unchanging a people as the Chinese, the oldest representation with which Mr. Holtzapffel is acquainted of that early form of the machine which is known as the pole-lathe, in Europe, is taken from a wood-cut (reproduced in the volume before us) in the "Panoplia Omnium," a rare old book by Hartman Schopper, published at Frankfort-on-the-Maine in 1568. This valuable work contains 154 engravings of different trades, each accompanied by descriptive Latin verses. *Tornarius*, the turner, thus advises his readers,—

> "Sedulus e flava tornarius omnia buxo,
> Torno meo torno quicquid habere voles."

Boxes, balls, and tops are enumerated in the following lines as the articles thus formed at will from yellow boxwood.

The European form of lathe is considered by Mr. Holtzapffel to owe its special character to the Western habit of standing, rather than sitting to work. Hence the centres (which in the Indian lathe are simply round nails or spikes, driven into short posts, wedged into the ground, at a height of about 8 in. above the soil) are raised to a convenient height, and means are adopted of giving solidity to the framework. Instead of the bow, which, applied first to the drill, was next employed to give a reciprocating revolution to the object to be wrought, an elastic pole was introduced above the lathe. To that was attached one end of a string or cord, which passed round the axis of the rotary part of the lathe, and was then attached to a stirrup or to a treadle-board. By this contrivance the foot, which the Indian turner employed to steady the cutting-tool, was used as the motor power; and both hands of the workman were set at liberty for the management of his cutting-tool. The disadvantage of this kind of lathe (which still retains its place in not a few country workshops in our own day), is that half the time, and half the power, of the workman are lost. The tool only cuts while the work is turning *towards* its edge, and the return of the pole, and the backward spin of the work, involves as much loss of time and unavoidable waste as does the journey of the coal-wagons on our railways in which they have to return empty to the collieries.

A considerable improvement on the pole-lathe is figured, the cut being taken from a work published in Lyons in 1701, entitled "L'Art de Tourneur; ou de faire on Perfection toutes Sortes d'Ouvrages au Tour. Par le R. Père Charles Plumier, Religieux Mineur." This is the introduction of a spring, or archery-bow, instead of the pole. This method, while giving increased power and regularity to the movement, does not, however, avoid the inconvenience of reciprocating action. The use of continuous motion, the lathe being driven by means of a wheel, is first represented in Schopper's book, dated in 1568. He there exhibits a detached wheel used by the turner of pewter tankards, who is working at a centre-lathe set in motion by a fly-wheel turned by a second person. In 1816 a hand-driving wheel is engraved in the "Manuel du Tourneur." The combination of the treadle and the fly-wheel, by means of which the workman can produce continuous rotary motion by the action of his own foot, was first applied to the grindstone and to the wheel of the gem-engraver. These are figured by Felibien, among whose numerous works one, entitled "Des Principes de l'Architecture, de la Sculpture, de la Peinture, et des autres Arts qui en dependent; avec un Dictionnaire des Termes propres à Chacune de ces Arts," was published in Paris in 1676, and again in 1690, 1697, and 1699.

Having arrived thus far in the history of the lathe, Mr. Holtzapffel proceeds exhaustively to discuss the momentum of the driving-wheel, and

the varieties of hand fly-wheels. The hand-wheel, he points out, receives two impulses during each revolution; the foot-wheel only one; so that, in order to obtain equal momentum, the latter requires to be made to move at at least double the speed necessary for the former. As a speed pulley, the fly-wheel converts the velocity most easily obtained by the operator into that called for by the nature of his work, by having a series of steps or grooves of different diameters, both in the fly-wheel and in the pulley which is driven from it. Thus, when the diameters are equal, the wheel and the mandrel of the lathe move turn for turn; and the speed gained by changing the grooves is inversely as the diameters of the pair of drums. The speed employed in turning the soft woods can hardly be too high. But for ivory, hard wood, and metal, a gradually decreasing rate of motion is required, coming down, in some cases, in power lathes, to the slow rate of from 10 ft. to 15 ft. per minute, measured at the tool.

The turn-bench, which is the smallest of all turning apparatus, is found in the hands of the watch and clock maker, with whom the bow lathe has never yet been entirely superseded; and it is extremely well adapted to his requirements. One of these little conveniences, only 9 in. in length, is figured at p. 26. When provided, as shown at p. 43, with a small hand-wheel of from 10 in. to 18 in. in diameter, this becomes the clock-maker's *throw*, or dead-centre lathe. The wheel is turned with the left hand, and the tool held in the right. From its simplicity and efficiency, this was long a favourite appliance of the millwright. When now employed it usually carries a pulley, and is driven by power.

The cranks and treadles of foot-lathes are next described by Mr. Holtzapffel, and this section is followed by another on driving lines and bands, splicing, and couplers. As an instance of the practical value of the book, we here call attention to the set of figures showing the mode in which to splice catgut, as well as to the cuts of the hooks and eyes for joining bands (at p. 54).

We now arrive at the subject of lathes with the revolving mandrels, and at a portion of the book which enters into a full and illustrated detail of the subject, which it would occupy too much space to attempt to follow. It would be worth Mr. Holtzapffel's attention, in subsequent editions of what will no doubt form the standard text-book on the turner's art, to insert a short glossary of technical terms. Thus when he tells us that the lathe in which the work alone revolved between fixed center-points, —he uses the American mode of spelling centre, —received its greatest improvement in the introduction of the mandrel, it would be well to say what is the exact meaning of that term. According to the "Practical Dictionary of Mechanics,"—formerly reviewed by us,—a mandrel (which the editor tells us carefully to distinguish from "a mandril, a short-tailed baboon with a red and blue face") is an arbor or axis on which work is temporarily placed to be turned. An arbor, according to the same authority, is an axle or spindle of a wheel or pinion, or, a mandrel on which a ring, wheel, or collar is turned in a lathe. These quotations, though throwing some light on the use of the word, by no means detract from the force of what we have said as to the importance of defining any technical word in a book like that under notice. We have to come back to Johnson's definition, "mandrel, instrument to hold in a lathe the substance to be turned." "Arbor" is not in the edition of the dictionary at hand.

Chapter IV. deals with modern foot-lathes; first those with plain or back-centre mandrels; secondly, with traversing or screw-cutting mandrels; third, the slide foot-lathe. Chapter V. introduces us to apparatus added to the lathe for specific purposes. Such are the division-plate and index, scribing tools, boring collars, sliding guides, and back-stays, and the slide-rest, with the appropriate tools. The spiral apparatus and lifting-blocks and lengthening-bearers are also described in this chapter. Chapter VI. is on chucks and apparatus for fixing the various works in the lathe. Here, again, while chucks for different purposes are described, we should have liked to see the chapter commence with a definition of the word. Our American friend defines "chuck" as "an appendage to a lathe; being screwed on to the nose of the mandrel it is made to grasp the work to be turned." The "Classified and Descriptive Index" of the fixing chucks and apparatus only needs here a line or two of introduction to be complete. The full and exhaustive chapter thus commencing completes that portion of the work which is directly descriptive of the lathe, its parts, and its appliances.

Chapter VII. is on the elementary practice of soft-wood turning. It contains information of the highest value to the amateur, or to any one who is not regularly apprenticed to the craft of the turner. It commences by describing the position to be taken by the workman, the velocity he should give to his work, the position of the external tools, and the use of the callipers; the position of the gouge and chisel on the surface, back surface, the plank-way surface, and on the cone; the internal cylinder, boring, internal soft-woodtools, hollowing with the gouge, hook and side tools, and the internal surfaces. Last come directions for turning the sphere and the internal hemisphere.

Chapter VIII. is on the elementary practice of hard-wood and ivory turning, which is divided into five sections, corresponding, *mutatis mutandis*, with those of the last chapters. Chapter IX., on the same principle, deals with elementary metal-turning. Chapter X. is on screw-cutting. Chapter XI., an extremely suggestive one, is on the sphere, and various forms in hard wood and ivory derived from that solid. Here will be found, reduced to rule and to compass, the whole mystery of the Chinese ball, consisting of several thin spherical shells, one within another, pierced with holes, and containing a solid ball in the centre. Solids within the sphere, moreover, are produced by the lathe with magical effect; the sharp conical points of the inner figures projecting like the quills of the porcupine from the containing shell.

Chapter XII. contains practical examples of simple plain turning in wood and ivory; Chapter XIII., practical examples of combined plain turning, executed with the hand-tools alone; and Chapter XIV., miscellaneous plain turning in wood and ivory, dyeing, staining, and darkening. There are twenty-two full-page illustrations. Two of these give details of that beautiful pierced work for the Arabian lattice-window which often occupies the place of glass in the East. Most of others are drawings of vases, candelabra, and other objects, produced by the lathe. As to this part of the work, we wish to call attention to the superior elegance of the forms taken from Etruscan vases, to which we may, perhaps, add, the Pompeian tripod (fig. 748) over some, which, like 732, 747, 707, 679, and especially 681, seem to have been fitted together impromptu, in the way of puzzle. And if we have anything to add by way of reserve to our commendation of a work that is worthy of the eminently workmanlike name that it bears on its title-page, it is that the turner, whether amateur or otherwise, cannot be too scrupulously and minutely exact in the measurement and reproduction of those inimitable proportions (inimitable in any other way) which were attained by the imagination of the artists of Greece in the noblest period of art.

CAN THESE DRY BONES LIVE?

THERE was a time, not many years ago, when the Society of Antiquaries represented, fairly enough, the antiquaries and antiquarianism of England. All the Jonathan Oldbucks and Dryasdusts of the day were inscribed upon its rolls, and such of their papers as escaped the limbo of the *Gentleman's Magazine* were included in its Transactions. On the general character of those Transactions, tried by the standard of the present day, it were ungracious to dwell. Much there is of useless and misapplied erudition, as in the papers of King, much of speculation very wanting in common sense, a certain amount of description of royal tombs, opening of barrows, clearing out of Roman buildings, and many prints of wills, household books, and Mediæval accounts of expenses, possessing a good deal of interest. The age was not particularly favourable to critical inquiry, and the contents of the *Archæologia* were not in advance of the age.

With the second quarter of the present century the race of "virtuosi" passed away, and a new school, assuming the title of archæologists, took their place. The "dignity of history" no longer prevented an historian from attending to the material evidence afforded by topography. Men who wrote of a great battle became careful to visit the spot on which it occurred, and to investigate the local evidence; and topography, which was studied by Arnold, and much attended to by Macaulay, in the hands of Freeman took up its true position as the handmaid of history. In archæological matters, and especially in the study of ancient buildings, men no longer sought evidence only in written records, usually imperfect, but they studied the details of the buildings themselves; and in this way, under the leading of Rickman and Willis, the dates of the several parts of our cathedrals, churches, and castles have been laid down with considerable accuracy. A central society, branching speedily into two, gave birth to two series of Transactions, and these volumes, with those of the Cambrian Society in Wales, above a hundred in number, contain an immense mass of information relating to the antiquities of the country, and much of it,—as, for example, the papers of Dr. Guest,—of a really critical character, such as no modern historian of any early period of English history could afford to neglect. Since the birth of these three societies,—the Archæological Association, the Archæological Institute, and the Cambrian Association,—a number of county societies have sprung up, all of which are vigorous and well supported, and almost all publish annually a volume of Transactions, full of excellent local matter, rendering the task of future county historians much less laborious than heretofore, and much augmenting their probable accuracy.

But, strange to say, in all this renewed life and vigour, the Society of Antiquaries, the chief official and only chartered representative of English archæology, has taken no share. She has never moved a step towards the recognising of these new societies, still less has she attempted to modify her charter so as to allow, in some shape or other, of their affiliation. Her Transactions have preserved much of their ancient character; they are highly respectable, and now and then contain papers of great merit, but the excessive delay that has of late years characterised their appearance has prevented some of the best known of modern archæologists from using them as a channel of publication. Thus, the conduct of the society has at this time entirely destroyed her claim to represent the archæologists of England, many of whom are not included in her rolls, and but few contribute to her Transactions. Not that there is any open breach between her and her rivals. They feel no hostility towards her. They have, indeed, no reason to be jealous of her fame, and most of them would be very glad indeed to co-operate with her for any useful purpose. There are certain general questions on which the great English Society should have expressed sound opinions. Such are the remains, material and philological, of the Britons in England; the traces of the Roman sway; the monuments, military, ecclesiastical, or literary, of the English before the Norman Conquest; the architecture, ecclesiastical or military, of the centuries ending with the decline of the Perpendicular style. Upon these and many other branches of archæology the pages of the *Archæologia* ought to contain papers of an authoritative character, but neither in them nor in the annual address of the several presidents do we find, with some exceptions, any considerable contribution to our archæological knowledge. The Society has for years been asleep. No doubt the slumbers have been decorous, but they have been profound, and none can say that the Society has, for a long time past, exercised any important influence on English archæology, or that its Transactions have held any very high position in the archæological literature of Europe.

The recent election of the Earl of Caernarvon to the office of President has led many of the Society's well-wishers to believe in a possible reform, and his lordship's opening address on his occupation of the chair justifies and encourages this belief. Lord Caernarvon, though not an archæologist, is a man of cultivated mind, as well as a man of business and of the world, and his address, though, as became the circumstances, of a modest and moderate character, showed that he was well aware of the short-comings of the Society, and thoroughly determined to do what in him lay to apply a remedy.

Lord Caernarvon's recommendations are:—

1. The creation of certain travelling studentships for the purpose of archæological study.
2. An archæological survey of England in connexion with the Ordnance togographical survey.
3. A national Codex Diplomaticus, or collection of charters.
4. A new edition of Dugdale's "Monasticon."
5. The publication of the Pipe Rolls.

6. The publication of the Subsidy Rolls.

7. The publication of the episcopal registers.

The travelling studentships are scarcely likely to be founded by the Society, and may therefore be set aside for the present with the remark that the Ratcliffe travelling fellowships, to which they would be somewhat analogous, can scarcely be said to have fulfilled the special intentions of the founder.

An archæological survey of England and Wales would be a most valuable work, conducted, as it would necessarily be, upon the plan of that commenced and unwisely laid aside in Ireland. The Ordnance surveyors, indeed, thoroughly understanding their proper business, are not archæologists, and would need at first to be aided by some competent adviser. At present the lettering of the objects of antiquity on the maps is defective, and many important earthworks are overlooked and their form misapprehended; but with a little instruction and continued practice in the field, the officers of the survey would soon become excellent archæological observers, and as regards earthworks, concerning which but little is accurately recorded, a very perfect and well-classified list would speedily be obtained. Local names also, especially of fields and small enclosures, now neglected, would be recorded and indexed, and in this way much curious local history would be recovered and verified. This, however, is not a work for the Society to undertake. It belongs exclusively to the Government, and all that the Society could do, and it is much, would be to prepare a sketch of what is wanted, and to press its adoption upon Government, as well as upon the War or Ordnance authorities.

A Codex Diplomaticus, or collection of the charters and similar instruments from the Saxon times to the accession of the House of Tudor, would indeed be a great and useful work, and one which would be undertaken under many advantages at this time, when the labours of the Historical Commission have brought to light so many private papers. No work would do so much for the elucidation of the pedigrees of the owners of land, or for the descent of their property. This, moreover, is a work which could be undertaken under the direct management of the Society. The Record Office and the British Museum are open to all, and the university, corporate, and private collections would certainly not be denied to the Society. Of course a work of this nature should be published by subscription, and its parts worked concurrently by several editors. After the eleventh century, the work should be divided under counties, which would add to its value as a book of reference, and greatly add to the number of its supporters. Such a work, accompanied by correct indexes of the names of the witnessess, would lead necessarily to a new edition of Dugdale's "Baronage."

A new edition of the "Monasticon" would be a formidable, but a very possible undertaking. Since the last edition many monastic cartularies have been discovered, and the means of correcting the lists of abbots. Ground plans of the several abbeys are much needed, with scientific descriptions of the architectural peculiarities and style. The "Monasticon" is, however, a national work, and all the Society could do would be to insist upon the importance of the undertaking. This work also, if properly completed and indexed, would be of great use in the preparation of a new edition of the "Baronage."

Lord Caernarvon places the publication of the Pipe Rolls fifth upon his list of the more pressing demands upon the society. We should be disposed to place it in the first rank. The great Rolls of the Exchequer, known familiarly as the Pipe Rolls, are the earliest records now unprinted, and by far the most complete. With the exception of two years, for which the rolls are lost, but of one of which there exists a duplicate, they consist of a series of annual rolls from the second year of Henry II. They are the accounts of the royal revenue rendered by the sheriffs of counties, custodians of honours and baronies, and other fiscal servants of the Crown. They show, not only the sources of the revenue, with great minuteness, but with equal minuteness the payments from the same, comprising allowances for the repairs and rebuilding of the royal palaces, hunting-lodges, and castles, wages for soldiers, keepers of the royal houses, and servants of the Crown, down to occasional messengers. They throw much light upon the movements of the sovereigns, upon many important public transactions, upon the prices of labour and commodities, and thus upon many constitutional and social questions in English history. They throw a curious light upon the tastes and habits of the several kings. They record payments for books, for paintings, for dogs, horses, and falcons, payments to the justices, continual references to the great tenants of the Crown, and the rents and extent of the Honours, of which so little is now known. Madox, the highest authority of his own or any other day on the records of the realm, placed the Pipe Rolls second only to Domesday in value. The Pipe Rolls, therefore, ought to be made public without delay, but this is a work for the nation, not for a society. The Master of the Rolls should be moved at once and with energy, and with all the pressure that the Society can exert, to direct this great work to be entered upon. It is for him, or rather for his editors, to decide what form the publication should take, to what extent mere formal and continually repeated matter may be omitted, and how far glossaries are necessary. The present Master of the Rolls is supposed not to take the same keen interest in the publication of his treasures as was the case with his predecessors, Lords Langdale and Romilly, and questions of economy are said to weigh with him rather unduly. It may be, therefore, that if the Society of Antiquaries exerted itself to obtain subscription lists for a proposed publication, the Master would be found more willing to commence it. This, however, is for the Society to consider.

The Subsidy Rolls, though inferior to the Pipe, are of great value, and being a part of the records of the realm, ought to be published by the nation, and the same may be said of "Kirby's Quest." Here, possibly, pressure, especially if combined with pecuniary assistance, might be used with advantage.

The episcopal registers are very ancient records, and but little known. They not only contain the names of early incumbents in each diocese, but those at Lambeth not unfrequently give the names of incumbents in distant parts of the provinces, where the benefices, either by lapse or as options, have been presented to by the archbishop. These records, like the wills and testaments, are but little known, and for the same reason. Some were ill-cared for, ill-preserved, and very inaccessible. There was among the episcopal registrars, as in Doctors' Commons, great jealousy of those not on the staff of the registry, and all sorts of foolish precautions were taken to exclude inquirers, whether for legal or merely antiquarian objects. The interference of the Legislature has much altered these conditions, and although there are still difficulties in the way, amounting in some cases almost to a prohibition, these are merely the remains of an obsolete system of exclusion, and there would now be no objection taken by the chief custodians of these documents, whether episcopal or lay, to their publication.

It is a work the Society of Antiquaries might very properly undertake. The registers of each diocese should be edited and printed as a separate volume; and, if so sold, would no doubt be largely subscribed for in the district.

Thus, to recapitulate, the scheme for fellowships might be laid aside.

The Archæological Survey of England should be pressed upon the notice of the Government.

A new edition of the Monasticon, and the publication of the Pipe and Subsidy Rolls, should be urged upon the notice of the Master of the Rolls with or without a list of subscribers to the several works.

The publication and editing of the Codex and of Episcopal registers might be undertaken by the Society alone.

But if any, or even one, of these great and useful works are to be taken up by the Society of Antiquaries, that learned but tardigrade body must show more signs of vigorous life than it has hitherto done. First of all, its own Transactions should not be suffered to fall into arrear. It should also take some steps to acknowledge the various independent societies throughout the kingdom, and to admit their members to some sort of qualified fellowship. If Lord Caernarvon were really himself to take the lead in these matters, perhaps to take office in some of the attendant societies, and, as president of the great society, honour some of the local annual meetings with his presence, it would show that the central and chartered society was in earnest, and would pave the way for a general and liberal support to any well-considered schemes of publication that might be brought forward.

ANTIQUITATIS INDAGATOR.

FROM THE BANKS OF THE SEINE.

It is with regret that we have again to open our chronicle from the banks of the Seine with a reference to the strike which still continues to disturb the building trade. Again we have only to record that the situation cannot be said to have materially changed, though further mutual concessions have been made. In the course of one of the numerous meetings held lately by the men, one speaker, amidst the general hilarity of the assembly, made known the reports that circulate with regard to the origin of the funds that sustain the strike. Every conceivable hypothesis has been suggested; the Pope and the ex-Empress having been stated to be large donors; finally, the news has come that the goodly sum of 12,000*l.* has been sent from England by the English workmen to their Parisian brethren.

One of the most important industries of Paris, that of the bronze-founders, has within the last week had to suffer from the inconveniences of a strike. This action causes much disturbance, as the trade has been suffering greatly this year. In addition, foreign competition, which has already closed the foreign markets to the French, will receive a further impetus by this check to an industry in which Paris at one time had no rival. Much as it may be regretted that the trade has received so heavy a blow, from an artistic point of view, France deserves but small credit for the cargoes of worthless, tasteless trash she has exported to every mantelpiece and over-dressed *café* of the world, civilised and uncivilised.

While Paris is still suffering from one of the many counter-effects of last year's world's show, from the banks of the now almost lifeless Seine we learn that the rival "in small" of Paris, Brussels, is rapidly pushing forward her preparations for next year's national Exhibition. We are not again to be tired by a huge international show: Belgium and her history, past and present, and the art and industry of her active provinces, will supply ample food for study. Of all the countries of Europe the industries of few, perhaps, excepting Holland, and, of course, from the same reasons, Switzerland, are so little known as those of Belgium. Prosperity and plenty are enjoyed by the Belgians, the population of whose busy provinces barely surpasses that of London. We may look forward with pleasure to the show next year in the gay little capital, when we hope that Belgium may become better known to the rest of the world. In size we are not, fortunately, to have a huge palace: the two pavilions of the Exhibition, one of which is already covered, present a superficies of some 7,200 yards. The executive bureau of the Exhibition originally decided to exclude all exhibits from abroad. But now exception has been made in the case of those foreign products which constitute the raw material of any industry exercised in the country.

Within the last week an interesting competition has been contested at the École des Beaux-Arts; it is the first time that the so-called "Concours des Gobelins" (the design for a piece of tapestry to be reproduced by the Government factory of that name) has taken place. There are to be two trials; and a few days since the first competition was decided. The definite judgment is to be given on a second trial. The object of the competition this year is the model of a piece of tapestry with a border destined for the room of the Bibliothèque Nationale, which still retains the name of the former owner of the old building, Cardinal Mazarin. The tapestry is to represent "the genius of letters, science, and the arts in antiquity"; it is to be about 22 ft. or 23 ft. broad, and about 15 ft. high. Of the numerous sketches exhibited it was certainly curious to observe how few of their designers had attended to even the most elementary rules required in the design of such work; but we heartily approve of the choice of the jury in the sketch No. 22, in which the great men of antiquity are skilfully and intelligently grouped according to the more or less conventional rules which should always regulate the design of tapestry. It is difficult to understand our inability to produce works of art in the same material in which were worked such marvels in the past, but the French Government certainly spares no pains to foster the interesting traditions of this once great branch of art. It is to be regretted that, in England, our South Kensington Museum authorities do not adopt some analogous method, for no more

noble decoration can be imagined for the walls of our great buildings than fine pieces of tapestry. Why should not the bare walls of the Albert Hall,—particularly those two great glaring patches on each side of the organ,—be decorated with allegorical pieces of tapestry? Let them first be old pieces till the school of art has produced others to replace them; and let those who doubt the efficacy of the effect of such decorations in a vast hall, visit the (now alas! deserted) Chamber of Deputies at Versailles, where on the walls at each side of the tribune hang (certainly hung a few weeks since) two superb pieces of Louis Quatorze tapestry,—probably designed by old Sebastian Leclerc or Lebrun,—and lighting up with their sober brightness the whole interior of the vast chamber. We strongly suspect that if a diligent hunt were made among the storehouses and lumber-rooms of our palaces, some gorgeous treasures from the looms of Flanders, France, and the East would not fail to be brought to light.

Speaking of exhibitions and treasures hidden away, we may mention that at the present moment the French Government is actively employed in re-organising its Colonial Museum, which, in due course of time, will be opened at the Palais de l'Industrie, that most useful of all the permanent buildings in Paris. At a time when our own India Museum is about to be "broken up," is it not somewhat surprising that we who possess, of all the countries of the world, the largest number of colonies, can boast of no Colonial Museum? The short space of a paragraph is scarcely calculated for the discussion of such a deficiency; but does it not appear somewhat to be regretted that our Consular agents, and even our missionaries, are so neglectful? The time is rapidly approaching, if it has not already come, when the "blessings of civilisation" will have exercised their invariable influence on formerly untouched portions of the globe, and before long it will be impossible for us to restore the past of those countries the Anglo-Saxon race so actively colonises. At the Invalides there is an interesting collection of ethnographical models, dressed correctly, and representing the inhabitants of the most distant parts of the globe; and no more instructive Sunday afternoon can be passed than in this collection, which forms so marked a contrast to the splendour of the armour and the artillery and war material of the rest of the famous museum. Why have we not in England some such collection? The idea may seem easy to suggest, but it cannot fail to have struck more than one intelligent British representative abroad, placed in a peculiarly advantageous position for acquiring every information on the subject, only that public acknowledgment has been wanting. Such a collection might easily be formed by loans, for private individuals who return from the colonies rarely fail to bring back some memento; and it may be observed that such a museum need not be made a permanent attraction in the metropolis: the provincial towns would probably derive more benefit from its teachings than the busy and over-occupied capital.

Irreverent as the objection may seem, on reading in a recent number of the *Builder* an account of the interesting abbey of Monte Cassino and its far-famed library, the recollection suggested itself to us of a visit once paid to the house of St. Benedict by no less a classic scholar than Boccaccio, who has told us how, being in Puglia, he determined to visit the monastery of Monte Cassino. Arrived at the hospitable gate, he desired to see the library, of the rarity and wealth of which he had so often heard. He found, to his surprise, the place without a key or even a door; the grass grew on the window-sills; the books lay thick with undisturbed dust. He examined several volumes, and, to his bibliopolic horror, found a large number of pages wanting; in other cases the margins had been cut out: almost every book had been mutilated. Having asked a monk the cause of this extraordinary neglect, he was informed that from time to time the monks, wishing to make a few *baiocchi*, scraped clean a number of manuscript pages, and made of them little psalters, which they sold to the children; as for the margins, they made them into little books of piety and prayer for the women. The monks, who pass for having preserved the works of the Pagan writers of antiquity, cannot be said to have always played the part of zealous propagators of the light of learning.

How few of the many who visited, on the "Jour des Morts," the little and already too-crowded cemetery of Auteuil were aware, as they passed the more than usually well-designed tomb of poor Cockerell, with its three perfectly-fresh wreaths, placed there by loving friends on their way through Paris, that beneath the well-wrought stonework rests an artist whose life, notwithstanding the worldly exertions of an artificial society, was devoted to the realisation of the most accomplished ideal? Poor Cockerell, who died just one year since here in Paris, will live in the esteem of his friends, and his early death will sadden their recollections of the past, which, during his short life, he in so many ways enlivened.

Although not even Mr. Ruskin,—an honorary if not a sufficiently honoured member of the Venetian Academy of the Belle Arti,—has said, or can say, too much in deprecation of the restorations that have injured in his time the "stones of Venice," the fear that is just now distressing the artistic world, that the west end of the famous church of St. Mark is about to be altogether destroyed, is somewhat, like most sad news from a distance, exaggerated,—exaggerated not only by these who still hope to see Venice for the first time in its undisturbed ruin, but by others who are lately, like ourselves, fresh from the lagoons and the Piazetta. It will be a long time before the Venetians in authority will have at their command sufficient pecuniary means to do wholesale injury to their unique place of attraction and worship, and from what we have lately seen at St. Mark's, the only immediate danger to be apprehended, and in all conscience it is serious enough, is an injury at the west angle equal only to what has been done to the corner overlooking the column of red porphyry (the *Pietra del Bando*) at the entrance of the Ducal Palace by the Giant's Staircase. This corner, as it existed, and had done for centuries, may be seen represented with all the care and truth of a thoroughly obedient artist in one of the most beautiful of old Samuel Prout's Italian drawings. Something probably must be done to support and maintain stones which are proved to be in actual danger of falling, but anything more than this should be prohibited.

A NOTE FROM FLORENCE.

Up to now the mode of finishing the façade of the Duomo has not been decided on. The work executed is excellent; I have mounted up on the scaffolding and examined it,—work such as Italians, long used to work in marble, only can do. Of course De Fabris, the architect, has legions of opposers, and decidedly, had he persisted in his first design of the three, "Cuspodi," the whole must have been a failure.

Among the few bits of news current it may be mentioned that the Exposition of old Tuscan art, promised to be opened this November, is, for want of means, to be postponed till next year. It appears that it would be a private speculation of Marchese Torrigiani. Probably energy and activity are more wanting than means.

Another Martha Somerville died here on the 3rd, the last of the family of the eminent Mrs. Somerville. Her death resulted from internal cancer. She was a lively, clever, amiable woman, and, though not young, retained a handsome face and splendid fair hair to the last.

The new Jewish Synagogue here is fast approaching completion. The interior walls are being gorgeously decorated, looking as if heaps of Indian shawls were covering them, with a lavish addition of gold. All the wealth of Florence is in the hands of the Jews. The old nobility, from the division of the family property among the members of the family, are becoming poorer and poorer, selling their heirlooms, some even the archives of the family. The young members do nothing. No one under thirty can be a "deputato," and there remains only the army or nothing, or rather the army or gambling.

Florence is trying to show some manufacturing spirit. Two rich old citizens have begun a crystal manufactory, and there are no fewer than four different majolica manufactories. The strangers are flocking in. Florence may, perhaps, profit by Rome's misfortune, fever having prevailed there this summer to a greater extent than has been known for many years.

The Senator Boccardo, in one of his writings, proves, with the indisputable logic of figures, that while in Italy the power of the sun and soil is greater than elsewhere, the productions of the soil are scarcer, through the negligence of the people. In fact, whilst, in general, a hectare of land in Italy produces 10 or 11 hectolitres of grain; a hectare of French soil will produce 15; of Belgian soil, 20; of German, 26; and in England not less than 32. England, then, not Italy, merits to be proclaimed the *alma parens frugum*.

And what is cited of wheat or bread may be said of wine. Thus, while in France, which has a superficial area of wine-growing land so much inferior to Italy, 63 million hectolitres of wine are produced annually, Italy, with the fine climate and rich hill country, only produces 27. It is only within the last few years in some of the provinces of Tuscany and Piedmont that the serious study of cultivating the vine and the making of wine has been attended to. No wonder, then, that while the Society of Mutual Help in France has already accumulated a patrimony of 70 millions, and in England more than 250; in Italy they have not been able to reach 10 millions.

HEALTH AT HOME.*

The old saying, there is no place like home, has a singularly happy meaning when it is applied to health and the benefits which spring from health that is good and beautiful. We who are engaged in forwarding sanitary work may labour our lives out and still do little service until we can get each home, however small it may be, included in the plan of our work. The river of national health must rise from the homes of the nation. Then it will be a great river on which every blessing will be borne.

The placard calling together this meeting specially invites ladies,—I had rather it had said women,—to be present. It is worded in this fashion, because we who have invited know that women are always at home as men are always abroad, and that the woman who is at home must be the continuous and natural guardian or ward of the health that should centre in the home. When I, as a physician, enter a house where there is contagious disease, my first duty is to look at the surroundings. What are the customs of the people there?—are they wholesome, are they unwholesome? If the answer be "wholesome and common-sense," then I know that the better half of success in the way of treatment and prevention is secured. If the answer be "unwholesome, slovenly, disorderly, careless," then I know that all that may be advised for the best will be more than half useless, because there is no habit on which any dependence can be truthfully placed, and because habit in the wrong direction is so difficult to move that not even the strongest ties of affection are a match for it in times of emergency. If we could, then, get wives and mothers to learn the habitual practice of all that tends to health, we should soon have an easy victory, and should ourselves cease to be known as the pioneers of sanitary work, the work itself being a recognised system and a recognised necessity practised by everybody.

In the few minutes at my disposal let me try and tell you what, after many years of experience and observation, seem to me to be a few golden rules for securing health at home.

1. *Sunlight at Home.*

1. Whether your home be large or small, give it light. There is no house so likely to be unhealthy as a dark and gloomy house. In a dark and gloomy house you can never see the dirt that pollutes it. Dirt accumulates on dirt, and the mind soon learns to apologise for this condition because the gloom conceals it. "It is no credit to be clean in this hole of a place" is soon the sort of idea that the housewife gets into her mind; "the place is always dingy, do what you may," is another similar and common idea; and so in a dark house unwholesome things get stowed away and forgotten, and the air becomes impure, and when the air becomes impure the digestive organs become imperfect in action, and soon there is some shade of bad health engendered in those persons who live in that dark house. Flowers would not healthily bloom in such a house, and flowers are, as a rule, good indexes. You put the flowers in your windows that they may see the light. Are not your children worth many flowers? They are

* By Dr. Richardson, F.R.S. Read at the Croydon Sanitary Congress; closing meeting.

the choicest of flowers. Then, again, light is necessary in order that the animal spirits may be kept refreshed and invigorated. No one is truly happy who in waking hours is in a gloomy house or room. The gloom of the prison has been ever considered as a part of the punishment of the prison, and it is so. The mind is saddened in a home that is not flushed with light, and when the mind is saddened the whole physical powers soon suffer: the heart beats languidly, the blood flows slowly, the breathing is imperfect, the oxidation of the blood is reduced, and the conditions are laid for the development of many wearisome and unnecessary constitutional failures and sufferings.

Once again, light itself, sunlight I mean, is of itself useful to health in a direct manner. Sunlight favours nutrition; sunlight favours nervous function; sunlight sustains, chemically or physically, the healthy state of the blood. Children and older persons living in darkened places become blanched or pale; they have none of the ruddy healthy bloom of those who live in light. You send a child that has lived in a dark court in London for a few days only into the sunlight, and how marked is the change! You hardly know the face again. Keep, then, this word in your minds, light, light, light; *sun*-light which feeds you with its influence, and leaves no poisonous vapours in its train.

Before I leave this subject, I want to say a word about light in relation to the sick. A few hundred years ago it became a fashion, for reasons it is very hard to divine, to place sick people in dark and closely-curtained bedrooms. The practice to some extent is continued to this day. When a person goes to bed with sickness, very often the first thing is to pull down the blinds, if there be venetian-blinds, to close them. On body and spirit alike this practice is simply pernicious. It may be well, if light is painful to the eyes of the sufferer, to shield the eyes from the light, or even shut the light off them altogether; but for the sake of this to shut it out of all the room, to cut off wholesale its precious influence, to make the sick-room a dark cell in which all kinds of impurities may be concealed day after day, is an offence to nature which she ever rebukes in the sternest manner.

This remark presses with special force in cases where epidemic and contagious diseases are the affections from which the sufferers are suffering, for these affections, as they live on uncleanliness, require for their suppression the broadest light of day. Moreover, I once found by experience that certain organic poisons, analogous to the poisons which propagate these diseases, are rendered innocuous by exposure to light. Thus in every point of view, light stands forward as the agent of health. In sickness and in health, in infancy, youth, middle age, old age, in all seasons, for the benefit of the mind and the welfare of the body, sunlight is a bearer and sustainer of health.

2. *Sleep at Home.*

I have been speaking about sunlight, and am led by this to refer to another and allied topic,—I mean night and hours of sleep. If it be good to make all possible use of sunlight, it is good equally to make as little use as possible of artificial light. Artificial lights, so far, have been sources of waste, not only of the material out of which they are made, but of the air on which they burn. In the air of the closed room the present commonly used lamps, candles, and gaslights, rob the air of a part of its vital constituent, and supply in return products which are really injurious to life. Gaslight is in this respect most hurtful, but the others are bad when they are long kept burning in one confined space. The fewer hours after dark that are spent in artificial light the better, and this suggests, of itself, that within reasonable limits the sooner we go to rest after dark the better. We require in the cold season of winter, when the nights are long, much more of sleep than we do in the summer. On the longest day in the year, seven hours of sleep is sufficient for most men and women who are in the prime of life; on the shortest day, nine hours is not over much, and for those who are weakly, ten or even twelve hours may be taken with real advantage. In winter, children should always have ten to twelve hours of sleep. It is not idleness to indulge to that extent, but an actual saving, a storing-up of invigorated existence for the future. Such rest can only be obtained by going to bed very early, say at half-past eight or nine o'clock.

It is really all wrong, at the present season, that we should be here robbing ourselves of sleep. It is as wrong as ever it can be that our legislators should often be sitting up, as we know they do, time after time, in the dead of night, trying against life to legislate for life. It is most foolish that public writers, who hold so many responsibilities in their hands, should be called upon to exercise their craft at a time when all their nature is calling out to them rest, rest, rest. It is said I am foolish for declaring these things. Is it so? I am standing by Nature, speaking under her direction, and, without a thought of dogmatism, I am driven to ask, May it not be the world that is foolish?—the world, I mean, of fashion and habit, which could, if it would, change the present systems as easily as it criticises the view that it ought to make the change. Any way, this I know, and it is the truth I would here express, that in every man, woman, and child there is, at or about the early time I have named, a persistent periodical desire for sleep which steals on determinately, which, taken at the flood, leads to a good sound night's rest, and which, resisted, never duly returns, but is replaced by a surreptitious sleep, broken by wearing dreams, restless limbs, and but partial restoration of vital power. I said the other night in this room, Make the sun your fellow-workman. I repeat the saying now. I do not say, Go to bed at all seasons with the sun, and rise with it, because in this climate that would not be at all seasons possible; but I say, as a general principle, as closely as you can, make the sun your fellow-workman; follow him as soon as you are able to rest, and do not let him stare at you in bed many hours after he has commenced his daily course. Teach your children, moreover, this same lesson, and the practice of it, whereupon there will be, in a generation or two, even in this land of fogs and dulness, a race of children of the sun who will stand, in matter of health, a head and shoulders above the children of this present generation.

3. *Beds and Bedrooms at Home.*

The mention of sleep causes me to say a word about beds and bedding, and bedrooms. It is a point of the greatest importance in a healthy home to let every person in the house have a separate bed. It is a most unhealthy practice for two persons of any age to sleep in the same bed. Every person requires some different condition from every one else in order to secure perfectly good repose. Take children as an example. One child requires more bedclothes than another, or a different kind of bed, or a different position before sound sleep can be secured; and this can only be obtained by giving a separate bed to each child. Then again, when two children sleep together, they are subject to the breath of the one or the other, and if both be quite natural it is bad; but if one be unnatural it is very bad; and if both be unnatural it is seriously bad. Near here, at this moment, a great experiment has been tried on this question with the most striking results. At the schools at Anerley, every scholar has his or her own bed; and the wise authorities there,—who have improved the health of the children under their charge until the mortality is reduced to three in the thousand annually,—tell me that few things have contributed so much to the grand results they have achieved as this one practice of having a separate bed for every child. It is important to have always a well-made bed, and everybody should learn to make a bed. A very soft or very hard bed is a bad bed. The bed should be sufficiently soft to allow all parts of the body to feel equal pressure and yet not so soft as to envelope the body. The clothes should be laid on lightly, not be closely tucked in. The clothes should be light as well as warm. Dense blankets and coverlets are always unwholesome. Every portion of the bedclothes should be every day spread out for a short time to the air. I do not object to light bed-curtains at the head of the bed: they keep off draught, they keep the light from the face of the sleeper, but they prevent the entrance neither of air nor of light.

I must add one word about bedrooms. It should always be remembered that the bedroom is the apartment in which one-third, at least, of the whole life is passed, and this remembrance should suggest that the bedroom ought to be the room on which most trouble after health should be bestowed. The rule that is followed is, with few exceptions, the reverse of this. The sitting-room and the drawing-room are made subjects of the greatest attention; but the bedroom may be small, close, at back of the house, at front of the house, anywhere, if it be but convenient to get at. It may not even have a fireplace; it may have the smallest window. It is often half a lumber-room, a place in which things which have to be concealed,—old boots and shoes, old clothes, old boxes,—are put away. Its walls, covered with several layers of paper, may be furnished with pegs, on which to suspend a wardrobe of garments; and it is constantly decorated, for snugness' sake, with heavy curtains and blinds at the windows, and carpets all over the floor. These errors are unpardonable, and health at home is impossible where they are committed. The bedroom should be so planned that never less than 400 cubic feet of space should be given to each occupant, however good the ventilation may be. The walls should be coloured with distemper or with paint that, like the silicate paint, can be washed three or four times a year. The windows should have nothing more than a blind and a half muslin curtain. The floors should have carpets only round the beds, without valances from the beds. The furniture should be as simple and scanty as is possible; the chairs free of all stuffings or covers that can hold dust. Of all things, again, the room should be kept clear of vestments that are not in use. From time to time a fire should be made in every bedroom, that a free current of atmospheric air may sweep through it from open doors and windows. I need not say that the floors should be kept scrupulously clean; but I would recommend dry scrubbing as by far the best for this purpose.

4. *The Bath at Home.*

To secure health at home some simple provision should be made by which the body of every person who lives at home may be subjected to the bath daily. This wholesome process is frequently neglected from the excuse that there is no convenience for a bath. The excuse is more plausible than real. A formal bath is not at all necessary. A shallow tub, or shallow metal bath, in which the bather can stand in front of the washhand basin; a good sponge; a piece of soap; two gallons of water, and a good large towel, are quite sufficient for every purpose of health. To stand in the shallow bath, and from the washhand basin to sponge the body rapidly over from head to foot, and afterwards to dry quickly, is everything that is wanted if it be carried out daily, and this may be so easily done, after a little practice, that it becomes no more trouble than the washing of the face, neck, and hands, which so many people are content to consider a perfected ablution. In winter time the water should be tepid, in summer cold; and once a week there should be dissolved in the two gallons of water a quarter of a pound of fresh washing soda. This addition cleanses the skin effectually and removes acidity.

5. *The Air at Home.*

In order to secure health at home it is necessary to maintain, as far as can be, an equable temperature in the different rooms,—a temperature of 60° Fahr. is nearest to the best,—a free access of air without draughts, and above all things, an air that is dry. Washing-days at home amongst the poor are the days of most danger to the young. In the damp atmosphere thus caused colds, sore throat, and croup find easy development; and in a house persistently damp from any cause, consumption of the lungs is induced as if under an experiment devised for the express purpose of production.

6. *Annual Cleansing at Home.*

From the more strict of our Jewish fellow-subjects I take my last lesson for "Health at Home." Their system of complete household cleansing once a year, the cleansing of every article, great and small, of every wall and floor and door and lintel, and the removal and destruction of all organic refuse, however minute, is a practice which, above all others, has so saved this wise and discerning people from the scourges of the great plagues, while all around have been stricken and destroyed, that a miraculous preservation has more than once accounted for what was a mere natural sequence and natural necessity. Health at home calls for this salubrious physical sanctification in every domestic centre and circle once a year at least.

And now I leave my learned colleagues to

descant on ventilation, good food, good air, and other accessories to health everywhere, at home and abroad. And though by our united efforts we may not essay to lead you direct to Salutland and its hundred years of happy life, we shall take you, if you will go with us, a long way towards even that promised commonwealth of health and long life.

THE NEW FREE LIBRARY AND MUSEUM, DERBY.

In a recent issue, when speaking of a crisis in the history of the Derby Mechanics' Institution, we referred to the Free Library and Museum recently erected there and presented to the town by Mr. M. T. Bass, M.P.,—in other ways a munificent friend to Derby.

We now give a view of that building, the foundation-stone of which was laid on Wednesday, the 25th of October, 1876, by the donor. It stands in the Wardwick, on the site of the old library. The premises, which up to that time had served the purpose, were formerly the town mansion of a well-known county family. The designs for the new buildings were selected in competition. The plan is as nearly as possible in a square. The entrance is placed in the centre of the front, and has a spacious hall, opening by a glazed screen and folding-doors into a corridor.

The room at the end of the corridor to the left of the entrance is intended for use as a ladies' reading-room, and is separated from the general news or reading-room by an open wrought-iron screen of ornamental character. The corresponding room at the other end of the corridor is for students attending the reference reading-room. On the opposite side of the corridor, and occupying the central portion of the building, is placed the lending library. This, as being one of the principal features of the scheme, has been given due prominence. The size of the room is 56 ft. by 24 ft., and in order to have thorough ventilation, and also to obtain additional wall-space for books, it is carried up to the full height of the building, nearly 40 ft., having a small gallery carried round with bookcases in it. The gallery is approached by the upper corridor of the main building, and also by a circular iron staircase from the ground-floor. The lighting of this part of the building is by a lantern in the roof. Additional light is procured by the windows between the bookcases at the back. The entrances for the public are near each end of the corridor. The floor of the library within the counter is raised some 16 in. above the other floor, in order to give the librarian and his assistants supervision of the adjoining departments. The division between the library and the main corridor, and also between it and the reading-rooms on either side, is of timber, with the upper portions filled in with ornamental glazing, in lead work, of appropriate character. At the right of the library is placed the reference reading-room, which is 56 ft. long by 24 ft. wide, and has an additional large semicircular bay in the centre of the side, for the use of students. It is lighted by large windows at the side and end, and the artificial lighting is by large lamps, manufactured by Benhams, the peculiarity of which is that they remove the vitiated air after combustion. The newsroom is placed at the left of the library, and is similar in size and in other respects to the reading-room.

A small angle-turret is placed at the north side of the building, near the curator's house, having a spiral staircase going from the bottom to the top of the building, and opening on to each story. An entrance to the ground-floor, for the librarian's use, is placed on the ground-floor, thus giving direct access from his house adjoining.

At the left of the main entrance a small room is provided for a private office for the chairman and secretary. The fireplace, which is placed in an angle of the room, is quaint and old-fashioned, and in addition to shelves and small galleries for old china, has a small cupboard formed in the centre. The ceiling is appropriately decorated in colours.

The principal staircase consists of flights of steps opening from the corridor on each side of the hall, and meeting in a central flight from the first to the main landing. It is of Hopton stone, with ornamental metal balustrade and massive oak hand-rail, and is of good width.

At the end of the upper corridor, to the left of the main staircase, is the curator's room. The corresponding room at the other end of the corridor is the committee-room, otherwise called the panelled room. This is of the same size as the curator's office, and is panelled with old oak.

The floor is of oak, laid herring-bone fashion. The ceiling is finished in plaster, elaborately moulded and enriched.

The museum forms three sides of a square, having ingress and egress at each end of the corridor, thus avoiding any clashing between people entering and leaving.

With the exception of windows in the circular bays, the whole of the museum is lighted by lanterns and ceiling lights from the top.

The central room at the back of the museum has been arranged to serve as a picture-gallery. The roof is supported on stone corbels at the angles, carved to symbolise the four seasons.

At the north side of the building is placed a house for the curator, and at the south a lodge for the porter, the basement containing the heating arrangements for the museum buildings.

The style of the building is Jacobean. The front elevation has the entrance-hall carried up as a tower, with octagonal angle-piers finished with open-timber turrets. The central part of the tower is also of open-timber work, surmounted by a circular roof. The wings have the roofs hipped back, and the ridges finished with wrought-iron ridge-cresting and finials. The space between the tower and wings is arcaded in both stories, but in general treatment is subordinated to the more important parts of the design. Large oriel windows, with splayed angles, are placed in the wings, and a circular one over the main entrance. The exterior of the building is faced with Derby pressed bricks, with moulded strings, arches, &c., of Coalville bricks. The dressings, oriel windows, turret, &c., are of Stanton stone. Terra cotta is introduced in panels and other places. This has been executed by the Coalville Brick and Tile Company, from designs prepared by the architect. All the external timber work is of oak. The staircase, corridors, steps to front entrance, &c., are of Hopton Wood stone, polished. The roofs are covered with strawberry-coloured Broseley tiles. The glazing of windows and screens in the principal parts is of cathedral glass of different tints, in lead lights, arranged in geometrical patterns. The internal joiner's work is of yellow deal, painted.

The carving includes, over the front entrance, the arms of the town, supported by sprays of bay; the arms of the donor and other well-known families are introduced at appropriate points.

Ventilation is provided for by the admission of pure air in various places, and by a system of exhaust-shafts to collect and remove the vitiated air. These are carried up into the tower, and terminate in Howorth's ventilators, of large size.

The building is set back from the line of the Wardwick, which has been considerably widened at this part, and is enclosed by a substantial stone curb, surmounted with wrought-iron railings. The gates and gate-posts correspond with the railing.

The several works have been executed by the following firms:—The general contractors for the building, Messrs. G. Woods & Son, of Blackburn, Derby, and Bolton; ornamental glazing, by Mr. Evans, of Birmingham; decoration, by Messrs. Best & Lea, of Manchester; metal-work, Messrs. Freeman & Collier, of Manchester; heating, Mr. Crump, of Derby; ventilation and gasfitting, Mr. Evans, of Derby; electric and other scientific appliances, Mr. Davis, of Derby; the carving, Messrs. Earp, of London and Manchester; marble concrete floors in corridors, by Mr. Oppenheim, of Manchester; and marble mosaic in hall, by Mr. Burke, of London and Paris; the bricks were supplied by Mr. James Flint, of Derby; iron girders, by Messrs. Fowke & Co.; the ventilating apparatus for the museum, by Messrs. Handyside & Co.; the iron palisading to the Strand, by Messrs. Handyside & Co.; the stoves and fittings, by the Derwent Foundry Co.; the marble chimney-pieces and hearths, by Mr. Tinkler, who also executed all the wood-carving and models for plastering; the whole of the wood-turning throughout the building, by Mr. Harrison, St. Mary's-gate; the cases in the museum, by Messrs. Sage, of London. Mr. Cooling, Mileash Nursery, Derby, laid out the grounds.

The whole of the works have been carried out from the designs and under the superintendence of Mr. R. Knill Freeman, of Bolton-le-Moors.

Decoration.—Bearing in mind the two-fold character of the building as a Free Library and a Museum of Antiquities and Natural History, an attempt has been made to symbolise these uses; first, by a cartoon in the upper part of the lending library, representing Caxton producing his first impressions from his printing-press. The "illuminators" are looking on with curiosity, while the Court Fool is taunting them, and seems to say, "This is the age of progress, and your occupation is at an end." The printer is likewise surrounded by patrons interested in his work. The space on either side of this subject is filled with ornament, the greater portion of which is a conventional treatment of the olive, with the fruit in silver, indicative of the peace and concord resulting from the use of books and the cultivation of letters. Continuing the idea of progress in all branches of knowledge from Caxton's time to our own days, and individualising those luminaries whose search after truth has so largely increased the pleasures of knowledge, is a frieze containing the names of some of the most eminent men. Thus on the west side of the frieze, the history of Fiction is represented by Fielding, Goldsmith, Dickens, and George Eliot. At the end, facing the visitor on entering, Science is shown by the names of Cuvier, Lyell, and Darwin. On the south side, Philosophy claims attention by the names of Bacon, Butler, Locke, and Herbert Spencer, a townsman. Poetry has its representatives on the screen in the main corridor.

The panels of cove have a floral arrangement to serve as a reminder of the other uses to which the building is appropriated.

The large museum galleries and the connecting gallery are more simply treated. A mixed arrangement of ornamental forms, combined with suggestions of animal and vegetable life, is its leading feature.

The upper and lower corridors have been coloured with a view to their ultimate use as sculpture and picture-galleries, and for that purpose the walls are a Pompeian red, with dark dado and an ornamental frieze.

The committee-room (in which old oak panelling that has been removed from Exeter House, has been successfully restored) has a painted frieze above the wainscoting, representing a growth of English oak, with golden acorns, emblematical of virtue, force, and strength. On these oak branches are suspended the heraldic shields of many local worthies, the glowing colours and quaint devices of which give a highly picturesque, as well as historical, character to this apartment. The panelled and enriched ceiling is picked out in colours and gold.

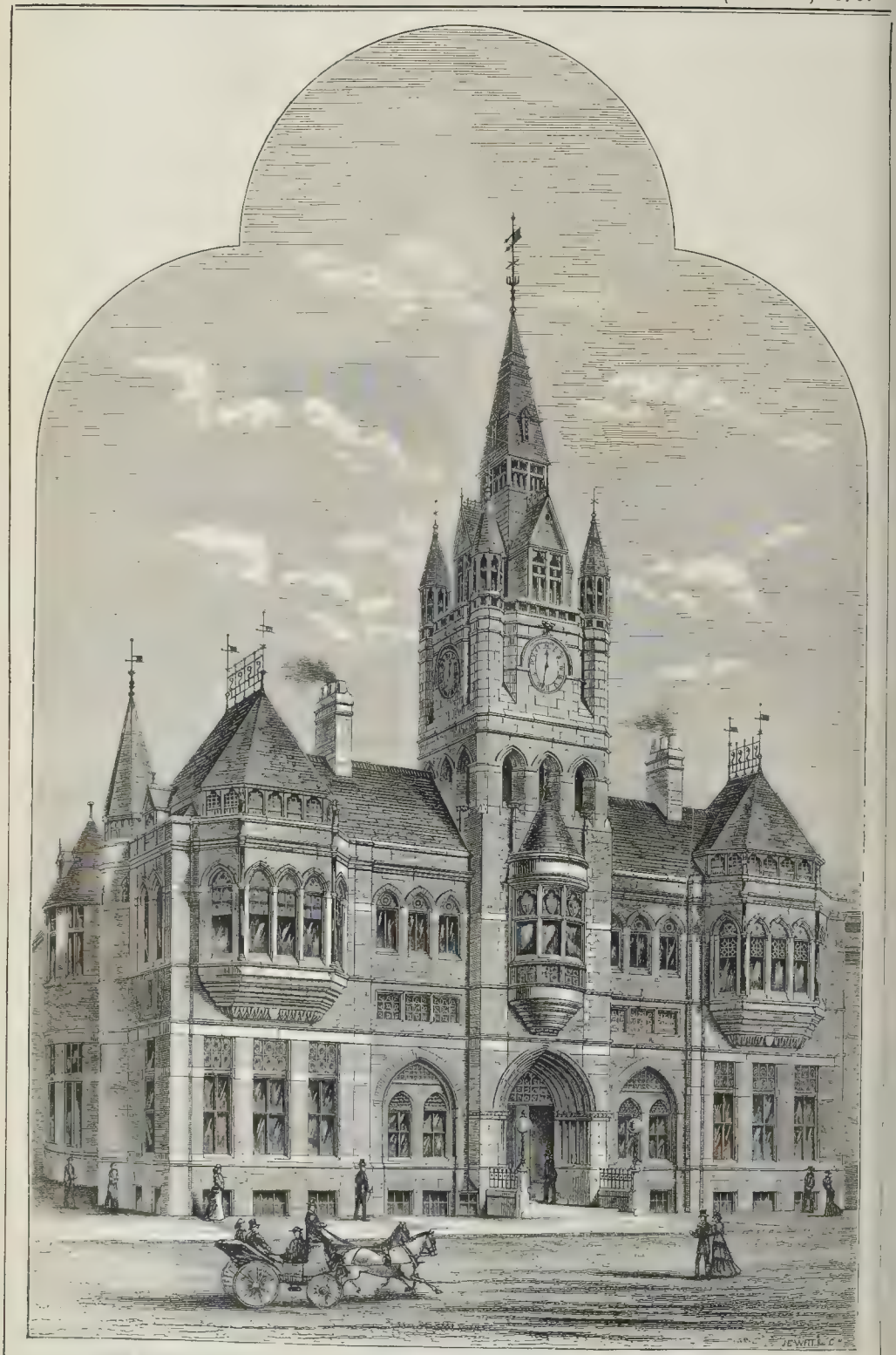
The chairman's private room, on the ground-floor, has its walls covered with tapestry.

The two large reading-rooms and the two rooms adjoining have been quietly coloured. The borders to dados are somewhat quaintly treated.

The artistic metal-work throughout the building is coloured chiefly in metallic colours, relieved by gilding.

NEW MUNICIPAL BUILDINGS, PERTH.

The new municipal buildings at Perth are now so far completed that the Council-room was formally opened on the 7th inst. The resolution to erect new municipal buildings was passed at a meeting on the 10th of September, 1877, and the memorial-stone was laid on the 10th of June following by Lord Kinnaird, with full Masonic honours. The building, the plans of which were prepared by Mr. Heiton, Perth, is in the Tudor style, and occupies the site of the old police office and adjoining property, acquired by the Police Commissioners for this purpose. The building has a frontage to Tay-street of 72 ft., and to High-street of 57 ft. A leading feature in the elevation is a reproduction of St. Mary's Tower, a prominent object in the old building. The main entrance leading to the Council-room is from High-street. The Council-room, situate on the first floor, is a spacious hall of 41 ft. by 25 ft., and is larger than the old chamber. The new Burgh Court-room, 30 ft. by 22 ft., is on the same floor, having a public entrance by Tay-street, and a private one from the Council-room. The total cost of the building will be about 12,000*l*. All the work has been carried out under the superintendence of Mr. George Wells, the master of works.

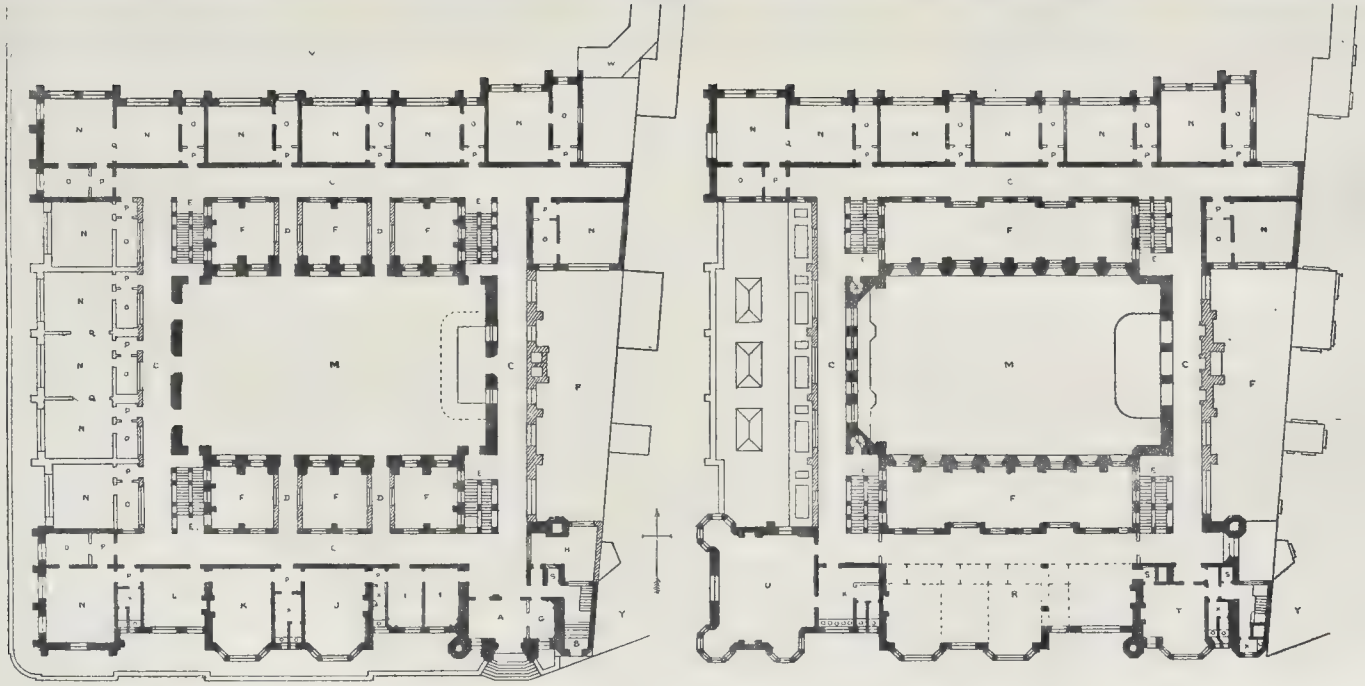


THE NEW FREE LIBRARY AND MUSEUM, DERBY.—Mr. R. Knill Freeman, Architect.



CITY OF LONDON SCHOOL.—Design by Messrs. John & S. Flint Clarkson, Architects.

[See p. 1251, *ante*.



A. Entrance-hall.
B. Porter's Entrance.
C. Corridor.
D. Cross Corridor.
E. Staircase.
F. Area.
G. Porter.
H. Book-room.
I. Secretary.
J. Committee-room.
K. Library.
L. Head-master's Room.
M. The Great Hall.
N. Class-room.
O. Cloak-room.
P. Lobby.
Q. Sliding Doors, combining Class-rooms.
R. Dining-hall (dotted lines show Class-rooms, &c., if formed).
S. Lift.
T. Ladies.
U. Assistant Masters.
V. Open Playground (covered Playgrounds under north and west portions of building).
W. Covered Way to Latrines.
X. W.C.s and Lavatories.
Y. The Royal Hotel.

UPPER FLOOR:—

School Culinary Department, and Porter's Residence, &c., in east portion of front building. Lecture-room for Natural Science over Dining-hall, reached by south-east and south-west Staircases, with Chemical Class-room, &c., to the west of it.

CITY OF LONDON SCHOOL.—Design by Messrs. J. & S. Flint Clarkson, Architects.

[See p. 1251, *ante*.

A SPECIAL SCHOOL OF ARCHITECTURE.

On Monday last M. Bardoux, who preceded M. Jules Ferry as Minister of Public Instruction, presided at the annual opening of the Special School of Architecture, Boulevard Mont-Parnasse, Paris. The ceremony was interesting from more than one point of view, and the institution itself is well worthy of a visit. This school was founded fifteen years ago, recognised by the Government as of public utility in 1870, and received the gold medal of the great International Exhibition of 1878. By the side of M. Bardoux we noticed seated on the platform M. Jenssen, physician and member of the Institute; M. Simonet, architect, who with M. Davioud built the theatres of the Châtelet and the Théâtre Historique; M. Chipier, the eminent author and archæologist; and M. Kœchlin Schwartz, the wealthy Alsatian manufacturer, whose indefatigable devotion to public and educational questions has rendered his name familiar to all earnest and patriotic Frenchmen.

The event of the morning was undoubtedly the speech of M. Emile Trélat, who is the director of the school. The gracefulness of his style, and the eloquence and warmth of his diction when alluding to the memory of M. Viollet-le-Duc, thoroughly roused the audience, and produced a deep impression. The lack of space forbids our reproducing this oration, but we may translate a few points. M. Trélat remarked that in travelling through a number of towns he had received thanks on all sides from persons who had benefited from the technical education conferred in so practical a manner by this special school of architecture. There had, however, also been some hostile criticisms, and the object of this meeting was to ward off the effect of these animosities. Some persons maintained that what sufficed yesterday was enough for to-day; but it was surely evident that every day the profession increased in its knowledge, and, therefore, an education considered ample for the previous generation no longer satisfied the exigencies of the ever-changing circumstances of life and progress. Far from opposing the official schools, which it was sometimes urged possessed greater *prestige*, the special school would assist its pupils to enter the former. There was already a great public school, but its organisations did not harmonise with the means and the time pupils have to give, nor did its workrooms afford the same free scope to the display of imagination on the part of the students. The Special School of Architecture did not seek to act in opposition to official teaching, but to supplement and strengthen it. Finally, to destroy all suspicion of antagonism, it had been determined to create scholarships by which pupils of the Special School would have their expenses paid when studying at the École des Beaux Arts.

Alluding to the subjects taught, M. Trélat insisted on the importance of looking beyond the grave, and vivifying the present by studying the achievements of the past. This led him to speak of M. Viollet-le-Duc, who was one of the founders of this school. "We were not all his disciples, but we all admired his works and words, and glorified his audacious genius. He did not take part in our instruction, but he displayed the greatest interest in our enterprise." We are lost in the number of his works. He was an incomparable designer and builder, an indefatigable writer, who, after spending sixteen years over his "Dictionary of Architecture," launched forth into new spheres of study. At sixteen, his tastes led him to study architecture. He went to the schools, and, after studying, travelled through Italy, Greece, and Sicily. Not satisfied, he returns to France, examines every province, and discovers a France which no one had known before. The books then existing were very poor and incomplete, but he ransacked them thoroughly, and in studying history, became the best of historians. After completing his dictionaries, he perceived that modern civilisation was being re-moulded by the progress of science. He therefore launched himself into the scientific movement. For ten years, at the risk of his life, he explored Mont Blanc, and finally produced the finest maps and description of that giant mountain. The "frightful activity" of his mind was never checked, and in spite of the number of his works, they were all well done, and all done by himself. Whatever he attempted he did openly. Any one was welcome to study his works; his doors were open from eight to ten every morning, and to all comers. He considered himself the comrade of every architect and the friend of every worker. He was calm, independent, and indifferent to the opinions of the world. He was solely devoted to his work, never asked for favours, and fought the battle of life alone. Yet on an emergency he could leave his solitude and join in public movements. During the war he created the 1st battalion of the Service Auxiliare, and fought at Champigny and Bougival General Tripier, who is beloved by all Parisians, always qualified M. Viollet-le-Duc, not as a great architect, but as an excellent soldier. After the war he joined the Paris Municipal Council, at a time when the labours of that body were more especially delicate, difficult, and arduous. Finally he died from overwork, when toiling for the good of the country. In conclusion, M. Trélat remarked that, contrary to what might have been anticipated, the understanding of the past had enabled M. Viollet-le-Duc the better to appreciate the exigencies of the present,—labour and liberty.

After a few appropriate words of congratulation from the chairman, the prizes were distributed, and we were not a little gratified to find that the most successful pupil of the school was an Englishman. Mr. Charles Herbert Church took the first "prize of the Old Pupils," which consisted of a gold medal worth 4*l.*, and the first "prize of the Ampbitheatre,"—a platinum medal, also worth 4*l.* On inquiry, we found that Mr. Church had been sent over to France when a boy by his father, who is the director of the traffic department of the Madras Railway, and his successful studies have won for him the respect and friendship of his French fellow-students. First among these, his intimate friend, M. de Villeneuve, won the gold medal for Architectural Composition; and this amicable competition between friends and students of different nationalities seemed the more striking when we were informed that this young and promising French architect is the grandson of the Admiral de Villeneuve who fought Nelson at the battle of Trafalgar!

In the evening a sumptuous banquet was given at the Hôtel Continental, when, again, M. Trélat was the principal speaker, and explained at greater length the nature of the school which was under his direction. The friends around him, he remarked, probably imagined they were the guests of a school of architecture, but he considered them rather as the guests of a school of philosophy. In any case, he and his supporters had had to practise the philosophy of waiting for success, which took its time in coming. Encouragement, at first, was but whispered in the ear, and on such feeble support the edifice had to be raised. Now, at last, a school had been founded which was recognised as of public utility, receiving public support, and destined to still greater achievements. France, he urged, was a country where there is much to build. Its needs are every day increasing. In each little village, in every small borough, ambitious designs were entertained for the construction of schools, municipal or other public buildings. The special school of architecture offers instruction of easy access to these more or less benighted districts. Still, opposition had been raised, and to show that the school was not in antagonism, but was destined to support the State and official institutions, they offered, M. Trélat repeated, scholarships or exhibitions to those who would go to the École des Beaux Arts. The latter school was a wide field for experiments, and he loved that institution. It opened gratuitously its rooms, which somewhat troubled the private architects who took private pupils; but, in spite of this, the École Spécial d'Architecture determined still further to facilitate instruction by paying the expenses of those who had the *feu sacré* while they followed the classes of the École des Beaux Arts. This action had awakened public sympathy. It brought them a Government subvention of 1,200 francs per annum, gifts from the municipality, and other donations, in all amounting to about 20,000 francs. Then they had not only the gold medal from the exhibition, but when the president, M. Bardoux, was Minister of Public Instruction, he gave decorations to several members of the school.

M. Jenssen, who, in the absence of M. Bardoux, presided at the banquet, and as an ancient professor of the school had witnessed all the difficulties that had been overcome, spoke next. Through all he had felt the greatest sympathy for the work undertaken. At this the first meeting of architects which had taken place since the death of M. Viollet-le-Duc, they might appropriately drink to his memory. With regard to opposition, M. Jenssen thought that man was, on the whole, good, and would, therefore, in spite of temporary antagonisms, ultimately render justice to so useful a work as this school had proved itself. At the present they were all united round the Government, for they were travelling through a period of anxiety and transition. But when this was over, individual initiative would be recognised as a necessary element to criticise, and, by criticising, to strengthen the Government.

When the banquet was over, the members present signed a petition in favour of raising a monument to the memory of Viollet-le-Duc; and the pleasant evening was thus brought to a conclusion.

We regret that we cannot at present examine more fully the action of this special school. The synopsis of the speeches which we have given will enable the reader to get some slight conception of the work done by this comparatively-speaking solitary example of French private initiative. The course of studies followed at the school is elaborate, and we noticed as a peculiarity the very great prominence given to sanitary matters in so far as they relate to building, ventilation, the lighting of rooms, drains, &c. On another occasion we hope to deal more fully with the organisation of these studies.

THE EARLY ARCHITECTURE OF SCOTLAND.

THE RHIND LECTURES IN ARCHÆOLOGY.

Mr. Joseph Anderson, keeper of the Antiquarian Museum, Edinburgh, has just concluded a course of six lectures in Archæology under the Rhind Foundation, taking as the special subject of the course, "Scotland in Early Christian Times."

In his first lecture, delivered on the 14th ult., he ably pleaded for the conservation of the prehistoric remains of Scotland.

Mr. Anderson, in his second lecture, delivered on the 17th ult.,* sought to answer the question whether there existed in Scotland any ecclesiastical structures of date prior to the twelfth century, and, if so, what where their characteristics? The earliest of the existing twelfth-century churches, he said, presented certain features of form and construction which were of importance for the inquiry. Their form embraced a nave and chancel, and their typical features were round arches with radiating joints over doors, and windows having perpendicular jambs. Having thus obtained a distinct point in time, and a known type in construction, he proceeded to deal with the unknown types on the principles of archæological classification. Supposing all the ecclesiastical structures known to be of the twelfth century or later were swept away, there were left a considerable number of which the most that could be said was that they possessed no architectural features, in the common acceptation of the term. It was obvious that of this residue there must be some earlier than others. It was possible there might be some earlier than the twelfth century, because the earlier type might have survived longer in some places. This produced an element of uncertainty in dealing with individual specimens; but in dealing with types or classes it had no disturbing influence, because, if the sequence of the types could be established, it was of no moment whether the specimens were early or late examples. In proceeding to consider the structures in question, he found they were susceptible of separation into two classes, —churches with nave and chancel, and churches consisting of a single chamber. Of these two forms, the more complex was certainly the later, which was found passing from great rudeness of style and construction up to the decorative style and elegant construction of the Norman manner, and thus linking itself on to the current architecture of the twelfth century. Even its greatest rudeness stopped short of the rudeness of a primitive style. There were chancel churches built of unhewn stone, but none built without mortar. On the other hand, the single-chambered type of church, which never rose to the dignity of the Norman type, could be traced back by a series of gradations

* We avail ourselves of the very full reports in the *Scotsman*, from which we condense the accompanying *resumé* of the lectures.

to a type utterly primitive, and corresponding all its characteristics with the type of the rliest churches in Ireland. It was not to be plied that any church found to consist of a ngle chamber was on that account necessarily rlier than one constructed with a chancel; the nclusion related to the typical form alone, and d not necessarily apply to all the specimens that form. The thing determined was merely at the single-chambered form went further ck than the chancelled form. What was the ecise date of any specimen of either was a estion undeterminable by any scientific ethod. The chancelled churches on the main- nd of Scotland were mostly Norman in style, d this removed them from among those with nich he had to deal; but an exception might be ade in the case of one which was unique in features,—the church of St. Regulus, St. ndrews. This beautiful ruin had been assigned many and various dates. Sir Gilbert Scott, e of the most competent authorities, found it fficult to conjecture its age, but imagined it be anterior to the introduction of Norman chitecture into England. But whatever might its precise date, St. Regulus' belonged to the ost advanced type of chancelled churches, nsisting of nave, chancel, and apse; and its pical form linked it on with the group of elfth-century churches. Outside of the main- nd there occurred a very remarkable group of ancelled churches in Orkney and Shetland. ey were small in size, rude in construction, d possessed no architectural features suffi- ntly distinctive to determine their age. One these, in the Island of Egilsay, was, like the urch of St. Regulus, unique in its features. consisted of a nave and chancel architec- rally distinguished, but differed from all other urches in Scotland in having a round tower, ned to the west end of the nave. There was thing in the material or character of the tower suggest that it was not built at the same ne as the church; and as it was this struc- re which gave the church its special character, was necessary to inquire what was its special nificance. There were only two other towers this type in Scotland,—one at Brechin, the ner at Abernethy. Neither of these was now nnected with any remains of a church, and ey seemed to have been always isolated build- gs. The Brechin tower stood in the church- rd, and was built of large irregular blocks of ddish grey sandstone. The stones were cut the circle of the tower, but not squared at top or bottom, and therefore not laid in ite regular courses. The tower was perfectly cular throughout, and tapered regularly from base to the summit, the interior diameter the base being 7 ft. 8 in., and the thickness the wall 4 ft. 2 in. Internally, the tower s divided by string-courses into seven sections stories. While some of the windows had ir sides inclined towards each other, others d the sides perpendicular. The structure s showed the junction of two distinguish- r and dissimilar styles, one of which had ne down to our own age, while the other tched back to the very commencement of hitectural construction. The doorway was at height of 6 ft. 8 in. from the ground, faced west, and was semicircular-headed, with in- ing jambs, its arches being cut out of the solid. e tower at Abernethy stood in the church- rd, and was built of stones dressed to the ve and laid in courses. Up to the twelfth rse above the ground-level the material was d grey sandstone, which had resisted the ather; above this the tower was built of f-coloured freestone, now considerably ather-worn, especially at the joints. There s only a very slight batter, so that the tower nted the grace of proportion which distin- ished that at Brechin. The doorway faced north, was 2 ft. 6 in. above the present level the ground, and had inclined jambs and a micircular head cut out of one stone exter- ly. The tower was divided internally into stories by string-courses. Some of the dows were semicircular-headed, and all had lined jambs. In the general features of their m and construction these two towers were ikingly similar; so that no one could hesitate pronounce them both examples of one specific e. From the solidity of their construction d completeness of their preservation, it was sonable to conclude that, if there had ever n many like them, traces would have been t in other localities. But there were no such mains, and there was no evidence of any kind show that there ever were more of those towers on the mainland of Scotland. Yet, looking to their completeness of character and general correspondence of form, structure, and arrangement, it was impossible to regard them as freaks or accidental products of local circumstances. Thus the archæologist was led to the conclusion that they must be outlying specimens of a well-marked type which must have existed somewhere, if not in Scotland. Now, in Ireland seventy-six round towers of this type were known to exist, and there were notices of twenty-two others not now in existence. These Irish towers showed the features characteristic of the two in Scotland; therefore those two were stragglers from a great typical group which had its habitat in Ireland; and all questions as to the origin, progress, and period of the type must be discussed with reference to the evidence derived from the principal group. From the inquiries of Dr. Petrie and Miss Stokes, it appeared that the Irish towers admitted of classification into four styles:—(1.) The style in which the tower was built of rough stones, untouched by hammer or chisel, with door square-headed, windows square or triangular-headed, and both constructed of the same material as the rest of the walls. (2.) That in which the stones were roughly hammer-dressed, rounded to the curve of the wall, and laid in courses, but often irregularly; the door semicircular-headed, the arch being cut out of the lintel stone, and sometimes decorated with an architrave; the windows constructed of stones roughly squared, but of the same material as the rest. (3.) That in which the stones were laid in horizontal courses, well-dressed and carefully worked to the round and batter of the tower; the door semicircular-headed, the arch being formed of three stones and of finer material, and decorated with mouldings; the windows also of finer material than the rest of the walls. (4.) That in which the building was of rough ashlar masonry, open-jointed, and closely analogous to the Norman masonry of the first half of the twelfth century. The whole group of those towers therefore belonged to the period of transition from the flat lintelled style of ecclesiastical architecture to the round-arched and decorated Irish Romanesque. It was established that this transition was accomplished between the commencement and the close of the tenth century; hence the first group of the towers fell to be included within that limit, and the whole period of this type of round tower structure would lie between the end of the ninth and the beginning of the twelfth century. The adoption of this conclusion greatly reduced the antiquity claimed for those round towers on grounds hitherto deemed sufficient. The conclusions from internal evidence were strengthened when it was found that external evidence led to the same result. Miss Stokes had pointed out that in the majority of instances the towers were on or near the sites of churches which suffered from the ravages of the Norsemen or lay in the track of their plundering expeditions; and that the purpose of the tower, as demonstrated by its form, isolation, and arrangements, was to afford an asylum for the ecclesiastics, and a place of security for the bells, books, croziers, and shrines under their guardianship. Now, the Norse invasions in question commenced at the close of the ninth century, so that on both lines of evidence the same limit of antiquity was reached for this typical form. The beginning of the tenth century was therefore the limit beyond which the antiquity of the Scottish towers could not be extended. The special features of the Brechin tower connected it with the third style of the Irish towers; so that in Ireland it would have been referred to a period later than the first half of the tenth century; and if the historical evidence did not materially support this conclusion, it supplied nothing that could be established against it. The Abernethy tower might be of two dates; but whether of one or two, the difference between it and the Brechin tower could not be very great, because in both its upper and lower portions it must fall in with either the third or fourth style of Irish towers. The lecturer gave reasons for not concurring with Dr. Petrie in assigning this tower to the eighth century, and went on to remark, in regard to round towers in general, that the type died out by degradation of form and function. The first step in this process was that the tower was placed so as to form part of the church structure, as in Egilsay; in the next stage the tower became a simple belfry, perched on the end of the church. Passing on to speak of the transition from the single to the double chambered type of church structure, Mr. Anderson remarked that the church of Lybster in Reay,—so far as he knew, the only specimen of its kind now existing on the mainland of Scotland,—consisted of nave and chancel. It was roughly built of undressed flagstones of the district. The doorway in the west end was flat-headed, and like the doorways of the early Irish churches, the sides being inclined to each other. The chancel-entrance was flat-headed, with inclined sides, differing neither in form, dimensions, nor character from the door. The chancel arch was the characteristic feature of all churches of this typical form, and no earlier type of chancel entrance was to be found than one which was not differentiated in any feature of size, construction, form, or ornament, from the external doorway. In the roughly-built and utterly rude structure at Lybster was seen the simplest form of a chancel church; yet, with all its rudeness, it was as clearly a chancel church as one in the advanced style of the Norman period. The primitive rudeness and simplicity was only reached in churches of one chamber, with one door and one window. In Benbecula was found the only example of a transition stage in the conversion of a single-chambered church into a chancelled church by the addition of a chancel. In several other instances throughout the Western Islands, an old church and an older one were found contiguous to each other, and in all such cases the older was invariably the smaller. It was thus evident that among the single-chambered churches there were two varieties, one linking on with the chancelled church, and one which did not. The church with windows in the side-walls, though single-chambered, was of the former variety, and was probably of the period of the chancelled church, because it was the addition of the chancel that created the necessity for lighting the nave separately. On the other hand, the type of church of small size, with one east window and a west door, was neither linked to the chancelled form, nor could be converted into it without losing its own distinctive features. Of this primitive type there were two varieties—those built with lime and those that reached the utterly simple character of construction which consisted of placing stone upon stone without binding material. One of the best examples of the first variety was found in the island of Inchcolm.

On the 21st ult. Mr. Anderson delivered his third lecture, and after remarking that neither the ancient ecclesiastical remains nor the early history of Scotland could be studied apart from those of Ireland, the study of Scottish remains being the study of a derived group exhibiting local peculiarities, but possessing the general features and characteristics of the principal group, of which it was an outlier or offshoot, proceeded to lay down the following general principles as necessary to be kept in view in the inquiry:—(1.) That the typical characteristics of a group were most readily obtained from the study and comparison of the greatest possible number of the most perfect specimens. (2.) That that number was more likely to be met with in the principal group than in the derived group. (3.) That the characteristics thus obtained as typical of the principal group would also be present in the derived group. The earliest churches in Ireland, he went on to remark, were constructed within the fortified enclosures of the chiefs who embraced the faith, and and took its preachers under their protection. The system which thus arose in the incipient stages of the church's growth continued long after the circumstances which rendered it necessary had passed away. The association of the church with a fortified enclosure, which had been at first dictated by necessity, became established by long custom as the normal form of the ecclesiastical structure, and the rath or cashel surrounding the monastic buildings remained to mark their separation from the outer world long after its primary purpose as a defensive structure had ceased to be recognised. The rath itself was a construction of Pagan origin, indigenous to the country. The church which it enclosed was a construction of external origin, the form and purpose of which were alike foreign to the habits and unfamiliar to the usages of the people. For this reason there were no typical forms of native structures with which it could be confounded. However nearly it might approach to them in style of construction, it never lost its distinctive character. The rath which surrounded it remained undistinguishable

from a rath of the Pagan time; but there was no Pagan structure which, in Scotland or Ireland, assumed the form or character of a Christian church, however early or rude. The rudest and earliest of those that had survived the lapse of time possessed so few of the features we were now accustomed to associate with ecclesiastical buildings that it was necessary to divest one's self of all preconceived notions on the subject, and approach their investigation in the spirit of a pure scientific inquiry. The basis of the investigation was the historical fact that the constitution of the early Scottish Church was monastic. Hence the rath which surrounded the place of worship also enclosed the dwellings of the family of ecclesiastics. Those dwellings, like the rath, were not necessarily affected, either in form or style, by the change of faith of their occupants, and they continued to be constructed after the ancient native manner. If, therefore, there were found in Scotland a church or churches thus associated with a group of dwellings constructed in the ancient native manner, we were warranted in concluding that a group of Christian remains of an earlier type than this was not likely to be discovered. Proceeding to describe three groups of ecclesiastical remains in Ireland possessing this typical character, Mr. Anderson began with Skellig Mhihael, which, he said, presented beehive huts, associated with rectangular buildings, the whole enclosed with a wall. There were five beehive cells of uncemented and unhewn masonry. They were circular and oval on ground plan, but quadrangular internally, and the walls, after rising vertically for 7 ft. or 8 ft., then converged, each stone projecting further inwards than the one below, till, at the height of 16 ft. 6 in., the roughly domical roof was finished with a small aperture, which might be covered with a single stone. The doorway was small, and over it was a small aperture, like a window. There were two other structures of unhewn and uncemented stones, which differed in being rectangular externally as well as internally. One of these had walls 4 ft. 8 in. thick, which rose vertically to the height of 8 ft., before passing into the form of a flat dome. The doorway, 4 ft. 10 in. high, and 3 ft. 8 in. wide, had inclined sides, this characteristic being a constant feature in those early structures. There was one small window in the centre of the east end, broader than it was high. The features in which this structure differed from the oval-shaped cells were its quadrangular form on the ground-plan, its having an east window with a slight internal splay, its having the doorway placed in the west end, and having the remains of an altar platform under the east window. There was no difficulty in concluding from those features that this was an oratory or church, and not a cell or residence. The second oratory stood a little apart from the main group, and was, in the main, a repetition of what had been described. There was also associated with this group of early buildings the larger church of St. Michael, a lime-built structure, with walls of roughly-dressed stones, doorway in the south wall, with jambs of dressed stones, and window with round head cut out of a single stone. This must be placed in order of time after the two dry-built oratories. There was no historic evidence by which a precise date could be assigned to any portion of those remains. There were incidental notices in the annals from which the existence of an ecclesiastical settlement on the Skelleg might be inferred from 812 to 1044. But it was no part of the function of archæology to determine the dates of those specimens. What it did was simply to classify them according to their types, and determine the relative sequence of those types. Whatever might be the precise date of this group, it was clear, from the characteristics described, that it presented a form of structure not indigenous, associated with dwellings constructed in the ancient native manner, and surrounded by a rath. It was thus a composite group of a special type, of which it might be concluded that no earlier was likely to be discovered, because it embraced forms and characteristics which partly belonged to Christian and partly to Pagan times; and thus marked the transition from one to the other. The similar group of Ardoilean was next described, its oratory being characterised as one of the rudest of the early churches of Ireland; and in regard to the third group, that of Inismuredach, it was mentioned, among other things, that the enclosing wall had chambers formed in its thickness. From the consideration of the details of all three groups, the lecturer went on to say, it was to be gathered that the characteristic features of the earliest type of Christian remains in Ireland were:—(1.) That they existed as composite groups, comprising one or more churches or oratories placed in association with monastic dwellings, consisting of dry-built cells of beehive shape, and the whole settlement being enclosed within a rampart of uncemented stone. (2.) That the churches or oratories found in this association were invariably of small size and rude construction. (3.) That whether they were lime-built with perpendicular walls, or dry-built like the dwellings, they were always rectangular on the ground-plan, and single-chambered. (4.) They had always a west door and an east window over the altar. It could not be doubted that if such was the character of structure in use in the parent Church, the same style of buildings, the same forms of huts and churches, and same assemblage of both within a fortified inclosure, must have prevailed in the period of the planting of the Christian Church in Scotland. He could not point to a single example in Scotland so completely typical as those described; but if he were to conclude that such groups never existed, he should commit the common mistake of drawing, from mere ignorance of the facts, a conclusion which could only be legitimately drawn from complete knowledge. He rather inclined to the opinion, founded on his knowledge of how very little was known of the real character of the vast majority of the great stone cashels and earthen raths of Scotland, that there might yet be found some which exhibited distinct and complete evidence of this Christian character. In Scotland, as in Ireland, it was only on the smaller, uninhabited, inaccessible islands that traces of such structures were to be found. The first of three groups selected for description was that of Loch Columcille, in Skye. The remains here, the lecturer said, were so ruined that it was difficult to determine their features with certainty. There was a cashel of stone enclosing traces of cells, which it was thought had probably been covered with beehive vaulting; also an oblong building whose remains were so indistinct that it was impossible to determine its character. Under these circumstances it was hazardous to venture on definite conclusions; but, as far as he was able to judge, the general features of the remains appeared to have been those which the analogy of the Irish groups taught one to look for in the monastic settlements of the early Christian time. There was not evidence sufficient to attribute the remains to the time of St. Columba, though they continued to retain the association of his name; but although the buildings might not have been erected in Columba's time, they were apparently of the earliest type, and might, therefore, be among the very earliest remains of ecclesiastical origin now in Scotland. A second group, that of Eilan Naomh, close to which was a spring called Columba's well, showed a small church or oratory, associated with beehive cells of uncemented masonry. A detailed description was given of these remains, which the lecturer pronounced to be of the typical character of the early monasteries in Ireland; at the same time reminding his hearers that that type might have ranged through four or five centuries, and that, without the assistance of definite records or dated characteristics, it was impossible to say to which of those centuries any specimen belonged. Passing next to a group at Deerness, he gave an account of a small oblong church with lime-built walls, doorway in the west end, window in the east end, and scattered round this the remains of a number of cells. This settlement, he said, was protected by a stone cashel; there was a well close by the church, and up to the sixteenth century the place had still such a reputation for sanctity that at certain seasons people of all classes and conditions climbed to the top of the rock on hands and knees to offer their supplications. In this case, again, the remains were declared to be of the type of the earliest Christian settlements. The three groups which had been mentioned, therefore, offered examples of the earliest type of Christian architecture in Scotland, belonging to the time when the church was monastic, and consisted of little colonies of ecclesiastics, sheltered within the rath of a friendly chief, or planted on lonely islands. But besides these, there was another class of structures which also belonged to the earliest type, though not occurring in such association as to warrant their being called monastic. Reference was made to the isolated churches or oratories on Rona, Suleskerry, and the Hannan Isles; and the lecturer, in summing up his remarks, said there might be difficulty, in certain circumstances, in determining whether a dry-built beehive structure in the Western Isles might be ancient or recent; but he had made it clear that no such difficulty existed in regard to the determination of type. Proper conclusions regarding the ancientness or recentness of any particular example could only be reached when special evidence in the nature of record or testimony existed. In regard to those composite groups, he said that he knew of no other type of earlier construction existing in Scotland; but he did not say of the existing specimens that they were the earliest that ever existed, or that the types he had described were the only types of Christian buildings that had existed. It was known from the writings of Bede that it was not uncommon for the Scottish monasteries to be constructed of wood; but, in the absence of remains, the wooden type of structure affected the archæological investigation no more than any other historical fact which was admitted as established on the credible testimony of contemporary writers. From the point now reached a survey might be taken of the phases of advancement exhibited by ecclesiastical structures. There was first the rude, unadorned type, consisting of a single chamber, and having but one door and one window. Of this there were two varieties,—one constructed without cementing material, the other built with mortar. Then there was the more complex type, consisting of nave and chancel, of which there were found such varieties as that in which the chancel was not bonded into the nave, marking the transition from the single to the double-chambered form; that in which there was no chancel arch, the opening into the nave differing in no respect from the doorway: that in which the end of the vault of the chancel-roof opened directly into the nave; and that which showed the chancel-arch along with other features which linked it with the current architecture of the twelfth century. Again, it had been seen that the earliest churches of Scotland, while partaking of the structural features of Pagan buildings, differed in the important elements of angularity and regularity of form, in having a west doorway, an east window, and an altar platform. The type also differed from those forms of early church structure which were common in Europe, and was therefore a form peculiar to a special area. The Roman or European type was basilican in form, having its east end constructed in a rounded apse. In Ireland and Scotland, on the other hand, the earliest churches were not basilican in form, but were invariably small, oblong buildings with square ends and high-pitched roofs. No example of an apsidal termination existed, and whatever might be the secret of their derivation, they were certainly not built after the Roman manner. Their special features were extreme rudeness of construction, extreme simplicity of form, insignificance of dimensions, and total absence of ornament or refinement of detail. If, however, he inferred that the uniformity of plan implied deficiency of inventive power, or that the absence of decoration implied inability to contrive or appreciate it, he should be drawing conclusions destitute of relevant evidence.

In his fourth lecture, Mr. Anderson spoke of existing relics of the early Celtic church, beginning with an account of the Book of Dee and other remarkable illuminated MSS., quoting from them in support of his views as to the architecture of the period, and observing that the quality of the culture disclosed in those valuable relics showed how greatly we in the present day should err if we relied on structural remains alone as indications of culture. The men who produced this art, although they might have lived in beehive houses, and worshipped in churches scarcely more refined in appearance or architectural in structure, were not destitute of that varied culture which was literary as well as artistic in its character. On the contrary, they were men of such acquirements and taste that they multiplied their books laboriously, and counted it a virtue to be diligent in doing so; that the skill they thus acquired enabled them to produce MS. volumes written with a faultless regularity and precision of character rivalling the best caligraphy of the most literary nations which they adorned with illuminations of exquisite beauty and intricacy of design, and enclosed in cases enriched with the costlies

rkmanship in gold and silver, and set with ecious stones.

The fifth lecture of the course was delivered the 28th ult., when Mr. Anderson continued treat of existing relics of the early Celtic rch, especially of bells. He described several table specimens of early bells, remarking that y, in common with other relics of the period, orded abundant evidence of the technical ll and artistic ability of a time whose every rk bore the stamp of that earnestness of pur- e and concentration of energy which always companied a mind inspired by genuine devo- n to the work for the work's own sake.

The sixth and concluding lecture of this inte- ting series was delivered on the 30th ult., . Anderson resuming his account of existing ics of the early Celtic church, including the oziers of St. Fillan and St. Columba. In con- sion, the lecturer said that he and his dience had traced the types of the early rches back to a type truly primitive in form d construction; they had seen that the dwell- gs of the founders were beehive cells or ttled huts, as mean in character and rude in nstruction as could be imagined; yet that eir occupants were men exhibiting a quality ulture and form of civilisation which it might difficult for the present generation to estimate their true value in relation to their own, but ich could not be spoken of in terms of dis- agement. The relics of that culture still tant exhibited a feeling for decorative art, a ulty of design and skill in the technical pro- sses of art workmanship, which had seldom en surpassed; and in all the productions ich had come under notice, whether rude or fined, they had marked the presence of features d characteristics peculiar to this special area, ecause they were the expression of the in- ividuality of the Celtic character. Throughout e course of lectures just closed, the features d characteristics which marked that individu- ity of character had been for the most part mmon to Scotland and Ireland. In the next urse it would be his duty to deal with objects d classes of objects which exhibited, in a still re distinctive manner, features and charac- istics which were the expression of an ividuality of character developed on the soil Scotland itself.

THE NEW ROYAL INFIRMARY, EDINBURGH.

These extensive and important buildings, hich have been erected and furnished at a tal cost of about 350,000*l.* (including the e), were formally opened by the Lord Provost the 29th ult. Nine years ago, in our volume 1870 (pp. 1006-1007), we published a view d plans of the buildings, of which the e Mr. David Bryce, R.S.A., was the archi- ct. The old infirmary, established about a ntury and a half ago, had but small be- nnings, but the demand for its beneficent rk was so great that the premises had to be tended from time to time to meet growing eds, absorbing the old High School building. will be inferred, the buildings were for the ost part old and unsuited to the exigencies of edical science in the present day; and it ing felt that the patients did not get so fair chance of recovery, nor the doctors so good field for the successful exercise of their rative skill as they would have had in better ildings, a few years ago the question of building the Infirmary came to the front. e immediate rebuilding of the Medical School as at first recommended, the intention then ing that the hospital should remain on the me site, with such extension as would be cured by the removal of the houses in South ridge, opposite the University. This scheme ing adopted by the contributors, a public bscription, energetically promoted by Mr. J. Boyd (the present Lord Provost), and t., now Bailey, Colston, was put in train, to cure the necessary funds. The subscription t soon showed a total of 75,000*l.*; and the anagers had begun to take steps for acquiring e necessary property in South Bridge, when a w complexion was given to the movement rough the action of the late Professor Syme, ho urged that the opportunity should be taken vantage of to have the whole Infirmary re- uilt on a thoroughly satisfactory scale. After great deal of discussion, the managers recog- sed the expediency of yielding to the proposals ade by Professor Syme and others. The governors of Watson's Hospital, then taking action under the Endowed Institutions Act, were found willing to dispose of their property, and the necessary consent to a change of plan having been obtained from the Infirmary contributors and the subscribers to the building fund, the late Mr. D. Bryce, R.S.A., was, as already stated, entrusted with the planning of the buildings, of which his nephew and partner, Mr. John Bryce, has superintended the completion.

In framing his design, the architect (says the *Scotsman*, in the course of a long description of the building published on the occasion of the opening), was guided, by the results of recent hospital experience, to the adoption of the pavilion system of planning. The site purchased has an area of 11½ acres—the original purchase of the Watson grounds having been supplemented by the acquisition of Wharton-place,— but only 3½ acres are actually occupied with buildings. The style adopted is the old Scottish baronial, its characteristic features being, of course, most completely developed in the main frontage, which, in accordance with the requirements of the site, has been turned to the important thoroughfare of Lauriston. This façade presents a central elevation 100 ft. long, with height of three stories, in addition to a half-sunk basement. A leading feature here is a tower, which, buttressed at either angle, projects slightly from the general line of the block and has its base pierced by the main entrance. Near the top the tower wall is corbelled outwards, and over it there springs a slated octagonal spire, terminating at a height of 134 ft. from the ground in a vane and weathercock. From each side of this central building, which is partly appropriated as administrative accommodation, there run out, in the same line, three tiers of corridors, giving access to the wards of the surgical hospital, and offering, in the front view, as many ranges of large three-light windows, surmounted by a stone balustrade. These corridors, measuring each 12 ft. wide by 15 ft. high, are continued from end to end of the buildings, and on the north side there are carried out at right angles towards Lauriston four pavilions, or blocks of wards, severally measuring 128 ft. in length, with an extreme width of 33 ft. 2 in. Each pavilion reaches to within about 30 ft. or 40 ft. of the thoroughfare, to which it presents, as a notable feature of the frontage, a crow-stepped gable, flanked with round towers, and having on each of its three floors two square-headed windows and a doorway, also glazed, which opens upon a stone balcony. In their side elevations, the several pavilions show ranges of plain windows, the walls being relieved with string-courses and diversified at the top with stepped gables, small turrets, and chimneys characteristic of the style. The masonry throughout is substantial ashlar, with tooled facings to doors, windows, and gable-heads. Of the four north pavilions mentioned, that at the east end of the frontage is separated from the one next in order by a space of 88 ft., open on the side next Lauriston, but closed on the opposite side by the connecting corridors, from which there projects into it a small one-story building, intended as a meeting-room for students. Between the second and third pavilions comes the central court, or carriage approach to the main entrance, which has a width of 158 ft., and between the third and fourth a second space of 88 ft., with corridors at the back as before, and a small projecting building corresponding to that in the other wing, to be occupied as a female accident ward. On the south side of the main corridors, again, there are two pavilions running southward, their inner ends coming nearly opposite the vacant interspaces of the two northern pairs. Between these there come in two class-rooms, likewise entered from the main corridor, as also an operating theatre in rear of the central block, and immediately to the south of this, the old buildings of Watson's Hospital, remodelled so as to be available for administrative purposes. The Surgical Hospital, with its adjuncts, thus forms a pile of buildings extending in its main frontage to 480 ft. A space, 195 ft. wide where narrowest, traversed by a covered way, with open gallery on top, separates the surgical and administrative departments from the Medical Hospital, which occupies the lower portion of the ground nearest the Meadows. The arrangement here is of the simplest. Four pavilions range north and south, and stand parallel to each other at distances of 100 ft. or 112 ft., repeating the architectural features of the pavilions already described. The pavilions here are somewhat longer than those of the Surgical House, measuring, as they do, 173 ft. 6 in.; but their width is the same; and so is their position with reference to the points of the compass, that having been adjusted with the view of getting the benefit of both morning and afternoon sun. Each block embraces, besides basement and attics, three extensive floors, and every floor constitutes a ward, complete in itself, and capable, if necessary, of being isolated and worked independently of the rest of the hospital. To secure at once durability and imperviousness to germs of disease, the walls of the wards are plastered with cement and faced with parian; while the floors are constructed of pitch pine, varnished. On either side of each ward is a range of windows, their upper sashes hung upon central pivots, so as to be readily opened for ventilation. Between the windows are placed the bedsteads, their centres 9 ft. apart. The heating is by four open fireplaces, it being deemed undesirable to extend to the wards the system of steam piping employed to keep up the temperature of the corridors. Galton grates are largely used, with the view of getting the full benefit of the fires. Apertures here and there, close to the floor, admit fresh air direct from the outside; while under each bed is an opening communicating with an extracting flue, carried up through the wall to one of the ventilating towers, where a warm-water cistern, connected with the heating apparatus, is expected to produce the necessary updraught. The gas-burners, of which there is one to each bed, are fitted with hoods through which the vitiated products of combustion may pass out of the ward.

The group of buildings devoted to the Pathological Department is situated at the north-west corner of the grounds, standing somewhat apart from the Infirmary proper, having a frontage to Lauriston of 120 ft., and constructed in a somewhat plainer style, but so as to harmonise with the general character of the design. The leading feature of this series of buildings is a spacious lecture-theatre, with sitting-room for 220 students, and having the necessary adjuncts of microscope-room, chemistry-room, &c. Near by is a mortuary, lined with white glazed bricks, which communicates with the medical and surgical hospitals by means of an underground passage, so that the bodies of deceased patients may be removed without unnecessarily attracting observation. Another building contains the washing-house, to which soiled linen will be conveyed through the tunnel, and where it will be dealt with by means of a steam-driven washer, a mechanical wringer, and hot-air drying-chamber. Here, too, is the boiler-house, where provision is made for working the heating apparatus and the hydraulic machinery of the lifts. A commodious residence for the superintendent, harmonising in style with the Infirmary buildings, has been erected near the Meadow Walk, immediately in rear of the surgical house.

In regard to the accommodation for patients provided in the new institution, it may be mentioned that of the eighteen wards in the surgical pavilions, there are about fifteen which, including private beds, will each accommodate sixteen patients. The medical house comprises twelve wards, each capable of receiving twenty-one, or, counting private beds, twenty-three patients. Adding the accident, ophthalmic, D. T., and students' wards, together with the numerous reserved beds, for which space will be found in other apartments, there comes out a total of about 600, or 140 over the daily average of patients treated last year in the old Infirmary. The amount of space provided for each patient varies from 2,350 to 2,380 cubic feet, as compared with 1,800 cubic feet allowed in St. Thomas's Hospital, London, and 1,226 cubic feet in Fort Warren, Massachusetts.

The contractors for the masonry, carpentry, and joinery work were Messrs. W. Beattie & Sons; plaster work, Mr. James Annan; slater work, Messrs. Anderson & Son; plumber work, Mr. Carstairs and Messrs. Barton & Sons; heating apparatus, &c., Mr. Purnell, Glasgow. The time specified for the completion of Messrs. Beattie's contract was the 31st December next. They can claim the credit of having considerably anticipated it.

Aylesbury.—Sir N. M. de Rothschild, bart., M.P., is about to present a new Literary and Scientific Institute to Aylesbury.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

The thirty-second anniversary festival in aid of the funds of this Institution was held at the Freemasons' Tavern, Great Queen-street, on Thursday, the 6th inst., Mr. F. J. Dove, president, in the chair.

The usual loyal and patriotic toasts were duly honoured, the President, in proposing the health of the Prince of Wales, expressing the hope that His Royal Highness would, on some future occasion, be willing to preside over the annual festival of so important a charity as the Builders' Benevolent Institution. The secretary, Major Brutton, responded for the "Army and Navy," and Captain Bird for "The Reserve Forces."

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," said that the Institution had now been established for thirty-two years, and during that period it had granted pensions to one hundred poor men and their wives. All those pensioners had now passed away, but the Institution had at present fifty other pensioners on its books. The Institution had now an accumulated fund of 20,700*l.*, the interest of which sum, supplemented by the donations obtained at the annual dinner, and by the annual subscriptions, was appropriated in payment of the pensions. The necessity for such a benevolent institution as that on whose behalf he was pleading was becoming increasingly felt from year to year. The building trade was one which had for many years been absorbing many trades which, thanks to the spread of sanitary knowledge through the labours of such men as Dr. Richardson, had now become essential for the erection of healthy dwellings. Architects now specified the adoption of more or less complicated sanitary appliances, and accordingly upon the builder there devolved a great deal of responsibility in connexion with such matters,—a responsibility which was leading to the absorption, by the building trade proper, of the special trades concerned in the manufacture and erection of such appliances. Besides this, the risks undertaken by builders in carrying out their works were constantly on the increase,—risks of party-walls, risks of adjoining owners, risks of life and limb, risks of settlement, and, in fact, risks of every conceivable kind. The builder had also difficulties in dealing with his workmen, with the building owner, with the architect, and with the district surveyor; and finally, when he had completed his work, he perhaps had a great deal of difficulty in obtaining the money for it. The last difficulty added to the others induced in some men a mental strain which prevented them devoting due energy to their business, which, under such circumstances, too often became a ruin and a wreck. The rapid growth of the building trade had been attended with great and sometimes bitter competition, and such competition too often ended in disaster. True it was that many men who had made colossal fortunes in trade competition had nobly come forward to help the Builders' Benevolent Institution in providing in some measure for the wants of those who had been so unfortunate in the struggle for existence as to be suppliants at the threshhold of the Institution. Now the pension granted by the Institution to men was 30*l.* per annum, which was not sufficient to provide for the wants of a man and his wife, but had to be supplemented in many cases by the doles of friends. He was of opinion that it would be a grand thing if, by the co-operation of the trade, the amount of the pension could be raised to 50*l.* He felt sure that by a vigorous effort it could be done, and although he was only speaking his own sentiments, for which the committee were not responsible, he felt quite sure that if the committee were provided with the necessary augmentation of means, they would be only too happy to increase the pension to 50*l.* Few in that company, however wealthy, knew how long it might be before, by some fortuitous combination of adverse circumstances, they might be overtaken by misfortune, and placed in a position to need the help of the Institution. Therefore, he said to all,—"While you are in a position to help, lend your help, and that most heartily."

The toast was enthusiastically received.

Mr. H. G. Smith proposed the next toast, "The Chairman and President," and said he regretted that Mr. Plucknett, the respected treasurer of the Institution, was not present to propose this toast, as was his wont. Mr. Dove had shown by his words that he had the interests of the Institution at heart, and he (Mr. Smith) felt sure that Mr. Dove would use what energy he had given to him for the benefit of the institution.

Mr. Dove briefly responded.

Mr. T. F. Rider proposed the next toast, "The Vice-Presidents and Trustees," and referred in eulogistic terms to the services rendered by those gentlemen. With the toast he coupled the name of Mr. Freeman, one of the vice-presidents, who responded.

Mr. Conder, in proposing the next toast, "The Treasurer," Mr. George Plucknett, said that Mr. Plucknett had been identified with the Institution since its foundation, and he believed had never been absent from the annual dinner until the present occasion. He was sure the company would all deeply regret the fact that ill-health prevented Mr. Plucknett's presence that evening, and would join in the expression of the hope that he would soon be speedily restored to health. He had been treasurer of the Institution for more than twenty years, and was, as everybody knew, most zealous in promoting the interests of the charity.

The toast was very enthusiastically received, and responded to on behalf of Mr. Plucknett by Major Brutton, the secretary, who announced subscriptions and donations to the amount of 859*l.* 0s. 6d. Of this sum 424*l.* 15s. 6d. figured on the list of the chairman, who personally gave 52*l.* 10s.; Messrs. Dove Brothers gave 52*l.* 10s.; Mr. H. J. Dove, 21*l.*; and Miss Dove, 10*l.* 10s.

The Chairman, in proposing the next toast, "The Architects and Surveyors," referred to the progress of modern architecture, observing that English architects, at any rate, were able to hold their own even in competition with foreign architects. With "The Architects," he begged to associate the name of Mr. Francis, joint architect of the Grand Hotel, Charing-cross. To the surveyors, architects and builders were equally indebted, for when they had managed to get their accounts into apparently inextricable confusion, the surveyor was called in to put things right. With "The Surveyors" he coupled the name of Mr. Franklin.

Mr. Francis, in responding, said he was always prepared for something amiable as well as clever from their excellent President, and the way in which he had spoken of the architectural profession entitled him to the thanks and esteem of all who were architects. There was every reason why there should be the best of understandings between architects and builders. The conceptions of the architect were of very little value until realised by the practical skill, energy, and enterprise of the builder,—and he was afraid he must say that some very impracticable suggestions put upon paper in architects' offices had to be very considerably "licked into shape" (if he might use the expression) by the builders. Personally, he did not think he had ever had business relations with any firm which had ended in better results than those in which he had been concerned with the firm with which Mr. Dove was identified. Mr. Dove was one of the most esteemed and popular men amongst the builders of the metropolis. It was, as he had said, very important that builders and architects should work together. Of course there were times when things were rather rough. There were several matters which were the subject of debate between architects and builders, such as "quantities," "day-accounts," and "extras," but it was pleasant to know that in the midst of the discussion of those distracting topics, architects and builders were able to meet round that hospitable board on terms of friendship. He hoped that state of things would continue. To get on well together, the architects and builders of the metropolis must work in harmonious concord. If the builders, on the one hand, would keep their day-accounts down, and if the architects, on the other hand, would refrain from adopting what was called the "skin-flint" policy, they would continue to get on together very well indeed.

Mr. Franklin replied in the name of the surveyors.

The remaining toasts were, "The Committee and Stewards," proposed by Mr. Colls and responded to by Mr. T. G. Smith; and "The Ladies," proposed by Mr. Conder, and responded to by Mr. T. F. Rider, who truly observed that had the ventilation of the hall been more satisfactory the toasts would have been more cool-ly, though not less enthusiastically, received.

The gathering was a very successful one.

NEW PUBLIC BUILDINGS AT READING.

On the 3rd inst. the Earl of Carnarvon lai the memorial stone of the new Town-hall, Fre Library, Museum, and Schools of Science an Art which are now in course of erection i Blagrave-street. The Town-hall, Free Library and Museum will front to Blagrave-street, an the Schools of Science and Art to Valpy-street The style is an adaptation of the French Gothic and the new buildings will exteriorly accord i colour and general appearance with the existin buildings.* On the Blagrave-street frontag will be a series of sculptured stone panels illustrative of incidents in the history of Reading The entrance to the Town-hall is placed nea the centre of the façade, and the entrance t the Library and Museum at its northern end The Town-hall is reached by a stone staircas 20 ft. in width, communicating with a corrido 15 ft. in width, and 78 ft. in length. Thi corridor communicates at its southern end wit the corridor of the present building at the sam level. The hall is 97 ft. in length, 60 ft. i width, and 50 ft. in height. There will b balconies on three sides of the hall. Thes balconies will be supported by cantilevers. Th hall will be lighted through a deep cove running all round the hall immediately under the ceilin line. The style of decoration to be employe in the interior of the hall will be that of th Renaissance, colour being sparingly used Under the orchestra-staging are ladies' an gentlemen's dressing-rooms, lavatories, &c Adjoining the dressing-rooms, on level of base ment, is a supper-room, 20 ft. by 60 ft. Th whole of the remaining area under the hal floor will be available for storage. On the wes side of the corridor are, first, a committee-room 21 ft. by 26 ft., next, ladies' and gentlemen' cloak-rooms and lavatories. Under these room are medical officer's room, waiting-room, an rooms for storage purposes. The whole o these rooms on both floors may be reached fron the corridors of both old and new buildings The Free Library is reached from the north en of the Blagrave-street façade, the floor being 3 ft. above the level of the footway. The floo area of the library is 2,700 superficial feet, wit a clear height of 20 ft., divided by glass screen into reading-room, ladies', and reference-rooms and library and librarian's room. The Museum which occupies the whole length of the Blagrave street façade, is reached from the same entrance by a broad stone staircase. The floor area i 3,380 superficial feet, divided into two museums each having a height in centre of width of 28 ft The central and back portions of both room will be lighted from the roof. The Schools o Science and Art are entered from Valpy-street and contain kitchen and scullery for the school of cookery (this kitchen will be connected by a passage-way with the Town-hall, so that it may be used in case of banquets, &c.), two large laboratories (one for elementary and one fo advanced students), eight class-rooms, including one specially arranged for drawing from life o life-sized casts, master's room, and ladies' an gentlemen's cloak-rooms and lavatories. Th class-rooms are all lofty, and have, exclusive o the lavatories, a floor area of 5,700 superficia feet. The heating will be generally by hot water, but some of the class-rooms will b warmed by open fires. In the matter of venti lation, fresh air will be continuously introduce by down-cast and other shafts and arrange ments, and the vitiated air extracted by Boyle' self-acting suction air-pump. The buildings wi cost about 46,000*l.* Mr. Thomas Lainson, o Brighton, is the architect, and Mr. Chappell i the builder.

Durham Baths and Wash-houses.—O the 4th inst. the mayor formally re-opened th Durham baths and wash-houses, which hav been closed for alteration and repairs since las May, under the direction of the City surveyor Mr. De Normanville. The first-class swimming bath has been lined with Minton's whit enamelled tiles, and the sides of the second class plunge-baths are lined in a similar way The first-class bath will be warmed with steam pipes, so that it can be used in the winte season. Both swimming-baths are covered wit open roofs of wood and iron combined. Th work has been carried out at a cost of nearl 3,000*l.*

* Designed by and erected under the superintendence o Mr. Waterhouse, A.R.A., and illustrated in the *Builde* vol. xxxv. (1877), p. 169.

A FREE SCHOOL OF ART FOR GIRLS.

Sir,—As you kindly inserted my letter on the ecessity of a "National Free School of Art and ndustrial Art for Girls" (p. 1156, *ante*), the rtherance of which scheme is an object I feel eply interested in, I venture to claim your ndulgence again and yet again, as I feel confident at in the course of time something will be done the proposition be well brought before the public. have been reading a very interesting book on e "Balearic Isles," by Mr. Charles Toll Bidwell, .M.S. Consul at Puerto Rico, but who was reviously Consul at the Balearic Isles for some ars.

After a very lively account of these islands, anners, customs, and so on, Mr. Bidwell votes a chapter to the fine arts, and it is with little interest I find that something of the an I have suggested is already carried out ere, and is working well. The chapter is so teresting that if I may so far trespass on your pace, I will give the pith of it. It relates to e Fine Art School of Palma. By a curious incidence, Mr. Bidwell says, there exists in pain the same number of Government fine-art hools as in Italy; there are thirteen of such hools under the charge of the State in Italy, nd, with the exception of the Superior Academy Fine Arts in San Fernando, there are also irteen fine-art schools in Spain. Amongst the panish academies, that of Palma now occupies, om the number of its pupils as compared with e population, a very remarkable position. The udy of fine art in the Balearic Islands in *all anches* has of late been much cultivated, but ore especially in such as may be applied to dustry. Drawing applied to arts and to dustrial pursuits is now studied there on a ale that compares in a noteworthy manner en with that of the well-subsidised hools of Italy; and the development of this rsuit is more praiseworthy, as the result is tained at a cost comparatively insignificant. om the data lately published, it appears that e Academy of Palma enjoys a grant of only ,750 francs (550*l.*) for professors, and 6,125 ancs (245*l.*) for material, &c., which is all its venue, and with which modest stipend the e classes required in the Government instruc- on are sustained, in addition to three higher es. There are no fewer than 425 matriculated udents (this was in February, 1875). The istribution, when these numbers reached 397, as: Class of arithmetic and geometry, 83; gure drawing, 88; lineal drawing, 100; orna- ent, 51; arts and building, 27; landscape and rspective, 29; drawing from antiquities, 11; awing from nature and living models, 8.

Of these 397 pupils, 136 thus attended the asses of "application drawing." It would nce appear that more than two-thirds of the pils dedicate themselves to drawing applicable industry, as the foundation of their profession artisans and architects.

Mr. Bidwell continues,—"Don Juan O'Neille lled attention in an interesting paper to the markable fact that the Academy of Milan, hich owes its prosperity to the prominent ace given therein to industrial drawing, is e only Italian school that numbered on its atricula more than 1,000 students, while the st of the Italian schools numbered less than at of Palma. Thus Turin numbers 394; aples, 357; Rome, 290; Modena, 289; Bologna, 5; Florence, 205; Marsa, 70 (these figures e taken from *La Italia Economica*). The penses of these thirteen Italian schools (year 72-3) amounted to 700,201 francs, which portioned amongst them would give upwards 53,000 francs to each (2,120*l.*). The school Palma, with 425 matriculated students, costs, we have seen, only 19,870 francs, or little re than a third of the above average.

The attendance at the Palma Academy *is free charge to the pupils*. The classes are held ily in the evening during the term, from the t of October to the 31st of May. The pro- ssors, in several instances young men, natives the island, who,—for the most part with small ailable resources,—have, with praiseworthy dustry and application, developed the natural tistic talent common to these islanders. They ve acquired in competition the honourable sition they occupy, and when one sees the cellent work of some of them, one may be led believe that, in a larger sphere of action, eir abilities would find a still higher appre- ation.

Amongst the more prominent of the young ajorcan artists is Señor Rebas, whose charming landscape gained a first prize at the Vienna International Exhibition, and the remarkable etchings and drawings of Señor Maura are too well known abroad to require attention to be called to them."

This account seems to me encouraging, and if that little Spanish island, lapped by the waves of the blue Mediterranean, can carry out for men, without cost to them, so vitally useful a plan, so simply and so judiciously, surely in *this* island, on whose possessions the sun never sets, and some of whose inhabitants possess almost fabulous wealth, a movement may be looked for to provide an institution offering similar advantages to the girls and women of England. C. S.

THE THAMES NAVIGATION AND THE SEWAGE OUTFALLS.

An inquiry as to the effect which the discharge of the metropolitan sewage into the Thames at its present northern and southern outfalls has had upon the navigation of the river was commenced on the 4th inst. in the hall of the Institution of Surveyors, Westminster, before Sir C. Hartley, the umpire appointed by the Board of Trade; Captain Douglas Galton, C.B., the arbitrator appointed by the Thames Conservancy; and Mr. Bramwell, C.E., the arbitrator nominated by the Metropolitan Board of Works.

Mr. Pope, Q.C., and Mr. Theodore Aston, Q.C., were counsel for the Thames Conservancy; Mr. Bidder, Q.C., Mr. Michael, Q.C., and Mr. Edward Clarke represented the Metropolitan Board of Works.

The inquiry was stated by Mr. Pope to be the outcome of a long correspondence which has been going on between the parties to the arbitration for several years, and the claim of the Thames Conservancy is based upon the 20th and 21st sections of the Thames Navigation Act of 1870, which provided that any banks or other obstructions of the navigation of the river which might arise from the discharge into it of the sewage of London must be removed at the expense of the Metropolitan Board. This, Mr. Pope remarked, was entirely apart from any question of pollution of the river in a sanitary point of view, and the inquiry would, therefore, be limited to the question of navigation. And by a further provision of the Act the result of the arbitration would not be given by the tribunal in the nature of an award, but would be sent in to the Board of Trade as a report, to be acted upon by them as they thought fit, and upon which they would determine, if they were of opinion that any obstruction had arisen partly from the outfall of sewage and partly from other causes, how far the expense of the removal of the deposits should be borne by the Metropolitan Board of Works and how far by the Conservancy Board. A question had been raised whether these particular banks were or were not considered to be obstructions by skilful navigators of the river; but the Thames Conservancy contended that under the construction of this Act all banks in the river caused by the outfall of sewage were to be regarded as obstructions. No matter whether there was a passage in a certain part which would accommodate vessels of a deep draught, a bank in any other portion which would interfere with the tacking of sailing vessels was equally an obstruction with any deposit that might be caused in the deep channel. The duty of the Metropolitan Board was declared by the Act of Parliament to be to "keep the navigation free from such banks, or other obstructions, as have arisen or may arise" from that cause. Mr. Pope traced the history of the Conservancy Board, and pointed out that while they had powers to prevent rubbish and sewage being thrown into the Thames, and to cause the surface of the river, as far as practicable, to be effectually scavenged with a view to the removal therefrom of substances liable to putrefaction, the rights of the Metropolitan Board to provide for the sewage of London were maintained subject to the restrictions already alluded to. Soon after the final opening of the northern and and southern outlets of the sewers in 1865, the Conservancy Board became alive to the fact that large deposits, which during their whole previous experience of the river had not occurred, had begun to accumulate in the neighbourhood of the outfalls. The first point in the evidence as to these banks being caused by the sewage was coincidence in point of time. Prior to 1861 there had been an increase in the depth of the river between Galleons Reach and Halfway Reach, and the bed of the river was so clean that the Trinity House dredger turned out quite clean gravel; but between then and 1868, according to the engineers of the Conservancy, very extensive shoals had been formed in the bed of the river near the outfalls (threatening seriously to endanger the navigation), which would entail an expense of 52,000*l.*, and an annual outlay of 13,500*l.* to keep the river free from obstruction, if the discharge of sewage was continued at its present rate, and a large outlay would probably be necessary to obtain land on which to deposit the material raised by dredging. Dr. Letheby reported that these deposits were sewage; but this did not necessarily imply fœcal matter only, but the whole of the substances resulting from street attrition or other causes, which found their way into the sewers and were ejected into the Thames, though they did not pollute the stream in a sanitary sense. Another point of the Conservators was, therefore, that the composition of the banks itself pointed to their origin, and that they should be removed at the expense of the parties causing them. The three banks of which the Conservators asked the present tribunal to take cognisance were, one immediately opposite the southern outfall; one in the slack water a little to the seaward of Barking Creek; and a third, not so large, but increasing, on the opposite side of Barking Creek, by Margaret-ness. There were other banks of less magnitude at Erith and St. Thomas's Hospital, and in other parts of the river, but unless the counsel for the Metropolitan Board called attention to them, he should not ask the arbitrators to make any report upon them. From 1870 to 1874 there were other reports from the engineers showing that there had been deposits of 240,000 cubic feet over a length of three-quarters of a mile of the river, in addition to the deposit previously complained of; and a further point which the Conservancy urged was, that these deposits were not of a uniform depth all over the river, but were such as would naturally be expected from an influx of matter from the very places where the outfalls were situated, and that they were carried by the ebb and flow of the tide and deposited in the places where the slack-water allowed them to precipitate. One of the alternative views taken to account for the formation of these banks was that the sea-water was heavily laden with "saltings," which were deposited there; and another was the mud and earth brought down stream from higher lands; but neither of these hypotheses would explain the fact of the concurrence of the formations in point of time, both of commencement and continuance, with the existence of the northern and southern sewage outfalls. It was also endeavoured to be shown by the Metropolitan Board that, so far from there having been a decreased depth of water, it had really been increased, but the fact was conveniently overlooked that what increase there had been was caused by dredging, and that these deposits were counteracting it; and that since the opening of the Crossness outfall the depth opposite to it had been reduced by 5 ft., and whereas there was formerly an anchorage there for twenty-four colliers, it was now unused, or nearly so. Evidence was called in support of Mr. Pope's statements and of certain diagrams and charts of the river which were put in, and the proceedings were adjourned.

The arbitrators and the umpire continued their labours on the 5th and 6th inst. Mr. More and Mr. Leach, the engineers of the Thames Conservancy, were examined at great length by Mr. Pope and Mr. T. Aston, as to the nature, shape, and formation of the three banks now existing near the northern and southern outfalls of the metropolitan main drainage. The effect of the evidence was, that these banks had been undoubtedly formed since the opening of the outfalls, and that, although the banks might be in the positions where it was probable that the dredging alterations of the bed of the river might have caused banks in any case to have been formed, the depcsit now existing there (in some cases to the depth of several feet) was unquestionably proved to be sewage by its mal-odour. Formerly, in these places, nothing was dredged but pure gravel, which is a marketable commodity, and which would be taken away by private enterprise: whereas this sewage-mud could not be moved except at considerable expense. It was stated that what led to the discovery of the existence of the mud-banks was the sticking fast of a vessel in 1867, at a

place where there was deep water and a gravel bottom in 1861. Again, in 1877, when a large steamer was sunk in Sea Reach, there was found to be a thick deposit of sewage-mud at a distance of twenty-four miles from the southern outfall. There had also been found to be deposits of mud opposite St. Thomas's Hospital, and between there and Chelsea, and these were attributed to the sewage taken up by the flood-tide. A statement put forward on behalf of the Metropolitan Board of Works that a million tons of earth were washed away annually from the "saltings" and other banks of the river was combated by the witnesses, who maintained that the conformation of the banks had not been altered in any such degree as would be necessary to account for so large a quantity being washed away. The witnesses were closely cross-examined by Mr. Bidder and Mr. Michael. They stated they had not found that any great washing away was going on in the upper reaches of the Thames; and that there was very little of the banks between Crossness and Teddington that yielded mud. A vast amount of mud was, however, churned up by steamers, and in the absence of land-water the sewage could be seen distinctly as far up as Richmond. An analysis and a report by Dr. Letheby, on samples of water taken at Woolwich, Greenwich, and London Bridge, were put in, and the result was stated to be that the amount of solid matter in suspension at the flood-tide was very nearly double that in suspension at the ebb-tide at those points, the argument being that a considerable quantity of mud must have been deposited somewhere up stream. But it was pointed out by Mr. Bidder that, in some cases, the water at flood-tide was found to contain more suspended solids at London Bridge than at Woolwich, and at ebb-tides to contain more at Woolwich and Greenwich than at London Bridge, the inference being that the mud was picked up by the tide somewhere between Woolwich and London Bridge, and could not, therefore, be attributable to the sewage outfalls lower down the river. The cross-examination on this point was not concluded. The umpire and arbitrators spent a great portion of the 6th inst. in inspecting the Thames between Galleons Point and Erith, in one of the Conservancy steamers. The inquiry was resumed on the 11th inst.

DÜSSELDORF EXHIBITION OF ART AND INDUSTRY IN 1880.

The erection of the extensive structure for the Exhibition of Art and Industry next year at Düsseldorf, already referred to, is making rapid progress. The applications for space from intending exhibitors have far exceeded the anticipations of the committee. It was originally calculated that a ground area of 25,000 square mètres would be ample for all purposes, but it has already been found necessary to enlarge the plan of the main building to such an extent that it alone will cover 32,000 square mètres, without reckoning the refreshment department, and other annexes. It may be mentioned that the Berlin Exhibition, which was such a great success during the past summer, only covered 18,000 square mètres in all; so that the Düsseldorf building, with the annexes, will be more than twice that size. Like the Berlin Exhibition Building, that at Düsseldorf is being built of wood, and of the quantity required for the purpose, some idea may be gathered from the fact that the value of the first 350 railway wagon-loads already delivered by the Rhenish Railway Company in the Exhibition grounds exceeds the sum of 10,000*l.* sterling. A number of the most important exhibitors have united together for the purpose of securing more space than can be allotted to them in the building, and they have resolved, as the best way to achieve their purpose, to erect several annexes of their own, which are to be carried out in a very tasteful style of architecture. It is calculated that the space covered by the annexes will be upwards of 10,000 square mètres. This is in addition to the area covered by the main building. In order to accommodate the expected rush of visitors, for whom the existing hotels would be insufficient, a committee is engaged in preparing a number of *hôtels garnis*, where strangers may find comfortable lodgings at a moderate rate. The main building is to be completed by the end of November, and with the help of 150 carpenters, who have been brought chiefly from the province of Hanover, it is expected that the contractors will be able without difficulty to observe this condition of the contract. The general committee of management have resolved, owing to the much larger proportions the enterprise has assumed than was at first contemplated, to extend the time for which the doors of the Exhibition are to be kept open. The opening ceremony will take place at the commencement of May instead of the 1st of June, and the Exhibition is to close at the end instead of the middle of September.

REMODELLING OF AN OLD CITY CHURCH.

The ancient church of St. Margaret Pattens, Rood-lane, Fenchurch-street, has just been reopened, after undergoing several internal alterations, which necessitated its being closed for a period of ten weeks. One of the principal alterations consists of the removal of the original pews, which is now being rapidly carried out at many of the old churches, both in the metropolis and in the provinces. An entire change has been effected in the body of the church. Open benches, of a modern design, have been substituted for the pews, the fine old oak forming the pews having been utilised for the purpose. The nave of the church, as re-arranged, consists of a passage, 10 ft. in width, covered with kamptulicon, the stone floor underneath having been restored. Clergy and choir-stalls in oak have also been introduced, occupying a considerable part of the enlarged chancel. The nave and aisle floors have likewise been raised several inches above the floor level of the nave and aisle passage, and relaid in pitch pine. An elaborate reredos has also been erected above the communion-table.

IMPROVEMENT OF SOUND.

We have all heard of the metal vases of the ancients placed with a view to increase the sound of the voice or of music, and of somewhat similar arrangements, though the statements are less precise, made in Mediæval buildings with the same end in view. Until we know how with certainty to build all apartments so that speakers and musicians will be everywhere heard in them, means to strengthen sounds and to overcome existing acoustic defects will be sought for.

The architect, with all his knowledge, works much in the dark, as he can never make sure of the excellence of his building in respect of sound when completed, and it is well known that frequently a place which is excellent for sound when quite full of people becomes indifferent in this respect when only partially filled, or *vice versâ*. The cause of this is that when the sound-wave strikes against a hard substance, it returns and combines with the original sound, and thus increases its volume if it come at the right time; but as the return of this sound-wave must depend on the shorter or longer distance it has to travel, it will be easily understood that the latter may destroy the clearness of the former, and in some instances make it unintelligible; and this defect is to be found, more or less, in all large buildings. Means may be produced to remedy this, but then the sound will appear to be dull, as the resonance is taken away, and a speaker or singer can then only be distinctly heard by those nearest to him. It is, therefore, of importance to increase the sound at its source, and to effect this, Mr. A. C. Engert, of the City-road, has invented an arrangement which promises to be of use at any rate in some situations. As we saw it, the materials employed consisted simply of thin steel or iron plates, varying from No. 20 to No. 30 gauges—those thinner than these becoming inefficient by reason of loss of musical power, and those thicker becoming useless by reason of their continuing to vibrate after the production of the notes, in the manner of bells. The plates are very slightly curved to direct the sound forward, and dampers are attached for the like purposes as dampers are employed to the wires of pianofortes. Four or five of these steel-plates constitute a series, all being parallel at one end, top or bottom, according to circumstances, but each overlapping the other at the other extremity about 6 in. The thinner plates are the best for intensifying the lower and bass notes; the thicker plates for the higher or shriller notes. These plates certainly seemed to have much of the effect desired, and may be easily attached to pianoforte or organ. How the plan may be arranged and succeed for other purposes we have yet to see. On this Saturday morning, the 15th, a concert is to be given at Steinway Hall, Lower Seymour-street, for the purpose of testing and displaying Mr. Engert's invention. We wait for the result with some interest.

SCHOOL BOARD FOR LONDON.

At the meeting of the Board, last week, the report of the Works Committee, which was adopted, included the following items:—

"The committee have invited tenders for the erection of a school to provide accommodation for 800 children on the site in Park-walk, King's-road (Chelsea), and recommend that so soon as the plans shall have been approved by the Department, the lowest tender, that of Mr. C. Wall, of Lot's-road, Chelsea, S.W., amounting to 6,460*l.*, be accepted, with the addition of 460*l.* for provisions. [Cost of site, so far as purchased (area, 32,900 square feet), 7,660*l.* 6s. Total cost per head, 8*l.* 13s.]

The school which is being erected in Star-lane, Fulham (Chelsea), is now nearly completed. The Department, however, have sanctioned the provision of 400 additional places in this sub-division, with a view to the enlargement of the school, and the committee think it desirable, for the sake of economy, that this enlargement should be carried out at once while the builder is on the spot. They have accordingly obtained a tender from Mr. J. Thompson, the contractor for the school as originally planned, for carrying out the enlargement upon the contract schedule of prices, and they recommend that as soon as the plans shall have been approved by the Department, this tender, which amounts to 2,773*l.* 5s. 4d., be accepted. [Cost per head of enlargement, 6*l.* 18s. 7d.]

On the 15th of January last the committee submitted the following report to the Board:—'The committee have to report that Mr. A. Young, the assistant surveyor, who has been in the service of the Board since the 7th of February, 1872, has received the offer, on very favourable terms, of a share in the practice of a surveyor, lately deceased, which, in justice to himself, he cannot refuse. A great number of negotiations are at present in the hands of Mr. Young, and a considerable number of sites have been advertised for the current year. Mr. Young proposes that he should continue to act for the Board in all these matters for a period of twelve months, and undertakes not to allow his private work to interfere with his official duties under the Board, the whole arrangement to be subject to revision at the end of that time. The Works Committee are of opinion that, in the interests of the Board, it would be most inadvisable that the connexion between the Board and Mr. Young should terminate suddenly. They have full confidence in the undertaking given by him, and they recommend that his proposal be accepted, and that his appointment under the altered circumstances be confirmed for a period of one year.' The Board then decided that the appointment of Mr. Young, as assistant surveyor, should be confirmed for a period of twelve months on the above conditions, but with the substitution of the words 'all matters' for 'all these matters.' The committee have now had the matter again under consideration, and they recommend that Mr. Young's appointment be confirmed for another period of twelve months, from the 15th of January, 1880, on the same conditions as were fixed by the Board last year."

Presentation.—A very interesting social gathering was held at the Mitre Hotel, Lambeth, on Saturday, November 8th, when a large number of the *employés* of Mr. George Jennings, sanitary engineer, Stangate, Lambeth, met for the purpose of presenting a handsome writing-desk to Mr. Watson, the cashier in the above firm (who is about to leave to accept a situation in the North), as a mark of the esteem in which he was held. The chairman, Mr. Jno. Gordon, in making the presentation, highly praised Mr. Watson for his conduct in cultivating good fellowship amongst such a large body of working-men, and for his assiduous attention to their interests as well as to those of his master. All present united in wishing him every success in his new post. The proceedings terminated with a vote of thanks to the honorary secretary, Mr. W. Halligan.

THE CORBEL TABLE AT ST. ALBAN'S.

SIR,—The clerk of works at St. Alban's is a trifle too fast in his laudable desire to defend what has been done in the work under his supervision. It is well that he should caution your readers to "believe nothing that they hear, and not one half of what they see," just before indulging in the grossly-misleading statements which he has thought fit to make. It might not seem worth while to reply to such an epistle, but the question is of too much interest and importance to let it pass without further notice; for I deny, not the plausibility, but the possibility of what he asserts as indisputable fact. I deny that the old corbel-table to which I referred (called by him "a cornice") "was built on a wall raised 5 ft. 6 in. in the thirteenth century," and I deny that it was in itself composed merely "of some pieces of Roman tile inserted for repairs, a course of common brick manufactured within the last fifty years, and the remainder of common roofing tiles and plastered."

He might have observed that I did suggest the possibility of its being of later construction, and at the time of the controversy I purposely raised this very question, hoping that something would be said about it. But I did not succeed in getting a "rise" out of him, or out of any of those who might be supposed to be informed on the subject.

By some of the best authorities, this corbel-table was supposed to have been constructed in the thirteenth century, when the stone string was introduced. It has remained till now for Mr. Chapple to let us know that it was built upon the top of a raised wall of thirteenth-century date, and then to give force and reality to his statements by a very detailed description of what has no existence in fact. There was, I maintain, no room for the existence of such a raised wall beneath this corbel-table, seeing that there was a space of only 3 ft. 10 in. from the top of the arch of the Norman window to the bottom of the corbel-table. The tiles of which the corbel-table was constructed were in thickness just about half-way between his 2¼ in. and the thickness of the common roofing-tile of which he says it was composed. He may be quite at liberty to express his own opinion, or to set forth that of others as to the exact date of the corbel-table itself; but to support that opinion with detailed description of what really did not exist, cannot add much weight to what he says.

I am, however, indebted to him for suggesting a phrase which aptly expresses what I, in common with many others, complain of,—that 'Bill Stumps his mark" should be so ruthlessly and indelibly written upon every fraction of St. Alban's Abbey, and that the only evidence which might seem to serve as a subterfuge for this alteration should be destroyed. To quote from a letter which I received a short time since,—"I have been so disgusted with the alterations that I have endeavoured to forget St. Alban's."

I am aware that it must be a sore subject to those concerned in the work which has been carried on; and had the corbel-table been left it would have been a standing memorial against the lines of the new roof. But it is a subject still more sore to those the study of whose life it has been to see in such remains the architectural evidences which have been here so recklessly destroyed.

I cannot leave the matter here. The importance of this corbel-table is not at all confined to that of its construction, or of its interesting character. It is intimately connected with the pitch of the original roof, and other parts of the history of the abbey. Having reconsidered it in all its bearings, I am now more than ever convinced of its having been of Late Norman date. There are but three periods to which it could be assigned—(1st.) That of the actual date of the thirteenth-century string-course above it; a small portion of which has been rebuilt into the new work. (2nd.) That of the date subsequent to this. (3rd.) That of the date prior to it. It cannot well have been of the first period named. We cannot suppose, and I have met with no precedent here or elsewhere to show, that the architects of the thirteenth century ever constructed a cornice of that character. Finding there they might crown it with a string-course of their own devising, ready to receive the parapet to be raised above it. There are many instances in the Middle Ages of earlier work being thus incorporated into the new. But, even supposing the construction of this cornice to be consonant with the period, it is impossible to suppose it would have been erected by the same men who put up the other thirteenth-century corbel-table and parapet. It cannot well have been of the second period named; for there is no time since the Middle Ages at which such a cornice would have been constructed with the old Roman tiles finely cut in the upper part, and with the old stone corbels and Mediæval string-course. If constructed subsequently to the making of some of the bricks fifty years ago, as intimated by the clerk of the works, it would be interesting to be informed whence the old stone corbels were obtained; and also to know at what period the lead flashing was put over to protect portions of the string-course, which lead flashing must have been very many years in its old position. If, again, it was constructed previously to the thirteenth century, there is no time to which it can be assigned but the late Norman, which is the date of a large portion of the interior stone-work. Until these times no "clunch" stone had been introduced into the building. These old corbels were of clunch. They were either very rudely cut or, what is more probable, much decayed; and they had all the character about them of corbels which I have seen of undoubted Norman period.

The Mediæval builders never exactly copied or reproduced earlier work. They very often "followed" ideas taken from earlier construction, imparting to their work a character of its own; and it certainly looks very much as though the Early English architect had this corbel-table in his eye when he designed his.

And once more, the lines of the old Norman roof (as arrived at by Mr. Neale, Mr. Street, myself, and others, quite independently of each other) accurately coincide with the top of this corbel table, which, as I maintain, formed the eaves-course of the original roof. It could not have been specially constructed for any other of the subsequent roof-lines visible; but, being there, it might well have been suffered to remain through the successive changes. It is remarkable, too, also, that this corbel-table was exactly co-extensive with the Norman work below, not only on the south side, but, if I mistake not, with the more extended Norman work on the north also. Unless the corbel-table were coeval with the Norman work, it would be an extraordinary thing that such pains should have been taken at any period of architecture to assimilate it thereto, or to make it coincident with it.

I hope Mr. Chapple will now be able to see that in his attempted sarcasm upon my having "made the discovery that a Norman cornice has been destroyed," he has only succeeded in giving expression to an almost indisputable, though, perhaps, unpalatable, truth.

WILLIAM WHITE, F.S.A.

NEW BUILDING AND LAND COMPANIES.

AMONGST the several new joint-stock companies which were registered last week there were no fewer than four connected with building operations and land projects. One of these is designated the Estates and Buildings Improvement Association, with a proposed capital of 500,000*l.* in 50,000 shares of 10*l.* each. The objects of the association are stated to be two-fold. One class of business proposed is the purchase, improvement, and sale of houses, and the other the purchase, development, and sale of land. One portion of the business proposed to be carried on by the association is to lay out the several estates which may be purchased, and to cover them with houses. The prospectus states that this branch of the business would, in the hands of skilful and experienced architects and builders, be a source of great revenue, and that in other respects it is believed that the undertaking will prove to be a very profitable business. The architect of the association is Mr. J. L. Holmes, of Leadenhall-street, and the surveyors are Messrs. Wilson, Son, & Aldwinckle, of East India Avenue.

The Kempton Estate Company is another of the new companies registered. Its capital is 85,000*l.* in 8,500 shares of 10*l.* each. The object of the company is to acquire the Kempton Park Estate, in the parish of Sunbury, Hampton, and Hanworth, and to build upon and develope the estate.

The Liberal Land Company, with a capital of 100,000*l.*, in 20,000 shares of 5*l.* each, propose to acquire by purchase, exchange, lease, or otherwise, freehold, copyhold, and leasehold properties, and to improve the property when so acquired, or to lay it out and re-sell it for building purposes.

THE PRINT ROOM: BRITISH MUSEUM.

SIR,—Every English art-student will endorse the honourable testimony you have borne to the desire of the British Museum authorities, Mr. Bond and Mr. Reid, to make available and to preserve the treasures of the Print Room in Great Russell-street.

Every one regrets that the precious drawings and engravings in the "old print room in the Rue de Richelieu" are not better protected against friction. You commend to the English authorities the new French act of "opening a photographic workshop" in connexion with the Cabinet d'Estampes, but your readers may not be aware that such an addition was many years ago made to the English Print Room, and is in frequent, if not constant use for the benefit of publishers and all who care for it.

Innumerable choice examples in the English Print Room have been already placed within "sunk mounts," and thus made safe from friction. The number of these protected examples is daily enlarged. F. G. S.

THE OWNERSHIP OF ARCHITECTS' DRAWINGS.

SIR,—Some little time ago the ownership of an architect's drawings was a burning question. May not some little light be reflected on the subject by the correspondence now proceeding in the *Times* as to "Copyright in Photographs"?

So far as copyright is concerned, the whole question seems to hinge upon whether a photographic negative made in the present usual course of business can in itself, and distinct from the photograph, be considered as executed for a good consideration or not? If not, as is affirmed by eminent legal authorities, how then can an architect's drawing made for the production of a building be said to be so?

"A Barrister," in a letter to the *Times* of the 30th of October, states that:—

"The Copyright Act, in a transaction where there is no special mention of the fact, does not touch the question of the right of property in the negative itself, as distinguished from the copyright of a photograph executed on order for a good or valuable consideration.

Without making the negative, the photographer cannot furnish the prints, which are all that are, in fact, supplied or expected. But the photographer only takes the negative for the purpose of executing the order for the prints, and a person ordering and paying for his portrait to be taken by a photographer may fairly be described as 'the person for or on whose behalf the negative is to be executed.'"

The parallel case as to an architect's drawings is obvious.

Mr. Watkin Williams, moreover, says in a letter published in the *Times* of the 3rd of November:—

"When a person orders his photograph in the ordinary way, surely the preparation of the negative is too remote for it to be properly said to have been made for the orderer of the photograph. It is made by the artist for the purpose of producing what has been ordered. Many artificers of whom articles are ordered prepare moulds, dies, models, types, sketches, paints, and other things in order to execute the commission intrusted to them. Now, I ask, could it be said with any accuracy that, in the absence of special circumstances, such preparatory apparatus was executed by the artist for another person for valuable consideration? The question is undoubtedly one of fact and not of law. But I venture to repeat that, in the ordinary case, all such preliminaries are made by the artist for himself for the purpose of enabling him to execute his customer's order."

R. E. P.

SAFE WINDOW-CLEANING.

IN connexion with our recent note as to inquiries for a window that can be cleaned without endangering life, we are reminded of what is known as Baker's Patent Ventilating Window, advertised some time ago in our columns. By a novel arrangement of the beads, these sashes, hung with special hinges, may be turned completely over for cleaning; when opened for ventilation they afford shelter from rain, and when closed they are air and water tight. This window acts at the same time as an inlet and outlet ventilator. The draught is directed upwards towards the ceiling, and may be regulated.

A model of the window may be seen at the Parkes Museum of Hygiene in University College, Gower-street, where many of our readers would find useful hints.

AWARDS, CROYDON SANITARY EXHIBITION.

The judges (Professor Corfield, Mr. Rogers Field, C.E., Mr. W. Eassie, C.E., and Dr. H. C. Bartlett), have recommended to the Council of the Sanitary Institute,—

That Medals be awarded to the following exhibitors, viz.:—W. H. Lascelles, Bunhill-row, for concrete bath, in one piece; Wilcock & Co., Burmantofts, Leeds, for silica glazed and enamelled fire-clay bricks and faience; Hamilton & Co., Kingsland-road, for patent primodial pavement and floor-lights; and H. Doulton & Co., Lambeth, for patent anti-percussion high-pressure valves.

The judges further recommend,—

That Certificates of Merit be awarded to the under-mentioned, among other exhibitors, viz.:—P. Hinckes Bird, F.R.C.S., for his method of costless ventilation; U. Knell, for his "Imperial" ventilating window; Benjamin Finch & Co., High Holborn, for large-way waste plug, with protective cover; Wilcock & Co., Leeds, for fireclay sanitary sinks and water-troughs; *Le Grand & Sutcliff, Bunhill-row, for improvements in driving tube-wells; J. C. Edwards, Trefynant, for Dean's patent external drain traps; Beard, Dent, & Hellyer, Strand, for patent ventilating drain syphon; Hygienic Stove and Grate Company, Birmingham, for "Eagle" sanitary trap; H. Doulton & Co., for decorative tiles for covering walls and floors, and for disconnecting gully; George Jennings, Stangate, for "Artisans' Dwellings" sink, and for universal shampooing apparatus; *Sanitary Appliance Company, Salford, for Morrell's patent cinder-sifting ash closet; *J. E. Ellison, Leeds, for conical ventilators; J. G. Stidder & Co., Southwark, for swivel lock plug and overflow for sinks; R. Adams, London, for patent adjustable shoe, and regulating spring hinge for swinging doors, and for fanlight openers and casement fasteners; Patent Victoria Stone Company, for artificial stone tubes; Henry Sharp, Jones, & Co., Poole, for rock concrete tubes; and *G. E. Pritchett, F.S.A., for Improvements in Hollow Tile Flooring.

Deferred for Practical Trial.—Many of the articles the judges are unable to express an opinion upon without testing; and they recommend that they should be tested at the expense of the exhibitors, if they are willing to incur the same. Among them are the following, viz.:—Sanitas Company, disinfecting fluid; hopper closets, exhibited by Doulton & Co.; Beard & Dent, "Artisan" closet; Messrs. Warner, Sharpe's hopper closet; and W. Ramsey (Limited), Dodd's ventilating hopper closet; J. G. Stidder & Co., infirmary closet; W. & S. Carsley, Jewell's hopper closet basin; W. H. Lascelles, concrete floor construction; B. Finch & Co., 4-inch ball-valve for large cisterns, with balanced valves; W. Woollams & Co., paper hangings free from arsenic; W. & S. Carsley, urinals, iron traps, and sink, coated by Professor Barff's process.

Until the deferred trials have been carried out, the judges are unable to award the Gold Medal of the Institute. They state that they have found that alterations have been made in certain exhibits to which medals and certificates were previously given, by which alterations some of the essential merits for which medals or certificates were awarded have been destroyed. They therefore recommend that in future each person receiving medals or certificates should be warned against using the name of the Institute in connexion with any article which has been altered since the award was made.

* There are two classes of exhibits which the judges recommend should be excluded from awards of medals,—namely, those which were exhibited at Leamington or Stafford, and to which a medal was then awarded; some of which they recommended should receive certificates; and these they have distinguished by asterisks; and secondly, objects exhibited or invented by any of the judges themselves, such as Mr. Eassie's exhibit of specimens of bad plumbing, and Mr. Rogers Field's self-acting flush tank, exhibited by Messrs. H. Doulton & Co.

FLATS.

Sir,—That there is a considerable demand for flats nowadays is indisputable, and if builders do not erect any, it is because they know that certain sorts of stereotyped houses will let and sell, but they feel doubts as to the success of anything new or different to the routine. Hence they go on multiplying the same common-place dwellings that their fathers did before them, and that they have themselves erected all their lives.

But if confined to a small scale, the experiment is easily tried, and can be put in a form readily understood by all. Thus, the ordinary suburban house of eight rooms, in terraces, generally has some 17 ft. of frontage, and four floors, with two rooms on each. It lets at from 35*l.* to 45*l.* a year, according to locality, style of build, of finish, &c. Now, if we take two of these houses together, we get a building with four rooms on a floor, which we may arrange as sitting-room, two bed-rooms, and kitchen. If we take out one of the two staircases, we gain space for a scullery or a bath-room. The rent of the two houses in usual form being, say 80*l.*, and rates and taxes 20*l.*, we should require a total rent of 100*l.* a year from the four flats, or say a little more. Now, does any one conversant with the subject doubt for a moment that the flats would produce that amount? Our own opinion is that by raising the basement floor a little more out of the ground than usual with kitchens, a total rent of 110*l.* could be got. That is, 25*l.* a year each for basement and top floors (or 10*s.* a week); and 30*l.* a year each for ground-floor and first-floor. So that it would be more profitable to build two houses together or in flats than separately.

A builder who might naturally hesitate long before he built a huge pile of Peabody dwellings, might thus with good courage commence building one double house for flats. All this contemplates a comparatively poor suburban neighbourhood; in central parts, of course, the returns would be much greater.

H. & R. P.

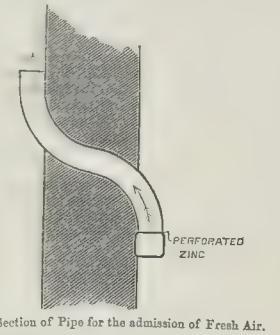
STAINED GLASS IN ST. PAUL'S CATHEDRAL.

Sir,—Your recommendation that St. Paul's should first be filled with the best stained-glass (p. 1229) seems to me most appropriate, and suggests to me to ask, why the window, to commemorate the recovery of the Prince of Wales and the state visit to the cathedral, has not been executed? Years ago the funds were subscribed by members of the Society of Arts, a design was made, and approved by the present dean, but nothing further has been done. The proceeding with this window was stopped by Mr. Burgess when in charge of the decorations, because he wished to have a different subject in the space appointed, and since then nothing has been done. If the present committee, consisting of Mr. Fergusson, Mr. Gambier Parry, Mr. Oldham, &c., would resolve to follow your advice, and fill all the windows with richly-stained glass, a real and unobjectionable beginning of the decorations would be made.

A Subscriber to the Memorial Window.

THE ADMISSION OF FRESH AIR TO ROOMS.

Sir,—Instead of having a pipe connected with a grating outside, I have used a 4 in. "swan neck" rain-water pipe (see sketch).



Section of Pipe for the admission of Fresh Air.

By this means the advantage of an upward current of air is obtained, and the pipe is hardly noticeable in the room. Moreover, I find that blacks are not so easily admitted as when a grating is used. A piece of perforated zinc can be fitted into the socket end of the pipe. This is the end which should be on the outside of the wall. The other end of the pipe, in the room, should be about 4 ft. from the floor.

C. F. M.

THE ANNOYANCES OF GAS.

If your correspondent "Y." (who by no means exaggerates the annoyance of grime and filth on low ceilings arising from gas, and forgets the still greater injury to health from the sulphurous and carbonic oxide and carbonic acid fumes) will take the trouble to go to the Library at South Kensington, he will see at what a ludicrously small cost it may be all avoided. The chimneys from the argand burners there slide up into a tin pipe, and all the products of combustion are carried off into the open air without mixing with the atmosphere in the rooms at all. This plan would never have been thought of to remedy the injury to the lungs of human beings, but the binding of the books must not suffer from the destructive gases, and hence this remedy.

The cost would be repaid by the cost of one year's whitewashing the less, and the ugliness would soon be cheerfully borne when the inhabitants of these now stuffy rooms felt the comfor of the pure atmosphere and complete ventila tion this plan gives.

The time is close at hand when it will b considered an unbearable nuisance to burn ga in any room without a chimney to carry awa the products of combustion.

Z.

SANITARY APPLIANCES.

Sir,—In your issue of November 1st you were goo enough to notice our stand at the Exhibition of Sanitar Appliances, Croydon. We beg to call your attention t the fact that you have not described the patent pipes w exhibit as we describe them. They bear the name of th patentee, Herbert J. Jones, and are known in the trade a "Herbert J. Jones's patent drain-pipes."

Thos. Smith & Co.

ROARING WATER-PIPES.

Sir,—With reference to my remedy for the above, I wis to correct an error. Instead of *soldering* the piece of pip to the outlet of the ball-valve it should be fixed on *loose* it will not then act as a syphon. I know from experienc that it is a certain remedy.

W. Dunkin, Plumber.

ILLICIT COMMISSION.

ANDREWS *v.* FENN.

This case (heard in the Lambeth County court before Mr. Pitt-Taylor) was brought fo the recovery of a balance of commission, and is reported in the *South London Press*. Plaintif is described as a draughtsman carrying on busi ness at Norfolk-street, Strand; defendant is builder carrying on business in Beresford-street Walworth.

The claim was for 4*l.* 15*s.* balance of an account for com mission. Plaintiff, it appeared, had had placed under hi control five dilapidated houses situate in Broad-street Lambeth. Plaintiff had also the option of employing an builder he saw fit to carry out the necessary repairs Plaintiff and defendant had some conversation on the sub ject, and plaintiff asked defendant what percentage h would allow him in the event of his obtaining defendan the job. Defendant said he would allow him five per cent Plaintiff complained that that was a small percentage o a 200*l.* job, but agreed to obtain it for him on those terms The contract was obtained by the plaintiff for defendant and amounted with extras to 215*l.* Plaintiff then claime his commission,—10*l.* 15*s.*,—but defendant refused to pa more than 6*l.* of that amount. This sum had been pai to the plaintiff, and he now sought to recover the balanc of 4*l.* 15*s.*

The Judge (to plaintiff).—It is my duty to tell you tha you have committed a gross fraud, and you may consider yourself fortunate you have not had to appear before magistrate. A gentleman engages you for the purpos of obtaining a builder at the cheapest rate, but instead o doing so, you make the best bargain you can for yoursel It is a gross fraud, and you ought to be ashamed of your self; so get out of the court as soon as you can.

Judgment for the defendant, with costs of solicitor.

OBITUARY.

Mr. William Farmer.—We regret to an nounce the death of this gentleman, the senio partner in the well-known firm of Farmer & Brindley, architectural sculptors, which took place on the 6th inst., after a few days' illness at his residence, 67, Westminster Bridge-road.

M. Poelaert.—The death is announced of M Joseph Poelaert, a Belgian architect.

VARIORUM.

"A Treatise on Metalliferous Minerals an Mining," by D. C. Davies, F.G.S. (Crosby Lockwood & Co., 1880), describes in a concise manner the conditions under which metals an metallic ores are found in the different countries of the world. It includes knowledge which ought to be more generally possessed than it is and has many illustrations.——"Electro-Plating a Practical Handbook, including the Practice o Electrotyping," by J. W. Urquhart, C.E. (Crosby Lockwood & Co., 1880), is addressed rather to amateurs and the outside public than to profe ssional practisers of the business. An ordinarily intelligent person may become an adept in electro-deposition with a very little science indeed, and this is the book to show him or her the way.——The *Magazine of Art* bound as a volume, makes a handsome, agreeable, and instructive drawing-room book. Oddly enough, it has exactly as many illustrations as pages, 288, though many of the pages are without illustrations, and others show three or four.——"The Carlyle Birthday Book" (Chapman & Hall) gives, as may be supposed, quotations from the works of our distinguished countryman opposite a space for each day of the year, wherein friends are hereafter to enter their names to note which date has the honour of belonging to them. It makes a nice little book, an

annot be dipped into without advantage. A econd quotation in some instances, however, strikes us as questionable. Why should a man ad himself ticketed "A sad dog," *Essay on Mirabeau*, because he was born on February 2, "A dreadfully dull individual," *Oliver Cromwell*, because his birthday is the 5th of that me month?

Miscellanea.

Yorkshire Fine Art and Industrial Exhibition.—This exhibition was closed on the th inst. It sprang out of a similar exhibition hich was held in York in 1866, and which, fter the payment of all expenses, left a surplus f 1,866*l*. The consideration as to the disposal f this surplus led to the suggestion that it ould be best employed in providing some permanent building devoted to the encouragement f art and industry. It was thought that the ossession of a building of that description, and frequently-recurring exhibition of works of rt and industry, would be a great boon, and nd to give permanence to the impulse which hat exhibition had given to the trade and rospects of the city. It was in 1874 that the xecutive met again for the purpose of further aturing this suggestion, when a sub-committee as appointed to report generally upon the ubject. After they had done so, the site of he proposed exhibition was obtained, at a cost f 4,000*l*. from the Commissioners of her Majesty's Woods and Forests, and a loan fund f between 12,000*l*. and 13,000*l*. having been ubscribed, the foundation-stone of the building, hich it was estimated would cost about 4,000*l*., was laid on the 22nd of April, 1878. he building (of which we gave a view in the *Builder* at the time, p. 514, *ante*.) was opened n the 7th of May, 1879, the formal ceremony eing performed by the Archbishop of York. he actual number of admissions up to the night before the closing ceremony was 531,294, nd the total amount received for admissions as 14,170*l*. 4s. 5d. It is expected, after the ayment of all claims, there will remain in the ands of the trustees permanent property to the mount of 26,353*l*., and a cash surplus about qual to that of the last exhibition, with responsibilities (the loan fund) to the amount of 2,718*l*.

St. Paul's Ecclesiological Society.—A *conversazione* of the members and friends of his society was held on Wednesday evening at he Chapter-house, St. Paul's-churchyard. There as a display of ecclesiastical art objects, mong them several rubbings of brasses, both oreign and English. It is stated that the ociety, which has been established scarcely ne months, now numbers nearly 250 members. he following, among other papers, have been romised for the ensuing session:—"Old St. aul's," by Mr. Edmund B. Ferrey, F.R.I.B.A.; The Christian Altar Architecturally Considered," by Major Alfred Heales, F.S.A.; and Christian Iconography," by Mr. George H. irch, honorary secretary of the London and Middlesex Archæological Society.

A Nuisance in Chelsea.—We (*Medical Press*) have received a complaint from a resident in Chelsea of a very serious nuisance existing on a property owned by the Chelsea Vestry. t is situated in the Lot's-road, and known as ot's-road Wharf, where a refuse heap of an xtremely offensive nature is lodged. The foul nells constantly emanating from the pile are f the most disagreeable kind, and cannot fail o exert an injurious influence on the surrounding atmosphere. The passengers from the Embankment along the road rightly regard the ontinuance of the evil as a grave source of anger, even to themselves, and for those who re constantly subject to it the consequences ust be still more injurious.

Newcastle-on-Tyne.—The Newcastle Town ouncil has adopted the report of the Joint ommittee on the Borough Engineer and Town urveyor's Department, which recommended he division of the duties of the department etween Mr. Fowler and Mr. Fulton, the latter be town surveyor, and to be responsible to, nd act under the direction of, the town improvement committee; and also that the charge the cleansing of the ashpits and streets and acadamised roads be entrusted to Mr. Curry, no also is to be responsible to the town improvement committee.

A Much-needed Improvement Postponed.—At the meeting of the Metropolitan Board of Works on the 7th inst., the Works and General Purposes Committee presented a report on the resolution of the Board of the 4th October, 1878, referring it to the committee to consider and report as to the desirability of making an application to Parliament for the construction of a spur-street from the junction of Theobald's-road and Gray's-inn-road towards the "Angel," at Islington, and upon the memorials of the Holborn District Board and the vestries of Clerkenwell and Islington on the subject; stating that, in the opinion of the committee, it is not desirable to make such application for the construction of a spur street in the next session of Parliament, and recommending that the several memorialists be so informed. The report of the committee was adopted. This decision is to be regretted, for improved direct communication between Holborn and Islington is much needed. We have frequently referred to the perils of the present tortuous and precipitous route *vid* Elm-street, "Mount Pleasant," and Coldbath Fields.

The Ruskin Society, Manchester. — At a meeting of the society, held on the 5th inst., the hon. secretary (Mr. F. W. Pullen) said the progress that the society was making was owing more to the help they were receiving from other quarters than from their own members. The members in Manchester were very lukewarm, and if it depended upon them the progress of the society would be very slow indeed. The first donation to the society, other than the subscriptions of members and associates, came from the Hon. Mrs. Cowper Temple, who sent a 5*l*. note, and said she looked to the society helping the St. George's Guild more than anything she knew. A paper was then read by Mr. Edmund J. Bailie, of Chester, on "Natural Adornment."

Liverpool Architectural Society.—At the meeting of the Liverpool Architectural Society, on Wednesday evening, the best of the drawings executed by the students, during the recess, of St. Chad's Church, Kirkby, for the prize offered at the close of last session, were exhibited and criticised by Mr. Hay, who announced that the first prize would be awarded to Mr. George Hornblower, and the second to Mr. J. R. Chidson.

Papers for the Institution of Civil Engineers. — A list of subjects is published upon which, among others, the Council of the Institution invite original communications, either for reading and discussion at the weekly meetings, or for printing in the "Minutes of Proceedings" without being publicly read and discussed. The list is preceded by a recital of the ample funds at the disposal of the council for awarding premiums and prizes to the authors of approved communications.

The Late Mr. P. F. Poole, R.A.—The will, dated February 7, 1877, of Mr. Paul Falconer Poole, R.A., late of Uplands, Greenhill, Hampstead, who died on September 22 last, was proved on the 23rd ult. by John Mogford and Francis Henry Huntington, the executors, the personal estate being sworn under 16,000*l*. The testator leaves to the trustees of the National Gallery any of his pictures that they may select and think worthy of being exhibited in that collection and will undertake to exhibit permanently.

The Brownhills Local Board have instructed their surveyor, Mr. Siddalls, to prepare plans for new public buildings, &c., proposed to be erected on an acre of land near the railway station; the accommodation to be provided consisting of offices for surveyor, inspector of nuisances, collector and clerk, board-room and ante-rooms, residence for the surveyor, stabling, &c. The Board are also about to memorialise the Quarter Sessions to hold a Petty Sessional Court at Brownhills, in which case they intend building an assembly-room, which can be used for the magistrates' meetings, &c.

Value of Land on the Embankment.—An offer has been made to the Corporation by a well-known public body, desiring to acquire a plot of land, on the portion belonging to the City, at the literal rate of 1,265*l*. per annum ground-rent for 75 ft. frontage, by a depth of 130 ft., or to buy the freehold at twenty-five years' purchase, which would yield a total sum of 31,625*l*. Should the remaining land on hand be disposed of at this rate, a considerable profit would accrue to the Corporation on their investment.—*City Press*.

The Ulverston Revolving Shutters. — The Southport Reform Club, recently opened by Sir W. V. Harcourt, M.P., and lately referred to in our pages, is fitted up with Messrs. Salmon, Barnes, & Co.'s patent revolving shutters, worked by patent balance-weight motion. A full-size model of these shutters, which are obtaining considerable approval, will be found in the Maddox-street Museum of Building Appliances. It appears to work easily and well. The chemical, physical, and large theatres of the University College, Nottingham, have been fitted up by this firm with darkening blinds, which effectually exclude the light. Each series can be raised and lowered in the space of half a minute by one man. A new edition of Messrs Salmon & Co.'s Catalogue of Revolving Shutters &c., is published, and will give all the information that may be desired.

The Cathedral Commission.—The Archbishop of Canterbury and other members of the Cathedral Commission have forwarded to the Deans and Chapters of England and Wales a circular, with a view to elicit information on the following among other important points,—"14. The number and condition of the buildings belonging to the Chapter in the vicinity of the cathedral, whether residentiary houses or other buildings, and the sources from which they are kept in order, with the sums expended annually thereon."

Scagliola.—At the Criterion Annexe in Piccadilly, now nearly completed under the direction of Mr. Thos. Verity, architect, Messrs. Bellman & Ivey have executed some fine scagliola marble in the shape of columns and pilasters. In the Great Hall, four fluted columns and fourteen pilasters to match old work; and in the *buffet*, six columns in red Devonshire, which are fixed round iron cones without showing joint.

Accident. — On the 5th inst., a painter named William Lomax, was working on a scaffold at the new covered market at Todmorden, his employer, Mr. Sidney Smith, and another man being also at work on the same scaffold, when a "spar" broke, precipitating Lomax and the other man to the ground. Mr. Smith fortunately had hold of a girder, and was thereby able to save himself from falling. Lomax fell on his head, and died ten minutes after the accident; the other man escaped with but slight injuries.

City of London College, Leadenhall-street.—We are asked to state that the ceremony of distributing the prizes to the successful students, which was fixed for Thursday, the 13th instant, has, at the request of their Royal Highnesses the Duke and Duchess of Connaught, been postponed until Thursday, the 20th inst., at seven o'clock p.m.

Craven, Dunnill, & Co.'s Tiles.—Medal has been awarded to Messrs. Craven, Dunnill, & Co., Jackfield Encaustic Tile Works, Ironbridge, Shropshire, for their design of the pavement of the entrance-hall of the Exhibition, and in testimony to the admirable manner in which it has borne the traffic of more than half a million of visitors.

Stockton Surveyorship.—Mr. S. E. Thorrold, of North Ormesby, Middlesbrough, has been appointed surveyor to the South Stockton Local Board of Health, *vice* Mr. Francis Drake, C.E., resigned. There were upwards of eighty applicants for the appointment. The salary, which was originally 200*l*. per annum, has been reduced to 160*l*.

The Vyrnwy Water Scheme, Liverpool.—The Corporation of Liverpool, having polled the ratepayers on the question of the adoption of this scheme, have obtained a majority of 2,660 votes in favour of it, the votes recorded for the scheme numbering 21,974, against 19,314 votes in opposition.

Piercy Blue Brick Works.—The highest award, a medal, has been given to Mr. Joseph Hamblet at the Yorkshire Fine Art and Industrial Exhibition, "for the excellence of his manufacture." Five "highest awards" have been received by him since 1874.

Royal Scottish Academy.—On Wednesday, at the annual meeting of the Royal Scottish Academy, held in Edinburgh, Sir Daniel Macnee, president, in the chair, Messrs. Robert Anderson, J. Z. Wingate, and J. C. Noble were elected associates in room of Mr. Gavin, Mr. Cassie, and Mr. Docherty.

New Government Offices.—The officers of Inland Revenue have for some years been agitating for an improvement in their offices, and especially in those outports where there are large distilleries and maltings. The offices as now provided are generally only small rooms badly lighted and ventilated, in which the officials have to remain a number of hours daily to transact most intricate business in the shape of calculations, as well as to accommodate merchants and their representatives. It is known that the present offices cannot in any way compare for space with the more modern Custom-houses and Post-offices, and the Treasury has promised to introduce a scheme for better provision being made.

TENDERS

For the erection of a villa residence, Walthamstow. Mr. Robert Blackmore, architect :—

Webb	£749	0	0
Brooks	699	0	0
Philips	549	0	0
G. Webb & Co.	538	0	0
Winter	520	0	0

For building the Railway Tavern, Mare-street, Hackney, for Mr. B. Hyams. Mr. E. Brown, architect :—

Huff	£7,763	0	0
Tibbett & Adams	7,680	0	0
Royle	7,558	0	0
Brooks	7,525	0	0
Outhwaite & Son	6,597	0	0
Wood	6,983	0	0
Gould & Brand	6,896	0	0
G. Crabb	6,806	0	0
Colls & Son	6,723	0	0
Crisp & Tomlin	6,685	0	0
Battley	6,675	0	0
Shurmur (accepted)	6,597	0	0
Lucas, jun.	6,461	0	0
Castle	6,345	0	0
Jones & Co.	6,345	0	0
Palmer	6,300	0	0
W. Crabb	6,300	0	0
Jackson & Todd	6,150	0	0
Frout	5,875	0	0
Stevenson	5,851	0	0
High	5,800	0	0
Gill	5,297	9	0
Gasfittings.			
Steadman	£430	0	0
Vaughan & Brown	425	0	0
Winne (accepted)	415	10	0
Pewterer's Work.			
Grimes	£316	10	0
Edwards	295	10	0
Pringle	289	10	0
Rogers	288	0	0
Paddon (accepted)	248	19	9

For new warehouses, Turnmill-street, for Messrs. Grant & Co. Quantities by Messrs. Batterbury & Huxley :—

Riddle & Sons	£5,747	0	0
Ashby Bros.	5,612	0	0
J. & J. Greenwood	5,592	0	0
Williams & Son	5,532	0	0
Mann	5,474	0	0
Downs	5,448	0	0

For villa residence at Mitcham, Surrey, for Mr. J. Woodward. Mr. E. Chart, architect :—

Keal (accepted)	£800	0	0

For rebuilding the "Buffalo," Appold-street, Finsbury, for Mr. C. Mees. Mr. Edward Brown, architect :—

Browne & Robinson	£2,040	0	0
Griffiths	1,950	0	0
Salt	1,885	0	0
Hayworth	1,795	0	0
Christopher	1,754	0	0
Marr	1,6 2	0	0
Outhwaite (accepted)	1,610	0	0

For three houses, Denning-road, Hampstead, for Mr. A. Field Mr. J. T. Newman, architect. Quantities supplied by Messrs. Curtis & Sons :—

Hoskings	£3,376	0	0
Sheffield & Prebble	2,927	0	0
North Bros.	2,858	0	0
Hearle & Son	2,843	0	0
Snow (accepted)	2,457	0	0

For detached villa residence, for Mr. J. H. Marshall, in Buckingham-road, Woodford.

Good Bros. (accepted)	£600	0	0

For erection of flour-mill, Stoke, Guildford, for the executors of Mr. J. Burges. Mr. H. Moon, architect :—

Moon	£2,862	0	0
Mitchell, Bros.	2,850	0	0
Pink	2,767	0	0
Coles & Sons	2,744	0	0
Putney & Sons	2,711	0	0
Martin, Wells, & Co.	2,709	0	0
Goddard & Sons	2,689	0	0
Beale	2,618	0	0
Nye & Co.	2,485	0	0

For building villa residence at Ventnor, for Mr. David Mitchell. Mr. F. Newman, architect :—

Meader	£2,920	0	0
Barton	2,700	0	0
Newnham	2,670	0	0
W. Jolliffe	2,550	0	0
Sibley	2,310	0	0
Walder, Silsbury, & Kingswell	2,227	5	0
Ingram & Sons (accepted)	2, 86	0	0

For buildings at Apley House, Ryde, for the Council of the Isle of Wight Proprietary College. Contract No. 1, new School-rooms, &c. Mr. F. Newman, architect :—

C. Jolliffe	£1,125	0	0
Meader	1,150	0	0
Newman	1,097	0	0
Sibley	1,043	0	0
H. T. & H. Jenkins	1,021	0	0
Barton (accepted)	948	0	0

For tower clock, Kingston Town-hall. Mr. John L. Robinson, architect :—

	No. 1.	No. 2.	No. 3.
Dent & Co.	£250	£156	£329
Booth & Son	211	135	282
Thwaites & Reed	212	136	277
Chancellor & Son*	189	115	258
Bailey & Co.	177	100	263
Dobbyn & Son	177	100	234
Frengley Bros.†	148	86	206

* Accepted. † Too late.

TO CORRESPONDENTS.

G. L. (we are unable to comply. Such a course would be full of inconveniences) —J. W. J. (notice should be given to the District Surveyor).—J. T.—T. P.—C. P.—J. B.—T. R. K.—W. W.—G. B B.—J. P. S. & Son —W. S.—O. N. H.—M. & L.—F. G. S.—R. G. B.—W. B.—J. H.—B.—G. P. B—G. S.—J. B.—C. F. M.—R. B. B.—C. W. A. —R. L. C.—M. P.—F. N.—J. S. T.—M. S. (not yet).—E. A. B. (next week) —W. P. (next week).—A Plasterer (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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For Winter use.
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MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
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Roofing Felts.—F. Braby & Co.

INODOROUS, SARKING, SHEATHING, AND HAIR FELTS, KEPT ALWAYS IN STOCK. MANUFACTURERS OF PERFORATED ZINC, PERFORATED COPPER, AND PERFORATED IRON, IN VARIOUS DESIGNS AND GAUGES.

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PAINTED AND GALVANISED, OF IMPROVED MANUFACTURE.

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Hatton Garden, Liverpool; Great Clyde Street, Glasgow; and at Cyprus.

The Builder.

VOL. XXXVII. No. 1920. SATURDAY, NOVEMBER 22, 1879.

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English Artisans on the Paris Exhibition.

THE Society of Arts, as some of our readers will remember, organised a large deputation of artisans to the Paris Exhibition of 1878, each commissioned to investigate and report upon the exhibits illustrating his own craft. The collected reports are published,* forming a thick volume of over 650 pages, containing some superfluous matter, but also a great deal of practical and interesting reading. We may dismiss the one fault we have to find with the book, as a book, its redundancy, by saying that this appears to result from putting together in one volume reports which were written separately, and which it appears are also to be published in separate parts at the price of 6d. each, for the instruction of the respective classes of artisans whose works are treated of. A little excision for the purposes of the book would have brought the volume more within compass, and avoided some of the pretty frequent repetitions of the same kind of reflections, and of information upon the social state of the working men and their families in France and England, and other general subjects of that kind.

The object of the undertaking we presume to have been to afford each branch of trade that was represented the advantage of a report upon the various classes of work given from their own point of view. Whether it has been supposed that the public at large would benefit by having the opinions of working men on the work,—that there would be an opportunity of gaining in this way a different kind of criticism from that which is commonly published on such occasions, we do not quite understand. Presuming that there may have been such an object, we should say that on the whole there will be found in this collection of criticisms less to distinguish them from ordinary published criticism of the best kind than might have been expected; more "æsthetics" and less of purely practical comment. But, as every one knows who has the opportunity of seeing much of the most advanced and cleverest men among the ranks of artisans, the line which separates them, in taste and education, from professional men, is becoming fast obliterated by the higher progress of culture among those who work into their hands; and there would be, in fact, very little to show in the reports included in this book that they were the reports of working men, to a reader who was not aware of the fact. In one sense we should have perhaps preferred it if there were a little more speciality about them. We can get "æsthetics" elsewhere, and we should have said that some of the reports would have been more useful and interesting in proportion to the amount of matter if the writers had confined themselves more to considerations of the *technique* of their respective crafts. They, however, seldom wander into the unmeaning generalities of the irresponsible newspaper correspondent on such subjects. While the Exhibition of 1878 was open we saw sometimes, as on other similar occasions, statements in the papers that "Mr. —— had gone to Paris to furnish descriptions of the Exhibition for" some leading daily paper, and we knew, perhaps, well enough that the gentleman named had no qualification whatever for the task beyond "the pen of a ready writer," no knowledge of art or of art-workmanship, and that he must inevitably be nothing but the channel through which to deliver, in sufficiently literary form, whatever was poured into him by probably more or less interested informants. We may certainly think that the truth of the matter would have been got much better from some of the contributors to this volume, though their periods may not be so well-turned as those of the practised newspaper writer. We have instances here and there in the book which illustrate exactly the point in which an artisan critic is strong where a newspaper correspondent would be weak; we find here and there the remark by one of the contributors that the representative of some firm "tried very hard to convince me that their work was superior to so-and-so's, but I did not see it," and one or two reasons are given. The regular newspaper correspondent would probably have swallowed the information thus volunteered, and posted it home as his decided conviction.

There is a great deal to be noted in turning over the pages of the book which is interesting, and on some of the points which struck us in regard to the subjects most connected with architecture and arts of design we may make a few comments. Nearly forty subjects are treated of by as many reporters,* from which of course we can only select a few for comment.

In regard to the pottery department, it is significant to notice that the principal makers in this art seem to have shown almost the only instance of practical jealousy of the visit of the English artisans which is recorded, the author of the first report, Mr. Frank Harris, having been denied access to the works or studios of MM. Machereau and M. Wiven in spite of special request in his favour by Sir Philip Owen. This looks as if the French were considerably afraid of us in this branch of artistic manufacture. It is worth note, also, that the reporter found it impossible to obtain any reliable information upon the rate of wages in the French pottery trade; "the instant the subject was broached the conversation was discontinued." No special reason is suggested for this reticence; we presume it must be set down to the fear of being underbid by the English artisans; but all this mystery looks as if there was a consciousness of weakness. The genius of Tinworth, the artist whom Messrs. Doulton's system has brought to light, is, we are told, fully shown by numerous works "that stand quite alone in this great collection," which we can very well believe, even after due allowance for feelings of nationality. In spite, however, of the conclusions to be deduced from the reserved and jealous spirit manifested by the French employers and workmen, the report certifies that France is the only rival we need fear in ornamental pottery.

"The classes of goods she excels in are decorated china, painted majolica, and terra-cotta. The decoration of vases at a lower price than that estimated for with our English goods appears to be due to several circumstances which operate in favour of the French. In the first place there is not so much risk incurred in making articles in several small pieces as there is when the ornament is constructed in one piece, as with us, and when, therefore, if one piece is spoiled, the manufacturer sustains the loss of labour and material of the whole. If, on the other hand, the foot or cover of a French vase be bad, the body may be excellent, and only a new foot is required, which can be made without much extra cost, and mounted in the place of the first cover or foot. Then, again, the handles can be fixed to the French vase, and made to hide marks that would otherwise condemn the piece as useless. Also, each part being separate, it can be more easily decorated."

These remarks are interesting as illustrating the differences in the English and French systems of work; but we quote them chiefly to express our decided conviction that the superior expense and trouble entailed by the English system is well worth going to for the sake of getting the articles in one piece. Pottery made in separate pieces has not nearly the value and permanence of solid articles, and we hope no effort after economy will induce the adoption of the piecemeal system by English makers. In articles of a higher class than those already named, the Report judges that we leave the French far behind, "and with the exception of the size of the Sèvres vases and the frescoes by Deck,

* The Society of Arts Artisan Reports of the Paris Universal Exhibition of 1878. Dedicated by express permission to his Royal Highness the Prince of Wales, K.G., president of the Royal Commission. London: Sampson Low & Co. 1879.

* In the separately published parts at 6d. each before alluded to, these subjects have been collected and classified so as to reduce them to eleven heads, viz.:—

1. { Pottery and Glass. Part I. " " Part II.
2. Art Workmanship.
3. Mechanical Engineering.
4. Agriculture and Horticulture.
5. Building Trades.
6. Cabinet Work.
7. Watch and clockmaking, jewelry, and optical instruments.
8. Printing. 9. Textile fabrics.
10. Leather and India-rubber.
11. Mining and Metallurgy.

they cannot show any piece of work in regard to which we cannot show two to equal theirs."

All the reporters in the pottery department agree in giving, as might be expected, very high praise to the Japanese work, one of them placing it above everything else. These ingenious people likewise showed a good many "potters' puzzles," such as "an inner and outer vase united into one piece by joining together at the upper edge and at the foot; the outer shell being splendidly perforated, while the inner lining is most elaborately painted in various colours, all executed by inserting the pencil through the perforated interstices of the outer vase. The manner in which these combined difficulties are conquered is really wonderful." This, however, is something like playing on one string on the violin, the merit being in the difficulty of doing it at all. There is one remark in regard to the Japanese work which shows considerable penetration. After remarking on the apparently instinctive knowledge of the Japanese artist as to the best way of arranging and balancing the masses of colour, Mr. Aaron Green adds, "Is this the result of serious study of fixed principles, or are such agreeable, harmonious, and complete designs fixed upon his mind by mere habit, communicated by the traditions of his school?" Originally, we should imagine, the fine colour and tasteful arrangements of Japanese ornamental work was a good deal the offspring of the intuitive eye for colour which one nation has and another has not; in the present day one may shrewdly suspect that a good deal of it is a kind of acquired tradition. The Japanese can hardly be great sticklers for artistic principle, or they would not show the readiness which they do show to adopt European manner in design in order to get a new market. Their apparently totally unconventional way of arranging the applied design without any reference to symmetry or to its relation to the form of the object ornamented, which was a new charm when it was first brought under the notice of Europeans, is becoming a mere convention imitated arbitrarily now by designers of other nations, a fact which is specially commented upon in the report; and it may be doubted whether this irregularity and disregard for symmetry is really the truest principle of ornament. To some of it there might really be applied the criticism which we find in Mr. Bedford's report on the terra-cotta exhibits; speaking of Mr. Mussill's work of this class, it is observed "his designs have the great merit of originality. It is too commonly the practice of painters on pottery to take any print or engraving which appears suitable, and transfer it bodily, or with slight alteration, to the article to be decorated. It need scarcely be pointed out that in the majority of such cases the forms and lines of the ornament do not harmonise with the contour of the object." This is perfectly true, and the remark is by no means uncalled for. Another fact mentioned in the same branch of the report is of interest, viz., that among the terra-cotta works sent by Madame Ipsen, of Copenhagen, are some very successful adaptations of Trojan forms from the Schliemann collection, "not mere copies, for though the forms have been taken with but slight alteration or improvement, they have been decorated in gold and colours with perfect taste and in true keeping with the style;" and it is added that Dr. Schliemann himself had expressed great pleasure at the use which had thus been made of his collection.

The department of terra-cotta which is devoted to building purposes is said to have been best represented out of England by the Wienerberger Company, of Vienna. The French terra-cotta building material is said to be very unsatisfactory; that of Messrs. Doulton the best. There is some special comment bestowed upon the new terra-cotta slab system of Mr. Lascelles, about which we have already felt bound to express an opinion much less favourable than that which is claimed for it, and the report here given of it certainly is not practically in its favour.

Wood-carving is one of the subjects in which the English exhibits are judged in the report to have been decidedly inferior to those of some other nations, the French and Italian in particular. The author of the report, Mr. W. H. Howard, does not consider that what was sent to Paris represents the best art of this kind that England can produce, and considers that the exhibitors lowered the artistic value of their exhibits by aiming at quantity rather quality, and treating the whole thing as if it were a mere bazaar. Still, he is of opinion that English wood-carving does not equal that or France and Italy, even at its best, and he gives some of what he considers the reasons for this inferiority. Want of patronage for one thing: many of our wealthier people "scour the Continent for articles of *vertu*, and give large sums for foreign works of art, quite regardless of the presence of talent at home." Want of real interest in the work as an art on the part of the heads of large workshops, who live in handsome houses, and draw the profits without taking real interest in the advancement of the work artistically. Various expedients are resorted to to obtain great profits. "In some places foremen are engaged for their 'nigger-driving' qualities. . . . In some cases the carving is given out to a man who takes it at a price, and employs men to do the work, and they then generally execute it by the piece-work system." This, as the writer says, may be a very good system to increase profits, but is certainly not conducive to good and artistic work. But the writer of the report also complains that the English wood-carver has not so much opportunity of improving himself as his brethren over the water have. The churches in Paris, which contain much fine carving, are always open; those in London are generally closed, and the portions of our two cathedrals which contain the most and the finest work of this kind are not accessible without special permission. In the Jardin des Plantes at Paris there is a portion of the ground arranged for students and artists, who have permission to pass between the plants and examine and copy them. As Mr. Howard says, a man who stooped to examine the flowers closely in Hyde Park, would soon have a policeman telling him to move on. There is Kew, however, which should be of some use in this way. The British Museum, he observes, is only open at the time when a working man cannot visit it. This is an inconvenience felt by many literary workmen as well, and we trust the electric light may really do something for us in this case. We have no places open on Sunday, the day of leisure of the working man, and our schools of art, as at present conducted, are hardly the kind of thing the art-workman wants; they are too slow a process and too costly. This, also, we believe is a true bill. A man may know very well in what particular thing he wants to improve himself; but the art-school will demand that he goes through a long routine before he reaches the special point in which he wishes for improvement. In regard to stone carving there is a very brief report, concluding with the opinion that no one can take a brief survey of the streets and public buildings of Paris without being convinced of the superiority of French stone-carving; but the reasons of this superiority the writer does not undertake to decide off-hand. We should be disposed to say rather that French stone-carving exhibits a different kind of excellence from the best of ours,—more refinement and finish, but less force. A great deal of our carving in modern Gothic buildings is, however, very bad; and we should be disposed to say that some part of this is due to the wrong feeling impressed on the workman by some of our modern Gothic architects, who were always preaching that "vigour" was the thing, and the carver not unnaturally supposed there could not be too much of a good thing, and degenerated from vigour to coarseness.

In the report on plastering we find, again, evidence of the impression which Parisian decoration makes on the eye of the English artisan. The plain plastering, says the report, exhibited nothing for special comment; but in ornamental plastering "every building seemed to excel its neighbour in the quantity and quality of the enrichments, which are everywhere introduced with consummate taste, with just proportion, and in good keeping. This seems one of the principal advantages that have been gained in the buildings of Paris. Ornament is before the eye wherever it turns, either in wood-carving, in stone, marble, plaster, or other composition, and, notwithstanding the great quantity of ornament, there is none that seems overcrowded or misplaced." The writer of the report (Mr. M. Curley) adds his conviction that the superiority of French ornament of this class is due in great measure to the ornament being more carefully studied before it is carved than is the case with us; "it is not left altogether to the carver and modeller to design and execute in a hurry, and in a time that is only sufficient for one of the two branches, as is, unfortunately, too often the case in London, to the production of so many blunders." The writer speaks, he adds, from sixteen years' experience as a modeller.

But in brickwork the report places Paris far in the rear of London. This is not surprising, considering the attention which has been given to brickwork in London lately, and the ambition of makers and bricklayers to rival each other in producing the best work that ornamental and moulded brick is capable of. The writer of the report on bricklaying seems to have been very disagreeably impressed with the monotony of Paris streets after London.

The report on furniture is a long and full one, the real competition being, says Mr. Patterson, who makes the first report, between England and France. The French furniture he characterises as limited in its range of style. "There is," he says, "in the French department a magnificent show of furniture of the richest kind, some of it extremely beautiful, and most of it well constructed, but there are not many marks of originality or progress. The English section seemed to me to present more signs of life and energy;" and this is very much our own opinion. He specifies a room designed in the Queen Anne style as extremely attractive, but, at the same time, wanting in adaptation to the present time. Another remark which he makes we cordially endorse: why are not the names of the workmen who make the furniture given? How, as he asks most pertinently, can workmen be expected to take any real pride or interest in their work when, in an exhibition intended entirely to distinguish good work, their names are ignored? There ought, in our opinion, to have been a stipulation that whatever was exhibited should bear the name of the real maker, as well as that of the firm who "exploited" him. The writer mentions the French firm of Christofle as an honourable exception in this respect; they took pains to publish the names of their chief workmen, and to state what was done by each.

The report on cabinet-work, by Mr. Henry R. Paul, is very well written, and is particularly to be commended for the importance which its writer attaches to the relation between construction and decoration in cabinet-work. In this respect much of the French furniture, which he describes as perfectly dazzling in its multifarious display of highly-polished carving, mostly of splendid execution, is inferior to the English, in the fact that it is so crowded with carving that the construction is in entire subordination to the ornament. In the matter of beauty, France is first in furniture; the Italians achieve a splendid outside appearance, but the construction is very flimsy; in fact, he says, their work consists of splendid pieces badly and incongruously put together. "The English, on the other hand, build their furniture on thoroughly correct principles, as a rule; but beauty, although there is great striving after it, is always a secondary consideration." The Italian makers, on the other hand, will put the finest inlaid and engraved ivory work on wood only fit to be used for packing cases. The remarks on Russian furniture, of which few of us in this country know much, are interesting. He says "the style is so thoroughly savage and uncivilised that the furniture is quite unique, but at the same time it cannot be said to be ugly. On the contrary, much of it has a very pleasing effect. There is such a striving after solidity, that one might really fancy that some of the articles had been made out of one solid piece of wood. One thing worthy of notice is the absence of French design among them. . . . Most of the smaller nations seem to have followed to a great extent the French designs; the consequence is, unfortunately, that we get numerous repetitions of bad French work instead of some national styles which might be worked out and improved upon, and which must always be interesting." The Japanese furniture he characterises as "quips and cranks," which is about what it is. The English furniture he speaks of with enthusiasm, especially the specimen that won the grand prize for Messrs. Jackson & Graham, and adds, "it is something, when the skill of the workmen of the present time is so pertinaciously cried down. . . . when Dean Stanley was to be heard telling a meeting in Westminster Abbey, composed expressly of working men, that the patient skill of their forefathers had gone from them, and that they thought only of what they got for their work, and not of the work itself,—it is something that we can point to a production such as this is, an article

which I believe represents a greater number of difficulties overcome, a larger effort of patient skill, than any other single piece of wood-work in existence." It is sad to learn, in fact, that one of the able hands employed on it suffered mental injury in consequence of the severe study required for the execution of the work, and died just before it was completed. The writer admits, however, that this was an exceptional piece of work, and the degree of truth which there certainly is in what Dean Stanley is reported to have said, cannot be rebutted by the instance of one *tour de force* for a special object. The characteristics of other furniture of English makers is gone into at length, with some very cutting remarks upon certain exceedingly "truthful," but, as Mr. Paul considers, very ugly furniture; remarks in which we concur from our recollection of the kind of thing described, though we hardly sympathise with the writer's feelings in regard to veneer entirely; it is a kind of necessity in some respects, but still veneered furniture can never, we should say, be regarded as representing the highest class of furniture-art. The report is, however, admirably written,—the best, from a literary and critical point of view, of the whole. There is a second report on cabinet-making, by Mr. John Fraser, which also seems a good one; but we must close.

There are, we may observe, introduced here and there in the reports some very interesting notes and reflections on the relative social state of English and French artisans, so far interesting, in fact, that we intended to make them the subject of some comment had not our remarks already run to rather too great a length. We may possibly say a word on this part of the report another time.

ARCHITECTURAL LUCUBRATIONS, WITH A PRACTICAL PURPOSE.

It might be regarded as a paradox to say that the idea of grandeur is inconsistent with the indication of size. And yet there is a sense in which such a remark may be made with justice. Great magnitude is, no doubt, at times an element of true grandeur. But such magnitude must be that of the whole object which impresses the mind, not that of a portion of the object. We can admire the grandeur of the head of the Jupiter of Phidias when we regard it as represented in a bust; but if that sublime head were placed on a body of inferior dignity, while the majestic lineaments would be unaltered, the effect produced on the mind would not be that of the grand, but that of the grotesque. In the same way, if any architectural object be so proportioned as to give the impression of enormous magnitude in any particular feature, the grandeur of the whole is diminished or banished. A little church supporting an enormous dome would impress us more readily with the idea of the smallness of the church than with that of the grandeur of the dome, even if, taken by itself, the latter were as noble a structure as that of St. Peter's. It is consistent with this view to hold that in order to insure the effect of grandeur in a figure or in a building, there must be that perfect and essential harmony in the proportions of the parts which shall prevent the educated eye from lighting on any small detail by which to form a scale for the estimate of the size of the whole. In this respect it is instructive to bear in mind the marvellous accuracy with which the Greek sculptors of the purest period of art wrought out the canonical proportions of the human figure. In height and in girth their dimensions are exact to the canon, of which some of the main outlines were indicated by Polycletus, and the entirety of which has only very recently been recovered by a very careful measurement of the masterpieces of Grecian sculpture. It might be thought by any one who had not given practical study to the subject, that a certain largeness of touch, inconsistent with scrupulous accuracy of detail, would give breadth and grandeur to a statue. That there is a breadth of handling characteristic of the Grand Greek Era no sculptor can doubt. But that this touch is subordinate to the most accurate definition of the main metrical proportion of the human body is an incontestable fact. How much of the grandeur of the style may depend on this mathematical exactitude it is not easy to pronounce. But that the two elements are closely connected, if not absolute functions of one another, may be learned from observing how the grandeur of the original evaporates in those Roman copies in which accuracy is far from being perfectly observed.

We are thus led to regard the impression of awe which is produced by a Grecian temple on the mind, as differing, in the method by which the idea of sublimity is sought, very widely from the treatment of the Gothic architect. To the traveller who stands on the mountain crest that parts the lovely bays of Naples and of Salerno, and who sees, gleaming clearly through forty miles of transparent atmosphere, the solemn temples of Pæstum, majestic at that distance, and only more majestic the closer they are approached, somewhat of the same feeling is present, as to him who paces the floor of the lofty nave of St. Ouen, and who almost shudders when the marks of the sacrilegious use made of that unrivalled church by Robespierre (to whom, at least, the patches on the marble floor are attributed by the sacristan), are explained to him in a half whisper. They are the marks of the forges erected during the revolution; when this noblest of Christian fanes was turned into a smithy. But the methods of the artists who built the two sacred buildings are so wide apart, that we have to look with some curiosity for the reason that so similar an impression is produced on the mind by two such different specimens "of temples old or altars new."

To pursue the inquiry we must bear in mind that, although the geometrical proportions of a building constitute the main features, they do not form the whole of its character. These proportions may be compared to those of the animal skeleton; and, as such, to those animal skeletons which are external, and which thus meet the eye directly. The skeleton of the vertebrated animals, being for the most part concealed by plumage, fur, or skin, does not so fully allow of a comparison with the geometric design of a building, as do those external articulated forms of shell, or horn, or carapace, which at once define and include the living tissue of the *insecta*, of many of the scaly reptiles, and of the cartilaginous fish of the ancient ocean.

Still, even in these cases, the skeleton, however well preserved, does not convey the idea of the living animal. No more striking instance of this can be cited than the case of the hippocampus,—the little so-called sea-horse, that haunts the shallow waters of the Mediterranean. When seen in a museum, it might be thought that it could make very little difference to the observer whether the animal were alive or dead. Its structure is composed of a series of bony links, locked one into another, like the joints of a delicately-forged coat of mail. What little there is of flesh or of tissue bears so small a proportion to this skeleton, that if in any case it might be thought immaterial, as far as aspect was concerned, whether a creature were alive or dead, this little animal might be cited as the best exemplar.

And yet, any one who has watched the little creature (which more closely resembles the usual figure of the knight on a chess-board than anything else) alive will soon become aware how utterly impossible it is to form the slightest idea of its quaint and graceful life from its solid *exuviæ*. Erect in the sea, its tiny serpentine tail twined round a stem of seaweed or branch of coral, or some small object at rest, the sea-horse looks around him for his prey. And along the back of the otherwise motionless animal plays the most wonderful spiral motion, a movement detected only by the light which radiates from a thin, transparent, prismatic fin, by which the sea-horse, no doubt, to some extent breathes, as well as regulates its movements in the water.

In a manner which may be to some extent illustrated by the above example, the life of a building has to be regarded by those who would understand what was the true idea wrought out by the architect. We are profoundly impressed with this feeling in treading the cradle of architecture on the shores of the Mediterranean. In no place, perhaps, so much as in Pompeii, do we seem fully to realise how far the presence, the temper, and the active busy life of the inhabitants must have deepened the impression produced by their abodes. The *cunei* and steps of the amphitheatres, which, at Pompeii, at Capua, at Pozzuoli, and other ancient sites, yet retain so much of their form uninjured, are remarkable instances of this. Such a structure would seem imperfect and unmeaning to those who could not, in imagination, fill the circling seat with an eager crowd, intent on the combat taking place below. So it is with aqueducts, baths, temples,—with all the glorious ruins of the Classic past, in which the soil of Italy is so rich. It is only when realising what these were when they conveyed the cool rivulets of the surrounding hills to a thirsty population, when their *tepidaria* and their *frigidaria* were crowded by the people who knew so well how to make the pursuit of pleasure a methodical occupation, or when the conscript fathers, the armed maturity of the force of the city, the noble matrons, and the shy and graceful virgins trooped to the several shrines of worship; that we can form any true conception of the outcome of Classic architecture.

Nor do we intend to overstep the line of boundary that marks off another region than that of art, when we say that there is a large number of the noblest buildings in this country, in various states of neglect, of observance, or of travestie, to which remarks somewhat of the same nature may apply. It is as necessary, in order to allow the noble relics of Fountains Abbey, or of Melrose, to produce their full effect on the mind, to be able to realise what those magnificent buildings were, when in full occupation by the services and the worshippers for whom they were designed, as it is to repeople the deserted peristyles of Pæstum.

It is thus impossible to enter into the idea of either the Classic or the Gothic architect, unless we possess at least some elementary acquaintance with the nature of the rite, or with the habit of religious thought, of the worshippers for whom each religious building was originally designed. It may seem almost a truism to say that the building should be the outer symbol,—the shell as it were,—of the rite. And yet how often do we find that primary law of design to be nowadays neglected. A Jewish synagogue, a Turkish mosque, a Vaudois temple (as this simple people love to term their present churches, such as the very noble one they have reared in Turin), or a Catholic church, are buildings designed for objects which differ in detail, however much they may be one in principle. The central act of the rite, whatever it may be, is the point on which the architect should seize as the dominant idea of his design. He should so build, if he be fit for the task, that if a convulsion like that which overthrew the Campanian cities befel his work,—if no historic record were left to say for whom or by whom the sacred building was erected,—it should be able to tell its own tale, if it were recovered after 2,000 years of burial. Such is the case with the temples and tombs of Egypt, of Greece, and of Italy. Cannot each of our readers call to mind some modern example of English architecture, perhaps one on which much money has been spent, which would either utterly perplex or wholly mislead the archæologist of 2079 A.D.? Whenever such a doubt is possible, the architect, whatever be the lighting of his building, has forgotten the lamp of truth.

Thus to illustrate a point of which it is not easy to exaggerate the importance, let us see for a moment what ought to be the central idea of each of the four buildings to which we have referred. In the synagogue, the reading of the law forms the most solemn feature of the service. The ark in which the sacred roll is kept, and the platform or stage on which the meturgemen, or readers, stand, are, therefore, the chief features of the building; nor can the arrangement, if suitable for the purpose, be readily confounded with that proper for any other rite. Again, in the mosque, the chief feature is the mihrab, or prayer-niche; indicating the direction in which lies the holy city of Mecca, towards which every Moslem is taught to turn when he prays. The Vaudois looks up to his pastor as his guide and teacher. From his lips he listens to the reading and the explanation of the sacred volume. Thus the pulpit forms the chief feature of the interior of the Vaudois church; even as in the times reddened by the bloodshed of St. Bartholomew, the King of Navarre left his bride after the civil rite of marriage had been completed, the queen going to mass, the husband to *le prêche*. Again, in the Roman Catholic rite, the altar where the mass is offered is the chief feature both of the rite and of the building; while in the Greek church the choir itself is divided from the nave by a solid wall with substantial doors, through which the priests only issue forth in procession at certain parts of the service.

We are not about to carry the comparison any further, or to refer, either directly or indirectly, to the warfare now going on between those who use the word "Catholic" and those who use the

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term "Anglican" for a watchword. It will, at least, be evident that the connexion which we have pointed out as existing, in any true and well-conceived design, between ritual and building, is not likely to be impaired or undervalued by any earnest persons among us, whatever be the shade of their own opinions. But we may be allowed to refer to this principle of structural fitness as explaining the inadequate effect which the Madeleine at Paris,—not to say our own St. Paul's,—has been so often spoken of as producing. All that wealth could do; all that genius, working on certain lines, could do; has, perhaps, been done in those noble churches. If you enter in order to see a mausoleum, or a public monument, the effect is all that could be desired. It is not the case,—at all events, with many persons not incompetent to form an opinion,—when you are told that you are being taken into a church. It is not that it is impossible, or even inconvenient, to carry on a Christian ritual in either of these buildings. But that ritual is not the *raison d'être* of either of them. It is but one out of several conceivable purposes for which the structure might have been reared. That structure is one of which the original design has been borrowed from an older faith; and some sense of this fact is ever lurking in minds of a certain order.

As far as it is possible now to form an opinion of the essential differences that underlay the primary conceptions of the Classic temple and of the Christian church, we should say that they were twofold; holding, the one to the philosophy of the religion; the other, to the influence of climate. If we do not put the second of these in the first line, it is because we might thus lay ourselves open to the objection, that the climate of the cradle of Christianity, in Jerusalem, Antioch, and Rome, was the same as that of the cradle of the hero worship of Greece. No doubt that is true. At the same time, it must be remembered that the 300 years of scorn, interspersed with persecution, which looked down on the early growth of the Christian Church, had accustomed its members to meet in caverns and catacombs, in dens and caves of the earth, before they were allowed the use of the basilica. Thus, as Roman Christianity grew, it grew in the presence of a great architectural past. It had only to displace the Pagan worship, and to re-consecrate, or repair, the Pagan temples.

But in the wood-building regions North of the Alps the case was different. There society sprang anew from the soil; and the churches of the new people and new faith had to be designed and built. It was thus that the Pointed Christian architecture grew up, and as it increased in richness and in elaboration, it entwined every decoration around a dogma, and made the ornamentation of the church almost as ideal as, and often ideal with a deeper meaning than, the utterance of the pulpit itself.

The great idea that was introduced with Christianity,—or of which at least we do not find much trace in the olden faith, so far as architecture bears record,—is that of associated worship. And, as we shall presently see, this association soon assumed a special form, one calculated profoundly to impress the imagination, and to render its expression and reflection, from the chisel of the sculptor as well as from the graceful structure of the architect, at once imposing and unmistakable.

Structurally expressed, this idea of association is less apparent in the Classical fanes. In part, the difference may be climatic. Life, in Greece and in Italy, for a good half, to say the least of it, of the year, is but lived *sub dio*,—under heaven. The idea of the *chamber*,—a room in which not only to sleep, but in great measure to live,—is absent in Italian architecture. Noble halls and saloons abound. But, even in the most costly palaces, the nooks in which people are put away to sleep are usually such as no English servant would by any means condescend to adopt. To people thus living an out-of-door life, the peristyle of the temple was shelter enough for the worshippers. Their chief place of meeting was in the pro-fane, before and without the temple, except in cases of public processions,—even as in the present day in Italy, the association at a festival is not that of worship. Prayers or offerings are made apart and alone, — a matter between the worshipper and the priest. The public association is that of festival, not that of simultaneous worship.

Thus in those cases where, as at Delphi or at Elis, the religious element may be thought most powerfully to have affected the people, the whole tendency of the rites was to make religious observances individual rather than common. When the utmost efforts of wealth, power, and genius had combined to make the most imposing symbol or representation of a divinity, as in the chryselephantine statues of the time of Phidias, the number of those who could have gazed upon those wonderful creations of the sculptor at any one time must have been extremely small. The god filled his temple. The sense of awe that attended on the *cella* of the most famous interior,—especially that of the most Holy Place at Jerusalem, on the interior of which no eye looked for century after century, except once in the year, and then was fixed only on the floor,—was encouraged, rather than the reverse, by the erection of those stupendous statues in the Greek temple. The intercourse of the worshipper with the object of worship was brief, awe-struck, alone, or aided only by the priest; the joy and jubilation of the festival was that of the out-of-door festivity of the people, each having performed his own religious rites apart.

In Gothic architecture, on the contrary, the inclemencies of climate that bade the architect rear wide and lofty roofs to shelter from rain or snow the hundreds that assembled on the feast-day of a saint, or on some great high day of the church, combined with that sense of brotherhood which had been fostered by persecution to make the worship social and simultaneous. Instead of each man bringing his own victim, all together looked on while the priest offered the common sacrifice, *pro vivis et mortuis*, for the living and for the dead. What effect the words of the early canon of the Mass have had on Christian architecture has probably never been fully realised. There can be no doubt that it has been profound. Acting directly on the imagination of the artist, acting on it a second time as reflected from the minds of the people,—and light loses by each reflection,—the mass of the community of the great Catholic Church, in the unity of which death itself was but an unimportant incident, beamed forth from every boss, and capital, and niche, and shrine, and tabernacle.

We have a remarkable instance of the effect of the religious imagination in the Choir of St. Paul's. We have never heard that the great wood sculptor, Grinling Gibbons, was a man particularly devoted to what may have been thought, in his time, the relics of an old superstition. But the power of art is not limited by Queens or by Parliaments. Gibbons had to adorn Wren's choir. He did not stop to ask what survived of Rome, or what of the new order of the reformed faith. He wrought under the fervid inspiration of the sculptor. He produced not half-Christian *amorini*, ornamenting stall and canopy; but boy-angels and infant cherubs singing continually out of invisible music-books. For if these lovely heads be carefully regarded, it will be seen that they are grouped in twos and threes, each group being bound together by the direction of the eyes to a common point,—the point where is writ in air the heavenly music.

Another mode in which the association of saints and angels with the living worshipper in the same act of common worship has given grandeur to some of our noblest churches depends on the small size of the figures. Sculptors have felt, rather than said, that, of all sizes in which they can work, life-size is usually the least successful. The comparison between the life and the statue is too close. A five-eighths size, or a nine-eighths size, on the other hand, gives play to the delicacy of feeling, or to the sense of grandeur. When the latter proportion has been attempted in sacred buildings, as in the case of the colossal reredos at Christ Church,—a tree of Jesse, with figures of size-and-a-quarter or thereabouts,—the effect is to dwarf the building, unless space and proportion be ample. But when the other method is taken,—when tabernacles and niches are full of the praying, or singing, or benedictory forms of saints and martyrs, virgins and cherubs, queens and kings, and holy bishops, and martyr knights, of a size with which we are familiar as that of the younger and most charming members of the human family,—then the imagination receives a stimulus to which it at once responds, and at the same time the height of lofty nave, or slender columns, is reared into a more shadowy grandeur by contrast with the visible height of the statues which adorn the fane.

Greek religious architecture thus produced the sense of grandeur by the isolation and dwarfing of the suppliant, in presence of either the Temple, or, when present, the statue. Christian art seeks sublimity in the association of the visible with the invisible; in the silent lesson that however numerous, noble, or divine are the worshippers, the temple is more lofty than their vision can define; in the sense of communion with those who have gone before, of despising the trials of life, and of victory over the sharpness of death. Such,—to us at least,—is the utterance of Christian architecture.

ON SOME MODERN EASEMENTS.

There is probably hardly any branch of the law more important than that which is connected with easements, and there are few things which, on the one hand, are more important to the dominant, and on the other more burdensome to the servient tenement, than this same class of rights. Certain easements, such as rights of way, for example, are well known to most persons, but there are other easements less common which are hardly so well understood, although they may be of great value. One of these classes may be called that which consists of the right to keep certain chattels or things in the land or buildings of a neighbour. It is indeed a right which differs a good deal from such elementary easements as those of rights of way, or for water to flow on to land, which arise out of the very nature of land; but it is one which in the present day is equally valuable. Moreover, it may be doubted whether at first it was regarded by the judges so much as an easement as the possession of a certain piece of property in the land or building of another man. But be that as it may, these rights must now be considered as easements, and we propose here to notice a few of them which naturally arise out of a recent and curious case. The decision to which we allude is that of Moody v. Steggles, 48 L. J., Ch. D., 639, in which the plaintiff was the owner in fee simple, and occupier of the Grosvenor Inn, Newmarket. The defendant was the owner and occupier of a house in the High-street, to which for many years the signboard of the Grosvenor Inn had been affixed by iron fastenings going through the wall of the defendant's house. The inn itself was behind the defendant's house, up a narrow thoroughfare, and stood back, so that it could not be seen from the High-street. The cause of the action it is easy at once to state, for it was that the defendant removed the signboard, whereupon the plaintiff at once commenced a suit to have the signboard re-hung in its accustomed place, on the legal ground that it was an easement over the defendant's house in respect of the plaintiff's inn. This, it will be at once apparent, is an easement of a curious kind, differing very widely from those which arise out of the permanent condition or fashion of a building, because as soon as the house used as an inn should lose this character, the easement would also at once fall to the ground. That it is an uncommon one may also be gathered from the fact that this is the first case in which these actual circumstances have come before a court of law; though in the other cases to which we shall allude rights somewhat similar have been upheld by judicial decisions. Therefore, it will be obvious that two principles at least may be gathered from this decision,—one, that an easement may arise out of a temporary occupation of a house for a particular purpose; and next, that there need be no physical connexion between what may be termed the dominant building and the thing which causes the easement to arise.

A previous case, similar and yet differing from the present one, was decided in 1874, being that of Hoare *v.* The Metropolitan Board of Works, 9 L. R., Q. B., 296. In this instance, however, a certain public-house had had the right of having a sign-post erected on Blackheath-common. By the 15th section of the Metropolitan Commons Act, 1866, no estate of a profitable or beneficial nature in, over, or affecting any common, was to be taken away without compensation. The 13th paragraph of the scheme for managing Blackheath-common secured to all persons such estate, interest, or right as they had before the confirmation of the scheme. The sign-board in question happened to be blown down, and the point arose whether the owner of the public-house had the right to re-erect it. The Court, after an elaborate argument, decided that such right did exist, because, said Mr. Justice (now Lord) Blackburn,

"it is a right which the lord of the soil could grant."

But here, again, it must be observed that this was a right against land, and not against a building, though it is equally deserving of notice that in this case of Blackheath-common it was rather a right to have a piece of property in the land of another than a beneficial right such as that of a way across a man's fields.

But the case upon which both the two last cases were to a large extent based was that of Lancaster *v.* Eve, 5 C.B., N.S., 217, decided in 1859. Here a pile had been driven into the Thames opposite the wharf of the plaintiffs, and the defendant's barge had run against and injured it, whereupon an action was brought; and in the judgment, which was in favour of the owners of the pile, these words occur:—"There was, therefore, ample ground for inferring that there was an easement to place this pile in the river for the use of and convenience of access to the plaintiff's wharf."

But the real gist of the decisions seems to be that the property in the pile being in the plaintiffs by virtue of the leave and consent of the Crown or the Conservators of the Thames, a right of action against any one who injured this property necessarily existed. Further, in the judgment, it is remarked that it was placed in the bed of the Thames for the purposes of navigation, that is, for a temporary purpose which would cease to be of any value if the land opposite to it ceased to be occupied by a wharfinger. In Mr. Goddard's well-known work an easement is defined to be "a privilege without profit which the owner of one tenement has the right to enjoy in respect of that tenement in or over the tenement of another person, by reason whereof the latter is obliged to suffer or refrain from doing something in his own tenement for the advantage of the former." Subsequently, this same writer points out that incidents of a novel kind cannot be devised and attached to property at the fancy or caprice of any owner, and he relies upon some high authorities for this statement. But it is obvious that such rights over property, as we have been drawing attention to, are of a novel character, and we cannot help thinking that, though they fall within Mr. Goddard's definition, yet that they are not in truth, as he seems also to think, real legal easements. The word has crept into the decisions in a loose sort of fashion, but in a way which may largely and very injuriously affect property of all sorts. The instance of the signboard is one example. For A and B to agree to such an arrangement as was illustrated by the facts of the case may be well enough, but that the house should be burdened, whoever may be the occupier, seems to be carrying too far a doctrine which originally arose out of the necessities of natural formations and natural wants. An easement to walk across a man's land to fetch water arose out of the fact that the dwellers on the neighbouring land required it to drink, and it was only equitable that succeeding owners should have a similar privilege. But when once we get rights such as those of signboards, or, as happened in another case, a right to fasten clothes-lines and dry linen on adjoining land, it becomes questionable whether the decisions are correct in law or beneficial for the interests of the community at large. The *ratio decidendi* in the case of the pile has, as it seems to us, been somewhat mistaken, and the consequence is that owners of land and houses may find themselves burdened by all sorts of curious liabilities, which have arisen out of the weakness or goodnature of their predecessors. Thus, the owner of a house adjoining a theatre might find that the lessee of the theatre had a right to put his bills on his walls, for the analogy between publishing programmes and hanging a sign-board is a close one. We, therefore, look forward to some authentic decision by one of the higher branches of our courts upon this question.

Worcester Auxiliary Health Society.—Under the auspices of this society, Dr. Strange, medical officer of health for the city of Worcester, on the 10th inst. delivered a free public lecture,—one of a series to be delivered in the various school-rooms in the city,—entitled "Our Homes: how to make them Healthy and Happy." He alluded to the excessive infantile mortality disclosed by the Registrar General's returns, and showed that in order to be healthy people must have plenty of pure air in their dwellings.

A VISIT TO THE PARKES MUSEUM OF HYGIENE.

BY S. S. C., CANTAB.

On the lamented death, in 1876, of Dr. Parkes (the author of what has been justly termed by Dr. Farr, of the Registrar General's Department, "the best work on hygiene in any language"), it was determined by his numerous professional and personal friends to found a memorial Museum of Hygiene, which, whilst perpetuating the memory of one whose life had been, from first to last, unselfishly devoted to the benefit of his fellow-creatures, should, at the same time, be of such a character as to aid scientific investigation and practical study in the subjects to which Dr. Parkes's work had been especially devoted.

This Museum was formally opened in June last, as the readers of the *Builder* know, by Mr. Cross, the Secretary of State for the Home Department, supported by Cardinal Manning, the Duke of Northumberland, Viscount Cranbrook, Sir Wm. Jenner, and many other eminent and distinguished personages. It has, thanks to the Council of University College, a temporary resting-place in that College (close to the Gower-street Station of the Metropolitan Railway), where it is open, free to the public, on Tuesdays, Thursdays, and Saturdays, from 10 a.m. to 2 p.m. But it is to be hoped that before long the necessary additional funds will be forthcoming to provide a worthy and suitable permanent home for the valuable and growing collection of objects which it contains.

Being under the impression that the nature of the collection of articles in this Museum only requires to be known to be appreciated, and in order to assist in extending its sphere of usefulness, the writer ventures to record some notes of a recent visit thereto, for the benefit of those who may not yet have been made aware of its existence, and who may then, perhaps, take an early opportunity of spending an hour or so in the Museum, and avail themselves of that important practical knowledge which it is well fitted to convey to the intelligent visitor.

The articles exhibited are arranged in six groups, under the headings of:—

1. Engineering and Local Hygiene,
2. Architecture,
3. Furnishing,
4. Clothing,
5. Food, and
6. Preservation and Relief;

and, in addition, there are a library and reading-room, which are perhaps the most important parts of the museum.

It may, perhaps, be convenient to briefly refer to the collection under the different headings, as above.

Class I. *Engineering and Local Hygiene.*—Under this heading are complete sets of contract drawings of the Thames Embankment, and main drainage of the metropolis, all drawings and plans being placed in portfolios, on easels, ranged round the room. Here are, also, bird's-eye and photographic views of different health resorts in this country and elsewhere. Amongst other noticeable articles under this head are one of Norton's patent "Abyssinian" well-driving apparatus, and a patent water-meter.

Class II. *Architecture.*—Under this head we have a collection of drawings and plans of model buildings of all kinds. Those of the Peabody dwellings for the poor, and other model dwellings, of a cottage character, are well worthy of study, as also are those of renovated and adapted town-houses. One of the most popularly-interesting articles in this department is a thoroughly well-made brick, arranged and prepared to show the porosity of the material. This brick has tubes attached to it, and connected with it, at each end, being everywhere else specially coated over with an impermeable material. By placing one of the tubes in the mouth, and the other in a tumbler of water, it will be seen that air can be blown through the brick in its greatest diameter. A knowledge of the porosity and permeability, as regards air and water, of brick, stone, and other materials used in building, is of fundamental importance from a sanitary point of view; and this practical illustration serves to impress the fact on the memory in such a way that it will never be forgotten. Then, under this head, we have specimens of water-closets, earth and ash closets, baths, slop-sinks, ventilating syphon and other intercepting traps for drains, yard-gullies, water-cisterns, &c., of the most approved designs from a sanitary point of view; and, by way of contrast, there are, on the other hand, presented to our notice, specimens of defective and faulty sanitary apparatus and sanitary work, from a study of which more useful practical knowledge can perhaps be gained and remembered than in the case of the more perfect appliances. Then, here are ventilators and cowls of every known kind,—too numerous to specially refer to in detail. The practical uselessness of the much-vaunted rotary cowls, for extraction purposes, has been recently demonstrated by careful experiments conducted at the Kew Observatory; and it will be advisable, therefore, to direct most attention to the several forms of fixed cowls that are here shown, and which, whilst affording good extraction power (obtained from the natural aspirating power of cross breezes of wind) completely prevent down-draughts, and cannot get out of order, as the movable cowls (in common with all other movable machinery) are always liable to do. There are some good specimens here, also, of ventilating gas-pendants, which not only remove their own products of combustion, but much of the foul air of the rooms in which they are placed, in addition. The collection of ventilating and economical fire-grates and stoves, under this head, is well worthy of special attention, as the adoption of some of them, in place of other old-fashioned and wasteful articles of that sort, would soon repay, with interest, the necessary primary outlay. Several of these grates are arranged so as to economise the fuel and utilise much of the heat that ordinarily goes up the chimney, by causing it to warm fresh air which is delivered into the room by a tube communicating with an air-chamber at the back of the fire, to which the external air has access. It would be invidious, and not to the purpose of the writer, to mention names of particular makers, and draw special attention to any grate or stove; suffice it to say, that there are specimens of grates and stoves, on the same and other economical and sanitary principles, of all shapes and sizes (from the poor "country parson's grate" and upwards), and suitable for every particular purpose, the manifest special advantages of each of which are at once apparent on inspection.

Class III. *Furnishing.*—Here are a variety of things that should be of interest to those setting up in housekeeping; but special attention should be devoted to the wall-papers and specimens of dado-decoration of many colours, including flocks, but being exclusively non-arsenical.* It might also be advisable to take a look at the child's patent cot, with sides to open, movable tray for toys, &c., bottom made with elastic wooden laths, which can be instantly removed for cleaning, and replaced. Here also are all sorts of lamps, duplex and triplex, and Argand burners, night-light burners, and one and two-flamed petroleum cooking-stoves. Strange to say, there are no specimens of the best and most useful kinds of the many gas-stoves for cooking and heating purposes, now so advantageously and extensively used; but doubtless this omission will be rectified in due time, and when there is more room. The great saving in labour and cleanliness obtained by the use of gas-stoves and fires, and their manifest advantages as to immediate turning on and off as and when required, as well as the saving of the other valuable products of the coal thereby effected,

* The arsenites being used principally, in colouring, for the bright green and the gloss that they afford, it would indeed be sad if science could not provide for us all that we desire, in these respects, without obliging us to resort to the use of a poisonous ingredient. Besides wall-papers, there are other sources of danger from the use of arsenical pigments, as will be seen on looking at the artificial flowers for ladies' hats and bonnets, exhibited under Class IV. of the Museum Collection, and from the colouring matter of which Professor Corfield obtained a considerable quantity of arsenic. And more especially dangerous are playing-cards, with green-coloured backs, under such circumstances, as they are thumbed a good deal during the process of using them; and thus, during a single evening between the shuffling of the cards and the warmth and moisture of the fingers, a considerable quantity of arsenite of copper may be detached and inhaled, and even introduced through the mouth by those who may be in the habit of moistening the thumb with the lips to facilitate the process of dealing. In the *British Medical Journal*, for November 8th last, will be found by those interested in the matter, particulars of a case of disease of the fingers, in a lady, due to the use of such cards, as also of two children poisoned by eating sweetmeats in the shape of toy sugar watches, in each of which the quantity of arsenic on the entire face of the watch was estimated at no less than eighteen grains: and also particulars of a case of eruption on the scalp, in a gentleman, clearly due to the use of a hat with a bright maroon lining, in which a considerable quantity of arsenic was found. In one of the daily journals, moreover, Dr. Wallace, analyst to the city of Glasgow, records that he found, on analysis of a pack of playing-cards, with green-coloured backs, that altogether they contained nearly one-fifth of an ounce of arsenic.

and now generally wasted, promise to cause the total abolition, in the future, of wasteful open coal fires, and the general substitution, in their place, of gas-stoves and fires; and doubtless when electricity shall have superseded coal-gas for lighting purposes (as it is destined to do) we shall find the gas companies willing enough to supply us with gas at a cheaper rate for its greater and more extended use for heating and cooking purposes. And when this revolution shall have taken place, more attention will most likely be paid, than is at present the case, to providing a proper and necessary outlet of escape for the injurious products of combustion in the case of all such gas or oil-stoves as are not connected with an open chimney.

Class IV. *Clothing.*—Consists principally, at present, of specimens of army clothing and accoutrements, which are of little general interest; but it is evident that there is plenty of room for the development of the Museum collection in this respect,—a fact of which, no doubt, the committee are well aware. Here are wanted specimens of well-ventilated hats and waterproof clothing; of incombustible clothing, &c.; as also specimens of boots and shoes constructed on proper principles, and corsets, &c., which shall afford the necessary support for the female figure, without causing undue constriction of internal organs, or interfering with that natural comeliness which only ought to be considered beautiful. There is plenty of scope, in this department, for ingenious persons to submit to the consideration of the authorities of the Museum specimens illustrating improvements and advance in such matters.

Class V. *Food.*—Here we have samples of food for invalids of all kinds, as also preserved meats and fruits, &c.; and under this head are ranged specimens of the most approved patterns of filters for domestic use. Particular attention, however, should be paid to the Food Collection presented by Mr. Thos. Twining, of Twickenham (who has taken such an important part in the general organisation of the Museum, and as a liberal contributor thereto out of his own private collection), which will be found in twelve glazed show-cases, or stands, in which the specimens are methodically arranged. The first two stands are devoted to the chemistry of food, and illustrate the chief proximate organic and inorganic constituents of the different foods. The composition of the different foods is illustrated in a very simple and palpable manner, viz., by placing, in a row, flat glass bottles opposite a given amount of each specimen of food substance, the amount of albumen, gluten, starch, fat, water, and salts, &c., existing in each, and in the exact proportion in which they are present; so that, at a glance, one sees the essential difference as to constituents, and the amount of such difference, in the various articles of diet, and the lesson thus learned will not be readily forgotten. Thus no one who has examined the specimens in these cases can fail to observe and remember the large bottle of starch in the rice series, as compared with the small bottle of that constituent in the oats or barley series; as also the apparent much larger proportionate amount of nitrogenous constituents, fat and salts in the latter, as compared with the very small proportionate amount of these in rice, and so on with the other different food substances and the other constituents.

Class VI. *Preservation and Relief.*—Here is a complicated series of all sorts of articles, from disinfecting-stoves to bronchitis-kettles, and including a portable Turkish bath, patent bedsteads, invalid couch, artificial teeth, orthopœdic apparatus, water and air beds, eye-preservers, respirators, &c.

Library.—Besides containing a copious supply of books on all matters pertaining to the subject of hygiene (presented principally by publishers and authors) for reference on the spot, it contains also a complete series of the Blue-books of the Local Government Board and of the Registrar-General's department, &c.,—not readily got at elsewhere except in the British Museum. There are also, on the library-table, most of the sanitary periodicals now published; and it should not be forgotten to mention that in the library there is a powerful Ross's microscope, with a supply of microscopical preparation of food substances, &c., at the disposal of visitors. Last, but not least, attention should be paid to the portrait of the late Dr. Parkes himself, painted in oil-colour by a student of the Slade School of Fine Art, and presented by Professor Legros.

In conclusion, though this collection, temporarily housed in University College, is but the nucleus or skeleton of a still larger and more complete collection, which will, one of these days, it is hoped, find a more suitable and permanent home in some convenient locality in the metropolis; yet it may be safely affirmed that it is the largest, if not the only public permanent collection of the kind, in this kingdom or elsewhere, and when completed, should form a model to be copied or adopted, on a larger or smaller scale, according to circumstances, in every town in the kingdom, for the diffusion of a practical knowledge of sanitary science for the benefit of the masses. Such an institution should be of special interest to all householders, landlords, medical officers of health, and medical men generally, architects and surveyors, members of local boards of health, and to those entering a new house or contemplating building, and is well worthy the more extensive support in money and contributions, which it needs to complete the scheme and objects in view, and we may, therefore, in finishing, just add that printed forms, and all information required by intending contributors, can be obtained on application to the curator of the museum, at No. 6, Dudley-place, W.

GREEK ART.

BURIAL AT THE BRITISH MUSEUM.

On Saturday evening last, at the College for Men and Women, Queen-square, Bloomsbury, Mr. C. T. Newton, C.B., of the British Museum, resumed his lectures on "Greek Art," taking for his subject, "Polykletos, and other Sculptors, the contemporaries of Phidias." The other lectures have already been published in the *Builder*.

Mr. Newton commenced by saying that the last time he addressed them it was on the subject of the Parthenon, of which he had treated in more than one lecture. In regard to the Parthenon, he was dealing with comparative certainties. There was hardly anything in all archæology more certain than that the Parthenon was executed under the immediate direction of Phidias, and that the date was about 430 B.C., in the time of Pericles. In this present lecture he had undertaken to tell them what he knew about the sculptors contemporary with Phidias, whether of the Athenian or of other schools. What he knew, and what he thought anybody knew, about these sculptors was exceedingly little, and based, not on certainties, but upon probabilities more or less plausible. At the outset he thought he would say this; and he need not observe that he could not construct evidence where none existed, but he would endeavour to show them what the evidence was, and what had been made of it by three generations of archæologists in this particular case of the sculptors who were contemporaries with Phidias. In order to make this clear to them, he must revert to what he told them in the inaugural lecture, of which the present was the continuation. He there told them how the museums of Europe had been formed, and how archæology had been gradually developed. He told them that in the fifteenth century, simultaneously with the revival of learning and the publication of classical texts, there took place at Rome great discoveries of ancient statues, which were found constantly in digging the foundations of palaces of princes and cardinals. These statues, he then pointed out, were collected in the museums of Rome, and in the museums of the great capitals of Europe, and they also got among private collections. Now, these statues were very seldom found perfect, being generally headless, armless, or without legs, and, where two or three of the same kind were found, the leg missing in one was supplied from a leg which had survived from the other, and so on. But they first had to go through the "hospital," and in these Roman "hospitals," he was sorry to say, the care of the sick and wounded in the fifteenth, sixteenth, and seventeenth centuries was very imperfectly understood. Instead of leaving things alone, as the Greek and Roman artists made them, they were patched and botched, repaired and "beautified," and the surface of the marble polished till nothing was left of the originals, and, in fact, they came out of the "hospitals" with a worse constitution than when they went in. It had consequently come to pass that statues had been misunderstood and restored wrongly, and that toes and heads had wandered all over Europe into private collections, losing their original connexion one with another. The subjects of these sculptures were first identified by reference to ancient mythology, as it was then imperfectly known in Rome. There was Pliny's vague and inaccurate but most precious catalogue of the works, and there were the criticisms of Pausanias upon works of art. Some few of the statues, such as the Laocoön, and Niobe and her Children, had been identified with works of which the date and author were given by Pliny. The rest were imperfectly understood and constantly restored with a misconception of the original motive. The best were retained in the Roman galleries; the remainder found their way into foreign galleries, public or private, and it was only since the beginning of the present century that a more scientific archæology had given more correct dates and interpretations to these sculptures by a diligent comparison of what was scattered all over Europe.

A general principle to be deduced from the study of ancient statues in museums with a view to identification was this: if they found replicas or repetitions of the same statue, or slight varieties from it, there was a strong *à priori* presumption that the statue was one of the celebrated and favourite statues in antiquity. Assuming this, search had been made in Pliny and other authors, who gave lists of ancient sculptures, and some of the subjects named by them had been identified in copies still existing. They found in the museums three distinct types of Amazons, of which two were represented in the drawings exhibited,—distinct so as not to suggest affinity between them.

It had been pointed out by Otto Joahn, a German archæologist (whose name deserved to be better known in this country) in a dissertation in a Leipsic periodical, that there were in Europe six examples of one of these types, and five of each of the other two. This was an unusual circumstance,—the constant repetition of the same type in so many different examples,—and at once the archæologist suggested the idea that they were replicas of some celebrated statue, and probably one which was a favourite at Rome. The style to the eye of the archæologist of all these three types of Amazons suggested one particular period, and one only, viz., that of Phidias. Again, the style of all three types presented certain characteristics which they associated with art in the age of Pericles, and further, the treatment was more in accordance with bronze than with marble. Having established this by the evidence of the museums, they must turn to the evidence of books to see whether they could get anything there, and looking to Pliny they found a curious story that statues of Amazons in bronze were dedicated to the Temple of Diana at Ephesus by four celebrated artists, Phidias, Polykletos, Cresilas, and Phradmon. These artists were severally invited to choose which of the works thus dedicated they ranked near to their own. We further learnt from Pliny that one of them, Cresilas, made a statue of a wounded Amazon, and of these three types two did represent wounded Amazons. In regard to the story told by Pliny, the method adopted would make artists very fair judges of each other's works. It was a curious fact that the late Prof. Cockerell, in giving evidence before a Fine Art Committee of the House of Commons, quoted this anecdote of Pliny, and recommended this actual mode of choosing, which was tried at the late Paris Exhibition. Many German archæologists thought it was an invention of a later age, but we had not only the positive competition, in the case of dramatic representations at Athens in the time of Pericles, and of poetic contests, but the distinct testimony of the practice of competition in works of art at the very time with which he (Mr. Newton) was now dealing, viz., the age of Pericles, and that was of a statue which had recently been found at Olympia. We learnt from Lucian that Phidias made an Amazon leaning on a spear. Such were the grounds which archæologists generally considered sufficient to justify them in connecting the originals of these three types with the story told by Pliny; but it would not be safe to appropriate any one type to a particular artist. He regretted that the British Museum had not one of these Amazons, but it happened that in the Townley Collection there was a head which undoubtedly belonged to one. He could not say, however, without a great deal of study, to which type it belonged. Whenever they saw

one of these Amazons at any of the European art galleries, they should ask themselves whether it was worthy of the age of Phidias. Let them carefully examine the dress. In the illustration exhibited, the action of the upraised hand of the Amazon had, no doubt, something to do with the severe wound she had received, but the question was a surgical one. In regard to "The Dying Gladiator," Sir Charles Bell pointed out that the action of the man leaning forward upon his arms was the action of a man whose lungs were being flooded with blood, and trying to breathe; so there might be some connexion of the upraised hand of the wounded Amazon in a similar manner.

As regarded the general type of these Amazons, he regretted to say that the drawings from the original statues from which they were taken were very much clumsier than he could wish. In placing these statues as of the time of Phidias, there were examples of how the artist tried to promote the female form, as it were, to a higher degree, and they would find that that was characteristic of the art of Phidias, who had tried to make his works as grand, as heroic, and as unsusceptible of the frailties of the sex as he could consistently with nature. This was of very great interest, because in this great age of creative art of the time of Phidias and Polykletos this type of Amazons was first conceived and brought to its maturity. In that maturity it remained certainly for another century. The lecturer then proceeded to point out two drawings from the frieze of the Mausoleum, exhibiting Amazons in violent action and with the same type; the difference being that of costume, and the fact that they had never been subjected to any restoration. In these figures, he said, there was extraordinary heroic beauty, and in the representation before them, depicting a deep, and, perhaps, deadly, wound, there was no more expression of pain in the face than was necessary, considering the wound, and they were truly worthy of the age of Phidias. They marked a great ethical period of art, when there was the feeling that heroism was everything. Then art, becoming emotional, lost its dignity. Mr. Newton then referred to another type of wounded Amazon in the Vienna Museum, of singular beauty, which, he said, appeared to be far earlier than the others. There was no reason to suppose it was a copy of any work. Turning from Amazons in action to Amazons in repose, there was one representation in the British Museum, on a Roman sarcophagus, of a row of Amazons resting after a battle, their shields by their side. He regretted he could not refer to the original of this, because it had lain in the basement of the British Museum for more than twenty-five years. It formed part of the famous Townley collection, for which the British nation paid 20,000*l.* at the beginning of this century, and it was situated in a place so dark that it could only be seen at this season of the year by the aid of a lantern. Many other interesting sculptures of the Townley collection were similarly placed, and were not shown to the public. There they would remain until the House of Commons, the authorities at the British Museum, or whoever was responsible, — he wished he could tell them,—assigned a proper place for them. We are supposed to be a very practical people, but it appeared to him, looking at things from his own point of view, that there was nothing more unpractical than to buy great collections with the money raised from public taxes, and then to hide them away in holes and corners for an unlimited time, after having once exhibited them and published a list of the works. He would be sorry to have any money dependent upon these sculptures being exhibited this day three, four, or even five years hence, because it appeared that the public were perfectly content to leave their national collections in this scandalous state of neglect. The only people who were not content were foreigners, who asked to see these sculptures, and insisted upon their right, and for whom the Museum lanterns only were put into requisition. In conclusion, Mr. Newton said that he had only two more lectures to deliver, which would exhaust all he knew at present in regard to the Athenian school contemporary with Phidias. He would treat further of Polykletos, who would re-appear as a maker of statues at Athens, and of Myron and other contemporaries of Phidias.

Mr. Reginald Stuart Poole, keeper of the coins and medals at the British Museum, in proposing a vote of thanks, said that in regard to what Mr. Newton had stated as to the placing of unique specimens of Greek sculpture in the cellars of the British Museum, the question was one of public importance. He urged the necessity of something being done "to civilise the savage tribes" who were connected with that building, in order that the public might have these specimens of sculpture properly exhibited in the future.

OUR FOOD SUPPLIES.

"Civilised men," says Meredith, "cannot live without cooks;" and whether, in the words of Horace, they seek "feasts Sicilian," or "the simplest fare," these universal providers draw heavily upon certain commodities. In Great Britain our own food supplies have long been insufficient; and though we have raised the acreage of land under crops from 22,052,510 acres in the United Kingdom in 1867 to 24,065,394 in 1878, the deficiency in our home produce must have largely increased, as the population in those years rose from thirty to thirty-four millions. Without considering whether the average crop remains the same, it is tolerably certain that we have had to enlarge our importations of the chief articles of food. Hence, we have nearly doubled our imports of wheat and grain from Russia in fifteen years, and whilst generally the larger consumption of other European countries has not allowed them to enlarge the quantities they send us materially, the United States send us four times as much as she did, and British North America twice as much. Where we imported 23,000,000 cwts. of wheat, wheat meal, flour, and grain yearly, we now import 49,000,000 cwts. In the fifteen years we have trebled our importation of cocoa, whilst coffee has not been materially increased; we have added 50 per cent. to the quantities of currants and raisins; almost doubled those of spirits and of tea, and increased by one-half the wine we bring in. We used to import one million cwts. of bacon and hams, but the rich stores of what Chicago calls "corn incarnate" have chiefly swelled that amount more than fourfold. We have doubled the imports of cheese, of eggs, of oranges; where we bought abroad 1,474 cwts. of preserved meat, we now buy 439,900 cwts.; and we buy now ten times the amount of potatoes we did. In short, from the great prairies, the grazing farms of the colonies, the vast cornfields of the Western States, the tea plantations of India and China, the vineyards of France and Spain, the fruit-gardens of the Mediterranean, the dairies of Denmark and Sweden, the great wheat plains of Russia, and from all the food, fruit, and drink producing districts, we have been compelled to draw enlarged supplies to aid our own productions in feeding our growing population. And though we continue, by reclamation and enclosure, to add to the land under cultivation, and though by emigration we check the natural increase of population, yet our food imports must continue to grow.

But Britain is more than a food-eating country; she is also a food-storing and food-selling one, and hence a part of the imports of food are not for her own consumption, but are for that of the inhabitants of other countries. Allowing for this, the fact remains that Great Britain is of recent years not only drawing more of her food supplies from abroad, but that each of her people, on the average, is consuming more imported food. Taking the quantities of food imported, and dividing them amongst the ascertained population (after deducting the re-exports), there is a continued, but irregular, increase over some years. To take a few instances from the official figures:—In 1864 we retained for home consumption for every individual in the kingdom 3·77 lb. of bacon and hams; but last year we retained for each 12·60 lb.; similarly, the butter retained rose from 3·94 lb. to 5·82 lb.; the cheese, from 3·13 lb. to 6·37 lb.; the potatoes from 2·81 lb. to 28·96 lb.; the raw sugar, from 33·80 lb. to 48·56 lb.; the corn, from 104·26 lb. to 188·29 lb.; and the eggs, from 11·34 to 23·18. Of imported spirits we used to consume 0·21 gallon, we now use 0·31 gallon; and of wine the quantity rose from 0·39 gallon to 0·48 gallon; whilst other articles of comparative luxury in food similarly increased. In a sentence, our wants have grown more rapidly than our own capabilities of supplying them have, and we have necessarily to increase our purchases elsewhere.

Although it does not come within the compass of this paper to deal with the question of our manufactures, it may be broadly stated that we have now increased competition in selling these, and therefore it is possible that there will be less transference of capital from agriculture to manufactures. And this is needful, just as it is also needful that our production of food at home should be enlarged. If our manufacturing supremacy is being assailed,—and it is evident that whilst other nations are developing their internal resources we cannot hope to manufacture for them,—if that supremacy is being assailed, and impediments are placed in the way of the entry of our goods into other nations, our policy is to lessen our dependence upon these nations by increasing our food productions. If our land were fully occupied this need be less urged, but it is notorious that there are hundreds of thousands of acres untilled and unutilised; and that a not inconsiderable portion of the land under cultivation is far from returning that amount of the "kindly fruits of the earth" that it would do if the proper amount of capital and labour were "put into the land." More than half a century ago Cobbett pointed out in nervous sentences how the land might be made to yield more; and much nearer our own time Miss Martineau has told how her "miniature farming,"—by "fork and spade husbandry"—paid her, and "created a subsistence for a labourer and his wife." Not only in this miniature method, but as Mr. Mechi has shown on a larger scale, may farming with modern appliances be made profitable. We need not discuss the land question proper, nor the need of readier and cheaper methods of transfer; but it may be added that even where the condition of the tenant as such is satisfactory, the land is often not made to yield what it should, and incidental aids to profitable farming are not brought into use. We have not the labour-saving cheese-factories that America knows; our farmers do not unite to purchase or hire the best instruments, where these are costly; our farming villages are not homes of the myriads of poultry that they are in Prussia and Poland; and the labourers' children here idle their time when their fellows in Norway and Sweden are using theirs to add to the food supplies from the wild fruits that here "waste their sweetness on the desert air." Our farmers need to endeavour to meet the increased competition they have to meet in the method some of our own manufacturers have done,—cheapening the cost of production by enlarging the yield from a given area. If this were done, if farmers would unite to form farming societies, as mechanics form building societies, and, if the waste land were tilled, we should have employment for many of the unemployed, and our yield of food being increased, our dependence upon other nations for our food-supplies would be materially lessened.

TOWN GARDENING.

"You must know, sir," says Addison, in a pleasant essay in the *Spectator*, "that I look upon the pleasure which we take in a garden as one of the most innocent delights in human life. It is naturally apt to fill the mind with calmness and tranquillity, and to lay all its turbulent passions at rest." But the pleasure of a garden is popularly supposed only to be enjoyed by those who are fortunate enough to live in the country; yet, if calmness and tranquillity are, as Addison says, some of the characteristics of the gardener, the cultivation of plants should engage most of all those whose lot it is to live in large towns; and it is only in towns, after all, that flowers are prized at their real worth. A posy of quiet ox-eyed daisies, which the children from the village school will hardly care to pick, becomes a real pleasure in the town, and a bunch of primroses in the early spring is worth a dozen camellias.

Thus it seems somewhat curious that those who live in London and the large provincial towns do not give more attention to the cultivation of flowers than they do at present. There can be no question, indeed, that in this respect London is far ahead of Liverpool and the great towns of the North. But even in London there are scores of gardens, and dozens of windows and balconies, where flowers might be grown and afford "one of the most innocent delights in human life," which are still quite neglected.

But town-gardening has for all classes three clear divisions. There is first the cultivation of plants inside the house; then there is window gardening simply outside the house; and finally, there is gardening on a larger scale,—the grow-

ing of plants in a garden. The two first kinds are within the reach of almost the poorest householder or lodger in a town, of any artisan or clerk who can muster a few pence now and then for the purchase of plants or seeds; but the last is only attainable by those who have some of those spare pieces of desolate ground, euphemistically called gardens, but which with care may be made gay and charming, not only in the middle of the summer, but even in the spring and autumn. And though the town horticulturist has difficulties to contend with from which his country brother is wholly free, yet these difficulties bring with them very counterbalancing advantages. When a plant has to be cherished and tended, when its growth is watched from day to day in a manner which is quite impossible in a good-sized country garden, it becomes a thing of real worth, and as it dies down when the autumn approaches its loss causes quite a void among the gardener's friends. When a bright green shoot of chrysanthemum is broken by a ruthless nocturnal battle of cats, or when one of these enemies of the town-gardener roots up an iris just about to flower, it is quite a misfortune for him. But gardening in town is an amusement not only innocent, but at once healthy and absorbing. Any one who has tended a town-garden during the present year must have undergone a vast amount of exercise of a small kind in the extirpation of the hydra-like growth of weeds which have characterised the past summer. And this recalls another pleasure which the town-garden gives,—the owner of it should be his own gardener, except it may be when some more than usually extensive operation has to be performed, as the digging over and manuring of the beds. For, first of all, it makes him the father of the garden; each plant is nourished with his individual care; and next, it is hardly possible to get a decent jobbing gardener. They are either idiotically stupid or crassly careless; they have no care for the most precious plants, and they will crop the ivied-wall, standing without compunction on your budding lilies of the valley or tiny auriculas. Really it would be a positive boon if a few honest, careful, jobbing gardeners could be procured in London at a reasonable cost. Why should not women undertake this work, which is never very heavy? Moreover, another reason why town-gardening should be encouraged is because both boxes and gardens add so much to the picturesqueness of a street or square; they give a brightness to the otherwise gloomy fronts that characterise English towns which nothing else can give, they please the eye and are attractions for passers by as well as to the possessors themselves.

And while we are on the subject of window-boxes, we should like to protest against the prevalent fashion of having them encased in gaudy tiles covered oftentimes with all sorts of patterns, usually more or less ugly. The flowers are meant to adorn the boxes,—not as the box-makers seem to think, the boxes the flowers. Plain cork or bark are really the most suitable coverings for a box, though dark brown tiles set off well the hanging sprays of the red nasturtium or the long and drooping feelers of the bright and ever-welcome Creeping Jenny.

It was not our intention here to go minutely into the details of town-gardening, but only to state some of the most obvious reasons why dwellers in houses should give some of their spare time to this pleasant pursuit. But before quitting the subject, it may be well to observe that care is the chief element necessary to obtain a satisfactory town-garden,—a little care in the selection of the plants; a great deal of care in the tending and cultivation of them. Neither is it any use to try to raise delicate or curious plants, the most old-fashioned and the most home-like will ultimately give most pleasure. Ferns should be made the *pièces de résistance* of the town garden and boxes; their graceful fronds will, with comparatively little attention, flourish year by year. Put them into any spare corner, under bushes, among stones, and throughout the summer they will form a delightful back-ground for the brighter flowers. Auriculas, again, as pretty a little flower for spring and early summer as can be wished for, do well in towns; and as for the musk of one's childhood, it will grow like a weed in London. Indeed, it gives a great deal of trouble when it has once made itself a home in a bed. Then very bright borders may be made of the pyrethrum; in many cases it will be as satisfactory a second as a first year, but on the whole it is better to plant it fresh every year. The purple and the white iris are each indispensable, and require little attention. Then it is possible to have excellent specimens of carnations, and both stocks and Canterbury bells add much to the prettiness of the town-garden. In window-boxes do not hesitate to clean with a syringe the fronds of ferns and the leaves of plants: it will invigorate them not a little; but we have gone already more into details than we intended, and can only reiterate that town-gardening is no small pleasure to the gardener and to those who see his flowers.

GLEANINGS FROM THE GRAVESTONES OF THE ISLE OF MAN.

The churches of the Isle of Man are singularly like one another, but it is the harmony of monotony, and not of beauty or stateliness, which characterises them, one and all. For the most part they are plain stone buildings generally whitewashed, without a tower or steeple, with only a plain and small turret or projection above the western wall for a small and strikingly unmusical bell. As a more energetic ecclesiastical rule begins to produce its effect, so will this plain appearance of the Manx churches undoubtedly disappear. Already the stone has been laid of a new church in Peel which will have all the appearance of the modern English church, and in the town of Douglas the quaint old church which still stands in the country parishes has for some time disappeared; and with the departure of these simple buildings will depart another characteristic feature in the Isle of Man,—a feature which told of an isolation from the mainland and a certain insularity of ideas in things ecclesiastical as well as lay. Taken by itself, one of these buildings is wholly without beauty, but, taken with the others of the island, and with its surroundings, it helps to give a certain character to the place, and, say what we will, anything characteristic has a certain charm. For these plain churches harmonise well with the unwooded and somewhat bare landscape; the desolate summits of Barule and Snaefell; the changing ocean, with its breadth and absence of detail, now sparkling in blue white-crested waves, now murmuring angrily under the lowering clouds. The graveyards, too, are equally in keeping with the buildings which they surround. For the most part they are filled with sombre tombs of black and unpolished marble, rising in perpendicular slabs, the produce of Poolvash or some other quarry. These, too, speak not only of an unadorned religious service, but likewise of a certain stolid perseverance and resignation among "the forefathers of the hamlet" and of their descendants.

And it might be supposed that on these sad-looking tombstones very characteristic inscriptions might be found. Feltham, who made a tour of the Island of Man in 1798, took down every inscription of every churchyard, and these were, for the first time, published in the fourteenth volume of the Manx Society's publications, under the title of "Memorials of God's Acre, being Monumental Inscriptions in the Isle of Man, taken in the Summer of 1797, by John Feltham and Edward Wright."

But, on the whole, there is less of quaintness among these inscriptions than would have been supposed, though they may well occupy a passing hour, and, as such, an example or two may interest the readers of this paper.

The first we will notice, one in Kirk Michael, is that of a man who has a universal celebrity in the religious history of England, namely Bishop Wilson, who died in 1755, and was known for his piety throughout Great Britain. The epitaph is what may be termed of the suggestive kind, and might be worth the notice of those who would rather have the qualities of the deceased traced with a pleasant vagueness. After reciting the dates and several details, it proceeds:—"This monument was erected by his son, Thomas Wilson, D.D., a native of the parish, who, in obedience to the express commands of his worthy father, declines giving him the character he so justly deserved. Let this island speak the rest."

In such a spot as the Isle of Man, where mariners and fishermen have a home, and where Sunday by Sunday a prayer is offered for those "toiling on the sea," and that the harvest of the sea may be bountiful, we should be certain to meet with some inscription dictated by the surrounding scenes and by the seafaring habits of the population. Perhaps the most characteristic of these which we have met with is one of a certain captain, William Harrison, who died in 1760. It combines what may be termed biography with a seamanlike assurance of ultimate salvation, and runs thus:—

> "The boisterous blasts of Neptune's waves
> Have toss'd me to and fro:
> In spite of both, by God's decrees,
> I harbour here below.
> Altho' I here at anchor lie,
> With many of our fleet,
> I must one day set sail again,
> Our Savour Christ to meet."

Passing onward to the north of the island to the parish of Marown, we find a gravestone which takes us back to quite a by-gone state of manners, and to quite a different estimation of the clerical character, a time in which society as depicted by the lively pen of Fielding was much the same as when this great novelist wrote his novels a few years earlier. For we find an inscription of the year 1779, of the "Rev. John Christian, of Balnekilley, vicar of this parish twenty-six years, buried September 29th."

> "In wit facetious, humorous to his end,
> A good companion and a steady friend."

Such was one of the Manx clergymen of the eighteenth century, and a pleasant fellow he must have been if his epitaph describes him aright. We will take only two more: one noticeable for the play on a Manx surname still common in the island, and another descriptive also, like the second already mentioned, of the seafaring habits of the population.

The epitaph facetious is in Kirk Santon, on the eastern coast of the island, and is in honour of one Daniel Tear:—

> "Here, friend, is little Daniel's tomb,
> To Joseph's years he did arrive;
> Sloth killing thousands in their bloom,
> While labour kept poor Dan alive.
> How strange, yet true, full seventy years
> Was his wife happy—in her Tears."

When we add that there is every reason to believe that this man was aged 110 when he died, and had lived part of his life as a vagrant, this epitath is a monument to the healthiness of the Isle of Man and of a wandering life.

We now reach the last of our selection, which is at once simple and suggestive. The epitaph is on the tomb of one James Cotter, who perished at sea on October the 20th, 1789, and was buried in the following month:—

> "God sent a wave to set him free
> From sorrow, sin, and misery."

This is in the graveyard of Kirk Christ at Rushen, a church within sight of the sea, and close to some of the finest coast scenery of this boldly-outlined island. On many Sundays in the year it is thronged by the hardy fishermen of Port St. Mary and from the surrounding cottages, unless they are away for their winter cod-fishing on the Irish coast, or fishing for mackerel in the spring off Kinsale; and no winter passes without some one of their number being lost when engaged in their dangerous toil. So that this inscription would fitly be found on the tomb of many who pass it by.

St. Mark's, Venice.—A meeting was held in the Sheldonian Theatre, Oxford, on the 15th inst., for the purpose of considering the expediency of communicating with the Italian Minister of Public Works on the subject of the proposed restoration of the façade of St. Mark's, Venice. The following resolutions were unanimously passed:—Moved by Mr. Street, R.A., and seconded by Mr. Burne-Jones, "That this meeting, believing that the façade of St. Mark's Church is structurally in a sound condition, and that its surface is at present both beautiful and venerable, thinks that any alteration in its appearance would be a misfortune to art." Moved by Dr. Acland and seconded by Mr. Morris, "That this meeting wishes respectfully to represent to the Italian Government the keen and heartfelt interest that all civilised nations take in the art and history of Venice, and pleads earnestly with them for at least time to consider the question in all its bearings, and to obtain, if possible, the co-operation of other countries." Moved by Professor Richmond and seconded by Dr. Acland, "That these resolutions be respectfully tendered to the Italian Government." The chairman said that a memorial would be drawn up and laid before the members of the University generally for their signature.

THE FLOODINGS AT BRIXTON AND STOCKWELL.

NEW SEWER WORKS DECIDED UPON.

The Lambeth Vestry have at length decided upon the construction of new sewer works in the Brixton-road, at an estimated cost of 4,000*l*., with the view of preventing a repetition of the flooding which has done so much damage in the neighbourhood during the last few years. At the last meeting of the vestry the serious statement was made that, according to information collected by actual examination and inquiry, out of 1,400 houses in the neighbourhood of the White Horse, Brixton, there were 600 liable to flooding, and that it was absolutely necessary that no time should be lost in carrying out the proposed sewerage works, which it was expected would prevent the continuance of the mischief which now occurred. The General Purposes Committee recommended the Vestry, on the advice of the surveyor, to use the old line of the Effra sewer as a storm overflow, and so relieve the high-level sewer at the White Horse. That would necessitate the construction of a sewer in Brixton-road, for the drainage of the locality, from Kennington Church to the White Horse, a distance of 4,000 ft. A portion of the proposed sewer would be 3 ft. 9 in. by 2 ft. 6 in., and another portion 3 ft. by 2 ft., the cost being 4,000*l*. In the course of a discussion which took place on the subject, Mr. R. Taylor (the representative of the Vestry at the Metropolitan Board of Works) said it would be of no use to think of going to the Metropolitan Board for assistance, as it was a local sewer. He added that the Metropolitan Board would have to lay out some 700,000*l*. for such public works, and out of that 70,000*l*. would have to be expended at once. It was agreed to proceed at once with the construction of the new sewer as recommended.

BUILDING ON THE SITE OF THE QUEEN'S BENCH PRISON.

We are given to understand that building operations will now very shortly be commenced on the site of the old Queen's Bench prison, and that a few weeks will suffice to see workmen engaged in demolishing the old building, preparatory to new structures being erected on the site. It appears that Mr. Hobbs, of Croydon, who is largely engaged in building, and also an extensive contractor in connexion with public works, is the gentleman who has purchased the building from the Government, and the purchase-money is stated to be upwards of 25,000*l*. It is further stated that the intention is not to erect dwellings exclusively, but that portions of the site will be laid out and set apart for the erection of manufactories and warehouses. The St. George-the-Martyr Vestry was exceedingly anxious to purchase the site for the erection of baths and washhouses, and other buildings of a public character in connexion with the parish, but on their wishing to enter into negotiations with the Government for this purpose, they felt much disappointment on being informed that the building and site had already been disposed of.

THE NEW GRAND DUCAL COURT THEATRE AT DARMSTADT.

On the 19th of October the new Court Theatre of the Grand Duke of Hesse was opened at Darmstadt with a performance of Weber's "Jubilee Overture" and Wagner's "Lohengrin." It is eight years since the old theatre fell a prey to the flames, having been burnt down on the 24th of October, 1871. When that calamity happened, it was resolved at once to re-erect another edifice, and among the plans sent in was one by the late celebrated architect of the Dresden Court Theatre, Dr. Semper. This, however, was found to have been drawn up on a scale of magnificence too vast and costly for the prim little capital of the Hessian duchy; and another plan, submitted by Herr Horst, who was afterwards assisted by Herr Müller, was ultimately adopted. The fact that the Hessian Government have expended no less a sum than 1,000,000 gulden, or about 85,000*l*., on the restoration of its theatre at Darmstadt, prepares us to find that the work has been very completely done; and this is, indeed, the case. It was not before the year 1876 that the work of erection was taken in hand. The new house is built on the foundations of the old one, which itself was a very convenient and elegant temple of the Muses erected by the architect Möller in the Antique style in the year 1819. It is almost only at the back part, behind the stage, that the new house has been extended beyond the dimensions of the old one, the only other addition being the covered entrances for carriages on each side of the building. It differs from the former house in another way, by the possession of considerably greater internal conveniences, satisfying everything that can be required for the production of the most elaborate musical and dramatic works on the stage. Among other things the reconstructed building enables the decorations to be drawn up whole and unbroken, which was not the case in the old house. On the exterior of the building, the portico, with its six fluted Corinthian columns, which came out of the conflagration of 1871 intact, have been adopted in the present structure, and, as in the former house, forms one of its chief ornaments. The auditorium, though of equal size with the old one, has been constructed to accommodate a smaller number of spectators, but provides better for their comfort. The internal ornamentation, which is in the modern Renaissance style, the parapets in white with gold, the groundwork of imitated gold brocade, has been executed by Volk, of Mayence, who has also supplied a fine drop-scene. The ceiling was painted by Herr Schabershut, of Dresden. The Court-box and retiring-rooms have been fitted up in a style of solid elegance, qualities which likewise distinguish the furniture of the auditorium generally, while all modern improvements have been adopted in the heating and ventilating apparatus. The stage has been constructed and fitted up according to the plans and under the superintendence of the noted German stage architect, Karl Brandt. All the novelties and improvements which he had originally introduced into the stage of Wagner's celebrated theatre at Bayreuth have been adopted at Darmstadt, including a deeper position for the orchestra. The lighted breadth of the proscenium is 11½ metres, and can be enlarged or narrowed at pleasure. The breadth of the stage from wall to wall is 23 mètres, the depth 20 mètres. The free height from the podium to the first covering is 24 mètres, and the depth below down to the base timbers, 7 mètres. Behind the main stage is a back stage of corresponding dimensions, occupied by a large movable podium, which, when occupied by decorations and actors, can be easily pushed forward by machinery over the front stage into any position desired. The machinery underneath the stage is in three stories. The machinery above has on both sides five galleries, mutually connected by eighteen bridges or gangways. The stage is divided in seven sections, arranged in perspective, each section having an incline of 10½ metres, three free passages, and trap-door. On the evening of the opening, the new house was crowded to the ceiling, and the performance showed the acoustical qualities to be excellent.

THE BRIDGING OF THE NEVA.

When Peter the Great selected as the site for his new capital a marsh dotted with a few islands, he did not foresee the difficulties that would arise should the town grow in size and spread from island to island. Bridges of boats are at best but a clumsy means of communication, while at St. Petersburg they were at times altogether ineffective. When the ice blocks float down the Neva in the autumn, and the snow melts in the summer, these bridges are carried away if not removed in time. All communication between the city and the suburban districts is therefore rendered altogether impossible for the time being. Thus the island or quarter of Wassili-Ostrow, where, by order of the Czar, many important edifices have been raised, used to be as completely separated from the other portions of the capital for a few weeks each year as if it had been a thousand miles away. The first permanent bridge which put an end to this state of affairs was constructed in the reign of the Emperor Nicholas, and contributed greatly to the increasing prosperity of what a Londoner might call, by comparison, the Surrey side. Nevertheless, this solitary bridge could not in itself suffice; for there was another quarter, the Vibourg district, of equal importance, which remained unconnected with the centre. But if the necessity was urgent, the difficulties were great. There were natural obstacles which no ordinary effort could surmount. The services of the celebrated engineer, M. de Struve, were sought, and during four long years, engineers, architects, and the boldest and strongest workmen have attempted to cope with the formidable Neva. Finally these efforts have terminated successfully, and within the last few days the Emperor Alexander has inaugurated the new permanent and solid bridge of Liteinaia. This was considered a great event, and will be productive of many material advantages, in spite of the enormous cost, which is estimated at five million roubles, to be paid half by the town and half by the State.

BUILDING AND COMMERCIAL DECADENCE.

Mr. B. H. Thwaite, of Bolton, read a paper before the Manchester Architectural Association, entitled "Commercial Decadence, and its Relation to Architecture."

After remarking that commercial progress is synonymous with that of art, he traced the influence of commerce on the art of the Egyptians, Phœnicians, Assyrians, Greeks, Etruscans, Romans, Venetians, and on the architecture of the Victorian era, pointing out that the luxury evinced in their architecture at certain epochs in their history was a sure evidence of commercial decadence. He concluded:—

One description of the rampant speculation common to the era of prosperity was the almost criminal form of construction known as "Jerry" or speculative building. We have laws for preventing adulteration of food. Why not have laws to prevent the erection of a class of buildings for habitation in every respect a sham?—often, from the builder's ignorance of hygiene, more injurious to health than some forms of adulteration. Besides, the buildings are a standing and permanent evil. A great many of these adventurous builders have succumbed to the prevalent oppression. We have no pity for them; they have committed a great injury against their fellow-men. Unfortunately, these sham buildings have in many instances depreciated the value of those truthful in construction, and healthy. The only way to prevent the construction of these buildings is by the exposure of their false character.

One reason of the prosperity of the Americans is their wonderful ingenuity; they have every encouragement to invent. Here, on the contrary, inventors have no encouragement. Let architects encourage inventors in every possible way by applying improvements relating to building. Of course, the choice of improvements should be influenced by a strict examination of the principles of the inventions. Architects themselves, by applying themselves to the science of invention, might introduce labour-saving machinery, so that even the Jerry builders should not eclipse a qualified architect in cheap construction.

Another point to consider is the only too-prevalent neglect of architects to apply sanitary improvements. Let architects first apply the science of construction; secondly, the science of hygiene. The intelligent public would then see at once the difference between Jerry and scientific construction. If the public, instead of venturing to purchase property after a personal examination, would ask for an architect's certificate of character of the property, the Jerry builder would soon be an extinct animal. At present, he occasionally succeeds in a wonderful manner, and after a few fortunate speculations, he dubs himself architect, and obtains a brass plate. How long have architects to suffer from the impunity and criminal actions of these quacks? A legal charter, granting privileges to duly qualified architects similar to those granted to the medical and legal professions, is all that is required. The present architectural examinations, except for personal satisfaction, bring no exceptional privileges.

The number of architects (save the mark!) augmented as described has created a great disproportion to the actual necessities, as will be seen on examining the number of applicants for any public appointment lately vacant. An examination, enforced by legal authority, would certainly reduce the number to a more reasonable ratio. The present luxury so prevalent in this country has at last influenced architectural adornment. Within the last four years structures of all descriptions have been built, and many evince in their external decoration a luxuriousness equal to the architecture of the

voluptuous Venetians. If art loses her chastity degeneration destroys her. Even the style of architecture now most generally adopted,—the Queen Anne,—evinces that effeminacy which is slowly but surely destroying our character as a bold, persevering, industrious, and hard-working nation. In some branches of architecture,—for instance, the decorative art,—we have greatly improved during the last few years, and the improvement has been truthful. Almost all the British productions allied to architecture which were exhibited at the Paris Exhibition were unsurpassed in ingenuity, originality, and beauty of design. If those architects who have shown such talent in decoration would extend their ability to improving textile and fancy goods designs, they would no doubt resuscitate many of the slowly-expiring branches of British trade. The Bradford fancy goods trade, for example, is suffering from French competition. The textile material of the Bradford manufacturer is superior to the French article. But the delicacy and beauty of the French designs seduce the fair purchasers. The proper adornment of a utilitarian subject need not be expensive if the adornment be true to its purpose. The labour of working stone for ornamental purposes is immense, and, therefore, costly. But architects have a medium in terra-cotta for external decoration, which is nearly equal in beauty to stone, far more durable, and less expensive. We must not forget that our country has entered upon a new and severe ordeal, a battle of commerce against America, Belgium, Switzerland, Russia, Germany, Hungary, and even India, and it behoves all true patriots to help her by indomitable energy, ingenuity, industry, sobriety, and economy to pass safely through the ordeal. By excellence, purity, beauty, and especially cheapness of workmanship, England may retain her proud position as the first commercial country in the world; but if these moral truths are neglected, her fate will be that of the once glorious Venetian republic.

DO NOT STARVE OUR LADS!

A few lines of explanation appear to me to be requisite in addition to the very interesting article on school-planning in last week's *Builder*.

What are the arrangements contemplated for that important item of education, the boys' dinner?

Prayer at nine, and class from that time till twelve, with ten minutes' break. Afternoon school from half-past twelve till three, with a short interval. Then prayer, and exit. Are the boys to fast all this time?

It may, perhaps, be suggested that they may take some hasty refreshment in the half-hour from twelve to half-past twelve. But surely the absence of a regular mid-day meal is a thing wholly inconsistent with a proper regard to the health of a growing boy. Brain-work,—if it be work, and not mere dawdling in a class-room,—is nearly as provocative of hunger, and certainly makes as great a demand for nutriment, as does the exercise of the playground. Then the journey of the boys to the school, often effected by railway, is another demand on the physique. Unless at least one regular meal interpose in the six hours passed within the walls, the educational power of the establishment will be to a great extent wasted, owing to its application at a time when the physical state of the boys is not best suited to respond to the call on their mental energies.

It may, of course, be possible to accustom boys to six hours of comparative fasting, and even to make the majority of them feel comfortable under the *regimen*. But that is hardly the way in which to regard the question. First, the finer nervous systems, belonging often to those who will best repay the cost of tuition, will suffer the most. A means of equalising the most capable and least capable lads, which may be very republican, but, at the same time, very wasteful of the national intellectual material, will be thus adopted. Secondly, taking the reduced level all round, it will be considerably lower than that which might be attained by a due attention to physical education.

As to the breaks in the course, and the enforced aëration of both the lungs of the boys and the class-room, its value can hardly be overestimated. One example of the utility of such a course is to be found at the Royal Military Academy at Woolwich. There, at different hours during the day, the cadets fall into line in the open air before proceeding to some new duty. The increase in bulk and strength that may be noted, term after term, is no doubt very closely dependent on this bit of wise tyranny.

In a book which has been more than once referred to in your columns,—Dr. Roberts's "Manual of Anthropometry,"—it is stated that the average increases in weight of public school boys, naval and military cadets, and medical and university students, from thirteen to eighteen years of age, are respectively 8 lb., 10 lb., 12 lb., 16 lb., and 14 lb. In boys of the artisan class, and of the town population, the corresponding increases of weight are 4 lb., 6 lb., 10 lb., 12 lb., and 10 lb. Is it possible to add anything to the mute eloquence of such a statistical fact?

In the former case there is a stimulus to hunger given by intellectual work. But, at the same time, there is good food, and, for the most part, good air. In the City of London School the stimulus is to be provided. But, unless the food be also provided,—and that at the time when nature most demands it,—we get a pull upon the tissues instead of upon the digestion. It will tell on the weight of the boys. Weight, no doubt, is not everything. But, in a case of this kind, increase of weight is a matter of more importance to the completeness of the future man than accumulation of marks in the class-book; and if, in the interest of obtaining the latter as rapidly as possible, the former be neglected, we are breeding under-sized and under-constitutioned boys.

It is very possible that this has been duly attended to in the regulations of the school, but it is not mentioned in your article. Nor does it appear at what times, or under what regulations, the dining-room for 200 boys is to be used. The bill of fare as to Latin, arithmetic, algebra, Euclid, French, German, and natural sciences, is enough to make those of us who are no longer boys look with something like envy on what is now being provided for the rising generation. But as far as our common mother, old England, is concerned, if she had to choose between 1,000 boys of sixteen who had made fair advance in that *curriculum*, and who averaged 62·93 in. in height, 28·97 in. in chest girth, and 106 pounds in weight, and another 1,000 boys of the same age, who averaged 66·40 in. in height, 33·08 in. in chest girth, and 128·3 pounds in weight,—how much education of the brain would she consider to make up for such a deficiency in the physique? Not that the two need be put in opposition. Quite the contrary. But if boys are to fast,—or to be uncared for as to due feeding,—from the time they leave their homes, at 8 or 8·30 a.m. to that when they return to them, at 4 p.m., or thereabouts, they will only gain some 14 or 16 ounces a month,—if they gain them at all,—at the expense of their constitutions.

Pray say a word in all questions of school-planning as to supplying food, as well as air, to the growing fathers of the future of England.

F.

VIEW ON THE PEGNITZ, NUREMBERG.

One of the daily newspapers not long ago, in a leading article, seriously contemplated the prospect of England's becoming, at some future period, entirely urban, and ceasing to be rural. Now it can scarcely be supposed that the *Builder* objects to building, yet we confess that a feeling almost akin to horror came over us when we read this very singular article, and we were led to a most sincere hope that when this event does take place, house-building will be better understood, both from an artistic and sanitary point of view, than it is at present; otherwise, we are afraid that when this delightful state of things does come about, the difficulties of over-population will be solved by some frightful epidemic, which will sweep off about nine-tenths of the people, and those who are left will be driven mad by the appalling ugliness which will surround them on all sides. When we look at the closely-built streets, houses without a scrap of garden attached to them, badly built, ill designed, and inconveniently planned, sanitary arrangements badly understood, or carried out in so slovenly a manner as to be more hurtful than beneficial to health,—which are, we are sorry to say, distinguishing features of many of the newly-built suburbs of London,—we cannot help expressing our astonishment that such an enormous experience of the wants of modern householders should have resulted in producing a state of things so thoroughly the reverse of satisfactory. It is a painful fact to have to acknowledge that, although we have sacrificed everything like picturesqueness in the planning and building of our towns; although we have sacrificed architectural beauty in our dwellings, for the sake of convenience; although we have expended vast sums of money upon all kinds of sanitary inventions and systems,—we have not improved, in any material degree, the real comfort of our dwelling-houses.

One of the principal excuses for the destruction and reconstruction of our ancient towns has always been the sanitary question. It has always been advanced that the health of the inhabitants required that old streets should be straightened, and the old houses rebuilt upon a modern plan; any expostulation on the score of picturesqueness or beauty has been treated with the utmost contempt, and has been met with the argument that picturesqueness and beauty must give way before sanitary necessities. Thus, all picturesqueness and beauty are swept away, but not always with the good result expected in the other direction. Fortunately, however, for the artist and the lover of the picturesque, the towns in some parts of the Continent still abound in picturesque old buildings, some of which, like those shown in the view we illustrate on the "Pegnitz at Nuremberg," possess little or no architectural detail, and might be the work of almost any period during the Middle Ages. Yet, although devoid of the higher qualities of architecture, they are singularly pleasing, and answer their purpose in an excellent manner; they are, moreover, very instructive to the student of architecture, because they serve to show that effective buildings may be erected without detail and entirely devoid of ornament.

It is commonly said that modern buildings fail to produce the effect which their builders had pictured to themselves on account of their cheapness. We doubt much whether a Mediæval builder would have considered scarcity of funds a sufficient excuse for the production of an inartistic building; in fact, some of the most picturesque works during the Middle Ages owe that picturequeness to the very difficulties brought about by the diminution of funds. Those who recollect the old capping of the tower of St. Maclou, in Rouen, must, we think, regret that this exceedingly picturesque makeshift has recently been destroyed for the purpose of completing the design as originally intended. Who would for a moment propose the removal of the curious old roofing of the south tower at Antwerp, for the purpose of carrying up another steeple, or who would like to see the old temporary belfry at Gmund replaced by a new tower?

NEW PREMISES, BISHOPSGATE-STREET WITHOUT.

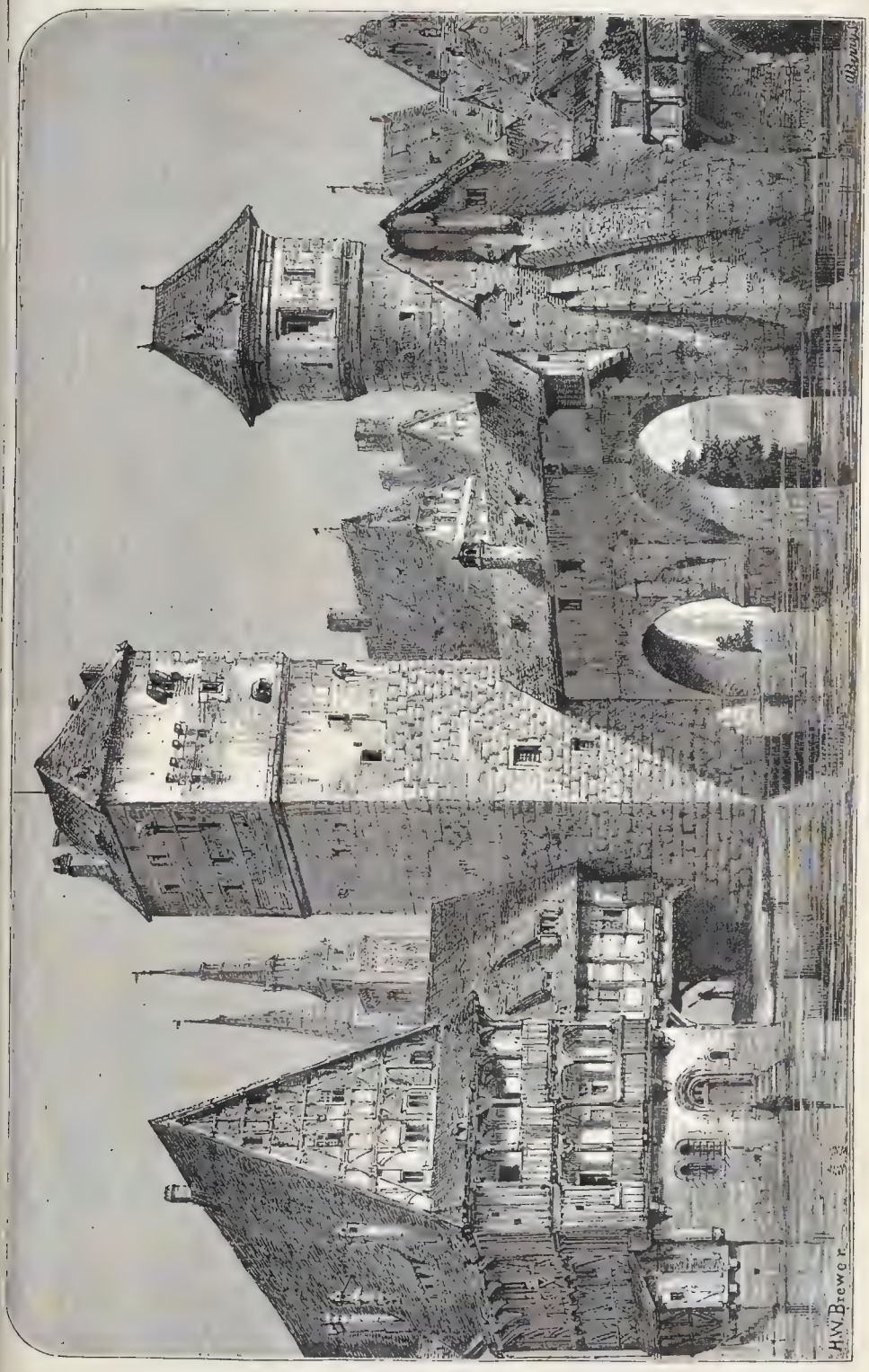
This building has been erected for Messrs. Thomas & Sons, wholesale furniture dealers, whose business has been carried on in Bishopsgate-street since the year 1813. The part rebuilt extends back a distance of 80 ft., with a return frontage to Brushfield-street, providing a floor area of 2,943 ft. The whole of the area is excavated, and forms a spacious and dry basement, well lighted by floor-lights and area windows. The front building contains five floors and the rear one three, all having excellent lights.

Owing to the adjoining property being very old, the work of shoring-up and rebuilding the party-walls was of a very difficult character; but has been successfully managed without damage or loss.

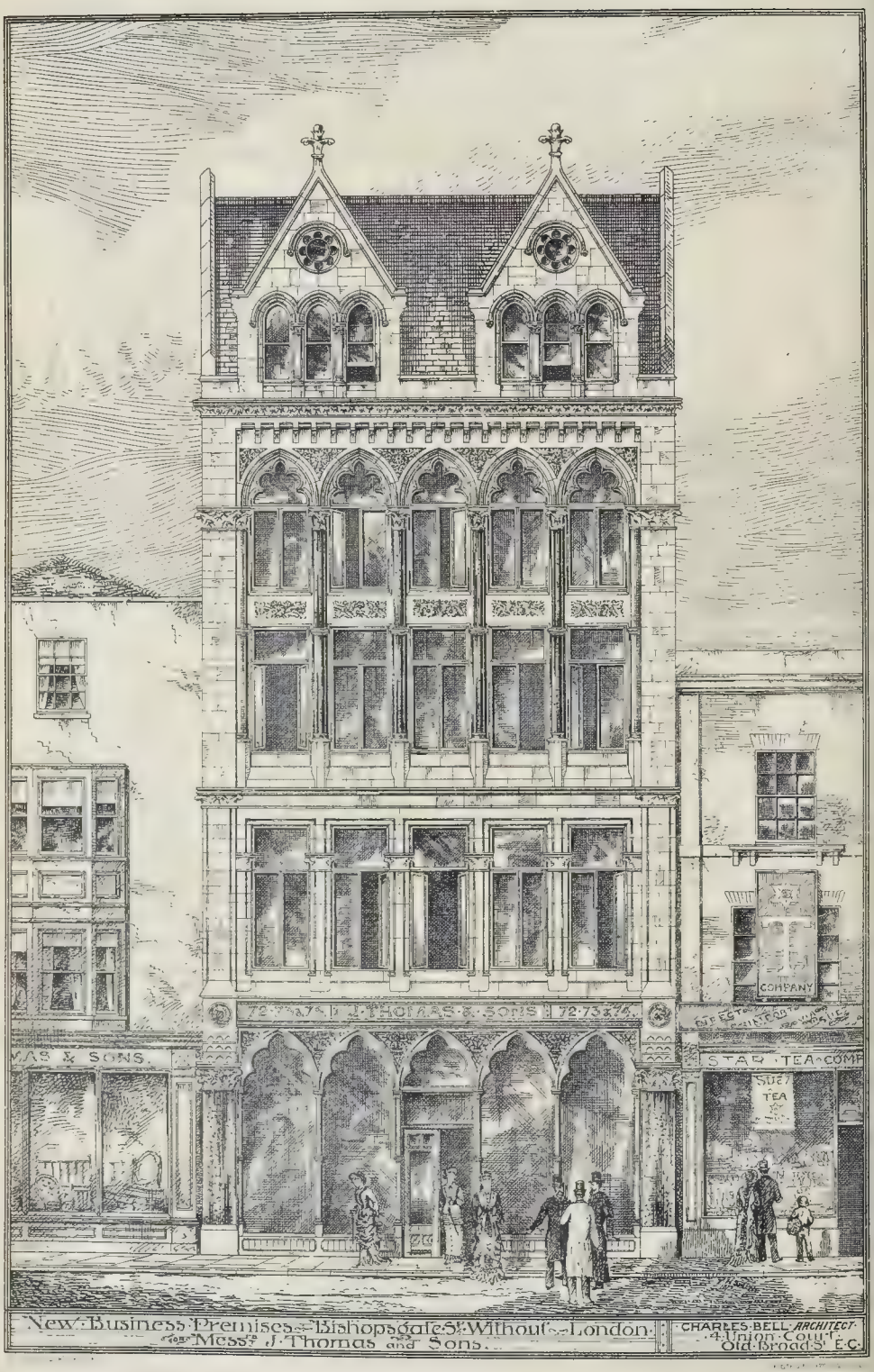
The ground-floor is devoted to show-rooms, in which the various kinds of furniture are displayed in an attractive style. The upper floors are for storing of bedding, &c. A lift communicates from the ground-floor to each floor, specially made for the purpose. The use of iron girders has been so made as to obviate the necessity of hardly any supporting columns, thus giving clear floor-space.

The main front to Bishopsgate-street is all of Portland stone, with Shap granite solid pilasters and columns, and a considerable amount of appropriate carving has been employed, giving a pleasing appearance to the front.

The shop-front is of walnut, with the spandrels of the arcading fitted in with ornamental lead-glazing; all the rest of the windows being of plate-glass. The Brushfield-street front is of brick, with Bath-stone dressings in a simpler Gothic style.



VIEW ON THE PEGNITZ, NUREMBERG.



New Business Premises—Bishopsgate St. Without—London.
for Messrs J. Thomas and Sons.

CHARLES BELL ARCHITECT
4 Union Court
Old Broad St. E.C.



THE NEW BUILDING NOW BEING ERECTED ON THE SOUTH SIDE OF THE FULHAM ROAD, AS AN EXTENSION OF THE HOSPITAL FOR CONSUMPTION, BROMPTON.
MR T. H. WYATT, ARCHITECT.

The architect is Mr. Charles Bell, of Union-court, Old Broad-street, City; and the contractor, Mr. Woodward, of Wilson-street, Finsbury, by whom the work has been carried out to the satisfaction of the architect in the space of six months. The foreman was Mr. Wickes.

MEMORIAL SUN-DIAL, ST. PANCRAS GARDENS.

On the 7th inst. Lady Burdett-Coutts added one more to her innumerable acts of beneficence by formally presenting to the vicar, churchwardens, and vestry of St. Pancras what is termed a memorial sun-dial, standing upwards of 30 ft. in height, and erected at her ladyship's expense—at a cost, it is said, of upwards of 2,000*l*. It is intended to commemorate not only the reclamation of the disused and dilapidated burial-grounds and their conversion into an ornamental garden for the recreation of the public, but also those whose remains were known to be interred in the two ancient burial-grounds of St. Pancras and St. Giles's-in-the-Fields.

The memorial stands in a prominent position in the gardens, near one of the main entrances, within a space corresponding to that of the mausoleum erected for the late Sir John Soane. The vestry of St. Pancras, with the approval of the ratepayers, and the assistance and sympathy of Baroness Burdett-Coutts, the Duke of Norfolk, and others, successfully resisted the attempts of the Midland Railway Company, who had already obtained by an Act part of Old St. Pancras Churchyard, to further encroach upon that as well as the adjoining cemetery of St. Giles's. Lady Burdett-Coutts determined to show her sympathies with the project for utilising the grounds for the recreation of the public, especially the poor of the surrounding neighbourhood, and for the preservation of the names of those eminent persons whose remains had been buried therein, by the erection of a memorial fittingly to record some of those celebrities whose memory should be handed down to posterity.

The superstructure of the memorial, which is in the Early Decorated style, consists mainly of Portland stone, with four marble tablets and clustered granite columns at the angles, bearing a crocketed gablet on each of the four sides, in one of which is the dial. It has been executed from designs by, and under the superintendence of, Mr. George Highton, architect. The tablets are surmounted by reliefs representing St. Pancras and St. Giles, also Night and Morning, by Signor Facigna. Two tablets on the memorial record the names of men of eminence buried in the grounds, including those of Sir John Soane, John Flaxman, John Walker, author of the "Pronouncing Dictionary," Peter Pasqualine, Thomas Mazzinghi, Father O'Leary, several members of the Norfolk family, Sidney Effendi, Turkish Ambassador to this country, Count d'Hervilly, Charles Louis Victor de Broglie, Archbishop Dillon, &c. The basement is in the shape of three narrow terraces leading up to the superstructure of the memorial, and forming flower-beds, with somewhat novel effect. These are of red Mansfield stone, worked at the quarries. The panels of the two upper terrace tiers contain flowers in mosaics; the top one has also panels representing the four seasons, by Messrs. Wills, Euston-road; the bottom tier panels are also in mosaics, the latter executed by Messrs. Simpson & Sons, of St. Martin's-lane. The whole is enclosed by a curb and iron railing with gates, the latter by the St. Pancras Iron Works Company; while the Portland stone work and fixing have been executed by Messrs. Daniel, of Highgate. Within the enclosure, at each of the four angles, is a lion on a pedestal.

St. Margaret's Churchyard, Westminster. An effort is being made, under the auspices of the rector, the Rev. Canon Farrar, to improve the present unsightly appearance of the churchyard adjoining St. Margaret's, Westminster, and Westminster Abbey, which at present is a disgrace to the neighbourhood, being dusty and dirty in summer, and full of pools of stagnant water in the winter on account of its low situation. It is intended, if possible, not only to raise the level of the churchyard, but to surround it with a dwarf wall, recording on its face all the monumental inscriptions that can be deciphered. The cost will fall not far short of 4,000*l*.

HOSPITAL FOR CONSUMPTION, BROMPTON.

NEW BUILDING.

This building, which is now in course of erection, is intended to form an extension of the present well-known Hospital for Consumption and Diseases of the Chest, Brompton. The existing hospital, which was the first institution of the kind erected for the treatment of persons suffering from consumption, has been found of late years to be quite inadequate to meet the demand made upon it, more especially with respect to the admission of in-patients. The committee determined to erect a new additional building, and for this purpose, having received a large legacy, purchased the freehold of a plot of land situated on the south side of Fulham-road, opposite to the old hospital, and occupied by the houses Nos. 193 to 221 (inclusive), Fulham-road; Nos. 16, 17, and 18, Charles-street; together with the stables, in the rear, facing York-mews, the mean dimensions of this plot being about 250 ft. by 115 ft. Communication between the old and new buildings has been provided by means of a tunnel passing underneath the Fulham-road. The new building is intended to be used for the treatment of male in-patients and the reception of out-patients generally, and the old hospital will, when this new extension is completed, be devoted to the treatment of female in-patients.

Owing to the special requirements for the treatment of phthisis, the wards of this hospital are all to be of small size, the largest only containing eight beds,—an arrangement which requires more space, and also entails much greater cost, than the more usual system of large wards. This great amount of space required by the wards, together with the limited area of the site, necessitated the adoption of several stories in the height of the new building, which in shape resembles a letter H, and is arranged in the following manner:—The basement contains steward's and housekeeper's rooms, servants' hall, Turkish bath, compressed-air bath, drug-store and dispensers' rooms, clinical pupils' rooms, larders, and general store-rooms, together with heating-chamber and coal-vaults, these latter being one-storied buildings kept apart from the rest of the hospital.

The eastern portion of the ground-floor is devoted to the out-patients' department, and contains separate waiting-rooms for 120 men and 160 women, two physicians' rooms, with dressing-rooms for each sex attached, and the general dispensary. In the south-west portion are situated the recreation-room and lecture theatre, a large room 54 ft. by 38 ft., intended to be used for the entertainments, &c., given to the patients, and for the medical lectures delivered to the students. This room and the out-patients' department are both 19 ft. 6 in. clear height from floor to ceiling. The remainder of this floor is occupied by entrance and inner halls, sitting and bed rooms for the resident medical officers, and physicians' consulting-room, &c., all of which have a height of 10 ft.; a mezzanine floor being obtained over them, which contains bedrooms and day-room for the nurses.

The principal entrance is from the Fulham-road, and is placed in the centre of the building, an exit for out-patients being provided in the east wing, and another door leading to a side yard being formed at the end of the corridor in the west wing.

The first, second, and third floors are entirely devoted to the accommodation of the in-patients, and are all arranged in a similar manner. Each floor contains nine wards, holding from three to eight beds in each, and one isolated ward (holding one bed) for any special case; thirty-seven beds being provided on the three floors. These wards have in all cases either a south or west aspect, and the height of these floors is either 13 ft. 6 in. or 13 ft., the average cubical space per bed being at least 1,500 cubic feet. The corridors giving access to the wards are unusually spacious, being intended for the patients to sit and walk about in during the daytime, and in the centre of each floor is a large dining-hall, 48 ft. by 20 ft. with an oriel window at one end. Provision is made on each floor for patients' bath-rooms, lavatories, linen and clothes, inhaling-rooms, nurses' rooms, and ward scullieries.

The fourth floor contains in the central portion a large kitchen and scullery, with larder, stores, &c., on one side of it, and living-room and bedrooms for the cook and her assistants on the other, these latter rooms being formed in the roof. In another part of the same floor, but quite cut off from the kitchen department, are placed the bedrooms for the female servants of the establishment. Communication between the different floors is provided by means of two large staircases of teak and two small stone staircases in the turrets, which run from top to bottom of the building; in addition to these a large hydraulic lift, capable of carrying five or six patients, and two large food-lifts (also worked by hydraulic power), working from the basement to the top floor, are provided.

The system of warming and ventilation is intended to be very complete, fresh air being admitted over hot-water coils at the floor level of each room, and the foul air extracted at the floor and ceiling levels by means of vertical shafts in the walls carried up to the roof, where they are collected into horizontal shafts which communicate with open ventilating-towers, in which powerful steam coils are placed, the heat from which causes an upward current of the foul air. In addition to the hot-water coils each ward has an open fireplace for the sake of comfort and cheerfulness. The sanitary arrangements throughout are to be carried out upon the most approved modern principles.

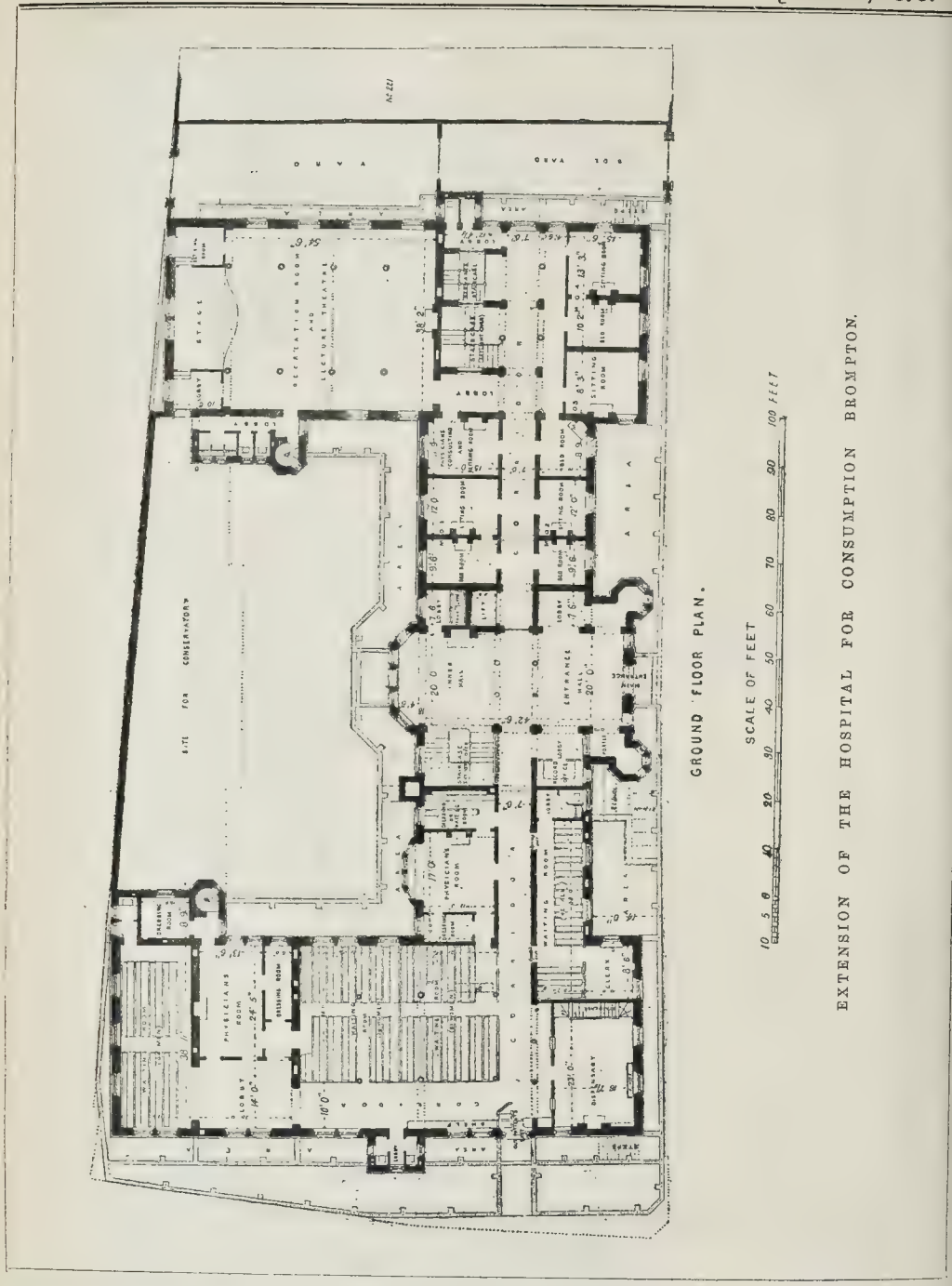
The soil not having been considered sufficiently solid to carry so heavy a pile of buildings, it was thought desirable to introduce a thick bed of Portland cement concrete over the whole surface of the site, so as to secure a good foundation.

Externally the elevations are treated in a somewhat plain adaptation of the "Queen Anne" style, the fronts being faced with Allen's Red Suffolk Bricks, with bands of warm buff-coloured terra cotta, and Ancaster stone dressings sparingly introduced; the roofs are to be covered with Sedan green slates. Internally the building will be finished in a very plain but substantial manner. The floors throughout are of fireproof construction, on Fox & Barrett's system, and those of the wards, corridors, and principal rooms are to be boarded with teak in narrow widths. The woodwork on all the principal floors will be of pitch-pine, varnished, and the walls internally are to be finished in trowelled stucco, with a Parisian cement dado 5 ft. high. The tenders for the whole of the new building, inclusive of extra cost of foundations, amounted to 60,000*l*. The general contractors for the works are Messrs. Higgs & Hill, of Crown Works, Lambeth, the terra cotta being supplied by Messrs. H. Doulton & Co., the hydraulic lifts by Messrs. Eastons & Anderson, the whole of the works for the warming and ventilation, hot-water service, &c., by Messrs. Haden & Son, of Trowbridge, and the internal plumbers' work by Mr. R. P. Beattie, of Victoria Station.

The works are being carried out from the designs and under the superintendence of Mr. Thos. Henry Wyatt, of 77, Great Russell-street, late President of the Royal Institute of British Architects, Mr. Wm. Tokey being his clerk of works.

We would add a few warm words in behalf of the institution itself,—the Brompton Hospital for Consumption. The mild air of the locality and the nature of the subsoil, which is sandy gravel, of great depth, have been proved by an experience of many years to be highly beneficial to consumptive invalids. The acquisition of a site in connexion with the existing hospital was most fortunate, and will conduce to the efficient and ecomomical working of the extension, which will thus be under the same administration with the parent hospital. The pressing need of additional accommodation has long been severely felt, the number of applicants on the list,—frequently upwards of 300 at one time,—and the consequent delay in their admission, affording painful evidence of the necessity. This subject has for many years engaged the anxious attention of the committee, and it is, therefore, a cause of thankfulness to all connected with the charity that a remedy is now, to some extent, to be supplied, and that this hospital, which has done so much good in the past, is about to enter upon a still more extended sphere of usefulness. It ought, however, to be made generally known that the cost of the site and of the new building will absorb the greater portion of the funded capital, and the income arising from this source will be lost in future, while the additional expenses for the yearly maintenance of the institution upon its extended scale cannot be estimated at less than 10,000*l*. per annum.

The committee confidently rely upon the generosity of the public to support them in the



heavy task which they have undertaken, and to assist by their means and influence in carrying on successfully this important work of charity and relief.

We have long known personally the admirable manner in which the affairs of this hospital have been conducted, and the large amount of great good which has been done through its agency, and we most earnestly invite those who are blessed with means to help the committee in the important work which they have in hand. We venture a little out of our way to say that Sir Philip Rose, bart., the honorary secretary and good friend of the Institution, and Mr. Henry Dobbin, the secretary, would gladly give the fullest information that might be desired by any disposed to assist.

Drawings from London Board Schools. An exhibition of drawings, executed by scholars and pupil teachers in the schools under the London School Board, has been held at the offices of the School Board for London, Victoria Embankment, W.C. The exhibition was open during the first three days of this week.

MORE WORK AT ST. ALBAN'S ABBEY CHURCH.

SIR,—As you and your readers take a strong interest in all that is being done with regard to St. Alban's Abbey Church, I beg to enclose a copy of a citation which was affixed to "the principal door of the church" on Sunday, the 9th inst. From it you will perceive that Sir Edmund Beckett now throws over his former colleagues on the Committee, whom he misled into erecting the high-pitched roof over the nave, and induced them to run into debt to do so, and



PLAN OF FIRST FLOOR.

EXTENSION OF THE HOSPITAL FOR CONSUMPTION, BROMPTON.

w seeks to have the whole building, and espe-lly the western front, handed over, without external control, to his own tender mercies. The application for the faculty does not appear be accompanied by any plans, but, from stworthy information which I have received, re appears to be no doubt that the intention not to restore or repair the great western ndow, inserted by John of Wheathampstead, to remove it altogether, and to substitute it three nineteenth-century pointed windows. far as appears from the citation, the whole is be left entirely to Sir Edmund's taste and discretion, and, indeed, the whole building is to be handed over to him for vivisection, or any other purpose. The insertion of windows in the dark bays means making holes in the wall of the church against where was formerly the abbot's house; and against this the late Sir Gilbert Scott always protested, and I trust that his two sons,—if, indeed, they are still the architects to be employed on the work,—will continue to do the same. The next feature in the abbey to be attacked will probably be the triforium windows of John of Wheathampstead, which will have to be closed to allow of a high-pitched roof being put over the north aisle, to match the newly-erected roof over part of the south aisle; but of this, as yet, nothing has been said. The destruction of the west front is, however, imminent, and I much fear that, unless a powerful remonstrance be addressed to the Bishop, he will grant the faculty for still further obliterating the traditional features of his cathedral. No doubt the offer of Sir Edmund Beckett appears in the highest degree liberal; but if every rich amateur in building were to have one of our principal ecclesiastical monuments handed over to him as a subject on

which to make experiments, where would it end? The answer from Italy to any remonstrance about the west front of St. Mark's at Venice need be but very simple,—"Look at home."

JOHN EVANS.

(*Copy.*)

"Thomas Legh, by Divine permission Lord Bishop of Saint Alban's,—To all clerks and literate persons in and throughout the whole diocese of St. Alban's greeting. Whereas it has been represented unto us by Sir Edmund Beckett, of Batchwood, near St. Alban's, in the county of Hertford, and within our diocese and jurisdiction, baronet, a Queen's counsel, and chancellor of the diocese of York, that a faculty was granted on the twenty-seventh day of March, one thousand eight hundred and seventy-seven, by us as the then Bishop of Rochester, within whose diocese the Abbey Church (now the Cathedral and Abbey Church) of St. Alban's hereinafter mentioned was then situate, unto the Right Honourable James Walter Earl of Verulam, the said Sir Edmund Beckett, the Venerable Anthony Grant, doctor of civil law, archdeacon of Rochester and St. Alban's; the Reverend Waters John Lawrance, rector of the Abbey Church of St. Alban's; the Reverend Owen Davys, rector of Wheathampstead; Henry Joseph Toulmin, John Evans, and Robert Pryor, esquires; and John Thomas Nicholson Lipscombe, esquire, doctor of medicine; Benjamin Agutter, gentleman; and Thomas Kent, brewer, churchwardens of the said Abbey Church, authorising them as an executive committee to restore, repair, and refit the said church for cathedral and parochial service, that the said committee, with such funds as were subscribed for the purpose, proceeded to execute the repairs and restorations most urgently needed, and have exhausted all such funds, and have become liable under contracts for more money than has been subscribed, and have no prospect of being able to do any more at present. That the said Sir Edmund Beckett is willing to continue such works at his own expense, and particularly to restore the western front of the said church, except the three porches (for which a separate subscription is being raised among the Freemasons of England), and to insertin the dark bays of the aisles, or some of them, windows similar to those now in the other bays, without prejudice to the right of the said Committee to do any work not at the time undertaken by him, when they have funds for the same; and whereas the said Sir Edmund Beckett hath humbly besought us to decree a Licence or Faculty for the purposes aforesaid, Wherefore we do hereby require you to cite, or cause to be cited, all persons having or pretending to have any interest in the premises, by publicly affixing this original notice on the principal outer door of the said Cathedral and Abbey Church of Saint Alban's aforesaid, and by leaving thereon a true copy prior to Divine service on the Sunday immediately following the receipt hereof, to appear personally, or by a Proctor or Proctors, duly constituted, before the Worshipful John Elliott Pasley Robertson, Doctor of Civil Laws, our Vicar General and Official Principal as aforesaid, his Surrogate, or some other competent judge in this behalf in the said Cathedral and Abbey Church of St. Alban's, and place of judicature there, on the sixth day after the service of this decree, if it be a General Session of our said Court, otherwise on the General Session of our said Court next ensuing, at the hour of twelve o'clock at noon of the same day, to show cause why a licence or faculty should not issue, according to the prayer of the said petition. And we hereby do intimate by the tenor of these presents that if no appearance be so entered, nor sufficient cause thereon shown, we, our said Vicar-General and Official Principal, his Surrogate, or some other competent judge in this behalf, will proceed to decree a licence to be granted to the said Sir Edmund Beckett for the purposes aforesaid.

Dated this fifth day of November, in the year of Our Lord, one thousand, eight hundred, and seventy-nine, and of our translation the third.

(Signed) GEO. HY. KNIGHT, Registrar."

Another correspondent writes,—

Sir Edmund Beckett seems to have startled people not a little by his last movement. Not content with having his way as the ruling member of a building committee, he has applied for a faculty to enable him to dispense with a building committee altogether, and apparently to dispense also with any detailed explanation of his intended alterations. The notice put on the church-door on the 9th inst., for the first time, is addressed "to all the clerks and literate persons in and through the whole diocese of St. Alban's;" and it rehearses statements given in by Sir E. Beckett.

Considering that restoring the west front is taken to mean knocking out the great Perpendicular west window, and "restoring" three lancets, such as Trumpington may have erected in the thirteenth century, and that the dark bays of the aisles are the bays which never had any windows, because the abbot's residence abutted against the south wall; and, considering that there is implied a request for powers to do what seems good, which might cover any extent of work, there should be much hesitation about granting such a licence. A movement of this kind without the consent of the building committee,—we may say, almost without their knowledge,—may be deemed good strategy if it succeed, but not by everybody even then.

ARCHITECT.

SIR,—I have read Mr. White's long letter, reiterating what he had said about the destruction of a Norman corbel-table. I emphatically deny that such a corbel-table existed. Mr. White acknowledges that his examination was a superficial one, and is kind enough to impute motives for the removal of this so-called corbel-table, alleging that it was done to obliterate all traces of the Norman roof. He also points to his examination of the marks of the original roof; but when I state that that roof was 284 ft. long, that the duration of his examination was twenty minutes only, and was made in a torrent of rain, with an umbrella over his head all the time, the value of such a minute survey will become apparent to every one. . . .

It is a pity that Mr. White's idea of conservatism for churches was not of an earlier date. I have a photograph of a nondescript reredos, inserted, by cutting away the ancient work, in the east wall of Boxgrove Church, Sussex, some years ago by Mr. White, which, after disgracing the Early English window above it for about seven years, was removed for the erection of a reredos of beautiful design, and the abortion deposited on the rubbish heap. . . . .

JOHN CHAPPLE.

THE SCIENCE AND ART DEPARTMENT.

THE twenty-sixth report of the Science and Art Department of the Committee of Council on Education gives the following summary of results:—

The number of persons who have, during the year 1878, attended the schools and classes of science and art in connexion with the Department is as follows, viz.:—57,230 attending science schools and classes in 1878, as against 55,927 in 1877, and 727,874 receiving instruction in art, showing an increase upon the previous year of 117,254, or more than 19 per cent. At the Royal School of Mines there were 36 regular and 189 occasional students; at the Royal College of Chemistry 303 students; at the Metallurgical Laboratory 74. At the Royal College of Science for Ireland there were 22 associate or regular students, and 53 occasional students. The lectures delivered in the Lecture Theatre of the South Kensington Museum were attended by 5,491 persons. The evening lectures to working men at the Royal School of Mines were attended by 1,685 persons, being 458 more than last year; and 169 science teachers attended the special courses of lectures provided for their instruction in the new science schools at South Kensington. The various courses of lectures delivered in connexion with the Department in Dublin were attended by about 1,421 persons. The total number of persons, therefore, who received direct instruction as students, or by means of lectures, in connexion with the Science and Art Department in 1878 is 794,547, showing an increase as compared with the number in the previous year of 113,180, or more than 16 per cent. The attendance at the Art and Educational Libraries at South Kensington, and at the National Library of Ireland in 1878, has been 76,064, or an increase of 1,731 over that of last year. The museums and collections under the superintendence of the Department in London, Dublin, and Edinburgh were last year visited by 2,329,877 persons, showing a decrease of 218,889 on the number of 1877. The returns received of the number of visitors at the local art and industrial exhibitions to which objects were contributed from the South Kensington Museum show an attendance of 513,986. The total number of persons who, during the year 1878, attended the different institutions and exhibitions in connexion with the Department has been upwards of 3,589,487. This total, compared with that of the previous year, presents a decrease of 672,152. The expenditure of the Department during the financial year 1878-79, exclusive of the vote for the Geological Survey, amounted to 282,553*l.* 11s. 5d.

The Crown Estates.—The fifty-seventh report of the Commissioners of her Majesty's Woods, Forests, and Land Revenues for the year ended the 31st of March last refers to the measures taken for the concentration and improvement of the Crown property, which, commencing in 1851, have since been continued. Mr. Gore states that one of the results of those measures of improvement has been that the revenue yielded by the Crown property has largely increased. In 1851 considerably more than one-third of the gross revenue, then amounting, including the entire receipts from minerals, to 341,000*l.*, was derived from quit and fee farm-rents, and also from ground-rents, reserved under building leases which had at that date, and, with a few exceptions, have still many years to run. From those rents, with the exception referred to, no increase has been obtainable except by the sale of some of the quit and fee farm-rents, and by the investment of the proceeds in property that improves in value. Notwithstanding that circumstance, the gross income revenue in the past year, including one moiety only of the net receipt from minerals, was 489,448*l.* The net revenue, which is annually paid to the Exchequer (and amounting to 410,000*l.* per annum), has increased in a more than corresponding proportion.

COOKING AND CHEMISTRY.

PROFESSOR CHURCH has delivered a course of lectures at the National Training School of Cookery, South Kensington, on the Chemistry of Food. We avail ourselves of notices which at different times have appeared in the *Times* and other papers to give a general view of the whole course. This is believed to be the first time that there have been combined in the course of instruction in one school the teaching of the physiologist and chemist and a training in the art of a *chef de cuisine*. The school has been in existence for seven years, but, though located close to the Museum of the Science and Art Department, the department is not only in no way connected with it, but its collection of "foods" has been practically ignored. That collection has been formed and arranged at successive times by Dr. Playfair, Dr. Lankester, Professor Huxley, Professor Frankland, and lately by Professor Church, but those who have had to do with the practical teaching of dietaries have in many ways expressed their opinion that they have not seen how to turn it to practical account. The teachings there formulated have been adopted in the dietaries of our prisons, workhouses, and our national forces with good results; but the difficulty has been to bring it home to every-day life. The lady superintendent of the school has seen the need of practical instruction in the science of foods for the pupils as well as the practical management of kitchen apparatus, and this series of lectures has been in consequence arranged. Professor Church's Hand-book, prepared for the Science and Art Department, has been a text-book in the school.

The illustrations and experiments the Professor introduced in his *First Lecture* were given with a view to show by demonstration what he had expressed in words. Two main points on which he laid stress, and which were illustrated experimentally, were that the "burning" of carbon in the body, as might be done outside it, producing carbonic acid, and the "burning" of hydrogen within the body, as might be done outside it, producing water, were in both cases similar processes. The whole of the water given off in vapour, perspiration, &c., is not due to the water we take in as fluid or in our solids, much is the result of the "burning" of hydrogen, and the production of water within us. These two "burnings" are the main sources of our heat and our force or energy. The part of nitrogen in our nutrition was especially mentioned, and the old distinction of carbon compounds being heat-givers and nitrogen compounds being flesh-formers was referred to as not so rigid as was some time ago supposed. Nitrogen compounds can act as heat-givers when carbon compounds are not in full proportion. Several experiments were shown as to what is meant by the incombustible salts, or "ash," so often referred to in food text-books. As the school has already supplied seventy centres with teachers, the work begun there may be expected soon to spread its influence.

In the *Second Lecture* the Professor pointed out that though some 66 elements are now known, only 15 or 16 occur in the human body. Of these, only one, oxygen, is a food as an element; all the other elements have to be taken in as compounds. While we need both water and salts with our food, and they have a definite function to perform, they leave the body when this is accomplished, with the exception of phosphate of lime. This, when once formed, is very difficult to decompose. The Professor then went on to speak of water under the three divisions of its occurrence, its properties, and tests for water. Water occurs in everything we know, even in gold one in every ten-thousandth part is moisture. In most of the foods we commonly call dry, 14 parts in every 100 are moisture. This is the case with flour, peas, rice, &c. Even the artificially-dried fresh oatmeal contains five parts. Milk contains 86 parts of water in the 100. Good butter contains but 10, though for certain reasons it is sometimes manipulated so as to contain more. It is well known that water itself is never naturally pure. Even rain water has "scrubbed" the air, and the Professor has seen rain with so much sulphuric acid in it that it has bleached in spots the purple flowers of the convolvulus. When once the rain has reached the earth it takes up more impurities. These are not all necessarily injurious to us, though some may interfere with cooking. The method of testing the colours of different waters by looking at them in 2 ft. tubes was shown

ıd then in succession the method of the follow-
ıg tests was illustrated. The oxalate of am-
ıonia test for lime, which is, when present in
ıantities, a serious drawback in cooking. The
ıiling of a residuum and the examination of its
lour, its absorption of moisture, and its smell
ı ignition. The ammonium molybdate test for
ıosphoric acid. The Nessler test for ammonia.
ıe nitrate of silver test for salt. The soap test
ı hardness. The Condy test for organic
ıatter. The physics of water were then briefly
ıferred to, and it was mentioned how the way
ı which it conveys heat so easily and so regu-
ırly makes it convenient for boiling as well as
ı loosening particles and making food softer.
ıe heat of boiling water, which varies accord-
ıg to altitude or to depth in a shaft, has a great
ıfluence on cooking. Thus in a Papin digester
is found that the ossein of bones can be con-
ırted into gelatine. The tendency of all changes
the teaching of the physical sciences is to
ıbstitute practical work on the part of the
ıdent for listening to lectures or watching
ımonstrations. Whether the list of tests
ıentioned above can be so grasped by a pupil
ım seeing them that she could reproduce the
ırk before her class, or whether she ought not
have laboratory practice for a short period, is
matter that requires consideration if our efforts
improving cooking schools are to come to
uch.

The *Third Lecture* was occupied with a con-
ıderation of the foods which are classed as heat-
vers, such as fats, starch, gums, &c. After a
ıeral description of the group, Prof. Church
ıceeded to the experimental consideration of
w the members of it are influenced by the
ıocesses followed in cooking, and how their
esence in food material can be recognised.
ıferring first to starch, he showed experimen-
lly that the right way to mix starch is in cold
ater, and then put the solution into very hot
ater. Starch is partly turned into dextrine by
ing subject to a temperature which would
arly "roast it." 320° Fahr. will completely
ange it. It was pointed out that, as at a
ture lecture it would be requisite to distinguish
tween starch and dextrine, the chemical tests
ould be known. The starch test, iodine, can
easily made by dissolving a crystal of iodine
ıd adding some spirits of wine. When iodine
added to a cold solution of starch, a blue
lour is produced; with a hot solution the blue
lour is not produced. Professor Church took
small mass of wheaten flour, and kneaded it
water till he washed out all the starch, the
neat-giving" portion of flour, leaving the
lesh-forming" portion, which is called fibrin.
ıe fibrin in this case is not quite pure, as there
a little fat and a little mineral matter also.
ıe starch test was applied to show that the
rt washed away from flour on kneading really
ıs starch. In the change of starch to "dex-
ine" by roasting, a delicate fawn colour is
on to be formed. The effect of iodine on dex-
ine is to give a reddish brown tinge instead of
olue. The practical value of these tests is to
shown in its bearings on cookery in a subse-
ent lecture. There is a great difference in
ubility in cold water between the crust of a
ıf and the crumb. More of crust than of the
umb will dissolve. Passing on to sugars, the
ifferences between grape sugar and cane sugar
re spoken of, and the tests for the one and
e other were shown. With cane sugar sul-
uric acid gives a dark colour, but with grape
gar it does not. The "sugar test," with
ommon sugar, gives a yellow precipitate. The
ıe of these tests is to be shown in future
ctical work. Some experiments connected
ıh oils were next taken. Oils dissolved in
ıer, but not in water. If a mixture of ether
ıd oil, however, be taken and then mixed with
ter, the oil and ether float on the top with the
ter below. This fact has practical bearings
o. The albumenoids,—fibrin, albumen, myosin,
ıd casein,—were briefly referred to, and some
the conditions under which albumen coagu-
es were illustrated. A temperature of 140°
hr. effects coagulation, both with such albumen
may be obtained from the juice of the turnip
ıfrom the white of egg. The ordinary acids
ıd in cooking do not cause coagulation, though
ric acid will. After a very rapid reference
fibrin, casein was spoken of, and the effect of
acid, such as acetic, was alluded to as produ-
g a "curd." The conclusion of the lecture was
upied with a brief reference to the way in
ich "heat-givers" become the source of "force
l energy" in the body.

In commencing the *Fourth Lecture* Professor Church alluded to the fact that dietaries based on a knowledge of the chemical constitution of foods were found by practical application to work satisfactorily. The subject has now been examined carefully for so long a time, and the qualities of different foods are known from the average of so many hundred analyses, that errors of observation and experiment may be regarded as being eliminated. The actual daily wants of the body in the various conditions of rest, partial or full work, and the varying climatal conditions, are also more exactly known than they used to be, though much more remains here to be done. English writers have sometimes taken the results of North German experimenters and incorporated them in their works as applicable to England; but this is apt to be misleading, and shows the need of great caution in such important matters. The practical application of dietary tables in India in time of famine has been found of great use For example, the average diet of an English soldier in time of peace is daily,—5 oz. of albuminoids, 3 oz. of fat, 22 oz. of starch, and 1 oz. of mineral matter. This does not include the water in the foods. The amount of water taken in some form or other every twenty-four hours is over 5 lb. It has been found that the famine diet of Indian natives can be as low as 3 oz. of albuminoids, 1 oz. of fat, 11½ oz. of starch, and two-thirds of an ounce of mineral matter. This is not sufficient to keep them in good working order, but it is enough to keep life going in time of famine. It must be borne in mind, in connexion with this, that the calculations for an English soldier are made for a man of 154 lb., while the average of Indian natives is taken at 105 lb. A great defect of rice as a normal food is that it does not contain the required proportions of fat. One ounce of fat should go with every 2 oz. of albuminoids, and it can take the place of 2 oz. 150 grains of starch. The way in which the redundancy of some constituents in foods can be made to harmonise with the correspondingly less amounts in others, so as to insure having a properly-balanced daily diet, was left for consideration in the next lecture, together with the results of too much or too little work in connexion with the diet selected. Professor Church showed the weighed amounts of albuminoids,—starch, fat, &c.,—daily needed from one source or another, but he pointed out that the mere taking into the body of these quantities was not sufficient. There must be a flavour which will stimulate the secretions of the saliva and gastric juices concerned in the work of digestion. Consequently, it is not enough to blindly follow the tables drawn up. The amount of energy obtained from one day's food may be reckoned at 3,300 foot-tons, of which only 660 can be used for external work. This, Professor Church said, was the result of most careful investigation. The rest of the energy is expended as heat, in the working of the heart, and the driving of the blood, &c. Thus, only about one-fifth of the energy derivable from the combustion of our food is available for work externally.

Having in the preceding lecture stated generally what is requisite in a day's ration, Prof. Church commenced the *Fifth* by giving in detail the sources from which the daily 4,900 grains of carbon and the 300 grains of nitrogen can be obtained without undue waste and without taxing the digestion with what is not really needed. He began with bread and bread-stuffs, including wheat, maize, rice, &c., and this was followed by an account of leguminous fruits, and afterwards of tubers and roots and green vegetables. Professor Church stated that he had during the last two or three years paid much attention to bread-stuffs, and he especially alluded to the great change recently effected in wheat-milling. Instead of the wheat being torn to pieces, as it formerly was, by grinding stones, it is now becoming more common to adopt Wegmann's process, which is to squeeze the wheat between porcelain rollers. The method of pressing, squeezing, or pounding wheat is of importance as influencing the products obtained from it. In some millings only three products are made, but by other methods there are more, and a diagram was exhibited showing eleven products, known as meal-flour, whites, seconds, middlings first and seconds, sharps first and seconds, pollard first and seconds, and bran. The recognition of these the Professor spoke of as of great importance, and he referred to the results of many analyses which he had made of each. The great difference in the relative nutrient values of these had not yet received that attention it demanded. Indeed, the table which he showed, he said, had been but recently completed, and was not yet published. One or two of the extremes might be selected in illustration. Of fat, meal contains 2 per cent., flour 1·7, first sharps 3·5, first pollard 5, and bran 2·8. Of albuminoids, meal contains 10·7 per cent., first sharps 16·5, pollard 15, and bran 13·6. Of fibre, meal contains 2·4 per cent., first middlings 1·7, first pollard 6·8, and bran 10·8. Of ash (mineral matter), meal contains 1·8 per cent., second sharps 2·9, and bran 6·1. It is therefore very important to know what part of the grain of wheat is being used as a food. The structure of a grain of wheat was illustrated with its central mass of hexagonal starch cells, surrounded first by a layer of "brick-like" cells, rich in nitrogen, and these again by six thin coats. Professor Church has found as the average of many analyses that the embryo contains from 23 to 35 per cent. of albuminoids (flesh formers). A table was also shown of the relative values of oatmeal, maize, pearl barley, rice, and bread, the table being the result of a long series of analyses undertaken by the Professor. While oatmeal contains 10·1 per cent. of fat, and pearl barley 1·3, rice has but 0·5. Oatmeal has 16·1 per cent. of albuminoids, pearl barley 6·2, and rice 7·5. The quantities of fibre and ash were also given. In the preparation of the pretty-looking pearl barley there is much waste. One hundred pounds of barley give but about 38 lb. when it is "pearled," and practically about 17·6 per cent. of the nitrogen is given to pigs. Again, though there is much fat in maize, this is lost in hominy. It should be noticed that the ash of oatmeal is rich in phosphates, and is a valuable food when it can be digested. The natives of India, who use much rice, so poor in fat, make up for it by various kinds of pulse, and Professor Church has had forwarded to him as many as thirty or forty different kinds for analysis. When officially dieted the natives are also supplied with some kind of fat. As to bread it is not a complete diet in itself, as it is too rich in carbon and not rich enough in nitrogen. The mineral matter in it does not represent only the mineral matter of wheat, as there is much added salt, and the proportion added is important. The tables of quantities of various kinds of food that will supply the daily needed 4,900 grains of carbon, and the 300 grains of nitrogen, differed somewhat from the tables given in the South Kensington Handbook, as Professor Church said they were now calculated with greater accuracy. The relative proportions do not, however, seriously differ.

The *Sixth Lecture* treated of breadstuffs, peas, beans, and pulse. There are at present three methods employed in this country by which carbonic-acid gas is formed in dough, the small bubbles of which give bread its vesiculated structure. In one process the carbonic acid is driven in ready-made from a vessel in which it is separately prepared. This is the bread known as aërated. Of the three processes in which carbonic-acid gas is formed in the dough, two are chemical processes and one is by the action of yeast. Bicarbonate of soda and tartaric acid are in one process used, when tartrate of soda and carbonic acid result. The objection to this is that the tartrate of soda taken habitually is liable to cause derangements in the system. Bicarbonate of soda and hydrochloric acid are also used in another process to produce the needed carbonic acid, and here the interchange leads to the formation of water and common salt as well. The danger in this case to be guarded against is the presence of arsenic. The more common process, however, is that in which the yeast-plant is used, bringing about those mysterious changes which are still so imperfectly understood. Yeast has the power of converting the starch of flour into glucose,—a sugar. This sugar is further broken up into alcohol and carbonic acid. The alcohol escapes and the carbonic acid gives the vesicular structure as in the other cases. Of all the cereals, wheat yields the best bread. This is believed to be due principally to the character of the nitrogenous matter of wheat. The main constituent is a fibrine, and it can be readily obtained for examination by making a little flour into a dough with water, and then washing the starch out by means of a stream of water. There is then left a greyish-yellow, tough, elastic mass, which is gluten. Speaking of peas, beans, and various kinds of pulse, it was pointed how much more nearly the different kinds agree in composition than the

cereals do. The great drawback to the use of various kinds of pulse is, that they are so difficult to digest. They are an excellent theoretical food, according to analysis, but they are a severe tax on digestion. Of all the beans, none presents a better typical food than the soy bean, and it would be a valuable introduction to this country. Lentils have been much spoken of lately as a good food, and they undoubtedly approach to a good typical food, but they are bitter, astringent, and not easy of digestion. It has now come to be pretty well recognised that the food of a man doing hard work should have flesh-formers to heat-givers in proportion of 1 to 4½, and that the food of a child should have 1 to 7. Bread gives 1 to 7¼, when the heat-givers are more than even a child wants, so it is not a good food by itself. Pulse gives (taking an average) 1 to 2½, which is far too small. In these calculations heat-givers are reckoned as starch. Potatoes give 1 to 16, according to the latest analyses, the old 1 to 8 being evidently an error. Onion is 1 to 4, an excellent proportion, though onions are not much in favour as food. In looking at the relative values of flesh-formers and heat-givers in foods, the actual amount of water must not be forgotten. The amount of water present in different foods has been referred to in a previous lecture. Potatoes have as much as 75 per cent. and onions 91 per cent.

In the *Seventh Lecture*, Professor Church took up the subject of the food values of roots and tubers, green vegetables, and fruits. Here, as in the former branches of his subject, the results given were those arrived at from experiments extending over a long period which he has himself made, and several of his figures were different from those generally accepted. This is a matter of importance whenever, at home or in our colonies, dietaries are calculated with a nicety based on the accepted tables. For example, in potatoes the relation of flesh-formers to heat-givers has been calculated as 1 to 10. Professor Church finds it is not more than 1 in 16, and perhaps barely that. Nothing, however was said about the possibility of a variation from time to time according to meteorological conditions. Coloured diagrams have been prepared showing the relative proportions of heat-givers and flesh-formers in different vegetables. As a rule, there is more mineral matter in roots and tubers than in cereals. For example, the proportion of mineral matter to combustible matter is in turnips 1 to 6, while in wheat it is but 1 to 72. The details of the chemical constitution of many plants were given, and it was then mentioned that in considering the amount of mineral matter in a plant its quality is an important point. Those mineral ashes are most active which contain most potash. Nearly all the mineral matter is made up of this and phosphoric acid. Nitre is largely found in some cases, and though it is not a nutrient, it is supposed to have some good effects. Endive, lettuce, and watercress are rich in nitre. In connexion with asparagus, the reason for cooking bundles with the heads out of water was explained. The green tops are the youngest and most delicate, and the nutrient matter from them would pass into the water. When asparagus is immersed in water one-third of the nutrient matter escapes. Potatoes should, when boiled, be boiled in brine, the boiling temperature is then much higher than 212 F., and this higher temperature makes the potato more broken up for digestion. The use of seaweeds as a food was mentioned, and their more general use was recommended. Fruits, using the word in the general and not in the botanical sense, can hardly be called substantive foods; but the citric, malic, and tartaric acid in them have beneficial influences.

The Professor devoted his *Eighth Lecture* principally to milk and products from milk—cream, butter, and cheese. Milk being the first of the animal products considered in the course, some generalised statements were made comparing vegetable foods and animal foods. The chief practical point was that the animal foods are much richer in nitrogenous compounds, and are more flesh-forming. Although animal food looks so much more solid than vegetable food, it must not be forgotten it is very watery, pure muscular tissue containing as much as 77 per cent. of water. Neither starch nor cellulose occurs in animal foods, while sugar is generally absent, or else exists in mere traces, except in the case of milk. The average composition of good cow's milk is about 87 per cent. of water, and 13 per cent. of solid residue. The milk of some Normandy cows, which Professor Church had analysed, gave as much as 16¾ per cent., but this was an unusual amount, and the yield was not great. Out of the average 13 parts per cent. of solid residue, only four parts are flesh-formers. It is, however, important to remember, in regarding milk as an article of diet, that the ash or "mineral matter" is rich in phosphates. There are four phosphates at least, and probably more. In addition to the phosphates of lime and magnesia there is phosphate of iron, which supplies a large part of the iron in blood, and in early infancy supplies the whole of it. As the 13 per cent. of solid residue is the recognised amount that should be present, salt or sugar is sometimes added by those who adulterate milk to make up the amount, but this is not often done. Specific gravity is often considered a safe and ready guide as to the adulteration of milk, but this cannot be relied on, even to test the amount of adulteration by water. Cane-sugar is sometimes added, but the difference between this and the natural milk-sugar is not difficult of detection. Sometimes common sugar is added, and sometimes glycerine, which when good is very harmless; but it is difficult to understand how it can be obtained cheaply enough to be used as an adulterant if good. The difference in the composition of the milk of different animals was given on diagrams. To make cow's milk assimilate closely to the composition of human milk, it is requisite to add only 10 to 12 oz. of water to the pint, and from 1¼ to 1½ oz. of milk-sugar, which can be readily purchased. That is, proceeding on the assumption that the cow's milk is not adulterated to begin with. With regard to skim milk, many misunderstandings have been current. It is richly nitrogenous, and is a useful article of diet. Several preparations called "milk preserves" are now sold. It is true they prevent milk from turning bad, but they contain borax or boracic acid, and we do not yet know what effects much of this would have on the system. Many people say that the adulteration of milk is not injurious, but if milk does not contain what we expect it does contain, it is injurious, from the fact that it does not supply the nourishment expected. In speaking of cheeses, Professor Church drew attention to the large amount of bone-forming material they contain. A good cheese has 3 per cent. of bone-forming material.

In the *Ninth* and *Tenth Lectures* the practical points had reference to the preparations of cocoa. Cocoa nibs themselves,—the cleaned, roasted, and crushed seeds of theobroma,—are too rich and heavy as a beverage. "Pressed cocoas" have much of the cocoa-butter removed from them, and "soluble cocoas" have starch added. So great is the amount of heat-givers in cocoa that in 100 parts they give an equivalent of 132 parts of starch. Soluble cocoas, so called, do not, however, give a solution of cocoa; a thick mucilage is produced with boiling water; but the finely-ground cocoa is held in suspension only. Ground cocoa is often ground in iron mills, and a quantity of iron,—an undue amount,—is generally given to the cocoa. The proportion of flesh-formers to heat-givers (reckoned as starch) has been usually given as one to eight; but recent analysis has shown it to be one in eleven only. The Professor stated it had been his intention to give some practical illustrations of the method of conducting analyses; but he found he should have to be content with a verbal account of some one or two of the processes. His own method for the analysis of meat was described, beef being selected for illustration. Two separate portions have to be operated on. The one gives the fibrine by treatment with hydrochloric acid, and the other gives the water, ash, and fat. The water is estimated by weighing after drying, the fat by solution with ether, and the ash by weighing after ignition. The analysis of a vegetable substance was very rapidly sketched. In conclusion, the subject of daily dietaries was taken up. It had been several times mentioned in the course of the lectures that 300 grains of nitrogen and 4,900 grains of carbon were daily needed for an average man of 154 lb. weight, in health and work. Several examples of dietaries for muscular work were given. Such food as turnips would have to be taken at the rate of one quarter of a hundred-weight a day, — an inconvenient amount,—while 10 oz. of cheese and 20 oz. of rice supply what is needed. Bread, eggs and bacon, or beans and bacon, furnish a compact dietary for muscular work. A good proportion of flesh-formers to heat-givers is one to five for adults, and one to seven for children.

WHO WILL HELP THE GIRLS?

SIR,—Who would not help the girls if h could? Over and over again have I been cor sulted upon this subject, and asked what occupa tions are open to them. All the applicant would appear to imagine that there must b many "genteel" occupations which might b easily learnt, say, either in a few weeks o months, which would insure a competence fo life. It would also appear to be a very preva lent notion that the branches of "applied" art as your correspondent, "Meter," has appro priately styled them, are those which would b most easily mastered. Painting upon china drawing upon wood, and wood-engraving, &c are specially inquired about, because the appli cants ignorantly suppose that proficiency i these is readily attainable, and they may hav had the misfortune, at some time or other, t have drawn a Berlin wool pattern. In most o these cases, I regret to say, the applicant cannot afford the requisite length of time, whic means expense, to become proficients in th occupations they seek. Nevertheless, they wi bravely try, poor things; they take a few lesson of persons who can scarcely help themselves Then they paint upon china posies such a would not pass muster on a fifth-rate wall paper, or they "peck" out wood blocks tha would not serve even as butter moulds, whe too late they find, alas! that there is no deman for such poor wares, and that they are wors off, and minus several guineas, than when the started on their foolish errand. They cannot b made to grasp the simple truth, that what ca be easily done, hundreds of thousands could do and that all skill of any real value, whether i the fine arts or in any other occupation, is onl to be attained by a long preparatory training and even then that only a few can reach tha point of excellence which is really remunera tive.

Besides these considerations, Sir, I nee scarcely say that, as you are perfectly wel aware, the labour market obeys laws as fixed an as inexorable as those of the tides. Any numbe of persons cannot be employed merely because the want to be employed, but only just as many a are wanted. I am afraid, then, that there is n way of helping the girls but through helpin the men. There are too many men in the countr in proportion to the work to be done. If wome could excel the men in handicraft, they woul supersede them in the factories, and the me would be turned adrift; if they were on a pa with the men in skill, they would lower wage by increasing the supply of labour out of a proportion to the demand, and many of bot sexes would be unemployed. It is very hard t have to say it, but there is really but one wa to meet the increasing struggle for existence and that is Emigration; but even then it mus be an organised and well-arranged system o emigration, if the last state of the emigrant i not to be worse than the first. Heaven onl knows what a state we should have been in i this country by this time, if it had not been fo emigration. People ought, in these days, t know that if there be only twelve vacancies t be filled, twenty-four persons cannot be ap pointed to them, and that before another can b admitted one of the twelve must vacate hi post by death, resignation, or dismissal. It i precisely the same in the employment of twelv millions, if twenty-four millions require employ ment.

The sooner, therefore, that the public ar taught that there is but one way of meetin the difficulty the better; for every day's dela increases the mischief and the misery.

W. CAVE THOMAS.

Viaduct, Walton-on-Thames.—The new viaduct forming the approach-road to Walto Bridge was thrown open to public traffic on th 5th inst. The viaduct, which has been in han for nearly eighteen months, consists of thirtee arches of 26 ft. span; the piers have stone cut waters, and over the whole length is a whit brick dentil cornice and blocking. Although no open for traffic, some weeks must yet elaps before the work is complete, owing to the tem porary bridge having to be taken down befor the approaches, &c., can be finished. The work are being executed by Messrs. T. Docwra & Son contractors, at the expense of the county o Surrey, and under the supervision of Mr. C. H Howell, surveyor for the county, Mr. Charle Hall acting as clerk of the works.

THE NEW CENTENARY CONGREGATIONAL CHAPEL, LANCASTER.

This building was opened on the 13th inst. The church is designed in the Romanesque style and is built of stone. A tower and spire at the south-west angle gives character to the building. Internally, the first consideration was to light the building effectually,—a matter of some difficulty in a galleried building, with light obtainable on only two sides; but the problem seems to have been satisfactorily solved.

The roof is lofty and wagon-headed in form. All timbers throughout are pitch-pine, and simply varnished. The warming and ventilation have received due attention,—the former by hot water, and the latter by shafts on the Tobin system, opening casements, and a trunk in the roof capable of being regulated. The passages are laid with Mr. J. Brash's concrete flooring, resembling marble mosaic. Messrs. Briggs & Lancaster carried out the mason work, &c.; Mr. R. S. Wright executed the joiner's work; Mr. Hartley, the slating and plastering; Mr. A. Seward supplied the heating apparatus; Messrs. Calvert & Heald, plumbing and glazing; Mr. Meadowcroft, the painting; and Mr. J. B. Hartley, the ironfounder's work. The gas-fittings were supplied by Messrs. Richardson, Ellson, & Co., of Coventry. Mr. Dixon acted as clerk of the works. The building has cost upwards of 4,000*l.*, exclusive of the site, and has been carried out from designs, and under the superintendence of the architects, Messrs. Hetherington & Oliver, of Carlisle.

ALBERT-STREET SCHOOLS, BRIDGWATER.

These schools were opened by the Mayor (Mr. W. J. Holland) on the 4th, and are built in the midst of the population for which they are especially intended, to accommodate 400 infants, 150 boys and 150 girls. Throughout the group the class-rooms open directly from the principal school-rooms; the upper panels of the doors are glazed in all cases, and large windows are also placed in the partitions, the head-teachers, without leaving their desks, thus commanding a view of the various class-rooms.

The infants' department consists of a main schoolroom, 80 ft. by 26 ft., with four class-rooms opening therefrom, 20 ft. by 19 ft. each. The boys' and girls' schools are alike in size, the principal room being 48 ft. by 18 ft., with class-rooms 20 ft. by 19 ft. to same. The buildings are lofty, well-lighted, and ventilated. The offices are provided with Moule's earth-closets, and there are the usual conveniences, such as cloak-rooms, lavatories, &c.

The style adopted is a simple treatment of Gothic. The walls are of local rubble, with Coombe Down dressings, the interior being pressed bricks in bands and patterns 4 ft. 6 in. high, above that portion being plaster, with cornice at springing of roof. Of ornamentation there is none, but a pleasing appearance has been obtained by the grouping of the buildings and a judicious mixture of materials.

The cost, including site, fittings, and desks complete, is 3,674*l.*, being 5*l.* 4*s.* 11*d.* per head.

The work has been carried out by Messrs. Chedzoy & Son, of Bridgwater, to the plans and under the superintendence of the Board's architect, Mr. J. Parker (the borough surveyor).

Schools built during the present Year, including the Albert-street Schools, Bridgwater, with Accommodation provided, and Cost per Head, &c.

District.	Rateable Value.	Population.	Name of Schools.	Total Cost.	No. of Children.	Cost per Child.	Name of Architect.	Contractor.	
	£			£		£ s. d.			
Cardiff	270,968	40,000	Temperance Town.	6,800	750	9 4 0	G. E. Robinson, Cardiff.	D. J. & G. Davies, Cardiff.	Including furniture & fittings.
Sheffield.....	808,332	239,947	Woodside.	9,000	950	9 10 0	Innocent & Brown, Sheffield.	Sharp & Son, Sheffield.	
,, ...	...	...	Central.	32 000	960	33 6 8	Ditto.	Ditto.	
Derby	173,650	53,338	Traffic-street.	6,700 extras, 1,275	738	9 1 9	Cothurst & Storey, Derby.	Jno. Gilling, Derby.	
London	...	...	Church-street.	12,318	802	9 17 10	...	...	The 204th school built by the London School Board.
Cirencester..	20,000	7,000	...	5,500	500	11 0 0	C. N. Tripp, Gloucester.	George Drew, Stratford.	
Newcastle ...	701,613	128,443	Byker.	10,329	1,064	9 16 0	Austin & Johnson, Newcastle.	Grey & Humble, Newcastle.	Including furniture. Fourth set of schools.
Huddersfield	261,525	70,000	Springgrove.	14,000	1,083	12 18 7	E. Hughes.	Graham & Sons, Huddersfield.	
Beaumaris	8,312	2,291		3,300	320	10 6 3	E. G. Thomas, Menai Bridge.	Jones & Owen, Beaumaris.	
Bridgwater	34,014	12,059	Albert-street.	3,674	700	5 4 11	Jno. Parker, Bridgwater.	Chedzoy & Son, Bridgwater.	Including site, sheds & fittings complete.

THE LIVERPOOL SLOP BUILDERS.

Few towns have a more unenviable notoriety for slop and jerry building than Liverpool, although the town also possesses many excellent palatial and tradesmen's structures. There is, however, a certain section known as "Welsh builders," who for years past have been in the habit of running-up houses with the vilest of materials, and this class of builders appears to be almost beyond the reach of the local and sanitary authorities. The neighbourhood of Everton is one of those outlying localities which has long been notorious for the erection of slop tenements, and the discovery which has just been made, and which has been brought under the notice of the Health Committee of the Corporation, would seem to indicate that the existing Liverpool Building Act is defective in its provisions. It appears that the builders of several of the numerous small tenements in the neighbourhood of Everton have been extensively using a mortar or plaster composed of a small quantity of lime mixed with street-sweepings, the latter being largely made up of manure, and this material is used for plastering the insides of the houses. Dr. Taylor, the medical officer of health, states that under the existing law he has no power to put a stop to this practice, as no nuisance is actually experienced at present; but he holds that a nuisance will arise very soon after the mixture has been placed on the walls, and that then he will take measures to repress it. The meaning of all this is, that so far as Liverpool is concerned, under the present powers of the Health Committee builders may go on using material of this character in building with impunity, and that disease may be engendered in the houses so built before action can be taken by the sanitary authorities.

LEEDS LEATHER MARKET.

This market is the property of a company of shareholders, and was erected in the year 1824. It was used as a general provision-market until October, 1827, when it was opened as a leather market, and quarterly fairs were held for some years, but afterwards half-quarterly fairs were established, and are now held.

It has recently been enlarged and improved, to adapt itself to its present requirements. The buildings consist of thirty-three small shops (which are let to tanners, factors, and dealers in leather and tanning materials), enclosing a courtyard, roughly speaking in the shape of a horse-shoe, and entered on two sides by carts-ways. In the centre is a circular building or rotunda, in the shape of a small tower, surrounded by a colonnade of massive masonry, and containing a committee-room. There is also a space above, under a hemispherical dome, originally intended to contain a fan to pump water into the tank or reservoir over the colonnade. In the early part of the present year an effort was made to raise a fund for roofing in the open courtyard, and the committee were so far successful as to be able to proceed with the work. The heavy stone colonnade, consisting of twelve large pillars, frieze, and cornice, and tank over, have been removed, in order to increase the area of the court-yard or market floor. The whole has been covered over with a light timber-boarded roof, the upper parts near the ridge being of glass. The inside walls are boarded, and painted in two shades of colour. The old irregular stone paving has been taken up, and the whole of the flooring has been laid with cement slag concrete, and it is felt that these alterations considerably enhance the comfort of those who attend the market. The works have been carried out from the plans and under the direction of Messrs. Henry Perkin and G. B. Bulmer, of Leeds.

THE UNOCCUPIED LAND ON THE ALBERT EMBANKMENT.

For some few years past the question of laying out the unoccupied land on the Albert Embankment as an open space for the use of the public has been warmly discussed by the inhabitants. At one time it was feared that it was likely to be built upon, and this caused much dissatisfaction amongst the residents in the neighbourhood interested. There is now, however, a strong probability that the public will have the benefit of it as a recreation area, the Works Committee of the Metropolitan Board of Works having recommended that it be appropriated for this purpose.

MASTERS AND MEN.

Stockport.—The operative house-painters of Stockport, have decided to submit for the present to a reduction of their wages from 7½*d.* to 6¾*d.* per hour. The employers gave a week's notice of the reduction.

Liverpool.—At a meeting of non-society house-joiners and carpenters on the 6th inst., the following resolution was unanimously passed:—"That the non-society house-carpenters and joiners hereby resolve, in the face of a threatened further reduction of wages, to take such action in the matter as will give the united committee of house-carpenters and joiners the necessary moral, pecuniary, and personal support when practicable; and they further resolve that they will empower the non-society committee, working in conjunction with the united committee, to impose and levy 6*d.* per week upon the non-society men; in the event of the money not being required, a meeting of the subscribers will be held to dispose of it as they think fit." The master builders have intimated to the joiners that from the 31st of March next the wages will be reduced from 7½*d.* to 6¾*d.* an hour, which the men think is not warranted in the present state of trade, especially considering that in May last they had to submit to a reduction of ¾*d.*

Birkenhead.—The members of the Joiners' Society, of Birkenhead, and a number of non-unionists, held a meeting on the 14th inst., and decided not to accept the reduction of 1*d.* per hour, of which they had received notice from the employers.

A Wages Dispute.—On the 17th inst., at Worship-street Police Court, George Kerry, builder's foreman, summoned his employer, Mr. George Crabb, builder, Phœnix Works, Kingsland-green, E., for 2*l.* 10*s.*, one week's salary in lieu of notice. It transpired from the evidence that the plaintiff was discharged on a Tuesday for neglect of duty, and his wages were paid to him to the end of that week, and he now claimed for one week's salary. It seems, by the evidence of witnesses, that the plaintiff was absent from the job about fifty minutes, he having been previously cautioned for the same offence. The magistrate dismissed the summons.

STAINED GLASS.

Brighouse.—A two-light stained-glass window has been erected in St. James's Church, Brighouse, to the memory of the late Marianne Barber. It has been designed and painted on the glass by Mr. H. Kennedy, under the direction and superintendence of Mr. John P. Seddon, architect. The design consists of figures to a large scale, representing "Faith and Hope," one in each light. The glass on which the figures are painted was made by Messrs. Rust & Co.

Frisby-on-the-Wreake.—The three-light window in the south transept in the parish church here has been filled with stained glass, the work of Messrs. Clayton & Bell. The design is a group representing the Transfiguration, Christ occupying the central space.

The Artisans' Dwellings Act.—In Manchester it is resolved to form an association for the improvement of the dwellings of the poor under the Artisans' Dwellings Act.

THE MONUMENTS IN ST. PAUL'S.

SIR,—I am glad that some one has at last called your attention to this matter, and hope that it will not be lost sight of until the improvement suggested by your correspondent, "R. E. Bray," is carried out, and something more besides. Taking off the dust is not all that is necessary. No doubt most of those monuments are made of the finest statuary marble the world produces, and executed by the most eminent artists; yet the last time I walked through that noble building dust had so eaten into the marble that an inexperienced eye might have had a difficulty in telling at a glance whether the statues were originally of pure white marble, or oak, or mahogany. Masons have a very powerful composition for getting out this dust and restoring the marble to its primitive freshness and beauty, and the revenues of St. Paul's would not be misspent in getting an experienced man to do this.

SETH MOSLIN.

SIR,—A correspondent directs attention in your number for the 8th inst. to the accumulation of dust on the monuments in St. Paul's Cathedral. It might not be amiss that the attention of the authorities should also be called to the disgusting condition of the outside steps leading to the south door, owing to the droppings from numerous "happy birds" being allowed to accumulate there, interfered with only by the footsteps of visitors, which distribute rather than remove the nuisance. I had ample opportunity of studying this natural decoration and its unpleasant effect (with ladies particularly) on a recent Sunday morning, when I was one of a group of a score or two of persons kept waiting outside in a cold wind for ten minutes after the proper time of opening, awaiting the porter's pleasure; an ordeal not best calculated to assist in preparing the mind for the purpose for which we were assembling and meeting together.

J. B.

WOOD-CARVING.

SIR,—I was not sorry to see by your last issue that there was a lull in the discussion *re* the National School of Wood-carving, as it appeared to me to be drifting into an argument as to the logical capacities of the two writers, rather than throwing any new light on the subject-matter. There were mistakes and truths above the signatures of both "Meter" and "Anselmo." The latter evidently let his enthusiasm lead him into exaggeration regarding the want of wood-carving talent in England, and I was pleased to find that "One who sent wood to be carved in Paris" wrote to correct the error, and stating his opinion that, had time permitted, it would have been better executed on this side of the Channel. I feel sure this mistake of thinking good work in this branch of art-industry is not procurable in England is more widely spread than it should be, and I have been endeavouring to find out whence it emanated.

One of the earliest announcements of this fallacy occurred at a meeting of the Society of Arts, and it is more than probable that the gentleman who made the remark founded his theory on the results of exhibitions devoted to the productions of working men, in which a very kindly interest has been taken of late. Who are the contributors at these gatherings? Certainly not the best and most talented of the working men, for they are in constant employment, and it is not to be supposed, therefore, that they would spend time and money on the chance of remuneration, when all they do would be well and certainly paid for by their employers. The next or medium workman has occasionally time on his hands, and is, therefore, likely to become a competitor at these exhibitions. A term of apprenticeship may have given dexterity to their fingers, but in most instances their art-education and power of design are very limited and imperfect. There are, of course, exceptions to this as to every other rule, and in a few generations South Kensington Schools of Design may improve this state of things.

The true deduction, in my opinion, to be drawn from the failure of working-men's exhibitions is not that "good work cannot be done in England," but that "one man cannot do it." In fact, there are three required,—the master, the artistic designer, and the wood-carver. The first buys, and for years stores, the wood till in good condition. He provides light and suitable premises for work, and also that peace of mind brought by regular wages. The second, is a man of cultivated artistic attainments, and generally one who has had opportunities in early life of gaining that information and knowledge which are required in designing harmoniously. Now comes the third, the wood-carver, who carries the work out under the control of the two first, and success is gained. Separate any one of these men from the other two and there will be no grand result. Each man has enough to do to learn his own particular part in the play.

The working wood-carver in most cases comes from different strata of society from the artist; he is generally apprenticed early in life, and has to earn wages at the earliest date. How is it possible, then, for him to gain that taste and refinement resulting from patient study of art which would enable him to stand alone? I have given my reasons, and trust I shall not be deemed ungenerous in not taking that interest in working men's exhibitions which at first sight they would seem to claim.

With regard to the National School of Wood-carving, it is fairly started, and the promoters seem hopeful, and I fail to see the use of making success more difficult by antagonistic criticism; even your correspondent, "Meter," does not point out any disaster likely to arise from the existence of such a class. That it was seriously wanted may be open to doubt; but some good, and certainly no harm, may be expected from it. The intentions are honourable: then let it stand or fall according to its merits. In any case it is more deserving of a friendly hand than an angry word.

I may mention that the best work done in this country is seldom exhibited publicly, and the critics have, therefore, little opportunity of judging what is being done, the commissions having to be delivered directly they are finished.

GEORGE ALFRED ROGERS.

THE DESIGNER OF SUNDERLAND BRIDGE.

AT the Liverpool meeting of the Iron and Steel Institute, Mr. J. A. Picton read a paper "On the Progress of Iron and Steel as Constructive Materials," in which he briefly referred to the iron bridge over the Wear at Sunderland as having been "designed by the celebrated Thomas Paine." This statement was founded on the following authorities:—1st, Smiles's "Lives of the Engineers," vol. ii., p. 357, where he says:—"It is a curious circumstance that the next contriver of an iron bridge was no other than the same Tom Paine, whose political writings Telford so much admired. While residing in America, Paine had proposed to build a bridge of this material over the Schuylkill, 400 ft. in span, and he came to England to take out a patent for his invention (the specification is No. 1,667, A.D. 1788). The materials were manufactured at the Rotherham ironworks. They were delivered in London, and fitted together on a bowling-green at Paddington. But the French revolution breaking out, Paine hastened to Paris, leaving his bridge in the hands of his creditors. In the meantime, the materials had been purchased for erection over the river Wear at Sunderland, where the second iron bridge in England was erected after a design by Mr. T. Wilson in 1796." Mr. Robert Stephenson, in an article on iron bridges in the "Encyclopædia Britannica" (8th Ed.) further states:—"About the year 1790, Thomas Paine, the well-known political author, proposed to construct cast-iron arches of framed open panels in the form of voussoirs, and with characteristic energy he put his views to the test by constructing an experimental arch of 88 ft. 6 in. span, which was made by Messrs. Walker, of Rotherham, and exhibited in a bowling-green at Paddington. This experiment was completely successful. It was intended to ship this arch to America, but Paine not being able to defray expenses, the manufacturers took it back, and the malleable iron was afterwards worked up in the construction of the Wearmouth Bridge. A bridge having been determined on over the Wear at Sunderland, the original proposal was for a stone structure, which was subsequently abandoned, and at the instigation of Mr. Burdon, the member for the county, who had gone into the subject with Messrs. Walker, of Rotherham, it was determined to construct a cast-iron arch. Mr. Thos. Wilson was accordingly entrusted with the design, and the ideas of Paine with regard to open voussoirs of cast iron were adopted."

Whoever the designer of the bridge may be it is certain that at the time of its construction it was believed, and apparently on good grounds, that Mr. Burdon was the designer, as stated in an inscription which was placed on the bridge at its completion. It is also worthy of mention that the following letter appeared in the *Newcastle Courant* of October 7, 1796:—

"*To the Printer of the Newcastle Courant.*

SIR,—Observing in your paper of the 13th current an account of the iron bridge lately erected and opened at Sunderland, we have to request that in your next paper you will correct a misstatement in that account, contained in the following words, viz., 'The artists for the iron part are Messrs. Walker, of Rotherham, who have obtained a patent for constructing bridges on the principle,' by stating that the ironwork was made by us; but the patent was granted to Rowland Burdon, esq., M.P. The ironwork was done by his order and under his direction, whose invention we believe the principle on which Wearmouth Bridge is constructed to be, and different from either that of Coal Brook Dale or Thomas Paine's. We suggested to Mr. Burdon the propriety of taking out a patent, which is granted only on the oath of the party, and believe that he is the first and true inventor.—We are, &c.,

JOSHUA WALKER & Co.

Rotherham, August 23rd, 1796."

FIRE PROOF FLOORS.

I NOTICE in your issue of the 8th inst. a letter by Mr. W. H. Lascelles describing his dry system of fire-proof floors, which I mean on the present occasion to refer to. Ever since the introduction of cement and iron for building purposes, I have considered it possible to supersede to a very large extent the use of bearing and supporting timbers in all classes of buildings, and thus reduce the risk of damage by fire to an impossibility. The introduction of a dry system is, I think, a step in the right direction; but it also seems to me that practice has considerable improvements to make on Mr. Lascelles' system. I should be inclined to make the section of the joist for an 8 ft. span 7 in. by 3½ in. instead of 6 in. by 4 in. The use of iron in combination with the concrete is an absolute necessity; it has to supply the tenacity requisite to resist a transverse strain, a quality the concrete does not possess to any extent. I agree with Mr. Lascelles that small pieces are quite effective, provided there are enough of them, and placed near the under-side of the joist; the placing of them near the upper edge appears to me to be quite unnecessary, as it is well known that only the under-side of a joist is in tension. There is also a danger in adopting plain hoop-iron, for it will to some extent divide the adhesion of the concrete, and thus in course of the general vibration a floor is subject to would be likely to cause a permanent injury. I would recommend that the hoop or hoops should be perforated, so as to allow the concrete, when wet, to secure a better combination with the iron.

The quantity of iron Mr. Lascelles uses for each joist represents a bar 2 in. by ⅝ in., which, in simple tension, would be expected to suffer a strain of about five tons; this at once leads to the idea that a much better combination could be effected than that described. Instead of inserting the iron in three pieces, as done by Mr. Lascelles, I would suggest that it should be used in one piece (a 1-in. diam. round rod), secured at each end at the upper part of the joist, and bowed in the centre to the lowest part of the joist, in such a way as to give to every joist the nature of a trussed girder, and thus obtain the full benefit of the tension of the iron. There would be cast-iron end-plates, and with holes to allow the ends of the rod through, and to be tightened up with a key.

I entirely agree with the size of covering slab described, but do not think the diagonal pieces of iron add any strength to it; they might be useful in case of the slab being cracked, as they would tend to keep the pieces together.

I fear that ceilings can hardly be dispensed with (except in warehouses or workshops), and I think the forming of them with slabs as described by Mr. Lascelles would be open to objections. They would add considerable weight

to the floor, the concrete joists would be weakened by the insertion of nail-holes; the slabs would be unhandy to fix, which would lead to carelessness on the part of the workmen; and, indeed, there are many other practical objections I could point to, which the vibrations of floors would subject to such a mode of fixing.

The ordinary lath-and-plaster ceiling could be used with every propriety. Small V-shaped grooves, about ½ in. deep, could be cast in the joists close to the under edges; the laths cut to the proper length, and driven tightly into these grooves, with the plaster applied in the usual way: this would make a much better job for lightness, safety, and finish.

A building, with concrete or brick division walls, concrete joists and flooring, lath-and-plaster ceilings, and an iron roof, may be, with every propriety, classed a fireproof building; and, if you will, the laths could be dipped in a fireproof solution at a trifling expense.

These are my opinions, which are gathered from practical experience, and given only as opinions, wishing success to strong and cheap fireproof floors, which necessity in all classes of buildings demands.

A. D. Hogg.

WATERPROOF ROOFS.

Sir,—Your kindness in inserting my letter (p. 1244, *ante*.) on fireproof floors emboldens me to address you on another detail of house-construction.

I noticed a few weeks back you had a leader on this subject, and you there expressed your opinion that our slate and tile roofs were in many respects faulty, and capable of improvement. The wooden rafters might, I think, be dispensed with, and iron rafters of any approved section substituted, say 3 ft. apart. These rafters might be encased in concrete, if thought advisable. I would then bed slabs of concrete, 3 ft. long, 2 ft. wide, and 1 in. thick, on the rafters in cement, and connect them with iron clips, which clips could also be constructed to hold an iron rod or a wood lath for fastening the tiles or slates to the roof, or the concrete could be covered with metal if preferred. By this means the roof would be quite fireproof, and nothing would be in it liable to decay. The iron rafters with the concrete slabs would not cost much, if any more, than the ordinary wood rafters with boards and felt, and would make a much better roof.

No fear need be felt as to the strength of the slabs. I have used them repeatedly for this purpose on wooden rafters without any covering whatever, although I cannot advise their use for dwellings without a covering of some kind. They weigh about 7 lb. to the superficial foot, and are 3½d. per foot super.

In case of fire the great point is to prevent its breaking through. Once a draught is created, destruction soon follows. A perfectly fireproof roof is a desideratum.

When wet penetrates under the roof-cover it is most essential it should not saturate anything liable to decay. Concrete is not injured by it; and painted or galvanised iron rods are equally impervious.

I think a roof constructed on the above principle would be superior in many respects to existing roofs.

W. H. Lascelles.

THE PAVEMENT AT THE YORKSHIRE FINE ART EXHIBITION.

Sir, I was much pleased to see in your paper of last Saturday that Messrs. Craven, Dunnill, & Co. have been awarded a silver medal by the Committee of the York Fine Art Exhibition for the excellency of their pavement at the above Exhibition. I beg to inform you that the cement used there was the make of John Bazley White & Bros. of Gracechurch-street, London, supplied through myself as their agent, and as the cement forms no inconsiderable part of tiling, I trust you will give this the same publicity, as we like to share the honour if we can, and in this instance it has been fairly earned. I may also state that I find your journal the best medium for information of its kind I know, my father and self having taken it for fully thirty years.

J. Lister Nichols.

Relief Works in Ireland.—The *Freeman's Journal* believes that it has been decided by the Irish Executive to commence works of improvement on the River Shannon. The works are to be commenced at once, and pressed on during the winter, as a reproductive public work calculated to afford relief to the labouring classes. The expenditure on the Shannon works will probably not exceed 50,000*l*.

FLATS.

Sir,—Your correspondent, "Londoner," rather under than over states his case. The newly-erected flats in Victoria-street,—Members' Chambers, I think they are called,—let for 75*l*. per room, the rooms for which this enormous rent is obtained being exceedingly small, and by no means remarkable either for light or convenience. The real advantages, indeed, of the flat system, either for comfort or economy, have never yet been brought out in London, whilst the eagerness with which even the most imperfect specimens are snapped up, at rents far exceeding those obtainable for equivalent accommodation in separate houses, shows how great and general the appreciation of its benefits is becoming. Your readers may perhaps be interested in knowing that a scheme is now on foot for erecting, close to a suburban station of the Metropolitan Railway, a block of buildings on the plan of "Adams's Elastic Flats." This building will be divided into thorough self-contained flats, with perfect sanitary arrangements, and ample light and ventilation throughout, and containing from four to fourteen rooms each. It is estimated that, if let only at the same rate as similar accommodation commands in the neighbourhood, the return will be at least 12½ per cent.

Economy.

RE PLASTERERS.

A circular, issued by the Builders' Association, with the above heading, having been sent to the builders (and master plasterers, what few there are) in London, urging them, in consequence of the scarcity of plasterers throughout the country, to at once take measures to employ apprentices, also to encourage the sons of plasterers learning the trade, in order to increase the number of efficient men; further alleging, as a reason for the so-called scarcity, the non-employment of hawk-boys,—I should be glad to make a few remarks as to hawk-boys.

One of the best things yet done for plasterers, and all connected with buildings, has been the disbanding of those boys; they were, as a rule, boys of the lowest class, and a constant plague and source of annoyance wherever they were. Whenever any mischief or damage was done, rightly or wrongly, the plasterers' hawk-boys always had the credit of it.

The plasterers of London should rejoice that the hawk-boys are abolished. The man who was the first to discontinue their use, about twenty years back, has lived to see his system adopted throughout London and in many country towns, although at that time the plasterers' societies called special meetings to bring his men out on strike, but lost the vote by a small minority.

As to the scarcity of plasterers, at the present time in London there are more men calling themselves plasterers seeking employment than can find it.

But as to efficient men, that is another question, and a question not easily answered while the present system of "labour only," or task-work, is so much the order of the day. Such men are passing away, and will become extinct unless other means are adopted than at present. What are those means to be, and who is to take them?

Competition is so rife in the building trade that builders know not how to complete the work for the price they take it at. Day-work is too costly; the recourse is task-work. Thus it is let to whoever comes in the way; quantity is the order of the day, quality is not considered; to get it done and to get away is the rule.

So long as this class of men can get a Saturday night with a few shillings over the ordinary wage, or be lucky enough to put in a "light one" or "dead one,"—terms well known,—what care they? I maintain these are not the men to train up apprentices to become efficient mechanics. The master plasterers, men who in former years were apprentices themselves, and took an interest and delight in their work, men who were able to instruct and train up apprentices, are becoming obsolete; if any person would take the trouble to inquire, he would not find so many efficient and practical master plasterers in London as in many provincial towns, especially in the Northern districts, where each trade is respected and encouraged, and whence we at present obtain many of our best men. Where is the remedy? I maintain that it is only in the hands of architects and the workmen themselves. If the architect or his clerk of works would take steps in order to abolish the "labour only" system, and insist upon the work being executed in an efficient manner, and the plasterers themselves refuse to work for these taskmasters, we might be looking forward to a better state of things. As it is, builders will not be troubled with apprentices, neither will respectable people apprentice or send their sons to work for these so-called master plasterers.

That these few remarks may be the means of eliciting inquiries as to the present condition and future welfare of plasterers in London, is the earnest desire of one who has made his trade his study and delight.

A Plasterer.

P.S.—It must not be supposed that I include all under the ban; there are honourable men on both sides, but few in comparison with the many.

ARCHITECTS AND CORPORATIONS.

TALLAND SCHOOL BOARD *v.* TREVAIL.

At the Liskeard County Court on the 17th inst., before Mr. M. Bere, judge, and a jury, the Lansallos and Talland United District School Board brought an action against Silvanus Trevail, architect, Tywardreath, to recover the sum of 30*l*. 9*s*. 7*d*., money alleged to have been had and received by him for the use of the plaintiffs. Mr. B. Childs appeared for the plaintiffs, and Mr. Collins, of Bodmin, for the defendant.

Mr. Childs, in opening the proceedings, said his clients had occasion to build some schools, and engaged the defendant as architect, and he gave some idea of what the probable cost would be. It was agreed that he should be remunerated at the rate of five per cent. upon the building outlay, and be allowed all reasonable travelling expenses. This was ratified in the presence of the whole Board, and Mr. Trevail drew up the plans and specifications for the new buildings, the probable cost of which he told the Board would be 1,400*l*. or 1,500*l*. Invitations for tenders were issued, but the amounts were so much in excess of the sum mentioned by Mr. Trevail that the Board was astonished, and said it was impossible for them to erect such a costly building. They thereupon asked Mr. Trevail to reduce the plans so as to diminish the cost of the building. This was done, and the ultimate cost of the building was 1,785*l*., on which the Board argued the defendant was only entitled to five per cent., and his reasonable travelling expenses. His clients had from time to time paid Mr. Trevail sums of money on account, and altogether he had had 30*l*. in excess of his proper remuneration of five per cent. His clients had pointed out to Mr. Trevail that they had paid this money in error, and asked him to refund it. This he had declined to do, and had put in a counter-claim for professional services, arguing that the amount he had obtained was only fair and proper remuneration.

John Gould Lakes, residing at Polperro, formerly clerk of the Board, said he remembered Mr. Trevail coming before the Board, and suggesting that he should be paid five per cent. on the building outlay, and reasonable travelling expenses.

Thomas Mills, chairman of the School Board, corroborated this statement.

His Honour.—You are a corporate body, and cannot enter into a contract without affixing the corporate seal. You must show a proper legal contract between yourselves and Mr. Trevail.

Witness, continuing, said a minute resolving to reduce the plans was entered on account of the excess of the tenders over the cost estimated by Mr. Trevail. He accordingly modified the plans, and on the 26th of March, 1877, the tenders were again sent in, and that of Mr. Godfrey, of Liskeard, accepted for 1,550*l*. Mr. Trevail was not in constant attendance on the work, and witness had had to advance money because he had not the architect's certificate to pay the builder out of the public funds.

Cross-examined.—Was present at the meeting when the Board sent 127*l*. to Government as the architect's charges. Witness signed the application himself. Mr. Godfrey's contract was afterwards increased from 1,550*l*. to 1,600*l*.

Edwin Hill, master of the Board school at Polperro, made out a list of the furniture he would require, and from an illustrated list of desks produced by Mr. Trevail he selected those required, and Mr. Trevail, who was sending up an order to London, asked witness to let him order them, which he did.

Mr. Childs.—That is my case, your Honour.

His Honour.—There is nothing before the Court yet.

Mr. Childs.—I submit that he contracted to do the work at a remuneration of 5 per cent.

His Honour.—You have not proved the outlay.

Mr. Childs.—There is the architect's certificate of an expenditure of 1,785*l*. 17*s*. 6*d*.

His Honour.—The estimated cost on the first plan was 2,250*l*., and the question is, what was the agreement between the Board and Mr. Trevail,—whether it was to pay upon the work considered in the first specification, or whether on the actual cost.

Mr. Collins, in defence, urged in the first place that the agreement in the minute, not being sealed with the corporate seal of the School Board, was not valid; and that money paid with a full knowledge of all the circumstances in the case could not be recovered, and quoted cases in support of this view.

His Honour.—The first point is a very strong one, but I do not like to shut up the case upon that.

Silvanus Trevail, architect, stated that he arrived at his first estimate of 2,250*l*. as being a proper outlay on the first set of plans. He charged them at that price, and gave the Board the benefit of the alterations for a less costly building, for which he had to make fresh plans, the expense of which would be about twenty-five or thirty guineas. He attended the meeting of the Board especially to consider the subject of the furniture of the schools. He ordered it, and had been accustomed in other schools to receive commission on such orders. He made a charge of

two guineas for the measurement of some extra work not in the plans. He had made thirty-one journeys altogether to Polperro.

Cross-examined.—No minute was read over to him at the meeting of the Board when he first made the bargain. He told the Board that he must have his "incidental expenses." Had never told any member of the Board that the cost of the schools would be about 1,500*l.*

By the Jury.—When the Board agreed to reduce the cost of the building, it was decided that witness should be paid for his trouble in altering the plans.

His Honour said he should submit five questions for the consideration of the jury. The agreement was clear and distinct that the architect should be paid five per cent. upon the building outlay, and his reasonable travelling expenses. The first sum, which was admitted to be fairly and properly paid, was 89*l.* 5*s.* 5*d.*, as commission upon the 1,785*l.*, which was the actual sum the school had cost. The first question was, what was a fair remuneration for the second set of plans? Mr. Trevail had prepared one set of plans, accompanied by specifications, which made the Board tremble about the cost they were about to incur. They asked Mr. Trevail to prepare a fresh set of plans, and he was of opinion that he was entitled to be paid a fair amount of money for his trouble and expense. The only evidence they had of the amount to which the architect was entitled was that of Mr. Trevail himself, who set it down at from 25*l.* to 30*l.* The next question was, was the defendant entitled to any commission on the price of the school furniture, or for the trouble he took in ordering it? The letters from the Board showed clearly that they had consulted Mr. Trevail in the matter. Was defendant entitled to any payment for measurement of extra work? and, if so, was two guineas,—the sum mentioned by Mr. Trevail,—a fair sum? Another query was, how many journeys did defendant make, and what was he entitled to be paid? And lastly, was he entitled to any sum for stationery, postage, &c.?

The jury, after a brief consultation, found Mr. Trevail entitled to 15*l.* for the second set of plans, two guineas in the matter of ordering the furniture, his full charge of two guineas for the measurement of extra work, and his full charge of 11*l.* 11*s.* 4*d.* on account of his journeys. They awarded nothing on the question of postage, stationery, &c.

His Honour reserved judgment, in order to consider the technical objections offered by Mr. Collins.

UNHEALTHY BUILDINGS.

A STRANGE COLLISION.

At Southwark, Edward Nutfield, as the agent to the owners of 52, 53, and 55, Gun-street, situate between the Borough-road and the Blackfriars-road, inhabited by costermongers and haddock-smokers, was summoned before Mr. Bridge, by Mr. Edwards, the sanitary inspector of St. George's Vestry, for refusing to obey the order of Mr. Partridge to have the houses cleansed, repaired, and put in a habitable condition, the state they were in being injurious to the health of the inhabitants.

Mr. Lambert, from the Solicitors' department of the Metropolitan Board of Works, said he appeared to support the defendant, who was their agent, and he contended that they had complied with the notices and orders of the magistrate. The houses in question, and a great many others, had been acquired by the Metropolitan Board of Works under the Artisans' Dwellings Act, and arbitration was pending as to the sum to be paid under the Lands Clauses Act; consequently, some of them were tenanted; but he was authorised to say that they were habitable and not injurious to health.

Mr. Bridge thought it was something absurd to find one Board seeking for penalties against another when the tenants could be easily removed.

Dr. Waterworth, the medical officer of health of St. George's Vestry, here stated that the whole area at the back of the Borough-road on the north side was in a very unhealthy state, and the houses had been for a long time in such a filthy state as to be dangerous to the health of the inhabitants. If the houses in question were not closed or pulled down they ought to be properly repaired and cleansed.

Mr. Bridge thought that if a deputation of the Vestry waited upon the Metropolitan Board the houses might be closed within a reasonable time. He adjourned the summons for a month.

The Board of Works have been placed in a false position by some of their officers.

PAVEMENT LIGHTS.

HAYWARD *v.* HAMILTON AND ANOTHER.

This was an action before Mr. Justice Hawkins and a Special Jury, in the Exchequer Division, for the infringement of a patent for improvements in the construction of pavement lights.

Mr. Webster, Q.C., and Mr. E. Carpmael appeared for the plaintiff; Mr. Aston, Q.C., and Mr. Macrory for the defendant.

The plaintiff is an engineer in Union-street, Borough, and the defendants are also engineers, carrying on business in Kingsland-road. On the 31st of July, 1871, letters patent were granted to the plaintiff's brother, now deceased, for "improvements in pavement lights," which substantially consisted of a mode of introducing in glazed pavement or area lights glass prisms of a particular shape, by means of which the light was thrown in a given direction,—for instance, into a room or cellar. The plaintiff's case was that the defendants, one of whom was formerly in his employ as foreman, had infringed this patent by manufacturing pavement-lights upon a similar principle. The defendants denied the novelty of the invention, and said that prisms of the kind claimed had been in common use prior to the date of the patent by manufacturers of reflecting telescopes, and engineering, optical, and mathematical instruments for the purpose of reflecting light.

After hearing the evidence on both sides, which was chiefly of a scientific character, the jury answered the questions put to them in favour of the plaintiff, and found that the defendants had infringed the plaintiff's invention.

The Judge entered a verdict for the plaintiff, but gave leave to the parties to bring the questions of law involved in the case before the Divisional Court.

The Sheffield Operative Plumbers struck on Monday against a proposed reduction of wages.

Books.

A Digest of Cases relating to the Construction of Buildings, and the Liability and Rights of Architects, Surveyors, and Builders in relation thereto. By E. Stanley Roscoe, Barrister-at-Law. London: Reeves & Turner, Chancery-lane. 1879.

With our permission, and at the suggestion of several of our readers, Mr. Roscoe has issued as an inexpensive little book the Digest of Cases relating to the Construction of Buildings, which originally appeared in this journal. It includes all the cases which have as yet been decided in regard to the erection of buildings, so that "any one who is professionally interested in this subject, whether as lawyer, architect, or builder, will be able, within a small space, to find any point arising directly out of building operations which has hitherto been decided after an argument in court." It does not, however, include decisions arising out of the Metropolitan Building Act, and local statutes, as these are to be found elsewhere. To the digest, Mr. Roscoe has added Forms of Pleadings, Building Agreements and Leases, and recognised Conditions of Contracts. The volume will be found very useful.

"*The Science of Taste.*" We have received several letters from the author of this volume (noticed at p. 1220, *ante*), asking for a justification of the opinion expressed of his design for the improvement of the entrance-gate at Hyde Park-corner. We decline, of course, any discussion of our review; but if he will lend us the engraved block illustrating his design, we will insert it, and allow our readers to judge for themselves.

SCHOOL BOARD SCHOOLS.

Halifax.—The formal opening of the Haugh Shaw-road Board Schools, Halifax, took place on the 10th inst. The schools have been erected from the designs of Messrs. Leeming & Leeming, architects, whose plans were selected in competition. The style adopted is Elizabethan. The building provides accommodation for about 800 scholars, with separate school-rooms for the boys, girls, and infants, and ten class-rooms for their joint use. Cloak-rooms, lavatories, and other conveniences are provided. Cross-ventilation of the school and class-rooms is provided by natural means, and in every room throughout Shillito & Shorland's patent ventilators are applied for admitting fresh air, which can be regulated at will. For extracting the vitiated air, Boyle's system is used. No plaster has been used on the walls, which are pointed and walled in Flemish bond. A painted brick dado runs round the rooms and corridors throughout, and is finished with a glazed brick capping. The cost of the building, together with the boundary walls, playgrounds, seating, &c., has been about 6,800*l.* The following contractors have carried out the work: Masons, Messrs. Fearnley & Firth; carpenters and joiners, Messrs. Charnock & Sons; plasterer and slater, Mr. Alfred S. Blackburn; plumber and glazier, Mr. John Naylor; painter, Mr. John Binns; asphalters, Messrs. Haigh & Ballough; whitesmiths, Messrs. Hirst Brothers; heating-apparatus fixers, Messrs. J. & J. Butterworth. Mr. R. J. Bryan has acted as clerk of works.

Sheffield.—On the 10th inst., Sir John Brown, the chairman of the Sheffield School Board, formally opened a new Board school in Burton-street, off Langsett-road. The buildings are in two blocks, one containing the boys' department, with play-shed and a house for the caretaker, and the other containing the infants' department on the ground-floor, and that for girls on the upper-floor. The boys' department consists of a large school-room, with two large and two smaller class-rooms; the girls' department consists of a school-room of considerable height, three good class-rooms, and a larger class-room, which contains special fittings for cookery lessons; the infants' department comprises a main school-room, with two class-rooms in connexion, and a smaller school-room for junior infants, to be called the "babies' room". The total accommodation provided is for 300 boys, 320 girls, and 340 infants. The buildings are of stone, with rock-coursed facing and ashlar dressings, and the rooms throughout have dados of varnished pitch-pine, all the lobbies and staircases being lined with glazed bricks. The cost was 10,700*l.* Messrs. Innocent & Brown are the architects.

Miscellanea.

Value of Theatrical Property in London. The great value of theatrical property in London is illustrated by the circumstance that Messrs. Gatti, as appears by the report of the hearing of their action against Mr. Webster the other day, hold mortgages on the Adelphi Theatre to the extent of nearly 46,000*l.* "Probably" (says a writer in the *Daily News*) "60,000*l.* would be a moderate estimate for the market value of the freehold; and we believe that the cost of building another theatre of about the same size, which will shortly be erected immediately behind the main street on the other side of the Strand, including the plot of ground, is 55,000*l.* Even such large capital sums as these, however, obviously do not prevent London theatres from yielding remunerative rents. The nominal rent of the Adelphi, specified in Mr. Webster's lease to Mr. Chatterton for twenty-one years from January, 1874, was, as appears from the same report, 2,550*l.* a year; but it also appears that there was an arrangement substantially equivalent to a premium of 16,000*l.* The present estimated value of the Adelphi is, we believe, nearer 4,000*l.* a year, which would, of course, represent an excellent return for a capital of 60,000*l.* invested in property of that kind. In considering the position of theatre landlords, and of their lessees, it is to be borne in mind that over and above the specified rent the tenant not only pays parish rates and taxes, but, though protected by only a short lease, frequently executes, at his own cost, extensive alterations and improvements, and generally pays fire insurance. The latter item is especially burdensome, owing to the fact that the insurance offices,—not without reason,—regard every theatre as predestined to be destroyed by fire. Fifty shillings per cent. is a common insurance rate for theatres."

Destruction of Woolwich Pier. — An alarming occurrence took place on the River Thames, at Woolwich, on Monday afternoon, just before dusk. The *Canada*, one of the immense iron vessels of the National Line, on her journey to New York, with passengers and merchandise, was in tow of two powerful steam tugs, and her own engines were at work, while the arrangements on board as to the helm and the look-out are said to have been as exact as though the ship were at sea. When passing Woolwich Dockyard, the *Canada* was seen to swerve over to the starboard, apparently with the view of avoiding collision with some other vessel. The tide, which was still running up in considerable strength amidstream, seemed to carry the stern of the huge ship round, and her steerage power was probably lost for a few minutes, during which the speed, which remained unexpended, carried her inside Woolwich steamboat pier at Roff's Wharf, and she crushed through the bridge as if it were matchwood, emerging on the other side herself unscathed. The destruction of the pier is complete, the whole length of the bridge, which measures about 100 ft., being an utter wreck.

New Corporation Offices, Southampton. The Town Council of Southampton having, after a great deal of consideration, decided not to incur the expense of erecting a new Town-hall, but to provide new public offices for the Corporation on the Audit-house site, the contract was secured by Mr. John Crook, a native of the town, and for some weeks past Mr. Crook's workmen have been busily engaged in pulling down the old buildings, and preparing the foundations for the new structure. The corner or memorial stone of the new offices was laid on the 25th ult., by the Mayor (Mr. J. Blount Thomas, J.P.). The buildings are being erected from the designs of Mr. James Lemon, architect.

Memorial of the Late Princess Alice.—The Prince of Wales has just erected in the church of St. Mary Magdalen, Sandringham, a tablet to the memory of his lamented sister, Princess Alice (Grand Duchess of Hesse). The work, which has been executed by Mr. J. E. Boehm, A.R.A., consists of a medallion portrait in marble of the Grand Duchess.

Society of Arts.—On Wednesday evening the inaugural address of the 126th session of this society was delivered by Lord Alfred S. Churchill, who subsequently presented a number of medals and prizes offered by or through the Society.

West Kensington.—A new Wesleyan chapel, at the junction of the Netherwood and Brook Green roads, West Kensington-park, was opened on the 30th ult. The structure is early English in style, the materials being Kentish rag-stone, with Bath-stone dressings. At the north-west corner is a gabled and crocketed spire. The interior of the chapel consists of nave and aisles constructed with iron columns, and finished with cascades above the galleries. The whole of the interior woodwork is of picked yellow deal, stained and varnished, except the pulpit, which is of clean selected pitch-pine, decorated with sunk and relieved ornament. In the basement is a lofty schoolroom, flanked by class-rooms, the whole capable of accommodating upwards of 400 children. The chapel and galleries will seat 1,000 persons. The building was commenced November 30, 1878,—eleven months ago. Owing to the severe winter, however, the works remained stationary for three months; so that, actually, the structure has been erected in the short space of eight months. Mr. Charles Bell is the architect, and Messrs. Lucas & Son were the contractors. The immediate supervision of the building was in the sole charge of the contractor's foreman, Mr. Doody. The contract price was 6,860*l.*

Kensington Parish Church.—The top-stone of the spire of the new Church of St. Mary Abbotts, Kensington, was laid on the 15th inst., by the Vicar, the Hon. and Rev. E. Carr Glyn. The church, which has cost nearly 50,000*l.*, occupies the site of the old structure (pulled down in 1869), and was designed by the late Sir Gilbert Scott, R.A. A plan and external view were given in our volume for 1870 (pp. 8, 11), and an interior view will be found in our volume for 1872 (p. 927). The stone used is Kentish rag, with Box Ground for the facings and the spire. As *data* for comparison the following details may be interesting:—The total length of the church is 179 ft.; the breadth at the transept, 109 ft.; the height of the nave, 73 ft.; from the ground to the top of the vane on the spire the height is 278 ft., the tower being 112 ft., the spire 152 ft., the iron vane rising 14 ft. above the top-stone. Of the eight old bells, three have been recast and two new ones have been added, by Messrs. Warner & Sons. The works have been executed by Messrs. Dove Brothers.

Wolverhampton Union Offices. — The foundation-stone of the new Union offices in St. Peter's-close, Wolverhampton, was laid on the 16th ult. The offices will be three stories high, and will be of brick, with stone dressings. On the ground-floor will be the private and general offices of the clerk to the Board, the relieving officers' department, the dispensary, and general waiting-room; on the first floor a consulting-room and caretaker's residence; and on the third story a store-room and attics. The offices will have a frontage of 81 ft. on the Horsefair side, and 53 ft. on the St. Peter's-close side, the angle being occupied by an oriel window terminating in a turret. The estimated cost is about 3,000*l.*, and the work, which is being carried out by Mr. David Evans, builder, of Dunstall-lane, from plans prepared by Messrs. Banks & Doubleday, architects, Wolverhampton, is to be completed by Lady-day next.

Honour to a French Architect.—The city of Marseilles has decided on the erection of a large marble bust, in honour of a Marseilles architect, M. Henri Esperandieu. "Never" (says the Paris correspondent of the *Times*) "was homage better deserved. If M. Esperandieu had built in Paris or any other great European capital what he has constructed at Marseilles, he would have left behind him the reputation of being one of the greatest architects of this century. I refer to the beautiful structure at Mareilles called the Palais de Longchamp. Unfortunately, it is not situated on a site worthy of it. The adjoining square, the promenade conducting to it, the side streets, and surrounding houses are mean-looking, ill-kept, unpicturesque, and ugly."

Fall of a Gallery.—On the occasion of a crowded political meeting at Dewsbury, on Tuesday, a terrible accident occurred, a large gallery at the end of the meeting-place,—a skating-rink,— falling a distance of five or six yards, and carrying with it about 250 or 300 people, nearly all of whom were working men. Twenty or thirty persons were injured, and four deaths have taken place. Buildings receiving large numbers of persons ought to be periodically examined.

Sewage-Farm Produce at Bedford.—The mangolds, swedes, and carrots on the Bedford Farm were sold by auction on the 10th inst., and, with the exception of the swedes, they commanded more than the prices of past years. The crops, though good for the season, did not reach the weight sometimes attained. There were times when the liquid sent down from the town along with the storm water could not be distributed on the land, for the rainfall alone at the adjacent observatory at Cardington amounted to no less than 1,900 tons an acre during the past six months. At the auction the carrots ranged from 15*l.* to 20*l.* an acre, being an average of over 16*l.* For the swedes 9*l.* to 10*l.* was obtained, and the rates for mangolds ranged from 13*l.* to 19*l.* The farm extends to 180 acres, and the rent is fully 5*l.* an acre. There is a large part used for growing market-garden crops, and onions, for example, average 30*l.* an acre, and in the rotation there is from 24 acres to 30 acres in Italian rye-grass, which does not average more than 12*l.* an acre, while it ought to make 20*l.* The supply of this grass has always been in excess of the demand, and the Corporation has (according to the *Bedfordshire Times*) in conse quence resolved to build dairy and piggery premises, with yards and shedding. These buildings, which are approaching completion, will accommodate from twenty to thirty cows.

The Architectural Association's Session, 1879-80, commences this (Friday) evening, the 21st., when the esteemed president, Mr. S. Flint Clarkson, will deliver an address. On the 5th prox. the annual *conversazione* will be held. The syllabus of papers for the remainder of the session promises the following:—

Dec. 19, 1879, "Common Sense in Architecture," by Mr Cole A. Adams; Jan. 2, 1880, "Architectural Illustrations and their Classification," by Mr. R. L. Cox; Jan. 16, "Soul Bay and its Churches," by Mr. Basil Champneys; Jan. 30, "Competitions," by Mr. Robert Walker; Feb. 13, "The Domestic and Civil Architecture of Germany between 1500 and 1700," by Mr. H. W. Brewer; Feb. 27, "Structures between the Piers of Ground-Story Arcades in English Churches," by Mr. T. J. Willson; March 12, "Famous Kentish Houses," by Mr. S. W. Kershaw, M.A.; April 23, "Haddon Hall, Derbyshire," by Mr. T. Roger Smith and Mr. R. E. Smith; May 7, "Unreal," by Mr. E. Ingress Bell; May 28, "Some Old Italian Architects and their Works, with Thoughts on an Architect's Education," by Mr. W. Scott; and, June 11, "The Special Planning and Arrangement of Sunday Schools," by Mr. C. G. Maylard.

The new "Brown Book" shows the Association to have 811 members, 630 being resident in London, and 181 elsewhere.

Art in Liverpool.—At a recent meeting of the Notes and Queries Society, Mr. Hall Caine advocated the establishment of a life-school in Liverpool. He said it was an astonishing, almost a shameful thing, that, whilst Manchester had two life-schools (notably one at its Royal Institution), and Edinburgh and Aberdeen a good life-class each, and London several such classes, Liverpool was without anything of the kind at all worthy of its name and of the place it took in English art. He thought a life-school should be started under corporate auspices, and supported by public funds. It only needed that some one should move first in the matter, and then we should have some chance of a real school of art in Liverpool.

Obituary.—Mr. John Hanvey, C.E., Borough Surveyor and Town Engineer, Dover, has died somewhat suddenly. A few days ago he went to his office and transacted his business as usual, but, having had a hard day's work, he complained that he was unwell and fatigued. He was advised to ride home, where his housekeeper left him to get him some tea; on her return she found he had expired, the cause of death being apoplexy, brought on by disease of the heart. Mr. Hanvey is spoken of as a most efficient public officer. For some years he was engaged on the Birkenhead Dock Extension Works; thence he went to Gloucester as the city surveyor; and thence, in 1860, he went to Dover.

Fires.—Early on Sunday morning last St. Leonard's Established Church, in Edinburgh, was destroyed by fire. It is supposed that the fire was caused by the overheating of the stove. The church was only opened about seven months ago, and was erected at a cost of between 7,000*l.* and 8,000*l.*——On the same day, also early in the morning, the mansion known as High Grove, Eastcote, near Pinner, the residence of Sir H. Hume Campbell, bart., was totally destroyed by fire. The only occupants of the mansion at the time of the outbreak were the female domestic servants. The fire is attributed to a defective flue.

Canterbury Cathedral has been re-opened after being closed to the public for about two months for the purpose of re-pewing the choir. The authorities engaged the services of the late Sir Gilbert Scott to act in conjunction with their architect in devising plans for re-pewing the choir, and for other proposed works. Ultimately, the plans submitted were adopted, and ordered to be carried into execution under the direction of Mr. J. O. Scott, son of the designer. The carving was entrusted to Messrs. Brindley & Farmer, of London. The cost of the re-pewing, exclusive of alterations to gasfittings, hot-water apparatus, new flooring, &c., amounts to 6,000*l.*, and the whole expense will probably fall little short of 10,000*l.*

The Shoreditch Tabernacle.—The new Tabernacle in connexion with the Baptist cause in the East of London has been opened. The new building, which takes the place of one formerly on the same site, is built to seat 3,000 persons. It has already cost 10,000*l.*, but the Rev. W. Cuff, who is the pastor, contemplates spending 20,000*l.*,—a school, a club, and other works of a like character being projected.

The West Kent Main Sewerage Board have accepted the tender of Mr. Henry Potter, of Stepney (amount 30,428*l.*), for an extension two miles and a half long of their main sewer from Holloway Farm, near Bromley, Kent, to Beckenham. The sewer will be constructed principally of concrete. Sir J. W. Bazalgette, C.B., and Mr. Alfred Williams are the engineers.

The Elgin Marbles.—"H. F." says, "There is a statement in Mr. Mahaffy's recent book on Modern Greece which has, I should think, startled all who have read it. It would seem that a large part,—I think it says half,—the original collection of the Elgin Marbles are now in shallow water off the Greek coast."

Fatal Fall of Buildings in Tottenham Court-road.—On Thursday morning some old buildings in Tottenham Court-road which were either in course of alteration or demolition, suddenly fell in, burying about a dozen men. One death is reported as we go to press.

Remains from Ephesus.—During the past week the remains of an ancient frieze, with reliefs, have been received in the Old Museum at Berlin.

TENDERS

For the erection of the North London Hospital for Consumption, Hampstead. Mr. T. Roger Smith, architect. Quantities by Messrs. Mann & Saunders. Contract No. 1.

Hobson	£11,346 0 0
Aldin	10,706 0 0
Stimpson	10,633 0 0
Thompson	10,330 0 0
Roberts	10,289 0 0
Holland	10,112 0 0
Higgs & Hill	9,980 0 0

For alterations and additions to the Duke of Abercorn public house, High-street, Kensington, for Messrs. Watney & Co.:—

	Gross amount.	Less old materials.
King	£1,362	£10
Auley	1,100	15
Hockley	1,098	18
S. & G. L. Mann	1,095	20
Grimwood & Sons	1,093	20
Hook & Oldrey	1,085	27
Stimpson & Co.	1,078	45
Wells	970	20

For building three villa residences in the West Green-road, Tottenham. Mr. Spencer W. Grant, architect:—

	Pair of semi-detached.	Detached villa.
Bangs	£2,047	£1,070
Williams & Son	1,845	970
Horlock	1,800	1,000
Edgar	1,793	968
Pocock	1,795	954
M'Cowan	1,700	992
Bell	1,670	871

For new residence, Fitz-John-avenue, Hampstead, for Mr. T. Uzielle. Mr. Thomas, architect:—

Macey	£5,230 0 0
Thorn	5,025 0 0
Patman & Co.	4,933 0 0
Chappell	4,860 0 0
Burford	4,830 0 0
Manley (accepted)	4,770 0 0

For alterations and additions to Nos. 7 and 8, Denbigh-mews, Notting-hill, for Mr. Egg. Mr. Lewis, architect:—

Gellatley	£598 9 0
Bowden	612 10 0
Roberts	339 0 0

For alterations and repairs to the British Queen public-house and to No. 37, Cumberland-market, for Messrs. Garrett, Whitaker, & Grimwood. Mr. Percy Hunter, architect:—

Falkner	£448 0 0
Gould & Brand	418 0 0
Mark	330 0 0
Horton (accepted)	327 0 0

For two engines and boilers in connexion with sewerage works, Belgrave, Leicester. Mr. E. F. Stephens, C.E.:—

Tipping & Co.	£1,427 0 0 !
Turner	1,220 0 0
Bridges & Son	1,220 0 0
Emerson & Co.	1,215 0 0
Ruston, Proctor, & Co.	1,180 0 0
Atlas Engine Company	1,140 0 0
Sharples	1,080 0 0
Cameron	1,000 0 0
Howarth	990 0 0
Jackson	977 0 0
Scott & Son	956 0 0
Holliday	950 0 0
Richardson	892 15 0
Tangye Bros.	880 0 0
Bagshaw & Son	869 0 0
Coalbrooke Dale Company	850 0 0
General Engine and Boiler Co.	849 0 0
Wood, Baldwin, & Co.	837 0 0
Spencer & Gillett	806 0 0
Walker, Eaton, & Co.	800 0 0
Wolstenholme	775 0 0
Pontifex & Wood	760 0 0
Rice & Co.	748 18 6
Jessop	713 13 0
Appleby Bros.	680 12 0
Gimson & Co.	636 10 0
Withenshaw & Co.	580 0 0
Murray	565 0 0
Warsop & Hill (accepted)	525 0 0
Grimsley & Co.	490 0 0 !

Robertson; Roberts; Richards, Glaskin, & Co.; and Oldamedge Boiler Works Co., were informal.

For painting and decorating the interior of St. Swithin's Church, London stone. Mr. T. E. Knightley, architect:—

Keddle	£433 0 0
Land	425 0 0
Ramsey	418 0 0
Motter	413 0 0
Greenwood	410 0 0
Harrison & Wood	419 0 0
Mansfield (accepted)	380 0 0
Pitman (too late)	345 0 0

For alterations and additions to the Stapleton Hall Tavern, Crouch-hill, Hornsey, for Mr. Chamberlain. Mr. J. Viney, architect:—

Williams & Son	£1,135 0 0
Lamble	1,037 0 0
Atherton & Latta	880 0 0
Jackson & Todd	852 0 0
Burch & More	833 0 0

For house in the Avenue, Eltham-road, Lee, for Mr. G. T. Mackley. Mr. W. T. Gates, architect; Mr. S. Young, surveyor:—

Kiddle & Son	£2,049 0 0
Tongue	1,950 0 0
Outhwaite	1,943 0 0
Grover	1,823 0 0
Jerrard	1,797 0 0
Staines & Son (accepted)	1,786 0 0

For villa residence, Bedford, for Mr. R. H. Coombs. Mr. John Usher, architect:—

		Boundary walls.
Hull	£1,490 0 0	£97 0 0
Knight & Boston	1,438 9 6	111 19 0
Lilley	1,405 0 0	112 0 0
Corby	1,398 0 0	111 0 0
Spencer (accepted)	1,377 15 0	110 0 0

For converting existing premises at Bedford, into a coffee tavern for the Beds Coffee Tavern Company, Limited. Mr. John Usher, architect:—

Harrison	£488 0 0
Freshwater	465 0 0
Long	450 0 0
Adams	455 0 0
Moore	433 10 0
Potter	410 0 0
Hull	400 0 0
Lilley (accepted)	391 10 0

For St. Alban's Public Library and School of Science and Art. Mr. W. H. Syme, architect. Quantities supplied:—

Dove Bros.	£2,295 0 0
Miskin	2,122 0 0
Savage	2,081 10 0
Turner	1,999 15 0
Longmire & Burge	1,970 0 0
Clifford & Gough	1,933 4 0
Rayment & Son (accepted)	1,935 0 0

For alterations and additions to Meadow Bank, Hampstead. Messrs. Spalding & Evans, architects. Quantities by Mr. Geo. Fleetwood:—

Evans	£912 0 0
Grover	880 0 0
Outhwaite & Son	845 0 0
Roberts Bros.	821 0 0
Saunders	795 0 0
King & Brown (accepted)	791 10 0

For alterations at the Pilot Hotel, Gunnersbury. Mr. J. O. Cook, architect:—

Mark	£370 0 0
Raymes	280 0 0
Harris	210 0 0

For erecting four additional warehouses, Bucknell-street, Oxford-street. Mr. W. S. Treharne, architect:—Downs & Co. (accepted).

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G. A.—M. A.—J. E.—S. B. L.—J. J. M.—Dr. J. W. B.—J. F.—E. K.—L.—C. F. M.—J. F.—S. C.—H. St. J.—J. J. H.—M. & C.—N. S. & H.—W. A.—H. T. W.—P. H.—S. F. C.—A. W.—J. L. N.—C. D. & Co.—S. & Son.—S. & C. M.—H. & W.—A. G.—J. P.—M. M.—P. J. B.—H. Bros. (agent for New Zealand).—O. & L.—C. R.—Mr. D.—W. T. (we see no reason why use should not be made of the maps for the purpose mentioned).—W. B. D. & Co. (should have sent list and amounts).—M. D. (not yet).—J. D. H. (next week).—A mass of correspondence too late to be considered.—J. H. (similar matter was already in type).—F. P. (too late).

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The Builder.

VOL. XXXVII. No. 1921. SATURDAY, NOVEMBER 29, 1879.

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Prout and Hunt.

THE combination in one exhibition of some of the best works of these two absolutely-opposed artists is a practical paradox brought about under the influence of the most brilliant and paradoxical of art-critics. And it may be added that no little of the interest of the exhibition at the Fine Art Society's rooms in Bond-street is due to the vivacious and pointed analytical paradoxes of the said critic himself, embodied beneath the grey-paper back of the *catalogue raisonnée* which is offered to the study of visitors to the rooms.

Mr. Ruskin tells us herein that he has brought together this collection of the drawings of Samuel Prout and William Hunt for two opposite reasons. The Hunt series of drawings are there "to show what real painting is, as such, wholly without inquiry concerning its sentiment and its story. The Prouts are here for an exactly opposite reason,—not at all to show you what mere pencilling is, as such, but what it can pencil for us of real scenery and history." The Hunts for their work, therefore; the Prouts for their subjects. The butterfly in Hunt's drawing of "Flowers, Fruit, and Butterfly" (142) is here "not at all to teach you anything you did not know about butterflies, nor the peach and grapes to teach you anything you did not know about those familiar fruits. . . . . They are here merely to show you what is meant by painting, as distinguished from daubing, from plastering, from rough-casting, from chromo-tinting, from tray-varnishing, from paper-staining, and in general from the sort of things that people in general do when you put a brush into their hands, and a pot within reach of them."

A pretty fair rap at the whole school of impressionists and smudgers; and there could not be, certainly, a better text for the subject than these collected drawings of William Hunt. Among the new and in many respects more interesting developments which English painting has shown of late years, these works have passed out of the notice and recollection of the younger race of art-lovers more than would have been supposed possible by those who previously knew their worth. What is remarkable in them is something different from the brilliant and forcible handling of flowers, for instance, by such artists as Fantin. The latter artist, as a flower-painter, may be considered as much the opposite of Hunt as two painters of the same class of subject, each of the highest order in their way, could be opposite to each other. His obvious aim is to give, not the precise realism of flowers, but the spirit and life of them in the way in which pigments can, as he conceives, best and most forcibly give it. It is the whole feeling and expression of a group of flowers which he endeavours to give, not a realistic imitation of them. He has succeeded splendidly in this; only, sometimes, in his desire to give force and brilliancy, giving by his thick and powerful handling a somewhat solid and painty appearance to his representations, as if they were partly reliefs in paint, and producing an appearance at variance with our idea of the lightness and fragility of flowers. Hunt's method and aim were less brilliant. He wanted simply and honestly to imitate his models, not to make pictures out of them; he wanted to make paint look as like flowers and dead animals, or what is called "still life," as he possibly could, and spared no pains and plodding to accomplish this. We say advisedly dead animals, for he rarely seems to have painted living ones, and then only the human animal, usually in a state of quiescence. But the diligence and conscientiousness of his work strikes one immensely when a number of his best specimens are thus got together. In the butterfly group, just mentioned; in such other specimens of his special work as the "Black Grapes and Peach" (134), the dead hare (138), the herrings and red mullet (144), and the shells (180), there is an absolute success of uncompromising realism, the result of minute observation and hard work, which, as far as it goes, places their author on a level with the greatest painters of the realistic Dutch school. The latter are only greater as they included more in their subjects, and were more ambitious in their aim, for they made pictures; Hunt's are rather studies. In fact, the attempt to make a picture in the higher sense of the word, is, in these works, conspicuously absent. So, also, in his figure-pictures, generally single figures. These are hardly even studies of character; they are accurate representations of individual specimens of humanity. There are, indeed, a certain number of subjects which seem to come under the category of character-studies; those which Mr. Ruskin describes as "representing country life with some expression of its degradation, either by gluttony and cowardice, or rudeness"; and we agree with the critic that the subjects of this class, though, as he says, "apt to be popular," are not the things which we would select if wishing to do honour to William Hunt. On the other hand, those rustic subjects which are simply realistic reproductions of individuals, such as the old man in "The Blessing," and the little girl painted as "The Shy Sitter," are not only most exquisite pieces of painting, but have real feeling, simply because the traits of the original are so completely rendered that, in spite of the mere objectiveness of the artist's aim, they impress us with the same sentiment which we should receive from the actual originals. These works, as well as many of the still-life paintings, are really successful examples of work done under the principle that if you take care of the details, the total effect will take care of itself,—a maxim in the main false and misleading as an artistic principle, but which Hunt's exceptional powers of manipulation enabled him, within his own limits, to turn to splendid account. Had he ventured beyond the modest limits he (usually) set to his work, this principle or practice would have failed him, and we should have found mere manipulation where we had a right to expect more. This kind of failure is illustrated by some of the works in which he did seem to aim at feeling and pathos; he falls short in these works, while the mere fact of aiming at something more than realism seems to have impaired the latter quality. But within his limits he is unsurpassed and hardly equalled, and no works could be better worth study in regard to the object with which they have been thus brought together,—the illustration of what constitutes really conscientious painting.

Our own interest is, however, more especially with the Prout drawings, as the works of an architectural artist, and also because there is something interesting and even slightly amusing in the enthusiasm with which they have been "taken up" by Mr. Ruskin. His admiration for Hunt is entirely in keeping with the spirit of his artistic teaching throughout; but in many ways Prout seems to our feeble vision to be in very decided contradiction to it. For if ever a clever and original artist was a picture-maker, and a mannerist, Prout, in his coloured works at any rate, certainly was so. He had acquired a remarkably fine tone and touch for representing old masonry, and he petrified everything he touched. For all classes of building he had one style and tone, admirably rich and picturesque in its way, but uniform and mannered to a degree. This is ingenuously admitted, with an indulgent tone of forgiveness, in the course of the remarks on some of the drawings; and though we are not ourselves by any means inclined to quarrel with the lenity of judgment thus passed upon a self-taught artist who had developed a special talent in his own way, we could not help thinking with some little amusement, when reading the remarks (for instance) on one case in which Prout had represented wooden window-casements as if they were stone, and another in which an extra story had been added and other alterations made in what professed to be a realistic view of a special scene, what sort of criticism would have been meted out against any artist whom Mr. Ruskin had not chosen to champion, and who had been guilty of the same kind of indiscretion; and our amusement is certainly not lessened when we find that in the same pages in which these slips are extenuated, Prout is described as an artist whom we can always

trust for the facts of a scene,—a completely realistic transcriber. It is not safe for a critic to be too impulsive; impulsiveness adds vigour and poignancy to his style, no doubt, but if the object of criticism be to propound the truth, impulsiveness comes very much in the way. The figures in Prout's scenes, again, are exceedingly conventional; they are always effective and well placed, in so far as their connexion with the whole composition is concerned, but in regard to character and what goes to make the real interest of figures in a picture, they mostly belong to the higher class of drawing-master's art, consisting of figures used merely as part of the material for "the picturesque." One would have supposed from the whole tenor of Mr. Ruskin's enunciations upon art, that nothing could have been more repugnant to his feelings and principles than such a mannered and conventional use of the figure; yet here it is held up to admiration.

Most of the specimens are not, however, from Prout's coloured drawings, but from his pencil sketches (the object of the collection being chiefly to indicate his power with the pencil); and in these the artist's best qualities are apparent, and his most decided mannerisms are not. And as pencil drawings made on the spot, it would be hard to find a better collection than these. Prout, as Mr. Ruskin truly observes, is essentially a draughtsman with the lead pencil, not a colourist. And the peculiar quality of his pencil drawings is their certainty and robustness of touch. There is no niggling, no aiming at fine lines, which can never be carried out in drawing on the spot with pencil, unless the artist took an attendant about with him to continually sharpen points. Many of the finest of the drawings are in comparatively thick lines, though they are not intended as shaded drawings; they are outlines of the architecture and details. The judgment with which, in such a style of handling, Prout seized exactly the *juste milieu* between too much and too little detail or finish, and (still more) the remarkable cleverness with which he contrived by a few lines to give the effect of multiplicity of architectural detail in cases where the scale of the drawing left no room for drawing anything like the multiplicity of the original detail, cannot be too highly admired; the latter, perhaps, can only be fully appreciated by those who have endeavoured to sketch architectural detail on a small scale with no more elaborate implement than pen or pencil-point. Both these high qualities in Prout's drawing are admirably done justice to in Mr. Ruskin's comments. The difficulty in sketches of this kind is in being able at the moment to choose what lines are essential to the total effect and character of the object, and what may be best suppressed as non-essential. As Mr. Ruskin puts it, "the chief art-virtue of the pieces here exhibited is the intellectual abstraction which represents many features of things with few lines." That is just it. It is that "intellectual abstraction" which gives their peculiar value to all works of art in which the means are inadequate to the full representation of the object, and makes such works often among the best indications of the real bent and genius of the artist. We could have wished that all the criticisms in the catalogue had been distinguished by as much common sense and comprehensiveness of idea and expression.

For, indeed, the catalogue is an exasperating admixture of brilliant and pointed remarks, and of eloquent nonsense expressed not seldom in English of very questionable pattern, in which the writer's peculiar affectations and mannerisms of style and expression are irritatingly prominent. The exaggerated value attached to some little detail in a drawing which has taken the writer's fancy, is in some cases almost absurd. In one drawing of the Ducal Palace, Prout has happily connected the palace with the foreground group of boats and figures by the mast of a boat which runs up parallel with one of the columns, fluting its surface with a couple of lines. It is a very successful little contrivance, but nothing more than any one who has an eye to the composition of a drawing may have often done. But we have half a page of rhapsody about it. A very serious drawback in the drawing, viz., that the open character of the arcades of the lower story of the Ducal Palace is destroyed by the shading up of the angle arches, instead of letting the full light be seen through between the columns, is passed over with a gentle rebuke; Prout was too much accustomed to see buildings with the lower story the most solid, to appreciate the contrary effect in the Ducal Palace, &c. The simple fact is that this inaccuracy destroys half the characteristic effect of the building, and the fact that Prout could do such a thing with the building before his eyes is sufficient in itself to throw serious doubts on any claim for him for special accuracy as a sketcher, and certainly is an amusing commentary on the remark a page or two before that Prout is really "as true as a mirror." Very overcharged is the comparison of the Coliseum drawing (71) to Turner, for "power of expressing magnitude and solitude." It seems to us exactly to want scale, and that the scale is only conventionally conveyed to us when we notice the two figures that are introduced apparently for this purpose.

There is, however, one part of Mr. Ruskin's handwriting in the room which can be looked upon with nearly unmixed satisfaction, viz., the few drawings or sketches by himself, chiefly of bits of architecture, on one of the screens. Some of these are exquisite in their feeling and their delicacy of touch, and go far to make one wish that their author had spent more of his time in drawing. It is a pity the author cannot exhibit them without at the same time telling us that he is the only person who can draw architectural detail (which is pretty nearly what his remarks amount to), and that architects fancy they have drawn an ornament when they have got its outline (which is not true); "but in sculpture the surface is everything, the outline follows and is compelled by it." Does Mr. Ruskin really think that he is the only person who knows this?

However, we are very grateful to him for the exhibition; for the catalogue also, for the sake of the brilliant bits and picturesque word-painting contained in it, and in a lesser degree for the amusement which is almost inseparable from its perusal. We may also express gratitude for another little item, a piece of Venetian embroidery of exquisite and rare beauty. It may be mentioned also that Meissonier's famous picture of Napoleon on his white horse, checking the flight of his men over the bridge of Arcis, is exhibited; it has been bought by Mr. Ruskin for "St. George's schools," apparently as much for moral as for artistic reasons. Those who know the work will be glad to meet it again; those who do not should not omit to look at it; it is a master-piece of grand painting on a small scale.

CONSTRUCTIVE ART IN JAPAN.

The early form of structure in Japan appears in the Shinto shrine of the present day, the simplicity of the primitive age being studiously retained in all those buildings dedicated to the ancient faith. The Budhist priesthood endeavoured first to amalgamate with and then gradually to efface the ancient worship, but without complete success, so that many temples and shrines are of a composite character. Recently the revival of the pure faith was followed by sweeping changes, and the separation of the two forms of worship. Then innumerable shrines were erected of the ancient pattern, free of any trace of Budh or other foreign ornamentation, elaborate design, gaudy colouring, gilding, &c. This primitive form seems to have been derived from the simple hut of the early races of the island inhabitants. After the introduction of Budhism in the fifth century, the more pretentious style of building was introduced; large temples, many-storied pagodas, and groups of gaudily-decorated shrines and altars around a central building, became common. The domestic architecture seems to have been but little influenced by that of the Chinese and other near neighbours, and but little progress seems to have been made for ages in the habitations of the tiller of the soil and the poorer artisan.

The visits of Europeans during the latter half of the sixteenth and the first quarter of the seventeenth century left a mark on the age with regard to fortified sites. Many of the citadels, both those of the great cities and the provincial centres, bear unmistakable traces of foreign ideas having been to some extent adopted. Although the buildings appear to have been mere frames of timber and bamboo, tiled and plastered, their foundations, and the facings of the moats and of the mounds upon which these fortified strongholds were erected, were of stone. Some of these moats are of considerable size and extent, and very large blocks of stone, conveyed a long distance, are used to a lavish degree, especially at angles, gateways, &c.,—granite and basalt principally.

Until very recent times no effort was made to improve the private residences or places of business of the Japanese, but within the last few years the natives of large means, some few noblemen, and one or two banking and other corporations, commenced building on a new model, which seems to be a compound of the foreigner's residence at the treaty ports, and the Budhist temple. Subsequently, the Imperial Government, after the first difficulties of the revolution had passed over, employed a number of foreigners, civil engineers, architects, and skilled workmen, and with this aid public buildings have been extensively erected throughout the country. In the metropolis entire streets of houses have been recently built of brick, &c., as an experiment. Visitors to Japan will thus find a most curious admixture from the moment of landing, and will see but little that will appear worthy of much attention, until a visit is made to some of the larger shrines, temples, and old public buildings. The residences of the former great nobles are rapidly disappearing; however, these rarely contained many large buildings. The frequent and often violent shocks of earthquake preclude architecture making rapid advance, and the contrast between the buildings in the foreign concessions in Japan and those erected and occupied by foreigners in China is most marked.

Having thus generalised, we will return to a more detailed description of the various classes of building,—premising that although little can be acquired from a study of Japanese architecture that will be of value, it is interesting, and many forms of building might be copied in our colonies and other places where labour or material is difficult to obtain, or under circumstances where economical buildings of a temporary character will answer all the purposes of more solid, permament, and expensive structures.

For temporary purposes, especially when large sizes of timber are scarce, Japanese houses have many advantages that would commend them to colonists and to those who had the housing of troops. The readiness with which they can be erected, taken down, and removed, would be a strong point in their favour under some circumstances.

In April and May last we said something about Japanese theatres, and the artisan of Japan and his work, and will avoid repetition here. Japanese buildings have been invariably wooden frames, with large roofs; the spaces between the uprights filled in with bamboo and plaster, and the inner partitions principally formed by sliding panels in single and double pairs. Even in the better class of buildings the upper floor is not much used, usually devoted to entertaining guests, &c. Hotels form an exception; we may classify the "tea-houses" and other places of entertainment with the "hotel."

The forms of primitive architecture are, no doubt, perpetuated in the rude huts seen in rural districts,—a frame of light poles, and a roof of bamboo joists and rafters, thatched, not always with straw, but with the eryanthus, and some other kinds of rush and coarse grasses. It is only the better class of rural houses that are tiled, and shingles (split wood) are used to a small extent, for the verandah and passage roofs principally. Where shingles or tiles are used, boards are laid underneath, and the bark of chriptomiria, or, what is deemed more enduring, that of the retinospora, laid upon it; there is a thick coating of mud or of well-worked stiff clay laid on this, in which the tiles are bedded.

The Shinto shrines are of all sizes, from that of a moderate dog-kennel up to the very large group of buildings seen at the more important places.

The larger shrines,—for instance, those dedicated to the fifteenth Mikado Ojin,—often consist of a large building, with a smaller shrine some little distance behind it, and a passage from one to the other, in the form of a bridge; these are often in a quadrangle. The shrine at Kama Kura is on the slope of a hill, with a fine wide flight of stone steps leading up to the terrace that supports the façade.

Every Shinto shrine has erected before it one, or more frequently several, and sometimes a number, of *Tori I*: bird-perches they may be called,—two uprights with a cross-piece curved upwards and outwards, and extending beyond the pillars. These are to be

found constructed of wood, stone, and bronze, and form the distinctive feature prohibited lately to Budhist temples. The *Tori I* of the shrines dedicated to *Iga-no-Mitama* or *Inari*, the rice-bearer, are commonly coloured red; it is at these shrines that stone foxes are seen in such numbers, as well as the votive offerings of coloured drawings of the fox. In the gateways of the principal shrines seated figures of ancient Japanese were sometimes placed in a similar manner to the Gog-and-Magog-like figures at some Budhist temples; but this is not strictly correct, and is not followed out at the shrines recently erected. The shrines are elevated much more than other buildings, the flooring being twice the ordinary distance above the foundations. Occasionally the ends of cross-pieces and portions of the gables are carved, but simplicity is most admired. The *Retinospora obtusa* is the tree most lavishly used for the framing of the shrines, and it is not by any means the cheapest; although said to be the most durable, certainly it is the nicest looking wood used. The panels are filled with slabs of *Chriptomiria Japonica*. The flooring is planked with broad rough boards of the pine, and the timber of the *Thujopsis Dalabrata* is used to a small extent when more plentiful than other kinds. One or two kinds of hard wood are used for special work round the altar, &c. The floors are matted with the ordinary-sized mat, 6 ft. by 3 ft., but, if funds permit, covered with a finer wove mat, and the straw superstructure much thicker than the ordinary 2-in. mat. In place of the dark blue or black border on the two sides (the ends having the matting turned down over them) a white material is used, varied by what is called "Corean pattern," small spots or flowers stamped on in a dark colour.

These shrines are much smaller than the temples, and frequented by greater numbers. The devotees rarely ascend the steps and enter the building, or even go on the balcony that invariably surrounds them. All Budhist sects visit at the same shrines, especially at the shrine of the tutelary deity of the locality, and at one or two others of national importance. The furniture is very simple. Before the door a receptacle for the Peter's pence is a conspicuous object, and on the altars of the shrine a mirror * is frequently placed. In the Shinto shrine idols or paintings are not placed. Formerly the Budhist priesthood engrafted many forms of worship and rites, evidently derived from those of the Budhists of India. On the occasion of festivals other temporary erections were put up, notably a raised platform with a roof, like an enormous old-fashioned four-post bedstead. On these the dances and other mysteries were performed.

The type of the Budhist building varied somewhat, whether or not from the fact that this religion, coming from various sources at long intervals, brought with it the local types. The Southern branch of Buddhism reached Japan from India, while from Corea the rites were brought over, as modified by their passage across the continent of Asia. Again, intercourse with various parts of the Chinese coast would affect the type of architecture.

At Nagasaki the Chinese element prevails in many of the finest temples. At Kioto the Corean style would be most noticeable; while at other places, such as the great temple in Kishiu, the Indian influence would be marked.

The main building of these temples was made as extensive as funds would permit. Some would spread over 1,000 mats, and although the overhanging eaves were not very elevated, the ridge of the roof would sweep up to a great height.

C. Pfoundes.

The Honourable Society of Cymmrodorion, instituted in 1751, "for the Encouragement of Literature, Poetry, Music, Science, and Art," as more immediately connected with Wales, held their annual meeting at the Freemasons' Tavern on the 21st inst. The occasion was interesting on account of there being exhibited the model of a medal to be given by the society to those who may distinguish themselves in the subjects named. The medal is designed by Mr. Joseph Edwards. The merits of the design were fully appreciated, and the president of the society, Sir W. W. Wynn, bart., has headed a subscription list for defraying the expense of cutting the die, which is to be entrusted, we believe, to Mr. Leonard Wyon, of the Mint.

* The mirror is not adored, it is an emblem merely.

THE ART OF THE GLASS-PAINTER.

The amount of money which is spent upon painted glass is and has been for some time enormous. The list we have given in these pages almost weekly for years would alone suffice to prove this, so far as Great Britain is concerned. Early in the present century it received, after long decadence, an impetus which has increased rather than lessened, but the large encouragement bestowed on this art, which in the past produced such gorgeous works, can scarcely be said to have yet led to entirely satisfactory results, and probably it is only since we have shaken off the mistaken teachings of the modern Germans that our artists have produced anything tolerably approaching, even in spirit, the work of the past,—a fact the more to be regretted, as few more effective, more durable, or more artistic memorials can be chosen in which to hand down to posterity and the future the recollection of great benefactors and family or historical traditions.

The extreme diversity of forms under which works of art in general present themselves explains to a great extent, if, at least it does not justify, the strangely differing and often contradictory criticisms which are passed at various times and by different judges on the same work. The critic is not always aware, in the first place, of the end aimed at, or the end to attain which the artist should in every work strive; on the other hand, he but rarely takes sufficiently into account the means which are the most suited for the attainment of that end. The whole value of art in its most extended acceptation, is comprised in these two terms,—the means and the end. For actor and for spectator alike, for artist and for critic, these conditions should be always before their minds.

We have spoken of the art of the glass-painter; among all the many arts, few are more subject to these conditions than this. Since the very recent period of its revival, neither the study nor the efforts bestowed on the subject have succeeded in raising the art to the level of the remarkable works of the earlier ages and the Renaissance. To charm and attract the eye and mind at a first glance is, as is well known, one of the conditions essential to every work of art worthy that name; to present a number of details which invite reflection, and which encourage the pleasure of the discovery of ingenious motives and harmonies,—proof of the thoughtful intelligence, the taste, and the learning of the inventor,—is a second condition possessed by every fine work of art, and in particular by the beautiful windows of painted glass of the early ages and the Renaissance. Among the more modern productions, if here and there may be pointed out some possessing many praiseworthy qualities, many but ill satisfy the critical eye, and shock one with their cold monotony or coarse garishness; harmony is alone found at the sacrifice of brilliancy, and brilliancy at the sacrifice of harmony; but in the old work, on the contrary, these two qualities are almost invariably to be found united, detail and general effect equally well considered, and appropriateness always. By the manner in which they have been conceived, they give to the edifices they adorn a singular animation.

To what causes can be attributed this superiority? Is it to the fabrication of the glass, formerly very thick and irregular? Is it to the knowledge of the association of colours so skilfully practised by the ancients, and the examples of which serve as ample justification for the learned and scientific theories of M. Chevreul on the simultaneous contrast of tones and colours? Can it be traced, as has been remarked in the oldest glass of the twelfth century, to the care which the artist took in leaving scarcely any single piece of glass, however small, without some effort at ornamentation with the brush? Can it be due to the multiplicity and small size of the pieces, and consequently the larger quantity used of lead and black spaces? It is not possible to fail to be struck with the effect of these old works in their well-understood composition and colour, whether displayed in the brilliant tapestries of the Middle Ages, which gave and still give such a mystery and a magic to the churches of those mystic days, or shining soberly in the great painted windows, the figures full of meaning, relieving, now light on a coloured background, now coloured on a grey background, surrounded in each case, whether tapestry or window, with emblematic borders, each portion of which is fraught with meaning and significance.

In vain the effects of time are spoken of. These arguments, possessing, undoubtedly as they do, a great degree of truth, do not bear upon the main question any more than does the statement that we are unable to make our glass as did our predecessors,—an assertion which is now very doubtful; the skill with which the colours in the past were juxtaposed enters more nearly into the question, but, above all, the spirit which then dictated and now dictates the design is the most important.

The secrets do not rest in the mere technicalities of the manufacture: our chemists are, it can scarcely be doubted, superior to those of the past; the superiority of the work of those days rests in the tradition and the respect of certain rules, in the knowledge of the means and of the end. There is no need of other guide; it was that of the great artists of the past in every branch of the art they practised,—it was especially that of the glass-painters and the tapestry-workers. They spent long years in studying before commencing to put their knowledge into practice. They did not argue that imaginations could replace settled theories and principles, or that long and didactic study has a tendency to repress genius. They were artists, and at the same time, by their study, chemists and practical workmen. They were fully aware and always kept before them the object they were endeavouring to attain, and the means at their disposal; they knew the limits of their art, and kept religiously within them, and they created works such as have traversed uninjured century after century, each day increasing in rarity and in their power of arousing our admiration. But such works now are not often produced. Too often, material and mechanical processes are substituted for the inventions of art, when in reality they should only be the auxiliaries. Under this influence the art especially, speaking as we are of the glass-painter, is disappearing, and more than one workshop is at present actively employed, while others may at any moment spring up, in which very little more preparation or trouble has been taken than is necessary in the management of any business or factory.

Without going back to the distant periods earlier than the twelfth century, without speaking at any length of the interesting and rare fragments of coloured glass found in Greece, referring merely to the small coloured tears of flattened glass found in the stone or plaster *claustra* in the windows of the oldest Eastern mosques, to confirm the theory of the reason of our decadence in this beautiful art, we have only to look at the examples which still remain of the epoch when stained-glass windows, composed as they then were in the early days of which we are speaking, of ornaments and figures, became one of the essential elements, one of the necessary complements of a religious edifice, one of the most eloquent beauties of the Christian church.

At the beginning of the twelfth century the palette of the glass-painter was composed of but very few colours, but such was the art shown in the association of the tones, the skilful manner in which the modelling was carried out by the aid of the black enamel, eventually fired, such were the resources which at this primitive epoch the glass-painter had at his disposition, that his work is still distinguished by its happy combinations and harmonious effect. Even the glass windows *en grisaille* of these early days, with their ingeniously-composed compartments, their simple decorations, possessed a decorative effect, at the same time admitting a full share of light into the interior of the church or abbey.

With the thirteenth century, the palette is enriched by new tones, and the system of legendary medallions, or the large figures of holy personages on backgrounds generally composed of blue and red tints. The power and the brilliancy of these windows are in great measure the result of the happy association of colours to which we have referred, to the adjustment between the background and the subject, to the multiplicity and small size of the fragments of glass, to the agreeable contrast produced by the quantity of dark produced by the leadwork, the very inequality in the thickness of the glass, the skill and taste displayed in the use of the black enamel applied with the brush to each piece of the composition, excepting the background, and this of a relatively-restrained superficies. Examples of this beautiful period are familiar to the profession in the Sainte Chapelle, at Reims, at Bourges, at Chartres, at Amiens, at Lyons, at Mans, and in many other

of the Mediæval cathedrals throughout France, England, and Germany,—at Canterbury and York, at Lincoln, and at Salisbury.

The fourteenth century did not entirely continue the methods of decoration of their predecessors, with whose work a fault might be found in their windows preventing the free entrance of sufficient light; the former adopted, therefore, figures of smaller size on architectural backgrounds, in which appeared a brilliant arrangement of niches and porticos in perspective. The field of art is visibly extending, to the detriment of the purity of the earlier conceptions. In England there are not a few specimens of the work of this period; among these may be mentioned, the east window in Bristol Cathedral, and in York Minster; again, examples are to be found in Tewkesbury Abbey Church, and in Exeter Cathedral, the beautiful glass-work of which was mentioned in our columns only a short time since.* In France the high windows of the church of Saint Severin, in Paris, may be mentioned as one among numerous other examples.

In the fifteenth century, the traditions of the art again undergo new transformations. The scraper relieves the monotony of many of the colours, the grindstone produces the most successful imitations of jewels and embroidery, on double glasses of different colours. Enamels of every shade are applied to certain portions of the design. Every possible combination is conceived and carried out; the only object sought is to obtain transparent pictures, works in which art still plays a chief part, it is true, but in which the aim of the real glass-painter is henceforth entirely put aside. Not alone France, but England, Germany, and Italy, offer numerous beautiful examples of this interesting period of the art. In France the churches of St. Merry, St. Gervais, and St. Etienne du Mont (these in Paris), the chapel of the château of Vincennes, contain some curious and beautiful works by Jean Cousin, the Protestant artist, and Robert Pinaigrier, which, with other similar familiar specimens that might be mentioned, are all worthy of study, but perhaps less for the glass-painter than the historical painter. It is the period, however, which seems strikingly to suit the modern artistic conception, and certainly could such works as those of Jean Cousin, at Vincennes, of Bernard Palissy, at Ecouen, of Leprince in St. Etienne at Beauvais, or for the same church Lepôt, of Valentin Bouch's famous window at Metz, and more than one other of this period, and which Lasteyrie has so conscientiously drawn in his well-known work, be again reproduced, or rather emulated, there would be but little reason to complain, even if the ends of true decoration were not entirely fulfilled.

A change has been brought about in the whole tradition; the glass is much thinner, the lead-work feebler, facts to which can be attributed the destruction of so many of the beautiful works of the Renaissance, and showing the strange anomaly of windows of this period being rarer than those produced two and three centuries previously. From a decorative point of view that these later works are inferior to their predecessors, it is impossible to deny.

Far from us, remarks M. Baltard,—a writer who has given much consideration to this subject,—the thought of reckoning as of little importance, pure and correct design. We only wish to point out that this condition must come after the general disposition, and that the tones and shades suitable to the little pieces of stained-glass work of the Renaissance produced for domestic decoration, and intended to be seen at a short distance, are by no means satisfactory; on the contrary, injure the effect when applied to the decoration of great buildings. Let it not be thought that the lead and ironwork so necessary in the production of a large window are an obstacle or a difficulty the existence of which is not to be skilfully overcome. They may be in the varied compositions of the Renaissance, but in the older pieces they play, on the contrary, an important part, and a useful one, not alone as strengthening supports, but also in the general effect, in the accentuation of the compartments, in the definition of the outlines.

The negligence in the consideration of mere mechanical processes, which is to be noticed in all the branches of art, as they tend to become more elaborate and oftener practised, is not alone to be remarked in the art of the glass-painter, but is evident in the very buildings in the adornment of which his work played so important a part. During the Middle Ages it is not difficult to trace the growing feebleness of their constitution from the twelfth to the sixteenth century, a statement which amply finds corroboration in the fact that the churches of the earlier period are now far more solid, in far better state of preservation than those of the latter epoch. Such comparisons could easily be extended to many other objects and other periods, all pointing to the conclusion that in the field of art the first steps are often the surest. Recall the primitive works of architecture, of sculpture, of numismatics (of painting, unfortunately, this can hardly be said), and how impossible it is not to see that they possess in the highest degree a style, a character, and a power of duration which are only found in an inferior degree in the works of later days. The study of sources, commencements, and early development is indispensable to every worker who is sincerely desirous to carry to its height the art of which he is the interpreter.

In the sixteenth century, therefore, the art of the glass-painter may be said to be in decline. The knowledge of the true principle of its use as a decorative medium has lessened; the old methods are abandoned. Not but what, as we have above remarked, many beautiful works were produced. In England the sixteenth century has left some exquisite examples, most of them familiar to the profession: in King's College Chapel, Cambridge; at Westminster, and the windows of Fairford Church, said by some to have been designed by Albert Durer.

With the seventeenth century the decadence is rapid, while, however, numerous beautiful works, from an artistic point of view, are still produced. In the eighteenth century the decadence has reached its depth. The fickleness of public taste, reasons of economy, the antipathy against the art of the Middle Ages, the love of novelty, all conspired to aid in this degradation; a crowning perversion of the decorative utility of the coloured window consisting in the transfer of canvas pictures to the transparency of glass, the most familiar example of which are the windows of New College Chapel, Oxford, designed by Sir Joshua Reynolds and painted by Jarvis; the sister university of Cambridge employing Cipriani to design the windows of Trinity College Library. But worse than this, the old windows of many a country church and cathedral, not alone in England, but over the whole Continent, were taken away, without scruple, sometimes because their beauty was utterly ignored, in almost every case destroyed by barbarous repairs, or for the purpose of admitting more light.

It was at this period (1774) that Pierre Leveil, glass-painter to the king and of the greater number of churches in Paris, wrote his well-known work, in which he treats *in extenso* of the art of painting on glass. In this work he gives an account of the ancient and the modern processes; but, let it be said, as to his appreciation of his Mediæval predecessors his information is somewhat incorrect, the tradition had been lost; his work, he himself says, in his preface, was a last effort to drag from decay the art of glass-painting, but his efforts were crowned with small success; for half a century still no movement was made.

The first symptoms of a revival openly manifested themselves about 1820, but feeble and incomplete; the primitive art, its processes, its practices, were forgotten or despised. The art was taken up at the point at which it had been left in the last century, when, having abandoned the use of stained glass and modelling in vitrifiable black, the artists only painted in coloured enamel on white glass, and it was considered that a progress had been realised by producing large spaces, by employing the brightest colours, and softening the modelling as far as possible. The only attempt was the production of transparent pictures, with all their effects of light and shade. The lead-work was in every manner hidden; large sums of money were expended, with, let it be said in justice, very mediocre results to all but the authors. The work had neither the effect, the value, nor the charm expected, and above all was wanting in that power of decoration which is the first and most important condition of the painted window. We must not, however, be unjust; these early attempts had the merit of bringing back an art long neglected, and it would be ungrateful not to thank the memory of more than one labourer in this then uncultivated field.

It cannot be too often repeated (we quote again M. Baltard's words) that a window must alone be considered as a rich and luminous enclosure, destined to diaper the light of day without neutralising it,—to attract and charm the eye at the first glance, in its harmonious general effect, and in its details satisfy examination. It is alone under these conditions that stained-glass windows can be truly produced, and not, which is far from the same thing, windows of painted glass. These principles have not yet, he continues (the author wrote in 1864), been thoroughly proclaimed and understood, but they will not be long in being so, and when this is the case the old methods will be revived.

Within the last few years more than one estimable work has been produced; it would be difficult for us to enumerate them; let us only say that their authors, with no small degree of talent and remarkable aptitude, have often been wanting in that requisite quality, the complete understanding of the conditions requisite for the beauty of a coloured window. Some strangers to the art have contented themselves by reproducing, with the aid of black enamel applied upon stained glass, according to the ancient usage it is true, but often by far from skilful hands, and almost always in a cold and mechanical manner, the cartoons given them. Others, on the contrary, artists and glass-painters, but more painters than decorators, have endeavoured to transfer to glass, without rule, effects and combinations which on canvas might show their power as colourists, but which reproduced on glass are only transparent pictures deprived of harmony and unity from a decorative point of view. Between these two there exists a mean, a rule to be followed to attain true decoration.

What is absolutely necessary is to practise with discernment and according to the case, the different processes in use with the Mediævalists, and without a desire for concealment, help the beauty and strength of the work by every practicable means; in the first place, that style, character, and correct drawing should enter into the ornament as much as into the figure; then in the execution, the use of actually stained glass (pot-metal), a multiplicity of pieces, care in the management of the lead and iron work; modelling in block enamel on glass of every colour, the trace of the artist's handiwork on every surface, the judicious use of accidental irregularities of the coloured glass and enamel, the skilful taking away of certain portions of the enamels, in order to produce greater brilliancy; the attentive study of the association of colours, and the observation of the laws which govern it; in fine, to endeavour to attain in the stained glass a work in which, as in every other work of art, unity reigns with variety, without variety ever injuring the unity of the whole. Art, whatever be its means of expression, obeys general principles, positive rules, which cause it constantly to tend towards a determined and superior aim; and the artist and the student must know how to reach that aim by recognising clearly the means suitable to each of the branches of his profession. It is this which constitutes the philosophy of art, concerning which such volumes have been, and will yet be, written and studied.

Before thinking of pleasing, and he will please without suspecting it, the student, the artist, must alone think of general principles, of the effect to be produced on the mind and the eye, of the elements at his disposal. This is but simple good sense, yet pure logic; for taste and logic, little as they seem to possess in common, go hand in hand.

More than any other art, perhaps, the art of the glass-painter must subject itself to the technical laws which rule it, it is so easy to deviate from them. It is alone on these conditions that it will again take the rank which it deserves, which it daily endeavours to gain, often with success; and this position once attained, it will preserve definitely, it cannot be doubted, under the watchful eye of an appreciative public, and the conscientious care of skilful artists and intelligent professors.

* See p. 1138, *ante*.

The Brompton Hospital for Consumption. In our account last week of the new building, now being erected opposite the old hospital, the number of beds provided was, by a printer's slip, said to be 37, instead of 137. Although the context and the engraved plan show what was really meant, it may be as well to state the number clearly.

ARCHITECTS, THEIR WORK AND THEIR CRITICS.*

The many excellent addresses delivered here by my predecessors in the office of President have dealt at first hand, sometimes with the whole range of the work of architects and of the Association, sometimes with controversies about education, theory, and practice. The spirit of these precedents should, no doubt, be followed; and perhaps no great blame would be deserved if we took them to authorise a momentary view about us, in order to see how we are, and how we would wish to be, treated by the world and by each other.

The virtues of the reverenced class of patrons and employers may shield from observation the weaknesses which they,—notwithstanding their privileges,—probably share with ordinary humanity; sometimes less of wisdom and knowledge appears in their estimates of men and things than might be looked for, all things considered. A working majority of members of the general public,—worthy but somewhat worried persons,—do their best to thrust the memory of professions in general, and of all that they do or attempt, into the limbo devoted to disagreeable necessities, till the time comes when there is need for aid, and the existence of some one who will give it may be remembered. By good luck the catalogue of our fellow-creatures is not exhausted when we have checked them off so far. There still remains a little band who have acquired a habit of thinking about, and getting pleasure out of, old and new architecture, some of them taking the trouble to record their impressions in print, so that the world may read them. Of the formidable class who go that length, it may be somewhat venturesome to speak above a whisper. We know of old, however, that a glimpse of themselves, as seen by some one else, is not unwelcome to people in authority, when their right to rule is not questioned, and no desire is shown to invade any of their provinces. A preface to an essay on criticism, or the preamble of a code of conduct, would be a much more serious task than the modest one we are now setting ourselves.

The excellent Mr. Joseph Gwilt, with a touch of delicate irony, set himself, in 1837, to writing "Elements of Architectural Criticism, for the use of Students, Amateurs, and Reviewers." Now-a-days no one of the same eminence would be disposed to follow far in that vein. It is taken for granted that a good many critics know something of their subject before walking towards the judgment-seat;—arriving at concord is a longish process when one of the parties, and that one the judge, must have the language of the pleadings interpreted to him, and must be made to hear the facts, after having recorded his judgment. Gil Perez got, as it was, a little gentle raillery from the ungrateful Gil Blas for improving his own reading while teaching his pupil to spell; but his anti-type would fare much worse in these degenerate, irreverent days. Not even a strong tone of omniscience could carry it off in the face of haziness about first principles and technical phrases,—in language addressed to people penetrated also with honest self-admiration,—the proud sense of superiority of the white youngster worshipped by Uncle Tom's Chloe, for his ready power of distinguishing between Gs and Qs. With such people as lookers-on,—re-discovering by accident a well-recognised truth,—or adoring or setting fire once again to an exploded fallacy,—may fail to cause thrills at all responsive to those which make glad the heart of the well-satisfied performer.

Wit which loses its point unless it is evident that somebody can be annoyed is not likely to become an extinct institution, and is never likely to afford a topic for very cheerful comment. There were, indeed, eccentric persons among us who looked on the odd articles in the *Quarterly Review* with satisfaction,—because mild-mannered querulousness is put to silence in the shouting of a scold,—because variety in men is very important,—because whatever is destined for the advantage of posterity should be, if possible, put into a compendium, so as to save the future from loss and from useless moiling. Thus Mr. Walter Shandy felt the worth of the anathema read by Dr. Slop, "as an institute of swearing, in which, as he suspected, upon the decline of swearing Ernulphus had with great dilligence collected together all the laws of it, lest, through the loss of time and the fatality of all things committed to oral tradition, they should be lost to the world for ever." The tracts by Sir Edmund Beckett have somewhat unfairly been classed with the collections of the Ernulphus of the *Review*, a painful evidence of want of thought; for few better specimens can be found of the minute manner, as distinguished from the sweeping, and of the avoidance of criticism, abuse, and calling names: our Ernulphus meddled with all these. The success of a feast is, it is true, not always directly proportional to the number of things omitted from the *menu;* but many palates will put up with some amount of privation, if each little bit of detail, otherwise unpleasantly dry, is made to relish by being flavoured with a piquant sauce of naïve self-esteem and carping artfully blended, and a spice of calumny is sprinkled here and there.

Notwithstanding some misuse of the word criticism, it is still associated instinctively with the idea of judging according to first principles, in order that the laws may suffer no hurt,—not, however, stopping short at punishing evil-doers, but making it a duty to honour what is good by determining well the relation of things,—to things of the same kind, and to things in general. If the whole of any matter is not examined on the surface and to the centre very little good can be done; and it is no valid excuse to quote,—

> "So vast is art, so narrow human wit:
> Not only bounded to peculiar arts,
> But oft in those confined to single parts.
> Each might his several province well command,
> Would all but stoop to what they understand."

The official should not have appointed himself, if disposed to fight shy of the most important of his duties, and to justify his shirking by means of Mr. Pope's warrant,—which does not give authority to those "who seek to give and merit fame" to attend only to what they can do easily to their own satisfaction. What Sir Joshua said, as to the genius of mechanical performance, might describe without altering a word the first duty of criticism,—"to make the general effect and power of the whole take possession of the mind, and for a while suspend the consideration of subordinate and particular beauties or defects." An eye which can adjust its focus easily to whatever presents itself,—which, therefore, can see blemishes if need be,—is, of course, implied. While there is matter to remove from the wrong place an eye for defects will be specially useful to a scavenger; but the temper of mind which results in a preference for negations must fail in eliciting hearty liking for anything which has good or excellent qualities,—in architecture for qualities like pure simplicity, refined elegance, grandeur, or solemnity. This is a different sort of thing altogether, and seems like having to do with substantial realities in a healthy atmosphere, instead of remaining, in order to give exercise to the eye for defects, amid orts and refuse.

The truth about utility, the adaptation of buildings to their purposes, and to the special needs of the time, and other well-established commonplaces, will have to be repeated again and again, so that the weak may not be offended. We are not, however, called upon now for any protestations, and need not falter in reciting the belief that suitable expression is the quality in architecture which implies all others,—that it is, in fact, the ultimate aim of all good building,—that nothing can make up for the want of this, for the production of which general form, light and shadow, relation of solid and void, proportion, fitness, and a host of other attributes must be fused together. It is the glory of architecture that, in the highest efforts, by the masterful ordering of dead material in the hands of genius, impressions may be made which go beyond the eye, the mind,—even the memory,—and permanently affect the beholder. Unhappily, works of that rare genius,—which sees things exactly as they are, and can carry into perfect execution whatever has been dreamed of as a whole,—are all too few in architecture, as in literature and in the other arts. It must still remain true that no building which is wanting in special expression can make good a claim to belong to architecture at all. If incapable of suggesting or sustaining some delicate emotion,—by smiling grace for instance, by severe grandeur, or by some other special quality in harmony with the destination of the building,—it can only, at the best, be classed as good, common-sense building,—and must be contented with possessing the same sort of merits as a serviceable shed, a well-cupboarded kitchen, or a soundly-put-together piece of walling.

Perhaps in the remote future all building will bear, at the least, the mark of what Mr. Garbett called "politeness," the evidence of thought and care in design out of compliment to the beholder,—which is not incompatible with the most perfect simplicity of form and detail. But that must remain a sort of dream while we have so much extreme poverty; and while we supply homes, and other buildings as well, in so haphazard a fashion. When the works of incapacity or of routine,—common-place, dulness, positive ugliness, and the like,—have been warned off, everything left will be the better for being carefully looked at and into, and the results chronicled; so that those who would otherwise be indifferent may be affected by sound opinions and breadth of view, and relieved from crotchets which are always trying to enter when there is vacancy. No profession has more cause than ours to welcome the help of intelligent amateurs,—indeed, of all who are capable of being touched by anything well done in the past and the present. Their existence in considerable numbers, and the consciousness that no labour and skill will pass unregarded by them at the last, is so much to the good; for, as far as pure architecture is concerned, the work has mostly to be done in silence, the course struck out without the chance of counsel, and followed near to the end before a voice from the outer world can be heard about it.

Members of liberal professions are charged with jealousy and other mean passions, because they ignore the larger quantity of other people's work, give scanty praise, and do not fail to point out weaknesses. There is a little understanding among them which outsiders do not always catch. If any besides the shots which are well on the target, and, for an odd time, the inexplicable misses of a capable man, must be spoken about, life would only be tolerable if the recreations were forgotten. The rule laid down by the cognoscente adviser of Mr. George Primrose would, if specially improved for the occasion, become "the criticism would have been better if the critic had taken more pains,"—which would be true at times of what architects say of each other,—as well as of what, by the revenges brought in by the whirligig of time, comes to be said by others about the brotherhood.

Mr. Whistler, in his cross-examination, and again in his little pamphlet, gave in his adhesion to the old heresy,—that the only people who are entitled to be heard about an art are actually practising it;—"Art, that for ages has hewn its own history in marble, and written its own comments on canvas, shall it suddenly stand still, and stammer, and wait for wisdom from the passer-by?—for guidance from the hand that holds neither brush nor chisel? Out upon the shallow conceit!" Actual experience is in truth an effective preparation for the thorough comprehension of anything out of the ordinary way;—insight into method, and perception of success in technical qualities, may be almost instinctive, on the part of any one who has attempted and succeeded in the same kind of task. The power of seeing things together, of permitting impressions to group themselves in the mind, so that none are unduly prominent and none are lost, is not a natural gift,—at any rate, it requires long cultivation by actual contact with actual problems to develope it into any vigour. "The powers of invention and composition ought to be called out and put in action, or they will be torpid and lose their energy for want of exercise"; and the extent to which they must be exercised before they can move, without each movement involving painful effort, is probably not apprehended quite so clearly as it might be. Mr. Martin Chuzzlewit gave, to a design for a large grammar-school, the whole of the only week which he spent in the studio of his eminent master,—apparently touching a T-square for the first time there. Following that excellent man's instructions, he "regulated his plan by the printed particulars." When he gave up the hope of erecting the public buildings at Eden, he came back, and found that a competition committee had set about erecting the grammar-school after his design. Some competition committees, in 1879, might have thought the design showed undeveloped "powers of invention and composition."

The distinguished inventor of Mr. Phœbus deserves, and will keep, the credit of crystallising what was waiting in solution, ready for a master who could deal skilfully with chemicals. Balzac had taken some pains beforehand; and,—"you know who the critics are? The men who have failed in literature and art" is not badly repre-

* Inaugural Address by Mr. S. Flint Clarkson, President of the Architectural Association, delivered on Friday, November 21, as elsewhere mentioned.

sented by,—"enfin il passa critique, comme tous les impuissants qui mentent à leurs débuts." It is really Mr. Whistler over again, with the worst of the heresy left out, and a bit of agreeable satire,—"which oft was thought, but ne'er so well expressed,"—put in. With a little more pleasantness,—and therefore with a good deal less point,—the paraphrase would be,—unless soured or rendered touchy in the process, the abandonment by accident or inclination of active practice is not a bad preliminary step for a critic to take. The secrets of the prison-house have been obtained, never to be forgotten; and, in the course of studies pursued at leisure, there will probably be joined, to acute perception of the right about details, a power of casting a wide as well as an intense glance,—which is not unfrequently denied to the man whose nose has been kept too close to the grindstone. But the processes need not be scanned too closely, so long as the results are all that can be wished. When insight and knowledge have been obtained,—the audience is close at hand, and ready to recognise all the value of,—for instance, the acute and cultivated intelligence and the wide range of view, to which Mr. Fergusson has accustomed us; which have made him honoured in his profession, not least by the younger members of it,—the respect thorough and sincere,—although his reserved and virile tone does not call for, or permit, the personal interest which the other great critic of our time excites without effort, in all who come under the spell of his influence. The incessant labour, which is gone through with a cheerful will in actual practice, takes a fresh aspect under the magic of Ruskin's power,—not merely to reach intelligence and judgment, but to affect the bias of the will. The ear does not readily lose the echoes of that language which has extended the resources of our tongue, and it is impossible not to continue to feel some of the glow of that intense delight, in the works of nature and the best works of man, which not unfrequently makes the words themselves,—the fitting vesture of thoughts that burn,—seem actually aflame.

When what the world outside thinks, or should think, about our work has been passed by,—what we think about each other comes straight in the way. It is felt at once that some parts of legitimate dramas are more fit for being merely mentioned, than for being performed *coram populo*. If some tyrannical influence allowed no option about discussing everything connected with this subject, one would be perforce condemned to emulate those public advisers, who deem clever steering clear of difficulties their best title to honour. The reasons why our Association exists, and its scope, and the way in which the interests of the profession are bound up with the Association's existence and success, will be a sufficient theme. In several other large towns the example set in London has been followed, and societies have been formed in which, as with us, people who are engaged in the practical work of architecture may meet on the common ground of membership. Some recent changes,—in procedure rather than in principle,—will aid our members in declining to nominate anybody for membership, who is only accidentally or temporarily connected with architectural work; everybody else will find, when he joins us, that any service he can render will meet with ready appreciation. It is not to be expected,—and perhaps not to be wished,—that any very large number of the elder members of the profession should enter our ranks; to retain those who have been with us for years as long as possible is quite another thing;—at least, I am anxious to interpret in that way the fact that you have, in so kind a way, chosen me as your president, although a good part of a generation has gone by since I first joined the Association. The main work usually falls to the share of men, who have not long reached, or who are approaching, the time when they will tempt fortune in independent practice, and of those who are fitting themselves for positions of confidence under the direction of others. The founders and builders-up of the Association have recognised the advantage of, and striven and managed to bring about, the fusion of classes,—the non-existence of cliques within the body; a most desirable thing, and now secured, almost without being thought about, by the system of nomination for membership, by giving to all members an equal chance of taking a share of the government of the Association, by making it the duty of everybody to join the classes ordinarily established, and to bear a part in the studies in them, or when desirable to band together some number of members for special studies. That kind of mutual regard which is rarely contracted,—especially among shy and reserved people,—except after a good deal of contact, may be looked for in the result.

It was felt to be impossible to fall in with the kindly-meant suggestions, made unofficially by some members of the Institute a year or two ago, that there should be an intimate alliance between the Institute and the Association. As far as the future can be forecast no such alliance can be looked for; at any rate, there will probably be no movement towards it from the Association, not because collision or bad management need be feared, but the essential feature of the Association is its self-governing character,—the good plenty of members always ready to undertake, and to keep persistently at, whatever is really wanted. If any, even the slightest, screens should, of course in kindness, be erected, the body would be deprived of some of those bracing influences which keep up the vigour, at the same time that they menace the life, of such an association. Of course there are plenty of dangers of all sorts; you know most of them so well that you do not require to be told of them again. There is, for instance, the impression, in the minds of shrewd men of business, that too much intimacy among those engaged in different offices has its drawbacks. The intermixture of architects in practice and nearly ready to practise,—all having a strong interest in promoting a feeling of honour in this as in other respects, if only because they would suffer themselves if it were wanting,—is one of the happy results of our judicious constitution. All must in duty show that service need not be the less loyal because it is more intelligent. Some honest desire for honest praise and recognition is, as we have been saying before, no unhealthy sign; but if the recognition is deferred for a time, it is as well to have the courage to get on fairly well without it. There are worse things in the world, most of us feel, than failing to obtain public notice; at any rate, when the conditions of the service are that no share of the risks and of the honours shall be borne. But if this strain were continued it might sound like giving ourselves praise. Happily, one of the greatest of the living writers of England has furnished words of guidance and consolation stronger, you will believe, than any I should have ventured to write down, except as a quotation:—"The growing good of the world is partly dependent on unhistoric acts; and that things are not so ill with you and me as they might have been, is half owing to the number who lived faithfully a hidden life, and rest in unvisited graves."

THE LATE JOHN GIBSON, R.A., OF ROME, THE COLOURING OF STATUES, AND THE VENUS OF CNIDOS.

Years ago, but I cannot recall the exact date, I had the pleasure, at the old city of Chester, of meeting the late Mr. John Gibson, of Rome, and his friend, Mr. Penryn Williams, and it was while walking together round the ancient walls of that picturesque town that we had a discussion of some two hours in length on colouring or tinting statues. It is well known that Mr. Gibson was an advocate for tinting marble statues, and that he cited the authority of the Greeks in support of his views. Notwithstanding my admiration for his works, I was not a convert to this practice, and he listened to what I said with much affability and condescension. That the Greeks coloured their statues occasionally I quite agreed to, but this, I submitted, was the case only when they were in connexion with the temples and worship of their divinities, and thus that it was their priestcraft and not their art-craft that coloured their statues.

It appeared to me that this view of the question was new to him, and I do not recollect that he either accepted or denied this distinction. As regarded, however, the general question, he brought forward the well-known passage in Pliny, in which that author reports the saying of Praxiteles in respect to those of his statues which he most prized, and the assistance of his friend Nicias, the encaustic painter, in completing them, and I submitted one or two on the other side; and as the subject of colouring or tinting statues even now crops up from time to time it may not be without interest to look at these various passages, and try to gather what information they yield as to the practice of the ancient Greeks in this matter.

The principal passage brought to bear upon this subject by the advocates of polychromy applied to statues, and cited by Mr. Gibson, occurs in Pliny, book xxv., cap. 2, in which he says, in speaking of Nicias, the encaustic painter,—"That Praxiteles, the great Athenian sculptor, when it was asked of him which of his marble statues satisfied him best, replied 'those which Nicias has had under his hands'; and adds, '*Tantum circumlitioni tribuebat.*' So much did he attribute to the finishing of Nicias." The force of this passage may be recognised to depend upon the true signification of the word "circumlitio." In the dictionary it is translated "polishing"; but the polychromists hold that Praxiteles could not have meant mere polishing in this case. Nicias, they say, was not a marble-polisher, but an encaustic painter, who painted with a medium of wax laid on with heat, and that, therefore, "circumlitio" must have meant colouring the surface of the statues by this method. The Greeks, especially the athletes at their games, frequently anointed their bodies with oil; and wax, if rubbed with some degree of warmth into the surface of a marble statue, would give it a subdued kind of gloss similar to that which healthy young flesh has when thus treated with oil. One view which it appears open to take in respect to this passage is, that it was this simple treatment with pure wax not coloured which Nicias employed for the statues of his friend Praxiteles. At any rate, however, although I believe this is the passage on which the polychromists most rely in support of their theory, it does not appear to indicate anything whatever distinctly about colour.

As, on the other hand, the treatment of the surface of the statues of Praxiteles is that which they thus cite, it may be of interest to take it up and follow it somewhat further; which we can do by means of Pliny, and also of Lucian, in the accounts which both these authors afford of the most celebrated of all the marble statues of Praxiteles,—the Venus of Cnidos, and which was the principal illustration of my view of the subject which I brought before the attention of the great sculptor and Mr. Williams, when we were walking together around the old walls of Chester.

Not far removed from the eastern side of the Ægean Sea were the island of Cos and the city of Cnidos, and the inhabitants of the former desiring to have made for them the most beautiful possible statue of the goddess Venus applied to Praxiteles for the purpose. In response to this desire, and anxious to do his best, the great sculptor employed himself to produce not one statue alone, but two, differently treated, of the Divinity of Beauty,—of the finest marble; one draped, but the other nude. When they were completed he gave the inhabitants of Cos the choice of which they would select, and they chose the draped one.

It was the other, however, which was destined to become by far the most famous. It was purchased by the city of Cnidos, on the neighbouring coast of Asia Minor, where it was placed in a small temple open on all sides, in the midst of a beautiful garden, where, after a time, it came to be accounted among the wonders of the world. The Cnidians valued it beyond all their other possessions; and when the neighbouring King of Bithynia offered to remit a very large public debt they had contracted with him, on condition that he became the possessor of this exquisite work of art, they declined his offer at once. Of this statue Pliny adds, that not only was it the most excellent statue by Praxiteles, but also the most beautiful statue in the world; and that many persons made a voyage to Cnidos solely for the purpose of seeing it.

Now, was this statue coloured? We see that this statue was accounted the finest of the works of Praxiteles. It was of the most prized of all statuary marble, that from the island of Paros, and it was of the size of life. Whether this was coloured by the hand of his friend Nicias appears a natural question. Was it coloured, or was it tinted, or was it left of the pure colour of the marble itself? In turning to the old records of it in Pliny's account, and in the more detailed one by Lucian, we find that they are silent on the subject. They do not speak of its being in any way coloured or tinted, and the question naturally occurs,—if it had been so, would they have left it without mention? Pliny draws attention to the fact that in every point of view this statue was beautiful, and that visitors were especially charmed by its benignant

smile. Lucian tells us that the mouth was a little open, the lips being a little parted. In another place he speaks of the beauty of the hair and forehead, and admires the precise yet delicate eyebrows, but says nothing of the colour of the hair, nor of the eyebrows. He also makes mention of the swimming softness of the eyes, but not a word of their hue, which surely would not have escaped notice and mention had they been tinted ever so slightly.

But the part of the evidence which is the most important is that which refers directly to the surface of this marble statue, and the character of which seems to have especially attracted the attention of Lucian. The Parian marble of which this statue was made was, he tells us, remarkable for its "*lamprotes*" or brilliancy. This observation is quite borne out by beautiful examples of Parian marble, which is indeed the very poetry of material, with a complexion not to be improved by colour or tinting, but rather liable to be dulled and injured by such treatment. Pure white wax perhaps, while warm, rubbed into its surface delicately with a perfectly clean piece of linen, might not do it any harm, but give it a little gloss, which might have been liked by those who had seen their athletes prepared by unguents for entering the arena, but the "*lamprotes*" or brilliancy of the marble would surely have been liable to be obscured by any visible addition of colour. Lucian, however, does not say anything about colour, although he does about brilliancy, and the following passage is especially remarkable. Beautiful as the marble of this statue was, he remarks, there was an imperfection in one part of it. There was, he says, a stain on the left thigh, but adds that this was only a foil which rendered the appearance of the rest of the surface more beautiful still!" Now, at this point of the description, let us arrest a moment's attention. However much this blemish in the marble might be construed, by lover-like special pleading, into an additional charm, we may be quite sure that the sculptor himself was not of this way of thinking, but, on the contrary, that had it been in his power he would have removed its effect upon the eye, and that he would have done all he could to conceal it from appearing on his beautiful work,—and that, had he been in the habit of calling in the assistance of his friend Nicias to colour the surface of his statues, this would have been a case in which his services would have been in especial requisition. But this does not appear to have been so. The beautiful surface and appearance of the marble is expressly described by a word the most fitting to indicate the natural tint of fine Parian marble, but not a word or a hint is given about colour, or the tint of the eyes or the hair, or the colour of the drapery, which the figure held in one hand pendent over a vase, nor whether the goddess was a blonde or a brunette, or pale or rosy, nor, indeed, one syllable about colour or tinting from first to last. Moreover, it must be supposed if the non-colouring of this most celebrated ancient marble statue had been an exception to the general practice of the day, that these authors would not have left it without the remark that it was unusual in that respect. On the other hand, however, they discourse of this work just as we should at the present day, when it is not the practice to colour our marble statues.

There is another passage that tells the same tale in respect to colour not being at any rate applied to the eyes, which occurs in the "Agamemnon" of Æschylus, in which Iphigenia, when about to be sacrificed, is compared to a statue because of the absence of "speculation in her eyes," a simile which would scarcely have occurred to the poet if it had been the practice in his day to colour the eyes of statues.

It may be allowed, I would submit to the polychromists, that these passages go a long way towards proving that many of the finest statues of the ancient Greek world were permitted to retain the natural purity of their marble surface, and distinctly to evidence, at any rate, that it was not the constant and unfailing practice of that nation to add colour to their statues. At the same time, it would be giving these passages too wide a significance to conclude from them that the Greeks never coloured their statues,—at least, as I read the matter, for I believe the Greeks did colour a great many of their statues, but that these were statues connected with worship in their temples, and thus, as I submitted before, that they were coloured for the purposes of Greek priestcraft, and not the outcome merely of Greek art-craft.

Considering, indeed, the exquisite Venus of Cnidos, which was considered one of the wonders of the ancient world, and yet was left in the purity of her native marble, it appears very much as if the taste of that time in that respect was similar to that which prevails in our own, which is pleasant to think of, for one would fain consider the canons and true principles of art as something firmly based and eternal, and not resting on the fashion of the day. There was, however, in that ancient time another element which came into the question of the treatment of statues, which does not exist in our days and according to our Church; and this was the influence of the state religion of the Greeks, so prolific of divinities, and so energetic in providing them with local habitations. When this mighty power appeared on the scene, art had to bow to her behests, and was coerced in her service to carry out to the utmost the objects of her patron, whom it appears it suited better that the statues of her gods in her temples should be coloured more or less to the imitation of life, than that they should be left, as works of art, in the native purity of their material.

It is recorded of Phidias that, in the Temple of the Parthenon, of which all the statues were executed by his own hands or under his supervision, he desired permission to execute the colossal central statue of the tutelar divinity of Athens, the brain-born daughter of Zeus, the Parthenos, or Sacred Virgin of the Greek mythology, in marble, but that the priesthood would not allow him to do so, and that in accordance with their views and instructions, he had to execute it in what was called the chryseo-elephantine style of workmanship, or in gold and ivory. The reason for this is not so ready to find; for assuredly this mode could not produce a work so permanent as marble; but the cause for it, I submit, is probably to be found in the fact that the priesthood desired for the complexion of the divine maid the most beautiful tints of life that could be obtained, and that this could be better produced on the surface of the ivory, which was to represent the flesh portions of the statue, than on marble, which does not take colour so well. As may be found by trials, marble does not take colour kindly nor evenly, but capriciously, from the inequality of the grain of its rounded surface, and its crystals in reference to this lying in different directions. On the other hand, ivory is excellent for this purpose; and to the present day we use it for miniatures, from its aptitude for receiving the most delicate tints by means of painting, or for other purposes, by receiving more permanent colouring through the medium of colours which will penetrate into the material, and yet allow of the most refined shades.

Doubtless the Greek ideal held, and the Greek priesthood endorsed, the faith that the complexions of their gods were as beautiful as their forms and features, and that the choicest materials would be required to represent the delicacy and vivacity of these hues. The selection of those of ivory and gold, veneered on a substructure of wood and metal, for the statues of the great gods which occupied the most sacred interior fane of the Greek temples, instead of imperishable marble, has always been somewhat of a puzzle to commentators, and the only or nearly only reason which has been called up to meet it has been that it was more expensive, and that it was this, its greater cost than marble, that made it more suitable in the idea of the authorities, to be employed in the representation of their presiding deity. The doubt may, however, creep in that this appears something of a lame and impotent conclusion, especially when, as I submit, a more plausible and likely solution of the difficulty suggests itself in the fact that ivory is a much better material than marble to receive delicate and varied and nicely-blended tints, such as priests and votaries would desire to obtain for the complexions of the gods which they imagined to be so beautiful in every respect.

That ivory in itself is a more beautiful material for pure sculpture than marble can scarcely be held; moreover, there is in ivory the disadvantage of the number of joinings which would be requisite in a large work. On the other hand, however, it was the material most fitted of all to receive the tints of beautiful flesh in such a manner as to best represent the combined effect of beauty and life, and thus lend to the dramatic impression which the priesthood ever sought for in the worship of their divinities that force which was to be gained by presenting them not only colossal and majestic in the interior of their temples, but as if really there existing and alive.

These central and holiest portions of their temples were not usually accessible to the people, and the sacred statues of the divinities of which they were the abode were only to be seen by them on special occasions. At such times every means was taken to work upon the senses of the populace. Coloured curtains subdued the light to a mysterious but gentle gloom. Ceremony lent its pomp, and music and the chant their charm. Censers filled the air with their ambrosial vapour, and sacrificial clouds hovered in waves before the entrance to the inner fane, from behind and beyond which, to the ardent and entranced worshippers, well might the mystic deity in his, or her, colossal proportions, and tinted to the hues of god-like life, have appeared to exist, and to breathe, and to frown or to smile, or even to nod.

Ivory left untinted could not have produced this effect of life; moreover, it soon becomes yellow; and, as respects any attempt at natural appearance, it may almost be said to be jaundiced, although, without reference to this idea, and in small works, its hue is pleasing. In statues of great proportions, as these presiding statues of the great gods were in the Greek temples, the ivory having to be laid on and attached as in veneering in separate pieces, it would seem impossible to have kept their surfaces of an equable tint so as not to show differences of hue at the joining, except by the addition of colouring of some kind. We receive on good authority that the flesh-surfaces of these great statues of the Greek gods were supplied by thin layers of ivory, and at great cost; and as marble untouched has a far grander appearance than ivory untouched, there appears to be no sufficient or likely reason for the preference of the latter material, but that it was the most perfect of the two for the reception of the most delicate and refined tints,—such as were required for the flesh portions of the statues of the great presiding deities of the temples, according to the views of the priesthood, who desired to impress the people that at least they were living and mighty existing influences rather than mere statues; and thus, with this impression, I ventured, some years ago, to suggest that the colouring of statues by the ancient Greeks was the outcome, not of art-craft, but of priest-craft.

In accordance with this theory that the statues of the great gods in the Greek temples were thus coloured to the life, or, at least, to the imagined tints of divine life, it appears but probable, for the sake of unity and completeness of effect, that the subordinate statues of the temple should all more or less partake of a similar polychromatic treatment, in accordance with which traces of colour have been found on fragments of statues, especially in Athens. These, however, forming parts of secondary statues, have been coloured in a more simple manner, and in a method more adapted to figures for the exterior than to those in the interior, in nearer relation to that of tutelar divinity. Those statues which were in the interior were probably coloured up to some approximation to that of the principal figure which gave the keynote to all the subordinate and accessory sculptural features, and as the figures of the structure were further removed from it, as on the exterior, the enhancements of colour were less in degree and of a simpler character.

From the foregoing considerations I came to submit that, although the Greeks, at least occasionally, coloured more or less all their temple sculpture, this was not, at least as a rule, the case with their independent marble statues, which, on the contrary, they left pure and untouched; and this is the way in which it is evident, from the records above quoted, the Cnidians treated their beautiful Parian marble of Venus. They did not colour it, but left the marble to shine out with its natural *lamprotes*, and this, notwithstanding that they placed it in a temple; but this apparently does not appear to have been in any way of the nature of a religiously-established edifice, but rather of the character of a summer-house temple, for Lucian says it was open on all sides, and in a beautiful garden.

And this brings me to the most interesting part of my subject,—namely, to what the late Mr. John Gibson himself did in the way of

colouring statues, and what he has left on record on this question. In respect to this I will only mention that he executed several statues which he tinted, chiefly those of Cupid and of Venus, one of the latter of which has become especially celebrated. It was exhibited in the International Exhibition in Kensington in 1862, on which occasion it was in position in a small temple in a similar manner to that of its prototype at Cnidos. It was very much admired, but very divided opinions were heard as to the advantage of the tinted surface. It was, of course, a life-sized figure, and had been tinted with great care by the sculptor with coloured wax, after the manner, probably, that he supposed the statues of Praxiteles were treated by his friend Nicias, the encaustic painter. This statue is in the possession of a lady, whose residence looks over Kensington Gardens, and in a reception-room of which this tinted Venus stands on an appropriate pedestal on a slight dais, while behind it is a large mirror down to the level of her feet, by which means the figure is seen on all sides, as Pliny narrates of the Venus of Cnidos, and the appearance of the trees also of Kensington Gardens, in the reflection, still further carries out a similarity to the *entourage* of that ancient work of Beauty at Cnidos.

Further than this I will not go in my speaking of this treatment of colouring statues, in respect to my own views, but will put before my readers the more welcome and more authoritative thoughts and words of the great Roman sculptor; and for a sight of a MS. containing these I am indebted to the kindness of the same lady who owns the statue. By her kindness I was entrusted with an original manuscript by Gibson of his life, left by him to a dear friend; with the further permission to be allowed to transcribe any of such portions as bore especially upon the polychromy of statues. The following passage describes the birth, in the sculptor's mind, of the idea of applying polychromy to statues, and of carrying it out in practice on his own works.

"I was engaged," he says, "in modelling a statue of Cupid disguised as a shepherd," of which he thus speaks: "As I dwelt upon the spirit of my subject, and sat meditating before my production,—longing after perfection,—that pure divine Beauty which enchants the soul, my imagination began to soar up to the god himself. O Eros! canst thou disguise thy celestial countenance or conceal thy ambrosial locks which wave luxuriantly round thy feminine shoulders? Thy little hands are too delicate for a shepherd's, and so are those lovely limbs. Will not thy god-like steps betray thee? tell me, O God of Beauty and Love! is this image, this humble mortal effort, tolerable in thy sight?"

"I approve," said the god; "but do not leave me white. Zeus is well aware of the fiery glance of my eyes. But here my figure appears stone blind! I cannot tolerate such a sacrifice. When the Graces tie up my little top-knots, which they as well as my mother make me wear, they will never suffer these white looks. When Praxiteles finished my statue in marble, —the same, with gold wings, which he gave to his beautiful Phryne,—he called Nicias to give it the last finish. That is my own divine complexion, not that of a mortal; for we gods feed upon ambrosia and drink nectar from the hands of Hebe. Give me, therefore, my celestial glow, pale and pure." "But I have been absent," he continued, "some time from my mother. She is alarmed for me, and has offered the reward of a kiss for any one who can find me. She can never remain long without me, because she is powerless in my absence, since it is my arrows which carry her will as quick as thought wherever she desires. She is also dependent upon Peitho; for Persuasion never leaves Aphrodite.

Here come my celestial companions, Pothos and Imeros, accompanied by the three amiable Graces, but I do not see the gentle Hymenæus. He must be presiding at a marriage. How is the air perfumed as they approach! Come, cover up that cold white statue representing my figure, for they will not endure the sight of anything so chilly and repulsive, and contrary to reason!

I must now render myself invisible to the Graces, for I suspect my mother has sent them for me, and I will not return to her yet awhile," —and the godlike vision disappeared.

John Gibson was a true poet, and the above reads as if from an idyll of Bion or Theocritus.

Again, in an after-part of the MS. to which I had the privilege of access, the sculptor recurs to the subject of colour, but in a less imaginative and more practical manner:—

"When my Venus was finished I decorated her in a manner never before seen in these times. The flesh I tinted like warm ivory, scarcely red, the eyes blue, and the hair blonde. The net containing the tresses behind is formed of gold. The blue fillets winding round the head are edged with gold. She is adorned with earrings and a golden armlet. The golden apple she holds in her hand bears an inscription in Greek, 'To the most beautiful.' The drapery is left untouched, the white colour of the marble being the most appropriate. Its border, however, is tinted pink and blue. Upon the back of the tortoise at her feet is, in Greek, the inscription 'Gibson made me at Rome.'

When all my long labour was complete I often sat alone in quiet repose meditating upon my work, and consulting my own simple feelings. I endeavoured to keep myself from self-delusion as to the effect of the colouring, which I put to the test of reason. I therefore said to myself, 'Here is a little nearer approach to life, and therefore more impressive. Yes! yes! Indeed she seems an ethereal being with her blue eyes looking on me!' I forgot at times that I was gazing at my own production. There I sat long and often, and said, 'How can I ever part with her?'"

It would have taken but little more, it would seem, to have made our enthusiastic British sculptor another Pygmalion, and this remark is ventured in no detractive spirit, but with respectful admiration for the intense devotion to his art of which such sentiments and expressions are the outcome. At last, with difficulty and persuasion, he was induced to part with this creature of his thought and hand, and her temple is now in our own Court suburb. Afterwards he produced replicas both of this goddess of Beauty, his tinted Aphrodite, and also of her son, who formed the subject of his first trial in polychromy.

This discussion and dream of ancient mythology and art may well conclude with a passage from the MS. of this devoted sculptor, in which he speaks of the art which was the pursuit of his life.

"Sculpture," he says, "is the delight of my soul. It is more elevating than any other of the departments of the fine arts; its highest aim being the representation of pure and sublime beauty. The attainment of a high degree of excellence therein is therefore attended with great difficulties."

J. Bell.

DUDLEY GALLERY.

Perhaps the best thing in the Winter Exhibition of Cabinet Pictures in Oil at this gallery, now open, is M. Tissot's small work, entitled "The Warrior's Daughter" (191). This represents an old military hero, wheeled along Hyde Park paths in a chair, his daughter walking by his side. The three figures of the old gentleman, his daughter, and the attendant who pushes the chair from behind, are each quite complete in their way; and it is a satisfaction to observe that the artist, in this study of London life, has painted a young lady, and not a "fast girl" of the type on which he has most unfortunately chosen to bestow so much of his attention lately. There is a great deal of spirit and refinement in this little work, which it is really a pleasure to look at. Not very far from it may be found an effective contrast in Mr. Tadema's interesting study of a Roman lady finding, during her bath, "A Safe Confidant" (240) in the head which forms part of the design of the bronze fountain from which the water issues. This is only one specimen of a type of work of which the artist has given us a good many examples; for him, it may be called slight and sketchy, though for most other painters it would be highly finished.

Taken as a whole, there are few things to excite very lively interest in the collection. Flower pieces are rather strong; among the best may be mentioned "Roses" and "Fleurs de Champ" (148 and 220), by M. Fantin; and "Gloire de Dijon" (159), by Mr. C. Stoney. There are also some interesting bits of architectural work: "Old Rome" (147), by Mr. J. M'Whirter, effective and with much feeling, though a little too woolly in texture for masonry, is the most prominent of these; there are two very small and well-painted little Roman subjects (43 and 195), bearing the name of Beatrice Meyer; and two admirable little modern domestic interiors, on the screen, "Cave Canem" and "A Morning Call" (444, 446), by Miss Jessica Hayllar. Returning to figure subjects, "A Siesta in Church" (123), by M. C. C. Van Haanen, has character with rather a want of refinement; Mrs. Jopling's three-quarter "Portrait of Mrs. Caird" (347) is natural and pleasing as a portrait. There is another work, under the title of "Cave Canem" (51), by Mr. Britton Riviere, an admirable study of an impudent but helpless puppy. Among landscapes, we noticed Mr. Syer's "Near Southwold" (19); Mr. Harry Goodwin's two Switzerland subjects (63 and 80); Mr. Aumonier's "South Cove Common" and "Wild Flowers" (79 and 142), the latter admirable; two sea-pieces, by Mr. H. Moore (157 and 205); Mr. Joseph Knight's "Morning Mists" (239), a beautiful little thing; and Mr. Ernest Waterlow's "Brickfields, Holmbury Hill" (241). Mr. Napier Hemy is hardly at his best in "A Fair Wind Out" (136), the "go" of the craft is capital, but the water is rather characterless; "Rowing Home" (190) pleases us more. "In the Heat of the Day," by Miss Alice Havers (172), is an unusual landscape well answering to its title,—a bare, unshaded, undulating common in a glow of sunshine. Mr. Colin Hunter's seaside subject, "The Naturalist" (267), is painted with much force, and shows a fine study of breaking waves. Mr. A. B. Donaldson's "Dordrecht" (346) is somewhat prismatic in effect, as is the way with him, but is a fine, powerful reproduction of the poetry of old houses and a canal, and might have claimed a better place. Indeed, the hanging system at the Dudley Gallery is a great puzzle to us often.

In this connexion we may as well tell brother journalists that if they should object ever so little to the manner of the attendant here, or speak slightingly of the collection, whether termed "Winter," or "Black and White," they need not expect to receive thenceforward any invitation to the private views. Do the committee take the responsibility of this policy? In our case it has proved advantageous to them to the extent of a shilling, and the profit on the sale of one catalogue!

FROM THE BANKS OF THE SEINE.

With the deserted Palais Bourbon, the home during the Second Empire of the Corps Législatif, furbished up, its long-neglected statues washed and painted, and, in huge letters of gold, the Chambre des Députés gifted with a new sign, there is now no possibility of the date of the 27th inst., as the great opening day, being delayed: Paris, in fact, is filling every day. The Palace of the Luxembourg is likewise receiving its last touches, and before long will be fully prepared to again receive within its historic walls the members of the Senate; and no light work has it been for the architects to adapt to the modern requirements of both Chambers these old-fashioned buildings, the Parliament-houses of a different *régime*. Again the home of Marie de Medici will be enlivened with distinguished guests, though most of the features have disappeared from the quaint semi-Italian palace in which the southern wife of Henri Quatre so successfully endeavoured to recall the grand old *palazzi* of her Florentine birthplace. There still remain the famous gardens, with their Italian mixture of greenery and marble; the beautiful fountain which Jacques Desbrosses designed for the queen; but gone are the superb set of pictures, the famous series (now hanging at the Louvre, it is true) which Rubens came specially from Flanders to paint; the glowing honestly-painted canvases still fresh as on the day they were executed, from which young Watteau drank-in the inspiration of his charming creations; the poor son of the tiler of Valenciennes, who lodged with his relation, the *concierge* of the palace, and thus was able to pass many an hour before these most brilliant of the productions of the brilliant Flemish master. Those were the days before Watteau went to London and found shelter under the hospitable roof of Dr. Mead in Great Ormond-street, which in those times—the early part of the last century,—must have been far out in the fields behind the old country turnpike-road to Oxford and the quiet solemnity of Gray's-inn, before the days of stout-hearted old Captain Coram, of Foundling Hospital reputation, the original of Hogarth's noble portrait;

and much would Watteau, the author of more than one painted representation of an army on the move, have been interested to see his contemporary's famous "March to Finchley," that now forms one of the treasures of the old hospital, where also still hangs painted at the faithful hands of Johnson's friend, Allan Ramsay, the portrait of Watteau's hospitable entertainer, Dr. Mead.

And speaking of the Luxembourg Palace, the well-known gallery of painting and sculpture there, it may be mentioned, at the present moment is closed, for the usual changes that are made after each year's purchases at the *Salon*. We shall soon see the gallery re-opened, and the Louvre will receive a fresh acquisition of old favourites who have passed from this world the regulation period of probation which separates them from the honour of being exhibited in the National collection. Why have not we also some such system in England. Our Chantrey fund can but ill perform such a duty, nor are the already too-crowded rooms of Burlington House suited for such a purpose; for let it be remarked that without a doubt much of the reputation which modern French art enjoys abroad arises from the prestige attached to the collection of the Luxembourg Gallery. Our superb National Gallery, the exceptional rarity of whose treasures a greater familiarity with foreign collections only tends more completely to prove, answers to the Louvre collection, but still we possess no "Luxembourg Gallery," while France, on the other hand, possesses no National Portrait collection. In time it is to be hoped such wants will be supplied.

The stranger who visits, at this inhospitable season, the banks of the Seine, may be indeed pitied, for in addition to the Luxembourg Gallery being closed, the National Collection of pictures at the Louvre is scarcely visible; the recent arrangements for an ample supply of water to prevent the injuries of fire, has caused the familiar *Salon carré* to be denuded of all its treasures; the "Marriage of Cana" has its gorgeous splendours enveloped in common sacking, to protect it from the dust, while the gazer on the mysterious and still ever impenetrable smile of the "Mona Lisa," and the noble solemnity of Titian's masterpiece (once in the hands of Charles I.), is sadly disturbed by the ruthless jar of the saw, and the distracting din of the hammer. There are many cynics who advise "those about to travel" not to visit Paris; but certainly, without going so far as this, we caution the æsthetic tourist to avoid yet, for a season, a visit to the banks of the Seine.

As a further treat when he can with safety come to "the wickedest city in the world," we may promise him, if he waits yet a short time, another archæological accession to the sculpture gallery of the Louvre, the pedestal completing the exquisite statue of the so-called "Samothracian Victory," and representing the prow of an antique galley on which the goddess rests. In 1863, M. Champoiseau, French Consul, entrusted with an archæological mission in the island of Samothrace, discovered there this superb fragment of the art of undoubtedly the finest Greek period, and this he sent home; but for want of funds and the necessary means, he was obliged to leave the pedestal. Having not long since returned to the East, M. Champoiseau has obtained from the Government a grant of 2,000 francs, by means of which, and one of the French war vessels, he has been able to roll down to the shore and ship the twenty-four blocks of marble which formed the pedestal,—no easy matter. The pedestal is from every point of view a treasure indeed, for it offers the sole existing example of the type of the vessels of war (such as they were three centuries before the Christian era) which antiquity has handed down to our times. With the exquisite little Venus of Vienne, and the Samothracian Venus, the foreign archæologist who has not paid his reverence to Notre Dame de Milo for some years past, will find other altars at which to lay his offerings of admiration.

While we are speaking of museums, let us not neglect to refer incidentally to the recent suggestive changes which have been made in the Government administration of the fine arts here. A special "bureau of the State museums," and one for the control of the inventory of the artistic treasures of France (whose excellent organisation has received full explanation in these pages), together with some other equally serviceable additions and subdivisions, have been organised. It is a step the utility of which we might humbly offer to the consideration of a new ministry of the approaching future. How long, we venture to ask, is it to be before our Government recognises the importance of art in the widest acceptation of that usually but ill-used word, and its proper encouragement? Heaven defend us from "State patronage," but let us at least have Government recognition of the importance of a subject which even so clear-sighted a politician as Mr. Brassey has strangely enough, in a recent work on the foreign labour question, entirely omitted from his enumeration of the reasons for the present depression of trade.

A word more on some recent artistic decrees of the Government. The French School at Athens, after having been interrupted by local circumstances from the continuation of their excavations at Olympia, have resumed their interesting labours, and already several discoveries have encouraged further research. It may therefore be expected that the rival efforts of the German and French archæologists on this classic ground will reveal before long some undreamt-of treasures to gladden the hearts and whetten the appetites of museum authorities and lovers of art.

It gives us great pleasure to endorse the praise which our correspondent, "F. G. S.," justly implies is due to Mr. Reid for the excessive care with which the more precious drawings and engravings under his charge are protected from friction and injury at the British Museum. Some of our readers are old enough to remember the successive keepers of the prints, from John Smith, of Fleet-street and Old London celebrity, the first keeper, if we are not mistaken, who was succeeded by the accomplished and learned Mr. Young Ottley, and Mr. Jossi, to be again succeeded by Mr. Carpenter, whose death made way for Mr. Reid, under whose careful direction so many treasures have long reposed, and certainly no method can be more effectual than that adopted in Mr. Reid's time for protecting choice engravings (if there is no space to put them behind glass) that of placing them within "sunk mounts," the number of which are calculated precisely to fill a given space in a spring-clasped firm-sided and backed portfolio, an enlarged pamphlet-box,—a method which, we think, has been in practice at the British Museum for at least thirty years. But it is not only Mr. Reid's well-kept and luxurious department at the British Museum that we have from the banks of the Seine to praise, but every department of that truly imperial establishment, from the attendant in the reading-room who places by our side and who introduces to us an eloquent friend whose "safe society" henceforth is always to be secured, and whose friendship will never desert us, to the head of a department who is daily laboriously and faithfully collating for our profit the intricate difficulties of the most abstruse sciences. To the well-instructed foreigner in London, the British Museum is a constant source of admiration, but perhaps we in London are a little too familiar with our belief that we understand the treasures the Museum contains fully to appreciate the magnitude of its usefulness, or to acknowledge sufficiently the skill and ill-paid talent that direct its management.

If the French Academy of Fine Arts, in its recent annual meeting, ungenerously omitted in its notice of the losses which the art world had sustained during the last twelve months, any mention of so distinguished a member of the great brotherhood as M. Viollet-le-Duc, the French Government do not neglect to pay their debt of gratitude and homage to his memory. After the eulogium of M. Trélat,—a former minister,—mentioned by us lately, M. Jules Ferry, the Minister of Public Instruction and Fine Arts, in a recent meeting of the Historic Monuments Commission, spoke feelingly of the great student whose loss will leave so cruel a gap in the ranks of the Commission. He said,—"In the latter days of his life, M. Viollet-le-Duc cherished a great design. He wished, among the many objects scattered over the country between the tenth and the sixteenth centuries, to constitute a new museum,—the museum of French sculpture,"—a work to contribute to the greater love of his country by its sons in their due admiration of the "great works their ancestors executed in the imperishable creations of past centuries." It was in this profound knowledge of the history of the past of his country that Viollet-le-Duc was inspired by that intense love of his fatherland which he desired to share with all about him, with which the people at large might be inspired. He wished, in this manner, to show in the reproduction of the documents themselves, the development and the originality of French sculpture, to demonstrate in this manner that it the most often preceded and inaugurated, where it generally is believed it followed and imitated, foreign taste. The conception of this popular museum had not remained alone in the mind of M. Viollet-le-Duc; he had laid down a complete project, in a report which is a work, firm, precise, and complete, like everything that came from his learned pen. "We have accepted this legacy, and I have decided, consequently, that the museum of comparative sculpture shall be installed as he himself suggested, in one of the wings of the Palace of the Trocadéro. The Commission of Historic Monuments will collect the casts and classify them, according to the dispositions of M. Viollet-le-Duc. We shall thus open to artists, to *savants*, to all labourers in the field of art and industry, an entirely novel source of information, and at the same time as we shall be erecting a true monument to French art, it will be also a lasting memento of the eminent man who, by his renovation of the art of the past, has exercised so great an influence on the destinies of contemporary art,—on this Commission, in fine, of which he was the soul, and which will religiously respect his memory and his lessons."

GREEK ART.

On Saturday evening last, at the College for Men and Women, Queen-square, Bloomsbury, Mr. C. T. Newton, C.B., of the British Museum, resumed his lecture on "The Sculptors contemporary with Phidias."* There was a large attendance at the lecture, which was illustrated by drawings and photographs.

Mr. Newton said that those who did him the honour of coming the previous Saturday would remember that he dealt with certain photographs of Amazons made by artists of the time of Phidias, reserving the discussion of other sculptors contemporary with Phidias for this lecture. Now, this list was rather a long one, and he would not trouble them with it upon the present occasion, because the rank and file of these names was very little more than a mere catalogue. They were like the horses in great races, many of whom did not even pass the winning-post, and were of no account compared with the winner and those three or four more who galloped in afterwards. Just as Michelangelo, Raffaelle, and Leonardo stood out prominently in the fifteenth century from the rest, so, conspicuous among the contemporaries of Phidias, were Myron, Polykletos, and Alkamenes, the first two of which he would deal with almost exclusively in the present lecture. In the judgment of antiquity, though they did not actually rival Phidias, yet they had great qualities making them worthy to be mentioned with the same name. In regard to Myron, he was rather earlier in date than Polykletos. He was ranked as belonging to the Athenian school, and though he did some works in marble, he was the more renowned as a worker in bronze than for anything else, in which he produced certain works which the voice of antiquity pronounced to be masterpieces. Perhaps it would be as well to give those present, in the first instance, a notion of what the ancients said about Myron. They told us a great deal more of the qualities of his work than of the artists before the time of Phidias; but, unfortunately, various things they said about Myron were not perfectly consistent with other information which had been obtained. Myron was mentioned not only by Pliny, but by three other writers who were entitled to our respect. Cicero was one of these, and he, no doubt, as an orator and a critic of oratory, had certain sympathy with the course Greek art took. He was always taking examples of the sculptors as matters to found an analogy in his history of oratory. Another writer who did the same thing was Quintilian. The other author who noticed Myron was Lucian, who was bred up to the profession of a sculptor, and whenever Lucian spoke of works of art, his remarks were always exceedingly valuable. When they looked at the passages in these authors, it would appear that Myron had a very keen observation of nature, and had great power to render life, and that there was about his style traces of the archaic manner of which

* See p. 1282, *ante*.

he (Mr. Newton) had treated in previous lectures. Great as was his skill in representing the body, he failed in expressing the feelings of the mind. He was not sufficiently spiritual to put into the face as much expression as he put into the body. Cicero, who probably studied Greek art more carefully than most of his contemporaries, told them that the works of Myron hardly attained perfect truth of nature, but their beauty was undeniable. In another passage he mentioned him in the same sentence with Polykletos, as having a style of his own, but so individual that no one would wish its character altered. Quintilian, a later critic, said that, as compared with the style of his predecessor, Kalamis, the style of Myron was less hard and stiff; while other writers called the style of Myron learned and elaborate. All these statements were easily understood. A sculptor who was a little older than Phidias might very well have retained in his style traces of archaic harshness.

In regard to Myron's treatment of the hair, in which he observed the ancient formal arrangement in dealing with the metopes of the Parthenon, the lecturer proceeded to say that there was something which reminded him of Myron's manner; that was to say, the curious falling back upon archaic ways of representing the hair and the features combined with the wonderful power of representing action, the limbs apparently being most complete, and showing a thorough knowledge of anatomy. He thought that these sculptures, particularly those they had in the Elgin Room, did give them an idea of Myron's manner, if the description and style were correct. When they considered that there were ninety-two metopes, 600 ft. of frieze of the Parthenon, and the pedimental sculptures, and the fact that Phidias was occupied in making the chryselephantine statue besides, there would be plenty of room for the activity of Myron if he were engaged upon a portion of these metopes. But now they came to a most obscure and different statement by Pliny, who stated that Myron was the first who seemed to have multiplied truth, more numerous in his art than Polykletos, more careful in symmetry. To say this of Polykletos was a strange assertion, because Polykletos was more renowned for his exact observance of the human figure than perhaps any artist of antiquity, he having invented a statue which was called the canon or standard of proportion. Now the first difficulty in this passage was that if they took *symmetria* in its usual sense, it would mean a just sense of proportion. If Polykletos was so great a master of proportion, his statue being referred to as an authority by all the later schools, how could Myron be said to be more careful in symmetry than Polykletos? The second difficulty was as to the precise meaning of the word *numerosus*. It might either mean more rhythmical, or more fertile in variety of subjects and motives, a sense in which Pliny elsewhere applied this epithet to a picture. This was the sense which he (the lecturer) would attach to *numerosus* as applied to Myron, and thus he might be said to have multiplied truth, to have got out of nature more aspects than art had before seized. With regard to the rest of the passage in Pliny, nothing but an arbitrary alteration of the text, —such as, for instance, leaving out the mention of Polykletos altogether,—would reconcile it to what they were told elsewhere of the respective merits of these two artists. They must abandon it to the ingenuity of German archæologists, who would continue to dispute over these enigmatical words like hungry dogs over a bone already picked clean. If, however, we supposed Myron to have been very inventive in new motives and combinations of action, but to have been not quite free from archaism, we might imagine his art to have presented the same sort of characteristics as some of the metopes of the Parthenon. Wonderful as these were in the boldness and originality of the groups, there were not a few traces of archaism in the treatment of the hair and beard, and the faces were sometimes deficient in that firm play of the muscles on which the subtler shades of expression depended. The anatomy of the bodies, on the contrary, was most learned and careful.

The catalogue of Myron's works was rather a long one. He made statues of gods, and also of heroes, but they were not singled out, as they were not masterpieces. His most celebrated works were the athlete Lados; another athlete, commonly known in later days as the *Discobolus*, and the figure of a heifer. Perhaps it might appear strange to them that this bronze heifer should be so strangely singled out, but she was so like life that her celebrity grew from century to century, culminating in thirty-six epigrams being written in her honour. Very marvellous are the statements in these epigrams. The imitation of life was so perfect that it deceived herdsmen, bulls, and even hungry calves, who mistook the work of Myron for their own mothers. This heifer was probably a votive offering on the occasion of some great victory. Oxen and cows were among the animals specially honoured by the ancients because of their pre-eminent fitness for sacrifice. Prizes were given for the best examples of animals reared as victims, and no part of the frieze of the Parthenon was more carefully sculptured than the cows led to sacrifice on the south side. They were perfect creatures, with a graceful movement. There was no work in bronze representing that particular phenomenon except on a smaller scale. If they had nothing in bronze which distinctly recalled the work of Myron, it did happen that they possessed in this country one in marble, the history of which was rather a sad one. There was in the possession of a gentleman (whom he would not name), who lived not far from London, a very fine marble bull. The late Mr. Cockerell, who was a great traveller, saw this marble bull at Athens, and had it shipped and transported to London. Upon arriving at the end of its journey an attempt was made to unship it, when it slipped into the Thames. In due course it was fished out of the mud, but the bill for salvage was so enormous that Mr. Cockerell declined to pay it, and the bull was left for many a year at the London Custom-house. Afterwards it got into the hands of a gentleman who had the bull placed upon the lawn attached to his house, where it was exposed to the wind and the rain, and no one appeared to be aware of its merit. It was hinted that as the bull was not cared for, it might be given to the British Museum, but he was sorry to say that there was no response to that hint. This happened twenty-five years ago, and probably it was now worn by the rain or split by the frost. He should like to know how many private collections were so treated. He was afraid there were a good many.

As regarded Myron's statue of the athlete Lados, it was a breathing bronze, and represented a runner at Olympia who dropped down dead after winning the prize. He was described as panting for breath. They could form an idea of such an effect in bronze from studying the horse in the eastern pediment of the Parthenon, with his distended nostrils. With respect to Myron's other celebrated athlete, the *Discobolus*, or disc-thrower, it was noticed by Lucian, Quintilian, and Pliny. By some it had been called the representation of a quoit-player. The disc was a circular flat piece of metal not too heavy to be hurled from the arm. There was one of bronze in the British Museum which weighed more than 11 lb. The disc was originally a circular plate used by the athlete in particular contests. Afterwards, curiously enough, the term "disc" passed to astronomers, just as "sphere" had been borrowed from the the Greek game of ball, *sphaira*. The *Discobolus* was described by Quintilian as being of an intricate and complicated composition, but Lucian described it with more detail. There were no fewer than eight copies of this statue in marble, of which the most perfect was the one in the Palazzo Massimi, at Rome. Two were in the British Museum and the Vatican respectively, while the rest were in a very imperfect state. The one in the Palazzo Massimi, of which the head had never been broken off, corresponded with the description of Lucian; but in the other two the head was set on wrong. The lecturer then proceeded to show from the drawings exhibited the correspondence of the statue with the words of Lucian, and made some critical remarks on its merits. He then alluded to another statue of a *Discobolus* in the Vatican in a different position, and very beautiful, an attempt having been made very recently to identify it with an athlete by Alkamenes. Another work of which Pliny had preserved the title, was a group of Athené and Marsyas, which was represented on an Athenian coin, and on a relief in marble. The figure of Marsyas had been recognised in a statue restored as a pugilist, and a beautiful bronze, recently purchased by the British Museum, repeated the same notion. This bronze, though certainly of a later style than the age of Myron, might have much of the animation of the original group.

Now as to Polykletos, who was one of the great names in Athens, he ranked very high, and was said to have excelled in bronze statues. The ancients were very well agreed as to his general merit as a sculptor of athletes. He made statues of gods, of which the most celebrated was the chryselephantine statue of Hera in her temple at Argos, of which he was the designer. Pausanias gave them a full description of this statue. It was probable that the type of Hera, as fixed by Polykletos in this work, was the basis of many subsequent conceptions of her. They had no extant work which they could distinctly connect with this statue, though attempts had been made to derive from it more than one head of Juno in Roman galleries. With regard to his power of representing the highest ideal types of divinities, Quintilian repeated the opinion of the critics of his day that the conceptions of Polykletos were deficient in majesty, and that he was better in athlete statues. There was an amusing anecdote told how he submitted a statue to public criticism, and then went on altering it according to a succession of suggestions from others till it became ridiculous. To him was attributed the proverb, that the real difficulty of the sculptor began when the work was tested by the finger-nail. What Polykletos was particularly celebrated for was the statue known as the *Diadumenos*, representing a figure with a diadem round his head. It was sent to the British Museum by the late King of Naples, and was of marble. There was something in it that reminded them of the Athenian school of sculpture, but it had one great fault, the whole character of the legs being deficient in movement. The other celebrated work of Polykletos was the *Doryphoros*, representing a man holding a spear, and in this statue was the well-known canon or standard of proportion. It was a statue which he had made according to the theory of proportion, which he further developed in a treatise in which he gave the proportions from the finger to the rest of the arm, and so on. It would be a most interesting thing if they could find in any of the museums in Europe any statue which might represent, however imperfectly, this canon of Polykletos. The indefatigable German archæologists thought they had found one of these statues at Florence, and another at Naples, but both of these were restored wrongly, and did not correspond with Pliny's description, they being two clumsy.

In conclusion, Mr. Newton wished to thank certain newspapers for taking up the question, to which he referred last week, of the burial in the cellars of the British Museum of some original works of Grecian sculptors which formed part of the Townley collection, and for which the nation paid 25,000*l.* at the beginning of the present century. He wished, however, to state that the Trustees of the British Museum were in no way responsible for the present state of chaos in regard to some of the collections, as might be understood from the report which had appeared in certain daily newspapers. For the last twenty-five years the trustees had never ceased from time to time to address memorials to successive Governments pointing out the crowded state of the British Museum, and anybody who wished to satisfy himself upon this point had only to search the official records to find out that the burden of the song of the Trustees had been, "Give us more space"; but that space had not been provided. It was not for him to say whether the House of Commons did not think it a matter worth pressing on the Government, or whether the fault did not rather lie with the British public; but if the public cried out long enough and loud enough there would soon be a remedy for the present state of affairs. So long as the public showed indifference the Government would stave off the expenditure to "a more convenient season," as the House of Commons had plenty to think of at the present time; but if the public did not agitate in this matter it would be put off till an indefinite and unknown time.

Mr. Reginald Stuart Poole, Keeper of the Coins and Medals at the British Museum, said that this was a public question, and could only be determined by the public. The British Museum had never been properly used for the purpose it was intended. He remembered a friend of his saying one day, "Oh, I am going to do a very childish thing; I am going to the British Museum." But, happily, this feeling was wearing away. They wished the public to

find out for themselves the importance of this great institution, which should be made an educational centre and worthy of the priceless treasures it contained.

THE RESTORATIONS AT ST. SEPULCHRE'S CHURCH.

After undergoing an entire reconstruction internally, the windows externally having had new Gothic tracery and mullions introduced, the historic church of St. Sepulchre's, Snow-hill, is intended to be re-opened at Christmas. One of the chief features in the alterations is the entire removal of the galleries. The west gallery and the organ formerly hid from view a lofty pointed central arch, manifestly erected when the tower was built. By the removal of the gallery and the organ, this arch is now fully opened out. In addition, two other deeply-recessed Gothic arches on the north and south sides of the west entrance have likewise been discovered and restored. This discovery was altogether accidental during the progress of the works. A portion of the stonework which, as it appeared, had been built up in front of these arches, and which was considered to be unsafe, was about to be repaired, when beyond the face of the wall the Gothic arches themselves were opened out, and it was found that they must have been hidden for many years past, as the inner space beyond the face of the wall and the space within the arches were found filled in with rubble. Amongst other works in the process of restoration, the columns and arches of the nave arcade, as well as the walls, have all been re-faced. The ceilings of the nave and aisles have been decorated in delicate tints, whilst sun-lights have been constructed along the nave ceiling, by which the church will be entirely lighted, without the aid of standards or brackets. A prominent feature in the structural alterations of the interior consists of the new organ-chamber which is now being made ready in the recessed space on the north side of the church, called St. Stephen's Chapel. In front of the chapel or recess a very elaborate screen has been erected, in Caen stone, with shafts and capitals in Irish green and Devonshire marble. The organ itself is being very considerably enlarged by Messrs. Gray & Davison, the case being likewise extended, the front of which, when completed, will be 37 ft. in width. The cost of the enlargement of the organ, and the works in immediate connexion with it, will be about 1,000*l.* The floor of the church, from the west end, and along the entire length of the nave and aisles, has been considerably lowered, admitting of the chancel being extended westward to the extent of about 28 ft., and approached from the nave by a flight of four steps. The floor of the nave and aisles is laid with diagonal wood, and the central passage along the nave will be paved with ornamental encaustic tiles, the side-aisle passages being laid with the monumental slabs found in the church, where large numbers of persons are buried. These monumental slabs are chiefly of black marble. The whole of the floor of that part of the chancel immediately in front of the altar, and the central portion of the chancel space between the new clergy and choir stalls, is laid in mosaics of varied patterns. The windows of the church are filled in with cathedral glass in pale green and blue, and has a disagreeable effect. All the old oak pews have been removed, and open benches substituted, constructed of the material forming the pews. The new clergy and choir stalls are all in oak; and a lofty oak screen has been erected across the church at the west end, a portion of which is made of the old oak which formed the gallery fronts. The only window which has been allowed to remain is that of stained glass at the east end.

The original contract was 7,275*l.*, but subsequently a second contract was entered into, in consequence of it being determined to introduce stone mullions into the windows, together with other deviations, and the estimated cost of the restorations, including the enlargement of the organ, is, we are told, between 14,000*l.* and 15,000*l.*

Messrs. Newman & Billing are the architects, and Messrs. Dove Brothers the contractors. Mr. Hammond is clerk of the works, and Mr. Barker the foreman.

The main arcade and ceiling agree but ill with the Perpendicular windows put in, and the general effect, we cannot avoid saying, is wanting in congruity.

THE MANUFACTURE OF FOWLS.

In France the practice of rearing and fattening fowls has recently taken,—to England's loss, let it be said, as recent statistics only too plainly show,—increasing proportions. Indeed, within a few years past, like so many other branches of industry, the rearing of fowls has become a mechanical question; and not alone are these useful birds reared and fattened, but they may be said to be manufactured.

The *hydro-incubator*, now exhibited in the annex of the Palais de l'Industrie, Paris, may be regarded as the means by which the apparently extraordinary process is carried out; an apparatus which may be looked upon as the artificial mother of the little chickens. The first operation consists in the examination of the eggs against the light, by which means the good and bad eggs are easily distinguished. The good eggs are then placed in a box, the incubator, where they are kept at a temperature of about 40° centigrade (about 104° Fahr.), by means of a reservoir of water heated to 130° or 140°, which surrounds the interior wherein are deposited the eggs, and the temperature of which is preserved partly by means of isolating wrappers, and by the partial renewal of the water every twelve hours. Each day the eggs are taken out for about twenty minutes to cool, and to change their position. On the twenty-first day the chickens are hatched. So far the process possesses no distinct novelty, for artificial incubation has been known for centuries. But the continuation of the process presents some interest from its scientific and yet natural character. The chickens hatched are placed on hay in another apparatus, kept at a suitable temperature. This apparatus (termed the *hydro-mère*) replaces the mother and her fostering wing. Here the chicks are left for two days without any food. When the moment has arrived for the first meal, a few breadcrumbs are scattered among the chicks, which commence to learn how to feed themselves,—a lesson which no animal finds it difficult to acquire; a touching care on the part of the stronger chickens for their weaker brethren is a fact which at this stage of their existence is almost invariably noticed. After this, the food becomes more complicated,—yolk of egg is mixed with the crumbs, boiled rice, millet, and barley-meal mash. During the first three or four days no water is given them; sand is finally strewed on the ground. Chickens created in this manner and on this regimen become fowls, with no difference from those reared in the ordinary manner, as may be easily seen in the annexes of the Palais de l'Industrie. Once strong, the little chickens are allowed to run about the yard until the fatal moment when their owner places them again under the influence of machinery to fatten them.

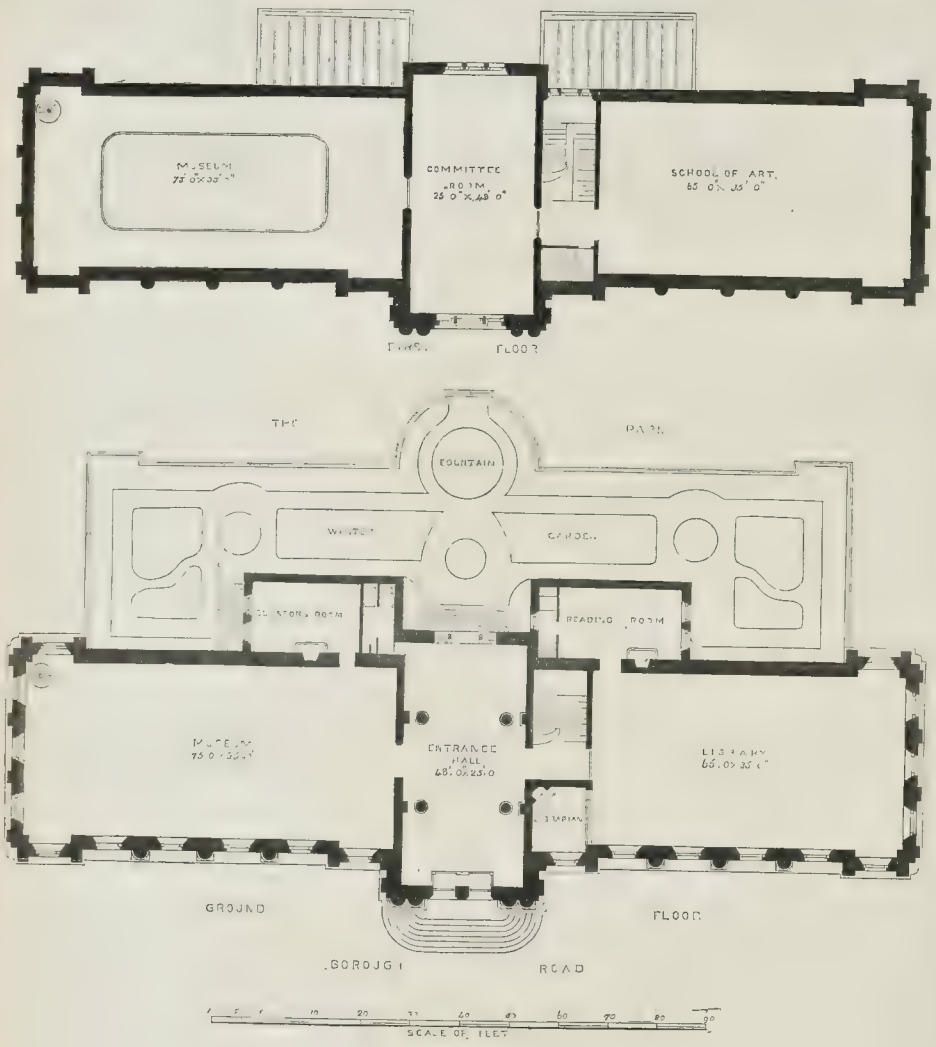
So far, as we have already remarked, the system of artificial incubation alone differs from that which has long been known, in the superior simplicity and scientific character it possesses; but the mechanical fowl-fattener, the invention of M. Odile Martin, is a novelty which we believe has only been in existence a few years, and for which, if we mistake not, the worthy inventor received at the London Agricultural Show of 1879 a first medal, several other medals having been obtained on the Continent. The artificial fattener may simply be defined as a species of cellular system, in which each fowl, fastened by the foot to a fixed spot, receives regularly three times a day, morning, noon, and night, its meals by means of a special apparatus, in which the feeder is a sort of pump. In the smaller apparatus for domestic use the fowls are disposed in a line; but in the larger apparatus, for speculation, the compartment is cylindrical, and turns round on a pivot, allowing the attendant to feed each fowl in rotation; taking it by the head with the left hand, and lightly pressing the beak to open it, with his right hand he quickly introduces into the fowl's mouth a gutta-percha tube, which communicates with the reservoir containing the food. By the pressure of the foot on a pedal, the attendant moves a pump, which injects the necessary ration into the stomach of the bird, the proportion being indicated by a dial plate. This is a most important feature, the rations varying according to the age and species. A card placed above each fowl indicates the quantity to be administered. As we have already remarked, the meal is given three times a day, and so rapidly that ten seconds suffice for the attendance on each fowl. Four pounds of barley-meal and two quarts of milk are sufficient to fatten a fowl in twenty days, or a duck in a fortnight.

The impression to any one who has not seen the simplicity and the ease of such an apparatus, and, indeed, even after the first sight of the operation, may be probably indignation, for the comic and the humane side of the question may be dismissed. It does certainly seem somewhat arbitrary that man should impose on a living being the obligation of becoming eatable, and with this view deprive the poor beast of the pleasures of existence; the good-hearted housewife may be indeed indignant, who is accustomed to feed,—and what prettier feature is there than such?—her fowls and their chicks. It certainly seems cruel to deprive the good hen of the right of looking after her brood; and in her place hatching her young ones in a box, supplied with a thermometer, and eventually fattening them by mechanism in all the misery of the cellular system. Such are the first impressions of most spectators, to all which the worthy inventor quietly and practically opposes several excellent arguments. Every one who knows the management of fowls is thoroughly aware of the fact that fowls never fatten when allowed to eat of their own choice. All the fat fowls sold have been fattened artificially, too often by cruel means; while by this system, granting for argument's sake any cruelty, it is but for a few days at the utmost. It is not to make the fowl into a mass of fat; but to render its flesh tender and full of flavour by getting rid of all the fibres of which it is composed. To obtain this result repose is absolutely necessary; the avoiding of the continual exercise which fortifies the muscles. Once this necessity is admitted and proved, the cellular system is the best means to attain the end desired, and the objector will soon find the new method admirable, the more so as the fowls thrive under it. The machines are being rapidly introduced throughout France, and the inventor is daily occupied in reducing their cost. As it is, an excellent apparatus for the incubation and rearing of a very large number of fowls, the hatching of a hundred eggs and the fattening of an unlimited number of fowls, can be purchased for a sum between 10*l.* and 12*l.* As a last proof of the efficacy of the system, it may be mentioned that the Society for the Prevention of Cruelty to Animals has fully approved of M. Odile Martin's system. When we read of the enormous sums that England yearly expends in imported eggs and poultry, it behoves our farmers to bethink them of this excellent means of arresting so large an encroachment on a once flourishing trade. If we have devoted a rather larger share of the space at our disposal to the description of this apparatus, it has been with the intention of showing something of the reason why our foreign neighbours are superseding us in agricultural and farming industries, in which at one period we stood foremost. Intelligence and the due application of science to industry are doing great things, and will do greater.

PUTNEY BAPTIST CHAPEL COMPETITION.

Thirty-three designs were submitted for the above chapel, and the committee have selected for the first premium the design by Mr. John Johnson, 9, Queen Victoria-street, Mansion House; giving the second premium to the design by Messrs. Bromilow & Cheers, Liverpool; and the third premium to the design by Mr. Jas. Hicks, Bristol. The selected design is of Italian character, to be executed in white brick, with stone dressings, and the approximate cost is 3,500*l.*

Breach of Building Bye-Laws.—William Hunt, of Old Windsor, builder, was summoned at the Berks Petty Sessions for having commenced to erect a building without having given notice to Mr. Byrne, the surveyor to the Rural Sanitary Authority for the Windsor Union. Mr. Byrne stated that the defendant had commenced to erect a building, the plans for which had not been passed. Defendant stated that he submitted plans some time ago, which were approved, but, desiring to make some alteration, he submitted fresh plans, which were not approved, and he therefore decided to build upon the old plans, which he now produced. He admitted that he had not given notice, but did not consider it necessary. He was fined 1*l.* and 9*s.* 6*d.* cost.



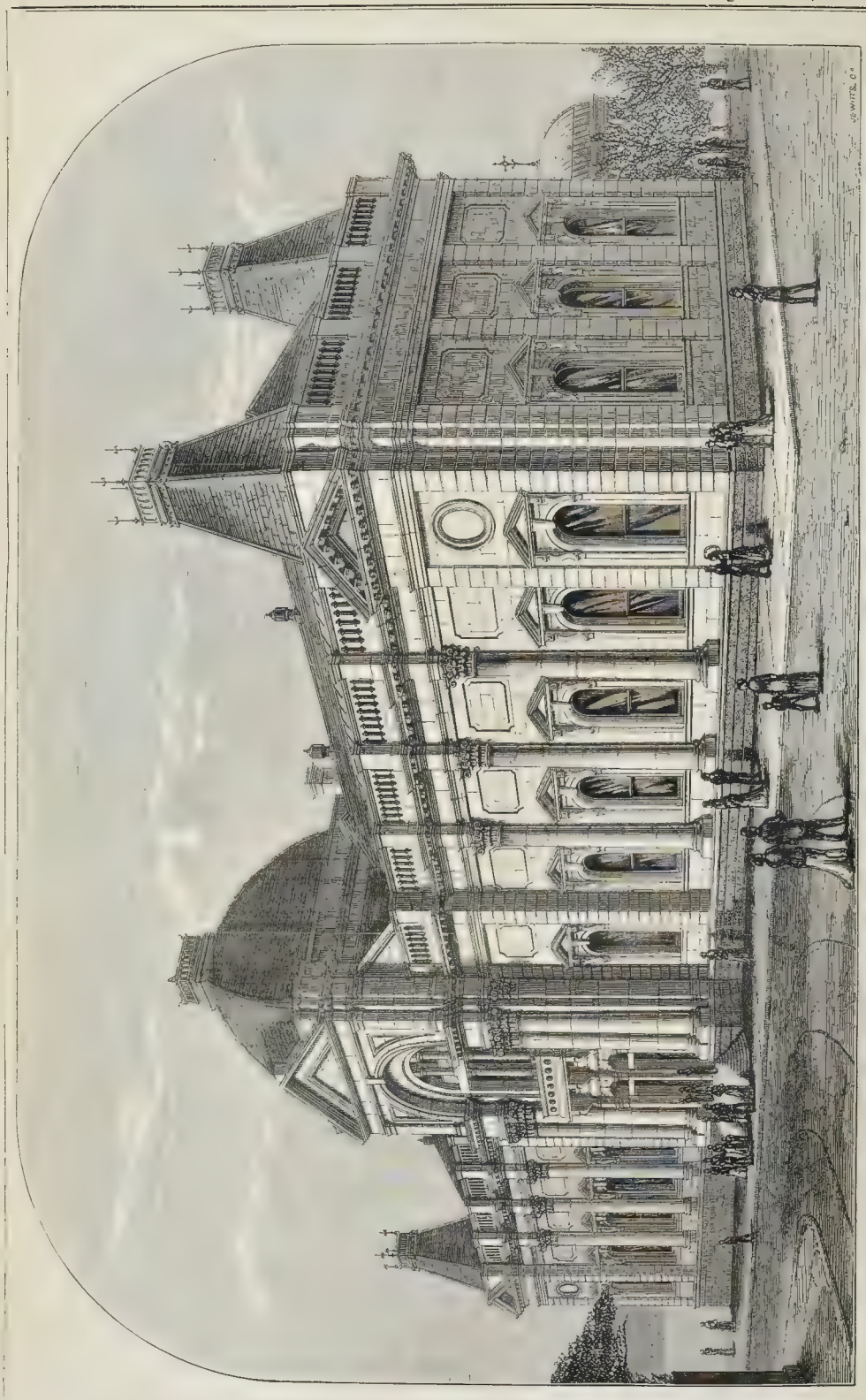
MUSEUM AND LIBRARY BUILDINGS, SUNDERLAND.—*Plans.*

SUNDERLAND MUSEUM AND FREE LIBRARY.

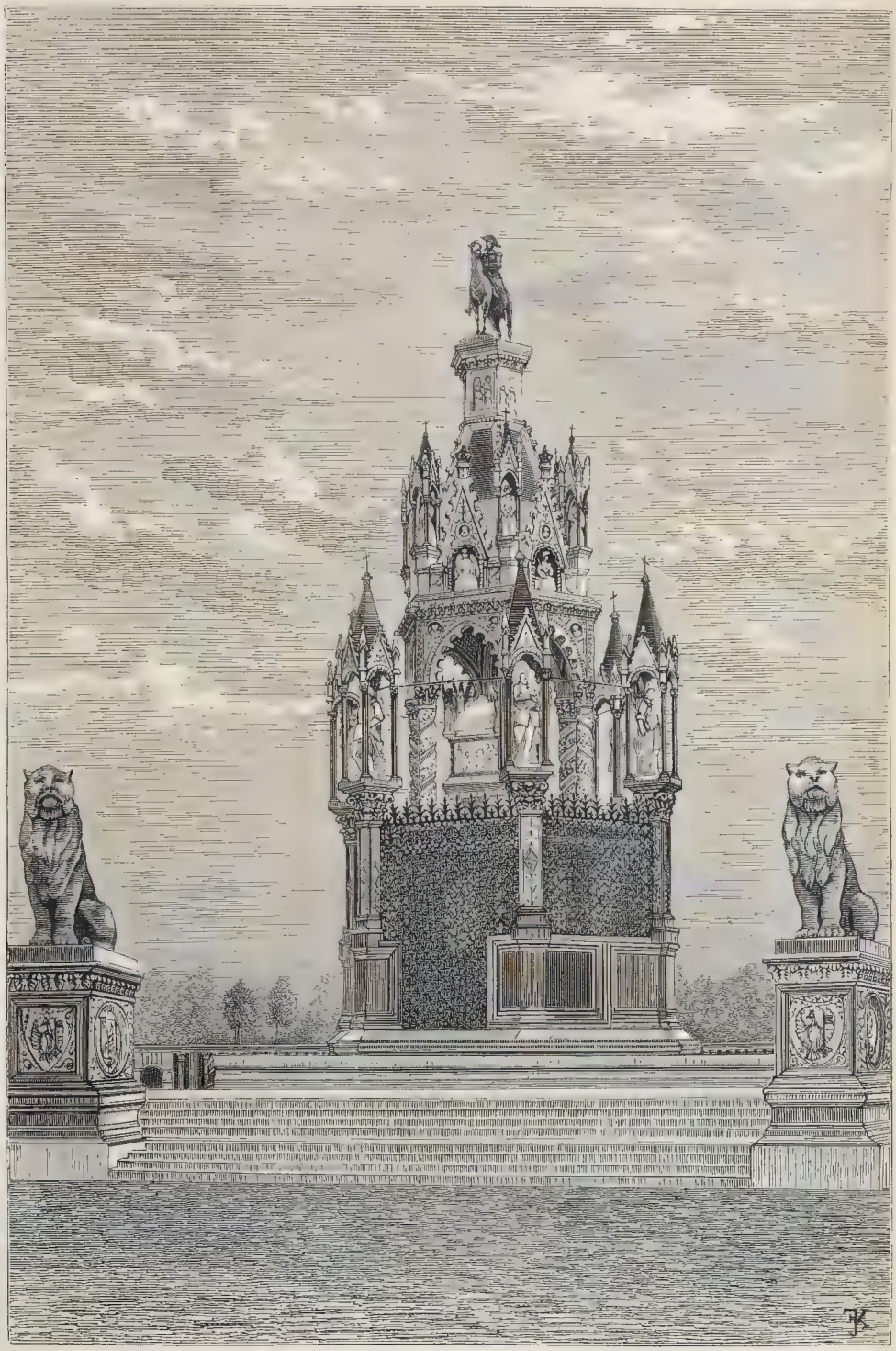
These buildings, of which we give a view and plans herewith, were formally opened by the Mayor (Mr. S. S. Robson), on the 6th inst. The foundation-stone of the building was laid by the ex-Mayor (Ald. Storey) in the presence of General Grant, in September, 1877. The buildings are situate at the north-west corner of Sunderland Park, and facing the Borough-road. The style is Classic, and the elevation to Borough-road is nearly 200 ft. long, the central feature being a dome, beneath which is the entrance-hall, 48 ft. long by 25 ft. wide. The walls of this hall are adorned by a bust, on a pedestal, of the late Mr. William Pile, ship-builder; a bust of Robert Stephenson, presented by Mr. McQueen; and figures representing Aristides the Just, Victory, Peace, and Ceres. On the ground-floor, to the left of the entrance-hall, is the Museum, 75 ft. long by 35 ft. wide, with a curator's room, 20 ft. by 15 ft., adjoining. A gallery, accessible by a circular staircase, is carried round the museum on a level with the rooms on the first story of the adjoining portions of the buildings. To the right of the entrance-hall is the library, 65 ft. by 35 ft., with rooms for the librarian and for ladies. A special feature in the library is the system of indicating the issuing of books, invented, we are told, by Mr. Elliot, of Wolverhampton, and which is being introduced into most of the free libraries in the kingdom. On each side of the librarian's desk is a long case with small glass shelves, each numbered in its alphabetical class, and when a book is taken out, the borrower's ticket is placed in the shelf corresponding in number and class to the book, which is an indication that that particular book is out. The method is very simple, and will save great trouble, both to the librarian and the borrowers, and the arrangement of the books on the shelves need not therefore be interfered with by the borrowers. The shelves are adorned with busts of Socrates, Scott, Milton, Havelock, Bewick, Chaucer, and James Watt. The first floor is reached by a stone staircase, and on this floor are two large rooms, one for the Science and Art Classes (which will be divided into three by curtains, and lighted from the roof, which is open-timbered), and the other for committee meetings.

The buildings have been erected from the plans and under the superintendence of Messrs. J. & T. Tillman, architects, the general contractor being Mr. Robert Allison, of Whitburn. The sub-contractors were,—Messrs. D. & J. Rankin, for the joiner-work; Messrs. Rule, Brothers, plasterers; Mr. J. B. Wilkinson, plumber; Mr. G. Morrison, painter, &c. The heating is by a high-pressure hot-water apparatus, by Messrs. Mackenzie & Moncur, of Edinburgh.

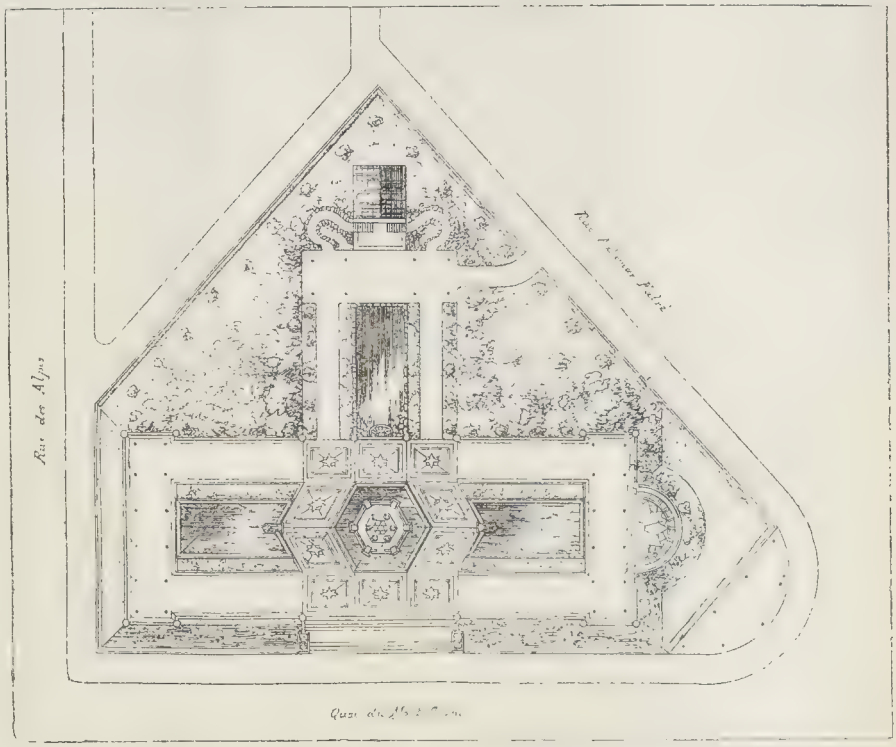
Through the centre of the principal entrance of the Library building is the interior entrance to the Winter Garden,—an important addition to the new structure. The garden, which will be 156 ft. long, 42 ft. wide at each end, and 50 ft. wide in the centre, will be covered with an iron and glass roof, having a dome for its central feature.



MUSEUM AND LIBRARY BUILDINGS, SUNDERLAND.—Messrs. J. & T. Tillman, Architects.



THE DUKE OF BRUNSWICK'S MONUMENT, GENEVA.——M. Franel, Architect.



THE DUKE OF BRUNSWICK'S MONUMENT.—*Plan.*

THE DUKE OF BRUNSWICK'S MONUMENT, GENEVA.

The Duke of Brunswick, whom all London and Paris knew, died, it will be remembered, at Geneva, where he had taken refuge at the time of the Commune, leaving the whole of his immense fortune to that town, and imposing upon it, by a clause in the will, the erection of a monument to the wealthy testator. The Duke desired that nothing should be neglected in order to make the monument as near perfection as possible. In general disposition it is a reproduction of the monument of the Scaligers at Verona. The whole is of white marble reaching to a considerable height,—and surmounted by a gilt equestrian statue of the Duke,—cast in the ateliers of M. Barbedienne. The two enormous lions in red marble, placed to the right and left of the flight of steps, as also two mythological animals with eagles' heads, in Scotch granite, figuring on the extreme right and left of the space round the monument, are the work of M. Cain, sculptor, as is likewise the equestrian statue. The sarcophagus, which occupies about the centre part of the monument proper, is the work of M. Iguel. It reposes under an open canopy, supported by twisted columns, richly ornamented, and surrounded by six smaller canopies, between the columns of which stand six statues of life-size, in white marble, representing the Duke's ancestors.

The first is Henry the Lion, taking us back to the first Crusade, when there were but two governing powers in the world, that of the Cross and the sword. Next comes Otto I., hereditary Duke of Brunswick, who lived in the thirteenth century. These two are the work of M. Schönenwerk. With Ernest the Confessor we leap three centuries, arriving at the great period of the Reformation. The friend of Melancthon and Luther is represented in a standing position, and the armour he wears shows that he is not only a disciple, but a champion of the new doctrine. This statue is due to M. Thomas. Duke Augustus, the learned (sculptured by M. Aimé Millet), represents the seventeenth century. A man of peace, he contributed largely to the development of the German universities, and it is to him the literary world owes that celebrated and precious collection known as the Wolffenbuttel library. The last two statues represent personages of comparatively modern date, viz., Charles William Ferdinand, the unsuccessful adversary of the celebrated French general Dumouriez, and Frederick William, killed at Quatre-Bras. The sculpturing of these was confided to a Swiss artist, M. Kissling, and their execution deserves great praise.

The sarcophagus, by M. Iguel, is of white and black marble, with eight bas-reliefs representing episodes in the history of the house of Brunswick. A magnificent grille, in forged iron, of remarkable workmanship, by M. Moreau, Paris, encloses the monument, round which there are a terrace, fountains, and gardens, as shown in the accompanying plan. It was the late Duke's wish that the monument should be after the style of that of the Scaligers, and if its architect, the venerable Borninus, of Campilione, could be transported to the "Place des Alpes," he would be surprised, and perhaps charmed, to find his work thus elaborated.

So much thought, work, and conscientious care as is here shown will receive its reward, and the name of M. Franel will be for ever associated with this remarkable monument.

The *Journal de Genève* observes that "probably" the late Duke "thought that the services rendered by his ancestors would in some measure atone for the shortcomings of his own life, and in gathering them around him he has proved his modesty; for certainly it is their presence, and not his, which gives to the edifice its real signification; it is not the tomb of a *man*, but that of a *race*."

LOFTUS-IN-CLEVELAND.

The new Town-hall here, erected by the Earl of Zetland, has just been opened. It is a stone building of late Gothic character, of two stories, having on the ground-floor police-court, local board-room, clerk's office, retiring-room, &c. The upper-floor is devoted to the public-hall, newsroom, office, and ante-room. There is a tower containing a clock and bells, which latter have been furnished by subscription by the tenants on the estate, in memory of the late Lord Zetland. The cost, 5,000*l.*, is considered small for the building, and is partly explained by the fact that the stone has all been supplied from local quarries belonging to Lord Zetland.

The architect is Mr. E. R. Robson, of London. The contractor was Mr. Dickinson, and the clerk of works Mr. James Patterson.

A Granite Monolith.—A drinking fountain, erected at Wood-green as a memorial to the late Mrs. Smithies, was publicly opened on the 25th inst. by the Baroness Burdett-Coutts. The memorial is an obelisk of gray Cornish granite, of which the apex is 32 ft. above the ground, the shaft being formed of a single block of granite, 21 ft. high, said to be, next to Cleopatra's Needle on the Thames Embankment, the largest monolith in London. The cost of the structure is about 800*l.* The monolith was supplied from the quarries of Messrs. John Freeman & Sons, Penryn, and erected by Messrs. W. & J. R. Freeman.

THE LAW OF FIXTURES.*

WHATEVER is affixed to the soil becomes, in contemplation of law, a part of it, and is consequently subjected to the same rights of property as the soil itself,—*quicquid fixatur solo, solo cedit.*

This fundamental principle of the law of fixtures is sufficiently well established; the difficulty is to determine what is meant by it: in other words, to say with precision what constitutes annexation sufficient for this purpose. There can be no doubt that this ancient maxim, whatever may be its present value as a guiding principle, was originally applied in all its strictness. It is, in fact, a relic of that ancient feudal principle which rendered every other description of property subservient to the interests of the owner of the realty.

In this, however, as in other branches of the law, the necessities of society, and the quickening influences of trade and commerce, have compelled the courts gradually to relax the strictness of the old rule. Accordingly, we find that the earliest exceptions to the ancient principle were made by the judges in favour of trade, and in relation to those articles necessarily affixed to the freehold for the purposes of trade and manufacture.

As the commercial classes increased in wealth and power, personal property, or that description of articles called "movables," became of increased value and importance, and exercised a commensurate influence upon the law, and the inadequacy of the old rule to meet the requirements of society was next acknowledged by excepting such articles from its operation as had been annexed to the freehold for ornament or for domestic use.

Notwithstanding, however, the rapid increase in the value of personal property, and the corresponding necessity for some modification of the ancient feudal principles, it was not until the time of Queen Anne that the courts assumed any extensive powers in restraining the dominant influence of the realty. And the law of fixtures, so far as the decisions of the judges have created it, consists at the present time almost entirely of those exceptions and qualifications which have, from time to time, been engrafted upon the ancient maxim which allowed the property in a movable to be changed by annexation to the soil. It is proposed in the following paper to indicate such an arrangement of this difficult subject as will, at any rate, render it more easy of comprehension.

Meaning of the Term "Fixtures."

The term "fixtures" has been used by the courts as applicable both to chattels annexed to the freehold, and thus becoming irremovable against the will of the owner of the freehold, as also to chattels annexed to the freehold, but, nevertheless, removable at the will of the party annexing the same. This use of the term, in its double and general sense, is approved by Chief Baron Kelly, in his judgment in Climie *v.* Wood.† The term "fixtures" is an ambiguous one. It has been defined to be such an annexation as can be removed from land by the party annexing it adversely to the owner, but, in its more general sense, it means any annexation or addition which has been affixed to or planted in the soil of the land.

The term "fixtures" may, therefore, with authority, be taken to include all those articles which are actually or constructively annexed to the freehold. It is proposed to retain the word in the generic sense thus indicated, and to distinguish merely temporary annexations from such articles as have become by permanent annexation a part of the freehold, by classing them respectively as "movable" and "irremovable" fixtures.

On Annexation.

Annexation to the soil, either actual or constructive, being therefore in all cases necessary to constitute a fixture, it will be important to define the degree of annexation necessary in law for this purpose, or rather to define the meaning applied to the word "annexation" by the more recent judicial authorities, in which sense it is intended to be used in this paper.

An article is considered to be actually annexed to the freehold when it is united thereto by means of bolts, screws, nails, &c., or when by any other and artificial means it becomes actually incorporated with the freehold.

An article is considered to be constructively annexed to the freehold when, although not actually annexed, it forms a necessary and integral portion of "or belongs to" that which is already a fixture, but is in itself separate or capable of easy separation.*

It will be found, with regard to that description of annexation termed constructive, that it is possible for a chattel to become a fixture, not only where there is no actual affixture to the freehold, but where the chattel is separate and removed from the freehold, and where, nevertheless, for certain purposes and in a limited sense, such chattel is to be considered as annexed to the freehold; as, for example, the doors, windows, locks, keys, and rings of a house may be distinct and separate things, and yet they are considered constructively annexed to the freehold, and therefore a part of it. And so of any other matter that forms an integral and essential portion of or belongs to "a fixture," although it may be distinct from it.

By the grant of a mill the mill-stone will pass, albeit at the time of the grant it be actually severed from the mill.† So with regard to machinery. If the *corpus* of the machinery is a fixture, all that belongs to that machinery, though more or less capable of being used in a detached state from it, follows the same principle, and remains attached to the freehold.‡

The Intention of Annexation.

This question will be found, more especially in the later authorities, to depend upon those circumstances attendant upon the annexation which serve to indicate the intention of the party annexing the chattel to the freehold. The operation of the ancient principle is, in modern law, subordinate to the consideration of the intention with which a man must be presumed to have annexed an article to the freehold, and the mere circumstance of annexation is not in itself sufficient to determine the question whether that intention is or is not for permanent benefit of the freehold *perpetui usus causâ*.

There is abundant authority for the principle to which it is now sought to refer all questions concerning annexation to the soil. The great difficulty lies in defining the circumstances from which the law may presume an intention to permanently benefit the freehold. These being ascertained, the intention of the party annexing an article to the soil, by so doing to permanently benefit the freehold, will be a question of evidence.

If the evidence of the circumstances attendant upon annexation be strong enough to raise the legal presumption of an intention to permanently benefit the freehold, the "fixture" will be "irremovable" by the party annexing the same against the will of the owner of the freehold. If, on the other hand, no such intention can be presumed in law from the circumstances, the fixture will be "movable" at the will of the party annexing the same.

It is difficult to reconcile some of the earlier cases with the principles which now obtain; but this is of little importance, and it is not proposed to consider these cases at any greater length than may be found necessary for the purpose of illustrating modern law.

Nature of a Property in Fixtures.

A right of property in a "movable fixture" is of a composite character, being neither exclusively a chattel interest nor an interest in the realty, properly so called, but partaking of the character of both, and possessing incidents peculiar to itself. The term fixtures has been already defined, and may be taken to include all those articles which are either actually or constructively annexed to the freehold.

The right to sever and remove a fixture relates, therefore, to the realty, so long as the fixture remains annexed to the freehold; but, upon the exercise of the right of severance, the fixture at once assumes the character of a chattel, and becomes subject to the law of personal property. A transfer of an interest in land,—for example, the mortgage of a term by a tenant for years,—will pass the "movable fixtures" without their being expressly included in the mortgage. But, on the other hand, it is competent to the tenant to transfer his right of severance; and this would be a transfer of his chattel interest in the fixtures; for upon the exercise of that right the fixtures cease to be part of the land, and become chattels. The right of property in fixtures is not, therefore, an "interest in land" within the 4th section of the Statute of Frauds,* nor yet "goods, wares, and merchandise," within the terms of the 17th section of the same statute; and agreements relating to the transfer of property in fixtures, not being affected by that statute, need not necessarily be in writing. Under certain circumstances, however, writing is indispensable.

Of the Right to remove Fixtures as between Landlord and Tenant.

The right of severance and removal of annexations to the soil by the tenant of a particular estate has, in modern law, developed into a right of considerable value and importance.

It must be remembered that the situation of a tenant, and the nature and extent of his rights relating to fixtures, may be varied by private contract, and the construction which had been placed by the courts upon covenants of this kind will receive separate attention; but, for the present, it must be presumed that there is no such private contract affecting his rights as to fixtures, and that the demise contains no covenants that relate thereto.

The position of the tenant will now be considered apart from any such incidents, and with regard only to his rights as sanctioned and established by the general rule of law; and it may here be noted that where it has been determined that a right of severance exists under the circumstances already discussed, *à fortiori* it may be taken to exist when the relative position of the parties is that of landlord and tenant, and the cases already cited will be applicable, so far as they allow of the existence of a right of severance and removal, to the state of facts now under consideration.

The presumption of law which arises from "the position of the parties," when they stand to each other in the relation of landlord and tenant, is one in the least degree favourable to an intention to permanently benefit the freehold; in fact, an intention to permanently benefit the freehold, on the part of a tenant annexing articles to the soil, can never be presumed solely from the relation of the parties as landlord and tenant.

It will depend in a great degree upon a consideration of "the mode and degree of annexation," "the nature and character of the fixture, and the use for which it is intended," to determine whether a fixture is "movable" or "irremovable;" in other words, these two latter incidents now become the most important *indicia* of the intention.

If the article is so firmly annexed to the freehold or incorporated therewith that it cannot be removed without permanent injury to the freehold, the tenant will not be allowed to remove it. It is a proper question for a jury to determine whether the removal of a fixture would cause substantial injury to the freehold, and such a direction on the part of the judge is a good test of the mode and extent of annexation.† A windmill, built of wood and resting on a brick foundation, by its own weight alone was held to be a chattel and a "movable fixture" between heir and executor.‡ A barn constructed of wood resting on staddels of stone, built into a brick foundation, may be removed by a tenant, but the foundation must remain. This latter case was decided on the ground that the barn was not fixed, and that a wooden barn so constructed was not annexed to the soil.

In Buckland *v.* Butterfield, a conservatory which had been purchased by a tenant for years and brought from a distance was by him erected on a brick foundation, 1 ft. 3 in. deep; upon that was bedded a sill, over which was a framework covered with slate; the framework was 8 ft. or 9 ft. high at the end, and about 2 ft. in front. This conservatory was attached to the dwelling-house by eight cantilevers, let 9 in. into the wall, which cantilevers supported the rafters of the conservatory; resting on the cantilevers was a balcony with iron rails. The conservatory was constructed with sliding glasses, paved with Portland stone, and connected with the parlour chimney by a flue; two windows were opened from the dwelling-house into the conservatory, one out of the dining-room, another

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* From a paper by Mr. J. Smalman Smith, barrister-at-law, read at the ordinary general meeting of the Institution of Surveyors, on Monday, November 24. The president (Mr. W. Sturge) in the chair.

† Climie *v.* Wood, 3 L. R., Ex., 260.

* *Ex parte* Astbury, 4 L. R., Ch. app., 636.

† Sheppard's Touchstone, 19.

‡ Fisher *v.* Dixon, 12 Cl. & Fin., 330.

* 29 Car. 2, c. 3.

† Avery *v.* Cheslyn, 3 A. & E., 78.

‡ Rex *v.* Otley, 1 B. & Ad., 161.

out of the library. The Court held that the conservatory had become part of the freehold, and could not be removed by the tenant or his assignees. Chief Justice Dallas appears to have decided this case on the ground that there may be a "sort of fixing or annexation which, though the building or thing annexed may have been merely for ornament, will yet make the removal of it waste."

In Jenkins *v.* Gething,* greenhouses built in a garden and constructed of wooden frames, fixed with mortar to a foundation of brickwork, were held to be "irremovable fixtures"; the boiler built into the floor of the greenhouse was also held to be an "irremovable fixture," but the pipes belonging to the heating apparatus and connected with the boiler by screws were held to be "movable fixtures." Vice-Chancellor Wood, in this case, after distinguishing the position of a tenant from that of an incumbent, as in Martin *v.* Roe,† goes on to say:—"There is nothing to distinguish this case from Buckland *v.* Butterfield."

It may be taken as the result of the authorities that a fixture, in order to be "movable," must be of a chattel nature and character before it was annexed, or, at the least, must partake of a character independent of the soil. In the relation of landlord and tenant, but in that relation alone, the rule of law was relaxed for the encouragement of trade, it being very early perceived that it would be injurious to trade if a tenant were told that he must continue to conduct his trade with property which need not be fixed in any way to the soil, or he would at once be held to have made a present of it to his landlord. In the time of Lord Holt,‡ such fixtures were movable by a tenant, and a series of subsequent authorities have established this general principle with respect to trade fixtures.

Lord Ellenborough, in the case of Elwes *v.* Mawe,§ also recognises the authority of the decisions in which fixtures, set up for purposes not wholly but in part connected with trade, have been held to be "movable fixtures."

When a tenant is a nurseryman, and makes it his trade, he may remove trees.‖

Time for Removal of Fixtures.

The right of a tenant to sever and remove fixtures does not for certain purposes affect the character of the fixture as a part of the soil to which it is annexed. By the exercise of the right of severance the fixture becomes a chattel, and subject to the incidents of a chattel. Nevertheless, until that right is exercised, the general rule of law still obtains, that when a tenant annexes articles to the demised premises during the term, such annexations or "fixtures" become part of the freehold.‡ The tenant is, moreover, liable to be divested of his right, should he not exercise it within certain prescribed limits; in such case the property in the fixture will pass to the owner of the soil to which it is annexed.

Lord Justice James, in *ex parte* Daglish,¶ has thus stated the law on the subject:—"In the case of a freehold, the freeholder has exactly the same interest in everything attached to the freehold as he has to the bricks and mortar themselves, which make up the walls of the freehold. But that is not the case with respect to a tenant who has a limited interest,—it does not signify what that limited interest is,—in the soil and the buildings, and who has besides an absolute interest, a complete and unqualified property (unqualified except as to this, that he must remove it before the end of that term), in the fixtures as distinct from the interest in the land. This interest is a thing which he can part with, a thing which his creditors can seize, and a thing which is liable to execution as against him, just as much as the chairs and tables in his house."

Where a yearly tenant of a house had at his own expense hung bells, but quitted the premises without removing them, it was held that, by remaining fixed to the freehold after the expiration of the term, they become the property of the landlord, and that the tenant could not maintain trover for them after the landlord had severed them from the freehold.**

In the absence of special contract, tenant's fixtures cannot be removed after the termination of the lease, and this rule applies whether the lease determines by effluxion of time or by re-entry on forfeiture.*

The result of the authorities may be stated,† first, that fixtures go, at the expiration of the term, to the landlord, unless the tenant has, during the term, exercised his right to remove them; secondly, that the tenant may remove the fixtures, notwithstanding the term has expired, if he remains in possession of the premises;‡ thirdly, that his right to remove fixtures after his term has expired is subject to this further qualification, viz., that the tenant continues to hold the premises under a right still to consider himself as tenant.

Covenants and Agreements relating to Fixtures.

The right of a tenant to sever and remove "movable fixtures" is frequently governed by express covenants. § When this is the case, the rights of the parties will, of course, depend upon the legal construction of such covenants.

A general covenant to repair extends not only to buildings, but to fixtures, and a tenant is precluded by such a covenant from removing fixtures. ‖ A tenant may also deprive himself of his right to remove fixtures by undertaking to repair, and yield up in good repair, improvements and fixtures.

If a tenant on the determination of his tenancy takes any fresh interest in the premises, he should take care to reserve expressly his right to remove those fixtures which he had, under the old tenancy, a right to sever and remove, otherwise the tenant may lose his property in them altogether; and it may be generally stated that the right of a tenant to remove fixtures may be divested by any new agreement for the use and employment of the land in which there is no mention of the fixtures. Suppose a tenant from year to year, or without any express covenant to repair, erects structures or improvements, and subsequently takes a lease of the same premises, with a general covenant to repair, the lessee would be restrained from removing those fixtures at the determination of the tenancy so created, although he might have removed them previously to the commencement of his lease.¶

Where the outgoing tenant stipulates with the incoming tenant for a purchase of the fixtures at a valuation, the landlord should, in all cases, be made a party to such an agreement; otherwise, if the fixtures are allowed to remain until the incoming tenant has taken possession, the landlord may dispute the right of purchase and sale, and claim the fixtures on the ground that the outgoing tenant has divested himself of the right to remove the fixtures by neglecting to exercise his right during the term.

A vote of thanks, proposed by Mr. R. C. Driver, and seconded by Mr. T. Huskinson, was unanimously passed to Mr. Smalman Smith for his paper.

After a few remarks from Mr. E. J. Castle and Mr. E. Ryde, the discussion on the paper was adjourned.

THE SYDNEY INTERNATIONAL EXHIBITION.

The Sydney International Exhibition was opened on the 17th of September, as already mentioned by us. This is the first undertaking of the kind that has ever been attempted in Australasia, and, compared with Exhibitions in the European and American capitals, it is, of course, on a small scale; yet, so far as the quality of many of the articles exhibited is concerned, the comparison appears to be not unfavourable. It is to be succeeded next year by an exhibition at Melbourne.**

The section devoted to British exhibitors is remarkable for its extent. The names of Aberdeen, Dundee, Edinburgh, Glasgow, Belfast, Dublin, Limerick, Cork, Hull, Leeds, Birmingham, London, Liverpool, Manchester, Sheffield, Newcastle, and Nottingham, which are inscribed on the façade of the section, indicate the important cities of Great Britain represented at the Exhibition, and in a considerable degree suggest the nature of the exhibits to be seen. These exhibits come into view immediately on entering the building from the western tower. We hear of complaints, however, as to the obtrusiveness of some of the "trophies" erected by exhibitors. Some of these erections seem to be of abnormal dimensions, and, as a rule, they are not endowed with sufficient beauty of appearance to compensate for their interference with the free circulation of the visitors to the building. The total display of furniture is disappointingly moderate, and in the British court, which contains the largest number of exhibits, the leading houses are scarcely represented. Of what there is, however, we may mention some fine suites of furniture in oak shown by Messrs. A. J. Arrowsmith & Co., of Bond-street; also, by the same firm, some attractive specimens of parquetry. Of carpets, Great Britain shows an endless variety from Kidderminster, Halifax, and Durham, and they come in very handily for covering plain partitions or hiding rough corrugated iron walls. Some few samples in bright colours have been placed in the collection with designs of flowers in bright colours on a white ground, but better things preponderate. Messrs. Thomas Tapling & Co. are among the exhibitors in this department. The electrotypes representing the royal plate at Windsor attract a great deal of attention. The collection has been lent by the permission of her Majesty the Queen, and forwarded under the direction of the authorities at the South Kensington Museum. Among the mechanical exhibits are some vices and smiths' tools shown by Messrs. Peter Wright & Sons, of Dudley. "Wright's anvils" are, with the exception of the foot, forged in one solid piece,—bick, face, and end, in fact, all forming one homogeneous piece of metal. This firm's parallel-motion vice possesses some advantages. Messrs. John Rabone & Sons, of the Hockley Abbey Works, Birmingham, exhibit a show-case containing samples of measuring rules and tapes, spirit-levels, &c. These specimens comprise carpenters' rules, in boxwood and metal, divided according to the requirements of different trades. It seems that most of the ordinary wooden rules have to go through from forty to fifty machines before they are completed, and the more complex rules undergo sometimes as many as a hundred different mechanical operations from the commencement to the final stage of the manufacture.

In the New South Wales Court, there is a display of art-objects in terra-cotta. The exhibitors, Messrs. Thorpe & Davis, have been less than a year in the colony, but, having found a suitable clay within a few miles of Sydney, they commenced operations at once. This branch of industrial art appears likely to thrive in Australia.

France makes a good show of works illustrating the art of the potter. A large collection of articles, which are the products of the Faïencerie de Gien, reveals the advances which France has made in this manufacture during what might be termed a very recent period. The Faïencerie de Gien was established on the banks of the Loire in the buildings of an old convent in 1820, and in the early part of its career, as we learn from a Parisian journal, made only fine faïence, of a composition analogous to the English faïence known as opaque porcelain. "The old products of Gien" (says the Parisian journalist) "were famous for their whiteness; but they were far from possessing the solidity of the paste and the fixity of the enamel which have since been obtained, and which now render the faïence of the same manufactory equal to porcelain for domestic uses. The products of the Faïencerie de Gien comprise two distinct branches of very different value. The most ancient and the most important from a commercial point of view is the manufacture of pottery for household uses,—white, printed, or with flower patterns,—broadly painted with a brush or by hand. It was only in 1856 that the Faïencerie de Gien began to apply its excellent material to artistic processes by making some table services in imitation of old Rouen faïence. The success was so great that the directors of the company, determined to carry their idea still further, and to imitate successfully the faïences of Delft, Marseilles, Moustier, and Italy. These products excited considerable attention at the Paris Exhibition in 1867, and started the vogue which is likely to

* Buckland *v.* Butterfield, p. 14; Jenkins *v.* Gething, 2 J. & H., 520.
† Martin *v.* Roe, 2 Joh. & H., 526.
‡ Poole's Case, 1 Salk., 368.
§ Elwes *v.* Mawe, 3 East., 54.
‖ Wyndham *v.* Way, 4 Taunt, 316.
¶ *Ex parte* Daglish, 21 W. R., 893; 29 L. J., 188.
** Lyde *v.* Russell, 1 B. & Ad., 394.

* Pugh *v.* Arton, 8 L. R., Ex., 626.
† Heap *v.* Barton, 12 C. B., 274.
‡ Penton *v.* Robart, 2 East., 88.
§ Naylor *v.* Collinge, 1 Taunt., 19.
‖ 14 Vin. Ab., 291. See also *Ex parte* Astbury, 4 L. R., Ch. app., 630.
¶ Thresher *v.* East London Waterworks Company, 2 B. & C., 608.
** The Exhibition buildings have already been illustrated and described in the *Builder*,—that at Sydney (Mr. James Barnet, architect) on pp. 513, 515, of the current volume; and that at Melbourne (Messrs. Reed & Barnes, architects) on pp. 1302, 1305, of last year's volume.

last for any length of time." In addition to what is mentioned above respecting the articles manufactured by the company, they have been equally successful "in imitating the ancient faïences of Persia, China, and Japan, cloisonné enamels, craquelé ware, turquoise, gold enamel on the Sèvres blue ground, and especially painting in Barbotine on the unprepared faïence." In the way of decorative faïence, the kind called Barbotine is considered to be particularly effective. "The method permits of the painting of a complete picture on the clay, just as it would be painted on canvas, in large and bold strokes, and with a gradation and softness of colour which has hitherto been unknown." Several exhibits of this Barbotine faïence can be seen in the collection at the Exhibition. There are many other exhibits of interest, representing the different kinds of manufacture referred to, and among them are some specimens of Emaux Turcs, or Turkish enamelled work, in vases and other things which have a very handsome appearance. But the real business of the Faïencerie de Gien lies in the manufacture of common china articles of all descriptions, and in these tradespeople and others will be chiefly interested. To give an idea of what the pottery works at Gien are capable of producing, the manufactory is said to turn out every day more than 25,000 kilogrammes, or 25 tons of faïence, and to take one article alone, the ordinary plate, the daily production is represented at 50,000. A very large proportion of this quantity is, of course, exported, and the company hope to extend their export trade to Australia. Another firm of exhibitors of faïence is that of Bolvet & Co., Faïenceries de Creil et de Montereau, whose collection will be found to contain some rich exhibits in china for ornament or for domestic use.

On the main floor in the American court there are several minor exhibits worth seeing. Carpenters will take an interest in the planes of the Stanley Rule and Level Company, New Britain, which have no wood about them. The steel plate at the bottom can be bent up or down, or kept flat by means of screws, according to the nature of the work in hand. There is a screw-driver fitting deeply into the handle, and having a cross-piece inserted through the wood to prevent the blade from turning or becoming loose. The locks of the Russell & Erwin Manufacturing Company, Philadelphia, are spoken of as marvels of simplicity, though many of them are without keys, and are opened and closed on the inside by turning round a little nob. For defending the spring catch of an ordinary door from the heavy jar it sometimes gets when the door is banged-to, a contrivance has been patented in the form of a second catch, which takes the blow and draws the other catch in out of danger. There are locks to do away with the trouble of pushing up bolts above and pushing down bolts below on big doors, the work being all done from the centre handle. Such contrivances are, however, in use in England. Amongst the hinges are some bronze castings, and where it is desired to hide the screws, the plate is in two parts, upper and under. For the Yale lock, which is largely used in America for gaols and for post-office private-boxes, the key is a narrow blade, notched along the edge, and the only part of the lock exposed is the slit for receiving it.

Ceylon sends to the exhibition an interesting collection of native carvings.

We hope to say more of the contents of the Exhibition.

Profits of Tree-Planting.—It has been calculated that the tree thinnings of an acre of land worth only from 5s. to 10s. per acre, but planted with a mixture of larch, beech, pine, hazel, birch, and oak,—the latter with a view to the growth of navy timber or trees of large size for building and other purposes,—will, at the end of from ten to fifteen years, according to local circumstances, repay the average expenses of planting, rent, and management during that period, together with compound interest at five per cent.; and the profits of future falls may be estimated as follows:—In 13 years, or at 23 years' growth, 24*l.* 10s. per acre; in 13 years more, or at 36 years' growth, 39*l.* per acre. After that period a triennal profit of about 12*l.* per acre, until the oak is fit for navy or other purposes, for which timber of first-class quality is required, when the final clearance may be expected to fetch from 200*l.* to 250*l.* per acre.—*The Garden.*

ARCHITECTURAL ASSOCIATION.

The opening meeting of this Association for Session 1879-80 was held on Friday, the 21st inst., Mr. S. Flint Clarkson, president, in the chair. Several new members having been nominated, the meeting proceeded to the consideration of the annual report, which detailed the work of the past session, and showed that in number of members, in work done and doing, and in financial position, the Association is in a vigorous condition. The number of members is 812, showing an increase of forty-four during the year. The committee express their satisfaction with the attendance in the various classes during the session, and congratulate the members upon the quantity and improved quality of work submitted. These classes, constituting as they do an important means of obtaining a theoretical knowledge of the various branches of architecture, ought to be well supported, and advantage taken of the many opportunities they offer. The report directs attention to the amount of good which may be done by means of the prize fund, in stimulating the younger members to enter the several competitions open to them; and, in order to further increase the interest, the committee announce that they have decided to offer a silver medal as the principal prize.* Donations to the prize fund will be acceptable. A satisfactory event in the history of the past session was that, at the instance of the then president, Mr. H. L. Florence, the members of the Association subscribed 120*l.* to the funds of the Architects' Benevolent Institution. In consequence of the alterations which have been made in the premises at Conduit-street, the committee have found it desirable to take upon lease the whole of the second-floor. The new committee-room, which will also be used for the meetings of several classes, is much larger, and will be found more suitable than the old room. The position of the library has also been changed.

The balance-sheet submitted by the treasurer (Mr. J. Douglass Mathews), and signed by the auditors (Messrs. Thomas E. Mundy and William Crisp), showed that the total income for the year (including 55*l.* 4s. 2d. remaining in hand at the date of the last balance-sheet) amounted to 530*l.* This total includes 364*l.* 5s. 6d. received for members' subscriptions, and 59*l.* 17s. entrance-fees. The total expenditure amounted to 405*l.* 2s. 4d., leaving a balance of 124*l.* 17s. 8d. in hand.

The report and balance-sheet were unanimously adopted, and a vote of thanks was given to the auditors.

The report of the Library Sub-Committee, presented by Mr. R. E. Pownall, showed that the number of books renewed or exchanged during the session was 1,491, the number of individual borrowers being about 130. The Committee of the Association had made a grant of 20*l.* to the library fund, and 26*l.* was expended in the purchase and binding of books. This report was adopted, on the motion of Mr. Pownall, seconded by Mr. Hampden W. Pratt.

The reports from the various classes were next submitted. That from the *Class of Design* showed that at the first meeting of the class thirty members attended and twenty-three designs were submitted. The total number of designs sent in during the year was 120, the average at each meeting being fifteen. Mr. Aston Webb, hon. sec. to the Visitors of the *Elementary Class of Design*, reported that the class had held eight meetings, the average attendance of members being twenty-one. The largest number of sketches submitted on any one evening was twenty-three. Although the work of the class was hardly up to the standard of previous sessions, the Visitors had pleasure in noticing that the younger members of the Association, for whom the class was especially intended, had largely availed themselves of its advantages. The report of the *Class for the Study of Colour Decoration* was of a satisfactory character, eighteen members having taken part in its work as against eleven in the previous session, the number of sketches submitted being fifty-five as against twenty-seven. The report of the *Class for the Study of Architectural Science* was not so satisfactory. Fourteen members of the Association joined the class, the average attendance at each meeting being eight. Eight papers were submitted for reading and discussion. On the other hand, the *Class of Construction and Practice* reported a very successful session. This class held fourteen meetings, the average attendance of members being 37. The average number of papers contributed was twelve.

The whole of the foregoing reports were unanimously adopted, as was also the report of the tenth annual excursion, some notes of which appeared in the *Builder* at the time.*

Mr. J. S. Quilter made a statement with reference to the work on Charente which is to be published as a memorial to the late Mr. Edmund Sharpe. The work is, he said, making good progress, many of the plates being ready. The letterpress is in the hands of Mr. Penrose.

The President then proceeded to deliver his inaugural address, which we print on another page.

Mr. H. L. Florence, past-president, said that in following Mr. Clarkson through his very able and eloquent address, he was in some doubt as to what the President quite intended to express with regard to critics and criticism,—whether he sought to deprecate criticism or to invite it. For his own part, he (Mr. Florence) should rather be inclined to think that criticism was to them, as architects, of the greatest value. Their work was entirely for the public, whether for private individuals or for associated bodies, and by the public they must consent to be judged. They might have a great deal to teach the public, but certainly there was much that they might learn from the public. Criticism was far better than apathy or indifference, and the criticism of the present day (of some of which there was undoubtedly some reason to complain) was a healthy symptom, and pointed to an awakening interest on the part of the public in the architectural profession. In concluding his remarks, Mr. Florence expressed the satisfaction with which he and the members generally felt in seeing Mr. Clarkson occupy the presidential chair. No one who had attained to that position had better deserved it. Mr. Clarkson had been a member of the Association for many years, and had worked steadily and zealously for its welfare, unpretentiously taking his part in its management. No doubt he would, at the close of his year of office, have done much to add to the prosperity and usefulness of the Association. He begged to move a cordial vote of thanks to the President for his able address.

Mr. H. H. Stannus, in seconding the motion, said that he thoroughly agreed with Mr. Clarkson when, in reference to critics, he spoke, with so much justice, of the wide range of view of Fergusson, and of the wonderful charm of the language of their other great critic, Ruskin. Mr. Whistler had done his best to degrade a noble profession by writing a silly, contemptible pamphlet, in which he sought to lay it down as a rule that a man must be a painter in order to be able to criticise painting, and he assumed that Mr. Ruskin was not a painter. If Mr. Whistler had ever seen a little work (now in the Sheffield Museum, the speaker believed) by Ruskin,—a marvellous view of an Alpine range, done with wonderful breadth of effect, he would at once retract his statements. Ruskin had shown himself to be one of the ablest artists of this age, as he was also one of the grandest critics of all ages. In conclusion, Mr. Stannus endorsed the remarks made by Mr. Florence as to the satisfaction with which the members of the Association beheld, in Mr. Clarkson, their president.

Mr. J. S. Quilter, Mr. W. Hilton Nash, and Mr. J. Douglass Mathews having spoken, the vote of thanks was put to the meeting and carried with enthusiam.

Mr. Clarkson having said a few words in reply, the meeting was brought to a close.

We may add that the annual *conversazione* of the Association is fixed for Friday next, the 5th of December.

Society of Engineers.—At the meeting of this society, to be held on Monday next, a paper will be read on "Sewage Disposal," by Mr. Henry Robinson, who will treat of the rules which govern the disposal of sewage, and of the sanitary Acts which bear on the question, including the Rivers Pollution Prevention Act. Reference will be made to the Thames and the Metropolitan sewage from a sanitary point of view; and the various systems for dealing with sewage, such as land filtration and chemical treatment, with the cost of it, will be discussed.

* The "Association Medal" (to which the sum of five guineas will be added if the judges so recommend), for the best design for a "Coffee Tavern" on a corner site. For particulars, see "Brown Book."

* See pp. 921, 934, 935, *ante*.

SCHOOL PLANNING.

Messrs. Oliver & Leeson, of Newcastle-upon-Tyne, have sent us a properly-worded letter,—bearing on the article on Schools for the Middle Classes, on p. 1251, *ante*. They call attention to the importance of obtaining direct sunlight in rooms generally,—in a way which might be taken to imply that we have not given this consideration all the weight to which it is entitled, mentioning,—"in our design ('L') for the City of London School, which was also one of the six selected, we arranged that every class-room should have either a south or a west aspect, and consequently have direct sunlight during the greater part of the day." We are not at all disposed to undervalue any opinion expressed by these architects, who have had a good deal to do with schools. The design "L," which they mention, merited all the commendation and the special premium which it received. In our notice of the designs in July last we spoke well of "the picturesque and appropriate appearance of the perspective design," and a word might have been said if there had been opportunity about the good planning of the natural science section,—on the west side of the building,—the students' chemical laboratory placed in the advanced wing, ventilated by opposite windows in the east and west walls, and having windows in the south wall as well. The arrangement of the lecture-room for 400 boys did not come up to that in the design selected for execution where the seating of the room is turned the other way, and a north staircase is put, and consequently two entrances are obtained, one available for each of the passageways at the end of the seats. We are not disposed, however, to modify anything said previously,—as to the type of plan by Messrs. Clarkson illustrated on p. 1265, merely on the ground that some of the class-rooms derive *all* their lighting from the north,—none of it from any other point. The more class-rooms derive their principal light from the north the better, if we consider mainly the advantages of steady, even lighting, and of the inconvenient glare of a southern or western sun, and the need for heavy blinds, &c.

As the City of London School is no longer under discussion, it is not at all necessary to go through once more the reasons for placing the rooms; it will be sufficient to mention the quiet of north windows on that site, as another great point in favour of that arrangement. In the design by Messrs. Clarkson, there are twelve class-rooms deriving their principal light from the north, but only five of these have windows to the north only; namely, those on the ground story. Those on the one-pair story having a corridor to the south of them, and having "windows in more than one wall," are apparently provided with south windows (high up). Ten others out of the total of twenty have ordinary windows through which the sun would shine daily.

There must usually be a balance struck in planning a large building put on a site which introduces special limitations and conditions. Certainly, as far as we have seen as yet, in such a school as this,—even with its site so magnificent in many respects,—several desirable things must be done without in order to obtain others still more desirable. Depriving one-fourth of the class-rooms of the direct rays of the sun between September and March, for instance, must, we are afraid, not be made into a vital point in planning class-room schools for London and other large towns. It is as well not to ride too many hobbies very hard.

In infants' schools,—as for hospitals,—sunny windows are indispensable. The school-rooms of primary schools, arranged for the pupil teacher system, may derive their principal light from the north, or from anywhere between the north-east and north-west; and have end windows, and opposite windows of smaller size, so that the sun may come upon some moderate extent of glass during the whole of school-hours. In arranging for a great school with separate class-rooms on an extensive and not extremely costly site, the class-rooms might be allowed to influence the general arrangement, in a way which in capable hands might produce a characteristic picturesqueness. Taking the class-room, for example, at 20 ft. by 20 ft., with two external and two internal walls, the diagonal of the room from the left of the desks might be about the line of the magnetic needle (19° west of the true north). Then the wall on the left of the desks would face north of north-east, and the windows in that wall would receive the morning sun. A window at the south corner of the east wall would receive light from sunrise to midday, and the sun would leave the room, as it should, shortly after that.

But we will not carry the subject further just now. Any careful observations of health or eyesight, in the case of boys of twelve and upwards taught in class-rooms lighted from only the left of the desk, but differing in the aspects of their windows, would be useful; — any specially good and bad results being noted. We have no wish to put a stop to inquiry, or to recording the result of it in our columns; but we have quite as little wish rashly,—by giving undue importance to any one desirable thing,—to add to the difficulties (already sufficiently numerous) of putting good middle-class school buildings on expensive town sites.

BUDDHIST REMAINS IN AFGHANISTAN.

Mr. William Simpson, who was lately accompanying the head-quarters of Lieut.-Gen. Sir S. Browne to Afghanistan, in the Khyber and the Cabul Valley, has already contributed to Oriental archæology some valuable notices of the remains of Buddhist sacred architecture and sculpture, especially in the neighbourhood of Jellalabad, some of which we have already quoted. The *Illustrated London News* of last week includes six engravings from drawings by him of such remains, with brief particulars. One of the subjects given, the Khaista, or Beautiful Tope, is the most perfect of the many topes yet remaining in the Jellalabad valley. On two sides the remains of the pilasters on the square base can still be seen; and on the circular part above the pilasters and arches are tolerably complete all round. From this monument it is evident that the topes of Afghanistan had the form of towers rather than mere domes. It will be seen here also, says Mr. Simpson, what a long neck the structure had, above which was the dome, unfortunately now gone. This tope stands on the base of the Siah Koh range, near to Daronta. It seems to have belonged to a very large Buddhist establishment; for there are the remains of a large tank about 400 ft. square, on the level ground; and the Ummer Wheyl Tope, one of the largest in the valley, belongs to this important group. The circular part of this last tope is 100 ft. in diameter, while the Khaista is only 50 ft. Of the tope at Hada, near Jellalabad, a large mass is still standing, but of its outer skin of architecture nothing remains. Masson calls this the "Tope Kelau," or the Great Tope. He found in this monument no fewer than 202 silver coins and seven gold pieces, besides rings, ornaments, and precious stones. There is a square ridge all round this, formed of mounds, eight of them in all, which may have been small topes round the large one.

While carrying on the excavations at the Ahin Posh Tope, Mr. Simpson came upon five figures in plaster, sitting on the upper moulding of the square base. They had been painted in a bright yellow colour, and one of the figures had still some of the tint remaining. Instead of a circular nimbus, a form was given from a lotus-leaf, the lotus being intimately connected with Buddhist symbolism.

The Bara Bat Tope, near Jellalabad, also illustrated, is on the left bank of the Cabul River, about three miles below Pheel Khana Tope and caves. It has a course of pilasters, in which the Greek character of the Corinthian capitals, as wells as of the cornices, is unmistakable. There is an arch only between the pilasters at the southern point of the tope. Thick fragments of plaster still remain on the surface. Mr. Simpson ought to put together all his information as to these Buddhist remains in the shape of an illustrated book.

The Proposed Column in Old-street.—The Shoreditch Vestry propose to erect a column on the piece of ground at the junction of Old-street with Great Eastern-street. The offer of Mr. Nicholson, of Mark-lane, to supply an Aberdeen granite pedestal and column (as per design exhibited in the Council Chamber), to be 33 ft. high, has been accepted, the estimated cost, including bronze capital and ornaments, and eight granite posts and fixing complete, being 745*l.*, and architect's commission, 40*l.* The expenses, the report stated, would be defrayed out of the Tramway Paving contribution received on behalf of the High-street, Shoreditch, extension.

THE FALL OF HOUSES IN TOTTENHAM COURT ROAD.

Dr. Hardwicke, the Coroner for Central Middlesex, on the 21st inst. opened an inquiry at the University College Hospital concerning the death of William Viles and John George Martin, who were killed on the previous day by the falling of houses in Tottenham-court-road.

Evidence as to the time of the occurrence and the identity of the bodies having been taken.

James Shields, a carpenter and joiner, said he acted as foreman to his son, a contractor and builder, in superintending the works at Nos. 171, 172, and 173, Tottenham-court-road. The contract was, among other things, to turn what had been three distinct shops into one, and to raise the first floors by 2 ft., which was done by erecting iron girders in lieu of the existing wooden bressummers. They had fifteen men at work in the buildings, and about three minutes before the accident occurred he was in the house No. 173. He had observed nothing wrong previously, except that on the preceding day, at a chimney-breast which was being altered, a brick had fallen from the flue; but it was shored up on the previous night before they left.

In answer to the Coroner and jury, witness said his opinion was that the buildings were very old, and would not admit of the alterations being made. They raised the floor by means of putting in needles, and then fixing in the girders. The party-wall of the two houses Nos. 171 and 172, the chimney to which he had referred being on it, fell. He had been a foreman two years, and understood buildings of that sort.

Mr. Alfred Shields, 46, Bath-street, Poplar, said he had been a builder and contractor one year, but was brought up as a carpenter and joiner. He had, however, superintended general building works for large firms about three years ago. He had in this instance undertaken a contract to convert the shops of three houses, Nos. 171 to 173, Tottenham-court-road, into one, to do the general repairs, paint and put in the fixings of the three shops; also to raise the first floors by means of putting in girders in place of the old bressummers. The shop foreman was superintending these works till three weeks ago, when witness's father, who was out of work, took his place. Witness considered him quite competent to act in such capacity.

By the Coroner.—He could not form any opinion as to the cause of the accident, and was not aware that the buildings were in a dangerous state. Mr. Williams, an architect, had prepared a drawing of what was to be done. He visited the place during the work, and considered it safe. He thought that the party-wall must have buckled and given way, and that carried the two houses with it. Witness gave notice to the district surveyor before the work was commenced, but had not had his consent in writing. It was usual for a district surveyor to inspect such work.

Mr. Frederick Wallen, district surveyor for the Western Division of St. Pancras, said it was his duty to have a knowledge of all works of alterations of houses, &c., within his district. Notice was given on the 30th of September that these works would be carried out, and something then had been done. The work was two openings in party-walls between 171 and 172, and two openings between 172 and 173, and new shop-fronts, in accordance with the specification. He was not then informed that the raising of the first-floors was in contemplation. On Saturday, the 15th inst., he was informed that the chimney-pieces were being cut away, and he wrote to Mr. Shields the following letter:—

"106, Gower-street, W.C., Nov. 15.

Re 171, 172, and 173, Tottenham-court-road.

Dear Sir,—I understand that you are cutting away chimney-breasts here without any certificate from me, and in a very reckless manner, without any shoring. Sec. 19, Rule 15, of the Building Act provides that no chimney-breasts built against a party-wall may be cut without my certificate, and it has been decided that you are liable to a penalty of 20*l.* for doing such work without giving me notice first, in order that I may make a special survey, and certify accordingly. This I shall certainly take steps to enforce if another brick is removed, and unless the buildings are immediately made safe from the effects of what you have already done.—I am, Sir, your obedient servant,

Frederick Wallen, District Surveyor.

Mr. A. Shields."

On Monday, the 17th, witness saw the foreman and complained of putting in the bressummers without shoring, although needles were in use. He replied, "It's all safe." Witness then asked him about the chimney-breasts upstairs, and noticed the front chimney-breast was cut away

about 4 in. in depth and in height between the levels of the old and the new floors, and there was no shoring whatever. The foreman remarked that he wanted to do the same at the back and adjoining house. Witness told him he could not do so unless they were properly shored up, and pointed out to him where the shoring ought to be. He added, "In addition to what you have done you must put in a good stone corbel under each jamb, the full thickness of the wall. Then you may cut away what is below the corbel." He then went and wrote the following certificate:—

"Metropolitan Building Act, 1855, Section 20.

No. 172, Tottenham-court-road.

I certify that the chimney-breasts built against the south party-wall of this house may be cut away to the extent or height of the distance between the former and present level of the first-floor story, provided that the chimney-breasts on the first-floor story be first efficiently shored up from the ground, and that hard stone corbels, 4 in. thick at least, be inserted of the full size of each chimney-jamb, on the level of the first-floor, and of the whole thickness of the wall, and the said chimney-breasts properly made good and pinned down thereto.

FREDERICK WALLEN, District Surveyor.

No. 106, Gower-street, November 17, 1879."

Mr. Wallen added that, as he left the building, he remarked to the foreman, "You must put in a story-post to support the bressummer on each side of that party-wall, and it must be 4 in. thick at least," and he answered that it should be done. On Tuesday, the 16th, he also saw the leaseholder, Mr. Lewis, and told him the same. On Thursday he was called, at about 11·15, to the scene of the occurrence, but had not sufficient time to fairly examine the premises so as to give an opinion as to the cause. He was not aware that what he had directed to be done was done.

The inquiry was adjourned.

THE OLD WALLS AND TOWERS OF NEWCASTLE-UPON-TYNE.

AT a meeting of the Newcastle Town Council on the 10th inst., Mr. Alderman Robinson presented the following report of the Old Walls and Towers Committee:—

"The Old Walls and Towers Committee have to report that, in accordance with the instructions of the Council, they have carefully surveyed the whole of the old walls and towers of the town. They find that the whole of them are in reasonable repair, except at a few points, where trifling repairs were urgently needed, and the committee have taken on themselves to order the carrying out of such repairs at a cost not exceeding 20*l.* The question of further and more permanent repairs may stand over, and the committee would suggest that they should continue their labours, with a view to endeavouring to secure to the Corporation the undisputed ownership of all the towers. With a view to guard against the destruction of these remains, except in cases of absolute necessity, the committee hereto append a schedule of the various towers and portions of walls now standing, and they ask the Council to pass a resolution that no building in the schedule may be taken down or sold until such destruction or removal has been brought before the Council, and carried by an absolute majority. The whole or part of eight towers are standing, and the schedule is as follows, beginning at the Close, and continuing north and east.

"B. C. BROWNE, Chairman.

Town-hall, Newcastle, Nov., 1878.

Schedule of the Walls and Towers, Newcastle, standing November 1st, 1879.

1. A portion of the wall by the side of Granary Stairs, between the Close and Hanover-street.
2. The wall forming the back of the Corporation stables and other property between Hanover-street and the railway.
3. The Gunners' Tower and a portion of wall on the south-west side of Pink-lane, opposite the Central Station.
4. The wall including the Durham Tower, extending from Westgate-street, opposite the Police-station, to Stowell-street.
5. The wall with the Heber Tower, Moden Tower, and Ever Tower, extending from Stowell-street to St. Andrew's-street.
6. Two portions of wall between St. Andrew's-street and Newgate-street, forming the boundaries of St. Andrew's Churchyard.
7. The Plumbers' Tower in Croft-street.
8. Part of the Corner Tower in Croft-stairs.
9. The wall between the Corner Tower and Pandon Dene now standing, including the two sides of the Dene, portions of which may be required for the formation of the new street now in progress.
10. The Sallyport and a short length of wall on each side of it."

Alderman Wilson moved that in the matters to be entrusted to the committee the Blackgate be included. It was the finest relic in the old town; and he would very much like to see it secured and put into a state of repair, as one of the monuments of the past.

Alderman Hedley seconded the motion, and it was agreed to.

Alderman Gregson said it was very absurd and quite contrary to the sanitary regulations to maintain these old walls; and he objected to money being spent upon them.

THE HANOVER GALLERIES, LIVERPOOL.

THE auction-rooms long known as the Hanover Galleries, occupied by a firm of long-standing, had become too small for their purpose. It was, therefore, determined to modernise, and make them also more spacious. The work, which has been in quiet progress for some months, has now been finished. The irregular rooms and galleries in rear of the front offices have been demolished, and in lieu of them has been erected a handsome pile of buildings, which not only covers the area of the original premises, but extends over the whole quadrangle, which was formerly an open yard or garden. These are entirely new and distinct buildings, intact within themselves, but they are approached through the doorway of the old premises in Hanover-street. The basement of the new building consists of a spacious storing-cellar for furniture and goods consigned to the firm for warehousing or to await the periodical sales. This room contains a superficial area of about 300 yards, the floor of which is laid with Atkin's patent asphalte flooring, as a preventive against damp. On the ground-floor, the principal saleroom is approached through the old building, and consists of one large room occupying nearly the whole area of the new building. It is 66 ft. long by 47 ft. 6 in. wide, and is lighted by means of a large skylight area over the central portion of the room. A covered way from the yard, into which vans can be driven, leads into this room, so that furniture and other goods sent for sale may be taken direct from the van into the saleroom without being exposed to the inclemency of the weather. On the first floor is another saleroom, 47 ft. long by 31 ft. wide, with an open roof, the ceiled portion of which is about 25 ft. from the floor. Part of this room extends over the covered way already noticed, and through trap-doors provided for the purpose goods may be loaded or unloaded direct from the cart under cover from the weather. Out of this saleroom lead three large picture-galleries *en suite* with the first-floor saleroom just described. All these rooms are lighted with top lights for the better display of paintings that may be hung, or other goods that may be exhibited for inspection. Care has been bestowed upon the lighting and ventilation of the various rooms, and lavatories are also provided for the use of the persons attending sales. The whole of the works have been carried out by Messrs. William Tomkinson & Sons, of Dansie-street, Liverpool. Mr. Edmund Kirby, of Liverpool, is the architect, under whose directions the works have been carried out.

CARLISLE.

AN extensive block of buildings, comprising shops, show and warehouse rooms, workshops, and dwelling-houses, is in course of erection in Lonsdale-street for Mr. George Moffet.

The widening of Annetwell-street, where Mr. Moffet's old premises are situate, caused his removal. The principal contractors for the new buildings are Mr. Jas. Metcalfe, for masonry and brickwork, and Messrs. Batey & Forster, for carpenter and joiner's work. The total cost will be over 4,000*l.* Messrs. Hetherington & Oliver, of Carlisle, are the architects.

New cottages for workmen employed by Messrs. Ferguson Bros. at Holme Head Works, are about to be commenced from the designs of the same architects. The contract has been let to Mr. Geo. Black, for the whole of the works.

Rapid progress is being made with the extension works at the Citadel Station, Carlisle. The roof is being executed on what is known as the ridge and furrow plan. The girders run across from east to west, and are supported in their centres by heavy and strong cast-iron columns, which in turn rest on granite bases 5 ft. square and 2 ft. thick. The contractors for the roofing are Messrs. Arrol, of Glasgow. The whole roof will be covered with glass, no slates being used, and about 7 acres of glass will be required in the work. The general contractors are Messrs. Morrison & Mason.

The *Carlisle Journal* publishes some statistics of house-building in the city. It seems that a few years ago the dwellings of the working-classes were being pulled down so rapidly in Carlisle as to excite great apprehension. Workmen's houses become very dear, any kind of hole with a covering over it fetched an extravagant rent, and overcrowding was common. A proposal was made to apply the Artisans' Dwellings Act to Carlisle, but the strain was proved to be only temporary, private effort being put forth to meet the demand. In the year 1875, the Health Committee passed plans for the erection of 113 houses, such as would be occupied by working men; in 1876, for 139 such dwellings; in 1877, for 196; in 1878, for 198; and during the present year plans for about 120 have been passed. So that in five years between 700 and 800 houses of the kind described have been built in Carlisle. They are situated chiefly in Botchergate and Denton Holme. Rents are now easier than they were three or four years years since, yet a steady demand for a good class of cottages testifies to the continued general prosperity of the city.

THE STANLEY-ALDERLEY MONUMENT.

CHESTER CONSISTORY COURT.

AFTER nearly a year's litigation, judgment in this case was delivered on the 20th inst. by the Rev. Chancellor Espin, at the Consistory Court, Chester Cathedral.

The subject in dispute was the erection of a carved medallion of white marble, 21 in. in diameter, containing a profile in bas-relief of the late Lieut.-Col. John Constantine Stanley, together with a brass-plate containing a simple inscription (not objected to) on the pillar of the north aisle, near the north-eastern window, in the parish church of Alderley.

The applicant was the Hon. Susan Elizabeth Mary Stanley, relict of the deceased gentleman to be commemorated, and in her application for a citation she was supported by almost every member (excepting Lord Stanley) of the Stanley family. The opposers were Lord Stanley, Rev. E. J. Bell, and the four churchwardens.

From the evidence brought forward in the case it appeared that the rector was not at first averse to the project. Lord Stanley objected to it, but was not averse to a memorial window being erected to the memory of his elder brother. The churchwardens, when applied to, wrote that, as Lord Stanley was against the proposition, they could not agree to it. The principal objection was that the medallion, or any other mural monument, would be incongruous with the architecture of the church. In reply, Mr. Blomfield denied that. The medallion, it was argued, being a work of art (it is by Boehm), would be an ornament to the edifice.

Chancellor Espin, in delivering judgment, considered there was no inconvenience caused by erecting the medallion in the place indicated; that the rector had once consented to it being so erected, and that it was a work of art. The sculptor was Mr. Boehm. He therefore decreed a faculty in terms of the citation.

Notice of appeal was given.

WATER SUPPLY.

Leeds.—The corporation of Leeds has just completed the large scheme of water supply for that borough which was set on foot twelve or fourteen years ago. In 1867 the consumption of water had exceeded five millions of gallons per day, and further sources of supply had then been explored and tested. In that year the corporation sought for Parliamentary powers to construct the Lindley-wood, the Swinsty, and the Fewston reservoirs on the river Washburn. The Lindley-wood reservoir was commenced in August, 1869, and finished in November, 1875. It will hold about 720 million gallons, and has cost about 199,000*l.* The Swinsty reservoir was commenced in February, 1871, and finished in January, 1877. It will hold about 960 million gallons, and has cost about 165,000*l.* The Fewston reservoir was commenced in July, 1874, and finished on November 3, 1879. It will hold 870 million gallons, and has cost 150,000*l.*, or a little more. The Swinsty reservoir, from which the supply of water is gravitated, is about sixteen miles from Leeds, as measured along the conduit-pipes, or about thirteen miles as the crow flies. Two 20-in. pipes convey the water into a storage reservoir at Eccup, a short distance from Leeds, which reservoir is undergoing enlargement, so as to hold 1,400 millions of gallons, which is more than six months' supply at the present rate of consumption. The ceremony of opening for the first time the sluices of the upper or Fewston reservoir was performed by the mayor, who said the works had been carried out without a single penny of rate having been levied on the town. The profits upon the water had been sufficient to pay the interest on the capital, and to leave a surplus besides. Moreover, the water was caught, carried a distance of many miles, and delivered to consumers at the rate of 1½d. per ton. He

referred to the satisfactory manner in which the work had been carried out, stating that it would be a lasting monument to the genius of Mr. Hawksley, C.E., and of Mr. E. Fillitter, C.E., of Leeds, his assistant.

Retford.—At a special meeting of the Retford Town Council, the Waterworks Committee reported that, in pursuance of the instructions received by them from the Council, they had proceeded to prepare a scheme for supplying the borough with water. They had had before them a report by the engineer, in which he submitted for selection two schemes, both of which contemplated the supply of the borough with water by means of a well and pumping engines from the site in the west of the town where water had been found by the trial boring which had been made. By No. 1, the tank scheme, it was proposed to deliver the water by means of a tank, to be placed on a tower 60 ft. high, to be erected near the well. By No. 2, the reservoir scheme, it was proposed to deliver the water by means of a reservoir on Grove-hills. The advantage of the tank scheme was that it would be less expensive than the reservoir scheme. The engineer estimated the cost of this scheme, inclusive of the purchase of the land, the price of which would be 600*l.* at 9,953*l.* The cost of the reservoir scheme he estimated at 11,405*l.*, exclusive of land, and as additional land would be required for the reservoir, the total excess of the cost of the reservoir scheme over the tank scheme might be estimated at 2,000*l.* The Committee recommended the adoption of the tank scheme, and their recommendation was adopted.

BRIDGING THE NEVA.

Sir,—In your last week's number you give a short history of the origin of the new Liteinaia Bridge at St. Petersburg. I do not know what design Col. Struvé has adopted, but I may inform you that competitive designs for this bridge were invited from engineers throughout Europe in 1872, and the first premium for the best design was awarded to myself and late partner (Mr. E. Perrett), the second premium being given to Mr. Ordish for his design. The superintendence and execution of the work were ultimately given to Russians; but I have every reason to believe that had we gone to St. Petersburg soon after the premium was awarded, with a sufficient sum of money available for any number of "*pots de vin*," we should have been appointed to carry out our design.

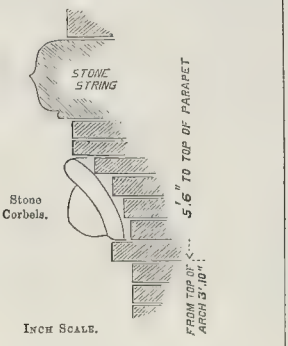
Charles W. Whitaker, Mem. Inst. C.E.

THE CORBEL-TABLE AT ST. ALBAN'S.

Mr. Chapple is not the only one connected with St. Alban's who disbelieves in the lines of the Norman roof having risen so high as the top of the old corbel-table; or in the existence of evident marks of the verge-line of the old roof against the tower. He is probably the only one who would pretend to deny the existence of this evidence upon such assertions and implications as he has not scrupled to put forth.

This corbel-table was one of great interest. It does not figure in Mr. Neale's book except in the small-scale south elevation. I trust, therefore, you will admit a detail of it, as I found it on November 28th, 1878. If Mr. Chapple is able to furnish a more accurate one, I hope that we may have the benefit of it. If the dimension of 5 ft. 6 in. which he gives were measured from the corbel-table downwards, it would cut through the external face of the Norman wall into the heads of the Norman windows below. It does so happen that 5 ft. 6 in. would, according to dimensions which I took, reach from the bottom of the old corbel-table to the top of the coping of the parapet. But if this were the dimension to which he referred as giving the extent of the raising of the wall in Mediæval times, it would be proving too much for his purpose. It would show clearly that the corbel-table existed prior to the Mediæval raising; for it is absolutely impossible for it to have been inserted subsequently to the building of the parapet, which was carried by it.

Instead of explaining or excusing his apparent mistake in his assertion that the so-called corbel-table was built of modern material upon a wall raised 5 ft. 6 in. in thirteenth-century rubble-work, he now "emphatically denies the existence of such corbel-table altogether." This may be merely an incorrect and misleading way of expressing his opinion that the corbel-table was not of "Norman" date or "Norman" work; just as he speaks of the great length of the roof as bearing upon the question of its verge at one



Inch Scale.

end. How far this is honest or honourable I will not venture to say; but if he have any self-respect or consideration for those whom he may be supposed to represent, it will be well for him to pause before further compromising himself and them by such inconsistencies. When he gets into a corner, he may, for self-defence or for amusement, take to the entertaining pastime of mud-throwing, without regard to the effect it may have either upon himself or upon those on his side of the dilemma in which he is pleased to place them as well as himself, if they acquiesce in such reasons and excuses; seeing that it is only under their direction and control that this work can have been carried out. I am in no way concerned to defend every step I have taken for the last thirty years and more, whilst maintaining, with more or less success, both in principle and practice, the cause of conservatism. But I am very deeply concerned at the serious and irreparable damage which this cause has sustained by the example set at St. Alban's, by such reckless and unnecessary demolition.

He has read my letters with no more care or accuracy than he has the history of the structure of St. Alban's, or he would have seen that although I lamented the loss of the corbel-table, not only as an interesting detail, but also as obliterating all traces of the lines of the Norman roof, I did not impute motives. Had I done so, I should have imputed to the restorers, at all events, the only true one possible, viz., the laudable desire to make as noble and perfect a restoration (according to their lights?) as possible.

William White, F.S.A.

THE FLAT SYSTEM.

Sir,—In your columns of the 15th inst. a letter appeared, signed "H. & R. P.", inquiring why ordinary builders do not adopt the "flat" system in preference to the usual type of house-building.

As one who has had life-long experience in building operations, I reply that the chief reason is the difficulty in getting ground for anything but the ordinary class of houses, landowners as a rule entrusting the laying out of the ground to an architect who insists upon a certain class of dwellings. Then, again, houses built in "flats" cannot be sold or mortgaged so readily as those built in the ordinary manner.

There can be no doubt, however, that buildings erected on the "flat" principle yield a much better return on capital than other kinds of house property; but it is evident that only large capitalists can find the necessary funds for an undertaking which consists of blocks, instead of single frontages.

Your correspondent "Economy," in last week's issue, after referring to the "flats" in Victoria-street, states that up to the present time no buildings which combine comfort with economy have been erected in London. Allow me to inform him that within the last seven years I have erected in Manor-road, Stoke Newington, ten blocks of dwellings for the middle classes. These blocks consist of forty-four "flats," of from five to twelve rooms each, the rents varying from 25*l.* to 60*l.* per annum, exclusive of rates and taxes. Each tenant has his own front door and separate entrance; the blocks are three stories high, with flat roofs, and the staircases and ceilings of each flat are fireproof. Although each dwelling is separate and distinct, the grounds in the rear are used in common, and are laid out with croquet lawns, conservatories, a billiard-room, a kitchen garden, &c. The wash-houses and drying-grounds are kept out of sight behind the conservatories, and are fitted with every convenience. That the speculation is a successful one is proved by the fact that I have seldom a house tenantless, and am continually receiving applications for flats of 30*l.* or 40*l.* rental.

I feel sure that if other builders adopted the "flat" system they would be equally successful with myself, and that they would meet a want which has long been felt.

Matthew Allen.

WOOD-CARVING.

Sir,—Unless Mr. Rogers believed that his soft-footed platitudes would not disturb that lull in the discussion, which he deems to be so eminently conducive to the best interests of the wood-carver, he should not have afforded an opportunity of re-opening it. But there is a sensitive ear even to the stealthy tread of a cat's-paw when this is bent upon mischief. It is perhaps as worthy an occupation to chop logic as to chop wood. Mr. Rogers would seem to think that it is very unreasonable that a discussion touching the welfare of his profession should involve logical treatment. His letter might have been more to the purpose had his thoughts possessed some logical consistency. Let him, for instance, place his own words in juxtaposition,—I mean those having reference to the institution of a school of wood-carving,—"That it was *seriously* wanted may be open to doubt." "In any case,"—that is, whether wanted or not,—"it is more deserving a friendly hand than an angry word!" Is this the mild way in which Mr. Rogers permits the independence of his profession to be tampered with by *dilettanti?* In my letters I have said that wood-carving is not in that abject state which the instigators of the school of wood-carving would lead the public erroneously to suppose, and that a school of the kind was not *seriously* needed. Mr. Rogers seconds both these opinions.

Again, Mr. Rogers, with a most eminent instance to the contrary, an example which he has had held up before him from infancy, viz., that of Gibbons, has the wicked temerity to write, "One man cannot do it." Fie! Fie! if wood-carving is the art that Mr. Rogers would make it out to be, why should not the artist in wood-carving, as in other branches of art, be complete in himself?

In your correspondent's grandiose deduction from what he terms "the failure of Working Men's Exhibitions," the vital factor to national success in the arts, that factor without which accomplished artists can at best but vegetate, is completely ignored, viz., that of their encouragement by the ruling classes, and it is to this essential factor and moving principle that all my letters point, for without this *prima mobile*, thousands upon thousands may still be thrown away upon art-schools and art-institutions,—for that factor was, and ever will be, the only factor capable of successfully developing artistic talent, and through this a grand national art development. So much for the letter of one who presumes to talk about the "mistakes" above the signature of your old correspondent,

Meter.

THE SOCIETY OF ANTIQUARIES.

Sir,—I have read the letter in your journal of the 15th instant, headed "Can these Dry Bones Live," and bearing the signature "Antiquitatis Indagator," the object of the anonymous writer being, as it appears to me, to asperse the Society of Antiquaries. In answering his letter, I will append my own name, and for the following reason:—

For the past ten years I have pretty regularly attended the meetings of the society, and since reading your correspondent's letter I have been endeavouring to guess its author, for I judge from it that he is also a member of the society. If he were not, I should think his letter unworthy of notice. If I knew who he was, I would repeat to him what I said to a late and most distinguished member of the society, though one rarely seen at its rooms, upon the occasion of a meeting at which he was present, and when he differed in opinion upon a subject under discussion from the views of the majority of the members present. When the member to whom I refer found the sense of the meeting

opposed to his own view, he grumbled like your correspondent, and I said to him,—"It is your own fault. If you, as a member, would take a proper interest in the society, attend its meetings, act upon its council, and propound your own views, you would be certain, if they were considered proper, to find supporters; weight would always attach to your views, and effect be given to them if possible, and if not, reasons would be assigned for the course adopted; but so long as you content yourself to remain away and to take no part in the management, I think it ill becomes you to be a grumbler."

I would say this to your correspondent,—if he would come forward, and either upon the council or at the meetings bring forward the subjects to which he refers, I can assure him that he would find many members who would co-operate with him, and if his objects were capable of being carried out he would have the pleasure of seeing them fulfilled; if the reverse, he would at least enjoy the satisfaction of having ventilated and taken the sense of the members upon them.

It would be tedious (though not void of interest) to go through the several points raised in your correspondent's letter, but as regards that which I think is of most substance, namely, "that some steps should be taken to acknowledge the various independent societies throughout the kingdom, and to admit their members to some sort of qualified fellowship," I would remark that ignorance alone can justify this being mentioned. There probably has been no subject which has been so much under consideration by the Council as this.

I will, in conclusion, add that until your correspondent either signs his name or comes forward and expresses his opinions at the meetings of the Society of which I assume that he is a member, I shall be content to regard him as unworthy of the *nom-de-plume* he adopts, and nothing more nor less than a grumbler who will not take the pains of seeking to remedy by the proper means that which he considers defective in the Society.

EDWIN FRESHFIELD.

GOVERNMENT OFFICIALS AND ARCHITECTS.

SIR,—Provincial architects and surveyors, in common with divers others of her Majesty's subjects, having suffered a marked diminution of practice consequent on the general depression of the past two years, it is not quite fair that the Government, through their officials, should assist in making it worse for them in some places.

I will only mention an instance of what I mean, and I am sure analogous cases will occur to the minds of your readers.

I was visiting a friend of mind the other day who was complaining of the slackness of work in his neighbourhood, when, in reply to my query, "Could he assign any reason for it?" I elicited the following facts, as near as possible.

The town in which my friend resides, and in which he practises with credit and profit to himself, has a population of some 25,000 inhabitants; two other regularly qualified architects and surveyors also carry on a fairly lucrative business in the same town. Important public works exist in the neighbourhood, on which two clerks of the works and a draughtsman are employed. Another Government office is filled by a surveyor,—all of whom are paid from the public purse, as well as the expense of their offices, and in some instances their residences. By the nature of their appointments these persons are, or should be, debarred, from private work. Such, however, is not the case.

It began in this wise. A surveyor to the local board was appointed at a reasonable salary, with restrictions as to private practice. This gentleman simply set the instructions of his employers at defiance for a few years, until a member of the Board called attention to the fact. His salary was increased, and he ceased openly to practise. It was different with the people in Government employ. The draughtsman and the clerk of works seeing a good chance, still retaining their places, and being able to oblige the inhabitants by views of the public works in question, went in for being architects and surveyors. The surveyor proper went in for public works, and dubbed himself a C.E.; and another draughtsman from the War Office sent in a design for a public institution, which is now being carried out, his only local opponents being an auctioneer's clerk and a builder, as far as my friend could make out, but one of the gentlemen in question has had a professional education.

Contracts are openly advertised by all of these officials, some a long distance from their posts, which must necessarily take some of them away from the public work; but no cognisance is taken of it by the heads of their departments. Consequently, my friend and his professional brethren have had to put up with Government official competition, in addition to the general depression. Whether the income-tax is increased by this arrangement is a question, as some of them are in receipt of several hundred pounds over their official income.

Other matters were mentioned by my friend which show the difficulty of local practitioners competing with Government officials in or near large garrison towns, and which urgently call for a careful and impartial inquiry by the Government, now that the question of civil servants and the trading community has caused such a stir.

COUNTRY ARCHITECT.

BUILDERS' BENEVOLENT INSTITUTION.

THE fifty-second election of pensioners on the funds of this Institution took place on Thursday at Willis's Rooms, St. James's, Mr. F. J. Dove, president, in the chair. There were five vacancies,—three for men and two for women,—and eleven candidates,—four men and seven women. The poll was opened at noon and closed at three p.m., when the scrutineers, Messrs. T. Stirling and T. F. Rider, reported the results of the voting to be as follows:—William George Gadsby, aged 69, 2,921; Jeremiah Bromley, aged 68, a subscriber to the Institution for thirteen years (second application), 2,480; Joseph Cable, aged 60, a subscriber to the Institution for several years, 1,883; William Charles Read, aged 66, 880; Elizabeth Starkey, aged 66 (widow of James Starkey), 3,885; Harriet Mary Gilder, aged 63 (widow of Francis Gilder), 2,680; Elizabeth Davis Stenteford, aged 60 (widow of John Blatchford Stenteford), 1,800; Mary Ann Hibberd (second application), aged 64 (widow of Daniel Hibberd), 1,297; Mary Ann Garner, aged 64 (widow of William Garner, who subscribed to the Institution for eight years), 857; Selina Thomas, aged 72 (widow of Charles Thomas), 250; and Anne Boulton, aged 60 (widow of Webber N. Boulton), 159. The Chairman therefore declared the successful candidates to be:—W. G. Gadsby, J. Bromley, J. Cable, Mrs. Starkey, and Mrs. Gilder.

Mr. Simpson, on behalf of the Committee, expressed regret that the whole of the candidates could not be elected, and on the motion of Mr. J. W. Scrivener, seconded by Mr. E. V. New, votes of thanks were tendered to the scrutineers and chairman for their services. We may remind our readers that the Annual Ball in aid of the funds of the Institution is fixed for Thursday, January 29. The hon. sec., Mr. F. W. Keeble, will be glad to receive the names of gentlemen who may be willing to act as stewards.

FIREPROOF FLOORS.

SIR,—In your impression of the 8th inst. I observe a letter signed "W. H. Lascelles," and headed "Fireproof Floors." On reading it over carefully, the system described by Mr. Lascelles seems to me precisely that which has been patented by Mr. Thaddeus Hyatt, of Farringdon-road, and which was set forth in a work by Mr. Hyatt ("An Account of some Experiments with Portland Cement Concrete combined with Iron as a Building Material, with reference to Economy of Metal in Construction, and for Security against Fire in the making of Roofs, Floors, and Walking Surfaces. By Thaddeus Hyatt. London: printed for private circulation at the Chiswick Press, 1877"), and reviewed in the *Builder* of March 9, 1878.

FAIR PLAY.

St. Alban's Abbey.—At the Chancellor's Court of the diocese of St. Alban's, on Saturday, the application of Sir Edmund Beckett for a faculty to carry out works of restoration at St. Alban's Abbey came before the Surrogate. Formal objection to the issue of the faculty was lodged in writing by Archdeacon Grant, by the rector of the parish, three churchwardens, one sidesman, and two other parishioners. Mr. John Evans, who withdrew from the committee of restoration on the high-pitched roof being adopted, and a representative of the Society for the Protection of Ancient Buildings, were also in attendance. The Court was adjourned for a fortnight.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT the first meeting of the new Session reference was made to the Saxon church of Escombe, near Bishop's Auckland, the discovery of which had been communicated to the Congress by the Rev. Dr. Hooppell.

The building is entirely of Saxon date, all the walls being original, and even the gables. The height, as is usual in buildings of this early date, is great for the size. This is, in the nave, 24 ft. 4 in., while the extreme length of nave and chancel is only 56 ft., width 14 ft. 4 in. The chancel arch is a plain semicircle, and only 5 ft. 3 in. wide. All the walls are built of squared stones brought from the Roman Station at Binchester (Vinovium). Escombe is a secluded village, and to this must be attributed the fact that the existence of this most interesting structure should have remained unknown until now. The plans will appear in the next part of the Society's *Journal*.

Mr. Loftus Brock, F.S.A., read a letter from the secretary of the Society for the Protection of Ancient Buildings, and reported the asserted proposal before the Italian Government to rebuild the front of St. Mark's, Venice.

This work was strongly condemned, and a resolution to that effect was proposed, seconded by Mr. G. R. Wright, and carried unanimously, after an animated debate.

The Rev. Prebendary Scarth reported the further discovery of important Roman remains at Bath, and after various exhibitions, the Rev. S. M. Mayhew read an elaborate paper on the "Antiquities of the Isle of Man."

CAUTION TO ARCHITECTS.

AT the Shoreditch County Court on the 25th inst. Mr. A. R. Brede, of Great James-street, architect, sued Mr. E. Dickens, of Great Cambridge-street, wholesale bootmaker, for 13*l.* 11*s.* for survey, preliminary drawings, and for preparing contract drawings, specification, and for copies of same, for new workshops, being the customary charges at the rate of 2½ per cent. on estimated cost.

Mr. W. H. Hargrave appeared for the plaintiff, and Mr. Metcalf appeared for the defendant.

The plaintiff stated that he received instructions to survey premises and prepare drawings and specifications for new workshops; such drawings and specification were prepared and supplied to the defendant in October, 1878. The defendant, unknown to plaintiff, obtained tenders from several builders in the spring of this year. The lowest tender was not accepted, although under plaintiff's estimate. The defendant did not have his works erected according to the specification, and did not employ plaintiff to superintend the works. The plaintiff, by his solicitor, contended that he was entitled to 2½ per cent. upon the estimated cost of the buildings, as being the customary charges, and according to the scale of charges of the Royal Institute of British Architects for making such drawings, specification, &c.

Mr. Shoobert and Mr. Fowler, architects, gave evidence as to the fairness of plaintiff's charges.

On behalf of the defendant, it was contended that he had only used the drawings, and not the specification for the actual erection of his workshops, a specification having been supplied by the builder who was employed to erect the buildings at a lower cost than plaintiff's estimate and the tenders of builders who had estimated according to plaintiff's specification; and that he, the defendant, was only liable for the drawings.

The Judge, strange to say, accepted this view of the case. Verdict for plaintiff for 4*l.* 4*s.* and costs.

Notice of appeal given by the plaintiff.

THE SHEFFIELD PATENT BRICK CO. (LIMITED) v. WADE.

THIS originally was an action brought against George Wade, of Suffolk-road, Sheffield, builder, by Mr. William Wing, liquidator of the Sheffield Patent Brick Company, Limited, to recover the sum of 111*l.* 15*s.* 6*d.*, being for bricks supplied to Mr. Wade to be used by him in the erection of St. Wilfred's Schools, St. Mary's-road, Heeley, of which he was the builder. Mr. Wade admitted that he was indebted to the company in the sum mentioned, but he claimed damages from them on account of a great quantity of the bricks with which they had supplied him turning out defective on being exposed to the weather, after having been placed in the building, in consequence of which Mr. Wade was compelled by the architects (Messrs. M. E. Hadfield & Son) to cut out the defective bricks, and in so doing he expended 600*l.* or thereabouts, and he claimed this amount from the company. The action was referred to Mr. William Smith, solicitor, by the consent of the solicitors on both sides. Mr. W. Smith sat as an arbitrator at the Law Society's Rooms, on the

31st day of October, and on the 1st and 10th days of November last. Mr. C. Mellor (instructed by Messrs. Webster & Styring) appeared on behalf of Mr. Wm. Wing, the liquidator, and Mr. J. E. Barker (instructed by Mr. Herbert Bramley) appeared on behalf of Mr. George Wade.

Mr. William Smith published his awards on the 19th of November inst., by which he awarded and adjudged that Mr. Wade should pay to Mr. W. Wing the sum of 111*l.* 15s. 6d., according to the particulars endorsed upon the writ in this action; and he also awarded and adjudged that a great quantity of the bricks supplied by the Sheffield Patent Brick Company, Limited, to Mr. Wade, being of a bad and inferior description to those agreed to be supplied, in consequence Mr. Wade had sustained damages to the amount of 450*l.*, which sum Mr. Wing was directed to pay to Mr. Wade, together with the costs of reference and award. The costs of the action follow the event.

CHURCH-BUILDING NEWS.

Burnley.—On the 1st inst. the new church of St. Matthew the Apostle, Burnley, was consecrated by the bishop of the diocese. The church, as at present erected, consists of nave (80 ft. long), south aisle, chancel (40 ft. long), and temporary vestry; the addition of north aisle, octagonal vestry, and tower over crossing, being left until some future time. The church has been built of local stone, in the style of the thirteenth century, the interior of the chancel being lined with stone. The whole of the roofs are in pitch pine, unstained. The choir screens and stalls are in Dantzic oak. The parapet at the entrance to the chancel is in alabaster, and is continued in circular form as a base to the pulpit, which is in polished iron and brass. The floor spaces are covered with Godwin's tiles. The font is of Caen stone and alabaster. The church will seat 530 adults, and has been erected at a cost of about 8,000*l.*, from the designs of Messrs. Wm. Waddington & Son, of Burnley.——It is expected that the church of St. John the Baptist, situate about a mile from the above building, and which is being erected from designs by the same architects, at a cost of 8,000*l.*, will be consecrated early next spring.

Frinton.—St. Mary's, Frinton, one of the smallest churches in England, has just undergone restoration and enlargement. The work, which has cost about 600*l.*, has been undertaken by the Rev. Frank Beadel, in memory of his father and mother, and carried out from designs by Mr. Henry Stone, of London, by Mr. J. Grimes, of Colchester. A partial restoration of the old nave took place in 1868, when it was benched out, and the church has now about the same dimensions as the original one, being built upon the old foundations discovered in the excavations. The addition just completed consists of an entirely new chancel, built with rubble stone and Bath stone dressings, and measuring internally 13 ft. by 11 ft. It has an open-timber roof, covered with plain tiles, stone copings, and cross to east gable. The floor is paved with Minton's tiles. The east window is filled with stained glass, the subjects being the Nativity, the Resurrection, and the Ascension. A new south window has been added, and the old buttresses thoroughly restored. A new west window, the gift of Mr. P. S. Bruff, of Handford Lodge, Ipswich, takes the place of the old one, and is filled with stained glass, the subject being "The Presentation of Christ in the Temple." The fittings have been re-arranged, and two new benches added. The porch has been taken down and rebuilt in conformity with the original.

Stradbroke.—About seven years ago the Rev. Canon Ryle, rector of Stradbroke, took in hand the restoration of his church, and at different times since that period no less than 5,000*l.* has been expended. He has just expended out of his own pocket the sum of 700*l.* in the restoration of the chancel, calling to his aid Mr. R. M. Phipson, the architect under whom all the other improvements were effected. The chancel now presents an appearance in keeping with the rest of the church. It has a lofty open roof, and a large east window has been inserted; and a reredos, communion-table and rail have been provided, and other improvements effected, including re-flooring with Minton's encaustic tiles, containing the badge of the rose and portcullis. The east window has five lights, of Decorated work, with stained glass inserted by Messrs. Clayton & Bell, the subjects including a number of emblems after the pattern of those in the windows of the Chapter-house of York. The reredos is carved in oak, the spandrels being filled up with natural foliage, the oak, ivy, vine-leaves, and grapes, and other foliage and fruit. The shafts of the reredos are of polished rosewood. The panels are slate, painted, the two side ones having the Commandments written upon them. The builder engaged to do the work was Mr. Grimwood, of Weybread, at whose establishment all the carving work was done, his foreman superintending the work at the church being Mr. George Bullen.

Dauntsey (Wilts).—The chancel of this church has been reopened, after being repaired, &c., at a cost of about 400*l.*, and a new organ and other fittings have been provided. The old stained glass has been arranged, and all the old woodwork preserved and re-used. Mr. A. J. Style, of Westminster Chambers, was the architect, and the work was carried out by Mr. Mullings, of Devizes, the brasswork being supplied by Mr. Singer, of Frome, and Messrs. Jones & Willis, of London. The organ was built by Mr. Sweetland, of Bath.

Kneeton.—Kneeton parish church has just been re-opened, after restoration, at the cost of Lord Carnarvon. The works were executed under the direction of Mr. F. J. Clarke, architect, Newmarket.

Sussex.—Christchurch, Crowborough Cross, erected from the designs of Messrs. Satchell & Edwards, was consecrated on the 11th inst.

Todenham.—The parish church of Todenham has been reopened, after restoration. From a few Norman remains, the church is believed to have been founded in the twelfth century; but the present fabric may date from the thirteenth or fourteenth. It is dedicated to St. Thomas à Beckett, and possesses many features of interest, amongst which may be noticed its proportions, light arcade, and lofty spire standing out a conspicuous object in the surrounding country. The interior of the church suffered greatly during the seventeenth century. The east window was partially blocked up, and the tracery of the windows destroyed; but, as some portion of the original designs remain, they have been restored. It was at first intended to limit the work of restoration to taking down the gallery, opening out the west end, rearranging the pews with a view to provide fifty free seats for the poor, making some necessary repairs, and other improvements, including a heating apparatus. But on commencing the work at the beginning of last month, the nave roof, and north arcade proved to be insecure. The rector and churchwardens were, therefore, compelled to extend the work to the restoration of the nave roof and rebuilding of the north arcade. The total outlay amounts to about 1,200*l.*

Books.

Hudson & Kearns' Diaries: 1880. Southwark-street, London.

LAST year we gave a favourable notice of these diaries, and further acquaintance with them has strengthened our good opinion. The original and extremely useful feature which they present is that each volume forms in itself a complete set of books, indexed and paged throughout. Nos. 12 and 13 are specially ruled and printed for the use of architects and surveyors, and contain not only a diary, which is virtually a journal or day-book, but a cash-book and ledger, a note-book, and rent and insurance registers, and, indeed, comprehend all that is required for ordinary professional use for the record of the year's transactions. The paper and binding are very good, and the price at which they are published compares favourably with other diaries. That intended for the use of builders, No. 11, has an excellent series of tables, and a bill-register, both for bills payable and receivable. The tables in their scope and arrangement are admirably adapted for practical purposes in a builder's office; those on the valuation of property, leases, life-policies, &c., are very complete and comprehensive.

VARIORUM.

WE may again call the attention of our readers to the excellent coloured examples of flowers, &c., issued weekly with the *Garden*. All through them may have the opportunity of becoming acquainted with the numerous and various shapes and colours supplied to us by nature for our pleasure and being, and so well set before us by these plates. Last week's number contains the "Hæmanthus Kalbreyeri,"—good both as to drawing and colouring. The previous number has "A Group of Potentillas," the execution of which is singularly effective. The colours of these and many others are admirably printed. What is chiefly to be regretted is that the illustrations come too close to the edges of the paper, thus precluding the possibility of binding them separately from the periodical, which would form very handsome volumes for presents and for study.——Mr. W. Crookes's remarkable lecture on "Radiant Matter," delivered at the Sheffield meeting of the British Association, will be found, fully illustrated, in the November number of the Journal of the Franklin Institute. ——The *Australasian* says,—"The reduction of graceful foliage and flowers to conventional ornaments, suitable for house decoration, is one of the useful modern arts taught at South Kensington. I am not aware whether Mr. S. H. Roberts hails from that school, but there can be no doubt of the creditable intention with which he has transposed and adapted a variety of Australian plant-forms to the useful purpose of decorative art. A series of drawing copies from his pencil has been published by the committee of the Artisans' School of Design, Trades-hall, Melbourne, and they are, though somewhat unequal, worth the attention of every drawing-master in the colonies. Mr. Roberts is inspector of the Victorian Schools of Design, and work of this class should exercise an important influence in guiding into graceful channels the taste of cabinetmakers, painters, plasterers, moulders, and other craftsmen. It may be accepted as an axiom that graceful and beautiful designs are not necessarily more costly than those which are vulgar and commonplace, and there can be no doubt of the trade preference which will be accorded to work having the first-named characteristics. A portfolio of twelve lithographed drawing copies, such as I have described, is sold for a shilling, so that the demand should not be checked by the price." We have seen the first number, and can endorse the remarks of our Antipodean contemporary.

Miscellanea.

Liverpool Master Builders' Association. The annual dinner of this Association took place on the 20th inst., Mr. J. C. White, the president, in the chair. Nearly 200 persons sat down to table. Mr. White proposed "The National Association of Master Builders of Great Britain," and observed that in nearly every important town in the country there was a branch of the Association. Mr. Clay, of Manchester, president of the National Association, in responding, said the society was forced into existence from necessity alone. However kind employers might be, there were extreme men connected with the building trade, and they had begun agitations, and were assisted by a great number of young men, who were also rash enough to aid them in carrying out their unfair expectations and exactions. The society was formed at a time when such things were being carried beyond the bounds of reason. The members had no unfair feeling towards the workmen, but merely wished for justice to all parties; and the society had been very successful. Mr. Cowlin also responded. Mr. J. W. Carlile, of Widnes, then proposed "The Liverpool Master Builders' Association and its Branches," which was acknowledged by Mr. J. Roberts.

The Gallery Fatality at Dewsbury.—The inquest on the bodies of the four persons killed by the fall of a gallery at the Dewsbury and Batley Skating Rink, when Mr. Serjeant Simon, M.P., was about to address his constituents, was concluded on Monday, after a sitting of six hours and a half. Another sufferer, Mr. John Stubley, of Batley Carr, died at noon from the effects of his injuries. A number of professional and other witnesses were examined, and the jury returned the following verdict:—

"That the deceased came by their deaths through the breaking of the rising-beams of the east gallery; that the said beams were not of sufficient strength to bear the weight consequent on the gallery being filled with an audience standing; that great blame rests with the directors of the Dewsbury and Batley Skating Rink Company in not having satisfied themselves as to the bearing capabilities of the gallery before letting it for the purpose of a public meeting."

The jury also strongly recommended that all public buildings should be examined and certified by the borough surveyor previously to being let for public meetings.

Metropolitan Board of Works.—At the usual meeting last week, in reply to a question by Mr. John Jones, as to whether it was not practicable to have hanging chains fixed between the rings depending from the lions' mouths along the river front of the Thames Embankment, for the purpose of saving life, the engineer (Sir Joseph Bazalgette) stated that the matter had already been several times under consideration, and that the adoption of the proposal was thought unadvisable, inasmuch as these chains would doubtless be used for the purposes of mooring barges and other craft, with the result of damage to the Embankment when strong tides were running.——On the motion of Mr. Runtz, it was referred to the Building Act Committee to consider and report upon the fall of houses in Tottenham-court-road on the 20th inst. Mr. Fowler drew attention to the fact that during the previous night or that morning two houses in Rathbone-place had also fallen. He thought that two such accidents in the same district showed the necessity of great watchfulness on the part of the district surveyor, and moved that the Building Act Committee do also consider and report upon this second accident. This was agreed to.

Mechanical Operation of Sound-Waves. K. H. Schellbach and E. E. Boehn have experimented with waves of sound, in illustration of the wave theory of light. Connecting two Leyden jars with the conductors of a Holt electrical machine, so as to produce sparks of 1 centimètre ('39 in.) between the balls of the discharger, concentric rings were formed in coal-dust sprinkled on a glass plate 4 centimètres (1·57 in.) from the balls. The longer the spark, the more strongly marked were the rings. By reflecting the reports of the discharges, by means of parallel walls and mirrors of various kinds, the dust-waves were made to assume such forms as are theoretically deducible from the reflection and refraction of light, thus visibly confirming the views of Huyghens and Young. That the results are not modified in any way by mere electrical action can be readily shown by substituting explosive gas or powder for the sparks. From ten to twenty sparks or explosions were generally sufficient to show the character of the waves and of their nodal intersections.—*Ann. d. Phys. und Chem.*

The Incorporated Church Building Society. — The Society for Promoting the Building and Repairing of Churches and Chapels held its first meeting for the present session on the 20th inst., when grants were made in aid of building a new church at Penzance, St. John, 350*l.*; rebuilding the churches at Beer Hackett, St. Michael, near Yeovil, 25*l.*; and Skegness, St. Clement, near Burgh-le-Marsh, 200*l.*; enlarging, reseating, or otherwise improving the accommodation in the churches at Dearham, near Carlisle, 25*l.*; Durham, St. Margaret, 40*l.*; Gamlingay, St. Mary, Cambridgeshire, 50*l.*; Llangadock, Carmarthen, 25*l.*; Markby, St. Peter, near Alford, 15*l.*; Middleton, Holy Trinity, near Wirksworth, 30*l.*; North Ormsby, Holy Trinity, near Middlesbrough, 50*l.*; Pembroke Dock, St. John, 45*l.*; South Shields, St. Hilda, 20*l.*; Swymbridge, St. James, near Barnstaple, 50*l.*; and Timbercombe, St. Michael, near Dunster, 20*l.* Under urgent circumstances some grants formerly made were increased.

Consecration of Churches.—On Saturday last the Bishop of Carlisle consecrated the four churches at Barrow which twelve months ago were dedicated to the four Evangelists. The churches and parsonages were built at a cost of about 24,000*l.*, of which sum the Duke of Devonshire subscribed 12,000*l.*, and the Duke of Buccleuch 6,000*l.* The Bishop of Carlisle, in the addresses delivered at the various services on Saturday, explained that the four churches were originally intended as temporary structures, but they had been found on examination by the architect of the Ecclesiastical Commissioners to be of such a permanent character that he had recommended their acceptance by the Ecclesiastical Commissioners.

Zimdars' Patent Pneumatic Bells and Tubes.—Very neat, scientific, and simple are these pneumatic bells; not too costly either. They have now stood the test of some years, and are to be found in all sorts of buildings, such as Government offices, mansions, ordinary dwelling-houses, and yachts; and we are not at all surprised to hear that Mr. Zimdars has been instructed to fix them throughout the new Law Courts.

The Electric Light.—A discussion as to the value of the electric light used in the Picton Reading-room, Liverpool, took place at the meeting of the Library Committee on the 20th inst., Mr. Picton in the chair. It being stated that 600*l.* was due to the British Electric Light Company, Mr. D. Radcliffe asked if the electric light was suitable for the permanent lighting of the room. The borough engineer replied that he thought so, as it was by far the best application of the light he had yet seen. He was rather astonished that the Company should have entered into an agreement with the Corporation to provide the light so that it would be absolutely steady and free from noise. The light as now applied was undoubtedly a great success, quite as great as he expected, because he did not consider that absolute freedom from noise could be obtained. The Chairman: I think it a success, and it is far superior to gas. The flickering may be reduced. Mr. P. H. Rathbone also thought it was the most successful application of the light that had been seen in any part of England to the present time.

Heights of Buildings.—The *Cologne Gazette* says:—"The two towers of our cathedral are now the highest buildings on the earth; they exceed by 1·50 mètre the tower of St. Nicholas's Church in Hamburg, which is 144·20 mètres high. When completed, they will measure 160 mètres, reckoning from the pavement of the cathedral cloisters, or 157 mètres, reckoning from the floor of the church itself. The following are the heights of the most remarkable high buildings in the world:—Towers of Cologne Cathedral, 160 m. or 157 m. (524 ft. 11 in., or 515 ft. 1 in.); tower of St. Nicholas at Hamburg, 144·20 m. (473 ft. 1 in.); cupola of St. Peter's, Rome, 143 m. (469 ft. 2 in.); cathedral spire at Strasburg, 142 m. (465 ft. 11 in.); Pyramid of Cheops, 137 m. (449 ft. 5 in.); tower of St. Stephen's, in Vienna, 135·30 m. (443 ft. 10 in.); tower of St. Martin's, at Landshut, 132·50 m. (434 ft. 8 in.); cathedral spire at Freiburg, 125 m. (410 ft. 1 in.); cathedral of Antwerp, 123·40 m. (404 ft. 10 in.); cathedral of Florence, 119 m. (390 ft. 5 in.); St. Paul's, London 111·30 m. (365 ft. 1 in.); ridge tiles of Cologne Cathedral, 109·80 m. (360 ft. 3 in.); cathedral tower at Magdeburg, 103·60 m. (339 ft. 11 in.); tower of the new Votive Church at Vienna, 96 m. (314 ft. 11 in.); tower of the Rath-haus at Berlin, 88 m. (288 ft. 8 in.); towers of Notre Dame at Paris, 71 m. (232 ft. 11 in.).

The Cost of Lunatic Asylums.—The *Hampshire Telegraph* contains a detailed account of the new Portsmouth Asylum, which was opened on the 30th of September. The points of interest to the ratepayers and corporation of Derby are that the asylum referred to is built to accommodate 424 patients, or approximating to the number which the Lunacy Commissioners desire should be provided for by the borough of Derby. The area of land set apart is seventy-five acres. The total cost is not given in the newspaper report, but we are credibly informed that it amounts to no less a sum than 283*l.* per bed or patient, being 83*l.* more per bed than the proposed but abandoned arrangement for amalgamation between the county and borough of Derby. We learn, moreover, that the estimated cost of a new asylum about to be erected for the county of Gloucester is 120,000*l.* for buildings alone, exclusive of fittings, furniture, bedding, and clothing. The proposed accommodation is for 700 patients, and the extent of land 150 acres. If the moderate estimate of 20*l.* per patient, or a total of 14,000*l.* be added for fittings, furniture, bedding, and clothing, the cost per bed will thus reach little short of 200*l.*—*Bedfordshire Times.*

Mouldings Ready-made. — Mr. William Gradwell's "Book of Mouldings," which are to be had at any moment by ordering (Barrow-in-Furness is the address), contains some 45 quarto pages illustrating them! They include architraves, cornices, gutters, plinth mouldings, crown mouldings, and handrails, and are all numbered and priced. Those who get the book may save both time and money.

Monumental.—It is proposed to raise a monument in Eton College Chapel to the memory of the officers educated at Eton who have fallen in the Afghan and South African campaigns.

The Waverley Penholder has reached us from Messrs. Macniven & Cameron. It has a pleasant elastic action, and suits us well.

"Peel Castle."—A proposition to build a cathedral for the Isle of Man has raised opposition, especially as it is suggested that the remains of Peel Castle should be "worked in." A writer in *Mona's Herald* says:—"In the estimation of the Lord Bishop we have not shams enough; his lordship thinks that a sham cathedral would add much to our happiness. Were that all, we should have but little to complain of: one sham more or less can not affect us much. Unfortunately his Gothic instinct has led him to choose the site of our only really remarkable ruin for his Basilica,—a ruin so grand, so picturesque, so unique, that I think not only the voice of Manxmen, but that of the whole British nation should be raised to stay his devastating hand. His lordship talks of 'restoration,' but we of the nineteenth century, especially in this country, know too well what is meant by 'restoring' monuments of antiquity. Perhaps no ruins in the empire are better known to the masses than those of Peel Castle. 'Peveril of the Peak' has made them famous from the palace to the cottage." We want to hear something more about this.

Look to the Sewer Connexions! — Mr. W. Iliffe, Medical Officer of Health for Derby, in his last quarterly report, lately issued, says,—"The rate of mortality for the district of Normanton showed a most decided improvement upon previous quarters, only one death having occurred that was of a zymotic origin, viz., diarrhœa, while not one was recorded as due to scarlet fever. It was observed during the reconstruction of the drainage of the district, that only six house-drains were effectively connected with the sewers, the remainder, viz., 132, being found either broken or imperfectly united, which is sufficient evidence to show what negligence often prevails in the carrying out of such work, and how important it is for the preservation of the health of any neighbourhood that active supervision should be everywhere exercised over this most important part of house-construction."

Poor-Law Guardians on Architectural Competitions.—At the meeting of the Lambeth Board of Guardians, on the 19th inst., a letter was read from Mr. Porter, asking the opinion of the guardians on the practice of obtaining designs by competition. Mr. Willmott (clerk) stated that it was the opinion of many architects that the practice of obtaining designs by competition was an unfair one, as it put architects to an expense of 50*l.*, 60*l.*, and even 100*l.*, for which they got no return whatever. The matter would be laid before the Institute of Architects at an early meeting. Mr. Higgs and Mr. Akerman believed that open competition was the fairest way of obtaining plans. Upon the motion of Mr. Kirkwood it was resolved that Mr. Porter be informed that the guardians were decidedly in favour of continuing the practice of open competition.

Tree Planting in the Suburbs.—The new street called "Fitzjohn's-avenue," which connects Hampstead with the Swiss Cottage, crossing the centre of the old Conduit-fields, is to be planted with trees. The work, which has already commenced, is being carried out by Mr. Chamberlain, of Hampstead, and is the result of a subscription among the residents of that suburb, and Sir Spencer Wilson, or his agent, Mr. Ellis, has given 100*l.* towards the cost, which is estimated at 200*l.* The "Avenue," which it was felt was rather a misnomer as long as it was without trees, is more than half a mile in length and 70 ft. wide. The trees selected are chestnuts, alternately pink and white. Measures have been taken entirely to isolate the gas-pipes, so as not to endanger the health of the young trees.

The City Guilds and Technical Education.—The Coach and Coach-harness Makers' Company, in continuation of their action in former years, offer prizes in money and medals for working drawings of carriages, cabs, &c. freehand drawings of ornaments, heraldic designs, and for papers on the technology of carriage building, as well as special prizes for treatises on "Carriage Trimming and Leather Work." The competition is confined to clerks, foremen, workmen, or apprentices.—*City Press.*

Indian Railway Items.—The electric light is being used on the Northern Punjaub State Railway, which is being pushed on very rapidly. ——The Government have given Messrs. Neilson & Co., of Glasgow, orders for the construction of eighty locomotives for the Indian railways.—*Bombay Gazette.*

St. Mark's.—A meeting is to be held on Tuesday, the 2nd of December, at the Liverpool Free Library, to promote the memorial against the restoration of St. Mark's, Venice. A paper by Mr. William Morris will be read, and the meeting will be addressed by various gentlemen.——On Wednesday last a meeting was held at the Old Town-hall, Manchester, to protest against the threatened destruction. Mr. George Milner presided. Two letters had been received from Mr. Ruskin, from the second of which passages were read, in which he stated that it was impossible for him at present to take any part in the defence which, though far too late, had been undertaken by the scholars of England of the most precious Christian buildings in Europe. In the second letter, he said that the work which had been going on had been making the church into barracks and billiard-rooms. The only thing they could do in the case, the only really practical thing that he could think of, was for them to send him "lots of money" to spend in getting drawings of the building before it went. He did not believe they could serve it by any protest.

St. Martin's School of Art.—The annual distribution of prizes to the students attending this school took place on Wednesday evening, under the presidency of Mr. A. J. B. Beresford-Hope, M.P. The report as to the past year's work stated that the list of prizes afforded a satisfactory comparison with that of the previous year. In the national competition two silver medals had been gained, and though no bronze medal had been taken, there were four book-prizes as against two in the previous year. The chairman having distributed the prizes, Mr. Morris, A.R.A., delivered an address to the students on the rules of art. The meeting was also addressed by Professor Guthrie, F.R.S. The chairman, referring to those students who had not been and who were not likely to be successful, urged them not to be discouraged. He could not conceive of a higher or more meritorious class of persons than those who came to study, knowing that Providence had not blessed them with those qualities which were likely to gain distinction in their career. A vote of thanks to the headmaster, Mr. Parker, was cordially voted, a similar compliment being paid to the chairman.

Royal Institute of British Architects.—As we have already announced, the first ordinary meeting of the Session 1879-80 will be held on Monday evening next, the 1st of December, when the usual certificates will be presented to Messrs. Capel, Herford, Jacques, and McLachlan, passed candidates in the Class of Proficiency at the Voluntary Architectural Examination, 1879. The Ashpitel Prize will be presented to Mr. Capel, and a reward of merit to Mr. Scott, who distinguished himself in the Preliminary Class at the same examination. The formal presentation of the gift, made by Professor Donaldson, past-president, of a gold badge and chain of office, to be henceforth worn on certain occasions by the President for the time being, will take place after the usual preliminary business. The opening address of the Session will be delivered by Mr. John Whichcord, F.S.A., president. The Library will be re-opened for readers on Tuesday morning, the 2nd of December next, at ten a.m. The Council have appointed Mr. Alexander Beazeley, M Inst.C.E., to the post of librarian, and Mr. Alban Lee to that of Library Clerk.

Death of Mr. Lewis Hornblower.—We regret to record, the death, on the 20th inst., at Clifton-park, Birkenhead, of Mr. Lewis Hornblower, architect, in his fifty-sixth year. He was a well-known practitioner in Liverpool. Among the larger works with which he and Mr. André were concerned, was the projection of Sefton-park. One of the earliest designs of importance by Mr. Hornblower was that of the entrance to Birkenhead-park. His constructive skill was shown in his "Cellular Terra-cotta Fireproof Girder Floor," which, though somewhat complex and costly, has been used with success in several large buildings. (See report in *Builder* for 1878, p. 585, of the proceedings of the Conference of Architects). The interment took place on the 22nd inst. at the Birkenhead Cemetery, Flaybrick-hill.

Fine Arts, King's College. — The City Guilds Institute having endowed a Chair of Practical Fine Art at King's College, the Council have appointed Professor Philip H. Delamotte to fill the post. The new School of Art is to be opened early in the ensuing year.

Liverpool Plumbers' Association.—On Monday evening, the thirteenth annual *soirée* and ball in aid of the benevolent fund of this association took place in St. George's Hall. There were about a thousand persons present, and after tea had been served, the chair was taken by Councillor David Radcliffe. The report showed that last year the proceeds of the ball amounted to 118*l.* 14*s.* 10*d.* That sum had been disposed of as follows:—Widows' and Orphans' Fund, 77*l.* 10*s.*; relief of afflicted members, 34*l.*; and there was a balance to credit of 7*l.* 4*s.* 10*d.* The Chairman remarked that the plumber of the present day was as skilled an artisan as any of his fellows in other trades, and much of the work he was called upon to do required the greatest care. Medical men were now fairly alive to that fact. He was sure the trade would take high grounds if the members of it would only understand their responsibility in connexion with great sanitary questions.

Competition.—Messrs. Coe & Robinson, of Furnival's-inn, have been adjudged the successful competitors for the best design for the new South Devon and East Cornwall Hospital; their design having been accepted out of nine invited to be sent in, on the advice of Mr. T. H. Wyatt, as the most suitable.

Messrs. E. P. & W. Baldwin, of Stourport, have just been awarded a gold medal for sheet-iron and tinplates at the "Exposition Internationale de 1879 Sciences appliqués à l'Industrie," Paris, the only gold medal awarded to an English house in this department.

Alexandra Estate.—The first portion of this estate was put up at auction by Mr. Croucher on Wednesday, the 19th of November, and the whole of the 107 lots were sold at a total amount of 8,619*l.*

TENDERS

For engineering works, comprising boilers, engine, pumps, and laundry machinery, at the Asylum for Imbeciles, Darenth, Kent, for the managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects:—

Duncan, Steward & Co.	£9,6	0	0 !
Clayton, Howlet, & Venables	9,150	0	0
Williams & Sons	7,281	0	0
Coles	6,921	0	0
Hunt & Sons	6,170	15	0
Green & Sons	5,990	0	0
Benham & Sons	5,460	0	0
Bunnett & Co.	5,447	10	0
Fraser, Bros.	5,395	0	0
J. & F. May	5,360	0	0
Clements & Co	5,020	0	0
Bradford & Co.	4,995	0	0
Siebe, Gorman, & Co.	4,900	0	0
Clarke	4,725	0	0
Bushby	4,578	0	0
Mason	4,491	0	0
F. G. & R. Vigor	4,397	0	0
Lowcock	4,259	0	0 !

For St. John's Vicarage, Hollington, near Hastings. Mr. W. Hawley Lloyd, architect:—

Woodall	£2,599	0	0
Vidler	2,188	0	0
Ashdown	2,046	0	0
Rodda	2,000	0	0
Cruttenden	1,990	0	0

For new road and pipe sewer on a new estate at Acton:—

Gipson	£870	0	0
Bloomfield	850	0	0
Pizzey	835	0	0
Porter	834	15	0
Symonds	655	0	0

For building four dwelling-houses in James-road, Walthamstow. Mr. R. A. Lewcock, architect:—

Goodall	£1,367	0	0

For rebuilding house and shop, 184a, Edgware-road, for Mr. A. Stedall. Mr. George Edwards, architect. Quantities supplied:—

Sanders	£1,196	0	0
Goad	1,049	0	0
Lidstone & Son	1,039	0	0
Richardson	1,009	0	0
Stimpson & Co.	990	0	0
Cullum	950	0	0
Martin, Wells, & Co. (accepted)	899	0	0

For the erection of a building for a free library and museum, Luton, Bedfordshire. Messrs. J. R. Brown & Humphreys, architects. Quantities by the architects:—

Groome	£2,431	0	0
Battley	2,275	0	0
Hicks	2,260	0	0
Prout	2,109	0	0
Goss	2,050	0	0
Halliday	2,017	0	0
Cornish & Gaymer	2,016	7	6
Foster	1,944	0	0
Rayment	1,894	0	0
Dunham	1,890	0	0
Monk	1,845	0	0
Bland & Sons	1,789	0	0
Phillips	1,787	0	0
Taylor & Grist	1,779	0	0
Pritchard & Feltham	1,765	0	0
Green & Hull	1,750	0	0
Lissaman	1,735	0	0
Mashin	1,734	0	0
Smart Bros.	1,648	0	0

For the erection and fixing of the iron columns, girders, and plant, at the new brewery, for Messrs. Eldridge, Pope, & Co., Dorchester. Messrs. Scamell & Colyer, engineers. Quantities for the ironwork supplied by Messrs. Curtis & Son:—

Contract No. 1.—Ironwork in Columns, Girders, &c.

Westwood, Baillie, & Co.	£3,732	0	0
Horsley Iron Company	3,688	0	0
Appleby Bros.	3,620	6	0
Cochrane & Co.	3,532	0	6
Handyside & Co.	3,474	6	9
Cockey & Co.	3,450	0	0
Thornewill & Warham (accepted)	3,185	0	0
Oxley & Co.	3,160	0	0

Contract No. 2.—Boilers.

Horton & Sons	£965	0	0
Thornewill & Warham (accepted)	897	0	0
Waller & Co.	888	0	0

Contract No. 3.—Copper, Copper Hopback, &c.

Dale	£1,181	0	0
Shears & Son	1,160	0	0
Oxley & Co.	997	0	0
Bennett	990	0	0
Pontifex & Sons (accepted)	958	0	0
Blundell, Bros.	890	0	0
Pontifex & Wood (for the copper only)	450	0	0

Contract No. 4.—Millwrights' Work.

Scott & Co.	£5,520	0	0
Horton & Sons	4,317	0	0
Pontifex & Son	4,274	0	0
Waller & Co.	3,392	0	0
Thornewill & Warham (accept.)	3,275	0	0
Oxley & Co.	3,204	0	0

Contract No. 5.—Backmakers.

Carty	£731	0	0
Bennett & Son	679	0	0
Oxley & Co.	581	0	0
Church & Co.	549	0	0
Colyer & Co. (accepted)	496	15	0

Contract No. 6—Slate Backs.

Stirling	£512	0	0
Brindley & Co.	511	0	0
Braby & Co.	510	0	0
Sharp (accepted)	510	0	0

Contract No. 7.—Pipe Connexions.

Lawrence & Co.	£2,241	9	4
Siebe & Gorman	2,084	0	0
Bennett & Son	1,510	0	0
Pontifex & Son	1,455	0	0
Oxley & Co.	1,400	0	0
Blundell Bros.	1,235	0	0
Thornewill & Warham (accepted)	1,045	0	0

Contract No. 8.—Refrigerators.

Lawrence & Co. (accepted)	179	0	0

For paving and sewering private streets and passages, for the Corporation of Leamington, as per drawings and specifications by Mr. G. B. Jenom:—

Palmer	£3,664	0	0
Boon	3,390	0	0
Smith	3,347	0	0
Currall & Lewis (accepted)	2,947	10	0

For sewerage works, for the town of Barmouth. Mr. T. Roberts, engineer:—

Jeffreys	£3,636	6	10 !
Beardsell	3,363	9	2
Hughes	2,800	0	0
Owen (accepted)	2,250	0	0
Bugbird	2,102	10	0
Morgan	1,850	0	0 !

For reconstructing, repairing, and decorating No. 37, Marine Parade, Worthing. Mr. F. W. Hyde, architect:—

Patching & Son	£1,294	0	0
Hide Bros. & Cook	1,276	0	0
Crouch	1,228	0	0
Snewin & Son	1,217	0	0
Haiden	1,195	0	0
Galton & Golds	1,040	0	0
Clark (accepted)	868	0	0

For dwelling house, shop, &c., Mare-street Hackney, for Mr. Matthew Rose. Mr. Vincent J. Grose, architect:—

Greenwood	£12,560	0	0
Browne & Robinson	12,450	0	0
Downs & Co.	12,330	0	0
Rider & Son	11,980	0	0
Shurmur	11,979	0	0
Dove Bros.	11,945	0	0
McLachlan & Sons	11,940	0	0
Ashby Bros.	11,673	0	0
Colls & Sons	11,647	0	0
Lawrence	11,526	0	0
Adamson & Sons	11,500	0	0
Little	11,391	0	0
Morter	11,243	0	0

For Board school, Reddin's-road, Peckham. Mr. E. R. Robson, architect. Quantities supplied:—

Aitchison & Walker	£10,680	0	0
Marsland	9,855	0	0
Tyerman	9,751	0	0
Brass	9,687	0	0
Higgs & Hill	9,494	0	0
Hunt	9,452	0	0
Jerrard	9,173	0	0
Hobson	9,078	0	0
Hook & Oldrey	8,984	0	0
Thompson	8,874	0	0
Kirk & Randall	8,872	0	0
Downs	8,865	0	0
Hart	8,800	0	0

For re laying pipe-sewers at Hornsey, for the Local Board:—

Dunmoor	£1,095	0	0 !
Ford	925	0	0
Pizzey	837	12	8
Williamson (accepted)	686	0	0
Marriott (mistake, withdrawn)	399	0	0 !

For addition to Manor-house, Hastings. Mr. W. H. Murray, architect:—

C. & E. Harman	£1,147	0	0
Shortell & Co.	1,110	0	0
Vidler	1,085	0	0

For new school, &c. at Humberstone, near Great Grimsby. Messrs. Maughan & Cuxson, architects:—

Haywood	£880	0	0
Smith	823	0	0
Thompson	658	0	0
Lowden	653	0	0
Blyton	649	0	0
Fletcher	636	10	0
Willows & Roebuck	634	10	0
Kirk	598	0	0
Laughton	593	0	0
Perkess	590	0	0
Doughty	589	0	0
Guy	572	0	0
Hill	555	10	0
Nightingale & Danby (accepted)	525	10	0

For eight cottages at Gale's-gardens, Bethnal-green. Messrs. A. & C. Harston, architects:—

Johnson (accepted)	£2,800	0	0

For new stokers' rooms, baths, &c., at the workhouse, Bishop's-road, Bethnal-green, for the Guardians of St. Matthew, Bethnal-green. Messrs. A. & C. Harston, architects:—

Somerville	£1,059	0	0 !
Palmer	820	0	0
Smith	780	0	0
Body	750	0	0
Johnson	747	0	0
Thomerson	695	0	0
Parrish	629	0	0
Derby (accepted)	588	0	0
Haines	568	0	0 !

For erection of a terrace of five houses at Dawlish, for Mr. W. Hatcher. Mr. G. S. Bridgman, architect:—

Forge & Ashley	£4,480	0	0
Goss	4,293	10	0
Maitland	4,287	0	0
Drake	3,772	0	0
Lamacraft	3,769	0	0
Baker	3,742	0	0
Bridgman	3,600	0	0
Vanstone (accepted)	3,377	0	0

For house and offices at Caversham, Oxon, for Mr. G. May. Mr. W. Ravenscroft, architect, Messrs. Cooper & Sons, architects:—

Shepherd	£5,933	0	0
Woodroffe	5,810	0	0
Higgs	5,778	0	0
Janett	5,521	0	0
Rider & Son	5,448	0	0
Staines & Son	5,384	0	0
Silver	5,006	0	0
Filewood	4,988	10	0
Kimberley	4,690	0	0

For reinstatement after fire of No. 90, Shoreditch, for the Phœnix Fire Office. Mr. Lacy W. Ridge, architect:—

Staines & Son (accepted)	£343	0	0

For pulling down and re-building No. 27, Bow-lane. Messrs. Graves & Hulbert, architects. Quantities by Messrs. Power & Barnett.

Toms (accepted).

For erecting six houses, Gunnersbury-lane, Acton, for Mr. W. T. Thorn. Mr. Percy Hunter, architect. No quantities:—

Blackall	£2,125	0	0
Brown	2,060	0	0
Wood (accepted)	1,869	0	0

For erecting new premises, Wandsworth Bridge-road, Fulham, for Mr. T. Whitaker. Mr. Percy Hunter, architect. No quantities:—

Aviss & Co.	£2,140	0	0
Mark	1,976	0	0
Smith	1,885	10	0
Falkner	1,847	0	0
Cowland Bros. (accepted)	1,827	0	0

For the erection of fourteen houses, store, and reading-room, at Nevin, Carnarvonshire, for the Nevin Syenite Granite Company, Limited:—

Schofield (accepted)	£2,470	0	0

For alterations and additions to three houses in Cleveland-road, Barnes, for the General Credit Company, Limited. Mr. G. Adamson, architect:—

Bowling	£650	0	0
Sale	600	0	0

For completing three terrace-houses at Hampstead, for Mr. Field. Mr. J. T. Newman, architect. Quantities by Messrs. Curtis & Son:—

Somerville & Hill (accepted)	£2,074	0	0

For finishing of five houses in College-street, Northfleet, for Mr. C. R. Miles:—

Uff (accepted)	500	0	0

For additional drainage (sewers) on the estate of the Birkbeck Freehold Land Society at Romford, Essex. Mr. St. John H. Hancock, surveyor:—

Contract No. 2.

Pound	£499	0	0

Previous Contract (No. 1).

Pound	2,400	0	0

Curbing.

Pound	£495	0	0

For the Municipal Offices, Leeds. Mr. George Corson, architect:—

Wood (accepted)	£53,000	0	0

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R. S. (Apply to Metropolitan Asylums Board).—S. C. (We cannot look back. It will be found in a previous volume).—J. C. (not received).—M. H. & Son.—G. B. B.—A. R. B.—E. T.—P. E.—W. H. J. H.—W. B.—A. & B.—T. W. F.—F. G.—J. F.—Messrs. R.—A. P.—M. & C.—N. S. & H.—Mr. P.—S. & E.—R. D. C.—T. R.—W. G.—E. R.—N.—E. D.—C. Z.—J. J.—J. F.—R. M. B.—J. D. H.—W. B. P.—N. P.—D W.—J. V.—B. & H.—R. C.—W. & J. R. F.—G. E.—R. A. L.—C. W. W.—U. W.—P. M. (persevere).—T. B. (next week).—R. & E. S.

Erratum.—On p. 1299, the address of Mr. George Drew, contractor for the Cirencester School, should be Chalford, not "Stratford," as printed.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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The Builder.

VOL. XXXVII. No. 1922. SATURDAY, DECEMBER 6, 1879.

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The Opening Meeting of the Royal Institute of British Architects.

MONDAY, December the First, Eighteen-hundred-and-seventy-nine, will in future years be noted in the annals of the Institute as the date of an exceptionally-interesting "Opening Night of the Session." The current session has commenced a month later than usual, owing to the alterations in the premises,—alterations which in many respects constitute an undoubted improvement, although (as was more than half hinted during the proceedings) probably only a tentative one. Improved accommodation has been found for some portions of the valuable and unique Library of the Institute; the staircase has been rebuilt, avoiding the dangerous "winders" of the old staircase; and by means of a partially-glazed dome in the centre of the ceiling, the meeting-room is now much better lighted by day than was formerly the case,—as it had need to be, seeing that it is henceforth to be largely used as a reading-room. But little if any extra sitting accommodation is provided in the meeting-room, which has not been enlarged; indeed, its former dimensions appear to have been somewhat encroached upon by the new bookcases. The meeting of Monday last was signalised by proceedings of more than usual importance and interest. In the first place, it was officially announced that the Institute had in a great measure, and very properly so, taken the Architects' Benevolent Society under its fostering care,—an event that should result in benefit to the Society as much as it will redound to the credit of the Institute; secondly, Mr. Barry made the gratifying announcement that their Royal Highnesses the Duke of Edinburgh, the Duke of Connaught, and Prince Leopold had consented to become Honorary Fellows of the Institute; thirdly, Professor Donaldson (although, to the regret of all, unable to be present), afforded yet another substantial proof of his interest in all that pertains to the Institute, by the presentation (per Mr. Charles Barry) of a massive gold chain and badge of office to be worn on what may be called "state" occasions by the President for the time being; fourthly,—and lastly only in order of sequence,—the new President, Mr. Whichcord, delivered his inaugural address, and a very excellent one it proved to be. We print this on another page, and hereto append a full report of the proceedings of the evening.

The minutes of the last meeting of the previous session (1878-79) having been read and confirmed,

The Secretary (Mr. William H. White) announced that the Council had received a letter from Professor Donaldson stating that in consequence of a slight attack of bronchitis he was unable to be present in person, although his heart and soul would be entirely with his fellow-members of the Institute.

Among the new members introduced to the President and formally admitted on the occasion of their attendance for the first time since their election, were Mr. John Fowler, C.E., Mr. E. S. Roscoe, barrister-at-law, and Mr. John Hopgood, Honorary Associates; Mr. Isaac Barradale (of Leicester), Mr. Hugh Gough, and Mr. W. Millican (president of the Leicestershire Society of Architects), as Fellows.

The President then proceeded to present the usual certificates to Messrs. Capel, Herford, Jacques, and McLachlan, passed candidates in the Class of Proficiency at the Voluntary Architectural Examination of this year. The Ashpitel Prize was presented to Mr. Capel, and a reward of merit to Mr. Walter Scott, who distinguished himself in the Preliminary Class at the same examination.

The Architects' Benevolent Society.

The secretary next read a letter addressed to him by Mr. Thomas Henry Wyatt, president of the Architects' Benevolent Society (who was, unfortunately, unable to be present, owing to illness). Mr. Wyatt wrote:—

"I am sorry to say that a continued attack of bronchitis confines me to my room, and will prevent my attendance at the meeting to-night. I need hardly remind members of the Institute that in May last, when the affairs of the Architects' Benevolent Society were under discussion, one of our oldest members, Mr. George Godwin, offered to give 100*l.* if fourteen other gentlemen would subscribe similar amounts, or if, by some such similar arrangement, the sum of 1,500*l.* could be obtained, so as to raise the funded property of the charity to 5,000*l.* The Council of the Society felt that this offer should not be lost sight of, and issued a special appeal, and the result has been that, after paying for printing, postages, and other expenses of collection, we shall realise a net sum of 1,608*l.* Our funded property will now exceed 5,000*l.*, New Three per Cents., and fifteen additional new subscribers will be added to our list. Whilst confessing to a personal feeling of disappointment at this result, considering the numbers of our profession, I am grateful for much cordial co-operation, especially so to Mr. Florence, the late President of the Architectural Association, who, on the part of that body, has given us substantial proof of the sympathy and interest of the younger members of the profession. Your executive body cannot be reproached with lukewarmness in this matter, for of the 1,600*l.* thus raised, more than 700*l.* have been subscribed by the Council of the Institute. I have now only to add that as we have followed the good example of the Institution of Civil Engineers, and have, as it were, affiliated our charity with the Institute itself, and induced you to act as honorary secretary, so may we venture to hope that the appeals made from the Chair of the Institute on behalf of the Society will be more generously responded to than hitherto."

New Members.

The following gentlemen were then balloted for and duly elected, viz.:—As Associates: Mr. Thomas Mullett Ellis, of Highbury Quadrant; Mr. Alfred Bovill, of Cockspur-street; Mr. Alfred Culshaw, of Liverpool; and Mr. Walter Stokes, of New Broad-street.

Illustrious Honorary Fellows.

Mr. Charles Barry said he had had the opportunity of submitting to a meeting of the Council a correspondence which had afforded them very great pleasure,—so much so, that they had asked him to read it to the meeting, and to state the circumstances in which it originated. After the dinner in the spring of the year, at which the Institute had the honour of receiving the Prince of Wales as their guest, his Royal Highness expressed a wish to have some record of the proceedings of that day: and the Council, therefore, had a special copy of the "Proceedings" printed and bound, and this he (Mr. Barry) was requested to present to his Royal Highness, and in doing so he again took the opportunity of expressing the satisfaction which the members of the Institute felt at the presence of his Royal Highness at the dinner It afterwards occurred to him (Mr. Barry) that it might not be a very improper thing to ask the royal brethren of the Prince of Wales to become in some way connected with the Institute, seeing that the Institute had for its patrons her Majesty the Queen and his Royal Highness the Prince of Wales. He, therefore, wrote to Mr. Knollys, secretary to the Prince of Wales, asking whether it would be agreeable to his Royal Highness that his brothers, the Duke of Edinburgh, the Duke of Connaught, and Prince Leopold, should be asked to join the Institute by being enrolled as Honorary Fellows. In reply, Mr. Knollys wrote to say that the Prince of Wales quite approved of the suggestion. Encouraged by that reply, Mr. Barry communicated with the secretaries of their royal Highnesses, the Duke of Edinburgh, the Duke of Connaught, and Prince Leopold, and he had the satisfaction of announcing that each of their Royal Highnesses had intimated his willingness to become personally connected with the Institute. These adhesions had afforded him (Mr. Barry) no slight gratification, and his first feeling was that it would have been the right thing to at once formally propose the election of their Royal Highnesses by acclamation; but he was reminded by the indefatigable and most exact secretary (Mr. White) that one of the bye-laws of the Institute made it necessary to give notice

of the election of everybody before proceeding to the election, and he therefore gave notice that at the next meeting of the Institute he should formally propose that their Royal Highnesses be elected by acclamation, dispensing with the ballot. He ventured to hope that that auspicious event would be of some lasting benefit to the Institute, and he also ventured to think that their Royal Highnesses would feel some degree of satisfaction in thus identifying themselves with a body like the Royal Institute of British Architects, whose objects were to promote the study of ecclesiastical and civil architecture, to foster feelings of sympathy for each other amongst its members, and to maintain that high tone of probity and honour in the dealings of its members with their clients which had ever distinguished them.

The President,—I think, gentlemen, that the whole profession will unanimously concur with me in thinking that Mr. Barry has been most happy and fortunate in inducing such a trio of exalted personages to become members of our Institute.

A Badge and Chain of Office for the President.

The next business was the formal presentation of the gift, made by Professor Donaldson, past-President, of a massive gold badge and chain of office to be henceforth worn on certain occasions by the President for the time being.

The President observed that members of the Institute would be aware that their venerable friend Professor Donaldson had, of his good pleasure, determined to present to the Institute a very handsome badge of office for the President. The Professor had written stating, in terms which all would appreciate, his reason for being absent, and, therefore, he (the President) had requested his immediate predecessor, Mr. Charles Barry, to perform, for the worthy donor, the function of formally presenting the badge and investing the President with it. He had asked Mr. Barry to perform that function because among certain rules (which had been framed by the Council, and approved by the donor) relating to the badge was one which provided that the function of the investiture of his successor with the badge should be one of the privileges of the retiring occupant of the President's Chair.

Mr. Barry expressed his regret that the presentation of the badge and the investiture of the President with it were not to be made at the more distinguished hands of the donor of that splendid gift to the Institute. The badge was of a very handsome character, and he ventured to think that it formed a very appropriate and a very fitting gift indeed. It would probably be remembered that a similar badge was worn by the distinguished President of the Royal Academy, whose members were the friendly rivals of the members of the Institute in the study and practice of art; and, therefore, if the learned Professor had desired any precedent for his gift, he had in that instance a most distinguished one. It might be of interest to the members of the Institute to know the circumstances under which the gift was presented to the Institute. At the members' dinner in April last, it was noticed with extreme gratification and pleasure that His Royal Highness the Prince of Wales took especial notice of their venerable Professor, styling him the father of the Institute and of the profession. The honour was unexpected, but highly gratifying to Professor Donaldson, and the next day he (Mr. Barry) received a very affectionate letter from him, stating that it had always been his intention to leave a sum of money at his death for the purpose of purchasing a badge and chain of office for the President, but that he thought that the unusual and very gratifying visit of their royal patron for the first time might very well be, in some degree, commemorated by the presentation of the badge, and he asked for the wishes of the Council on the subject. By the Council the offer was received with cordiality and thorough appreciation of the feelings with which it was made; and the members had now the double pleasure and satisfaction of having that splendid gift while they still numbered amongst them its worthy donor himself. He (Mr. Barry) was sure that all the members of the Institute would rejoice with him that Professor Donaldson had given the badge now rather than that it should have come to the Institute only when they should have lost its donor, for now they not only had the advantage and pleasure of the gift itself, but they were glad to know that their dear old friend was still amongst them. Professor Donaldson's absence from the meeting that evening was due, partly to indisposition, no doubt, but also partly from a delicate wish to avoid the praise and applause which they were all anxious to give him. He (the speaker) was sure that they would all join with him in expressing the hope that the worthy Professor would be with them yet many a time and oft, for it would be a very sad day to many of them individually, and to all of them corporately, when his familiar face should be missed for ever, and when his place at the Institute which he had graced so long and loved so well should know him no more. In conclusion, Mr. Barry invested the President with the badge and chain, amidst the cheers of the meeting.

The President,—Mr. Barry and gentlemen, I accept this magnificent gift in the name of the Institute in a few words, but not the less with great gravity. It is a very kind and a very noble act on the part of Professor Donaldson. We have already expressed to him in person, in the Council, the feelings which have animated us as a small section of the Institute, and I am sure that those expressions will be most fully endorsed by the members at large. The chain is not only a graceful work of art in itself, it is not only a type of the dignity of office, but it has the still further interest to us in the association that it will always have with our venerable and venerated Professor. My only regret is that, bearing in mind the inscription that is upon the reverse of the badge, the gift was not presented during Mr. Barry's term of office, because it records an interesting event,—perhaps the most interesting event which has occurred for many years past in the history of the Institute, and which event took place during Mr. Barry's presidency. I hope that it may decorate the persons of presidents of this Institute for very many years to come, and that in that sense the desires of the worthy donor may be fully fulfilled.

Mr. Barry said he had omitted to state that when the badge reached the Council it was imperfect. There was an inscription upon the reverse of the badge identifying the gift with the date of the visit of His Royal Highness the Prince of Wales; but the Council (and he was sure that the members would sympathise with them) felt that without the name of the donor the badge would be absolutely imperfect, and they had therefore taken the liberty of inscribing upon it the name, long to be revered in that Institute, of Thomas Leverton Donaldson.

A vote of thanks was, by acclamation, accorded to Professor Donaldson.

St. Mark's, Venice.

The Secretary reported that he had had an interview with General Menabrea, the Italian Ambassador, with reference to the proposed works at St. Mark's, Venice. His Excellency explained that the present state of the basilica involved not so much the question of the restoration as the question of the stability and endurance of the fabric, and observed that it should be remembered that Venice was not only a city built in the sea, but a floating city. Subsequently to that interview the following letter had been received:—

"Londres, le 29 Novembre, 1879.

Monsieur,—Je viens vous prier d'être mon interprète auprès de M. le Président du Royal Institute of British Architects en le remerciant de sa gracieuse invitation à la Séance de l'Institute qui aura lieu Lundi prochain à 8 heures du soir. Mais je regrette de ne pouvoir y assister, car je dois intervenir le même soir et presqu'à la même heure à une réunion de la Royal Society. Du reste, comme dans votre séance il s'agirait de discuter les réparations de la Basilique de St. Marc à Venise, ma présence, ou celle d'un membre quelconque de l'Ambassade, serait tout-à-fait superflue, voire même inopportune après les informations à ce sujet qui ont été publiées dans le *Times* du 27 et du 28 courant. On pourra, d'après elles, se convaincre que,—bien avant qu'aucune agitation se soit manifestée en Angleterre à propos de cette question artistique et archéologique,—le Gouvernement Italien s'était sérieusement préoccupé de St. Marc, et avait pris des mesures énergiques pour préserver de la ruine, dont il était menacé, cet admirable monument; et pour mettre à l'abri des profanations les merveilles artistiques qu'il renferme. Votre Société peut donc être rassurée,—car l'Italie, qui a été le berceau des Arts en Europe, en a conservé le sentiment et les traditions; elle ne laisse à aucun autre le soin d'être plus jaloux qu'elle de la conservation des richesses artistiques dont son sol est couvert et dont elle est justement glorieuse.

Veuillez, Monsieur, agréer l'assurance des sentiments de considération très-distinguée de votre tout dévoué Serviteur,

L. F. Menabrea, Ambassadeur d'Italie.

A Mr. William H. White,
Sécretaire du Royal Institute of British Architects."

The President's Address.

The President then proceeded to deliver his inaugural address, which we print on other pages.

Mr. John Fowler, Honorary Associate, said,—I have this evening the pleasing and congenial duty entrusted to me of moving a vote of thanks to our worthy President for the excellent address which he has just read to us. Having now had experience of presidential inaugural addresses at a sister institution for many years, I feel I may venture to express the opinion that the address to which you have just listened is one of peculiar value, from its suggestive and practical character. I esteem my privilege the more, because our President has enforced, in no doubtful terms, the importance of including, in future papers read at this Institute, the subjects of science and practice. These are subjects which belong as much to engineers as to architects, and perhaps even more to engineers than to architects; but they are essential to both. The times and circumstances are past when a man can be great as an engineer and great as an architect, as were the few old Italian giants; but the time is not, and never can be, when a man can be a good architect without some knowledge of engineering, or a good engineer without some knowledge of architecture. In point of fact, gentlemen, the two professions overlap; but overlapping does not mean collision; it means the reverse,—it means union and strength. Take, for instance, the case of an architect called upon to report upon dangerous structures, or structures alleged to be dangerous: it is quite impossible for him to satisfactorily perform such duty, unless he has a knowledge of strains and the strength of materials. Here, then, is one of the inevitable cases of overlapping. I rejoice very much that our President has alluded to St. Mark's at Venice, because that is one of the works of international interest. I wish, at the same time, that it could be, like many other works of the kind, under international protection, all civilised countries having an opportunity of assisting in its preservation. I think a proposal to that effect from our Italian friends (who are, to my knowledge, highly distinguished as engineers, and, to your knowledge, equally distinguished as architects and artists) would have immense weight if they could see their way to mature a plan which should combine international assistance with undiminished authority of the legitimate custodians. On questions of principle, all persons must be agreed that the great artistic and historical monuments of the world should not be allowed to fall into decay, and so be destroyed, but that they should be preserved, and touched only with a gentle and loving hand. On that point there can be no question whatever. There is one point connected with this matter as to which I venture to say (on behalf of myself and of others who, like myself, have not such steady steps as in days of old), that if it be possible, with due deference to the intentions of the original architect, and with due reference to propriety, you should endeavour to make level pavements instead of wavy ones. Permit me to congratulate you, gentlemen, on the royal acquisitions which, as Honorary Fellows, have been announced this evening, because, although not formally elected, I think we may safely assume that their election will be merely a matter of form. Believe me, you have done wisely and well in inducing those royal personages to become associated with you. We at the Institution of Civil Engineers have reason to be proud of our member, his Royal Highness the Prince of Wales, who occasionally graces our annual dinner with the dignity of a prince and the geniality of an English gentleman, and he never omits an opportunity of showing his appreciation of our works and our pursuits. These royal personages now belong to yourselves. They will have opportunities of becoming acquainted with your works which without that connexion they would not have had, and my congratulations are serious and earnest congratulations on the steps that you have taken with respect to them. Permit me formally to move a vote of thanks to your excellent President for the admirable address which he has read to you.

Mr. George Godwin, in seconding the motion, said,—I feel it a great compliment to have been called upon to second the vote of thanks on this occasion. If I have not heard, I have read, the whole of the addresses ever delivered at the opening meetings of the Royal Institute of British Architects, and I venture to say that a more practical, and, at the same time, a more eloquent address was never delivered by the President. The commencement of it, with the

reference to Earl de Grey, and the room in King-street, will scarcely bring to any one in this room the recollections which flood upon me,—I see in that room so many who have since passed away: the elder Hardwick, Cockerell, Goldicutt, Scoles, Smirke, Sir Charles Barry, the elder Fowler, J. B. Papworth, and half-a-dozen others. It was my good fortune to receive from the hands of Earl de Grey, as representing the Institute, a gratifying tribute in that old room over the now historic "Evans's." Fortunately we have still left to us one of the founders who was there, our dear and excellent friend Professor Donaldson, whose absence to-night I deeply regret: he should, under any circumstances, have endeavoured to be here to receive from us that homage and affection which we are all ready to pay him. In the frame of mind which that reference to the old room in King-street so many years ago has induced, I could have wished that when the names of Pugin and Edward Blore were mentioned in the President's address as those of men who had helped so materially to lead to a love of our ancient buildings, and to a knowledge of them in this country, the name of John Britton had been recollected. He was a good friend of mine and a good friend to all archæologists and architects. His career was a remarkable one. Emerging from a cellar in Clerkenwell, where he had been occupied for years in bottling wine; coming into the world with little or no education except what he had given himself, he yet left behind him a series of volumes of the greatest value and beauty, and in producing those volumes he founded a school of architectural draughtsmen and engravers which we certainly cannot parallel in the present day. It was in the prosecution of some of those works that Britton induced Edward Blore to lend the aid of his wonderfully facile, fairy-like pencil. Therefore I should have been glad if Britton's name had been mentioned.* There are two or three other points in the President's address which suggest observations. I am very glad indeed that he was brave enough to give that hint as to members of the Metropolitan Board of Works who are members of this body. It is not that there is any fear to be entertained that they would do that which would disgrace themselves, but that they ought to avoid placing themselves in a dangerous position. The architect should be not merely *sans reproche*, but *sans peur*, and therefore I feel glad that the President has taken the opportunity of suggesting to those members of the Institute who are members or who may be elected members of the Metropolitan Board of Works, to pause before having anything to do with building operations on land which they, as members of the Board, have let to their clients. As to the subject of illicit commissions, the wild statements that have been made against architects are perfectly abominable, because, so far as I know, perfectly unfounded. It happens to me to hear more from architects and more about architects than, I venture to say, happens to any man in the kingdom, and I do not hesitate to assert that a more honourable, a more high-minded, a more chivalrous set of men than the architects of England it is impossible to find. I have endeavoured, over and over again, to fix those who have made such charges against architects to a specific statement, but have always failed. I know, of course, that it would be difficult for many men, tradesmen and others, to make specific statements; but surely, if there had been any ground for such abominable charges, proof would have been afforded in some specific instance, but such has never been afforded. As regards the question of quantities, the President has reminded you that a Fellow may, by the terms of the undertaking which he signs here when he becomes a member, take out the quantities for works done under his own superintendence; but, depend upon it, the architect will be much wiser who resists any temptation to do so, even although it may appear to be to his financial advantage, for it is almost certain to lead him into a false position in relation to the builder, and should, on all accounts, I think, be avoided. The alteration of these rooms was also referred to by the President, and I think our first expression will be one of thankfulness that we did not carry out the proposition to go up to the two-pair floor. I am sure we are all very much obliged to Mr. Macvicar Anderson and those who have assisted him for the alterations now effected, but I am very much afraid that what we have done cannot be considered final, for I perceive that several of our members are unable to find seats. I anticipate that before many years have elapsed, we must begin a new subscription list, and look out for a larger building altogether for our accommodation. Much has been done to improve these premises, but it seems to me that they must soon become unsuitable for what, I trust, will become more and more the meeting-place of the architects of England. The question of affiliation with other societies, which has been mooted to-night, will be and must continue to be discussed, and will doubtless lead to very great results. As to the question of restoration, it has been touched upon in the address very gently, and, as I think, very wisely indeed. In reference to that question, again, statements have been made which must tend to harass architects, and to lead to the disregard of our ancient buildings, which, in its turn, will lead to their falling into ruin, rather than to the prevention of damage by restoration. It should not be forgotten that a building must first of all be useful: it must afterwards be beautiful. Our aim, and the aim of all those who would see these heirlooms preserved, must be to extend such careful protection to the buildings as will prevent them falling into a state of ruin; but where the architect finds a building placed in his hands, ready to fall, his first duty is undoubtedly to prevent it from falling. This agitation against restoration has led, I think, to rather too hasty an outcry, even in the case of St. Mark's. I have the greatest respect for those gentlemen who have, from one end of the country to the other, shouted loudly to the Italian Government to save that building, but I have reason to believe that the Italians never did intend to do so much to the building as we have given them credit for, and that they were only considering how they could best maintain those portions of the western façade which are undoubtedly in a dangerous state; and my impression is that the Italian Government has paid much more attention to the representations of Italian architects in this matter than our own Government would have been likely to pay to English architects under similar circumstances. To pass to another subject, it is an admirable step, as it seems to me, the doing of the work of the Architects' Benevolent Society in this building. It belongs to us, and we are bound to maintain it, and to do all we can to aid those of the profession who fall into distress. Its funds will necessarily be kept entirely distinct from the Institute funds. The step now taken is not without precedents. A similar connexion is found in various other institutions, the Royal Society among the number. An excellent suggestion in the President's address, which I trust will be carried out, is that of appointing honorary secretaries throughout the world, wherever the English language is spoken. In another society with which I am connected,—the Art-Union of London,—the taking of a similar step has been the very root of our wide success. Touching the subject of compulsory architectural examinations, I must confess I have never looked very favourably on any plan that proposed to make architecture a close profession. I no more think that a man should be prevented from designing and carrying out a building, than that it should be made illegal for a painter to sell his picture or for a sculptor to sell his statue unless both painter and sculptor possess the diploma of the Royal Academy. But that the Institute of British Architects should, after having given proper notice, resolve that it will not admit any person to take that high position in the eye of the world which this Institute can give him unless he show that he is qualified for it, is, I think, a very proper step. It is, I believe, already proposed that in 1880 an examination shall be necessary for all those who wish to come into the Institute as Associates. I will only touch upon one more topic mentioned in the address, viz., the sanitary question. It would be affectation in me to pretend not to see that some long labours of mine were most kindly alluded to. That in many ordinary builders' houses even at this time the greatest ignorance and the most culpable neglect are shown, is quite certain; but these do not belong to architects,—architects have nothing to do with them. There is every reason to believe that architects generally do now endeavour to make such provisions as are necessary for the health of those who inhabit the houses they design, and it should never be forgotten that in furtherance of the movement which has led to a wider recognition of this necessity, Mr. Henry Roberts, our late Fellow, worked for years. The efforts of Mr. Robert Rawlinson, in the same direction, are known and appreciated the wide world over, as are those of Mr. Baldwin Latham. Mr. Norman Shaw, Mr. H. H. Collins, and other architects in active practice at the present time, are also known to be bestowing a great deal of attention on this subject, a proper knowledge of which will become more and more essential to all who desire to become thoroughly successful architects. I have very great pleasure in seconding this vote of thanks to our President. I have known Mr. Whichcord for many years,—even from before the time when he became the partner of that old and most accomplished friend of ours, the late Mr. Ashpitel. I have watched his progress with great pleasure, and I augur for the Institute great success under his presidency.

The motion having been put to the meeting was carried, with much applause.

The following members and visitors were present:—

Fellows.—J. M. Anderson, Chas. Barry, Jas. Brooks, A. W. Blomfield, D. Brandon, J. Barradale, R. H. Burden, E. H. Burnell, Arthur Cates, E. Christian, J. Clarke, F. Chambers, R. H. Carpenter, Edwin Clare, C. H. Cooke, H. H. Collins, W. G. Coldwell, H. Currey, Jas. Edmeston, C. Fowler, H. L. Florence, B. Fletcher, E. Gregg, G. Godwin, E. A. Grüning, A. Green, Alex. Graham, H. R. Gough, O. Hansard, J. Honeyman, C. F. Hayward, M. E. Hadfield, G. Judge, Horace Jones, H. Jarvis, jun., W. Kidner, R. Kerr, R. Keirle, T. H. Lewis, G. Low, H. S. Legg, W. Millicamp, A. K. Mackinnon, J. D. Mathews, E. H. Martineau, J. Norton, J. Noyes, H. Oliver, F. W. Ordish, W. Papworth, J. Peacock, F. C. Penrose, T. Porter, C. J. Phipps, E. R. Robson, H. N. Sheffield, T. R. Smith, J. P. St. Aubyn, S. Salter, P. G. Smith, G. Scamell, C. Sherlock, E. Salomons, J. P. Seddon, W. M. Teulon, J Goldicutt Turner, E. Turner, G. Truefitt, T. H. Watson, E. Woodthorpe, Jas. Williams, John Whichcord.

Honorary Associates.—John Fowler, Richard F. Grantham, John Hopgood, W. G. Harrison, E. S. Roscoe, W. H. Rylands.

Visitors.—Bruce John Capell, A. S. Grove, Sidney Godwin, F. J. Sparke, B. Wilkinson, H. Stannett, Thomas Skinner, John Warne, W. Ralph Low, W. Sidmouth, C. Mackinnon, H. G. McLachlan, Benjamin Hannen, W. Jacques, Andrew Oliver, Walter Scott.

Associates.—W. H. Arber, C. A. Adams, C. E. Barry, R. Blackwell, A. Conder, H. H. Collins, Horace Cheston, W. W. K. Clarke, S. F. Clarkson, F. E. Eales, D. J. Ebbetts, Thos. Garratt, Chas. Grieve, Wm. Grellier, Wm. Griffiths, C. A. Gould, John Hudson, E. G. Hayes, F. Hammond, F. Judge, C. A. Legg, C. H. Löhr, T. E. Mundy, P. E. Masey, Jas. Neale, J. T. Perry, B. A. Paice, W. H. Powell, R. C. Page, A. Payne, C. H. Purday, R. E. Pownall, J. S. Quilter, C. Reilly, J. M. Rogers, S. R. J. Smith, E. J. Tanner, H. Tanner, T. W. Wilis, J. W. Walton, Aston Webb, Wm. Woodward, Wm. Wheeler.

ARTISAN CRITICISM ON SOCIAL TOPICS.

IN mentioning the English artisans' report on the Paris Exhibition the other day, we alluded to the fact that the report contained remarks of some interest, from various pens among those employed upon it, in regard to the social and educational conditions of the French artisan, as compared with those of his English brethren,—remarks which we could not then do more than allude to. These portions of the before-named report are, however, worth a word or two in detail, for what they suggest in regard both to France and England.

The difference in the home economy of the English and French artisan seems to have struck our critics considerably, and they seem to have a feeling, rather implied than expressed, that the whole system is more business-like than ours. Mr. Harris, in the first report on pottery, notes the fact that both husband and wife in general work, commencing at six a.m., and having no food till the eleven a.m. *déjeûner*; then work again from half-past twelve to six, dinner at the *café*, and an evening's amusement after it, the children being left in the care of the woman of the house. All this pre-supposes a state of things radically different from that of the English working-man's home, not least in the number of the children constituting the average family, which, as is well known, is much smaller in France than in England. Whether our friends, who allude to the fact more than once in the course of these reports, had any unexpressed criticism in their own minds on some of the bearings of this very important social difference, there is no hint. There are assuredly more sides than one to it; some of them were incisively discussed in the opening chapter of the unequal

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* Some of our readers may be glad to be reminded that in our volume for 1850, p. 373, we gave some account of the interesting "Autobiography" of this remarkable man; and that on the occasion of his death (which occurred on the 1st of January, 1857), we gave, in our volume for 1857, pp. 22-24, some further account of his life, illustrated by a medallion portrait; by exterior and interior views of the cottage in the village of Kington St. Michael, Wiltshire, where he was born; and by a view in the wine-cellar referred to,—that of the Jerusalem Tavern, Clerkenwell.

brochure called "Ginx's Baby." Apart from that, there are points in the French artisan's day, as briefly sketched by our reporter, in which he has an advantage over the English artisan. Among these we should certainly be disposed to reckon the power of dispensing with a great part of the home cooking. But for this, in fact, the wife could not, of course, join in the bread-winning to the extent which she does in Paris; and, in any case, is it not a great advantage to get rid of the heavier part, at least, of the cooking in a small house, and relegate the dinner to a place where it is all done at once for every one without the workers wasting their own time over preparing their food? In London, however, this could not be, simply because there are hardly any places analogous to the French *restaurant*. The coffee-tavern movement is destined, perhaps, to supply this want; but it is only a tentative movement at present. Taking into consideration the smaller families, and the warmer climate, which lessens so much the expenditure on coals and clothes, the reporter we are quoting is certainly right in saying that these things must be taken into account in estimating the comparative thriftiness and carefulness of the English and French artisan, as is sometimes done to the advantage of the latter. The want of home life is a drawback (for a drawback it certainly is, and probably always will be in the eyes of Englishmen of nearly all classes) which the French artisan shares with most other classes in France, though not for quite the same reasons. The arrangement would, however, fit much better with the scheme of the new English School-Board system of compulsory teaching than does the present social arrangement of the English artisan's life, where, in the poorer families, the children are so often wanted at home (if they could be got) to help to keep the pot boiling in either the literal or the figurative sense. There is one point in regard to the *modus vivendi*, or *bibendi*, which the promoters of coffee-taverns here might do well to take into consideration, viz., the variety of refreshing and stimulating, but not in any serious degree intoxicating, drinks from which choice is to be had by a workman in Paris. One of the contributors to the reports in this volume speaks particularly of this, and contrasts their light wines and other drinks with the heavy stout which a London workman gets if he wants a refresher, or as an accompaniment to his meal; and he suggests that the coffee-taverns should include something of this kind, even if they continue to exclude beer and spirits. The coffee-tavern people are occasionally to be found debating the question of drinks, and here is a suggestion for them; and it must be remembered that whatever may be said in favour of cocoa, tea, and coffee, hot liquids do not suit all constitutions.

The French workman obviously spends less in food than the English, and has only two meals a day; but then, can he work as the Englishman does, either in regard to absolute physical strength or power of settled application? All observation seems to concur in the negative. The testimony embodied in this report is certainly not in favour of the French workman in this respect. One reporter says, in speaking of the mechanical engineering shops:—"The energy put into their work by the mechanics was certainly much below what we are accustomed to see in England. The men work in the most leisurely fashion, and provoked the remark of a companion who was with me that they seemed to like to work best when they could do it sitting. When I hazarded some observation on their speed of working to a French friend, he retorted by asking if I could expect a man to work at high speed for eleven or twelve hours a day."* Another reporter says:—"Judging from what I saw in the workshops that I visited, I do not think they get as much work done in the eleven hours as we do in nine. This, I conceive, is in a great measure to be accounted for by their not having a recognised day of rest. Sunday-work being almost the rule, the employers select whatever hour is most convenient to themselves to pay their men. Some pay weekly and some fortnightly, but the majority pay monthly. The men, on the other hand, take their recreation very irregularly, at whatever time they find it most convenient to themselves. They cannot, therefore, be expected to work as diligently as men who rest regularly once a week, and take their recreation at stated times." This last remark is the point of the matter, and the conclusion is certainly in favour of our own system. Shorter hours and vigorous work while at it, is a far healthier system than long hours interspersed with irregular dawdling periods; not only is it better for the work, but for the worker, and certainly more economical of time. The scraps of time which the French workman whiles away in his game of cards after lunch and in his other periods of relaxation during working-hours would add up, at the end of the working-hours, to a good total of time available for recreation or for other studies if desired. About the Sunday work there seems to have been some attempt to mislead the English visitors. "We were told," says the reporter on mechanical engineering, "that no work excepting repairs was done on a Sunday; but from the number of men that were seen to enter the factory in the morning and again at noon on Sunday, the 18th of August, we were led to doubt whether these could all be employed on repairs. I incline to think that Sunday work was stated not to be done more in compliment to our English Sabbatarianism than from a desire to tell the actual truth." Most probably. But it may also be supposed that the French workman, eating and drinking less than the English, is *pro tanto* a workman of less bodily energy and power of endurance. One of our great railway contractors, when he wanted to diminish his working staff of navvies, went round among the men at meal-time and noted for dismissal those who seemed to be bad feeders and left part of their meal, keeping the heavy feeders; and said he always found he retained the best men in this way.

A remark which is connected with this part of the subject is that in the machinery shops which were visited, the shops and machinery were in a very untidy and ill-kept state. "The shops were all exceedingly dirty, no attention being paid to sweeping them up. The shafting and pullies were invariably rusty; the lathes and other machines very much neglected; the borings and turnings were allowed to accumulate near the machines. No one seemed to be deputed to cleanse the shops or keep them tidy." If this is really the rule and not the exception in French engine-fitting shops, it is a bad feature, to be regarded as a warning. Few things are in general more significant of the degree of efficacy with which a trade or business is carried on than the order or want of order of the working-place, be it office or workshop.

Continually throughout these reports we find the complaint of want of means of education in England, as compared with those at hand for the French artisan. This complaint seems sometimes a little exaggerated, and we are led to think that full use has hardly been made of the means within reach, in London, at all events, when we think of the mass of objects at South Kensington. But, in fact, it is the want of systematic arrangement and classification in that vast *mélange* of beautiful and costly objects, which takes away from its value for purposes of study, while increasing, perhaps, its popular interest. Again, the art-schools in our country do not seem to be made practically useful to the artisan class. In some remarks on this head at the close of the first report in the volume, it is observed that in England the student who wishes to learn something to assist him in his trade as china painter or decorator is given an exact copy of some antique scroll or statue. "The art studentships are often given to those who may be proficient at the age of eighteen or nineteen in drawing, though only novices in the technicalities of the trade they wish to follow, and sometimes when they have not even settled what that trade is to be. They consequently acquire a miscellaneous art knowledge, which they have afterwards to find out for themselves how to apply, and much of the knowledge they have acquired proves in the end to be of no real use to them in their particular vocation." In short, artistic education in England has become too much wrapped up in red tape. The writer implies that in France the student for a decorative art is "instructed till the technical difficulties are overcome, when he is expected to apply his knowledge by executing certain specified drawings or paintings within a given time." This is rather vague; but, as far as we understand the drift of it, it seems to point to a greater attention to special art-training for special pursuits.

Connected with this question of artistic education comes that of primary education, on which several of the contributors to the volume have remarks to make which are specially worth attention at the moment when a new School Board is just about to begin its labours. Our artisan friends are not all of one mind on this matter. In the report on "Table and Fancy Glass," the writer considers that first-class workmen in this art are more plentiful in France than in England, because boys are put to it much earlier, and almost from infancy are working with the men and learning the manipulation. "Boys in France go to work at any age. I saw boys at light work in the glass-house who were not more than nine years old, and who worked six hours a day" (poor little fellows!). "In England, no boy must work under twelve or thirteen. Now, if a boy must make a good workman it is necessary that he should go to work early." We do not know whether the writer of this report would go as far as the magistrate of one of our police-courts the other day, who refused (illegally, as it seems) to commit a costermonger for taking his boy about to serve the customers instead of sending him to school, on the ground that "the boy was getting a much better education following his father's cart" (!); but we must say that the opinion here expressed, however "practical" it may seem in the eyes of some people, is a completely retrograde one; and we should imagine few of the writer's brother artisans would endorse his opinion on juvenile labour. At all events, as a counterblast, we may quote the very sensible and well-written remarks of the writer of the mechanical engineering report:—

"In England at the present time, as soon as a boy is sent to learn a trade all mental instruction is discontinued. He conceives he has only to learn to work, and in this he is very much encouraged both at home and in the factory; at home by the indifference of his parents; in the factory by the indifference of master and foreman. In fact, he is looked upon as a nuisance and in the way for the first year or two; he is set to do the most trifling jobs, and discipline is often so loose that he becomes a confirmed skulking sloven, his powers of mischief being the only powers that evince development. The reason for work being done in a particular way is rarely put before him, and it is only when he is grown to almost man's estate that he begins to be regarded as of any value. The foreman, perhaps, notices what he can do, sharpens his tools for him, bores, or lathes, and to this he is put and kept for the remaining term of his apprenticeship. By this means, perhaps, he becomes a fair turner or fitter, but rarely both. The neglect of mental training during his apprenticeship is so absolute that he is a worse scholar by far than when he left school. The habits of the most recent years of his life are not easily shaken off. Hence even when he begins to be aware of his deficiencies he is rarely to be found attending a science school. He lives and works—it may be steadily and soberly—but at the best like a mere machine. In many cases he does not know how to make the simplest calculation in relation to his work."

This is a sad and, we fear, a true picture; and which apprentice, let us ask, is most likely to fall into this mere mill-horse way of doing his work unintelligently,—the lad who has had a well-grounded primary education up to twelve or thirteen, and has, if fairly sensible, gained thereby some power of applying his sense to his work, or the boy who, at the tenderest years, is pitchforked into the workshop to make him simply a good working-tool, and nothing more? In the opinion expressed in the last quotation we entirely concur. What an apprentice wants to enable him to get on, is not only the acquirement of the trick of his craft, but the mental and moral training which will give him some power of understanding the reason of what he is doing, and some sense of responsibility for his time and opportunities; or, to put it in the words of Mill,—"Education makes a man a more intelligent shoemaker, if that be his occupation, but not by teaching him how to make shoes; it does so by the mental exercise it gives and the habits it impresses."*

Some of the remarks on what may be called the economics of labour are of interest. The writer of the glass-making report, in referring to foreign competition with English work, is of opinion that in this trade we are in great danger from French competition, but that the danger arises not so much from the superiority of the French workmen (which, however, he admits decidedly in some points) as from the system of utilising boys' labour along with men's labour more than with us, whereby the same work is done for a lesser total of wages. It is in reference to this that he makes the remarks above quoted as to the employment of boys at an early age, in regard to which what we have already said will imply that we should consider the remedy

* Some of us do that not unfrequently, however.

* In reference to this question, we may note also the remarks on page 143 of the report, in regard to the cleverness of the French glass-workers in the management of their material, concerning which the report observes, that "everything done by these workmen seems the result of some kind of ingenious reasoning." This power of "ingenious reasoning" is certainly as important a factor in good work as practical knowledge and habitude.

as worse than the disease. The influence of general intelligence and education upon work is hinted at indirectly in some remarks in the report on iron and steel manufacture. There it is observed, in speaking of the longer time spent in the workshop by the French artisan, in return for relatively the same wages, that in physique the English workman has the advantage, and that "in the ordinary forge and rolling-mill, where so much depends upon the nerve and muscle of the operative, it is possible that the English workman can produce in nine hours as much as the French workman could in ten, and, judging from observation, I believe he does, and rather more; but as soon as the mechanical powers are brought into use to help the workman, the conditions are altered, and we find that in the manipulation of heavy masses of iron other nations are taking the lead of us. To put it in another way, an English navvy could do more work than a French navvy in the same time, but can an English machinist do the same?" He adds that though the English manufacturer is fully alive to the danger of foreign competition, it has been regarded amongst the working classes as a myth, and that herein lies our chief danger. "If aware of the fact we can cope with it, but if we refuse to perceive it, the 'hare' will wake up some day to find that the 'tortoise' has won the race."

It is to be hoped that some among the artisan class will not fail to notice and appreciate the remarks in the glass-making report (page 145) in regard to the relation between individual excellence of work and individual wages. The state of things in this branch of work in France seems rather anomalous. The reporter was told that the French workmen in one large glass-making firm were working by the piece. On inquiry the fact seemed to be that the workman was paid day wages, but that "by a process of natural gravitation he is expected to complete an amount that is commensurate with what is sanctioned by usage." If, however, he is kept back in "delivering his tale of bricks" by any unusual difficulty arising from defective state of the material, "if his metal is not good, and he has to lose time in skimming and doing whatever else may be thought necessary to make his work clean," he is paid his full quantum of wages just the same. The tendency of this is, as the writer says, to enable a workman to do his work in the best manner; but he adds, "If a man is only paid for good work" (by piece), "I think it will effectually prevent him from making bad work. . . . . Another thing may result from day-work: it may destroy all incentive to exertion. I cannot see why the skilled, quick workman should not receive the advantages that properly belong to his abilities. Surely the best things should fetch the best price; but if the last horse in the race is to receive the same prize as the first, what is the advantage of superior excellence, either in speed or breed?"—a question to be asked, certainly; and all credit is due to Mr. Joseph Leicester, the author of this report, who takes the opportunity of asking so plainly a question so unpalatable (apparently) to a large proportion of English working men at the present hour.

A feature, the last we will allude to, which strikes us in these reports, is the impression which several of the contributors to them seem to have had as to the comparative gaiety and capacity for enjoyment of the French operative, and especially his readiness for a dance at all opportunities. The English working-man, in truth, seems in the present day to be most especially the representative of the character long ago attributed to Englishmen generally, of a propensity to "take their pleasure sadly." There does not seem to be much of a medium, with our men, between the coarser class who place their notion of a holiday in getting tipsy and uproarious, and the respectable and decent class who seem to set about the business of enjoying themselves with an almost formidable amount of staid decorum. We hardly wish, for the dignity of the English working-man, and his womankind, to see him indulging his holiday instincts in such grotesque caperings as are illustrated for us in some of the sketches which accompany Mr. Sala's amusing book on "Paris Herself again." Yet we could wish to see a little more of the real look of enjoyment and relaxation than the study of a Bank holiday crowd usually reveals. Differences such as these, however, are possibly dependent on deep-seated qualities of race, which it is hardly in the power of any one arbitrarily to alter.

COLOUR IN ARCHITECTURE.

Architecture, as a fine-art, is generally regarded as more closely akin to sculpture than to painting, inasmuch as its features are defined, for the most part, by form rather than by colour. At the same time, it is extremely rare to find a structure in which anything resembling the pure colourless material most prized by the sculptor is employed throughout. We may freely admit that, when such is the case, architecture reaches its apogee. We may recall the idea of some of the noblest Grecian temples; we may point to the fairy frost-work of the Duomo at Milan; we may note a marble archway here, and a marble mausoleum there. But as a rule, even in palatial structures on which no cost has been spared, perfect unity of material and homogeneity of colouring are rarely attained. Nor must we forget that where such is the case, no sooner is the work complete than the unresting pencil of Time begins its slow but certain work. Time, indeed, himself, may almost be defied when the air is pure and dry. A year of London fog does more to obliterate the sharp outlines of the hieroglyphics of King Thothmes III. than would be effected by a century of neglect in Egypt. Nothing, as far as we are aware, is so adverse to the maintenance of a pure architectural surface, kept freshly as it came from the hands of the builder, as an atmosphere that is at once laden with damp and envenomed with the vapours of coal. We see in the case of St. Paul's an action steadily in progress in much of the external work, which very strikingly resembles the erosive action that takes place on iron when brought in contact with lime. Our readers may remember that on the occasion of some repairs to the chapel and tomb of Henry VII. at Westminster, we called attention to the fact that the iron plates which a false economy had introduced at the corners of the tomb had attracted so much oxygen as to have coated themselves with a leprous rust of three times their own thickness, so that the irresistible force of the chemical action was riving the whole structure asunder. Something of much the same kind appears to go on with all limestones, if not with all stones, exposed to the London atmosphere. We are not able to say whether a careful attention to cleanliness would avert this mischief. It is possible that if, by means, say, of a well-directed jet of water, the cornice and mouldings of a new and stately building were regularly kept clean, so that dust, and grime, and vapourised coal-tar would not steadily settle upon them, the constant attrition might prove as destructive as the slow and uninterrupted eating away. As to that we regret to have no means of forming an opinion. We will not hazard one, except on the basis of fact. But no one could look at many edifices in London, where bold or delicate sculpture is now reduced to a mass of shapeless blackness, without feeling that neglect, at all events, has not had any conservative power. A patch here and there shows that if any serious attempt were now made to cleanse the work, the stone would scale off in large flakes, leaving an obliterated and ugly surface exposed. If we contrast those portions of an exterior which are swept by the rain with those that are protected from the wholesome purification of a driving shower, we shall be struck by the contrast, more especially just after rain; and we think that it cannot be doubted that if such a building as St. Paul's were regularly washed with jets of water of proper power, the decay of the stonework would, to say the least of it, not be hastened; while the true architectural tone of the building would be permanently retained, and its beauty and majestic effect immeasurably heightened.

This case, in which, not time alone, but time, damp, and coal-smoke in league, have set themselves to work to deface the elevation of one of the noblest buildings we possess, is highly illustrative of the importance of colour as an element of architectural effect. We are not unaware that there is a difference between colour proper and light and shade, and that black and white are not colours, technically speaking; but we use the word in its broadest sense, and we are justified in so doing by the language of the engraver. By colour in architecture we intend the tint or hue of a building,—the effect of brightness or dimness on the eye,—all that part of the surface appearance which is not the pure definition of a sky-line or of a shadow-line. In this view of colour the term will apply to the difference between Carrara marble and the marble of Pentelicon; to that between either of these beautiful materials and alabaster; to that, again, between either of the above and chalk, oolite, or any other selected white stone; and so on through all the countless tints and shades that are special to every kind of material used by the builder.

It may be perfectly true that few architects have sufficient elbow-room to allow themselves to give much heed to the question of tint. Materials are, to a great extent, a matter of locality, and the builder may think himself happy if he makes the best use of such as come most readily to his hand, and may be apt to regard an abstract study of the effect of the tone or tint of this or that stone or clay as a matter of pedantry. But it is one thing to be pedantic and another to be learned; one thing to propose impossibilities, and another to know what we should prefer if it came within the range of what is possible. And, therefore, the real student of art will be the last to think it a waste of time to inquire somewhat into the effect of the colours in which his conceptions, when embodied in outward form, are enrobed, as presented to the eye.

In this inquiry, we have to regard, not only the building as it comes forth spick and span from the hand of the builder, but also,—and perhaps with more anxiety,—the building as we have reason to expect that it will look after the lapse of thirty, or sixty, or a hundred years. We have to consider the detailed and the general effect; the harmonies or contrasts of the component parts, and the general effect of the building as framed in the surrounding scenery. And, apart from the pictorial part of the study of the architect, we have to regard the yet more vital question of the tone and colour of the interior. We know places,—let us cite a country church as an example,—where the effect of the churchwardens' treatment of the interior has been simply to render every one who entered the building hideous. Hideous is a strong word, but the effect of the sickly bilious tint which is so strongly thrown on every face as to overpower even the brightest roses in the cheeks, deserves no other name.

It may follow, and we think it does follow, from such an experience as the above, that colour has to be regarded from two totally different points of view as regards the exterior and the interior of a building. In the former, the eye judges directly. The pictorial effect is that which has to be studied. The effect of an edifice cannot, of course, be predicted from any elevation or perspective drawing of the building alone, however truthfully coloured. It must be the idea of the building as seen, that is to say, as framed in trees, or houses, or blue sky, that has to be foreseen. But the effect is direct on the eye, and in the judgment of a man of competent taste (and adequate visual sense of colour) will be regarded as simple and unperplexed.

As to the interior, the case is quite otherwise, Thus, the man who trusts to the effect on his own eye will probably fall into signal error. It will not be the colour of a ceiling, the contrasted tints of the woodwork or marble of a door and doorway, the beauty of a wall paper, or the effect of the mullions or tracery of a window that the master of the subject will regard. It will be the inmates of the place to whom he should first look. The residents in a house soon lose their sense of the internal finish of the house itself. However charming be the fitting and tinting of a room, it is only the stranger whose attention is excited by it. The owners soon become accustomed to their details. They would miss them, if taken away; they may derive unconscious pleasure from the general effect. But they do not, as a rule, turn any daily attention to the subject.

It is quite the reverse with reference to the inmates of a house, themselves. In a family that lives happily, and with a certain degree of good taste and good breeding, the daily changes that may become visible in the faces of the members are matters of daily concern. A bright look of health and pleasure is, happily, for the most part, contagious. An air of constraint or of pain on one face casts its reflection on the features of all to whom that face is dear. The influence of a bright morning, and the opposite influence of fog or gloom, are familiar to all. If this be the case, it cannot well be disputed that the influence of internal colouring, as far as it affects the complexion and tint of the inmates of a building, whether by way of chromatic contrast, or of actual tinting of

reflected light, must be a matter of importance, and one well deserving of study. We must return to this part of the subject, as the distinction between actual and complemental colouring demands a word or two more; but we have first to regard the colour of the elevation or exterior of a building.

Here we may at once be met with the observation that colour is a matter of taste, and that it is useless to attempt to lay down any rule for its application. We are disposed to believe that, in this matter, what is called taste is really the greater or less excellence of vision. Artists who deal with colour, as distinguished from those who deal with form, will be found by those to take the trouble to inquire to *see* colours more distinctly than other people do. We have noted instances of this in such cases as the perception by an artist of a hue in the landscape which had not struck any other observer until it was pointed out by the colourist. One example may be cited in the case of the reddish-purple tint that, in early spring, first announces the activity of the buds. Looking at an oak coppice a dozen people will see only the buds, boughs, &c. The painter says,—"Don't you see what a glow has come over the wood since yesterday?" You look, and look, and then say,—"Well, now you mention it, I do; it did not strike me before!"

The fact is, that a wealth or poverty of visual power, long unsuspected, is divided amongst mankind with great irregularity. And, again, for the ordinary observer, some education is requisite in order to appreciate any but the more striking effects of colour. A flash of lightning appeals to every one. There are glorious contrasts of gold and purple at sunrise and sunset that attract very general notice. From these violent appeals to the sense of colour down to the subtlest and most delicate harmonies of sky or of landscape, there is a continually decreasing vividness of effect, and a corresponding diminution in the number of persons who perceive these effects. Some will perceive this when pointed out; many will fail to do so even then. So that it is not so much in taste as in facility of perception that the difference really lies.

Even so, we have to deal with society as it is, and must make our account for what are called differences of taste, however we may explain their origin; we must therefore speak with reserve in indicating what seem to us to be rather the principles on which rules should be based, than the admitted rules, of the use of colour by the architect, in his exterior, so far as he is at liberty to attend to the subject.

We should say, then, that the first thing to be sought is homogeneity. By this we do not mean to exclude the use of materials of different colours in the same elevation, for structural reasons this is often desirable, or even necessary. The point mainly to be regarded is the relative distribution of those differing or contrasting shades. The whole must be regarded as a whole. For example, we may take black and white as affording the greatest contrast of shade. In the same way, we may take the square as one of the least accommodating figures,—one which, so to speak, sets its elbows out most aggressively, and refuses readily to blend in contour with any curve or other form of outline; yet, in the familiar instance of the shepherd's plaid, composed of alternate squares of black and white, with sometimes an intermediate tint, we have a surface that is by no means wanting in unity. We look at the check, and we see it as a colour, or tint. It is the same in diapers; it is the same, to a great extent, in stained windows. What impresses the eye is the whole,—the diapered ground, or the stained light,—not the details of the figures or of the tints; and, no doubt, the less any individual detail asserts its presence, and attracts the eye, the greater is the merit of the general effect. It is not for individual excellence of drawing or of colouring that we look in such cases, it is at the effect of the whole.

A very instructive illustration of this view may be taken from a field of study quite distinct from that of the architect, although it is one with which every architect ought to be thoroughly familiar; we mean the blazon of the herald. It is a primary rule in heraldry (which is illustrated, rather than weakened, by the one signal exception of the arms of the Latin kingdom of Jerusalem) that colour is not to be placed upon colour, or metal upon metal. A red star on a black ground would be false heraldry; a golden sceptre on a silver shield would be false heraldry. But in a case where a coat-of-arms has been once blazoned, it is no longer regarded as consisting of two or more distinct tinctures, as they are called, but as a whole. Thus the ancient arms of France were a blue field sprinkled over with countless golden lilies,—*semée de fleurs-de-lys sans nombre*. This bearing is spoken of by the herald as "France ancienne," or as "semée de France," and either colour or metal may be borne against it, because it is regarded as a special *whole*. Thus, the Royal House of Bourbon, before it acceded, in the person of Henry of Navarre, to the throne of St. Louis, bore "France, oppressed" by a broad red band, called by the heralds a "band gules;" while the Dukes of Orleans bore "France oppressed," as it is termed, by a silver label.

In the same way, if we take the case of brickwork, we have the contrast of red and white in parallel and vertical lines. But the eye takes in neither the contrast of the colours, nor that of the lines, but looks at the brickwork. It is true that irregularity of bed or of purpoil joint is distressing, but it is not absolutely certain that it is distressing as matter of distribution of colour. It is as an evidence of slovenly work that it is abominable to the good workman, or the man who knows what good work is. Irregularity is not in itself displeasing to the eye, if it be a consistent irregularity, not an evidence of neglect. Thus, a wall built of flints, which is perhaps the most irregularly-patterned object which it is easy to cite, may be very far from an ugly object. But if the flint wall had square white patches let into it here and there, the effect would be unbearable.

The question of stone dressings comes in here. Many persons are very fond of a full red brick, with white stone dressings. The contrast between the two colours, if both the materials are excellent, may be kept up for many years, with but little fading. We can give instances reaching back as far as the time of Queen Elizabeth, where the brick is still red and the stone still white. It may be urged by some architects,—and we are far from disagreeing with them,—that the use of *terra-cotta* dressings and quoins of a colour alike to the brickwork, and not very dissimilar from it in tint, or depth, gives a finer architectural effect. That is just one of the points as to which there will always be a difference of opinion. Not so, however, we hold, with regard to the distribution of the foreign colour. Thus if in an elevation there should be one part containing a large proportion of stone dressings,—say a fifth of the visible area,—while another part should be almost wholly of brick,—say windows in one place and chimneys in another,—the effect, we suggest, is always bad, the want of balance of distribution calling the attention to the want of homogeneity in material.

There is another point on which we are in doubt whether to speak with more or less decision, owing to the general neglect which exists on the subject. And we have to confess that the neglect is not confined to modern work,—which is a reason for modesty of assertion. And yet we can hardly doubt the assent of men of taste to our view. We refer to the flush building together of different materials. An illustration that comes to aid our objection to this mode of treatment is to be found in the stained glass of the thirteenth and fourteenth centuries. The deep black lines which surround the faces and figures of the saintly personages who adorn these ancient lights, if in themselves ugly, add immensely to the force of the composition. There is a want of the "lead" felt in the modern glass. In the same way, the line of shadow which is given by a projection at once masks and veils the change of colour in a building, and adds, we submit, materially to the unity, and thus to the dignity and excellence of the general effect.

The great fault, then, to avoid in the colouring of the exterior is, either irregular bitty and scrappy treatment which fritters, away the whole, or want of balance in distribution of shades. In any building, whether palatial or otherwise, we think that the architect will be rewarded for bearing in mind these conditions, and for distributing his dressings, or other colouring, in obedience to such principles as we have endeavoured to indicate.

Next comes in the perhaps yet more serious question of the contrast of masses of colour, especially that between the building and the roof. We fear that here economy is at variance with architectural taste. In many cases contrast between walls and roof is unavoidable. In the case of a house built with oolite, or any white stone, for instance, although the most homogeneous roof will be one composed of the schistose or slate-like layers of the same stone (which nature almost invariably provides in the vicinity of the quarry), it will frequently happen that this material is not calculated to make a good roof, without being, at the same time disproportionately heavy. In such cases economy suggests the use of slate, and it is hard to find any answer to the claim.

In brick houses, on the other hand, and now we are speaking of houses of a certain magnitude and importance, such as those which stand, for instance, in their own grounds, and form features in the landscape, a tiled roof, pictorially regarded, has generally a great advantage over a slate roof. Those, indeed, who are familiar with the slate districts of Wales, and probably of other parts of the world, are aware that we have by no means exhausted the variety and beauty of colouring that may be attained in slates. There is a rich warm purple, of which colour some of the largest slates,—those known as Empresses,—may be obtained from some quarries, that has a charming pictorial effect. But, as a general rule, a tiled roof for a brick mansion has this great advantage,—as a matter of landscape, it tints with the house. Fresh in the assertion of their spick-and-span novelty, for a few weeks, the walls and roof generally look all the better for the lapse of a winter. The rapidity with which brickwork loses its originally raw tint depends in great measure on the particular clay used. But the same district, and usually the same kiln, will supply both brick and tile. And whether brick alone, brick and stone, or brick and *terra cotta* be employed for a mansion in a clay country, the warm and substantial covering of a tiled roof will generally be found to give a greater degree of unity and good effect to the building than can be attained by the substitution of slates. The effect of the dull red mass of a substantial and well-proportioned house, set in a green framework of foliage, and reflecting a bright light from numerous windows, is a case in which architecture gives her hand to nature in producing the scenery of cultivated landscape.

PREHISTORIC REMAINS IN SOUTHERN ITALY.

A lady-correspondent, whose husband holds an official position in the province of Basilicata, the duties of which lead him to travel from city to city in that interesting but little-known part of Southern Italy, writes as follows from Potenza, under date November 17:—

"We returned about a fortnight ago from Malera, where we had been before, in July, for the examinations; but this last visit was a pleasanter than the former, on account of the cooler season, which enabled us to make long excursions. One of these had a most interesting object in view, and though it occupied six hours I did not feel fatigued, so much was I interested. In the rocky banks of the river that surrounds the town of Malera are found several series of caverns, and in one series, excavated by young Dr. Ridola, a man of great ability and extensive information, a number of objects have been brought to light, suggesting that these caverns were the abode of pre-historic men. Dr. Ridola intends shortly to publish a pamphlet, in which he will give an account of these excavations, and which he intends to send to the scientific men who devote themselves to this particular branch of study in Italy and in other countries, hoping that some may come to Malera to see for themselves these series of caverns, and organise further explorations. The objects found in them have been carefully arranged by Dr. Ridola, and form an important collection."

The writer afterwards describes other interesting places in the Basilicata, but in no other parts have they found these caverns.

Royal Albert Hall.—A Fine Art Exhibition will take place here next year, as already mentioned. It is fixed to open on Monday, the 22nd of March, and all works intended for exhibition, and which on this occasion will include Architectural drawings, are to be sent in by the 23rd of February. It has been suggested that an exhibition of wood-carving would form an interesting adjunct, and be serviceable in showing the real position of the art in England at this moment.

THE PRESIDENT'S ADDRESS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the opening meeting of the session, as elsewhere reported, Mr. John Whichcord, F.S.A. president, delivered the following address :—

Turning back to the records of our twenty-sixth session, I have found that, at the opening meeting held just twenty years ago in the new Rooms at 9, Conduit-street, Hanover-square, our first president expressed a certain pride and pleasure in presiding for the first time in a place where the British Architects might be said to have a *locus standi*. In a short account he then gave of the past he told us that the first meeting he had attended was in King-street, Covent-garden, in the year 1835, when the Institute was in its second session. Two years afterwards it removed to Grosvenor-street, where two different sets of apartments were occupied in succession. Coming here in 1859, the late Earl de Grey, my noble predecessor, whose words I have quoted, delivered his inaugural address in this place just one month before his death. He had been our president for twenty-four years; and during that period the number of professional members had risen from 13 to 293. I am glad, therefore, at the close of another twenty years, to be permitted to welcome you within the same walls, but in rooms which I trust you will deem an improvement upon the old.

I am glad to record that in the course of those twenty years the number of Fellows and Associates has steadily increased from 293 to 681. I am glad also to welcome here this evening many of the same men who assisted a score of years ago at that opening meeting; to know that in this—the forty-sixth year of our existence—our founder, Professor Donaldson, is still diligently at work for the benefit and advancement of the profession.

But as it has been the painful duty of my predecessors to deplore the loss of colleagues who have been taken from us, so it now falls to my lot to record the decease since we last met of a very old member, Mr. W. Southcotte Inman; others more or less publicly known are also deceased, and obituary notices of them will be published in the appendix to the Transactions of this session. Three names, however, more prominent than the rest, and familiar to the professional ear, claim from your President more than a passing word. The death of Joseph Louis Duc, at Paris; of Eugène Emmanuel Viollet-le-Duc, at Lausanne; and of Edward Blore, in London, are events of more than general interest. They are episodes in architectural history. The enthusiasm, learning, and ability which comparatively young men have witnessed in what is now called the Gothic Revival were not due to any sudden inspiration, nor were they rapid in their growth. The seed was sown towards the close of the last century; the pen preceded the pencil in successful attempts to interest the public with Mediæval legend and antiquarian research. Edward Blore, who has just died at the age of eighty, is perhaps the last of that generation of workers who, fifty and more years ago, were familiarising the nation with stories and sketches of the many native buildings, more or less decaying, scattered over this island,—ancestral works which then were neither appreciated nor understood. To him, a contemporary and fellow-worker with Pugin, may be partly attributed the change that has occurred, in this particular, among the majority of Englishmen. Sir Walter Scott, to whom a recent period of revival is more indebted than perhaps it is willing to own, may be called the patron of Edward Blore, whose earliest work of practical architecture was the front of Abbotsford House, over which, however, Sir Walter had probably no small influence and control. Blore, who was entrusted with the repair of several English and Scotch cathedrals, was ultimately appointed architect to King William IV., and afterwards to Her Majesty the Queen, having been employed both at Windsor Castle and Buckingham Palace. He also erected some well-known and important residences in different parts of the country; his drawings and etchings are extremely valuable, the books he illustrated numerous.

A heavy debt of gratitude is due from the brilliant writers and draughtsmen of the present time, in France, Germany, and England, to the scholars and artists who, in a particular school of architecture and the allied arts, preceded them. Nevertheless, in an assembly like this, and with recollections fresh in our minds, the pre-eminence of Viollet-le-Duc over all other exponents of the artistic theories and precedents he illustrated must indisputably be acknowledged. Both in diagram and description he was unsurpassed. More, he used his natural power of logical deduction to explain methods of construction, or give a reason for forms of design, with strength and ability such as none of his predecessors had exhibited. That he did not write or draw for men of our profession alone is seen by his "History of a House," his "History of a Fortress," his "History of Human Habitations," and his works on "Fortification." I am assured that all the illustrations to these and his other numerous publications were made by himself, generally drawn and shaded on the wood by his own hand; and when it is remembered how comprehensive and elaborate are the illustrations to the sixteen volumes comprising his two great Dictionaries, it is difficult to withhold astonishment or limit admiration. He began to sketch his native buildings early, and he had completed a large number of such drawings before the introduction of photography unhappily diminished the ardour of draughtsmen travelling in pursuit of practical example and archæological parallel. He extended the theory of those "true principles" of architecture which Pugin had earlier made the basis of a creed; and it cannot be out of place, here, to acknowledge the obligation due to Viollet-le-Duc, a Frenchman, and to Augustus Welby Pugin, the son of a Frenchman, in the elucidation of Mediæval methods and the classification of Mediæval styles,—a science in which this country did undoubtedly take the initiative. Viollet-le-Duc was also equally happy with pencil and pen in the delineation of Grecian and Roman remains. Nor in his devotion to a particular current of architectural idea was he oblivious of the source whence the stream flowed. To some of his colleagues whose practice lay in the adaptation of a mode of construction older than the thirteenth century he paid a just meed of admiration. The works of Neo-Greek design, conducted by M. Duc at the Palais de Justice, in Paris, were often alluded to with delight by M. Viollet-le-Duc, while the former never hesitated to admit the value to a Classical architect of M. Viollet-le-Duc's Mediæval researches. Both have received the Royal Gold Medal, and the visit paid to us in this room, in 1876, by M. Duc is still fresh in our memories. At that time M. Duc had been thirty-six years architect to the Palais de Justice. The work had year by year progressed; as each new portion reached completion, an old building was pulled down. Before his death he conversed in turn with the heads of the various trades employed in the buildings, and left definite instructions with each. During thirty-nine years almost everything,—to a wooden bench or an iron bar,—had been designed under his direction or with his own hand. In giving up his charge he must have felt the satisfaction with which the knowledge of duty done and hard work accomplished is happily accompanied. Nor can we fail to perceive and envy that artistic organisation which, in spite of revolution and war, is maintained by the Parisians, who never intrust even the repair of their public buildings,—historical monuments they call them,—to other than qualified members of our profession.

I am not, however, able here to enter upon any minute comparison of the modes respectively adopted by the municipal authorities of Paris and London for the improvement and embellishment of the two great capitals. It would be rash to suggest and futile to hope that this enormous metropolis, entangled with every sort of legalised complication both of land and house, will ever present to living man anything like the metamorphosis that has been lately witnessed by less than a generation of Parisians. It is sometimes said that the Empire ruined France in order to rebuild her capital and adorn her chief cities. But throughout France the small towns and villages are prosperous; the large cities are continuing and completing vast improvements. The Republic has given to Paris a thoroughfare more splendid, and with greater rapidity, than had been known during the Second Empire. It is also said, and I believe with truth, that the great works we have seen executed in France have not "paid," as people in England understand the word; but at least the French are now relatively no poorer under the infliction. Do the improvements in this city and metropolis "pay" according to the English meaning of the term? Perhaps I may venture, as a man of business, to doubt whether a new thoroughfare can be a paying improvement when, as in the case of Victoria-street, Westminster, land on each side of it remains for years unsold and unlet. I have heard say that Northumberland-avenue will not turn out a "paying" improvement unless the land on each side of it be speedily let or sold. A comparatively long time has elapsed since the Metropolitan Board of Works submitted to the Council of the Institute any elevation of new buildings proposed for erection in that Avenue; and, as you know, the Board is bound so to submit such elevations. I find that, in the Board's last annual report to Parliament, the delay in letting this land is attributed to the general depression in business, and to the expensive character of the buildings required to be erected. But when it is remembered that in Northumberland-avenue the foundations to the new buildings must be unusually expensive, and that the restrictions as regards dominant rights of light encouraged by the present mischievous state of the law are numerous, it might have proved true economy to have put the ground-rents at a scale that would have attracted immediate investors. I cannot refrain from comparing the desolate condition of Northumberland-avenue, situated in the very heart of London, with the brilliant achievement of the Avenue de l'Opéra, carried out by our neighbours in the space of a few months, and at a time when the political and commercial conditions of their country were certainly not superior to our own. I regret also that many undoubted improvements, due to the in-all-other-respects wise action of the Board, should have been executed without adequate regard to the architectural embellishment of the metropolis.

The responsibilities, duties, and powers of the Metropolitan Board of Works are enormous, and they annually increase. It is not only important that the organisation for devising and deciding the details of street improvements should be the best of the kind available, but it is also important that the machinery employed for purchasing, letting, and selling the common property of the metropolitan ratepayer should be well put together. Now, both individually and collectively, we architects are in constant communication with the Metropolitan Board. The Institute has statutory relations with it, and receives numerous acts of courtesy from it; its Superintending Architect is an honoured member of our Council, and its chairman one of our distinguished class of Honorary Associates. We, as a corporate body, not only wish well to the Board, we would do whatever might lie in our power to aid it in the discharge of its manifold functions. Architects may be elected members of that Board, just as barristers, solicitors, and doctors may be so elected. It would be ridiculous to say that professional men shall not sit at that Board because they may have had a pecuniary interest in some of its public business transactions. But I shall run no risk of censure when I say that a Fellow or an Associate of this Institute, if he be elected a member of the Metropolitan Board of Works, ought not from that moment to have any professional connexion whatever with the purchase of land offered for sale or lease by the Board; nor should he be professionally engaged in the superintendence of buildings to be erected upon land which is the property of ratepayers, whose agent and representative he is.

The subject of "illicit commissions" has again been brought before the public, and a temperate letter to the *Times* from Sir Edmund Beckett, one of our Honorary Associates, recently afforded an admirable comment upon the present phase of the difficulty. Our course, as a corporate body, is clear. The declarations taken by our members were framed many years before it was discovered in the newspapers that a great deal of unrecognised dishonesty existed in almost every rank of the community. It is generally admitted that there are black sheep in all folds; it was then laid down with a show of authority that in the architectural fold all the sheep are black. But time has brought its softening influence to bear upon our well-intentioned maligners; they have felt the impropriety of making against the whole profession a charge which could not be made with impunity against individuals. Two years ago the Council, in their report, which was adopted by the Institute, declared themselves ready to co-operate with the Legislature in order to prevent and exterminate what in an architect, who is the fiduciary

agent of his employer, is neither more nor less than fraud. So far we are in the straight path. There is, however, one detail of architectural practice,—often forced upon professional men who happen to be situated at a distance from the large provincial capitals,—which offers to the outsider an easy handle of criticism. It lies in the mode of payment adopted for bills of quantities. In London and the chief cities these bills are prepared by specialists, and there is no absolute necessity for an architect to prepare bills of quantities for his own works. As a rule, he does not take out the quantities, nor does he derive any pecuniary benefit from them; but when he does, the declaration taken by both Fellows and Associates is sufficiently precise. The words in the case of a Fellow are:—"I will not take out quantities except for works to be executed under my own superintendence, and then only with the concurrence of my client: such quantities being paid for by him;" and in the case of an Associate:—"I will not take out the quantities for works to be executed under my own superintendence, except with the concurrence of my client, and unless the said quantities are paid for by him." In making these quotations I hope I may be considered to have the interests of our profession at heart, for my object is to inform outsiders of the obligations accepted by every one of our professional members, rather than to remind the members themselves of the discipline to which we all voluntarily submit.

That discipline is our chief safeguard; it was in the minds and hearts of those who founded this Institute. The tacit concurrence of the general body with recent attempts to advance the interests and secure the well-being of a profession, still young and still not fully recognised, is conspicuously apparent. I need hardly enlarge upon the sentiment with which the Council reciprocate the confidence reposed in them by the majority of the general body. Even in so small, and what at first sight may seem so congenial a task as the improvement of the premises we have occupied for twenty years, that confidence has been appreciated as a favour and a necessity. You will possibly be incredulous when I tell you that the difficulty of making our rooms more convenient than they were before has been considerable. The difficulty was enhanced by the fact that the whole Council, upon whom the preliminary business depended, were one and all experts in the subject they had undertaken to discuss. When the original plans prepared by our Fellow, Mr. Phipps, were before us, there was a half-formed intention to take a lease of the upper floors of this building; a scheme was suggested by which our meeting-room was to be placed on the second floor, the library remaining in its present position. But even had we succeeded in inducing members to ascend more than seventy steps to reach the meeting-room, the cost of such a scheme precluded the possibility of its execution. Mr. Phipps then made several supplementary designs, and gave the council the benefit of much valuable assistance. But the purpose for which his services had been retained was set aside by the Institute as beyond the general wish or means. He was, therefore, good enough to accept the usual professional honorarium, and the Council took upon themselves collectively the task of devising some comparatively small alterations and renovation of the rooms we occupied. As you have already been informed, they ultimately appointed a committee of four of their number to carry out the plans approved by the last annual meeting, together with the resolution that empowered them to negotiate for the acquisition of additional area on the upper floors for purposes of ventilation. One of the members of this building committee was Mr. Macvicar Anderson, who, admitting the possible embarrassment of four architects engaged in the joint superintendence of building works, chivalrously consented to take charge of the matter, at the same time declining to accept any pecuniary compensation. His colleagues on the Council have expressed to Mr. Anderson their sincere thanks for the trouble and anxiety he must have incurred, and it remains for the Institute at some future time, when a report will be formally presented, to say whether we have been hasty in our judgment or wrong in our appreciation of much quiet service very gracefully rendered.

It is impossible to refer to the subject of these alterations without being reminded thereby that Mr. Charles Barry had, during his three years of office, a most natural desire to see the improvement of our rooms effected. He had devoted himself so entirely to the Institute, that he must almost have felt it a reproach to leave this chair while the alterations remained to be done; and to know that they have now met with his approval is a satisfaction to us over whom he has presided with such good temper and such beneficial results. I am unable, also, to forget that his full and comprehensive address at the opening of last session, together with the report of the Council issued last April, leaves me little of the past upon which to expatiate. It is, however, gratifying for me to support and follow him in his opinion respecting the functions of our committee on professional practice. Mr. Barry deprecated the custom of submitting to that committee cases the statements of which are simply *ex parte*. The members of a committee cannot be made advocates in individual cases, for thereby they might subject themselves to be subpœnaed as witnesses; but when appealed to on points of principle they can conveniently and usefully formulate an opinion, which, when approved by the Council, is always willingly given to an applicant, whether he be or be not a member of the Institute. Nevertheless, the paragraph in our last report, referring to differences or misunderstandings between members, offers to my mind the best solution. It is there suggested that an agreement should be previously made between the parties to leave the question in dispute to the decision of the Council, or of a Fellow nominated by them. Moreover, a committee cannot, under the bye-laws, give advice or speak in the name of the Institute. The Council appoint committees to assist them in the investigation of specific subjects, and they are often very much indebted to members for the benefit of their assistance. But as all the affairs of the Institute are managed and directed by the Council, subject to the control of the general meetings, no committee has any power of separate or private action.

The reasonable conservation of ancient and Mediæval monuments is a question too important to be ignored by architects or omitted in your president's address. That news of a reported restoration of the west front of St. Mark's Church, at Venice, should be received in this country with some dismay is natural and explicable. Nor have Englishmen any right to expect foreign nations to take a similar interest in the old churches and cathedrals of these islands. Even presuming it possible now to destroy or mutilate a Mediæval building in Great Britain or Ireland, the misfortune would not be felt by the Italians, because similar works of the same character abound throughout Western Europe. America might justly complain,—Italy never. But there is only one Venice, and the history of our modern world begins with Rome. Hence the anxiety of Englishmen for the original works of Italian masters; hence their excuse for a protest which, under other circumstances, would have been impertinent. Indeed, after an uninterrupted experience of many years, thinking men in this country are beginning to appreciate the real meaning of what, after all, is a comparative novelty both in practice and phrase. You will remember that Viollet-le-Duc was very clear on this point, for in past times no people ever "restored" as the word is understood at present; neither the Latin nor the Norman-French contained any word equivalent to the modern term of restoration. The Classical and Mediæval architects pulled down, altered, added or rebuilt, as necessity dictated or authority required, and to this fact is largely due the multitudinous variety of architectural precedents. The substantial records of every known nation show architecture to have been, though artistically conservative, a progressive science. To attempt to maintain that every useful building is to be left untouched if only it be old, and that every useless obstruction is to remain an obstruction, if only it be beautiful, is a paradox opposed to the very principles upon which our forefathers constructed the self-same buildings that now delight the many, and render a few enthusiastic people almost inconsistent. The architect is both an engineer and an archæologist. He must, as a rule, when arrived at the three cross-roads of the proverb take the middle one; he is neither free to follow the engineer alone, nor the archæologist alone. He cannot, like the engineer, be "the first by whom the new is tried;" he must not, like the archæologist, be "the last to lay the old aside."

The inquiry, now being prosecuted, into the statistics of damage to buildings by electrical action is one of more importance than many have possibly imagined. Existing knowledge on the subject, even among men exclusively scientific, has long been admitted to be slight and imperfect. The Meteorological Society of Great Britain is therefore doing good service to both architects and engineers in collecting statistics with a view to the ultimate publication of a general code of rules for the construction and fixing of lightning-rods. I believe that a great number of facts relating to actual damage and escape from the effects of lightning at home have been already obtained, and that further information on the subject has been promised from various parts of the world.

I have no doubt, when the different items of information are put together in a scientific manner, that we shall be enabled to publish in our Proceedings a synopsis of the same. And I would venture to make a few passing remarks upon the fact that we are now arranging in one annual volume everything having to do with the public business of the Institute. With this object our Proceedings or "Notice Papers" now comprise, in one uniform regularly-paged publication, reports of Council, balance-sheets, estimates, general notices, lists of members, lists of prizes, reports of speeches, and so on. I have urged that, in future, the many communications we receive from our honorary and corresponding members shall be printed, if not *in extenso*, at least in extract, in these Proceedings. It has also been decided to send, at the close of each session, an annual volume to all our honorary and corresponding members; so that starting from this session, every one of our 868 members, of all classes all over the world, will be in receipt of our publications. It is, therefore, most desirable that the character of the papers read here, and that of the discussions which follow them, should be worthy of the subjects it is our custom and privilege to examine,—useful contributions to the half-art, half-science, that we practise and uphold. There is no lack of literary work offered or suggested to us; our want lies in the difficulty of obtaining practical expositions of current subjects connected with architecture. If I may follow the thought of my predecessor in one of his excellent addresses, it is of little use or interest for us to be argued into a belief that one style is better than another, or even that one phase of æsthetic design is more delicate than others. A see-saw of rhetoric exists to prove the futility of such discussion. I would venture to say that papers upon practical subjects,—on the best system of combining materials in different situations, on the best results obtained from experience of iron and concrete, or of building houses that will resist fire, on modes of construction adopted in other countries, on the application of steel, of terra-cotta, of plasters and cements, to modern habitations,—are likely to be far more welcome to the majority of members within our own circle, and far more useful to everybody outside it, than the most learned dissertation upon the mutability of fashion, or the wittiest homily on the perversion of taste. I trust that, among the papers to be read here this session, those of a scientific and practical character will predominate, if only to balance the apparent tendency of our day to depreciate the value of that scientific basis upon which the art of architecture is founded.

With the Proceedings, to which I have referred, it is determined for the future to issue notices and communications made by the Architects' Benevolent Society to its subscribers and donors. The president of the charity is a past-president of the Institute,—Mr. Wyatt,—who is now good enough to give us, in the responsible post of honorary secretary, the advantage of his tact and experience. Moreover, our secretary,—Mr. White,—has, since this time last year, undertaken to act as honorary secretary of the Architects' Benevolent Society, so that henceforward the business of the charity will be conducted in the office of the Institute. A similar arrangement has long existed at the kindred Institution of Civil Engineers, where the secretary,—Mr. Forrest,—is the honorary secretary of the Engineers' Benevolent Fund, and the Council of the Institution act as the directors of the charity. Such a combination has been attended with marked success. The maintenance by the Civil Engineers of their charity offers a comparison by no means flattering to ourselves, for the Architects' Benevolent Society has never, I believe, received that support from the profession which it deserves.

No one has urged its claims more earnestly than Mr. Wyatt, who, in his last address from this chair, appealed as much to the dictates of ordinary benevolence as to the claims of professional brotherhood on behalf of a charity now more and more economically administered. The announcement he has made to-night as to the amount collected for the invested fund shows that the interest he has long taken in the charity does not diminish. I most sincerely entreat those of our body who can afford aid, to give donations which will all be funded, and to press their thriving colleagues into the still meagre list of annual subscribers. Now that this room in which we are met to-night will be devoted during the day to purposes of reading and writing, our council-room will be the proper place in which the active members of the Benevolent Society can best meet,—it being a rule that nothing shall interfere, even for an hour, to diminish the value and usefulness of our library as a centre of reference and research.*

SOCIETY OF BRITISH ARTISTS.

The winter exhibition of this Society, in the Suffolk-street Gallery, is one of the best they have had of late years, and contains many nice things, in landscape especially. It really seems to us that it would be better policy for the Society to make the winter exhibition their principal one, and either stop the spring show or make it a secondary, or "sketch and study" exhibition. In the season it is useless to expect to compete in interest with the Academy and the Grosvenor, and the Suffolk-street exhibition at that time is generally but poorly attended. At this season of the year there is far less counter attraction, and an exhibition which, even if not of the first rank of interest, contains many good paintings and drawings, may have a chance of fair attention.

The most important work in regard to aim and style is that of Mr. A. B. Donaldson,—"King Alfred is Godfather to Guthorne the Dane" (121). This is hung higher than it should have been. It appears to be, like most of its author's works, fine and rich in colour, but rather wanting in reality; the figure of Alfred, especially, is conventional and rather weak. The best parts of the work are the kneeling figures of the rough and unkempt followers of the Danish chief, their armed limbs appearing from beneath their white ceremonial dresses. Among the pictures in which figures are the subject, or the predominant interest, may be mentioned "Le Quillier" (319), which title is, we presume, the name of the game something like ninepins, which some French rustics are playing on the common ground in the neighbourhood of a village. The style of this work is a good deal French in character, though not of the best French art of the day. It is rough and heavy in execution, and wanting in the genuine light and colour of an open-air landscape; but the groups of figures have much force and character, and there is that about the work which would dispose one to look for the name of its author (Mr. Yeend King) again. Mr. John Burr (member) has two good *genre* pictures,—an "incorrigible" dunce (162) and "A Flower-girl" (247), both painted in a hard forcible style, and marked by individuality of character. Mr. G. E. Hicks's fine "study" of a woman's head (186) occupies worthily the centre place over the mantelpiece of the large room; and on the opposite side of the room Mr. Gadsby's child's head, under the title "Ironing" (393), makes a remarkably nice little picture. The "Danseuse" (471) of Mr. Arthur Hill,—a figure half seen through a nearly transparent veil,—is well and carefully done, and successful in its aim; but it is a kind of thing that has been rather often done, and in which Gerôme has made such brilliant successes that no one can hope to be looked at much for this kind of thing after him. Nor, to say the truth, is the effect worth very frequent repetition. In the same room with this is a very interesting study by Mr. W. Christian Symons, of a rather new subject, "A Sailmaker's Loft" (499). This is spirited and real, and obviously studied from fact; but it would have been none the worse for a little more finish and making out of detail, both in the figures and the accessories.

Among landscapes, or works in which landscape predominates, there are a good many works agreeable to look at. Among these may be mentioned "A Sunny Pastoral" (128), by Mr. Claude Hayes; and "It was Windy Weather" (212) a landscape very full of wind, as shown in the straining and swaying lines of the mass of trees in the centre,—the picture is marred by the awkwardness in composition of placing one tree so that at first glance it seems to grow out of the head of the figure that is introduced between it and the spectator; "Taking the Lad's Boat down Tide," a capital translation of marshy sea-coast scenery, with its low spits of land and level lines, by Mr. J. W. B. Knight; "Green Pastures" (255), by Mr. James E. Grace (member); "The Turn of the Leaf" (277), by Mr. Stuart Lloyd (member); "A Sussex Common" (284), by Mr. James Peel (member); a carefully-painted view of "The Bride's Door, St. Sebald's, Nuremberg," by Mr. Wyke Bayliss (member); "In the Meadows" (362), a very nice landscape by Mr. A. F. Grace, also a member; "An Ancient Briton" (455), an old oak, to wit, by Mr. Hines; two or three river landscapes, by Mr. Caffieri (member); two small and very good pictures on the Conway (78, 95), by Mr. E. Ellis (member); "Mountain and Glen" (101), by Mr. James Macbeth. It will be observed that in this list a large proportion are members of the Society, whereas, on previous occasions, we sometimes found that the works most worth looking at were by outsiders. Several artists who have been members and regular contributors for some time, have made great and steady improvement.

There are several pieces of sculpture and terra-cotta, among which is a beautiful and highly-finished marble head, by Mr. Percival Ball, intended as *Isabella*, in "Measure for Measure," and answering well to the character. Among the terra-cottas, Mr. Mullins's pretty and piquant fancy, called "The Swing," should be looked at.

* To be continued.

FROM THE BANKS OF THE RHINE.

THE FOURTH GENERAL EXHIBITION OF GERMAN ART.

The German Art-Union, the foundation of which originated in Düsseldorf in 1856, and which was intended, by causing the formation of the artists of Germany into a general association, to impress upon German art a national character, established periodical exhibitions, in order to present the works of German artists of a certain period as a whole, and to permit of a comparative review. The first exhibition, in 1858, at Munich, therefore, collected in the works of the most eminent masters of the intervening period, beginning with Asmus Carstens, the materials for a monument which was a landmark of the successes and the glory of German art. The second exhibition took place two years later, at Cologne, and formed at the same time the worthy inauguration of the Wallraf-Richartz Museum, which has now been open to art and its followers for eighteen years. A longer pause ensued. Germany was divided against herself politically, and the effects of this domestic estrangement spread also to the domain of art. Not until 1868 followed the third exhibition, at Vienna. It likewise served the purpose of throwing open a centre of art. Like Buda-Pest and Berlin, Vienna would have its Artists' House. When, therefore, the Emperor Franz Joseph came expressly from his favourite pleasaunce of Ischl to open the exhibition in person, this fact added greatly to the solemnity of the inauguration of the Vienna Künstlerhaus.

It was feared that, after the great *éclat* attending the Paris Exhibition of 1867, the third general exhibition of German art would turn out a failure, a year not being considered a sufficiently long interval. Facts proved the baselessness of such apprehensions. The exhibition itself was an immense success, and although financially its yield did not come up to the handsome material surpluses realised at former general exhibitions, the cause of this shortcoming was, that the rooms of the Künstlerhaus had to be considerably enlarged and completed at the expense of the exhibition which was held in them.

Twelve years have since passed. Several important international exhibitions have been the means of bringing together, in different cities, the works of masters of all nations. The Germans complain that German art has not always found the recognition it merited at those exhibitions. Even the improvised German section at Paris was unable to score a decided success. But its tasteful and rich arrangement had demonstrated that it does not alone depend on what is shown, but also how it is exhibited. The fourth general art-exhibition of Germany, which Düsseldorf has the privilege of receiving within its walls, has supplied a good opportunity of acting upon that experience. The French have hitherto stood first in matters of arrangement and decoration; but taste in displaying exhibits, especially if they be works of art, is only meant for first impression. The French have another advantage over other nations, especially the Germans. French artists do not experience much unwillingness on the part of private owners of works of art to lend them for exhibition purposes. A more generous spirit seems to prevail in this respect in France than is the case in Germany, where the difficulty of getting works of art together is greater than we have any idea of. The organs of German art are, therefore, most earnest in their appeals to private owners to be more liberal. Another section of the undertaking, that of antiquities of the art-industries, likewise depends on the willingness and generosity of owners.

In general terms it may be shortly stated that the art-section of the Düsseldorf Exhibition of Art and Industry is to illustrate the period of the last twelve years; that is to say, this part will be collected from the best works of that time, whether they are the property of public museums or in the possession of private owners, or are still in the hands of artists; the preference being given to more recent works. A jury, consisting of representatives of all German art-societies, in accordance with the statutes of the German Art-Union, will be appointed to supervise the quality of works admitted. Düsseldorf is for the first time in a position to hold a large art-exhibition, but this has only become possible by combining with it the industrial branch. In consequence, the undertaking, from a modest beginning, has assumed such vast proportions as has hitherto not been experienced in provincial life. But with the growth of the whole, the importance of the art-section will also increase, by its greater popularity and the more permanent influence exerted by it upon wider circles. Seventeen rooms have been reserved for German art, of which sixteen will be lighted from above. Their sizes vary from 400 by 240 to 240 by 96 square feet. The works have so far progressed that the architecture of this part of the exhibition can be made out. It will form an entirely separate section, parted off from the industrial art section by a courtyard.

We defer a fuller report of this exhibition, which promises to be highly interesting, to a more convenient period, but we may remark in conclusion, as a good omen of its financial prospects, that already large sums have been reserved for the purchase of the more important works.

THE LIVERPOOL TRAMWAYS AND THE CORPORATION.

IMPORTANT PURCHASE.

The Corporation of Liverpool have entered into an arrangement with the Tramways Company under which the former body undertake to incur an expenditure of nearly 200,000*l.* in the construction and maintenance of tramways within the borough. In the first instance, the Corporation have agreed to purchase the existing lines of the Tramway Company for the sum of 70,000*l.* The municipal body are then, under the arrangement, to take up and reconstruct the several lines running north and south, and in other directions, and also to maintain the same. In consideration of this outlay, the Tramway Company is to lease the line from the Corporation for sixteen years at an annual rental calculated at 7½ per cent. upon the purchase-money and cost of construction. By this arrangement it is estimated that in seventeen years the Corporation will come into possession of the tramway system, on which all charges will have been paid. The estimated cost of the reconstruction of the several north and south lines is 42,000*l.*, the net annual rental upon the purchase and reconstruction, after payment of interest on capital, being estimated at 5,400*l.* a year. The agreement further provides that the Corporation are, in addition, to construct four entirely new extension lines, at a cost of 42,350*l.*, upon which the Tramway Company is to pay 10 per cent. annually, or 4,225*l.* a year, making the total annual amount which the company will have to pay 9,635*l.* In the agreement, the

construction of the lines within the borough is likewise contemplated, bringing up the aggregate amount of outlay for purchase and construction to 194,000*l*. It is calculated that after the annual cost of repairs, and the interest on the sums to be borrowed to make the several lines, —estimated at 3½ per cent.,—the corporation will have a net annual surplus of 9,346*l*. on the whole of the lines, including those contemplated, towards a sinking fund for the extinction of the entire cost of purchase and construction, the effect of which will be that, at the end of the sixteen years' lease, the corporation will have a surplus revenue sufficient to put them in free possession of the whole tramway system of the borough, and by the development of the town and the expected adoption of steam power on tramways, it is believed that the town will be in possession of a property worth some 25,000*l*. a year to the ratepayers.

This seems one of the most comprehensive arrangements which any municipality has ever yet made with respect to tramways, and shows the Liverpool Council have a firm belief in the continuance of things. It is to be hoped they are well advised as to the sort of tramway to be adopted, especially as they look forward to the use of steam-power.

THE CHANCELLOR OF THE EXCHEQUER'S DOWNING-STREET RESIDENCE.

Under the superintendence of Mr. Taylor, of her Majesty's Office of Works, the dingy official residence in Downing-street occupied by the Chancellor of the Exchequer is at present undergoing certain extensions by the construction of a distinct and separate suite of apartments at the west side, overlooking St. James's Park, which are intended for the use and accommodation of deputations waiting upon the Chancellor. These apartments are being formed out of a number of offices until recently occupied by Government clerks. The whole of the inner walls dividing the several offices have been removed, and the entire area reconstructed, the principal apartment being a spacious room in which deputations will assemble in future, and hold their interviews with the Chancellor. This apartment is about 70 ft. in length and 30 ft. in width, and said to be large enough to accommodate upwards of 300 persons, a number considerably in excess of the average of any deputation waiting upon the Chancellor. The entrance to the deputation-room will be from the St. James's Park frontage, instead of by way of Downing-street itself as formerly, and for this purpose a spacious new doorway has been constructed, approached from the St. James's Park area by a flight of steps. A new range of windows overlooking St. James's Park has likewise been introduced. In addition to the deputation-room itself, reception-rooms and other apartments have also been constructed, and there is an internal connexion between the Chancellor's residence and the newly-constructed official apartments. Messrs. Braid & Co., of Manor-street, Chelsea, are the contractors for the works.

It is stated to be in contemplation to reface both the Chancellor's residence and that of the Prime Minister adjoining, which will certainly be an improvement; for it is not too much to say that two more gloomy and dismal-looking buildings are not to be found in the metropolis, especially when compared with the India and Foreign Offices immediately opposite.

THE CRITERION ANNEXE, PICCADILLY.

So rapid and so marked has been the prosperity of the Criterion that in some departments of it the business greatly exceeded the space and the resources available for conducting it, and, before even four years had passed away, its proprietors had to contemplate the extension of the building. Mr. Verity, the architect of the original building, prepared the necessary plans for the extension, and the site of some adjacent houses having been secured, the foundations of the new building were laid about eighteen months ago. The addition to the building is very considerable, and is now complete. It includes a *café*, American bar, Wiener Bier Saal, a new grill, an oyster bar, Masonic rooms, a new hall, constructed as an adjunct to the Criterion grand hall, and suites of private rooms. The hall is separated from the existing hall by iron shutters when used separately. The *café* is on the ground-floor, and is approached through the buffet. The American and the Vienna bars practically form portions of it. The Masonic rooms have been designed and are fitly furnished for various purposes incident to Masonry.

The hall has been decorated by Mr. Crossley, of Newark; the *café*, by Messrs. Simpson & Sons. Mr. W. Webster was the general contractor, and Mr. Thos. Chany, clerk of the works.

The Criterion, with its adjunct, is certainly a very complete and handsome building, and does infinite credit to its architect, Mr. Verity, and the various parties who have been engaged in its construction and adornment.

"TEMPLE GARDENS": THE ENTRANCE TO MIDDLE TEMPLE LANE.

Not long ago we gave a view and plan of the picturesque and original block of buildings erected in the Temple Gardens from the designs of Professor Edward M. Barry.* As we then said, these buildings form the termination of Middle Temple-lane, towards the Thames Embankment. Middle Temple-lane divides the property held by the Hon. Society of the Inner Temple from that belonging to the Hon. Society of the Middle Temple. The houses on the eastern or Inner Temple side of the lane are called Harcourt-buildings, and those on the opposite or Middle Temple side bear the title of Plowden-buildings. It was determined, by the advice of Mr. Barry, to abandon the idea of two blocks of buildings, and to substitute for them one block to be appropriated between the two societies, the continuation of Middle Temple-lane being provided for by an archway, forming a central feature of the design. The entrances to the chambers are in Middle Temple-lane, and by setting the same backwards in the midst of the new Harcourt-buildings means are secured for obtaining side-lights to the adjoining rooms. The central archway continuing Middle Temple-lane is an important feature of the elevation towards the river; and of this we now give a separate view. The archway is surmounted by a carved balcony, and is flanked by niches, in which are placed statues of Justice and Learning, by Mr. W. Calder Marshall, R.A. Beneath the archway appear the armorial bearings of the treasurers of the two societies who have held office during the erection of the new buildings. The elevation is of Portland stone, and the carving has been well carried out by Messrs. Mabey, of Westminster. The drawing we have engraved was made from an excellent photograph produced by Mr. J. F. Knights, of Clapham-road.

* See p. 653, &c., *ante*.

CHURCH OF ST. GUTHLAC, MARKET DEEPING.

This church, one of the most interesting in the Fen district, has been recently restored, and is now again open. It is dedicated to St. Guthlac, the patron saint of Croyland Abbey, where he is said to have lived as a hermit, and become famous in works of usefulness, love, and charity. History records that in the year A.D. 1050 Richard de Rulos, a relative of Hereward the Wake, found a chapel here, which had been built by the monks of Croyland Abbey, and dedicated to St. Guthlac, and he made it into the parish church. The date of the present edifice is from about 1170, judging from the nave, with its rounded and pointed arches. The exterior of the church is chiefly Perpendicular. The western tower is large and strongly built, and contains six bells. The interior consists of a nave, with north and south aisles, chancel, with chapel and vestry on the north side, and a south porch. It has, moreover, some interesting features architecturally. We have the north arcade of the nave, an arch opening from the aisle to the chancel aisle, and the south doorway of the same date, but as the south arcade is of fourteenth-century work it must have replaced one of an earlier date, and the question would arise, was this of Norman work or similar to the one on the opposite side? Early in the thirteenth century we have the arch on the north side of the chancel and the south aisle of the nave, and in this have been inserted windows of more recent character, and in it also is the early doorway before referred to. Upon this door are remains of coeval ironwork of very good workmanship, which are to be replaced on the new door. The north aisle was rebuilt at the same time with the south arcade of the nave, the windows of which are square-headed. The west window in the tower is a fifteenth-century insertion. Next follow the tower, chantry, and chancel, probably carried out in this order, and so the chancel would remain doubtless until the early part of the present century, when the present nave was erected, and the building filled with the pews recently removed. The north aisle has now been in part rebuilt on a more extended scale, so as to obtain more sitting accommodation, by which seventy extra sittings have been added to the church, and in this the old windows, buttresses, &c., have all been re-used, and the doorway, long blocked up, has been used as an entry to the new vestry. The old roofs at the aisles have also been used for the covering of the new organ-chamber and vestry, and new ones substituted for them in both cases; the north aisle being increased in width, it was impossible to retain the old wood. The chancel roof is of oak, with the beams and brackets on the walls. This has been repaired and re-covered with lead; in fact, the whole of the roofs are covered with this material. A new chancel arch has been erected, which is of two chamfered orders, with a hood-mould, the inner one resting on a detached column, with corbels below, the capitals of which are sculptured in representation of fen plants, &c. The walls being of stone internally, and apparently not intended to be plastered, have been pointed, and the new work of the aisle, &c., built to correspond with them. The chancel is of three bays, with three-light windows in each on the south side, and in the priests' doorway is the central one. The church has been re-seated throughout, with plain, but solid and substantial, benches of oak, and floored with tiles by Minton & Co., of Stoke, with the exception of the sanctuary, where stone has been used, and a granite step fixed to the foot pace. The other steps to the chancel are of Hopton Wood stone. The chancel stalls have traceried and panelled fronts, and on the standards of the desks are carved a bittern with bulrushes, and a partridge with wheat, showing the original and the present productions of the fen. The panelled fronts of the new seats in the body of the church are also carved with emblems from Croyland Abbey, or from monuments found in the church. The pulpit, subscribed for by the school-children, is at the north-east corner of the nave, and is made of English oak and panels of olive-wood (the latter brought direct from the Holy Land by a friend of the rector's), and rests on a stone base. The lectern is a handsome one, and is also of oak. The heating apparatus (hot water) has been put down by Mr. Davey, of Wisbech. The altar-cloth and hangings were wrought by the Countess of Rothes, Miss Fergusson, Mrs. C. C. Hope, Miss Mawby, and Mrs. S. B. Sharpe. The designs are from natural fen plants,—the iris, &c., and are important features. There is one stained-glass south window in the chancel, given by the rector and the choir, illustrating part of the life of St. Guthlac of Croyland, from designs in the British Museum. The west window in the tower is to be of stained glass; it is now being made, and will be given by Mr. and Mrs. Page.

The works have been carried out by Mr. J. M. Thompson, builder, of Louth, assisted by Mr. Stark and others. Mr. Crowson, builder, of Deeping, has done the masonry. The carving was executed by Mr. W. H. Barrett, of Louth. The whole restoration has been made under the superintendence of Mr. James Fowler, architect, of Louth, and the total cost will be about 3,000*l*.

Association of Municipal and Sanitary Engineers and Surveyors.—The next district meeting of this Association will take place on this Friday, the 5th of December, the members assembling (by the permission of Mr. Baldwin Latham, C.E.) in the new Pumping Station at Merton, Surrey. The following papers will be read and discussed:—"Junction Blocks, their Use and Advantages," by Mr. Jas. Craggs, member; "The Sewerage Works of the Croydon Rural Sanitary Authority, by Mr. W. Santo Crimp, C.E.; "Notes on Ironwork," by Mr. Graham Smith, C.E. The sewerage works in course of construction for the Croydon Rural Sanitary Authority will be inspected.



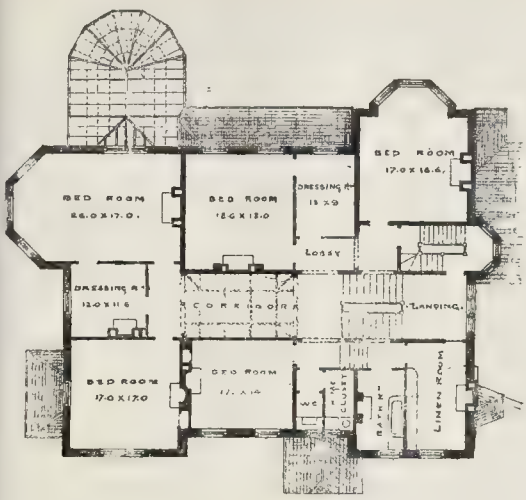
THE TEMPLE GARDEN BUILDINGS.—Professor E. M. Barry, R.A., Architect.



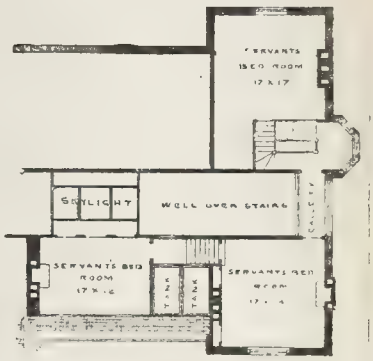
S. Guthlac: Market Deeping: Lincolnshire. Restored 1878: J. Fowler F.R.I.B.A. Archt. Louth.



GODDEN GREEN, NEAR SEVENOAKS, KENT.—Mr. Joseph Fogerty, Architect.



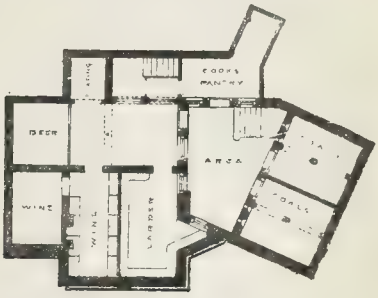
FIRST FLOOR PLAN



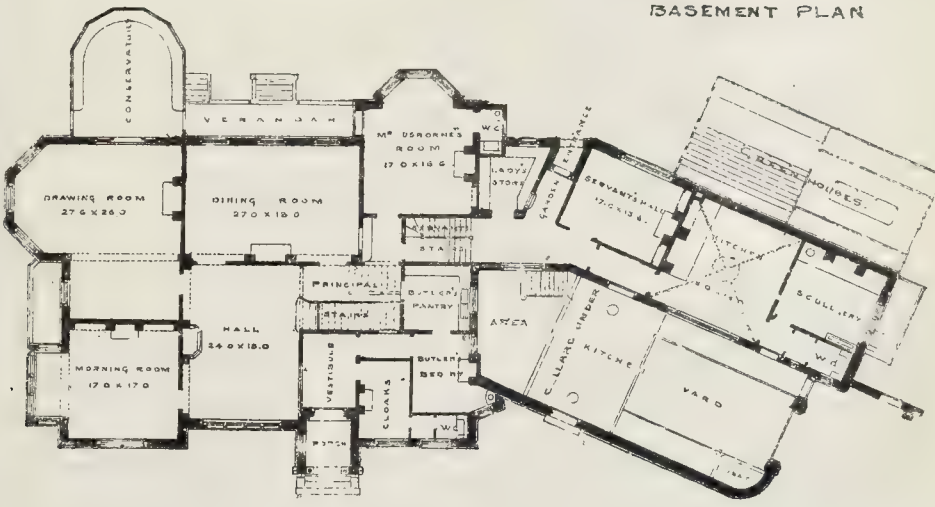
ATTIC PLAN

PLANS OF
VILLA ERECTED AT
GODDEN GREEN, near SEVEN OAKS, KENT.
FOR THOMAS USBORNE ESQ.
JOSEPH FOGERTY, ARCHITECT
1 WESTMINSTER CHAMBERS

SCALE OF FEET



BASEMENT PLAN



GROUND PLAN

GODDEN GREEN, NEAR SEVENOAKS, KENT.

The residence illustrated in our present issue was erected from the designs of Mr. Joseph Fogerty, architect, of Westminster Chambers, by Messrs. Punnett & Son, builders, of Tunbridge, at Godden Green, near Sevenoaks, Kent, for Mr. Thomas Usborne, and is treated throughout in the style of the thirteenth century.

The external walls are built hollow; that is, with a vertical air-space of 3 in. between the outer facing of red brick and the interior brick walling, both being connected throughout by hollow "bonding bricks," crossing the air-space, which is ventilated by perforated bricks. This method of construction has rendered the external walls, which are a brick and a half in thickness, perfectly dry, although, we are informed, the house is built on a very exposed site.

In order to comply with the requirements of the landscape-gardener who laid out the grounds and needed a long wall for his glass-houses facing due south, it was necessary to deflect the servants' offices, as shown on the plans, and the effect of so doing appears to be rather beneficial than otherwise.

Offices, such as a dairy, wood and root stores, &c., were included in the original design, but are omitted at present to save cost. Stabling and farm offices, treated in the same style, are built at a little distance from the house, and a deep well was sunk to the chalk to obtain water, which is stored in underground tanks.

The interior exposed woodwork is executed in selected pitch-pine, stained and varnished, the details throughout being maintained in accordance with the style adopted. The central hall on the ground-floor can be used as a billiard-room, and although it was made a condition that the dining-room should occupy a south-westerly aspect on account of views and conditions of site, it is effectively screened by the verandah in front of the casements. Dinner is served by means of a "revolving drum" in the hutch over the hot-plate of the serving-room, a useful feature in domestic arrangements which the architect finds to be a great labour-saving contrivance, and has adopted in many houses recently erected. The servants' sleeping-rooms in the attics are in front, connected with the back staircase by an open gallery over the landing of the principal stairs. This forms an ornamental feature over the staircase window, and the upper corridor is arranged with top-lights as a picture-gallery.

The chimney-pieces are all of wainscot, with tile-panels, and marble plinths, fenders, and protecting fillets, and were executed by Mr. Lascelles, of Bunhill-row, Finsbury. The painted tiles by Messrs. Cox & Son. The geometric tiles by Messrs. Simpson, and Messrs. Minton & Hollins. The plumbing throughout, which was made a distinct contract, was executed by Messrs. Beard, Dent, & Hellyer, of Newcastle-street, Strand. The pneumatic bells were put up by Mr. Humfrees, and the stable-fittings by the St. Pancras Co. Boyle's valves and Boyd's hot-air iron flue division plates were used in all ventilating flues.

The total cost of the house was about 7,000*l.*, and of the stables and outbuildings, 1,600*l.*

SENTIMENT IN ART-WORK.

CITY SCHOOL OF ART.

Mr. Val. Prinsep, A.R.A., distributed the prizes to the successful students in the City School of Art, Skinner-street, Bishopsgate, on Friday, the 28th ult., the Rev. W. Rogers, M.A., rector of St. Botolph's, Bishopsgate, in the chair.

The report, which was read by the hon. sec., the Rev. Mr. Ogle, was of a satisfactory nature. The prizes presented consist of a Bronze Medal, obtained in the National Competition, three Third Grade Prizes, and nineteen of the Second Grade, besides five prizes given by the Clothworkers' Company, two by the Joiners' Company, one by the Baroness Rothschild, one by Mr. W. Neave Hill, and fourteen by the Committee. The Bronze Medal was taken by Sarah M. Smith, for a painting from the cast in sepia; two of the Clothworkers' Company's prizes were awarded to Stuart W. Proverbs (first) and Harry Winney (second) for a study in black and white in Westminster Abbey; the Joiners' Company's prizes (subject, design for ornamental newel to staircase) were carried off by Alfred Shorman and Frederick W. Foster; while the Baroness Rothschild's prize (subject, hearth-tiles) was won by George C. Banks; and Mr. Neave Hill's prize (subject, design for almsdish) by Alfred Shorman. The Painters' Company offered two prizes (a Silver Medal and a Bronze Medal) for a design for wall decoration, but in this competition no award was made.

The report having been adopted, a vote of thanks was, on the motion of the Chairman, accorded to Mr. Mills, the head-master, whose services were highly eulogised. In replying, Mr. Mills expressed his indebtedness to the assistant masters.

Mr. Val. Prinsep, in the course of his address to the students, said it had no doubt struck many of those to whom he was speaking as a strange thing that although the world had latterly made wonderful progress in most respects, in matters of art it had made no progress at all. He was not talking of great geniuses such as arose perhaps once in a century, and whose works would always live, but he was referring to the general artistic level of work, in England especially. He thought that every man of education in England would agree with him in saying that modern English art-work was not up to the old mark. If in the present day he wanted a piece of ironwork, with a scroll of leaves, flowers, and fruit, he found it very difficult to get it well done; but if he went into some of the older streets of London and its suburbs he should be able to find example after example of artistic wrought iron. If he gave a few beads and a few pieces of coloured rag to a savage, he would turn out something which, though it might be quaint and grotesque, would certainly be harmonious. But with all the advantages that our art-workmen had, with the same materials they would only succeed in turning out something which would be neither beautiful nor harmonious, although it would almost certainly be grotesque. Our metal-workers could make machines and fit them together with absolute exactness; how was it, then, that, with all our manipulative skill, we could not turn out such good art-work as of old? The true answer was, he believed, that it was our very perfection in manipulation which had killed all feeling for art. It was Science which had ruined Art; it was the march of civilisation which had trodden out sentiment. Sentiment was the very soul of art. A painter might paint a picture apparently perfect in line, form, and in everything that could be learnt in the schools, and yet that picture would be neither popular nor successful, and why? Because it was devoid of sentiment. On the other hand, another painter might produce a picture full of glaring faults in drawing and other points, and yet the sentiment in it would constitute it a great work of art. The works of Giotto and Cimabue, however imperfect in drawing, excelled simply because of their sentiment. Sentiment in painting, like charity, covered a multitude of sins. The reason why so much of the art-workmanship of the present day was so unsatisfactory was that it had no sentiment in it. The art-workman of the past got his sentiment partly from education,—though he had very little of that compared with what he might obtain in the present day,—but mainly from his surroundings. Take the workman of London four or five centuries ago. London was then a picturesque gathering of houses around the magnificent fabric of the Gothic St. Paul's. Every house was original in shape and design, and every door, window, and lintel differed in forms or ornamentation from its fellows. The streets were gay with the bright robes of many a knight, lady, and burgher passing to their pleasure or business. In close vicinity to the streets of the city were green fields and trees, and birds in plenty, for the lark yet sang in Lincoln's Inn-fields, and the nightingale's voice was heard in the Temple, by the side of an unpolluted Thames, which flowed clear and sweet amongst its swans. In those days, too, each master worked in the midst of his men, whom he instructed with his experience and knowledge, so that each workshop became a school of art, in which the traditions of the craft were preserved with the greatest jealousy. Beyond this, the masters, and even the workmen themselves, were brought into immediate contact with kings, princes, and other patrons of art. What wonder, then, that every workman sought to do his best, and to impart to his work that feeling and sentiment which the workmen of the present day did not seem to know how to impart to their productions? He (the lecturer) was not one of those who thought that the world had not progressed. Enormous progress had been made. The people of this country were now better fed, better clothed, better educated, and their health was better looked after, than was the case in the old time; but while conferring on us all these advantages, civilisation had rubbed off the edges of men, and had tended to make them all of the same mould. One might walk from the Tower to Tyburnia and never see a male wearing any but a sombre garment, while the ladies seemed to be emulating male attire as far as they possibly could. Our houses were all of the same pattern, and our employers of labour had become great men, dealing wholesale, and leaving the public to be handled by middle-men, who "went in" only for that kind of work which they found to sell most readily. No wonder that, under such circumstances, sentiment had been crushed out. What was sentiment? The sentiment to which he had been referring was the sentiment of expression. Now, art-workmen had very little to do with that unless they happened to be painters or sculptors, but the kind of sentiment that he (the lecturer) wished to impress his hearers with was the sentiment that was to be imparted to form and colour. Science differed from Art inasmuch as Science had no sentiment, whereas Art could not exist without it. He did not mean to attach any narrow meaning to the term "art." Artists were, as a body, only too fond of assuming that their own particular phase of art was the only, or, at any rate, the highest form of art. In conclusion, Mr. Val. Prinsep dwelt with eloquence on the vital importance of promoting art and technical education.

Mr. Luke Fildes, A.R.A., as joint examiner (with Mr. Ouless, A.R.A.) of the works submitted by the students, congratulated the school, and all connected with it, on its high standard of achievement, but cautioned successful students of schools of art generally against entertaining the idea that because they were successful as students, they would necessarily become great "artists" in the sense of being great painters or sculptors. He endorsed some remarks made by Mr. Prinsep as to the bitter trials and disappointments undergone by those who, having acquired a certain facility in the use of the brush or pencil, had rashly concluded that they were born to be artists in that limited sense of the word. Wood-carvers, ironworkers, and other handicraftsmen could, he assured them, be true artists in their own several vocations, and if their work were lovingly done it would possess a charm for all lovers of art so long as it existed.

ARCHITECTURE AND DECORATION.

At the opening meeting of the new session of the Edinburgh Architectural Association, held on the 12th ult., Mr. Thomas Bonnar, president, delivered an opening address. In the course of it he said,—One of the causes which led to the neglect of decorative art was of somewhat singular origin, when viewed from the standpoint of our Continental neighbours. It arose from the circumstance of there being very little encouragement held out to the student of ornamental art to induce him to devote himself to its study and practice. And however eager and ardent his proclivities might be in that direction, this drawback exercised a very disheartening and deterrent influence. There were, indeed, very few attractions and inducements to bind him to its steady and earnest pursuit. This clearly points to at least one of the sources to which may be traced the neglected position to which this art ultimately fell.

It must be borne in mind that the presence of such an institution as the School of the Board of Manufactures, which was established for the promotion of the useful and decorative arts in the latter part of last century, had in few cases been taken advantage of, in the spirit in which it was instituted. Instead of devoting attention to the study of the decorative principles taught, the students of this school applied their energies to the more attractive pursuit of pictorial art, and in many instances, doubtless with great success, as the brilliant career of David Allan, William Allan, and Runciman conclusively testify. Although it must at the same time be remembered that the unsuccessful aspirants in this branch of art were in number legion, had those unlucky enthusiasts only followed out the training bestowed

by the decorative department of the school, and been assured of obtaining public sympathy and encouragement, in all probability we should not now be regretting the presence of the many crudities and absurdities which daily produce unrest and disappointment to all lovers of the beautiful and true in decorative art.

Having thus briefly alluded to the position maintained by the useful arts during the first half of the present century, and also indicated a few of the causes of their backward state, I shall now attempt to show that the gulf which had so long existed, and kept apart the decorative arts from those of architecture, is now rapidly disappearing. When the latter art was in the zenith of its power during the best periods of the Greek and Roman epoch, and also in later times in France, the decorative arts blended with it in congenial, harmonious action, for the perfect embodiment of the grand and beautiful, the examples of these periods being all more or less distinguished for their power and originality of conception and design, and vigour and grace of execution. They strikingly exemplify the influence which those arts exercise on one another by the charming results they produce in combination, when controlled by cultured and true artistic instincts.

As exhibiting the revival of this spirit, we may point to sculpture, and the place it now holds in connexion with ornamental detail, as coming more under our immediate observation. It will be acknowledged beyond dispute that it begins to show a steady advance towards realising freedom in thought and execution; approaching in some degree the works of those earlier times when the decorative arts were the intimate, though humble, handmaidens employed in the embellishment of those noble fabrics which are at once the object of our admiration and the sources of our embarrassment. For they reveal to us the triumphs achieved by independent thought when united in action and directed towards the production of objects having for their aim the typical illustration of the highest form of ideal motives. Indeed, it may be truly inferred that this disregard of the independent study and practice of architecture in later times operated prejudicially on the minor arts, which together constituted the complete embodiment by which its growth could only be successfully nourished and maintained.

As with the improvement apparent in the particular art referred to, viz., ornamental sculpture, so it is with mural decorative art, painted glass, ironwork, and carving, each of which begins to show in an unmistakable manner that the present revival embraces all the essential evidence of being the result of earnest and genuine study, accompanied and intensified by the powerful, adjunct, enthusiasm, which was such a prominent feature in the early works.

With all these aids at hand, assuredly the architect, as administrator, possesses very great influence in giving a true direction to any æsthetic movement. But after that is acknowledged, it is to the educated public that we must look to for aid in the promotion of art progress. Their ideas, being untrammelled by the operation of technical barriers, will unquestionably give an impetus to those faculties in art which are comprehended within the familiar circles of home life. This influence will be found especially useful when employed in producing the picturesque effects so desirable in the treatment of interiors, which act as a foil in lending value to the various cognate arts employed in the development of the perfection of domestic arrangements. This end can only be accomplished by a careful and discerning study of the individual parts. And I humbly submit that in this sense the subject of interior treatment has not received that amount of consideration and assistance from the architect which it deserves. Instead, it has been left very much to accident, or to the caprice of those who have been delegated to the performance of this function. In the majority of cases this work, being esteemed as one of a purely mechanical nature, has been hitherto, for the most part, executed by individuals entirely untutored by either study or thought, and whose want of appreciation has consequently resulted in discordant and unsympathetic effects.

It must be admitted that, practically, in the larger question of exterior architecture, which engages so much of the architect's attention, the general public have,—at least, in a direct manner,—very little to say in the matter, either in the way of accepting or rejecting the design under consideration, all the triumph or "otherwise" being generally appropriated as a personal matter, and as the outcome of individual effort, the public merely enjoying the privilege of expressing approval or disapprobation, without in any sense influencing the final result.

It is, however, different when engaged in considering the merits of the practical agents of usefulness employed in our domestic arrangements. As already stated, the greater portion of these have been handed down to us in their primitive simplicity, with all the recommendation of fitness to their various functions attached to them. Hence arises the necessity of dealing with them in a discerning and judicious spirit, so as to render them not only attractive, but also in subjective harmony to the higher state of refinement prevailing in society, at the same time accomplishing these modifications without interfering with their original uses and purposes. In performing this successfully, while retaining the original beauty, lies the real basis of all genuine artistic design; for it can only possess one of two qualities. It must either be in perfect unison or in utter discord,—the first having the chaste ornamentation, as it were, arising spontaneously from it, and diffusing an atmosphere of elegance in accordance with its changed circumstances; in the other case, exhibiting excrescences,—miscalled ornament,—to such an extent that the usefulness of the article,—if, indeed, it might be presumed to have any remaining,—is utterly lost; and there is likewise a total absence of the qualities that are especially welcome to those who have the gift of appreciating that subtle indescribable presence of the beautiful, which always possesses the two main essentials, namely, artisticness and skill.

THE SOCIETY OF ANTIQUARIES.

SIR,—Your paper of the 29th ult. contains a letter signed "Edwin Freshfield," commenting upon a letter in a previous number, signed "Antiquitatis Indagator," and attributing to the writer a desire to "asperse the Society of Antiquaries." As this was by no means my desire, I request your permission to make such remarks as Mr. Freshfield's letter seems to require.

Mr. Freshfield takes exception to the absence of my personal signature to my letter, and holds out to me the threat that, unless I come forward in my proper person, he will hold me to be unworthy of the name I have assumed. I am content to lie under Mr. Freshfield's ban. Had his letter contained a little of the sunshine of civility, I should at once have thrown off an *incognito* that I have no reason to maintain, but before the cold blast of his discourtesy I shall certainly let his wrath whistle as it will, and brave his censure, however formidable.

As to the withholding my personal signature, I may observe that my letter is in no degree personal. The Society of Antiquaries hold a charter from the Crown, are lodged in a public building, and are, therefore, a public body, amenable to public opinion, and upon their position and proceedings any person, whether a Fellow or not, has a right to comment. My charges are addressed to the proceedings of the whole body, and are not even confined to its governing Committee or Council; and, indeed, it so happens that, writing at a distance from any public library, I do not even know the names of the Council, or of the editor or editors of the Transactions. The only person named or even alluded to in my letter is the President, and he, I hope, would not feel aggrieved by the tone of, or charges contained in, my letter, which was suggested by, and intended in support of, his Lordship's opening address.

Further, I can assure Mr. Freshfield that I have no quarrel with the Society, nor, so far as I know, with any one of its members. Personal feelings in no degree have influenced me. I have, I can assure him, not only no desire to asperse the Society, but I wish to see it take the position that I think it should take, and that I think it does not take, among English archæologists; and my great desire is to move its Fellows and their governing body to make some advances in the direction indicated by the President.

As to the charges themselves, my motive in bringing them forward is nothing to the purpose. Mr. Freshfield does not deny them, nor indeed can he truly do so, but he says, with respect to one of them, that "there probably has been no subject which has been so much under consideration by the Council." This may be so, and I dare say is so, though I do not see how other people are to be aware of it; but what I complain of is, not that the matter has not been discussed by the Council, but that nothing has been done by the Society,—which is quite another matter.

As to the particular channel through which I have selected to ventilate my grievances, and as to Mr. Freshfield's opinion that they should have been brought forward from within and not from the outside of the Society, the question is an open one. My own opinion, and it is strengthened by the tone of Mr. Freshfield's letter, is, that there is more to be done by external pressure than by internal argument or persuasion.

I will not, sir, apologise for the length of my letter, and I should be very sorry should you think that its tone needed apology. The well-being of the Society of Antiquaries is in some sense a national concern, and should this correspondence meet the eye of the President, I hope it will encourage him to pursue the course indicated in his excellent address, and in which I am sufficiently in charity with Mr. Freshfield to believe that he would be found a zealous supporter. ANTIQUITATIS INDAGATOR.

REPAIRS TO THE THAMES BRIDGES.

A CONSIDERABLE outlay is at present being incurred in repairing the roadways of three of the bridges crossing the Thames, and the traffic on each is partially stopped. Two of the bridges,—Waterloo and Vauxhall,—are undergoing extensive repairs at the cost of the Metropolitan Board of Works. When the Board took them over, and they were declared free, the roadways of both were in a very unsatisfactory condition, whether as regards footpaths or carriage-way, and had been in that state for some considerable time previously. As regards Waterloo Bridge, the granite forming the footpath was refaced and relaid some months since, and now the carriage-way is under repair. A similar process is now going forward as regards the footpaths at Vauxhall Bridge, and this is to be followed by repairing the carriage-way. The heaviest portion of the work is, however, at Blackfriars Bridge, where the whole of the wide and spacious carriage-way is being repaved with square setts. In order to interfere with the traffic as little as possible, each side of the carriage-way was repaved in the first instance, the central portion being left open for traffic. The last-named portion is now in course of being relaid, the traffic being confined to the two sides, which renders a block unavoidable several times in the course of the day, space for one vehicle each way being altogether inadequate for the traffic passing over the bridge. The repaving of Blackfriars Bridge is being carried out at the cost of the Corporation.

THE CROSS AND HORSESHOE.

A CORRESPONDENT sends us a photograph of a gable-cross at St. George's, Fovant, near Salisbury, on the face of which, at the junction of the arms with the stalk, is sculptured a horseshoe, and inquires if it has any particular meaning. It is plainly a horse-shoe, let us add, to prevent suggestions that it may be *Omega*, or anything else, and the nails,—three on one side and two on the other,—are distinctly made out.

Such a conjunction is very unusual, and we shall be glad to hear if there be any local story to account for it. The power of the horse-shoe against witches is a very old superstition, and one can understand an old mason who had hung up a real shoe over his own cottage-door with that feeling, carving its resemblance elsewhere, but not on the cross,—at any rate, not in Mediæval times. The stone of the cross looks old like the rest of the gable, judging merely from the photograph; but as to this we cannot speak positively.

Staines Town Hall Competition.—At the Board meeting, November 26th, the design for proposed town-hall, submitted under the motto "Hôtel de Ville," was accepted. On opening the sealed envelope the author was found to be Mr. John Johnson, architect, London. It was resolved that the design be exhibited at the clerk's office for fourteen days, for the inspection of the competitors and the ratepayers. About fifty designs were submitted.

TOWN PARKS.

It is surely a matter of regret that the Metropolitan Board of Works have been unable to form their projected park at Paddington, and thus revive some of the recollections of this old suburb, which many among us remember playing over in our youth at cricket and at rounders. That was not so very long after the days when the whole strip of land, stretching from Hyde Park down to the river-side, might have been purchased for some 20,000*l.*; and what a park that would have made. Considering how satisfactorily in the present day we see treated on a small scale the public gardens of our great cities,—in the recent change in St. Paul's Churchyard we have a fair example,—it is to be regretted that the metropolitan authorities have not been able to see some way of forming their park at Paddington without requiring it to be so extensive. In Paris, the Parc Monceau, with its few acres, and the Buttes Chaumont, in the midst of a terrible neighbourhood, are perfect models of what may be done with a limited space; and the clumps of trees, the lawns agreeably interspersed with beds and clusters of shrubs, the lake of the Parc Monceau and its ruined colonnade, or the large overgrown rockery of the Buttes Chaumont, afford as agreeable a contrast to the bustle of the boulevards as the weariest ocitizen can want; while round the former of these two parks have risen, within the last few years, some of the most princely residences in the capital. Let it be remembered by the Board of Works that real estate interests are much advanced by the formation of such breathing-spaces. The land round the Parc Monceau reaches, whenever it is in the market, fabulous prices; as also it does round the Central Park of New York, which the real estate owners of a quarter of a century since well knew would some day be surrounded by houses, and that at a time when Union-square and Washington-square were the *ultima thule* of respectability. Central Park, again, offers an excellent example of what may be done by careful consideration by the allied charms of nature and art; but the sums laid out on its adornment would, we are afraid, somewhat startle Paddington ratepayers. The park at Brussels is a very small park, the houses on each side can be seen through the trees, and yet every one who knows the bright little capital of Belgium will remember the skill with which this small plot of ground in the heart of the city is laid out. The Hof-garten of Düsseldorf (a thoroughly typical German town), to all who know its charms, combines marvels of artificial and natural manipulation. There is no want of knowledge in England in laying out gardens. There are plenty of examples of small spaces of ground carefully laid out, and we hardly think the Board of Works can hope to obtain as many acres as have so far been spoken of; much might be done with a very much smaller space. Inhabitants of Boston and visitors to that home of American refinement and "culture" all remember the small size and charming appearance of the old Common,—with which even English readers of Fenimore Cooper must be familiar,—with its old trees bending over into aristocratic Beacon-street, reminding the Londoner of Park-lane, quite as much by its associations as by its aspect; and while we are speaking of Park-lane, who that has passed along that busy thoroughfare during the season has not thanked the park authorities for that attractive show of flowers that bloom behind the tall gilt railings? There are, as we have said, numerous examples of small pieces of garden laid out charmingly even in London; Gray's Inn and its purling fountain, so often spoken of; the Temple Gardens, and even those of Lincoln's Inn; but London should take a lesson from the Continental parks and gardens, especially those of Paris. Let our numerous unoccupied squares, entered rarely by the key-holding inhabitant, be thrown open to the public; let the popular belief of "injury" be put aside: the gardens and squares of Paris are crowded with children, and yet throughout the year no greener grass plots are to be seen than on the banks of the Seine. The Tuileries and the Luxembourg gardens afford, of course, familiar specimens of what may be done with a small space of ground; and here let it be remarked that the Paris municipality make a large and wise use of their squares and gardens to place the numerous statues they yearly purchase at the exhibition; and charming is the effect, reminding one of the gardens of Florence and Rome, and many another city in Italy,—that home (let it be said with all due respect to the East) of the gardener's art.

"THE NEW CRUSADE."

CHANT ROYAL,

ON THE PROPOSED RESTORATION OF ST. MARK'S, VENICE.

Each age hath its own flower,—be it rose
Of love, and daring,—be it lily pale
Of cloister'd passion, wherein soul foregoes
All colour and all perfume of life's tale,
And fusing her fair prism to one white flame
Of death-in-life, greets torture with accaim,—
Be it the thirst that draws men o'er the sea
To seek amid wan waters wearily
The sun-flower of dreams,—be it array'd
As blue forget-me-not of memory. . . . .
Arm ye, my brothers, for the new crusade!

Priests led of old, and 'gainst the white Christ's foes
Dared devil, death, and darkness to prevail;
Our poets lead us now, with song that glows
Rose-red from fiery heart, that dare not quail,—
Those for Love's tomb, these for Love's carven name,
Call us to battle. It were grievous shame
Such call fell echoless: it shall not be!
Our souls must answer, shouting joyfully,
As those of old when Hermit Peter pray'd,—
"God wills it, let us go!" So answer ye. . . . .
Arm ye, my brothers, for the new crusade!

Our fathers, with the wisdom which well knows
No comfort lies in scorn, or hearts that rail
Against the power that wounds them, veil'd their woes
'Neath carven blossoms, marble pure and pale:
Their holy thoughts the stubborn rocks proclaim.
By mighty strength of love grown weak and tame,
Saint Mark's arose: a glorious vision, free
From stain of earth, 'mid tears wrought faithfully.
The human to the God its pray'r had made,
And writ its hope in gleaming masonry. . . . .
Arm ye, my brothers, for the new crusade!

Shall we, grown fiercer than the storm that blows
Across the fretted waves, in stress of gale,
Or wind that slays the bloom in trellis'd close,
And in the ocean wrecks the quiv'ring sail,
Yet spares the carven flower, that her claim
"Strength wrought by Love" disarms his might to maim,
Less merciful than tempests are,—shall we
Tear down this sculptured blossom ruthlessly?
"Fools blindly rush where angels pause afraid,"—
Shall Art's forget-me-not down-trodden be? . . . .
Arm ye, my brothers, for the new crusade!

Our flower halts its language; list! there grows
A sweet weird music, soft as nightingale
'Mid silent woods in June, when song o'erflows
The bounds of speech, and floods the list'ning vale
Of yearning nature; till our spirit's aim
Floats into cloudland, tho' earth glooms the same
Around our feet: such song eternally
Art sings to life, with deathless melody;
Her lute the heart of man, on which she play'd
Such music as wrought words, Saint Mark's, in thee! ...
Arm ye, my brothers, for the new crusade!

ENVOI.

Fling out the banner, let its blazonry,
"Saint Mark and Venice" (for sweet memory
Enwreathen with blue petals) be display'd!
No stone of Art's carved pray'r shall cloven be! . . . .
Arm ye, my brothers, for the new crusade!

Evelyn Pyne.

THE GREAT EASTERN RAILWAY COMPANY'S NEW WORKS.

The extensive operations undertaken by the Great Eastern Railway Company, at Ray Island, in connexion with their continental steamboat traffic, are now in full progress, and the general features of the undertaking are as supplied below, although some of the matters may be modified in detail as the works progress. Ray Island, it may be premised, is the name given to a point of land on the river Stour, about two miles above Harwich pier, up to and beyond which the water consists rather of an inlet of the sea than of a fresh-water current, the channel being navigable at low water for vessels drawing 16 ft. Here it is proposed to establish the station for the company's fine service of Continental steamers, which, at the present time, consists of a fleet of eight fine well-manned vessels, which ply daily between Harwich and Antwerp and Rotterdam. The service being so popular, the company have recently determined, to quote the words of Lord Claud Hamilton, deputy-chairman of the Board, to improve it still further in every respect, and to inaugurate works which shall be "carried out and end in their full maturity in the most perfect manner;" and we are further told that the Board will not be satisfied till they are able to compete successfully with the London, Chatham, and Dover Company, and until Harwich has become a great depôt for trade, not only with London and all the eastern counties, but with other great centres.

To accomplish and provide the necessary accommodation for this trade, it is intended to establish at the Ray piers and landing-stage, a custom-house, railway station and hotel combined, warehouses, goods-sheds, and the other multifarious requirements of an undertaking of the magnitude contemplated. The levelling of the land and the formation of sea-embankments are now in the hands of Mr. T. D. Ridley, and involve the removal of upwards of 1,000,000 cubic yards of earth, of which work not quite one half has yet been completed. The pier is in the hands of Mr. Cochrane, and is being proceeded with rapidly, the whole of the engineering work being under the superintendence of Mr. Crawford.

Of course many months must elapse before the service can be removed from Harwich, but when the works contemplated are completed, there is little doubt the route will become even more popular than it is at the present time.

JEWISH ARCHITECTURE.*

The question of Jewish architecture claims a short notice. According to Josephus, the erection of splendid monuments was contrary to the law of Moses; and we are not surprised to find that the exploration of Palestine has brought to light scarcely any remains of ancient Jewish architecture having pretensions to beauty of structure or detail.

The earliest habitations of the Israelites were tents, booths, and caves. The tents were black (Cant. i. 6), and no doubt resembled those of black camel's hair now used by the Bedawin.

From the dimensions given of the various curtains covering the Tabernacle, and from the description of the "middle bar in the midst of the boards" (Exod. xxvi. 28) it seems clear that the sacred tent had a ridge and a sloping roof, as have the modern Arab tents; but the description is not sufficiently clear to allow of our determining the exact pitch of this roof.

The distinctive mark of a Jewish habitation was the *Mezuza* (Deut. vi. 9, and xi. 20), a kind of amulet like the phylactories. It consists of a tube of vellum, covered with lead or tin, having the name Shaddai written on the vellum and visible through a slit cut in the outer covering. Inside the tube are scrolls with various texts (Deut. vi. 4—9, and xi. 13—21); occasionally the names of three angels are added.

Jewish houses were built of mud (Job xiv. 19), of sun-dried brick (Isaiah ix. 9), and of stone (Levit. xiv. 46). The latter probably was used in the hills, the former materials in the plains. Plaster and mortar were employed (Deut. xxvii. 4; Ezek. xiii. 10); and the wood of the sycamore (Isaiah ix. 10), cypress, acacia, cedar, and even sandal wood (1 Kings x. 12), were used for roofs, doors, and windows; while the interior was sometimes painted with vermilion (Jer. xxii. 14).

The houses were often two stories in height, the upper chamber (*Aleya*) being mentioned in several passages of Scripture (cf. Judges iii. 20; 1 Kings xvii. 19; 2 Kings iv. 10, and xxiii. 12; Dan. vi. 11).

Summer and winter chambers are also noticed (Amos iii. 15; Jer. xxxvi. 22); and the roof being flat, was used as a sleeping-place in summer (1 Sam. ix. 26), a custom still common in Syria, as is also that of erecting booths on the housetops (Neh. viii. 15). The law of Moses also obliged the Hebrews to surround the roof with a battlement (Deut. xxii. 8).

The houses were not scattered singly over the country, but compactly gathered into walled cities (Deut. vi. 10), open towns (Num. xxxii. 41), and villages (Cant. vii. 12). The curious expression "daughters" ("villages" in our version, Num. xxi. 25) seems to refer to suburbs beyond the city walls. The fortresses were erected on sites naturally of great strength, and their walls often rose above natural precipices or scarps of rock, artificially cut, which still remain, though the masonry above has disappeared.

Only two important examples of ancient Jewish masonry are left to us,—namely, in the Haram at Jerusalem and in that at Hebron. A

* From the "Handbook to the Bible." By F. R. Conder and C. R. Conder, R.E.

full description of the character of the former work will be found in Part II., chap. viii., and it is only necessary here to note that the Temple of Solomon was the work not of Israelite, but of hired Phœnician masons, so that the magnificence of the proportions, and the superior finish of these great blocks, can hardly be considered a distinctive feature of native Hebrew architecture; while, from many passages of Scripture, we may draw the conclusion that the ordinary habitations of the Jews did not far surpass, either in strength of material or in style, those of the modern inhabitants of Palestine.

The sepulchres of the Hebrews are almost the only Jewish monuments of undisputed antiquity now left. The oldest form of tomb consists of a square chamber, about 8 ft. on a side, cut in the rock, and entered from the face of a cliff, through a door generally not more than about 2 ft. wide and 3 ft. high.

From each wall of the chamber a number of parallel tunnels are driven, measuring 6 ft. or 7 ft. in length, and about 2 ft. in width; the usual number being three in each wall. These tunnels, called *kokim*, or "excavations" in the Talmud (Baba Bathra, vi. 8), were intended to hold one body each, the head being at the further end where a sort of stone pillow is often found. The entrance of each *koka* was closed by a slab plastered in position. An inner chamber is sometimes reached by crawling through one of the kokim.

In the late tombs of this class sarcophagi seem to have been used; and the recess becomes sufficiently large to hold two sarcophagi side by side, the bodies lying as before with the feet to the central chamber. This transition style resembles that of tombs in the Necropolis of Thebes, and we are thus led to inquire whether the Israelites may not have derived the idea of the kokim tombs from Egypt. The kokim of Palestine are not, however, large enough to admit any kind of coffin or sarcophagus.

A second class of Jewish tombs, belonging to the Hasmonean and Herodian times, presents monuments of far greater architectural pretensions. The influence of Greek art is plainly visible in the character of the details; but the work appears in most cases to have been executed by native artists, and often presents a curious mixture of classic conventionality, with Jewish naturalistic representations of the vine or the palm.

To this class of tombs belong the sepulchre of Queen Helena of Adiabene, north of Jerusalem, and the curious monument generally known as Absalom's Tomb (which is probably the sepulchre of King Alexander Jannæus), east of the city. Ionic capitals, rosettes, wreaths, and triglyphs, here occur, with vine-leaves and bunches of grapes, the execution being generally rather rude and the measurements irregular. A great many such tombs have been recovered by the survey party in Palestine, and the plan is generally the same. A porch or vestibule, some 20 ft. long and 10 ft. wide and high, is cut in the rock; rock columns, along its front, supporting a rock-cut frieze. The small doorway leads from the vestibule to a chamber, on either side of which is an arched recess (*Arcosolium*), in which a rocky sarcophagus is cut, parallel to the side of the chamber, so that the bodies lay sideways, instead of at right angles to the direction of the wall.

A transitional style between the tombs with kokim and those with loculi or sarcophagi beneath Arcosolia, has already been noticed,—namely, that in which the sarcophagus lies end on to the chamber. The substitution of the sarcophagus, marking the influence of Greek or Egyptian customs, certainly took place before the time of Christ,—apparently during the period of the Hellenistic movement preceding the Hasmonean revolt. It is interesting to remark, that the Tomb of Christ as described in the Gospels must have belonged to the class of loculus tomb; for the description of the two angels sitting, "one at the head and the other at the feet, where the body of Jesus had lain" (John xx. 12), could not be reconciled with the structure of the koka.

It is also interesting to notice that the cylindrical rolling stone (Matt. xxvii. 60), like a millstone or cheese on end, closing the entrance of the tomb, is rarely found with kokim tombs, but is commonly used with the late loculi. The older tombs are closed by stone doors, swinging on hinges, or sliding up and down; but the stone rolling in a groove was a comparatively late discovery. The weight of these stones is generally about 6 cwt., and the groove sometimes is so cut that the stone rolled down an inclined plane, closing the small door when at the lowest point, and requiring to be rolled up hill and there wedged up before the tomb could be entered.

The influence of Classic art is even more clearly traceable in the Galilean synagogues; but as these buildings belong, according to Jewish authority (Isaac Chelo, A.D. 1334), to the second century of our era, they do not require special notice in the present volume.

A CHAPEL IN UPPER TOOTING.

A NEW Wesleyan Chapel was opened at Upper Tooting on the 27th ult. It has been erected from the designs of Mr. Maurice H. Pocock, architect, and is a red brick building, with Bath stone dressings, standing upon a somewhat peculiar site, and facing, with its principal façade,—the western end,—the main thoroughfare. The style of architecture is of Early Geometrical type. The building was commenced in September of last year, the contractors for the work being Messrs. Turtle & Appleton, builders, of New Wandsworth. The frontage towards the roadway, embracing as it does several gables, is of a picturesque character. All the windows have moulded mullions cut in red bricks, stopped in the brick-sills, solid in the angles. Patterns are also worked in red and stock bricks upon the face of the walls. The splayed mullions to the chancel-windows, and those to the five-light and three-light windows in the north-west and south-east nave gables, are good samples of manipulation in brick. The bricks, we may add, are the red Chilton Suffolks and the "R. R. R.'s" supplied by Messrs. Richardson & Eastwood, while the picked stocks are from Messrs. Root's, of Sittingbourne.

Near the main entrance is a niche, in which is a statue, somewhat under life-size, of the Rev. John Wesley, M.A., the founder of Wesleyanism, and who died towards the close of the last century. He is represented in the clerical vestments and old-fashioned bands of the period, and in the attitude of quiet exhortation. This sculpture, as well as the rest of the carved work upon the building, has been executed by Mr. Harry Hems, of Exeter.

The roofs are of steep pitch, and covered with Yorkshire tiles of warm colour. The nave itself measures 66 ft. 3 in. by 29 ft. 8 in., and has an apsidal west end. Its height from floor to ridge-plate is 56 ft. The north and only aisle is 52 ft. 6 in. by 19 ft. and 48 ft. high to its ridge. Adjoining the aisle upon its northern side is a schoolroom 45 ft. by 26 ft. 3 in. and 22 ft. high. It is divided from the aisle by an arcade filled in with 9 in. brickwork, built in with a straight joint. The intention is ultimately to remove this partition and throw the school-space into the church: accommodation will then be afforded for 1,000 sittings altogether. The nave arcade has received careful consideration. The columns are of Portland stone, and are surmounted by carved capitals in the same material, whilst the arches above, cut and moulded on the soffits, are of brick.

The clearstory windows are traceried in Boxground stone, with cut and splayed red brick jambs, and cut moulded curtain arches in red bricks, the arches springing off the splayed reveals. There is an internal dado of red brick, finished with blue Staffordshire brick diamonds. The nave-roof consists of queen-post principals, having moulded tie-beams slightly cambered and framed, and bolted to wall-pieces, with circular-cut and chamfered trusses, the whole being pinned and framed in oak. The ordinary rafters are fixed and framed flatwise to the purlins, and trussed and framed on to the wall-plates, the tying-pins being left projecting.

The north aisle roof is framed continuously, and consists of common rafters with collar-beams and struts, or straining pieces, and with the feet of the various rafters framed and trussed to the wall-plates. All the timbers in this roof are of one scantling, viz., 5 in. by 4 in., framed and fixed flat-wise.

The schoolroom has also an open roof of king-post principals, with ribbed trusses from collar-beam, and framed and pinned to the wall pieces; the intermediate principals also framed with collar-beams and king-post, but these are trusses framed on the wall-plates. These roofs are lath-and-plastered on the backs of the rafters, and all the timbers are twice oiled.

The glazing is of cathedral tinted glass in lead quarries, which work has been executed by Messrs. Ramsey, of Farringdon-street.

The pulpit stands upon the south side of the chancel arch. It is made of English oak, is octagonal on plan, and has moulded and carved cornices, and traceried panels sunk in the solid, on the cant. It stands upon a moulded and carved base of Bath stone. This pulpit, as also the ornamental clock-case, which is also in oak, is the work of Mr. Hems.

The coronæ, brackets, and other gas-fittings, together with all the ornamental wrought-iron work, are by Messrs. Hart, Son, & Peard. The apse and the various avenues and approaches, as well as the entrance-porches, are laid with 3-in. red and black tiles, with borders supplied by Messrs. Boote, of Burslem. Mr. John Grundy, of Tyldesley, near Manchester, has heated the building by his system of hot air. The clerk of the works was Mr. William F. Strong. The cost of the building has been about 7,000*l.*

SUGGESTIONS FOR DEALING WITH THE SEWAGE OF LONDON.

AT the meeting of the Society of Arts on the 26th ult. Lord Alfred Churchill in the chair, a paper entitled "Suggestions for Dealing with the Sewage of London," was read by Major-General H. Y. D. Scott, C.B., who sought to show that, according to the investigations and analyses of the most eminent living chemists, sufficient value can be recovered from the suspended matters, known as "sludge," of metropolitan sewage, obtained by simple subsidence, and unmixed with bulky precipitating materials, to meet all the expenses of keeping such offensive and injurious matters as solid sewage out of the Thames. The liquid and richest portion of the sewage the Major-General abandoned as being, after its admixture with water, irrecoverable, unless it could be utilised by irrigation. The sludge, with which alone it was now proposed to deal, consisted partly of fæcal and other organic matter, and partly of the mud and sand scoured from the streets. In Paris, where they are rapidly carrying out a system which allows of the recovery of the solid fæcal matters without admixture with *detritus*, the contractor can afford to collect them for the fertilisers they contain; but we must deal with the matters as they arrive at the outfall, in which state the worthless ingredients greatly exceed in amount those which have a value. After a detailed statement of the nature, amount, and money worth of the fertilisers,—nitrogen, phosphoric acid, and potash,—contained in the London sludge, Major-General Scott gave a general account of the process by which he would propose to eliminate them from the refuse and to render them marketable manures. The first operation, after draining off the supernatant water (nine-tenths of the whole), is to add to the sludge two-thirds per cent. of quick lime, slaked, and made into milk of lime. This is effected by running the milk over it and then stirring the compound, which will effectually deodorise it. The next step must be to mix with the limed sludge such a quantity of prepared superphosphate of lime as will nearly, but not quite, neutralise the lime previously added. The mixture now becomes surprisingly inodorous, considering the origin of the greater part of it; the organic matter also loses its slimy, glutinous nature; and assisted by the precipitated phosphates and the crystalline sulphate of lime intimately incorporated with it, the compound drains and dries with comparative rapidity. These additions would cost for materials about 16s. 6d. per ton of prepared manure. To remove the sludge from the tanks and to dry it, including all outlay for treatment, except the cost for building tanks, the expenses are reckoned at 20s. per ton. This gives a profit on 70s. worth of manure at 1*l.* 13s. 6d.; or, say 30s. per ton. The tanks, of which there would be two sets, would intercept the sewage near the outfall, and if executed in concrete are estimated to cost 100,000*l.* Major-General Scott thought the sale of the manure might be expected to realise 132,000*l.* a year, so that it would certainly be sufficient to cover the interest on this sum, together with the expense of disposing of the sand.

A discussion ensued, the speakers being Prof. Frankland, Mr. Bramwell, Dr. Voelcker, Mr. R. Rawlinson, C.B., Mr. Baldwin Latham, and Mr. Rogers Field.

SEWAGE DISPOSAL.

SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers, held on Monday evening, December 1, in the Society's Hall, Victoria-street, Westminster, Mr. R. P. Spice, president, in the chair, a paper was read by Mr. Henry Robinson, C.E., on "Sewage Disposal." The author, in the first place, described the different systems which are employed for the removal of the refuse of the community, and the advantages and disadvantages of each. He then called attention to the large number of deaths recorded annually in the Registrar-General's returns, arising from preventible diseases, due to bad house sanitation and defecctive sewerage, and he referred in detail to the chief causes, and to the remedy for these evils. He condemned the apathy shown by vestries in the metropolis and sanitary authorities generally to the provisions of the several Sanitary Acts, and pointed out that the duties which had been imposed by the Legislature on these authorities were practically disregarded. The pollution of water by its storage in uncleansed cisterns was referred to, and an opinion expressed that the water, as supplied to the metropolis, was not the cause of illness, but its pollution after delivery; and that far more blame attached to the householders, for not examining their cisterns, than to the Water Companies. The author advocated the expeditious completion of the constant service which was now being gradually accomplished. The operation of the Rivers Pollution Prevention Act was then considered, and the necessity for its amendment shown, owing to the difficulty experienced in arriving at an agreement as to what was a reasonable system to enforce in the varying circumstances of towns, in respect to the purification of sewage. The exemption of the River Thames and the Metropolitan Sewage was referred to, and this question was considered at some length, the author expressing an opinion that the sewage of the metropolis should be purified before its discharge at the outfalls; and, from calculations he had made, he considered chemical treatment would be the cheapest, and could be accomplished for 7d. per head. He pointed out that the arbitration between the Conservators of the River Thames and the Metropolitan Board of Works was really dealing with the commercial part of the question, namely, as to interference with the navigation, leaving the sanitary part for future consideration, as apparently of secondary importance. The author then at considerable length entered into the laws which governed the disposal of sewage upon land, and gave the average results of twenty-two towns he had investigated, which were as follows:—39·3 gallons of sewage per head of the population per day; the sewage of 114 people to the acre of sewage farm; cost of sewage farm, 1s. 10d. per head of population, and 6¾d. in the pound of rateable value. Where land could not be obtained as a purifier and utiliser of sewage, he indicated methods of dealing with it by chemical treatment. In conclusion, the author abstained from recommending any system, stating that his experience had led him to advise the adoption of a system for a town according to its own special circumstances, and considered that those who advised in these matters, whilst being free from bias in favour of any system, should be practically familiar with them all.

BUILDING AND THE RISE IN THE PRICE OF BRICKS.

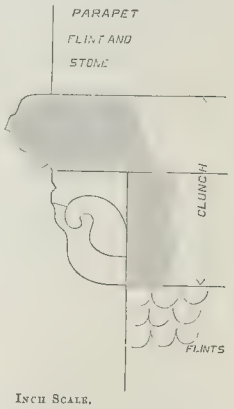
Messrs. Berry & Co., the contractors for the new water-tower at the Union Infirmary in Rotherhithe, have unsuccessfully been endeavouring to obtain from the Rotherhithe Vestry an allowance in excess of their contract, in consequence of the increase in the price of bricks. At the last meeting of the Board a communication was received from the contractors to the effect that owing to the rise in the price of bricks they had suffered a loss of 60*l.* in carrying out the work of building the new tower, and asking for an allowance over the amount of their contract in consequence. In the course of a discussion which took place on the subject, it transpired that the architect would not certify for the payment of the money unless the Board passed a resolution authorising him to do so. It was ultimately resolved that the terms of the contract be adhered to, and the Board declined to grant the allowance asked for.

THE CORBEL-TABLE AT ST. ALBAN'S.

Sir,—In reply to Mr. White's challenge in your last, I send you a true section of the Early English stone corbel-table (a portion now remaining *in situ*), which he alleges was composed of brick. His drawing supplies me with what I wanted, namely, to show to all who know anything about it, that his ideal Norman work was modern repairs, executed within the last fifty years.

I need scarcely tell those who know St. Alban's Abbey that the mortar *joints* in the Norman work are nearly as thick as the Roman tiles themselves,—that is, from 1¼ in. to 1⅝ in.; whereas in Mr. White's section all are thin and modern.

If Mr. White will take the trouble to look at Carter's drawings, published in 1810 by the Society of Antiquaries, he will find in the south elevation not a trace of his brickwork, but the very corbel-table which I now illustrate.



Inch Scale.

I respect fair criticism, but persons who have a propensity for firing random shots must sometimes expect to get hit in return, however unpleasant it might be. John Chapple.

WOOD CARVING: A VOICE FROM THE DEAD.

The following communication will be read with interest:—

Several years ago, while making a survey of certain college property, at a well-known watering-place, my chairman was asked if I were any relation to the great wood-carver, Wallis, of Louth, who, the interrogator understood, was dead, and he could scarcely be convinced that the wood-carver and the surveyor were the same person. For reasons that need not be given here I changed my calling about ten years ago, and may be regarded as dead as to wood-carving. Will you admit my ghostly reflections on this subject, a subject that has been freely discussed in your pages in reference to the "School" of Wood-carving at South Kensington, and permit me to call to mind a few scenes from that world in which I formerly played a part?

I have been permitted to follow the letters of "Meter," Mr. Rogers, and others, on the subject of wood-carving, but do not intend to specially comment upon the details of what has been advanced, but briefly to relate some incidents of a life which occurred in a world from which I am now a departed spirit, and my personal early history may elucidate the points under discussion.

I trust your correspondents will acquit me of vain egotism whilst I refer to pleasant incidents of my life, which led to or resulted from the production of wood-carvings that held a prominent place in competition with the products of wood-carvers from all parts of the world, in the great gatherings in London and Paris, being a medallist in 1850, 1851, 1855, and 1862, considering that I no longer exist in that world to which these incidents refer. For many years I exclusively followed wood-carving, doing my own special individual work, and employing first-class London carvers to do my ordinary trade carving; but every work I exhibited in London, Paris, Manchester, &c., was the product of my own pocket, brains, and fingers, and thus "*one* man did do it." Mr. Rogers's theory (and practice?) that it takes "three men" to produce wood-carving seems puerile in the extreme to me. Perhaps it may be true as illustrating the cradle in which he has been nursed, and which the necessities of London life impose upon men who are engaged in the manufacture of goods Society is willing to buy. This recalls a scene in the Fine Arts Court, Exhibition of 1851. Mr. A. Rogers's father, Mr. W. G. Rogers, was a man of good taste and clever business habits; this, together with his cheery geniality and admiration of Gibbons's carving, did very much to promote or direct the public taste to wood-carving. He was dubbed the "Queen's Carver,"—a cradle carved in box-wood was exhibited as proof. This was, I believe, a triple product: Mr. W. G. Rogers was the capitalist, his son Harry was the designer, and the actual carving was done by Mr. Perry, of Taunton; a fact which he then and there publicly declared in writing. This was known to be the practice. A foreman in a London house bluntly asked me how much of the work I exhibited was my own work. My reply was,—"The whole,"—from the idea, first sketch, models, studies from nature, grouping, rough cast, to the last delicate finish. No other hand or thought had been employed upon them. My original sketch did not restrain me from making any and every variation as I proceeded with the work; bosting the masses in rapid work, getting the general effect of quantity in surface work. "Surface is everything, the outline follows," * a principle, I presume, acted upon by every man who deserves to be called a carver in wood or stone. Details were supplied from my own studies from nature in wood or clay; in case of dead game, &c., being guided by my models from the actual bird; and wrought with a care (but by methods different) equal to that with which a sculptor works his marble from the plaster cast from the original model, keeping the hand with a free and playful touch in developing the minor masses, so that at the last a few delicate finishing touches produced that downy softness for which the plumage of my carved birds was noted, and is yet so difficult for another to imitate.

It is not enough to justify this self-praise to say I was a quadrupled medallist; but I, a stranger there, have stood, and heard, many as they rushed past Mr. Rogers's carving, say, "This used to be our great carver, but the works are nothing compared to these (close by) from Louth, Lincolnshire, by Wallis." Again, when I admired the fine carving of a Frenchman on a beautiful chimney-piece (and the finest art wood-carving is supposed to be indigenous to France), "Yes," replied the lady attendant at the French Exhibition; "yes, these are considered very good indeed, but are not thought nearly so good as those by Wallis, of Louth." Having, you will remember, departed from that world, I cannot be hurt for talking this egotism.

Many past scenes crowd upon my memory, which I must draw a line through; but just permit this. How did I acquire the power to do by myself what it is said it now requires three men to do? Briefly this. At thirteen years of age I was apprenticed to a "carver and gilder." My master, contrary to the rule, was a carver in wood. Early in the present century he was one of a few turned out by an Italian picture-dealer in Hull, who were skilled carvers. One, Mr. Loft, became a Silver Medallist of (Sculpture), and afterwards for many years Curator at, the Royal Academy. About 20 per cent. of my youthful years were occupied in carving for my master. At home I modelled, drew in pencil or crayon, read, or thought, my one object being to excel as a wood-carver. I pondered on the best carvings I could find, and my natural vision enabled me to see the delicate play of lines the forms of nature presented. To my master I gave eleven hours' labour per day. I had four hours at home, rising at four a.m.; working until nine p.m. in summer.

For several years in Louth I earned my living, and a little more, by my ordinary trade, devoting part time to my special work of highly-finished original work of dead game, fruit, flowers, &c., until I exhibited at the Society of Arts in 1850, when a special prize and the praise of Prince Albert at once lifted my work to a prominent place. That may suffice.

About the year 1854 Signor Monti, the sculptor of the well-known and much-admired veiled figures in marble exhibited in 1851, called at my rooms, and thought my original studies from nature more beautiful than my finished works.

* See p. 1306, *ante*.

Of these studies in wood I have boxes full; models of dead game in clay, many. My method of proceeding with these models was as follows:—Having obtained the dead birds,—one, two, or three, as the case might be,—I suspended them by the leg, or legs, then arranged them so as to form a well-balanced mass as a whole. When my eye was satisfied, I secured the wings, &c., so as to retain their position until my model was finished. I then constructed a careful skeleton model of wood, wire, &c., on which to build up my model in clay, using silver sand beaten into pipe-clay until it was finely tempered. The rest depended upon the dexterity of my fingers being able to represent what the eye could see. It was not a mere imitation.

I must crave your pardon for this lengthy letter, and must leave it to you to use as you think proper. T. W. WALLIS.

*** We well remember Mr. Wallis's beautiful works, and must express regret that circumstances have led him to abandon the practice of the art.

SCHOOL OF WOOD-CARVING.

SIR,—If "Meter" wished to make a quotation from my letter which appeared in your columns last week, it would have been more fair had he extracted another line or two, and so have conveyed the full meaning.

What I said was,—"that whether the National School of Wood-Carving were needed or not, it could do no harm. The intentions were honourable, and, therefore, more deserving of a friendly hand than an angry word."

Personally, I give neither. I do not put myself forward as the champion of the undertaking, but I claim for it fair play, and it was on this principle I wrote to you, sir.

It may be that "Meter" is a more far-seeing man than I am; but I must confess I see no danger likely to accrue to the profession from the foundation of this "National School." I consider, therefore, it would be more dignified for the wood-carvers of England to wait and let success decide that the institution was wanted, or failure that it was not.

GEORGE ALFRED ROGERS.

WEATHERPROOF WALLS.

SIR,—Might I follow up my two communications on "Fireproof Floors" and "Waterproof Roofs" by saying a few words on weatherproof walls, as good floors and roofs are of little use unless the walls are sound also?

It is pretty nearly universally admitted that in open situations solid walls are a mistake,—a long-continued wind and rain will penetrate the thickest wall. The wet, I noticed, came through granite walls 2 ft. thick, at Prince Town, on Dartmoor, in such quantities that resort has been had to tarring the exposed side, of not one or two walls, but all the houses in the street, to their great disfigurement. I have seen large damp patches on the inside of a house in Scotland, built of stone equally thick, and there are few people living in brick houses but have had this difficulty at one time or another to contend with.

The remedy found most effectual is by battening off the inside of the wall, and finishing with lath and plaster, or building the wall in two thicknesses of brickwork, with an air-space between them. An objection to the battening process is, that it is hardly desirable to bring woodwork in contact with a wall that is occasionally wet, as danger of decay is thereby incurred.

A difficulty with the hollow walls is the bonding tie, which is shown by the great varieties of contrivances continually brought out to effect this object. Another, is the loss of internal space. It is quite clear if two houses are built of equal external dimensions, one with solid and one with hollow walls, the rooms in the latter must be as much smaller as the width of the hollow spaces.

A solution of the difficulty I wish to submit is, do not let the wet get in; make the outside of the wall of a substance that wet will not penetrate, and there will be nothing to get rid of.

Instead of building brickwork to carry the floors I would substitute a wooden framework, just such as a carpenter would erect for a boarded structure. The sill should be kept well above the ground with a damp-proof course between it and the foundations; the scantling of the woodwork would be according to the size of the building. For a two-storied building half a deal, or 4½ by 3, would be strong enough.

The woodwork should have two coats of lime-whitewash, which I believe to be a most simple and excellent preservative, and the upright pieces or studs should be 3 ft. apart, centre to centre. No braces are necessary, but may be put to use up short stuff.

The outer wall would be formed by screwing on a slab of concrete 3 ft. wide and 2 ft. high and 1 in. thick, provided with four holes, one in each corner. If it is wished to present the appearance of wall-tiling, slabs are provided with a tile-pattern cast on them, of a red colour, that penetrates the slab and will not come off with a rebated horizontal joint and a butt-vertical joint; this will cost 5d. per foot super., and should be stopped in red cement. I did walls this way four years ago, and now they are weathered they look equal to wall-tiling.

Another plan is to screw on a plain slab with the rough side outwards, to form a key for the finishing work.

If the appearance of brickwork is preferred, a coat of red cement and sand is put on, finished with a wood-float and tuck-jointed in lime-putty in the usual way. If stone is required, cement and sand with a wooden float and ruled joints give the ordinary stucco-work. Rough cast is produced by a slight coat of cement and sand allowed to harden, then another coat of the same, then small gravel and liquid cement thrown on with a dasher.

The effect of half-timber, weather boarding, or anything, can be produced; in fact, the walls of the house may be likened to a sheet of paper, and can be decorated to any extent, and in any way.

Chimneys should have 1½ in. slabs, costing 4d. per foot super., for the fronts and backs, with an extra thickness at the back of the grate; the chimney divisions are 2 in. thick, and made of concrete specially prepared to hold a screw, as the back and front slabs are screwed with the divisions with ordinary carpenter's screws, and they hold exceedingly well. The houses I referred to as having been built four years since, have chimneys of this kind, and no fault has been found with them. The inner walls have the inch slabs screwed to wooden studs, and are finished with cement and sand, or lime and sand.

It will be seen that, by this simple mode of construction, I have produced a hollow wall with a minimum of material, say 3 in. of concrete and plaster, and a 4-in. space. A 7-in. wall is compared to a brick wall of 14-in., and a 3 in. air-space, occupying 17 in. of ground. The cost of the outer walls and plaster may be taken at 6d. per foot, fixed, and the inner wall at 5d., and say 3d. for the studding, giving 1s. 2d. for the wall complete.

The value of a hollow-brick wall, with picked facings and internal plastering, may be taken at 1s. 6d. per foot; this shows a saving of 4d. per foot in favour of the concrete wall, and an addition of 10 in. to the size of the room.

The weight per square of the concrete wall, as described, would be about one-fourth of the weight of a 14-in. brick wall, effecting a considerable saving in railway charge and cartage.

I have now enumerated the principal advantages this system of building presents, and if your numerous readers require any further information, I am quite willing, provided you will grant me space, to give it.

May I add that, in the last Sanitary Exhibition just held at Croydon, the ends of my space were enclosed by walls so constructed, and that an advantage I ought not to omit is, that houses such as I have described can be built, except the plastering, in cold weather, however severe it may be, and that my men were building these walls the whole of last winter, when, as is well known, ordinary brickwork was entirely suspended. W. H. LASCELLES.

A HARD CASE.

SIR,—Some time ago a man entered our works at Streatham, in our absence, and seized thirteen half-hundred weights, asserting to our foreman that seven of them were over and six under the standard. We were accordingly summoned to appear at the Surrey Sessions on the 19th inst., and fined 3l. 6s. These weights had been lying about the place for about 100 years, and were valued by us in consequence, and had never to our knowledge been used in the way of trade for many years past (we being builders and contractors, and never selling anything by weight). These facts were represented to the magistrates, but were unavailing. We beg that, with the sense of justice always shown by you, you will insert this to warn others of the penalties which innocence and ignorance of the law (if law it be) may bring upon them.

ROBERT & E. SMITH.

BUILDING MATTERS AND THE BUILDING ACT.

IT may not be inopportune to impress on the building public the necessity of exercising great care when seeking to alter and convert old buildings; in so doing, often by injudiciously cutting away existing ties, taking away supports, great risks are run, especially when the premises have not been amply and sufficiently shored.

Builders of known reputation, means, plant, and men, only should be employed in such operations, and a skilled surveyor to direct. When a building owner employs a cheap or inefficient man at a low price, often the case, he should do it at his own proper peril, for he is *particeps criminis*.

In such cases the district surveyor has really very limited powers, his duties consisting in enforcing the rules of the Building Act, and has very little power as regards constructive matters. The mode and amount of remuneration paid to that officer would indicate his limited supervision. CAVENDO TUTUS.

SAILORS' CLUBS AND READING-ROOMS.

SIR,—The Sailors' Club and Reading-room stands in the same relation to the able-bodied sailor as "The Sailors' Home" stands to the disabled seaman in the numerous seaport towns of the United Kingdom. The only "Home" of the sailor in port is the hold, the cabin, or even the hammock of his ship. Such a refuge is simply intolerable by day, especially when aggravated or accompanied by idleness, ignorance, monotony, surveillance, and vacuity of mind. Thus, this mainstay of our commerce and of our seaports, the poor sailor, is literally driven to the beershop, the publichouse, and to profligacy, for adequate society, pastime, and recreation. Hence the fixed and long-established institutions of seaport-towns, namely, drunkenness and immorality, be they more or less, or whether open or hidden; the disgrace, the reproach, and the stigma, of all our seaport-towns indiscriminately, and to which, incredible to say, the inhabitants appear to have become either resigned, inured, or reconciled, or consider them as unavoidable and inevitable, and so, therefore, necessary and good for trade! Between the inhabitants and this deserving class of the population of seaport-towns there seems to exist a lack of sympathy and kindly fellowship, as though sailors belonged to another and inferior race of beings. The "clanship" of sailors is simply a necessity of their occupation. The sailor's club and reading-room, then (and there should be several in large seaport-towns), is but a spacious room plainly furnished, properly seated and lighted, with a few newspapers, periodicals, and books, and wherein tea, coffee, and cocoa, only are provided and sold, together with substantial food. Seaport-towns would find (as with coffee-taverns) that sailors' beershops, sailors' publichouses, and profligacy, would speedily diminish, together with the heavy cost of vice!

AUGUSTUS J. HARVEY.

MODERN BRICKWORK.

SIR,—It is no wonder that old buildings will not stand to be altered when new ones will scarcely stand looking at. I was working at a job not a long way from Chancery-lane, and I, being a bricklayer that has used the trowel a great number of years, and know what work is, can truly say that I have never seen such scamping work in my life; work you can scarcely call it. There are some walls in the basement that are a disgrace to the trade. If a plumb-rule is placed to the wall, there are some parts of it 3-8ths of an inch hollow, and if the plumb-rule be held upright the wall batters about 1¼ in. in 5 ft. What is the architect about? ONE WHO LIKES GOOD WORK.

DANGEROUS BUILDINGS.

LATE on Saturday afternoon an application was made at Marlborough-street Police-court by Mr. Robert Walker, district surveyor, on behalf of the Metropolitan Board of Works, for an immediate order to remove the inmates of the house, 10, Union-street, Hanover-square. Applicant stated that he had that afternoon been instructed by the Board to survey and report as to the safety of this and the adjoining property. He found the north party-wall of the house No. 10 extremely dangerous. It was bulged and partly crushed at the foundation, and a portion of it had been squeezed out at the base, and in its fall had injured a child belonging to a large family who lived in the basement. The house was filled with lodgers on every floor, and though applicant had succeeded in getting the Board's contractor to undertake to shore up the premises that night, yet he was afraid loss of life might occur.

Mr. Mansfield said the case appeared to him similar to one which lately happened when some houses suddenly fell near Red Lion-square, Holborn, and he should, therefore, grant an immediate order to remove the inmates, and directed a constable to see it carried out at once.

A RECENT VIEW OF TUNIS.

In the neighbourhood of the railway station, the city of Tunis, says a German traveller who was there less than a month ago, possesses some streets of a European character. The rest of the place is a labyrinth of narrow lanes and still narrower passages. The houses are of one or two stories, and their windows small and irregularly distributed. All openings are defended by strong iron grating, often of beautiful native workmanship. An ordinary house has, as a rule, in the centre an open court similar to the *impluvium* in the houses of ancient Rome. Around it on both floors are the small narrow rooms. In the smaller houses the inner court is wanting. In streets where business is carried on, the lower rooms form shops whose dimensions are from 6 ft. to 10 ft. long, 5 ft. broad, and just high enough to allow the proprietor to stand upright. The bazaar is nothing more nor less than a collection of narrow business streets with shops of this kind closely crowded together. Each branch of trade occupies an entire street, or at least half a street, in this quarter. Here sit the perfumers. Close to it an odour of a different kind informs us of the proximity of the tanners. In another corner the jewellers are found. Textile fabrics, cloth, burnouses, &c., are offered for sale in several streets, and close by are men weaving hair sieves and other articles. The public throng the bazaar in immense numbers, and the heat is intolerable. Partly on this account the principal shops close their doors as early as eleven o'clock in the morning, and the chief part of the day's business is transacted in the cool hours immediately after sunrise.

A walk through the city by night shows characteristic features. The invention of street-lighting by gas has never yet penetrated as far as Tunis. The Bey, however, has had a railway and a system of waterworks constructed, but those achievements have made such a hole in his finances that as yet he cannot think of street-lamps. Some few points of the city are nevertheless lighted up by open-air *cafés* or by Jewish shops, and are very conspicuous by night in consequence. For the most part, however, the traveller wanders after sunset in the deepest darkness, especially in the outlying quarters, stumbling along through puddles and pools, under arched passages and through alleys sometimes less than 2 ft. broad. Often in the streets which have a narrow pavement he will tumble across night stragglers asleep or otherwise, and more than once a hoarse voice coming from the ground has greeted me in the darkness to the effect, "Now may Allah take care that this infidel does not tread on me!" The fact that one can go about in such holes and corners without arms and without personal danger testifies, in a manner that is not to be underestimated, to the patriarchal justice of the Bey. In Europe, nobody would think of venturing into such quarters after nightfall.

Of buildings of a monumental character, or of any architectural pretensions, Tunis possesses only a few mosques and the Bey's house, "Dar-el-Bey." Admittance into the mosques is, of course, strictly forbidden to Christians, and even if you only stand against the door, an Arab will come and push you away. A large open forecourt, encompassed by colonnades, a minaret, and, in the background, the mosque proper, with a white cupola,—such is the general description of a mosque. By day the edifice appears but of little importance; but by moonlight the cupola shines out beautifully over the broad court, the more so as the airy expanse of the broad enclosure stands in such contrast with the confinement and heat of the narrow streets.

The "Dar-el-Bey" is a product of various centuries, and, unfortunately, of the nineteenth among the number. The apartments in which the Bey and his guests dwell have been altered, and several of them furnished with painted ceilings after the fashion of a Paris *café*, and with furniture similar to that of a Berlin *Hôtel garni*. The less we say of it the better; but it was precisely these things which filled our native guide with wonder and admiration. Right in the interior of the palace, however, there are some apartments fortunately still preserved with their old Moorish decoration. These are a glass-covered court and the dwelling occupied by the Vizier. These are cabinet pieces, than which the Alhambra has nothing finer to show. Elegant pilasters support the walls. Decorations in variegated colours of beautiful effect adorn the niches. Doors, presses, and furniture of old woodwork harmonise with the *tout ensemble*. But it is the frieze ornamentation and the filigree stucco-work that we most admire. The friezes are about 3 ft. high and 10 ft. to 15 ft. long; their surfaces are decorated entirely with plaster of Paris stucco. Lines of incredible fineness cross in all directions upon them, forming rosettes and straight rays. The latter combine so as to form large stars; one star runs into and interlaces with another, forming a wonderfully complicated model, and yet in every individual spot there is such perfect regularity, and the whole is of such precise workmanship, that the eye is everywhere satisfied. At the first glance one can see that these stars are the result of constant practice and long-cultivated skill and dexterity in the art. In the present day such perfect specimens are no longer produced, but the Bey still supports a few stucco artists and their pupils, in order that the art may, at any rate, not be entirely lost.

THE FALL OF HOUSES IN TOTTENHAM COURT ROAD.

Dr. Hardwicke, the Coroner for Central Middlesex, on the 28th ult. resumed the inquiry* as to the deaths of William Viles, age 34, a carpenter, and John George Martin, age 39, a bricklayer, killed by the falling of two houses, 171 and 172, Tottenham-court-road.

Frederick Blandford deposed that he was a carpenter and joiner, and had been at work for eight weeks at the premises under Mr. Joyce, the then foreman of Mr. Shields. On the 19th ult. he was at work there putting up counters, and left about half-past four. He then had a strong impression that the place was not safe, and told the foreman, Mr. Shields's father, that as he (Blandford) objected to the hours, and considered the place not safe, he should leave. The deceased, Viles, was there at work on the second-floor, and he had told witness he considered the place was unsafe. He (witness) also pointed out to Mr. Lewis, the proprietor of the houses, how the job was going on, and that he considered it unsafe. That was a fortnight before he left. He considered the uprights and needling unsafe both at the back and front walls. They had nothing to do with the party-walls. He was of opinion that the party-walls were rotten. The chimney-breasts were cut away, and there was no shoring.

Thomas Carey, bricklayer's labourer, employed by Mr. Shields, said that the workmen were employed in carrying up the piers of the chimneys at the party-wall of one of the houses which had fallen. The night previous to the accident the foreman gave witness his money and discharged him,—he supposed because he had said it was not safe. A fortnight previously the centre front girder was put in, when the front shifted, and the pier the girder was resting on came away and left an opening wide enough to admit two fingers. The men were kept the whole dinner-time at work to prevent any further opening. The floor had been raised 2 ft. and was afterwards again lowered 1 ft. The girder was put in and the bressummer lowered, and two needles were put in to carry the bressummer while the brickwork was cut away.

Richard Taylor, a carpenter, who had been employed on the premises eight days before these houses fell, gave it in evidence as his opinion that the walls ought not so have been touched, being rotten. There were no outside shores.

Mr. Frederick Wallen, the district surveyor, was recalled. He said: Due notice of the character of the work being done at these houses was not given to me at the proper time. The work had been commenced. I called and viewed the work, and then the notice I produce was given to me. This was a notice under the Metropolis Buildings Act of 1855, and described the work as additions and alterations to houses, 171 and 172, Tottenham-court-road,—two openings in south party-wall between Nos. 171 and 172, and two openings between 172 and 173, and new shop-fronts to each house. That notice was inadequate, as it by no means expressed all the work taken in hand. Technically it is wrong; but it is not an uncommon thing for notices to be enlarged upon. I object always to extended work being done without notice, and that was why I wrote the letter I sent and read at the last sitting, threatening to proceed for penalties if any more was done. I commenced to visit the buildings in October, and again early in November, and saw no danger then. On the 15th of November my clerk visited and reported the work going on, and that led to my letter. I visited on the Monday before the occurrence, and pointed out what should be done, and put it in writing. It is my opinion that had my instructions been carried out the work could have been perfected in safety.

By the Coroner.—I have visited the scene of the accident and carefully examined the fallen buildings. I find the principal fall in the direction of the front of 171. The light iron girder that carried the floor of 171 is snapped in two, the middle girder is dragged forward and tilted, and the back bressummer is also thrown forward. At house 172 the left-hand end of girder is fallen slightly, the mid-girder tilted half over, and the joist is drawn out and fallen at the back. The lower part of the party-wall is still standing. The front walls of 171 and 172 fell bodily, and my opinion is that the front walls fall first and dragged with them the first floors of 171 and 172, and in doing so snapped the girder. I am also of opinion that the middle pier failed, producing the accident. The front pier of 171 and 172 had been under-pinned with Portland cement imperfectly. I think the pier between 171 and 172 should not have been tampered with. Temporary needles were used. It should have been shored and story-posts put in front.

Mr. B. Williams.—I am an architect, practising in Swansea, and made plans for alterations in the three houses in Tottenham-court-road, for Mr. Lewis, the leaseholder, for putting in new shop-fronts, &c., and believe the plans were shown to the district surveyor. It was proposed to put in iron girders in front, and to raise the floors and girders at the back of the houses, 171 and 172. The first plans were carried out, and then a second lot of plans were prepared. I was in town till the 25th of October, and the foreman then in charge seemed to me a competent man, to whom I might trust the supervision. I should have done so myself, but had other work in hand. I should not think it my duty to be constantly at the work. I considered the buildings capable of admitting the alterations.

By Mr. Wallen.—It is not in my plans to raise the floor of 172, but before I left town I was told it was going to be done.

By the Jury.—I was not called in again by Mr. Shields after Mr. Wallen's notice. I had every confidence in Joyce, the then foreman, although I had not known him before this j b.

Mr. Lewis Lewis, the owner of the property, said he had no idea of there being any danger about the alterations till his attention was called to it by Blandford. He then spoke to Mr. Shields, the foreman, about it, and he said it was all right, and he trusted to his (the foreman's) experience.

Mr. Robert Walker, district surveyor of St. Martin's and St. Anne's, Soho, said he had examined the *débris*, and everything seemed to point to the fact that the front walls had not been bonded. He found on inquiry that some years ago alterations were made which might have weakened the pier, which had been undermined, and rendered it insufficient to sustain the weight. He believed the underpinning must have been imperfect, and that on the morning of the 20th ult., when the traffic commenced, it shook the buildings so that, being without proper support, they gave way.

The inquiry was further adjourned for a fortnight.

* See p. 1,325, *ante*.

FORDEN CHURCH, MONTGOMERYSHIRE.

In this church has just been erected a new reredos in stone and marble, the centre portion, having a carved floriated cross, with a background of a deeply-cut diaper, and surmounted by a cusped and gabled canopy, supported on polished marble columns and capitals, terminating with a carved finial, and finishing at the bottom by two angels in adoration. The sides of the reredos are relieved by moulded quatrefoil panels, containing boldly-sculptured heads (life-size) of the four Evangelists, and finished with an ornamental projecting cornice.

The whole is from the designs of the architect of the church, Mr. T. Nicholson, of Hereford, and carried out by Mr. R. Boulton, of Cheltenham, who also executed the carvings in the church.

"TEMPORARY" BUILDINGS UNDER THE METROPOLITAN BUILDING ACT.

PARSONS *v.* TIMEWELL.

This was an appeal (Queen's Bench Division, before Justices Lush and Manisty) from the decision of Mr. Ellison, the police magistrate, under the Metropolitan Building Act. Mr. Biron appeared for Mr. Parsons, the appellant, and Mr. M. White, Q.C., for the respondent.

It appeared that in June, 1876, the respondent obtained the permission of the Metropolitan Board of Works for the erection of an iron building, to be used for two years, known as the Marble Rink, Clapham-road. In June, 1878, the appellant (Mr. Parsons, the district surveyor) gave the respondent notice that the time for the existence of the erection had expired, and required that it should be removed at the expense of the latter. No application was made for an extension of time, and the respondent having failed to comply with the notice, a summons was taken out, which came on for hearing before Mr. Ellison, who decided that there was no provision in the Act for the compulsory removal of a temporary building erected under the circumstances described, and dismissed the summons.

Without calling upon Mr. White, the Court said it was quite clear that this was an omission in the Act, and that, consequently, the magistrate had no jurisdiction, and was right in dismissing the summons. The only way was for the Board of Works in all similar cases in the future to take a bond from the builders, and so bring pressure to bear on the parties if they refused to remove the buildings when required to do so.

GAS COMPANIES AND LOCAL ACTS.

THE GOSPORT GAS COMPANY *v.* THE ALVERSTOKE LOCAL BOARD: APPEAL.

In the Queen's Bench Division of the High Court of Justice, before Mr. Justice Lush and Mr. Justice Manisty, the appeal case, The Gosport Gas Company *v.* The Local Board of Alverstoke, came on last week for argument. In 1878 two informations were laid by Mr. Horatio Compigné, clerk to the Alverstoke Local Board, against the appellants, under certain bye-laws made by the respondents, in pursuance of the Public Health Act, 1875, for that between the 9th of September and the 3rd of November, 1878, the appellants, intending to erect certain new buildings on their lands, at Newton, in the Alverstoke Local Board district, failed to give due notice either to the respondents or their surveyor, or deposit plans as required by the Bye-laws. The Justices convicted the appellants of these two offences, and fined them 1s. in each case.

Against this the company appealed.

After argument, Mr. Justice Lush said the Court were of opinion the magistrates were right.

Appeal dismissed.

TECHNICAL EDUCATION.

APPRENTICESHIPS.

At the meeting of the Society of Arts, on Wednesday evening, Mr. Silvanus P. Thompson, B.A., Professor of Experimental Physics at University College, Bristol, read a paper on "Apprenticeships, Scientific and Unscientific," in the course of which he pointed out that there was in this country no workshop, factory, or institution in which anything approaching a rational and scientific apprenticeship existed. Outside the limits of the so-called professions he knew of none in England, unless we excepted the pharmacists; but in the handicrafts and mechanical trades there was nothing approaching even that imperfect step towards a technical training, and certainly nothing resembling the systematic industrial training of certain schools abroad. The great technical colleges and schools on the Continent were intended mostly to train foremen, masters, and teachers; they did little for the apprentice. There were, however, some schools of apprenticeship, of which the chief were the Écoles d'Apprentis, in the Boulevard de la Villette, Paris, at Havre, and at Douai, the École Municipale d'Horologerie, Besançon, and the Institute Saint Nicolas, Paris, the École Communale, rue Tournefort, Paris, the schools for apprentices in various factories at Paris, and the schools established by the Guild of Jewellers and Goldsmiths, and by the Trades Union (Chambre Ouvrière) of Jewellers in Paris. In Germany there were supplementary schools, industrial or technical supplementary schools, and trade schools in every large commercial or industrial centre. When we contrasted the abundance of technical instruction, higher and lower, provided in Switzerland, France, Austria, Belgium, and every province of the German Empire, with the utter absence of it at home, it was impossible to avoid endorsing the opinion of Professor Huxley that "the condition of England in these matters is simply scandalous." Two possible difficulties in adopting a similar system were,—first, the difficulty of getting trained teachers unless we established technical colleges to train them, and secondly, the doubtful attitude of a small section of the trades' union leaders. We must hope that wise counsels would induce the thoughtful among the trades' union leaders in England to follow their brethren of France in helping forward all movements for the elevation of the skilled workman of the future. The essentials of success in a rational and scientific apprenticeship were good teachers and a good system of instruction, in which prominence was given to drawing and to the science of tools. There was, however, one thing, more essential still. We must first convince those most concerned that there is an imperative necessity for this entire reform. There was no question whatever that the persistent neglect of technical education in England would sooner or later ruin her in the markets of the world, which would be seized by less favoured but more highly-trained nations; and the work of technical education was only half begun if it stopped short of regenerating the education of the apprentice.

Professor Huxley, who was in the chair, expressed a hope that something real and practical would soon be done by the City Guilds, which had done him the honour of consulting him on this subject of technical education, and the advice he gave them was in precise accordance with the principles which Professor Thompson had laid down. Whatever might be the merits or demerits of the old system of apprenticeship, it was as thoroughly doomed in different branches of ordinary handicraft as it had been long doomed in physic. The only alternatives appeared to him to be of two kinds. In the first place, we ought to bring within the reach of the young people who were employed in our great manufactures the means of carrying on their education in the particular branches of business with which they were respectively occupied beyond the time during which the necessities of practical life obliged them to be at work in the workshop,—that is to say, for a period corresponding virtually with what used to be their apprenticeship. One of his suggestions, therefore, was that there should be established in the neighbourhood of the great centres of industry schools to which young boys who are learning certain handicrafts could resort in order to receive instruction which would qualify them to work skilfully and intelligently at their trade. He likewise suggested that the guilds should employ part of their large funds in the establishment of a central institution, which should do for the teaching power of the country that which such institutions as the École des Arts et Métiers in France, and the Polytechnicum at Zurich, did in their respective countries. In England there was not only a total absence of schools to which apprentices could resort, but there were no teachers competent to teach in such schools even if they were established. As far as London was concerned, it would be a scandal and a robbery if a single shilling were asked for out of the general revenues of the country for technical education. The City of London Guilds possessed enormous wealth, which had been left to them for the very purpose now under discussion. If the people did not insist on the wealth being applied to its proper purpose, they deserved to be taxed down to their shoes.

CAUTION TO BUILDERS AND OWNERS OF HOUSES.

At the Bristol Council-house on Saturday, Mr. Stephen Gist, a builder, of Bedminster, was charged, upon an adjournment, with occupying a house, erected by him in Bristol, without having first obtained a certificate of completion and that the house was built in all respects conformably with the by-laws of the Bristol Urban Sanitary Authority.

Mr. J. G. Heaven (clerk to the Authority) appeared on their behalf, and stated that the case was heard before the justices on the 14th, when Gist was allowed fourteen days in which to complete the house to the satisfaction of the city surveyor.

Evidence was now given to show that it had not been so completed, and the magistrates convicted the defendant in a penalty of 3*l.* and costs, or in default one month's imprisonment.

Mr. Gist did not appear.

COMPETITIONS.

St. Helier's Market Buildings.—Some just comments on the preposterous terms offered by the States of the Island of Jersey have reached us too late for publication; but we insert this word of warning.

Eastbourne Town-hall Competition.—The terms proposed are most inadequate. A letter on the subject has reached us too late.

SCHOOL-BUILDING NEWS.

Baguley (Cheshire).—New national schools for the parish of St. John, Baguley, which include a large room, class-room, porch, &c., have been opened, and are now in use. The principal room is 36 ft. by 24 ft., with open-timbered roof, 25 ft. high in the centre. The class-room is 24 ft. by 12 ft. The porch, lined with pitch pine, is used for the cloaks and hats. The interior of the school is lined with white brick throughout, with pitch-pine dado. The warming and ventilation is by means of Shorland's patent grates and ventilators. The outbuildings consist of the usual offices, fitted with earth-closets, and coal and ash places. The site contains about 1,200 square yards of land. The style of the building may be termed "picturesque. The whole cost, including bell and bell-turret, making playground, forming boundaries, &c., was 510*l.*, and the school can accommodate 110 children. The builders were Messrs. Elms & Evans, Greenheys, Manchester; and the architects were Messrs. Smith & Heathcote, Manchester.

Clapton.—St. James's schools, Powell-road, were re-opened by the Bishop of Bedford on Saturday, the 8th ult., after having been considerably enlarged under the superintendence of Messrs. C. & H. Humphreys, architects. Mr. W. Shurmur, of Lower Clapton, was the contractor. The lead-lights were supplied by Mr. Plumb. Mr. Walter Bartleet was the contractor's foreman.

Biggleswade.—New Wesleyan Sunday schools were opened at Biggleswade on the 9th ult. They contain seven class-rooms, and a minister's vestry, in addition to the large central room. The contractors were Messrs. Edey & Wade, of St. Neot's, and the cost has been about 700*l.*

A Brass Eagle Lectern, value 110*l.*, has just been placed in St. John's Wesleyan Chapel, Manningham, near Bradford. It was from the workshops of Messrs. Jones & Willis, Birmingham and London.

CHURCH-BUILDING NEWS.

Thimbleby.—St. Margaret's Church, Thimbleby, has lately been re-opened after rebuilding, under the direction of Mr. James Fowler, architect, Louth, the builders engaged being Messrs. Walter & Hensman, of Horncastle. The old edifice, which was Classic in style, was erected in the year 1744, and consisted of a nave, 40 ft. by 20 ft. internally, with small apse at the east end, the whole surmounted by a parapet wall and low lead roof. Much of the old stone from an earlier larger building was worked up or buried in the walls and foundations, several interesting pieces of gabled buttresses, window tracery, ornamental parapets, and finials having been discovered in the present restoration. The present building is designed after the style of early fourteenth-century work. Nothing has been left of the old church except some of the nave walls. The apse has been removed, and in lieu thereof a chancel, 20 ft. by 15 ft., has been built, with vestry and organ-chamber, 11 ft. by 11 ft. 6 in. opening into it on the south side. The above are the internal measurements. At the west end, where the church commands, on an elevated site, the view down the whole length of the village street, a tower has been erected, receding by an octagonal belfry into a stone spire, terminated by a carved finial and vane, the whole being over 50 ft. in height from the ground line. The whole building has been newly roofed in with Broseley tiles of a brindled colour. In the new portions the stone used is the same as in the old walls, viz., the green sandstone, from the Holbeck and Salmonby quarries, while all the dressings, quoins, mouldings, tracery, &c., are in the best Ancaster.

Radcliffe-on-Trent. — The parish church of Radcliffe-on-Trent has been re-opened, after restoration, or rather, it may be said, re-building,—for the new works have involved the re-erection on an enlarged scale of the nave, north and south aisles, and tower. The old church (irrespective of the chancel adjuncts, which still remain) consisted of a nave and aisles, measuring 47 ft. by 46 ft. within the walls, and a small west tower. The building was erected in the last century, and was devoid of any architectural interest. The church, as now rebuilt, will accommodate about 700 worshippers, and consists of a nave, 74 ft. by 19 ft. within, and 47 ft. high to the ridge of the roof, the whole of which is visible from below. The north and south aisles are 16 ft. wide, and are covered with lean-to roofs. At the north-west angle stands a massive tower, and at the west end is a narthex or porch. The walls are carried up in stone, principally from the Bulwell quarries. Externally the masonry is rough-dressed in random courses; internally it is brought to a smoother face. The style is that of the thirteenth century as exemplified in the ecclesiastical buildings of England and France. The west window is filled with stained glass by Messrs. Lavers, Barraud, & Westlake, representing the Ascension. The works have been carried out from the designs of Messrs. Goddard & Paget, architects, of Leicester, and under their superintendence. The contractors were Messrs. Barlow, Brothers, & Letall, Oakham.

Folkestone.—A new organ-case has just been completed in St. Peter's Church, Folkestone, from a design by Messrs. Morris & Stallwood, architects, Reading. The work was entrusted to Mr. Harry Hems, of Exeter, and consists wholly of wainscot oak. It is in the Early English style. The extreme height of the case is 16 ft., and the west frontage is 8 ft. wide. Both fronts are deeply moulded, and the various cornices, as well as the brackets and finials of the gables, and the different diapers, &c., are carved. The portion of the front immediately above the key-board coves over, and then opens with shutters, much in the same way as seen in many of the ancient German reredoses. These are enriched by oil paintings, painted upon oak panels. When closed, the whole presents one picture illustrative of the life of St. Martin. The reverse sides have seated figures of the four Evangelists, whilst above are full-length figures of SS. Ann, Martin, Mary Magdalen, and John the Divine.

Higher Openshaw. —The foundation-stone of St. Clement's Church, Higher Openshaw, was laid on the 15th ult. The style adopted by the architects is Geometrical Gothic. The nave is of six bays, with north and south aisles, divided by stone arcades, the columns being relieved by bands of Runcorn stone, and having

moulded capitals and bases. The side aisles have lean-to roofs. Quasi-transepts will be formed by gabling the two easternmost bays of aisles, and a large three-light window will be placed high in each gable. East of the transepts will be situated, on the north the clergy vestry, &c., and on the south the organ-chamber. The chancel is 22 ft. in width, fitted up with choir-stalls of pitch-pine, and terminating in an octagonal apse, the three bays of which will contain each a two-light window with traceried heads. The chancel arch will spring from moulded capitals with red Mansfield shafts upon moulded and carved bases and corbels. Internally the dimensions of the church will be as follows:—Extreme length, 117 ft., by a width of 50 ft.; the nave from floor to ridge will be nearly 50 ft.; and the chancel, 46 ft. The walls internally will be plastered, and open-timbered roofs have been adopted. Durnford parpoints will be used throughout the exterior, with Yorkshire dressings to all windows and angles. Accommodation has been provided for 664 adult worshippers; 354 sittings (or more than half) will be free and unappropriated. The contractors for the superstructure are Messrs. Wilson, Toft, & Huntley, Messrs. Cordingly & Stopford doing the masons' work. The whole of the works will be executed from designs prepared by Messrs. Enticknap & Walter K. Booth, architects and surveyors, Manchester. The estimated cost of the works under the present contract, exclusive of the tower, is about 5,300*l*.

Rugby.—The Bishop of Worcester has consecrated the parish church of Rugby, which has recently been rebuilt from designs supplied by Mr. Butterfield, at a cost of 20,000*l*. The old church was demolished early in 1877, and the foundation-stone of the new one laid in June of that year by the Bishop of Exeter. The new church consists of a nave 76 ft. by 31 ft., and a south aisle 76 ft. by 14 ft. On the north there are two aisles, one being the old nave, which has been repaired and embellished out of a special fund called the "Moultrie Memorial Fund," and the aisle will take the name of the "Moultrie Memorial Aisle." There is an aisle to the north of it 10 ft. wide, and two transepts. The chancel is 48 ft. long, and the choir-stalls are of oak and walnut. The ceiling here and in the nave is richly decorated. There will be a spire 190 ft. high when the necessary funds are forthcoming. The building is of Bath stone externally and Bath and warm-coloured stone internally. A reredos of elaborate design, in various coloured marbles, has been presented by the Rev. C. B. Hutchinson and Mrs. Hutchinson. The seating accommodation is 820. Messrs. Parnell & Son, Rugby, were the builders.

Mapperley. — On the 13th ult. St. Jude's Church, Mapperley Plains, was consecrated by Dr. Trollope, Bishop Suffragan of Nottingham. The architects were Messrs. Evans & Jolly, and the builders Messrs. Wheatley & Maule.

South Shields. — St. Hilda's Church, South Shields, has been re-opened, after alterations. With the exception of the tower, the present edifice was almost entirely rebuilt in 1810-11, and consisted of a large square chamber, 88 ft. by 61 ft., spanned by a flat ceiling, and crowded with galleries, with the pews on the ground floor high and narrow, the whole being overlooked by the huge "three-decker" pulpit. About seven years ago the seats on the ground-floor were re-arranged, and the east end furnished with open stalls for the choir; at the same time sufficient of the gallery in the south-east corner was removed to form a space for a new organ, the old one in the west gallery having been disposed of. Through the exertions of the Vicar, Canon Chester, and his churchwardens, the entire re-modelling of the church has now been completed, and it is spoken of as being internally one of the handsomest churches in the Italian style in the district. The design for the remodelling of the roof (which had given signs of failure) having been entrusted to, and prepared by, Mr. J. H. Morton, architect, South Shields, the work of restoration was immediately commenced, and has been carried out under his superintendence. The alterations have been effected without changing the construction of the fabric, or even taking off the roof, as in dividing the body of the church into nave and aisles the roof is now carried by arcading springing from a colonnade of iron columns with ornamental Corinthian capitals, and carrying an entablature. An additional 9 ft. has been added to the height of the nave by cutting away tie-beams and substituting iron tie-rods; this ceiling is coved and relieved by moulded panels and ribs. The ceilings of the aisles remain at their former level, but are panelled and treated in the same manner as the nave. The heating, both of the ground-floor and the gallery, is to be accomplished by hot-water pipes, by Messrs. Dinning & Cooke, Newcastle; Mr. J. Elliott, North Shields, was the contractor for the general work; Mr. Walker, Newcastle, for the painting and decorating; whilst the windows have been glazed by Mr. Baguley. Mr. Chas. Cobham, of Sunderland, has acted as Clerk of Works. The total cost will be about 2,500*l*.

Ryall.—The ancient church of Ryall, in the parish of Matfen, Northumberland, has been re-opened. The chancel has been restored by the Ecclesiastical Commissioners, from designs by Mr. Ewan Christian, their architect. The old roof, with its whitewashed flat ceiling, has given place to a wagon-roof of pitch-pine. The nave (which was an utter ruin, the roof having collapsed and the side-walls having partly fallen down) has been restored, from designs prepared by the vicar, whose chief object has been to reproduce the Norman fabric almost destroyed by the Scots in 1296, and of which but little remained above ground. The bases of the Norman doorway were found *in situ*; fragments of its shafts were found in the walls. The string-course of 1150 was almost intact on the north side. Half a window-head and an original splay gave sufficient data for the present windows. A few old quoins confirmed the angle of the splay adopted. The plinth and bases of the pilasters were found perfect round the whole edifice. These have been carefully replaced, and the stones of the old chancel-arch were all numbered when taken down, and each one replaced in its ancient position. As the funds at the vicar's disposal (altogether about 520*l*.) would not allow him to rebuild the Norman tower (traces of which may be seen at the west end), he has replaced the turret of 1776 by another of Norman character. The nave roof is of pitch-pine. The walls follow their original dimensions, and vary in thickness from 4 ft. 6 in. to 3 ft. 6 in. The whole work has been carried out by Mr. J. Ferguson, of Gosforth. The whole of the stone required has been granted by the Duke of Northumberland, from his quarry at Inghoe.

North Ormesby (*Middlesbrough*).—On the 26th ult. the foundation stone of a new tower and spire of the church at this place was laid by Messrs. Pennyman, of Ormesby Hall. The church, which was partly built some ten years ago, is being doubled in size by the extension of the nave westwards, the addition of a new south aisle, a chancel transept, and a tower and spire 140 ft. high at the south-west corner of the church. The lowest stage of the tower will contain the principal entrance to the church. Mr. Chas. Noel Armfield, of Whitby and Middlesbrough, is the architect.

Burbage.—The parish church here has been re-opened after restoration. Upwards of 1,500*l*. has been expended in the work. The interior has been entirely cleaned and renovated, the west gallery removed, and the tower arch opened into the church. The works have been carried out by Messrs. John & William Harrold, contractors and builders of Hinckley, the architect being Mr. W. Smith, of London.

Egton.—The Archbishop of York on Monday afternoon consecrated a new church at Egton, near Whitby. The church, which has cost over 5,000*l*., is the gift of Messrs. Foster Brothers, of Halifax, Bradford, and Whitby.

DISSENTING CHURCH-BUILDING NEWS.

Rhayader.—The memorial stone of a new chapel for the Calvinistic Methodist Connexion, in the little village of Gwystree, near Rhayader, has been laid. The contractor is Mr. J. Griffiths, of Cwmgwyddel.

Hartshead.—On the 15th ult. four memorial stones of a new Wesleyan chapel, to be built at Hartshead by the Wesleyan Methodists, were laid. The proposed erection comprises a chapel 45 ft. by 22 ft., with two vestries. The cost of the chapel will be about 800*l*. Mr. W. H. Howorth is the architect, and the works are being carried out by Mr. John Brearley, mason; Mr. Joseph Moffitt, joiner; Mr. John Brown, painter; Mr. George Lucas, plumber; and Mr. George Shaw, Mirfield, plasterer and slater. Accommodation is to be provided for 250 persons.

Miscellanea.

Obituary: Mr. Harry Leach.—We record with regret the death of this gentleman, who has for many years been known as physician to the Seamen's Hospital, Greenwich, and medical officer of health to the Port of London. The deceased pursued his medical studies at St. Bartholomew's Hospital, and was admitted a member of the Royal College of Surgeons in 1858. His long connexion with the *Dreadnought* Hospital gave him opportunities of witnessing the sufferings and frequent deaths among the crews of trading ships from scurvy, due to defective provisions and want of pure and good lime-juice. He was unwearied in his exertions in bringing the facts to the notice of the public and the Government, and was very influential in procuring those legislative improvements which have now ensured a pure and regular supply of lime-juice for all merchant ships, and inspection of their provisions. Mr. Leach was consulting medical officer to the Board of Trade, and published "The Ship Captain's Medical Guide," under their authority, a work which has gone through seven editions. He is also author of the "Pocket Doctor for Travellers and Colonists" (second edition), "Report on the Hygienic Condition for the Port of London," and on the necessity of inspection of shipping arriving in the Thames, and on the sanitary control of that port. The deceased died at the early age of 44, after a long illness.

The New Diver at the Polytechnic.—The operation of diving has been so long associated in idea with the Polytechnic that the new process of diving now being exhibited there appears to have received less public notice than it seems worthy of. The name of the inventor is Fleuss. He wears a dress like that of an ordinary diver, and takes down with it the materials for breathing. Dr. B. W. Richardson, who has "interviewed" him, gives some interesting particulars in *Nature* (of Nov. 20th):—"When on the floor of the tank, Fleuss moves about as he pleases, apparently without any impediment whatever. He can pick up coins, he can sit down, and he can even lie down and get up again. He breathes, he says, just as easily as when he is in the air and quite as freely. He has some means of disposing of the products of respiration as well as of getting a continuous supply of air for respiration, since there is no escape of expired air from him into the water. The facts narrated prove that, without assistance from above, a man who has had no previous experience of diving or of remaining underwater can take down with him sufficient oxygen to live there easily for an hour. In whatever way Mr. Fleuss gets breathing-room under the water, he has, without a doubt, achieved a great practical success. He has learned how to live independently for a long time shut off from all external access of air."

Death of a Steeple Jack.—Mr. Arthur Weston, coroner for the western division of Northamptonshire, held an inquest at Green's Norton, near Towcester, on the body of John Rhodes, of Hull, a "steeple Jack," who was well-known for the ability with which he ascended steeples and church spires to effect repairs. Rhodes had been engaged to repair the spire of Green's Norton Church, and when ascending the spire of the church with a stone on his back he was seized with palpitation of the heart. He secured himself to a ladder by means of a belt in front of him, and was there suspended. A man who was working with Rhodes went up to him and found he was dead. A medical man gave it as his opinion that the deceased had been seized with palpitation of the heart, had fainted, and that he had been strangled with the cord by which the stone on his back was secured. The deceased had complained of heart disease for some time, and the coroner expressed his opinion that the probability was that heart disease was the cause of death, and a verdict of death from "natural causes" was returned.

The Female School of Art holds its annual Exhibition of Students' Drawings on (this) Friday, the 5th, and the following day. The school has been particularly successful in respect of medals this year.

The Water-Colour Societies will both open with winter exhibitions on Monday, the 8th, the private view in each case taking place on this Saturday.

Metropolis Waterworks Purchase.—Notice has been given that an application will be made to Parliament next Session for leave to bring in a Bill to authorise the purchase by agreement or compulsion to a metropolitan water trust, to be constituted by the intended Act, and the vesting in it of the undertakings of the metropolitan water companies. Powers will be asked enabling the trust, subject to the provisions of the Act, to exercise the rights and powers of the companies, and to carry on the acquired undertakings; for the dissolution of the companies, the creation and guarantee of stock, borrowing, rating, and other powers, and the amendment of Acts. The companies whose undertakings will be sought to be acquired wholly or in part are the New River, the East London, the Southwark and Vauxhall, the West Middlesex, the Lambeth, the Chelsea, the Grand Junction, and the Kent.

Opening of a Coffee Tavern in Ramsgate. A new coffee tavern, situated near the South-Eastern Railway Station, Ramsgate, was opened to the public last week. There are bedrooms, plainly but comfortably furnished; a large, pleasant reading-room; small sitting-rooms; adjoining the bar is a room in which a bagatelle board is fixed, but which may also be used for lectures or discussion; and, last of all, there is the bar, over which the tea and coffee, &c., are dispensed. In regard to the general question of coffee taverns, the movement is not only spreading throughout the country, but well-established houses are paying a good percentage. It appears that there are now at least 800 such taverns, whilst four years ago there were less than fifty in all England; whilst the report of the forty coffee taverns in Liverpool states that they are paying 10 per cent. dividends.

A large Engine Shed, Offices, and Turntable have just been completed at Horsham for the London, Brighton, and South Coast Railway Company. The shed is semicircular in form. The back and end walls and walls of offices are of picked grey stocks, relieved with red brick arches and bandings. The front is formed with eleven cast-iron columns, 11 ft. apart. The roof is constructed of iron trussed principals, and trussed wood purlins to receive the 1½ in. yellow batten-boarding for slating. The upper portion is constructed in the same manner for Mr. W. E. Rendle's patent system of glazing. The turntable is 45 ft. in diameter, and calculated to carry 100 tons. There are ten roads off the table into the shed, which is intended to hold ten large-size engines. The works have been carried out by Mr. J. Anscombe, contractor, of Brighton, from the plans of Mr. T. Bannister, engineer to the company. The resident foreman of works was Mr. F. Chettleburgh.

A Mislaid Tender.—Messrs. Hindley & Sons having properly delivered a tender for certain upholstery work for the Mansion House according to specification, in the prescribed manner and at the appointed place and time, complain that by some unfortunate mishap it failed to reach the committee, then sitting to receive tenders. Their tender was very much the lowest in amount, and they have offered twenty guineas reward for such information as will enable them to trace the miscarriage of the said tender, and recover the document if still in existence. Did any servant of the Corporation receive it?

The Eberle Restaurant, Liverpool, was totally destroyed by fire on the 30th ult. The building was the newest, and probably the most costly, of the many establishments of the kind in Liverpool. The loss is estimated at 43,000*l*. Nothing is known as to the origin of the fire. The restaurant was opened in April of last year for the Eberle Hotel and Restaurant Company, having been erected from the plans of Mr. E. Kirby.

The Institution of Civil Engineers.—At the fourth meeting of the Session, held on the 2nd of December, Mr. Bateman, F.R.S., president, in the chair, the paper read was on "The Passenger Steamers of the Thames, the Mersey, and the Clyde," by Mr. W. Carson, C.E. Fifty-four candidates were balloted for and duly elected.

Recent Building Accidents.—It has been incorrectly reported that these two accidents occurred in one district: one, that in Rathbone-place, occurred in Mr. Jennings's district; the other, in Tottenham-court-road, in Mr. Vallen's.—L.

The Artisans' Dwellings Act.—At the meeting of the Metropolitan Board of Works on the 28th ult., the Works and General Purposes Committee presented a report, in which they stated that they had considered the letter from the Home Secretary referred to the Board on the 9th ult., requesting that the Secretary of State might be furnished with a special report as to all the schemes under the Artisans' and Labourers' Dwellings Improvement Act now pending, and under the authority of the Board the committee had prepared and forwarded to the Home Department a reply to the letter, and they now submitted a copy of their reply, which submitted for the information of the Secretary of State particulars with reference to each of the fourteen schemes which have been prepared by the Board and sanctioned by Parliament, viz.:—1. Whitechapel and Limehouse scheme; 2. Bedfordbury scheme; 3. Great Wild-street scheme; 4. Old Pye-street scheme; 5. Pear-tree-court scheme; 6. White-cross-street scheme; 7. High-street (Islington) scheme; 8. St. George the Martyr scheme; 9. Goulston-street scheme; 10. Essex-road (Islington) scheme; 11. Bowman's-buildings scheme; 12. Little Coram-street scheme; 13. Great Peter-street scheme; 14. Wells-street (Poplar) scheme. The latter scheme has been postponed until the Board shall have gained some further experience in dealing with claimants under the provisions of the Artisans' and Labourers' Dwellings Improvement Act, 1879. The letter concluded by stating that "the Board, having regard to the very large amount of work now in progress in connexion with the Street Improvements and Artisans' Dwellings Acts, does not propose to deposit any further schemes with a view to legislation in the ensuing session."

The Vyrnwy Water Scheme.—On Wednesday a deputation from the towns on the Severn had an interview with the President of the Board of Trade with reference to the proposal of the Liverpool Corporation to take certain tributaries of the Severn for the supply of Liverpool with water. Sir E. Lechmere, M.P., in introducing the deputation, said it represented the trade and commerce of the Severn, which was likely to be very much injured by the proposed abstraction of water. The proposal was to construct a large reservoir called Llanwddyn, and to abstract 40,000,000 gallons per day. This would occasion a want of water at some seasons of the year, and the navigation would be very seriously affected. Mr. Marten, the engineer to the Severn Commissioners, explained the engineering features of the Liverpool scheme. The Liverpool Corporation proposed to take the water from 23,000 acres of land. The water coming from that area in times of floods went into the river Severn in a very turbid state. It consequently deposited large quantities of silt, and if they were deprived of a large body of water, they would have nothing to scour away the silt. If they were deprived of this water, the river must necessarily contract the whole distance down to its estuary. The mayors of Worcester and Gloucester having spoken, Lord Sandon in reply said it would have to be proved to the Board of Trade that some damage was likely to be done by the proposed scheme to the tidal waters. He would take care that the whole subject was considered by the Government.

Lower Thames Valley Main Sewerage Board.—Notice has been given by the Board that they intend applying to the Local Government Board for a provisional order enabling them to put in force the provisions of the Lands Clauses Consolidation Acts, 1845, 1860, and 1869, with respect to the purchase and taking of lands otherwise than by agreement for the purposes for which the Lower Thames Valley Main Sewerage District was formed, and for, *inter alia*, the construction of sewerage and sewage works, and works for the purification, utilisation, filtration, and disposal of the sewage of the said district, and for the erection of pumping and lifting stations, tanks, machinery and plant, and for any purposes connected with the carrying out of a system of sewerage for the said district.

Piercy Blue Bricks.—Mr. Hamblet has been awarded a Gold Medal (the highest award) at the International Exhibition of Science applied to Industry, at Paris, for excellence of quality of terra-metallic pavings and Staffordshire blue bricks, copings, and so forth. He must have a drawerful of medals by this time.

Extension of the Metropolitan Railway to Willesden.—The extension of the Metropolitan line from Finchley to Willesden has been completed and opened. The extension was commenced in April, 1878. Between the Swiss Cottage and the present terminus at Willesden there are three stations, namely, Finchley-road, West Hampstead, and Kilburn and Brondesbury. It is a double line of railway throughout, and is carried by a viaduct over the West Hampstead Junction Railway of the North London line and across the Iveston and Edgware roads to Kilburn Station, whence it proceeds to Willesden. The two skew-bridges over the Iveston and Edgware roads are good specimens of engineering work. The first has a span of 105 feet, and the second a span of 80 feet. The line has been constructed by Mr. Firbank, the well-known contractor, in accordance with the plans of Mr. Charles Liddell, the consulting engineer of the Metropolitan Company. The several station-buildings have been constructed from designs by the architect of the company, Mr. M'Dermott. All the locks and door-fittings for the stations were supplied, according to the architect's specification, by Mr. James Hill, of Upper Thames-street.

Pergamos.—There have been received at the Berlin Museum the remains of a colossal altar, celebrated in antiquity as one of the most splendid works of art of the kings of Pergamos. On all sides of it are marble reliefs representing the struggle between the gods and the giants. The remains of these sculptures had been for the most part built into the old city wall of the Byzantine period. Here it was that they were first discovered by the civil engineer, Herr Karl Haman, who has rendered great service in the way of researches in Asia Minor.

Southend Pier.—The ratepayers of Southend have been polled upon the question of providing a new pier, with steam-tram, &c. The result is as under:—Against a new pier, 547; for, 509. Against a new loading-pier, 570; for, 434. For a new head to existing pier, 526; against, 517. The whole scheme was estimated to cost 23,500*l*., the portion sanctioned being put down at 4,500*l*. The enlargement of the pier-head will enable the saloon-boats of the London Steamboat Company to discharge and take up passengers at Southend.

Improvements at Brighton.—The Corporation decided, on Wednesday evening, to carry out the scheme of the surveyor in its entirety, namely, to substitute a wrought-iron fence from Kemp Town to near West Pier, and to widen a portion of the Esplanade at a cost of 15,700*l*. They rejected the proposal of their Works Committee to carry out only a portion of the works at a cost of 8,000*l*., preferring to execute the whole immediately.

TENDERS

For the erection of Board Schools to accommodate 800 children, at the Lyng, West Bromwich. Mr. E. J. Ettwell, architect. Quantities by the architect:—

Hodgson & Facon	£5,119	0	0
Nelson	5,050	0	0
Whitehouse & Sons	5,030	0	0
Evans	4,988	15	0
Fisher	4,890	0	0
Butler	4,789	0	0
Garlick	4,697	0	0
Harley & Son	4,625	0	0
Parton	4,575	0	0
Vardy & Winter	4,506	0	0
Smith	4,497	10	0
Marshall	4,454	0	0
Stockton & Sons	4,347	13	0
Trow & Son	4,320	0	0
Horton	4,299	0	0
Griffiths & Co.	4,289	0	0
Mallin	4,264	0	0
Millward	4,193	0	0
Robinson	4,192	0	0
Widdowson	4,100	0	0
Pritchard & Feltham	4,065	0	0
Jones & Son (accepted)	3,963	0	0

For new roads and sewers on the Castlebar Estate Ealing. Mr. W. Graves, architect. Quantities by Messrs. Barnett & Power:—

Haines	£1,275	0	0
Nye	1,132	0	0
Keeble	1,128	0	0
Jackson	1,083	0	0
Pizzey	1,055	0	0
Botterill	1,024	0	0
George	882	0	0

For brickwork, &c., for heating apparatus, St. George' Church, Ramsgate:—

Goodchild	£113	0	0
Duckett	70	0	0
Newby Bros.	67	0	0
Forwalk (accepted)	45	0	0

For the erection of the first portion of St. Francis's Church, Week-street, Maidstone, exclusive of fittings. Mr. C. G. Wray, architect. Quantities by Messrs. Lansdell & Giffard:—

Blake	£2,464 0 0
D. C. Jones & Co.	2,366 0 0
Beale	2,343 0 0
Reeves	2,346 0 0
F. & E. Vaughan	2,297 0 0
Wallis & Clements	2,194 0 0
Goddard & Sons	2,192 0 0
Bridge	2,167 0 0
Naylar	2,044 0 0

For the erection of new wing, &c., to St. Mary's Orphanage, North Hyde, Middlesex. Mr. C. G. Wray, architect. Quantities by Messrs. Linsdell & Giffard:—

D. C. Jones & Co. (accepted)	£4,891 6 8

For erecting house and stables at New Malden, Surrey, for Mr. E. Child, Messrs. George Lansdown & Harriss, architects:—

Morbey	£2,450 0 0
Lane	2,195 0 0
Downs	2,098 0 0
Walne	2,060 0 0
Laurence	2,039 0 0
Stephenson	1,948 0 0
Tarrant & Son	1,919 0 0
Wells	1,897 0 0
W. & H. Castle	1,857 0 0
Collings	1,824 0 0
Howard & Dorrell (accepted)	1,795 0 0
Saunders	1,777 0 0

For brewery at Dorchester, for Messrs. Eldridge, Pope, & Co. Mr. G. R. Crickmay, architect. Quantities by Mr. T. Nixon:—

Goss	£10,171 0 0
Crook	9,777 0 0
Jenkins & Son	8,900 0 0
Hoare Bros. & Walden	8,598 0 0
Phillips	8,477 0 0
George	8,350 0 0
Gregory	8,305 0 0
Hale & Sons	7,600 0 0
Bull	7,350 0 0

For alterations and restoration of mansion, Calcot Park, Reading, for Mr. J. H. Blagrave. Messrs. Brown & Albury, architects:—

Contract No 1.	
Simonds	£1,433 0 0
Contract No. 2.—Plumber's Work, &c.	
Goddard & Son	556 10 6
Contract No. 3.	
Simonds	411 0 0
Contract No. 4.	
Simonds	283 0 0
Contract No. 5.	
Simonds	499 0 0
Contract No. 6.	
Simonds	316 18 0
Contract No. 7.	
Wigmore	700 0 0

For the erection of new house, Maitland-road, Reading, for Mr. R. Hewett. Messrs. Brown & Albury, architects:—

Kingerlee	£1,840 0 0

For the erection of new shop and premises, Friar-street, Reading, for Mr. W. Newbury. Messrs. Brown & Albury, architects:—

Wernham	£940 0 0

For the erection of new offices, Blagrave-street, Reading, for the proprietors of the *Reading Observer*. Messrs. Brown & Albury, architects.—

Searle	£1,575 0 0

For new infants' schools at Silvertown, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities by Messrs. R. L. Curtis & Sons:—

Grimwood & Son	£3,593 0 0
Reed	3,358 0 0
North Bros.	3,349 0 0
Wall Bros.	3,275 0 0
F. & T. J. Wood	3,174 0 0
Morter	3,173 0 0
Hoskings	3,099 0 0
Hearle & Son	2,963 0 0
Nightingale	2,883 0 0

For proposed new sewage works, 1879, for the Chelmsford Local Board. Mr. Charles Pertwee, engineer. Quantities by Mr. Kennard.—

	Contract No. 1. For Main Sewer.	Contract No. 2. For Tanks.	Contract No. 3. Primrose-hill Sewer.	Contract No. 4. Widford Sewer.
	£ s d	£ s. d.	£ s. d.	£ s. d.
Bell	8,009 10 3	689 15 1	830 10 2	493 3 5
May & Facey	7,248 16 11	636 15 0	810 16 6	610 12 6
Pearson & Son	7,096 15 0	839 0 0	949 0 0	638 0 0
Pizzey	6,550 0 0	850 0 0	...	...
Nobbs & Co.	6,316 14 0	784 16 7	1,185 1 8	661 16 0
Botterill & Co.*	5,787 0 0	710 0 0	724 0 0	529 0 0
F. & F. Wood	5,760 0 0	673 0 0	1,053 0 0	623 0 0
Gozzett	...	655 10 0	...	832 0 0
W. Wood	...	630 0 0	1,119 0 0	593 0 0
Rogers	...	638 17 0	1,100 0 0	650 0 0
Chout	...	629 0 0	...	689 0 0
Hawkes	...	695 0 0	...	750 0 0

* Accepted.

TO CORRESPONDENTS.

E. D. (the information desired has been given in previous volumes of the *Builder*, but we cannot look back) —W. & A. W. S. (we decline recommending).—R. T. S. (whatever may have been once done, nothing of the kind is done now at the Royal Academy).—H. B (we are unable to give addresses).—A. A. & A.—W. H.—W. B.—E. B.—B.—M. P.—J. L. H.—C. G. W.—A. S.—A. H. W.—H. A.—C. P.—Y. G. & Co.—Dr. R.—Mr. K.—P. & F.—C. H. & Son.—T. P.—M. C. & Co.—J. K. C.—O. O. E.—T. H. H. C.—B. W.—T. N.—J. H. W.—Mr. M—J. S. S.—R P.—X. Y. Z.—W. H. P.—F. E. J.—B. & A.—J. S. S.

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And Summer Dried
CORSHAM DOWN STONE,
For Winter use.
PICTOR & SONS, Box, Wilts. [Advt.]

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Seyssel, Patent Metallic Lava, and White Asphaltes.
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An Architectural Domesday Book.

NOTHING contributes more directly to the saving of valuable time, and to the utilisation of the knowledge positively acquired on any given subject, than the possession of a good index. The greater the wealth that exists, the more need of an inventory. It might almost seem as if the example in our national classic literature of the mischief wrought by the mis-direction of,—

> "Forsooth, an inventory, thus importing
> The several parcels of his plate, his treasure,
> Rich stuffs, and ornaments of household, which
> I find at such proud rate that it outspeaks
> Possession of a subject,"—

had induced our countrymen to neglect the very important duty of properly recording and indexing the national wealth.

The contrast with France is most striking in this respect. What have we in England to compare to such works as the "The Bulletin des Comités Historiques," the "Églises de l'Isle de France," the "Églises de Normandie," and their suite? We are not now speaking of such a work as the "Églises principales de l'Europe," published at Milan in folio, containing the Basilicas of St. Peter at Rome; St. John Lateran; St. Mark, Venice; the Superga, near Turin; the cathedrals of Milan, Vienna, Florence, Pisa, Sienna, Antwerp, and Ghent; although we find no corresponding entry in the Universal Catalogue of Works of Art, under the word "Church." We have, of course, well-known books; those on St. Paul's, on Westminster, and the historical and descriptive accounts, by J. Britton, of the cathedrals of Canterbury, York, Salisbury, Norwich, Oxford, Winchester, Lichfield, Hereford, Wells, Exeter, Worcester, Peterborough, Gloucester, and Bristol, published from 1814 to 1832. But where are we if any one puts the question,—"How many parish churches and chapels-of-ease are there in England? Where are the oldest buildings? To what date do they reach? What are the edifices of most interest as museums, or monumental records of the gradual change undergone by ecclesiastical architecture in Great Britain since the time of Offa, king of Mercia, or of Pope Gregory the Great?

Unless there exist a literary store with which we are entirely unacquainted, no reply, worth the name, can be given to these questions,—nay, if it were felt to be ever so urgent to ascertain the facts of the case, what course would be adopted? Only one is consistent with our experience in such matters. Some independent Peer, or member of the House of Commons, would ask for a "return of all the cathedrals, minsters, and parochial churches of England." Then there would be a debate. Members would urge that such a return was not required. Suppose the return ordered. The officer of the House of Parliament entrusted with the duty of preparing the return would first carefully seek to limit the field of inquiry in every possible manner. Thus, if any ecclesiastical buildings existed that did not come exactly under either of the above headings, they would be ruthlessly left out. Tewkesbury Abbey, for instance, with its noble round-headed west window,—a window filling, in its design, the entire width of the nave; Pershore Abbey; Malvern Abbey,—these would probably be omitted on the plea that they were neither cathedrals nor parish churches, but abbey churches used for parochial service. At all events, this is a specimen of the species of evasion in which the collectors of Parliamentary returns delight. Then there would be a certain number of contumacious returns. From one county would come the reply that no list of churches existed, and no funds or machinery existed for making such a list. From some great centres of ecclesiastical architecture might come the reply that the Deans, or Masters, or Fellows declined to furnish any information as to collegiate chapels, unless directed to do so by an Act of Parliament. Then, when all the returns that *did* come in were collected, they would be printed in the most disjointed way. No enumeration would be made in the report, unless specially directed in the words of the resolution. Nothing would be done to make a *coup d'œil* easy, or indeed possible. Such a mass of unsorted detail would be pitchforked to the presses of Messrs. Hansard, that the task of wading through it would be such as to disgust the most eager inquirer. We should be presented with a vast amount of information, neither complete nor exhaustive, and not indicating where *lacunæ* existed,—so that, after three or four years' delay, and a cost untold to the general public, we should be much where we are.

Now we are living in a great church-building age. In few respects does the latter half of the nineteenth century offer a greater contrast to the corresponding period of the eighteenth than in that. Seventy or eighty years ago it was a very rare and difficult matter to build a church. No one seemed to know how to do so legally. Acts of Parliament were required for the purpose, so that, except in cases of reconstruction after damage by fire, from the reign of Elizabeth to that of George III., the ecclesiastical builder was almost wholly unemployed in England. Now, if we remember rightly, we complete between two and three churches per week. It may be said that a man who asks for money to build a church in Middlesex need not concern himself with the number of churches that exist in Yorkshire. The same kind of objection may be made to every effort to collect statistics. Indeed, it is made. There are persons who try to bilk the census enumerator; there are persons so ignorant or so perverse as to say they have "religious objections" to a census. And perhaps it is more easy to understand, than it is decorous to mention, the real cause of the hitherto successful opposition that has been raised to the including in the decennial census of what might be useful information as to the number and capacity of our churches.

Statistical information, however, important as it is, is not what we now contemplate. The provision of church-room for an increasing population is a subject which has been very seriously contemplated and very nobly met. Under all the troubles of the past year or two there seems, as far as our experience goes, to have been but little check in the development of our great charities, or of such voluntary efforts as are covering the country with new churches. But the rapid increase of our architectural wealth cannot be adduced as a reason for failing to ascertain what that wealth is. At the present time we often find occasion to regret that no great work on the subject of our English churches,—such, for example, as the "Gallia Christiana,"—was compiled in the time of the great Benedictine writers. The important question of the growth of our population, for example, is one on which such a record would have thrown much light. We know, thanks to the decennial census, our actual rate of growth. We know, to some degree, that of most European countries. But when we work the calculation backwards, we so soon arrive at such low figures that we are led to question the accuracy of the process. This subject was handled by Cobbett, in his usually nervous and lucid manner. He is not a writer on whose statements it is possible to place implicit reliance, but he is one who, more than many others, suggests food for meditation and object for research. In 1826 he writes that, "We know, from the returns now before Parliament, that out of 11,761 parishes in England and Wales there are upwards of a thousand which do not contain a hundred persons each,—men, women, and children." He states that, in the first three Protestant reigns, parishes were united in more than two thousand instances, and parish churches pulled down. He calls attention to the size, and also to the comparative emptiness, of the then existing churches,—"They were manifestly built, in general, to hold, three, four, five, or ten times the number of the present parishioners, including all the sectaries. Why were so many and such large churches built? Whence were the people to fill them to come? Above all, whence came the hands that built them, with the walls 4 ft. thick, their towers and steeples? There must have been men to perform the labour; and can any one believe that this

labour would have been performed had there not been a necessity for it? We now see large and most costly ancient churches, and these in great number, too, with only a few mud huts to hold the ninety or a hundred of parishioners." This statement is hardly applicable at the present day. We may question as much as we like how far it was an exaggeration fifty-five years ago. But that there is a good deal of truth in it we think no one can doubt. It is probable that in many cases where very large churches are now found in small rural districts we have the ruins of old abbeys or cathedrals, which, on the banishment of the religious orders, were retained as parish churches. Thus Ramsbury Church was a cathedral; those of Romsey, Tewkesbury, Pershore, Malvern, and many others were abbeys. Of these the last three noble instances were,—at least, some forty years ago,—visible to one another from the tops of their respective towers, in the rich valley of the Severn. But while the wealth that from the time of the Conquest to that of the Reformation had gradually accumulated in *mortmain*, or come into the possession of the Church, was so large that it had excited the serious attention of the sovereign and his council so far back as the reign of King Henry IV., the question of the proportion of the size of a building to the probable number of worshippers to be accommodated was much the same in the time of the Confessor that it is now. A certain ease and margin would, no doubt, be allowed. But our ancestors knew so little as to the rate of increase of population, that they have left no records of what the population actually was. They probably were quite ignorant of the fact. They evidently had not the means of computing what the numbers of the inhabitants of any place would be in fifty or a hundred years from any given date. That is a thing which even now, with all our exact information from the census, we cannot realise in our imaginations. We can set down, and we do set down, on paper what the population of London will be forty years hence. But the imagination refuses to realise a city containing 7,000,000 inhabitants. It is all very well, we must confess to ourselves, to say, "If matters go on as they now do for forty years, that will be the population of London." But then we have the instinctive feeling that such a result is too portentous to contemplate. "Things cannot so go on," we are fain to think. Still, for sanitary no less than for other reasons, it would be of immense value to have information, such as that which we now seek to be put on record, of the state of our parish churches and parishes at earlier periods of our history. If, instead of having to contend as to the propriety of attributing the tower of the church of St. Mary, at Guildford, to the time of Alfred, we only had the record of its building, or that of either of the three successive enlargements which the edifice itself assures us took place in Norman, in Early English, and in Perpendicular times, with a statement of the causes which led to the same, and the number of parishioners for whom the accommodation was found necessary,—what a precious illustration of English history, not only architectural, but social, would these few notes afford!

We have the estimate, by George Chalmers, of the population of England and Wales in 1377, as 2,092,978. This will allow only about 525,000 able-bodied men in the whole kingdom. The churches and religious houses at that time are stated by the authority above cited to amount to upwards of 16,000 in number. There was at least one priest to every church, and the priests, together with the regular clergy, must have amounted to at least 40,000 out of the 525,000 able men. So that there was an allowance of about one church to every twelve able-bodied men! We are not, of course, pledging ourselves for the accuracy of these statements. But there they are; they have at least crystallised into the form of *mémoires pour servir*, or materials for history. They require sifting and thrashing, but they are enigmas for the social economist.

In 1381, Hume says, 100,000 men assembled at Blackheath, under the command of Wat Tyler, while, at the same time, numerous bodies of insurgents assembled in Hertfordshire, Essex, Suffolk, Norfolk, and Lincolnshire, to say nothing of the king's army of 40,000 men. How had Wat Tyler collected, in *six days*, more than one-fifth of all the able-bodied men of England? There may be exaggeration in excess of the number cited by the historian. There may be exaggeration, in defect, of the numbers cited by the statist. But the very statement of the two sets of figures, side by side, is ridiculous. It shows how far we are from having proper data. Chalmers's estimate would be too high, if things had gone on as they do now. It is by far too low, if Hume has any data for his positive statements. It follows that our knowledge of those causes which interfere with the growth of population is very defective. The plague, the black death, the Wars of the Roses, may be cited among the disturbing causes. But the great lesson that is to be derived from this palpable contradiction of estimates is the need for that stock-taking and due record, from time to time, of the national resources for which we are pleading. Of the value of the one regular stock-taking that we have of late established, viz., the decennial census, it is impossible to speak too highly. The financier, the soldier, and the sanitary reformer, are alike interested in these returns. The value of the "Church Domesday Book" might be less than that of the census, but he would be a bold man who should attempt to fix the minimum or maximum of that value.

Before the Reformation, according to the same authorities, there was one parish church to every four square miles throughout the kingdom, and one religious house to every thirty square miles; that is to say, parish churches dotted the land two miles apart each way, while a religious house stood on each piece of land five miles long and six miles wide. The wealth to which such a number of buildings,—many of them so stately, most of them so beautiful,—bore testimony, must have been very great, not that, if estimated in pounds of silver or ounces of gold, it would have compared with that of the present day. But what would an ounce of silver buy in the time of Henry VIII.? Supposing it to be stated in coin, the shilling of that day contained 120 grains of silver, which would now represent rather more than one shilling and sixpence. The price paid for meat, by the Act 24 Henry VIII., chapter 3, was one halfpenny per pound for beef or pork, and three farthings a pound for mutton or veal, avoirdupois weight, "and less in those places where they are now sold for less." Thus while the penny was intrinsically worth three of our present halfpence, the purchasing power of the penny (measured by its power to purchase meat) was sixteen times what it is at present, that is to say, that as far as the price of meat is a guide, a penny, or a shilling, or a sovereign, of the time of Henry VIII. was worth rather more than ten times what it is at present. No doubt, therefore, that where it would now take 10,000*l.* to rear a parish church, an equally stately structure might have then been reared (had it been an age of building instead of one of demolition) for 1,000*l.* That would have been the money value. But, except in so far as our improved roads and means of transport allow of the delivery of building materials, where much distance of transport is required, by means of far less labour now than was formerly the case, the actual labour devoted to the erection of the building must have been equal in the two eras. At the round allowance of 5s. per day of the workmen, to cover every expense, 40,000 days' work would be provided, at the present rates, for the sum named, or the constant work of forty men for three years. But the same number of days' work would have been required by the architect of Tudor times, only he would have paid his workmen 6d. a day each instead of 5s. And good pay too, with beef and pork at a halfpenny per pound.

This question as to the testimony mutely borne by architecture to the power and to the population of a country, at the dates fixed by the style, is one that is, of course, by no means new, although it is not one that has ever received that full and systematic elucidation which it demands. The question of the wealth of the Pharaohs, and of the population from which they drew such vast stores of naked human labour, has been rather raised than solved. The question of the method by which, and the cost at which, the vast architraves at Baalbec have been reared into their present lofty position, is one still more undetermined; although from the relics of the banks raised by the Romans for the siege of certain fortresses in Syria it may be conjectured that a solid bank, with a long inclined road up it, was reared close to the site of the temple, and that the enormous monolith was drawn to the top of the bank by sheer force. But so closely do we find the architecture of a country and of an age to be bound up with, and to reflect, the state of human life at the time,—the number of the people, their material welfare, their industrial skill,—that we may well hold that the formation and preservation of a written architectural record is one of not the least of the duties which a generation owes to those that will come after it.

As to the method of forming such a record, the need of which, we hope, requires no farther argument to support it, we would rather, in the first instance, be the recipients than the authors of suggestions. Let us, however, urge on all those who value either architectural record, or the statistics of social life, and the *bones* of history, to use every effort in their power towards the requisition, in the Act of Parliament for the Census of 1880 (if any new legislation is required), or in any other way which may be practically available, for the notation of such records as to schools, churches, public buildings of all kinds, including all descriptions of places of worship, as should furnish at least a blank skeleton for a proper Domesday Book. Even the number of such buildings in each parish, with the simple statement of the number of attendants they could accommodate, or that of their exterior dimensions, would be of immense value. What would we not now give for such a statement, say dated in the first years of each of the Henries? It would be difficult to estimate the historical and statistical value of such information. Here, then, it seems to us, is a plain duty to be fulfilled by the Administration; nor can we believe that if the matter be brought before Parliament with the urgency that its claims, the mere mutual fire of sectarian jealousy will be allowed to maim and mutilate the next census.

To the Royal Institute of British Architects, to the architectural profession at large,—especially to such members of it as may have sufficient pecuniary means to allow them for a little while to work for the good of their country and the honourable remembrance of their own names, rather than for immediate pay,—to the Science and Art Department, to the Statistical Society, to the Society of Arts,—unweary in its efforts to be of public use,—we say, this is an object worthy of your study. We shall hail the first response from whatever source it may come. May we hope that the year 1880 will witness at least the commencement of the preparation of a Domesday Book of the Churches of England?

THE THEATRE WAR AT LYONS.

Undoubtedly the greatest event which has stirred the architectural and artistic world of Lyons is the opening of the Théâtre de Bellecour. This venture has been the subject of faction fights, of political discussions, and wrangling of no ordinary description. It is certainly an enterprise of a gigantic nature and the expediency of the undertaking was well calculated to occasion many discussions and a great divergence of opinion. Lyons is a town which must now contain 400,000 inhabitants, and more than the usual proportion of wealthy people. It might, therefore, be able to maintain a greater number of places of amusement than most towns of this size. The wealthiest people, however, are at the same time often the most parsimonious. For instance, we know a case of a gentleman who had made his fortune at Lyons, and who, while professing the warmest sympathy, would not subscribe to an artistic local periodical started by a friend because it cost 16s. per annum. "Sixteen shillings," he observed, "was a considerable sum." Three months later this prudent individual died, and it was found that he had left a fortune of 7,000,000 francs! Many of the Lyons millionnaires live in the most modest manner, content themselves with the strictest necessities of life, and are, therefore, not prone to spend their money in orchestra-stalls. Now Lyons, apart from a number of smaller and suburban theatres, is endowed with two large theatres, subventioned by the municipality, and where every effort *is* made to develop a high standard of taste and cultivate whatever local aptitude may be forthcoming. At the first of these theatres, the Grand Théâtre de Lyon, the opera is produced in a most creditable manner. At the other theatre, the Théâtre des Célestins, we have drama and comedy. The first theatre will hold 2,200 persons, and the other 1,700; and might bring in respectively 160*l.* and 120*l.* per night,—an estimate which includes officers and soldiers, who are always admitted for half-price. To keep these two theatres alive, the municipality

has been in the habit of paying them a subsidy of 6,000*l.* per annum; and in the face of these facts the question arose whether it was wise or necessary to build yet another larger and even more expensive theatre. The municipality would not hear of such a proposal; and, for our part, we cannot fully appreciate the merits of this local squabble, but we must record our admiration for the courage and enterprise of those gentlemen who, in spite of opposition from the authorities, determined to give Lyons yet another theatre; and, by the grandeur of the scheme, make this new house of entertainment one of the chief attractions of the town. We cannot but doubt the wisdom of the undertaking; nor, perhaps, was it altogether fair towards the other theatres, where efforts were made to accomplish good work; but, we repeat, the boldness of the enterprise, the energy with which it has been carried out, must commend itself to the admiration of all impartial observers.

The new Théâtre de Bellecour has now been opened to the public for about two months, and though it is not quite finished, we were, nevertheless, able to form a very complete idea of its magnificence, and the novelties that have been introduced in its construction. The façade is perhaps the part of the building which occasioned the most perplexity, and gave the architect the best opportunity of displaying his ingenuity. The company, or rather the few shareholders to whom this theatre belongs, succeeded in obtaining a site measuring more than 2,000 square mètres, and valued at more than 40,000*l.*; but the portion of this land which gives on to the main thoroughfare of Lyons, the Rue de la République, close to the Place Bellecour, is extremely narrow. To add to the complication, the houses on either side do not match, the one is much larger than the other, and they are in no way adapted to the close proximity of a great public building. How far the architect, M. Jules Chatron, has made the best of these adverse circumstances must remain a matter of opinion; but, in all cases, no one can deny that the façade of the theatre, in spite of its narrow dimensions, is at once imposing and original. The entrance is flanked by two immense statues, 18 ft. high, which are surmounted by a balcony, corbelled out in hard limestone. Above the balcony there is a monumental loggia, decorated with mosaics, bronze, gold, stained glass, &c. One of the peculiarities of this theatre is that there are three *foyers*, or crush-rooms, one above another, to correspond with each story, and all giving on to the street. The two upper crush-rooms are not yet furnished. Over the loggia there is a cupola, painted to imitate Florentine bronze, and relieved with gilding. This enables the eye to realise the height of the structure. Behind the cupola similar windows admit light into the body of the theatre in sufficient quantity for a meeting or concert to be held in the daytime without the aid of gas. Finally, on the summit of all, an electric light indicates to the whole town that the theatre is open,—the piece begun.

The side of the theatre giving on the Rue Bellecordière has a wall no less than one mètre fifty centimètres thick, and thirty-seven mètres high. This wall is united to the rest of the structure by tension-rods and enormous rafters in iron; fixed at their extremities in metallic pillars, and possessing, according to the verdict of the experts appointed to examine the safety of the building, every necessary element of strength and security.

It is impossible to enter, be it only the vestibule of the theatre, without being at once impressed with the novelty of the entire organisation and structure. First of all that abomination of the French theatre, the *queue*, has been abolished. Instead of being obliged to stand packed close together in Indian file between palisades that look like cages in front of the ticket-office, the public is allowed to secure places any time during the day without extra charge. Every place in the theatre is numbered, and thus, armed with his ticket, the spectator can walk in at any time, without being compelled to wait outside before the doors are open in order to secure a good place. This is certainly an excellent innovation, and avoids much confusion and crowding.

The entrance, or vestibule, leads to the most peculiar part of the theatre. This is termed the Indian *café*, which is built underneath the theatre, is circular in shape, and entirely lighted, both day and night, by electricity. It would be most difficult to give anything approaching to a correct picture of this most fantastic place. The style of decoration is purely Indian, and not a little barbarous. Brick-red is the predominating colour, but this is relieved with gold, green, blue, Indian faces painted here and there, and a little black. There is a colonnade all round, with red and gold pillars, while the wall beyond the pillars is covered with uneven looking-glass, that seems more like plaques of polished steel, fixed into a buff-coloured framework. The pillars have for capitals elephants' heads, life-size, painted a dull green, with huge gold ears. There is a circular bar in the centre whence refreshments are served,—little tables dotted here and there for coffee, &c. The absence of gas and the tesselated pavement would render the place delightfully cool in summer, particularly as drapery is used instead of doors. The whole effect is harmonious, though it might be thought gaudy but for the fact that the high colouring is in keeping with the Indian style. In any case the result is most startling: the electric light throws a fairy-like glamour on the scene, and it would be worth while visiting the theatre if only to see the *café*.

Below the *café*,—that is, in the basement,—another circular room, plainly decorated, and not so lofty, serves as a *restaurant*, so that the visitor begins by dining in the room below the level of the earth, then ascends to the ground floor, where he takes his *demi-tasse* and cigar, and finally, at the last moment, when the electric bell has given the signal, he goes up to the first floor and finds that his stall, numbered and reserved, is ready, waiting for him. The theatre itself is also a remarkable though less eccentric structure. Its size and importance may be gathered from the fact that it will seat 2,400 persons, though every seat is separated by a division, to prevent overcrowding; and, further, there is standing-room for 600 more persons. In the general style, M. Chatron has sought to effect a happy compromise between the Italian and French systems. In the ordinary French theatre each category of place varies in aspect and disposition. The first tier of boxes and the dress-circles predominate by their sumptuous decoration. In the Italian theatre, on the contrary, the decorations are uniform, whatever the height or nature of the place they surround. At the Théâtre de Bellecour a difference is made, but not so marked as is generally the case in France. Each row of stalls is raised one above another, so that the persons in the last seats can see perfectly; but the floor is level, the seats can be easily removed, and the theatre converted into a large ball-room. Around the stalls and on the same level there are thirty *baignores*, or large boxes, which hold eight people, and are only separated from each other by a division about 3 ft. high. Behind these there is not, as in most theatres, a wall, but simply some heavy drapery; and, on the other side of the drapery, a wide space where persons can stroll round and talk, and, by pulling the curtains aside, obtain an occasional glimpse at the stage. To this contrivance, however, two very serious objections may be made: firstly, the sound of conversation disturbs those who are seeking to enjoy the play; while the rush of wind every time the curtains are moved is most distressing, at least in the cold weather, which so often prevails at Lyons.

The general disposition of the interior of the theatre is very similar to that of the ancient Paris Opera, in the Rue Lepelletier. There are four columns on either side of the stage, of a composite and remarkable style. The three galleries are richly decorated, the design including shields that bear the names of great composers and authors. The centre of the ceiling represents the rays of a star, to which the eight electric lights that hang underneath, instead of the ordinary gas lustre, give an appearance of reality. The rays of the star gradually lose themselves in clouds, which themselves frame allegorical and admirable paintings, representing Aurora opening the gates of the West to Apollo conducting the Sun; and, where darkness of night still prevails, Tragedy and Death are menacing Love, nurtured in the soft glow of the dawning day. There is also a stalwart female, seated on a heraldic lion, receiving a crown from the hands of Renown, which is, of course, meant to represent the town of Lyons. Round the galleries we have both electric and the ordinary gas light. These are used sometimes simultaneously, sometimes separately, according to the exigencies of the play. In the decoration the most novel feature is the frequent admixture of red copper, which harmonises wonderfully with the surrounding gold and silver, and with the rich crimson satin hangings and gold fringe.

The first-floor, or principal crush-room, is preceded by a regular English bar, with three bar-girls, who have thoroughly understood the importance of personal appearance as a means of increasing the sale of refreshments. The crush-room is also Indian in style. The walls are covered with looking-glasses, framed in pillars which, facing each other, give the room the appearance of an endless gallery, where the waving palm-leaves, poised above the central seat, are reproduced over and over again. The pillars are of a brick red colour. The room is lighted by electricity, which has a most curious effect of colour on the large satin rosettes that surmount the doors. These are made of plaited blue and crimson satin, with red velvet and gold fringe.

Such are some of the most salient eccentricities and attractions of this new theatre. Certainly it will rank as one of the greatest "sights" of Lyons, and the tourist will not have done his duty unless he visits the Théâtre de Bellecour. We do not know that we can recommend the theatre as a masterpiece of artistic culture and refinement, but it is most original in its details, magnificent in its general effect, and in the theatrical building world deserves to be considered as the "sensation" of the day. M. Jules Chatron, the architect, has well understood the exigences of the situation. It was no use fighting the "official" theatres with their own weapons. It was necessary to go out of the beaten track altogether to impress and excite the imagination of the people, so as to divert them from their ordinary channels, to fill his huge theatre when there are so many other and good theatres close at hand with their doors wide open. The gauntlet thus thrown down has been boldly taken up. The old-established theatres do not intend to be eclipsed by the new-comer. But the taxpayer will have to pay some of the costs of this war waged for the purpose of providing him with amusement.

The theatre subvention was formerly 6,000*l.*; now this sum is to be doubled, so as to enable the two theatres supported by the Municipality to fight the all-engrossing Théâtre de Bellecour. Already the interior of the Grand Théâtre has been redecorated this year. The ceiling originally painted by M. Abel de Pujol, has been restored by M. Ginivet, the decorator retained by this theatre. Next year the crush-room is to be re-done by M. Hirsch, the architect of the town, and on this a sum of 8,000*l.* will be spent, and not spent before it was required, for the room certainly looks old, dingy, cold, and stiff. On the other hand, the crush-room of the Théâtre des Célestins, which theatre, together with the Grand Théâtre, is to carry on the war against the Théâtre de Bellecour, is most elegant and refined in its Greek style of decoration. At one end of the room there is a gigantic ebony and gold fireplace, with some fine ironwork and marble above. The colours of the wall are sober, chaste, and yet not devoid of a certain grandeur. The predominating colour of the ceiling is white, while the design is in bright blue with a little red, some gold, a little black, and a few flowers. The wainscoting is of a dark dull brown; the paper of the lower half of the wall dull brick colour, enlivened with a thin gold design and a black and red border. Nothing could be in greater contrast with the startling ornamentation of the rival Théâtre de Bellecour. The *foyer* of the Théâtre des Célestins is certainly not so original, but it seemed to us more refined.

There is a powerful argument which the old theatres bring forward in their defence against their new rival that we should mention in conclusion. The Théâtre de Bellecour is blamed for supporting the "starring system." It imports companies from Paris for a few weeks each, who, during that time, play the same plays over and over again. On the other hand, the Célestins and the Grand Théâtre, under the able management of M. Marc, constitute a real local school for acting. These theatres have their own companies, and afford an opening not merely for local actors, but also for local authors. Thus we have at the Théâtre des Célestins a play, recently produced, entitled "La Lune Rousse," by M. Josephin Soulary, a well-known poet, and the librarian of the Bibliothèque Centrale of Lyons. "Jehan le Serf" and "L'Impasse" are also two other plays by local authors. Then, again, while in the course of six weeks the

Théâtre de Bellecour gave only two different pieces, that of the Célestins gave twenty-two; and, in six months, the Grand Théâtre put on the stage no less than sixty-eight different operas, including "Étienne Marcel," the opera by Saint-Saens, which has never been rendered elsewhere.

In this manner is the battle waged, and it is amusing to note how gradually the population are forming themselves into factions,—the one supporting the old state of affairs, the other applauding the enterprise and the revolution brought about by the directors and founders of the new Théâtre de Bellecour. In such a struggle the public will probably be the gainers.

Lyons.

THE "ST. MARK'S" DEMONSTRATION.

The short but rather excited skirmish that has arisen over the supposed intentions of the Italian Government in regard to St. Mark's has run out its first stage, at all events; and not without leaving one or two small lessons for those who are able and willing to profit by them. The very excitable kind of English people who promoted the skirmish ought to have learned once more a moral which has been pointed towards them ineffectually more than once already, viz., to be quite sure what it is that another man means to do, before they hold him up to ridicule and abuse for his presumed intentions. Whatever we may think of what has been done at St. Mark's already, it would certainly appear that the high Italian officials who are concerned in the matter are not thinking of going to work in any careless or Vandalist spirit, and that the statements flourished about in the newspapers and at the meetings of the Society for the Preservation of Ancient Buildings have been in many cases exaggerations. One of the illustrated journals, the other day, took the opportunity of publishing a view of the façade of St. Mark's, "which it is proposed to pull down,"—a proposition which, of course, has never been made. It is significant to contrast with these sweeping denunciations the considerate remarks of the Italian Ambassador, as reported by the secretary at the last meeting of the Institute of Architects,—remarks which went to emphasise the fact that, considering the nature of the foundations and the ground on which the famous basilica was built, the question was one not so much of restoration as of the absolute stability and safety of the whole structure. But this is far too matter-of-fact a view for some of our good friends at home. It has been stated as a fact that the mosaic of the great dome has parted from its ground, and is now hanging as an internal shell within the dome, and with a space between the mosaic and its proper ground or bed. We are not able to vouch for the fact, but we do say that mosaic so situated is in a most critical position, though some who have written on the matter here pass it over as a trifle.

It may possibly occur also to some of the more sober among the anti-restorers, that in future interference with the custodians of any important building, it would be as well to modify that tone of superiority in which they lecture and take to task those who are often better informed in regard to the matter in hand than any of their censors. Had the anti-restoration society sent a private memorial, in polite and respectful terms, to the Italian Government; had they taken the trouble to inquire what was really intended in regard to St. Mark's, and given their support to those individual Italians who, as they would have discovered, were really actuated by much the same wishes as those expressed by the English society, they might have been welcomed as co-adjutors, and heartily thanked for their enlightened interest in the architectural monuments of Italy.

There is a broader and more important question suggested by the controversy than that to which we have alluded, and more particularly the subject of a long letter from the Roman correspondent of the *Times* last week. That letter suggested what seems to have been entirely lost sight of by some of the objectors,—that it was just possible that modern Italy might be disposed to regard her land and her architectural remains as existing for some other purpose than the amusement of foreigners and travellers. We have been, for a good many generations, so much in the habit of regarding Italy as a beautiful relic of the past happily left for our artistic instruction and pleasure, that it seems difficult to convince some people that recent Italy is a very different thing from the Italy of last century or the commencement of the present; that she has her own independent political life, and is looking forward to a new future. It is not surprising that, under these circumstances, the too paternal interference of a small knot of excited Englishmen should have been resented pretty warmly; the Italians would hardly have shown proper spirit if they had not done so. A country which is looking forward to the future is hardly likely to sympathise very much with a circle who seem, with one consent, to have given up present and future as hopeless, and to think nothing worth the slightest attention or reverence except the relics of the past. By all means let a reverent care be had of such relics, but do not exaggerate their value at the expense of all the present interests, and all the hope which there may be for an art of the future, if only more energy and more encouragement were given to the work. As we have already said, St. Mark's is one of the most typical buildings in the world, and no pains ought to be spared to preserve the structure to us as intact as possible, and to preserve the mosaics rather than attempt to restore them. We entirely concur with those who say that a restored work of art, meaning thereby a copy of the old one as it might be supposed to have been when it was new, is worth little or nothing; it does not represent the art of the present day, and it fails in giving any real representation of the art of the time which it imitates. What is there to be done when an old fresco or an old mosaic has come to that stage of falling to pieces that it cannot any longer be let alone? Is there not one other course open to us? Surely we may try to make a better one. The remaining fragments of the old work should be carefully copied on durable material, and all their history and the circumstances of their removal noted down for historical reasons, the old work, if it cannot possibly be maintained *in situ*, removed to a museum or other place of preservation, and then the attempt should be fairly made by the best genius and with the best materials and methods available to us, to produce something which our far-off descendants may be as unwilling to touch or remove as we are unwilling to remove that of our far-off predecessors. Surely if this spirit and this aim, heretical as it may sound, had been more acted upon,—if all the time spent in getting up discussions and sensations against restoration had been spent on seeing what we could do ourselves to surpass the works which we see inevitably mouldering before our eyes,—English architectural and ornamental art might be in better and more hopeful condition than it is.

DALKEITH AND ITS NEIGHBOURHOOD.

Pursuing our observations on Dalkeith,* we must now proceed to speak of the population and the local government; and also to make a few observations on the adjacent villages, some of which are greatly in need of improvement. Those who seek for a picture of rural felicity in such a neighbourhood,—if indeed such a phantom has any form of concrete existence in these degenerate days,—will be apt, we are afraid, to find themselves disappointed. It must always be remembered that we are writing of a district which has a sort of town and country,—a mining and manufacturing population all rolled into one; and which therefore cuts up on the section very much like a piece of pudding-stone or a block of breccia marble.

The population of Dalkeith at the last census was 7,667, that is, within the boundaries of the parish, which contains also a large number of villages and farms as well as collieries; besides being supplied with a most extensive and intricate network of railways. That of the town itself does not exceed in all probability 5,000 or 5,600 at the utmost. The mortality and disease of the district are regularly reported by Dr. Ballantyne, the medical officer of health. From some of these vital statistics, kindly furnished to us by Mr. Dyer, the parish registrar, and commencing from the date of the Compulsory Vaccination Act, we find the death-rate on a computation of the average deaths for the last ten years to be 24·8, which is obviously far too high for such a rural community; and must be considered with regard to the varying conditions of the population, in the first place; and secondly to the exceptional years of 1871-2, when there was a severe epidemic of smallpox, which disease, however, has since disappeared. Speaking from personal observation we may also point out an extraordinary increment of the mortality in the shape of fatal accidents. The urban population is chiefly composed of the ordinary mechanics, manufacturers, and shopkeepers of a county market-town, such as we have already described, and the suburban is made up of agricultural labourers and colliers. In both of these last-mentioned classes it is curious to observe that there is now a very large admixture of the Irish element, not at all to the advantage either of the *physique* or the *morale* of the indigenous population. The ploughmen and farm-servants we happened to see at a hiring fair held in the town one day (when, by the way, their wages were reduced about twenty per cent.) were unmistakably of a well-to-do order of the labouring classes; that is more, however, than we can say of the whole working-classes in the town, a great many of whom are out of work, and who seem to be a set of very rough and sound specimens of what Carlyle calls the mobocracy. In order to account for this we must look into the nature of the local industries. There are several extensive iron-foundries in Dalkeith, some brush and "bobbin" manufactories, a carpet manufactory, two or three flour-mills, a paper-mill, and a brewery. The staple industry, however, of the whole district is the coal trade, which certainly gives employment to a full third of the population. As for the poorer colliers, coal-carters and coal-heavers who depend for their existence on the subterranean treasures of the mines, we have quite recently had enough, and to spare, of their social and educational condition; but even this class of people have improved in their condition, particularly since the days when their great-grandfathers were slaves of the soil.*

The whole district of Dalkeith, we may explain, as well as nearly the whole valleys of the river Esk and its tributaries, consist entirely of the carboniferous system, forming the central part of the great and extensive coalfields of Midlothian. This large and interesting coal basin, we may add, gradually diminishes in the course of every succeeding stratification, and if we may judge from the number of deserted and worked-out coal-pits and smokeless chimneys, is slowly but surely getting exhausted.† Although this heterogeneous population is now on the whole orderly enough, we must add they were not, even very recently, always so characterised. The late Sheriff Gordon, we were told, said, on one occasion, rather disgusted with the abnormal number of delinquents, that Dalkeith would need a sheriff to itself. Until within the last year or two, a depôt of militia had its head-quarters in the town. A fair staff of the county constabulary had also their head station here; and hard enough work, we believe, they had to keep the peace. The burgh commissioners have now superseded the county magistrates in the administration of the police force, consisting of a number of constables, with a superintending inspector. Their duties, we were told, are now very light, excepting on special occasions, such as a fair or a market-day, or an election, and more particularly on a Saturday night, when the surrounding miners and agricultural labourers flock into the town to make their markets.

Temperance, we may add, is rapidly increasing among them; indeed, we have seldom, except in some towns in the north of Scotland and in Wales, seen so much of the temperance movement as we have seen in Dalkeith. The difficulty about the teetotal societies, however, in this quarter seems to be that they have a direct and positive tendency to merge into the warmest description of revival meetings, and not unfrequently into hot-beds of political propagandism.

Dalkeith is now governed, as a municipality, by a provost, three magistates, and twelve commissioners of police, elected under the General Police Act. The adoption of this Act (which is popularly known as Provost Lindsay's Act) was in a manner rendered absolutely necessary by the growth of the town and its suburb

* See p. 226, *ante*.

* The "colliers" and "salters" of Midlothian were actually slaves,—*i.e.*, in the language of the Scots law, "Thirled" to the soil up to the year 1729.—See Fletcher of Saltoun's Works, and Robert Chambers's Domestic Annals.

† The geology of the district is highly interesting. Dalkeith Park, according to Provost Mitchell, lies on the plateau of an ancient sea margin.

of Eskbank, and, above all, by the deficiency of the water supply. The old trustees had not, it was found, the necessary powers of assessment, either to introduce another source of water supply, or to project a new system of drainage. But the great battle of introducing the new Police Bill was fought likewise on other grounds,—those, namely, of putting an end to the slight remnant of feudal jurisdiction exercised by the Duke of Buccleugh, or rather by the baron bailie, and substituting that of local administrative government. There was a great demonstration of triumph, as some think unnecessary triumph, on the part of the burgesses on the day they carried the adoption of the Act; and although the rates or assessment has risen from 9d. to 2s. in the pound, yet so much are they gratified with their success and their consequent enfranchisement, that none of the ratepayers, as far as we could gather, make the least complaint.

Of course, it was not to be expected that Dalkeith could be renovated all at once, and we must say that, as far as they have gone, the commissioners deserve credit. They have, indeed, made several blunders, from which a greater knowledge and experience of Parliamentary practice might have saved them; as, for instance, with regard to the water-supply. Dalkeith, as we have mentioned, is now supplied with water from the Edinburgh Water Company's Moorfoot systems, in consideration of a stipulated price per million of gallons or per head of the population,—we forget which. The supply having been obtained, the works were simple enough. A neat brick octagon tower, about 50 ft. high, with cast-iron cistern calculated to contain 25,000 or 30,000 gallons, has been erected (under the plans and superintendence of Messrs. Leslie, C.E.), close to the cemetery, in the shape of a reservoir; and filtering-beds have been completed on the neighbouring eminence of East Houses. A similar erection has been made at the village of Easter Cowden, for the reception of the water,—obtained under the Water Companies Act as compensation,—from the Moorfoot Hills, by the Duke of Buccleuch. This water-supply has unquestionably been of the greatest value and importance to the town. The error the commissioners committed was simply in becoming lessees of a subsidiary water-supply from Edinburgh without any Parliamentary title, or heritable or legal right. They took no part in promoting the Edinburgh Company's Bill, as Portobello and Musselburgh did; and the plain consequence is, that in the event of either of those municipalities getting scarce of water, Dalkeith might have its supply diminished, or it might be cut off altogether. Such an event is, of course, not very probable for the present; but it is by no means impossible. Whatever may be said about their supply of bread at this moment, it cannot be affirmed that their water is sure in Dalkeith.

Some mistakes seem also to have been made in the matter of the Eskbank drainage. Eskbank, we may mention, is a sort of fashionable suburb of Dalkeith, chiefly inhabited by retired citizens of Edinburgh and merchants of Leith, with the usual sprinkling of half-pay officers and anglo-Indians, who seem to gravitate to such places by some inherent process of selection. A portion of the site, it should seem, lies at a pretty low level; and although considerably elevated above the bed of the river, it is nevertheless dangerously close to the surface-water, which may be found on digging 4 ft. or 5 ft. almost anywhere in the neighbourhood of Dalkeith. Under such conditions, it is by no means safe to have cellars below the basement floor of the houses. Yet this was the origin of a very hot controversy which followed in the local newspaper for the period of six weeks, between a certain gallant captain of the navy and the Sanitary Authority, in which our readers who are conversant with such descriptions of duels will easily imagine that the captain was no match for the commissioners! Let us hope that some good may come out of the discussion, for the drainage of Eskbank is unmistakably defective.

A very pretty little cemetery has recently been added to the two parish graveyards of Dalkeith. We can hardly call it an extramural or even a suburban cemetery, for it lies between Eskbank and Dalkeith, right opposite the R. C. chapel, and adjoining the Public Schools. There is a very tasteful mortuary monument worth noticing in this little cemetery, of white Carrara marble, erected by the Postmaster to the memory of his wife; and not far off in the churchyard of the West Kirk parish, there is a beautiful Cairngall granite obelisk erected by Mr. David Jerdan, to the memory of his wife, who was a sister of Dr. Samuel Smiles. It has engraved on it an appropriate Scriptural quotation in the original Greek. The churchyards, of course, belong to the parish; the cemetery is the property of the Parochial Board.

There is, we understand, at this moment a project on foot of cutting a new street through White Hart-street at right angles to Buccleuch-street, and also of opening up and otherwise improving the labyrinthine closes and densely-populated wynds in the High-street, some of which, such as the Flesh Market-close, Campbell's-close, Leyden's-close, and the Laigh-close, would be all the better for being reformed altogether. Without doubt this is the next and probably most serious task before the Commissioners, and should not be carried out, let us suggest, without a well-considered plan and a collateral system of drainage.

We have left ourselves very little room to describe the surrounding colliery villages, and, indeed, most of them are not worthy of description. We must except those on the Dalkeith estates, however, such as Thorniebank, Cowdenfoot, Smeaton, the Cowpits, and others, which are perfect models of labourers' cottages, and which, we believe, were erected under the personal supervision of the Duke of Buccleuch, who has long been president of the Agricultural Labourers' Cottages Building Association. The villages on the other, or landward, side of Dalkeith, such as those which surround the Millerhill Station, are literally a century behind the age. We are afraid some of the wealthy and liberal colliery proprietors of Midlothian have been spending more money on their steam engines than their cottages!

Dalkeith, we have to observe in conclusion, compared with similar Scotch towns we have examined, such as Stirling and Dumfries, is in all essential respects (if we except its drainage) in a state of advance; and, furthermore, if we consider the beautiful grounds and district of country in which it lies embosomed, it is a perfect paradise when contrasted with such colliery towns as Falkirk or Ardrie. There is, besides, a spirit of great earnestness and desire for improvement existing on the part of the local authority, as well as the conterminous proprietors, which we do not remember to have often met with in our wanderings beyond the Tweed.

THE TWO WATER-COLOUR EXHIBITIONS.

BOTH the Institute and the Society of Water-colour Artists held their private view last Saturday, and opened on Monday for their respective winter exhibitions of "Sketches and Studies." The simultaneous arrangement, whether or not intentionally prompted by a spirit of rivalry, is inconvenient and undesirable, and is calculated to injure the opening day of either one or both exhibitions by dividing the visitors. In this case the old society was the gainer, and seemed to draw by far the larger number to its private view, the other gallery being thinly attended in comparison with what is usual. The "Society" being the older establishment, had the fair claim to first consideration, though not only on that ground, for we have rarely seen a better winter exhibition in its rooms.

Following this example of the multitude, and giving precedence to the older society, we may say a word first upon a few drawings which have special interest for us as illustrating architecture. *Facile princeps* among these, and indeed in its way one of the very best things we have ever seen in this exhibition, is Mr. Ruskin's water-colour sketch of a part of the interior of St. Mark's, Venice (28). This is a "sketch" only in the sense that it is not all equally completed, certain parts being only lined-in sufficiently to give the continuity of the architectural design; but as far as the coloured portion goes, it is about as minutely finished as anything could be, though in light tints. It would be impossible to speak too highly of the delicacy and conscientious study with which the colours and markings of the various marbles are given, and the whole anatomy as well as complexion of the architecture realised; indeed, as we heard it observed by one of the greatest water-colour artists of the day, the drawing suggests the idea that if one were to attempt such study in detail for a large work, and carry out such detail along with the general impression or effect, a very few paintings would have to suffice for a lifetime. We hope that this is not the last of Mr. Ruskin's drawings of this class that we are to see.

We would next point out to the architectural visitor the drawings at Rome, executed on the spot (as the catalogue informs us) by Mr. H. P. Rivière. If we are to take it, as we conclude, that these drawings were really finished as we see them here, in the open air and before the buildings which are delineated, we must compliment their author very highly upon them. They are admirably true in tone, have the appearance of finish without hardness or labour, and represent the architectural detail with combined truthfulness and picturesque effect. Among them may be named "St. Peter's and the Castle of St. Angelo" (93), "The Interior of St. Peter's" (221), and the view of the Temple of Venus and Rome (275); the latter is especially excellent. Not so much can be said, we fear, in favour of another set of architectural studies by Miss Clara Montalba, who has been working at the Thames bridges, and sends several studies, consisting generally of a drawing taken close to a pier or under an arch of one of the bridges, and showing other buildings in the distance. One of them, perhaps in one sense the best, shows that abominable pier of Blackfriars Bridge in hard and disagreeable prominence; but the tones and texture of the material in the others are anything but satisfactory, and they cannot rank as good architectural illustrations. A good sketch of an architectural subject, in very different style from any of those already named, is the view of the arch of Constantine, with a small bit of the Colosseum in the foreground (407), by Mr. Arthur Glennie.

Quitting this special class of subjects, and taking the exhibition generally, we are really quite unable to name half the works which deserve attention, and which (bearing in mind always that this is professedly a "sketch" exhibition) show most refined excellencies. The greatest executive painter of the day naturally comes first. Mr. Tadema's one contribution occupies the centre place on the second screen, which has been his by custom for some years back. It is a Roman interior, of course, exhibiting an aged epicure, "an old bachelor" (356) draped in saffron robes and reclined upon a couch, behind which is seen a marbled bas-relief most beautifully painted; in front a stream of water from a bronze head spouts into the middle of a basin in the marble floor. Every one will understand what are the characteristics of such a subject in Mr. Tadema's hands. The present example, a very small-size work, is even exceptional in a minuteness of finish which Meissonier alone could rival. We may next turn to the beautiful little works of Mrs. Allingham. This lady also disdains to send sketches, and there is no difference whatever in finish between her contributions to the winter and the summer exhibitions. "In the Hayloft" (204) shows us two little children crouched against the mass of hay on the floor of the loft. It is a trying experiment, for a great part of the picture consists of hay, yet the whole is so beautifully handled, and the two children seem so well worth a considerable framework, that the result is quite satisfactory as a picture, and the children are painted with all the refinement and sympathy which characterise the artist's numerous child-subjects. An exquisite little picture in quite a different way is "The Hayfield: Albury, Surrey" (306),—a hayfield in bright sunshine, backed by an amphitheatre of trees on a rising bank, the masses of foliage covered with a shimmer of light and shadow, seen through a slightly hazy heat, which is an exquisite realisation of one of the most beautiful and evanescent effects of nature. There are other works by the same artist, all with more or less excellence.

Mr. Alfred Hunt, as usual, exhibits drawings which might pass for the work of so many different hands, so perfectly distinct and free from manner are they. "Capel Curig" (17), a dark stormy scene, is a good example of his power in one kind of view, and "Twilight—Whitby" (82), a fine realisation of a half-lighted effect of a view only indistinctly discerned through the dusk. Among Mr. Albert Goodwin's contributions, the best is "The Overgrown Park—Allington Castle" (88), where a delightful piece of red ivy-grown ruin forms the centre, with a foreground of rushes and other wild

growths. Mr. Thorne Waite's "Outdoor Studies" come more than any we have yet mentioned into the category of work for which the winter exhibitions are professedly intended, and are admirable specimens of free and broadly-handled sketches. We would particularly notice No. 6 of the set (293); in the same artist's sketch "On the Cotswold Hills" (250), the sky and the landscape seem to be out of keeping, as if they ought to have belonged to different drawings.

Some very charming drawings are contributed by an artist whose name is less familiar, Mr. G. H. Andrews, of whose works "Brightlingsea Hard" (386), and the "Ragged School at Cardiff" (417,—an old hulk to wit), should be looked at. One of the recent members, Mr. H. M. Marshall, sends some very good little studies. Among the old members, we have seen Mr. Geo. Fripp better represented than in this exhibition; Mr. A. D. Fripp, on the other hand, has seldom shown his own peculiar excellence in delicate and pure water-colour more than in "Harvesting, Dorsetshire" (211). Mr. Wallis's scene in a marriage registry at Bruges (258) is a study remarkable for its combination of broad and rich effect, with marked individuality of character in the figures. We might have mentioned among the architectural subjects Mr. A. Goodwin's admirable and careful view of High-street, Salisbury, with the well-known spire seen over the house roofs (118). In speaking of Mr. Wallis, we should not have omitted mentioning, first, his larger and more highly-finished study, almost a finished picture, "Luca Signorelli" (122), where the great artist, gowned and grave, is seen coming down some steps alongside a garden-wall, from over which some merry girls shower flowers upon the long-haired youth who carries the artist's portfolio. There is the making of a fine oil painting in this, and we hope to see it made. There are many more studies and sketches we would gladly comment upon, but space forbids. We should not omit to mention, however, that among the contributions are several sketches by H.R.H. Princess Louise (who is an honorary member of the Society). These are sketches taken in Canada, and though slight, are very artist-like in style and feeling, and have the appearance of great truthfulness as representations of local scenery: the "Courtyard of the Citadel, Quebec" (148), is particularly good. The Princess was among the visitors on the private view day.

Having in mind what is proverbially said in regard to comparisons, we will not follow out any between the exhibition of the Society and that of the Institute, but content ourselves with mentioning the works which pleased us in the latter exhibition, merely observing that the task is a shorter one in this case. Mr. J. D. Linton's name cannot, of course, be passed over, but he has nothing of importance; for the large study for "The Flag of Truce" is an old work, and his single figure, entitled "Forget-me-not" (245), is little but a study of colour and costume, the face being very characterless. Mr. A. C. Gow carries off the honours for his two contributions, "Stragglers" (78) and "The Old Bachelor" (236). The former represents the interior of a house in which two wounded and bandaged soldiers have taken refuge, to whom a little girl enters through the open door, bringing them a pitcher of water, her eyes wide open with wonder and compassion. The motive is an old one: it has seldom been better treated. The other work represents the figure of an old gentleman of the Queen Anne or early Georgian era seated at a window; a highly-finished drawing, not a study; both the countenance and costume show admirable painting. Among studies of the same kind, Mr. C. Green's "1793" (357), a figure in the French costume of that memorable period, may be mentioned; and (better) Mr. Townley Green's little picture, —a complete picture on a small scale,—entitled "Rich gifts wax poor when givers prove unkind" (380); a delicate girl in a green dress before a crimson-lined cabinet, from which she takes some of the "gifts" referred to. Mr. Seymour Lucas has a clever and effective figure-study, a man revolving a "Question of Date" (29) in regard to an old helmet. Mr. Hugh Carter continues his studies in the key struck by Israels, of whom he is at least a very successful follower. Among a number of black-and-white studies in the small room, Mr. C. Green is very good in the representation of "Racecourse Outsiders" (151), and Mr. W. Small, in his spirited representation of the "Athletic Sports" (172) at a public school, showing the head boys in a foot-race half tumbling to the goal in the last stage of spent wind; a good picture might be made out of this. The same artist's coloured study of a "Limpet-gatherer, Banff" (74), is very good, though rather *prononcé* in colour. Mr. Wolf's two lion studies, entitled "Night" and "Morning" (154, 173), should be noticed.

Among landscapes, we see with pleasure that Mr. Thos. Collier is in his old place on the centre of the east wall, with a subject in his old style, "A Deer Park in the South Downs" (271), a noble water-colour study. That Mr. Hine's studies are admirable goes without saying; Mr. James Orrock shows his usual fresh open-air feeling, especially in "Stacking Hay" (235), Mr. Aumonier has a good little sketch, "Mousehole" (238), a fishing village; Sir Coutts Lindsay's sketch of a Mount Athos convent (99) is a very interesting study of quaint architecture and noted place, and Lady Lindsay's able study of a head, titled "Antonino" (111) should be mentioned at the same time. Both these artists send other interesting drawings. "The Ribbonroad, St. Gothard Pass" (287), by Mr. W. L. Thomas, is good, and yet more so is "Fog before Sunshine" (310), by Mr. Kyrke Penson, a very successful realisation of a very weird and difficult effect. Mr. Fulleylove has two Hampton Court studies, of which the larger (64) is deficient in local colour and consequently not real; the building is not red enough, and the yew trees are not nearly dark enough; the other (296) is admirable, and fully bears up the repute the artist has begun to acquire for studies of old gardens in this style. There are some pleasant little bits of landscape on the screens; of the amount of common-place conventional landscape it is not worth while to speak particularly, neither of the little pen studies of theatrical characters of the day in the small room, except to note the conclusion that a society which hangs them must evidently be rather in want of good matter to cover its walls.

FROM THE BANKS OF THE SEINE.

Old Londoners, exiled to the banks of the Seine, had the rare opportunity, some days since, of reviving cherished recollections, in a fog as dark if not as ruddy or as smoky as London can produce; and if it did not bring out the link-boys, it necessitated the use of gas at three in the afternoon. Happily, however, in Paris such inconveniences, though not unknown, are utterly free from that horror of the London atmosphere, "the blacks." As long as we in London are contented to continue the imperfect and thriftless methods of our grandfathers in the warming of our houses, we shall have to suffer from the inconvenience of the "blacks," a very evident proof of the immense loss of caloric the present system induces. Our own advertisement columns are weekly filled with accounts of the most ingenious inventions to prevent such waste, and to obtain that still more important desideratum, a well-warmed house; but yet we continue, when we visit our friends, to shiver, while the grate is cheerily blazing away its tons of cannel or Wallsend for the benefit of the chimney-sweep and the coal-merchant. Paragraphs might be filled with the mere enumeration of the ills to which such a system gives rise,—the pollution of the atmosphere, and the list of diseases increased; our public buildings doomed to everlasting dinginess; our back-yards rendered incapable of producing blooming flowers; our muslin curtains (where we are extravagant enough to use such luxuries), entering as a terrible item into the washing-bill in many other ways augmented by "the blacks." We remember once a well-known Academician showing us in his pleasant garden, thirty miles from London, the effects of its smoke on that portion of the bark of the trees turned towards the capital; and those familiar with the Channel will recollect to have met more than once with a dense fog out at sea, aggravated by the denser atmosphere blown southwards from the metropolis. In this respect, if not in many others, we scarcely envy our be-wintered compatriots on the banks of the Thames.

Paris, which is already, it might be imagined, rich enough in museums, was endowed a week ago with a new and interesting addition to its instructive collections thrown so freely open to the public, not alone on week-days, but on Sundays. The so-called "Musée d'Artillerie" of the Invalides, and its superbly-arranged collection of arms of all ages, has long been one of the features in the visit of the intelligent stranger to Paris, and a delight and instruction on the Sunday afternoon's holiday with the residents; this collection has now received a further addition to its series of armed *mannequins*, representing the warriors of the Middle Ages, in two new rooms; one, in which has been collected a series of models of the cannon in use since the invention of gunpowder; the other, far more instructive, containing a number of ancient arms, representative of the early ages, the stone age, the bronze age, that of the Romans, the Greeks, and the Gauls. But the feature of this new room consists in the eighteen life-sized figures representing the armed warriors of the Greek and Roman armies, and in which each feature of the equipment, the arms, the armour, and the accessories, has been restored, in many cases from examples actually in the museum, in others from specimens in other collections, or from painted and sculptured representations. Here we have a series of Greek soldiers such as they were in the days long before the Christian era; and the Roman soldiers who conquered the world, together with three superb figures of gladiators in all their paraphernalia. For the Sunday afternoon it would be difficult to imagine for the youngsters a more agreeable sequel to the schoolroom of the week day and its dry records of Roman and Greek history than this new museum which has been thrown open to the public.

Not long since we spoke of the number of houses built in Paris during this year; as a complement to this, the recently-published bulletin of the Prefecture of the Seine for the year 1878, which has been inserted in most of the newspapers, may not be uninteresting. In this document (rendered intelligible to English readers by the transformation of francs and mètres into pounds and yards) we find a concise table of the topographical statistics of Paris. The capital of France contains 74,740 houses, in addition to the public buildings; these houses contain 337,587 shops and workrooms, and 684,952 dwelling-rooms, forming a total of 1,022,539. The value is calculated at more than twenty-three millions sterling, of which ten millions go for the former class, and the remaining thirteen millions for the latter. The public ways, streets, avenues, and boulevards, not including the numerous passages and courts, reach the total length of 545 miles, of which 127 miles are planted, a piece of statistics to which we venture to draw the attention of our Board of Works. Paris owes one of its chiefest charms to the large quantity of trees with which it is planted, and which hygienically and pictorially produce no small effect on the city. The drains reach a length of 355 miles, but out of the 75,000 houses of Paris, there are only 22,455 which are supplied with drain-pipes. The total superficies of the capital is more than 19,000 acres, of which 3,600 acres are occupied by the public roads, 442 acres in squares and public gardens, some 231 acres in cemeteries within the walls; the Seine between its embankments occupies more than 500 acres, and the buildings, houses, gardens, &c., more than 14,000 acres. As a last detail, the total population in 1878 being 1,988,806 inhabitants, the mean to the acre is about 100.

In what quarter of the capital are the builders not at work, for recent statistics show that, in spite of strikes and bad weather, the building trade of Paris is the most prosperous of all the Parisian industries? Near the fashionable neighbourhood of the Champs Elysées the whole *Quartier Marbœuf* is a forest of scaffold-poles, —a wilderness of blocks of stone and cement and iron joists; the Boulevard St. Germain is still encumbered by the contractors' wagons, and the historic old Hôtel de Luynes, of which we once spoke in these columns, has, if not ceased to exist, so changed its appearance that it is no longer recognisable; within a few steps of its old and now disappeared court-yard, the publisher Hachette is building a large house, and almost opposite, the Passage de Commerce, and the site of Marat's house, is gradually being transformed, as others have been in the neighbourhood of the Parc Monceau. The same architectural style is being everywhere continued, but greater simplicity and purity of detail are evident; monotonous, but producing houses excessively commodious and returning a very respectable income to their fortunate owners, a great consideration in the present day, and so well understood here, that we were told not long since, by a large contractor, that in building on a piece of land in Paris, he em-

ployed invariably a practical architect-builder (who only differs here from the architect in not having served his time in an architect's office), while, in building a country-house, he turned to is friend, the artistic architect. Such, we be lieve, is the reason and the excuse for the me notony and the want of that architectural con sideration which are brought against the aspe ct of Paris. Parisians regard their city as a city to dwell in at all seasons of the year, and necess arily have recourse to flats. We, in London, owing t o our few-storied and separate houses, in most of which a large amount of space is lost, are obliged to spread out to the suburbs, and our e asier classes spend too much time in their, t uth to say, far more comfortable and luxurion s country existence.

Twenty ye ars ago the English artists-world in Rome was d livided between those who sided with John Gibs on the question of painted statuary, and the se who were shocked at what they unlearnedly c onsidered as vulgar. A great personage, who ha d commissioned Gibson to execute for him a sta tue of Cupid, on hearing at a distance that Gibs on intended to colour the work, wrote to request him not to do so, as he objected to coloured sta tues. Gibson, however, replied somewhat curtly, that he might take the statue or not as he pleased, but that he intended to colour it. At that time, indeed, throughout Gibson's life, he was very fond of giving his brother Benjamin credit for keeping him well informed as regards the manners and customs of the ancients, and the exceedingly interesting passages that Mr. Bell quotes from Gibson smack greatly either of the classical acquirements of "my brother Benjamin," or perhaps still more of the handiwork of some one of those admiring and enthusiastic English women to whom we have heard it said Gibson was fond of imparting his happy thoughts over a dish of tea. Mr. Bell's view of the coloured statues of the ancients being all but invariably confined to the priestcraft is singularly confirmed in the present day by the conservative habits of the Roman Catholic Church, as we see by the elaborately coloured and begemmed statues of the blessed saints which disfigure so many modern churches on the Continent and in England, and are now, more than ever, objects of commercial value in the sacerdotal neighbourhood of St. Sulpice. We must, however, all feel as much on the banks of the Seine as in London how much we are indebted to Mr. John Bell for his exceedingly interesting communication.

THE FORESTS OF THE NORTH.

WOOD-CUTTING in the Norwegian forests commences towards the end of the autumn or the beginning of winter, as soon as the circulation of the sap ceases. It is always an arduous, and sometimes a dangerous occupation, for the localities of the forests are very lonely, and far removed from habitations, so that the wood-cutter is unable to return home for the whole week, but has to camp out in a little fir-log hut, taking with him sufficient provisions for the week, and keeping up a good fire with the branches, without which, indeed, his life would be insupportable. On Sunday he returns, following the tracks through the snow, made for the carriage of the timber, and guarding himself in dangerous places by wearing a pair of long wooden skates called "ski." After a time, when the roads become more marked, and the marshy ground is frozen over, the timber is brought away by the hardy Norwegian horses to the banks of a stream, where it is piled up in heaps called "tommerlunder," and there marked with the peculiar cut of the owner of that part of the forest. As soon as the rivers are free in the spring, the timber is floated down, a good deal of ingenious engineering being displayed in the formation of little artificial lakes to facilitate the passage when the water is shallow, while every now and then a chain of wood, called "laendser," is thrown across the stream to assist the course of the timber fleet, and enable it to be broken up and distributed according to the marks and destination. The whole of this part of the business is managed by a committee of forest proprietors, everything being done strictly according to rule, and the expenses divided by a regular tariff. This "flotation" is an operation which requires very skilful and experienced workmen, for the difficulties are neither few nor trifling. Sometimes a great mass of timber is suddenly brought up by a projecting bank or a rock in the middle of the stream, so that a thousand or more pieces become detached and piled up one upon another. The floaters have a perilous job before them in freeing the mass, which they do by balancing themselves upon the loose timber, and pushing each piece forward with a long pole, until, at length, the hitch is overcome, and the whole pile suddenly darts forward. This is the critical point, however, for the workman, who has to use all his presence of mind and rapidity of action to prevent being carried away himself in the boiling flood, and to regain the shore in safety. It is worse still at the foot of the cataracts, for the timber keeps turning round and round, much to the detriment of the wood, which is not able to get out of the whirlpool without assistance; and the whole period of the water transit is one of great anxiety, not only to avoid actual loss, but to prevent the timber remaining in the water longer than can be helped. If the timber fleet does not arrive at the shipping port at the proper time, the wood has to be left in the water until next season, which represents a considerable loss of capital, not only in the deteriorated quality, but in the loss of the market.

Let us look a little at the economical value of the Norwegian forests. A rough estimate has put them down at about 550,000,000 of francs, or 22,000,000*l.*; and, according to the last census, 13,638 persons were occupied in the wood-cutting and the rafting, the greater part of the men being unmarried and between twenty and thirty years of age. A curious calculation was made in 1870 as to the distribution of the forests in regard to consumption, when it appeared that out of 446 communes or parishes, 102 had a good deal more building-timber than was sufficient for their own wants; 129 had as much as they wanted, and no more; while 215 had not sufficient, and were compelled to buy. In the matter of firewood, 139 parishes were more than amply provided for; 174 had just enough; and the remaining 134 had to buy. The exportation of timber from Norway has doubled during the last quarter of a century, the principal ports for the timber trade being those on the Skagerak, to the east of Cape Lindesnaes; while the ports on the west and north of it scarcely send away more than 4 per cent. of the whole. By far the largest quantity (about 78 per cent. of the whole) is sent away from the ports between Skiensfiord and the Swedish frontier. The following are the proportions of the different timbers exported in 1870 and 1875.

	1870. Per cent.	1875. Per cent.
Rough or squared timber	30·6	38·7
Sawn timber.....	48·6	37·9
Planed timber	10·9	14·5
Small, for fire or pit wood	7·7	5·7
Small, cut for staves, &c.....	2·2	3·2
	100·0	100·0

The latter item consists principally of birch wood, and is insignificant, by far the largest portion of the exportation being composed of fir and pine. The numbers mentioned before of those who are employed in the forest trade, of course do not include the still greater number of those occupied in the supplementary wood trade, such as makers of matches, wood oil and wood paper, the figures of those engaged in these industries, being 50,780 persons, in addition to 662 saw-mills, occupying 6,350 workmen. The following table shows the average rate of timber exportation between 1870-74, in stères (1 stère = 1⅓ cubic yard) :—

Great Britain	1,308,400	Stères, or 55·3 per cent.	
France.....	321,600	,, 13·6	,,
Holland	267,900	,, 11·3	,,
Germany.....	191,000	,, 8·1	,,
Denmark ...	134,100	,, 5·7	,,
Belgium	90,500	,, 3·8	,,
Other countries...	53,000	,, 2·2	,,
Total	2,347,500	,, 100·0	,,

The average value of timber exported between 1871-75 was 61,000,000 francs per annum, at the average price of 20s. 9d. per stère. There are also exported about 250,000 kilogrammes (1 kilogramme = 2½ lb.) of oak bark every year, together with an average of 4,500,000 kilogrammes of wood pulp for paper-making. This branch of trade, however, is largely increasing, and in 1878 it amounted to more than 19,000 tons,—a very large amount, seeing how recent is the commencement of the trade of making wood pâte, few of the factories dating further back than 1870. The Norwegian Court in the Paris Exhibition last year was characterised by a very fine series of exhibits of wood, from the cut balks of pine to the various consistencies of pulp, and finally the paper resulting from it. One very striking application of the pâte was on wall, cornice, and moulding decorations, which possessed a remarkably clear and sharp outline, and is evidently well adapted for ornamental building purposes.

Let us now turn our attention to the neighbouring country of Sweden, celebrated for long past for her forest riches, which are so great, that, after supplying her own wants, she is able to export very large quantities. Like the Norwegian forests, those of Sweden are composed principally of different species of fir and pine, birch, alder, and aspen trees, with the oak in the provinces south of the Dalelf, and the beech in the still more southern districts. In addition to the true forests, almost all the large properties, whether State or private, possess immense pasturages, more or less wooded with the trees above mentioned, as well as with ash, elm, maple, lime, &c., while some localities in Middle and Southern Sweden possess large plantations of mulberry trees. It is somewhat difficult to give an exact computation of the Swedish forests, as Lapland, which contains large woods, partly the property of the State and partly that of private individuals, has not been yet surveyed. Swedish territory, deducting the rivers and fiords, occupies 40,672,000 hectares (1 hectare = 2½ acres), from which should be subtracted 4,693,000 hectares for fields and cultivated land, leaving 35,979,000, which may be classed under forest-land. But a great proportion of this is rough and desolate moorland, strewn with great rocks and intersected by bogs and marshes, so that we cannot place the true forests at more than 16,443,000 hectares, or about 40 per cent. of the whole country; and at least two-thirds of this are situated to the north of the Dalelf, the southern provinces being comparatively sparsely wooded. Of all the rough and forest-land, 5,221,500 hectares belong to the State (about 15 per cent.), and the remainder of 30,757,500 to private owners.

HALIFAX AND ITS TRADE.

FEW of the great towns of Yorkshire are better worth note than Halifax. Its trade is important, its influence great, its parish almost boundless; and its history, though not broken in upon so oft as that of less famous towns by wars and rumours of wars, is interesting. It has known for generations a continuity of progress, and though it has more rivals now than it had, there are grounds for a belief in the continuance of that progress still. It may not be uninteresting to glance at some of the facts which show the past and the present of this famous old town, and the best starting-point is that of about forty years ago. Premising that Whittaker, the historian, opines that in the deep valley where the parish church of Halifax stands, there "stood anciently a hermitage" which attracted many pilgrims; that its name is partly traceable to this fact; and that through once garrisoned by the Parliamentary army, Halifax has kept out of the way of armies generally, and devoted itself and its facilities to commerce,—let us try to glean a little information as to what Halifax was nearly two score years ago. Manufacturing on a small scale dates far back in Halifax, and it is thus not surprising that at the time we have named they had attained great growth. The manufactures chiefly produced then were enumerated as "shallons, calimancoes, taminets, moreens, shags, serges, baizings, coatings, and carpets, with narrow and broad cloths, and kerseymeres." Cotton manufactures generally were growing; paper-making was also increasing, and the coalmines not far distant were a source of wealth to the town. The Aire and Calder and Rochdale canals were the chief sources of communication for traffic, and thriving manufacturing villages around were also served by it. As to the town itself, it might be said that it was well lighted with gas and supplied with water; that the town government was in the hands of "two chief constables and one deputy-constable"; that three churches, a large number of Dissenting places of worship, dispensaries, hospitals, and almshouses testified to the piety, benevolence, and charity of the town; whilst mechanics' institutes and other literary institutions supplied it with literary food. Its extensive parish, the largest in England, contained in 1821 109,809 persons, the township of Halifax furnishing 12,628 of these with homes. Halifax had been made a Parliamentary borough in the time of the Civil War, and it lost that privilege after the Restoration. When the Reform Bill

gave it again direct representation it had 531 electors in the township of Halifax, Owram, and Ovendon. It had then half a dozen cotton-spinners, thirty stuff manufacturers, and large numbers of worsted-spinners and wool-staplers. About a dozen coaches ran to and from the town in this pre-railway time, many carriers, including the Pickfords, Deacons, Cockerhams, and Sutcliffes; whilst there were daily conveyances by water. The post-office was in Cheapside, but the days of "Tabitha Bagnold, post-mistress," and the arrival and despatch of the old mail-carts and mails have long since vanished. These, however, were outlines of a picture of Halifax in the days when, though its trade was large, the town was small to what it now is, and its institutions and its commerce were only the miniature of what they have now attained in extent.

First, as to the population. It may be said that in 1871 the borough of Halifax had 3,704 acres enclosed in its bounds, that its population was 65,510,—five times that of fifty years previously; that it had 13,970 inhabited houses; that the number of electors on the register was 10,083 (that number being swollen now to 11,800); that it was assessed to the income-tax for the large sum of 1,250,000*l.* under the four initial letters which head the schedules so much dreaded by taxpayers. It may be here added, as illustrative facts to show the importance of Halifax, that in the postal district of which it is the head, 2,500,000 letters are yearly delivered, with 300,000 post-cards, and 3,800 newspapers weekly. Of post-office orders, in the town the amount issued yearly is 60,000*l.*, and the amount paid about 51,000*l.* annually. Its name gives the chief title to three important banks, issuing notes to the amount of 60,000*l.* Thus led, whilst dealing with rather dry statistics to the trade, it may be said that in the sub-district of Halifax, the inspector of mines names twenty-eight collieries as in operation at the date of the last return, and three as being then sunk; whilst the names of the owners of the pits are known in many instances well where coal-merchants most do congregate. Near to Halifax, if not exactly within the district, are some of the famous ironworks which have made the south and west of Yorkshire famous for its metalliferous productions. But much more than for these is it noted for its textile trades. "Woollen, cotton, worsted, silk, and carpets" head the rank of its manufactures, and it may be doubted whether the order named would not express the importance of these trades to Halifax, but there are no very reliable statistics of these industries to exactly state the extent. Sufficient to state, that for textile fabrics the locality around Halifax is classic ground: that there are ancient mills to which historic interest now attaches, and that these have known growth as they have adapted themselves to the changing requirements of the age. For the days of the industry in the olden style, when hand-spinning was known, have passed away, and as machinery and increased output have gradually cheapened the cost of production, the demand for all classes of textile fabrics has wonderfully increased, and with it the trade of the great district that is in and upon the largest "parish in England." For it is not only that Halifax has grown and has swollen its trade, but it is also that all the surrounding villages that add largely to the manufacturing output of the district, have increased theirs, and there has been a consequential growth until it may be said now that Halifax is the centre of a belt of manufacturing places that have become almost joined to it in everything but the name. These are tributaries to its trade, and they to a very large extent swell the markets of the town,—alike those devoted to sale of the produce of the mills, and those where the town dwellers purchase from their country cousins. It scarcely needs to be added that as the trade of Halifax has grown, and as the population has increased, those institutions to which we have referred have grown, and alike in their numbers and in the architectural pretensions of their homes, they would discredit not a large town. One or two of the ecclesiastical structures, it is true, are not noted for their elegance, but the bulk of the public buildings are well adapted for the uses to which they are put; and the philanthropic and literary associations of the town are in numbers and order excellent testimonies to the character of the inhabitants.

As to the future of the trade of Halifax, it may be said that the question is one which depends on the larger one of the question of the textile trades of England. A very large portion of the manufactures of Halifax and its district are for export, and it is evident that the export trade of this country has experienced several severe shocks. In cotton and woollen goods we have more competition to meet with than we had, and thus it may be fairly said that the great industries of Halifax are more pitted against foreign producers than they were. Hence, every attempt to cheapen the production is needed, and every enlargement of the area of consumption amongst neutral or non-producing peoples is a direct benefit to the trades. A little has been done in both these methods of recent years, but not so much as is requisite to place the textile trades in England on the footing they were. The trades of Halifax will be much affected by these and allied circumstances, and with that national attention to the state of trade that is needed, these great textile trades should increase. The town is in a great coal-field, furnishing abundant and cheap power; it has the advantage of water communication, and of abundant railway facilities; its trades are well centred, and often old established, and there is abundant capital and machinery almost perfect of its kind. A town placed as it is at the head, almost, of certain trades, and certainly in a district which embodies the centre of these trades, must attract to itself those who deal in the product, and the residential quarters are around Halifax are naturally the abodes of wealthy manufacturers in great numbers. Wealthy as the district is, it has not yet gained that slothful state which wealth too often brings with it, but it possesses abundant energy and public spirit, which must cause its town to advance with the advance that the great trades on which it chiefly depends may know in the future. But it is becoming more and more evident that what our great industries will have to have done for them will be such a change as will enable the product to be improved and the cost of production lessened. This is what Halifax will need to turn its attention to, and with it assured, its future would be also assured with the greater future of the textile trades of Britain. But without it there will be possibly a gain of wealth, but certainly that ultimate accompaniment which, in Goldsmith's well-known lines, typifies a land "to hostening ills a prey."

EDINBURGH NEWS.

The Act of Parliament authorising the complete restoration of St. Giles's Church stipulates that a sum of 10,000*l.* shall be paid to the congregation occupying the nave of the building to enable them to erect a new church. In making this very liberal offer to be at the entire expense of the restoration, Dr. Chambers gave it to be distinctly understood that he would have no connexion with the vested interests of the congregation of West St. Giles's, and the sum required for the erection of the new church consequently fell to be provided for otherwise.

A public meeting was called in the Council-chamber to consider what means should be adopted to raise the necessary fund. The Lord Provost, who presided, referred to the depressed state of trade, and to the heavy demands that had lately been made upon the liberality of the citizens. No resolution was come to, and there is reason to fear that the opportunity may be lost. A period of twelve months is allowed for consideration, and it is to be hoped that before the expiry of that period definite action may be taken.

The expenditure in church building within the last few years in this city has been remarkable, and there seems as yet to be no check to the activity of the promoters of church extension. The last scheme which has come under our notice is for the erection of a church at Dumbiedikes, a name rendered classical in "The Heart of Midlothian."

This district, comprising the sloping ground to the west of the Queen's Park, has been covered by dwellings for the working classes, and the parochial authorities have, for some years past, provided an iron church for the use of the residents. This church is now to be replaced by a permanent structure. The design has been entrusted to Messrs. Thornton, Shiells & Thomson, and the requirements are that the building shall be as economical as possible, and fitted to accommodate a congregation of 800. The site being surrounded on all sides by high tenements, the architects have presented a high-pitched gable to the street, pierced by elongated lancets, and flanked on one side by a simple broach spire rising to a height of 140 ft., which will be seen from the adjoining park overtopping the houses. The interior consists of a parallelogram surrounded on three sides by a gallery. In a basement, formed by the sloping of the ground, a hall has been formed for week-day meetings.

Operations have begun for the erection of the new United Presbyterian church at Morning[side]. The site is a good one, at the angle of Cha[mber]lain-road and Morningside-road. The pr[in]cipal elevation faces Chamberlain-road, to the [n]orth, and at the north-west angle there is a tower. The church consists of nave, trans[epts], aisles, and there are a hall, vestry-[room], &c., to the south. The style adopted by Mr. David Robertson, the architect, is Norman, and the only objection we have to the design is that the tower more resembles an Italian campanile than a Norman tower, as it is surmounted by a projecting depressed sloping roof. As the site is in the immediate proximity of the Episcopal and Free churches, which are each provided with spires, the one being remarkable for elegance of proportion, the other for the reverse, the adoption of a tower will thus give a distinct individuality to the new church, and not enter into competition with its neighbours. The aisles (according to a practice now being generally adopted in Presbyterian churches where such features are used) are kept narrow, and only utilised as passages. The aisle windows are small, and the interior is chiefly lighted from the clearstory, which is pierced by triple lights, the centre one being higher than those flanking it. The aisle columns are cylindrical, with cushion caps; and there is a gallery at the north end, opposite the pulpit. There are two entrances; one from Chamberlain-road, and the other from Morningside-road, at the base of the tower, and these lead into a stone-vaulted corridor or narthex. The windows are to be filled with quarries of tinted glass; the pulpit, which consists of a broad platform with an arcaded back and front, is to be of oak; and the seating of yellow pine.

The scaffolding has now been taken down from the tower added to the Viewforth Free church, and the general effect is picturesque. The first stage is pierced by long narrow openings and the surface of the wall emphasised by a corresponding blank arcade. Four pinnacles rest upon the angles of this stage, one of them containing a turret stair, and rising higher than the rest. These pinnacles contain an octagonal belfry-stage, which is pierced by elongated double louvres filled in with deep louvre boarding. Besides the four angle pinnacles, the skyline is broken by minor pinnacles between, cutting up through a high open arcaded parapet.

Messrs. Sutherland & Walker have discarded the design originally prepared by them for the Rosehall United Presbyterian church, which was Gothic in style, and have substituted one of a Lombardic type, a style in which they have produced a very pleasing example at Hope Park-terrace, described by us at the time of its erection. The new church, which is already far advanced, is in the form of a Latin cross, with the arms very slightly pronounced. The gables are low-pitched, the principal one to the west being flanked by towers 70 ft. high, capped by low projecting roofs. The interior is to be fitted with open arcaded galleries on three sides, and this arrangement is marked on the exterior by two stages of semicircular-arched windows; those in the upper stage of the transepts being complete circles, three in number, separated by pilasters with enriched caps which carry enclosing arches. The upper range of windows in the west elevation are divided into two lights, and filled in with Italian Gothic tracery. Behind the pulpit is a large organ-gallery, opening into the church by a moulded arch, supported on corbel shafts with carved caps, and similar arches span the openings to the transepts. At the rear is a large hall, vestry, &c. The cost of the building will be 6,000*l.*, and it will accommodate a congregation of about 800.

Not far from this new church, and on the same line of road, stood the newly-erected Established Church of St. Leonard. With the exception of the walls, it has fallen a prey to fire, caused, it is said, by a beam having been allowed to project into the flue of the heating-stove. The spire and walls are intact, but if it is found necessary to erect buttresses to the side elevations to ensure their stability, it will help the design by breaking up the flat, characterless

monotony they presented. The interior of this church elicited the admiration of many, and a fine organ was, with the rest of the contents, completely destroyed.

The operations at the Argyle-place United Presbyterian Church have been pushed on most vigorously; the edifice is now roofed in and slated, but the upper part of the spire is still in progress. When referring to the plans we hinted that the detail was hardly up to the mark, and this is manifest in the building as executed. There is evidence of want of sufficient knowledge in this respect on the part of the designer; and the church and adjuncts, although of considerable dimensions, lack dignity, especially as regards the openings. This is the more to be regretted as the site is a fine one, open on all sides and upon a leading thoroughfare.

The German church at Bellevue, designed by Mr. W. D. Wemyss, is built up to the wall-heads, and the principals for the roof are in place. The architect has had rather scant means at his disposal, and the church is bare and uninteresting; he has chosen to spend as much upon a small spire as might have been more judiciously applied upon detail. This feature in juxtaposition to the high tower of the parish church will appear contemptible. The spire stands at the south-east angle of a gable, in the upper portion of which are two windows with centre mullions and trefoil headings; the doorway is surmounted by a gablet and flanked by small two-light windows; the side windows are wide and without tracery. The plan is a parallelogram, with a shallow apse for pulpit and organ, and there is a gallery at the east end over the entrance.

A site has been secured for the erection of a new United Presbyterian church on the ground occupied by Canonmills House, to the east of Eyre-place. A crescent is to be formed on the ground, and the church is to occupy an isolated position in front of it. The plan, as prepared by Mr. Starforth, shows a nave with flanking spire, and at the back is a spacious hall, vestry, &c. The style adopted is Early Decorated, the windows are large and filled in with rich tracery, and the spire is a particularly effective feature of a distinctly French type suggested by a well-known example. Provision is made for a congregation of 750. There is a gallery over the main entrance which is reached by a stair in the tower, and at the opposite angle there is an organ-chamber. A legacy of 3,000*l.* has been left towards the building of this church, the ultimate cost of which will be about 10,000*l.*

Free St. George's Church, Shandwick-place, erected about fifteen years ago, from a design by the late Mr. David Bryce, has remained incomplete until now as regards the tower. The style of the building is of the type of the Renaissance affected by the Jesuits. The tower, as designed by Mr. Bryce, was far from being a happy composition, consisting of a series of superimposed open belvederes, similar to those designed by him for the Bank of Scotland. It is now intended to complete the tower, and to Mr. Robert Anderson has been entrusted the task of preparing a new design. We shall look forward to this erection with interest, as it will come in a line, or nearly so, with the spire of the cathedral as seen from the vista of Princes-street.

The Hospital for Incurables has been erected in Salisbury-place, a narrow thoroughfare on the line of the tramways. In choosing such a site the convenience of lady-visitors appears to have been the chief consideration. There is no recreation-ground. The site is a confined one, and had to be cleared of several substantial dwelling-houses. An entirely isolated site of an acre or two in extent could have been secured in the suburbs. The style of the building is Italian, very simply treated. While aiming at economy, the architects, Messrs. Kinnear & Peddie, have, by careful attention to proportion and a skilful distribution of parts, succeeded in designing an elevation more pleasing than many which are much more pretentious.

The centre portion is three stories high, divided horizontally into three portions, the centre one being broader than those flanking it. The extreme flanks, to the right and left, are wings two stories high. The wings are entirely devoid of ornament, but the central portions are enlivened by balconies to the first floor and attached columns with moulded caps. The skyline is broken in the centre by a small pediment, and by well-designed chimney-stacks rising from the cornice.

By his will, the late Mr. G. H. Watson, brother of the late Sir John Watson Gordon, P.R.S.A., has bequeathed a sum of 11,000*l.* towards the foundation of a Fine-Art chair in the University. The conditions of the bequest are that the appointment of a professor shall be vested in the University Court along with the President of the Royal Scottish Academy, and that a course of instruction shall be given in the history and theory of the fine arts and collateral subjects. Prize-takers at the Life School of the Academy, not exceeding six in number, are to be entitled to attend the lectures without payment of fees. The professorship, it is understood, will be offered to one of the Scottish Academicians. It is to be held *ad vitam aut culpam*, and the occupant of the chair will rank equally with the other professors.

The Osborne Hotel, at the extreme west end of Princes-street, has been acquired by a newly-formed Liberal Club. The building is a pretentious one, decorated with compo castings.

The season for the planting of trees has been taken advantage of in different parts of the city. The sloping bank to the east of the Bank of Scotland has been planted both with trees and shrubs. The line of trees in Warrender Park recently acquired by the city has been continued eastward to Meadow-place; and a proposition has been made to line the Lothian-road with trees on one or both sides. On the east side of that thoroughfare, at all events, there is ample space available between the footpath and roadway. A few trees judiciously planted on the slope in front of the New College might be an improvement in that locality, but care should be taken not to obstruct the view to the north and west, which is one of the finest in the city.

BURLINGTON FINE ARTS CLUB.

THIS club has now on view a collection of the etchings of Méryon, which includes some interesting specimens of the artist which were not in the collection we previously commented upon, at Messrs. Dowdeswell's gallery. In the main, however, it will be apparent that the works included in the latter collection contained most of what makes the value of the Burlington Club exhibition; and what we have already said in regard to the nature of Méryon's genius and art need not be modified or added to in speaking of the Burlington collection. There are some interesting pencil studies, however, which we had not before seen. The preliminary sketch of the artist's life, prefixed to the catalogue, is interesting, and has the additional merit of not being exaggerated or over-enthusiastic in style. All who can should see the collection, to which admission can be obtained through any member of the club.

THE INTENDED FREE LIBRARY, MUSEUM, AND ART GALLERY, PRESTON.

THE town of Preston may, at no distant day, expect to be in possession of one of the finest buildings for free library and museum purposes of which any municipality can boast. The institution will not, indeed, be limited to the advantages which a library and museum in themselves confer, but the inhabitants will have all the benefits which a school of art and an art-gallery confer. The buildings proposed to be erected will, in this respect, be on an exceptionally comprehensive scale. For all this the inhabitants are mainly indebted to the princely liberality of one of their fellow townsmen,—Mr. Edmund Harris,—who bequeathed almost the whole of his property, amounting to upwards of 150,000*l.*, to trustees for the purpose of being appropriated, according to their discretion, to general educational and religious purposes. For some time past negotiations have been in progress between the corporate authorities and the Harris trustees, on a proposal by the former that the trustees should advance a portion of the testator's bequest for the erection of such a building as that to which we have referred. The trustees from the first expressed their desire to comply with the request, on the understanding that the land for the required buildings should be provided by the local authorities, and within the last week or two the final arrangements in this respect have been completed, the corporation having liberally met the Harris trustees by undertaking to provide the site, the value of which is estimated at 20,000*l.* The site is very advantageously situated about the centre of the borough, and in order to clear it, a large extent of property will have to be demolished. It will afford an area of about two acres, and the building will have three main frontages, one of these, the west frontage, immediately facing the fine new town and guild-hall, which was erected some years ago from the design of the late Sir Gilbert Scott. A considerable portion of this elevation will overlook the open area known as the old market-place, whilst the north front will face Church-street, which, with Fishergate (which is a continuation of it) is the principal thoroughfare in the borough, the east frontage being in Lancaster-road, a wide and spacious new thoroughfare to the north, which has recently been constructed. The sum which the Harris trustees have consented to grant for the erection of the building is 70,000*l.* the whole of which will be expended on the structure.

Within the last few years several improvements have been made in the town, which is at present rapidly extending, more especially in a northerly direction, where streets for new houses have been opened out and built upon to such an extent that tramways have recently been formed along them. Two parks have also been formed on the banks of the river Ribble, which runs along the north and west sides of the town. Further improvements of a varied and important character are contemplated, to carry out which the Corporation will apply for powers in the next session of Parliament.

DECORATIONS IN ST. MATTHEW'S CHURCH, RASTRICK, YORKSHIRE.

AFTER various alterations and renovations this church has been re-opened and consecrated by the Bishop of Ripon. The architect was Mr. W. Swindon Barber, of Halifax. The greatest amount of outlay, however, has been incurred in the illustration and ornamentation of the apse, designed and executed by the firm of Powell, Bros., Leeds. This work involves a speciality, viz., in the painting of the chancel ceiling. It may be regarded, according to the artists, as trifold. First, and centrally, is a triplet window in stained glass, devoted to the subject of the Transfiguration; the Awakening of the three Disciples, and their wonder at the vision, is the moment chosen for delineation. The mural decorations which enframe the window are more especially dedicated to the illustion of the two verses of the "Te Deum," viz., "The glorious company of the apostles praise Thee"; "The goodly fellowship of the prophets praise Thee"; and beneath the cornice on either side are two friezes of twelve apostles and prophets in fresco, yet with this peculiarity, that generally, where practicable, the treatment is in oils, as more durable. The walls beneath are diapered in gold and colours upon the generally-prevailing vellum-tinted ground.

The roof of the chancel is circular, intended to embody one great central orb and various surrounding zones, within which the artists have depicted, emblematically, the great events of the six days of the Creation. Within the great inner central circle is Christ enthroned upon a rainbow, and imperially crowned in front of a solar glory; in his left hand the orb surmounted, as if prophetically, by a Latin cross. So also prophetically his hands and feet bear the stigmata of the crucifixion. His right hand, opened, is extended in the act of blessing,—"When thou openest thy hand they are filled with good."

Immediately beyond this circle are smaller zones of cloud, emblematic of the Spirit and Ether,—the latter filled with a number of attendant cherubim. Beyond these again the principal zone is continent of six orbs, each illustrative of the special work to each appropriate in the successive six days of Creation, beginning with the division of light from darkness, and ending with Adam and Eve and the newly-created animals. Between each such orb is a watching angel in the act of adoration for the work accomplished. This zone and its subordinate zones in various colours and gold are made to constitute one vast circular glory around the Christ,—whose glory "the heavens declare."

Drury Lane.—At a meeting of the Committee of the Proprietors of Drury Lane Theatre, held on the 9th inst., Mr. C. J. Phipps, F.S.A., was appointed Architect to the Company, in the place of Mr. Marsh Nelson, resigned.

THE HOLBORN TOWN-HALL AND PUBLIC OFFICES.

On Saturday, the 3rd of August, 1878, the Chairman of the Metropolitan Board of Works, Lieut.-Colonel Sir James M'Garel Hogg, bart., K.C.B., M.P., had a somewhat busy time of it. On that day he formally opened the last completed section of the new thoroughfare from Oxford-street to Shoreditch,—namely, from Bloomsbury-square to Farringdon-road, and that done he proceeded to lay the foundation-stone of the new Holborn Town-hall and Public Offices at the corner of Gray's-inn-road and what was then known as Liquorpond-street, but which is now called Clerkenwell-road.

The works have been vigorously pushed forward since that date, and are now so near completion as to admit of the inauguration of the building. The following description, with the accompanying illustrations, may serve to convey some notion of this the latest addition to the municipal halls of the metropolis.

The site on which the structure stands is a parallelogram, 120 ft. long by 100 ft. wide, and the buildings are disposed upon it forming three sides of a quadrangle, a clock tower marking the angle at the corner of Gray's-inn-road and Clerkenwell-road. The space unbuilt upon forms the stone-yard for the district; this also extends under the greater portion of the large hall, the floor of which is fireproof, composed of iron skewback girders resting upon two rows of iron columns, the spaces filled in with brick arches, above which comes the wood flooring upon joists with pitch-pine battens.

A large archway for driving into the uncovered portion of the stoneyard pierces the centre of the Clerkenwell-road frontage, passing under the public hall. In this courtyard are placed the mortuary, post-mortem room, and disinfecting-room, supplying a great want in the neighbourhood.

The basement occupies but a limited area of the site, only extending under the official portion of the Gray's-inn-road block. It comprises a strong-room, space for the heating-apparatus, supplied by Messrs. J. & F. May, of High Holborn, and the necessary coal-cellars and store-rooms.

The principal entrances to the building are in the Gray's-inn-road front. The public office, approached by a loggia at the southern end of the façade, is exclusively devoted to business purposes, and is in immediate communication with the offices of the clerk, surveyor, and the medical officer of health. The entrance to the public hall and the board-room is in the tower, and gives direct access to a circular-hall, 18 ft. in diameter, on the right of which is the inner-hall, containing the principal staircase, a corridor leading therefrom to the rooms occupied by the officers of the Board. This staircase is constructed entirely in stone, each flight 6 ft wide, with stone strings and balusters of Doulton ware, with newels to correspond, being the first instance in which this material has been used for such a purpose; the handrail is of American walnut to match the principal doors.

The floors of these halls and corridor are in mosaic, specially designed for the building, and are executed by Messrs. Oppenheimer, of Berners-street, who also provide the panel on the landing of the first-floor. From this landing, 20 ft. long and 10 ft. wide, the public-hall is entered by a door on the right of the platform, a similar door on the left opening into the octagonal anteroom for the *artistes*. Directly opposite, at the eastern end of the hall, is a gallery, containing over 200 seats, approached by a separate stone staircase from an entrance in the Clerkenwell-road, and which is continued up so as to give access to the interior of the roof.

The dimensions of the public-hall are 96 ft. long, 45 ft. wide, and 32 ft. high, and afford space for 800 seats, exclusive of those in the gallery. The hall is lighted on each side by a range of seven windows, divided in the interior by piers with foliated caps, above which is carried the cornice; an attic story, with circular windows giving light and ventilation to the upper portion of the hall, comes beneath the great cove of the ceiling, supported by caryatid figures. Twelve panels in this cove represent the months of the year, and the three principal panels of the ceiling are decorated with figure subjects.

An organ, with suitably-designed case, built by Messrs. Gray & Davison, is provided on the platform facing the gallery.

On this floor is also placed, to the right of the principal staircase, the Board-room, with its waiting and retiring rooms. This apartment is 50 ft. long by 30 ft. wide, and 20 ft. high, and is lighted by three large windows looking into the Gray's-inn-road, and two windows opposite, overlooking the stone-yard.

The decorations for the whole of this floor were executed in carton pierre, by Mr. Boekbinder, of Thornhill-road, Barnsbury, and the figure and colour decorations were carried out by Mr. John Crossley, of Newark, Notts. It may be added that the building was dried by the process of Messrs. Dreyfus & Co., which enabled the painters and decorators to proceed at once.

A second-floor in the portion of the building fronting Gray's-inn-road provides ample accommodation for the housekeeper. A tank-room and clock-room occupy successive stages in the tower, and finally the bell-stage is reached, with five bells chiming from a peal of eight.

The clock, with four illuminated dials, and the bells, were manufactured by Messrs. Gillett, Bland, & Co., of Croydon. Of this part of the works we give a separate description.

Fire-mains with appliances rise at each end of the large hall, and command an immediate supply of water at the different floor-levels.

Pitch-pine, unstained but varnished, and American walnut, are the woods employed throughout for the finishings, the espagnolette bolts and other window fittings being in bronze.

In its external architecture this building may be described as being in the style of the Renaissance of the reign of Louis XIII., freely treated. The materials used are the best Fareham bricks and Portland stone, polished grey Aberdeen granite in monoliths being used in the three-light windows in the Gray's-inn-road front, and the principal entrance doorway in the tower is entirely constructed of the same material. The whole of the polished granite was supplied by Messrs. A. & F. Manuelle.

The composition of the design is simple, and the principal lines of strings, plinths, balustrades, and cornices, are carried through each front. Considerable effect is gained by recessing the windows in receding planes, allowed by the thickness of the walls. At the angle the clock-tower rises to a height of 120 ft., terminated by a gilded vane, 9 ft. high.

Advantage has been taken of the rounded corner at the junction of the streets to reproduce this feature in the design of the tower, the angles of which are rounded until they rise above the main cornice, with the crowning balustrade. It then becomes square on plan, with a boldly-projecting feature on each face, in two stages, the first with perforated panels in stonework, between low pilasters, giving light to the tank-room, the upper containing the clock-dials, 6 ft. 6 in. in diameter, enclosed in a square panel enriched by carving. Each face, after an ornamental band of carving, is terminated by a deep cornice and pediment, surmounted by a stone balustrade with vases at the angles. From this point the form is changed to an octagon, leaving a clear passage-way round on the exterior. Above this, open panels, with ironwork screens, enclose the bells, and an octagonal dome with moulded ribs finishes the tower.

The carving has been executed by Messrs. Farmer & Brindley, of the Westminster Bridge-road.

Mr. Sax supplied the electric bells, Messrs. W. T. Allen & Co. the ornamental ironwork, and Messrs. Bellman & Ivey the scagliola columns in the entrance-hall. Messrs. F. Goddard & Co. made the double dinner-lift; Messrs. Stevens & Sons, of the Southwark Bridge-road, executed the gas-fittings; and Messrs. Shand, Mason, & Co. the mains and appliances for securing the building against fire.

The whole of the works were executed from the designs and under the superintendence of Messrs. Isaacs & Florence, architects, of 3, Verulam-buildings, Gray's-inn, Mr. Isaacs being the surveyor to the Board of Works for the Holborn District, at whose instance and cost the building has been erected. The general contract was taken by Messrs. Browne & Robinson, of Worship-street, Finsbury. The total outlay involved in the acquisition of the site and the erection of the building is 50,000*l*. Mr. Farrow was the architects' clerk of the works, and Mr. Cornish represented the builders.

The Hall is to be formally inaugurated on the 18th inst., when the Lord Mayor and Sheriffs, the Chairman of the Metropolitan Board of Works, and a great many of the leaders of municipal life in London, are expected to be present.

THE CLOCK, CHIMES, AND BELLS, HOLBORN TOWN-HALL.

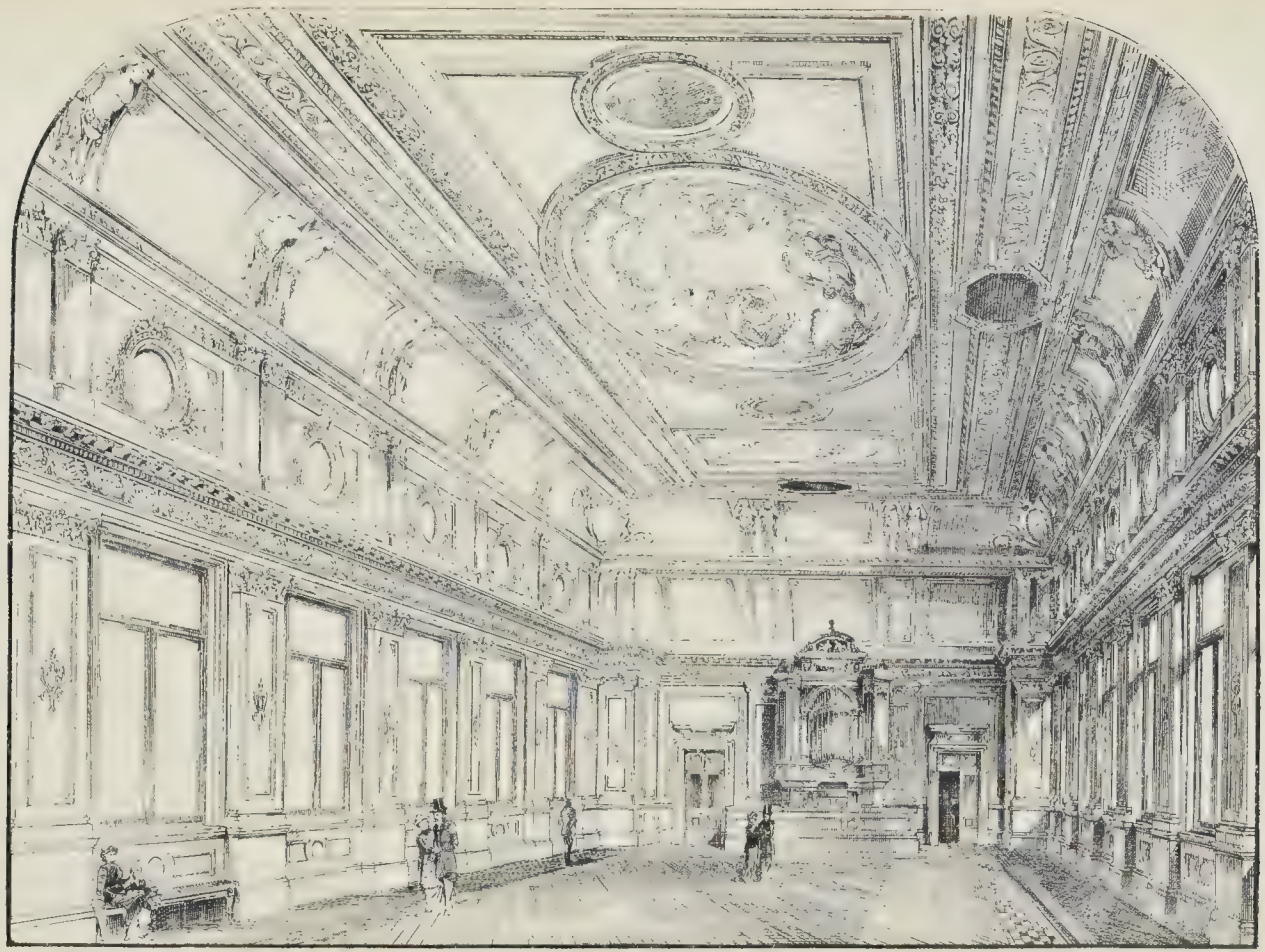
The new clock, chimes, and bells have been manufactured and fixed up, as already mentioned, by Messrs. Gillett, Bland, & Co., of Croydon. The clock strikes the hours upon a bell of 20 cwt., and chimes the four quarters on four other bells (weighing altogether about 3 tons), the same as at the Westminster Palace, the time being shown upon four 6-ft. 6-in. skeleton iron dials, glazed with opal glass, and illuminated at night. There are engraved and silvered dials on the clock showing minutes and seconds, for the purpose of adjusting the outer hands, and taking observations. A compensation pendulum is used, made of zinc and iron tubes, and beating 1½ second of time, with a cast-iron cylindrical bob at the bottom weighing 2½ cwt. The motive power is given to the clock by weights, weighing about 14 cwt., suspended from the three barrels by steel lines, which are carried over pulleys at the top of the tower and fall to the ground, a distance of 70 ft. The escapement is what is technically called a double-three-legged "gravity," which is superior to other kinds for perfect time-keeping. The chime part of the clock is constructed on Gillett & Bland's improved principle, with movable steel pins, so that the chimes can be adjusted to the greatest nicety, or changed at any time if required. The clock is guaranteed not to vary more than five seconds per week, the first blow of the hour, and first, second, and third quarters, being the exact second of mean time. There is also fitted to the clock a self-acting gas apparatus, to turn the gas on and down automatically, and to suit all seasons of the year.

The clock is fixed upon cast-iron ornamental brackets built into the tower, and the pendulum is also suspended from a massive cast-iron bracket, fixed to a stone corbel in the wall. The clock is made on the horizontal plan, and contains all the manufacturers' recent improvements, including the new winding gear, of which they were the inventors, one advantage being that no damage can be done to the clock by the carelessness of the person who winds it up, as the handle may be turned either way, and at any speed, and the weights can be lowered as well as raised without interfering in the slightest degree with the action of the clock.

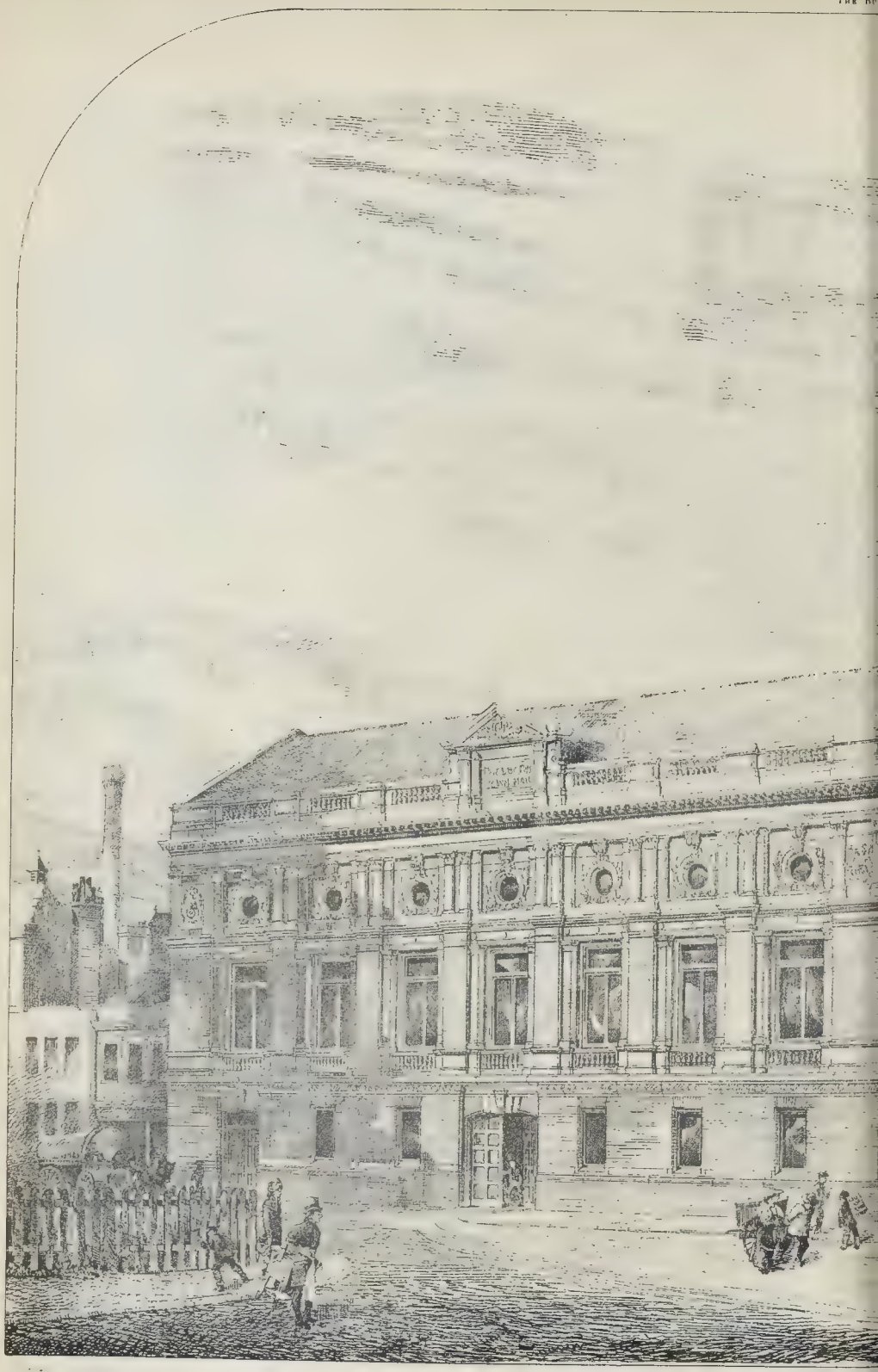
The bells, which have been cast and tuned in the manufacturers' own church-bell foundry, at Croydon, are of the following notes,—hour-bell, E flat, and the quarter-bells F, B flat, C, and D.

The oak framing in which the bells are hung was also constructed and erected by the same firm. The entire cost is about 800*l*.

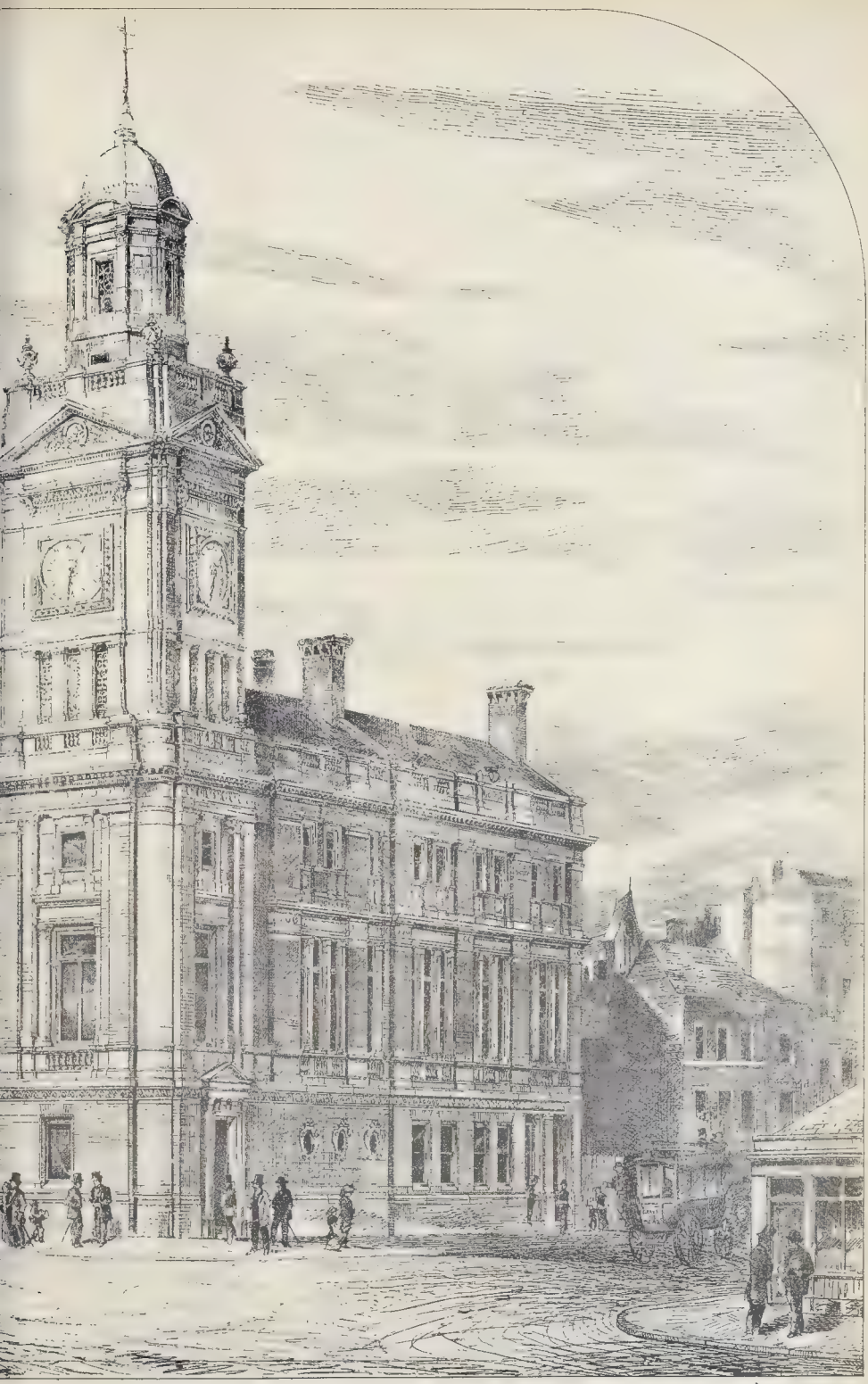
New Station at Waterloo, near Liverpool.—The Lancashire and Yorkshire Railway Company have at last undertaken (says the *Bootle Times*) the preliminary steps towards the erection of the sorely-needed new railway-station at Waterloo, near Liverpool. It will be situated to the south-east of the present station, the line of rails being diverted some 40 yards to the east for that purpose. The South-road crossing is to be raised about 4 ft., and the present lines, being lowered 13 ft., will pass at this point under a handsome bridge, to be erected in place of the existing level crossing. In the centre of this bridge there will be a broad flight of steps leading to the new station below, which is to be in the centre of the rails, thus forming on either hand an arrival and departure platform, with the waiting-rooms, booking-offices, and general station buildings between the two. The station itself is to be of white and red brick, in the Gothic style of architecture. The platform length will be about 250 yards, with a width of 60 ft. By this arrangement of station and platforms no crossing of the line is necessary, and the waiting-rooms and other accommodation are equally available for departing or arriving passengers. The present station is to be incorporated with a large new goods station, which is to be formed with a frontage of about 400 yards to the Brighton-road. The contractor is Mr. W. H. Smith, of Bankhall.



HOLBORN TOWN HALL: INTERIOR VIEW.



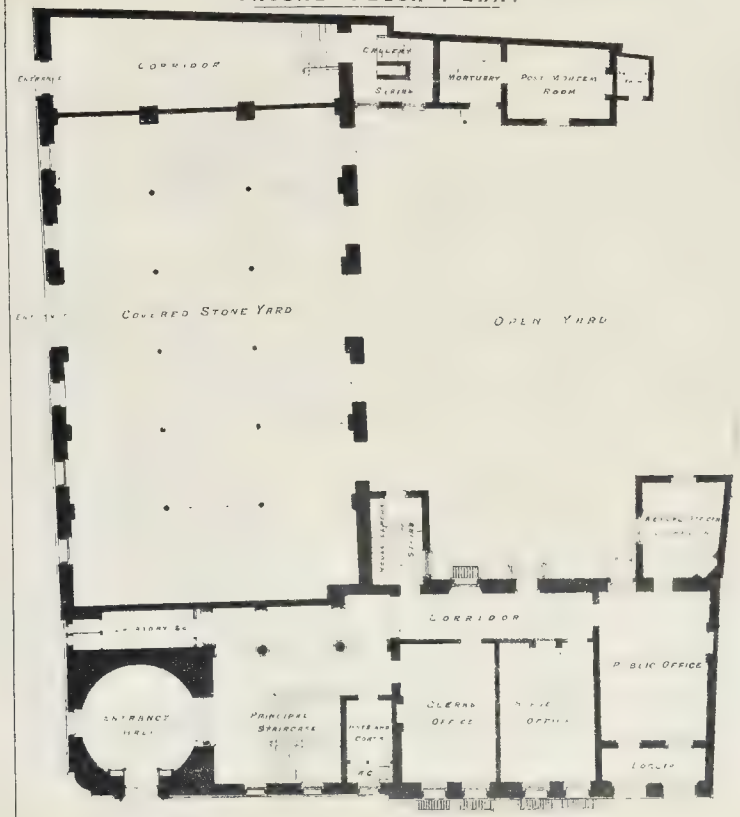
THE HOLBORN TOWN HALL AND PUBLIC



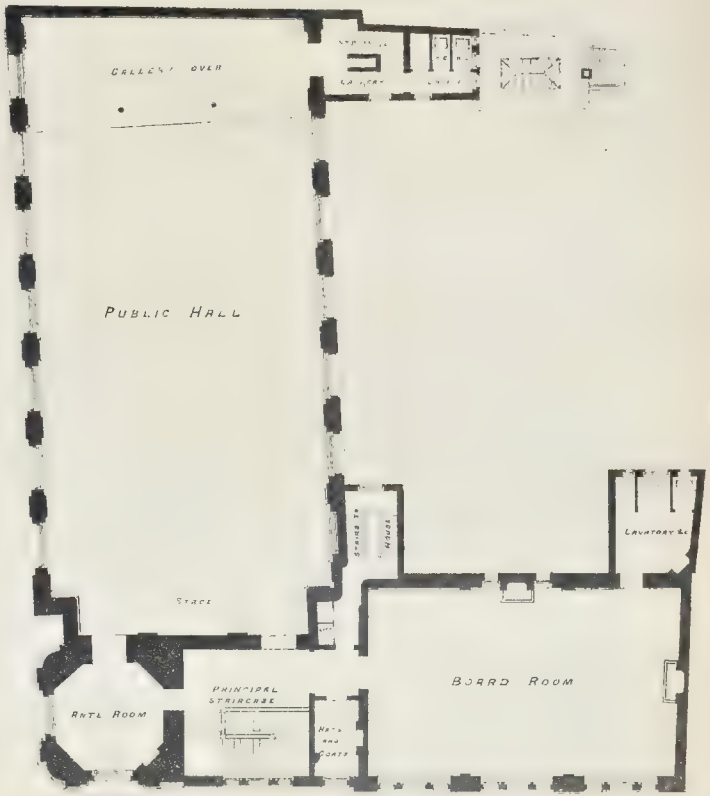
——Messrs. Isaacs & Florence, Architects.

HOLBORN TOWN HALL AND PUBLIC OFFICES

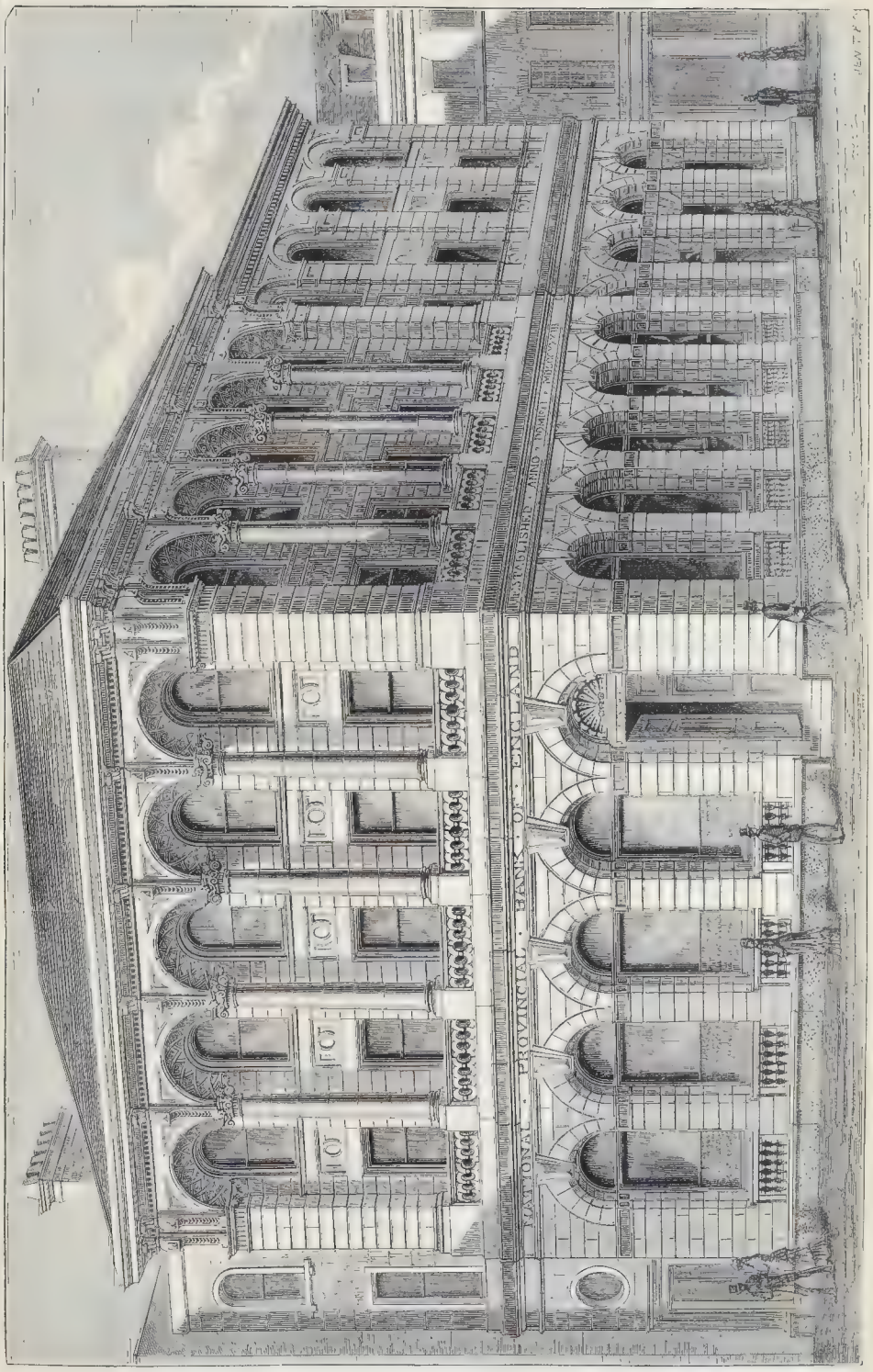
GROUND FLOOR PLAN.



PLAN OF PRINCIPAL FLOOR.



SCALE OF 10 5 0 10 20 30 40 50 FEET



THE NATIONAL PROVINCIAL BANK OF ENGLAND, SUNDERLAND.—MR. JOHN GIBSON, ARCHITECT.

THE NATIONAL PROVINCIAL BANK OF ENGLAND, SUNDERLAND.

THE National Provincial Bank of England has increased the number of handsome buildings in the flourishing borough of Sunderland, by the addition of a piece of architecture, designed by Mr. John Gibson, architect, of Westminster, under whose superintendence the works have been carried out by Messrs. Shaftoe & Barry, of York. The building alluded to is for the purposes of the National Provincial Bank's Sunderland Branch of their business, and occupies a commanding position at the corner of the High-street, leading from the railway to the docks.

The two fronts are constructed of Prudham stone, and the entrance is at the angle. The banking-room, which is 40 ft. square, is very lofty, and the walls and ceilings are divided into bays, and handsomely panelled and moulded. The fittings of the room are finished in mahogany, and the space for the public is paved with encaustic tiles. The heating is effected by hot-water pipes, the apparatus for which is in the basement. The entrance to the banking-room is through a panelled mahogany lobby.

The manager's room and the strong-rooms are situate at the rear of the banking-room, and there are additional safe-rooms arranged in the basement.

Refreshment-rooms, lavatory, and other conveniences for the clerks are provided in the basement, and are fitted with the newest appliances.

The upper stories of the building are arranged for the accommodation of the resident officers and servants of the bank, entrances to which are given from the two streets forming the angle of the building.

THE PRESIDENT'S ADDRESS.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE numerous volumes that now adorn our shelves have been obtained from the liberality of members and of authors, foreign as well as native, among whom no one is to be remembered more thankfully than the late Sir William Tite. He devoted a large sum of money to remedy the want, which existed to about 1866, of the more expensive publications on architecture. Thanks to him, and to the opportunities which the Council later possessed through donations of money,—enabling them to purchase rare books such as can scarcely be expected to be presented by individual members,—only a few standard works of reference are now required to place this library, as it should be, among the best of its class. But permit me, whilst remembering the more expensive works, to add a few words in favour of the smaller and perhaps ephemeral publications, even pamphlets, referring to architecture,—that class often deemed rubbish, if such a term can be applied to any production which, considered useful in its hour, is liable to be thrown aside and destroyed, but which, once preserved in our library, may some day give the historian a useful clue to an invention, a date, or an incident. These numerous works, already contained in many volumes, take up little room, and to some they are not the least esteemed portion of the library.

The "Dictionary of Architecture" must by this time be well known as a work of reference, and for its great scope of subject matter, embracing all that relates to architecture as an art and a science. It is on the high road to completion; the letter O is published, and the letter P greatly advanced. It has been noticed to me lately that in this work we shall have a nearly complete collection of the professional lives of deceased British architects. This fact alone is a great result when it is remembered to our disadvantage, that many States, and even many towns in Italy and France, have published the lives of their local artists, and that Spain has produced valuable volumes on the architects of its country. No other work has yet appeared in England which revises and continues, like the "Dictionary of Architecture," the interesting contributions of Virtue and Horace Walpole in the last century.

Perhaps I may be permitted to hint that the valuable collection of technical books and illustrations contained within these walls has not been sufficiently used or fully appreciated by the majority of our members. If that be so, it is possibly due to the hitherto uninviting character of this room, owing partly to the want of light, and partly to the absence of those accessories which, in the best clubs and in the British Museum reading-room, render modern libraries a most delightful resort. Indeed, this room in which we are now seated used, with its bare table and its rows of empty benches, to present daily an appearance of the most woe-begone condition. In future it will be a general reading-room; some of the benches will be removed to a place of storage, and the rest will be so arranged as to leave the centre of the room free for readers. As our meetings never exceed fifteen in the course of the session, the task of removing and re-arranging the benches, chairs, and tables will be slight, while the advantage of possessing every day in the session accommodation for members who may wish to meet, or read, or write, cannot be disputed. I trust that some of our non-metropolitan members will take an early opportunity of proving the utility of a central place of meeting, and that metropolitan members may soon have opportunities of conversing, here, with colleagues from different parts of the country, on the practicability of measures long in contemplation, and now under discussion by the Council.

I allude to the relation of the provincial and colonial societies of our profession to this Institute, placed as it is in the capital city of the Empire, and being the chartered body of British architects throughout the world. As you know, something has already been done towards eliciting the views of the different Architectural Societies in England and Scotland, but the results have not encouraged the Council to formulate a definite scheme by which a more intimate connexion than at present exists may be maintained. What minor negotiations have taken place have been effected by correspondence,—a by no means satisfactory way of discussing complicated and delicate questions. I think that personal contact may enable the Council to learn the wishes of local professional bodies, and that personal influence may tend to assimilate their local rules and interests to those of the chartered body. In view of future more lasting arrangements, I would venture to suggest that each of the larger societies might be asked to delegate one of their number, and that smaller societies, situated in neighbouring localities, might appoint a representative of two or more societies. These gentlemen might, for the purpose of discussing the possibility of closer union, take their places at our council meetings on the same footing as past presidents and past vice-presidents now sit at our board. We could, at the same time, revert to the old system, and appoint in different provincial centres one of our Fellows as a local honorary secretary or representative of the Institute. Indeed, we have already done so in one corner of this vast empire, having appointed my friend Mr. W. W. Wardell, Fellow, our representative at Sydney, in Australia; while at Melbourne Mr. W. Loyd Tayler, Associate, will act in a similar capacity, though subordinate to Mr. Wardell, who for more than twenty years was head of the Public Works Department there. These gentlemen have accepted the appointments in view of the International Exhibitions at Sydney and Melbourne, held this year and the next. But the fact may be regarded as the renewal of a system which should be widely extended. I see no reason why, if our members be only willing, we should not have honorary secretaries, duly appointed or elected, in the different presidencies of India, in New Zealand, in the Dominion of Canada, and in other places, just as we now have in Victoria and New South Wales. The advantage of possessing such representatives, men whose career is not only known, but who themselves are known to the council and their colleagues in this country,—whose advice, in cases where British architects resident abroad are candidates for admission to our ranks, can be solicited with confidence,—must be obvious to all. I think, therefore, that the next step in the matter of our relation to the numerous societies of our profession, in the British Isles and abroad, should be the appointment of local honorary secretaries, and this I propose to submit for the consideration of the Council at an early opportunity. Much has already been mooted respecting the affiliation of provincial societies to the Institute, and it must be borne in mind that an intimate connexion with ourselves is really possible in the case of societies whose by-laws are not framed "in opposition to the general scope, true intent, and meaning" of the charter under which we are incorporated. I know one society,—the Glasgow Institute of Architects,—whose members are governed by rules, and who accept obligations, almost identical with our own. The Glasgow part of the profession is very worthily represented at our Council, and, considering the distance from London, Mr. Honeyman may be called a regular attendant. Like him, most of the members of the Glasgow Institute are Fellows of our body. Suppose the professional men of Glasgow were to make a little verbal alteration for the general good and as a wholesome example. Suppose, instead of being called the Glasgow Institute of Architects, they were asked to be known as the Glasgow section of the Royal Institute of British Architects. I cannot believe that our colleagues of Glasgow would think such an alteration derogatory to their position, or that in making the suggestion other than the most friendly intentions towards them would be manifested.

The necessity for union, however, will become apparent as the time approaches for the execution of our by-law (No. 14), which, if it is to have any practical effect at all, will compel every candidate for membership to pass the test of an examination. The terms of that by-law, which was agreed to in 1877, are that "All gentlemen in the study or practice of civil architecture, before presenting themselves for election as Associates, shall, after May, 1882, be required to pass an examination before their election, according to a standard to be fixed from time to time by the Council." The subject is now under inquiry at the hands of a special committee, who will in due course present a report to the Council. Meanwhile, perhaps I may, as the chairman of that committee and as your president, refer to some of the difficulties which obstruct our path, and arguing from what has been successfully done by other professional societies, in pursuit of the results to which we aspire, lay before you a rough sketch of what I think is not altogether impracticable.

In the first place, even if it were possible, it is not desirable to make our profession a close one. The Church, Law, and Medicine are close professions; they are hedged in by barriers which have grown up from time to time, and which may be regarded as hereditarily and historically pertaining to those three professions. They have to do with the spiritual, the moral, and the corporeal health of the community at large. The welfare, spiritual and moral, of men is not thought to be affected by architectural successes or failures, although buildings ignorantly and unscientifically put together are known to physically impair human life. As it has been laid down in this room by one of her Her Majesty's counsel,—ruination by bad advice, and killing instead of curing, are rather more serious matters than the difference between good and bad architecture. When, however, the same eminent Counsel made that remark, he had but just challenged us with the question:—"What real measures do you take, collectively or individually, to secure that men calling themselves architects should know anything of architecture beyond what they pick up in the offices where they sit for a time, copying drawings and specifications?" That was at the end of 1874, and much beneficial advance has been made in the Institute since then. Though even at the present moment we could not give a satisfactory answer to the question, we are at least able to say not only that the necessity for making a practical response is felt to be more and more necessary, but that our improved position renders it more easy to do so now than it would have been five years ago. My feeling is that every candidate for associateship should be required to obtain a certificate from examiners appointed by the Institute, or that he should hold some qualification from a University, from the Royal Academy, the Science and Art Schools, or from other educational bodies, which qualification should serve to modify the terms of his examination. That once established, it would be easy to regulate a transfer from the class of Associates to that of Fellows. Whether such a certificate should be given to all those who before May, 1882, have been duly elected Associates is a question for consideration, though it is one that can be decided by reference to similar precedents in other societies, particularly to that of the Dentists, to whom I shall allude presently. It would be idle to disregard the probability that, for the first few years of a *régime* by which the test of an examination was made a condition of membership, there would be a falling-off in the number of new Associates,

* By Mr. John Whichcord, F.S.A. See p. 1339, *ante*.

and during the last session forty-three have been elected. This session I anticipate a larger number; and during the period, anterior to the proposed compulsory examination in May, 1882, there would be, comparatively, a very large accession of Associates. Then would come the expected diminution of income from our subscriptions, and the question will arise:—Are we prepared to face such an eventuality? I, personally, think we are. Indeed, I think we are bound to face the difficulties of this matter,—bound to try our strength. For, if you look around, you will find bodies of men far less favoured than ourselves, devoting considerable time and labour, and incurring a large expenditure, in pursuit of this very object.

Take the Institute of Accountants, quite a young body of professional men, who have lately introduced a Bill into Parliament to incorporate themselves with other kindred societies for the purpose of regulating and controlling the profession of accountant under the direct sanction of the Legislature. The Bill was read a second time in the House of Lords, and referred to a Select Committee. There was every prospect of the Bill passing, when at the last moment Lord Redesdale, the chairman of committees, suggested that in his opinion the object of the Bill would be attained by means of a royal charter, rather than by an Act of Parliament. The Council of the Institute of Accountants therefore presented a petition to the Privy Council, and were subsequently requested to orward a draft of their proposed charter. I need hardly add that the accountants propose under their charter to make examination a condition of membership. Under their rules and regulations, "Every articled clerk who has made application for his name to be entered as a student shall before his name is so entered undergo a preliminary examination in regard to his general education," but any articled clerk who has matriculated at one of the Universities, or who has passed the Oxford or Cambridge Local Examination, or the Examination of the College of Preceptors, is not required to pass the preliminary examination. Then again, the rule of the accountants is that every articled clerk who is a candidate for associatesbip must pass an examination, and if he fail he may present himself again for examination, provided he do so within a period of six months. I have no doubt, should the accountants get their charter, that they will afterwards apply for an Act of Parliament, and that they have both the spirit and the means to make the trial. Now, though we have had a royal charter for more than forty years, I do not perceive that we are as far advanced in this matter as the accountants.

But there is another society founded in 1848, —the Institute of Actuaries,—the members of which, though they do not possess a royal charter, submit to examination. That is to say, the Institute of Actuaries examines its own members. Candidates must be elected Associates before they are eligible to be examined; then, after passing three examinations, and obtaining a certificate of competency, an Associate of the Institute of Actuaries requests to be made a Fellow. This proceeding seems a very stringent one; but I am told that the Institute of Actuaries is a flourishing society, and that no one stands a chance of being known as a qualified actuary unless he be a Fellow of their Institute, a position of which the Fellows are justly proud.

Some of you, however, may think that it is now too late in the day for us to make examination a condition of membership; we are already too numerous. It would be impossible to force examination upon actual members; it would be unfair to compel candidates for admission to undergo a test that the majority of their colleagues have escaped. But do you know, gentlemen, that the dentists have lately faced this difficulty and overcome it? Last year, on the 22nd of July, an Act of Parliament was passed "to amend the Law relating to Dental Practitioners." It is now unlawful for any person to take or use the title of "dentist" or "dental practitioner" unless he is registered under the Dentists Act; and unless he is so registered he cannot recover in any court fees for any dental attendance or advice. A register is now kept, which contains (1) a list of all United Kingdom dentists registered under the Act, (2) a list of all colonial dentists registered under the Act, and (3) a list of such foreign dentists as are registered under the Act. The 18th clause of the Act refers to examinations, which are held by the medical authorities having power to grant surgical degrees; these examinations are made a test of the fitness of persons to practise dentistry or dental surgery. Now, as the chairman of the special committee engaged in collecting information necessary to guide our action in this matter of compulsory examination, I have learnt something about the working of the Dentists Act, not in so huge a place as London, but in Dublin. Our Fellow, Mr. Thomas Drew, who was recommended to you this year for a seat on the Council, has been good enough to study the working of the Dentists Act in the Irish capital. I shall betray no confidence if I quote from one of his letters to us. His words are:—

"I have observed that under the reasonable and undeterrent kind of examination carried on by the College of Surgeons of Ireland there has been no difficulty in bringing in, within one year, the great majority of a body of practitioners hitherto requiring no legal qualification, and consisting of men, many comparatively advanced in years and of long standing, to obtain the necessary qualification for registration. . . . . The course pursued seems to owe its success to the wise discretionary powers conceded to the Examiners, the reasonable elasticity and absence of hard and fast lines of formality with which they have exercised them. The examiners appear to have laid down no theoretic curriculum,—to have set no 'papers' which would require a candidate of mature years to return to the half-forgotten exercises of youth. They have taken the candidates, then and there, red-handed from their practice, and, by an encouraging *viva voce* communication with each, elicited to their satisfaction whether the candidate was fairly and intelligently acquainted with his profession. . . . . I have heard from some of the Examiners, —men of great experience as surgical examiners,—that they have passed their candidates with greater confidence in having ascertained the real value of their knowledge than by any examination by papers or otherwise in a set course. So far as I know, this is the first case in which a profession has been brought under the recognition of law by a happily hit-off combination of voluntary and compulsory examination. I cannot but believe that on some such lines it will yet be possible to bring architects within the pale of legal registration."

Having learnt so much, we asked Mr. Drew to place himself, on our behalf, in communication with some of the examiners of the Royal College of Surgeons of Ireland first appointed under the Dentists Act. He did so, and thanks to the kindness of Mr. R. Theodore Stack, F.R.C.S.I., one of the examiners resident in Dublin, he has been enabled to furnish us with a most clear and satisfactory statement respecting the character and extraordinary success of those examinations. It appears that for the first year after the passing of the Act all *bonâ fide* practising dentists were allowed to go upon the register, but since last August the only portal to that register has been by obtaining a certificate from some of the medical bodies. Up to the 1st of August, 1881, the examinations will be of a *sine curriculo* character, for the purpose of meeting the case of the established practitioner, from whom only two conditions are required. One is, that he has been five years in practice; the other, that he has conducted his practice reputably. The dental practitioners in Dublin have evinced great alacrity to present themselves for the *sine curriculo* examination, and I am assured that the majority of the rejected candidates were very young men.

Now it appears to me that the question which may divide the Institute is not whether there shall or shall not be introduced the test of compulsory examination, but rather, what shall be the character of such compulsory examination? Ought it to test the general education of a candidate, or should it be strictly professional in its details? The real difficulty lies in deciding upon the artistic capacity of a candidate. An idea doubtless prevails,—and it may have great sway,—that no board of examiners can possibly pronounce an opinion which shall be conclusive on the artistic powers of a candidate; or, to put it still more unfavourably, on taste partly natural and partly acquired. I will not here attempt to enlarge upon that quality which is known as good or bad taste,—as to whether taste is a divine gift, an hereditary acquisition, or merely the result of association and education. But I am prepared to maintain that both geometrical and free-hand drawing are essential requirements for an architect. He may not, in the full tide of business, have either the time or the inclination to make or finish drawings, but he should at any rate know how to do so, if only for the proper exercise of his judgment and the due instruction of his pupils and assistants. I am also prepared to maintain that an architect should be cognisant of the general principles of construction, and that it is possible to define what those principles are; and that he should be acquainted with the nature, qualities, and value of those building materials that are in constant use in the localities with which he is or has been familiar. The question whether a student who has learnt the rudiments of architecture in Dublin shall be compelled to come to London in order to pass an examination fitting him to be enrolled in the list of British architects is easily answered. Dublin has an old and a recognised Society of Architects. A student in Cork or Galway would repair to Dublin, where examiners duly qualified and duly appointed would be ready to examine him. In like manner, local examinations, under the control of our Council, aided by our honorary representatives, would, in different parts of the country, obviate difficulties and moderate abuses sometimes produced by over-wrought centralisation. Even in India and Australia similar opportunities might be offered to candidates for membership of this Institute; and the very difficulties of compulsory examination might thus help to bind heterogeneous offshoots from the parent stem in one solid and enduring corporation.

Though I have, perhaps, wearied you with details of this character, I feel that the subject is too important to allow me to apologise for having introduced it. True there are both at home and abroad hosts of things to which I ought to have fully alluded in this address. I might have told you of recent correspondence with our foreign members, whose letters in reply have frequently been accompanied with donations of valuable books and photographs; I might have reviewed the labours of our member, Dr. Schliemann, among the ruins of Troy and the heroic tombs, or the recent festival at at Pompeii to commemorate the eighteenth centenary of its destruction. At home, the probable completion of St. Paul's, and the improvements effected around the cathedral; the projected thoroughfares in the City connected with the works of the Inner Circle Railway; the relics of old London day by day disappearing; the admirable address of the accomplished President of the Royal Academy at their last banquet; the new Offices and Courts of Justice, a portion of which is now occupied; the new buildings in the Temple; the Natural History Museum at South Kensington; the undoubted progress visible in the architecture of country residences, and even of suburban villas,—all these might have afforded material for chapters of comment or praise. If I do not devote an exclusive paragraph to sanitary matters it is not because I ignore the growing popularity of the science. It is only natural that architects should be credited with much of the acknowledged error which is due partly to general ignorance of the subject. But if the public are now on the alert it is because engineers and architects—notably one of our own Past Vice-presidents—have for long years aroused attention to existing evils while prosecuting a systematic inquiry into the methods of sanitary reform; and your President and Council are keenly alive to the value of such independent professional research in a branch of science now somewhat involved by the speculative genius of numerous patentees. With regard to another subject discussed here during the last session, I think, or at least I hope, that all London will soon have reason to thank Parliament for a recent Act which has amended a part of the Artisans and Labourers' Dwellings Act, and removed the difficulty experienced by the Metropolitan Board of Works in carrying out the provisions of that Act. You will remember that the original Act of 1875 compelled the promoters of an improvement scheme to provide for the accommodation on the same area of all those persons of the working class inhabiting that area and displaced by that improvement scheme. Thereby, among all the expropriated inhabitants, the working class appeared to be the only privileged class. The amended Act provides that, where the confirming authority is satisfied that equally convenient accommodation for the working class displaced can be provided in the vicinity, and that the required accommodation has been or is about to be provided, an improvement scheme may be forthwith executed. The authorities can, under the amended Act, use land belonging to them for the purpose of providing accommodation for those of the working class displaced by a scheme of improvement, or they may purchase land elsewhere. The amended Act also contains provisions for assessing, in the case of future schemes, the compensation payable for premises within an unhealthy area. These amendments to the Act of 1875 are satisfactory proofs that the Legislature have recognised the difficulties which impeded the action of the Metropolitan Board of Works in the clearing of contaminated neighbourhoods.

I have but a few more words to say, and they relate to myself. I have to thank you, gentlemen, for having placed me in this chair,—a position to the attainment of which nothing in my career has pointed or induced me to expect. But now that I am here, I desire to be proved worthy of being not only a leader, but your leader. I cannot hope to preside over a session as brilliant as that you have just enjoyed under the auspices of my immediate predecessor; you must accept for the time being the services of a practical president. Four years hence we shall enter upon the fiftieth year of our foundation; meanwhile, there is time to establish the principle of educational fitness and assert the privilege of a liberal profession. Should I be fortunate enough to enjoy the confidence of the Institute during the usual period of presidential office, I hope to show that the close union of British Architects throughout the world, facilitated by the accepted test of a compulsory examination, is both a possible necessity and a probable fact.

PROFESSIONAL TOPICS

AT THE ARCHITECTURAL ASSOCIATION'S CONVERSAZIONE.

THE annual *conversazione* of the Architectural Association was held on the evening of Friday, the 5th inst., and was well attended. The only thing which marred the complete success of the gathering was the persistent and disagreeably rapid flickering of the whole of the gas-burners in the meeting-room of the Institute, which commenced just as the formal part of the proceedings was about to begin, rendering it very difficult to take notes of the speeches. Towards nine o'clock the president, Mr. S. Flint-Clarkson, took the chair, and proceeded to present the prizes as follows:—The Association Silver Medal, together with the sum of 5*l.* 5s., offered for the best design for an hotel in a country town, to Mr. W. H. Moore (motto "Seymar"). An extra prize of 3*l.* 3s. was, in the same competition, given by Mr. H. L. Florence, the late president, to Mr. Frederick Hemings ("The Medal"), who was honourably mentioned by the judges for the originality and skill displayed in his elevations. Five other designs were submitted. For the Architectural Union Company's prizes for measured drawings, there were only two competitors, and the judges did not consider that either of the sets of drawings sent in merited the first prize (5*l.*). They considered, however, that very great skill and industry had been manifested by one of the competitors (Mr. Leonard Stokes, "Audax"), and they therefore awarded him the second prize (2*l.* 10s.) for his drawings of the choir of Pershore Abbey. For the Essay prize (3*l.* 3s.) only two essays were sent in, and neither of them fulfilled all the conditions required by the judges, who, however, recommended that one third of the prize be awarded to Mr. W. J. Burrows ("There is no limit"). The Class of Design Prize (3*l.* 3s) for the best series of sketches submitted in the class during the past session, was awarded to Mr. John Bilson, who was also, as is hereafter stated, the recipient of the first prize in the Class of Construction. The President spoke of Mr. Bilston as one of the most promising and hard-working members of the Association. The second prize (2*l.* 2s.) in the Class of Design was carried off by Mr. T. H. Smith, and honourable mention was made of the work of Mr. A. Bridges and Mr. H. H. McConnal, a member of the Birmingham branch of the Association. In the Elementary Class of Design, the first prize (2*l.* 2s.) was won by Mr. J. H. Curry, for the best series of studies submitted during the session. The second prize was taken by Mr. C. C. Wilson, and honourable mention was made of the work of Mr. A. S. Gover. The Colour Decoration Class prize (3*l.* 3s.) for the best series of sketches made during the session was awarded to Mr. L. A. Shuffrey. The first prize in the Class of Construction (2*l.* 12s. 6d.) was awarded to Mr. John Bilson, for the best series of papers submitted at the meetings of the Class. The second prize (1*l.* 11s. 6d.) was obtained by Mr. A. T. Ellison, and honourable mention was made of the papers submitted by Mr. D. R. McBlain.

The President then announced that he had received a number of letters from various friends of the Association, regretting their inability to be present. Amongst them were letters from Mr. E. M. Barry, Mr. Waterhouse, Mr. John Gibson, and many others, including Mr. George Godwin, who wrote:—

"No one takes more interest in the progress of the Association than I do; no one is more gratified in hearing of its success. At one period of its existence, but for the interference of Professor Kerr and myself, my impression is that it would have collapsed. You may easily suppose, then, that I view with pleasure its present admittedly effective condition, and I cordially wish it increased prosperity. I have a few educational works which would probably be more useful at the Association than on my shelves,—say twenty or thirty volumes,—and I will, before long, take your opinion on the subject." *

The President then delivered a short address, in which, after a few words of welcome to the assembled guests, he went on to say,—How many or how few of the qualities found in good old buildings must re-appear in a modern work in order that it may become a good work of architecture? A careful answer would, of course, add to the mass of explicitness already in the world, but would be curious rather than useful. At any rate, a simpler course is possible,—for there is one thing which must appear in every work of architecture, although a good number of others may be absent. It must be evident that a man has been master of the work,—not mastered by what he had to do; that he was able, more or less perfectly, to do what he wished; and that he sought and found pleasure in those qualities which educated men in all ages have agreed to admire. From this starting-point an onward course leads to the grandest successes which human wit and will have wrought in building,—where the greatest powers have found full expression,—and the world has therefore felt effects similar to those produced by the most beautiful, the grandest, the most majestic scenes in nature. When some admirable work has been defined as fitted to its site and purpose as a whole and in every detail, of good materials skilfully put together, likely to endure for generations, each part good in itself and especially good in relation to the rest, and as having an expression in harmony with the purpose of the buildings,—that purpose not without a distinction of its own,—when every excellence has been found in some measure, and pointed out, it is clear that little further except superlatives will be wanted for the most perfect work which was ever designed, and, in consequence of the pleasure it gave to its creator, gained the power of giving pleasure for ever to all the world. Something very different from this would, however, be required in defining the character of the larger number of the buildings erected in any civilised country. Rough serviceableness would, indeed, be too lavish a phrase in England,—where, as in imperfectly settled countries generally, a handsome majority of the people are well content to pass their days sheltered by ugly screens and coverings which are neither wind nor weather tight, and will fall to pieces in two or three generations. Real serviceableness itself, though by no means unimportant, becomes a small matter in our eyes when a good deal more seems easy of attainment. Ignorance of the alphabet is a kind of wonder, and the correct repetition of the alphabet not thought a great achievement when finished eloquence has filled the air and stirred the blood by the heat of the light-giving rays. The habitual contemplation of what is really excellent makes mediocrity, and everything which falls short of higher excellence, sink into its proper place,—almost out of sight. Sometimes the fine ease of thorough mastery actually beguiles a spectator into the belief that ease implies absence of effort, and he tries his 'prentice hand, and lets everybody see the woful contrast between hope and act. A lover of commonplace, or of mild jesting, might state his conviction that it is necessary to be always beginning at the beginning, and learning, again and again, in each generation by sad experience, what can be taught in a much less unpleasant way to the performer and to the world. He might add that the man who burdens the earth with an ugly, dull, or commonplace building can sometimes forgive himself, — sometimes succeed in deprecating his own thorough self-condemnation,—and sometimes be content to groan as he gives way to his fate; but the rest of the world need not feel very acutely any of his personal woes. An amateur practitioner is a gift of generous nature usually very embarrassing to the recipients. Probably his best efforts result in a rough apprehension of the bearings of things in general, and in bundles of defects of all degrees of importance, everything being made still more defective by jejuneness, by the want of refinement, force, and definiteness of expression,—the quality which marks off architecture which is good from all that is inferior. The moral of this,—if it had been pursued far enough to entitle us to draw a moral, — would be that architects should master their craft well enough to take a delight in it, and that no one who does not devote himself regularly to the study and practice of it is likely to overcome the many obstacles which beset the entry upon the right path, and to acquire skill in walking along it. Many of the obstacles must be overcome afresh whenever there is a fresh attempt after a considerable interval to undertake and go well through a task in design. We believe that it has always been necessary for a certain number of people to give a good deal of their lives to the cultivation of their natural powers of design, and that no approach to perfection has ever been made except after long labour and training. We believe that in England at the present day the control of all building should be in the hands of trained persons who can and will direct it carefully, skilfully, and honourably. There is ample justification, as we feel, in the nature of things,—without allowing self-interest to affect our judgment,—for the separate existence of our profession. You will see that I have thus prepared the way for saying that the Association gives a good help to students nowadays in reaching the inner meaning and fitting themselves for the effective practice of our work,—an art which has not begun its march or taken its greatest steps within recent generations,—its laws being embodied in the works of old masters, many belonging to other centuries and other countries, who learnt at first hand, from nature and their own souls, the lessons which they taught again in the enduring works which remain for our instruction to-day. No theory of design, however well learnt, can give power, which must come from nature, and be strengthened and developed by well-directed training. The Association gives the younger men in the profession the opportunity of learning from one another, and from older men who can impart some of the experience gained as students and practitioners. Healthy emulation, many incentives to persistent work, and the chance of seeing their work through other people's eyes, are some of the advantages. Others need not be pointed out by me, as I trust you will hear about them from the lips of those friends who will now address a few words to us by expressing good hope of a prosperous, useful session.

Mr. F. C. Penrose said,—Mr. President: It is with very great pleasure that I rise to thank you for your extremely able and suggestive address, and to testify my right goodwill to the Association. I believe it to be of the greatest importance to the architecture of this country that the Architectural Association should continue to form a gathering-ground, as it were, for the architects of the future; for this Association stands to the superior and elder body, the Institute, much in the same relation as the Militia force stands to the Army. I regard the work of the Association as one of extreme value, and I have seen some little of it, having been permitted to take part in some of the interesting excursions which were organised by our lamented friend, Mr. Edmund Sharpe. In connexion with those excursions, and in other instances, I have noticed with great pleasure the zeal displayed by the members under the instruction and guidance of the President for the time being, and I trust that that happy state of things will continue.

Mr. Truefitt, who was called upon by the President, was understood to say that he had always taken a very great interest in the Association, having joined it about five-and-twenty years ago, when the Architectural Exhibition was in existence. He thought it would be a good thing for the Association to endeavour to resuscitate the Architectural Exhibition.

Mr. Millican, president of the Leicester Society of Architects, said,—As the humble president of a provincial architectural society, it gives me much pleasure to be present, and it does me very great good to see so much zeal and enthusiasm displayed by the members of the Architectural Association. I came up on Monday last to attend the meeting of the Royal Institute of British Architects, and I thought it was no less than my duty to come here to-night, in response to the kind invitation of your worthy President, to see the meeting at which we are now assisting. I felt on Monday that I was in the company of the veterans of the art, but to-night I see around me the recruits and the

* We print this note at the special request of the Committee, who think that it may lead others to contribute to the library.

rank-and-file,—to carry out Mr. Penrose's simile,—and I am sure I can congratulate them on the immense opportunities they have, in an Association of this kind, over what we older men had in the days gone by. I can speak of thirty-five years ago, when I was articled in a country office, where the only works we had to refer to were that venerable old book of Peter Nicholson, and a few others of that kind. With the opportunities that are now placed within the reach of the younger members of the profession, I am quite certain that the architecture of the nineteenth century will establish itself as one not to be forgotten in the history of our art. The presence with us of so many ladies leads me to observe that although the professions of Law and Physic have already been attacked by the assertion of ladies' rights, I know of no attack on our own profession by ladies, who had better rest content with remaining, as they are, the queens and chief ornaments of the interiors of the buildings that we may have the honour to erect. In returning to Leicester I shall take back to my own society a most favourable impression of your Association and its work. I shall go back prouder of my profession, and with a deeper conviction than ever that there will be a better future for architecture. I hope that this Association will help to bring about a substantial settlement of the great competition system. It is my conviction that competition, honourably carried out and fairly judged, has been the means, and always will be the means, of bringing to the front rank a great many struggling men of ability and talent who would never, but for competition, have attained to their proper position. I think of course, that there is very great scope for improvement in the way in which competitions are conducted. There is also the burning question of quantities. I hope we shall speedily arrive at a proper settlement of it. There is no doubt that the more architects are associated, the more they come before the public, the better will they and the needs of their profession be understood. I have been ashamed when, in a court of law, I have sometimes heard learned counsel display their utter ignorance of the real position of an architect. I shall take back to Leicester with me a very agreeable impression of the Architectural Association and its work, and shall, I hope, be able to put a little more enthusiasm into our own rather languishing society.

Professor Kerr, in the course of a long speech, said,—I am very happy to congratulate you, sir, upon occupying the chair of this Association, as I have congratulated many of your predecessors, and I feel quite sure that you will continue the good work of the Association as far as in you lies, and on the same lines on which it has been successfully carried on so long. I feel complimented by the reference to my name made by my very old friend Mr. Godwin with reference to our exertions many, many years ago in connexion with this Association. I can say of Mr. Godwin what he could scarcely say of himself, and if he had not happened to mention it I should not have presumed to say what I am now about to tell you. Many gentlemen (including, of course, most of the younger members of the Association, and some of the elder ones) are quite unaware of the way in which this Association was supported, and of the important part which Mr. Godwin took in it. It was in the year 1847 that this Association was started upon the lines of a previously-existing very small club of architectural draughtsmen. I find I had something to do with the initiation of it, and I think Mr. Truefitt was one of the founders. [Mr. Truefitt: No.] At all events, the Association did me the honour to appoint me to occupy the chair which you now so worthily fill, and I applied to Professor Donaldson and Mr. Godwin to come down and start the Association. Those two gentlemen were then precisely in the position they now occupy in the profession,—higher positions they could not occupy,—and they came down most heartily and helped the Association. Indeed, but for the patronage of Professor Donaldson,—who was at that time, as he has since remained, at the head of the profession in his particular department,—and but for the constant support of the Association in the pages of the *Builder* by our friend Mr. Godwin, I really think this Association could never have been started. I will say no more on that subject, but will pass to other topics. The opening *conversazione* of this Association has generally,—almost always,—been held before the opening meeting of the Institute. This year, however, it is held after the opening meeting of the Institute, and I am inclined to think that if the Association will take it into consideration, they will find it more advantageous, in the future, to always hold it after the opening meeting of the Institute,—for this reason: that the President of the Institute, at the opening meeting, delivers himself of his address, and then we have something to talk about. The President of the Institute may, of course, be considered, for the time being, to be at the head of this Association and of all kindred societies. Probably most gentlemen present will be aware that the Institute has recently established a somewhat novel *régime*, part of which,—and an important part,—is, that the presidential chair for the future shall be occupied by a succession of gentlemen who are fairly representative of the best class of architects; and thus, when we have from the lips of such men as Mr. Charles Barry and Mr. Whichcord such addresses as those gentlemen have delivered, it is extremely convenient for us to reflect upon them, because we have in them the best average intelligence of the whole profession. In former years, when such gentlemen as Sir William Tite and Sir Gilbert Scott delivered addresses, the members of the Institute were necessarily a good deal restrained, from many considerations, in commenting upon them, but now we have addresses given by men who are of ourselves. I should like to refer to one or two points alluded to by Mr. Whichcord in his address, and which, as it seems to me, are of particular interest to the members of the Association. I observed in the report of the proceedings of the opening meeting of the Association, that Mr. Henry, who is at the head of the Architectural Science Class, was obliged to acknowledge that, in effect, that class was unsuccessful. Now, Mr. Whichcord, in his address to the Institute of Architects last Monday, laid down one proposition which was very remarkable, and has some bearing on this unfortunate circumstance. He said, in effect:—"While I am President of the Institute I shall consider it my duty to promote as far as I can the discussion of practical subjects." Not that Mr. Whichcord, who is a man of artistic instincts as much as any man, desires to disparage the influence of art, or the importance of art as a study for members of the profession, but because he, as an experienced man of business, begins to perceive that art can pretty well now, fortunately for us, look after itself, although science, unfortunately for us, cannot do so. Now, when we speak of a scientific man in the architectural profession we mean primarily a man who understands how to build as distinguished from the man who understands, not, perhaps, how to build, but certainly and notably how to design a building beautifully. The profession of architecture combines, in a way in which no other profession in the world combines, three most important and apparently diverse matters of knowledge and study,—art, science, and administration. An architect, even in prosaic England, if he is to be one of high standing, must be an artist equally with the painters of the Royal Academy; he must be a man of good scientific skill, like the members of the Institution of Civil Engineers; and, at the same time, he must be a man of good administrative powers in matters of business. Now, these three elements are not combined in any other profession that we know. What Mr. Whichcord means, in effect, is this,—that during the last ten or fifteen years, by some means which are not very clear, English architects have, in common, I am bound to say, with English artists of many other classes, been extremely successful in their study of art. England at the present moment is rising rapidly in the school which is constituted by the nations of the world, as regards artistic design, and amongst other classes of artists, the class of architects has already risen very rapidly and very highly indeed. Having done so well in art, then, during the last fifteen or twenty years, and having done nothing, or scarcely anything, in science, why not,—I will not say leave art alone for a little while, but,—consider the demands of art to be to some extent satisfied, and devote your attention specially to science? Now what Mr. Whichcord means by science is not the ordinary facility of building, not the ordinary constructive powers, but that higher science which the engineer possesses. Mr. Whichcord does not see why, and I do not see why, the architect should not be as successful in his mathematical appreciation of construction as the engineer. We have in this room, in the person of a gentleman who has spoken to-night, one of the most distinguished mathematicians of the day, and when a gentleman carrying on the profession of an architect can find the time, as Mr. Penrose did in 1878, to visit the Rocky Mountains in order to make a drawing of the corona of the sun, he gives sufficient proof of his ardour in scientific pursuits. I am sure Mr. Penrose will bear me out in saying that there is no reason whatever why architects should play second to the engineers in anything. That is the substance of what Mr. Whichcord desires to impress upon us, and I would re-echo his remarks in impressing upon young architects the essential importance of studying the science of architecture. The time has come when science is becoming of much more importance in this as in other professions. There is another consideration which is of great importance to the younger members of the profession. The time has now come when the examination test is about to be introduced into this profession of ours. The time for such a thing was bound to come, sooner or later, and it has come now. Mr. Whichcord announces his resolution, as President of the Institute, to devote himself to this very important question. There is one other point upon which I should like to say a few words,—that is, as to a question which is of great importance to every one present here, as it concerns the honour of the profession. The architectural profession has had its honour very seriously impugned of late years. It has been said that some architects,—and of course no one says how many,—are, in respect of what is called fiduciary agency, not exactly what they ought to be as regards honour. Now Mr. Whichcord alluded to that topic in his address, and my good friend Mr. Godwin took upon himself to make some remarks on the subject, and I was delighted beyond measure with those remarks, for the observations he made could not possibly have come with the same force from any other man in the profession. Occupying, as Mr. Godwin has done for the last twenty-five years or more, a peculiarly advantageous position for knowing what has been going on in the profession, he was able to say, in effect, that instead of the men who constitute the profession maligned in so cowardly a manner being dishonourable, they are the most honourable and chivalrous profession that he knows of, and pursuing the end and aim of their art under circumstances very often of great self-denial. Now, my experience of the profession is not in any degree that of Mr. Godwin; but I venture to say this,—that I have always congratulated young men who were entering the profession by telling them they were entering a profession which, more than any other I know, is honourable. When we consider how corruption stalks abroad in every kind of business in this country at the present time, I am ashamed to think that any one should impugn the honour of a profession like ours. Our friend Mr. Godwin made this reservation,—though I can scarcely call it that,—that when architects take out their own quantities, they are likely to place themselves in a false position. Now the story goes, that once upon a time a gentleman gave a professional dinner. A good many architects were invited, and a great many builders. The architects came in cabs, the builders came in their broughams. Some quiet, observant gentleman at last noticed this, and he asked the reason of it, when the answer was volunteered, "That is the difference between five per cent. and fifteen per cent!" Now, sir, if you or my friend, Mr. Barry, were to give a dinner to a number of architects and to a number of surveyors, some of the surveyors would come in their broughams, and others of their number would come in Hansom cabs, rattling up to the door with great *éclat*, paying the cabman quite regardless of such a thing as "change," and giving one to understand at a glance that they were men very well-to-do in the world. On the other hand, some of the architects would come on foot, and others would come four in the inside of a four-wheeled cab, and one on the box. Now that, putting it very broadly indeed, is the primary distinction as regards finances between architects and surveyors, and I therefore say that I think, for one or two reasons, young architects, at all events, ought to be permitted,—and I venture to think that the Institute does intend to permit them, cheerfully, so long as it is fairly and straightforwardly done,—to take out their own quantities, and to receive for such work the greater emolument than they receive for the preparation of the drawings.

But there is another consideration, and it is a most important one. It is well known by practical men that nothing teaches a young architect so well the *arcana* of his own profession as taking out quantities for the buildings he designs; and considering that we, as a profession, are honest men, and may be trusted, I think it is very advisable that the young men should be encouraged, as a matter of learning, to take out their own quantities. One word more. When a young man in our profession is starting in business, he can always start upon knowing how to make up a builder's bill, but he may find it a very difficult thing to start only knowing how to design an extremely handsome building. In conclusion, I have only to say that I wish you and the Association a very prosperous year, and I am perfectly sure that that wish will be realised.

The President.—Mr. Charles Barry is present, and he has always been so great a friend to the Association that we should not like to let him go away without saying a few words to us.

Mr. Barry, in the course of his remarks, said,—I shall not attempt to follow the learned Professor through his speech, but will only refer to two points. As to the question of "illicit commissions," I wish only to say that I think it now becomes the dignity of the profession to say no more about it. I think it is a bogey which has been entirely dispelled now. We are conscious of our own integrity as a profession. To say that in our profession, as in all callings of life, there are some few men who act dishonestly, is to state a self-evident fact. I was extremely glad to hear the other evening at the Institute, from such an authority as Mr. George Godwin, that his conclusion had been, and was, that architects were on the whole, and very much on the whole, a thoroughly honourable profession; and, further, that he had endeavoured, with the power which he can have, to follow up some of the general charges which have been made against them to a specific course, and that such charges have invariably broken down. No better testimony could be given. The only other subject to which I will allude is the suggestion that in future the profession is to be entered only by means of examination. I have only to say with regard to this, that as a very old member of the Institute, I hope the experiment will be tried, and tried thoroughly, fairly, and honestly. That it is a question surrounded by enormous difficulties, I think any one who thinks about it will see at once. It is quite impossible, for instance, for any board of examiners to say whether one man, as compared with another, is a good artist or not,—indeed, it would be impertinent; and yet it is quite possible for a man to be a thoroughly good practical architect and no artist at all, while it is equally possible for a man to be a good architectural artist, and no man of business. But the Examination, if it is to have any force at all, must deal with both these difficulties. I only say this to prepare our friends, both old and young, for possible non-success; but the difficulties may be, and I hope will be, surmounted by perseverance.

The company then dispersed to listen to the music of Coote & Tinney's band in the large gallery on the ground-floor. Owing to the space on the walls, screens, and tables in the galleries on this floor being occupied by other objects, the Association was not able to make its usual exhibition of drawings, &c. There were a few other exhibits, however, and we may make mention of some effective wall-papers with ornament in relief (applied on the surface, not stamped), shown by Messrs. Scott, Cuthbertson, & Co., of Chelsea; and of a collection of pottery, consisting of vases and plates, lent by Messrs. Buckley & Co., of Wells-street, Oxford-street. These works were stated to be the production of a self-taught potter, Mr. E. Bingham, a schoolmaster by profession, the clay being "obtained in his garden at Castle Hedingham, Essex," and "all the modelling being done by means of a chicken bone." By the courtesy of the Council of the Royal Institute of British Architects, their meeting-room and library were placed at the disposal of the Association for the evening, and Mr. Boyd kindly allowed refreshments to be served in the Museum of Architectural and Building Appliances.

Smithfield Club Show.—The Show at the Agricultural Hall includes many things likely to interest our readers. There is still time to go, on (this) Friday, the 12th inst.

NOTES ON IRONWORK.*

THE branch of science which enables the engineer to determine the theoretical amount of strain in the members of any proposed structure may be said to appeal directly to ordinary intelligence, and to be on the whole simple. The science, however, depends upon data and conditions the exact influence of which can never be determined in actual practice. It is proposed, therefore, in this paper to consider briefly some of the practical questions which affect theoretical deductions, and the design, efficiency, and economy of ironwork structures generally. The precise conditions under which ironwork will be constructed and worked being indeterminable, it becomes necessary, among other matters, to have some knowledge or workshop practice or routine in order to determine the proper limits and importance to assign to theoretical results.

In taking out strains, it is usually assumed that each member has a normal length whatever the amount of strain to which it is subjected, and that its conditions are the same as they would be were it free to turn in a plane about its extremities. Both of these assumptions are, to a certain extent, erroneous. So far from any bar having a normal length, that is being perfectly rigid, it may be taken for granted that directly any piece of iron is subjected to a tensile or compressive strain its length is varied accordingly. Likewise, no member of any structure is perfectly free to turn in a plane about its extremities; were it so, each junction would have to be made with an absolutely frictionless pin. In English practice, junctions are frequently made with innumerable small rivets, which render them to all intents and purposes rigid. In America, however, pin connexions are employed to a very large extent, and undoubtedly, with pins and eyes properly proportioned, efficient joints may be made, and with simple arrangements of parts, theory be more closely approached than with our complicated systems with riveted joints.

Variations in the temperature of the atmosphere likewise materially affect the strains in iron structures. When constructing an iron bridge, a camber is given to it, so that when loaded it may assume a straight line, instead of exhibiting signs of apparent weakness by sagging. While testing the bridge, it is usual to measure the camber as the load is put on, and it is not uncommon to find that on a warm day the camber is greater than it was the evening before, notwithstanding that a larger amount of load has been put upon it. This anomaly is due simply to the sun warming up the top flanges, and causing them to extend, whilst the bottom flanges have not extended to a similar extent, owing to being protected from the sun by a platform or the load upon the bridge. It has been ascertained that a variation of temperature in iron of 15° Fahr. will produce the same effect as one ton actual load per square inch; therefore, a change of 82·5° Fahr. will produce the same effect as 5·5 tons per square inch actual load, which is greater than the amount of strain supposed to be put upon any bar when under its full working load. Now, although the difference between the extremes of temperature in this country may be estimated at 82·5° Fahr., the extreme temperatures only act during a short portion of each twenty-four hours; and so, owing to the mass of iron and other circumstances, the temperature of the structure is seldom the same as that of the atmosphere, consequently the iron is not affected to the full extent just mentioned. There are, of course, many positions which will at once suggest themselves where the temperature is tolerably uniform throughout the year, and where accordingly no provision need be made for expansion and contraction due to changes of temperature. In exposed positions in this country an allowance of seven-sixteenths of an inch in each 100 ft. should be made if it is wished to eliminate strains which it has been shown may be of considerable amount. Edwin Clark has placed it on record that half an hour's sunshine has more effect on the tubes of the Britannia Bridge than the heaviest rolling loads or the most violent storms.

Questions of the foregoing nature having been considered, and the strains upon the various members of the proposed structure having been determined within reasonable limits, it becomes necessary to arrange the material to meet them. It is in doing this properly and economically that the art of designing ironwork consists. In all designs every endeavour should be made to employ iron of such dimensions and weights that it may be easily procured in the open market, and require only such workmanship as can be cheaply and readily performed. By attention to these points economy will be more surely attained than by saving in the weight of iron which may be effected by adhering more closely to theoretical refinements. As an instance of this it may be stated that the actual weight of a plate girder is always very much in excess of its theoretical weight, and it is rarely the lightest form of girder which it is possible to design to carry a load; it is yet generally the most economical type to adopt for small spans, owing to the uniformity of its parts and the simplicity of its manufacture. While mentioning plate-girders it may be well to state that although the theoretical economical depth of all girders depends upon their description, the loads to be carried, and a variety of other circumstances, the depth of a plate-girder is often fixed by one consideration alone, and that of a practical nature quite beyond the control of the designer. It is simply the fact that plates cannot be rolled at ordinary rates over 4 ft. 6 in. in width, so that the maximum depth of ordinary plate-girders is fixed at 4 ft. 6 in. If this depth is exceeded it becomes necessary to plate the web vertically, which will enhance the cost of the work to an extent exceeding the saving likely to result from conforming more nearly to any greater depth which theory might dictate. In arranging the flanges, although theoretically the section of metal should be reduced at certain points, it is generally desirable, when a limited number of girders are to be made from one design, to keep the plates as nearly uniform in thickness as possible, rather than to vary their thickness so as to approach more closely to the amount of metal required to meet the strain. However, where a large number of girders are to be constructed from the same design, the plates may be varied in thickness without increasing in any way the cost of the work, as the plates can be ordered in batches from the rolling-mills and relegated to their respective girders in the manufacturer's yards.

At one time much of the iron employed for girder and bridge building came from Staffordshire: consequently specifications were prepared in such a manner that iron from this district might comply with their stipulations. These specifications have been copied and re-copied even up to the present time, notwithstanding that Staffordshire iron is now rarely put into ordinary work, for the reason that the sizes of the iron supplied from this district are small when compared with those from the north country. This is owing to the Staffordshire mills working with plant which was put down many years since, whilst the ironworks in the Cleveland district are provided with more modern machinery and improved appliances. A South Staffordshire plate to cost the ordinary market rate must not be over 4 cwt. in weight, 15 ft. in length, and 4 ft. in breadth, and about 30 superficial feet in area; whereas Cleveland plates can be procured without additional cost up to 21 ft. in length, 4 ft. 6 in. in width, and 12 cwt. in weight, providing the area does not exceed 56 superficial feet. Although plates from the latter district may be obtained possessing as great a tensile strength both with and across the fibre as those from Staffordshire, they are not as a rule equal to the latter in toughness. Extra care should therefore be taken to test and thoroughly ascertain the quality of the iron, as it is sometimes very brittle. No attention whatever should be paid to "brand," as it is no criterion by which to judge of the qualities of iron usually employed for the construction of ordinary ironwork. A very fair specification for girder-iron is 20 tons per square inch and 6 per cent. elongation with the fibre; 18 tons per square inch and 3 per cent. elongation across the fibre for plates; 22 tons per square inch and 9 per cent. elongation for L and T's; and 24 tons per square inch and 15 per cent. elongation for rods and bars. These elongations ought to be taken on a testing section of uniform width for a length of 6¼ in. In a length of 6¼ in. there are one hundred sixteenths of an inch, so that each $\frac{1}{16}$ elongation after testing represents 1 per cent. In preparing all samples for testing they should be drilled out of the plate angle or bar,

* From a paper by Mr. Graham Smith, C.E., read at the Mitcham meeting of the Association of Municipal and Sanitary Engineers and Surveyors, December 5th.

and be either chipped or slotted to the required dimensions, and all tool-marks carefully filed out, and the parallel portions should run in with curves of large radii to the portions through which the pin-holes are drilled. In the event of there being the slightest shoulder at either of these points, it will have the same effect as a nick in the iron, which will generally render worthless the test for both tensile strength and elongation. With a little experience the quality of a plate may be determined to some extent by breaking the corner off over an anvil, and by inspecting the punchings from the plates. If the iron is brittle and untrastworthy, the punchings will show cracks in all directions if the punch be working as ordinarily with a little clearance, whereas if the iron is good and reliable slight cracks only will be perceptible,—all running in the direction of the fibre. Whilst these workshop tests can be carried out in the manufacturer's yard by the inspector during the progress of the work, all tests requiring to be made with hydraulic presses or steelyards, should be conducted by independent authorities, such as Mr. Kirkaldy. After the material has been tested and passed, and the structure put together, it becomes necessary to apply a proof-load, which consists of gradually placing on the structure a weight somewhat exceeding its working load. This is requisite in order to ascertain if the workmanship is up to the proper standard. It must, however, be always remembered that a proof-load is no test of the strength of the structure or the quality of the material. If the iron is hard and brittle it will give less than a material of more desirable quality, and the structure will apparently be stronger, but it is needless to state that such is not the case. Again, any part may be on the point of breaking, and yet not yield sufficiently to materially alter the deflection. Likewise, although a structure may stand the application of a proof-load at the time of testing, it does not follow that it will stand repeated applications of loads of even less amount than the proof load. Fairbairn's experiments, carried out many years back, demonstrated this fact. He found that when the strain on the iron of a beam was between six and seven tons per square inch, the beam sustained an unlimited number of applications of the load producing this strain; but when the load was increased so as to put a strain of from eight to nine tons per square inch on the iron, the beam failed with comparatively few applications of the load.

MALTON URBAN SANITARY AUTHORITY.

An important meeting of this Authority was held last month, when several cases of infringement of the bye-laws were reported by Mr. J. Lawton Welsh, the borough surveyor. The Authority unanimously decided to support their surveyor in the carrying out of the same, the chairman remarking that the bye-laws had for some time been systematically evaded, and in future legal proceedings would be instituted against offenders.

They also approved of plans prepared by their surveyor, for stables, stores, &c., and have adopted the tub system of scavenging, the Manchester system for better class houses, and the Rochdale system for cottages, at the surveyor's recommendation,—the borough being divided into districts for night and day scavenging.

HEALTHY HOUSES.

Eight years ago the district of West Brighton, which was then known as the Stanford Estate, had only one building upon it, of the annual value of 40*l.*, while now there are some 526 residences, many of them mansions, the whole representing a total outlay, it is asserted, of 2,000,000*l.* sterling. One of these houses has been arranged in accordance with the plans of Dr. Hayward and Dr. Drysdale, of Liverpool, whose scheme for the ventilation of houses has been mentioned in these pages before now. The plan adopted in the present case appears to be this:—To construct an air-shaft, the inlet of which is situate in the basement, and which ascends to the top of the house, there being communicating flues with each apartment of the building. The air thus introduced into the house is first passed through a hot-water apparatus, and thence ascends and enters the various apartments through a perforated cornice. The vitiated air, on the other hand, leaves the room through another perforated cornice on the opposite side of the room, and is drawn upwards into a chamber, and afterwards into a flue, by a contrivance which utilises the heat arising from the kitchen fires for the purpose of keeping up a continuous circulation of the air.

FEMALE SCHOOL OF ART.

The exhibition of selected works by the pupils at Queen's-square took place last week, and Miss Gann has reason to feel satisfied with the number of medals and premiums awarded. The Queen's scholarship was gained by Miss Florence Reason; National Gilchrist scholarships by Miss Harriet Ada Payne and Miss Ethel Mary Spiller; the Princess of Wales and subscribers' scholarships by Miss Catherine Martha Wood; subscribers' scholarship by Miss Ellen A. Chrismas. Queen's gold medal (head from life, in chalk) by Miss Ellen Amelia Chrismas. The national gold medal (group from nature, in oil, azaleas, &c.) went to Miss Catherine M. Wood, the national silver medal (bay-leaves from nature, water-colour) to Miss Ethel Nisbet, and the national bronze medals to Miss Maud A. West and to Miss Margaret Dickson. National and Queen's prizes (modelling figure, antique) to Miss Susan Ruth Canton, Miss Louisa Jacobs, Miss Amelia Walter, Miss Edith Gibson (figure, antique, chalk), and Miss Mary E. Carter (painting in monochrome from cast). The other prizes are too numerous to specify. We do not yet recognise the Genius which an old friend of the institution at a prize-giving meeting some time ago asked for from the school, one who is to take a place in the history of art, but there is much ability to be seen, ability fostered by careful teaching, and some of our manufacturers might usefully look there for artistic assistance needed in their establishments.

THE TOWER OF ST. MARY'S, BUNGAY.

This tower, as most Suffolk people know, is a magnificent specimen of flint panelled work of the early part of the sixteenth century, with octagon turrets at each corner, terminating with carved stone pinnacles. But what people did not know, including many of the inhabitants of Bungay, was that the tower was in such a tottering state that it might have fallen at any moment. Two sides of it stood upon stone arches, which rested on an angle pier at the north-east corner. The arches and piers were made of the softest kind of stone, a kind of clunch, and became, more than 100 years ago, perfectly shattered. Some time in the latter part of last century this pier and arches were encased in wood shores and bound together with large iron rods and plates. These gradually lost their hold, the tower was in imminent danger of falling, and it required the greatest care to prevent its sharing the fate of Chichester tower. Mr. Phipson directed very massive piers, about 30 ft. high, in brickwork in cement, to be built on each side of the weak part, and from these he placed wrought-iron girders of enormous strength through certain portions of the walls, and with the aid of very powerful hydraulic jacks the upper part of the tower, weighing something like 600 tons, was slightly raised, and was kept suspended in the air for nearly three months, whilst the defective arches and pier were entirely removed, and the whole of the lower part on two sides, to the height of nearly 30 ft., was entirely rebuilt. The upper part of the tower was then let down into its place. The whole of the work has been carried out without the slightest settlement or fracture of any kind. Mr. Owen was the clerk of the works, and Mr. Richardson the foreman. The cost of this work has amounted to nearly 1,500*l.*

FIREPROOF FLOORS.

Sir,—Your correspondent, "Fair Play," in a recent issue states he considers my system to be the same as that patented by Mr. Thaddeus Hyatt, and described in a book published by him in 1877.

My system is an improvement on the original patent of Mr. Matthew Allen, sen., taken out about eighteen years since. It was first adopted by me in 1874, and patented in 1875. I attended, by invitation, a discussion on concrete, at the Institute of Architects, in the spring of 1878, and exhibited specimens of my improvements.

The book published by Mr. Hyatt in 1877, I have not seen, nor do I know its contents, and none of my improvements have been suggested by anything Mr. Hyatt has done.

In your issue of November 22nd there is a most interesting letter, signed "A. D. Hogg." I am obliged to him for the kind tone of his criticism, and the suggestions he makes shall have my best attention.

W. H. Lascelles.

THE CROSS AND HORSE-SHOE, ST. GEORGE'S, FOVANT.

A variety of suggestions have been made as to the carved horse-shoe on the cross, but are wide of the mark. We understand that the cross was found in the walls when the church was restored, and was then placed in its present position. The rector, the Rev. Alfred Earle, who has received a number of letters on the subject, and proposes presently to publish a digest of them, inclines to the opinion that it was a tombstone or monument to a smith, the shoe indicating his trade. Monumental slabs with memorials of the trade of the person buried beneath are not uncommon. There is a noted instance in memory of a cook in the church of St. Mary Redcliff, Bristol. But the cross at Fovant is not exactly of this character.

TOWN OF ST. HELIER'S NEW MARKET BUILDINGS' COMPETITION.

The principal "conditions" are as follow:—

"1. The two best designs (including plans, detailed estimates, and specifications) to receive premiums of 30*l.* and 20*l.* respectively each. The committee to be sole referee.

2. No percentage or other commission to be allowed on account of any premiated or adopted design.

3. All plans and designs to remain the absolute property of the committee, at the option of the committee."

Several correspondents express their indignation, and no wonder; but if, spite of indignation, architects send in designs in accordance with such conditions, no surprise need be felt when other bodies offer similar terms.

EASTBOURNE TOWN-HALL AND OFFICES COMPETITION.

Sir,—The above certainly deserves attention called to it on the part of architects, owing to the cool and unfair manner in which it is proposed to deal with members of the architectural profession; and if my letter should cause only a few of those who usually go in for competitions to think at least twice before risking the loss of time, &c., to gain such handsome remuneration for their pains, and at the same time helping to drag what should be an honourable profession down to the level of a third-rate "co-operative" store, my time will be well spent.

Surely some, if not all, the members of the Eastbourne Local Board are, or have been, tradesmen, and have always been in the habit of charging a fair price for their several wares, according to the usual business mode; if so, then why have they the impudence, not to say ignorance, to ask professional men to give them 500*l.* worth for 75*l.* or 60*l.*, as the advertisement in your paper clearly does? The usual professional charge is 2½ per cent. for drawings, &c., and this on 20,000*l.*, the limited amount to be laid out, comes to 500*l.*; and yet the profession is coolly asked to compete for the honour of providing 500*l.* worth for 75*l.*, and thus to lower each competitor and his fellow artists at the same time.

I hope, sir, that by drawing the attention of architects to such proceedings that you will be able, at least, to prevent time and trouble being thrown away; and as the surveyor to the Board is to carry out the drawings, perhaps he had better also make them.

A Competition Man of Eleven Years' Experience.

ARCHITECTS AND SURVEYORS.

Sir,—I greatly respect Professor Kerr, and always feel a pleasure in listening to the words which fall so gracefully from his lips, but I cannot help thinking that on Friday last his story about the architects' means and the surveyors' means was rather overdone and not strictly correct.

I have had considerable practice in both branches of the profession, and I assert that I would rather act as architect to an ordinary building at five per cent. than prepare the quantities at three per cent., as quantity-taking is a personal matter, real collar-work, while the drawings can be entrusted to assistants with a general supervision from the principal. Quantity-taking requires years of experience; and I should be sorry for the contractors who had to base their estimates on the bills prepared by the young architects who, to add to their incomes, ventured on a dangerous experiment.

Observer.

Sculpture Competition, Paris.—The following are the awards of the jury appointed to choose the design for a monument in commemoration of the Defence of Paris, to be erected on the Rond Point at Courbevoie:—1st prize, M. Barrias; 2nd prize, M. Lequien (Alexandre); 3rd prize, M. Mathurin Moreau. Honourable mentions:—Messrs. Aubé, Chaplain, Léon Noël, Falguière, Steiner, Paris, Labatut, Dumaige, Cougny, Taluet, Perrey (Léon), Maillet (Jacques). The premiums are respectively 15,000, 3,000, and 2,500 francs.

JOHN BRITTON IN CLERKENWELL.

SIR,—I was much interested with the *Builder* last week. The President's address was excellent. With great tact it combined all the elements of the topics of the day. As regards your own speech, I quite agree with you that we are much indebted to our good friend, John Britton. By coincidence his birthday, July 7th, was mine. I beg to inclose an original letter (not published) which will interest you.

W. P. G.

MANY thanks, my dear sir, for your friendly recollection of me by sending an impression of your new font for Clerkenwell Church.

Perhaps you are not fully apprised of my long residence in the parish of Clerkenwell,—first, on my arrival in London, in 1788, when I resided for some months in the Close; thence I went to the Jerusalem Tavern on the Green, where I was *buried* for nearly six years. I afterwards lodged in Rosomond-street, then Corporation-lane, and next took a house in Wilderness-row, where the "Beauties of England" were commenced. I was married by Mr. Lendon in St. John's Chapel, and am now busily employed in penning "the last dying speech and confession" of your *old* friend,

J. BRITTON.

March 18, 1852.
W. P. GRIFFITH, Esq.

SCHOOL OF WOOD-CARVING.

SIR,—Permit me, by way of preface to this letter defending my dictum that there are several men of various accomplishments required in the practice of wood-carving, to add that *a wood-carver should be able to carry out any design, and a designer should understand every style.*

We all remember the beautiful works of Mr. Wallis, and whenever they are spoken of it is with praise; but he does not disprove my assertion in the letter he has addressed to you, sir. I submit that to tie up some dead canaries, and pin out a wing on one side, and ruffle some feathers on the other, and then to "represent what the eye could see," does not show that the executant is a designer, however faithfully and delicately the subject may be copied. If well done,—and all Mr. Wallis's birds were well done,—it proves that, when a living wood-carver, he was a man of great capabilities in one direction. That his special talent was duly appreciated, his strong and lusty "voice from the dead" will amply show.

Mr. Wallis, in fact, all through his letter, confirms my statement. He says he pursued his own individual work, but employed the best London men to do the other styles of carving. Again, he acknowledges that London life renders the triple method necessary. Mr. Wallis has evidently misread Mr. Ruskin's sentence, "the surface is everything." It referred not to carving in wood or stone, but to *drawings* of sculptured ornament.

Your other correspondent, "Meter," in also combating my maxim, "One man cannot do it," which you will observe is in the present tense, and was applied to the present state of the art-industry in England, mentions, as an overwhelming argument, the name of Grinling Gibbons, the great carver, who died nearly 120 years ago. This is evidently a piece of his favourite logic. But even on his own ground I am bold enough to say that even Gibbons has left us no proof that he was a designer in the full and proper sense of the term. He grouped flowers and fruit together with infinite taste, and, in addition, introduced a good species of scroll-work adapted from the Italian, which he used with great effect and genuine originality. But here ended his claim to be a designer. Had he been called upon to enrich a Byzantine basilica, an Oriental palace, or a Tudor mansion, the result, in all probability, would have been as incongruous as when he added to Canterbury Cathedral his beautiful but misplaced festoons.

A few words, before I put down my pen, relative to my late father. He was a man of rare artistic genius and quick imagination, and a master-carver of the first order. Scarcely a man of business, however; for he spent his fortune in the pure and simple effort to advance his art, collecting specimens of ancient and modern art-work from all parts of Europe long before there was a South Kensington Museum in which to study, and keeping young men employed through years without the chance, or even the wish, for gain, and training them as he so well knew how to do. The Royal Cradle was designed by my brother, and the carving was executed by several of my father's trained hands, not by *one*, as Mr. Wallis states. I have all the details of time and expenditure to refer to, apart from my own knowledge of the way the work was carried out.

With regard to my late brother, Mr. Harry Rogers, I may, without chance of denial, say that he was one of the best, if not the best, ornamental designer England has produced this century. His knowledge of architecture and architectural ornament of every style, his studies here and in Continental cities, and not the least his Classical education, combined to produce an artistic designer to whom I looked up with the greatest pride, and to whose teachings I owe what talent in design I possess.

GEORGE ALFRED ROGERS.

SIR,—It is very pleasant in these last expiring days of 1879 to find that Mr. Wallis, the unrivalled wood-carver, and the ideal for so many of us a quarter of a century ago, is not—as we all thought him—dead and gone; but yet liveth. The general impression was that study had brought on blindness, and that this grievous affliction, to the deep regret of every lover of art, had been succeeded by the lamented death of the artist in question.

I am rejoiced that such is not the case; and would insist that no man has more right to speak upon the subject of wood-carving than has Mr. Wallis. A good, old, and, I hope, never-to-be-forgotten saying runs:—"What man has done, man can do." But I question very much whether any man has lived since 1851, or is living now, who could carve a worthy companion-panel to Mr. Wallis's "Spring," which some will recollect was exhibited at the first Great Exhibition. It may be remembered that the study in question consisted of a ram's head and shepherd's crook hung against a wall, from which a wreath of early flowers drooped carelessly down. The delicate workmanship, the wonderfully-light arrangement, and the thoughtful grouping of that specimen of wood-carving, were altogether astonishing. I have never seen nor heard of it since, and know not who possesses it. All I am aware of is that whosoever is its owner has in his collection a piece of carving that admittedly stood without a rival in the entire Exhibition of 1851. And this was but one of Mr. Wallis's very many works.

The only man I know whose style of carving at all approaches that of Mr. Wallis is another East-countryman,—Mr. Minns, of Norwich. I saw some exquisite specimens of that gentleman's work at Vienna in 1873, and many who read these lines will remember with pleasure the choice samples of carved birds and foliage that clever carver exhibited at Paris last year. Like Mr. Wallis, Mr. Minns, I believe, does every stroke of his work himself.

Personally, I am wholly and solely an architectural man. To architectural detail, and especially to ornament, as an accessory to architecture, I give my sole attention. I have never flown at, and am sure, if I did, I have not the exceptional ability nor the power to produce by the manipulation of the chisel, such delicate and inspired representations of still life as every one of Wallis's studies affords; yet I can admire them with all the enthusiasm of an artist, and am proud to confess that admiration of "Spriug" in the Exhibition of 1851, first filled with the desire to be a carver one who has, with no little good fortune, thank God, followed that profession for very many years since, and who signs himself

HARRY HEMS.

ST. ALBAN'S ABBEY.

SIR,—On a former occasion, Mr. Chapple, when hardly pressed, did not consider it beneath him to meet my arguments merely by attempting to throw discredit on me professionally, and on the honesty of my regard for ancient remains. He did this by making some unprovoked, unjust, and wholly irrelevant sneers at a reredos which was put up by me some twenty years since at Boxgrove,—a mere makeshift for the time-being,—as though it were intended as a permanent and worthy appurtenance to that grand old church when restored. In your last week's issue, whilst nominally and professedly accepting my challenge, he displays the unenviable discretion which, in some cases, is said to be the better part of valour,—by giving, as a correction of my section, the section of something else to which it is only remotely related.

I find that by his persistent evasion of the real question, some of your readers are scarcely aware what the exact issue is, which may be stated thus. In the length of the nave clearstory, on the south side, there were three distinct divisions of corbel-table, each one co-extensive and corresponding with the several periods of work in the bays beneath. That in the five western bays had simply moulded corbels. The middle bays had principally heads more or less grotesque. The three eastern bays had a corbel-table constructed of old Roman tiles (the others being principally of clunch stone), with stone corbels very simply moulded and cut, much decayed, and consequently not well defined in their form, with a distant likeness to those over the western bays. I arrived at a conclusion that the old corbel-table surmounting the undisturbed Norman work of the eastern bays was original, of Late Norman date, forming the eaves-course of the original roof. Other architects and antiquaries had expressed themselves puzzled by it, but had set it down as unquestionably Mediæval, without assuming to suggest its exact date. Mr. Chapple informs us that it was wholly modern, constructed within the last fifty years, and attempts to prove his case, not by analysis and reason, but by ridicule, assertion, and a little harmless vituperation. He actually evades the very points at issue, and sets up a dummy, which he forthwith proceeds to knock down. He says nothing as to the assertion which he at first made of the corbel-table having been built upon the top of a wall raised 5 ft. 6 in. in Mediæval rubble work. He gives a detail of a corbel-table, without any intimation as to its position in the length or breadth of the building. The detail which he gives is that of the unquestioned Mediæval one, and *not* that of the three eastern bays, of which alone I have all along spoken. He then refers me to Carter's plates as showing these eastern bays to have had in Carter's time a clunch stone corbel-table, like that of which he gives a section in your columns, in order to suggest that it had been rebuilt since Carter's time, in 1810. But Carter's plate shows nothing of the kind. It gives no indication of difference between the brickwork and stonework generally. It does give, however, some wavy lines below the corbel-table to indicate the junction of the work of the Norman period with that of the Mediæval. The corbel-table of which I gave a section, and which has been destroyed, is clearly the one indicated by Carter. In the letterpress the battlements (or parapets) are spoken of as in recent brickwork; but that this does not apply to the corbel-table is evident from the fact that in a detail given of the Mediæval portion of the corbel-table he indicates what he calls the recent work, *i.e.*, above the corbel-table, by leaving it plain. He gives no detail of these three eastern bays; and Mr. Chapple's detail was taken neither from Carter's illustration, nor yet from this portion of the building at all. He has not touched the real point except as to the thinness of the mortar joints. And even here he has prudently refrained from calling attention to the fact that the mortar joints, and, indeed, the whole work in the later Norman walling generally, and not only in this corbel-table, were thinner and finer than those in the tower. I deny that these had either the thinness or the character of the modern brickwork; and the construction and character of the work of the parapet were quite different to that of the corbel-table beneath it. It is impossible for them to have been built at the same period. And it is quite clear that the corbel-table to which I have all along referred (of whatsoever period it may have been) was not put up within the present century. The only opinion which I have heard expressed (except by Mr. Chapple) has been that it was Mediæval, and probably almost coëval with the western bays. I cannot accept this as a solution, any more than Mr. Chapple would be disposed to do so. He professes to correct my detail, but gives something else instead.' Portions of the corbel-table of the five western bays, of undoubted early Mediæval work, were made up of scraps of Roman tile and roofing tile, and anything that came to hand, such as Mr. Chapple described. And it followed to some extent the design of these three eastern bays, except that they used such of the old *débris* as was available; whereas in

the eastern part the old Roman tile not having been displaced or destroyed was merely repaired and surmounted with a stone string.

Surely I am fully justified in venturing to record the interesting nature of its construction, and to deplore its demolition, as something worse than unnecessary. As mayor of the borough in which this grand old building is located, Mr. Chapple may not think it beneath him to give a little more critical consideration to the history of this work specially under his care. He may still merely continue to ridicule my discovery of an "original Norman cornice," but, in any case, your readers will agree that it is he, not I, who has "found the mare's nest."

WILLIAM WHITE, F.S.A.

*** The correspondence may end here.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE second meeting of the session was held on Wednesday, the 3rd inst., Mr. Thomas Morgan, F.S.A., in the chair. Several interesting documents relating to Wells Cathedral were exhibited by the Rev. Canon Burnard, among them being a little-known grant, by King Edgar, of land at Stanton, Wilts, and attested by Dunstan and several dignitaries of the period.

Mr. W. de Grey Birch described an inscription on an external buttress of the same cathedral, announcing thirteen days of pardon for all who might pray for the soul of John de Putney.

Mr. Mann described some remarkable Roman sculptures, consisting of architectural members, several very elaborately carved. These have recently been found at Bath.

Mr. J. T. Irvine reported the discovery of the foundations of the long-lost bell-tower of Lichfield Cathedral. The ancient records report that this stood in the close, and that it was burnt in 1315, since which time its site has been unknown. It has been found on the north side of the cathedral, near the chapter-house, in excavating for a new stable in the bishop's grounds. A mass of calcined flooring-tiles was first met with, covered with a coating of melted bell-metal, and afterwards the foundations of the massive walls.

Mr. Loftus Brock, F.S.A., exhibited a series of Italian salt-cellars of pottery of very diverse form, but identical with those noticed in English pictures of the fifteenth and sixteenth centuries, showing the generality of form in many articles of domestic use.

The Chairman then concluded his paper on the results of the recent Congress, and Mr. George Wright, F.S.A., called attention to the much-discussed question with respect to the birthplace of Anne Boleyn. He quoted from Spelman that she was born at Blickling Hall, and asserted that this might be taken as conclusive evidence, since he was so nearly a contemporary writer.

The proceedings were brought to a close by a paper on the Trethevy Stone, Cornwall, by Mr. C. W. Dymond, F.S.A. This is a cromlech standing on a low, well-defined mound, and having no appearance of having ever been covered over. All evidence is in favour of the belief that it was built as it now stands. A hole in the top stone may have been to receive the base of a cross in Mediæval times.

MEDALS AND PRIZES, ROYAL ACADEMY.

ON Wednesday evening the medals and prizes awarded to the students of the Royal Academy were presented by the president, Sir Frederick Leighton, who, in the course of an eloquent address, after a critical inquiry into the question, "What is art in the world?" urged the students to have faith that the stirrings which they felt within them were not the last spent waves of a retreating tide, but the pulses of a living force, now, indeed, faller, and now more feeble,—yet as old as our humanity, and of which the days were not numbered. He urged them not to vex themselves with the question whom they should follow, for if following meant imitation, they should follow none. Let them study with deep and reverent admiration,—and that admiration could not be too deep or too reverent,—the works of the great men who had gone before them. Let them brace and fortify themselves in the contemplation of their strength, catch what could be caught of the fire that was in them, but let them never forget that the common greatness of all those great men was their sincerity, and that it was only through sincerity that they could hope to emulate, even from afar, those masters of their art. Their work, in order to live, must be the direct and truthful reproduction of their own individual emotions, not the echo of the emotions of others. Without sincerity of emotion no gift, however facile and specious, would avail them to win the lasting sympathies of men, for as Goethe truly said,—

"The chord that wakes in kindred hearts a tone,
Must first be tuned and vibrate in your own."

The principal prizes and premiums were then awarded as follows:—

Historical painting, gold medal—H. H. Le Thangue. Landscape painting, gold medal (Turner)—Henry Gibbs: silver medal, extra—George Francis Miles. Painting of a figure from the life, silver medal—C. Knighton Warren. Painting of a head from the life, silver medal—William Hatherell; silver medal, extra—Henry D. Chadwick. Copy of an oil painting, silver medal—Sydney J. Hayes. Drawing of a figure from the life, silver medal, first—C. Knighton Warren; silver medal, second—Sydney J. Hayes. Drawing of a figure from the life, 10*l.* premium—William M. Griffenhagen. Drawing of a head from the life, silver medal—Edith Savill. Composition in sculpture, travelling studentship—Thomas Stirling Lee. Composition in sculpture, gold medal—Frederick Callcott. Model of a figure from the life, silver medal, first—Frederick Pierey; silver medal, second—Frederick Callcott. Model of a statue or group, silver medal, first—Not awarded; silver medal, second—David J. Wade. Drawing of a statue or group, silver medal, first—Jane Mary Dealy; silver medal, second—Not awarded. Drawing of a statue or group, 10*l.* premium—Jane Mary Dealy. Design in architecture, gold medal—Frank T. Baggallay; silver medal, extra—J. Howard Ince. Design in architecture, travelling studentship, Robert W. Gibson. Architectural drawing, silver medal, first—Frederick Miller, silver medal, second—Not awarded. Perspective Drawing and Scenography, silver medal—Not awarded. Design for a composition (Armitage prizes) first, 30*l.*—Marcus H. Smythson; second, 10*l.*—Thomas Hill.

PROPOSED HOSPITAL OF THE GUILD OF ART AND LETTERS, HAMPSTEAD.

THE formation of a proposed new road through the beautiful park-like ground behind the Assembly Room in Well-walk, Hampstead, and lying between Well-walk and the Lower Heath, involving, as it will, the certain destruction of the magnificent forest trees,—oaks, elms, and chestnuts,—now forming most picturesque masses of foliage visible from many parts of Hampstead, a movement for the preservation of the trees has been inaugurated by Mr. J. H. Metcalfe, and is supported by a number of well-known persons. The land has been taken at a rent for a few months to give time to raise subscriptions. The scheme includes the foundation of a college, hospital, or retreat, for aged or infirm and poor artists and literary men, to be erected on the site of the present Assembly Room in Well-walk. Subscriptions, therefore, are now being sought among artists and literary men, and lovers of art generally, for the purchase of the site and erection of a retreat. This, and its proper endowment would require, of course, a very large sum, and whether or not that could be obtained is a question. The first thing to settle, however, is whether such a retreat would be acceptable or not, and this should be fully discussed.

OBITUARY.

Sir William Boxall died on the 6th inst., in his 80th year. He was eminent as a portrait-painter, and will be remembered as Director of the National Gallery, to which post he was appointed in 1865 as successor to the late Sir Charles Eastlake, P.R.A., resigning it 1874 in consequence of failing health. Like many other artists, Sir William Boxall was entirely a self-made man. It was at the Abingdon school that young Boxall got his first schooling. He exhibited a natural talent for drawing, and this led to his coming up to London, where he gained admission into the schools of the Royal Academy, where he was a fellow-student with Mr. Webster, R.A., who is now, as Sir William Boxall was, one of the retired Academicians. He went to Italy about the year 1827, and exhibited in 1829 his first important picture, "Milton's Reconciliation with his Wife," and a portrait of Thomas Stothard, R.A. In 1831 his picture of "Lear and Cordelia" attracted so much notice that it was afterwards engraved in Finden's Gallery. But it was to portraiture that he felt himself more attracted.

Mr. William H. Botterill.—On the 5th inst., Mr. William Henry Botterill, architect, died at his residence, West Parade, Anlaby-road, Hull, of typhoid fever. The deceased was 27 years of age, and was the only surviving son of Mr. William Botterill, and junior member of the firm of William Botterill & Son.

Books.

Mathematical Drawing Instruments, and how to use them. By EDWARD F. HULME, F.L.S., F.S.A. London: Trübner & Co. 1879.

THIS is a handbook to the use of the simpler class of instruments such as are in daily use by the draughtsman; it is not a full descriptive treatise on instruments, such as that by Mr. Stanley which we noticed some time since; it is limited to a description of those most generally employed, and the best practical methods of using them. The author divides drawing-instruments into three kinds,—those used for producing straight lines, those for producing curves, and those for measuring lines and angles. The remarks on that most valuable servant, the ruling-pen, upon the goodness or badness of which depends so much of the comfort and expedition of the draughtsman's work, are very practical, and what we entirely concur in. A good many will remember their own youthful experiences in reading the remarks on the probable consequences of hurrying on to the inking of a drawing when the pencil definition had not been completely and clearly made out; and tyros of the present moment may take a hint from it, and save themselves from "scratchings out." We proceed from the pen to the T-square and set-square, and in connexion with these and some other of the instruments, diagrams are given showing the variety of figures and combinations of angles which can be produced by the ordinary employment of these instruments. We attach more importance to framed set-squares (for all but small sizes) than does Mr. Hulme; our experience is that solid set-squares, of anything more than 6 in. on the larger side, are seldom true for long. In the chapter on drawing-boards it would almost have been useful if the author had told his readers where to go for drawing-boards that will not warp or cast; comparatively simple a thing as a drawing-board seems, it is easier often to get the most delicate drawing instruments of a satisfactory nature than the board on which you wish to use them. But the various chapters in the book seem really to be very complete, and very practical and reliable, and easy to the comprehension of the younger worker. A slightly sarcastic tone tinges agreeably some of the advice given, and tends to fix it the more on the learner's memory. We can cordially recommend the book as a very sensible and useful one, containing many hints that may save time, trouble, and vexation to many an engineer's and architect's pupil, if duly read, marked, learned, and inwardly digested.

Which shall it be? New Lamps or Old? Shaxpere or Shakespeare? Printed by Fleet & Bishop. Brighton: 1879.

As a pamphlet thus titled, Mr. J. O. Halliwell-Phillipps, F.R.S., is circulating a few pages extracted from a privately-printed volume now in the press, to induce further research to ascertain the general practice adopted in the *autographs* of surnames in the time of the great dramatist. Ben Jonson has shown how the name was pronounced by contemporary literary friends, by writing of,—

"His well-turn'd and true-filed lines;
In each of which he seems to *shake a lance*,
As brandish'd at the eyes of ignorance."

And Mr. Halliwell-Phillipps claims that it should be now uniformly written "Shakespeare." That it should be so pronounced we fully agree; this pronunciation, indeed, is almost universal. But we see no reason for the first "e." "There are five, and only five, undisputed genuine signatures of the great dramatist known to exist, and in each instance" (says Mr. Phillipps) "he has written his surname without an *e* at the conclusion of the first syllable." Why add it, then? S-h-a-k-s-p-e-a-r-e is always pronounced Shakespeare. Why, therefore, add that for which the owner of the name has given no authority? We are very glad to see Mr. Halliwell-Phillipps again in the field; he has reposed too long under his laurels.

VARIORUM.

THE first batch of Christmas and New Year cards received comes to us from Messrs. Eyre & Spottiswoode, the Queen's Printers, who seem to have made the production of such cards of compliments one of their specialities. Many of them are from designs by Mr. Albert H. Warren, and exhibit great variety. Mr. Warren is well

known as a designer, and the calendar received from him is a good evidence of his skill with flowers and birds. "The Game of Old England," also from Eyre & Spottiswoode, will teach while it amuses.——Messrs. C. T. Brock & Co. send us a little optical novelty called Magic Mediums. It is mildly entertaining.——Yes; we certainly move. In lieu of the ridiculous old Twelfth Night character cards which gladdened us in our childhood, Mr. Butler, of Great Portland-street, has issued two sets which have claims to be considered artistic, especially the Shakspeare series. They may even serve as Christmas cards. ——Artists may get a few hints from this quotation from the *Garden* on autumn tints in trees and shrubs:—"After an exceptionally wet year, and a summer almost sunless, it will perhaps be worth while to note the effect they have had on the different trees and shrubs that in ordinary seasons display gay-coloured foliage in autumn. I will confine my remarks from observations taken in Longleat Park and adjacent woods, having watched the changing hues daily. The Norway maple (*Acer platanoides*) was the first to colour, and quite outshone all its compeers this season with brilliant and gorgeous-tinted leaves; the colours varied from yellow to glowing fiery red. The contrast and effect, particularly in the noble and spacious avenue leading from the chief lodge to the mansion, which is planted in double rows alternately with lime, elm, and Norway maple, was a grand sight to behold; the latter at their best stage of colouring seemed to be so many shining lights amongst their more sober-coloured neighbours. The park was literally lighted up with them; each tree, so to speak, was like a tree on fire. Of other maples that coloured before the fall of the leaf, the most noteworthy were *Acer colchicum rubrum* and *Acer Schwedleeri*, both dying off pure yellow; the young leaves on the latter during summer are claret-coloured and highly ornamental. The tulip-tree has not appeared in its usual deep yellow-shining suit; a few trees are dying off pale yellow, but others are shedding their leaves a dull brown uninteresting colour. The Liquidambar, too, has failed to make its customary mark amongst rich autumnal-tinted trees, for it is usually beautifully coloured before dropping its leaves, often varying from purple to vermilion and other fiery colours. I am pleased to be able to note that the comparatively new purple birch may be classed amongst, and in the first rank of, gay autumn-coloured trees. A fine specimen growing here is just now clad in foliage varying from bright chestnut to vermilion."——The Christmas number of the *Illustrated Sporting and Dramatic News* is a very good one, both from a literary and artistic point of view. The coloured print, "Firm Friends," is fairly worth the price of the number. Look at the faces.——But what shall be said of the Christmas number of the *Illustrated London News?* Simply,—marvellous! ——All who are interested in the copyright question should read a paper on the subject by Mr. H. T. Wells, R.A. (which is endorsed by Sir Frederick Leighton, P.R.A.), in the current number of the *Nineteenth Century*. Mr. Wells makes a strong case against the proposed Bill on the subject.——The *City Press* says the Court of Assistants of the Cordwainers' Company, having regard to the importance of the City guilds employing part of their funds in the establishment of a central institution for the promotion of technical education, have (in addition to a grant of 250*l.* per annum already made), voted a donation of 500*l.* towards the building fund.

Miscellanea.

Sandringham.—A stable-yard has been covered with glass roofs constructed by Messrs. Barnard, Bishop, & Barnard, for H.R.H. the Prince of Wales, and glazed by Mr. Helliwell on his patented system. The architect, Mr. Smedley Beck, speaks very well of them. Four thousand feet of the same description of glazing have been put up at the Victoria Station of the London, Brighton, and South Coast Railway Company.

Westminster Abbey.—We are requested to state that owing to the bursting, through frost, of one of the hydrants which had been placed in the triforium for the protection of the Abbey in case of fire, the organ has been so far damaged as to prevent its use for some short time. The services will, however, be still choral. It is hoped that all may be set right by Christmas.

The Liverpool Safe Deposit Company.—The premises fitted up in the basement of the Imperial Chambers, 5, Dale-street, by the Liverpool Safe Deposit Company are now completed. The object at which the Company aims being indicated by its title, it may be mentioned that inside the vault, which is built as strongly as human ingenuity can devise, and which is fire-proof and heated by hot-water pipes, is a fire and thief proof iron and steel room, specially constructed by the Milner Safe Company (Limited), weighing 250 tons, and which is believed to be the largest and strongest safe in the world. This is divided into five compartments, one being for the reception of cash-boxes in daily use; two others for packages, plate-chests, and other valuables deposited with the company under seal; and the remaining two compartments are fitted up with 1,424 safes of various sizes. In one of them the renter can place his valuable property, locking it securely against every one but himself, as he has exclusive custody of the key, which will fit no other lock. The keyhole of the renter's safe is kept closed by the company's escutcheon, so that he may not obtain access to his safe unless in the presence of the officer of the company, so that mutual protection is secured. Means are taken for the identification of a renter, and as a further safeguard against imposition a pass-word is selected, and only by pronouncing that pass-word is the renter admitted into the vault and to his own private safe by the custodian, in whose presence he unlocks his own safe, and, taking out its contents, passes out of the vault to one of the retiring-rooms which are provided with desk accommodation, where, secluded and undisturbed, he can examine his property at leisure. Upon his return into the vault, accompanied by the custodian, he places his property in his safe, and locks it securely against any one but himself. A very interesting item in the arrangements is, that the compartments are provided with chronometer-time locks, which prevent the safe, after being closed at night, from being entered into at any other than the fixed hour for opening in the morning.—*Journal of Commerce.*

Leadenhall Market.—At a special meeting of the Court of Common Council, on the 1st inst., a report was brought up from the City Lands Committee, by Mr. George Shaw, on the subject of the Leadenhall Market Act, 1879, and for authority to carry into execution that portion of the Act which related to the formation of the proposed new streets. The report stated that they had had before them a copy of the Act, which provided for the abolition of the present Leadenhall Market, the improvement of the site and neighbourhood, the formation of certain new streets, and the construction of a new market. As regarded the approaches, they recommended a new street being made from Leadenhall-street into Fenchurch-street by Lime-street, and another from Gracechurch-street into Lime-street, by the widening of Half Moon and Beehive passages. The area of the new market would be 25,000 superficial feet. A report from the Markets Committee was brought up by Mr. H. A. Isaacs upon the same subject, submitting a block-plan for the new market, appropriating 25,000 square feet for market purposes, and admitting of future extension if found desirable. They recommended that the Act, so far as it related to the market proper, should be referred back to them for execution. The reports were, after considerable discussion, agreed to.

Institution of Surveyors.—At the meeting of this Institution on Monday evening last, Mr. E. Ryde, vice-president, in the chair, the discussion on Mr. Smalman Smith's paper (the substance of which appeared in the *Builder* a fortnight ago) was resumed, the speakers being Messrs. F. Vigers, Hugh Shield, H. Lofts, S. W. Casserley, Robert W. Mann, W. G. Harrison, Q.C., P. D. Tuckett, W. Eve, E. J. Smith, D. Watney, A. C. Meysey-Thompson, the author of the paper, and the Chairman. We have provided ourselves with a copious report of the discussion, but exigencies of space compel us to withhold it until next week.

City-road, Chapel, the historic centre of Wesleyan Methodism, had a narrow escape from total destruction by fire early on Sunday morning last. The fire broke out in the morning chapel, which it completely gutted, and extended to the large chapel, which was much damaged. The disaster is ascribed to the overheating of the warming apparatus.

The Artisans' Dwellings Act.—At the meeting of the Metropolitan Board of Works on the 5th inst., it was resolved, on the recommendation of the Works and General Purposes Committee, that application be made to the Secretary of State for the Home Department for a general authority to the Board to remove any premises acquired for the purposes of schemes under the Artisans', &c., Dwellings Act, 1875, in which fever or other infectious diseases are prevalent or imminent.——At a special meeting of the Commissioners of Sewers of the City of London, on the 9th inst., a report was received from the Finance and Improvement Committee relative to their proceedings under the Artisans and Labourers' Dwellings Improvement Act, 1875, more particularly as to an application to the Secretary of State to modify the Commissioners' improvement scheme so far as to allow a site adjoining the Cattle Market at Islington to be substituted for those cleared in Golden-lane and Petticoat-square, under the powers given by the Artisans and Labourers' Dwellings Improvement Act, 1879, and for authority to undertake the building of artisans' dwellings on the said site. The report was almost unanimously agreed to.

Look to the Kitchen Boiler.—An accident which happened at Liverpool last week should induce caution in the treatment of kitchen boilers during the winter. A boiler explosion occurred about two o'clock in the afternoon on the 4th inst., in Hornby's public-house, Lime-street, but no person was injured, though much damage was caused. The boiler was what is known as the "L" boiler, and was behind the fire-grate. It had not been used for some time, and exploded with a terrific noise about two hours after the fire was lighted. The kitchen was rendered a complete wreck, and it is fortunate that no one was in it at the time.

Architectural Union Company, Limited.—The twenty-second ordinary general meeting of shareholders was held at No. 9, Conduit-street on the 3rd inst. The report of the directors, which recommended the payment of a dividend of 13s. per share, free of income-tax, was adopted.

TENDERS

For the completion of the extension of the West Kent main sewers. Sir Joseph Bazalgette, C.B., and Mr. Alfred Williams, engineers. Quantities supplied:—

Nowell & Robson	£40,911	0	0
Killingback	40,471	0	0
Mowlem & Co.	39,287	0	0
Webster	37,618	0	0
Dickinson	37,253	0	0
Neave & Son	35,854	0	0
Potter (accepted)	30,428	0	0
Woodham	29,780	0	0

For the erection of a mortuary, for the Vestry of St. Matthew, Bethnal-green. Mr. Gathercole, architect:—

Cook	£1,996	0	0
Lucas Bros.	1,600	0	0
Steel Bros.	1,595	0	0
Wood	1,587	0	0
Johnson	1,578	0	0
Thomason	1,550	0	0
Wire	1,500	0	0
Wilson	1,495	0	0
Beal	1,475	0	0
Mattocks Bros.	1,453	0	0
Ennor	1,390	0	0
Judd	1,375	0	0

For the erection of receiving-wards, and making alterations and additions to the Union Workhouse, Nantwich, Cheshire. Mr. J. A. Davenport, architect. Quantities supplied:—

T. & M. Meadows	£1,938	0	0
Brown	1,900	0	0
Lucas	1,870	9	2
Price	1,850	0	0
Nevitt Bros.	1,820	0	0
Ray	1,800	0	0
Brereton	1,737	8	5
Bromage	1,700	0	0
Wood & Petty	1,680	0	0
Harding	1,633	10	0
Matthews	1,616	0	0
Parker	1,605	0	0
Madeley (accepted)	1,450	0	0
Porter	1,238	0	0

For alterations at the Prince Albert public-house, Hollingsworth-street, Holloway, for Mr. Grist. Mr. H. J. Newton, architect:—

Shurmur	£333	0	0
Anley	300	0	0
Lamble	283	0	0
Godden	277	0	0

For villa residence at Burgess Hill, Sussex. Mr. Arthur Loader, architect:—

Mill's	£2,812	0	0
Rampton	2,736	0	0
Lockyer (accepted)	2,728	0	0

For mission church and school, Fishersgate, Sussex. Mr. Arthur Loader, architect:—

Lockyer	£1,024	0	0
Longley	1,007	0	0
Reid	990	0	0
Bruton (accepted)	895	0	0

For additions to house, North-street, Chichester, Sussex. Mr. Arthur Loader, architect:—
Gambling & Sons (accepted)..... £1,200 0 0

For erecting house, Walm-lane. Mr. Wm. Bradbear, architect:—
Shurmur £1,494 0 0
Rowlandson 1,400 0 0
Steel 1,383 0 0
Sheffield & Prebble 1,157 0 0

For New Court, Serle-street, Lincoln's-inn. Mr. A. Waterhouse, architect. Quantities by Mr. T. M. Rickman:—
Stephens & Bastow (accepted)...£76,499 0 0

For providing and jointing about five miles of cast-iron pipe, for the Littlehampton Urban Sanitary Authority. Littlehampton Water Supply. Contract No. 4:—
Goodenough £3,448 10 9
Shaddock 3,427 19 0
May 3,348 18 11
Marshall 3,259 11 0
Dixon 3,200 0 0
Easton & Anderson 3,057 1 5
Laidlaw & Sons 2,941 4 0
Walker 2,919 1 2½
Cowdery & Sons 2,893 0 0
Harrison 2,623 10 0
Hayter* 2,460 13 2

*Accepted. Sent in with right reserved to withdraw the same if not accepted at once, in consequence of the fluctuating state of the market.

For new stores and offices in the Farnham-road, Guildford, for Mr. George Trimmer. Deduction for old materials in buildings to be pulled down allowed in the amounts. Mr. Henry Peak, architect. Quantities supplied:—
Strudwick £2,170 0 0
W. Swayne 2,027 0 0
Pearce & Clark 2,000 0 0
Garnett 1,997 10 0
T. Swayne 1,825 0 0
Martin, Wells, & Co. 1,799 0 0
Mitchell Bros. 1,717 1 4
Moon 1,708 16 0
Duke & Fowler 1,675 19 0
Smith & Sons (accepted) 1,649 15 0

For rebuilding premises, 27, Bow-lane, for Mr. William Cooke. Mr. Walter Graves, architect. Quantities by Mr. Walter Barnett and Mr. Power:—
Lister £2,100 0 0
Hook & Oldrey 1,855 0 0
Greenwood 1,857 0 0
Hunt 1,629 0 0
Boyce 1,623 0 0
Ansley 1,576 0 0
Toms (accepted) 1,529 0 0

For the erection of shops and offices, Corporation-street, Chesterfield, Derbyshire. Messrs. Rollinson & Son, architects:—
Tinkler £1,254 0 0
Forrest 1,049 0 0
Cropper 1,002 0 0
Wright 992 19 9
Greenwood 990 0 0
Gough (accepted) 902 0 0
Braillsford & Brown 890 0 0

For the erection of a manager's house, Millwall, for Mr. J. T. Morton. Mr. William Eve, architect.:—
Heiser £1,316 0 0
Hunt 1,264 0 0
Crabb 1,260 0 0
Harris & Wardrop 1,099 0 0
Sheffield & Prebble 1,087 0 0
Salt (accepted) 945 0 0

For erecting dwelling-house, Caledonian-road. Mr. John Hamilton, architect:—
Boyce £3,193 0 0
Little 3,129 0 0
Hayworth 3,098 0 0
Goodman 2,948 0 0
Shurmur 2,914 0 0
Harper 2,895 0 0
Crabb 2,850 0 0

For alterations to house, Goswell-road, for Mr. Shoobert. Mr. W. D. Church, architect:—
Steed £310 0 0
Bullock 290 0 0
Downs 263 0 0
Shurmur 216 0 0
Steel 212 3 0

For police-station and two cottages, Woodboy-street, Leicester:—
Greenwood £1,125 0 0
Plant 1,068 15 0
Smitten 1,030 0 0
Hallam 1,029 0 0
Rudkin Bros. 1,020 0 0
Duxbury & Son 1,010 0 0
Pailthorpe 1,005 0 0
W. & A. Rudkin 1,000 0 0
Major 997 13 0
Sharp & Son (accepted) 981 0 0

For the erection of dwelling-house, sale-rooms, &c., for Mr. G. Simmins, Crawley, Sussex. Mr. Peter Wood, architect:—
Woolger & Son £789 0 0
Cook 629 17 3
Peters & Redford 625 0 0
Mitchell 586 0 0
Amended tenders, leaving out office-fittings, &c.:—
Mitchell £560 0 0
Cook 535 15 9
Peters & Redford (accepted) 520 0 0

The tender of Messrs. John Mowlem & Co. for granite has been accepted by the Corporation of Kingston-upon-Thames.

TO CORRESPONDENTS.

W. F. (we decline recommending).—Junior (we really cannot attempt to price our correspondent's bill).—E. (received).—M. D.—J. B. & Son.—H. & O.—W. E.—A. E.—A. L.—C. J. P.—H. P.—S. S. & Co.—W. S.—Mr. W.—L. B.—T. B. H.—W. W.—V. B. K.—S. B. & Son.—R. C. P.—T. D.—G. S.—C. I.—W. L. G.—F. G. & Co.—H. W.—J. F.—W. & L.—H. H.—J. C. & Sons.—H. de M.—F. M. A. (to be considered).—T. C. (next week).—X. Y. Z. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

SPECIAL NOTICE.

Christmas Week.—*The* Builder *for the week ending December 27th will be published on* **Wednesday, 24th** *inst., at the usual hour.*

Advertisements for insertion in that issue must therefore reach the Office before Three o'clock P.M. *on* **Tuesday, 23rd** *inst.*

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For all other Advertisements ..... 6d. per Week.

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catharine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *direct* from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, *prepaid*. Remittances payable as above.

Bath Stone of Best Quality.
RANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
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For Winter Use, is the Best.
Being unaffected by frost, may safely be used fresh from the quarry.
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Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Whitland Abbey Green Slates.—The peculiar green tint of these stout, durable Slates recommends them for Churches, Mansions, and Public Buildings. Present Orders booked at Reduced Prices.—Apply to Mr. J. MUSCOTT, Clynderwen, R.S.O., South Wales.—[Advt.]

J. Sessions & Sons, Docks, Gloucester, Manufacturers of ENAMELLED SLATE and MARBLE CHIMNEY-PIECES, URINALS, &c. WELSH ROOFING SLATES direct from Quarries to any Station in the Kingdom. Manufacturers of Joinery & Mouldings. [Advt.]

Damp Houses and Buildings, New and Old, DRIED, completely and permanently, in a few days, by LIGNY'S PATENT APPARATUS. By appointment to the French Government. Particulars of A. DREYFUS & CO. 39, Monkwell-st. E.C. Damp basements cured.—[Advt.]

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MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

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FOR
REFLECTING LIGHT.—DAYLIGHT REFLECTORS
OF EVERY DESCRIPTION, ALSO
ARTIFICIAL LIGHT REFLECTORS.
P. E. CHAPPUIS, Patentee. Factory, 69, Fleet-st. London, E.C.
N.B.—DIAGRAMS AND PROSPECTUSES ON APPLICATION.

The Builder.

Vol. XXXVII. No. 1924. Saturday, December 20, 1879.

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Colour in Architecture: Wall Decoration.



COLOUR is a subject that is just now attracting an unusual amount of attention. It is one on which our own pages have contained much that may, we hope, be remembered or referred to with advantage. The October number of the *Edinburgh Review* contains an article on the subject of the perception of colour, which is singularly clear in its philosophic statement of the rudiments of the study, and especially demands the attention of the architect, as showing the different, and indeed opposite, action of pigment colours and of tinted light, when mingled in order to form a compound tint. And the December number of *Macmillan's Magazine* contains a paper of an unusually wide range of reading, and command of physiological as well as of literary knowledge, bearing on the discussion of the question whether the colour-sense in man has varied in intensity within historic time; such variation, be it understood, having been suggested to have occurred in the way of increase in the power of perception.

In these articles, as well as in some from a writer well acquainted with the use of colour, which have appeared in our own columns, two sides of the question of colour have been mainly discussed. These are, of course, the artistic and the scientific sides. They regard colour from the point of view of the painter, and from that of the physicist. We wish to call attention to what is a more limited, possibly a more humble view of the subject, but one which possesses no small interest for us all,—that is to say, the architectural point of view. We spoke the other day of colour in the exterior of the building; we intimated, in that article, that we had a few words more to say on the subject of colour in the interior.

We feel, however, that we are as yet so far from having arrived at the discovery of any definite *régime* of laws which should regulate this very important part of the practice of the architect, that it will be of more use to indicate the various directions in which inquiry should be made, and thus to seek for facts and for suggestions from our readers, than it would be, at the present moment, to attempt to lay down the A B C of the architectural treatment of interior colouring.

Colour, when given to the interior of buildings, has been hitherto mainly regarded as a means of ornamentation or decoration. As such, its use has been of a twofold nature; that is to say, coloured light has been either transmitted or reflected. This, of course, is no new remark, although it may be desirable to recall the fact. Transmitted colour is given by means of stained glass. Reflected colour, which is most pure when thrown on the eye from rich marbles and coloured stones, is also produced by painting, by gilding, by the presence of pictures which are not drawn on the walls of the building, but merely hung before them, by draperies, by coloured work, and by wall-papers. In all these cases, if we except the polished stone, the colour is produced by pigments, as distinct from the admission of coloured light. Polished stone acts, it may be considered, in a mode intermediate between that of the window and that of the painted wall. The material being natural, its action on light cannot be said to be exactly the same as that of an artificial pigment. On the other hand, its action on light is by reflection, and not by transmission; if we except the rare cases where alabaster or translucent stones are employed actually to transmit a softened light, as in some of the luxurious palaces of the East.

This distinction between a transmitted and a reflected colour is not one of theory alone. It is one that is most important to be borne in mind by the architect who seeks to attain as perfect a mastery over the use of colour as he desires to exercise over the use of form. The experiments of Professor Clerk Maxwell have gone far to destroy the old arrangement, which speaks of red, blue, and yellow as the normal primary colours. Most of the investigations conducted upon pigments tend to that classification, which in all works written on the subject, down to within a short time, has been taken as indisputable. It is the action of transmitted light which has been indicated by Professor Maxwell's experiments to be inconsistent with this view. Red, green, and violet are, according to this view of the subject, when the spectrum is regarded, found to present the quality of elementary light; while yellow shows all the signs of a compound. If pure red, pure green, or pure violet light is thrown upon the prism, it passes through it undecomposed. It comes out of the same hue that it goes in. But when yellow light is thrown upon the prism, red and green rays emerge from the opposite side. It follows that the red, green, and violet vibrations, or that particular action or movement which excites those sensations in the human sensorium, are homogeneous, and that the vibrations, or action which excites the sensation of yellow, are not homogeneous.

We do not write as either accepting or combating this view; we only state it.

Hence arises a new theory of the use of pigments. It is to this effect. The mixture of blue and yellow pigments produces the effect of green on the eye. The reason is, that the blue pigment absorbs and extinguishes all the yellow, orange, and red light, while the yellow pigment absorbs and extinguishes all the violet, indigo, and blue light. Only the green rays remain unabsorbed, and are reflected to the eye. It is obvious that such a view as the above must have a controlling effect on the disposition of light within a building, inasmuch as it regards not only tint, but quantity. This will be seen in a moment from a little table of the relative value of the colour constituents of white light, according to the calculations of Professor Rood. The various colours of the spectrum are divided by this analyst into twelve groups, with pure red and pure violet as the two extreme poles. Taking white light as equal to 1,000, the proportions of the colours are given as follow:—

Tint.	Parts.	Tint.	Parts.
Red	54	Green and Blue Green	134
Orange Red	140	Cyan Blue	82
Orange	80	Blue	40
Orange Yellow	114	Ultra-marine and Blue Violet	20
Yellow	54	Violet	5
Greenish Yellow	208		
Yellowish Green	121		

It will be seen from the above table, that all the rays of the spectrum which contain green light amounts to only $\frac{486}{1000}$ parts of the whole. And as red extends over $\frac{433}{1000}$ parts, and violet and blue over $\frac{87}{1000}$ parts, while the influence of these tints may be said to meet in the "green and blue green" band or portion of the spectrum, the exclusively green rays must be appreciably less than $\frac{486}{1000}$ of the whole pencil of light. It follows, if these new views be correct, that if an architect who admits to an apartment a volume of light which he considers adequate for the purposes of illumination, colours his walls green, he has, as far as reflected light goes, only some 40 per cent. of that on which he might calculate.

Again, we may hence understand the cause of the grave and tranquillising effect of the dull red colouring of which the decorative artists among the Romans made such frequent use for interiors; as we may observe at Pompeii, and in many parts of Italy at the present day. In a climate where the light and heat of the sun are, for a portion of the year, so much more intense than is often the case in more northern latitudes, it might have been thought that red was a particularly inappropriate colour for the interior of a house, a palace, or a temple. We should have anticipated that the effect on the eye would have been that of glare, and thus of intensifying heat; while, on the contrary, a pure white wall would give a cool imitation of the light reflected from snow-covered mountains, or from plains bound in ice. But in point of fact, this particular tone of red was a great favourite in Imperial times, and has to a certain extent held its own in Italy to the present time. Nor was it absent from the Egyptian decorations in the great times of Egyptian art. How are we to account for this? It is clear that neither the Italian nor the Egyptian architects could have had any philosophic conception of what colour in its essence was, being destitute of all such advance towards the solution of that problem as has been due to the invention of the prism by Sir Isaac Newton, as an instrument of analysis. At the same time, there is every reason to hold that the classic artists, and probably their Egyptian forerunners, made a far more systematic and exhaustive study of what was luxurious in the appliances of life, as well as of what was becoming to personal beauty, than any one now dreams of doing. And we may

take it as tolerably certain that if red walls had produced a sense of glare or of extra heat in hot weather, that fact would have been discovered by the classic artist, and red walls would, in consequence, have been avoided. But when we see that pure red forms only $\frac{44}{1000}$ parts of the spectrum, and that enough red to give the effect of orange to a mixture with green only extends to $\frac{17.6}{1000}$, we become aware that the Pompeian decorators had, however unconsciously, found the means of absorbing and extinguishing more than 80 per cent. of the light which would have been reflected from a white wall. Dimly this must have been felt rather than perceived. The value of the analysis of Professor Rood in enabling us thus to give a numeric expression to the amount of loss of light is capital.

Here, then, we venture to suggest, will be indicated the first rule which has to be framed as to the colour of interiors. What will be the amount of light which, having been allowed to enter an apartment, it is desired to preserve by reflection or to extinguish by absorption? Given a certain amount of transmitted light, the above table will enable the artist to arrive at the amount of preserved or reflected light. Nor is the question one of little moment. We saw some time ago how much the German architects were in advance of ourselves in that question of school illumination which was introduced in our columns. America now sends us a fresh contribution to our knowledge of interior-lighting, where the amount of light admitted has in the first instance been decided.

Connected with this question of how to deal with the light admitted into a room, is the inquiry into the texture, as well as the colour, of the material that lines the walls of an apartment. The remark made as to the effect of red, in Italy, may lead to the further consideration, that the best diffused light will be that reflected from a *mat* surface, or from a soft, unpolished white. From a surface of pure white polished marble, or from a surface of burnished silver, light is reflected with a sharpness which is distressing to the eye. A pearly grey tint is far more agreeable, because, by absorbing a certain portion of the rays, it reflects a less vivid light. But we may suggest that a better effect is likely to be produced by entangling the rays of light in their course, bending them one on another, and sending them back to the eye in a broken flight, instead of in a full volley, rather than by *dirtying* the light to check its intensity. And we must call the use of grey shading by that term, inasmuch as it intersperses lines of no light between the pencils of light. The singular beauty of such substances as alabaster, and the transparent white porcelain on which such exquisite transparencies in relief are modelled, chiefly by German artists, confirms this view of the case. Even with regard to marble, there can be no comparison between the beauty of such a surface as the sculptor leaves on the flesh of a statue, and that of the high polish given by the stonecutter. The same is the case with regard to ivory. Nothing is more easy than to give a brilliant polish to ivory. A little chalk and water applied by a brush are all that is required for the purpose. All workers in ivory, except those few who happen also to be artists, are free in their use of polish. Hence, no doubt, the sense of poverty and vulgarity which so often and so unavoidably is caused by the display of common or other works in ivory. Some would say that the difference between the chalk-polished surface, and that finished by the burin of the artist, was the difference between the mechanical and the artistic; that the first disgusts the taste, the other attracts it. May be that is so; t whether it is or not, the difference between he dazzling reflection of the white incident light in a mass, and the broken and tender softness of the same light when it has for a time lost its way in following the movement of the tool of the artist, is enough to account for the effect. What would be the claim of the Venus of Melos if she were polished until she shone like a pair of well-blacked boots? On the other hand, the most beautiful copy of the Venus dei Medici with whom we are acquainted is one which stands (or did so *consule Planco*) in the vestibule of The Grove, Lord Clarendon's seat in Hertfordshire. The figure is of bronze, and although the colour is not to be compared to that of marble, the effect of the *mat* surface is such as to make the statue incomparably more beautiful than any plaster cast. Yet if a plaster cast were roughened, as by covering it with glue or gelatine, and then dusting it with chalk, we apprehend that (until the surface grew dirty) we should have a very beautiful statue.

These two questions of the quantity of light reflected, and of the broken and mingled manner in which white (or tinted) light is reflected from interior surfaces, are, we venture to think, as well deserving the attention of the architect as they are, up to the present time, new and undiscussed. Another remark follows naturally from the preceding calculations, and that is, that we have an explanation thus afforded of the much greater richness of effect that is produced by tapestry, or indeed by drapery in general, than by wall paper. In the textile fabric there may, or may not, be a blending of colours that is in itself beautiful. In the faded ancient tapestries, to which we can now only look in order to form some idea of the domestic elegance of the stately rooms of our ancestors some three or four centuries ago, the charm of colour has, for the most part, fled. And yet what is the effect on the observer? Not, we apprehend, that of association alone. It is felt by those who are quite innocent of any archæological tastes. The entanglement of the light in the textile surface is such as to send it back diffusedly to the eye. And the eye, untaught by any science but that of its maker, appreciates the charm.

So again with silks, velvets, rich hangings of any kind. Compare the plushy surface of a piece of velvet,—black or white,—with the satiny sheen of a poor silk, dressed with that shiny, glossy, surface which was once admired. We do not speak of the sheen of satin, because satin has really a *mat* surface, though there is a gloss owing to the fineness of the texture. But what we mean will be seen in comparing a rich and a poor satin. In fact, the coining of the word "shiny" expresses the sense unconsciously entertained, that there is a difference between gloss and richness,—between that which is shining and lustrous, and that which is shiny or glazed.

Again, we may look at wall-papers. Those rich, dark, crimson, or morone papers, with a flock surface, at times relieved with gold, which some decades ago were in favour, have to a great extent disappeared from our dining-rooms. The reason, as far as any reason can be assigned for the vagaries of fashion, is said to be the darkness of these papers. For this our previous remarks fully account. The red colour extinguishes some 80 per cent. of the light thrown upon it. And the red light actually reflected is so broken and diffused by the *mat* nature of the surface, that its effect on the eye is wholly different from that which would be produced by a paper of exactly the same tint with a glazed or hot-pressed surface.

The same explanation accounts for the fact that no wall-paper has been as yet produced which can in any way give the effect of damask panelling. The difference of cost, of course, is enormous. But any one who compares the effect of a room panelled with a rich silk, with that of one similarly decorated with a paper of exactly the same colour, and on which the same arabesques are produced, will see at once that there is no deception in the matter. For those who are rich enough to afford the former, the cost is, as matter of internal decoration, money thoroughly well laid out. But we do not apprehend that this cost need be always incurred. The reason is, at present, that the paper-manufacturer has not had his attention directed to the true cause of the rich effect of the silk. He has produced tints and damask patterns which are fully equal, and often much superior, to those of the textile workmen. But he has not imitated the surface texture of the woven fabric. When he has deadened the surface of his paper by flock, he has provided a universal dust-trap, and has overdone the effect of breaking up the reflected light. What remains is for the paper-maker to make experiments as to surface. For example, an expensive kind of writing-paper has been lately made, the surface of which is covered with fine corrugations. As far as we have had experience, the only objection to this paper is its cost. It affords a very good resistance to the pen, and gives a fine *mat* effect to the eye. We should like to see the same process experimentally applied to wall-papers. It is possible that it might not succeed. We can offer no opinion without a trial. But, on the other hand, it is possible that it may succeed. And, if parallel lines prove objectionable, other methods are available to the paper manufacturer by which he may give to the surface of his paper the effect of the texture of a woven surface. As soon as this is attained, we have little doubt that paper panelling will be made as effective as silk panelling, and of course at a very much lower cost.

The study, of which we are thus venturing to indicate the rudiments, is as important for the industrial artist as it is for the architect. It is not too much to say that it is impossible at the present moment to foretell the exact effect of any design in colour when applied to an interior. From mosaic or water-glass painting on a church wall, to the wall-paper of an apartment, trial is requisite. Of course, when a given effect has been noted in a particular locality, experience is obtained; but it is locked up in the breast of the architect or of the designer, and is not available for general guidance. A striking instance of this came within our own knowledge the other day. A lady who possesses that instinctive taste in colour which is more common among French, than among English, ladies, spent some time in looking over an assortment of new patterns of wall-paper, with a view to make a choice for a room. Very beautiful some of these papers certainly were,—artistic in design, harmoniously blended in colour, and generally reproduced in two or three different tints, so as to give a wide range of choice. Of these she selected one which pleased her the most,—a very beautiful paper it was, of small flowing pattern, and delicate olive, russet, and pink tints. Every one approved the choice. But it so happened that before anything else was done, a large folding screen was covered with this paper. The effect was most disappointing. Looked at as a design, the paper had been faultless. Its effect in reflecting light in the room was decidedly bad. What looked so delicate in the outspread sheet, looked dusky, poor, and even mean, on the vertical screen. A room would have been ruined by the application of the paper,—that is to say, if the effect had been compared with that produced by many a far less carefully prepared and chosen material.

If the same skill and taste which had been devoted to the production of the beautiful but inappropriate design had been enlightened by an acquaintance with those laws of internal colouring for the determination of which we have endeavoured to begin to clear the ground, we cannot doubt that the result would have been, not a success in draughtsmanship, but a success in decorative architecture. With a little more exact knowledge of the laws of reflected light we shall find some of the most angry architectural controversies of the present day shrink to very modest proportions. Our great aim is always to transpose a question from the condition in which a man says,—"My taste is as much worth respect as yours," to that in which he says,—"Such are the scientific facts of the case, can there be much dispute as to their application?"

ROYAL ACADEMY.

LECTURES ON ARCHITECTURE.

Professor E. M. Barry, R.A., will deliver his annual course of six lectures at the Royal Academy, on Thursday, January 8th, and the five following Thursdays. We have much pleasure in stating, as we did last year, that the authorities of the Royal Academy are willing to admit students of other societies, or from private offices, and also persons interested in the subject, to attend the lectures as far as space (which is primarily devoted to their own students) may permit.

Applications for tickets are to be made to the Professor of Architecture at the Royal Academy, Burlington House, W., or at No. 21, Abingdon-street, S.W.

The subjects and dates of the lectures are as follows:—

Jan. 8.—Architecture in theory: a matter of public interest.
Jan. 15.—Architecture a fine art, and also an art of utility.
Jan. 22.—Architecture governed by technical principles.
Jan. 29.—Architectural ornament.
Feb. 5.—Architecture allied with colour.
Feb. 12.—Architecture in practice, under the conditions of modern life.

For the vacant Post of Surveyor to the Orphan Working School buildings and estates there were nearly 100 candidates, from which three were chosen for a final selection, viz.,—Messrs. Charles Bell, Gwyther, and S. Hill, and at a meeting of the committee on Wednesday, the 10th inst., Mr. Bell was elected.

FREDERICK PEPYS COCKERELL.*

IN the cemetery of Auteuil, near Paris, on a sad November day, was laid to rest all that was mortal of one who has left specially to the Guild of British Architects the legacy of a most honoured name. An allusion in the Presidential address of last session, to a loss then so recently sustained, touched the heartfelt sympathies of the audience by an appeal to the mute eloquence of an empty chair. With what grace the functions of honorary secretary were discharged by Frederick Pepys Cockerell is unanimously acknowledged no less by those whom he represented than by the artists of foreign nationality whose interest he was successful in associating with our own English aims ond work. His skill as a linguist in the expression of his own genial and appreciative mind made him a true exponent of those fraternal sentiments by which British architects are assuredly actuated towards their foreign friends and colleagues.

When summoned from a life bright in social and professional success, rich in the promise of future distinction, he was on a visit in Paris, spending his days in the Exhibition Buildings, and a welcome guest at the tables of distinguished professional colleagues. On the 4th of November, 1878, friends assembled to do him honour at the house of M. Duc,—whose own decease occurred only a few months afterwards, —were shocked to learn that their last words with him had been an unknown farewell. Death had been immediate upon a sudden seizure that day. At his grave side a tribute of respectful sorrow from those Frenchmen whose work he had ever warmly appreciated, and whose intercourse had brightened the closing hours of his life, was feelingly paid. M. Hardy (Architecte de l'Exposition Universelle), M. Vaudremer (Architecte de la Ville), M. Pellechet,—all three comrades of his youthful travel and study,— and MM. Duc and Lefuel, were there; as well as M. Daumet, whose beautiful drawings for the Duke d'Aumale's château at Chantilly had been the theme of admiration in the very last letter which was gladdening home, when the dark message came that its writer could never return.

A desire having been expressed that a biographical sketch of the late Honorary Secretary should take its place among the records and papers of the Institute, it is well that the task should be performed while its difficulty can be appreciated, and the deficiencies of the portraiture inseparable from its subject can be supplied by the loving recollection of his professional contemporaries. No succession of great public works executed by him arrests attention, compelling admiration or challenging criticism; yet, who is there among the most distinguished in architecture who does not feel the loss which was sustained in his death? As an artist he will be remembered,—as a man of delicate taste and fine perception, of generous impulse, and catholic liberality, which, harmonising the intellectual with high moral qualities, formed a character of rare attractiveness not easily conveyed to the minds of any who were strangers to its refining influence.

Frederick Pepys Cockerell, born in 1833, was the second surviving son of Charles Robert Cockerell, R.A., and Anna Maria his wife, daughter of the engineer, John Rennie. At that time no name was more illustrious than his father's in the society which awards honour to artistic genius. Some sentiment of romance, moreover, affected the minds of many friends towards the man who for years of early youth, though gifted with every grace of presence and every social charm which could fit him to shine in cities, had devoted himself with a rare singleness and courage of ambition to the exploration and study of buried sculptures and gems of architecture cruelly maltreated,—reckless of the peril which in those days beset the traveller in continental Greece, and still more him who committed himself to the yet ruder life of her island population. Shortly after he was appointed to the Professorship of Architecture in the Royal Academy, his interest in the reputed works of William of Wykeham led the elder Cockerell frequently to visit Winchester College, and there he placed his son Frederick as a commoner in the year 1845. Winchester was at that time a very rough school. The authorised despotism of the sixth form, and too much unauthorised self-assertion of the stronger over the weaker, formed, however, a discipline not wholly disadvantageous to such of the new comers as were gifted with courage and temper. Old Wykehamists of his own standing, and many who at his coming were high in the school, remember Cockerell a bright-faced curly-headed boy, who, while never subjecting himself to the severe punishment which awaited rebels against constituted authority, always managed by intuitive tact and good humour to disarm the terrors of the bully. Sufficient that he won his way rapidly to popularity and the full enjoyment of a school life to which he always looked back with pleasure and affection. Already, in so early boyhood, his father seems to have discerned and appreciated in him some germs of an æsthetic tendency. A little entry in Mr. Cockerell's diary during his son's first holidays is touching when read in the light of after-events:—"June 28, 1845. With my boys to the Academy Exhibition; judgment and taste in Fred.; more combativeness in Robert." The one was to be our artist friend; the other, who set his heart upon a soldier's career, fell gallantly in his twentieth year as a lieutenant in the Royal Artillery at the memorable battle of the Alma.

Meanwhile the Winchester curriculum of that date gave no encouragement to the acquirement even of the rudiments of art and science. There, proficiency in the mechanism of Latin verse was the special avenue to distinction, and it does not appear that in this young Cockerell achieved any marked success. The bent of his disposition was rather shown in the collection of little drawings, fruits of feeble tuition, which he treasured as memorials of the school friends whose names they bore. At the close of 1848 he matriculated at King's College, London, and the reason for this so early change in his course of studies may probably be found in the name of the department to which he was attached, viz., "Applied Science," with all the branches of which his father, clearly destining him to the profession of architecture, desired that he should now begin to be conversant. For about five or six terms he is recorded in the College books as constantly attending the lectures, during which time his fellow-students were more impressed by his presence, vivacity, and cleverness of conversation, than by any apparent devotion to severe study. One who sat next to him at Professor O'Brien's Lectures on natural philosophy remembers Cockerell's note-book as being fuller of deftly-traced towers, pinnacles, and spires than of the teaching which its pages were intended to record. He was observed to affect much the companionship of the medical students, with whom as an "occasional" he attended the anatomy classes. Familiar, doubtless, with a favourite theory of Professor Cockerell that the human frame is the basis of all idea of beauty, he set himself with interest to a study which must always be the foundation of correctness in figure-drawing. It bore fruit in the facility which he afterwards enjoyed of thorough truthfulness in the expression of an instinctively delicate sense of form. In designing decorations he would outline a figure, 2 ft. high from head to foot, and up the other side, without taking his pencil from the paper. This dexterity was no less edifying to those who witnessed his office work than amusing in general society, when, to illustrate some point in conversation, or to describe a scene, a minute or two with a pocket pencil on a letter-back would suffice for a most artistic representation of form and action. It happened one day in 1851 that a student at the old School of Design in Somerset House, now a successful painter, observed a youth whose appearance struck him, but whose name he did not know, to be diligently working at the remains of an antique statue,—the legs of a Faun. Hearing that he was an architectural student, the young painter commenced an acquaintance with him by expressing surprise at the then unusual devotion of time to this line of study by one whose professional intention was thus fixed. He remarked that Professor Cockerell was the only English architect, he knew, of real power in drawing the human figure. "He is my father," replied the young man, with animation and delight, "and I am trying to follow him." One idea of Professor Cockerell's, which often formed the subject of conversation, was that, for any approach to perfection, a modern building demands the co-operation of two architects, the one to devote himself to utilitarian arrangement, the other to artistic embellishment. The Professor would even go so far as to argue that no man could give equal and adequate attention to both subjects; and, having himself personal experience of such division of labour in at least one instance,* the suggestion was no bare theory. It may not unnaturally have increased what has been alluded to: the apparent indisposition of a boy to devote to the drier details of the prescribed instruction the same application as accompanied the exercise of his pencil. Withdrawn, however, in his seventeenth year from the generalities of class-rooms to a more intimate practical training, he must soon have been disabused of any uncertainty as to the requirements of actual practice. Mr. Goodchild, for many years the valued chief clerk, and through life the faithful friend, of Professor Cockerell, who as architect to the Bank of England had offices there, gave him the first lessons in perspective drawing; and new offices at the Bank were then in course of construction. Designs had frequently to be furnished for branches in provincial towns, so that there was no lack of elementary study. Identifying himself, meanwhile, with every institution connected with the architect's profession, at one time engaged among the working builders upon a scheme for a provident club in their interests, at another assisting in the business of the Artists' General Benevolent Institution, he became every day more heartily pledged, to his father's intense gratification, to share the moral responsibilities as well as the distinction attaching to his name. During the summer of 1850, with an independence then not often confided to boyhood, but forming part of the Professor's educational design, he made a sketching tour in Northern France. He returned from the beauties of Abbeville, Avranches, and Morlaix to distribute his autumn between the School of Design and some subordinate occupation obtained for him by the kindness of the late Sir M. Digby Wyatt, in connexion with the Exhibition building in Hyde Park, which, as a novel and an ingenious solution of a difficult question, was attracting great public interest.

* * *

There are marked spots in the youthful life of most men who have at any time excelled, to which may not unfrequently be traced some determination of their opinion and taste, or at least their approximation to some more or less model idea. In the profession of architecture the disposition must sometimes be suppressed, and constantly modified by the exigencies of circumstance and duty, but the impression once clearly made will never be entirely effaced. To some months of severe study at Paris in the spring of 1853, and to the admiration he there conceived as much for the system as for the results of the training in the Parisian school, must be referred a perhaps somewhat exaggerated estimate formed by Frederick Cockerell of the lofty aims and ambition of perfection which he deemed specially characteristic of French architects; and in his own earlier designs the French idea is profusely blended with the classical.

Later in that year he made a fine perspective drawing of St. Paul's Cathedral, which, with some little alterations and introduction of figures, suggested by the late Mr. Stanfield, R.A., a constant visitor at the house at Hampstead, was exhibited at the Academy in 1854. Cockerell was early in that year a pupil in the office of Mr. Hardwick, R.A., where there was a great deal of business; and under the immediate guidance of Mr. P. C. Hardwick, who found him, "from his thorough knowledge of his own favourite style of art in many cases of much use," he for the first time assisted in the planning and laying out the site for country-houses, in the construction of which he was in later years himself not unsuccessful.

One would wish that a letter from Mr. Cockerell to his son, which so emphatically determined the rivalry between painting and architecture as the aim and object of a mind delicately sensitive to the beauties and attractions of both, had been preserved. It could only have been on the most earnest conviction that the indulgent and loving father disappointed a desire so keen, and dealt a wound at the time so mortifying. For he was himself as appreciative of the glories of success as he was critical of mediocrity in painting; and his nervous pen, well skilled through years of labo-

* From a "Memorial Sketch," read at the meeting of the Royal Institute of British Architects, on Monday evening last, as elsewhere mentioned.

* The London and Westminster Bank (1837–39) was a joint production, the exterior being especially Mr. Cockerell's work; the interior was by Mr. (afterwards Sir) William Tite.

rious composition, to analyse artistic feeling and interpret every modulation of its faintest utterance, must have treated the subject with the most cogent argument and exhaustive judgment. Doubtless he rested his decision upon an estimate of his son's best powers, of which none could have so tenderly watched the development or so rejoiced in the promise. Yet it is more than probable that young Cockerell's ready acquiescence in the decree, which closed one bright avenue to his ambition, was dictated rather by dutiful obedience than by whole-hearted concurrence in the answer to his appeal. . . . .

When on entering Switzerland he parted with his friend, it was to join his family in Paris, where the first Paris Exhibition was gathering its crowds, and where his father was engaged among the English Commissioners; and more than twenty years afterwards, when visiting Chambord, Frederick Cockerell recalled an excursion thither with some of the most distinguished men of the two countries during that Exhibition summer, and of the impression made on him by the lucid criticism of Sir Charles Barry. There was, indeed, no lack of amusement in the French capital at that time; but the full love of Italy was upon him, and within a very few weeks he was writing home from Venice the most enthusiastic descriptions of its inexhaustible interest and beauty. For two months he could not tear himself away; then it was that he did some of his most careful work. As autumn waned, letters from Padua and Vicenza, from Mantua and Florence, from Siena and other charming resting-places on the road to the Eternal City, formed a journal which delighted its recipients at home by picturesqueness of illustration and evidence of appreciative study. . . . . .

Cockerell's first independent professional work was done in 1858-9, consisting of a cemetery chapel and other buildings at the picturesque little town of Ledbury, which, giving satisfaction to the townspeople, led to his building one or two small houses in the neighbourhood. His speciality came to be the design of country houses and the alteration and improvement of existing ones; and one of his earliest successes was achieved in raising the elevation and making additions to Colcorton Hall, the beautiful seat of his cousin Sir George Beaumont, which materially improved the proportion and dignity of that somewhat bizarre work of Dance. Among the more important of the many houses, which, throughout the English counties, bear silent testimony to the skill in plan and grace of execution, are Down Hall, Essex (Sir H. Selwin-Ibbetson, bart., M.P.), in the Italian style, where an excellent effect is produced by the use of concrete with decorative panels in sgraffito; Lythe Hill, Haslemere (J. Stewart Hodgson); and one of the most recent, Crawley Court, near Winchester. This is a large and imposing work, its idea a modified Elizabethan, its material brick and the grey flint of the country, with terra-cotta introduced into the window mullions, the whole effect being very light and soft. There were difficulties here connected with the site; some exceptionally fine tall trees stood in close proximity, and it was feared that any building short of being colossal would be dwarfed by them; but Cockerell managed his elevation with such judgment that the house, without being immoderately large, seems to reign duly supreme and asserts itself a successful rival to its lofty surroundings. One undeniable merit attaches to his residential buildings, the more remarkable as it indicates a feeling apart from his delight in the beauties of proportion and decorative work. If Mr. Kennard's mansion of Crawley be specially instanced, it is because it was Cockerell's largest and (with the exception of Woodcote, the seat of C. C. Cotes, M.P.) his latest completed work, and because its owner's comparatively recent acquaintance with his architect led to a strong personal friendship from his admiration of the conscientiousness and skill by which the fulfilment of his own wishes and requirements were combined with unyielding assertion of artistic principles and effect. Cockerell was always especially studious of the *genius loci* where he was called upon to build. Whether a modest rectory or a stately manorial residence were in contemplation, Nature was always duly courted in council over the projected site, its facilities and beauties harmonised with the invasion of its domain, and every less attractive feature softened by careful study and subdued. The Carlisle Memorial Column, at Castle Howard, testifies to his capacity for taking advantage of a fine position to atone for a limited expenditure by the exercise of appropriate taste; and a column in the beautiful park of Sir R. Bateson Harvey, at Langley, has been admired for its correctness of dimension and beauty of design.

He had little opportunity in the metropolis of displaying his powers; a slight but pleasing memento exists in the front and entrance to the gallery of the Society of Painters in Water-Colours in Pall-mall, and he executed a few private houses; but his only work of importance in London is Freemasons' Hall, for which his designs were selected in competition (1864).* It is marked by his distinguishing characteristics, originality and beauty of detail; the façade is rich in emblematic carving and sculpture. The highest recognition of the success within the power of the craft to bestow was shown by their architect's immediate appointment to the high office of Grand Superintendent of Works, which, although one subject to annual change, he continued to hold to his death, when, in his own Lodge where he had been greatly esteemed, the unusual tribute of three months' Masonic mourning was paid to his memory.

A reflection will occur to all who criticised in his company or conversed with him upon the works of bygone days or of those of contemporary architects; he was unusually liberal of appreciation in art. It was, for instance, impossible for any one to be more free from bigotry in favour of Classical or Mediæval school or any special development of either. With the former, naturally enough, his name was in early days hereditarily linked, but his sense of the beauties of the latter, in their proper association, was manifest in the reverent care with which he always approached the restoration or enlargement of old buildings; and his School Library and Chapel at Highgate have been approved by men whose own successes in that style give value to their opinion. But Frederick Cockerell regarded style as altogether second in importance to the great principles which underlie all beauty, and which his power of analysis enabled him in every work of merit to distinguish and to prize. Eminently catholic in æsthetics, from a naturally acute perception of beautiful things and the effect of early education, his sweetness of disposition and utter freedom from any spirit of captious detraction robbed even the most condign disapproval of offence, so that those of his younger associates who sought his judgment found in the critic the friendly teacher too.

* Illustrations of the Freemasons' Hall, Great Queen-street, will be found in our vol for 1866, p. 613; view of the house of the Society of Painters in Water-Colours, Pall-mall East, vol. for 1875, p. 371; view of the Carlisle Memorial Column, Castle Howard, vol. for 1870, p. 347; and illustrations of one or two of his country houses in other volumes.

CLEVELAND'S IRON CENTRE.

Mr. Wilberforce, in opposing the proposed imposition of a duty on pig-iron, said, seventy years ago, that "he had never felt a more sensible pleasure in this life than when, after the lapse of a few years, he had returned to a spot once rugged and barren, but then covered by the fruits of human industry, and gladdened by the face of man, in consequence of the introduction of this manufacture." Such a change in its fullest measure has been produced at Eston-in-Cleveland. This village, almost meriting the title of town, is dwarfed in importance by its proximity to the great centre of the English iron trade, — Middlesbrough; but its history, the extent to which it has grown since the discovery of its mineral treasures, and the largeness of its contributions to the metallurgical resources of the world, render it worthy of note. In the north-east of Yorkshire there have been many changes in consequence of the utilisation of the local ironstone; but none so remarkable as that to be seen in the Eston district, and the story of these changes might almost be taken for a fairy tale. In the olden days the moors near Eston were the dwelling-places of some of those of whom its homes enclosed the undistinguishable dust,—Britons, Saxons, Danes; but in later years, it and its surroundings were practically unpeopled, and from the small irregular hamlet called Eston which stood at the foot of a detached hill called Barnaby Moor, down to the estuary of the Tees, there was a long flat sweep of agricultural land, sparsely dotted with cottages, and presenting no feature of interest. Down to thirty years ago Cleveland was an undeveloped agricultural community, and what are now the bathing-towns on its coast were then ancient little villages addicted to smuggling. The treasures of iron in the Cleveland hills have been suspected during all this century, and sample cargoes were sent to smelting-works to be rejected. But thirty-four years ago there grew a great demand for iron, and other than the usual sources of supply were found. On the coast of Cleveland small supplies were discovered, and the seam was traced slowly northwards, whilst its presence nearer the small town of Middlesbrough was sought for. An idle tale represents the discovery to have been the result of an accident; but so far from this being the case, the two discoverers of the stone, the late John Vaughan and Mr. Marley, went to the hills to find a suitable place for boring, and, coming to a quarry, they found that the ironstone was used for road-mending, and a little further on a solid rock of ironstone, 16 ft. thick, rewarded their efforts. The outcrop was followed up; suitable sites for mines were settled; and on the 2nd of September, 1850, the first lot of 7 tons of the ironstone was brought down to the highway, and thence sent to the nearest ironworks. From this date for dozens of years the Eston mines were the most prolific iron reservoirs in the world. In the few months that elapsed before the close of the year in which the mines were opened, there were extracted thence 4,000 tons of ironstone; in the first complete year of working, 187,950 tons were wrought; in 1852, 1,000 tons daily were almost averaged. From 1865 to 1875 the maximum output of from 600,000 to 809,000 tons of ironstone yearly was attained; and though the present output has been brought down to about 500,000 tons, there has been from Eston mine, in its "life" of less than thirty years, probably over 14,000,000 tons of ironstone quarried from this immense iron repository. It still employs its 1,400 miners and 150 horses; it uses engines of 600-horse power; twenty miles of railroad are laid in and about the mines; and large as is their output, it can be long maintained for the primal benefit of the little village of Eston,—swollen from a population of 200 to one of 3,000 people.

Seen from the crest of the hill, from under Eston Nab or Beacon, the mining village shows its scattered streets of cottages straggling to the foot of the hill, where long inclines are dotted with trains of ironstone-laden or light wagons descending or ascending, whilst, higher up, at the "tipping cradles," there is a continuous rattle as the small mine-wagons bring out from the gnomes in the hill the fruits of their labour, and discharge the greyish-green ironstone into the railway trucks. Below the busy little village are ranges of worksheds for joiners, wagonwrights, and other trades; and along an extended plane to the mouth of the Tees, from great gantries, there is, through a fertile agricultural tract, the dark streak of the private railway that leads to the smelting-works at South Bank, seen near the line of the river under its canopy of smoke.

South Bank is a station on the line between Middlesbrough and Saltburn, and Vulcan could have had no better representative station. The traveller who approaches it from the hills sees great inclines of slag and clay-blocks, ranges of calcining kilns "breathing forth,"—not threatenings and curses, like he of Tarsus,—but clouds of smoke and stour; great sets of blast furnaces now yielding dense clouds, and then emitting tongues of flame, pale in the day's light; and a long range of sheds where steel rails are writhing red-hot as they take shape between the rollers, and where the converters throw up great sheets of fire. This is the largest pig-iron producing centre of the world; the primal place of Cleveland iron manufacture, and also the first of Cleveland steel. Fourteen immense kilns roast or calcine the ironstone for one of the sets of furnaces, and, altogether, there are, at this iron-making village, twenty-five blast-furnaces, which represent a capital of probably half-a-million, and the capacity of production of which is twice as much as that of Belgium! But the age of iron is giving place to that of steel, and there have more recently been constructed steel works which roll out from the ingots of steel 2,000 tons of rails weekly.

This centre of the steel and iron trades is divided into two unequal portions by one of the main branches of the North-Eastern Railway. The line is flanked on either side by the stacks of blast-furnaces, and in the night-time there are few more striking features than it presents.

Rows of furnaces are seen by the glow which spreads from the issuing molten metal, through the interstices of trains of coal, coke, and iron-stone wagons; and by the occasional blast-flame that high above casts a lurid light down upon the scene. Farther on there are long sheds in which little engines are seen darting about with great ingots of steel red from the ingot-mould, or white-hot from the heating furnace. Long bars of steel are being forced by powerful rollers into the double-headed shape of rails; and there is the sound of punching and testing and loading these. The flaming converters, where the pig-iron is purified of some of its vitiating elements, are among the most striking sights. Egg-shaped, there issues from what might be called the spiked end a great volume of flame, which rises many yards into the air as a fierce blast rushes furiously through the molten iron, burning out as it goes superfluous carbon, and marking the state of its work by the variations of the flame. In that fierce blaze the works are lighted up, and for yards around the place is as light as at midday. Around furnaces, converters, mills, and forges, there are the dwellings of the workmen,—dwellings that seem dingy in the most sunny day; for, hemmed in by banks of slag, by smoking kilns and flaming furnaces, by great sandy furrows where molten iron assumes hues of red, dull brown, and then its normal grey,—surrounded by these, and by the smoke-laden atmosphere, there could be nothing but the dingy dwellings where the industrious dwell. Year by year this transformation of the irony earth of the honeycombed hill into railway or ship-building steel or merchant-iron goes on, and year by year the great iron-mining centre of Cleveland is losing its rural aspect, and losing its village characteristics, and putting on the dress and the institutions of towns, whilst it causes the fields and the waste lands round to be "covered by the fruits of human industry," and populated by a hard-working people.

CONSTRUCTIVE ART IN JAPAN.*

THE Budhist Temples almost invariably have tiled roofs, and the enormous weight of woodwork and tiles is supported upon pillars, placed at intervals of 6, 12, and 18 ft., the widest openings being in front of the altar.

Besides the main building, there are the lesser shrines, the priests' residence, and extensive out-offices. In some localities the groups of temples cover large areas; for instance, those at Shiba, in Yedo (now called Tokio, or Eastern Metropolis). The wealthy families visiting the cemeteries required accommodation for their periodical visits in state, and extensive suites of reception-rooms were erected for these purposes.

In recent years these apartments were found most convenient for the foreign *employés* of the Government until suitable buildings were erected, and it was in some of the larger temples that the Legations and Consulates were located. Ancient precedent was followed, and the fiction kept up to the last, that no foreigner could gain more than a guest's footing in the country. In olden time refugees and castaway voyagers were always housed in temples.

Pagodas, unlike those of the main land, were constructed entirely of wood, in five stories. This number five is one of those frequently used by Indo-Chinese nations under which to group associated ideas, *e.g.*, the elements, the virtues, the senses, the passions, &c. Thus we have,—wood, fire, earth, metal, water, the five elements; benevolence, righteousness, propriety, wisdom, truth, the five virtues; &c.

These pagodas are not numerous; there is a very fine one in Osaka, and two in Yedo. There are four balconies, with overhanging tiled eaves, and the roof is surmounted with a spire, the design eminently Budbistic, of metal, and from 12 ft. to 18 ft. high, the entire building, exclusive of this spire, having an altitude of 60 ft. to 80 ft. They are invariably square, whereas the Chinese and others are usually octagonal, and the overhanging eaves measure from 16 ft. to 20 ft., the same measurement being adhered to for all five stories. A centre-piece runs up through the building, from which radiate the principal rafters and beams of each story, supported at the corners by strong pillars with intermediate uprights. Cross beams and ties, as we would use them, are not seen, and the heavy timber is much weakened by the system of mortise used.

* See p. 1306, *ante*.

There is very little ironwork, copper was exclusively utilised (?), thin sheet metal being elaborately displayed at corners, &c., for ornamentation, forming a contrast to the crimson lacquer and gilding so profusely used formerly in all Budhist buildings. The carving, colouring, lacquer, and gilding, so opposed to the native ideas of purity and simplicity, was confined to the temples of the wealthy sects, which continued to retain their Indo-Chinese character with little change.

The influence of the Christian teachers of the sixteenth and seventeenth centuries left little behind in the religious or domestic architecture that we can now trace. The fortified sites, the great citadels of the chief cities and provincial centres, bear strong traces of our early European feudal systems; in fact, several of the most important of these strongholds were constructed since the advent of the Jesuits and other teachers from the West.

A strong natural position being selected, the conformation of the land was availed of; that of our own Windsor Castle bears a striking resemblance to some of the sites selected. A series of deep moats being excavated, the material was thrown inwards, and the natural elevation materially increased. A facing of large blocks of stone of a pyramidal form, the apex inwards, was constructed, commencing at an acute angle, gradually gaining the perpendicular. At angles the stones were in regular courses, but only there and in the top courses. Piling was resorted to extensively. In p. 540, *ante*, the mode of driving piles and ramming foundations was mentioned. Stone walls and masonry proper are not seen in Japan. Inside of the moats a high bank is often seen, the plane facing of the moat being thus carried up to a more imposing height, and affording a greater protection against the missiles of an enemy. Along these, pine trees, *Cryptomeria Japonica*, *Chamæcyparis obtusa*, *Abies firma*, *Quercus dentata*, and *Planera Japonica*, were planted, and also, in more recent times, the flowering cherry. Some of these pines are noble specimens of forest trees.

The Imperial residences are remarkable for their simplicity and absence of ostentation; following closely the pattern of the Shinto shrine, the official reception-halls and the private apartments vary but little from those of the nobles and wealthy.

It is, or rather was, some years ago, in Yedo that palaces were to be seen to the greatest advantage. The cheapness of material in the provinces gave opportunity for some provincial chieftains to erect large buildings within their palace grounds, but all followed the same plan, —large official halls connected with smaller buildings by passages, the private apartments being suites of small rooms of the common domestic type.

Official buildings were not of so solid a character, and the official palaces of the higher officials were wanting in the elegance and comfort of the private residences.

The streets and houses of tradesmen varied with the locality and the means of the occupiers, as with ourselves, while the farmers and farm-labourers were content with very primitive homes.

The houses of the common people were devoid of all privacy; even the life of the better class was exposed to the publicity incident to having numerous servants in the houses, and the close association between master and servant. The fragile nature of the partitions precluded privacy, even if loneliness were desired. Foreigners were obliged to first live in the temples, and then in the houses constructed on the native model, glass being substituted for paper in the outside sliding panels that did duty for windows. Gradual progress was made; strong frames, copied from American and colonial models, were erected, and on to these tiles were nailed. Then bricks came into use, and recently attempts have been made to build warehouses and even residences of brick and stone,—the Masonic Hall, Yokohama, the British Legation, Tokio, and Walsh, Hall, & Co.'s tea warehouse, being early instances of a marked step in advance, even in the face of dread of the frequent severe shocks of earthquake.

Natives have within the last eight or nine years endeavoured to copy our models, but frequently make some very quaint and striking additions of their own.

Under the direction of the first foreigner employed as surveyor-general Mr. Waters, and since, Mr. MacVean, the Japanese have availed themselves of the opportunities afforded by extensive conflagrations to erect on the devastated sites a new class of house, and several long streets of buildings of brick, &c., have been erected.

The fireproof buildings, common throughout Japan, seem to have fairly well answered the purpose. A wooden frame and bamboo construction for the thick mud-plaster, laid on, layer over layer, on both sides, to the thickness of an armour-clad's turret, is gradually dried; a coating of lime on the outer-side, tiles on the roof sometimes. A separate frame and temporary shed over it is often to be seen, which is pulled down if fire breaks out. A weather-board covering of thin *cryptomeria* is attached by hooks, so as to be easily torn off also. The tiles used in roofing are but slightly burnt, and therefore are not very durable; the form seems to be taken from the ancient mode of using split bamboo sections, concave and convex halves alternately.

Shingles, being cheaper, are extensively used where cheapness is the object, their lightness requiring a less massive building to support the roof. Thatch is universal in the rural districts. The flooring is invariably matted, excepting the outer passages, and this matting is laid on pine boards ½ in. thick, which are supported on light joists, supported at intervals of 6 ft. and 9 ft. on uprights resting on stone, and 3 ft. to 4 ft. above the ground.

In two-storied houses the under-side of the flooring, planed smooth, forms the ceiling: in the better fitted rooms a light ceiling is added, and upon this a compass card is placed, so that sleepers may not lie with their heads to the north, the position of the dead.

C. FOUNDES.

SKETCHING FROM NATURE.

AT the London Institution, Finsbury-circus, on Thursday evening, the 11th inst., Mr. Walter Severn, the water-colour painter, delivered an interesting lecture to a crowded audience on "The Art of Sketching from Nature in Water-colour," which was practically illustrated by some excellent drawings.

Mr. Severn commenced by saying that this art had until recently belonged almost exclusively to England, and they associated with it such well-known names as Cox, De Wint, Muller, and Cotman, whose best works might be said to partake more of the nature of sketches or out-door studies, possessing a certain completeness, than of finished pictures. The distinction between completeness and finish emphasised what he was going to say. To do what he called a complete sketch one must catch nature in one particular mood, not easy in a climate like ours. This required dexterity and rapidity, qualities so obviously necessary that even Professor Ruskin, who had written so usefully about careful work and finish, now said that "good painting can only be acquired by rapid and various practice from nature." It was reported of Fuseli, R.A., that in reply to some question as to his mode of painting, he said, "First, I sits myself down,—then I works myself up,—then I throws in my shades,—then I pulls out my lights." He (the lecturer) proposed for the introductory part of his lecture to make use of these quaint utterances of the eccentric Academician. First, with regard to sitting down, he wished to impress upon those who paint out of doors how necessary it was to be comfortably seated, and to have all their things what was called "ship-shape" round about them. Any mishap, such as upsetting the water-bottle, or losing their brushes in the grass, might prove serious if they happened to be at work upon a changing cloud or fleeting shadow. He did not like three-legged stools, but four-legged ones, upon which they could sit for a long time without feeling tired. He did not think that any one should work at a landscape out of doors for more than two and a half or three hours. In addition to the trouble caused by changing effects, they were likely to feel tired, and this was fatal to good work. Except for small drawings, easels were indispensable, and he found a second camp-stool to hold his paint-box very useful. He could not paint earnestly or apply his mind vigorously unless both his hands were free. The art of painting was quite difficult enough without making it more difficult by a want of comfort. Millais told him not long ago that when he had a landscape to paint he often had a

small house, built with plate-glass window and fireplace; but, without going quite to that length, they could, with very little trouble, make themselves sufficiently comfortable. It was useless trying to paint if they were hot and tired. The student was more likely to excel if he was pleased with his subject. The true artist ought to feel some sort of excitement or enthusiasm when looking at a beautiful scene. The fewer colours they could do with the better. Too many would only confuse them, and they should remember that dried-up colours would wear out their best brushes, and they should not try to work with brushes that were worn out. In regard to throwing in shades, it might be said of all things that they ought not to look painted, but this might be said emphatically of shadows. Remember that shadows were caused by the absence of direct light, and that a shadow on the ground or on trees represented a part of the landscape as it would be if the direct sunlight were obscured. This would prevent them from making their shadows too black or dark,—a very common fault. In painting rocks or cliffs they should observe that in every hole or crack the shade would be full of reflected light from the ground and near objects, especially if the day was sunny, and all the upper edges would have cold bluish lights from the sky above.

In the afternoon and at sunrise, when the sun's light passed through a medium which absorbed the blue rays, and the lights on the earth became warm, the shadows might be cool, but generally and certainly in broad daylight, the shadows were warm. The distant shadows on hills and cliffs often appeared to be more blue than they really were, especially to beginners. Rose madder, light red, or vermilion, would neutralise the blue, and even a little yellow must at times be necessary; but the greatest care must be taken to preserve an even surface in shadows. Ragged shadows would spoil any drawing. What made near surface shadows often appear so very distinct was not that they were especially dark, but that they were in strong contrast with the surrounding light. To get this contrast he thought the shadows must be painted as transparently as possible, and a small amount of body-colour might be mixed with the lights.

In regard to lights, there were four ways of rendering them, called technically "leaving out," "rubbing out," "scraping," and putting on with body colour. These methods were quite distinct, and the adoption of any particular one made it necessary to use particular paper. Paper that was absorbent, like Harding's, took body colour readily, but would not stand scraping out; so he generally used the thin rough Whatman, which, when strained on a board, would stand anything. It was particularly useful, if they wanted to work up their sketch afterwards. All kinds of knives were now used for scraping. It was easier to scrape out a small light than to leave it. Thin rough Whatman would stand scraping very well, and they could easily get any scraped part even by stippling. By stippling they could get evenness and flatness, and also distance, finish, and texture. The finer stippling was done by filling up with rather a dry brush every light speck or inequality, and modifying every dark mark, until the whole surface looked even and uniform. Any background done this way would make objects which were left or erased stand out very plainly. Rubbing and taking out might be done softly with leathers and roughly with rags, and, of course indiarubber and bread would take out any part of the colour which had been wetted. He thought it was very important to have plenty of rags—nice, old soft rags—and never to use them after they were soiled. They had been told how Turner used to drive the wet colour to the edge of a dark or a light, although he was not given to many dodges. Let them keep their lights clear, and tone them down gradually. A small amount of bright paint used with much water was often more valuable than a large quantity of dull colour.

In respect to "glazing," or putting one colour over another instead of mixing them, it was discovered by the old masters that the system was important, not only to secure brilliancy, but to ensure permanency. Chemical changes were apt to take place if colours were too much mixed. He believed that a sketch from nature would often lack freshness and brilliancy if all glazing were ignored. As they had warm and cold, transparent and opaque, colours, they should use them in the way most likely to aid the artifice of painting. He did not agree with the theory that shadows and lights should be painted in exactly the same way; on the contrary, he thought the student should try and vary his methods, just in the same way that an engraver used dots, lines, and irregular work to imitate flesh, drapery, or foliage. He agreed with Professor Ruskin that placing transparent and opaque colours in juxtaposition should not be carried too far, so as to become a mannerism or a trick; still he thought all students should bear in mind that variety of treatment was the direct means of securing variety of effect.

In respect to tones, nothing was more puzzling to beginners than to determine between two very opposite colours as to which was the darkest in tone. Instead of merely observing whether a thing was brown or green, or blue, they should acquire the habit of judging whether it was warm or cold, and what was its tone in relation to objects near. This was of so much importance to secure the completeness or truth that they should try for a few seconds to look at nature with the eyes of an engraver who had to copy a coloured picture without colours. The help of slightly grey spectacles would help them to do this. He used them also to keep off the glare of the white paper when he was first drawing his subject. The most serious mistake made in reference to tone was that of making a red setting sun darker than the sky through which it shone. They could not have a better study of tones than snow-covered ground, especially in the evening, or their beautiful white chalk cliffs. Every projection had several faces which took different reflected lights, and every hollow was full of warm light which, if not painted rightly, would prevent the cliffs from looking white. Referring to perspective, the lecturer said that by the simple carpenter's rule they could measure any angle and trace it on the paper, and if tested by the strictest rules it would be found that this method was quite correct. As to measuring, he was pleased to find that their great art-critic now permitted them to measure as much as they liked. He thought even tracing might be done if it would help to secure correct drawing. It was only by tracing one side, after getting the other as correct as possible, that he could paint the "Tombs of the Caliphs" he exhibited to the meeting. The most important thing was to select subjects to paint which had what the Italians called "*motivo*,"—some feature which attracted attention,—some marked light or dark,—something that would give special interest to their drawing. Without this the most praiseworthy sketch might be tame and uninteresting. They should try to make their drawings tell a story. A ray of sun, a passing shadow or shower, or a rainbow, might appear opportunely. To do these they must be rapid, so should take care that their apparatus was complete and simple. Sun, wind, and rain might prove awkward customers; and as to midges, without a veil they would crush the artist. In painting masses of trees or other objects reflected in water,—what the poet Keats called

> "A crystal mocking of the trees and sky,"—

they would find that two or three brushes ready charged with different colours would enable them to paint the variegated downward streaks quickly and with the blended effect they had in nature. He thought that slightly troubled water might, like everything else, be painted on a system, or with the knowledge of some system. If they watched a large surface of undulating waves, not caused by direct wind, they would observe that they had the appearance of hundreds of irregular diamonds or ovals, and after studying [these carefully they would observe that the hollows and sides reflected separately the different objects above or opposite to them. Cliffs, trees, and clouds would all be reflected, downwards, in broken streaks, through these diamonds. An artist had this great advantage over a photographer, that he could give effect to peculiar features. Sir Edwin Landseer might be quoted as the greatest example of an artist who knew exactly what to leave out. If they found that they must take out an object which they had painted in rather strongly, they should use a small Turkey sponge. For subduing or softening they should use large brushes, and a hog's-hair brush was valuable for some kinds of work. If they wanted to get a large sky even and soft, it was a good plan to lay their drawing flat, and work over the sky with plenty of water. If a drawing looked hard and dry, they should give it a bath; but this required experience, and it was better to try their hand on some old sketches. Not only in painting, but in everything, knowledge was best acquired by actual experience. His hearers should not mind a few failures; they would teach them quite as much as successes. Prof. Ruskin said that the most distinctive charm of water-colours as opposed to oil was the visible merit of hasty skill and the entertaining concurrence of accidental felicity. By degrees they would acquire more and more certainty, until at last they would know what they were going to do. That was a sign of real advance. They should never object to criticism. He had even found the remarks of children useful. Self-satisfaction was detrimental to good work. It should be remembered that perfection was not to be attained *in* art. The greatest artist was always learning and never reached the goal towards which all his efforts were directed. They should learn to rely upon themselves. Sir Joshua Reynolds said that the rules of art were few and easily learnt, but Nature was too infinitely various, too subtle, and beyond the power of retention of memory. They should, therefore, constantly study Nature and accumulate facts, never forgetting that all good art depended upon a subtile choice of what was most beautiful, interesting, or necessary to the work in hand. His (Mr. Severn's) late sister, Mrs. Newton, said of portrait-painting that it ought to be "the truth lovingly told," and this remark applied equally to landscape-painting. Good painting consisted in generalising by short and simple methods. All painting was an artifice,—a deception. Objects must be made to look real upon a flat surface. To make a picture required a broad, comprehensive grasp, which, as Reynolds said, denoted genius more surely than any other quality. In conclusion, the lecturer advised them to lose no opportunity of observing Nature,—to look at all things worthy of notice and study them, to observe closely how the lights and shadows fell, and to make notes of colours. They should fill lots of sketch-books, and if they could not find a kindred spirit to go with them, should go alone. Others might feel solitary, but the student of art ought not to know what it meant. Truly might it be said of him or her, "Never less alone than when alone."

THE LAW OF FIXTURES.

INSTITUTION OF SURVEYORS.

In the discussion which ensued on the reading of Mr. Smalman Smith's paper,* read on the 24th ult. before the Institution of Surveyors,

Mr. R. C. Driver said that the Institution was under great obligations to Mr. Smalman Smith for his paper. As every surveyor knew, the law of fixtures was most unsettled. His own experience extended over some forty years, but so uncertain was the law that he had always found it advisable, in offering a property for sale, to specify exactly what the vendor intended to sell, as otherwise great difficulties might arise before the purchase was completed. There appeared to him to be some divergence between the custom in these matters, and the law as defined by the author of the paper. In giving decisions with reference to fixtures, the judges seemed to be in the habit of taking what might be called a liberal view where it was a question between owner and heir and owner and executor; but in cases of mortgage between parties who were strangers to each other a stricter method of interpretation was adopted.

Mr. E. J. Castle said that in his opinion the question of fixtures or no fixtures was not so much a matter of legal definition as one of fact, and the difficulty of applying the legal decisions seemed to him to be due to the circumstance that the judges were apt to decide questions of fact instead of leaving them to be decided according to the evidence of skilled witnesses. Consequently, there were most conflicting decisions on all points. He believed that it had been held that an ordinary window-sash was removable by a tenant as not being fixed, whilst a gasfitting that was soldered to a gas-pipe had, he believed, been held to be not removable. If this were so, it seemed contrary to the practice or custom of dealing with a tenant's right to remove. So in the case of a clock. The one in the room was, no doubt, removable, though fixed to the wall, but no one would, in the case of the Westminster Clock Tower, say that the large clock there was not part of the freehold. Thus

* See p. 1322, *ante*.

a clock might be a mere article of furniture in one case, and in another it might be an important part of the building, and pass with the premises.

Mr. E. Ryde said he had understood the author of the paper to say that the question of fixtures or not fixtures often depended on the circumstances under which the property was held,—whether in the hands of a tenant or the owner,—and he wondered how, under such a state of things, the property would be valued for rating. To his regret the paper had not entered into that part of the question. It was stated in the paper that whatever is fixed to the realty, so as to be irremovable as between landlord and tenant, must be taken to be part of the premises for ascertaining the rateable part of the property; but it had been decided in the West Ham case that a tank which actually formed the roof of part of the premises was not a fixture and not to be taken as part of the rateable value.

Mr. E. P. Squarey observed that Mr. Smalman Smith had done the Institution great service in preparing so able and luminous a digest of the law of fixtures. The paper showed how numerous were the pitfalls in the path of those who were called upon to deal with this subject, and so clear a compendium of the law as Mr. Smith had prepared could not fail to be of great use, especially to the younger members of the profession.

The discussion was resumed on Monday, the 8th inst. (Mr. E. Ryde in the chair), when

Mr. F. Vigers observed that the paper would certainly be very useful for reference, for no doubt Mr. Smith had given a lawyer's view of the question as regarded fixtures between the heir-at-law and the executor or remainder-man, and also between landlord and tenant. But it was desirable that the views of surveyors, who had to deal practically with these questions, should be put upon record. When questions relating to fixtures came before courts of law, the difficulty was that the question of construction could not be very accurately brought forward, owing to the nicety of the distinctions. In deciding the question whether a particular fixture formed part of the freehold or was only so affixed as that it could be considered a chattel, removable by the tenant, the distinction was sometimes very fine indeed. He remembered upon one occasion that upon a question of fixtures which was thought to involve some very nice points, it was said by the legal representatives of the parties, "Let us refer it to two surveyors for arbitration, and appoint a legal umpire." That course was adopted, and Mr. (afterwards Mr. Justice) Willes was appointed umpire. He (Mr. Vigers) happened to be one of the arbitrators, and he remembered that Mr. Willes gave them an appointment one morning before breakfast to view the property in dispute, and the difficulty was to make Mr. Willes understand why one thing which appeared to be very firmly fixed should be a tenant's fixture, and why another, which really appeared to be not more firmly fixed, should be a freeholder's fixture. Standing before a register stove he asked, "I am to understand that this is a tenant's fixture. Why?" The reply was, "Because it could be removed from its place without injury to the freehold." "Then," he said, "am I to understand from you that if I apply sufficient force to this stove I can move it bodily out?" He was answered in the affirmative. He then said, "Here is a mantel-piece; what do you say to that?" He was told that it was a freeholder's fixture. "But," he rejoined, "if I apply sufficient force to it, that also can be removed!" The arbitrators reminded him that, though the mantel-piece certainly could be removed, it could not be removed without injury to the freehold. He went through a variety of items in that way, and at last he said,—"Gentlemen, I have arrived at the conclusion that this is a matter which is much better settled between surveyors than by a lawyer. I advise you to appoint a surveyor as your umpire," and he retired. The arbitrators did appoint a surveyor as their umpire, and the case was settled without very much difficulty, and to the satisfaction of all parties. For every ten cases relating to fixtures which came before the courts, thousands were settled, and satisfactorily so, between surveyors, to whom Mr. Smith's paper, embodying as it did the leading principles of the law, would be of very great value.

Mr. Hugh Shield, barrister-at-law, said that Mr. Vigers seemed to think that lawyers should, as a rule, be excluded from the settlement of these questions, a doctrine to which he, as a lawyer, could hardly be expected cheerfully to subscribe. He had no doubt whatever that the late Mr. Justice Willes would, in the case referred to, have decided very fairly between Mr. Vigers and his brother professional arbitrator. If, however, Mr. Vigers was only claiming for surveyors an essential and necessary voice in the settlement of such questions, he quite agreed with him. He was there to bear his testimony to the very great merit exhibited in the paper. In dealing with a legal subject, it might pretty safely be said that that treatment of it would be most satisfactory which aimed at and succeeded most directly in bringing it under the governance of one or two leading principles, and the merit of Mr. Smith's paper lay in the fact that it sought to bring the whole subject under one guiding principle, that guiding principle being the determination of the intention with which the fixture had been affixed to the soil. All the other aspects of the question really led up to that. Under the guidance of that principle, Mr. Smith had been able to arrange his subject in perfectly logical order, and had given a harmonious and comprehensive view of the whole subject. In conclusion, Mr. Shield made some remarks upon the subject of the rating of fixtures, chiefly with reference to the Bishopwearmouth case.

Mr. H. Lofts said it appeared to him that Mr. Smith had given a very lucid legal analysis of the question. He had had a good deal to do with the subject, especially in relation to house-property, and he would suggest that instead of calling the two descriptions of fixtures "movable" and "immovable," it would be better to call them respectively tenant's fixtures and landlord's fixtures. He thought it was a generally-recognised principle that if one could not take anything away without making a dilapidation, it became a landlord's fixture. Wherever it was possible, it was a good plan to take as a guide the surrendering clause of the lease, which generally specified what the landlord might claim and what the tenant might claim. Mr. Smith, in his paper,* had stated that chimneypieces, if ornamental and set up by the tenant, were movable fixtures, but his (Mr. Lofts') experience was that they could not be removed without causing a dilapidation; and he knew of a case in which the Duke of Westminster brought an action against a tenant for removing a chimneypiece from a house in Grosvenor-square. Again, Sir Dudley Majoribanks, at his house in Brook-street, had a Canova chimneypiece, and he reserved the right to remove it on paying a certain fixed sum. Whenever a property changed hands an inventory should be made of the fixtures, and that inventory, duly attested, should be preserved for future reference. It would, he thought, be very advantageous to the profession if the Institution of Surveyors would, not only for house-property, but for farms, trading concerns, and other properties, arrange a code of rules upon the basis on which the question of fixtures could be settled permanently.

Mr. S. W. Casserley said that the law of fixtures was, theoretically, very simple, and might be said to be embodied in the maxim introduced into the paper,— *quicquid fixatur solo, solo cedit*, and the application of that principle by the courts, and the development of it, were sufficiently shown by the cases which Mr. Smith had brought forward. But for every single case reported in the law-books, there were thousands of cases in the memory of men of practical knowledge which illustrated that view of the law. He thought Mr. Smalman Smith's paper was extremely well done, and the members of the Institute were very much indebted to him for his industry, for he had given them a fair general view of the law of fixtures. If he might be allowed to say so, it was a very good "reduced plan" of the law. Considering the complexity and magnitude of subject, he thought the members could not but feel towards Mr. Smith much as the rustics in the "Deserted Village" regarded the schoolmaster,—

> "And still they gazed, and still the wonder grew,
> That one small head could carry all he knew."

Viewing, however, Mr. Smith's treatment of the subject as a "reduced plan," it would be found to have some of the characteristics of a reduced plan, or, in other words, some of the points would be found to be dwarfed, and one or two might be omitted. Mr. Smith, for instance, in his paper had said that in the absence of special contract, tenants' fixtures could not be removed after the termination of the lease, and that that rule applied whether the lease determined by effluxion of time or by re-entry on forfeiture. That was perfectly correct so far as it went, but Mr. Smith might have added that it depended upon whether the fixtures were intended to be removed by the tenant or by the assignee of the tenant, for the law was that an assignee might remove fixtures even after the lease had been surrendered.

Mr. Robert W. Mann said that while fully appreciating the value of Mr. Smith's paper, he differed from one or two points in it. In cases of annexation to the freehold, he had seldom found any difficulty in settling questions of fixtures when meeting brother-surveyors. Difficulties more frequently arose between landlord and tenant, or rather between their solicitors,—for as far as his knowledge went, solicitors did not seem to have made themselves acquainted with the law of fixtures. He did not see the advantage of changing the terms "landlord's" and "tenant's" fixtures into "immovable" and "movable" fixtures, for the former terms showed, *à priori*, to whom the fixtures belonged. If there were to be any changes in the names he should suggest that they should be called "freehold" and "leasehold" fixtures respectively. He agreed with Mr. Vigers in thinking that it was desirable to append a schedule of the fixtures to the lease. Some twenty-five years ago, it was almost the universal custom for a tenant to provide stoves, grates, ranges, baths, bells, &c.; but now all that had been changed by the speculating builders, who in their competition for tenants and purchasers, now generally provided all those things, and other things, almost approaching the nature of planned furniture, besides. He agreed with what had been said as to mantel-pieces. If a tenant replaced a chimney-piece worth 50*l.* by one worth 1,000*l.*, when once he had fixed the latter to the freehold, he could not remove it unless he had the consent of the landlord in writing to replace it by the original chimney-piece. That course was frequently taken. In practice, the difficulties which arose were not, as a rule, so formidable as might be supposed by those who were not practical surveyors.

Mr. W. G. Harrison, Q.C., said that if he were speaking as a surveyor and not as a lawyer, he should say that the whole subject of the law of fixtures was a hopeless muddle. Almost invariably the question of fixture or no fixture was a question of fact, and not a question of law. Admirable as was Mr. Smith's intention in preparing the paper, it was very rash to generalise on such a subject. Nearly all the authorities cited by Mr. Smith were no authorities at all. The judges' decisions quoted were not decisions on questions of law, but decisions on questions of fact, and probably if those questions of fact had been submitted to juries their findings would have been diametrically opposed to the findings of the judges. He (Mr. Harrison) denied the truth of the maxim quoted by Mr. Smith,—"*quicquid fixatur solo, solo cedit.*" It was necessary in dealing with this question to consider what were the rights of the holder of the estate. In all dealings with fixtures it would be advisable that they should be made the subject of legal and well-drawn agreements, so that it might be seen at a glance whether a man meant to convey the bare walls alone or anything more. The conflicting decisions quoted by Mr. Smith had produced unnecessary and intense confusion, and, indeed, the muddle into which the question had got could not be better shown than by the use of such a contradiction in terms as "movable fixtures." In dealing with the cases, the courts drew inferences from the facts, and their decisions, based on those inferences, were then quoted as law! With Mr. Ryde, he regretted that a subject of so much interest to surveyors as the law relating to the rating of fixtures was dismissed in a single paragraph, but he was not surprised, because it could not be satisfactorily discussed within the limits of a paper, it being purely a question of facts. The main questions were questions of facts, which could be very much better dealt with by practical men than by lawyers. The whole subject was unscientific from beginning to end. Very little was known of it, and his advice was,—Deal with fixtures as a matter of express agreement. But, it might be urged, "Surveyors have to deal with these matters after people have failed to deal with

* See p. 57, vol. xl., of the "Transactions" of the Institution of Surveyors.

them in that way!" True, and therefore, to surveyors he would say,—Apply the rules of good sense.

Mr. P. D. Tuckett wished to add his testimony to that of previous speakers as to the great value of Mr. Smith's paper as a concise summary of the law on the subject. There was a common proverb which said that "a little learning is a dangerous thing," and while it was undoubtedly necessary for surveyors to know something of the law of fixtures, they should leave all strictly legal business to the lawyers, or they would be likely to find that "a little law is a dangerous thing." When a surveyor was required to go over premises and value fixtures without any special instructions as to what he was to value, he would give a lot of trouble to everybody unless he had previously taken some pains to make himself acquainted with the law on the subject. It seemed to him that one of the difficulties which attended the law of fixtures consisted in the very few decisions which had been given by the courts on the subject. There was an immense number of questions arising about fixtures every year, not to say every month, and those questions were constantly referred to valuers and surveyors up and down the country, many of whom were quite ignorant of the niceties of the law on the subject, but who nevertheless decided such questions between landlord and tenant according to their idea of custom or upon general principles of common sense. In the majority of such cases the amount in dispute was not sufficient to make it worth while to take the opinion of a court of law. The consequence was that there was springing up here and there a method of dealing with questions of fixtures which materially differed from the method of the courts. There was one point, towards the end of the paper, as to which he thought that Mr. Smith had gone a little too far. He stated that "a general covenant to repair extends not only to buildings, but to fixtures, and a tenant is precluded by such a covenant from removing fixtures," and he subsequently stated that if "a tenant from year to year, or without any express covenant to repair, erects structures or improvements, and subsequently takes a lease of the same premises, with a general covenant to repair, the lessee would be restrained from removing those fixtures at the determination of the tenancy so created, although he might have removed them previous to the commencement of his lease." Now, if that were really the state of the law, it would be impossible practically to enforce it without a great many disagreeable and violent scenes.

Mr. W. Eve agreed with what had been said by previous speakers as to the importance of taking inventories of fixtures when property changed hands. He thought that one effect of Mr. Smalman Smith's paper would be to induce surveyors to endeavour more than ever to settle disputes as to fixtures without bringing them into court.

Mr. E. J. Smith said that as reference had been made to the Bishopwearmouth case, he might mention that a very able pamphlet on that case had been written by Mr. Potts, of Sunderland, a member of the Institution.

Mr. Watney and Mr. A. C. Meysey-Thompson having made a few remarks (the latter gentleman offering to contribute a paper at some future time on the rating of fixtures),

Mr. Smalman Smith proceeded to reply on the discussion. He said it seemed to him that some of his learned friends, and some members of the surveyor's profession, had laid too much stress upon the point,—involved, no doubt, in the consideration whether an article annexed to the freehold was a fixture or is not,—that it was a question of fact, and not one of law or theory. Now he admitted that in many instances, and important instances, questions of fact were involved in determining the questions in dispute; but of what use was it to determine the facts unless there was a theory to apply to those facts? Where was the advantage of determining the isolated facts unless they could be made use of? In preparing his paper his only object had been to endeavour to reduce the complicated, intricate, and confused subject to something like a consistent theory which should serve as a guide for surveyors when they came to consider the facts which had been insisted upon as all-important. He believed that it was the first time that any attempt had been made to formulate such a theory, and he had been encouraged to make the attempt by the perusal of the judgments of one learned judge (Mr. Justice Blackburn), who had done more, probably, than any other judge, towards determining such a theory. The leading general principle upon which he had proceeded was the intention of the party in annexing the fixture to the freehold. Mr. Harrison had said that that was a question of fact and not one of law, and had denied the applicability of the maxim quoted at the outset of the paper,—*quicquid fixatur solo, solo cedit*,—and contended that such a state of things as it implied no longer existed. But the whole object of the paper had been to show that such a state of things did not now exist. The maxim was a relic of the old feudal system, and had now almost ceased to have any effect. In conclusion, Mr. Smith expressed the hope that the Institution would endeavour to formulate some comprehensive schedule of fixtures of all classes, so as to (at any rate in the great majority of instances) prevent the disputes that now so frequently arose.

The Chairman (Mr. E. Ryde) closed the discussion by making some observations supplementary to those made by him on the evening the paper was read. He remarked that Mr. Smalman Smith's paper might be regarded as a complete index to the law of fixtures. The question, in the minds of practical men, naturally divided itself into three parts,—Firstly, What is a fixture? Secondly, In whom is the property of the fixture? Thirdly, What part does a fixture play as a portion of a rateable hereditament? He should have liked to hear the discussion turn more upon those points than it had done. Very little had been said as to what were not fixtures. On many trade premises there were things which were not fixed at all, though necessary for the carrying on of the trade for what the premises were built. It seemed to him that common sense would say that a thing which was not fixed or "annexed" could scarcely be called a fixture. It had been suggested by one of the speakers during the discussion that the immovable fixtures should be called landlord's fixtures and the movable ones tenant's fixtures, but it was possible to conceive of cases in which both landlord and tenant might be possessed of fixtures belonging to each category. He agreed with Mr. Mann that in demising property it was advisable to set forth in the lease exactly what was demised, and the same precaution should be taken in selling property. With regard to the rating of fixtures, reference had been made to the Monkwearmouth case, and to the very able pamphlet which had been written by Mr. Potts, of Sunderland. The pamphlet was in the Library of the Institution, and was well worth reading.

The meeting closed with the announcement that on Monday, January 5, 1880, Mr. E. R. Robson will read a paper on "The Purchases [of land] of the London School Board."

UTILISATION OF THE TIDES.

LIVERPOOL ENGINEERING SOCIETY.

A PAPER on this subject, by Mr. Arthur Oates, of Bradford, was read at the last meeting of the Society.

The author opened his subject by referring to the probable exhaustion of the coal supply, and advocated the substitution of the tides as a producer of motion. Although it may not be until the distant future that advantage is taken of the power of the tides, yet, in his opinion, owing to its inexhaustible character, it will ultimately outrival all other sources of mechanical power. He then described the most favourable sites for taking advantage of the tides economically, stating that there were many places on our coasts where the tides could be utilised at a sufficiently low cost to enable them to compete with coal.

The ways of taking advantage of the power of the tides he divided into two comprehensive classes,—one requiring large permanent constructions, such as the various modifications of the tidal dam,—this he considered the most efficient and economical for using the vertical motions of the tides, which motion is the most important for mechanical purposes. The other class was the numerous but comparatively unimportant utilisers which do not require such works, such as the tidal cask, but which would only be employed when the power is required intermittently.

The former could only be undertaken by large public bodies, but the latter might be employed by small capitalists. He then suggested how the horizontal motion of the tides might be taken advantage of by water-wheels, &c. After pointing out that the ways of utilising the tides were innumerable, and describing the construction of the tidal dam, with suitable converters of the power, such as turbines in openings of the dam, working air-compressing or magneto-electric machines, he stated that the necessity for large conservators for storing the power between the tides would be the greatest difficulty in utilising their power. A brief description of how this could be done, and the power rendered constant, was given.

The means of conveying the power to a distance was then considered,—air and water pressure and electricity being suggested. With regard to the latter, he believed the age of steam had reached its zenith, and the "age of electricity" had dawned. But should there be difficulty in conveying the power to a distance, he suggested that manufacturing towns should be built adjacent to suitable sites for utilising the tides.

In conclusion, the author pointed out that the estuary of the River Mersey possessed many advantages as a tide-utilising inlet, both from its natural features and the great vertical range of tide. By the construction of a dam at its narrowest part, an area of thirty square miles would be enclosed, and an easy means of communication obtained between Liverpool and Birkenhead which would obviate the necessity of a subway, as proposed.

MODERN WOOD-CARVING.

THE two tables of which we have engraved representations were executed by Mr. Rogers, of Maddox-street. They are very different in character. The first is of the Queen Anne period, and intended as the Communion-table for the private chapel in Aldenham House, Elstree, the seat of Mr. Henry Hucks Gibbs. Mr. Rogers has lately bestowed much of his time on the decoration, with works of wood-carving, of this mansion. Amongst other works, he has finished five elaborately-carved chimney-pieces, under the auspices of the architect, Mr. Ed. Ellis.

The other table is of Arabic design, and executed in ebony and gold, with a rich Oriental jasper top, of great rarity. The designer has caught the peculiar character of this Oriental style. Round the frieze is carved, in raised Arabic letters, that portion of the Koran which is known as the "Chapter of the Table."

CHOIR STALLS OF THE CHURCH OF NUESTRA SEÑORA DEL PILAR, SARAGOSSA.

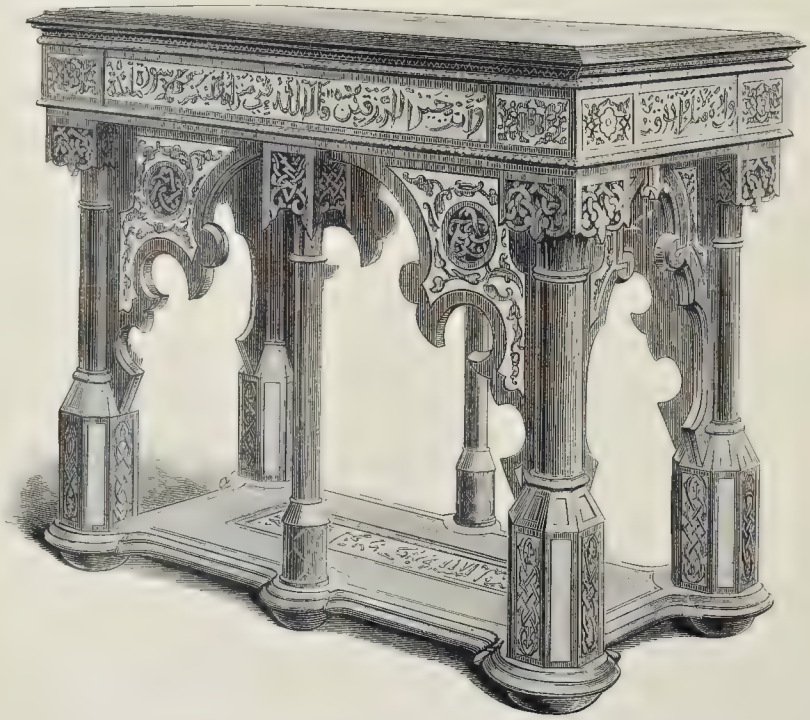
THE elaborate choir-stalls of the Church of Our Lady at Saragossa, of which we give an illustration in this issue, were commenced in 1542, and completed at a cost of 62,000 Aragon sueldos, according to Spanish authorities. The work was executed by Juan Moreto (of Florence), Nicolas Lobato, and Estéban de Obray, in accordance with designs prepared by the latter master.

The seats, of which there are altogether 115, are in three rows, and are entirely in oak. It is impossible to describe in detail the remarkable elaboration which they exhibit: colonnettes, panels enriched with figure-subjects, brackets, arms of the seats, misereres, and cornices, all carved or inlaid.

The beautiful bronze railings which enclose the choir were completed in 1579 by Juan Tomás Celma, at a cost of 23,000 sueldos.

Curiosities of Numbering in Oxford-street.—At the meeting of the Marylebone Vestry on the 11th inst., a letter was read from the Postmaster-General, calling attention to the great inconvenience caused in the numbering of houses in Oxford-street, thereby hindering the prompt delivery of letters. There are, it appears, eight houses numbered 315, eight numbered 314, three called 343, and two numbered 256; while 140 houses have only 55 numbers among them. The chairman said the numbering of this street was something frightful. An immense number of leases would fall in in 1882, so that, perhaps, action at present might be thought inopportune. Mr. Brook said that if the Vestry waited till the rebuilding of houses ceased in Oxford-street, they might wait till domesday. The letter was referred to the Works Committee.

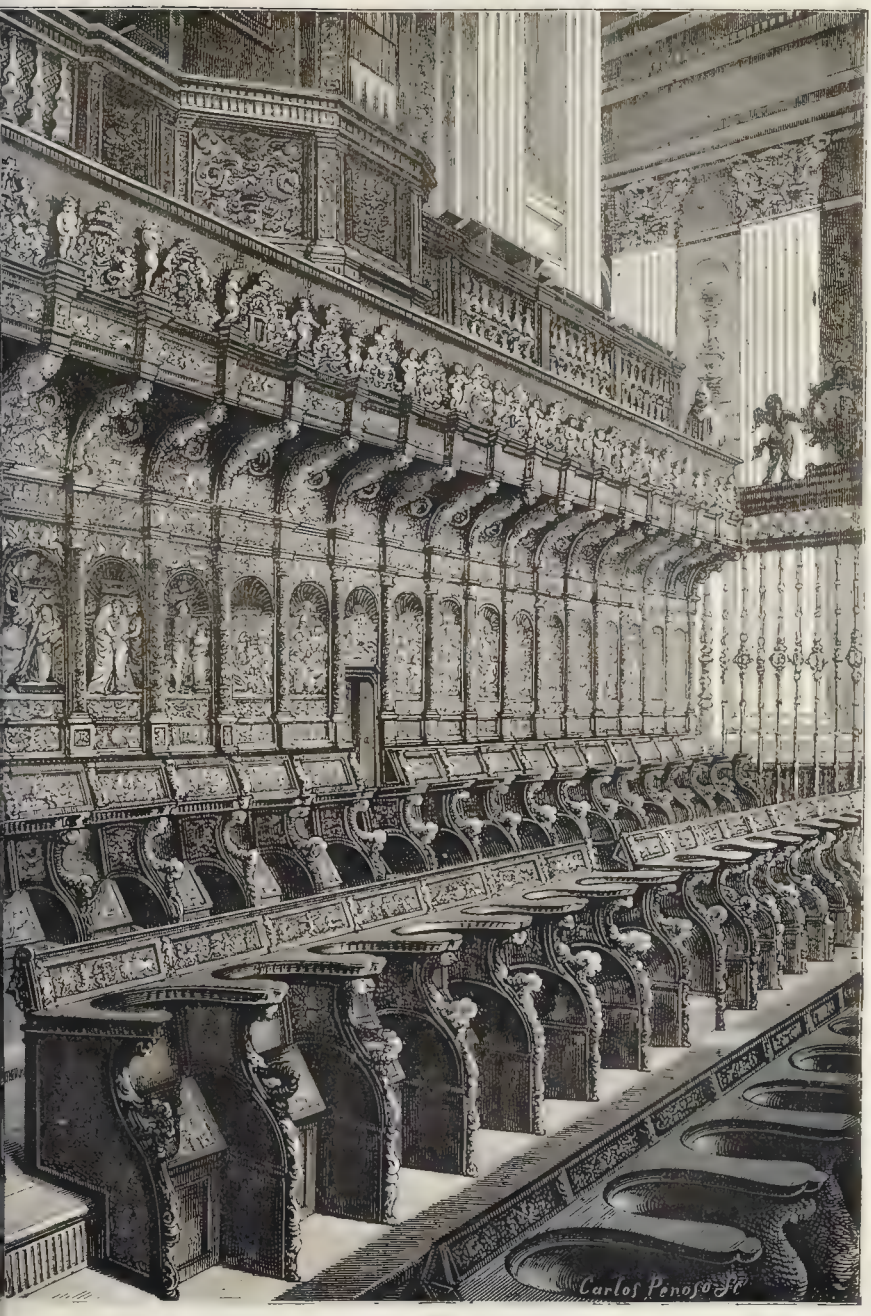




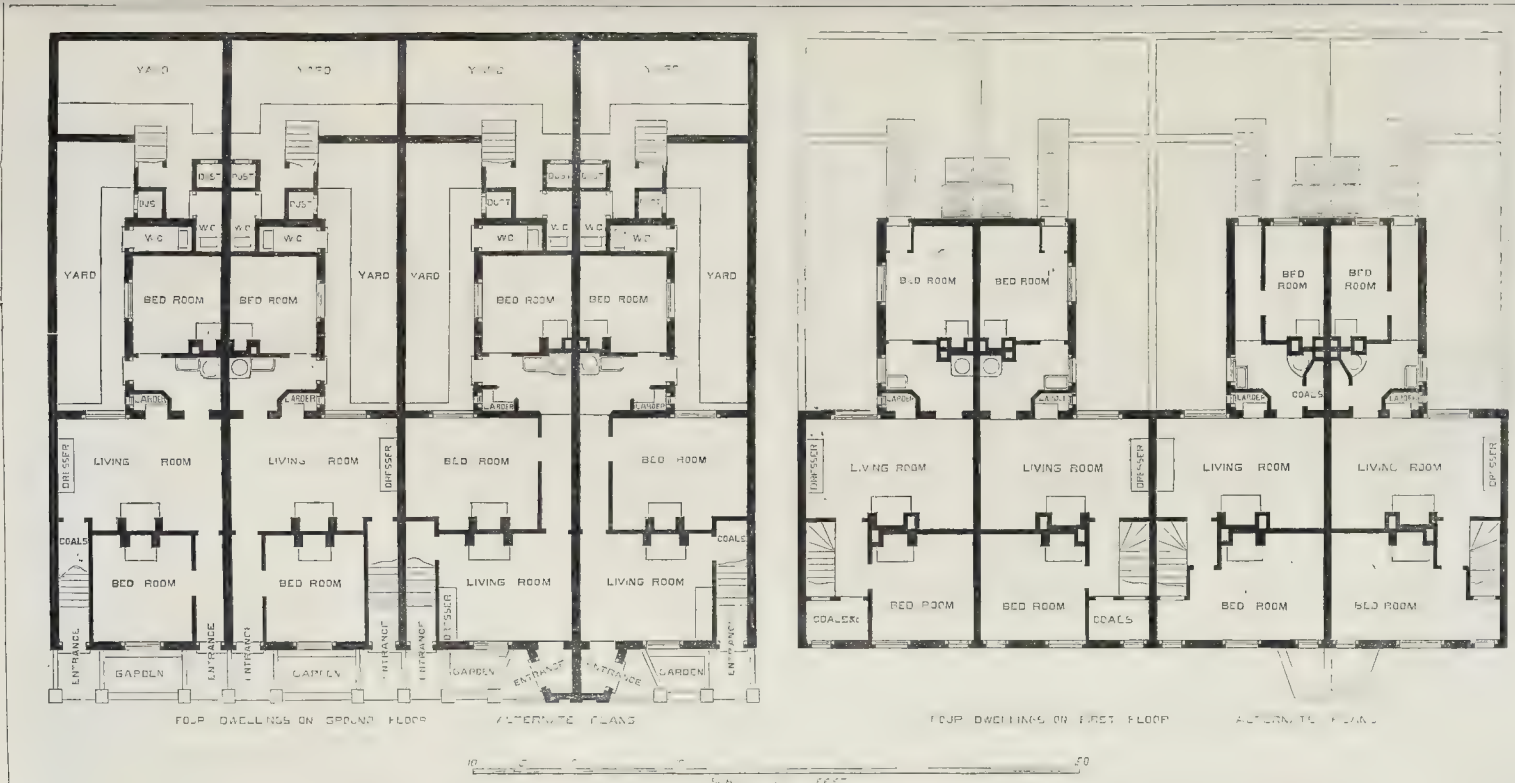
MODERN WOOD-CARVING.—Two Tables by Mr. G. A. Rogers.



SARAGOSSA : CHOIR STALLS OF THE



H OF NUESTRA SEÑORA DEL PILAR.



SEPARATE DWELLINGS v. LODGINGS FOR ARTISANS AND LABOURERS.

The question of overcrowding among the poorer classes, the evils of which we have continuously pointed out, has now for some time received a large amount of public attention. Many societies and companies have been formed for the express purpose of providing healthy and convenient homes for artisans and others whose limited means compel them to make the outlay for rent as small as possible. A negative good has been secured in some instances by the aid of Parliament in clearing away parts of those over-crowded slums which disgrace modern civilisation, and, so far as the great centres of population are concerned, an attempt to solve the question of rebuilding has been made by the erection of large blocks of dwellings in flats. Whether the best mode of building in flats has yet been carried out we will not here consider. The price of land in the centre of large towns renders it almost imperative to build in flats, if artisans' dwellings are to be provided at all in such situations. These blocks of dwellings, however, only deal with a small part of the question. Like other classes, the poorer people have been forced to migrate to the outskirts of the town, and we fear that, in many of the nearer suburbs of London, where street after street of six and eight roomed houses has been erected, overcrowding is not unknown.

With the exception of Kensington and one or two other districts of very limited area, London is now surrounded by a wilderness of small houses of from six to eight rooms, each house being constructed for the convenience of one family. In these houses, whose number is legion, and which are fearfully and wonderfully alike, the great bulk of the artisans, clerks, and warehousemen of the metropolis reside. Any one who has the slightest knowledge of the home-life of these particular classes must be aware of the fact that the rents charged for these small

houses in the suburban districts of London are such as to make it absolutely impossible, in most cases, for artisans, clerks, or warehousemen, to occupy them without sub-letting. The exigencies of the case compel them to let to their own class, and in all probability, in the large majority of cases, these small houses are occupied by two separate families. The very arrangement of such houses, split up as they are into six or eight little rooms, suggests the opportunity of overcrowding. Bedrooms are used as kitchens, and the privacy of each family is at all times liable to be intruded upon by the in-coming or out-going of the other. These facts seem to show that the wants of the wage-classes have not yet been met, so far as dwellings are concerned.

There is no doubt that the average Englishman likes to feel that "his house is his castle," and prefers to have a separate and distinct house; therefore we may rest assured that he does not consent to share it with a strange family until driven to do so by the force of circumstances. That the circumstances are against him in this respect is evident from the experience of the Artisans' Dwellings Company, who, by stringent regulations, endeavoured to prevent sub-letting on their estates at Battersea and Queen's Park, Kilburn. The attempt utterly failed, and at the present time not only is sub-letting permitted, but in the majority of the houses there are two families living. The smallest houses built by the Artisans' Dwellings Company consist of four rooms and a scullery. On the ground-floor:—One, 11 ft. by 9 ft. 7 in.; one, 11 ft. 3 in. by 11 ft. 3 in.; and scullery, 8 ft. by 7 ft. On the first floor:—One, 11 ft. 3 in. by 11 ft. 3 in.; and the other, 14 ft. 3 in. by 9 ft. 7 in. The largest houses built by the company consist of seven rooms and a scullery. On the ground-floor:—Parlour, 12 ft. 9 in. by 11 ft. 1 in., with bay window; living-room, 12 ft. by 11 ft.; kitchen, 9 ft. 6 in. by 9 ft.; and scullery, 8 ft. by 6 ft. On the first-floor:—One, 16 ft. 3 in. by 11 ft. 1 in.; one, 12 ft. by 11 ft.; one, 9 ft. 6 in. by 9 ft.; and one, 9 ft. by 6 ft. These are called by the company fourth and first class houses respectively. The second and third class houses vary slightly between these two. Altogether, the houses may be taken as fairly representative of the several kinds of small houses which have been built to such a large extent round London during the last twenty years. With regard to the first-class houses, they appear to be admirably adapted for overcrowding. The unnecessary multiplication of rooms is found to encourage overcrowding. A large living-room and kitchen combined would be preserved to one family, while if the same were cut into two and divided under the heads of living-room and kitchen, each room would too often be made to contain a separate family. Sub-letting ought decidedly to be at a minimum in the fourth-class houses, where the largest room on the ground-floor is only 11 ft. 3 in. by 11 ft. 3 in.

Mr. Mark H. Judge, who is a director of the Artisans' Dwellings Company, is not of opinion that the houses now being erected by the company are the best possible houses for those who will have to occupy them, and he has designed some which he thinks better. His plans we now publish. These buildings consist of three-roomed dwellings, one dwelling being on the ground floor, and the other on the first-floor. Each dwelling has a separate entrance from the street, a separate scullery, with separate yard and offices. The plans we publish show alternate arrangements. Taking that with the living-room in the front on the ground floor, we have a dwelling on the ground floor consisting of the following rooms:—One living-room, 13 ft. 4 in. by 10 ft. 9 in.; two bedrooms, 13 ft. 6 in. by 10 ft. 9 in., and 9 ft. 9 in. by 8 ft. 9 in.; and scullery, 9 ft. 9 in. by 5 ft. 6 in., with yard and offices. Over this there is a distinct and perfectly private (as far as the occupants of the ground-floor dwelling are concerned) dwelling, with living-room, 16 ft. 9 in. by 10 ft. 9 in.; two bedrooms, 13 ft. 4 in. by 10 ft. 9 in., and 11 ft. 6 in. by 5 ft. 9 in., with scullery about 7 ft. by 6 ft. A flight of stone steps leads down to a yard with offices, which is situated at the back of that belonging to the ground-floor dwelling. A house on this plan, and rooms of the dimensions given above, would occupy the same area as that required to build a first-class house of the Artisans' Dwellings Company. If two families are to live on this area, no doubt it would be to their advantage to have a building constructed on some such plan as that designed by Mr. Judge. Such a dwelling, with its fair-sized living-room, would certainly be preferred by the better class of artisans to the fourth-class house with the front room on the ground floor only 11 ft. by 9 ft. 7 in., and he considers that double the rent of a fourth-class house would be the least commercial value of the double-tenement house, and consequently that the rent would more than pay for the cost of the extra staircase, street-entrance, kitchen-range, copper, sink, &c., even to the extent of allowing for fireproof floors, which, as the Building Act now stands, would be called for on sites within its jurisdiction.

AMERICAN INSTITUTE OF ARCHITECTS.

The thirteenth annual convention of this Institute was held in November last. The president, Mr. Thos. U. Walter, in his address, said:—

There has been considerable architectural activity throughout the country since our last annual convention. It should, however, be remarked that but few buildings having claims to magnificence have been projected, though many grand and costly structures, commenced in former years, have progressed with satisfactory results. Works of more recent date exhibit a freshness in their architectural handling that seems to indicate the advent of a new era in the arts of design. The manifest tendency of architects to break away from the trammels of conventional rules, and to make style subservient to the spirit of the age, indicates a progress in the development of independent thought hitherto unknown. Architecture, both in this country and in Europe, is obviously in a transition state. What may be the result of this new departure remains to be seen. If, however, architects are careful to design their works on true æsthetic principles, and in conformity with the sciences which underlie our art, it is not likely to be regretted that they show a disposition to do their own thinking. Classic forms and classic combinations are everywhere yielding to more ornate compositions, bearing the names of Queen Anne, the Stuarts, the Jacobean, the Italian Renaissance, the style called "Eastlake," which it would be difficult to define, and other fashions of building having no trace whatever of paternity, either ancient or modern. It is, however, greatly to be regretted that a good deal of the architecture of the present day gives but little evidence of conformity with æsthetic principles. We find modern compositions, both in this country and in England, having a decided flavour of the old English Renaissance, or Elizabethan, type of building, but which manifests a lamentable want of vigour in the form of their masses, and an aggregation of trivialities in the making up of details, which awaken emotions in the cultivated mind that are anything but pleasing. The largest licence in architectural composition is undoubtedly admissible, provided it does not degenerate into the production of forms and combinations that do violence to the elements of fitness, beauty, and stability, which, in all cases, are essential to successful building. The first involves the planning of our works so as to fulfil the requirements and promote the comfort and convenience of our employers; while the second, which embraces, in the fullest extent, the philosophy of architectural propriety and taste, tends to results that ennoble and elevate our science; and the third, comprising stability of construction in all its ramifications, insures the safety and durability of our work.

As regards the peculiar claims of domestic architecture on the skill of the profession, they are undoubtedly greater than they have ever been before; and it is only by becoming thoroughly acquainted with the increasing requirements of the age, in reference to buildings intended for domestic purposes, that an architect can keep pace with the progressive elements of his profession. Improved processes for warming and ventilating buildings are continually being developed, and questions relating to drainage, to the disposition of sewer gas, and to other sanitary appliances that are now profoundly occupying scientific minds, should be regarded by the architect as objects of study that demand the most serious attention. It should also be remarked that the requirements of modern civilisation and taste are not to be met without an intelligent knowledge of what is going on in the outside world in relation to improvements in building appliances. We have now a thousand-and-one inventions which furnish us with every conceivable object of usefulness and beauty in the building art, of better design, of better materials, of better workmanship, and at cheaper rates than were ever known before. It is, therefore, to our interest to keep abreast of the times, so as to utilise all modern devices for the perfection of our works.

In relation to the present status of the Institute, and its outlook for the future, I have the satisfaction to say that it is evidently exerting a decided influence for good on the public mind in all matters pertaining to our art, and that architects in general are deriving from it, directly or indirectly, advantages that never could have been realised if the profession had remained without a corporate existence. It therefore becomes our duty to seek to enlarge our field of usefulness by increasing the membership of the Institute until it embraces respectable practitioners in every considerable centre of civilisation throughout the country. It is greatly to be regretted that a large number of respectable, and in many cases distinguished, architects in our most important cities have never yet become members of the Institute; while it is known full well that many who are outside of our organisation are not inferior in professional standing to any who are within it. It would be well, and in no small degree courteous, if steps were taken, by making exceptional modifications in our terms and processes of admission, to receive all such into the membership of the Institute upon their expressing, in writing, a desire to that effect. Whatever promotes the consolidation of the profession tends to lead the public to a higher appreciation of architectural genius, and to inspire confidence in the principles which govern scientific building.

The peculiar relations of architecture to civil life render it desirable to institute popular educational processes by which the public mind may be reached and instructed in the general principles which govern fitness, propriety, and good taste in architectural composition. Unlike other professions, architecture primarily addresses the eye, and its developments are always exposed to view; it is therefore incumbent on us to enlighten the public in reference to its æsthetic elements as well as to the sciences which underlie its practice, and to its historic relations. This may be done by illustrated lectures, by popular articles in our architectural publications, and in scientific and other periodicals. This subject has often been alluded to in the proceedings of the Institute, and in the chapters, but we have never yet taken any concerted steps in this direction. The architectural training pursued in many of our educational institutions is important, as far as it goes, but it fails to reach the general public. I would therefore suggest that regular courses of public lectures on architecture, with proper illustrations, be delivered under the auspices of the several chapters during the winter months by such of the fellows of the Institute as may be willing to perform that service.

The *American Architect*, which reports the proceedings at the convention, says:—

"An order was passed, giving the Board of Trustees power, on the recommendation of their report, to waive the proscribed formalities (not the conditions) of membership, and elect fellows directly at their discretion from among qualified architects; a proposition to form a new grade of non-professional life-members, which was referred to the Trustees; and a resolution directing the Trustees to consider the question of dissolving the present chapter organization, so as to leave the Institute, as it was in its earlier days, a body consisting entirely of members at large, and if, after consulting the chapters, they decided in favour of the change, to report the necessary alterations in the law of the Institute for action at its next convention. This proposition was the outcome of a recommendation in the report of the committee on membership, and was directly suggested, we believe, by symptoms of disaffection on the part of the Chicago and Cincinnati chapters, which had failed to convert the Institute to some desired legislation; the Cincinnati chapter, with no fear of coercion before its eyes, having sealed its devotion to its lost cause by a deliberate secession. A special committee was appointed to collect and present to the next convention records of the architecture of the Colonial period of the United States and of the first fifty years of their independence, and another for

'the consideration of the best solution of the tenement-house problem, especially as it is presented in the city of New York.'"

NEW BUILDINGS IN PARLIAMENT STREET.

ALMOST immediately opposite to the new Home and Colonial Offices in Parliament-street, a prominent block of buildings is in course of erection for Messrs. Waterlow. The buildings, which are in close contiguity to the Whitehall Club, have a frontage to Parliament-street 35 feet in width, and are carried to a height of 66 feet. They are of considerable depth, and will ultimately be carried to Cannon-row, a depth of 90 feet, with a frontage to the last-named thoroughfare, and also a third frontage opposite the side elevation of the Whitehall Club. They contain, including the attic, four stories above the ground-floor, which consists of two shops. The Parliament-street frontage is of Portland stone, with some carving and ornamentation introduced. The ground-floor portion of the elevation is rusticated, and immediately above the shops, at the foot of the first floor, there is a projecting stone balcony, resting on cantilevers, faced with sculptured female figures. Each of the upper floors contains a range of six windows. The piers between the first-floor windows are carved, with suspended fruits and flowers. At the foot of the first-floor windows a balconnette is carried across the face of the elevation. The whole of the building, which contains a ground area of about 2,700 ft., is intended to be occupied by Messrs. Waterlow in connexion with their business.

The architect of the building is Mr. Hall, of Moorgate-street; and the contractor is Mr. Brass, of Old-street. Mr. Hobbs is clerk of the works.

ARCHITECTURE AND PUBLIC IMPROVEMENTS.*

IN recalling the leading events of the past year in the world of architecture and building, one is irresistibly reminded of the question so often discussed by critics,—artistic, architectural, and literary,—as to the real definition of architecture, and the reasonableness of the somewhat arbitrary boundary by which it is separated from engineering. For, if we consider what is the most remarkable building event of the year, unquestionably we must conclude that 1879 will be memorable in the history of such events mainly, as far as this country is concerned, for the commencement of the new Eddystone Lighthouse. The fame of the older structure was so justly great, its name has become so proverbial as one of the most brilliant achievements of English engineering genius, under exceptional difficulties, and the new work promises to be so worthy a successor to the old, that it seems impossible, in speaking nominally of architecture, to put any other building enterprise of the year before this. It is something to be remembered with pride by the countrymen of Smeaton that the edifice which he erected has had to be superseded mainly through the defects of the natural rock on which it was founded, rather than through any weakness in the structure itself; and that the engineering science of the present day, with all its acquired experience, has hardly pretended an ability to make any improvement on the lines and general design of Smeaton's lighthouse, though some practical improvements on the process of construction are being realised. The new lighthouse is much larger than the old one; Smeaton's building had a base of 32 ft. diameter, and carried its light at a height of 72 ft.; the new erection, designed by Mr. J. W. Douglass, has a base of 44 ft., and carries its light at the height of 130 ft. Smeaton's lighthouse was built internally of Portland stone, faced externally with granite blocks shaped from the exceedingly hard rounded granite fragments found on the face of the country in Dartmoor and other similar districts, and called hence "moorstone." The new work is built entirely of granite, with special methods to ensure permanence; the stones in the basement especially being let into each other with a dovetailed projection fitting into a channel in the adjoining stone, both on the side and end, and additionally secured by bolts of a metal specially compounded for the purpose, as having the greatest power to resist oxidation and other chemical deterioration; and the whole, when put together in Portland cement, will probably furnish, as its engineer says, a structure "stronger than the rock itself." The Eddystone Lighthouse has an additional interest in connexion with English building of every kind, as it was owing to the experiments made by Smeaton in order to discover the best cementing agent for his work, that we were first put on the right track in regard to the qualities and power of what is now known as Portland cement, a material which, though long confined to use in engineering work, is likely to become an important ingredient in much of architectural work, as the basis of concrete; a material which is becoming more and more talked about, and already put into use in various forms, as a substitute for brick walling, in which capacity the economical advantages which it offers may even influence architectural decoration by leaving a margin for the introduction of ornament where it would otherwise have been impossible to indulge in anything but plain walls.

If we have to congratulate ourselves on the commencement of one great engineering work, we have also to rejoice over the preservation of another, which combines some of the highest qualities both of architecture and engineering. The additions which had been proposed, and were nearly being carried out, to increase the traffic accommodation on London Bridge, would have involved not only possible injury to the stability of the structure, but certain and absolute disfigurement to what may truly be called one of the noblest architectural works which London possesses; for London Bridge has exactly the qualities which constitute the highest architectural character and expression,—solidity and mass, perfect execution, and a complete suitability of the design to its practical purpose. The proposal to destroy the grand monumental character of this structure by tacking balconies on to it for pedestrians, is a painful example of the indifference which is felt in modern England towards architectural grandeur, when it is supposed to stand in the way of any fancied "practical" advantage; and it is matter for sincere congratulation in the eyes of all those to whom architecture, in its noblest and severest forms, is of any consequence at all, that the House of Lords, by throwing out the Bill of the City corporation for widening the bridge in the manner proposed, have preserved us from the discredit of having deliberately spoiled and disfigured one of our grandest structures, and that the greatest ornament of the Thames is still left intact.

If there be any question raised as to the suitability of including the two engineering works just named under the head of "Architecture," no better justification for it could be found than in the writings and the career of the greatest mind among contemporary architects, whom we have had the misfortune to lose during the past year. Though Eugène Emmanuel Viollet-le-Duc was not an Englishman, his loss is ours as well as that of his countrymen; for, in fact, he belonged not to France but to all Europe. And the whole tendency of Viollet-le-Duc's teaching and practice was in opposition to the academic theory of architecture, which regards the art as merely the application to buildings of certain derived ornamental or decorative features. With Viollet-le-Duc every kind of building, whether it was a mansion, a bridge, or a fortification, was equally "architecture," for, with him, architecture simply meant the best, most scientific, and most expressive form of building. His whole professional life was, in regard to this, more or less of a fight against the Academic party in France, and the system of Government instruction as carried on at the École des Beaux Arts. Of his work in other ways much is already becoming well known in England. His great "Dictionnaire Raisonné de l'Architecture," itself nearly sufficient, as one might suppose, to be the work of a lifetime, is now a necessary element in every good architectural library, and is probably the finest work in illustration of architecture that has ever been published, when we regard the mass of detailed information it contains, the insight into the relations of architecture to the history and social economy of nations, and the admirable and hitherto (in such a work) unequalled character of the illustrations. Yet this great work, though constituting his chief monument, is but a part even of his literary labours. Among his many other critical and illustrative books in relation to his favourite study may be mentioned his "Dictionnaire du Mobilier"; his admirable "Lectures on Architecture," two volumes of which have already been translated into English, and which contain some of the most profoundly suggestive criticisms in regard to the very foundation of art and of artistic perception; his "History of a Fortress," in which the most minute information in regard to the successive stages of military architecture is conveyed in a manner which has all the interest of a romance; his "Essai sur l'Architecture Militaire;" and his "History of a House," in which the philosophy of house architecture, practical and æsthetic, is brought into so simple and readable a form as to be clear to every comprehension, and which, it may be added, was written merely as an evening's amusement while making a survey for the French Government in an out-of-the-way district. His practical work included the restoration of some of the most interesting and historic buildings of France, among which may be mentioned Notre Dame at Paris, and the Abbey Church of St. Denis; and subsequently, he restored the fortifications of Carcassonne, the Cathedrals of Laon and Amiens, Notre Dame de Chalons-sur-Marne, and the Château of Pierrefonds; the last-named building being one of the finest and most interesting of the Mediæval châteaux of France, in which Viollet-le-Duc took especial interest, and arrived at nothing less than the production for modern spectators of a complete reconstitution of the feudal dwelling in the days of its greatest splendour,—a task which his unequalled knowledge of French Mediæval architecture and furniture enabled him to accomplish as probably no one else of his time could. Subsequently he was intrusted with the supervision of the works for the additional fortification of Paris under the Republic, thus vindicating in his own person his theory as to the unity of all classes of building and construction under the general head of architecture. His knowledge seemed to be almost encyclopædic; and one of the men who worked under him was heard to say of him, "He knows everythiog, from geology to cookery, and it all comes like music from his lips." The last scheme in which he had interested himself was the effort to bring about the foundation of an opera-house for the people, in order to bring the lyric drama within the reach of all. With all this varied ability and power, he was a man of the most simple and unassuming character, working hard early and late in his favourite craft; ready to impart his knowledge to all who sought it, and beloved and respected by all who had dealings with him; such a man as the architectural world will not, it is to be feared, see the like of again for some time to come.

The great historic Abbey Church of St. Albans has continued during this year to be the subject of hot discussion in regard to the treatment of the building by those under whose care it is for the time officially placed. Last year the walls of the structure were lifted into the perpendicular from which they had dangerously declined, a proceeding about the advantage of which there could be no difference of opinion; but dire was the outcry when it became known that the Restoration Committee intended to place a new roof on the nave, and sensible people could derive little satisfaction either way from a contest in which both sides were more or less wrong, and seemed influenced less by interest in a great building than by a wish to annoy their opponents. The Society for the Protection of Ancient Buildings, whose members seem to be actuated rather by sentiment than by any knowledge of facts, declared that the existing roof was perfectly good, which they had no means of knowing even if it had been the case; the Restoration Committee decided, quite rightly and on sufficient advice, that the roof was in such a condition that a new one was indispensable; but they then unfortunately adopted a theory that it was their duty to replace the low-pitched roof by a high-pitched one, such as would very likely have been first placed on the building when the walls were erected, but of the former existence of which there was no trace and no proof. They have, it is to be regretted, carried their point, and have thus altered the proportion and the outline of a building which has been for centuries a part of the landscape in which it stands, and breaking through all the sentiment and the associations of the place for an object even the architectural value of which is exceedingly doubtful. The moral connected with the matter is that if the mass of the public interested themselves more in such subjects, and were not so deplorably ignorant and indifferent on the subject of archi-

* From the "Companion to the Almanac for 1880," The Company of Stationers, Ludgate-hill.

tecture, both ancient and modern, there would be a healthy public opinion which might prevent the indulgence of sentimentalities and mistakes such as these; but the public and the press, as a rule, neither knowing nor caring anything about such things, the treatment of buildings which form a part of the history of the nation is thus left to the pleasure of a few irresponsible persons, who may do an entirely irreparable injury to it, the extent of which will only be recognised when it is too late.

It is important that every opportunity, therefore, should be taken of endeavouring to promote increased interest in such subjects in the minds of those who are not specially or professedly concerned in architecture and archæology, and who may therefore exercise in such matters what may be called the judgment of common sense, uninfluenced by professional feeling or archæological sentiment, which latter quality is not infrequently displayed in a somewhat unreasonable manner, and without sufficient consideration for the practical wants of the present day. There is likely to be increased necessity for the exercise of public criticism in regard to the ancient buildings of London, as the necessity for the improvements in thoroughfare accommodation, and the changing demands of commerce, lead inevitably to the removal of such old buildings as are manifestly useless to the modern community, and occupy ground the commercial value of which is enormous. This subject comes, in fact, into the history of the architectural movement of the year, as the question of the treatment of some of the City churches has been much agitated, and is likely to become an increasing source of contention between archæologists and men of business. The *Builder*, in view of this discussion, republished in its issue for the 3rd of May a former engraving representing "the threatened churches of London," which included some of the best and most characteristic of the works of Wren. Some of these it will probably be impossible ultimately to save, except at the cost of absolute neglect of important present interests; but while there is no doubt that those who are most strongly interested in these buildings are apt entirely to overlook the claims of existing society, it must, on the other hand, be plainly said that the tone and spirit in which such works are regarded by the commercial or City mind exhibits an indifference to the picturesque and historic interest of these old buildings, and a preference for £. s. d. over every other consideration, which is deplorable. A more general and enlightened public interest in the question would be the best check on archæological sentimentalism, on the one hand, and commercial indifference on the other hand; and each of our readers may do something to promote such a balance of public criticism when the time comes for exercising it.

Reference to the works of Wren naturally brings to mind the fact that some special interest has been excited during the present year in connexion with his greatest work, the Metropolitan Cathedral, which is, fortunately, under the charge of an architectural custodian (Mr. Penrose, "the surveyor to the fabric"), who combines, in a rare degree, archæological enthusiasm with practical knowledge and judgment. Investigations carried on under his direction have led to the discovery of a portion of the foundations of the cloister and chapter-house of the Mediæval cathedral which perished in the Great Fire, and these remains have seemed to point, among other things, to the interesting fact that the choir of the old cathedral was deflected from the line of axis of the nave, inclining towards the north-east, in the manner which is found in several Mediæval cathedrals and churches, and which is believed to have had symbolical reference to the inclination of the head of the Saviour in Mediæval representations of the Crucifixion. What is, however, of much more direct and certain historical interest to us is the discovery, by Mr. Penrose, of the foundations of St. Paul's Cross, an erection which was connected with so much of the political and social history of England, in one of its most stirring and eventful periods, and the site of which must be matter of such interesting associations to every Englishman. Both the pavement of the old cathedral and the base of the cross were considerably below the present ground-level of St. Paul's Churchyard (illustrating the constant tendency to a raising of the ground-level in large cities, owing to the accumulation of *débris*), and though the actual remains of the structure could not be permanently exposed to view without fear of their disintegration by weather, as well as inconvenient interference with the ground-level, the site of the cross is now marked on the land at the north-east angle of the cathedral, which has also been laid out and planted as a small garden, open to the public, thus greatly improving the appearance and accessories of the building from this point of view, and giving a new historic interest to the locality. The crypt of the cathedral has also been cleared from the lumber and dust of generations, and thrown open to the public; the eastern portion, on the site of the ancient chapel of St. Faith, arranged as a small church for daily early morning service, and some of the old monuments rescued from the original cathedral have been arranged here. These and other interesting details were communicated by Mr. Penrose, early in the year, to a meeting of the Institute of Architects, in a paper which will be found in their Transactions; not, however, including the particulars about the remains of St. Paul's Cross, which were not discovered till a few months later.

One of the most interesting new architectural schemes of the year has been that which has resulted from the determination of the Trustees of the City of London School to yield at last to the pressure of circumstances, and remove their important establishment from the narrow and cramped site on which it has so long stood, to a new building on a roomy and airy situation on the Thames Embankment. This resolution led to an architectural competition, in which, as in so many similar cases, a great amount of admirable work was thrown away, and an exceptional amount of practical and artistic talent exhibited. The committee appointed to consider the designs went into the subject with unusual minuteness, and have selected a design which we must conclude affords them the accommodation they look for in what they regard as the best and most convenient manner. Unfortunately, however, they cannot be congratulated on having chosen a design which architecturally will be likely to be considered worthy of the site; and though this is a secondary consideration in comparison with suitability of plan, it is certainly matter for much regret that there seems little probability of the Thames Embankment, the river frontage of which affords such a splendid site for the noblest architecture, being occupied by buildings really worthy of the situation. The architectural history of this great thoroughfare, so far, is not encouraging. It has been occupied at one end by a hotel of the most commonplace description architecturally, at the other end by a half-finished building, the proposed, but now abandoned,* opera-house, which, had it ever been completed, would have been no ornament to the site, and totally unworthy to stand under the shadow of Barry's Clock Tower; and now we have the promise of another large building, which will permanently occupy a considerable portion of the frontage with architecture as good as anything else that is there, but apparently not much better. It is to be hoped that future efforts at the architectural embellishment of the Embankment will lead to more fortunate results than this promises. The building is not, indeed, commenced yet, but it is understood that the selection of the design is finally determined on, and as the designs submitted were open for public inspection, it was possible to judge both of what was done and of what might have been done."

Civil and Mechanical Engineers' Society. The following is the programme of papers to be read before this Society during Session 1879–80:—Dec. 18, 1879, opening address by the president, Mr. W. C. Street; January 8 and 22, 1880, "The Bridges of the Thames at London," by Mr. A. T. Walmisley; Feb. 5, "Corn Mills," by Mr. H. Ellis Hill; Feb. 19, "The Fracture of Cast Iron," by Mr. James Love; March 4, "The Beneficial Action of Mind on Matter," by Mr. R. Harkness Twigg; March 18, "A Railway to India," by Mr. B. Haughton; April 8, "Teredo and other Insects destructive to Wood in Marine Works," by Mr. Thomas Cole; April 22, "Roof Construction in the Middle Ages," by Mr. Charles H. Rew; May 6, "A Small Colliery in North Wales," by Mr. W. F. Butler; and May 20, "Cement Manufacture," by Mr. C. H. Driver. The annual meeting will be held on the 3rd of June.

* It is now stated that definite arrangements have been made for completing this building. Ed. B.

THE IMPERIAL DOCKYARD, DANZIG.

To the two important dockyards which the German Empire already possesses,—one at Kiel, in the Baltic, the other at Wilhelmshaven, opening into the German Ocean,—a third will shortly be added. The works at the imperial dockyard at Danzig have now progressed so far as to warrant the expectation of the docks being opened in the spring of the coming year. The dockyard comprises an iron floating-dock, the dock-basin, and three radial slips in connexion with the latter. The floating-dock has a length of 325 ft. in the centre line, and a breadth of 112 ft., by a height of 48 ft. 6 in., of which 12 ft. 6 in. are absorbed by the pontoon. At its completion, it will be permanently stationed in the Vistula, by the side of the dock-gate. On docking a ship, the dock is towed to a deeper part of the river and partly immersed by filling fifty of its sixty-five water-tight compartments. The vessel to be docked is then hauled into the floating-dock, anchored to the cradle at the bottom of the dock, and the latter raised again by pumping the water out of the fifty compartments. The pumping out of the water is effected in four hours by two two-cylinder engines, driving four centrifugal pumps. The steam of six atmospheres required for feeding the engines is supplied by four boilers. The dock has a floating power of 6,600 tons, and is consequently calculated to raise any ship, fully equipped, of the German navy, the *König Wilhelm* alone excepted. The entire material required for the dock was furnished by German firms; its whole weight, when completely fitted up, will be 5,000 tons. In case the repairs of the docked vessel are of a smaller nature, such as cleaning and painting of a ship's bottom, for instance, they may be executed in the floating-dock. But should the work required to be done be heavy, or the repairs necessitate the hauling of the ship ashore, the floating-dock, with the vessel inside, is towed into the dock-basin.

The latter is constructed close to the bank of the Vistula, in the form of a trapeze, the shortest side of which, its head, of a breadth of 122 ft., is open towards the river, and may be closed, perfectly water-tight, by iron pontoons. The two sides of the trapeze to the right and left of the dock-head are each 316 ft. long. The end opposite to the head is rounded off, and has a length of 240 ft. in the segment. The greatest length of the basin from the head to the rounded end is 333 feet, from the latter of which the horizontal slips radiate. The bottom of the dock-basin is formed of 7 ft. 6 in. of concrete, upon which follows a course of brickwork, covered again by granite slabs. The enclosure-walls are 19 ft. 6 in. high, and constructed of brickwork, faced also with granite. The depth of water in the dock-basin, at an average water-level of the Vistula, is 14 ft., which is sufficient for all requirements, as the iron floating-dock with its heaviest burden draws only 13 ft. of water. When the floating-dock has been anchored opposite to the horizontal slip to be used for repairing the vessel, it is lowered by letting in water until it rests upon the granite bed of the dock-basin, and thus the required resistance is supplied for hauling the ship off the floating-dock and on to the slip. The dock-basin is closed, as a rule, towards the river only when repairs on the floating-dock itself become necessary. In that case the basin, after the dock has been towed in, is closed at the head by the insertion of the above-mentioned pontoons, and then pumped dry by two centrifugal pumps, each capable of raising 3,300 gallons per minute.

Of the three horizontal slips, which, as already remarked, radiate towards the interior and rounded-off end of the dock-basin, the centre one has a slipway of a length of 344 ft. 6 in., by a width of 66 ft., and a supporting power up to 7,000 tons. The length of each of the two side slips is 315 ft., their width 59 ft., and their supporting power 4,000 tons each. The centre slip, therefore, will take any ironclad of the German navy, with the exception of the *König Wilhelm*, while the two side slips are intended solely for unarmoured vessels. The hauling up of the ships on to the slips, and the hauling off into the iron floating dock after repair, will be effected by means of cast-steel chains, by hydraulic machines, with five pressure cylinders and a recoil cylinder, of a traction-power of 1,800 tons. The pumps which supply this power are worked by a locomotive steam-engine, of 90-horse power, which is used also for working the two centrifugal pumps serving for emptying the dock-basin.

The extent of the labour required for constructing these vast works may be estimated by the following data. In excavating the pit for the dock-basin, over 3,000,000 cubic feet of soil had to removed; for enclosing it, 26,400 square feet of pile-planking and 6,358 cubic feet of fir timber were used. For laying down the concrete bed of the dock-basin, nearly 580,000 cubic feet of broken stones, 5,438 tons of ground trass, 160,500 cubic feet of unslaked lime, 2,400 tons of Portland cement, and 187,700 cubic feet of sand, were required. The brickwork for the enclosure-walls, &c., consumed 1,800 millions of bricks and 5,500 tons of Portland cement. For covering the bed and the brickwork, 53,000 cubic feet of ashlar, granite, and sandstone, and 1,800 tons of Portland cement, were used. For the foundation of the slips, 5,000 pieces of round timber, each 66 ft. long, and for constructing the slipways 2,000,000 bricks, 8,000 tons of Portland cement, 105,000 cubic feet of sand, and 24,700 cubic feet of granite slabs, were required. All this material is native produce, with the exception of the last-mentioned 24,700 cubic feet of granite slabs, which have been imported from Sweden.

OBITUARY.

THE Düsseldorf school of painting has just lost two of its disciples prominent in their respective lines. On December 1st died FRANZ Ittenbach, at the age of sixty-seven. He belonged to the Roman Catholic church painters, who form a characteristic group in the older Düsseldorf school, and was one of its best-known and veteran members. His chief works are altar-pieces, single figures being his principal productions; but there are also existing some of his saints' groups and compositions representing scenes from Bible history.

A much more widely-known painter of the Dusseldorf school was Karl Hübner, who died on December 5th, aged sixty-six. He was a genre and landscape painter, whose works enjoy a wide reputation. Being extremely active and versatile, and using the brush with facility, the number of works left behind by him is very large. He created an enormous sensation in 1844 by one of his best and largest paintings, "Silesian Weavers." In it he portrayed the sufferings of the weavers (Upper Silesia had then passed through one of those periodical famines one of which has just now set in again) and the harshness of Silesian employers, the time chosen being pay-day. This work brought him into public prominence much against his will, and he was looked upon as a democratic painter. He, however, made use of this current of public opinion, and soon several other important productions of his hand saw the light, of which "The Game Laws," "The Emigrants," "The Distrain," are perhaps the best. His popularity was not lasting, especially as with age his productions became fewer, but he was widely esteemed to the end for his generosity and liberality towards his brother artists.

The death is also announced of Knud Baade, at Munich, on November 24th, at the age of seventy-two. Baade was a Norwegian by birth, but attached himself early in life to the Munich school. He was a landscape and marine painter, and very productive. He was settled at Munich over forty years.

Artisans' Dwellings in Manchester.—A correspondent of the *Manchester Guardian* writes, under date the 22nd ult.:—"I am one of a small band of friends, who joined together, early last winter, for the purpose of beginning, on a very small scale, a work in Manchester, such as Miss Octavia Hill has so long and so successfully carried on in London. The very gist of Miss Hill's scheme is personal systematic inspection. In the same manner, we proposed to become the landlords of as many houses as we could afford to buy,—say one small block at first,—to put them into decent sanitary repair, to let them at rents duly proportioned to our outlay upon them, and to depute one or more of our own number to visit and inspect regularly once a week. The abnormal condition of things in Manchester last winter prevented the scheme being immediately carried out. But it is only in abeyance at the present moment. We but wait to see whether the times are favourable for beginning, not wishing to injure our work by making a false start."

PROPOSED NEW BUILDINGS ON THE THAMES EMBANKMENT.

THE CITY OF LONDON SCHOOL.

At the meeting of the Court of Common Council on the 11th inst., the City Lands Committee presented a report recommending the granting to the Governors of Sion College, for the erection of a new hall, library, and offices, a lease of a piece of ground on the Victoria Embankment, at 1,265*l.* per annum, with the option of purchasing the freehold at twenty-five years' purchase. The site proposed to be leased to the college had a frontage to the embankment of 75 ft., and a depth of 130 ft., and abutted on the new street it was proposed should be formed from the Embankment to Temple-street. Another report on this subject was also submitted by the City Lands Committee, who, on the petition of the Grocers' Company, asked for authority to negotiate for granting them a lease of a piece of land with a frontage of not less than 140 ft. on the Victoria Embankment, for the purpose of erecting a new hall and offices for their corporate business, with the option of purchasing the freehold. The report pointed out that the entire frontage owned by the Corporation on the Embankment was 650 ft. Of this they were in negotiation, in respect to 270 ft., with the Government for the erection of the new Royal Mint, and they proposed, with the Court's consent, to lease 75 ft. to the Sion College authorities, at a rent of 1,265*l.* per annum, with option of purchasing the freehold for 31,625*l.* or twenty-five years' purchase. Another range of 193 ft. was proposed to be devoted to the purpose of building the new City of London School; but it is thought that 135 ft., or thereabouts, would be amply sufficient. Under these circumstances the committee asked leave to continue their negotiations with the Grocers' Company.

Mr. G. Shaw, in proposing the adoption of the first report, having reference to Sion College, said that on the 27th of February of this year the committee were instructed to negotiate with the Government for the sale of a piece of land on the Embankment as a site for a new Mint, and those negotiations were now nearly complete, and the principal reason why the committee had not hurried on those negotiations was because the committee wanted some basis upon which to ascertain the market value of the site. The Government knew the price which the Corporation had paid, and looked at the question from that point of view, but the committee took another view, and did not agree with them. The original plan presented to and agreed upon by the Court showed that the frontage of the City of London School site was 193 ft., that of Sion College, 75 ft., leaving, after allowing for the Mint, 73 ft. or 74 ft. to deal with. In the negotiations with the Grocers' Company it was found that they would not be able to come to terms unless some alterations were made, and he (the speaker) then directed that the chairman of the City of London School Committee should be asked to attend a meeting of the City Lands Committee, so that they might agree upon a plan which would suit all parties. Although the frontage of the school would be curtailed, the same amount of area would be retained, and the playgrounds would be as large as was provided by the plans sanctioned by the Court. By the changing of the axis of the hall to north and south they would save about 40 ft., and another alteration would save 27 ft. more. By the modification of the appurtenances and the rooms in front they could save more space, and in these ways a saving of 72 ft. of frontage could be effected without the school being in any way injured. Besides, he believed the change would be an improvement in the façade of the building.

Mr. Murrell thought the Court was entitled to some further information as to the value of the particular site it was proposed to allot to Sion College. They were asked to let that choice site, with a large frontage and a small depth, at only 2s. 7d. per foot. If the land was thrown into the market he had no doubt that a very much larger price would be obtained.

Mr. Felton said he rose with reluctance to oppose the report. From the manner in which the subject had been stated to the Court it would appear that he and his colleagues were enemies to the interests of the Corporation. In 1877 it was determined to remove the school from its present site to the Embankment, and the architect was asked to prepare plans for a building which would cost about 50,000*l.* or 60,000*l.* Two plans were prepared, but the committee did not entertain either of them, on account of the great expenditure that would be involved in carrying them out. In December, 1878, having obtained the land on the Embankment, the City Lands Committee were applied to to stake out the site. The School Committee did not ask for any specific number of feet for a frontage, but left the matter entirely in the hands of the City Lands Committee. In reply, the City Lands Committee stated that the staking out of the ground was a matter entirely in the hands of the City of London School Committee. The School Committee then gave instructions to the Architect to stake out the ground, and that was performed by Mr. Murray, of the City Architect's office. Having had the land staked out, the committee took steps to obtain plans and designs for the new school, and from the particulars supplied to the competing architects the new building was to have a frontage of 192 ft., a side frontage of 327 ft., and a back of 200 ft. In accordance with these particulars plans were prepared. The plan and design which was ultimately accepted by the Corporation showed a frontage of 192 ft. 3 in. The evidence of Mr. Vigers, upon which the Act of Parliament had been obtained, showed that the area of the site was 1½ acre and that the frontage was 192 ft. 3 in. He (the speaker) maintained that if they now altered these plans they had obtained the Act of Parliament by false representations. There had been fifty-three designs sent in for the school, and he asked was it to go forth that they had been engaged in a solemn farce in dealing with the question by which the valuable time and ability of so many gentlemen had been wasted?

Mr. De Keyser said that the Mint would disfigure the Embankment, and by the appropriation of the 75-ft. frontage for Sion College the Corporation would lose the adequate utilisation of a quantity of back land. He trusted the Court would not entertain the proposal of the committee.

Mr. Phillips asked if the plans of the school would have to be remodelled if the report were agreed to?

Mr. Shaw.—There will be no difficulty in the matter; but the City Lands Committee have suggested that the firm of architects whose plans were adopted should put themselves in communication with us in the matter.

Mr. Beck said he would not give much for the character of an architect who said that he could not modify his plans to a reduced frontage. It was only a question of turning round the large hall. If the frontage were reduced, it would make the building more handsome than it was shown to be on the plans.

In reply to a question put to him as to the value of the land,

The Architect (Mr. Horace Jones) said,—I believe the actual sum will figure out to something like 2s. 7½d. per foot, but it is not let in this way; that is not the basis of the valuation. I do not consider 2s. 7½d. a particularly low price, or I should not have recommended the City Lands Committee to have accepted it. There are some portions taken at a higher price than 2s. 7½d., while others have been taken at a lower price.

Mr. Shaw mentioned that portions could not be built on, owing to the railway passing underneath.

After considerable discussion, both reports were adopted.

Salting Roads in Frosty Weather.—At the meeting of the Marylebone Vestry on the 13th inst., Mr. Sedgwick moved that the salting of roads and pavements during frosty weather throughout the parish be strictly prohibited by the Vestry, as the mixing of snow and salt produced a liquefaction that lowered the temperature greatly below freezing-point. Animals and men having to wade through this briny slush suffered, to the very great injury of their health. Dr. Macgregor Croft seconded the motion. Mr. Stevens opposed, saying that the General Omnibus Company were not foolish enough to injure their horses by having the roads salted. Mr. Hallam, as to the snow and salt being so disastrous, asked, Did ever any one know salt water to freeze? He had mixed snow and salt, but after thirty-six hours there was no frost. He had heated water to 180° Fahr., and it froze in one thirty-sixth part of the time when exposed. The surveyor said the omnibus routes were salted judiciously. The motion was lost.

ARTISTS AND THE HUMAN FIGURE.

ROYAL SCOTTISH ACADEMY.

On the 10th inst., in the Life School of the Royal Scottish Academy, Professor Turner, M.B., Honorary Professor of Anatomy to the Academy, gave the first of two demonstrations from the living subject.

Professor Turner said that when appointed to the honorary Professorship of Anatomy to the Academy, he thought that he ought to do something to show that he esteemed very highly that distinction. He turned over in his mind how this might most efficiently be done; and it seemed there were two ways,—either to prepare a series of formal discourses on the bearings of anatomy on an artistic education, or to give to the students a series of demonstrations on the living model, to point out the meaning of various marks appearing on the surface of the body, and show how those marks were caused by the construction of the inward parts. He did not attach an overweening importance to the application of the anatomy of the inward parts of the body in the education of artists; because, from all they knew of the artistic education of the ancient Greeks, who were the most perfect delineators of the human form in marble that the world ever saw, there was no reason to believe that they either had opportunity of making dissections, or of using dissections made by others. They seemed to have acquired their marvellous power of representing the human form, partly from the fact that they were well supplied with admirably-moulded forms, and partly from their possessing wonderful manipulative skill and artistic aptitude. But, while they must give to the ancient Greeks the greatest credit for artistic aptitude and manipulative skill, they could not fail to recognise that, if an artist had some knowledge of that which lay beneath the skin, knew the forms and position of the bones, and the forms and position of the principal muscles, more especially those that lay close to the skin, he would understand what it was that caused the various surface markings he had to depict, either in painting or in sculpture, and would possess greater readiness in bringing out the characteristic forms of the surface than when entirely ignorant of those matters. The professor then proceeded, with the help of a skeleton and a set of anatomical diagrams, and with constant reference to a living model, to show how the arrangement of bones and muscles determined the external configuration of the shoulder and arm.

BUDDHIST REMAINS IN THE JELLALABAD VALLEY.

SOCIETY OF ARTS.

Mr. William Simpson, the accomplished artist and antiquary, who has travelled we do not know how many times round the world for the *Illustrated London News*,—keeping his note-book, no less than his sketch-book, always open,—on the 10th inst. read a paper (embodying the results of some recent explorations in the Jellalabad Valley) before the Society of Arts. As newspaper readers will know, for the paper has been fully reported, he was quartered for some months last winter in the valley with the force under General Sir Samuel Browne; he visited most of the remains, and made sketches of them; and he made a number of excavations under the late Sir Louis Cavagnari. We had, he observed, known of Buddhist remains in the valley from the date of the first Afghan war. After summing up our former knowledge, Mr. Simpson said the Buddhist remains of the Jellalabad Valley were little more than mounds. Here and there the crumbling remains of a stupa might be seen, and fragments of walls could be traced in the heaps. The immense number of these mounds astonished him. As they knew that these Buddhist establishments were monasteries, the extent of the remains seemed to him to indicate in the past a population of ascetics alone far greater than the whole population of the present day. That pointed to another fact of importance,—there must have been more cultivation of the land in the Buddhist period than now. Large plains of stones and dust which were in all probability bearing crops in former times have been found. At the present day there was no art or architecture. The houses were built of mud; the walls of Jellallabad were formed of that material only, and the gates were wooden structures of the rudest kind. In the Buddhist period, on the contrary, the country must have been under a high state of civilisation, where considerable wealth abounded, and art was cultivated. The vestiges of that art still remaining showed that the religious structures of the time were large and important. A style of architecture was followed in which sculpture was largely practised, and in which the effect was heightened by the use of colour and gold. The structures connected with the practice of the Buddhist faith were viharas, or monasteries,—places in which each monk had his cell, and with buildings for worship. One prominent form of the ritual was connected with structures which were now known as "topes," or "stupas." The origin of these monuments was thus explained:—At an early period the simple grave heap was, in cases of important persons, increased into a large mound or barrow. Following this, stones were added, and the heap became a cairn. Later still the cairn took a structural form. In India, under Buddhism, that development assumed the form of the tope. It would thus be seen that the tope was essentially a tomb. That the Seven-terraced Tower of the Euphrates Valley and the Pyramid of the Nile were only varieties of the same growth was highly probable; but the connecting-links of evidence on the subject were as yet sadly deficient. We were equally destitute of the connecting-links between the Buddhist tope and the cairn. If any vestiges could be found in India to tell them what form the heap of stones had assumed towards the Buddhist period, it would be a discovery of some importance. At Bamian, 100 miles to the north of Cabul, there was a city of caverns, and there were caves in other places. These were now the winter homes of nomadic tribes. There were traces of decorations and of Buddha and Buddhist saints on the plastered interior. A strangely composite character belonged to the architecture of the Buddhist period in Afghanistan. It had received a capital from Persia; a Corinthian capital, with frieze and mouldings, from Greece; and an arch from India. It was at Venice that the architecture of Western Europe met and combined with the Eastern style of Byzantium. Afghanistan, although widely separated and vastly different in many respects, had yet some points of resemblance to the city on the sea. It was a trade route, and also a gate of conquest. These conditions brought together the art of Western with that of Eastern Asia, and combined them into one. An interesting description was given of the excavations at Jellalabad.

BUILDINGS FOR POOR-LAW ADMINISTRATION.

Chelsea.—The Chelsea Board of Guardians have under consideration proposals, involving an expenditure of 20,000*l.*, for the enlargement of the workhouse and infirmary, at the instigation of the Local Government Board. The Guardians do not mean to incur so great an outlay if they can avoid it.

Lambeth.—The workhouse and infirmary at Lambeth, both of them extensive establishments, and only erected within the last few years, are reported to be very full,—indeed, over-crowded,—and the Local Government Board has been urging the Guardians to re-open the old workhouse in Princes-road. The Guardians are reluctant to do so, preferring to keep their establishments concentrated at Kennington. It is proposed to provide additional accommodation there, if possible, for 500 persons. If this cannot be done, it is suggested as an alternative to build a new workhouse at Norwood for the aged inmates. In either case the Guardians do not propose to use the old workhouse in Princes-road, except temporarily, on the ground of its unsuitability. The sale of this property would, they urge, go far to pay for the new accommodation required.

A Large Laundry.—The first laundry of the London and Provincial Steam Laundry Company is now in course of erection at Battersea Park, and will be completed about Midsummer next. The building, which, its projectors say, will be the largest of its kind in the world, will be fitted with machinery of the most complete description, and will be lighted by the electric light. Messrs. Scrivener & Co., of Alpha-road, Regent's Park, are the contractors, and Mr. Ernest Turner, of Regent-street, is the architect.

THE FALL OF HOUSES IN TOTTENHAM-COURT-ROAD.*

The inquest on the bodies of John George Martin and William Viles, who were killed by the fall of houses in Tottenham-court-road on the 20th ult., was resumed and concluded on the 12th inst. Mr. Grain, barrister, represented the District Surveyors' Association, Mr. F. T. Peacock appearing for Mr. Lewis, the owner of the property.

Michael Doody, one of the men injured by the fall of the houses, said,—I was on the first floor of No. 171 when the houses fell. Martin was also there cutting away the chimney-breasts. I was knocked down and injured, and brought to this hospital. I cannot account for the accident, but I had heard it remarked that the place was not very safe.

By Mr. Grain.—The bressummer was a little rotten at the corner, and it was covered over with cement or something. It rested on two piers, the "scaley" part resting on the part now standing. I suppose it was covered to hide it from the surveyor. There was some roughness, and Mr. Shields, the foreman, gave instructions for it to be covered over.

Mr. Spencer Chadwick said,—I am architect to the London and country estates of the Marquis of Salisbury. I have examined the fallen premises in Tottenham-court-road, and have formed an opinion as to the cause of the accident. I think that the lowering of the floor displaced the brickwork in front and caused the front wall to fall. I do not think the district surveyor is in any way responsible. The district surveyor has no power to stop the progress of the works; he has only to see that the Building Act is carried out. A magistrate's order is the only authority for stopping the works. Before a district surveyor can take any action the matter must go before a magistrate, who has power to inflict a fine if the structure is proved to be dangerous,—a point frequently not decided until after several remands.

Mr. Alfred Shields, the contractor for the works, recalled, said,—I received instructions from the leaseholder, Mr. Lewis, to alter the first plans. I did not refer the matter to the architect. We had finished the floor on the Saturday, and on the Monday I received instructions from Mr. Lewis to lower the floor in the letter produced:—

"23, Ampthill-square, Saturday night,
November 15, 1879.

Mr. Shields,—Dear Sir,—I find there is an awful mistake in the rooms of the first-floor, looking over the drawings this evening; a copy having been given to the superior landlord, it must be immediately rectified. I very much regret this mistake, but I consider you can lower the floors without interfering with the front girders by putting joists to take the floors and lowering them down again bodily. I shall meet you at nine on Monday morning.

Yours faithfully, Lewis Lewis."

By Mr. Grain.—I proceeded to act upon that authority. I did not consider there was any danger in making the alterations. I did not consult the architect, as I did not know his address. I was not aware that a pillar had come away the week previously to the accident. I was on the works at the time when the slip in the brickwork occurred.

Mr. Shields, sen., recalled.—As foreman of the works for my son, I was aware that there was a disposition of the pier carrying the girder to yield, and I gave instructions for the men to put it right during their dinner-hour. It was pinned up with slate and cement. I did not tell my son, as I thought so little about it. It came away from the party-wall. My son saw what had been done. I did not inform either the architect or district surveyor. There was a portion of the wooden bressummer, the end portion, a little "scaley"; it was covered over by my directions. It is standing now.

By Mr. Grain.—Mr. Wallen, the district surveyor, told me to put in raking shores, but I did not do so because I saw no necessity. The work was complete when he told me, back and front. No story-posts were specified by the architect. I put a temporary story-post against the pier. It was put up by my direction by the man who is killed.

Mr. George James Thomas, examined.—I am chief clerk in the Dangerous Structures Department of the Metropolitan Board of Works, and notices of all dangerous structures received by the Board pass through my hands. I received no notice that these premises in Tottenham-court-road were dangerous. I have considerable experience in these matters. The notice gene-

* See pp. 1325, 1356, *ante*.

rally comes from the builders or contractors, and undoubtedly they are responsible. The district surveyor merely surveys and gives instructions as to what shall be done, but has no power to stop works. He becomes, in fact, the surveyor of the Metropolitan Board of Works, by whom he is appointed. [The witness put in a variety of forms of notices which it is necessary to give for various purposes in carrying out alterations of buildings.]

The Coroner (Dr. Hardwicke) having summed up the evidence,

The jury, after nearly an hour's deliberation, returned into court and handed to the Coroner the following as their verdict:—

"That the falling of the houses Nos. 171 and 173, Tottenham-court-road, was caused by the culpable negligence of the builder, Alfred Shields, and his foreman, James Shields, in carrying out the work intrusted to their charge, and by neglecting to carry out the instructions given by the district surveyor. The jurors regret the inefficiency of the law in relation to buildings in not giving power to district surveyors to stop works being carried on in a reckless manner. The jury further recommend that serious cases under the Building Act should be tried in a more summary manner before a magistrate, assisted by a practical assessor, and that builders convicted of recklessness in building structures should be liable to a heavy penalty."

The Coroner pointed out to the jury that a verdict attributing "culpable negligence" was tantamount to a verdict of manslaughter, and he desired to know if he was to understand it in that sense.

After some further consultation, the foreman said the jury did not mean criminally culpable, but their verdict was intended to convey a strong censure on the negligence which had been exhibited in carrying out the works.

ENLARGEMENT OF THE ROYAL HOTEL.

WE are informed that De Keyser's Royal Hotel, situate on the Thames Embankment, at the corner of New Bridge-street, is about to be very considerably enlarged by an extension from its present eastern boundary along the vacant angular piece of land to William-street, at the corner of New Bridge-street. This piece of land was some time ago announced as on sale for general building purposes, but was not disposed of, and it is now stated that the new hotel, spacious as it is, is inadequate to the magnitude of the business, rendering an enlargement necessary. The present building has a frontage upwards of 100 ft. in length, and when extended to the boundary in New Bridge-street it will have an elevation with a sweep from west to east of something like 280 ft. The plans are said to have been prepared, and the contract for the enlarged building entered into.

LIBELLING ARCHITECTS.

BOTTERILL AND ANOTHER *v.* WHYTEHEAD.

THIS case, upon which we commented in our issue of the 15th ult.,* was before the Lord Chief Baron and Mr. Justice Stephen in the Exchequer Division of the High Court of Justice on the 6th inst., when the rule (granted by Mr. Justice Hawkins and Mr. Baron Huddlestone) for a new trial was argued. Mr. Digby Seymour, Q.C., Mr. Cyril Dodd, and Mr. Kemp supported the rule; Mr. Waddy, Q.C., and Mr. Sutton showing cause against it.

The rule was granted on the grounds that the verdict was against the weight of evidence; that the letters were written on a privileged occasion, not exceeded by the writer; that there was no evidence of express malice in the defendant, and the learned Judge ought to have directed a nonsuit or a verdict for the defendant; that the learned Judge did not sufficiently instruct the jury that the question for them was, not the fairness or unfairness of the letters in fact, but whether there was actual malice in the writer; and that the damages were excessive. Lord Justice Bramwell, before whom the case first came (at the Leeds Assizes), in summing up, said,—"It is no imputation to say of a man that, although competent in his profession that he carries on generally, he is not a specialist in a particular branch which is not one of the ordinary branches of his profession;" also that "if the repairs of this church were of such a character that any one fairly interested in them might properly address himself to those who had influence in determining how they should be carried out for the purpose of having them properly restored or preserved, it would have been perfectly legitimate so to do."

Mr. Waddy, in showing cause against the rule, said the attempted justification set up by the defendant was, "I meant, no such experience as in my opinion was requisite." At the trial the plaintiffs were prepared with ample evidence of capacity as architects; but as that was not really impugned, the Judge rejected it as irrelevant. The defendant, however, had given evidence by a side-wind to the contrary. Were the jury justified in finding the letters libels?—that was the real question.

Mr. Justice Stephen.—If you were to say of an architect that he had no experience in building pyramids, would that be libellous?

Mr. Waddy.—No, for that would not be in the usual course of his business. But if you said of a tailor, "He cannot cut coats," it certainly would. The defendant says, "You mean to give him a job for which he is not fit, and as an architect he ought so to be; if you allow him to touch it, it will be ignorantly tampered with."

Mr. Justice Stephen.—I can see now there is a sense in which the jury might have found the letters libellous. But if the real meaning of them is only "Beware what you do," and the jury have misread it as an attack on personal skill, that would show that the verdict is against the weight of evidence.

Mr. Seymour, in support of the rule, said the question was one of the plaintiff's peculiar fitness to do a particular work. He drew attention to the animated discussions going on in the *Times* and elsewhere on the restoration of St. Alban's Abbey, and the proposed defacement of St. Mark's, at Venice, and the free comments made on all hands on the matter.

Mr. Justice Stephen.—The matter seems one which they cannot discuss with calmness; just like the classical languages, over which people invariably lose their tempers before long.

Mr. Seymour proceeded to read a passage from Mr. Ruskin's "Seven Lamps of Architecture," p. 160, as embodying Mr. Whytehead's feelings on the subject, and

Mr. Justice Stephen said,—Suppose the greater part of the "Seven Lamps" had been written about living architects instead of Venice, can you imagine cases in which Mr. Ruskin would have been defendant?

Mr. Seymour pressed that the expression "no experience in church work" had been fully made out; certainly not such as would fit the plaintiff to undertake such a work as the restoration of this unique and interesting gem of Gothic art, which dated from somewhere like 1383. In thirty years' experience the plaintiffs had only put the roof on one Gothic church—St. Mary's, Sculcoates; but there was nothing of Ancient Gothic about that. One of the defendant's witnesses had styled it "poor Modern Gothic." As to the plaintiffs' plans, the architects called by the defendant all condemned them. Mr. Fowler, Mr. Broderick, and Mr. Gilbert Scott said the spirit of the work would be destroyed and its value as an historical building entirely gone if his plans were followed. All this showed the defendant was zealously and properly anxious that the work should fall into the hands of one who had studied deeply in the ancient school and was attached to it. No sensational letter was written by the defendant to any newspaper, the *Builder*, any Church paper, or even the *Hull News*. He wrote to people he knew, and to friends, not with any reckless disregard for Mr. Botterill's character.

The Lord Chief Baron delivered judgment on the 13th inst. At the close he said,—The learned Judge who tried the cause held, and, I think, most correctly held, that there was evidence of express malice, and that evidence was fairly and fully left to the jury, and the jury found, and, I think, properly found, that there was express malice; for in this case the defendant had no manner of interest in the question of the employment of the plaintiff to execute the work in question which all mankind, or at least every admirer of ancient art throughout England, did not possess equally with himself. Then, lastly, it is contended that the damages (50*l.*) are excessive. But who can say that the effect of this letter may not actually have been to prevent great numbers of persons from employing the plaintiff in the way of his profession? On the whole, therefore, I am of opinion that the letter is libellous, and that the verdict of the jury ought not to be disturbed, and, therefore, that the rule or conditional order must be discharged.

Mr. Justice Stephen was of the same opinion. Rule discharged.

* "Sectarian Architecture," p. 1254, *ante*.

THE FOUNDING OF "BIG BEN."

STAINBANK *v.* BECKETT.

IN the Court of Appeal, on the 10th inst., before the Lord Chief Justice and the Lords Justices Bramwell and Thesiger, this case was heard. It was an appeal on the part of the plaintiffs from a refusal of the Lord Chief Baron and Mr. Justice Stephen, in the Exchequer Division, to order the defendant to amend his statement of defence.

The plaintiff was a bell-founder, carrying on business at Whitechapel, under the style of Mears & Stainbank, and the defendant was Sir Edmund Beckett, bart. The plaintiff's firm before he joined it carried on business as Charles & George Mears, and had cast for the Government the bell now at Westminster, called "Big Ben." The plaintiff, in his statement of claim, alleged that the defendant had libelled him in a series of letters to the *Times*. The letters in question were written by the defendant, and contained expressions which the plaintiff contended were libellous; such as, "I agree with Mr. Hawels about the present condition of Big Ben, which is a disgrace to the nation as well as its founders." One of the letters also spoke of "the oldest and worst foundry in England," which the plaintiff alleged applied to his foundry, as it had been established longer than any other.

The statement of defence stated that "the said letters did not in any way relate to or affect the plaintiff, and that the statement of claim, so far as it set out statements referring to the firm of Charles & George Mears, and the casting of Big Ben of Westminster, was immaterial and irrelevant, and such as the defendant ought not to be called on to plead to; but inasmuch as the letters referred to the firm of C. & G. Mears alone, the statements were fair comments on a matter of public interest, and were true in substance and in fact." The defendant also contended that these statements had nothing to do with the plaintiff, as they were made with reference to a time before he joined the firm, and as he had nothing to do with the casting of Big Ben.

The plaintiff, however, applied to the Exchequer Division to have the statement of defence amended, as he contended the issue thus raised by the pleading was one which he ought not to be called upon to try, and was too general in its terms, and was, therefore, expensive and embarrassing.

The Exchequer Division refused to order the defendant to amend, and the plaintiff, therefore, now appealed.

Their Lordships proposed that the respondent should agree to give the appellant as full particulars as he could as to his justification for the statements he had made which he alleged to be true, and that the costs of the motion should be costs of the cause, and that the order of the court should be made accordingly.

This proposition was accepted by the counsel representing both parties.

LIGHT AND AIR.

PHILLIP *v.* FITCH.

THIS case was lately before the Master of the Rolls, on a motion for the defendant to have an *interim* injunction removed, to enable him to proceed with the erection of a warehouse at No. 3, Bury-street, St. Mary-axe.

During the vacation, on the motion of the plaintiff, an injunction was granted restraining the defendant from proceeding with the erection of his new building beyond the height of the old one; otherwise the light and air of the dwelling-house adjoining would be materially obstructed. The defendant had proceeded to build a back wall to the height of 35 ft. 6 in., or 7 ft. above the old one, and he had also built over a vault, bringing the new building within 19 ft. of the plaintiff's house. The curved roof would bring up the building to 46 ft., and beyond that there was a skylight which was 6 ft. in addition.

The Master of the Rolls said that this was a case where personal inspection was necessary. He would much rather that there was a reference.

Mr. Locock Webb (for the plaintiff) said that he was most anxious to have a settlement of the dispute with as little delay as possible, but he felt that it was necessary to protect his rights. He had no objection to a reference.

Mr. Marten (for the defendant) said that it was a most serious matter for the building to be stopped, and he considered that an undertaking ought to be given as to damages.

The Master of the Rolls said that there must be an undertaking as to damages, and he would refer the question, the costs of the reference to be paid by the defendant in the first instance.

ARCHITECTS' DUTIES FOR FIVE PER CENT. COMMISSION.

IS an architect bound, for a commission of five per cent., on the completion of a work to measure up the whole of such work to test if the rooms, passages, walls, chimney-breasts, doors, windows, roof and other timbers, &c., are in accordance with his specifications, plans, &c.? And is he bound to climb on to the roofs and check the slating, the thickness and sizes of the lead flashings, and other such-like things? And, moreover, in a case where work has been covered up or hidden during the time between his visits to the work, and where no clerk of works is employed, is he to be held responsible to check all these things? In lead gutters, for instance, when these differ from the plans by their being made larger (by order of the architect), and when the architect visits the work and finds the lead worked and fixed and the slating done, and the builder tells the architect that the lead works up under the slates on each side of the gutter 9, 12, or more inches, is an architect justified, in the absence of a clerk of the works, in taking the builder's word in this respect, or is the architect bound to take off slates to satisfy himself how far the lead had been worked up on to the roofs under slates? Again, is an architect bound to check all minute details throughout a work, or is he merely responsible for seeing that the work has been carried out correctly in a general sense?

An architect would not be bound to climb a building and measure every corbel, check the sizes of all gutters, down-spouts, &c., I presume, but merely to take a general view of the premises, and see that these things exist in the building, and in the positions shown and specified.

X. Y. Z.

The Holborn Town Hall, and New Bank, Sunderland.—At both these buildings, illustrated in our last week's issue, Messrs. Chubb & Son supplied the whole of the strong-room doors, safes, and strong-room fittings.

NEW WORK FOR THE ART-UNION OF LONDON.

For the current year this society offers to its subscribers, in addition to the chance of obtaining one of the valuable prizes to be distributed by lot next April, an impression of a plate, engraved in pure line, by Mr. Lumb Stocks, R.A., from the well-known painting by the late E. M. Ward, R.A., "Dr. Johnson awaiting an Audience of Lord Chesterfield." The original of this fine work, first exhibited in the Royal Academy in 1845, is in the National Gallery, and is justly regarded as one of the most characteristic of our modern school. Mr. Ward was a special exponent of two phases of art, which ran in different, though parallel, grooves. The one may be designated as purely historical, embodied in such subjects as "The last Sleep of Argyle," "The Execution of Montrose," and "The Disgrace of Clarendon"; the other, of a more familiar character, such as "Dr. Johnson and Goldsmith," "The South Sea Bubble," and the one now under notice. In all, we have evidence of the prevailing tendency of the artist's genius, a combination of the styles of Hogarth and Wilkie.

The picture now before us vividly represents such a scene as may have occurred in the anteroom of Lord Chesterfield, one of the chief patrons of literature and art of that day. The great lexicographer had, no doubt, on numerous occasions waited in vain in the "outward rooms" of the nobleman for an opportunity of laying before him the proposal, perhaps the first proof-sheets, of that dictionary which was to make his name a household word for generations, and always without success; and galling, indeed, it must have been to him to see others whom he would but lightly esteem preferred before him. In the present case, a lady of the opera, powdered and patched, comes forward, after an audience of the peer, accompanied by her waiting-maid and page, bearing her lute, having performed a part, written by the composer who ambles by her side, and who is whispering in her ear some remark not flattering to the "old squaretoes," who, in company with several others,—such as a jockey who rides his lordship's horses at Newmarket, a parson who has dedicated to his lordship a volume of sermons, a sea-captain minus a leg in the wars, and others,—is waiting for the chance of being admitted to the great man. It is evident that the doctor was never favoured with the interview which he sought, from the undying revenge he exacted in the letter he wrote, when the dictionary was published, repulsing the noble lord's proffered favour. The incidents of the occasion are most happily rendered in the picture, and the translation into black and white by the skilful burin of Mr. Stocks is as complete as possible.

The picture has the merit of telling its own story, and at the same time of not exhausting interest in the first glance; but leaving many minor details, which will engage attention for a long time. We have reason to believe, from the returns already reported, that this will prove an attractive print with the subscribers.

The Almanack of the Art-Union is now ready for the members. This little book, besides the general information given in such works, contains particulars as to artistic and scientific societies,—and the dates of meeting of the latter,—which are not to be found concentrated in any other publication.

We some time since gave a view of the elevation of the new house lately built for the Art-Union, at 112, Strand; and in the galleries are now to be seen the original picture by Maclise of the "Death of Nelson," also the companion painting of "Wellington and Blücher meeting after Waterloo," and other works, which will repay a visit, and to which the public are freely admitted.

Knightsbridge New Barracks. — This large pile of buildings, lately illustrated in our pages, is expected to be ready for the occupation of the troops early in the new year. Rapid progress is being made with the internal fittings, and we understand that Mr. James Hill has just executed an order for 526 of his improved locks, together with 200 latches and furniture complete, all of which have been specially selected by the War Department. It is a noticeable feature of these locks that the keys all vary throughout, and that every key has its own number,—a corresponding number being stamped on the bolts of each lock.

IN RE SCHOOL OF WOOD-CARVING.

Sir,—Modern art talk is commonly innocent of logical connexion. Of keeping to a point, it shows not the slightest heed. It is here, there, and everywhere, in self-contradiction, at a breath. A most amusing instance of this, quite Hibernian in its character, is afforded by Mr. Rogers's letter of last week, in which, after twitting me for not noticing that his dictum about "employer, designer, and carver," was conditioned with the *now*, immediately proceeds to deprive Gibbons of the right to be considered an artist, and, with his little best, to endeavour to prove that that dictum was equally applicable to the *then*.

Mr. Rogers has, in his several letters, made an abortive attempt to deprive the wood-carver of any title to be considered an artist. In his first letter he reduces him to a mechanical *woodpecker*, subject to the man of business and the designer. He would reduce him to the status of a "hewer of wood," pure and simple. And, not content in his first letter with this mischievous intent, he proceeds in his third to cast doubts upon Gibbons himself being anything more than this,—of being in any true sense an artist. Does Mr. Rogers know that one of the best, if not the best, of the public statues in London, that of James II., was executed by Gibbons?—a fact which shows that Gibbons was really and truly an artist, and that it was but a mere accident that he was an artist chiefly in wood. Mr. Rogers's designer, who is required to design in every style, is seldom much of an artist; this kind of designing is but a modern *métier*, necessitated by the whimsiness of the day. Not one of the original artists in any of those styles could design in any way but his own.

One word more, sir, and then I must leave this subject,—at least, for the present. In my several letters of this correspondence I have endeavoured to uphold the status of the wood-carver as an artist, and I have contended against unconstitutional interference with the independent conduction of his profession. I have maintained:—

1. That wood-carving needs only a liberal demand for its exercise in order that it should flourish as of old. This your correspondents have confirmed in several ways, and by citing instances of clever men languishing for want of encouragement, and not from want of ability.

2. That if there were a great demand for it, young men who have been educated as artists would turn their attention to wood-carving. Wood offers no technical difficulty but what can easily be surmounted by the true artist.

3. That wood-carving, though not encouraged as it might be, is anything but defunct in this country.

4. That a school of wood-carving, therefore, is not required; that its establishment under existing conditions, and placing it under the direction of a foreigner, is to depreciate the status of the English wood-carver, and of English wood-carving, in the eyes of foreigners. It should not be a matter of mere *laissez-faire* to a project, which is a standing reproach to the ability existing in this country, though in other respects it may be powerless either for good or evil, for it diverts public attention from the real cause of the depression in the art of wood-carving, and raises false expectations; it is unconstitutional in procedure, and it is unpatriotic. The promoters of this and other spurious schemes, and the decriers of the British artist's and workman's abilities, must not be surprised if the world take them at their word, and if, as chief agents in this depreciation, they should destroy the repute of and ruin English manufactures. It lies with the intellect and wealth of England whether we have a great school of the leading and subordinate fine arts, for if the wealth of the country be not intelligently and liberally directed to the encouragement of the arts, all other appliances devised for this purpose will prove but vain and empty *shams*.

Meter.

Sir,—Having been engaged over three years at St. Paul's Cathedral carving the soffits and friezes in the new west lobbies, and a large quantity of work in the choir, I hope I may be allowed to pass a few remarks on the subject of wood-carving now under discussion in your journal. I think, with Mr. Wallis, that Mr. Rogers's idea that it takes three men to produce good wood-carving, viz.,—the master who buys and stores the wood, the designer, and then the workman who does the actual carving,—is simple in the extreme. The history of all great works of art teaches us that they have been the effort of one man. The brain to conceive and the hand to execute must be united in the one person before any great work can be produced. The National School of Wood-carving, in my opinion, will only tend to enlarge the fault under which our wood-carving is now suffering, that it makes us a nation of careful copyists, and capable of producing work finished to an almost painful extent; but in encouraging and fostering that power of design and facility of execution that indicate genius, it will do nothing. How, then, is this point to be infused into our wood-carving, in a similar way to which our sculpture and painting are fostered by giving the artist the opportunity of exhibiting his work to the public in some place and by some means that will insure his work being brought into notice? The only chance that exists at present is some workmen's exhibition to which the classes likely to be patrons will not come, and in which on that account the exhibitor has no faith. If he is successful, the paltry prize of, perhaps, 10s., is the only reward for months of labour undertaken after a day's work has been done. Grinling Gibbons depended upon no school of art for instruction. The power to conceive works like the reredos at St. James's Church, Piccadilly, or those beautiful works at Windsor and Chatsworth, and many others I have seen and could mention, is a natural gift; and what is wanted is that men who have the desire to excel in that line of art shall have some ready means of bringing their work into notice, and find that personal ambition and individuality fostered, without which no one has ever risen to fame or produced a great work.

One great drawback against wood-carving now is that the style of internal architecture in vogue does not allow of any great effort in that line of art. In the times in which Gibbons lived our houses were wainscoted, and the panels gave an opportunity for the carver which now does not exist. As Allan Cunningham states, all is now bald and plain, and the eye looks in vain for that bold relief and imposing effect which Gibbons alone could produce. As for the carvings of Mr. Rogers and others, beautiful and exquisite though they are, after all they are merely the trifles of the art.

I would direct your readers' attention to the address by Mr. Val. Prinsep, A.R.A., to the students of the City School of Art. He says our advanced civilisation and art-teaching have made us nothing more than clever in manipulation, but we have no sentiment. To encourage this attribute of sentiment, then, is what is wanted. A school to teach wood-cutting may do some good, but that it will bring about the end desired it is vain to hope. We want artists to think and act for themselves, and to learn that this great desire for minute manipulation is a secondary consideration. Let the wood-carver, then, be able to feel that his endeavours will command attention, and I believe there are many carvers amongst us who would enter the lists and fight the fight with spirit, and be able to show that the fact of wood-carving having gone back is not the fault of the carver, but of the system and want of opportunity under which he works.

T. Colley, Jun.

MILE END OLD TOWN COMPETITION.

"The spirit I have seen may be the devil,
And the devil hath the power to assume a pleasing shape."

Sir,—Hamlet's soliloquy forced itself upon me on learning the *denouement* of the farce lately played by the Guardians of the Poor of Mile End Old Town in the appointment of an architect for their infirmary extension.

The public should know that the guardians, intending to extend their workhouse infirmary, sent circulars to some ten architects, inviting terms and experience. Several replied who have designed and carried out such buildings, myself among the number. A call was made on some of the members of the Guardian Board, and the asseveration that none but men who could refer to such work would be employed was made and believed in. Imagine, then, our surprise on discovering that the most experienced men were all excluded. Well, the wise men have ever come from the East; therefore is it reasonable to suppose any, except those with East-end connexions, could be selected for submission by the committee to the Board?

Ah! well, many geese are slaughtered and dressed at this season of the year. That is our consolation and answer, so our *anser* only followed suit; and as the talk of employing none but experienced men was satire only, we will call Churchill to our aid and ask him to say his say for us:—

"When satire flies abroad on falsehood's wing,
Short is her life, and impotent her sting;
But when to truth allied, the wound she gives
Sinks deep, and to remotest ages lives."

Competitor.

COLOURED STATUES.

SIR,—It has been remarked in respect to the article which appeared in the *Builder* of November 29th, "On the late John Gibson, R.A., of Rome; the Colouring of Statues, and the Venus of Cnidos," that the argument drawn from that statue is indicated as having been novel at the time I mentioned it to the late Mr. Gibson; whereas, it is to be found in the valuable Handbook of Sculpture by the late Mr. Richard Westmacott, R.A., which was published in 1864. I am not able to recollect whether the conversation I had with Mr. Gibson was prior or subsequent to a paper I read on the subject at the Society of Arts at one of its Wednesday evening meetings, namely, on April 24th, 1861, a report of which is contained in the volume of its Transactions for that year, on which occasion, for the first time in public, I introduced the illustration to be drawn from the accounts extant of the Venus of Cnidos in respect to the practice of the Greeks in the colouring or non-colouring of their marble statues. The late Mr. Westmacott was present on that occasion, and added much to the interest of the discussion which followed by taking part in it. He gave me his valuable support in many respects, and in relation to that one illustration and the mode in which I had applied it, he did me the honour of adopting them, and incorporating them in his "Handbook of Sculpture," which appeared three years afterwards, and of which he kindly sent me a copy, which I often consult, as it is a very excellent work, not only for the use of students, but for compendious reference on the subject it treats. J. BELL.

A NUT FOR CHRISTMAS.

SIR,—I have a nut that will make the fortune of whoever cracks it, a fortune so large I am afraid to estimate it, and the blessings it must confer upon us all would be such that the name of the fortunate solver of the difficulty would never be forgotten,—and here it is.

The force exerted in lifting the tides is so great that if it could be utilised all our railways, all our factories, all the work now done by steam engines, could be done by it, and there would be plenty to spare. Now, the man who can catch the force and utilise it will solve the problem, and I really believe that if a tithe of the thought had been bestowed on this point that has been spent on many other matters it would have been solved long ago.

I fancy I know a pair of crackers that may crack this nut; they are not quite complete, they want a rivet,—who will supply it? Let us know, you say, what your crackers are before we answer your question. Well, that is fair enough, so here they are.

One jaw of the cracker is Brunel's atmospheric railway of thirty or forty years ago. I rode in it when a boy; no modern locomotion is equal to it,—a gliding sensation like a skater on the ice,—no jerk, jerk, jerk, no steam, no smoke; the first carriage keyed to a piston that slides along a pipe, no fear of its leaving the rails,—a cushion of air between each train, no danger of collisions. This system was worked by compressed and exhausted air; it was in operation between Exeter and Newton, and London and Croydon, and was given up because the present was cheaper, although in other respects it was a success.

The other jaw is a compressed air-chamber, filled by the tide. I think it was in 1872, when strolling through the galleries at South Kensington, I saw an Italian,—Signor Tomassio was his name, I fancy,—but he had a small circular saw at work driven by compressed air, and his proposal was to obtain this by utilising the power of the tide. There was a receiver, like an inverted kettle, with a pipe and tap in the top, and an engine driven by air instead of steam. As the tide rose the pressure increased, until the gauge indicated the requisite figure, when a tap was turned, and away went the engine and round went the saw.

Now suppose, just to begin with, we lay down a pipe, say, from Brighton to London, with a slit in the top, and a flexible cover to open in front of the piston-rod and close after it, just as Brunel did fit in piston and rod to our first carriage, and there we are.

Now there is a lot of chalk at Brighton (burnt chalk is lime), and shingle on the Brighton beach. Lime and shingle make concrete, and this is what I would make my receiver of.

These receivers or air-chambers could be built on the beach, and strengthened by iron if necessary. The roof could be levelled and chalk thrown on top to balance the pressure within, or buildings could be erected on it.*

Floodgates next the sea, a pressure-gauge and a safety-valve for security, a pipe for the air with valve, and a connexion with the railway, makes the thing complete.

Now if there is a flaw in my argument, I should like to be shown it. I suppose no one doubts the power of tide to do the work. The Italian has shown us how to obtain compressed air from this power and to use it for driving machines, and Brunel has shown us how to use this air for the propulsion of trains.

The rivet wanted is cash to carry it out. Money, they say, is plentiful in the City. Let some of the owners use a little of it. If my reasoning is right, it will produce such returns as money never yet produced. Let some practical engineer make a working model. People like to see the wheels go round. Perhaps the sight of the thing, if neatly finished, might unlock the chest of the capitalist, and the visions of fat royalties might tempt him on, at all events. Here is my Christmas nut: who will crack it? W. H. LASCELLES.

GAS IN SITTING-ROOMS.

SIR,—It is all very well to complain of the gas, but has any practical method been suggested, at once simple and reliable, which could be provided during erection by the builders of houses of the 40*l.* to 50*l.* a year type, with rooms of from 1,500 to 2,500 cubic feet of space, for draining the tops of the rooms? It is, of course, essential that any construction be simple in execution, self-acting, and not liable to get out of order.

In a terrace house of the above type the front room contains 1,900 cubic feet, the height being 9 ft. 6 in., opening into a back room of 1,500 cubic feet, with folding doors (always open). This room has a three-light gaselier, Sugg's burners and regulators; there is an opening 9 in. by 3 in. under the ceiling into the passage near the front door, and an Arnott in the chimney-flue, which acts well. The window and door are ill-fitting, the fire draws properly, and yet the gasiness is intolerable.

The question is, How can you collect your ceiling drainage to a point? So long as the gas blends with the air of the room there will be a difficulty in removal, because no ceiling flue could be laid in of sufficient capacity to act for the whole room. Such a flue might be constructed for the gas alone, but the gasfitting manufacturer must here step in and amend the ordinary gaselier so as to throw the gas products into this flue by some modification of Rickett's system or otherwise. Then the lighting of the gas would create the current, and all would be well. No doubt it will tax invention to design a three-light gaselier with batswing burners and flue to each concentrating at the top, which shall be at once good-looking and but little more expensive than the present which are bought by the class of people who inhabit the above type of house, but it must be done. F. N.

P.S.—When the proper gaselier is obtained the construction of the ceiling-flue must be carefully worked, as the heat from three batswing burners is very great, and the passage of the trimmer is a trouble. This is a question that ought not to be overlooked in the Building Act.

ARCHITECTS AND SUPPLY COMPANIES.

SIR,—With reference to some of the directors of the Co-operative Foundry and Builders' Supply Association lately advertised, will you allow me to ask if the regulations of the Royal Institute of British Architects allow of their Fellows and Associates becoming thus interested in builders' foundries and the supply of builders' materials? A. B.

Evening Study.—The library of the École des Beaux Arts, Paris, is to be open to the public every night from half-past seven to ten o'clock. The library is very rich in works of art and illustrations of the great galleries of Europe.

* To be occupied by "airy sprites."—*Printer's devil.*

COMPENSATION CASES.

BALLARD *v.* METROPOLITAN BOARD OF WORKS.

THE Metropolitan Board of Works requiring the premises of Mr. George Ballard, 112, High-street, Peckham, ironmonger, for the purposes of the Camberwell and Peckham improvement, served a notice to treat, and after considerable negotiation the Board made a sealed offer of 3,500*l.*, which, being declined, the case was referred to Mr. E. N. Clifton as umpire, who heard the same at the Surveyors' Institute, Great George-street. The witnesses called on were Mr. Ballard, and Messrs. Cooke, Baines, Virgoe Buckland, and L. H. Isaacs, surveyors; Mr. B. Grellier, accountant, with Messrs. Scamell & Thomas, trade valuers, for the claimant, and Messrs. Robert Reid, Samuel Walker, and Castle (Fuller, Son, & Hervey), surveyors, and Mr. Woolley, accountant, for the Board.

The umpire awarded the sum of 4,123*l.*

LONDON AND BLACKWALL RAILWAY COMPANY *v.* KATTE.

AT the Mansion House Police-court, on Monday, the London and Blackwall Railway Company, by their secretary (Mr. J. F. Kennell), took proceedings by summons against Mrs. Adelaide Katte, a widow, keeping a hairdresser's shop at 19, John-street, Crutched Friars.

By a special Act of 1876 the company are empowered to widen their line and enlarge their stations, and, with that view, they have authority to purchase premises in the line of the proposed improvement. The defendant, who had had notice that the property was required for the improvement, had failed to agree with the company as to the amount of compensation to be paid to her, and she was accordingly summoned under the 121st section of the Lands Clauses Consolidation Act, 1845, for the purpose of settling the claim.

It was admitted on both sides that all legal preliminaries had been satisfied, and the sole question for the determination of the sitting Alderman (Sir Thomas Gabriel) was the amount of compensation to be awarded. The defendant claimed 85*l.*, being three years' purchase of the profit on her business, and the cost of her fixtures and removal to other premises. She kept a barber's shop, in which her boy assisted her. It was elicited that she was only a tenant liable to four months' notice to quit.

Mr. Nicoll, for the company, admitted that they were bound to pay the defendant compensation, and suggested that a year's purchase would meet the justice of the case. If railway companies were called upon to meet these heavy claims for compensation, there would be an end to the improvements of either railways or streets.

Alderman Sir Thomas Gabriel, in the result, awarded the defendant, Mrs. Katte, 100*l.* compensation and 10*l.* costs, and ordered her to give up possession on the 1st of January next.

ARCHÆOLOGICAL NOTES.

London and Middlesex Archæological Society.—At the meeting of this Society on the 8th inst., Mr. J. E. Price exhibited and described some Roman and other antiquities found during the past few years in the City, especially those found during the excavations for the foundations of the building of the National Safe Deposit Company in Walbrook. Mr. T. Blashill exhibited an old wood-carving found in a house in Aldgate, remarking that it could not be drawn with a compass, which was a peculiarity distinguishing ancient from modern carved work. It probably belonged to some ancient religious house in the vicinity where it was discovered. Mr. Richard Mann exhibited, through Mr. Roach Smith, photographs of some interesting Roman sculptures recently found at Bath. They comprised cornices, shafts of columns, capitals, pilasters, &c., many being elaborately carved and ornamented. They were found on the site of the ancient Roman baths.

A Roman Vase.—Among a number of objects found by Mr. Geo. Payne, jun., in a Roman grave near Sittingbourne, Kent, and exhibited at the Society of Antiquaries on the 4th inst., was a remarkably fine vase in bronze, 10½ in. high, 6¼ in. broad at the widest part, 3⅝ in. at the base, 2¼ in. at the neck, and widening at the rim to 3⅜ in. The handle is of solid metal, and very massive; that portion of it which is fastened to the body of the vessel is beaten into a kind of shield, 2¼ in. in width, upon which is shaped in high relief the figure of a man in a nude state standing in an attitude ready to attack. In his right hand is an uplifted sword; in the left, which is raised to the centre of the body, is the scabbard, and over the arm is thrown the cloak, the folds hanging below. On his head is a cap; his mouth is open as if in the act of shouting. Under the right hand is a decapitated ram or goat, legs uppermost, with blood flowing from the neck, the head having fallen at the man's feet. Between the man's legs reclines an ox, and outside the left leg is the head of a boar with uplifted snout. Above the

man's head the decoration is continued up the handle, which at this point contracts to about an inch; here a goat is represented galloping; over it are two animals somewhat indistinct; above them is the figure of a man seated and holding a crook in the right hand. The handle above is encircled half-way round by a band with a thin line of silver in the centre. The rim of the vase is clasped by the heads of two birds, with eyes of silver, and the long beaks are drilled with holes to represent teeth. The necks of the birds are divided by a scroll pattern, which flows down the handle to the band before mentioned. The only iron object is a lamp-stand, with bar for suspension.

The Temple Caves at Ajanta.—At the meeting of the Royal Asiatic Society on Monday evening, the President, Sir H. C. Rawlinson, K.C.B., in the chair, a paper was read, contributed by Babu Rajendralala Mitra, "On the Age of the Temple Caves at Ajanta," in which it was maintained that this question could be set at rest by the evidence of the inscriptions to be found in many of them, which showed, as he adduced, grounds for believing an antiquity as early as the first century of the Christian era. On the other hand, Mr. James Fergusson contended, in reply, that the architectural details clearly proved that the most important of them were formed as late as the middle of the seventh century.

WATER SUPPLY.

Aberystwith.—The Local Government Board have given their sanction to a scheme adopted by the Aberystwith Town Council for supplying the town with water from Plynlimmon, at an estimated cost of 16,000*l.* The Commissioners of Woods and Forests have granted, upon favourable terms, the use of the water which belongs to the Crown. Sir Pryce-Pryce has also granted the use of his land upon liberal terms. The supply is said to be inexhaustible, and of the purest quality. Mr. Stooke is engineer of the scheme.

Arbroath.—At a meeting of the committee of the Local Authority of St. Vigean's parish, held on the 9th inst., it was mentioned that the Earl of Northesk had agreed to introduce a supply of water into the fishing village of Auchmithie, near Arbroath (the Musselcrag of "The Antiquary"), and also to improve the drainage. The water to supply the village is to be lifted by means of a hydraulic ram from a spring at the base of the cliff on which the village stands. The work has been entrusted to Mr. Keith, C.E.

Opposition to the proposed Water Bill for the Metropolis.—At the half-yearly general meeting of the Southwark and Vauxhall Water Company, held on the 11th inst., the chairman, Mr. Alderman Knight, referring to the Bill proposed to be introduced next Session for the compulsory purchase of the undertakings of the Metropolitan water companies, said, if it should be proposed to acquire the Company's undertaking on the basis of the price of the stock last June, they would oppose it to the utmost, as such a calculation would inflict a gross injustice on them.

GAS JOTTINGS.

London.—It is not long ago since the Surrey Consumers' Gas Company was absorbed by the South Metropolitan Gas Company. The amalgamated companies are now to be absorbed by the Phœnix Company, with the view of concentrating all the companies supplying South London, and forming a gigantic establishment somewhat of the character of that at Beckton. It is rumoured that the companies are seeking to acquire nearly ninety acres of land in the neighbourhood of Greenwich. No doubt amalgamation will bring with it many advantages in administration, but due regard will be had, we hope, for the interests of the public.

Bristol.—Mr. B. Kitt, the gas engineer of the Bristol Urban Sanitary Authority, having perfected his system of street-lighting, the Corporation has adopted it, and it is now permanently applied to the whole length of Victoria-street, leading from the railway terminus to the centre of the city. Concave mirrors or reflectors are placed between two gas jets, used instead of a single jet of an ordinary street-lamp. Some are made of block tin, and others of glass, which requires no cleaning. Originally the mirrors were suspended from the top of the lamp, but, as it was found in these circumstances exceedingly difficult to focus the light, Mr. Kitt now has the mirrors and burners made in one fixture, which is screwed on the gas-pipe, above which there is an adjusting screw by which the mirrors can be brought to the exact focus in each particular lamp. The light thus obtained is very satisfactory, and it is claimed that the consumption of gas in the two jets is not greater than that of the single jet formerly used. The roads of Clifton are to be next lighted on the system.

COW-HOUSES IN THE METROPOLIS.

In former volumes of the *Builder* we have depicted, both with pen and pencil, the unsatisfactory manner in which cows were,—and are now in some instances,—wont to be stowed away in very circumscribed back premises, greatly to the detriment of the health of the cows and that of their keepers. We remember one case, that of a "dairy" in South London, in which two or three cows were kept in what in other shops would be called the "shop-parlour," and the full odour of the cowshed used to pass through the shop out into the street, where it was only too perceptible by the nostrils of the passer-by. It is satisfactory to see that some supervision is now being exercised over the sanitary condition of cowhouses.

We note that at the Blackheath Petty Sessions, on the 9th inst., the magistrates were engaged for two or three hours in adjudicating upon the applications for a renewal of cowhouse licences. It is usual to grant these licences at the October Sessions, but in consequence of the regulations recently made by the Metropolitan Board of Works, they were adjourned, to enable the dairymen to make the necessary alterations in their premises. The two months had expired, and it was found that very few of them had complied with the requirements of the law. About one-fourth of the cowkeepers had made a commencement, and convinced the officer of the Metropolitan Board that they really intended to do what is required, and the Bench granted their licences, but gave instructions for them to be impounded or kept back until the certificate of the Metropolitan Board was produced.

Mr. Lowe (one of the magistrates) pointed out that the licences having been granted by the justices, it became a question whether they could be prosecuted for keeping cows without a licence in the event of the work not being completed.

The Bench were of opinion that they could be proceeded against, inasmuch as they would be unable to produce a licence when before the police magistrate. With regard to the other applicants, the licences were refused altogether, and these cowkeepers, who we hear, number some hundreds, are likely to get into serious difficulties, the Bench urging Mr. Spencer, who appeared for the Metropolitan Board, to prosecute in every case of keeping cows without a licence.

Miscellanea.

Royal Institute of British Architects.—At the second ordinary meeting of the session, held on Monday evening last, their Royal Highnesses the Duke of Edinburgh, the Duke of Connaught, and Prince Leopold were elected Honorary Fellows, by acclamation, on the motion of Mr. Charles Barry. The following gentlemen were balloted for, and declared to be duly elected, viz.:—As *Fellow*,—Mr. John Bond Pearce, of Norwich. As *Associates*,—Mr. Martin Brereton Buckle, of Seaforth, Malvern; Mr. Henry Siddon Greaves, of the Public Works Department, Cape Town, Cape Colony; Mr. Charles Valentine Hunter, of Bedford-row; Mr. Arthur Harrison Newman, of Tooley-street; and Mr. William H. Ackin Berry, of Murree, Punjab, India. As *Honorary Associate*,—Lord De L'Isle and Dudley. A memorial sketch of the life of the late Frederick Pepys Cockerell was read by the secretary, Mr. W. H. White. Of the discussion which ensued we shall give a report next week.

The Lighting of Paris.—Lighting the streets of Paris costs the municipality, in round numbers, 169,600*l.* per annum. The number of jets employed is 38,400, of which 4,000 are extinguished at midnight. In the coming year it is proposed to spend 16,200*l.* in addition, by lengthening the hours during which the lights burn, and by establishing candelabra at certain crossings where the light is at present insufficient.

The Electric Light.—At the meeting of the Court of Common Council on the 1st inst., it was resolved "that it be referred to the Bridge-House Estates Committee to consider as to the practicability and advisability of lighting London Bridge by the electric light, or of otherwise improving the present defective lighting thereof, and to report thereon forthwith to this Court."——On the 2nd inst. Messrs. Newton, Chambers, & Company introduced the electric light for the purpose of illuminating their extensive works at Thorncliffe.——The completion of the first year of the illumination of the Thames Embankment by electricity upon the Jablochkoff system has been marked by a further and important development of that system, viz., the successful extension of the system to the Victoria Station of the Metropolitan District Railway, the source of power being that at Charing-cross, which supplies the Embankment and Waterloo Bridge with light. The lighting up of the station took place on Monday afternoon. The station is 350 ft. long, 50 ft. wide, and 40 ft. high. There are two platforms, each 15 ft. wide, the railway space between them being 20 ft. wide. There are ten lights, which are produced and maintained by the same steam-engine which is maintaining the forty lights on the Embankment and the ten on Waterloo Bridge. The engine is, therefore, now maintaining a total of sixty lights. Of still greater importance, perhaps, is the distance to which it is now found possible to successfully transmit the electric current for purposes of illumination. The distance marked on the map of the District Railway between their station at Charing-cross and that at Victoria is 2,383 yards, 1·354 mile. The length of wire between the two stations, however, owing to curves and losses necessarily attending the laying, connecting, and fixing, is about 1·65 mile. The whole circuit is thus equal to a length of 3·30 miles. The success of this experiment augurs well for the future of electric lighting.

Activity in the Iron Trade.—Last week the plant used by Mr. Daniel in constructing the new Portishead Docks, Somerset, was sold at auction, by Mr. Rymill, of London, when a general improvement was realised of at least 25 per cent. over the prices of two months ago. Old rails made from 85s. to 90s. per ton;——the locomotives, steam cranes, portables, and other machinery bringing equally good prices.——Messrs. Bolling & Lowe, in their December report, say:—"On comparing the state of the iron and steel trades in August and November of the present year, we find an advance in prices, and a feeling of hopefulness as regards the future, which we are confident no one in the summer anticipated would so soon take place. The commencement of this reaction is unquestionably due to the demand from the United States. It was considered at first unlikely to last, but it has continued on advancing prices until buyers from other quarters have anxiously rushed in to secure their winter requirements; and a certain amount of speculation being added, the advance may now fairly be looked upon as permanent, in so far as it will surely carry us over the spring." The table they give showing the quantity and value of the principal iron and steel materials exported to the United States during August, September, and October, 1877, 1878, 1879, is very remarkable. While in 1877 we get 37,707 tons (627,421*l.*), and in 1878, 37,988 tons (537,121*l.*), in 1879, the figures are 266,829 tons (1,599,330*l.*).

The Medal given to successful exhibitors at the Paris International Exhibition of last year is a fine work of its class. The head typifying the Republic fills nearly the whole field of the obverse, and is especially beautiful. On the reverse, Fame sends off a winged messenger with a tablet on his head bearing the name of the exhibitor for whom it is intended. The name is not written with a graver, as usual on such medals, but is in raised letters, and is obviously struck with the rest of the design, which would seem to involve a change in the face of the die for each medal struck. The engraver of the medal is M. J. C. Chaplain, and he deserves praise.

Schools at Leytonstone.—The guardians of the poor of Bethnal-green at their last meeting approved the plans submitted by their architects, Messrs. A. & C. Harston, for new school buildings at Leytonstone and directed the clerk to forward the same to the Local Government Board for their sanction.

The Mersey Railway Tunnel.—It is with no small satisfaction, says the *Liverpool Daily Post*, that we are able at length to announce that the preliminary works of the Mersey Railway have been commenced, the contract for the shafts at Liverpool and Birkenhead, and for the drainage-heading under the river Mersey to connect them, having been let to Mr. S. C. Ridley, the well-known contractor for the Birkenhead Joint-Railways Extension, who will push forward the works with all possible energy. The engineers, Messrs. Brunlees & Fox, last week visited Liverpool, and, with the consent of the Mersey Docks and Harbour Board, fixed upon the sites of the shaft. This scheme must not be confounded with the Mersey subway, which is an entirely distinct undertaking. The first contract, amounting to half a million of money, relates to the distance from Grange-lane, Birkenhead, connecting the London and North-Western and Great Western systems and the dock-railways on the Cheshire side, and carrying a double line of railway under the river Mersey, terminating in Liverpool. 25,000*l.* have been subscribed for meeting the expenses of these preliminary works.

The Society of Telegraph Engineers.—At the annual general meeting of this society, held at the Institution of Civil Engineers, on the 10th inst. Mr. W. H. Preece was elected President for the ensuing year. The report of the Council stated that fifty-nine members and associates had been elected during the year, bringing the total of all classes up to 1,019. The losses by death include Sir William Fothergill Cooke, whose name is so intimately connected with the introduction of the electric telegraph, and Professor Clerk Maxwell. It was stated that the magnificent collection of electrical works bequeathed to the society by the late Sir Francis Ronalds was being classified and bound, and that the printing of the catalogue, including 12,000 titles, was nearly completed. Special allusion was made to the labours of the International Telegraph Conference held in London during the months of June and July last. The financial position of the society was reported as very satisfactory.

Bravery Rewarded.—At a meeting of the Chapter of the Order of St. John of Jerusalem in England, held last week, it was resolved to confer the medal awarded by the Order for deeds of gallantry in saving life on land on Mr. Arthur H. Stokes, one of Her Majesty's sub-inspectors of mines, Charles Maltby, John Hancock, Thomas Davis, and John Davis, in recognition of the successful exertions made by them, at great personal danger, in July last, to rescue one Dennis Bagshaw, who was imprisoned for five days by a sudden fall of "shale," or old workings, from the roof of the Black Engine Mine, Eyam, near Sheffield.

Govan.—St. Anthony's R.C. church, which was recently completed, has been opened. The old building was found insufficient for the wants of the congregation, and it was resolved to erect a larger edifice. The new church, which is built on the site of the old one, is in the Byzantine style of architecture. It is seated for 1,500 persons, and has a large sanctuary. The altar is carved in oak, and there are three roomy vestries and a baptistery. The architect is Mr. Honeyman, of Glasgow.

Mechanical Plastering of Walls.—In America a machine for plastering walls has been invented, which consists of a receptacle for the mortar, the segment of a cylinder in form. It is provided with a hinged plate that presses against the mortar, and, as the receptacle is moved upward against the wall, presses the plaster out through a narrow-gauged opening at the bottom.

Street Footpaths in Frosty Weather.—"N. W." urges, with justice, that occupiers of private houses and shops, not only in London but in the provincial towns also, should, during frosty weather, and when the pavements are very slippery and unsafe for pedestrians, have a little gravel, sand, sawdust, or a few cinders sprinkled upon that portion of them which is in front of each of their establishments.

Curator of Works of Art in the City.—The City Lands Committee, reporting on a petition of Mr. John Frederick Dicksee, have recommended to the Court of Common Council the appointment of a curator of works of art belonging to the Corporation, and that an honorarium of 100 guineas per annum be presented to the person who may be appointed to the office. The report was adopted.

Sale of the Fillebrook Estate, Leytonstone, Essex.—Messrs. Protheroe & Morris offered for sale at the Workmen's Hall, Stratford, on Monday evening, sixty-six plots of building land on the Fillebrook estate, in the Walwood, Drayton, and Bulwer roads. Mr. G. F. Morris was the auctioneer, and previously to offering the lots, he stated that sewers were laid in the roads and a new main drain had just been put down by the Leyton Local Board. The situation was described as healthy, and as being within easy distance of some of the prettiest parts of the forest. The first and several succeeding lots realised 5*l.* 5*s.* per foot frontage, and the whole of the estate was eventually sold at prices varying from 4*l.* to 5*l.* per foot. The remaining portion of the estate will be offered for sale in February next

Harbours on Low and Sandy Coasts.—The King of the Belgians, it is announced, offers a prize of 25,000 francs, or 1,250*l.*, for the best work on "Means for the Improvement of Harbours on Low and Sandy Coasts," such as those of Belgium. The competition is open to writers of all nationalities. Foreign writers must send in their essays to the Ministry of the Interior at Brussels on or before January 1st, 1881. The award will be made by a jury of seven persons, consisting of three Belgians and four foreigners of different nationalities, who will be appointed by the king. The successful work will be published by the Belgian Government in 1882.

Competition: Withington Public Buildings.—Some months ago the Withington Local Board invited six firms of architects, practising in Manchester, to send in competitive designs and detailed estimates for a Public Hall and Offices. One of the conditions was, that each of the competitors should receive an honorarium, except the one whose design was selected, who should be appointed to carry out the necessary works. Designs were accordingly submitted, and the committee, having taken the opinion of several local builders as to the accuracy of the respective estimates, recommended the Board to appoint Mr. L. Booth, of King-street, Manchester, as their architect. The recommendation was adopted.

The Council Chamber, Guildhall.—A new Council chamber has long been talked of, and will probably, in a few years' time, be provided. In the meantime, the Court of Common Council has referred it to the City Lands Committee forthwith to make arrangements for increasing the accommodation by raising the public gallery of the existing chamber, and providing more seats for members, each seat to be separated in a similar manner to those in the Aldermen's Chamber, and so arranged that the deputies and the chairmen of committees shall have special seats allotted to them, at an expense not exceeding 750*l.*

Street Hydrants.—The street hydrant system in the City of London is now complete, and the Gas and Water Committee of the Corporation at their last meeting received information that two fires, which might have been of a very serious character, took place a few days ago, and were extinguished by means of the hydrants. There are now 818 hydrants ready to be employed for the extinction of fires in the city of London. It is asserted that no other city or town in the kingdom possesses a similar system of hydrants.

A Hospital for Hounslow.—Mrs. Lydia Manning Grimes, who has resided in Hounslow for a great number of years, has left the sum of 10,000*l.* for the purpose of erecting a hospital for Hounslow and its neighbourhood. After numerous other bequests, the remainder of her wealth is left to go towards endowing the proposed hospital, the deceased directing by her will that Dr. Tyler Smith shall be appointed the medical officer thereto.

Newcastle-on-Tyne.—The committee of the Larkin Memorial met at the *Chronicle* offices on the 4th inst., Mr. Cowen, M.P., in the chair. Mr. Kirton laid before the committee several designs, which were considered. Upon the motion of Mr. George Rule, who attended on behalf of Mr. Crawshay, the design of Messrs. Oliver & Leeson, architects, was adopted, and Mr. Kirton was requested to take the matter in hand and carry it into execution.

Forts.—Messrs. Bunnett & Co., Limited, have received instructions to fit their patent iron revolving-shutters to the New Battery, Peterhead, similar to the same class of shutter they have fitted to the forts at Spithead.

Court Theatre.—The new piece at this theatre, "The Old Love and the New," is more likely to prove a success than anything the management has yet attempted; the story is interesting, without any striking disregard of probabilities, and the characterisation is marked. Moreover, it is, for the most part, very well acted, and the scenery is excellent, both as regards the interiors, which are complete without being overdone, and the ruined château by moonlight, the scene of an exciting and capitally-managed duel. Mr. Coghlan and Mr. Anson are particularly good; the former displaying a quiet power which is very effective. Miss Amy Roselle, in a part a little out of her best line, acts with much feeling and intelligence. Miss Emery, who plays the most telling part in the piece, in proportion to its length, that of a heartless little butterfly, may be praised for what she does, though much more might be done.

Over Darwen.—Mr. Wm. Stubbs, district surveyor of Pendleton, has been appointed engineer and surveyor to the Corporation of Over Darwen, at a salary of 275*l.* per annum. There were 109 applicants for the appointment.

Grosvenor Gallery.—The private view of the Winter Exhibition here is fixed for Wednesday, the 31st inst.

TENDERS

For the Londesborough-street school of the Kingston-upon-hull School Board. Messrs. Botterill & Son, architects. Quantities supplied:—

Stamp	£6,339	0	0
Brown	6,179	0	0
Leggott	6,102	10	0
Sergeant	5,965	5	0
Musgrave	5,960	0	0
Drury & Harper	5,949	15	0
Clarkson & Son	5,914	7	0
Habbershaw & Son	5,836	3	6
Wilson Bros.	5,836	0	0
Stanley	5,807	13	0
Hockney & Siggins	5,794	0	0
Southern	5,733	12	0
Jackson & Spencer	5,610	0	0
Jackson & Son	5,593	0	0
Skinner (accepted)	5,597	0	0

For a side chapel to St. Austin's Catholic Church, Wakefield, for the Rev. Geo. Lambert, S.J. Messrs. J. A. Hansom & Son, architects:—

Wrigley (accepted)	£420	0	0

For fitting up factory premises, Collingwood-street, City-road, for Messrs. J. & M. Cohen. Mr. J. T. Newman, architect:—

Page	£360	0	0
Reed & Son	313	0	0
A. Reed	308	10	0
Stimpson & Co. (accepted)	267	0	0
Heating Arrangements.			
Siebe, Gorman, & Co. (accepted)	190	0	0

For tanks, Harlow drainage, contract No. 2. Mr. Lewis Angell, engineer:—

Jesse Jackson	£537	0	0
John Jackson	483	0	0
Field (accepted)	359	0	0
Blackmore	351	0	0

For first portion of University College buildings, Bristol. Mr. Charles F. Hansom, architect. Quantities supplied:—

Baker & Sons	£4,674	0	0
Stephens & Bastow	4,598	0	0
Hatherly	4,598	0	0
Davis	4,530	0	0
Veals	4,518	0	0
Pugsley	4,500	0	0
Brock & Bruce	4,470	0	0
Cowlin & Sons	4,370	0	0
Gorrett	4,359	0	0
Forse & Ashley	4,225	0	0
Wilkins & Sons	4,153	0	0
Crocker	4,093	0	0
Wilkins & Hill	4,041	0	0
Howell & Sons	3,949	0	0
Lewis & Edbrooke	3,782	0	0

For Wesleyan Chapel, Tenby. Mr. K. W. Ladd, architect. Quantities not supplied:—

	Chapel.			Boundary walls, gates, and railing.		
Jones & John	£4,800	0	0	£231	0	0
T. Thomas	3,995	0	0	175	0	0
G. Thomas	3,420	0	0	160	0	0
Davies (accepted)	2,997	0	0	143	0	0

For works at the Kent and Sussex Pure Ice Company's Stores. Mr. Arthur Loader, architect:—

Reid	£276	0	0
Barnes	260	0	0
Bruton	254	0	0

For coach-house and stabling, Wellington villa, Brighton. Mr. Arthur Loader, architect:—

Longley	£600	0	0
Reid	600	0	0
Newnham	593	0	0
Bruton	585	0	0

For two houses, New Shoreham, Sussex. Mr. Arthur Loader, architect:—

Curd	£780	0	0
Burchell (accepted)	750	0	0

For new front, &c., 23, Sillwood-road, Brighton. Mr. Arthur Loader, architect:—

Hackman (accepted)	£480	0	0

For additions, 25, Sillwood-road, Brighton. Mr. Arthur Loader, architect:—

Hackman (accepted)	£385	0	0

For strengthening floors and other works to four houses, Rupert-street, Whitechapel. Mr. Holmes, architect. Quantities supplied:—

Wittle	£912 0 0
Kerry	860 0 0
Stephenson	858 0 0
Moyle & Son	809 12 2
Gould & Brand	768 0 0
Merritt & Ashby	736 0 0

For the erection of stables for 200 horses, for the lessees of the tramways, Newcastle-upon-Tyne. Mr. Edward Shewbrooks, architect. Quantities by the architect:—

Obank & Sons	£7,043 0 0
Harbottle	4,917 13 9
Gaby	4,630 5 0
Gray & Humble	4,594 8 6
Millar	4,569 0 0
Simpson	4,554 19 11
Whichello	4,537 0 0
Kennedy & Sons	4,500 17 8
Reed & Son	4,488 4 1
Elliot	4,390 0 0
Johnson	4,288 12 4
Scott	4,198 7 0
Broomhead & Keswick	4,181 1 7
Jackson	4,089 17 1
Allison	4,068 0 0
Bell	4,038 19 10
Forster	4,027 18 5
Lunn	3,932 13 0
Leighton	3,818 0 0
Miles	3,657 0 0
Pickhaver	3,746 4 0
Atkinson (accepted)	3,346 14 0

For the erection of offices, restaurant, &c., Sandhill, Newcastle-upon-Tyne, contract No. 4, for Mr. W. A. Oliver. Mr. Shewbrooks, architect. Quantities by the architect:—

Reed & Sons (accepted)	£7,231 12 6

For alterations to offices, No. 50, Finsbury-square, for Mr. Edmund W. Richardson. Mr. M. H. Pocock, architect:—

Strong	£174 10 0
Sharpe & Evered	125 0 0
Browne & Robinson	110 0 0
Capon	98 0 0
Holloway	96 0 0
Nixon	92 0 0
Goad (accepted)	85 0 0

For iron fencing, Sittingbourne Recreation-ground. Mr. W. Leonard Grant, architect:—

Littlewood (per yard)	£0 18 0
Leaver	0 16 2
McLean	0 15 6
St. Pancras Iron Company	0 14 9
Gardiner	0 13 6
Johnson Bros. & Co.	0 12 6
Chittenden, Knight, & Co.	0 12 0
Geoge	0 11 11
Taylor	0 11 8½
Morton & Co.	0 11 7½
Smith & Co.	0 11 0
Hill & Smith	0 10 9
Spencelayh & Co.	0 10 6
Tett & Hussey	0 9 11½
Rowland Bros.	0 9 8½
Tewsaer	0 9 6
White	0 9 6
Simpson & Wood	0 9 5
Iron Fencing Co.	0 8 11½
Hernulewicz & Co.	0 8 8
Staffordshire Fencing Co.	0 8 6
Tank and Boiler Co.	0 8 2
Deane (accepted)*	0 8 0½

* Mr. E Deane having declined to carry out the work at the price he submitted, the following fresh tenders were obtained:—

Hernulewicz & Co.	£0 9 4
Tank and Boiler Company	0 8 11
Staffordshire Bolt, Nut, and Fencing Company (accepted)	0 8 11

For the erection of house, offices, coach-house, and stabling at Walmer, Kent, for Mr. F. Ommanney. Mr. E. Fry, architect. Quantities by the architect:—

	House.	Stables.
Bourne	£2,575 0 0	£194 0 0
Stiff	2,393 0 0	493 0 0
Wise & Cottew	2,367 16 0	467 12 0
Adcock	2,249 0 0	456 0 0
W. & T. Denne	2,073 0 0	415 0 0
G. H. Denne	2,031 0 0	444 0 0
Petts (accepted)	1,985 0 0	463 0 0

TO CORRESPONDENTS.

NOTICE.

We have reason to believe that, in the case of a few copies of our last week's issue, duplicates of one of the lithographic illustrations were given in lieu of two separate views. This will be remedied on application at the publishing office.

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The Builder.

VOL. XXXVII. No. 1925 SATURDAY, DECEMBER 27, 1879.

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Hospital Construction and Organisation.

ARCHITECTURAL works which have come to us from America have not usually been very satisfactory in regard to the degree of refinement of style and taste in architectural design which they have exemplified. But it is only fair, on the other hand, to testify that in dealing with purely practical matters of construction and planning we not unfrequently find the Americans are ahead of us. When they are in earnest about these matters, they go more systematically to work than we do, and with a more defined determination to get at the best way of doing the thing. In some papers which came before us in regard to the best planning and construction of schools some time ago, we observed a thoroughness of systematic investigation in reference to the effects of every form of building or method of lighting, upon the health of the pupils,—investigation based upon the collection of an immense mass of statistics,—which certainly quite outdid anything that has been done in regard to discovering the best form of school in England, even by School Board officials, and now we have a book from America on hospital arrangement which even more decidedly illustrates this tendency to give ungrudging trouble and time to finding out the best way of doing a thing. Whether or not the architects succeed in carrying out adequately the best thing, when it is discovered, is another question, which we can hardly undertake to answer; but the good intention on the part of those who are about to erect buildings which may be of important effect on the health of thousands, is unmistakable, and cannot be too much commended.

The thick book* which deals with the subject named at the head of this article, and appears to have been some three or four years before its own public, is the result, indirectly of a bequest of a wealthy citizen of Baltimore, the late Mr. Johns Hopkins, for the purpose of having erected the best hospital possible for the town, with special instructions to his executors "to obtain the advice and assistance of those at home and abroad who have achieved the greatest success in the construction and management of hospitals." In pursuance of this recommendation, the committee asked for the detailed views and suggestions of five eminent hospital physicians. This, it may be said, only meets the second half of the recommendation in regard to management, and they do not seem to have invited the opinions of architects. But the five medical councillors appear to have very practical ideas on planning and management, and probably themselves got the assistance of architects or surveyors; indeed, one or two of them mention that they have done so.

Be that as it may, we are certainly struck by the thorough manner in which, in some of these essays, the absolute conditions of a perfect hospital are considered in detail and *ab initio*, without the slightest reference to mere precedent or to purely architectural considerations. These latter are, in fact, regarded as hardly existent at all in the question; and though, of course, it has with us for some time back been recognised in theory that this should be the case, and in the present day the instructions to competitors for hospital designs nearly always contain the provision that the buildings must be plain and that architectural effect is a secondary matter, it is equally true that these conditions are hardly ever observed, and that there is still a hankering on the part of the architectural mind to make palaces out of hospitals whenever there is a chance. Yet if there is any truth in what Dr. Caspar Morris records in his essay in this volume, that some of the largest, most imposing, and most costly structures that have been erected in France and England are radically deficient in regard to their real aim, the provision of the most favourable circumstances for the recovery of health and the avoidance of fresh causes of disease among the inmates, and that no permanent and costly structure can ever hereafter be erected for the treatment of disease, "except as a monument to the pride of some aspirant after posthumous fame," it must be admitted that we have still much to do and to undo, before we can be said to have done all that human care and ingenuity can do to attain in such buildings the best conditions for their main object.

Among the practical points which are thoughtfully discussed in the volume before us, the first which may be named is the largest and most general question as to the best principle for the general arrangement and grouping of the buildings. It is almost needless to say that all the contributors adopt the pavilion system in one form or another, but there is considerable difference of suggestion in regard to the manner of grouping and intercommunication, and still more in regard to the question of two-storied or one-storied buildings. Recollecting the great several-storied masses of our leading hospitals, it ought to be somewhat startling to their managers to find medical men of long experience still speaking in the strongest terms in favour of one-storied ward-blocks, and regarding two stories as, at all events, the maximum which need be considered at all. Of course, from London, the natural answer would be that it is simply a question of providing sufficient room for receiving the average number of cases, and that a restriction to one-story wards in our hospitals would, under the existing state of property, simply mean that two-thirds of those who required aid would get no hospital accommodation at all. How far it would be the wiser economy, when further opportunity occurs, to lay out a large proportion of money on the ground for a great hospital, securing a sufficiently extended site for the application of an ideally perfect system, is almost too large a question to be considered in the course of this article, and one on which it would be, perhaps, premature to pronounce a very decided opinion until we know better what London in the future is going to be, and what scope will be left to future administrators for carrying out what now may seem almost utopian schemes. All that is said, however, goes to confirm the truth of an assertion made by us some years ago, when we took a leading part in bringing about a reform in hospital construction, and which assertion may still be repeated, that many a sufferer would have a far greater chance of life in a canvas tent, on a bare common, with an old woman to tend him, than he would have in one of our town hospitals with the best professional skill applied to his case.

The first of the essays before us is by an army surgeon, Mr. John S. Billings, and not unnaturally his peculiar experience leads him to emphasise certain ideas in regard to the plan and construction of hospitals derived from this experience. He is, more than any of the essayists, in favour of reducing the permanent building to the plainest and simplest type, and goes so far as to recommend the adoption to a great extent of temporary and destructible wards similar to those which have been found to answer well in military experience in the field, even recommending tents for a part of the hospital accommodation. The idea need not be immediately dismissed, but it is necessary to remind readers of the grounds upon which a proposition of this kind is made at all. To those who have no personal experience of hospitals, they are probably merely buildings affording shelter to the patients, and bringing them together, so that the efforts of a medical or surgical staff can be concentrated upon them with the least loss of time and labour. But, in fact, a hospital is not only the place for the cure of accidents and diseases, but is itself, unless the most favourable circumstances are secured, and the most continual care and vigilance exercised, a place where disease originates and is fostered tenfold more than anywhere else. The congregation of a large number even of healthy human beings as continual residents in one building is attended with great difficulty in securing sanitary conditions. What must it be where all the persons thus collected are suffering from disease, often contagious, and accompanied by the continual giving off of

* Hospital Plans. Five Essays relating to the Construction, Organisation, and Management of Hospitals, contributed by their Authors for the use of the Johns Hopkins Hospital, of Baltimore. New York: W. Wood & Co. 1875.

diseased particles from their bodies? Life in a hospital is a fight against the disease tending to breed there, and to leave its germs to benefit the next comers; and the utmost vigilance in cleansing, and precaution against the lodgment of infected matter, only succeeds with difficulty in keeping the enemy down. It was on this account that during the Crimean war, and we believe elsewhere, the system was adopted of periodically destroying hospital huts, and building up new ones of new materials, as the only effectual means of making a clear start with a healthy room; and this is the system which it has been proposed by Mr. Billings to introduce into permanent hospitals. In this country, certainly, we must feel that climate is a good deal against slight wooden erections during most of the year, and that on the whole it would be a doubtful advantage with us to fix on a hospital a permanent charge for taking down and putting up sheds, which could only be useful during a certain part of the year, and would in winter weather occupy ground which would thus be rendered useless. But the idea, which was long ago promulgated by a well-known Scotch surgeon, is worth repeating, and in summer weather it might be found a good resource for the housing of a few cases of a kind specially in want of airy situations, and specially liable to leave seeds of disease behind them.

The question of single-storied wards rests on another basis. There is very much to be said for it on account of the far greater facility afforded for good ventilation in a ward that has only the roof over it, as compared with one that has a flat ceiling and another room over it. It is noticeable that the contributor of the fourth of these essays,—Dr. Caspar Morris, who is in favour of two-storied wards, — recommends them not only on the ground of economy of space, but because he has always noticed that the upper wards are more healthy, on account of having more light and air. This is, in fact, only repeating the chief arguments against two-story wards in another form, that the lower ward is never so well ventilated as the upper. The argument on account of economy in space is not quite sound, for one-story wards can be built closer than two-story ones. Another reason in favour of the one-story system is the difficulty of preventing the vertical passage of contagion from one ward to another by lifts and staircases, though it is possible, by careful arrangement of staircases nearly or altogether external, to minimise this. We should have no hesitation, however, in saying that the one-story system has nearly all the positive advantages in its favour; it is only a relative question of building space and expense.

The whole of the plans recommended in these essays proceed on the assumption that the buildings, whatever their number of stories, are to be raised on a basement, which will not only isolate the buildings more and give them more air and light, but will afford means for ventilating and warming apparatus being arranged in the most complete manner. Let it be supposed that the form of ward and the disposition of the ward buildings on the land is determined upon, it may be observed that an important point in this latter is, in most cases, the planning of the whole so as to admit of subsequent additions without either crippling the building at first or interfering with its arrangements when the additions have to be made: otherwise, there must be the dilemma, in any increasing town, of a hospital disproportionately large at first or too small eventually. And say that we discard altogether the notion of temporary or destructible buildings, what are the best conditions for keeping the permanent building completely cleansed and healthy? Those who have not been led to consider the subject from a medical point of view will be astonished at the rigid nature of the precautions urged against the chance of poisonous matter collecting in and about the ward buildings. "Whatever," says Mr. Billings, "may be the opinions held as to the nature of diseased germs, and their mode of origin and propagation, they are what we have to fear and to provide against in the construction of a hospital." Not only are they on "the dressings, the sponges, the instruments, and apparatus," but "wherever there is a ledge, a projection, or crack in the ward, these invisible particles are liable to lodge, and becoming dried, to be displaced by currents of air. Under certain circumstances it is probable that a single one of these particles is sufficient to set up a morbid process if brought into contact with the living body." Accordingly, everything that can catch dust in any way is a danger. Dr. Folsom says, "the finish (of the walls), especially in wards, is advised to be perfectly plain, without mouldings; and where projection is necessary, as in the casing over a door or window, the upper surface should slope towards the floor at an angle of 45° so as to facilitate cleansing." This latter hint indeed might be adopted for many things in private houses which are made with flat tops, unnecessarily, and become gathering-places for every kind of dust. To continue our doctor's directions:—"The inside of the walls should either be plastered directly on the brickwork, and so prepared as to be hard, smooth, and impermeable, like stone, so that they can be freely scrubbed; or, if this is impracticable, very thin furring should be so attached as to be easily removed and replaced; and this renewal should be made in the buildings occupied by patients at least as soon as the plaster becomes cracked or marred. . . . However constructed, the walls should have all corners and angles rounded to prevent accumulation of dust, and allow of ready cleansing. This is especially desirable at the junction of the base-board and floor, where a broom is apt to leave more or less dust in spite of care." The author gives a full-size section of his method of connecting flooring-board and skirting-board with a concave strip of some 3 in. wide, tongued into flooring and skirting-board. This is the best way if the floor must be of wood. We should have rather had the impression that for a system of ground-floor wards, with basements under them which could be arched, a cement floor would have answered the conditions of sanitarians better than anything else; and in that case the rounded angle could be more effectively made in cement than in any other way. Dr. Folsom recommends for floors "strips of hard wood, not over 2 in. wide, tongued and grooved and blind-nailed" (punched). "On the whole, the application of boiled linseed oil is believed to be the best way of treating the floors. . . . . The walls of all these buildings are recommended to be constructed of brick, with a closed air-space, except in the corridors, where a single 8-in. wall will be sufficient; and painted outside to ensure dryness" (?). "If stone trimmings are used, they should project as little as possible from the surface, as any irregularity interrupts the free sweep of air, and gives opportunity for dust to collect. Especially in those buildings occupied by patients, relief to the eye should be obtained by variation in colour rather than by projections or depressions in the walls." Dr. Caspar Morris is equally strong in regard to the internal treatment of the wards. "Wooden mouldings are wholly inadmissible, as shrinkage will allow or form cracks or fissures, harbours for vermin and pockets for the retention of the morbid emanations and exhalations of the sick. Similar objections apply with equal force to all cornices and ornaments to ceilings, of moulded plaster. . . . . It is impossible to lay too much stress on the necessity of avoiding, in every part of the building, everything which shall have a tendency to catch dust, conceal dirt, or afford a harbour for vermin of any kind." For the floors he recommends, like Dr. Folsom, thin strips of hard wood, "such as is not liable to be scarred by the thoughtless dragging over it of a heavy bedstead, &c. Every such bruised or frayed spot becomes a pocket for the reception and emission of pestiferous contamination. The hardest and closest-grained wood should be secured without regard to cost; and the *utmost accuracy* in the adjustment of joints should be demanded. . . . . One open seam or splintered edge of a joint may become an irremediable source of contamination, in a ward otherwise well constructed." The floors thus made and laid he recommends to be imbued with oil coloured with some dark substance, the latter stipulation in order to avoid the unsightly appearance of stains from the accidental overturning of things, and other causes, which cannot be quite avoided in the most carefully-managed ward, and which leave unsightly stains on a light-toned floor. Another essayist recommends glazed tile linings for the walls: this would be admirable in summer, but it would be found, we think, to produce rather too cold a room in winter. It must always be remembered, too, when walls are rendered impermeable, that extra provisions must be made for the supply of fresh air and the removal of foul.

The question how far anything like architectural beauty can be imparted to a hospital, internally or externally, under such rigid requirements and limitations, is of course not without interest. Dr. Caspar Morris, the most exacting of all our essayists in regard to the requirements for the achievement of perfect internal cleanliness and freedom from lodgment of matter, is, nevertheless, rather pressing in his demand that the exterior should be attractive to the patient. In this we entirely concur, provided it be possible; but the fact is that, after all, architecture is "play," and a hospital administration is such very serious "work" that anything which does not conduce to its main object seems an impertinence; the more so, of course, if it is proved to be an actual source of practical evil. So far as the cheerful and attractive look of a place affects the health and spirits of the patients, appearance and design come under the head of practical subjects. But it is probable that a general air of cleanliness and cheerfulness, which is attainable with the very simplest forms of buildings, is all that a patient suffering under serious illness or a severe accident is the least capable of appreciating; and the presence of mural ornament in a sick-room is in feverish cases a source often of acute irritation to the patient instead of being any relief to the appearance of things.* The great mistake in the architectural treatment of hospitals, when anything architecturally effective has been attempted, has lain in using the ordinary "properties" of Italian or Gothic design, and conveying merely the idea of an ordinary rather palatial house, in a building which requires something much less ostentatious and quite different in kind to give it an appropriate expression. In the interior of convalescent wards, if such be set apart from the rest (as in any good hospital they would be), mural ornament, and drawings or paintings, may be very appropriate and welcome; but in the wards devoted to serious ailments we opine that the less disturbing element there is the better. This opinion is more than confirmed by a remark in Mr. Billings's essay, that in the acute stages of disease bright light even is an evil. Nothing, as he observes, can compensate for its absence or insufficiency for people in health, but he is "satisfied from observation that in many cases of acute disease the glare of a large, white-walled, many-windowed hospital ward does harm very much in the proportion in which it inflicts discomfort," and for this reason alone he urges the separation of acute from convalescent or chronic cases. Another sanitary point upon which we observe that nearly every contributor to this volume insists strongly, is that there should always be one ward in the hospital empty, with windows open, "undergoing Nature's process of purification," and the wards should in this way be left to stand empty in rotation; so that if there were twelve wards, each would be empty for one month in the year. Is this rule at all observed in English hospitals?

Problems of warming and ventilating are of course not essentially different in the case of hospitals from their general conditions in overcrowded buildings, except that the demand for full and ample ingress without cold draughts, and for rapid extraction, is more than usually emphatic in the case of a hospital. A great deal of thought and attention is given to it in these pages, and a good many suggestions and diagrams are given for the perfection of system in regulating heat and air supply, which it would lead us too far to go into here.† It may be observed that all the recommendations are in favour of open fires as at least a very important accessory, not so much in regard to warmth as to ventilation, and not only in the angles of a ward, but in the centre, in the shape of a stove for extracting more efficaciously the vitiated air from the centre of the room. Whether each ward block should have its own self-contained system of ventilation, or whether one central extracting-shaft should be used, is a question of some importance, and which circumstances would have to decide; in all probability the central extractor would be most economical in a small hospital of only a few pavilions, but would become hardly practicable in a more extended establishment. Some of

* We have heard a man who had recovered from a fever describe how, during many stages of his illness, the elaborate pattern of the wall-paper was a source of perfect agony to him, part of his delirious illusion being that he was compelled to trace its windings from end to end.

† One desideratum in regard to heating may be mentioned, which we feel sure is often neglected,—that of taking the heating system through the water-closets as well as through the wards. Indeed, this ought to be done in good private houses much more than it is; many weakly people probably get the seeds of illness from a sudden chill in a water-closet in cold weather.

the provisions which are considered *de rigueur* in the more advanced English hospitals are here very decidedly called in question; one of these is the "foul-linen shoot." Dr. Caspar Morris allows, indeed, of a lift for carrying them down to the basement. "The usual mode of gathering the soiled garments in baskets or in the arms, and carrying them through the wards and down the stairways, diffuses the foulness and disseminates the seeds of disease. But even this, disgusting and improper as it is, is preferable to the sluttishness of throwing them loosely down a shaft, contaminating the walls by their contact in descent, and then lying at the bottom to undergo at least an incipient stage of putrefactive change, and to send the poisonous influence through the shaft back to the ward." His plan is, a metal-lined box on wheels with indiarubber tires, which can be run to the foot of each bed when changes are made, and in which the soiled articles can be at once deposited and drawn to the opening of the lift, and the box sent down with closed lid to the basement, and thence directly to the laundry. The box can then be scoured and cleansed in a place set apart for the purpose. We might add a suggestion, whether the use of lifts in large hospitals for conveying the patients to upper stories does not need modification in detail. We have seen lifts in many-storied hospitals, and those which boasted to be of advanced construction, where the lift was simply an ascending platform going up a bare and nearly dark well, a method of ingress which we should think was calculated to have a most depressing and even alarming effect on a patient in a nervous and impressionable state of disease. It should surely be an ascending *room*, where the well and the movement up it would be invisible to the occupant. It may be observed that in vertically-arranged hospital blocks, especially if of many stories, all lifts and staircases require the greatest care in placing and construction, in order to avoid their being lifts for contagion,—a danger the existence of which is one of the strongest arguments in favour of one-story hospitals when circumstances allow of them. For a similar reason, corridors parallel to the wards, and opening out of them, for affording exercise for patients who are able to walk a little, are to be condemned. They receive the foul air from the wards, and act as channels for conveying it to other parts of the building. The ward blocks must necessarily have connecting corridors,and it is suggested by one of our essayists that an open verandah on the south side of such corridors affords exercising-ground without the evil effects of the corridor contiguous to the ward, and which also shuts out the light and air from one side of it. How far and how quickly contagion can travel in a badly-planned hospital may be judged from one fact mentioned in this book, that in the great ill-planned military hospital at Netley, "where the wards and corridors are so improperly constructed as to *favour* communication" [an error which we pointed out before the building was erected, and were sneered at for so doing], "the opening of an abscess filled with peculiarly offensive fluid in one ward was promptly recognised in another on the same floor at a distance of one-third of a mile"; and, of course, where smell travels, contagion travels.

We have said enough to indicate that there is much in the book we have been commenting on that is well worthy to be marked, learned, and digested,—a good deal more, in fact, than we can give any indication of; and its perusal will certainly suggest how very much those who build hospitals in this country have, if not to learn, at least to put in practice, before we can have a hospital that is a model of its kind. We have it on the authority of one of the first surgeons of the day, that there is not in England at present anything that can be called a model hospital, or near to it. And we fear the fact is, that architects who are asked to carry out such buildings do not really grapple with the problem. They get some general rules and look at some existing hospitals, and then make a building with pilasters and cornices, or mullions and arches, in the orthodox arrangement, and an interior adequately ventilated and sufficiently convenient in its general working arrangements, but destitute of those score or so minor details which go to make the difference between a real solution of the problem of a perfect hospital, and the mere random shot at it.

We should be interested to know from the trustees of the Johns Hopkins Hospital, if the building for which this volume of recommendations was made is completed, what have been the results following this exceptional amount of consideration and forethought.

A MASTER-PAINTER.

It is agreeable in England, where we daily see noble acts of public and private benevolence, to bring forward the example of a foreign, and hence, probably unknown, benefactor. The practical nature of the acts of his life, which could not fail to interest a large number of our readers, led us some years ago to speak of M. Leclaire and the arrangements in his workshops in Paris for the advantage of his men. His instructive biography has been written by M. Charles Robert, and appeared not long since. We make a summary of this from the pages of a recent number of the *Magazin Pittoresque*. It is a story which in able hands would afford ample matter for instruction. His life shows an untiring effort to ameliorate the condition of those about him in his employ, and who followed the trade in which he had made a career, that of a house-painter.

Edme-Jean Leclaire was born at Aisy-sur-Armançon (Yonne) in 1801. His father was a poor cobbler. At ten years of age the boy was obliged to leave school, barely able to read or write, but he had to earn his livelihood. At first he was a shepherd, then he apprenticed himself to a bricklayer, and eventually became a harvest labourer. One day he left his village in company with a band of these roving adventurers; he was at this time seventeen years old. After having in this manner travelled over a large portion of the country he reached Auxerre; some of his companions were going to Paris, and he determined to follow them.

Many, like Leclaire, have arrived at the French capital, and many, like him, young, without friends, without money; but how many have had his energy and perseverance? Wandering in the streets, begging for employment wherever the occasion presented itself, refused everywhere, luck took him to the Place du Châtelet, where the house-painters used then to assemble. There, he said,—and in after-life he used to tell the tale,—"there, at least, the contractors come to look out for their workmen. It is true they generally give the preference to those they know; as to those they have never seen before, they employ them according to the more or less favourable impression their faces make on them." Leclaire must have made a good impression on some one of the discerning contractors, and he was immediately engaged as an apprentice.

The work was hard, the pay small; a piece of bread in the morning, two sous, a penny a day, supper in the evening, and a shake-down with the master. The apprentice had often many a distant errand to run in the evening; exhausted with fatigue, he got up behind the cabs and carriages, and many a time was he made to feel the coachman's whip. In happier days he used to like to tell the tale of the misery of these his years of struggles and mortification, but it was always with an entire absence of bitterness. When he became at length a master workman, he often used to remind his apprentices, with a smile on his lips, "You are better treated than I was."

After his meagre supper, the young man climbed up to his garret; not having any money to buy books, he borrowed those of his master, and in this manner he taught himself. At twenty, Leclaire was a good workman, gaining his three and four francs a day. Out of his wages he contrived to save up twenty-four pounds, to insure himself against the chances of the conscription, and purchase a substitute. Not long after this, he marries. He continues to put by money, and, with a capital of barely forty pounds, he sets up on his own account, and undertakes a number of important contracts, to the surprise of all who knew him.

Simple, modest, and gentle, his faith is always in the future; as a master, he works like his men, and encourages them by his example; he barely snatches a few moments of repose, as he eats his mid-day meal, brought to the shop by his wife in a small basket. But by this means, from his humble commencement, his business rapidly increases.

Before many years are out we find Leclaire at the head of one of the best houses in Paris. His name is respected; by his intelligence, his activity, his rigid probity, he inspires absolute confidence in all who entrust any work to him to carry out.

At this period white-lead was used for house-painting, and the workmen were constantly attacked by grave and frequent illness. Leclaire, after a self-made inquiry, discovered that out of a hundred of the men attacked, thirty suffered from "lead palsy." From this moment his sole thought was to replace white-lead by a substance which should be innocuous to those obliged to use it. There was, it is true, zinc-white, but zinc-white at this time was very dear, and its price prohibited its use for house-painting purposes. Leclaire did not allow himself to be daunted for a moment. He began to study chemistry; the illustrious *savant* Chevreul aided him with his counsels, and, under his direction, Leclaire, after many fruitless efforts, finally discovered (in 1844) a process by which zinc-white could be produced at a cheap rate, and yet dry as rapidly as white-lead. "It was a revolution in the trade," says M. Charles Robert; "two camps were immediately formed; on one side the consumers of the poisonous white-lead, attached to the old routine with their pale, emaciated workmen exhausted by long illness; and opposite them the partisans of zinc-white, at the head of their men, fat and well-looking, an air of health and triumph on their face."

By substituting zinc-white for white-lead, Leclaire rendered the workmen of his profession a service which they ought never to forget. But he rendered them other services; he taught them order and thrift. An old workman, he was constantly turning his attention to the consideration of the existence of his comrades of the days gone by. "I felt this impression," he once said, "that the day that I retired from business, the workmen who remained attached to me could not do the same. I then thought that I should not enjoy complete happiness as long as I remembered the fate of those who had in great measure contributed to help me to pass my old days happily." Noble words these, soon to be carried out in acts. By the foundation of a provident society, a retiring fund, and later on, by abandoning a large share of the profits to his workmen, as a co-operative society, Leclaire saw that the future of his men was insured.

He did much, we see, for those he employed, in exchange for which he exacted two things: regular work and an honourable life. It was only on these conditions that admission was obtained to his establishment, and on these conditions alone the workman ensured his remaining there. Leclaire is dead, but the system he founded did not die with him. The rules which he had established are religiously observed by his successors; the association he formed has continued to prosper and develop; the apprentice receives a well-directed professional education, the sick find the attention and care of which they may have need, the aged workman enjoys a sufficient retiring pension.

Leclaire, who had retired from business some years, died on July 13th, 1872, aged seventy-one. His courageous wife had died before her husband. Till the last day he lived alone by the thought and recollection of her who had been for him so worthy a companion; by a sentiment of touching piety, he desired that at each meal her place might be laid before the chair she had occupied for so many years.

The life of this good man is a lesson for all, for men and masters alike; poor, he had raised himself from his humble position by obstinate work, rigid probity, and daily economy; rich, he well understood the fact that so few seem to take to heart, that if fortune possesses its rights and its enjoyments, it possesses also its duties.

Masonic Hall and Club, Kidderminster

A building for a Masonic Hall and Club at Kidderminster was opened on the 19th inst. by Sir Edmund Lechmere. Some premises in Mill-street, recently purchased by the Masonic Hall and Club Company, have been adapted to the requirements of the company. The premises to be used for Masonic purposes consist of a lodge-room, 55 ft. by 21 ft., and 20 ft. high, with adjoining robing-room, 15 ft. by 15 ft., and ante-room 16 ft. by 11 ft., store-room, and lavatory. The club contains a billiard-room, 34 ft. by 17 ft.; a general room, 18 ft. by 17 ft.; dining-room, reading-room, and card-room, each of the latter being 17 ft. by 15 ft.; committee's, secretary's, and other rooms. The alterations have been carried out by Mr. Price, builder, under the direction of Mr. Meredith, architect. The total cost is about 2,500*l*.

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THE PROGRESS OF GERMANY AS SEEN IN THE SYDNEY EXHIBITION.

Sydney and Melbourne were from the first rivals. New South Wales calls herself proudly the mother colony; Victoria relies on her greater industrial and commercial importance. Neither colony will be second to the other, neither desires to be behind in the path of increasing internal development. To this rivalry must be attributed the invitations which the world has received for two exhibitions following closely upon each other.

With this, however, we do not intend to deal; our principal object is to convey an idea of the share of Germany in the exhibition. In looking through the building, we have not been bound by any classification, such as is customary in writing exhibition reports, our first object being to make our account readable and interesting. Thus, in taking a ramble over the whole, the most salient features only have been selected, and comparisons instituted, no matter whether they be odious or the reverse. The English section may be described as excelling in quality, for there is very little of cheap manufacture; but it wants some points of excellence in which the German department is rich. The decoration of the German section is the handsomest of the whole exhibition. If fault could be found, it is this, that the Germans have been very tardy in completing their share of the exhibition, and thus permitted a slight prejudice to take root from the commencement; while, on the other hand, the space allotted is not nearly sufficient for the quantities of goods sent, so that many really good things are shown at a disadvantage.

As to the participation of German industrials in the exhibition, it has been pretty general, although several eminent manufacturers, shining in their several branches, are conspicuous by their absence. The principal parts of the German section are those comprising musical, optical, surgical, and scientific instruments generally, educational material, and some of the manufactures and machinery.

Germany has taken great pains; expressed in sums, her exhibition has a much higher value than the sections of most of the other countries. In the German section, pianos represent, perhaps, the greatest value, and it is expected that none of them will cross the ocean again. The same holds good of many other articles.

According to the catalogue, the 695 German exhibitors are represented in 137 out of 566 classes, a performance equalled by no other nation but England.

In the art-exhibition, sculpture is represented by Begas, Hartzer, and Schulz. Painting has representatives in Andreas Achenbach, Von der Beck, Becker, Beckmann, Von Cramer, Von Eckenbrecher, Fahrbach, Friedrichsen, Heyden, Hübner, Jutz, Knackfus, Lasch, Oemichen, Schanche, Seypel, Schulz-Breesen, Schüz, Van Starkenborgh, Wagner, all artists of Düsseldorf; Arnold, Baisch, Baumgarten, Braun, Dehn, Gaisser, Gräfle, Grob, Hellrath, Hoff, Horst-Hacker, Kronberger, Langko, Lindenschmit, Lossow, Mali, Marc, Mayer-Wismar, Munsch, Von Poschinger, Roux, Rögge, Seitz, Strecker, Wellroider, all of Munich; Douzette, Eschke, Grünfeld, Huth, Von Kameke, Körner, Von Löfen, Ockel, Schrader, Steffeck, of Berlin; Brendel, Linnig, sen., Linnig, jun., Rettig, Sturzkopf, of Weimar; Oehme, Schultz, Thiele, Thomas, of Dresden; Koken, of Hanover; Ruths, of Hamburg. It should, however, be remarked that many of the less known paintings have been sent to Sydney by art-dealers, more especially by the firm of Pietro del Vecchio, of Leipzig. Next to England, Germany will be the country most strongly represented in the art-department of the Exhibition.

The German standard floats over the foremost tower, beneath which the building is entered. Inside, the statue of her Majesty the Queen looks in a straight line upon the German imperial eagle, which adorns the entrance to the principal German space, where also the German arms are placed and names of German towns are inscribed. Some important objects of exhibition have been placed likewise outside, or in the wide transept crossing the whole exhibition building, for instance, a five-armed cast-iron candelabrum from the Lauchhammer Ironworks. Next to the entrance are two lions cast in zinc (A. Castner & Co., Berlin), as well as two youthful allegorical figures of Trade and Industry. A cabinet with chased silver work in good taste (Koch & Bergfeld, Bremen) takes high rank in the transept. Three more German firms of Berlin, Hanau, and Lauter (Saxony) have exhibited gold and silver goods. They may be confidently compared with the best articles of other nations, although England, the United States, New South Wales, and South Australia compete not unsuccessfully. We also find in the transept a number of bells, frequently tolled, by C. Voss & Sohn, of Stettin. Besides Germany, England only has exhibited bells.

Inside the exhibition, Germany is the most musical country. In the principal hall are ranged more than seventy pianos of various descriptions, the best known makers being Blüthner & Bechstein. Berlin, Stuttgart, Munich, Dresden, Leipzig, Weimar, Coblenz, Vöhrenbach (Baden), Barmen, Zeitz (Saxony), Löbau (Saxony), Naumburg on the Saale, Saarbrücken, and Wesel participate in this show of pianos. England, France, Belgium, and the United States have also exhibited in this class, although not so many. Of those countries, America, with her Steinways, alone can compete with Germany. Besides a large number of other instruments, the public are shown the leather cylinders, resembling the jacquards of pattern weaving, in which the melodies of the barrel-organs are cut in. If desired, the instruments are opened, and the adult public stand before them like children who want to see what is inside.

On entering the large hall, a strange object in the shape of a Calvary strikes the eye, nothing at all similar being within the radius of the exhibition. Those altar saints have nothing in common with art; their claim to notice consists in the faithfulness with which the human body is portrayed. The amount of business done in this line is something surprising, and thus it happens that, while Italy is first in the lighter walks of high art, the Germans are at present the principal manufacturers of saints.

In porcelain, Franz Till, of Dresden, has exhibited paintings on porcelain and ivory, which may be compared with the best that are produced anywhere else. The painted china for domestic use of Römer & Födisch, of Fraureuth, is very good, and the same may be said of the fancy porcelain of Helena Wolfson, of Dresden. As striking as those objects may be, other countries furnish similar things. France has sent splendid faïence, Italy excellent majolicas; but the most magnificent collection, especially as regards quantity of exhibited china, is offered by W. Brownfield & Sons, Cobridge, Staffordshire. There we find mountains of plates, with paintings of real artistic merit, valued at 120*l.* the dozen.

There is a great diversity in German glass goods. Some of the glass is excellent; some of it is cheap and of an average description, only intended for sale. Amongst exhibitors of good glass may be mentioned the Stolberg Glassworks (near Aachen), and Fr. Klingspor, jun., of Siegen. Dr. Heinr. Oidtmann & Co., of Linnich, show glass prints on a new principle. Of countries exhibiting glass goods, England and Austria, besides Germany, are first. Austria has sent a quantity of saleable glass and china goods; of English exhibitors, Thomas Webb & Sons have filled a great part of the transept with their best manufactures. Bohemian glass, which, while scarce, had some claim, is so plentiful at Sydney, as it was last year at Paris, that it fails to please.

The exhibition of gold beading by Germany will probably obtain one or two prizes. Belgium does not approach it. English makers affirm that their gilding is better, but they have not exhibited anything that could be put to the test. Considering the material, the iron ornaments from the Lauchhammer Ironworks are gems, their excellence being the more obvious as it is not shadowed by similar work of other nations, barring the rounded bronze reliefs of the Belgians. We find knights' helmets and shields, adorned with reliefs, for the ancestral halls of newly-ennobled bankers, as well as furniture, knicknacks, decorative figures, partly the natural colour of iron, partly bronze. Among them towers the well-executed bronze bust of the German Emperor, one-and-a-half life-size.

Arms and cartridges of the newer and newest systems (we believe a pause has set in in the invention of "manslaying machines") are exhibited by half a dozen firms, amongst which the name of N. von Dreyse, of Sömmerda, is perhaps the best known. The country most prolific in deadly weapons is Belgium. There, in the gallery, is a crowd of revolvers and bayonets, of Remingtons, Sniders, and Chassepots. If Germany were to attempt in the manufacture of arms a contest with Belgium, she would have to make very great efforts.

The ironworks of S. C. Harkort & Co., of Duisburg, show, in the machinery hall, one of the best collections of the different parts, to the most minute, used in the construction of iron bridges, which is a special branch with the firm. The collection is in the form of a gigantic ornament, harmoniously arranged, enclosed by a framing of photographs, illustrating the history of bridge construction. The Americans have attempted similar displays, but they are beaten in the matter of tasteful arrangement.

Gloves and hats have been sent by all countries exhibiting. The best display of hats is by Christy & Co., of London.

In the great branches of the textile industry, Germany is not well represented, many of the best German firms being conspicuous by their absence. One of the best shows is that of J. G. Treffz & Sohn, of Leipzig, who exhibit cloth. Manufactured textile goods are also sent by England, France, Belgium, and the Australian colonies. In comparing the carpets shown by Germany with those of the best makers of the world,—amongst them John Crossley & Co., and Tapling & Co.,—an impartial judge would probably say that Germany excels in taste and suitable selection of patterns, England with respect to magnitude of operations. The beautiful "Gobelins" of the French, in which they are confessedly unique, must not be left unmentioned; in other respects, France has nothing very remarkable in this class. In lace and embroidery, Switzerland must be placed first.

Germany is great in clocks, sent from the Black Forest, Silesia, Baden, and Westphalia. There are some splendid clocks, inlaid with gold and enamel, exhibited by A. Türpe, of Dresden. They are in the taste of the last century. Respecting watches, it is stated that, although German watches are so often described as "Genevas," the 'cute Yankees know how to utilise the really excellent workmanship of German watch-works by putting them into very massive gold cases, and sending those watches into the market as American goods.

From want of space elsewhere, Germany has been obliged to make good use of her share of the gallery, which is otherwise much neglected by other countries. First, she makes a good show of material for instruction, scientific instruments, paper, and similar articles. At the entrance there are found parabolic reflectors, electric lamps, and telephones of the improved Bell system, of Siemens & Halske. Of similar objects in the English section, only some heliostats, as used in the South African and Afghan campaigns with some success, are shown. Other eminent German firms exhibit microscopes, telescopes, theodolites, surveying and mathematical instruments. In all those things, Germany is unrivalled; although the English, the French, and Americans are also far advanced in this branch, they have sent nothing worth a special notice. Some machinery models, used in illustrating the laws of mechanics, optics, and related branches, to the students at the Darmstadt Polytechnic School, form a unique collection. Many of the objects have already been purchased by the Sydney School of Arts.

The exhibition is very rich in sewing-machines; perhaps no other article is so well represented; Belgium, England, France, Germany, and the United States participating.

England almost monopolises the great branch of writing-paper. If we were to judge by the Paper Exhibition held last year in Berlin, it would appear as if with German paper a good business might be done in Australia. This may be true; but German descriptions of paper have a lower reputation than the English article; yet it is a fact that the English import their best papers,—for instance, a great part of their printing-paper,—from Germany. We know it for certain that the importation of German paper into England is continually assuming larger proportions.

There are three branches in which Germany is equally great, whether this assertion is applied to production or consumption; we refer to spirits, wine, and beer. Pure alcohol goes from Germany to all parts of the world, principally to fortify wines. France, England, and Holland take more to the manufacture of cordials and liqueurs; they are not absent in the German section, but pure alcohol, such as is made in the eastern provinces, preponderates. Light wines also form a special German feature. But beer

is perhaps stronger, and beer will be one of the most hotly contested fields. The rivalry is greatest between Austria and Germany, and next between England and Germany.

There are some things in which Germany is either conspicuous by absence or else supplies but little of merit. Amongst them are leather and leather goods (articles which form one of the strong points of England at the exhibition), products of the textile and iron industries, as well as artistic bronzes, terra cottas, &c. In the textile industry, whole branches are omitted; while in the iron industry larger machinery, steam-engines, locomotives, and similar objects are absent.

Of machinery proper, not much is to be seen. In instituting comparisons with other countries, it may be remarked that the Americans are prominent by many novel ideas. The gas-machines for the house, hardly larger than a safe, exhibited by England, are also remarkable objects. As regards agricultural tools and machinery, many of the German machines, it is asserted, go under an English name to England, and are equal to those made there. Those who doubt this statement are advised to go to Sydney. This account, though it is from the pen of a German writer, claims the merit of being fair; it has been the author's endeavour to keep it so, and to write without native prejudice.

MUSIC, AND AS HELPED BY ARCHITECTURE.

MUSIC may very fairly be said to occupy a special place in the long catalogue of things of interest artistically. It would seem, above other arts, to be all but universally interesting and more or less intelligible, and to be capable of entrancing and thoroughly occupying, at least for a time, all orders of minds and all degrees of intelligence. The learned and the unlearned, the wise and the simple, the most refined and the very roughest, all seem capable of being entranced by the magic of sweet sounds,—by music. In the sister arts of drawing and painting this can hardly be said to be so, and certainly it cannot be affirmed of architecture. Each one of these would seem to require, as preliminary, a somewhat of education, and special education in the beholder to enjoy their results. True it is that the most common intelligence will pause before the likeness of a well-known face, and will even return to it again and again; or a striking representation of a battle-scene, full of life and action, will command attention, and a long attention; but, speaking generally, we may safely affirm that of all the fine arts, the art of music is the most universally intelligible, pleasing, and attractive.

Thoughts such as these must certainly strike any one who reflects for a moment on the quantity of music of all and every kind which this great city alone is always day and night providing for the amusement and delight of its vast population. Indeed, there would seem to be hardly any end to it; another and a more grand opera-house being at this moment only waiting its time of completion, in addition to those already in existence. We need, too, only name the numberless music-halls, great and small, and other minor places, in which, though not solely devoted to music, it plays so prominent and conspicuous a part. We here say nothing of cathedrals and churches, though music, as all know, takes an important place in the ministrations of them. Music is thus everywhere, and all around us. Generally we may thus take note of all things musical; but to fully take note of, and to understand the subject of music as an element of public delight and amusement,—and may we not say instruction?—it would be necessary to go into not a little detail, and specify the many forms into which it divides itself, and the many tastes and degrees of culture it appeals to. Popular musical displays may also be fairly said to be a test, at least of a certain kind, of the power and influence of "education," using that word in its most comprehensive sense; for the sense of hearing must needs, as others, be educated to do its own work as well as may be.

There is in music one element which makes it an art especially *per se*,—it is that of its calling upon the twofold faculty of composition and execution. There must almost always be a subject to play, and an executive player or players to do the work of it, and such are but very rarely the same; the composer and the player are quite distinct, in a most wonderful way sometimes. Again, the composer's work lives, and is interpreted over and over again, and even re-interpreted, long after he himself has passed away, no longer to compose or to listen. Though dead, the Beethovens, Mozarts, Mendelssohns, Handels, and the host of thinkers in sound, yet continue day by day to speak to and to charm the world, not silently as a book, or a poem, or a picture, but through the organs and the hands of others not less in their own way gifted than themselves.

We must not here forget, by the way, how very much depends on the instrumental means, on the musical instrument, as a piece of mechanism that is employed in the interpretation of the musical idea, whatever it may be: a subject in itself on which much might be written, and usefully too, in these days. All and every mechanical appliance is ever improving and progressing, as we are on all hands told; but might we not ask, with some curiosity, Are musical instruments doing so? It may be of interest also to note here, that in the performance of "Fidelio" at Covent Garden, the old-fashioned and now disused serpent, as it was called, has to be brought into life and service again, no substitute for it seeming possible. It is a singular instrument, and does its special work well. It would seem to be quite possible to improve even a good thing out of useful and serviceable existence.

Passing by not a few items here on which much might be said, we may come to the more strictly educational part of our subject, and may ask, usefully may be, what sort of music it is that finds acceptance with the "popular mind," to adopt a very general term, and how far education has an effect on it, and how far it, in its turn, educates those who listen to it? Music holds so special and peculiar a place in art that it needs a special faculty of observation. There are those who will listen with delight to street music, who will hardly pause to look at the finest of pictures. Yet are such not more educated for the one amusement than the other. May be there is more of the poetry of human nature to be roused and got at through the ear than through the eye, the eye needing more of culture than the ear. Crowds will be found to gather round but a common instrument poorly played, and to remain while nought else will hold them together. May not this be said to evidence the "power of sound," and to prove how deeply it touches and must needs educate and refine, if that word be sufficiently definite, the very roughest and the most untutored? Is music, pure and high-wrought music, we might here ask, sufficiently utilised? In the now universal educational programme there is most surely a fair opening for such new educational appliance.

It may here serve to guide to further consideration of the nature of this inquiry, and to the nature of the subject generally, to ask how it is that in so vast a city as London, there is no building erected for, and devoted exclusively to, music, and especially adapted for it in all ways, not only as to dimensions and form, but as to the nature of the materials. Surely this would be well worth a little careful experimenting. Glass, surely, cannot be the best of substances for it. For classical music, as it is termed, how little has been done, as far as "building" is concerned! What building is there adapted for the perfect rendering of the great "symphonies" of the masters of musical fine art, or for the hearing of those wonderful fancies which would all but seem to be inherent in the very being of a musician and composer, *e.g.* Gounod's "Meditation"? Such things never tire. But as matters now are, the hearing of them is an event in life, and a something hardly to be hoped for again. Surely a fine structure wholly fitted for this purpose, and for this alone, would in the end pay? It ought to do so!

It is quite true that the faculty of finding out what is most worthy is not to be acquired in an hour or a day, but it is to be done; and if there be within the educational programme a thing worth aiming at and striving for, it is this of knowing a fine work when present. The consequences can here, at least, be hardly over-estimated. It may, indeed, be a question, how best to provide for such; but the best and shortest road to it is to really and earnestly need it. Culture,—at least, musical culture,—does not, we are told, consist in the increase, however much, of knowledge, but in the wise and right use of that knowledge and faculty we have: an admirable definition, and one that here ought to do good service; for, in the feverish search after the "new," the old and the well tried are but too apt to be forgotten. Music is ever new, however old may be the dates of the birth and death of the composer of it; for it is always new as interpreted afresh. In a building all ways adapted for it, both as to form and materials, it remains yet to be still more new, and to come on to the world as a fresh creation. There can surely be no doubt that one of the great problems of the future (if it be not of the present) will be this of the due and worthy interpretation of music; and that this must involve, among much else may be, the special plan and construction and material of the building in which it is to be heard.

We have thus called a moment's attention to music and to matters musical, and as connected with building and architecture, feeling how much there is yet to be thought out and to be done in it. The art of architecture owes a something, it is quite certain, to music as an art, and a fine art; for it may well be doubted whether our great cathedrals themselves would have come into existence had not music and song and chant been to be provided for. It is most certainly a great architectural, and may be even constructive, problem for the future, how best to build and fit a building suitable in all ways for music in its highest and purest form, where best to put the performers, whether few or many in number, what materials to use, and what kinds of fittings are best and most suitable. The power of sound is but too subtle. Much might be said on it; but very much more after due inquiry and careful experiment. So small a difference, indeed, changes its character, that the painting the walls and piers of a great cathedral does no small mischief, as was evidenced in St. Paul's when so unhappily painted, and which may now be more happily tested in it as it now is; as also in Westminster. It will surely be a notable thing to accomplish, in these modern days, rivalling truly the great art feats of the past. We must needs do this work ourselves, for neither Egypt, nor Greece, nor Rome, nor Gothic Europe, can here help, for they *had* nothing of it.

FROM THE BANKS OF THE SEINE.

PARIS for the last fortnight has presented an aspect unknown even to the oldest inhabitants; the frozen banks of the Seine, in their sad immobility, offer little of that sprightly liveliness which generally reigns on the quays of the river. For the fifth time only during this century, so meteorologists tell us, has this phenomenon occurred. The municipality at this trying period deserve the highest honour for the measures they have taken, and the ready employment they have afforded, to the thousands thrown out of work. At every great square, picturesque groups of uncouthly-clothed labourers, each spade or pick in hand or over shoulder, form at certain hours in the day, and are engaged and paid, and already the great thoroughfares, by the aid of thousands of carts,—in great part generously horsed by the General Omnibus Company, who have also displayed in these bitter circumstances praiseworthy liberality,—have been cleared of their tons upon tons of heaped-up frozen snow. The work of charity has not stopped here: 4,000*l.* have been voted by the municipality to enable the poor to gratuitously take their blankets out of pawn, and a few days later more than half that sum was expended to allow the needy to come again into possession of their mattresses. Warmth has been publicly and gratuitously afforded by huge coke brasiers established on most of the public squares, a happy introduction from St. Petersburg, and round the grateful warmth may be seen at all hours large groups of men and women. Private charity has been no less active. Food and warmth,—that second greatest necessity in winter,—has been afforded, as also comfortable beds, to a large number of men and women. Within a few days past an excellent innovation has been introduced by warming comfortably, and throwing open freely to the public, the huge consultation-rooms of the great hospitals. Such winters as these should, and do, rouse the attention of the thoughtful in the direction of the possibility of more ample provision being made in the certain event of such trials recurring. Science and its sister Hygiene have evidently

not yet said in this matter their last word, and aided by that boundless generosity and charity which are ever to be met with when suffering humanity is to be succoured, the near future, we may be assured, reserves for the world unsuspected methods of alleviating public misery.

The due consideration of the hygienic condition of our great cities must be regarded as one of the chief questions which will occupy the legislators of that near future,—a future which may be said to have already commenced. As our great centres attract in larger proportions their thousands from the country, as the laws which regulate the growth of population exercise their unvarying influence, and as, at the same time, the desire of the Legislature increases, to afford to these millions a degree of hygienic comfort more or less approaching perfection, each day this important question presents itself as one of those most needing immediate consideration, and requiring a more active supervision on the part of the Government. It is a proposal which has more than once been unsuccessfully put forward, but which cannot fail in time to be carried out, that of the formation of a special Ministry of Hygiene. Those who live in the great centres, but more especially those residing in the capitals, have their attention too often painfully drawn to the consideration of such subjects to which it is one of the noblest sources of pride of modern progress to have first drawn scientific attention.

The population of Paris, in 1878, numbered hard upon two millions of souls. With Paris thus placed on the first rank among the great cities of the world, it is not uninteresting to observe its hygienic conditions as proved by its death-rate, the most important, when its correctness can be depended on, among means of acquiring a definite understanding on this point. The mortality of the French metropolis is some 24·6 for every 1,000 inhabitants, this mean being taken during the period between the years 1874 and 1878. But as such facts, while to a great extent proving more or less satisfactorily the hygienic conditions of a city, require comparison with like statistics of other large agglomerations of humanity, we take the bills of mortality of last year, and find Philadelphia offering the most satisfactory sanitary conditions as judged in this manner. William Penn's colony on the banks of the Delaware stands first on the list of the great cities of the world from this point of view, the death-rate being reduced to eighteen persons in every 1,000; our own capital on the banks of the Thames follows with 22·8 for every 1,000 inhabitants; after which comes Paris, which, as above remarked, is 24·6 for the same proportion; then follow New York, 24·8; Brussels, 28·0; Rouen, 29·8; Berlin, 29·9; Calcutta, 37·7; and the last of all, St. Petersburg, with 47·1. The place occupied on this scale by Paris, in common with more than one other of the cities mentioned, cannot be said to be definite. Each year the French metropolis ameliorates its hygienic conditions, and distributes more freely to its occupants those two great necessities of existence,—light and air,—while pure water is more abundantly supplied, and impurities are carried away. The municipality and the hygienists have expressed it as a possibility for Paris to reduce its death-rate to the low figure of seventeen in every 1,000 inhabitants. Contemporary science may with great justice attribute the reduction of the death-rate within this century, not alone to the salubrity of the air of Paris, but to the greatly ameliorated distribution of the streets, to the piercing of new boulevards, the planting of immense numbers of trees, and the opening up of numerous squares and public gardens, but especially to the hygienic consideration given to the supply of water to the capital. We learn from a scientific contemporary, the *Journal d'Hygiène*, that fifty years ago, in 1829, Paris was able to furnish only five litres (little more than one gallon) of pure water for each inhabitant daily. In 1879 it is nearly forty gallons of pure water for each inhabitant. The city draws its provision of water from the Seine, the Ourcq, and the Marne, which furnish it a daily volume of nearly 370,000 cubic yards, with the other reservoirs supplied from Arcueil and the Dhuis, the artesian wells of Passy and Grenelle, and the waters of the Vanne, the total daily supply of water to the French capital may be estimated at 415,000 cubic mètres, or nearly 543,000 cubic yards. This supply is brought into the capital by a series of pipes which, put together in a line, would attain the length of nearly 3,000 miles. From the five litres of water in 1829, to the 150 in 1879, a progress is evident, but still the amount is insufficient.

As one of the natural consequences of the snow and the frost here, all building operations have received a check in the metropolis, and the bricklayers and masons are leaving Paris, for most of them come from the provinces. A few days since the Orleans terminus here was crowded with a first squad of some 300 Limousins returning home as usual after their season's work; they are now being followed by other and even more numerous bands, laden each with their simple but heavy tools, and their small package of clothes. The Limousins return to their homes and families with their pockets well filled, for they have had a good season, and they are a thrifty, honest, sober set of workmen, each with his little square of field carefully cultivated, and many with money in the Funds.

To aid the unemployed in this bitter winter weather, the Minister of Public Works has recently published a circular addressed to all the heads of the Government work-yards throughout France, and urging them to "redouble their efforts and seek every possible combination which may allow of work being given to the unoccupied."

While we are speaking of the consideration given to the occupation of the working-classes, it may not be out of place to mention the result of the Commission nominated not long since to inquire into the means adopted by the contractors to prevent loss of life and accidents in the employment of scaffoldings. The use of nets, which was suggested, and in more than one case, to our personal knowledge, adopted with eminent success, has been set aside by the Commission by reason of the difficulties, which it is only right to say certainly exist, in these nets being fixed in the streets of a large capital like Paris. The kindness of neighbours has to be put under requisition to fasten such nets, and this is an inconvenience. The measures proposed by the Commission consist in the law obliging a greater solidity and strength in the scaffolding employed, and the obligatory institution of a balustrade on each side and at each landing of the scaffolding; and for flying scaffolds (such as are often used here in Paris, where, worse still, one constantly sees a man suspended from the top of a house on a single knotted cord), the use of three ropes instead of two. This question of scaffolding, and the natural unwillingness of the contractor, on the score of its great expense, to erect a secure structure when the house has merely to be painted or washed, is one that requires a more serious examination than that given to it so far. At Brussels, as every professional visitor must have noticed, in each house, exactly under the cornice, may be observed a line of several holes in the wall; into each of these holes when the house requires repairing is thrust a stout pole; on this are suspended either a number of cords, or the upright poles are attached. In this manner, in an incredibly short space of time, and at the smallest possible expenditure, a secure temporary scaffolding is obtained and as easily removed; the hole being pierced in the wall of the garret, there is no lost space or injury done to the house, while an architectural beauty is added to the cornice.

This system of scaffolding, of which personal acquaintance enables us to know the value and efficacy, suggests to us the proposal recently put forward by a French professional journal, *L'Architecte*, that there should be instituted here in Paris a permanent exhibition of materials and inventions connected with the building trade. The success of the recent exhibition of sciences applied to industry, in which a special annexe was occupied in this manner, has suggested this proposal. "Each manufacturer," we quote our contemporary, "would have in this exhibition a specimen of his productions; a jury would be nominated by the exhibitors themselves, and each year prizes and recompenses would be awarded to the most praiseworthy inventions." The proposal farther contains the suggestion of a special room devoted to "new inventions"; each invention, discovery, or improvement in the processes of building, and its various aids and accessories would be here represented, and would have the right to remain here six months or, at the outside, a year. Such a proposal merits attention, and we may venture to hope that such an institution would soon cross the Channel. In these days of museums, and with the manifest proofs about us of their salutary effects, a similar institution, as an annexe to the Parkes Museum of Hygiene, could not fail to become a powerful ally in the aims of its founder.

Among the artistic topics which deserve mention from the banks of the Seine, we may refer to three important competitions held at the École des Beaux Arts, that for the Chandesaigues prize, for young architects; that for a monument to be erected at Courbevoie in memory of the defence of Paris in the Franco-German war; and, more recently, the competition for a Sèvres vase to commemorate the "passage of Venus across the Sun's face." To speak at length of such artistic tilts, to those at a distance, is scarcely profitable: in all the works exhibited is evident that peculiar French stamp which some cynically attribute to the over-active interference of the State in French artistic education. Let us not forget to mention also that M. Delaunay has been nominated a member of the French Academy of Fine Arts in the place of the late lamented Alexandre Hesse, whose name and works are now almost forgotten by the present generation.

SCULPTURES OF ANCIENT PERGAMOS.

In the course of the past autumn, the Old Museum at Berlin has been enriched by an ancient work of art of unique character and value, a very extensive series of high reliefs from the site of the ancient city whose name is variously spelt in Greek and Latin authors, appearing in the latter chiefly as Pergamus, but in the former as Pergamos, Pergamon, and sometimes Pergama. It was at noon on the 26th ult. that a numerous assembly of the *savans*, classical scholars, journalists, and artists of Berlin met in the Göttersaal on the basement of the Royal Museum, by special invitation of the Prussian Minister of Education, for the first preliminary inspection of these valuable relics of antiquity. It is not possible to enter as yet into any detailed criticism of the work, the more so as a large portion of the sculptures is still invisible, and some time must elapse before they are freed from the mortar and other accretions still covering them,—a process through which they are now going, and which it is intended to complete before opening the collection to the public generally. At the private view to which we have above referred, the unanimous verdict was that these sculptures are of the rarest value, and that by this addition to its treasures the Berlin Museum has received an accession, second in importance and interest to no ancient remains which have, for a long time past, been deposited in the museums of Europe. With respect to the extent of the collection, some idea may be gathered from the fact that they fill two very long galleries, and, that, in addition to the sides, they, in many places, cover the floors of those apartments. The art-loving public of Europe is indebted for the recovery of these remains to the exertions of Herr Humann, a German civil engineer, long resident at Smyrna, and, next to him, to Herr Conze, director of the Berlin Museum. To those two gentlemen is due the discovery of the relics and their subsequent excavation and preservation. In their acquisition for the Berlin Museum, the German Foreign Office lent its powerful aid, the German Ambassador at Constantinople having materially contributed to the success of the negotiations, and to the fact that the money they have cost is exceedingly trifling. It is intended after the cleansing of the remains to put them together in their original order, and to place them permanently on exhibition in the projected Berlin Museum for plaster-of-Paris casts. In the mean time we are enabled to give the following description which we translate from a copy of the MS. of the catalogue about to be published on the subject, and which will place our readers in possession of all the leading facts at present made out with reference to these remarkable sculptures:—

"On the Acropolis of ancient Pergamon (now Bergama) fragments of high reliefs for many years past have from time to time been brought to light, as mentioned by Curtius in his 'Contributions to the History and Topography of Asia Minor' (pp. 56-62). Several of these remains, through the courtesy of the civil engineer, Herr Karl Humann, of Smyrna, have been presented to the Royal Berlin Museum, and are placed in the Göttersaal, or hall of the gods. Last year, at the suggestion of Director Conze, the permission of the Sublime Porte was obtained to excavate the spot in question, and

the excavations were commenced under the direction of Herr Humann, a grant having been made for the purpose under the auspices of the Prussian Minister of Education and Worship. In a very short time the work led to the discovery of a series of alto-relievo tablets, which turned out to be parts of a large marble frieze, to which the fragments already in Berlin likewise belonged. The German Emperor was now pleased to grant the requisite funds for systematically carrying out the excavations for which the ordinary means at the disposal of the Royal Museum would have been insufficient. The operations, in which the German Crown Prince, the patron of the Royal Museum, manifested deep interest, were then continued, under the direction of Herr Humann, and for part of the time also of Director Conze, who is still on the spot, and who will soon bring the operations to a conclusion. Through the courtesy of the Sublime Porte, Germany has been enabled to secure possession for the Royal Museum of all the relics that may be found. The largest part of the sculptures has already reached Berlin.

In his 'Liber Memorialis' (viii. 14), written, probably, in the second half of the second century after Christ, Ampelius enumerates as among the wonders of the world, a great altar situated at Pergamon. It was 40 ft. in height, and was covered with extensive sculptures, representing the Battle of the Giants. It was manifestly the same altar which was mentioned by Pausanias, writing at about the same period (v. 13, 8; compare Brunn Bull. dell' Inst., 1872, pp. 26 *seq.*). It is an obvious conjecture that the structure was erected by Attalus I., between 241 B.C. and 197 B.C., and that it had some connexion with his victories over the Galatians. There is no doubt that the great mass of the sculptures which have been found belong to this altar, and more particularly to a great frieze forming part of it, and representing the battle between the gods and the giants.

The question is still under investigation as to what was the general shape and aspect of the altar, and what place the frieze occupied in it. The frieze itself consisted of tablets 2·3 mètres in height, and with a breadth varying from 0·61 to 1·10 mètres. They were made of a large-grained marble, the colour of which was not quite uniform, sometimes being bluish and sometimes rather yellowish. The figures, executed in the boldest high relief, being often entirely separated from the background, occupy the entire height of the tablets, and are, therefore, about one-and-a-half times life-size. The composition exhibits the gods engaged in the fiercest and most passionate fight with the giants, who are represented in the most fantastic variety of form. The latter are for the most part serpent-footed, often winged. Sometimes they appear in purely human shape as armed warriors. They are all rushing on in the wild and savage rage of battle against the gods. Two of the chief groups, apparently designed as counterparts, comprising four tablets each, represent in the one case Zeus, or Jupiter brandishing the ægis in his left hand, and as having just hurled his thunderbolts with his right hand; and, in the other case, Athene, or Minerva seizing by the hair of the head a giant about whom her serpent is coiling itself, while Nike, or Victory, is hovering near to crown her as victress; and Ge, or Earth, is rising up out of the ground to complain and to supplicate for her sons. Upon another series of tablets, Helios, or the Sun, is represented rising up from the deep in his chariot drawn by four steeds. On other tablets we find Apollo, Artemis, Dionysos accompanied by a satyr-boy, Hephaistos, Boreas, and, it is thought, Poseidon (Neptune). On a beam, running along above the frieze, the names of the gods appear to have been engraved, and below the frieze the names of the giants.

While the entire composition obviously comes from one master, and everywhere shows the same freshness and the like wealth of inventive power, the manner in which the different parts are executed is not completely uniform, but betrays different hands of various degrees of skill and carefulness. But throughout the whole we see an incomparable mastery and boldness in the marble work. Although the sculptures manifest their relationship with the works hitherto known as products of Pergamenian art, as, for instance, the Dying Gaul of the Capitol, and the group of the Gaul who has killed his wife and is stabbing himself, in the Villa Ludovici, yet they present this style of art from entirely new points of view, and they open up a very surprising insight into a branch of ancient sculpture which is remarkably in sympathy with modern ideas, and which hitherto was little known to us. The surprising relationship of some of the subjects with the Laocoön group throws a new light upon the question not yet answered with certainty, as to the period when this work originated.

The number of plates found, some of them of the full original height, and others in large fragments, is upwards of ninety. To these there are to be added no fewer than 1,500 smaller fragments, some of them being very small indeed. The surface of the relics is in very different degrees of preservation. Some pieces are as good as intact. There are great hopes that the plates which had been built into walls of Mediæval fortifications will, after the removal of the mortar still on them, turn out especially well preserved. A great deal has been much damaged by exposure to atmospheric influences, and a great deal probably by fire; and it is beyond doubt that a considerable portion of the frieze has been entirely destroyed, probably by having been burnt for lime. Along with the Gigantomachia, numerous fragments of a second frieze of smaller dimensions (1·57 mètres in height), and of less deep relief, have been found. The subject of this is not yet made out, but part of it appears to refer to the myth of Telephos. A series of statues has also been found, some at least of which belonged to the altar-piece. Of sculptures of a more ancient epoch only a few isolated pieces have been obtained, among which is an ideal female head, of quite extraordinary beauty."

COSTUME, CUSTOMS, AND DISEASES OF BUILDING WORKMEN.

It was once very easy at first sight for an ordinary observer to recognise the building or other skilled workman by his everyday-costume or working-dress, but it has for some years past become more and more difficult to identify one class of workmen from another, except when witnessed at their work, or found in the street bearing or carrying some instrument of their respective crafts. So completely have skilled artisans thrown off the once distinctive signs of their ancient callings in apparel and other observances, that it takes one acquainted with their trades, habits, and manners to identify them with any certainty. Building and other artisans have most foolishly cast aside some sensible customs and habits which they would do well to revive wholly, or subject to modifications. The mason, carpenter, joiner, bricklayer, plasterer, painter, and those in other branches wore once distinctive caps and aprons, and their working-clothes varied, particularly in trousers and vests. Carpenters, masons, and bricklayers wore either fustian, baracan, moleskin, or corduroy trousers, or some other kindred stuff, and for the protection of their working-dress and other useful ends they also wore an apron. The carpenter's or joiner's apron was made of stout linen, generally white, but often it was made of unbleached stuff at first, which afterwards thickened and became white by repeated washings. The full-sized apron of the joiner or cabinetmaker was made to cover the breast as well as to extend to the knees, or below them, and there was a pocket sufficient to hold a small number of nails, and a few tools, such as bradawls, gimlets, and other minor and useful tools in constant request by the workman, or wanted when executing or fixing a piece of work in an elevated position. There was a rule-pocket also in some aprons, as well as the general one in the trousers. Three-feet rules in 9-in. joints or lengths, or 2-ft. rules in 12-in. lengths were mostly used by the old class of operatives, but our present-day artisans have almost discarded deep rule-pockets in aprons or trousers, and prefer using 2-ft. rules in 6-in. joints, as they are more handily carried, and can be hidden away in any pocket out of sight. Less error, however, is likely to occur in the use of rules with the longer lengths and the less joints; but your modern building workman is a gentleman, and he likes compactness, and does not care to exhibit any of the signs of his trade outside the workshop or building. We do not infer that all workmen are ashamed of their craft, but we regret to write that too many of our present-day artisans act in a manner as if they wished that nobody should recognise that they were mechanics. The brown-paper cap, the moleskin or corduroy trousers, with a rule-pocket from which a portion of the rule stood out, and the apron, were the distinctive dress of the carpenter, joiner, and other wood-workers. Masons and bricklayers formerly wore coarser aprons than carpenters or joiners, and the material was often or commonly a description of leather. Masons and stoneworkers of all kinds to some extent still wear leather aprons as a protection for their clothes, for the wear and tear, dust and colouring matter of some stone acts most injuriously on clothes, and an apron of some kind should be always worn. Workmen should never be ashamed of their garbs; and as for an apron, it spells cleanliness and economy in the yearly cost of clothing.

Shakspeare, who has touched upon almost everything, gives the carpenter a leather apron; but the traditions of the building trades do not associate the house carpenter and joiner with the donning of a leather apron, although it is just possible in early times carpenters, like smiths and masons, wore aprons made of leather, as wheelwrights and millwrights in our own times, or those engaged in cart-making and farming carpentry. Here is what Shakspeare says, in "Julius Cæsar," act i., scene 1, the scene supposed being a street in Rome:—

Flav. Hence: home, you idle creatures, get you home!
Is this a holiday? What! know you not,
Being mechanical, you ought not walk,
Upon a labouring day, without the sign
Of your profession?—Speak, what trade art thou?
1 *Cit.* Why, sir, a carpenter.
Mar. Where is thy leather apron, and thy rule?
What dost thou with thy best apparel on?—
You, sir, what trade are you?
2 *Cit.* Truly, sir, in respect of a fine workman, I am but, as you would say, a cobbler.

There is little doubt that the shoemaker, when at home in his workshop, wore what his present-day representative wears,—a leather apron; but your present-day carpenter or joiner would spurn the idea, and often prefer to soil and wear out his clothes than to even wear a short white apron, from the waist to the knees. The plasterer sometimes wears a white or grey apron, and in some instances a white or grey blouse; and the house-painter who is wise dons a blouse and canvas trousers, or overalls, when engaged at his work. The painter being constantly in contact with painted work, and handling all kinds and colours of paint, oils, varnish, &c., runs more danger of permanently injuring his clothes than wood or stone workers. All building workmen, however, are more or less liable to injure their clothing by contact with various materials, and the wearing of an apron is advisable, and should be thought indispensable. Working-clothes, at the same time, should be somewhat strong and coarse, yet close or thick in material, and the colours should be such as will not show the dust or dirt, or but little of it.

The French building *ouvrier* or operative is more wise in his generation than his British brother, for he mostly wears over his working suit a blue blouse. In London, the only building workman who approaches the Paris one in costume, though not in colour, is the house-painter, with his white blouse or overall. There are at the same time hundreds of painters and sign-painters, writers, &c., who work away daily at their trade in their ordinary dress, their working-suit being their daily walking-suit, and the same may be written of other building workmen, and many outside the trade.

On the score of health and cleanliness, we would strongly advise all classes of building and other workmen to retain the use of the apron, and in some instances the blouse. It is immaterial whether the old paper-cap be retained, though it is very suitable for the workshop. Caps can be had of suitable material for working uses, and straw hats are a healthy and light covering for the summer-time. There are a number of artisan diseases from which workmen suffer, and some hands in the building branches are prone to contract and suffer from those diseases. Stone, monumental, and marble masons suffer from the mechanical irritants, as dust given off from the stone they work, just as coal-miners, knife-grinders, flax-dressers, and other workmen suffer. Many diseases could be prevented if workmen would only take a little trouble. As wearing aprons prevents a good deal of dust and dirt working through the openings of the clothes to the body, soiling the skin, and impeding the proper functions of the pores, so would the wearing of respirators by stonemasons and metal-workers, or other artisans, prevent them from inhaling dust. This constant inhalation on the part of a number of our artisans in various trades is the fruitful source of diseases of the bronchial tubes, lungs,

chest, and pulmonary consumption. Some useful respirators, as masks, were introduced a few years ago for the benefit of workmen, but few could be got to use them, or continue the life-prolonging practice. The moustache movement, advocated successfully in these pages a quarter of a century ago or upwards in the interest of stone and metal workers, and others employed at dusty trades, has had good results, a large number of workmen having taken to the wearing of moustaches on their upper and lower lips, and long beards as well. The hair to some extent acts as a filter and respirator, and workmen inhale less dust and other irritants. We have known several stonemasons to severely suffer from one or another of the diseases above named, and die at an early age. Cabinet and chair makers are also prone to these diseases, as they inhale much of the very irritant dust thrown off in the planing, scraping, and glass-papering of mahogany, rosewood, and other fancy and highly odourous or strong-smelling woods. House-painters often suffer from lead-poisoning, which cleanliness and nightly washing or bathing would lessen. Plumbers also suffer from lead-poisoning, and so do printers or compositors. Painters and plumbers, however, who wash their hands before meal-times, change their clothing as frequently as they can, and retire to bed in a cleanly state, seldom or never suffer from lead-poisoning. The term "painters' colic" has been long known, but that called "writers' palsy" is not so generally known. The attack of spasmodic irritability is sometimes so severe, in the case of the last-named disease, as to compel the sufferer to relinquish his trade or otherwise learn to write with his left hand. Writers' palsy, or paralysis, arises through the constant use of a particular group of muscles of the fore-arm. Being forced to work in a constrained posture, or to keep the arms or legs in a constrained posture, gives rise to many complaints in other than the building trades. Hence arises injured lungs to the shoemaker by the pressure of the last against his breast; but besides compressed chests, many boys or young workmen contract curved spines and distorted shoulders. As regards shoemaking, within recent years, there has been a great reform in the method of working in all the large workshops or factories, the trade being subdivided into several branches, and most of the work being done in a standing position, with the aid of machines and other improved appliances. The standing position is also of late being introduced into other trades, where sitting and working in a constrained position were productive of injury and disease.

During an ordinary working life, house-joiners and plasterers, particularly those workmen engaged in jobbing work and alterations, eat or swallow more than one good peck of dust. Indeed, this class of hands inhale, through mouth and nostrils, nearly as much dust as masons. Bricklayers, on outside work of buildings, inhale less dust than those engaged on inside work do. They are generally surrounded by a current of air which disperses the dust. Dusty trades, whether in relation to the working of stone or metals, have the effect of inducing drinking habits on the part of the workmen engaged, for the inhaling of dust causes thirst, and thirst too often, unfortunately, leads to the washing down of the dust with draughts of beer, instead of a rinsing of the mouth, and a draught of water or some other non-intoxicating liquor. Lime-burners, and some workmen engaged in certain chemical and vitriol work manufactories, wear the proverbial "wad" or wisp of straw or hay in their mouths, through which they inhale the life-sustaining air, and escape much of the poisonous gases or other irritants escaping or floating around them. It is a noteworthy fact that, notwithstanding the nuisances created by certain chemical and gas works through smoke, smells, and most disagreeable exhalations, there is a certain curative and preventive value in their existence, viewed in relation to some diseases.

We have known localities in which some vitriol and other chemical works were situated to almost wholly escape various visitations of cholera, fever, and small-pox epidemics, while the rest of the district, city, or town suffered severely on each occasion; and what makes the matter more remarkable still, the site of these chemical and vitriol works was previously swampy low ground, foreshores, slob-lands, mouths and sides of rivers and estuaries, reclaimed and filled up. It is a well-known fact, that notwithstanding the injurious effect that working in gasworks has upon a portion of the workmen engaged, yet, that in case of children and adults who have the whooping-cough or other kindred complaint, a temporary detention or visit or two of the sufferer to the yards or premises of gasworks often works a speedy cure, or otherwise so controls or lessens the cough that it passes away in a very short time. We leave these facts to medical men to explain as best they can. Constant inhalation of poisonous gases, however little, produces disease, if not death, while a temporary inhalation of a certain vapour or fume may act as a curative or preventive to some forms of disease.

Hale and healthy artisans in the building, or, indeed, in other trades in our crowded cities and towns, able to do a good day's labour at the age of sixty or upwards, are comparatively few in number at the present time. In our long experience of the building trades we have known carpenters, masons, and others who continued to work as journeymen till they had become octogenarians. We have known several less aged, yet men who had passed into their seventieth year, who could keep pace, and often outstrip, young workmen of twenty-five or thirty. Personal neglect and strong drink, we fear, have undermined the constitutions of a large number of our building workmen; and, as a class, in our large cities and towns at least, they are not as healthy and as long-lived as their predecessors. To the decline of the apprenticeship system a few marked ills are owing, which we will not stop at present to particularise, as they are obvious to the majority of the readers we address. Cleanliness in person and clothing and in thought and expression, and physical strength and mental activity, bring many advantages in their train. Health and skill are the workman's capital, and the latter is of little use without the other.

THE SALIENT FEATURES OF PARISIAN ARCHITECTURE.

The lively interest felt in Parisian architecture is so general and so legitimate that a further exposition of the subject will hardly need an apology. We shall endeavour, though, to invest our theme with that special value which springs from practical acquaintance with it: a circumstance which, we hope, will afford us an apology, and will kindly ensure us attention. Most of the comments made upon the architecture of Paris have too general and vague a character; or they are confined to the investigation of some special point. Hence their usefulness is limited to giving information on disconnected features, or to the propagation of a general favourable opinion about the merits of Parisian art. A comprehensive picture in salient traits, descriptive as well as analytical, will, no doubt, facilitate a clearer understanding of the subject, and will contain the elements of real usefulness and adaptability. Detail studies will, therefore, be no part of our present remarks; for we shall attempt to present the important causes which have given to Parisian architecture its distinctive character: those agencies which have prepared the *field* for the development, as well as for the exercise, of taste and skill in design and detail. The secret of the beauty which is so lavishly displayed from the Place de la Bastille to Passy, from the Mont Parnasse to the Gare du Nord, is, in its essence, twofold. On one side we have the French artistic talent, renowned since centuries, trained in excellent schools, fostered by many social institutions and by the art-enthusiasm of the whole people. On the other side we have those important causes which are the subject of our discussion, and which we have designated as the "field of action," or as the stage, upon which the above capacities are called upon to display themselves. Whether the French architects, divining what is necessary for effective street-architecture, have themselves first established their field of action, or whether the latter has been the result of outside influence favourably reacting upon the skill of the architects, is a nice question for art-historical speculation. The likelihood is, that both conditions have been co-existing since ancient times, and have worked hand-in-hand as they do at the present time. But, however that may be, it is certain that both conditions are necessary for architectural effort to culminate in works of perfection.

We repeat that, apart from matters of capacity and taste, a few great principles have contributed to the general excellence of Parisian architecture, and, in ascertaining them, we shall see that they are at once those which have at all times been accepted as necessary conditions to good street-architecture. We enumerate them as follows:—

1st. General extent of buildings and the roof.
2nd. The doorway and continuation of architectural effect from the street into the building.
3rd. The window.

I. *General Extent, and the Roof.*

The absolute size of buildings is an all-important consideration. There is power, monumental grandeur, breadth of treatment, and character contained therein. Where the canvas stretched before the architectural artist is large, he will feel a sense of liberty to let his genius fly; he will make his dispositions and determine his proportions with freedom, and according to æsthetic dictates; various solutions for façades and internal arrangements being possible, he will be able to arrive at a happy combination. Large and decisive features of design will be possible, reducing long and high façades into a few distinct but harmonising figures; and light and shade and colour effects can be so distributed as to be both effective in themselves, as well as contributory to the general design. Size of building gives breadth of treatment and *character*; these two go hand in hand, for they mean the frequent repetition (character) of a few well-designed features. Details, if good, are effective in themselves; but their individual worth and import to the general design is increased in proportion to the frequency of their occurrence. Thus, the regular rotation of a well-chosen detail becomes indeed a feature, impressing upon a building a certain character, and furnishing at the same time a desirable perspective scale.

In Paris, the general extent of buildings in front, depth, and height is large. Leaving out of account public buildings, hotels, and extensive business premises, the above is principally due to the general custom, for rich and poor, to live in apartments or flats. For such buildings, large plots are found most suitable and most profitable. This plan of dwelling, which existed in Paris in a more or less perfect form since olden times, received fresh impulse and full sway in the reign of Napoleon III. Desirous of making of his Paris the most beautiful capital of Europe, he set about his purpose with all the means and skill at his command, and on a scale almost unprecedented in the history of architecture. The city was partially re-planned; whole quarters were disturbed and rebuilt with the view of obtaining fine broad streets, improved communication, sites for proposed public structures, open squares, and gardens. As a glance at the map of Paris will show, the radiating system was employed, converging often as many as a dozen streets and avenues, towards a common centre, formed by an open square. Distinguished by a fountain or monument of some kind, these grand public places became the culminating points of architectural and perspective effect. It was clearly understood that new Paris had to be laid out in large plots, so as to have large buildings; for such alone could realise the intended picture of grandeur and magnificence. Hence, apartment-houses, already popular, became also the official plan, and under the scheming and organising genius of Baron Haussmann and an army of able and disciplined architects, this mode of house-building soon attained artistic and material perfection. Apart from the better accommodation and convenience afforded by apartment-houses, and apart from their great architectural merit, there was a further advantage in their adoption. With them, considerably more people could be housed on a given square of ground than with any other plan; for such houses could be built from five to eight stories high without becoming ugly and disproportionate, as strips of façades would do. This was a great point in Paris, which is a city limited in extent by its defensive walls, having at the same time the prospect of considerable yearly growth. And the greater concentration of the people could only be another factor to add to the life and splendour of the city, for what are fine streets and squares with no people in them to give interest and animation?

Sixty feet of front are a minimum in Paris, 80 ft. or 100 ft. are nearer the average. The depth of plots is in most cases proportionately great, which gives rise to another excellent point; courts and court architecture. The courts, which are open ones, generally separate a structure into a front and a back building,

giving light and air to these where required. They are treated architecturally in a simple appropriate manner, but always neatly and cheerfully. The approach to courts is by the wide entrance-hall way, which is often made a carriage-way. This entrance, in all its relations, will be more minutely described under the second head. The buildings of Paris are, as already stated, from five to eight stories high, the majority having the two last stories worked in the roof. The Mansard shape is of most frequent occurrence; but often the last story but one has a set-back front wall of light construction, in which case the roof above is a French roof with flat top; but in many instances a complete Mansard roof rises from the set-back wall. The French roof proper, of rich ornamental treatment, is reserved for monumental edifices, or for such instances of *hôtel privés*, where no important stories, requiring much light, are contained in the roof. For the monumental roof is, in its æsthetic character, a complement to the façade; it is to impress by its lines and its surface, and should therefore not be subjugated and hidden by a mass of dormers. The reasons for making the roof so conspicuous a feature in Paris, are two: appearance and cheapness. In fact, a well-treated roof gives a desirable finish to a building, at a less cost than could be worked in stone; but it also presents great advantages to the general design of a building, especially a high building. A roof permits the serious perpendicular ascent of the façades to be pleasantly released and contrasted, at a height such as to give a good shape to the picture of stone-work below. This effect is assisted by the slate or lead colour of the roof, and this colour furnishes in addition a pleasing gradation from the yellow of the stone to the blue or grey of the sky.

The artistic and perspective effect of Parisian streets is simply magnificent. It is due to the system of building "large," as above examined, and to the prevailing principles of design. There is *agreement* in the various styles of Classic practised in Paris, but there are also individuality of features and variety in details. Hence, *contrast within general harmony* is the key-note of Parisian architecture. Where power, breadth, magnificence of the *mass*; where refined beauty, serene or playful, of separate parts and details are desired, the above principles of design and of building are absolutely necessary, and none others will suffice. The qualities of the individual buildings become at once the character of the whole street and of the whole city. Cornices and roof-lines, ranging at nearly uniform elevation, furnish grand perspective-lines which are strengthened in their power by the uniformity of the stone and roof tints. Beautiful details in stone and metal work, in marble, bronze, and wood, ever varying and ever harmonising, meet the eye at every step, and bright bits of flowers and bright faces everywhere combine with the soothing green of the trees to a picture, such as few cities can present. Who has not gazed along the grand streets, boulevards, and avenues of Paris, but to be filled with wonder and delight!

II. *The Doorway and Continuation of Architectural Effect from the Street into the Building.*

The doorway is one of the most conspicuous and meritorious features of Parisian architecture. The importance which it has received is closely connected with the subject of the first division. Houses which are inhabited by many people will necessarily require liberal space in the common entrance-hall and staircase, and in average fronts of 80 ft., a space of from 7 ft. to 12 ft. can easily be allotted to the main entrance. The width is further determined by the fact of the entrance being made a carriage-road in all cases where there are courts. The dustman, wagons for removals, and similar vehicles make splendid use of this arrangement; they are thereby removed from the street, where their presence is always an incumbrance, if not a nuisance. Again, cabs can drive right into the building and deposit their passengers at the foot of the main staircase, under complete shelter. For wealthy people who keep their own carriages the convenience and privacy afforded by this roadway are almost inestimable. They can leave for, and arrive from, the opera and balls, in light toilettes, without being exposed to inquisitive looks, or subjected to walk to and from their carriage in cold, rain, or snow. The front-door width is, therefore, regulated by the entrance-way, and it measures from 6 ft. to 11 ft. With a ground-floor of the usual height this opening can always be given a good shape. Full arches, segments or straight lintels are employed, as each particular case may suggest, and the decorative features are as will be presently suggested. There are, though, frequent instances in Paris, where the door-opening is raised to a really monumental conception; where it is from 8 ft. to 11 ft. wide, and where the story above the ground-floor is made a *mezzanine*, the door-opening is boldly taken up two stories high, reaching from 16 ft. to 20 ft. What a proportion! What a field for rich and bold architrave or voussoir treatment, for grand keystones, spandrel-panels, trusses, entablatures,—what an occasion for the sculptor and carver! And whether the doorway be as above, or of a lower description, the opportunity for display is never lost. The wood entrance-door generally fills the entire opening, whether high or low, and fixed transomes are very rare; but in cases where the hall-way is only of the height of the ground-floor, whereas the doorway is two stories high, a little difficulty occurs. Here the mezzanine floor and story must cut across the door-opening. The manner in which this problem is solved speaks volumes for the skill or better taste of Parisian architects. Instead of filling up the mezzanine portion with a stone face, as would be done almost anywhere, that part is treated as belonging to the *door composition*, and is accordingly executed in *wood*. An entablature in wood finishes the door, and covers the floor, and a window to light the mezzanine forms the central feature of the space above. The window-finish, trusses, scrolls, and panels, on each side are designed conformably to what we shall say further on about the doors, and are all executed in wood. Such a treatment leaves to the great stone frame all the importance and æsthetic merit it possesses when the door proper fills its entire space. The doors themselves are not made flat frames, like ordinary room-doors, but are treated in a massive architectural style. If they were not so designed they would lack distinction, and would present too little body for the elaborate stonework surrounding them. The doors are in two folds. The meeting-rail, panels, raised bands, and cappings, are treated in bold architectural forms. Often there are pediments, dentils, rosettes, and sculptured figures. The panels are filled with iron or bronze grilles, and the furniture is in bronze or brass. The details and execution are of the most exquisite taste and finish. Now, let us look at the combined effect before us. We see the entrance to the building, the mouth of the house, treated in a manner befitting its character and importance. In harmony with the whole design, it is by its size and special elaboration made distinctive in an architectural, social, and optical sense. It seems as if all the merits of Parisian architecture were recapitulated and grouped around this entrance to the house. Like a gem in its setting of gold does this door shine out from its frame of beautiful stonework. This is really the portal which leads to the habitation of refined and cultured man. It is visible from great distance to every one, ambiguous to none; and as we stand and admire, this doorway fills us with an instinctive notion that it is hiding even better things from our view. Throwing open the door and looking into the passage-way we are struck by a wealth of beauty. The architecture of the street has entered the building, it is lingering in the hall-ways and courts, it has ascended the grand staircase; and we feel that the artistic atmosphere must continue in the rooms and halls of the separate apartments. The façade which has delighted us is not a show-piece merely to a meaningless carcass, it is the expressive face of a beautiful interior; the whole building is a living organism, in which requirement and expression combine to a perfect piece of art. Conforming to the size of the entrance-hall, the main staircase is wide, with a large open well and square landings. On the top landing of each floor are seen the vestibule doors, which lead to the different apartments. The whole is lighted by large windows upon the courts.

The whole resources of Classic architecture are called in to decorate these entrance-ways and staircase-halls. Whether executed in stone, marble, or plaster, the most ingenious research for originality of design and detail is visible; and bronze candelabra, statuettes, mirrors, and flowers lend individual interest. Where the entrance-ways are of the two-story kind throughout their whole depth, which may be put at from 30 ft. to 50 ft., the architecture often is of the most imposing kind. Pilasters, three-quarter columns, or wholly detached columns, divide the walls into spaces which again are filled with panels, niches with statues, and sometimes doors. Rich entablatures, projecting over pilasters and columns, line the walls. Semicircular arches spring from these, encasing groined or cassetted vaults of the most varied invention. The entrance to the main staircase is made the object of special decorative study, and the promise made is fulfilled to the very top of the house. In the fine *hôtels privés* around the Park Monceau and in Passy the grand staircase is often planned on a lavish scale, and finished in solid stone architecture, terminating with a complex system of vaulting which rises from pilasters, piers, and columns; and sculpture vies with the natural beauty of coloured marbles for a dazzling combination. As we walk along the grand avenues and boulevards of Paris, we throw a rapid glance into each doorway. Through the elegant halls we see into the light court in the depth where the spray of a fountain is playing with huge water plants and flowers. Everything looks bright and cheerful: brass and bronze are shining, there is neither dust nor blemish anywhere. In fact, Parisians live in palaces, and they know it, and are proud of it.

III. *The Window.*

In extensive façades, a well-proportioned and large window-opening, recurring at pleasing intervals, is one of the primary factors of their beauty. Such are the windows of Paris, and they are distinguished for three points,—the size, the window-frame, and the curtain. The single or continuous balcony, a conspicuous feature of Parisian buildings, has tended to add a few feet to the ordinary height of the window, and to obtain good proportions, more width was necessary than usual. With box-frames this might have been inconvenient, but the casement-frame, in exclusive use in Paris, offered no restrictions to the lateral extent of the window. Hence, the proportions visible in most cases are strikingly excellent. This is equally true in regard to the width of spaces between windows, and remarks made under the first head are very significant in regard to this essential condition to good architecture. Large windows offer scope for elaborate decoration with compound architraves, pilasters, entablatures; in the endless variety of composition possible, the most refined fancy for ornamental carving can find application. Instead of leaving the separate windows æsthetically detached from one another, a skilful treatment of the intermediate spaces combines them all, making of the wall of each story a continuous and homogeneous feature. Thereby, the window-composition obtains weight and character to enable it to maintain its individuality against the architectural concentration effected around the doorway, and the mezzanine cornice and balcony work. The casement frame greatly assists the window opening in all we have said in its favour, for instead of cutting it horizontally in two equal divisions like the box-frame does (an eminent æsthetic defect) it divides the opening *vertically*, accentuating the oblong shape, adding grace and elegance. In high, or even ordinary windows, a low transom can be introduced to decrease the length of the wings, and to facilitate the access of air for ventilation. In these cases the horizontal transom line is not objectionable, on account of its high position; often even it greatly enhances the beauty of the window by improving the shape of the wings. The casement frame is therefore a very artistic feature, for apart from its relation to the opening, it offers in the central meeting-rail and in the transom an opportunity for rich and effective treatment which can be made to materially aid the appearance of the whole window. The curtain has been mentioned as the third principal feature to the Parisian window, and as it hangs down, white as snow in beautiful lace patterns, in one unbroken fold over each wing, it gives an impression of neatness, cleanliness, and of rich cheerful comfort within, that our most costly blinds cannot produce. The white lace curtain of Paris (where it is seen in the humblest street) takes away that dismal, black, cold look, with which our windows habitually greet us; it makes the houses look bright and inhabited. This curtain also adds *body* to the window; it is like the picture for the frame of stonework, and the effect that Queen-Annists are striving for

with small panes pattern and shadow effects, is realised in a more effective, elegant, cheap and useful manner by these simple and practical curtains. Impenetrable from without, they are as clear as glass from within; they seem in their whiteness rather to increase than diminish the amount of light; and with the addition of *lambrequins* they make as neat a window-finish as can be desired for all ordinary cases. The three points which we have enumerated as characteristic of the Parisian window combine to a very pleasing and satisfactory feature, and it will be seen that they are all in turn dependent upon each other for their existence.

Glancing back upon the material we have presented, we will attempt to sift from the various facts examined the essence, or *raison d'être*, of the general excellence of Parisian architecture. For to counsel blindfold copying of foreign art elements is as completely removed from the writer's ideas as it is possible to be. In fact, the very spirit of this dissertation has been to show that Parisian architecture,—widely admired, but even more widely misunderstood,—is not a senseless conglomeration of nice decorative features and details, that can be pulled to pieces and isolately scattered here and there on foreign soil without injury to their original sense and merit, but that it has a broad material foundation, contained in the three divisions of which we have treated. This foundation, though, which we have previously called the *field of action*, has been shown to be the result, not so much of natural development as of wisely directed effort. Paris is, above all other cities of the world, a city built by architects, a city of architecture. Wherever we may go, the smallest streets will eloquently proclaim the fact! But more are we induced to comprehend as we proceed. The harmony, the unity, of this sea of architecture, will force itself upon us, and with satisfaction we exclaim:—There is system, there is direction, in this mass of work. A tie of common sentiment, ideas, and aspirations in matters of art and taste, unites all French architects to a homogeneous and intelligent body. This tie is the common great school upon the Quai Malaquais, from which they have all proceeded. Filled with similar views, taught to think in similar channels, and to strive for similar ends, is it to be wondered that modern Paris is like one great monument, cast in one mould? Yet, what a wealth of individuality within the harmony of the whole picture! It seems as if the restriction imposed upon individual fancy acted more as an incentive than otherwise, to attain within the given limits the greatest variety, the greatest perfection. The pressure exercised upon the general tendency of Parisian architecture by a well-constituted and competent authority, has been touched upon under the first division. This wise and far-seeing direction instituted by Napoleon III. still exists, and exercises its powerful influence upon all building operations. This pressure, though, is easily and gladly borne when it is remembered, by architect and client, that its objects are the beauty and glory of the city. The main inferences, therefore, which we are permitted to draw may be stated as follows:—Architecture as an art should be the intelligent penetration of requirement into decorative expression and *vice versâ*. It should be freely developed upon such material conditions as are absolutely necessary to raise it from mere *building* into the higher domain of art. Where such conditions do not naturally exist they should be obtained; *that field of action* which embodies the greatest possible chance for artistic success, individually, or, in the case of street architecture, collectively, should be *created* and enforced by competent authority.

Joseph A. Stark,
Élève de l'École des Beaux Arts and Disciple of Prof. G. Semper, of Vienna.

Euchlorine.—Attention is being directed to a new disinfectant, as suggested by Dr. Archer Farr, medical officer of health for Lambeth, and to which has been applied the name "Euchlorine." It is being used in some of the metropolitan asylums and other public institutions, and appears to be one of the most potent and reliable disinfectants known, while it is most convenient in its mode of application. It can be so regulated according to the quantity used as to serve as an air-purifier in the sick-room, or as the strongest disinfectant. It seems to have considerable advantages.

COMMON SENSE IN ARCHITECTURE.*

Mr. Fergusson, in the admirable introduction to his "History of Architecture," says, "Convenience is the first thing which the practical common-sense of the Aryan seeks, and then to gain what he desires by the readiest and the easiest means." From this ancient Aryan stock John Bull claims descent, and common sense is a very strong article of his creed.

When and wherever architecture has been practised as a living art, as the outcome of the wants of the people who practise it, especially in those styles and ages which are generally reckoned by the educated as the purest, this quality of common sense is everywhere recognised, as their works are eminently practical and logical. From the rock-hewn cave and rude hut to the stateliest edifice this principle will be found to exist, and though a common-sense building may have no artistic beauty, a building which sets common sense at nought will fail to please the intelligent observer.

Of the æsthetics of architecture I do not propose to treat this evening (except so far as may be necessary to illustrate my meaning), but rather of the practical side and of modern times, as it is difficult in the short time at our disposal to take a very wide range of the subject; but I shall endeavour by illustration and example to point out the necessity of common sense in architecture, and to show that where it is ignored or wilfully omitted that building cannot fulfil the conditions of art.

Common sense is a gift which is not implanted in the breast of every man, and where it is, it must, like every other talent, be cultivated, so that it may gain strength by experience. But the man who adopts any profession or trade is expected by those who employ him to exercise this quality, to cultivate it, and bring it to bear upon the work he supplies; and this, more especially, in a profession where those habits known as business ones form a large part. In our calling it is essential, in the interest of our clients and the nature of our business, that we should strive to conduct it on common-sense principles, for any departure from this will lose us respect and influence in the minds of our employers, the mischief arising from which will extend beyond ourselves, and weaken that respect which we should strive to hold in the eyes of the public.

The charge often brought against us as a body is this want of common sense, that we are not practical, and many find a peculiar pleasure in pressing this accusation. Every blunder committed and brought to light in building must be laid at some door, and our accusers are happy if that door has the name of an architect upon it. Charges of ignorance in sanitation, which, at the present time, is exciting, as a science, so much attention, are hurled at us broadcast, and this is done by people who, if they exercised the common-sense maxim of looking before they leaped, would hesitate, and first ascertain whether an architect had been employed at all on the work which they condemn, and bear in mind that a very large amount of building is carried out quite independently of our services,—that by far the larger number of us are lodged in houses provided by the speculative builder, whom it is not incumbent upon me to defend. He is a most useful man to the public, is created and supported by them, provides wares to suit all pockets, and it is, at least, a little unfair to charge him with the faults inherent in the article which he somehow contrives to sell the public for a sum absurdly below what such an article would cost were it made of true metal.

Further, where this charge of want of common sense is brought against us, the question will arise, What is common sense? You think so and so, and I differ from you. On the whole, considering that I make a study of my work, I ought to know best. Such questions as this must and do arise, and it would be impossible to lay down definite rules, and say this work possesses, and this other does not possess, common sense.

It is easy, of course, to quote gross cases in which this quality under discussion does not exist. For instance, a house without a staircase, a living-room without a window, a house built without proper foundations, or in the midst of a swamp, and expected to be dry, when no provision has been made to guard against the situation, and so on. Here, perhaps, we should all agree that no defence could be made, and we have no hesitation in saying that the persons responsible for such doings lack common sense.

Let us also take other examples, which require a higher perception of this faculty than those just quoted. We have in the present day a rich store of illustrations of the architecture of the past ages, and I think you will take it for granted that the building generally tells you the purpose for which it was erected, if you are familiar with its style, and we all agree that a work should express this common-sense requirement. But often in modern times we find that this is ignored. In the Gothic revival, a movement which has been so beneficial to us as a nation, it is not to be wondered at that enthusiasm carried many of its disciples beyond the region of common sense, and that blunders were made which we must deplore. In the rage to build everything Gothic, the world containing the relics of the past has been ransacked, and the treasures gleaned have often been misapplied. Let us take an ordinary dwelling-house, for instance. It is not unusual to find the porch looking as if it had been brought from some village church, and though it fulfils its practical common-sense purpose, it does not commend itself to common-sense intelligence, which demands fitness and expression of the use for which the work is intended. Neither are we impressed, on entering a small hall or dining-room, to find a chimney-corner recess large enough for a spacious apartment, and there appropriate enough, but out of scale altogether where spaciousness could not be obtained. Common sense seems to demand that the fireplace should be proportioned to the scale of the room. Attempts, too, have often been made to plan houses on mediæval lines, ignoring the fact that the world has grown older and more civilised, demands refinement of plan and has introduced requirements which can only be met as they arise. Instances might be found where the dining-room has been so placed that it had to be traversed by any person requiring access to the stairs or kitchen, and this not from want of skill, but from a desire on the part of the architect to reproduce the simplicity of living as it existed in the past. As well may we try to persuade people to go back to the inconvenience of the old stage-coach and the slow delivery of letters. Yet many of you must know that attempts almost as unreasonable and deficient in common sense have been made by many men who, instead of seizing the spirit of the past, and designing in it, seek to reproduce the letter, and are imitators only. Again, we sometimes see a church-like gable and traceried window engrafted upon a house in the part occupied by the staircase, and looking more like a private chapel. The whole does not express its purpose. Both gable and window were right where they originally came from, but, transplanted, the incongruity is apparent to intelligent criticism. The butler carrying the dinner up this staircase in monk's garb would be thought quite out of place, and yet, would it be much more incongruous?

Church restoration and building both offer much food for reflection, as the most prominent result of the revival. The difficulty of building houses successfully in the Gothic style has always forced itself upon the attention of the designer. Our mode of living is so out of joint with it that it promises soon to go out of fashion for domestic purposes; but for ecclesiastical buildings it will probably survive, though even here there are signs of reaction. Now, as to restoration. The use to which our churches are put will vary according to the requirements of those who use them. Our days witness a return, in a large party of the Church, to more ceremonial observance. Previous generations had in their day ignored ceremonial, and at the Reformation had cleared the churches of all that, to their minds and teaching, symbolised the faith of their fathers. With the enthusiasm of the time a clean sweep was made of everything that served to recall the hated doctrines, and, from their point of view, it was a common-sense proceeding. These things represented, to their eyes, error and false teaching. Away with them. We know what followed. Whitewash, ceilings plastered up, churchwarden additions, pews, galleries, three-deckers. Then came the revival in church principles, and the demand for buildings which should act their part in teaching these, and men set themselves busily to work to restore and build churches to this end, and the example has been followed even by those who still adhered more strictly to the

* Paper read at the meeting of the Architectural Association on the 19th inst., by Mr. Cole A. Adams, as elsewhere mentioned.

spirit of the Reformation. The religious aspect of this question is obviously only touched upon here to illustrate the reason for this change. If, as we have seen, the Reformers looked upon the building and its furniture as of no importance in teaching doctrines, the revivers of ceremonial in our day insist upon the building and furniture fulfilling this purpose, and so making use of the senses by external teaching. This being so, it is obvious that our churches, as they were some half-century ago, were a standing protest to the new school of divines. They demanded that, for the proper and reverent conducting of the services, all those fittings and additions which we know as "churchwarden" should in their turn be swept away. As men's attention was called to our churches, the beauty of them became a popular study, and we all know how the enthusiasm spread, and what it has produced. This revival in the Church demanded, as we see, a return to the teaching of art as part of its system, and though its advocates do not insist upon it as a necessity of their creed, they welcome its use, as soldiers do the colours under which they serve. From this point of view, I think it may be granted as a perfectly common-sense way of effecting their end.

From the zeal with which the restoration of our old buildings has been carried on, much irreparable mischief has resulted. It is a natural consequence that it was so; for experience must be bought. What we have to look to is to buy it at the lowest rate possible. Seized with alarm at the blunders that have been made, many have rushed to the opposite extreme, and would stay the hand of the restorer altogether. These worthy people, actuated by honest motives, would leave the buildings as they are, or only do what was absolutely necessary to prevent their decay, by keeping out wind and weather. As archæologists and students, it is impossible to withhold sympathy from such intentions. With what delight do we enter a church where we find the whitewash and grey hairs of age! Here there is no mistake likely to arise as to what was part of the original building and what is churchwarden. You would probably after a little study of it be prepared with a scheme for restoring the fabric; but you doubtless will miss a great deal of pleasure if, on paying a visit to it at another time, you find your old friend with its hair dyed, and made young again, by some other restorer. But suppose the anti-restoration men had their own way. Decay we know is the mortal inheritance of all earthly things, and does not common-sense experience teach us that there is a limit to patching and propping; that circumstances often arise, over which we have no control, which necessitate radical alterations; that our buildings are from time to time put to new uses to which we must bend them or else leave them to decay? Leave them, say some; build others for what you need, but touch not with altering hand these stone books of the past. But, says common sense, these buildings were erected for the purposes of worship, and men in previous years adapted them to their needs. This dedication to their high purpose is the most important, and therefore, as long as they afford shelter and can be made use of, men will avail themselves of them. Your interest in them is altogether secondary to this. Is it not impossible to lay down definite rules of what shall and shall not be done? Common sense must be used, and, further, we may say that, in dealing with such treasures as are bequeathed to us, only those well skilled in the work to be restored should be employed; and it is a pity that we have not some central authority to restrain such work from falling into the hands of men who, from want of sympathy with and ignorance of what they undertake, do an amount of mischief which is beyond recall.

In the building of new churches, common-sense requirements are too frequently overlooked. Here, as in other things, men forget that the world has moved on since the time that it produced the works that we admire, and that the more artificial life we lead now requires that more attention should be paid to the comfort of the people who are compelled to worship in cold and draughty churches. Because great simplicity in all such matters is found in the old churches, that, surely, is no sound argument for not seeking improvement in new ones. Now it is only common sense to know that, if you have a door opening direct into a building, and the weather is cold, the chilled air will enter by it, and make those people miserable who are in contact with the draught occasioned. Architects seldom dream of doing this in any other building where people assemble. We all know that in a house, where the money to be spent will allow, screen-doors are put to a hall, and in most cases some sort of a passage cuts off access from an external door and a room door. Why, then, should a congregation be exposed to danger,—for real danger it often proves to be,—by omitting so simple an expedient as a lobby of some kind? Contrast the comfort of a church or chapel where this is done with one unprotected from the blast.

Another serious omission is the absence of any mechanical and simple contrivance for admitting fresh air from outside, and warming it before it enters the building; for in winter, and the one we are having now calls our attention to the fact, it is misery to sit in a building with the windows open; so a close and stuffy atmosphere has to be breathed, no means existing to get rid of it and to supply fresh air in its place.

Other great causes there are which militate against warming our churches,—the large amount of glass, and the open roofs, both great chilling surfaces. Moreover, sometimes the boarding to the roof is not tongued, so that the hot air finds a ready escape, and so the heating apparatus is comparatively useless.

Common sense in planning is often sacrificed to supposed architectural effect, and as seeing and hearing are the most important points to be met for the comfort of a congregation, although where the means at disposal are limited, some sacrifices to effect may readily be granted; yet where this is not the case it is assuredly foolish to so seat the congregation that their view and light are interfered with by facing walls and other obstructions. These are difficulties that arise, and to ignore them for the sake of carrying out some likeness to what we have seen elsewhere, and for which, probably, sound reasons might be advanced, is a confession of weakness, and to this error may be attributed much of the lifeless work we have in our midst.

What a perfect medley do some designs present: here part of a monastery, there of a church; details reduced so in size from the originals from which they were taken as to look starved and wretched; chimneys overtopped by high roofs that will be sure to make them smoke; buttresses to resist no thrust; windows stuck in for appearance, coming anyhow to the rooms, now close to the floor, now above looking-out level; roofs that must from their construction thrust out the walls; passages ill-lighted, and tortuous in their windings,—these and other mistakes arise from ignoring the common-sense requirements of the purposes for which the building is intended, and with the mistaken idea of producing architectural effects by trusting to appearances only. Careful consideration of the plan, and working out of heights and sections of the construction, would have shown the designer his mistakes; and a more intelligent studying of the works which fill his sketch-book, that what looks well and suitable in a position for which skill has designed it, may become ludicrous if placed in a position which is foreign to its original purpose.

I cannot leave this part of my subject without a brief allusion to the style which has somewhat quenched our Gothic ardour, and which, for want of a better name, is called "Queen Anne." I believe I am right in saying that its sponsors promised in its name essentially common-sense qualities, and that it would more readily adapt itself for house architecture and modern wants. In my own opinion, I think there is much in it to commend itself as a style, but it is possibly only the prelude to a revival of Classic architecture. Here, as in the Gothic revival, men are and will be found hunting up old examples, and trying to make new houses look as much like old ones as possible; and as long as imitations are the fashion no real progress can be made. Touching Queen Anne, common sense may ask, Why is it necessary to return to small panes of glass, and thick bars which obstruct the view, when you can get larger. Would the old builders have put them if they had not been obliged? Why is it that porches are built, and cut off short of the cornice, looking as if you had not bricks to finish with? To get light into the hall? But surely you can do this without resorting to so foolish an expedient. And why, in this dirty London climate of ours, do you paint your outside doors white or pale dull greens? After the first week's use they are dirty and disagreeable to look at. And while on the subject of painting, a great deal has been said against graining and varnishing: it is decried as a sham. But if you will soothe your conscience by calling it a conventional mode of decorating doors, &c., you will have a most useful agent. Beyond all question, for ordinary purposes, there is nothing that on the whole wears better, looks better, and goes better with the ordinary furniture and belongings of a house,—a thoroughly common-sense method. But, to resume, why is it necessary to stick up tablets on blank walls, in all manner of positions, looking as if they had been bought up from a church under restoration, and set up here as a protest against the vandalism that removed such precious works of art? Why, too, we may ask, is it necessary to be putting balconies, balusters, and railings where they are not wanted at all? And other questions of this kind will be forced upon you, if you will take a walk in the neighbourhood of the Thames Embankment or Pont-street, and study the designs which are weekly supplied to us.

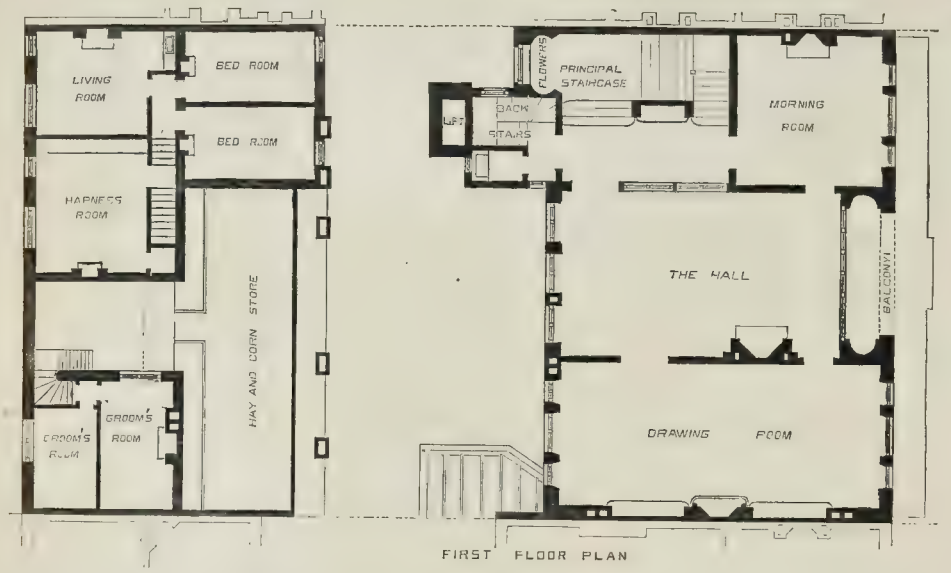
Much of the charm of the red brick style consists in its colour, and there is no doubt that it has great capabilities when used with skill and sobriety. Too much of what we see is rendered feeble by the fussiness displayed and the ignorance shown in the mouldings, which are too often of a nondescript form.

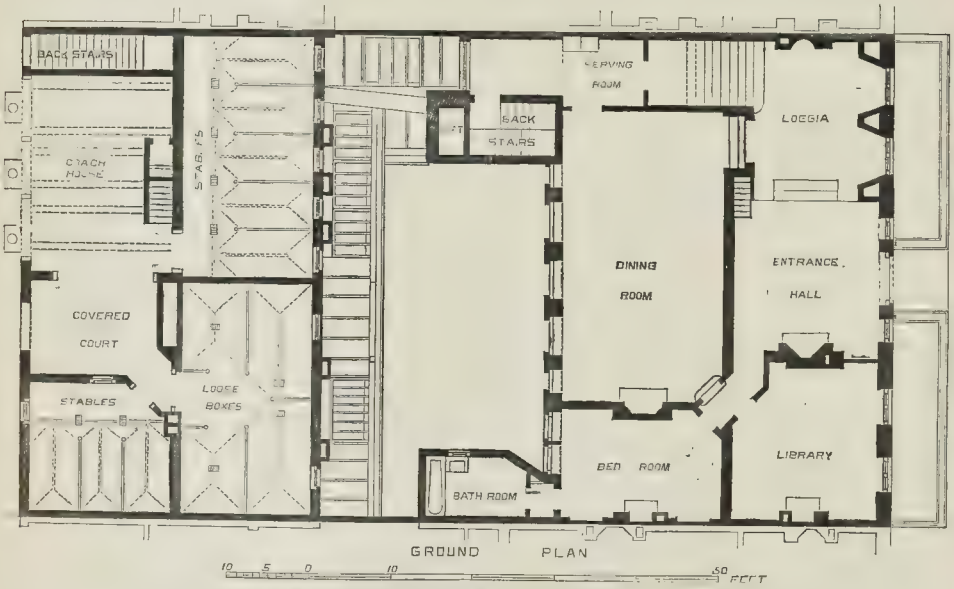
I will, in conclusion, make a few remarks upon some of the causes which conduce to failure and violations of common sense, hoping to fulfil the object of this paper by exciting discussion upon it. I believe that the main cause lies at the root of professional training. Lads are articled to an architect, and left in the office, too often to shift for themselves. You all know the usual course, so I need not stop to describe that; but I would urge the importance of reform,—that it should be an understood thing in the articles of agreement that a pupil should spend a large part of his time upon works in progress, that he might see for himself what drawings mean when carried out, learn the different modes of construction,—from foundations to painting,—be compelled to make measured drawings from the work, accurately showing how the parts are put together, and to make himself familiar with the terms and methods used in building. Better still, that after his pupilage was up he should, if it can be managed, be sent for a couple of years or so to a large builder, and there taught the practical side entirely of the question, even to manual labour, and that perplexing study, a builder's account. Engineers do this, and their works are pre-eminent for common-sense. Why should not architects make themselves also familiar with the capabilities of the materials in which they will have to work? The knowledge thus gained, combined with the experience of the office, and careful and systematic studies from old examples, would produce men skilled, theoretically and practically, in their profession; and to those within reach the Architectural Association offers immense advantages.

That we, as a profession, should hit upon some feasible plan by which competitions might be conducted on a fair footing, is much to be desired, and I trust that when the subject comes up here for discussion, some remedy will be found. If the Institute and yourselves were to combine to resist the injustices of the system, much might be done to discredit it. One thing we may assume as certain. The competition system exists, and is more or less popular. What is asked for is fairness from projectors and among competitors themselves. The appointment of a skilled professional man as referee seems a necessity, for this very common-sense reason,—no layman is competent to decide upon designs, and discriminate between rival merits. If competitors knew that designs must undergo the scrutiny of plan, sections, and details, those crucial tests of a man's practical knowledge, better designs would be sent in, and the simply draughtsmen-architects would be nowhere. Too much stress has, I believe, of late years been laid upon this quality of draughtsmanship and sketching. Excellent as accomplishments, they are not the be-all and end-all here.

St. Alban's.—We have received another letter from Mr. Chapple reiterating his assertion that the section he gave in our columns "was from a portion of the ancient corbel-table over the three eastern bays on the south side of the nave, to which Mr. White first alluded, and that the old pieces of stone still remain there."

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A HOUSE ON THE THAMES EMBANKMENT AT CHELSEA.

A MANSION ON THE THAMES EMBANKMENT AT CHELSEA.

The residence on the Chelsea Embankment, of which we give a view and plans, is in course of erection for Mrs. Erskine Wemyss, from the designs of Mr. R. Norman Shaw, R.A. It stands nearly opposite Battersea Park, and is near to Cheyne Walk. The style adopted, termed that of Queen Anne, suits well the *genius loci*, and a number of other costly houses similar in style adjoin it. It is faced with red bricks from Fareham; the dining-room and staircase will be panelled in oak. The amount of the contract, including stables in the rear, is, we believe, about 13,500*l.*; but some few alterations have been made in the façade since it was first designed. The contractors are Messrs. McLachlan & Sons, of St. James's-street and Clapham-common.

SHRINE OF ST. CYMBERT

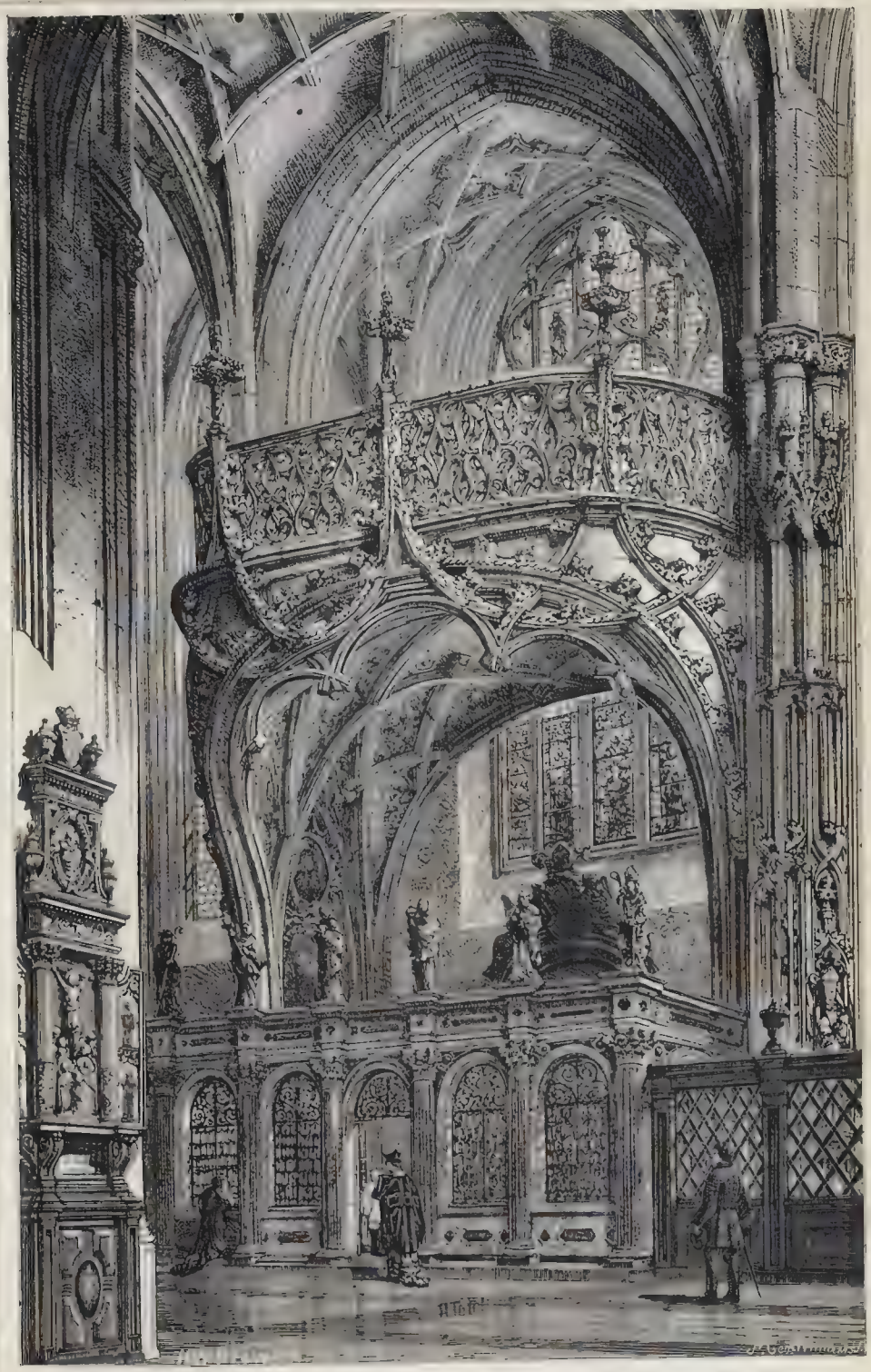
IN THE CHURCH OF SS. AFRA AND ULRICH, AUGSBURG.

The Church of SS. Afra and Ulrich, Augsburg, one of the latest examples of the German Third-Pointed style, was erected between the years 1476 and 1500. It occupies the site of a former church, which dated from the year 1064; of this building, however, very little remains except the basement of the tower, and no detail is visible even here to give any idea as to its design. The architects of the existing building were, first of all Hans Lintpold, and after his death, Burkart Engelberger. Of the former of these very little is known, but the latter was one of the architects of the tower of the Cathedral of Ulm, and of the magnificent pulpit in that church.

The Church of SS. Afra and Ulrich is one of those magnificent and vast parish churches with grand spacious naves, so appropriate for congregational purposes, which were developed during what is considered the decline of Gothic architecture. It consists of a very lofty nave and aisles, with a very noble clearstory, very short transepts, and a long choir without aisles; the tower is in the north-east angle of the choir and transepts, and attached to it is a large chapel, called the *Schnekenkapelle*. The church is full of very rich furniture, chiefly of the Renaissance period. The altar of the Schnekenkapelle, however, and the shrine of St. Cymbert, are Gothic, and fine works of their kind. The nave of the Church of SS. Afra and Ulrich was the first portion erected, and according to Kugler it was commenced in 1467 and completed in 1499. There is some doubt as to the first of these dates, and probably the date given by Kugler is a misprint for 1476. Kugler



A HOUSE ON THE CHELSEA EMBANKMENT.—Mr. R. Norman Shaw, R.A., Architect.



SHRINE OF ST. CYMBERT, IN THE CHURCH OF SS. AFRA AND ULRICH, AUGSBURG.

says the choir was commenced in 1500, and the whole building not completed till 1607; this, however, thoroughly disagrees with the local tradition that the Emperor Maximilian I. was present at the consecration of the building, as the Emperor Maximilian died in the year 1519. In addition to this, the dates given by Kugler would not in the least agree with the architecture of the church, no part of which, except the lantern on the top of the tower, and some of the fittings, can be of so late a date as 1600. An excellent little guide-book to Augsburg gives the dates of the church 1476 to 1500.

The proportions of the building are very noble, the total length being 318 ft., the breadth of the nave and aisles 94 ft., and the height to the vaulting 100 ft. The shrine of St. Cymbert, or, as it is sometimes spelt, "Simpert," is situated in the south aisle of the nave, and consists of a large and very remarkable canopy of stone richly vaulted and cusped. A remarkably rich parapet surmounts the whole. The space beneath this canopy forms a chapel, the screen of which is a very beautiful example of early German Renaissance work, and is composed of marbles of various colours. This screen is said to have been the gift of one of the Fugger family, who were great benefactors to this church. The tomb and fittings of the chapel are of a much later date, and, though handsome, are too much in what the Germans call the "Zopfzeit" * style of architecture to be particularly interesting.

FREDERICK PEPYS COCKERELL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

In the discussion which followed the reading of the memoir on the late Frederick Pepys Cockerell, read at the meeting of the Institute on the 15th inst., and the substance of which we printed last week (p. 1393 *ante*),

Mr. Charles Barry, in moving a vote of thanks to the anonymous writer† of the paper said:—The eloquent memoir which has been read must have touched your hearts, as it has mine. The writer desires his name to be unknown, and there appears to me to be a strange propriety in his name being unknown, because he has spoken the sentiments of us all, and, therefore, we can sympathise entirely with the writer. Many of us,—most of us, I think,—had some personal knowledge of poor Cockerell. It so happened that I was in Paris on the day of his lamented death, and I was one of a party, mainly composed of Parisian architects, who had assembled at the house of the late M. Duc to do our comrade honour, and we were awaiting his arrival when the sad news came of his death. A gloom came over the whole of the Paris community of architects, with which I was then officially mixing, and the prevalence of that gloom testified to the esteem in which our departed friend was held. Lament for him I think we cannot; lament for ourselves of course we may. Had it been in the providence of God to have spared him to a green old age, I believe that every aspiration which the affection of his friends could desire would have been entirely and fully satisfied. He is, I think, to a certain extent to be congratulated, if I may so say, on leaving such a memory as he has done amongst us. One short year has passed since we saw him here amongst us, rejoicing, as he did, in the advance of our profession in public esteem,—an advance which this Institute has had no mean share in bringing about. In the promotion of that work he took a labouring oar with his colleagues. He knew the esteem in which he was held, and he had reason to believe that the work which had been done had left its impress. Some allusion was made in the paper to his at one time idea and desire to become a painter rather than an architect. Many of us, I am quite sure, in our younger days, could have quite sympathised with the feeling. We must all of us have felt great delight in the fields of imagination in which our studies naturally lead us, and some hesitation against entering upon the prosaic duties of business and science with which the art of architecture must of course be inseparably connected. But that feeling of appreciation for art, that indulgence of the imagination, is just one of the recompenses which we occasionally have for the daily routine of business life, and but for that, I think the profession of architecture would have little or no charm for many of those I see around me.

Mr. Charles L. Eastlake (late Secretary) in seconding the vote of thanks, said,—The brief but faithful memoir which has been read this evening is one of deep interest to me, for many reasons which may easily be guessed. I enjoyed our late colleague's friendship for more than twenty years. Indeed, it was while I was a pupil in Mr. Hardwick's office, which he entered for a year or so to complete his studies, that I first made his acquaintance. We attended Professor Donaldson's lectures together, and I think became students of the Royal Academy about the same time. There are, no doubt, some members of the Institute in this room who remember him in those early days, and I am sure they will agree with me when I say that in the youthful *coterie* to which we then belonged there was not a brighter spirit, a kindlier heart, or a more accomplished hand than that of Fred. Cockerell. The accident of Mr. Cockerell's family connexions gave him, while still a young man, an *entrée* into the world of fashion, where his brilliant social qualities, his genial disposition, no less than his artistic ability and highly-cultivated taste, soon made him a general favourite. But although in such society he was the gayest of the gay, the popularity which he then enjoyed, and which might have turned the heads of weaker men, did not make him vain or indolent. He possessed that happy faculty which distinguishes some professional men,—of being able to work and play by turns; and he did both with equal zest. Behind that easy *nonchalance* of manner which he sometimes assumed, there was in reality a deep and earnest devotion to his art, and a capacity for taking pains which was very remarkable. He was rarely satisfied with his own designs, and it is probable that his artistic aim was often beyond what he succeeded in realising. One of his early characteristics made a great impression on me when a boy. I mean the intense filial respect and devotion which he felt for his father, who in his turn was equally proud of his son. Indeed, it was delightful to see the two men together, and to note the love and confidence which existed between them. Manly and straightforward in his opinions,—upright and honourable in his professional career,—with a supreme contempt for all that savours of bigotry and affectation in the art which he followed,—Frederick Cockerell was, to my mind, and I believe in the opinion of most who hear me, admirably qualified for his position as honorary secretary to this Institute; and I can truly say that during the seven or eight years in which we held office together,—a period of uninterrupted cordiality between us,—I never sought his advice in vain, and that advice always seemed to be dictated by a sound and accurate judgment. Of his professional works, I, who am now altogether outside the profession, will leave others to speak; contenting myself with this brief tribute of respect to the memory of a dear friend and former colleague.

Mr. George Aitchison said,—"Those whom the gods love die young," and I think we cannot regret for poor Fred. Cockerell that he was cut off in the flood of youth, health, happiness, and success; but for ourselves, as architects and Londoners, and for England, I think it is one of the greatest misfortunes that has happened in our profession. Fred. Cockerell was to architects what the president of the Royal Academy was to painters,—in him all their hopes were centered. He was the representative of the great architects of the Renaissance. He was many-sided. Like a cut crystal, there was no side on which you could take him on which he was not fully equipped. He was able to criticise with keenness and ability the works of our popular novelists and of our painters and architects. One cannot have passed much time amongst the best works of the Italians and Greeks without feeling that Fred. had caught some of their charm and inspiration. Had he lived, he would doubtless have made many fine additions to the buildings of London and the country.

Mr. Horace Jones.—As the oldest, I believe, of a small *coterie* of architects who for twenty years have been in the habit of enjoying kindly, friendly, brotherly, social intercourse, I feel it difficult not to attempt to add one word on behalf of those who are left, with myself, as a tribute of our respect, our esteem, and our love for our lost friend. Another one went before him,—Digby Wyatt,—well loved, well revered, well respected, and to our deepest regret. There are a great many here now who for twenty years have enjoyed the social friendship of poor Fred. Cockerell, and, leaving apart his high intellectual qualities, we must all look back with sorrow to the loss of one who had such a cheery, honest, English character.

The Chairman (Professor Hayter Lewis, V. P.), said,—I do not think any one can feel more deeply than I do the touching way in which the writer of the memoir has portrayed the life of our lost friend. Like most of you I knew him well, and worked with him, and I think no one can speak more feelingly than I can of the constant pleasure that it was to be with him, and of the artistic elevation that one had in conversing with him upon all points connected with art. Of his possible career as a painter, what his success might have been is sufficiently indicated by the exquisite sketches exhibited this evening. That we owe a great deal to him for the large amount of time he devoted to us and our interests there is not the smallest doubt, and we can only feel that, although "those whom the gods love die young," yet his loss leaves behind him a great vacancy, which it is difficult to fill up. It is with the most lively remembrance of poor Cockerell that I beg to move that a vote of thanks be given to the author of the very feeling memoir which has been read by Mr. White.

The motion having been carried, the meeting was made special, to consider the revision of Bye-law 34. The bye-law was expunged, and in place of it the following was inserted, viz.:—"Honorary Fellows shall not be required to pay any subscription or make any donation to the Institute." It was further resolved that the Council have power to alter or expunge, in Bye-law 64 and other bye-laws, words affecting the spirit or intention of Bye-law 34 as it now stands. Certain amendments were made in the nomination forms for candidates for membership resident abroad, and for Honorary and Corresponding Members.

The next meeting will be held on Monday, January 12, 1880, when a paper on "Buddhist Architecture in the Jellallabad Valley" will be read by Mr. William Simpson.

THE EXAMINATION OF ASSOCIATES OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A CRITICISM FROM AN UNPROFESSIONAL PEN.

It appears, from the opening address of the President of this Institute at the first meeting of the present session, that the question of obliging all persons who desire to become Associates in the future to undergo an examination is under the consideration of the Council, although by Bye-law 14 the examinations are to begin in 1882. This step is one of so much importance to the Institute, and consequently to the architectural profession, that it is worthy of careful criticism, and we opine that one reason why Mr. Whichcord alluded to it in his opening address was that it might be publicly discussed. There is a well-known line of that shrewd observer, as well as true poet, Burns, in which he expresses the wish,—

"O wad some power the giftie gie us
To see ourels as others see us."

Therefore it needs no excuse, acting upon this maxim, for one who is not an architect, nor ever likely to be, to offer some remarks upon this subject in a spirit of fair criticism.

Now, we take it that the chief object of the Institute is to collect within itself as large a number of the architectural profession as possible, and to exercise, as far as possible, a beneficial control over its members, keeping them in the way that they should go, promoting a true *esprit de corps*, and regulating the general body of the profession in the best interests of the profession and of the public, whom they must "please to live." And next, we take it that the object of an examination is to show that persons have an intellectual knowledge equal to a certain standard, a standard which is above the average,—because if every one possesses a knowledge equal to this test, it would be absurd to be continually applying it. It is true that in some cases the object of an examination may be to lessen the number of applicants for particular posts; thus it is obvious that if gentlemen were not examined as to their fitness to enter the Army, the War Office would

* Literally the "braid period," or, as we might say, the "pigtail style."

† It was announced, when the memoir was read, that it had been written by a very close connexion of Mr. Cockerell, but that the writer did not desire his or her name to be mentioned.

be crowded with persons desiring to obtain her Majesty's commission. Therefore the question arises, are these two functions, that, on the one hand, of the Institute, and that, on the other, of examinations, compatible? A consideration of this question must throw much doubt upon it. For the Institute differs from a profession such as that of the Bar, because no one except a barrister is allowed to plead for another in the courts of law; and, therefore, if a person wishes to adopt this profession he *must* belong to the Inns of Court, and, consequently, submit to their regulations.

But, desirable as it is for any one who practises the profession of an architect to belong to the Institute, there is nothing to prevent a man from designing a house for another, but without being a member of this body. It is just the same with the dentists to whom Mr. Whichcord alluded, unless a man is now a registered practitioner he has no legal standing as a dentist. Therefore the example of the dentists is of no value in regard to the Institute; and if there is one thing that men dislike more than another it is passing examinations, and some of the wisest men of the present day throw great and deserved doubt upon them as being evidence of real intellectual training. Now, we much fear that the consequence of having an examination for persons wishing to become Associates will be to keep down the numbers of the members, and consequently to give the Institute authority over fewer members of the profession than would otherwise be the case. If a man cannot pass the examination in order to be a solicitor, he tries again, because he cannot practise until he has received a certificate; but this does not apply to an architect, and, therefore, is there any reason to suppose that a large number of gentlemen who might not satisfy the examiners would not cease to try again; and is there any reason why, if the regulations are very stringent, architects might not erect another corporate body less exalted, it may be, but yet sufficiently numerous to lessen the good that could be done by the Institute? The Architectural Association is not a rival of the Institute, but the mere fact of its existence shows that the Institute's first aim should be to enlarge its boundaries and to take as many men as possible within its folds. But, on the other hand, you may have examinations so slight as not to terrify the most ignorant of practitioners, and then the question must at once be asked, Why establish examinations at all? Why parade a virtue before the public which you do not possess? Moreover, if examinations are necessary, it becomes at once an interesting question, What is the practical value of Bye-law 8 of the Institute Laws? Because, if the professional education of an Associate has not been satisfactory, he can be blackballed by those who consider his qualifications insufficient. Therefore there seems to be this dilemma: either the Institute must lose its influence over a number of the profession if the examinations are stringent, or if, on the other hand, they are mere forms, then, so far from being a credit to the Institute, they will in the eyes of the public be a mere piece of humbug, and in no way raise the general professional character of the architect.

R.

IMPROVEMENTS IN MANCHESTER AND SALFORD.

A century ago, Manchester was a comparatively small town, with a population of about 40,000; now it can boast of miles upon miles of streets, and has a population of 350,000. During the last half-century the improvements which the growth of the city has necessitated have completely changed the character of certain parts of the city and suburbs. The most important of the improvements lately carried out under the auspices of the Corporation has been the widening of Deansgate. This work has been several years in progress, and much of the land cleared still remains vacant, although (according to the *Manchester Courier* of the 12th inst., which contains a long article on the subject of improvements in Manchester and Salford) the Corporation has used every effort to dispose of it. The second part of the Deansgate improvement, dealing with property between Bridge-street and Knott Mill, is being pushed forward as rapidly as the leases of the houses which have to be demolished fall in. When finished, the new thoroughfare will be of a uniform width of twenty yards from Victoria-street to Bridgewater-street, Knott Mill,—a distance of about three-quarters of a mile. The new covered market at Knott Mill has proved a boon to the neighbourhood, and other improvements in the same locality are contemplated. Under a joint scheme, promoted by the Free Libraries Committee and the Markets Committee, a new free library is about to be established on a site between Tonman-street and Liverpool-road. The ground floor will be set apart as shops, and the reading-room and library will be on the upper floor. The Free Libraries Committee have undertaken to hand over to the Markets Committee the sum of 11 000*l.* as their contribution towards the cost of the work, and tenders for the erection of the building will shortly be invited. The premises in King-street, formerly occupied by Messrs. Bird & Hull, cabinet-makers, have been demolished, and direct communication effected between King-street and Charlotte-street and other adjacent thoroughfares. The effect of this improvement will be to relieve the traffic in other thoroughfares considerably, and a new route will be established between St. Peter's-square and the Exchange. Another improvement in this part of the city has been the widening of Spring-gardens, and the extension of the thoroughfare into Fountain-street. The much-needed widening of Tib-street, from Piccadilly to Thomas-street, has been effected during the year. In Market-street and other leading thoroughfares large buildings, intended for shops and warehouses, have taken the place of old structures. According to agreement entered into with the Corporation, the Cheshire Lines Committee have widened the greater portion of Lower Mosley-street to the extent of four yards. The Cheshire Lines Committee have, also by arrangement with the Corporation, increased the width of Watson-street, and continued the thoroughfare into Bridgwater-street. It is the intention of the Corporation to widen Mount-street and Windmill-street in order to improve the approaches to the new Central Station. Eventually all the buildings between the Windmill-street end of Mount-street and Lower Mosley-street will be demolished, and the latter street will run straight through into Lower Mosley-street, thus opening a direct route from the City-road to Albert-square and the Exchange. The Central Station is fast approaching completion. It is roofed in, and the glaziers and painters are now at work upon it. The new loop line, running from the Central Station through the south-western suburbs of Manchester, and round to London-road Station, has been recently opened for traffic. Besides facilitating the traffic between Manchester and Stockport, a saving of time will result from the opening of the line to persons living in the vicinity of any of the stations who may have occasion to go to Liverpool or any other place reached by rail from London-road Station, and the inconvenience of having to cross the city from the Central Station to the London-road Station will be obviated. The new Manchester South District Railway is now completed, and will be opened on the 1st of January. Through communication will be afforded by this line between Manchester Central Station, London, Derby, Birmingham, and all places covered by the Midland system. On the other side of Manchester, the Lancashire and Yorkshire Railway Company have provided increased accommodation in the shape of a new line to Cheetham-hill, Prestwich, Radcliffe, Bury, Bacup, Bolton, Preston, and other places on their main line. The London and North-Western Railway Company are duplicating their existing double line between Ordsall-lane, and a large number of workmen have been for some time past engaged on the work. The extension of London-road Station is being pushed forward with all despatch. The new street forming a part of Fairfield-street, and running from London-road alongside the new station, is completed. The new wholesale fish-market in Shudehill, which was opened on June 3, has proved to be well adapted for the purpose for which it was designed. It covers an area of about 2,000 square yards, and adjoins the old market, the front facing High-street. There are two large bays, each 45 ft. wide, and the roof is supported by cast-iron columns. Messrs. Mangnall & Littlewoods were the architects, and the contract was let to Messrs. Robert Neill & Son for 15,200*l.* On the 22nd April a new gymnasium, erected on the ground in front of Owen's College at the Burlington-street side, was opened. During the year the baths and washhouses in Leaf-street and Mayfield-street have been acquired by the corporation, and have undergone considerable alterations and repairs. The construction of the tramways throughout the city is about to be commenced. The corporation have power to lay down forty miles of tramway. The first section dealt with will include Mosley-street, Piccadilly, to the city boundary, Gray-street, Stockport-road. Double lines will be put down throughout the entire distance, the length being about a mile and three-quarters. From Gray-street a single line of rails will branch off, and run to the city boundary in Albert-road, a distance of a quarter of a mile. Another line will run along the Hyde-road to the city boundary at Gorton, and there will also be a line laid down in Fairfield-street, leaving the main line in London-road, and proceeding along the Ashton Old-road. The southern portion of the tramways will next be laid down, the routes including Mosley-street, City-road, Stretford-road, and the other principal thoroughfares on the south and south-east side of the city. Connexions will be established with the different suburban tramways. The system adopted is Gowan's patent.

Salford.—Though much has been done in the course of the last twelve months by the corporation of Salford in the matter of public improvements, the work carried out will not compare in magnitude with that effected in previous years. Nearly all the more ambitious plans that were sanctioned by Parliament when the last Improvement Bill was granted have been brought to a successful termination. The Blackfriars extension, and the widening of New Bailey-street, which involved the purchase and pulling down of a good deal of tumble-down and dilapidated property, together with the erection of the Trafford Bridge, are accomplished facts. There still remains much to be done in the shape of works of a smaller and less expensive character. There are yet two bridges to erect, tramways to lay down, and private street improvements to make. In all these respects, with the exception of the last mentioned, the corporation are making steady progress; but in regard to the private street improvements, the cost of which, of course, falls upon the property owners, little has been done, the council desiring to deal as lightly as possible in these times of depressed trade with private individuals. Although nothing has at present been done in the matter of the prevention of floods in the Irwell, sanitary affairs generally appear to have been well looked after. The intercepting sewer is now completed, and it has rendered necessary a good deal of detail drainage, the effect of which is that many of the sewers that formerly discharged their contents into the river are now connected with the intercepting sewer, and consequently to that extent the Irwell may be considered a purer stream than it formerly was. Good progress has been made with the sewage works at Mode Wheel, and it is anticipated that they will be finished by the end of next year. The sewage will be dealt with by precipitation, for which a series of six tanks in duplicate will be provided. The sewage will be pumped into these tanks, and there clarified, this process rendering it sufficiently pure to warrant its being discharged into the Irwell without fear of causing a nuisance or of further polluting that river,—already too well known as "the Inky Irwell." Several new police-stations have been erected. One in Great Cheetham-street is now in use, while a second in Moor-lane is finished, ready for occupation, and a third in Cross-lane is approaching completion. The Corporation are building baths in New Blackfriars-street, which are expected to be ready in the Spring. In West Market-street, Bexley-square, new offices have been erected for the purpose of relieving the town-hall. The Eccles Old-road tramway has been completed and opened for traffic. In order to avoid annoyance and inconvenience caused to gentlemen driving carriages by the wheels getting into the hollows formed by the stone setts on each side of the line, blocks of furnace-slag have been used instead of stone-setts, and as they form a perfectly level surface, are of a uniform size, and are laid upon a concrete bottom, the difficulty previously experienced would seem to have been effectually overcome. In the course of the ensuing year additional lines of tramway will be laid along New Blackfriars-street, Great Clowes-street, Broughton and Lower Broughton-road, as far as Broughton sprout; from the Woolpack Inn, Pendleton, along Bolton-road to Irlams-o'th'-Height, where it will be joined by a line in course of construc-

tion by the Manchester Suburban Tramways Company, in the Swinton Local Board district. In the case of both these lines the furnace slag will be used, and a further improvement will be introduced in the shape of steel-faced instead of iron-faced rails. The Wallness Bridge, which is to form a communication from lower Camp-street, Broughton, into Pendleton, is in course of construction, and the contractor for the masonry work, Mr. Pilling, is making satisfactory progress. It is expected that when completed this bridge will greatly relieve the traffic along Broad-street, the Crescent, the Adelphi, and Chapel-street, as it will open up a shorter and much more convenient route into the whole of the Broughton district. The bridge is to have a span of 140 ft. and a width of 54 ft. Quarries in Westmoreland will supply the granite for the abutments. For the purpose of making provision for the anticipated traffic over the bridge, the Broughton District Highway Committee have acquired land and property with the intention of widening Lower Broughton-road very considerably. The abutments of the Springfield-lane Bridge are nearly finished, and the ironwork is in course of construction. It is hoped that by Midsummer the bridge will be opened, and in this case also it is intended to widen the thoroughfare to meet the requirements of the expected increase of traffic. The Highfield reservoir, which has been in course of construction for some time, has been completed and is ready for the admission of water, of which it will hold between 7,000,000 and 8,000,000 gallons. Not the least of the improvements at present being effected under the supervision of the borough engineer, Mr. A. Jacob, may be mentioned the complete re-survey of the township of Pendleton, on a scale of $\frac{1}{3\,\frac{1}{3}\,6}$, or 10 ft. to the mile, which equals 44 ft. to the inch. The township, including Pendlebury detached, and which is embraced in this survey, has an area of about 2,560 statute acres, and the draft plans embrace eighty-nine sheets of double elephant paper, each sheet having 3 ft. by 2 ft. of drawn work upon it. On the recommendation of the Gas Committee, the council voted 160,000*l.* for the extension and improvement of the gasworks. A combined air and water tank condenser, of a new and economical construction, and other necessary apparatus, have been erected. A tank, 154 ft. in internal diameter and 40 ft. deep, and a telescopic gas-holder, 151 ft. in diameter, capable of holding 1,400,000 cubic feet of gas, have been built at the Liverpool-street works. Several other additions are in progress, including a retort-house capable of producing nearly 750,000 cubic feet of gas every twenty-four hours, and a boiler-house for three 40-horse power boilers. The gas mains have been considerably enlarged, and from the Lamb-lane works to the Liverpool-street works a 1 ft. 6 in. pipe has been laid.

The foregoing summary will suffice to show that the municipalities of Manchester and Salford are alive to the importance of keeping abreast of the times.

ARCHITECTURE AND PUBLIC IMPROVEMENTS.*

SINCE our last year's number was published, the largest building now proceeding in this country has been partially completed and thrown open for occupation. The portion of the Law Courts now in use was completed externally last year, and we then commented fully upon its architectural aspect, so that it is unnecessary to repeat any remarks upon its architecture. It is sufficient to say that, so far as it is now in use, it appears, on the testimony of those who have to use it, to be more practically satisfactory than was anticipated by many who judged from the forbidding and monastic appearance of the exterior of the structure. So far this is matter for congratulation, though it can hardly be hoped that the building will ever be accepted, when complete, as a realisation of the best possible ideal of Law Courts.

Another great building, the exterior of which has been for some time complete, and familiar to visitors in the neighbourhood of South Kensington, is now also nearly complete internally, though not yet open to the public. Externally the Natural History Museum is hardly a building to command very much admiration as a whole; it is somewhat heavy, and has the additional disadvantage of standing too low, and, in fact, almost in a hollow, below the level of the adjoining roadways. There are, however, very admirable points of detail in the exterior, and the central entrance doorway, with its deep recessed arch and rich sculptural decoration in terra cotta, is a very fine feature. But when the public are admitted into the completed building, they will find themselves brought face to face with a very novel and successful application of special materials, and of a type of architectural design which has not in any other modern building been treated on anything like this scale. The whole building is practically, to begin with, a remarkable and valuable example of the application of terra cotta as an architectural material. In the interior this is carried out with highly decorative effect, numerous designs in bas-relief being introduced of an appropriate character, and having all some relation to the purpose of the building, and in most cases admirably modelled. But the architectural importance of the interior really consists in the fact that it is a new and most effective application to modern architecture of the phase in the history of arched architecture which is generally known as "Romanesque," and which may be defined as architecture in which the Gothic or Mediæval spirit has been largely developed, but previous to the introduction of the pointed arch. This interesting and very solid and imposing phase of architecture has been copied occasionally in modern times; that is, simply reproduced in its ancient form. But Mr. Waterhouse has done more than this. He has made out of the materials suggested by the old Romanesque style an architecture quite modern in feeling, and completely suited to the purpose of the building and to the material in which it is executed. Entering through the principal door, we come into a great hall, which forms the central feature of the interior, and which is lighted from an arched roof. On each side are deep, heavy, arched recesses, with special light of their own, and which are intended for the arrangement of special classes of objects; while the objects of more interest, which present no hint for special classification, are arranged in the centre of the floor. At the further end of the hall rises a staircase, leading to open galleries, which run along each side of the hall above the arched recesses before named, and by these galleries we return again to the entrance end of the hall and the staircase which leads to the higher level of the first-floor galleries of the wings of the building. This staircase is carried over the hall on a great semicircular arch the whole width of the hall,—a treatment which produces the most picturesque effect, both from above and below, and is one of the finest points to be found in any modern building in the country; and the whole of this portion of the interior is full of fine effects of architectural perspective and composition. All the details of the internal architecture have been most carefully considered, and are all artistic and pleasing, without costliness or over-elaboration; among other things, the treatment of the windows is remarkably successful. It is unfortunate to have to add that the architect of the building,—a practical man as well as an artist,—has been thwarted in one of the best and most practical features of the plan of the building by official interference. In order to render the collection of objects conveniently available for scientific study as well as for popular edification, Mr. Waterhouse had contrived private corridors running between the larger halls into which the public would be admitted, so arranged that the cases containing objects of special interest to scientific students should be accessible from the back from these corridors, and capable of being opened for close inspection and study under proper control, while the cases on the side towards the public rooms would be always closed under glass. Nothing could be more practical and useful, apparently, than such an arrangement, which, however, has been countermanded, for the present at all events, for unintelligible reasons, though there is still the possibility of carrying it out in the future.

The present year has also seen the completion of a very large and important work, which is not, like Mr. Waterhouse's building, a modernised adaptation of an old style, but a complete reproduction of a Mediæval form of building in Mediæval style: we allude to the new cathedral at Edinburgh. It would be out of place here to discuss the question of suitability of building cathedrals at all at the present day, when the Church occupies so different a place in reference to the life of the nation from that which it occupied when the Mediæval cathedral grew into being: our readers will have their own opinions on that subject. It must suffice to chronicle the fact, certainly an architecturally important one, that a large cathedral has been completed in a remarkably short space of time,—a cathedral emulating in size and architectural magnificence some, if not all, of our genuine Mediæval cathedrals, and designed by the architect who unquestionably knew more of Gothic architecture than any other modern architect; who had, in fact, studied it so that it had become almost a second nature with him, and who, if his life had been spared, would have seen with peculiar satisfaction the completion of an entire modern cathedral from his own designs, after he had been so many years of his life occupied in restoring ancient cathedrals. The cathedral is in that Early English, or "Lancet" style, for which Sir G. G. Scott had a peculiar affection, and which combines solidity with grace in a more balanced form than perhaps any other style of English Gothic architecture. The cathedral has a centre tower with a fine spire; the nave consists of seven bays, with cylindrical and octagonal piers alternately; and the choir of four bays, with piers formed of clustered shafts. The nave is divided from the transepts by a screen of alabaster, enriched with inlaid panels and coloured marble shafts; the choir aisles are shut off by ornamental iron grilles, decorated with gilding; the choir is furnished with carved walnut-wood stalls; a considerable amount of stained glass, rather various in quality, has been placed in the windows, partly the gift of private individuals; an organ, by Willis, is in course of erection; and a peal of ten bells, by Taylor, of Loughborough, will be placed in the tower. This is a great change from the days when stained glass, organs, and all such vanities would have been scouted on Scottish soil as inconsistent with true devotion. While speaking of Edinburgh, it may be added that a great deal of rebuilding is going on in the city, which almost necessarily includes the removal and rebuilding of many of the high, blackened, picturesque old houses which gave so much of its peculiar character to the city, though they were certainly completely out of keeping with the title of "Modern Athens," which had been rather too hastily bestowed on Edinburgh. It is impossible not to regret the demolition of many of these old streets and "wynds" from the artist's point of view; but no one who has adequate ideas on the sanitary condition of the city can feel otherwise than that their removal was an absolute necessity.

Another piece of work which has been in progress during this year, and with which also the name of Sir G. Scott is connected, is the restoration of the north transept porch of Westminster Abbey. Though a far smaller work than the new Cathedral of Edinburgh, the great national interest of the building renders any alteration or restoration in any part of it a matter of importance. The north porch, which had been called "Solomon's Porch" in old days (in allusion to its special richness and elaboration), had been overlaid by later and very inferior work; but enough traces of the original work have been found to enable an architect so learned in Mediæval detail as Scott to restore the whole design on paper, and considerable progress has been made during the last few months in carrying out the work *in situ*. It is, of course, idle to say that this is the same thing as having the original work back, and if there were any at all proportional merit in that with which it has been overlaid it would have been wiser to have left the latter, as being at any rate real and historical work. But the late work was in fact architecturally weak and worthless to a degree, and it was far better to have even a copy (for it is little more than that) of the original design than to have the portal left in the meagre and despoiled state to which it had been reduced in an age when Mediæval architecture was not in the least understood. The design, when its restoration is completed, will show the three doorways, the centre and two side ones, with their deeply-recessed arches filled with rich carved ornament, and the wall space between the centre and the side arches decorated with niches and figures. The completion of the whole will necessitate the lowering, probably, of the level of St. Margaret's churchyard, now considerably above the floor of the Abbey: another illustration of the constant

* From the "Companion to the Almanac for 1880." The Company of Stationers, Ludgate-hill. See p. 1407, *ante*.

tendency to the raising of the ground-level wherever ground is much disturbed in the restricted spaces of a crowded city.

Having touched upon some of the last architectural works of our late distinguished and successful architect, it may be not out of place to allude to the appearance of the volumes containing his "Personal Recollections," edited by his son, as an event of some interest in the architectural world. There is a great deal in these volumes that is of considerable interest in the description of Scott's early studies and recollections, and of the state of architectural taste, or rather the entire absence of any such taste at the time when he commenced to learn the profession. It must be confessed, however, that a good deal of the latter portion of the book is taken up with accounts of architectural polemics of various kinds which have no longer (if they ever had) any interest for general readers, and that the publication of the "Recollections" has not on the whole operated advantageously to the memory of the distinguished church architect.

The general course of architectural work during the past year can hardly be said to have shown any special movement or advance in one direction or another. Perhaps in London the most marked characteristic has been the development of a love of red surfaces, shown either in the revived brick style called after Queen Anne, or in the deliberate painting over in strong red of many houses and parts of houses of the old cement type. We certainly want more colour in our streets, and perhaps this rather crude beginning may lead the way to a more thoughtful and artistic development of colour in our street architecture. In other respects town architecture seems to go on pretty much in the same groove in which it has recently been travelling; the more commonplace buildings taking the usual forms of "Italian," which have long been consecrated to town architecture in the eyes of those who may be called regulation architects, while those who aim at artistic effect have been continuing to play variations on the Queen Anne string, leading to the production sometimes of some piquancy and novelty in detail, and certainly of a great deal of costly and beautifully-executed brickwork, which, as improving the character and the standard of work, is in itself a gain. We may mention some few of the works which seem most to call for notice in London and elsewhere.

Among other things, it cannot be overlooked that the class of building known under the title of Restaurant has assumed lately an importance socially and architecturally which it never had before. It has become, in fact, a kind of club for the million, and is fitted up with a degree of luxury and show which many clubs would be as unable to emulate in costliness as they would be unwilling to imitate them in style. The "Criterion," which was the first of these large establishments, has been recently enlarged, and a new establishment of this kind has been completed this year under the title of the "Gaiety" Restaurant, in connexion with the theatre so named. The elaborate and showy decorations of these buildings, though by no means free from vulgarity and ostentation (which cannot be wondered at when it is considered that they are more or less of the nature of advertisements), are at any rate very greatly in advance, in point of taste, of anything which it was formerly thought necessary to place in buildings of this class; and so far we may note an advance, though of a rather doubtful kind,—the tile and other decorations for ceilings and walls, in these buildings, erring in fact rather on the side of attempting too much and producing the impression of art-decoration turned out by machinery, than which nothing can be more opposed to true taste. Mr. Verity, the architect of the "Criterion," whose name has now become connected with buildings of this class, also designed and superintended its more recent successor in the Strand.

The buildings in connexion with the new Northumberland-avenue do not seem, so far, to promise anything out of the common run of the more costly description of street architecture; the Grand Hotel, now externally completed, has no features to distinguish it from many other buildings of the same class. The necessity for making the most of every foot of the ground compelled, we are told, the employment of an unbroken mass of frontage without projections or recesses; but it is surely time for architects to consider whether they cannot adapt themselves to circumstances, and achieve picturesque appearance under such drawbacks, by some other method than falling back upon the hackneyed resources of worn-out Italian details. Mr. Gibson's building for the Christian Knowledge Society, on the other side of the same street, though somewhat heavy, and also made out of well-worn details, exhibits a successful attempt to gain variety of surface and grouping by the large recessed arches on the upper story, and the effect of the whole building is dignified, though cold. If we may judge from published illustrations, the new building for Drummond's Bank, in course of erection at Charing-cross, will do nothing to relieve the heaviness of the new architecture of the locality. It will, no doubt, be a building practically suited to its purposes, for its architect, Mr. Hardwick (consulting architect to the Bank of England), has much experience in such buildings; but, artistically speaking, it appears the most absolute common-place of architecture, without a single feature of novelty or interest.

One of the finest and most successful buildings coming under the head of commercial architecture which has been completed during the year is Mr. Waterhouse's building for the Prudential Assurance Company in Holborn. This is noteworthy as one of the few recent instances of a large building in the Gothic style, which has now so nearly given place to the various species of what may be called "bastard Classic." Mr. Waterhouse, however, is not one of the architects blown about by every wind of fashion, and he has given us in this building one of the best specimens of that style of Gothic, a little deficient in *verve* and picturesqueness, but nevertheless very refined, which he has elaborated for himself on the basis of early French Gothic. The building is also a remarkably good instance of workmanship in rubbed and cut brick and terra cotta, and is in every way a valuable addition to London street architecture.

The Paddington branch of the London Joint-Stock Bank, by Messrs. Isaacs & Florence, is a building showing considerable originality as well as suitability of style, as might be expected from the fact that the junior partner in the firm is well known as one of the cleverest draughtsman and designers of the younger generation of architects. Some of the best works of the year in London, however, have been in the class of warehouse and manufactory building, which has ceased to be necessarily mere bricklayer's work. The new warehouses in Southwark Bridge-road, for Messrs. Petty, Wood, & Co. (Messrs. Roumieu & Aitchison, architects), may be mentioned as a large and striking building of this class, showing, however, more force than refinement of detail. A smaller building for a bookbinding establishment in White Hart-street, Strand (Messrs. Clarkson, architects), is an excellent specimen of simple and practical treatment of a building of this class. The Leather Exchange at Bermondsey may be mentioned, though a building of no very special character; but the London Leathersellers' Company have set an admirable example in the way of architectural decorative art in the new iron gates to their hall, in St. Helen's-place, which are entirely hand-wrought in every part, without castings or any mechanical appliance whatsoever. It is only by work of this kind that anything can be produced worth calling decorative art, which in modern days has been nearly killed by machinery. The work was done from the designs of Messrs. Wilson & Aldwinckle, the architects to the Company. A good deal has been in progress this year in the way of what may be called City architecture: among which, the Manchester Hotel, in Aldersgate-street, may be mentioned, as one of the most important, and perhaps, also, one of the most successful, recent buildings in the City neighbourhood, and which is also noteworthy as one of the few buildings lately erected in the Late Gothic style. But, in general, it cannot be said that new architecture in the City shows any very original features. That venerable institution, the Bow-street Police-court, is coming out in a new dress; but neither will this exhibit any definite character, and it might as well be a club as a police-court. A more important building is "Temple Gardens," the new block of very showy building which has lately been erected at the end of Middle Temple-lane, and which has been carried out under rather peculiar circumstances, as the site was the property partly of the Middle Temple and partly of the Inner Temple, and the two societies, both wishing to build, agreed to adopt the same style of building; and eventually what was at first to have been two buildings, was compressed into one, and Mr. E. M. Barry, the architect to the Benchers of the Inner Temple, was entrusted with the entire external design; he and Mr. St. Aubyn, who was engaged on behalf of the Middle Temple, being each responsible separately for the internal arrangement of his own half of the building. . . . . .

Among buildings which claim a word of notice are those which are erected for exhibitions, of which our colonial friends at Sydney have produced a large specimen for the exhibition which is now open. The building presents nearly the usual features of erections of this class; the central dome appears to be well treated, and though the whole building seems, from the illustrations transmitted to us, to be plain enough, there seems no indication of such exceedingly flagrant and flaunting taste as was displayed in many portions of the Paris Exhibition building. A Fine Art Exhibition has been built at York, also; this, however, is not a temporary, but a permanent structure, and though there is nothing out of the way in the architectural detail and treatment, the amount of sculpture introduced will, when completed, and if of good quality, give a certain degree of special interest to the building, and it appears to be well and effectively grouped on the façade. Among other works of interest which have been in progress in the provinces, may be mentioned the new town-hall for Great Yarmouth,—a picturesque application of details borrowed from Elizabethan and Jacobean architecture, and rather happily assimilated by the architect, Mr. J. B. Pearce. The competition for this building was one of some importance, and brought out a good many good designs, of which the selected one may be said to be one of the best in keeping with the style and general aspect of the town. In Liverpool a new club has been opened in the early part of the year, under the title of the "Reform," the building for which shows a considerable amount of originality, in a design that is Classic in feeling, but treated mainly in brick, with considerable refinement of design and execution, though a little heavy. New street-architecture has shown much development in this large town, and much of it is of a very high character; and an important building has also recently been opened under the title of the Picton Reading-room (named after an eminent citizen of the town), which takes the now unusual form of a circular Greek colonnaded building, and has a graceful effect between two masses of square building (the Free Library and the Art Gallery), which abut on it at different angles. Mr. Waterhouse's new hall for Balliol College, Oxford, is a good specimen of modern Gothic, with some specialities of treatment, and very appropriately designed to express its purpose; and the private chapel at Eaton Hall (the seat of the Marquis of Westminster), by the same architect, is another specimen of modern ecclesiastical architecture of a very satisfactory type from a certain point of view, and which, in style and dimensions, rises almost to the dignity of a church, having attached to it, but nearly detached from the building, a lofty and powerfully treated tower, in which is hung a carillon peal by the celebrated bell-founder of Louvain, Van Aerschodt. The tower presents a kind of mixed derivation in style, the details being Gothic, but the main design partaking of the Italian campanile character, a lofty and nearly straight-lined stalk without buttresses, carrying an over-sailing clock stage, which is surmounted by a short and graceful spire. The very active and rising town of Barrow-in Furness has supplied itself with a Town-hall of large dimensions and admirable design, by Mr. W. H. Lynn, an architect of real genius, both in planning and designing, and whose treatment of the central tower especially of this Town-hall deserves, and will probably receive, much admiration. The building of asylums has been a feature in provincial architectural work; the proposed new County Lunatic Asylum for Gloucester gave rise to a large competition, in which a good many very admirable plans were submitted; and the Lincoln County Hospital may be mentioned as a building in which the practical requirements of planning, &c., in a building of this class have been very successfully combined with picturesque outline and effect in a manner perfectly suitable to the occasion. A small building, the Stephenson Memorial Hall at Chesterfield, ought not to be passed over, on account of

the interest attaching to the name of the great engineer to whose memory it was built, in sight of the house in which he died. The building comprises a public hall and rooms for educational purposes, and is a quiet-looking design of Domestic Gothic character, appropriate enough for a building of that class for a comparatlvely small town.

It would be impossible to say that the year 1879 has been marked by any peculiar or definite step in architectural style. It may be readily observed that the decline of interest in revived Mediæval architecture has taken no turn, and that Mediæval buildings, not long since the rule, are now the exception; and the style which is founded on revivals of Jacobean and Queen Anne architecture, though increasingly prevalent, has not yet shown any symptoms of leading to the development of a new Classic style, as many of its adherents have predicted it would; on the contrary, it appears to consist still of mere copying, and the copying of bad and corrupt detail, which can from no point of view be called artistic. Among some of those who have given themselves to this manner of architecture, however, there is evident a wish to produce characteristic architecture suited to its purpose, which, on the whole, more recommends itself to us than the cold and bare classicisms, without colour or character, with which so many architects of clubs, banks, and public institutions are still content. It is impossible, of course, that modern architecture should sever itself from or forget the past,—some copyism and reproduction the most original building must show; what we feel more especially is the want of direct attempts to deal with special problems in a special way; the perverseness with which, when a building has to be erected the conditions of which in regard to site, materials, and requirements really give every suggestion for specialty of treatment, all this is ignored and the special qualities of the building are stupidly hid away behind a mask of regulation pilasters and such-like architectural furniture. What is above all required is that architects should be induced to take the trouble of thinking out a problem for themselves, and resolving it in what is really the best and fittest way under the circumstances. Till we can get a large proportion of the best-educated of our architects to take this course, instead of flying to old and unsuitable types of design, merely to save themselves trouble, there will be no real architure among us. There is little enough at present, and the few refreshing instances only serve to intensify our impression of the general weakness and insufficiency of the architecture of the day.

COST OF WOOD-PAVING IN CHELSEA.

At a recent meeting of the Chelsea Vestry, the surveyor presented a return, showing the cost of, and other particulars in connexion with, the laying of 31,333 yards of wood pavement in King's-road, Sloane-square, Sloane-street, and Cadogan-place North, for which purpose a loan of 18,000*l.* was obtained:—Total expenditure, 17,260*l.* 11s. 2d. Repayments, viz.,—from Gas and Water Companies for reinstating trenches, sale of materials, and other receipts, 118*l.* 12s. 2d.; nett cost of works, 17,141*l.* 19s. The nett cost of the pavement only (including superintending) has amounted to 10s. 5¾d. per yard super. The estimate was 11s. 3d. The lowest tender for the works in question was 12s. 6d. per yard, consequently the actual saving effected by the Vestry undertaking the work amounts to 3,160*l.* 11s. 4d., without making any allowance for the concrete and grout being in Portland cement instead of lime. The works generally consisted of a 6-in. bed of Portland cement or concrete, upon which were laid yellow deal blocks, 9 in. by 6 in. by 3 in. The blocks had each three iron studs driven into them to keep them in place until the grout had properly set. The joint, which is ⅜ in., was filled in with grout composed of Portland cement and sand. 6,392 loads of old macadam were screened from the excavation, carted from the works, and used in repairing various streets. The unexpended balance of loan amounts to 858*l.* 1s., but it is probable that about 100*l.* will be required to fill in the side margins with grout, as soon as the expansion of the wood has ceased. The estimated value of the plant and materials in stock at the Vestry Wharf No. 1 amounts to 100*l.*

ARCHITECTURAL ASSOCIATION.

At the second meeting for the present session, held on Friday, the 19th inst., Mr. S. Flint Clarkson, president, in the chair,

Thirty new members were elected, viz., Messrs. Charles Dunch, Herbert Hooton, H. P. Hogg, W. Toogood, F. W. St. Aubyn, H. W. Moxon, J. C. Carter, F. Clemence, E. J. Andrew, M. W. Maylard, W. N. Ashbee, R. D. Reeve, L. Barton, J. Crocker, G. G. Warren, H. Lambert, G. S. Stephenson, H. W. Crickmay, F. G. F. Hooper, A. E. Newth, W. A. Pite, A. B. Pite, E. Hodges, H. W. K. Martin, T. J. Holland, G. W. Jones, R. Turner, G. P. C. Fyfe, H. T. Clark, and A. E. Westover; and thirty-six gentlemen were nominated for election at a future meeting.

On the motion of Mr. R. C. Page, votes of thanks were given to the Council of the Royal Institute of British Architects for lending their rooms to the Association on the occasion of the opening *conversazione;* to Mr. Boyd for placing the Museum of Building Appliances at the disposal of the committee on the same occasion; and to the entertainments sub-committee.

The President announced that, as usual, most of the architectural students' prizes at the Royal Academy had been won by students who were members of the Association. In the Baptistery competition the gold medal was won by Mr. F. T. Baggallay, and in the same competition a medal of merit was won by Mr. J. H. Ince. The Academy travelling studentship in architecture was gained by Mr. R. W. Gibson, for his design for the town-house of a royal prince. All these gentlemen are members of the Association.

The librarian, Mr. Hampden W. Pratt, announced several donations of books to the library, the donors being Messrs. Edwin Nash, D. G. Ebbetts, Mark H. Judge, — Buckler, and Bowes A. Paice. It was also announced that Mr. George Godwin had, in pursuance of the promise contained in his letter read at the Association's *conversazione*, presented thirty-eight volumes treating of various phases of art and construction. On the motion of Mr. Pratt a hearty vote of thanks was given to the several donors.

Mr. Cole A. Adams then read a paper entitled "Common Sense in Architecture." This we print on p. 1426.

In the discussion which ensued,

The President observed that "common sense in architecture," as it had been treated of by Mr. Adams, might be defined as consisting in the choice of the best course in the pursuit of architecture as a profession,—a very desirable aim in the abstract. But there remained further questions as to whether all the things recommended by the author of the paper in the name of common sense were desirable in themselves, and some of those questions would doubtless be raised in the course of the discussion.

Mr. Gilbert R. Redgrave said that just as some people would say, "Orthodoxy is *my* doxy, heterodoxy is anybody else's doxy," so others said, virtually, "Common sense is *my* sense or opinion, and anybody else's opinion, unless it happens to agree with mine, is not common sense." Although Mr. Adams had not exactly defined common sense, he had given some very well-chosen illustrations upon points in which the absence of common sense was very easily seen. Common sense in the elevation of a building, common sense in the planning of it, and common sense in the use of it, were all touched upon in the paper. That common sense did not always prevail in meeting all the requirements of a building was very amusingly illustrated in a story, told in Walpole's "Anecdotes of Painting," respecting an architect of the Earl of Burlington's time. The architect, it was said, built a house the elevation of which was exceedingly good, but the interior was so bad that the gentleman for whom it was built could not live in it: so he took a house opposite to it so that he might be able to live in comfort and be able to gaze on the beautiful façade of the uncomfortable house. He (Mr. Redgrave) agreed with much that had been said by Mr. Adams as to common sense in church architecture, but while it was necessary, and, indeed, desirable, to make adequate provision for the comfort of the congregation, there was a higher sentiment to which, to a certain extent, common sense and strict utilitarianism must sometimes be sacrificed.

Mr. John Sulman said it too often happened that the cry for "common sense in architecture" came exclusively from those who prided themselves upon being strictly "practical men,"—very good men in their way, no doubt, but men who only saw half the truth. On the other hand, there were men in the architectural profession who were artists pure and simple, and who paid little heed to common sense in planning or construction. In church architecture especially, some architects were, perhaps, rather too apt to put architecture first and common sense second. But what was wanted was neither of those two extremes, but the mean, and the mean was apparently very difficult of attainment by one and the same man. That opened up the question whether it should not be the aim of the members of the profession generally to become good average "all-round" men,—men who would not give undue preponderance to construction and planning, to the detriment of art; neither, on the other hand, making art supreme and ignoring common sense in construction. With reference to the architecture of churches and chapels, he happened to come very much in contact with a class of people,—viz., Nonconformists,—who laid a great deal of stress upon common sense in matters of convenience and comfort in the arrangement of their chapels; and he believed that, as a general rule, much more regard was paid in Nonconformist chapels to the comfort of the congregations than was shown in church architecture. The reason for that he believed to lie in the fact that church architecture was too much hampered by tradition. On the other hand, the various Nonconforming bodies had no architectural past, and architects who were engaged in providing places of worship for Nonconformists had better chances of combining comfort with architecture, because freer from precedent than church architects. A good illustration of what he meant was afforded by Union Chapel, Islington [Mr. James Cubitt, architect], visited by the Association a few years ago. Mr. Redgrave had referred to the higher sentiment in church architecture, but there was no reason why that sentiment need be interfered with by studying comfort. As to the question of successive "revivals" of style, those revivals were certainly not in accordance with common sense. We were not Greeks, and lived neither in Mediæval times nor in the reign of Queen Anne, nor were our thoughts, manners, and customs those of any of those ages. He could not help thinking that if architects were to take up their work on a more practical, common-sense, or vernacular basis, they would be able to give better and more original expression to the buildings which they erected to meet our nineteenth-century wants, and the need for revivals would cease, because we should have a style belonging to our own age. He failed to appreciate the force of Mr. Adams's *dicta* as to graining, either on the ground of durability or on that of its alleged happy quality of "going well" with furniture and other things. He fully agreed with what Mr. Adams had urged as to the necessity of practical training for architectural pupils, and it had often occurred to him whether it would fall within the scope of the Association to form technical classes for the instruction of its members in actual practical work. But nowhere than actually on buildings in progress could the young architect gain a proper knowledge of construction, and it was the duty of principals to allow their pupils all reasonable facilities in that respect.

Mr. Audsley said he, like the last speaker, could not sympathise with Mr. Adams's plea for graining.

Mr. Aston Webb said that perhaps the *acme* of common sense in architecture was very uncommon sense, and was attained to only by those men of genius who were able to combine beauty in design with a thorough knowledge of construction and utility of planning. Common sense, it seemed to him, was as necessary in the art portion of the building as in the practical portion. He thought it a most fortunate thing that the church architecture of England had its traditions. As to the greater discomforts alleged to prevail in churches than in chapels, he thought that church architects were not altogether oblivious of their duty in that respect. As to the training of architectural pupils, he agreed that more attention should be given to the practical details of construction, but, at the same time, he thought too much was being made of this question of educational facilities, for a young man in an architect's office in the present day would have plenty of opportunities,

if he were disposed to use them, not only to examine and study the drawings and correspondence of the office, but to go on the buildings in progress and to go through the builders' workshops. It was, perhaps, hardly wise for architects to twit each other, in the face of the public, on their want of common sense. As a matter of fact, he believed that architects now paid more attention than ever to practical details.

Mr. W. Hilton Nash said a striking instance of the want of common sense was afforded by the rectory-house at St. Alban's, designed by a gentleman who, though not an architect, prided himself upon his knowlege of what was and what was not "common sense in architecture," and who had also written "a book on building." He (Mr. Nash) thought that the buildings of Paris, on the whole, exhibited much more common sense in design and construction than those of London. But common sense in architecture did not seem to increase with the enlightenment of the present age. In the days of the Normans much more common sense was often exhibited in construction than was exhibited in the present day.

Mr. Hugh Stannus said that he agreed with the author of the paper in thinking that the "Queen Anne" movement portended a revival of Classic architecture, but the question arose, When we have run through the gamut of all possible styles, what will be the result? He ventured to say that the present age, which was essentially an analytic and reasoning age, would in the end choose from each style its best elements, adapt them to present-day needs, and so produce a living style, in accordance with the doctrine of the "survival of the fittest." "Common sense," he thought, was that upon which every one was agreed. In Norman times, when there was not much enlightenment, it was easy to understand that there could only be one style of architecture. But in the present day, when individual liberty had become so developed, when individualism was allowed free scope, it was almost impossible to find any one point upon which everybody was agreed. But what ought to and what might be attained in architecture was reasonableness and fitness. He agreed with what had been said by Mr. Aston Webb as to the education of young architects. If a young man desired to become an architect, if he had a real burning desire to learn his business, there was nothing to prevent his doing so. But if, on the other hand, he were idle and apathetic, no educational facilities would avail. In fact, it was not so much a question of what the pupil was taught in the office, as it was of what he learned there.

The thanks of the meeting having been tendered to Mr. Adams for his paper, that gentleman said a few words in reply, and the meeting terminated.

The next meeting will be held on Friday, January 2nd, 1880, when Mr. R. L. Cox will read a paper on "Architectural Illustrations and their Classification."

THE NEW HAYMARKET THEATRE.

Within the last two or three months the Haymarket Theatre has been in the hands of the builders, undergoing an entire transformation. It has, in fact, been internally re-constructed, and may be practically regarded as an entirely new theatre. When the old house was handed over to the contractors, the first thing to do was to clear away the auditorium and the whole of the interior portion of the structure, the stage included, the main external walls only remaining. This having been effected, the work of reconstruction commenced. As is well known, the pit of the old Haymarket Theatre was one of the best in London, notwithstanding that the theatre itself is of comparatively limited dimensions, and was long popularly known as "the little Theatre in the Haymarket." In the reconstructed theatre this has been altogether changed, what has long been known as the pit having been entirely done away with, and a considerable portion of the space appropriated to the extension of the dress-circle, whilst the remaining part will entirely consist of stalls. In order to effect this, and bring forward the dress-circle, it was necessary to lower the floor, and this has been carried out to the extent of 2 ft., the floor level of the stage having also been lowered to a corresponding extent. By the new arrangement the dress-circle has been brought several feet nearer to the stage than that in the old theatre, whilst the upper-circle and a new amphitheatre and gallery above have been similarly constructed. This arrangement secures a much larger box space, as well as additional private boxes. It is understood that the amphitheatre is intended to be in lieu of the pit,—now converted into stalls, whilst the gallery behind the amphitheatre is very spacious, extending to the main boundary-walls. There is a wide promenade behind the dress-circle and crush-rooms, in connexion as well with the stalls. Whatever may be thought as to the abolition of the old traditional pit, which in the construction of modern theatres appears at present to be gradually being absorbed into the "stalls," the interior of the new Haymarket, structurally speaking, appears to afford facilities for a greater degree of comfort to the audience than did that of the former building. Another feature in the newly-constructed interior is in the ceiling, which has to a certain extent been increased in height. This has been effected by the introduction of cross-beams and girders in the place of iron columns, which has produced a much improved roof and ceiling. Additional attractiveness has likewise been given to the ceiling by alcoves carried round it. Several portions of the floors and other parts of the interior are fireproof, and in the reconstruction of the building the facilities for ingress and egress, now so rightly insisted upon in buildings of this character, have been attended to. The stage, as well as the auditorium portion of the house, has been entirely reconstructed under the supervision of experienced stage carpenters. The structural portion of the work is now almost completed, and the decorations, which are being executed by Mr. Bell, of Regent-street, are in progress. When finished, it is believed that the new Haymarket will be an elegant and compact theatre. It is expected to be ready for opening by the new lessees, Mr. and Mrs. Bancroft, early in January.

The theatre has been reconstructed from the designs of Mr. Phipps, architect, and the contractors are Messrs. Laing & Sons, of Duke-street, Adelphi.

THE BASEMENT VAULTS OF THE ROYAL EXCHANGE.

NOVEL CONVERSION.

The Gresham Committee have leased the whole of the spacious basement vaults under the Royal Exchange to the "National Coffee Public Houses Company," who are now engaged in converting the vast area into a huge establishment for the purposes of their business, from the designs of Messrs. Parr & Strong, of Finsbury-square, at an outlay of several thousands of pounds. In the first instance a new floor is being laid down, extending over the entire area, that portion of the centre which is called the great central hall, 110 ft. in length, and 56 ft. in width, being in parquetry. What may be termed the two aisles are being fitted up as private rooms for dining and other purposes connected with the business of the establishment. These rooms are thirty-three in number, there being twenty on the north side and thirteen on the south side, and the average dimensions of each room are about 13 ft. by 10 ft. They are entirely divided from each other by partitions carried up to the crown of the vault arches. Immediately beyond the south-east corner of the great central hall there is a spacious smoking-room, 25 ft. square. There are counters on the north and west sides of the central hall, whilst the whole of the area is fitted with tables for the visitors who may frequent the establishment. The culinary department is at the east end, and occupies a considerable portion of the basement area. It comprises a large kitchen, and other apartments connected with the cooking arrangements of the establishment. The cooking apparatus is being furnished by Mr. W. J. Smith, of Finsbury-pavement. At the north-east end, some distance beyond the central hall, a still-room, 25 ft. square, is in course of construction, where the coffee, tea, and cocoa will be prepared. There will be three entrances into the establishment, one from Threadneedle-street, on the north side, another from Cornhill, on the south side, and a third at the east end, near Lloyds' The two entrances from Threadneedle-street and Cornhill respectively lead down into a corridor 90 ft. long and 15 ft. wide, along which the large central hall and the several rooms on either side are reached. On each side of the entrance hall and corridor there will be lavatories and hair-dressing rooms, the ladies' lavatories being on the Threadneedle-street side. Artificial light will, of course, be necessary throughout the day, and for the purposes of air and ventilation a large fan, driven by an engine, will be erected at the east end. This, as well as the cooking machinery, is in course of construction by Mr. Smith. The piers, walls, and arches of the vaults will all be decorated, and when completed this huge underground hotel will, we fancy, present an imposing appearance.

Mr. W. Brass, of Old-street, is the contractor, and Mr. Weston acts as foreman and clerk of the works.

THE ARCHITECT OF THE SCOTT MONUMENT, EDINBURGH.

We regret to hear that the widow of the architect of this well known monument, Mr. George Kemp, is in distressed circumstances. The Edinburgh Corporation have taken the matter in hand, and made a small allowance to Mrs. Kemp; but it is proposed that a public subscription be raised, and it is hoped that sufficient will be collected to give her an annuity of at least 50*l.* per annum, to be continued during their lives to her two children. There are doubtless some in London who would help; as would probably the Architects' Benevolent Society if properly applied to.

THE NEW CITY COUNCIL CHAMBER.

The Corporation have just decided upon an important purchase of property in the City for the new council-chamber. It consists of freehold property in Aldermanbury, and the sum agreed to be paid for it is 20,000*l.*, together with 500*l.* for fixtures. In consideration of agreeing to let the Corporation purchase it, the present owners are to have a lease of the adjoining premises for twenty-one years, at an annual rent of 400*l.* During a discussion which took place on the subject, it was stated that the Corporation could not carry out the design of the new council-chamber without this property. It further transpired, as to the provision of the necessary funds, that the Corporation expected 5,000*l.* or 6,000*l.* from the London and Brighton Railway Company, 2,000*l.* from the Commissioners of Sewers for property in Fore-street, 2,000*l.* from the Great Northern Railway Company, and from Zion College, if the negotiations now in progress are carried out, 31,625*l.* They were also negotiating with Government for the sale of a large property, and likewise expected a heavy amount from another quarter. It was urged by several members of the council, in support of the purchase of the Aldermanbury property, that the purchase of property around Guildhall should be encouraged.

PROGRESS OF THE WEST KENT MAIN DRAINAGE WORKS.

A large sum has already been expended on the West Kent Main Drainage Scheme, and a considerable portion of the work has been executed, but more money is required to continue the works, and, last week, Mr. J. T. Harrison, C.E., one of the inspectors of the Local Government Board, held an enquiry on the subject, the West Kent Main Sewage Board having made an application for powers to borrow 37,250*l.* for the purposes of further carrying out the sewerage of the district. It appears from what transpired at the enquiry that the Board has already completed a line of sewer, under the superintendence of Sir Joseph Bazalgette, C.E., and Mr. Williams, C.E., from Bromley to the outfall at Long Reach, Dartford, at a cost of 200.000*l.* and the additional amount required was to carry on the sewer to Beckenham, where, by a short junction, it will be able to take away to the Thames the whole of the sewage of Croydon and South Norwood, about which there have already been negotiations. The financial part of the work, including the amount of contributions of the constituent authorities, was explained by Mr. R. G. Muller, the secretary to the West Kent Board, and Mr. Alfred Williams, C.E., explained the nature of the proposed works. There was no opposition, and the inspector intimated that he should report favourably to the Local Government Board.

A COLOSSAL RAILWAY GOODS STATION.

AMONGST other new works of great magnitude on which the London and North-Western Railway Company have for some years been engaged at different points on their system is a new goods station at the extreme north end of Liverpool, which has been in course of erection for some time past, and which is now so far completed that it is intended to be opened for traffic on the first day of the new year. This station, which has been named the Atlantic Docks Station, is actually beyond the boundary of the borough of Liverpool, being within the neighbouring borough of Bootle, and in immediate proximity to the large new docks at the north end of the port, which are at present in course of construction on land reclaimed from the foreshore of the river. This land is upwards of 200 acres in extent, and was purchased by the Docks Board, at a large outlay, from the Earl of Derby as lord of the manor. After the purchase a still further large sum was expended in the construction of a river wall between one and two miles in length, and in "making" the land between the intended new docks and the wharfs and warehouses space.

It is upon a portion of this space that the spacious new goods station of the London and North-Western Company has been constructed. It covers an area of nearly twenty acres, and is one of the largest railway goods depôts in the kingdom. The greater portion of the space has been devoted to the construction of the station proper, which is entirely covered in, and contains some twenty lines of rails, several miles in length in the aggregate. In the construction of the station, many hundred tons of iron have been used in the columns and girders supporting the roof, as well as in other portions of the work. On the space in immediate contiguity with the covered station area several large warehouses are intended to be erected by the company, and will immediately be proceeded with. The station is replete with every convenience for dealing with general goods traffic, including cotton goods and other merchandise intended for immediate shipment, or for being conveyed into the interior of the country on arrival in Liverpool by ship. By means of the line of rails carried along the whole length of the docks from north to south, —now upwards of eight miles in length,—the station is placed in direct connexion with the entire dock system. The works have been carried out under the superintendence of the Company's engineer-in-chief and his assistant engineers. Access to the station is obtained for the company's trains from different parts of the country, by means of a branch line which the company some years ago constructed between Edgehill and Bootle. In addition to their goods stations in the interior of the town, the London and North-Western Company have now three stations of this character in direct connexion with the docks, namely, the new station just described at the north end; another at Waterloo; and a third at Wapping, in the vicinity of the south docks.

CONVERSION OF YORK HOUSE, REGENT-STREET.

THE JUNIOR ARMY AND NAVY STORES.

A LONGING for co-operative stores appears to be permeating almost every class of society, and amongst other establishments of this character, a well-known building in Regent-street, immediately above Waterloo-place, York House, which has for many years past been known as a club-house or chambers, chiefly as the residence of unmarried members of the aristocracy, is undergoing most extensive alterations, both externally and internally, for the purpose of being converted into what is designated the "Junior Army and Navy Stores," after having been purchased, it is stated, at an outlay of 20,000*l*. The building had originally three stories above the ground floor, extending a considerable depth, and containing, for the accommodation of the members of the club, no fewer than 130 rooms. Two additional stories have been added, and it is now one of the loftiest and most conspicuous buildings in Regent-street. But it is in the interior of the structure where the most extensive works have for some time been in progress, and are now almost completed. The interior has, in fact, been gutted and reconstructed for the purpose of adapting it to the comprehensive and varied business to which it is in future, at any rate for a time, to be devoted. When it is stated that although two additional floors have been built there are only eighty rooms instead of 130 in the original building, the transformation which the interior has undergone may be imagined. Some of the rooms are very spacious and lofty, one of them being 85 ft. in length, and 22 ft. in height, whilst the decorations and fittings throughout are elaborate. The principal entrance is from Regent-street, leading into a hall or vestibule, which has been artistically decorated, and the floor laid in mosaics and encaustic tiles, several of the floors in the other rooms being likewise laid with the last-named material. Through the hall access is gained to the staircase leading to the several floors. On the right hand of the ground floor is the grocery department, and on the left the provision department, the grocery department running the entire depth of the building, and having a ground area of 2,000 ft. Ladies' show-rooms are on the first floor, as well as several other departments; hosiery and drapery on the second; on the third floor china and glass, and refreshment and dining rooms. The fourth and fifth floors are set apart for furnishing.

Hydraulic lifts, as well as the staircase, lead to the upper floors. Iron largely prevails in the construction of the interior, in proof of which it may be stated that 105 tons of iron have been used in the construction of the floors, and other portions of the interior. The floors are constructed on Dennett's fireproof system, with rolled iron joists and concreted arches. The extreme height of the hydraulic lifts from the basement is 106 ft. The engine employed is Crossley's "Otto" gas-engine, of 6-h.p., working a pump capable of throwing twenty tons of water per hour to the upper tanks. The building throughout is supplied with over 300 ft. of 4-in. fire mains, with hydrants and hose, and over 10,000 ft., or nearly two miles, of gas-pipe have been fixed in the several rooms and departments. The wrought-iron tanks placed over the hydraulic lifts will hold 2,000 gallons of water. The superficial working area of the building is 70,000 ft.

Mr. A. Bedborough is the architect concerned, and the general contractors are Messrs. Green & King, of New Bond-street. The total cost of the building, including purchase, is estimated at upwards of 50,000*l*.

DRURY LANE *REDIVIVUS*.

RUMOUR is busy with the name of this famous as well as notorious thoroughfare. The Lane is to become a street, and Drury is to be known no more as its title.

Drury-lane has been a lane for upwards of six hundred years. The villagers whose cottages were clustered in the vicinity of the Church of St. Giles journeyed along its pathway on their road to or from the Strand, while the lowing of the cattle and the bleating of the flocks came to them from the fields on either hand. Little more than three hundred years ago there were only two houses in the Lane, the blacksmith's house and shop at the north west end adjoining the Broadway, now Broad-street, Bloomsbury, and Drury House, at the south-east end. For three centuries had the clink of the anvil sounded from the ancient forge. Doubtless the smiths did a good business in the shoeing-line, for Strype records that "High Oldburn" (the only road from the village of St. Giles to the City), "leading from the Bars towards St. Giles, was very full of pits and sloughs," and many a carrier's or packman's nag must have lost a shoe or two in struggling through the treacherous morass.

In the reigns of Elizabeth and James I. a few farmhouses sprang up in the vicinity of the smithy, and on the north-east corner of the Lane arose a hostelry, named "The White Hart," which was demolished in 1720, to be erected under the same name at the beginning of the present century. At the south of the Lane, opposite Drury House, a tavern, "The Cock and Pye," was erected. A right merry place it was in days of yore, and thither the lads and lasses used to betake themselves after a dance round the May-pole in the Strand, and refresh themselves with cakes and ale. The Church of St. Mary-le-Strand covers the ground where the May-pole stood. Among the merry makers would probably be found that "mighty pretty creature," Nell Gwynne, the peerless beauty of the Coal-yard, one of the tributaries of the Lane. This Yard has seen better days. Only recently, the last of its stately mansions, sadly gone to decay, was pulled down, and its site and garden are covered with a school. Here also, until lately, stood a large dwelling which had in former times served the purposes of a round-house and a lock-up. South of the Coal-yard is Macklin-street, formerly Charles-street, formerly Lewknor's-lane,—for there, in the days of King James I., dwelt Sir Lewis Lewknor, in his mansion surrounded by flowers and fruit-trees. Since his days, Lewknor's-lane, though its name has changed, has been known as a haunt of immorality. Why should the name of Macklin be linked with this infamous locality? There is no record to show that in his lifetime he was in any way connected with it. But a like liberty has been taken with the name of Kemble. In the last-mentioned king's reign, Drury-lane was altered to Prince's-street, but only for a short time, when the street running from the Lane to Lincoln's-inn-fields was called Prince's-street. Here it was that Mr. Page resided, at whose house one night, after the theatre had closed, the beautiful Mrs. Bracegirdle supped; while at the "Horse-shoe Tavern," in the Lane, the profligate Captain Richard Hill plotted with six soldiers to carry off the fair actress: a sad night for Mountford the actor, who was slain by Hill. Why should this street have been new-named Kemble-street?

In the reign of Charles II., John Brownlow, gentleman, built for himself a house on the west side of the Lane, and also a street, which he named after himself. Strange to say, this street has been christened Betterton-street Short's-gardens, by its name only, still recalls the memory of the pleasant residence of Dudley Short, gent., contemporary with John Brownlow; and Parker-street, of Sir Philip Parker, who dwelt here, and was at times visited by King James.

As a continuation of Princes-street, Sardinia-street, formerly Duke-street, deserves notice. In this street "the Roman Catholics have the finest chapel for their worship in England," says "The New Guide to London," published in 1726. In this chapel was Nollekens, the sculptor, baptised, in 1737, and in 1780 it was sacked and demolished by the Gordon rioters. Opposite this chapel, Benjamin Franklin, while working as a journeyman in an office close to Lincoln's-inn-fields, lodged, at a rent of 2s. weekly.

The first theatre in Drury-lane was named the Cockpit. It was erected by Killigrew, actor and manager, in the reign of Charles II., on the ruins of a playhouse which had demolished the town, and was burned down by "the brave London 'prentices," as they are called in a ballad of the time, on Shrove Tuesday, 1616, in virtue of their right on that night to attack and demolish houses of evil notoriety. Drury Lane Theatre was opened in 1663, burnt down in 1671, again rebuilt and taken down, rebuilt for a third time in 1794, and again burnt down in 1809. The present theatre was erected in 1812.

Many memories cling round Drury-lane. In it resided the poetical Earl of Stirling; the Marquis of Argyle, who added such a lustre to the House of Macullammohr; here the Merry Monarch strolled between the hedgerows while as yet the birds and milkmaids sang together. Hither came Dryden, Gay, Defoe, Pope, Hogarth, and Goldsmith to find matter for the pen or pencil.

Drury-lane is to be no longer a synonym for all that is vile. Already some of its loathsomeness has disappeared. Some of the courts running from the Lane to Wild-street are being razed to the ground. The Board schools are clearing the atmosphere of the Coal-yard; but few of the dilapidated hovels of Macklin-street remain; Parker-street is, in regard to its hovels, little more than a name; Short's-gardens is nearly purged of its subterranean dens; and the abominations of the southern portion of the Lane are doomed. Ere long its "paltry drabs and bloods" will vanish, and the Lane rejoice in the blessings of freer light and purer air. Its name, however, should be retained.

SURVEYORSHIP ITEMS.

Derby.—There are 118 applicants for the vacancy caused by Mr. Dunscombe's resignation of the borough surveyorship. The salary is 400*l*. per annum.

Dover.—At a special meeting of the Dover Town Council on the 16th inst., Mr. Matthew Curry, jun., was elected borough surveyor, with a salary of 450*l*. per annum, house, and fuel.

ARBITRATION.

Sir,—A recent law case as to what was held to be the irregular conduct of an arbitration by one who was admitted by both sides, and by the court, to be an able and experienced man in this class of business, has recalled to my mind how very vaguely defined are the duties, powers, responsibilities, and rights of arbitrators and umpires. This is the more remarkable when it is considered how largely the practice of arbitration is resorted to in this country. Doubtless, in practice, many details of procedure which would be held in law to be improper, are quietly acquiesced in by the parties, so that a large amount of irregular proceeding continues without question; nevertheless it is most important that the attention of architects and surveyors, who so frequently act as arbitrators, should be directed to the proper and legal methods of conducting arbitrations.

Amongst the authorities I have studied are, barristers—Russell, Glen, Raymond, Jenkinson, and Redman; surveyors — Banister Fletcher and Jackson; but all of them in many places confuse their meaning by using the same general term "arbitrator," whether they are referring to one of two joint arbitrators, to a sole arbitrator, or to an umpire, and they leave us in much doubt on the following points:—

(1.) When a separate arbitrator is appointed by each party, should the arbitrators appoint an umpire before proceeding to the further consideration of the matters referred to them?

(2.) If, having appointed an umpire, should the arbitrators take evidence in his absence? as, in the event of their disagreement this course would necessitate an entire re-hearing before the umpire.

(3.) This question arises from the last. It is stated that an umpire is to be an umpire between the parties, not between the arbitrators, and that his authority commences from the disagreement of the arbitrators. Can the arbitrators be said to disagree whilst the time for making their award is still running, and before they have heard the evidence which each of the parties is willing to produce? In other words, can the joint arbitrators "agree to disagree" without full investigation, merely for the purpose of bringing in the umpire at an early stage of the proceedings?

(4.) In the event of the umpire being called in after the arbitrators have heard the evidence and disagreed, should the arbitrators sit with him to determine the matters jointly with him? This is exceptionally the case in London, although I hear it is the common practice in the North. It appears to be an unnecessarily cumbrous proceeding, as the opinion of the umpire would override the opinions of the arbitrators.

(5.) In the event of the arbitrators disagreeing after hearing the evidence, and then calling on the umpire to act, are their duties *qud* arbitrators at an end when the umpire enters upon the reference?

(6.) If not, is it right for the arbitrators to give evidence before the umpire either of matters of fact or of opinion? It is common for them to do both; and, indeed, not infrequently an arbitrator is the only person who can depose to material facts, but it may well be that in that case he should not be appointed an arbitrator.

(7.) "In the absence of any express promise by the parties to the reference an arbitrator cannot recover his charges by action" (Redman). This appears to apply only to a sole arbitrator, and to express promises by both parties. It is obviously improper for one of two joint arbitrators, or for a sole arbitrator, to take such express promise from one only of the parties; his duty in either case being to act judicially, and not as an advocate. Two joint arbitrators having disagreed, appointed an umpire; one did not give evidence, the other did; the evidence was accepted by the umpire, and was not objected to by either party. At the close of the arbitration, the arbitrators were asked by the umpire if he should include their fees in the amount to be paid to him on taking up the award. The first-mentioned arbitrator, who had not given evidence, said "No." The umpire then refused to include the fees of the other arbitrator, stating that if he did not include the fees of both, he would not include those of either. Can the arbitrators, under these circumstances, recover their fees from the respective parties?

(8.) Suppose a dispute between the arbitrators, or between arbitrators and umpire as to the amount of their respective fees, can an umpire settle them?

(9.) Can an action be maintained by an arbitrator against a co-arbitrator or an umpire for his fees received by the defendant?

(10.) "Where there have been no differences between the parties previous to their submission, and the reference is merely to fix a valuation . . . . it is not strictly a reference to arbitration, and the provisions of the 17th section of the Common Law Procedure Act, 1854 [as to making the submission to arbitration a Rule of Court] do not apply to such a case." (Redman). Is a building contract, strictly a submission to arbitration, in which the architect is appointed the sole authority to determine by his certificate the value of extra and omitted works, when to properly determine the amount due to the builder it is necessary to take into account facts outside the architect's own personal knowledge and in dispute between the parties, but to be ascertained by the deposition of witnesses on oath or otherwise, such as the measurements of work covered up and inaccessible?

W.

INCONSISTENCY.

A SATIRE.

When with consistency declaring war,
All Albion's sons most truly Britons are!
No sooner do they some quaint view explain,
Than with the opposite your ears they'll strain;
They'll hold at once that both the views are right,
And first for one and then the other fight,
Then turn all smiling for the world's applause,
For they have flouted reason, facts, and laws.

With taste one-sided they'll affect Japan,
The wares of China, and the bricks of Anne;
With willow-pattern, barb'rous blue and white,
They'd set the world æsthetically right;
The more fantastic doth the work'ship show,
The more ecstatic doth the critic "blow";
In weekly journal you shall find his lore,
His puking verses and his dreamy snore;
In print he poses, and will learnèd prate
Of silly maidens, knights emasculate,
Of pictures painted by a kindred set
Who each, loud cawing, doth each other pet.

Of "Art for Art's sake" they will vaguely talk,
And dream that they with Truth and Nature walk,
Though what they really think 'tis hard to learn,
For all their talking is but dodge and turn:
"Art is not art, nor this clear thing nor that,
'Tis something, nothing,—yea, they know not what;
From sense did ne'er divine afflatus spring,
'Tis stark unreason gives poetic ring."

One moment they'll some technic craze uphold,
Then turn to seek some more congenial fold,
To show how workmen did surpassing well,
Fine things indeed the moderns can't excel,
Without three R.s, or Brompton's wondrous aid,
Without being noticed, and without being paid,
By men unwash'd, who ne'er on beef were fed,
Who lived in hovels,—died on barley bread.

Amidst æsthetic cant the workman stares,
Bewilder'd stumbles, and the wrong thing dares,
Till forced at last, the poor unhappy wight
Exclaims with Pope,—"Whatever is, is right!"

You've heard the teaching of one curst extreme,
The other kicks as oppositely the beam;
Would make new science play the larger part,
Than grand experience tells us holds in art,
For taste, as led by Wisdom's golden rule,
Was e'er the feature of the greater school
Of poets, painters, and the wiser few,
Who soar'd above the mere mechanic crew.

Teach men to think, if you would have great acts;
Don't cram them full with ill-digested facts,
Men cannot bear such burden of the soul
As they would have, who'd make them bear the whole
Great sphere of knowledge, as on Atlas' back,
All science cramm'd in one huge rounded pack.
Too much of one, they'll have the lesser part
Of something needed in consummate art;
Do not too much, let Nature walk alone,
Just lift her o'er some hard and rugged stone;
Let moderate knowledge soul-spread pinions touch,
The direst error is to teach too much.

Or this or that, please, Britons let us know:
If we're to reap we needs must wisely sow;
If your new critics modern work despise,
And instinct's best, 'tis folly to be wise.
Why haste at once and close your technic schools
And leave all art to mere untutor'd fools;
If not to these, to those more wisely sped,
Who find their school by nobler reason led.

Meter.

THE WATER IN THE SEVERN TUNNEL.

The workings at the Severn tunnel are still filled with water caused by the spring which recently flooded them and stopped operations just at the time when the headings driven from either side of the estuary were within a few yards of meeting. The Great Western Railway Company have, however, resolved to take immediate steps to repair the damage done to the works, and with this object machinery is now in course of construction. This machinery consists of the most powerful pump that can be obtained, which is at present in course of erection, and upon which a large number of working engineers are employed with the view of completing it as early as possible, so that the work of pumping out the water from the workings in the headings may be commenced. The pump, however, is of such ponderous dimensions that it is believed it cannot be completed and ready to commence pumping in less than two months. The engineers are confidently of opinion that when once it is in operation it will very quickly clear the water out of the workings, when the headings may be proceeded with and completed.

WEST OF SCOTLAND.

GOVANHILL AND CROSSHILL MUNICIPAL BUILDINGS; ROTHESAY NEW PUBLIC HALLS.

Some of the small burghs in the West of Scotland are looking up in the way of new buildings. The feature about the work, too, is that the corporations do not do it themselves, but get it done for them. Paisley, as noticed more than once in these columns, is hastening to completion a gift of a town-hall from the Clark family, whose Anchor Mills, by the way, suffered seriously from fire the other day; Rothesay has just taken possession of new public halls built for the town by Mr. Charles Duncan, a former provost of the burgh; and Govanhill and Crosshill, suburbs of Glasgow, have jointly came into the ownership of a town-hall and municipal offices by the kindness of Mr. W. S. Dixon, the well-known ironmaster in the West of Scotland. The proceedings of these two occasions were marked by considerable ceremony, especially at Crosshill, where there was a gathering of provosts and county gentlemen in the height of their glory, delivering speeches at one another. Mr. W. S. Dixon, the donor, was unable to be present on account of his health. At Rothesay, Mr. Chas. Dalrymple, M.P., and many other notables, were present.

The halls opened at Rothesay cost something like 20,000*l*. The site is in East Princes-street, in the front of the town, and overlooking the picturesque bay, which swarms in summer with yachts and small boats. It was at one time contemplated spending only from 11,000*l*. to 12,000*l*.; but when the site was purchased and the contracts closed, it was found that close on the sum expended would be required. The site was occupied by a substantial three-story building, and the front elevation raised to five stories has been utilised. It has, of course, been remodelled, and surmounted by three towers. The main entrance in the centre of the ground-floor has a porch extending across the pavement, and on either side there are handsomely fitted-up shops. A corridor, laid with encaustic tiles, and decorated with figures on pedestals, leads to the main hall, which is designed to accommodate 1,250 persons. It is 83 ft. by 48 ft., and from the dome to the floor is 46 ft. A substantial gallery wholly supported from the walls, leaving the floor free of pillars, runs round three sides of the hall, and at the further end a platform is raised. Behind the platform there is a recess for an organ, and along the top of this, in a line with the gallery, are three panels, containing thirteen life-size figures. The figures are said to represent the ancient inhabitants of the divided island of Bute, praying Neptune to withdraw the water and unite the island. The smaller hall is 42 ft. by 27 ft., and, like the larger one, is lighted from the roof. It accommodates 300 persons. Messrs. James Hamilton & Sons, of Glasgow and Rothesay, were the architects; Mr. Wm. Morrison was the mason; and Mr. Robert Easton was the joiner.

The plans for the new town-hall and chambers for Crosshill and Govanhill were prepared by and executed under the personal superintendence of Mr. Francis Stirratt, architect, of West Regent-street, Glasgow. The struc-

ture is two stories in height, the ground-floor being laid out as chambers for the two corporations. The upper floor is entirely devoted to the town-hall. The main entrance in Dixon's-avenue is in three doorways, separated by handsome columns. The vestibule is 35 ft. long and 15 ft. broad, and from either side is a staircase leading to the hall. The hall measures 100 ft. long and 45 ft. broad, and affords accommodation for between 600 and 700 persons. There is a nice suite of ante-rooms arranged in an *entresol*, and communicating with the hall, which is in all respects excellently well fitted up. The ground-floor is entered from Cathcart-road, the portion of the building to the right of the doorway being devoted to the Govanhill authorities, and that on the left to the older and more pretentious burgh of Crosshill. There are a magistrates' room, retiring-apartments, and a commodious waiting-room for the public. Externally the edifice is very well decorated. A clock-tower rises to a considerable height at the south-east corner. The corners of the tower and the main gable are finished with circular turrets, which again are surmounted by carved lions rampant holding shields bearing devices. Over the magistrates' entrance to the building is the Dixon coat of arms, flanked by carved work of good design and two medallion heads.

ASSOCIATED CARPENTERS AND JOINERS OF SCOTLAND.

THE eighteenth annual report of the Associated Carpenters and Joiners of Scotland was issued on the 19th inst. In the opening remarks the general secretary, Mr. William Paterson, Glasgow, states that he has to notice, both in connexion with the Association and the trade, various matters which were not the most encouraging. Such disputes as had existed in branches during the past year had been wholly due to interference by the employers either with the established rate of wages or with working regulations. The results of these disputes had, in the main, been unfavourable to them, and, in addition, there had been numerous reductions of wages and repudiations of their working regulations, to which no opposition was offered, owing to the fearfully depressed state of the building trade. As illustrating that depression in the West of Scotland, he had to state that on the 1st of November, 1877, 3,080 journeymen joiners were employed in Glasgow, and on the 1st of November, 1879, only 1,224 were employed. There had been no attempt worth noticing on the part of the employers in the building trade to depart from the nine-hour day. As much could not be said of the Clyde ship-builders. They could not lose the opportunity which the depression of trade afforded, and the 51 hours per week had been superseded by the 54 hours. How long the 54 hours would continue the rule on the Clyde depended very much upon the workmen in view of the improved state of the ship-building trade. The income for the year amounted to 7,362*l.* 12s. 5½d., showing a decrease of 2,752*l.* 9s. 9½d. when compared with the previous year. There had been paid as sick aliment 3,759*l.* 17s. 5d.; as funeral allowance, 534*l.*; as superannuation allowance, 49*l.* 15s. 6d.; as tools compensation, 398*l.* 6s. 11½d.; as strike allowance, 502*l.* 5s. 5d.; as victimised allowance, 365*l.* 3s. 1d.; and 300*l.* as bonuses to six members. The gross expenditure amounted to 9,181*l.* 6s. 10½d., which left a deficiency of 1818*l.* 14s. 4½d. upon the year's transactions. Of that sum 1,353*l.* 12s. 10½d. fell to be borne by the trade section, and 465*l.* 1s. 6½d. by the sick section. This left 3,260*l.* 8s. 4½d. belonging to the trade section, and 5,334*l.* 9s. 9½d. to the sick section. There was a decrease of 2,005 members during the year, the number being 6,105. It appears from a trade census which has been compiled that there are about 10,030 carpenters and joiners, and 3,807 apprentices in the various districts. Another table shows that their hours of labour range from 50 to 57 a week, and that their wages vary from 5½d. to 7½d. an hour.

A Brass Eagle Lectern, of good design, has been presented to Christ Church, Wanstead, Essex, in memory of the late Rev. G. S. Fitzgerald, which was made by Messrs. Jones & Willis, of London and Birmingham. The same firm have in hand a marble font for the same church.

OBITUARY.

Mr. Henry Warren, K.L.—The death of this gentleman, one of the oldest of our painters in water colours, will be heard of with regret by many. Mr. Warren died on the 18th inst., aged 85, at the house of his son, Mr. Albert H. Warren, where he had lived in retirement for the last five or six years. Mr. Warren, who has in his time produced a large number of beautiful pictures, and published some works on art, held many important positions, and was respected in all. He was acting president of the Institute of Painters in Water-Colours almost from its foundation, and when retirement became necessary, through failing health and eyesight, he was unanimously elected hon. president for life. He was knighted, as was his relative, the late John Martin, by Leopold, the late king of the Belgians, in acknowledgement of his talent. Of late he was in receipt of a pension from the Royal Academy, and was also on the Civil list for 50*l.* per annum on account of his aids to art through a long and industrious life. Mr. Warren was buried on the 23rd inst. in the Brompton Cemetery.

Mr. John Leslie.—At a meeting of the Metropolitan Board of Works on the 19th, the Chairman said it was his painful duty to lay before the Board a letter he had received from Mr. Henry Leslie, announcing the death of his father, Mr. John Leslie, the senior representative at the Board of the Vestry of St. George, Hanover-square. Mr. Leslie died on the 15th inst. Dr. Brewer proposed a resolution, expressive of the sympathy of the Board with Mr. Henry Leslie and the other members of his family, on the loss they had sustained by the death of their father, who had been for many years a member of this Board. Mr. E. Dresser-Rogers seconded the proposition, and Mr. Richardson, in supporting it, said no one could fail to recognise the energy and extraordinary activity of their deceased friend. He certainly, in his (Mr. Richardson's) opinion, thoroughly represented his Vestry, and they must give him full credit for having done what he believed to be his duty. We add to these remarks an expression of our own regret. Mr. Leslie was a man of remarkable energy and ingenuity. A few years ago he made some inventions in respect of lighting and heating, which have scarcely been utilised to the extent that might have been expected. He was one of the members at the original formation of the Board of 1855, and previously was a member of the Metropolitan Commission of Sewers and Westminster Commission of Sewers.

M. Alexandre Denuelle has (according to the *Athenæum*) died suddenly in Florence. He was largely employed in planning the interior mural decorations of public buildings in France. The ornamentation of many churches was the product of his pencil, and he either restored or completed the decorative work in the Abbeys of St. Denis, St. Paul at Nimes, and St. Polycarp at Lyons. The internal decoration of the new part of the Louvre was intrusted to him. The only English building which he treated is the Oratory at Birmingham. Shortly before his death he executed some designs for the interior of Strasburg Cathedral. He was born in Paris in 1818, and studied under Paul Delaroche.

Mr. Dominic Colnaghi.—The death took place, on the 19th of December, at Margaret-street, Cavendish-square, of Mr. Dominic Colnaghi, of Pall-mall East, in his 91st year.

Mr. Gibbons, of Buntingford.—The death of Mr. William Gibbons, a well-known builder in Hertfordshire, on the 4th inst., will be regretted by many. Mr. Gibbons settled in Buntingford as a successor to Mr. Warren, about a quarter of a century since, and by an unswerving rectitude and business qualifications of a high order he had succeeded in establishing a business which was known far and wide, and with which the interests of a large number of *employés* in Buntingford and neighbourhood have for many years been closely identified. In the work of church restoration, not only in many parishes in this neighbourhood, but in many more distant parts of the country and also in other public works, Mr. Gibbons had been much engaged, and we can speak personally of his uprightness and ability. As a large employer of labour, a good master, and a kind friend and neighbour, he will be missed in the town. The business will be carried on by his former partner under the name of William Gibbons & Co.

MANCHESTER SCHOOL OF ART.

THE annual meeting and presentation of prizes in connexion with the Manchester School of Art took place on Friday, the 19th inst., in the Lecture Theatre of the Royal Institution. The chair was occupied by Mr. F. W. Grafton, and Sir Coutts Lindsay distributed the prizes.

The report of the committee stated that since the last annual meeting the committee had most seriously considered the question of cost in relation to the new building. According to the tenders sent in for the erection of a school according to the design illustrated by the model exhibited in the Art Treasures Exhibition, a sum of about 25,000*l.* would have been required. Having regard to the depression of trade, which rendered it most doubtful whether that sum could be raised at present, and to the urgency of making provision for the accommodation of the school, a design of a somewhat more modest character has thus been prepared and approved. The design was for a brick structure, in which material it would have cost about 10,000*l.* As, however, the treasurer, Mr. F. W. Grafton, thought it most desirable that the structure should be worthy of the city, and of its commanding position, he strongly advocated the facing of the façades with stone, and to relieve the building committee from the responsibility of obtaining the fund required to meet the extra cost, he has most generously arranged to guarantee the extra sum, upwards of 2,000*l.*, required for the purpose. The committee have already entered into a contract with Mr. Herd for the erection of the new school. Although the reduced scale and cost of the building render the responsibility less onerous, they have still to solicit the aid of the people of Manchester to the amount of about 5,500*l.*

The Chairman, in opening the proceedings, said he was told that Mr. Rickards had consented to place his collection of Watts's paintings at the disposal of the Royal Institution for exhibition, the profits to be divided between the Children's Hospital and the new building of the School of Art.

The report and balance-sheet were adopted.

On the motion of Mr. J. Murgatroyd, seconded by Mr. Edward Salomons, a vote of thanks was accorded to Mr. Muckley, the head-master, and the teachers, for their untiring energy in the faithful discharge of their duties.

Sir Coutts Lindsay then distributed the prizes, and afterwards delivered an address, in which he made some encouraging criticisms upon the work of the students of the School of Art, which he had personally inspected. He pointed out the advantages that accrued from life-studies and the study of the antique. He knew a great many pupils objected to the antique, finding it too dry and uninteresting; they were anxious to hurry on to the study from the life. In that matter they made a mistake; in fact, unless an artist had a good idea of the antique, he (Sir Coutts) doubted whether he would ever attain a high position in art; at least, he would not attain a fine knowledge of art. The use of the model was to enable the painter to represent what he wanted on his canvas, and to give vitality and life to his idea. Unfortunately, it was impossible to get a model of a type so fine as to enable the artist to make use of it without any change or alteration in any work of imagination, and if the artist had not learned the human form in its best proportions and finest qualities from the antique, he would always find himself unable to express nature in its most beautiful form, and he would find that his drawing from nature instead of helping him would puzzle him in his work. If a man had a proper knowledge of the antique he could correct nature by that knowledge; if not, he must keep to what he saw, and he would never produce very fine work. The first object of an artist was to be able to imitate what he saw; and, secondly, he must have the power to direct the hand in harmony with the eye. The education of the mind ought to accompany the education of the hand, and those drawings which educated the mind were the most important; therefore he insisted, and every master should insist, upon the proper use of the model. The three necessities for artists were power of imagination, common sense, and energy of purpose; and the possession of all three combined would make what was one of the rarest things among men,—a great artist.

Warwick.—A stained-glass window has just been placed in the east end of St. Mary's Church, Warwick. The subjects illustrated are, in the centre lights, the Supper at Emmaus, and the Sermon on the Mount, and, in the side-lights, events from the life of Christ. In the tracery-pieces are figures of Apostles and Prophets. The glass is executed in the fifteenth-century style of work, in keeping with the architecture of the chancel. The window was designed and executed by Messrs. Heaton, Butler, & Bayne.

THE APPROPRIATE TREATMENT OF GRANITE IN CITY ARCHITECTURE.

As the use of polished granite for building in London is increasing, it is worth while to consider whether it is being applied in a manner best calculated to display the inherent beauty of the material with a sufficient regard to its natural characteristics.

Assuming, for the sake of discussion, a negative reply, the question seems to resolve itself into one of style. Hitherto, in London, granite has been associated exclusively with Classical architecture, but with this striking defect, that the most important details are not executed in it, probably on account of mechanical difficulties, or of doubt as to their good effect or of expense. Dados, columns, architraves, pilasters, friezes,—all plain surfaces,—have been accomplished easily enough, but those crowning and essential features, the capital and cornice, have been abandoned to Bath or Portland stone,—an inferior material where only the very choicest should be found. The result is a serious want of harmony, which daily becomes more noticeable, for while the freestone is discoloured and eventually blackened by the absorption of the soot of the London atmosphere, the granite remains unchanged; and it at once becomes evident that if the whole of the order cannot be carried out in one material,—or in two equally good materials,—it should be abandoned for the purpose under consideration.

Even if an architect, on some important occasion, felt himself at liberty to disregard the great cost of the manual labour in executing capitals and cornices in polished granite, the effect would certainly be disappointing, inasmuch as confused glitter would result from the combination of positive and numerous reflected lights on so many surfaces at different angles.

Without reflecting in the least upon its design, there is a granite building opposite Cannon-street Station which illustrates very forcibly the unsuitability of this material in Classical architecture, even when,—as in this example,—no freestone is used.

Under these circumstances, it does not require very much reflection to come to the conclusion that the selection or adaptation of a later style, —Byzantine, Romanesque, or Saracenic,—is necessary. In these buildings there is a principle of construction well suited to the hard and intractable nature of granite, and to the display of its many beautiful colours, its gem-like translucency, and its rich depth of tone, in the most satisfactory manner. Architectural effect of a very striking character is obtained by ornamental construction, with two or more coloured materials,—marble, porphyry, serpentine, and others,—and there is often a minimum of moulding and carving which are the great difficulties in granite building. It may be said that the greatest effect is obtained with the least expenditure of labour.

In Florence, Palermo, Messina, but more particularly in Cairo, this ornamental construction has been most completely carried out, and in adopting it, it would only require the refinement and cultivated taste of the modern architect to render it perfectly suitable for English buildings. Arches of all forms and compound lintels have the voussoirs in two colours, and with ornamental edges, the letter ≷ forming a chevron being a favourite form. Panels, strings, and jambs of ingenious geometric tracery are constructed with coloured materials. All these have flat surfaces, so as to exhibit the beauty of the materials to the greatest advantage. Even the carving and moulding is of flat superficial character, but most elegant and refined, and would be well suited for granite work. The labour of executing it would be comparatively slight,—indeed,'at the present time much of this kind of work is done in Aberdeen.

The chief characteristic of this ornamental work which renders it suitable for granite is, that all the separate pieces are straight-sided, though, of course, at many different angles. All the pieces could therefore be prepared with the greatest economy by the powerful machines recently invented in this country, which reduce the rough surface of a block of granite, 14 by 8, in one minute, while the workman simply looks on. The polishing of the surfaces of granite is also now done by machinery, with the same comparative rapidity and almost entire freedom from manual labour, which can be more intelligently employed.

This brings me to the economical part of this question. There can be no doubt that the price at present charged for polished granite is unreasonably high. This is in consequence of its being supplied by men whose business is rather in heavy monumental work than in the lighter kind of work that would be required by builders carrying out the above style. A test-estimate by a well-known surveyor, based upon *bonâ fide* prices of labour and material from first-class men and upon detail-drawings, shows that a polished granite façade in this style would cost seven per cent. less than one in carved and moulded Portland stone. This fact, therefore, shows that if this style were adopted,—for style and economy are intimately connected,—there would be an opening for the supply of this material to builders at reasonable profit,—a more appropriate method of using granite would be established, and we should soon see façades complete from base to summit in this noble material.

HENRY TRAVIS.

THE TRANSMUTATION OF FORCE.

SIR,—The perception of the correlation of the physical forces ultimately led scientific men to regard them as so many different modes of motion or transmutations of a primary force. This knowledge will in a few years lead to wonderful results. The conversion of water and wind power to mechanical uses is destined to receive enormous development, on account of the now recognised possibility of converting these forces into electricity. This possibility was demonstrated at the late meeting of the British Association at Sheffield. We can scarcely venture to predict to what uses the transmuted power of the waves, tides, and great waterfalls may be directed. Mr. Lascelles, in his letter of last week, has suggested one. He touches upon a subject, however, in which, in my youth, I was extremely interested,—the pneumatic railway, of which, I believe, there is a model of mine in the Museum of Inventions. I also made drawings for the specification of the patent, being at that time intended for an engineer. This railway was invented by Mr. Henry Pinkus, an American, and a large working model of it was exhibited in London. The top valve in his invention was closed by a cord. Mr. Samuda substituted a hinge-valve, which was ploughed up by a contrivance attached to the frame-work of the travelling piston. Both forms worked by exhausting air from the tube. Both kinds of valve would have been blown open by compressed air. Mr. Samuda's was the form used at Exeter and Croydon.

The utilisation of tidal force and water-pressure is, of course, no novelty. The waterworks of Old London Bridge were worked by tidal action. It is on the conversion of the gigantic wind and water power at our command into electricity that the great revolution in the economical application of power to transport and to manufactures is to be anticipated. A commission of engineers could presently solve the problem.

W. CAVE THOMAS.

AN ORNAMENTAL MATERIAL.

IN the course of my ramblings lately my attention was called to a very large deposit of pure white spar quartz, and it occurred to me that it might be employed as a sort of veneering to the walls of gentlemen's residences, put on in blocks, larger or smaller, or in any form to suit the fancy of the builder, and fixed with some sort of cement to the wall. The blocks would be best fixed to each other, perhaps, by pure white sulphate of lime, prepared as gypsum; or might not the quartz be wrought into the front of the wall, in uniform or irregular blocks, fashioned in the manner, or in some similar way, to the granite now much used in the construction of many railway stations in Cumberland, where, however, the latter stone abounds?

I am not aware that the quartz has been anywhere used for the purpose suggested, but it may have been so used, and my suggestion involves nothing novel. The spar, however, would have a very beautiful effect.

THOMAS BARNES.

Wages in Warrington.—At a meeting of the building trade operatives in Warrington on the 19th inst., it was decided to resist the reduction of 1d. per hour and the increase of one hour per week, as a reduction took place only last May.

THE MISLAID TENDER.

SIR,—In calling attention to our offer of "Twenty Guineas reward for such information as will enable us to trace the mis-carriage of our Tender for Upholstery work at the Mansion House, which, though delivered at the appointed place and time, mysteriously failed to reach the Chairman of Committee then sitting to receive Tenders," you pertinently inquire, "Did any servant of the Corporation receive it?"

We are glad to be able to inform you that, after considerable discussion in the Court of Common Council, the following motion was proposed by Mr. Johnson, seconded by Mr. Judd, and carried,—

"That it be referred to the General Purposes Committee to examine into the circumstances connected with Messrs. Hindley's tender; and also as to the general mode of receiving tenders by the Corporation, reporting thereon to this Court, with such suggestions as the Committee may deem fit."

We have had the opportunity of giving our evidence before this Committee, proving, not merely the due delivery of the Tender, but actually identifying the clerk to whom it was delivered.

We understand that it will be several weeks before the report of this Committee can be presented to the Court of Common Council, and we shall look forward to the result of their investigation and deliberations with very considerable interest; for when it is possible for a tender (as in this case), the lowest by some 135*l.*, to be completely lost in its transit from the Architect's office (where it was delivered) to the committee-room, it is high time to amend the mode of receiving such tenders.

C. HINDLEY & SONS.

ARCHITECTS AND LAND AGENTS.

IN these days, when all questions relative to the architectural profession, and other businesses connected therewith are being mooted before the Institute and other public bodies, I think I shall not be out of place in calling the attention of the more influential members of the profession to the inroads that the persons called "land and estate agents" make upon the scope that some unlucky provincial brother professional has chosen as his field of action Do not for a moment suppose I allude to those ornaments to their calling that are to be found all the way down Parliament-street, and without whom England would be unable to get on, but to such as in the country are always striving to take their living from out of the mouths of cultured men, who, having paid for their education, as their capital by which to obtain their existence, are obliged to look on with their hands in their pockets, because they are too proud to accelerate the downward progress of their profession by attempting to rival those who "tout for work."

I may mention one case in particular that has come under my notice during the past week. A School Board in the county of Shropshire advertised for plans for a school, in such a manner that it was commented upon in your publication. The competition was gained by a professional gentleman of the name of Adams. So far, so good. Then, as a sequel, they, instead of advertising for a competent and authenticated clerk of works, select a local land agent to superintend the erection of their new schools.

Now I do not wish to wound the feelings of individuals, but truth must out, and in the past and present general depression of trade there have been, and are, hundreds of men, thoroughly educated to their business, who are starving for want of employment, and who would willingly have rendered their services for a low salary.

There are some, doubtless, who will suggest that writing on the subject will not correct the evil; but I write in hopes that gentlemen owning landed property, if they see one source of bread taken away from hard-working men and their families, will give young agents a chance of gaining a livelihood by introducing fresh blood on to their estates, thereby proving their right to the name of liberal-minded English gentlemen.

Before I conclude I should like to mention another instance of what I allude to; a contractor who had been erecting a set of kennels, &c., from the designs of a land-agent, not 100 miles from the before-mentioned county, showed me a case in which it appeared the floors had all been laid to a certain fall, which, when the doors were hung, naturally enough prevented them from opening; and the man who styled himself "architect" of these buildings —really an agent—wished to compel the builder to alter the work at his own, *i.e.* the builder's, expense, and afterwards had the audacity to oppose the bill of extras before the Hunt Committee.

MENS CONSCIA RECTI.

WOOD CARVING.

SIR,—"Meter" has said his last word "for the present"; will you allow me the privilege of adding a few remarks before making my bow also?

An architect prepares plans, elevations, &c., for a church, mansion, or whatever his client may require, sketching in the ornament where he knows it is wanted, and sometimes making detailed drawings of every piece to be carved; he then becomes one of my trio,—the ornamental designer as well as the architect. If he does not detail the ornament, the master-carver employs his artist, and the result is shown to the architect for approval. The master-carver then distributes the work amongst his assistants, giving the figure-work to the best figure-carver he has, the floral work to the one best suited to that class, and the ornamental to those who have succeeded best in that department. However much may be written in arguing the point, the fact remains that this is the way all great works are carried out, and it is the surest way to gain the best results. It often occurs that the master-carver takes the place of designer in some of the styles, or the part of carver in some of his varied departments, but he must understand what is right and true in all branches in order to control wisely.

"Meter" asks,—"Does Mr. Rogers know that Gibbons executed the statue of James II.?" No, sir, Mr. Rogers does not know it; moreover, he considers it very much open to question.

And for "Meter" to say Gibbons was only a wood-carver by chance is quite against his history. He was first discovered carving wood, he was introduced to the king as a remarkable wood-carver when quite young, and his works in other materials are very few compared with those in wood. It was once thought that all the carvings at Chatsworth were from his hand; the stone pedestal of Charles I.

at Charing-cross also; and some time back I purchased the whole of the carved fittings of a country church, which had been for years ascribed to him, but which were, unmistakably, the work of an artist of an inferior rank.

It does a great master's name an injury to put down works to his authorship without strong proof; for refutation often comes by the finding of lost documents. For instance, Mr. Hare, in his pleasant book "Walks in London," states that the Charles pedestal was the work of Joshua Marshall, the master-mason to the Crown.

I will not dilate on Mr. Colley's letter; but one thing strikes me as peculiar,—the tone of his communication to you being so different to that which he used when, a short time back, he applied to me, bringing a specimen of his work as a recommendation.

GEORGE ALFRED ROGERS.

ARCHITECTS AND CORPORATIONS.

TALLAND SCHOOL BOARD *v.* TREVAIL.

AT the Liskeard County Court, last week, the judge (Mr. Montagu Bere, Q.C.) gave judgment in the action brought by the Talland and Lansallos United District School Board against Mr. Silvanus Trevail, of Tywardreath, to recover 30*l.* 9*s.* 7*d.* for money alleged to be overpaid defendant whilst acting as architect for the plaintiffs.

The action was tried before a jury at the November court, who (as reported in the *Builder* of the 22nd ult., p. 1301) found for Mr. Trevail to the extent of 31*l.* 10*s.* 4*d.* The judge, however, reserved his judgment on certain legal points. He now gave judgment for the defendant, on the ground that the school board was a corporate body with a seal, but they did not use it upon the appointment of the defendant as architect. The appointment required the seal to be affixed.

The defendant's solicitor afterwards applied for costs, which were allowed.

BLASTING FOR FOUNDATIONS.

DOBSON *v.* SAUL.

THIS was an application (in the Chancery Division) to restrain the defendant from excavating, by blasting, the foundations of a house about to be built by him in close proximity to a house lately erected by the plaintiff. The *locus in quo* is part of an estate called Windermere Park estate, near Lake Windermere, which had been laid out for building, and the ground of which is of a rocky nature.

The defendant alleged that it was customary in that neighbourhood to use blasting as a means of excavation, and without it a great part of the estate could not be built on. The foundations of the plaintiff's house had been excavated by this means; but when the defendant had fixed two or three blasts for the purpose he received a notice from the plaintiff to desist, and in consequence of his not doing so the present application was made. There was a space of 24 ft. between the houses. The plaintiff alleged that he was prevented from taking possession of his house in consequence of the defendant's operations.

Mr. Glasse, Q.C., and Mr. E. Cutler were for the plaintiff; Mr. Higgins, Q.C., and Mr. Bramwell Davis for the defendant.

The Vice-Chancellor suggested that as the plaintiff had not taken possession of his house, he had better allow the defendant to finish his foundations, the latter undertaking to pay such damage as might accrue to the plaintiff in consequence of his blasting operations. It was ultimately arranged that the motion should stand over to the hearing, and that the defendant should be at liberty to continue his operations upon his undertaking to be answerable for any damage which might be done to the plaintiff's house.

The Metropolitan Board's Budget.—At the last meeting of the Metropolitan Board of Works, Mr. Munro (chairman of the Finance Committee) presented the estimates of the Board for the year 1880. He regretted that he had to ask for an increased call. Last year he had to ask for an increase of 1d., and this year he required an additional ½d. The Board would not be surprised at this when it took into consideration the extraordinary expenses incurred by the freeing of the metropolitan bridges, and under the Artisans' Dwellings Act, which schemes alone had cost ½d. in the pound. After entering into details, Mr. Munro said that the total requirements for the year were 653,260*l.*, which, being reduced by the sum of 7,760*l.* derivable from fees, licences, &c., brought the total net charge to 645,500*l.* To produce this sum, a rate on the present rental of 24,501,410*l.*, equal to 6·32d. in the pound, would be required, against 5·82d. in 1879. Since the establishment of the Board, the total amount levied had been 9*s.* 10*d.* in the pound, and when the vast improvements which had been effected under its supervision were taken into account, he did not think that amount could be deemed excessive. The estimates were adopted.

PROVINCIAL NEWS.

Sheffield.—The Wolstenholm Memorial Hall, which has been erected in Queen-street by Mrs. E. M. Wolstenholm, of Kenwood Park, in memory of her husband, was opened on the 11th inst. by the Archbishop of York, and formally presented to the inhabitants. The building is in the Italian style, and has cost, with the site, about 11,000*l.* Portions of the building will be devoted to purposes of refreshment and recreation. The large lecture-hall will accommodate about 1,000 persons, and will be used for services, lectures, and entertainments. It is 72 ft. long, 40 ft. wide, and 25 ft. high. The seats are Redmayne's pitch-pine, convertible; and the gas-pendants, ten in number, have been designed by the architect. Mr. H. D. Lomas is the architect, and Mr. J. Fidler, of Eckington, is the contractor; Mr. T. Taylor, of Reed-street, has done the joiner's work; and the furniture, linoleum, and similar requisites, have been supplied by Mr. Roberts, of Sheffield Moor.

Clumber House, Notts.—The rebuilding of Clumber House, the seat of the Duke of Newcastle, which was partially destroyed by fire last winter, has been commenced, from plans prepared by Mr. Barry. The estimated cost is 60,000*l.*

Withington.—At a meeting of the Withington Local Board on the 11th inst., Mr. L. Booth, of Manchester, was appointed architect of the new offices for the Board.——The memorial stone of new workhouse schools and homes, situate in Nell-lane, opposite the workhouse, has been laid. The buildings are being erected for the Guardians of the Chorlton Union, the architects being Messrs. Mangnall & Littlewoods, whose designs were selected in limited competition. The buildings consist of six homes, three of which are situated to the right and three to the left of the administrative block. The schools are placed to the front, facing Nell-lane, with dwellings for schoolmaster and schoolmistress in the centre. Each of the six homes will provide fifty children with living and sleeping accommodation. On the ground-floor is provided a day-room, 33 ft. 6 in. by 17 ft.; sitting-room for the official in charge, lavatory containing ten wash-bowls and two baths, storeroom, and water and slop closets. The first pair floor contains two dormitories, 33 ft. 6 in. by 17 ft. and 17 ft. by 17 ft., holding twenty-four beds, bedroom for official, water and slop closets, and storeroom. The second-pair floor contains two dormitories, the same size as on first-pair floor, and holding twenty-four beds, and a bedroom to hold two beds in case of slight sickness, or separating weakly children from the rest; water and slop closets, and storerooms. The administrative block contains three workrooms, dining-hall, 70 ft. by 38 ft.; cooking kitchen, officials' sitting-room, bread-store, larder, washhouse, laundry and drying-closet, linen-room, boiler-house, and boys' plunge-bath. The whole of this block is one story high. The boys' school is situated to the right of the front block, and the girls' school to the left. Each school is provided with a room 95 ft. by 22 ft., two class-rooms each 18 ft. by 14 ft., and two book-closets. Provision is made in the centre portion of this block for the schoolmaster's and schoolmistress's dwellings, separated by a central archway forming the principal approach to the several buildings. The elevation to the front block of buildings is faced with stock bricks, the moulded work being in red terra-cotta. The window-sills, copings, &c., are of stone. The buildings are expected to be completed about the end of March next, and the estimate, exclusive of fittings, amounts to 16,924*l.* Mr. James Herd is the general contractor for the several works, and the following sub-contractors are engaged under him:—Mr. Charles Normanton for the brickwork; Messrs. Stephenson & Corcoran, the masonry; Mr. James Barrow, the slating; Mr. Henry Lightfoot, the plumbing; and Mr. Richard Higson, the plastering and painting.

Hull.—An extensive pile of buildings in Silver-street has lately been erected for Messrs. Goddard & Son, wholesale and manufacturing stationers. The style is described as Classical of the Doric order, freely treated. The lower portion of the front is of stone, and is divided into five bays, with red granite pilasters. The granite pilasters are surmounted by a cornice, and carved frieze and cantilevers, finished with a stone balustrade. The upper stories are built with Scarborough yellow stock bricks, the pilasters being carried up to the height of the second story, and the various carved bands, strings, and dressings of stone are from the Whitby quarries at Cragmoor. The works have been designed by Messrs. Smith & Brodrick, architects, and carried out by Mr. George Higham, of Hull, the general contractor, the sub-contractors being Mr. George Taylor, mason, and Messrs. J. & T. Hall, joiners. It is believed that the building occupies part of the site of the grounds of the old Suffolk Palace, the erection of which, according to Sheahan and other local historians, was commenced by Sir Michael de la Pole, afterwards Earl of Suffolk. In the excavation for Messrs. Goddard's new premises, large pieces of hewn stone were dug up, one piece deserving special notice, as it was beautifully carved, and has been preserved as a memento by Messrs. Goddard & Son by being built into the side of the building under the archway. The architects express their opinion that it is a portion of the old palace, probably part of a carved stone roof.——On the west side of Savile-street are the premises of Messrs. A. Brown & Son, booksellers and stationers, which have been erected from designs by Messrs. W. Botterill & Son. The shop-front is of Ancaster stone, with recessed windows, the upper part being of red brick. The contractors for the building were Messrs. Musgrave & Son, and the furnishings were by Messrs. Curtis & Son, Leeds. The heating apparatus was supplied by Messrs. Perkins, London; and a hoist and the revolving shutters by Messrs. Bennett & Co., of Westminster.——The new premises of Mr. Henry Wilson, wine-merchant, form a conspicuous feature of Savile-street. They consist of a warehouse of four floors, the front part of the premises being devoted to offices and general business purposes. The cellars are all floored with the patent concrete flooring of Mr. Wilkinson, of Newcastle. The usual lavatory arrangements are of the best description, and were furnished by Messrs. Jennings & Co. The exterior is built of red stock brick, with dressings of Whitby stone. The architects were Messrs. Smith & Brodrick, and the builders Messrs. Geo. Jackson & Son, Witham, the carving being by Mr. Frith.

Salisbury.—The new Salisbury Middle Class School, erected for the Rev. W. Baker, has been completed. The school, which is only the first instalment of what will ultimately be a larger building, is built entirely of red brick, in the Queen Anne style, relieved by projecting chimneys, porch, and heavy mullioned windows, with small squares of glass, which are in many cases filled with ornamental lead glazing. Carved brick panels are inserted in the chimneys; they were executed by Mr. Harry Hems, of Exeter. The chimney-shafts rise from a dark tiled roof with red ornamental ridging. All the offices, kitchens, and stores, are in the basement. The dining-hall, class and master's rooms are on the ground floor, the two upper stories being devoted to the master's bedrooms, dormitories, and bath-rooms. The dormitories and dining-hall are large, lofty rooms. The schoolroom, which is of iron, is merely used temporarily until the other portion of the buildings is completed. The laundry is detached from the house. The architect is Mr. R. J. Withers, and the works have been carried out by Mrs. Hale & Sons, builders, of Salisbury, at a cost of about 6,000*l.*

Mr. Edison and the Electric Light.—A *Times* telegram, dated Philadelphia, Dec. 22, states that Mr. Edison claims to have discovered an effective, cheap electric light, which is a complete substitute for gas for household use. After fifteen months' experimenting, he accidentally discovered that burnt paper is the best substance to use, and he therefore abandoned platinum, devoting himself to perfecting this lamp. He cuts from cardboard a narrow strip, shaped like an elongated miniature horse-shoe, the strip being 2 in. long and ¼ in. wide. This is placed in a wrought-iron mould, which is heated slowly to a white heat, driving off all volatile portions of the paper, which is then gradually cooled. The charred remains of the horse-shoe are taken carefully out, and are placed upright in a little glass globe, the wires of the generating machine being attached at the ends of the horse-shoe. The air being exhausted from the globe, it is sealed, completing a lamp costing about one shilling. This, Mr. Edison claims, will produce a bright mellow light, without flickering or pulsations. He has also invented a generator and regulator, his claim being that he has entirely solved the problem.

CHURCH-BUILDING NEWS.

North Ormesby.—The memorial-stone of the extension of the Church of the Holy Trinity, North Ormesby, Middlesbrough-on-Tees, has been laid by Mrs. Pennyman, of Ormesby Hall. The present church consists of nave, choir, chancel, north aisles, vestries, and north porch. The additions are south nave and chancel aisles, extension of nave westwards with additions to north aisle, tower and spire at south-west corner of nave, the lower part of which forms a west entrance and porch. The cost of the additions will be about 1,300*l.* The architects are Messrs. Armfield & Bottomley, and the contractors, Messrs. Allison, Bros., of Middlesbrough-on-Tees.

Wheatacre.—The chancel of Wheatacre Church, about five miles from Beccles, has been restored, under the direction of Mr. Phipson, architect and diocesan surveyor. From its age it had become a good deal out of repair. All the roofs were covered with thatch. The tower is a very fine piece of brickwork, erected late in the reign of Henry VIII., and has much good moulded brick detail, and flint panelling. The plaster ceiling, rotten timbers, and old thatch have been replaced by a trussed rafter open timber roof, in pitch-pine, boarded with the same material, and covered with green slates. The east and south windows have been restored in stonework, and the outside walls, which were covered with plaster, and had brick buttresses, have been faced in flint, new stone quoins and set-offs being introduced. The windows have been glazed with cathedral glass of a subdued tint. The passage and the space within the Communion-rail, have been laid with Minton tiles. The works have been executed by Mr. Allen, of Beccles, the total cost being a little over 300*l.*

Gwinear.—On the 2nd inst. St. Gwinear Church, after undergoing an extensive restoration, was re-opened by the Bishop of Truro. The church is a large and interesting building of the fifteenth century, with portions of an earlier church at the east end. It consists of nave and chancel, with one aisle on the south and two on the north, a north porch, and a western tower. The chancel was partially restored several years ago by Mr. Sedding, who repaved it with encaustic tiles, fitted it with new stalls of oak and an oak reredos, renewed the east window (an interesting specimen of tracery), and effected some other repairs, especially in the roof. This work remains unchanged, except that the east window has been raised 18 in., and the reredos and levels of the floor have been correspondingly elevated. The recent works were commenced by the renewal, some months since, of the whole of the roofs, the ancient roofs having become so decayed as to be positively dangerous, and quite past restoration. With the sole exception of the windows, a thorough restoration of the ancient fabric has been effected. The church is well lighted with the new "Hesperus" lamps, provided by the patentees, Messrs. Jones & Willis, of Birmingham, who have also supplied the curtains and the like fittings generally. The northernmost aisle, known as the "Arundel Chapel," has been separated from the church by a low screen (the gift of the rural dean, the Rev. Frederick Hockin, of Phillack), and will be used as a chapel for week-day and occasional services; the westernmost bay is devoted to the purposes of a vestry. The passages throughout the church are laid with large and massive slabs of rubbed Delabole slate, edged with borders of red, yellow, and black tiles. The architect (according to the *Western Daily Mercury*) was the Rev. F. C. Hingeston-Randolph, rector of Ringmore, and the builders were Messrs. Cara & Edwards, of Crowan.

Cratfield.—The parish church of Cratfield, Suffolk, has been re-opened, after restoration. The south aisle roof was so rotten that Mr. Phipson, the architect, was forced to condemn it altogether; and a new roof, with moulded timbers, braces, purlins, &c., all of pitch pine, has been put up, and the roof covered again with lead. The clearstory windows have been restored and glazed with cathedral glass, and the internal stone piers, capitals and bases, arches, quoins, &c., throughout the church, cleaned down and left perfect. The internal walls have been re-plastered, and the north and south aisle windows made good and re-glazed as far as necessary; but the outside walls of the church, which are covered with plaster, have, with the exception of the clearstory, not been touched. Wooden floors with oak curbs have been laid under the benching in the nave and aisles, and the latter have been benched with some of the old seats, and the nave with some plain pitch-pine benches. The passages are paved with Minton's tiles, all old monumental slabs being relaid. There was a very fine and interesting carved screen in the chancel arch some forty or fifty years ago, but about that time it was cut in half, and the head placed at the back of a west gallery erected at that time. This gallery has been removed, and the screen has been put roughly together again, and placed at the west end of the nave. The old Jacobean pulpit remains, but has been made larger, and some old Jacobean panelling has been formed into a prayer-desk. There is a very beautifully carved font of Perpendicular date, containing in its panels the seven sacraments, which we are glad to see is untouched. The work has been executed by Mr. Grimwood, of Weybread. The total cost of the present works, including the value of the old lead on the nave, sold to help to defray the expense, is about 860*l.* or 870*l.*

DISSENTING CHURCH-BUILDING NEWS.

Manchester.—A new Wesleyan chapel, erected at the junction of Plymouth-grove and Hyde-grove, has been opened. The chapel is built of stone, and is designed in the Early Gothic style. It is lighted by an arcade of windows on each side, and by a four-light window in the main gable. The internal dimensions of the building are 63 ft. long by 37 ft. wide. Sittings are provided for 350 persons. The roof is lofty, and in one span, wagon-headed in form, and divided into panels, with moulded ribs. The open seats, roof timbers, &c., are all of pitch pine. The entrance-doors are at each side of the chapel, and a narthex is formed by a wooden screen (glazed with cathedral glass) cutting off a passage-way, 8 ft. wide, the entire breadth of the building. Doors in the narthex, and again in the screen, protect the congregation from draughts. All the doors are arranged to open outwards. Vestries, class-rooms, and keeper's-house have also been built, and the total cost at present incurred will be about 5,500*l.*, including land and boundary walls. Ample space is reserved for a larger chapel,—contemplated at some future time, capable of seating 1,000 persons. The contract for the present buildings was entrusted to Mr. L. C. Webster, of Brook-street, and the works have been designed by Messrs. Hetherington & Oliver, architects, Carlisle, and carried out under their superintendence.

Bournemouth.—On the 17th inst. the new East Cliff Congregational Church was opened. The church has been erected on a site presented by Sir G. Meyrick, bart., and is situated near the East railway station. It is built of white brick, with white stone dressings, and moulded brick reveals to windows. It has a clock-tower 90 ft. in height. The interior is divided into two aisles, and the apse is provided with pulpit, organ, and a platform. It is 60 ft. long by 40 ft. wide, and including that in the gallery, sitting accommodation has been provided for 650 worshippers. In the basement a school, 40 ft. by 20 ft., and four class-rooms, have been constructed. The total cost exceeds 4,000*l.* The architects are Messrs. Kemp-Welch and Pinder, of Bournemouth, and the builder is Mr. Pike, of the same place.

SCHOOL BOARD SCHOOLS.

London.—At a meeting of the School Board for London, on the 10th inst., it was decided to accept a tender amounting to 8,300*l.* (exclusive of the cost of foundations) for the erection of a school for 1,200 children on the site in Reddin's-road, Derwent-road, Lambeth. It was stated that the cost per head of this school worked out at 7*l.* 5s. 8d., the site having cost 2,500*l.* The Works Committee reported that the new schools in Edinburgh-road, and in Silver-street, Notting-hill, providing accommodation for 802 and 624 children respectively, had now been completed, and would be ready for occupation immediately after the Christmas holidays.

Hemel Hempstead, Herts.—The Queen-street Board School buildings consist of a schoolroom, 61 ft. long and 22 ft. wide, class-room, 20 ft. long, 16 ft. wide, fitted with galleries and desks, and a capacious porch, in which are conveniences for hats, cloaks, &c.; and also lavatories and drinking-cups for the children. The roofs are all open to the ridge, stained and varnished. Care has been taken to insure good ventilation The materials are the dark bricks of the locality, with red brick strings and decorations. The heads and cills of all the doors and windows are of Bath stone. The buildings were opened by the Chairman of the Board (Mr. John Evans, F.R.S., of Nash Mills), on which occasion he delivered an address on the work of the Board, and the progress made in education since its establishment in the town. The buildings have been designed by Mr. George Low, architect, London, and erected by Mr. William Sear, builder, of Hemel Hempstead, at a cost slightly in excess of 1,000*l.*

East Linton (Scotland). — The East Linton School Board have approved of plans and specications for new schools, of which the estimated cost is 2,600*l.*

Norwich.—The foundation-stone has been laid of new school, lecture and class rooms, in connexion with Prince's-street Congregational Church. The buildings, which are situated at the corner of Redwell and Prince's streets, and occupy the whole space between them, the Congregational Church, and St. Michael-at-Plea Church-alley, will be a Classic structure of white brick, moulded and enriched. It will consist of a basement, ground, and first floors. The former, although 12 ft. 6 in. high, by taking full advantage of the incline of Redwell-street will be only partially underground. It will comprise a large infants' schoolroom, mothers' meeting-room, church parlour, class-room, ladies' retiring-room, hat and cloak rooms, and lavatories for all the school-children. Adjoining a kitchen will be the heating-chamber, from which the whole building will be warmed with hot water, in addition to the open fires in some of the rooms where cheerfulness is desirable. The ground-floor will contain an assembly or school room 62 ft. long by 39 ft. wide, with fourteen rooms arranged round it. Eleven of these will be class-rooms, the remainder will be for the secretary, the library, and the superintendents' private rooms. The height of the assembly or large school room will be 24 ft. to the springing of a large plaster panelled cove ceiling, which will have a lantern extending the whole length to give light; but the height from the floor to the top of the lantern will be 44 ft. The works are being carried out by Mr. John Downing, builder, of Pit-street, from the designs and under the superintendence of Mr. Edward Boardman, architect, Norwich, the whole of the plain and ornamental bricks for the exterior being supplied by Mr. G. Gunton, of Cossey.

STAINED GLASS.

London.—The east windows of Holy Trinity Church, Gough-square, Fleet-street, have been filled with stained glass, supplied by Messrs. Powell, of Whitefriars. The centre light has for its subject the Resurrection, with the figure of Christ standing at the empty tomb, with two sleeping angels below. Above and below are circular medallions of angels bearing scrolls and palm branches. The background is of diaper work in quarries.

Plymouth.—A memorial window has just been placed in St. Andrew's Church, Plymouth. The subject portrayed is the eight beatitudes. They are as follow:—Publican and Pharisee, the three Marys at the tomb, Joseph making himself known to his brethren, Simeon taking the infant Saviour in his arms, the Good Samaritan, the Annunciation, Abraham beseeching Lot that they should not quarrel, and the Martyrdom of Stephen. These subjects are surmounted by canopies designed as nearly as possible to old fifteenth-century glass. The tracery is filled at the top by the representation of our Lord speaking to the multitude, on the left side by Christ tempted, and on the right side by Christ ministered to by angels. The work has been executed by Messrs. Fouracre & Watson.

Great Sutton.—The west window of the new church of St. John the Evangelist, Great Sutton, has been filled with stained glass in memory of the late Mrs. Peter Owen. The window was designed by Mr. Henry Holiday, and executed by Messrs. Heaton, Butler, & Bayne.

Edinburgh.—Another of the series of memorial windows in St. Giles's Cathedral has just been completed. It occupies the window that has been for some time vacant, beside the organ. The illustrations are taken from the parables of "The Prodigal Son," "The Good Samaritan," and "The Good Shepherd." The principal

figures are in deep tones of brown, amber, and blue. The artists are Messrs. Ballantine & Son, of George-street, who have worked under the direction of Mr. Robert Herdman, R.S.A., and the Windows Committee.

Books.

The Pied Piper of Hamelin. By Robert Browning. Illustrated by Jane E. Cook, Author of "The Sculptor caught Napping." (King Alfred's School, Wantage). Printed for private circulation. 1879.

Mr. Robert Browning's popular version of the Legend of the Pied Piper of Hamelin, who first piped away all the rats of the town and afterwards all the children, because the burghers would not keep their promise, is well suited for illustration, and has afforded subjects to artists before now. No one, however, that we know of has illustrated the weird story so completely as the lady whose handsome book is before us. In nine folio plates Mrs. Cook has depicted all the prominent points of the legend, showing a playful fancy, power of expression, and much skill in drawing. As the sister of an architect, Mr. E. C. Robins, Mrs. Cook has an extra claim to our attention, but has no need of that to secure it. It is a pity that the book should be confined to her own circle.

VARIORUM.

"The relative Advantages of Wind, Water, and Steam, as Motive Powers, compared with each other," by Samuel R. Goslin (John Warner & Sons, Cripplegate), is a valuable pamphlet, containing within a small space a large amount of valuable matter. It includes an illustrated description of the motors best suited for utilising wind, water, and steam-powers, and the author evidently knows what he is talking about.——A third edition is published of "Bevis's Improved System of Book-keeping, specially adapted for Builders and Contractors" (8, St. Martin's-place). It is enlarged by the addition of an appendix containing examples of the author's newly-introduced arrangement of entries, showing an advantageous extension of the system advocated.——The *Gardeners' Magazine* gives a Christmas number full of engravings of all sorts, including a Sheet Almanac, printed in colours. Pictures,—pictures,—everywhere pictures.——The Christmas number of the *Pictorial World* includes a number of coloured sketches. The lithographer and chemical engraver are pushing the wood-engraver off his stool.——Whitaker's Almanac (1880) is excellent. We place it amongst those books in which we always find what we think ought to be in them.——The third section of "Colchester Castle: a Roman Building," just now issued by Mr. Geo. Buckler (Benham & Co., Colchester), is a synopsis of the pamphlets of 1876 and 1877, and a register of many points which have been under discussion for thirty years past. It is offered by the author more particularly to those who regard Colchester Castle as the oldest and the noblest monument of the Romans in Britain, and, therefore, a monument of national importance. We are bound to say that a not very minute examination of Colchester Castle, made by us some years ago, did not lead us to the conviction that it was a Roman structure. Mr. Buckler's long-continued study of the subject, however, entitles his opinion to respect.

Miscellanea.

New Post-office, Dudley.—On the 19th inst. the new post-office in Wolverhampton-street was opened to the public. The building has been erected by Messrs. Nelson & Son, from designs by the Government architects, which (says *Aris's Birmingham Gazette*) are not at all pleasing. The total cost will approach 4,000*l.*, the land having cost 3*l.* 3*s.* per square yard.

The Royal Society.—No. XXIX. of the "Proceedings of the Royal Society," just issued, includes the President's address and the accounts of the various Funds at the disposal of the Council for scientific and charitable purposes. The digest of papers read at the meetings is brought up to December.

A Blot on Birmingham.—The death-rate in Birmingham the week before last was equal to a yearly average of 33 per thousand. The average rate in twenty-two large towns was 31 per thousand.

Sanitary Condition of the City of London.—In the *Builder* for the 8th ult. (p. 1248), we briefly referred to the fact that the Greystoke-place Board school (a new structure) had been closed, owing to an outbreak of fever, due in some measure, according to a report made to the City Commissioners of Sewers by Dr. Sedgwick Saunders, to the insanitary condition of the school. The School Board for London subsequently appointed Dr. Alfred Carpenter, of Croydon, to inquire into and report to them upon the sanitary condition of the school, and at the meeting of the Board on the 17th inst. the Works Committee presented Dr. Carpenter's report. Dr. Carpenter says, "I am bound to say that a most searching inquiry did not discover any serious defect in the construction of the drains to the school. I examined into the whole of the connexions which exist between the drains and the interior of the school; some slight defects were found, capable of easy rectification, but nothing whatever to justify the idea that the school was from this cause 'a pestilent and insanitary area.'" Dr. Carpenter carries the war into the enemy's country when he says:—

"After searching diligently, and failing to find within the school buildings a sufficient reason for the illness which undoubtedly existed among the children, and, still further, a condition of things which would account for their poor state of health, I thought it my duty to visit some of the homes of those who attended the school. I had not far to go before I found sufficient evidence to account for pallid cheeks, flabby looks, and feeble health. In my endeavour to search out the truth regarding the allegations contained in the medical officer's report, I did not find that the parents generally imputed the illness of their children to infection received at the school. It was generally said to be in "the court" or "place" before their children had failed with it. I examined the water supply provided for these people; it was stored in old tubs, the place of storage being in the most filthy position; the offensive condition of the closet accommodation provided for these poor people being almost beyond conception. I should not have thought that it could have been possible for such a state of things to have existed within a few yards of one of the main arteries of the City of London."

The school has been re-opened.

Dioptric Lenses for Gas-Lighthouses.—Mr. John S. Sloane, C.E., late Engineer to the Commissioners of Irish Lights, has suggested certain improvements in the arrangement of dioptric lenses for gas-lighthouses. He does not propose to interfere with the upper reflecting prisms, but would, without hesitation, if necessary, sacrifice the lower, and by suspending the different annular polyzonals between wrought-iron grooved frames of light but (from their section) rigid description, with pulleys and balance-weights make their use comparatively easy. At Hasborough, Howth, Wicklow, and Mine Head, two panels, representing 90° of azimuth for each augmentation of flame to seaward,—*i.e.*, six lenses in addition to those at present in use,—would, from the situation, be sufficient. For Hook Tower he would propose nine lenses in addition to the eastward, in three groups—in either case the lenses of each power to be attached, so as to move up and down within the frames as one, somewhat like an ordinary sash-window. There would then be a set for the 28 and 43 jet burner, inclusive, and for the 68, 88, and 108, in each degree or point of azimuth; and as all the lights mentioned are fixed, or have apparatus suited for fixed lights, the object would be easier of attainment than if revolving. The cost of these improvements would be, he urges, comparatively trifling, when considered in relation to the immense advantage to the mariner, and to the great saving that the gaslight has effected since brought into use on the coast, unlike the electric light, which, he says, has been a source of great expense, anxiety, and uncertainty, and is useless in fogs, or even in ordinary thick weather.

Fires.—The Town-hall and Plait Market, Dunstable, were completely destroyed by fire on the 17th inst. The building was erected five years ago at a cost of 3,000*l.*——On the night of Friday, the 19th inst., a fire broke out in the extensive saw-mills of Messrs. Roberts, Williams, & Co., Cranmer-street, off Stanley-road, North-end, Liverpool. Before the arrival of the fire-brigade, the flames had gained complete mastery over the building.

Fall of a Cornice.—At Sheffield, on Saturday last, a serious building accident took place at some bank premises in course of erection for the Midland Company. The cornice along one side, composed of massive stones, suddenly fell a distance of 30 ft. into the street, smashing some capitals, and knocking down the hoarding. Three men who were working below were severely injured,—one beyond hope of recovery.

Crystal Palace School of Practical Engineering.—The certificates of merit awarded to the students of this school for proficiency in the winter term just closed were distributed on Saturday last in the lecture-room of the school in the south tower of the Palace. Mr. M'George, the new chairman of the Palace Directors, presided, and the certificates were distributed by Mr. George Berkeley, C.E. Mr. Shenton, the superintendent, read the report of the examiners, which stated that the number of students of the first year's course who had attended the lecture examination in "materials and their manufacture," was twenty-six, of whom twenty were eligible for examination, and ten passed satisfactorily, and that the second year's students of the civil engineering section showed considerable ability in the surveys, Parliamentary plans, working-drawings, and specifications, both in regard to the quality and the amount of work done. Mr. Berkeley, in the course of a brief address to the students, said the grand object of an engineer was to find out and direct the great sources of power which were contained in nature to the use and convenience of men. In recent years that power had been much developed. One of the features of the present day was the extraordinary advance which had been and was being made in the manufacture and appliances of steel, and another feature was the application of the marvellous power of electricity, as shown in the telephone and microphone, by means of which persons who were miles apart could converse and transact business in a few minutes or seconds which formerly took hours to accomplish. In the application of force a knowledge of chemistry was most important to an engineer, and he recommended that instruction in that science should be added to the curriculum of the school.

Rateable Value of the Metropolis.—The following particulars are taken from the list of the totals of the gross and rateable values of the valuation lists of the several parishes and unions in the metropolis, as shown by the supplemental valuation lists sent to the clerk to the managers of the Metropolitan Asylums District, which will come into force on April 6th, 1880:—

Bethnal-green, 324,005*l.* 5*s.*; Camberwell, 690,304*l.*; Chelsea, 423,851*l.*; Hampstead, 87,461*l.*; Islington, 1,280,831*l.*; Kensington, 1,472,986*l.*; Lambeth, 1,174,903*l.*; Marylebone, 1,328,144*l.*; Mile-end Old-town, 315,356*l.*; Paddington, 1,121,616*l.*; St Pancras, 1,336,890*l.*; Shoreditch, 526,035*l.*; St. George-in-the-East, 191,739*l.*; St. Giles-in-the-Fields and St. George's, Bloomsbury, 334,360*l.*; Lincoln's-inn, 18,011*l.*; Fulham Union, 446,008*l.* 10*s.*; St. George's Union, 2,099,902*l.*; Greenwich Union, 523,498*l.*; Hackney Union, 827,375*l.*; Holborn Union, 835,724*l.*; Gray's-inn-place, 14,647*l.*; Lewisham Union, 523,664*l.*; St. Olave's Union, 773,564*l.*; Poplar Union, 611,508*l.*; St. Saviour's Union, 883,750*l.*; Stepney Union, 289,943*l.*; Strand Union, 639,168*l.*; Wandsworth and Clapham Union, 1,028,111*l.*; Westminster Union, 685,039*l.*; Whitechapel Union, 356,908*l.*; Woolwich Union, 264,991*l.*; City of London Union, 3,313,522*l.* 8*s.*; the Middle Temple, 10,929*l.* The total gross value of the metropolis is 37,418,684*l.* 9*s.* 6*d.*, and the total rateable value, 25,055,674*l.* 3*s.*

Chepstow Bridge Works.—So much interest is felt in the prosperity of the Chepstow Bridge Works (Edward Finch & Co., Limited) as affording employment to a large number of the inhabitants of Chepstow, and consequently identified to a considerable extent with the well-being of the town, that we are glad to hear that the *employés* are again so busily engaged that extra exertions are necessary, and that orders have just been received for a series of steel masts for iron-clad vessels which are being constructed for the Admiralty. The lattice-girder bridge which is being completed at these works for the Indian State Railways is likely to add to the reputation which Finch & Co. already enjoy. The bridge alluded to is made for a single line on the North Punjab Railway, designed to open up better communication with Afghanistan, and contains ten spans of 120 ft. each, with several smaller spans, the total weight of iron being about 1,000 tons. The firm are completing and sending forward to London for shipment one 120-ft. span per week.

Organ, Upton Old Church, Slough.—The new organ for this church, to be presented by the Misses Nixey, is being erected in the chamber prepared for it. It has been built by Messrs. Walker, and the case is from a design by Mr. J. Oldrid Scott.

Royal Albert Hall.—"The Messiah" will be given here on Friday evening, 26th inst., and on Thursday evening, January 1st; in the first case by the Royal Albert Hall Choral Society, and in the second by Mr. Carter's Choir, eminent soloists assisting at both presentations.

"Opera Comique."—Mr. D'Oyly Carte was polite enough to invite us to the representation of Messrs. Gilbert & Sullivan's "Pinafore" by children, a treat provided in the mornings for other children during the holidays, and we feel bound in return to say a word or two about it for good or for ill. For ill, however, it certainly shall not be, for the cleverness displayed, the result of strict training, is remarkable; several of the mites act delightfully, in fact; but if Master Tom or Miss Rosie consult us on the subject, we shall, in strict confidence, of course, advise them to get papa to take them in the evening and see the real thing. The music is so charming, and the joke so good, it would be a thousand pities if they did not hear and see the piece at its best. At one time or another, however, let them not fail to go. Mr. George Grossmith, jun., who has materially helped to make the fortune of this theatre, brightens up the morning with an original drawing-room entertainment, called "A Juvenile Party," written as well as sung by himself.

TENDERS

For alterations and additions to the Surrey County Lunatic Asylum, Wandsworth. Mr. C. H. Howell, architect. Quantities by Mr. John Scott and Messrs. Widnell & Trollope:—

Smith & Co.	£40,884	0	0
Adamson & Sons	36,965	0	0
Peto	35,848	0	0
Holland & Hannen	35,814	0	0
Browne & Robinson	35,580	0	0
Chappell	35,431	0	0
Brass	33,342	0	0
Trollope	34,980	0	0
Nightingale	34,838	0	0
Higgs & Hill (accepted)	34,234	0	0

For the erection of Barton House, Cambridge, for Mr. S. Holben. Mr. Alfred H. Fitz, architect. Quantities by Mr. Joseph Rookwood:—

Patman & Fotheringham	£3,685	0	0
Thoday & Son	3,399	0	0
Forrest	3,387	0	0
Falkner	3,247	0	0
Smith	3,133	0	0
Nightingale	3,063	0	0
Bell & Sons	2,943	0	0
Jacklin	2,897	0	0

For St. Catherine's Wesleyan Schools, Derby-street, Lincoln. Mr. C. Bell, architect. Quantities supplied:—

Middleton	£1,207	4	3
Close & Co.	1,169	0	0
Benton	1,136	0	0
Crosby & Sons	1,134	0	0
Allman	1,123	0	0
Hatcliffe & Bell	1,119	0	0
Walter & Hensman	1,098	0	0
Horton & Warrener	1,098	0	0
Drury	1,092	0	0
Young	1,085	0	0
Finns, Brothers	1,065	10	0
Cox	1,054	0	0
Woolhouse, Brothers	1,050	0	0
Bailey	1,050	0	0
Otter & Elsey	1,040	0	0
Harrison	1,010	14	0
Judd	998	0	0
Barnes & Wright	970	0	0
Weighel	969	0	0
Cowen & Lansdown (accepted)	925	0	0

For building ambulance sheds, Hammersmith, for the Fulham District Board of Works. Mr Alfred C. Bean, architect. Quantities supplied by Mr. Alfred J. Bean:—

Edwards & Co.	£217	0	0
Lucas & Son	210	0	0
Eales	197	10	0
Crosse	189	10	0
Williams	187	0	0
Craske	186	0	0
Johnson	178	0	0
Haines	175	0	0
R. & E. Smith	165	0	0
Scott (accepted)	165	0	0

For completion of house (at present in carcass) in St. Mark's-road, North Kensington, for Dr. H. E. Pocock. Messrs. Hills & Fletcher, architects:—

Whiteley	£1,731	0	0
Handover	1,200	0	0
Gregar	1,095	0	0
Sharpe & Everard	1,040	0	0
Dover & Long	985	0	0
Cowland, Brothers	968	0	0
Sheffield & Prebble	967	0	0
Alexander	874	0	0
Jolliffe (accepted)	780	0	0

For alterations to the Rose and Crown, Goswell-road, for Mr. Brunsden. Mr. H. J. Newton, architect:—

Grimwood	£488	0	0
Taylor	477	0	0
Godden	472	0	0
Marr	399	0	0
Lamble (accepted)	391	0	0

For the erection of sculptor's studio and residence, Belsize-lane, Hampstead, for Mr. J. M. Griffith. Mr. Walter Graves, architect. Quantities by Mr. Burnett:—

Patman & Fotheringham	£2,980	0	0
Toms	2,916	0	0
Harnes	2,850	0	0
Hunt (too late)	2,808	0	0
Longmire & Burge	2,789	0	0

The contract for providing the waterworks of the town of Aldershot with an additional supply of about 100,000 gallons per day of ten hours, from the chalk springs, has been entrusted to Messrs. Le Grand & Sutcliff, and the boring operations have already been commenced.

The tender of Messrs. E. Downs Kennedy & Co., of 70, New Corn Exchange, Mark-lane, has been accepted by the Richmond Vestry for granite and flints.

TO CORRESPONDENTS.

R. M. T.—A. J.—W. S.—Old D. Trap.—R. H.—A. F. E.—J.—J. A. S.—C. S.—Mr. H.—W. G.—C. H.—L.—K.—W. & P.—H. W. P.—H. & F.—A. R. P.—J. C.—R. G. A.—C. H. & Sons.—C. L. S. (the employer always pays in one shape or another for taking out the quantities, and therefore, so far as that goes, need not object to make the payment direct to his architect for this service if performed. The commission charged is regulated to some extent by the amount of contract).—J. H. (the gentleman addressed is dead).—H. S (thanks; no).—R. B. (next week).—W R P (next week; too late for this).—J. N. (next week).—C. & son (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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